

Schuhmann Messtechnik





Table of Contents

Isolating Amplifier

Active, passive, universal, transducer, distributor

1

Feeding Isolating Amplifier, Analog Signal Conditioning

Transmitter feeding devices, distributor, limit switches

2

Measuring and Monitoring Relays, Limit Switches

Analog, digital with display, for input signals: current and voltage - DC und AC, thermocouples, PT 100, etc., Live-Zero Control, Electrode Relay

3

Digital Pulse and Frequency Processing

Digital Analog Frequency Transducer, Digital Frequency Analog Transducer, Switching Amplifier with Impulse Summator, Frequency Divider, Switching Amplifier

4

Measuring Values, Transmitting and Metering

USB-Simulator, Simulator 90, Setpoint Adjuster

5

Analog Calculator

Addition, subtraction, linearization, multiplying, min- and maximum selector, calculator of the square root

6

AC Current Transducer, AC Voltage Transducer

Isolating transducer for alternating current or alternating voltage

7

Temperature and Resistance

Isolating transducer for NI 1000, PT 100, etc. in 2-, 3- or 4-wire technology, potentiometer, resistor, thermocouple, etc.

8

Additional Devices

USB2 Interface, Temperature Frequency Converter, Measuring Point Switch, Process Indicator with Profibus-Interface

9



Contact



Schuhmann Messtechnik

Schuhmann GmbH & Co. KG
Römerstraße 2
74363 Güglingen
Germany

Fon +49 7135 5056
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de





Title	Specification	PC-Interface	Available designs	Auxiliary power	Page
ISOLATING AMPLIFIER					
standard signals 0(4)...20 mA, 0(2)...10 V					
ST 1.00 SDC	standard signals I-U/ I-U, calibrated switching/ Live-Zero input monitoring: transistor output		G 6,2	20...30 V DC	01-01
STP 1.00 SDC	free parameterizable, universal inputs and outputs	X	G 6,2	20...30 V DC	01-03
STP 1.00 MW	free parameterizable, universal inputs and outputs	X	G 12,5	24...250 V DC, 90...253 V AC	01-05
TF 19.00 GW	input I/ U, output I/ U, fixed calibrated, adjustable, simulation		G 22,5	24...250 V DC, 90...253 V AC	01-07
TF 19.00 GW 148	Isolating amplifier with peak value measurement		G 22,5	24...250 V DC, 90...253 V AC	01-07-xx
UT 19.00 GW	input I/ U switchable, output I/ U simultaneous, trimmer		G 22,5	24...250 V DC, 90...253 V AC	01-09
UT 19.04 GW	special input, output I/ U simultaneous, trimmer		G 22,5	24...250 V DC, 90...253 V AC	01-11
MT 1.20 SDC	current input and output, 1:1		G 6,2	20...30 V DC	01-13
TT 1.00 MW	1-channel, input I/ U, output I/ U, fixed calibrated, adjustable		G 12,5	24...250 V DC, 90...253 V AC	01-15
TT 2.00 GW	2-channel, input I/ U, output I/ U, fixed calibrated, adjustable		G 22,5	24...250 V DC, 90...253 V AC	01-17
TT 2.00 GW 315	2-channel amplifier, input 1: 0...60 mV/ input 2: 0...200 V		G 22,5	24...250 V DC, 90...253 V AC	01-17-xx
TT 4.00 GW	4-channel, input I/ U, output I/ U, fixed calibrated, adjustable		G 45	24...250 V DC, 90...253 V AC	01-19

More devices see back page

* Designs: G = housing,
T = housing for door installation,
E = eurocard

3 Year
Warranty



Title	Specification	PC-Interface	Available designs	Auxiliary power	Page
ANALOG DISTRIBUTOR					
distribution of universal analog I/ U input signals, 2 or 4 outputs 0(4)...20 mA/ 0(2)...10 V					
AV 2.00 SDC	2-channel output, parameterizable	X	G 6,2	20...30 V DC	01-21
TTV 2.00 GW	2-channel output I/ U / I/ U		G 22,5	24...250 V DC, 90...253 V AC	01-23

ISOLATING AMPLIFIER - passive					
Galvanic 2-way isolation, no auxiliary power required, 4...20 mA					
MP 1.10 S	1-channel, 1:1 transmission, passive		G 6,2	no	01-25
MP 2.10 S	2-channel, 1:1 transmission, passive		G 6,2	no	01-25

ANALOG CALCULATOR					
addition, subtraction, linearization, multiplying, min- and maximum selector, calculator of the square root					
AS 3.00 SDC	3 inputs ± 20 mA, 1 output I or U, addition, subtraction, linearization, parameterizable	X	G 6,2	20...30 V DC	06-01
AS 3.00 MW	3 inputs ± 20 mA, 1 output I or U, addition, subtraction, linearization, parameterizable	X	G 12,5	24...250 V DC, 90...253 V AC	06-03
AS 3.10 SDC	3 inputs ± 10 V, 1 output I or U, addition, subtraction, linearization, parameterizable	X	G 6,2	20...30 V DC	06-05
AS 3.10 MW	3 inputs ± 10 V, 1 output I or U, addition, subtraction, linearization, parameterizable	X	G 12,5	24...250 V DC, 90...253 V AC	06-07

* Designs: G = housing,
T = housing for door installation,
E = eurocard

3 Year
Warranty

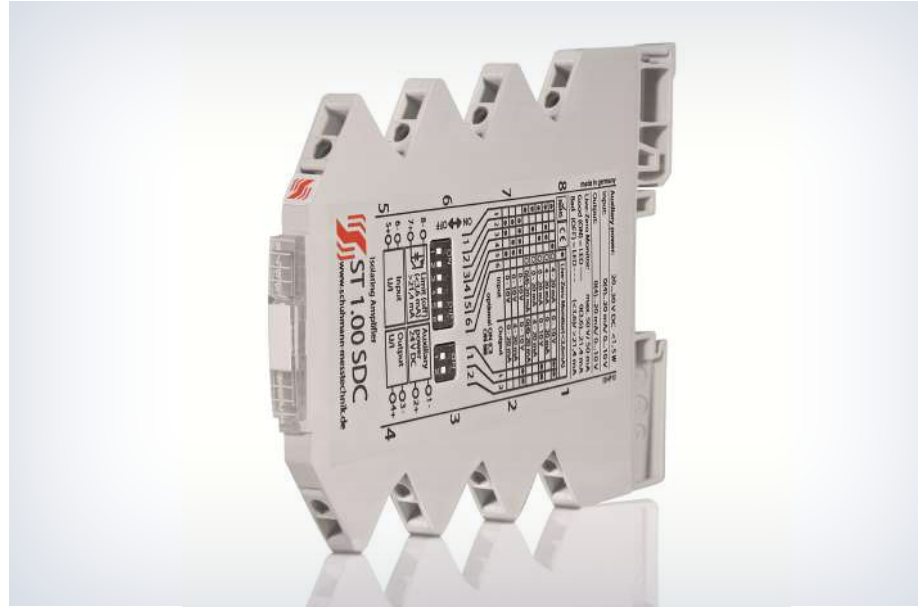


Universal Isolating Amplifier with Live-Zero Monitor

ST 1.00 SDC

FEATURES

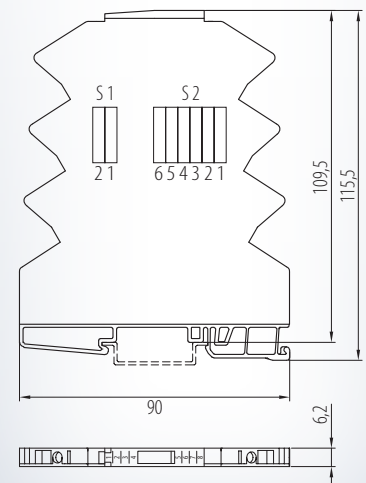
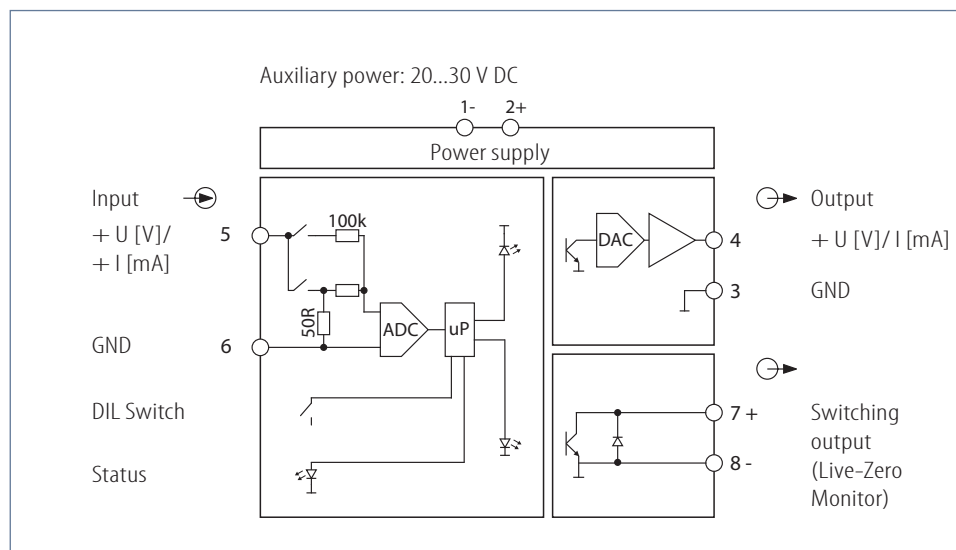
- **Input:**
Current 0(4)...20 mA or
Voltage 0...10 V
- **Output:**
Current 0(4)...20 mA or
Voltage 0...10 V
- **Calibrated inputs and outputs
for all ranges**
- **Transistor output for
Live-Zero Monitor**
- **Galvanic 3-way isolation
of 3,75 kV**
- **Low internal consumption**



FUNCTION

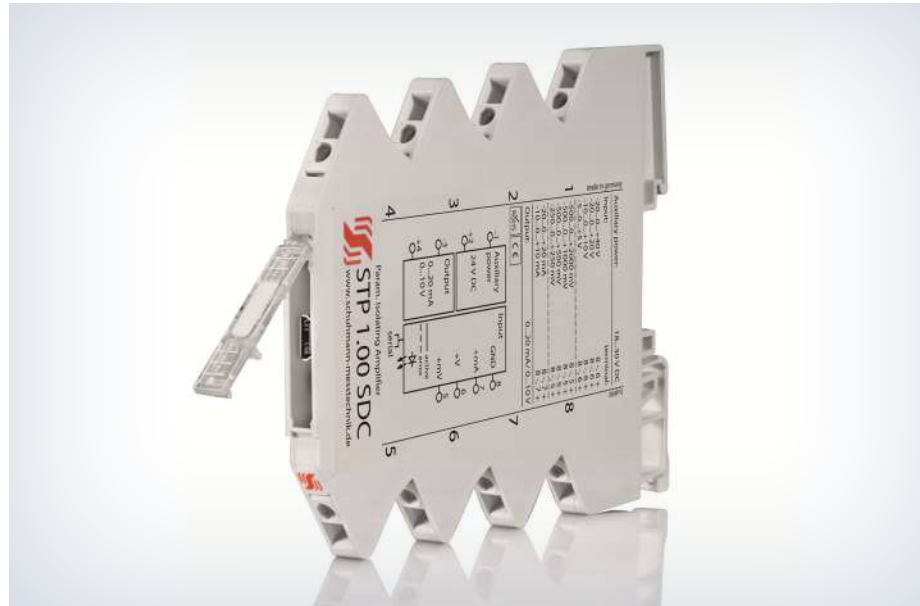
Amplifiers are used for the isolation or conversion of analog signals. This guarantees a safe decoupling between the sensor and evaluation circuit and any influence of other sensor circuit among each other is absolutely impossible. Input and output of the ST1.00SDC are equipped with a current- or voltage range.

The range selection is being made by DIL-switch S1 and S2 on the side, the desired adjustment can be chosen from the table on the side. The integrated Live-Zero Monitor is also able to control the input current ranges on error.



FEATURES

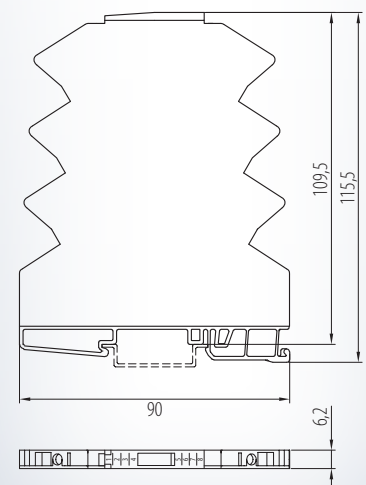
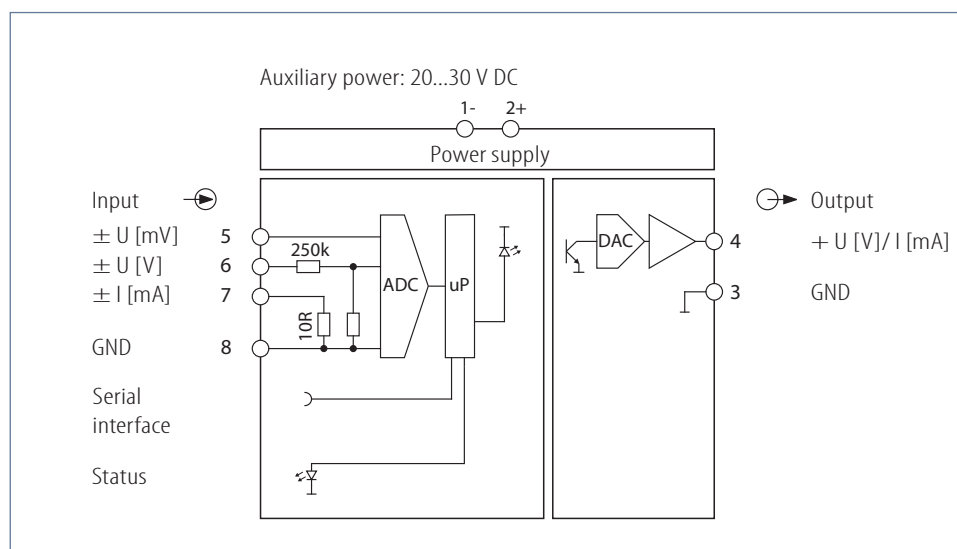
- **Bipolar inputs:**
 Current $\pm 20\text{ mA}$
 Voltage $\pm 250\text{ mV}$
 Voltage up to $-20\text{ V...}+40\text{ V}$
- **Output:**
 Current $0(4)\text{...}20\text{ mA}$ or
 Voltage $0(2)\text{...}10\text{ V}$
- **Parameterization without auxiliary power via PC-interface**
- **Galvanic 3-way isolation of 2,5 kV**
- **Low internal consumption**



FUNCTION

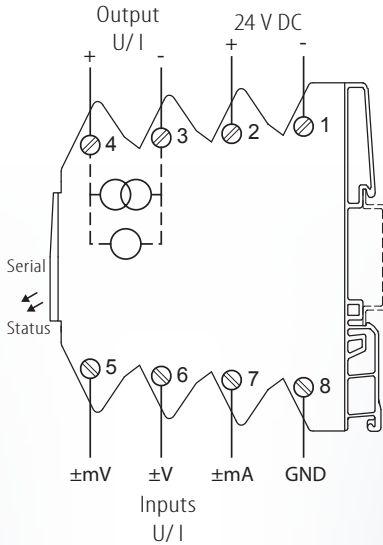
Amplifiers are used for the galvanic isolation or conversion of analog signals. This guarantees a safe decoupling between sensor and evaluation circuit and any influence of other sensor circuits among each other is absolutely impossible. The STP 1.00 SDC is equipped with bipolar current and voltage inputs as well as current and voltage outputs.

It can be adjusted and parameterized easily by the USB2 adapter in connection with KALIB-Software. Indication of status is signaled by front sided LED. The integrated protective switching with suppressor diode protects the secondary circuit from voltage peaks and transient excess voltage.



STP 1.00 SDC

Connection diagram:



Input:

I: DC current (bipolar):	-20...0...+20 mA -10...0...+10 mA	input resistance approx. 10 Ω
connection:	terminal 8 -, 7 +	
U: DC voltage (bipolar):	-20...0...+40 V -20...0...+20 V -10...0...+10 V -5...0...+5 V	input resistance approx. 250 kΩ
connection:	terminal 8 -, 6 +	
U: DC voltage (bipolar):	-250...0...+250 mV -500...0...+500 mV -500...0...+1000 mV -500...0...+2000 mV	input resistance approx. 1 MΩ
connection:	terminal 8 -, 5 +	

Within the described measuring ranges the beginning respectively the end can be freely selected.

Output:

I: load-independent DC current:	0(4)...20 mA	permissible load max. 580 Ω
connection:	terminal 3 -, 4 +	
U: load-independent DC voltage:	0(2)...10 V	permissible load ≥ 1 kΩ
connection:	terminal 3 -, 4 +	

The minimum/ maximum limits for current and voltage output are freely selectable and adjustable in clear text. On exceeding or falling below the error limits at the input, a defined fixed value can be predetermined in case of error for the output.

Adjustment:

Measuring ranges and parameterization are adjustable in parameter data by KALIB-Software. You need a PC and the interface adapter USB2 with KALIB-Software.

Display:

LED status:	green, active green, flashing	input signals are in standard range, device ready for use input out of predetermined limits or exceeding of measuring range
-------------	----------------------------------	-----------------------------------------------------------------------------------------------------------------------------------

Environmental conditions:

Storage temperature:	-40...+70 °C
Operating temperature:	0...55 °C
Isolation voltage:	2,5 kV eff. 1 sec. input-output 2,5 kV eff. 1 sec. auxiliary voltage

Auxiliary power:

24 V DC:	20...30 V DC < 1,5 W
----------	-------------------------

Influence of auxiliary power:	< 0,1 %
-------------------------------	---------

Characteristics of transmission:

Transmission error:	< 0,12 %
Resolution:	15 bit
Linearity error:	< 0,1 %
Temperature error:	< 100 ppm/ K
Load influence I:	< 50 ppm of final value
Load influence U:	< 0,2 % at 1 kΩ load
Setting time:	< 500 msec.

Directive:

EMC Directive:	2014/30/EU*
Low Voltage Directive:	2014/35/EU

*minimum deviations possible during HF-radiation influence

Mounting details:

Housing for top hat rail	
Type of protection:	IP 20
Mounting rail fixed according to	EN 50022-35 x 6,2 mm
Width:	6,2 mm
Weight:	52 g
Material:	Polyamide PA
Flammability class:	V0 (UL 94)
Approval:	CE
Connection:	screw clamps 0,14...2,5 mm ²

For safety reasons we recommend to mount the housing for top hat rail with a distance > 1 mm to each other. Please check parameterization before initial operation!

Ordering information:

Type:	STP 1.00 SDC	24 V DC
Accessories:	USB2/ USB-Simulator with KALIB-Software	

Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen
Tel. + 49 71 35 50 56
Fax + 49 71 35 53 55
www.schuhmann-messtechnik.de

FEATURES

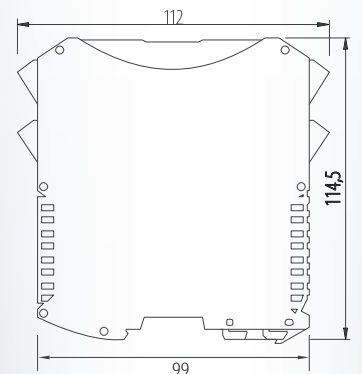
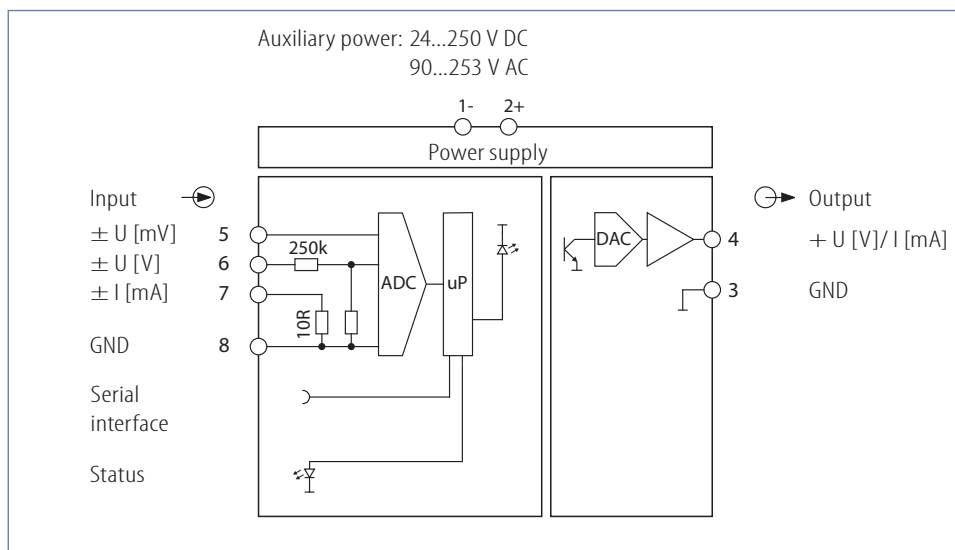
- **Bipolar inputs:**
Current $\pm 20 \text{ mA}$
Voltage $\pm 250 \text{ mV}$
Voltage up to $-20 \text{ V} \dots +40 \text{ V}$
- **Output:**
Current $0(4) \dots 20 \text{ mA}$ or
Voltage $0(2) \dots 10 \text{ V}$
- **Parameterization without auxiliary power via PC-interface**
- **Wide range auxiliary power**
 $24 \dots 250 \text{ V DC} / 90 \dots 253 \text{ V AC}$
- **Galvanic 3-way isolation of 2,5 kV**



FUNCTION

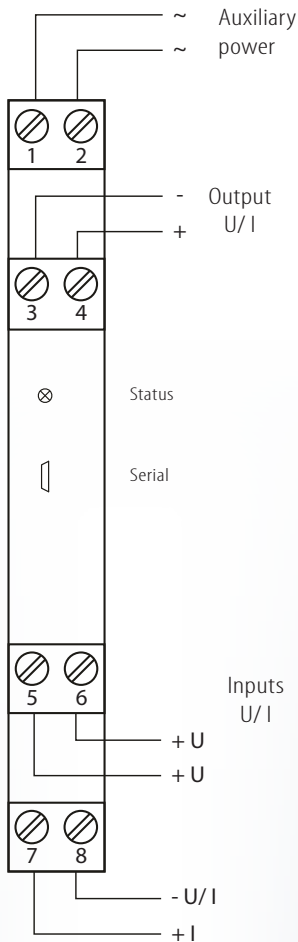
Amplifiers are used for the galvanic isolation or conversion of analog signals. This guarantees a safe decoupling between sensor and evaluation circuit and any influence of other sensor circuits among each other is absolutely impossible. The STP 1.00 MW is equipped with bipolar current and voltage inputs as well as current and voltage outputs.

It can be adjusted and parameterized easily by the USB2 adapter in connection with KALIB-Software. Indication of status is signaled by front sided LED. The integrated protective switching with suppressor diode protects the secondary circuit from voltage peaks and transient excess voltage.



STP 1.00 MW

Connection diagram:



Input:

I: DC current (bipolar):	-20...0...+20 mA -10...0...+10 mA	input resistance approx. 10 Ω
connection:	terminal 8 -, 7 +	
U: DC voltage (bipolar):	-20...0...+40 V -20...0...+20 V -10...0...+10 V -5...0...+5 V	input resistance approx. 250 kΩ
connection:	terminal 8 -, 6 +	
U: DC voltage (bipolar):	-250...0...+250 mV -500...0...+500 mV -500...0...+1000 mV -500...0...+2000 mV	input resistance approx. 1 MΩ
connection:	terminal 8 -, 5 +	

Within the described measuring ranges the beginning respectively the end can be freely selected.

Output:

I: load-independent DC current:	0(4)...20 mA	permissible load max. 580 Ω
connection:	terminal 3 -, 4 +	
U: load-independent DC voltage:	0(2)...10 V	permissible load ≥ 1 kΩ
connection:	terminal 3 -, 4 +	

The minimum/ maximum limits for current and voltage output are freely selectable and adjustable in clear text. On exceeding or falling below the error limits at the input, a defined fixed value can be predetermined in case of error for the output.

Adjustment:

Measuring ranges and parameterization are adjustable in parameter data by KALIB-Software. You need a PC and the interface adapter USB2 with KALIB-Software.

Display:

LED status:	green, active green, flashing	input signals are in standard range, device ready for use input out of predetermined limits or exceeding of measuring range
-------------	----------------------------------	--------------------------------------------------------------------------------------------------------------------------------

Environmental conditions:

Storage temperature:	-40...+70 °C
Operating temperature:	0...55 °C
Isolation voltage:	2,5 kV eff. 1 sec. input-output 2,5 kV eff. 1 sec. auxiliary voltage

Auxiliary power:

Widerange:	24...250 V DC 90...253 V AC < 3 W
------------	-----------------------------------------

Influence of auxiliary power: < 0,1 %

Characteristics of transmission:

Transmission error:	< 0,12 %
Resolution:	15 bit
Linearity error:	< 0,1 %
Temperature error:	< 100 ppm/ K
Load influence I:	< 50 ppm of final value
Load influence U:	< 0,2 % at 1 kΩ load
Setting time:	< 500 msec.

Directive:

EMC Directive:	2014/30/EU*
Low Voltage Directive:	2014/35/EU

*minimum deviations possible during HF-radiation influence

Mounting details:

Housing for top hat rail	
Type of protection:	IP 40 housing IP 20 clamps
Mounting rail fixed according to	EN 50022-35 x 6,2 mm
Width:	12,5 mm
Weight:	108 g
Material:	Polyamide PA
Flammability class:	V0 (UL 94)
Approval:	CE
Connection:	plugg. screw clamps 0,14...2,5 mm ²

For safety reasons we recommend to mount the housing for top hat rail with a distance > 1 mm to each other. Please check parameterization before initial operation!

Ordering information:

Type:	STP 1.00 MW widerange
Accessories:	USB2/ USB-Simulator with KALIB-Software

Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen
Tel. + 49 71 35 50 56
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de

FEATURES

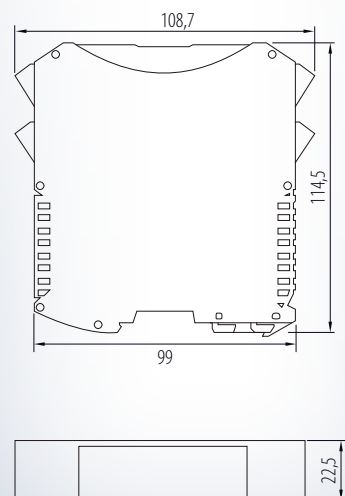
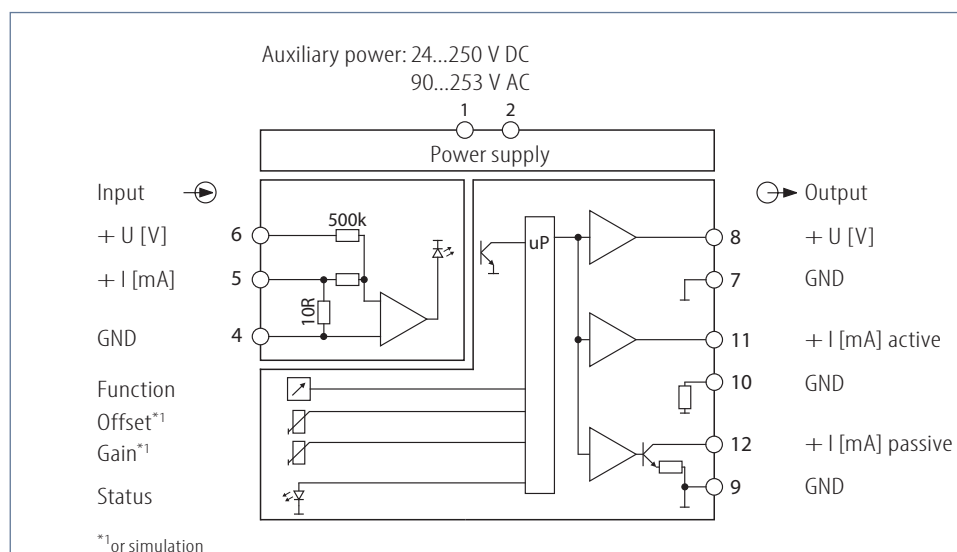
- **Switchable inputs:**
Current 0(4)...20 mA or
Voltage 0(2)...10 V
- **Outputs simultaneous:**
Voltage 0(2)...10 V and
Current 0(4)...20 mA active or
loop-powered
- **Function, switchable:**
- fixed calibration or
- adjustable by trimmer or
- simulation mode for outputs
- **Galvanic 3-way isolation**
of 2,5 kV
- **Low internal consumption**



FUNCTION

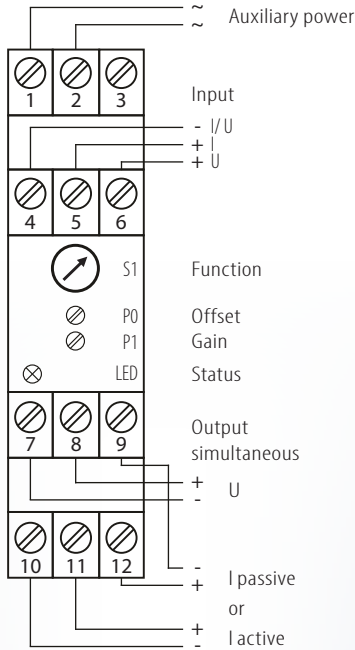
Amplifiers are used for the galvanic isolation or conversion of analog signals. This guarantees a safe decoupling between sensor and evaluation circuit and any influence of other sensor circuit among each other is absolutely impossible. This Amplifier is equipped with standard current and voltage inputs as well as current and voltage outputs.

The TF 19.00 GW can be switched to different characteristics of transmission by front side turn-switch. Fixed calibrated measuring ranges for input and output are stored in switch setting 0...7. In position 8...D the transmission ranges can be adjusted by zero point and range trimmer. Position E and F are used for simulation during initial operation, here a fixed output value can be generated by zero point and range trimmer, without input signal.



TF 19.00 GW

Connection diagram:



Input:

I: DC current:	0(4)...20 mA	input resistance approx. 10 Ω
connection:	terminal 4 -, 5 +	
U: DC voltage:	0(2)...10 V	input resistance approx. 500 kΩ
connection:	terminal 4 -, 6 +	

Output:

I: load-independent DC current:	0(4)...20 mA	permissible load max. 500 Ω
connection:	terminal 10 -, 11 +	
or:		
loop-powered DC current:	0(4)...20 mA	max. permissible voltage 30 V
connection:	terminal 9 -, 12 +	
U: load-independent DC voltage:	0(2)...10 V	permissible load ≥ 2 kΩ
connection:	terminal 7 -, 8 +	

The maximum limits for current- and voltage output are fixed at 22 mA respectively 11 V.

Adjustment:

The characteristics of transmission are adjustable by front side turn-switch.

S1	Input	Output simultan.	Position turn-switch S1
0	0-20 mA	0-20 mA / 0-10 V	0...7
1	0-10 V	fixed calibrated	Inputs and outputs are fixed calibrated, the trimmer for zero point and range are here without function.
2	0-20 mA		
3	0-10 V		
4	4-20 mA		
5	2-10 V		
6	4-20 mA		
7	2-10 V		
8	0-20 mA	0-20 mA / 0-10 V	8...D
9	0-10 V	change value Offset/ Gain	Inputs and outputs are not exactly calibrated. Adjustment: zero point trimmer P0 (> ± 15%) gain trimmer P1 (> ± 15%)
A	0-20 mA		
B	0-10 V		
C	4-20 mA		
D	2-10 V	0-20 mA / 0-10 V	
E	Simulation via P0 0-100%		E
F	Simulation via P1 0-100%		F

Display:

LED status:	green, active	input signals are in standard range, device ready for use
	green, flashing	input signal out of the acceptable range or exceeding of measuring range or simulation mode

Environmental conditions:

Storage temperature:	-40...+70 °C
Operating temperature:	0...55 °C
Isolation voltage:	2,5 kV eff. 1 sec. input-output 2,5 kV eff. 1 sec. auxiliary voltage

Auxiliary power:

Wide range:	24...250 V DC 90...253 V AC < 3 W
Influence of auxiliary power:	< 0,1 %

Characteristics of transmission:

Transmission error:	< 0,12 %
Resolution:	15 bit
Linearity error:	< 0,1 %
Temperature error:	< 100 ppm/ K
Load influence I:	< 50 ppm of final value
Load influence U:	< 0,2 % at 2 kΩ load
Setting time:	< 100 msec.

Directive:

EMC Directive:	2014/30/EU*
Low Voltage Directive:	2014/35/EU
*minimum deviations possible during HF-radiation influence	

Mounting details:

Housing for top hat rail	
Type of protection:	IP 20 housing IP 20 clamps
Rail-mounting fixed according to	EN 50022-35 x 7,5 mm
Width:	22,5 mm
Weight:	140 g
Material:	Polyamide PA
Flammability class:	V0 (UL94)
Approval:	CE
Connection:	screw clamps $\leq 2,5$ mm ²

Please check switch position before initial operation!

Ordering information:

Type: TF 19.00 GW wide range

Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen
Tel. +49 71 35 50 56
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de



Adjustable Isolating Amplifier

Peak value measurement

TF 19.00 GW 148

FEATURES

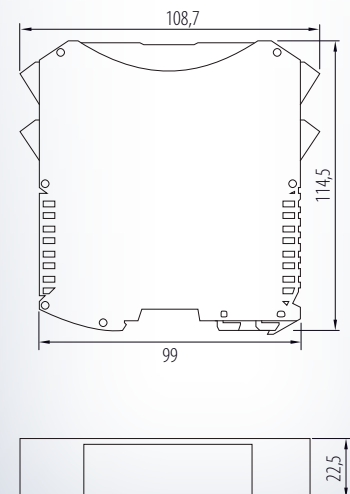
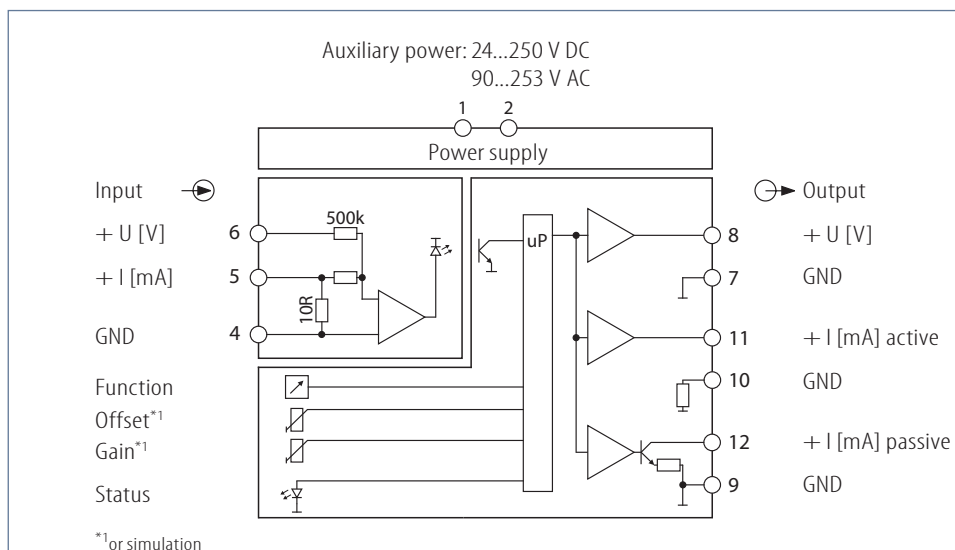
- **Peak value measurement:**
 $f=6$ Hz (half sinus)
 Current 0(4)...20 mA or
 Voltage 0(2)...10 V
- **Outputs simultaneous:**
 Voltage 0(2)...10 V and
 Current 0(4)...20 mA active or
 loop-powered
- **Function, switchable:**
 - fixed calibration or
 - adjustable by trimmer or
 - simulation mode for outputs
- **Galvanic 3-way isolation**
 of 2,5 kV



FUNCTION

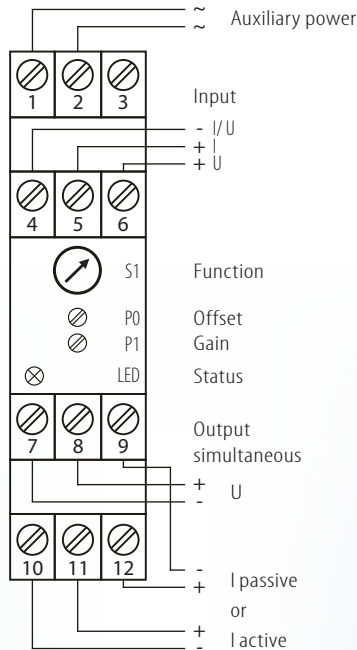
The TF 19.00 GW 148 does the peak value measurement: $f=6$ Hz (half sinus). Amplifiers are used for the galvanic isolation or conversion of analog signals. This guarantees a safe decoupling between sensor and evaluation circuit and any influence of other sensor circuit among each other is absolutely impossible. This Amplifier is equipped with standard current and voltage inputs as well as current and voltage outputs.

The TF 19.00 GW 148 can be switched to different characteristics of transmission by front side turn-switch. Fixed calibrated measuring ranges for input and output are stored in switch setting 0...7. In position 8...D the transmission ranges can be adjusted by zero point and range trimmer. Position E and F are used for simulation during initial operation, here a fixed output value can be generated by zero point and range trimmer, without input signal.



TF 19.00 GW 148

Connection diagram:



Input:

I: DC current:	0(4)...20 mA	input resistance approx. 10 Ω
connection:	terminal 4 -, 5 +	
U: DC voltage:	0(2)...10 V	input resistance approx. 500 kΩ
connection:	terminal 4 -, 6 +	

Output:

I: load-independent DC current:	0(4)...20 mA	permissible load max. 500 Ω
connection:	terminal 10 -, 11 +	
or:		
loop-powered DC current:	0(4)...20 mA	max. permissible voltage 30 V
connection:	terminal 9 -, 12 +	
U: load-independent DC voltage:	0(2)...10 V	permissible load ≥ 2 kΩ
connection:	terminal 7 -, 8 +	

The maximum limits for current- and voltage output are fixed at 22 mA respectively 11 V.

Adjustment:

The characteristics of transmission are adjustable by front side turn-switch.

S1	Input	Output simultan.	Position turn-switch S1
0	0-20 mA	0-20 mA / 0-10 V	0...7 Inputs and outputs are fixed calibrated, the trimmer for zero point and range are here without function.
1	0-10 V	fixed calibrated	
2	0-20 mA		
3	0-10 V	change value	
4	4-20 mA		
5	2-10 V	Offset/Gain	
6	4-20 mA		
7	2-10 V	8...D Inputs and outputs are not exactly calibrated. Adjustment: zero point trimmer P0 (> ± 15%) gain trimmer P1 (> ± 15%)	
8	0-20 mA		0-20 mA / 0-10 V
9	0-10 V		
A	0-20 mA		4-20 mA / 2-10 V
B	0-10 V	0-20 mA / 0-10 V	E Simulation with trimmer P0: 0...100% output
C	4-20 mA		
D	2-10 V	F Simulation with trimmer P1: 0...100% output	
E	Simulation via P0 0-100%		E
F	Simulation via P1 0-100%		F

Display:

LED status:	green, active	input signals are in standard range, device ready for use
	green, flashing	input signal out of the acceptable range or exceeding of measuring range or simulation mode

Environmental conditions:

Storage temperature:	-40...+70 °C
Operating temperature:	0...55 °C
Isolation voltage:	2,5 kV eff. 1 sec. input-output
	2,5 kV eff. 1 sec. auxiliary voltage

Auxiliary power:

Wide range:	24...250 V DC
	90...253 V AC
	< 3 W
Influence of auxiliary power:	< 0,1 %

Characteristics of transmission:

Transmission error:	< 0,12 %
Resolution:	15 bit
Linearity error:	< 0,1 %
Temperature error:	< 100 ppm/K
Load influence I:	< 50 ppm of final value
Load influence U:	< 0,2 % at 2 kΩ load
Setting time:	< 100 msec.

Directive:

EMC Directive:	2014/30/EU*
Low Voltage Directive:	2014/35/EU
*minimum deviations possible during HF-radiation influence	

Mounting details:

Housing for top hat rail	
Type of protection:	IP 20 housing
	IP 20 clamps
Rail-mounting fixed according to	EN 50022-35 x 7,5 mm
Width:	22,5 mm
Weight:	140 g
Material:	Polyamide PA
Flammability class:	V0 (UL94)
Approval:	CE
Connection:	screw clamps
	≤ 2,5 mm ²

Please check switch position before initial operation!

Ordering information:

Type: TF 19.00 GW 148

Schuhmann GmbH & Co. KG
 Römerstraße 2
 D-74363 Güglingen
 Tel. +49 71 35 50 56
 E-mail: info@schuhmann-messtechnik.de
 www.schuhmann-messtechnik.de



FEATURES

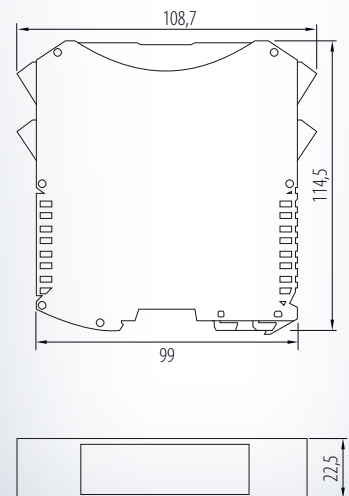
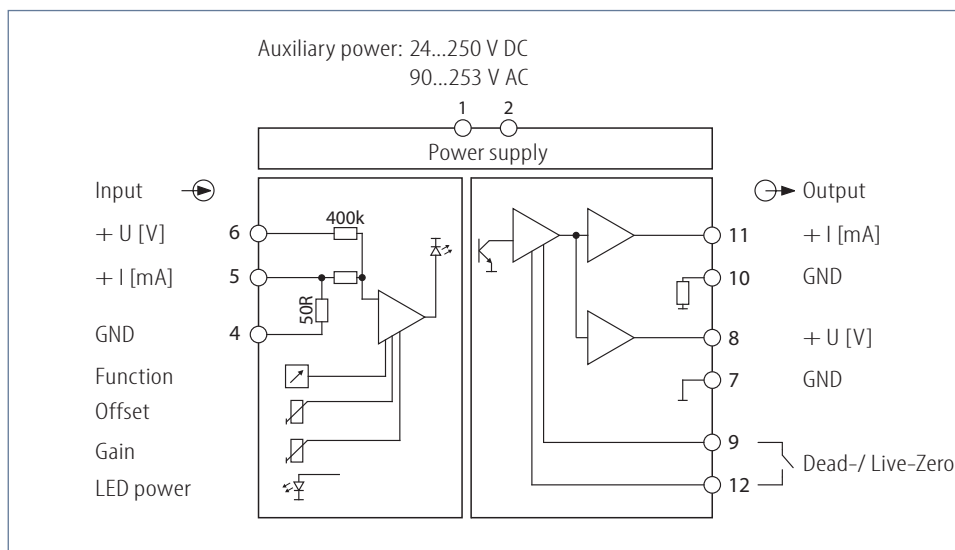
- **Input, switchable:**
Current 0(4)...20 mA, ± 10 mA or
Voltage 0(2)...10 V, ± 10 V
- **Output, simultaneous:**
Current 0(4)...20 mA and
Voltage 0(2)...10 V
- **Fine adjustment of
offset and gain by trimmer**
- **Galvanic 3-way isolation
of 4 kV**



FUNCTION

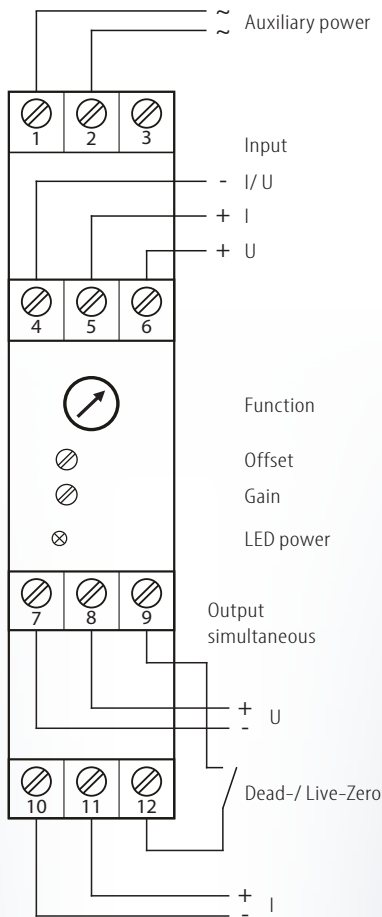
Isolating amplifiers are mainly used for the galvanic isolation or conversion of analog signals. This guarantees a safe decoupling between sensor and evaluation circuit and any influence of sensor circuits among each other is absolutely impossible. The UT 19.00 GW has one input for current or voltage and one output which can do current and voltage simultaneous. Fine adjustment of offset and gain is being made by trimmer.

The desired input range can be chosen from the table on the side, the adjustment is carried out by front sited turn switch. The output ranges are switchable. The integrated protective switching with suppressor diode protects the secondary circuit from peaks and transient excess voltage.



UT 19.00 GW

Connection diagram:



Input:

I: DC current:	0(4)...20 mA	input resistance approx. 50 Ω
connection:	terminal 4 -, 5 +	
U: DC voltage:	0...1/ 5/ 10/ 20 V	input resistance approx. 40 kΩ/ V
connection:	terminal 4 -, 6 +	

Input ranges selection by front side turn-switch:

Position	Input U	Input I
0	0...20 V	0...20 mA
1*	0...10 V	0...20 mA
2	0...1 V	0...20 mA
4	-	4...20 mA
8	-10...0...+10 V	-10...0...+10 mA
9	-5...0...+5 V	-10...0...+10 mA
A	-500...0...+500 mV	-10...0...+10 mA

Measuring range errors at change-over of the individual measuring ranges ≤ 0,5 %.

Output:

I: load-independent DC current:	0(4)...20 mA	permissible load max. 600 Ω
connection:	terminal 10 -, 11 +	
U: load-independent DC voltage:	0(2)...10 V	perm. load ≥ 5 kΩ simult. operation perm. load ≥ 1 kΩ exclusive
Gain adjustment:	trimmer ± 5 %	
Offset adjustment	trimmer ± 7 %	
connection:	terminal 7 -, 8 +	

Output ranges switchable by connection of terminal 9 + 12 (Dead-/ Live-Zero):

Terminal 9/ 12	Output U	Output I
Open*	0...10 V	0...20 mA
Closed	2...10 V	4...20 mA

* Factory setting: transmission 1:1; with Live-Zero transmission.

Position	Input I	Output I	Clamp 9/ 12	Remark
1*	0...20 mA	0...20 mA	Open*	transmission 1:1 with Live-Zero transmission
1*	4...20 mA	4...20 mA	Open*	
1	0...20 mA	4...20 mA	Closed	basic offset at output 4 mA

Display:

LED power	green, active	device active
-----------	---------------	---------------

Environmental conditions:

Storage temperature:	-40...+70 °C
Operating temperature:	0...55 °C
Isolation voltage:	4 kV eff. 1 sec. input-output-auxiliary power

Auxiliary power:

Wide range:	24...250 V DC 90...253 V AC < 3 W
-------------	-----------------------------------------

Influence of auxiliary power: < 0,1 %

Characteristics of transmission:

Transmission error:	< 0,12 %
Linearity error:	< 0,15 %
Temperature error:	< 100 ppm/K
Load influence I:	< 50 ppm of final value
Load influence U:	< 0,5 % at 1 kΩ load
Setting time:	< 200 msec.

Directive:

EMC Directive:	2014/30/EU*
Low Voltage Directive:	2014/35/EU
*minimum deviations possible during HF-radiation influence	

Mounting details:

Housing for top hat rail	
Type of protection:	IP 20 housing IP 20 clamps
Rail-mounting fixed according to	EN 50022-35 x 7,5 mm
Width:	22,5 mm
Weight:	140 g
Material:	Polyamide PA
Flammability class:	V0 (UL94)
Approval:	CE
Connection:	screw clamps ≤ 2,5 mm ²

For safety reasons we recommend to mount the housing for top hat rail with a distance of approx. 5 mm to each other. Please check switch position before initial operation!

Schuhmann GmbH & Co. KG

Römerstraße 2

D-74363 Güglingen

Tel. + 49 71 35 50 56

E-mail: info@schuhmann-messtechnik.de

www.schuhmann-messtechnik.de

Ordering information:

Type: UT 19.00 GW

wide range

06.12.2022

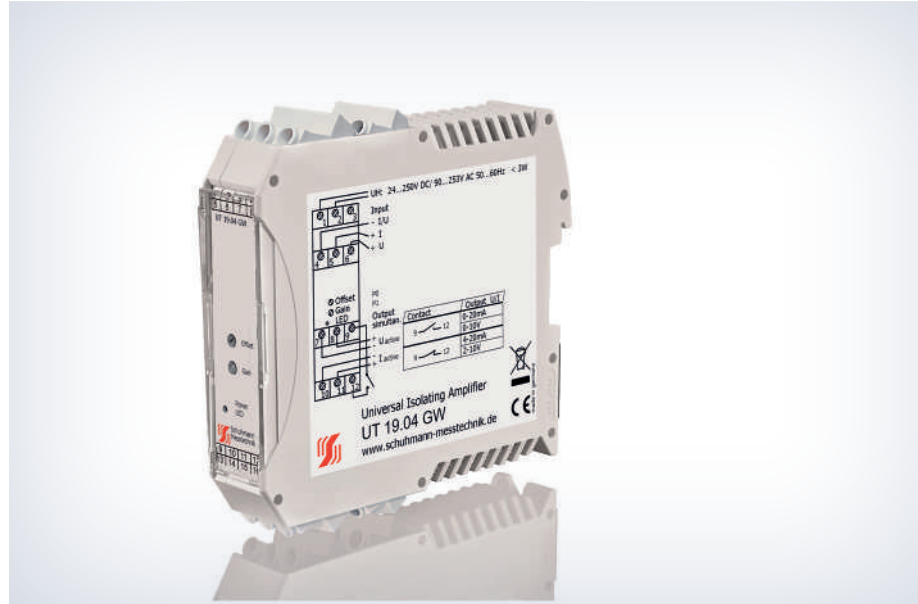


Universal Isolating Amplifier with Special Input

UT 19.04 GW

FEATURES

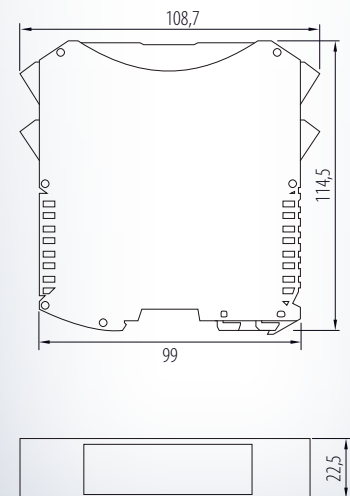
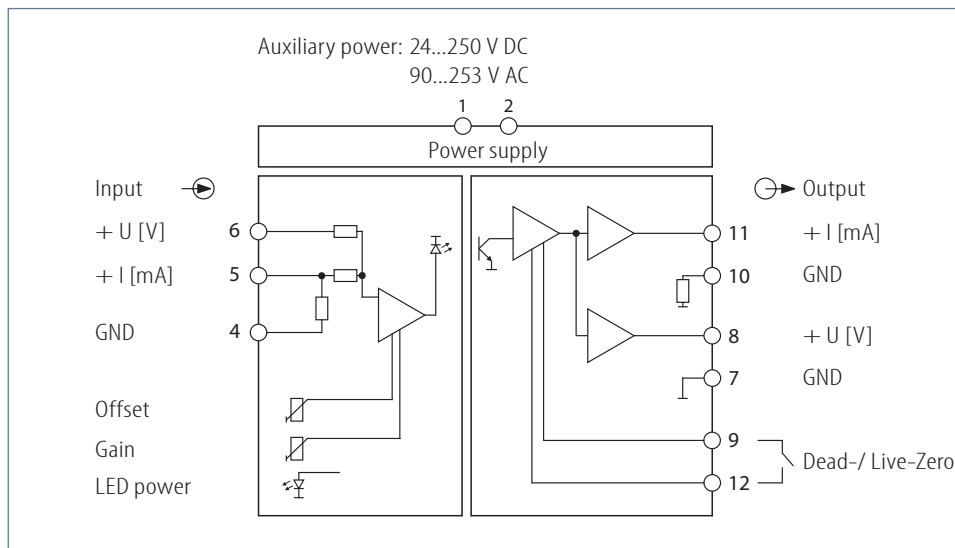
- **Input:**
Current up to 5 A DC or
Voltage up to 1000 V DC
according to customer specification
- **Output, simultaneous:**
Current 0(4)...20 mA and
Voltage 0(2)...10 V
- **Fine adjustment of
offset and gain by trimmer**
- **Galvanic 3-way isolation
of 4 kV**



FUNCTION

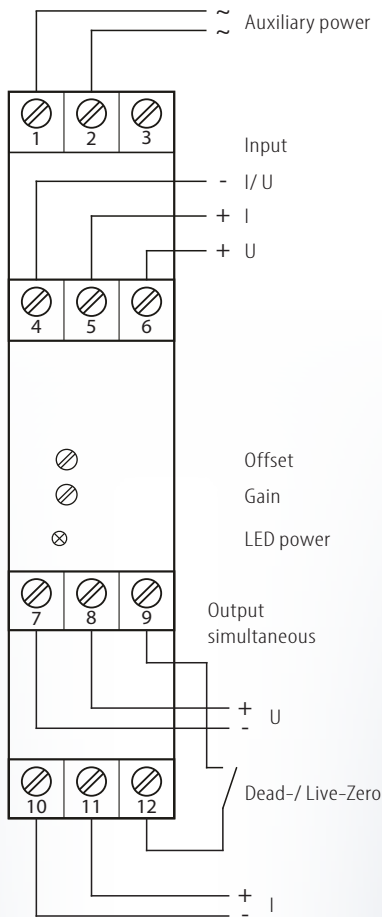
Isolating amplifiers are mainly used for the galvanic isolation or conversion of analog signals. This guarantees a safe decoupling between sensor and evaluation circuit and any influence of sensor circuits among each other is absolutely impossible. The UT 19.04 GW has one input for current or voltage and one output which can do current and voltage simultaneous. Fine adjustment of offset and gain is being made by trimmer.

The desired input ranges must be specified by customer. The output ranges are switchable. An integrated protective switching with suppressor diode protects the secondary circuit from peaks and transient excess voltage.



UT 19.04 GW

Connection diagram:



Input:

I: DC current: up to 5A DC
 connection: terminal 4 -, 5 +
 U: DC voltage: up to 1000 V DC
 connection: terminal 4 -, 6 +

Customer specification and calibration of the input, e.g.

input: 0...100 mV DC
 or input: 0...200 V DC
 or input: 10...20 mA DC
 or input: 0...250 mA DC

Output:

I: load-independent DC current: 0(4)...20 mA permissible load max. 600 Ω
 connection: terminal 10 -, 11 +
 U: load-independent DC voltage: 0(2)...10 V perm. load ≥ 5 kΩ simult. operation
 perm. load ≥ 1 kΩ exclusive
 Gain adjustment: trimmer ± 5 %
 Offset adjustment: trimmer ± 7 %
 connection: terminal 7 -, 8 +

Output ranges switchable by connection of terminal 9 + 12 (Dead-/ Live-Zero):

Terminal 9/ 12	Output voltage	Output current
Open*	0...10 V	0...20 mA
Closed	2...10 V	4...20 mA

* factory setting

Display:

LED power green, active device active

Environmental conditions:

Storage temperature: -40...+70 °C
 Operating temperature: 0...55 °C
 Isolation voltage: 4 kV eff. 1 sec.
 input-output-auxiliary power

Auxiliary power:

Wide range: 24...250 V DC
 90...253 V AC
 < 3 W

Influence of auxiliary power: < 0,1 %

Characteristics of transmission:

Transmission error: < 0,12 %
 Linearity error: < 0,15 %
 Temperature error: < 100 ppm/K
 Load influence I: < 50 ppm
 of final value
 Load influence U: < 0,5 % at 1 kΩ load
 Setting time: < 200 msec.

Directive:

EMC Directive: 2014/30/EU*
 Low Voltage Directive: 2014/35/EU
 *minimum deviations possible during HF-radiation influence

Mounting details:

Housing for top hat rail
 Type of protection: IP 20 housing
 IP 20 clamps
 Rail-mounting fixed according to
 EN 50022-35 x 7,5 mm
 Width: 22,5 mm
 Weight: 140 g
 Material: Polyamide PA
 Flammability class: V0 (UL94)
 Approval: CE
 Connection: screw clamps
 ≤ 2,5 mm²

For safety reasons we recommend to mount the housing for top hat rail with a distance of approx. 5 mm to each other. Please check switch position before initial operation!

Ordering information:

Type: UT 19.04 GW wide range

Schuhmann GmbH & Co. KG
 Römerstraße 2
 D-74363 Güglingen
 Tel. +49 71 35 50 56
 E-mail: info@schuhmann-messtechnik.de
 www.schuhmann-messtechnik.de



FEATURES

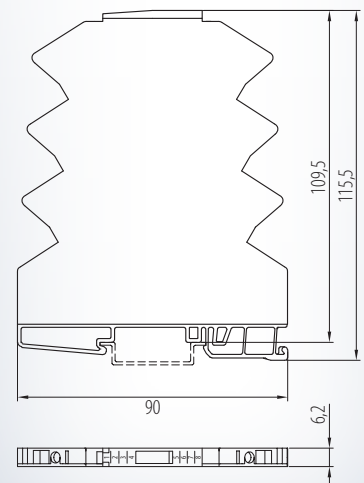
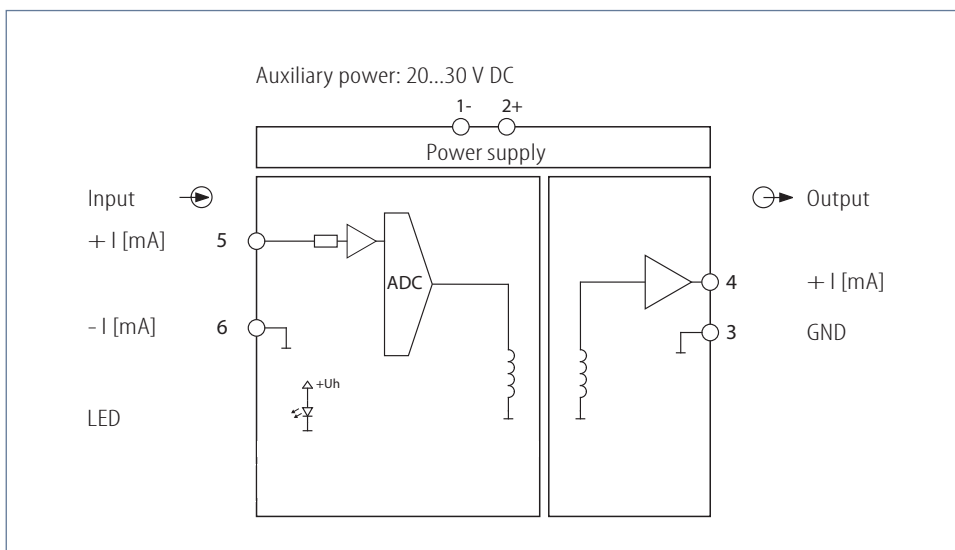
- **Input:**
current 0(4)...20 mA
- **Output:**
current 0(4)...20 mA
- **Galvanic 3-way isolation**
of 500 V
- **Low internal consumption**



FUNCTION

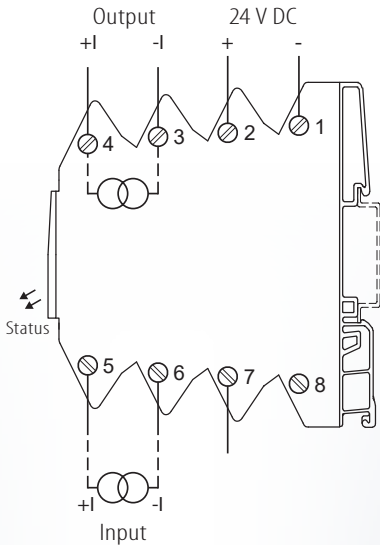
The MT 1.20 SDC is used for the exact potential isolation of different measuring signals. The galvanic 3-way isolation protects against mismeasurement or damage of the following instruments, such as analog control devices, control rooms, guidance systems, PLC units. The transmission of input and output is 1:1. It is possible to transmit Live-Zero.

The integrated protective switching with suppressor diode protects the secondary circuit from voltage peaks and transient excess voltage.



MT 1.20 SDC

Connection diagram:



Input:

I: load-independent DC current: 0(4)...20 mA input resistance approx. 20 Ω
 connection: terminal 6 -, 5 +

Type	Input I	loop-powered	Output I	Remark
MT 1.20 SDC	0...20 mA	no	0...20 mA	transmission 1:1
MT 1.20 SDC	4...20 mA	no	4...20 mA	with Live-Zero transmission

Output:

I: load-independent DC current: 0(4)...20 mA permissible load max. 400 Ω
 connection: terminal 3 -, 4 +

Display:

LED status: green, active device ready for use

Environmental conditions:

Storage temperature: -40...+70 °C
 Operating temperature: 0...55 °C
 Isolation voltage:
 500 V eff. 2 sec. inp./ auxiliary power
 500 V eff. 2 sec. outp./ auxiliary power
 500 V eff. 2 sec. output/ input

Auxiliary power:

24 V DC: 20...30 V DC
 < 1,5 W
 Influence of auxiliary power: < 0,1 %

Characteristics of transmission:

Transmission error: < 0,12 %
 Linearity error: < 0,1 %
 Temperature error: < 100 ppm/ K
 Load influence I: < 0,4 %
 of final value
 Setting time: < 50 msec.

Directive:

EMC Directive: 2014/30/EU*
 Low Voltage Directive: 2014/35/EU

*minimum deviations possible during HF-radiation influence

Mounting details:

Housing for top hat rail
 Type of protection: IP 20
 Mounting rail fixed according to EN 50022-35 x 6,2 mm
 Width: 6,2 mm
 Weight: 52 g
 Material: Polyamide PA
 Flammability class: V0 (UL 94)
 Approval: CE
 Connection: screw clamps
 0,14...2,5 mm²

For safety reasons we recommend to mount the housing for top hat rail with a distance > 1 mm to each other.

Ordering information:

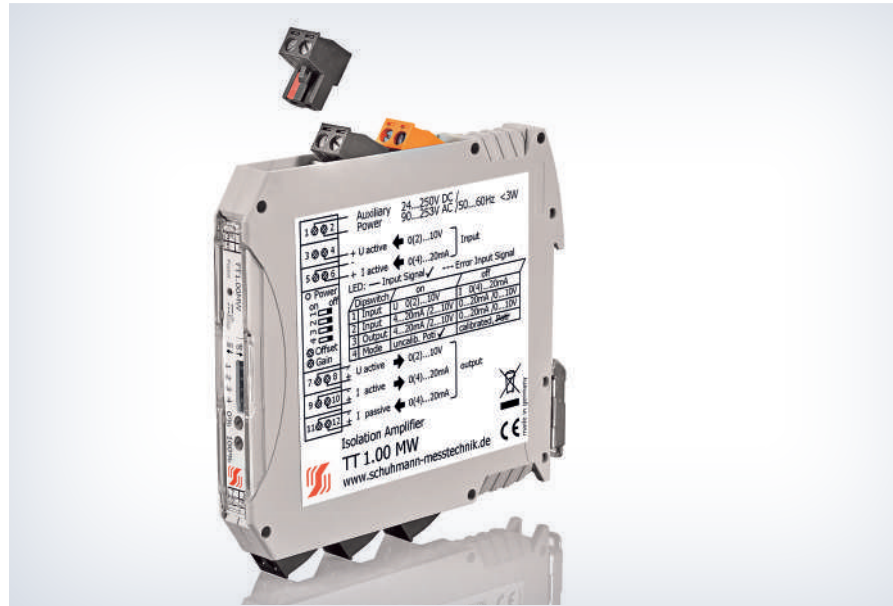
Type: MT 1.20 SDC 24 V DC

Schuhmann GmbH & Co. KG
 Römerstraße 2
 D-74363 Güglingen
 Tel. + 49 71 35 50 56
 E-mail: info@schuhmann-messtechnik.de
 www.schuhmann-messtechnik.de



FEATURES

- **Input:**
Current 0(4)...20 mA or
Voltage 0(2)...10 V
- **Output, simultaneous:**
Current 0(4)...20 mA (active or
passive) and voltage 0(2)...10 V
- **Function, switchable:**
- fixed calibration or
- adjustable by trimmer
- **Pluggable screw-clamps**
- **Galvanic 3-way isolation**



FUNCTION

The TT 1.00 MW is used for the precise potential isolation of different measuring signals. The unit has 4 DIP-switches on frontside.

To select the transmission or the signal conversion ranges, use the DIP-switches 1 - 3.

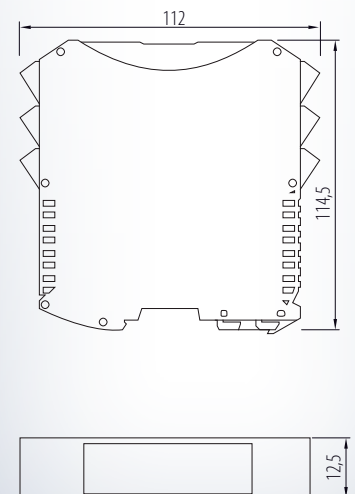
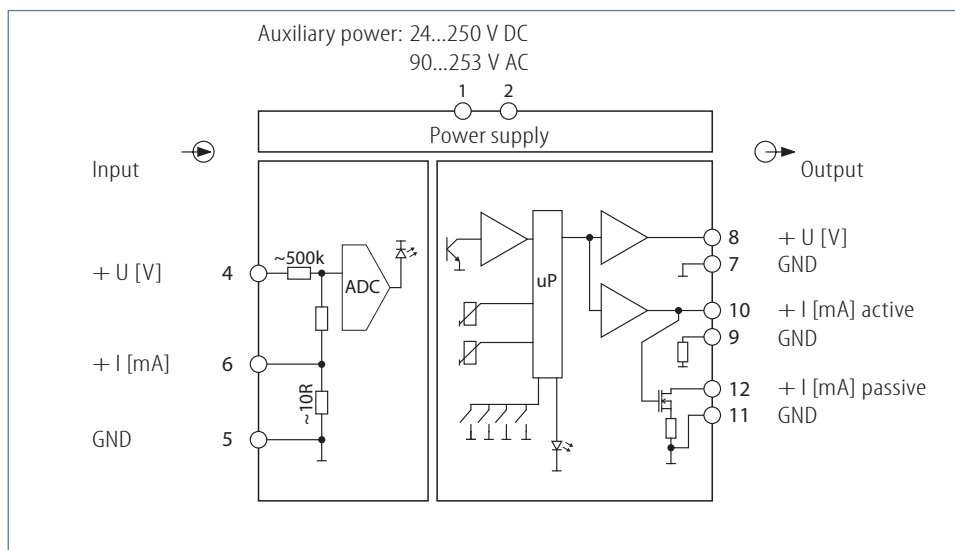
Fixed calibrated standard measurement ranges, for input and output, are stored in the device: 0(4)...20 mA / 0(2)...10 V = DIP-switch 4 OFF.

The fine adjustment of the offset and the final value is carried out by trimmer = DIP-switch 4 ON.

Its output can do current (active or passive) and voltage simultaneous.

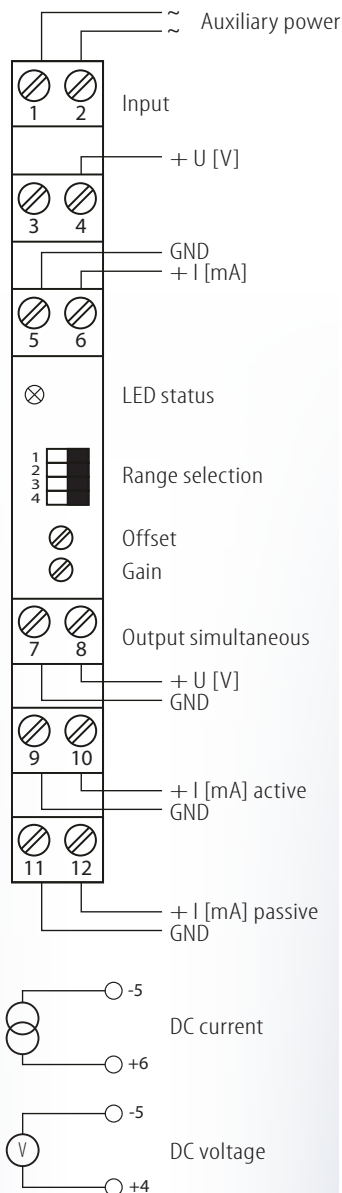
The galvanic 3-way isolation is used to protect against faulty measurement or damage downstream equipment such as analog control units, control rooms, control systems, PLC units.

The integrated protection circuit with suppressor diode protects the secondary circuit from voltage spikes and transient surges.



TT 1.00 MW

Connection diagram:



Input:

I: DC current:	0(4)...20 mA	input resistance approx. 10 Ω
connection:	terminal 5 -, 6 +	
U: DC voltage:	0(2)...10 V	input resistance approx. 500 kΩ
connection:	terminal 5 -, 4 +	

Output:

I: load-independent DC current:	0(4)...20 mA	permissible load max. 540 Ω
Output current limiting:	22,0 mA	
connection:	terminal 9 -, 10 +	
or:		
loop-powered DC current:	0(4)...20 mA	max. permissible voltage 30 V
connection:	terminal 11 -, 12 +	

Caution: do not use output I active (load-independent) and I passive (loop pow.) at the same time!

U: load-independent DC voltage:	0(2)...10 V	permis. load ≥ 5 kΩ simultaneous permis. load ≥ 1 kΩ exclusive
connection:	terminal 7 -, 8 +	
Gain adjustment:	trimmer ± 25 %	(DIP-switch 4 = ON)
Offset adjustment:	trimmer ± 25 %	(DIP-switch 4 = ON)

Adjustment:

DIP-switch for range selection:

Switch	Function	ON	OFF
1	input	U [V]	I [mA]
2*	input	4...20 mA / 2...10 V	0...20 mA / 0...10 V
3*	output	4...20 mA / 2...10 V	0...20 mA / 0...10 V
4	calibration	adjustment with trimmer	fixed calibrated*

*unchangeable factory setting: DIP4=OFF (trimmers are inactive)

Display:

LED status	green, active	input signals are in standard range, device ready for use
	green, flashing	input signals are not in standard range

Environmental conditions:

Storage temperature:	-40...+70 °C
Operating temperature:	-40...+55 °C
Isolation voltage:	
2,5 kV eff. 1 sec.	input/output
4 kV eff. 1 sec.	auxiliary power

Auxiliary power:

Wide range:	24...250 V DC 90...253 V AC < 3 W
Influence of aux. power:	< 0,1 %

Characteristics of transmission:

Transmission error:	< 0,12 %
Linearity error:	< 0,1 %
Temperature error:	< 100 ppm/K
Load influence I:	< 50 ppm of final value
Load influence U:	< 0,2 % at 1 kΩ load
Setting time:	< 30 msec.

Directive:

EMC Directive:	2014/30/EU*
Low Voltage Directive:	2014/35/EU
*minimum deviations possible during HF-radiation influence	

Mounting details:

Housing for top hat rail	
Type of protection:	IP 30 housing IP 20 clamps
Rail-mounting fixed according to	EN 50022-35 x 7,5 mm
Width:	12,5 mm
Weight:	90 g
Material:	Polyamide (PA)
Flammability class:	V0 (UL94)
Approval:	CE
Connection:	pluggable screw clamps 0,2...2,5 mm ²

For safety reasons we recommend to mount the housing for top hat rail with a distance of approx. 5 mm to each other. Please check DIP-switch before initial operation!

Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen
Tel. +49 71 35 50 56
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de

Ordering information:

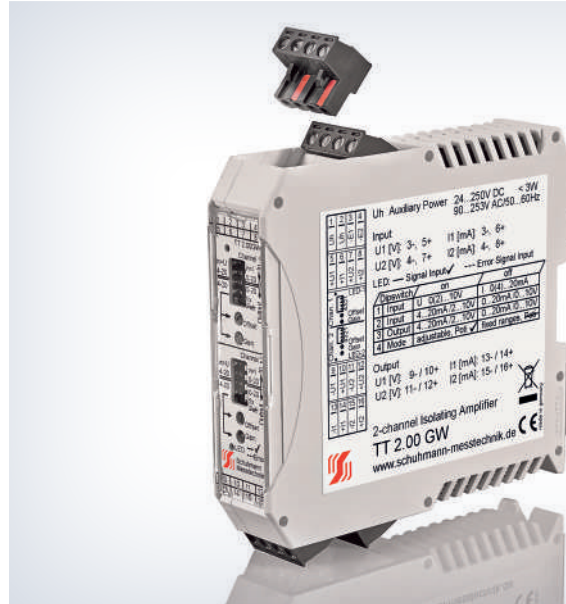
Type: TT 1.00 MW wide range

06.03.2023



FEATURES

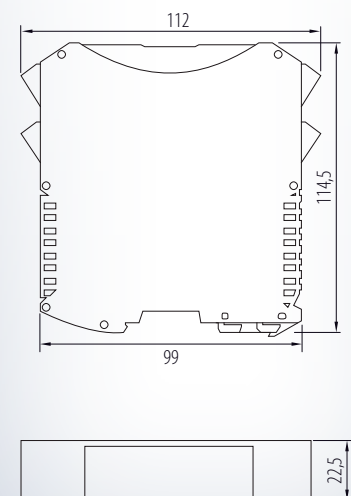
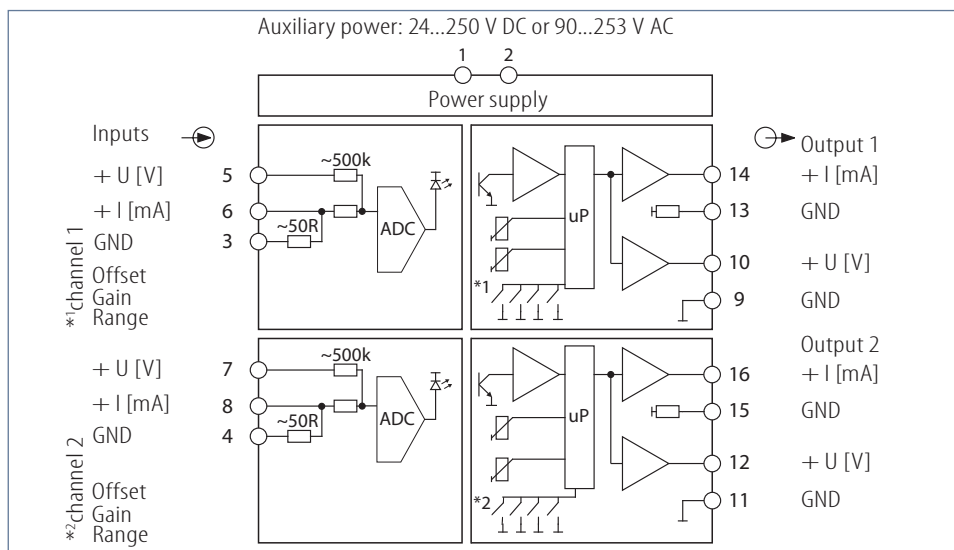
- **Inputs:**
2 x current 0(4)...20 mA or
2 x voltage 0(2)...10 V
- **Outputs simultaneous:**
2 x current 0(4)...20 mA and
2 x voltage 0(2)...10 V
- **Function, switchable:**
- fixed calibration or
- adjustable by trimmer
- **Pluggable screw-clamps**
- **Galvanic 3-way isolation per channel**



FUNCTION

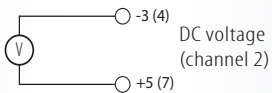
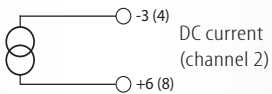
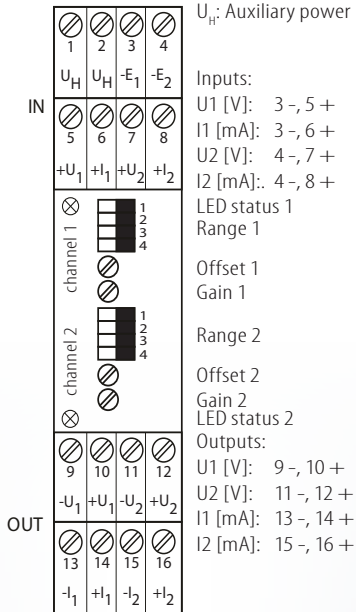
The 2-channel TT 2.00 GW is used for the precise potential isolation of different measuring signals. The unit has 4 DIP-switches on frontside. To select the transmission or the signal conversion ranges, use the DIP-switches 1 - 3. Fixed calibrated standard measurement ranges, for input and output, are stored in the device: 0(4)...20 mA/ 0(2)...10 V = DIP-switch 4 OFF. Each output channel can alternatively be adjusted separately and the individual range can be set. The fine adjustment of the offset and the final value is carried out by trimmer = DIP-switch 4 ON.

The galvanic 3-way isolation is used to protect against faulty measurement or damage downstream equipment such as analog control units, control rooms, control systems, PLC units. The integrated protection circuit with suppressor diode protects the secondary circuit from voltage spikes and transient surges.



TT 2.00 GW

Connection diagram:



Input:

I: DC current:	0(4)...20 mA	input resistance approx. 50 Ω
connection:	see connection diagram	
U: DC voltage:	0(2)...10 V	input resistance approx. 500 kΩ
connection:	see connection diagram	

Output:

I: load-independent DC current:	0(4)...20 mA	permissible load max. 540 Ω
Output current limiting:	22,0 mA	
connection:	see connection diagram	
U: load-independent DC voltage:	0(2)...10 V	permissible load ≥ 5 kΩ simultan. permissible load ≥ 1 kΩ exclusive

Gain adjustment: trimmer ± 25 % (DIP-switch 4 = ON)
 Offset adjustment: trimmer ± 25 % (DIP-switch 4 = ON)

connection: see connection diagram

Adjustment:

DIP-switch for range selection:

Switch	Function	ON	OFF
1	input	U [V]	I [mA]
2*	input	4...20 mA/ 2...10 V	0...20 mA/ 0...10 V
3*	output	4...20 mA/ 2...10 V	0...20 mA/ 0...10 V
4	calibration	adjustment with trimmer	fixed calibrated*

*unchangeable factory setting: DIP4=OFF (trimmers are inactive)

Display:

LED status	green, active	input signals are in standard range, device ready for use
	green, flashing	input signals are not in standard range

Environmental conditions:

Storage temperature:	-40...+70 °C
Operating temperature:	-40...55 °C
Isolation voltage:	
2,5 kV eff. 1 sec.	input/ output
4 kV eff. 1 sec.	auxiliary power
500 V eff. 1 sec.	channel/ channel

Auxiliary power:

Wide range:	24...250 V DC 90...253 V AC < 3 W
Influence of aux. power:	< 0,1 %

Characteristics of transmission:

Transmission error:	< 0,12 %
Linearity error:	< 0,1 %
Temperature error:	< 100 ppm/ K
Load influence I:	< 50 ppm of final value
Load influence U:	< 0,2 % at 1 kΩ load
Setting time:	< 30 msec.

Directive:

EMC Directive:	2014/30/EU*
Low Voltage Directive:	2014/35/EU

*minimum deviations possible during HF-radiation influence

Mounting details:

Housing for top hat rail	
Type of protection:	IP 40 housing IP 20 clamps
Rail-mounting fixed according to	EN 50022-35 x 7,5 mm
Width:	22,5 mm
Weight:	160 g
Material:	Polyamide PA
Flammability class:	V0 (UL94)
Approval:	CE
Connection:	pluggable screw clamps 0,2...2,5 mm ²

For safety reasons we recommend to mount the housing for top hat rail with a distance of approx. 5 mm to each other. Please check DIP-switch before initial operation!

Ordering information:

Type: TT 2.00 GW wide range

Schuhmann GmbH & Co. KG
 Römerstraße 2
 D-74363 Güglingen
 Tel. +49 71 35 50 56
 E-mail: info@schuhmann-messtechnik.de
 www.schuhmann-messtechnik.de



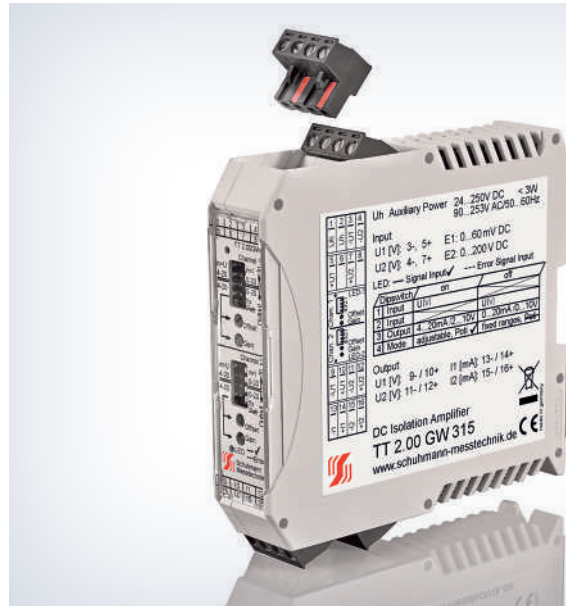
2-channel Isolating Amplifier

Special voltage inputs

TT 2.00 GW 315

FEATURES

- **Inputs:**
2 x voltage
E1: 0...60 mV / E2: 0...200 V
- **Outputs simultaneous:**
2 x current 0(4)...20 mA and
2 x voltage 0(2)...10 V
- **Function, switchable:**
- fixed calibration or
- adjustable by trimmer
- **Pluggable screw-clamps**
- **Galvanic 3-way isolation per channel**



FUNCTION

The 2-channel TT 2.00 GW 315 is used for the precise potential isolation of two different measuring signals. Channel 1 processes signals from 0...60 mV, channel 2 from 0...200 V. The unit has 4 DIP-switches on frontside.

DIP-switch 1 must be ON, DIP-switch 2 must be OFF. DIP-switch 3 determines the output signal.

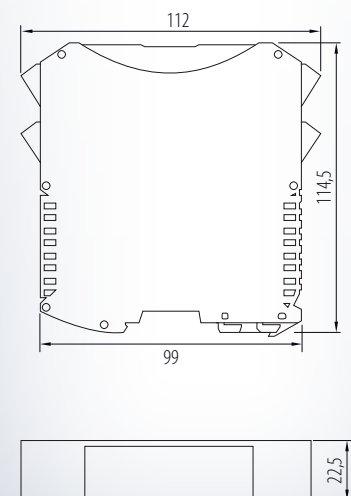
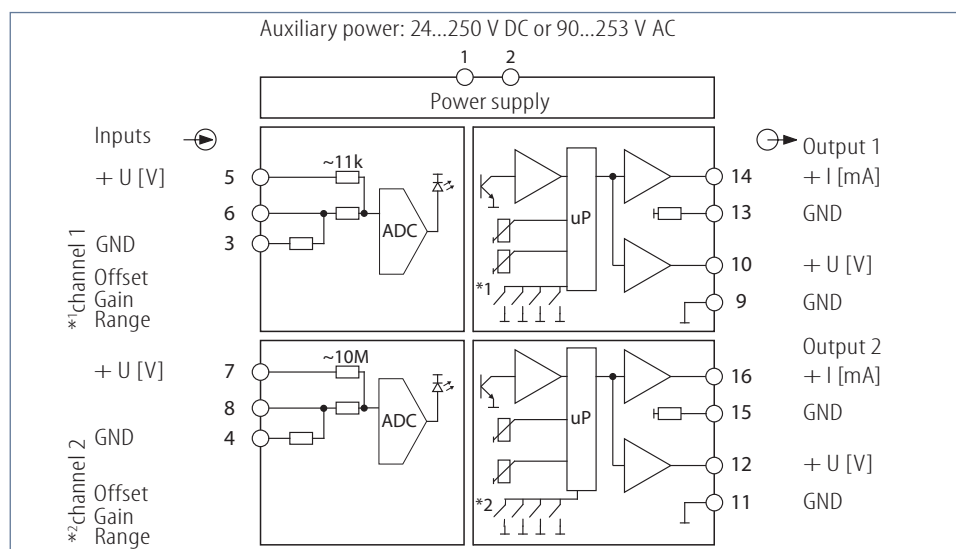
Fixed calibrated standard measurement ranges, for input and output, are stored in the device: 0(4)...20 mA / 0(2)...10 V = DIP-switch 4 OFF.

Each output channel can alternatively be adjusted separately and the individual range can be set.

The fine adjustment of the offset and the final value is carried out by trimmer = DIP-switch 4 ON.

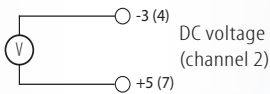
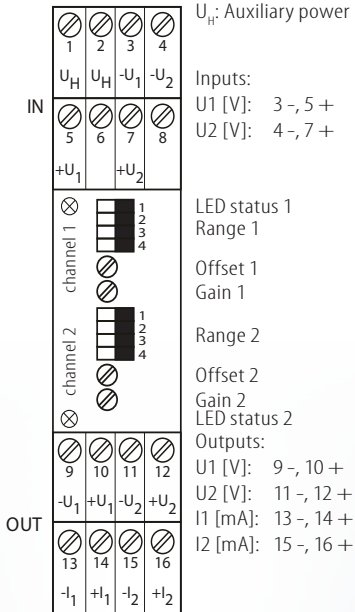
The galvanic 3-way isolation is used to protect against faulty measurement or damage downstream equipment such as analog control units, control rooms, control systems, PLC units.

The integrated protection circuit with suppressor diode protects the secondary circuit from voltage spikes and transient surges.



TT 2.00 GW 315

Connection diagram:



Input:

U: DC voltage: U1: 0...60 mV input resistance approx. 11 kΩ
 U2: 0...200 V input resistance approx. 10 MΩ
 connection: see connection diagram

Output:

I: load-independent DC current: 0(4)...20 mA permissible load max. 540 Ω
 Output current limiting: 22,0 mA
 connection: see connection diagram
 U: load-independent DC voltage: 0(2)...10 V permissible load ≥ 5 kΩ simultan.
 permissible load ≥ 1 kΩ exclusive

Gain adjustment: trimmer ± 25 % (DIP-switch 4 = ON)
 Offset adjustment: trimmer ± 25 % (DIP-switch 4 = ON)

connection: see connection diagram

Adjustment:

DIP-switch for range selection:

Switch	Function	ON	OFF
1	input	U [V]	
2*	input		U [V]
3*	output	4...20 mA / 2...10 V	0...20 mA / 0...10 V
4	calibration	adjustment with trimmer	fixed calibrated*

*unchangeable factory setting: DIP4=OFF (trimmers are inactive)

Display:

LED status green, active input signals are in standard range, device ready for use
 green, flashing input signals are not in standard range

Environmental conditions:

Storage temperature: -40...+70 °C
 Operating temperature: -40...55 °C
 Isolation voltage:
 2,5 kV eff. 1 sec. input/ output
 4 kV eff. 1 sec. auxiliary power
 500 V eff. 1 sec. channel/ channel

Auxiliary power:

Wide range: 24...250 V DC
 90...253 V AC
 < 3 W
 Influence of aux. power: < 0,1 %

Characteristics of transmission:

Transmission error: < 0,12 %
 Linearity error: < 0,1 %
 Temperature error: < 100 ppm/ K
 Load influence I: < 50 ppm
 of final value
 Load influence U: < 0,2 %
 at 1 kΩ load
 Setting time: < 30 msec.

Directive:

EMC Directive: 2014/30/EU*
 Low Voltage Directive: 2014/35/EU

*minimum deviations possible during HF-radiation influence

Mounting details:

Housing for top hat rail
 Type of protection: IP 40 housing
 IP 20 clamps
 Rail-mounting fixed according to
 EN 50022-35 x 7,5 mm
 Width: 22,5 mm
 Weight: 160 g
 Material: Polyamide PA
 Flammability class: V0 (UL94)
 Approval: CE
 Connection: pluggable
 screw clamps
 0,2...2,5 mm²

For safety reasons we recommend to mount the housing for top hat rail with a distance of approx. 5 mm to each other. Please check DIP-switch before initial operation!

Ordering information:

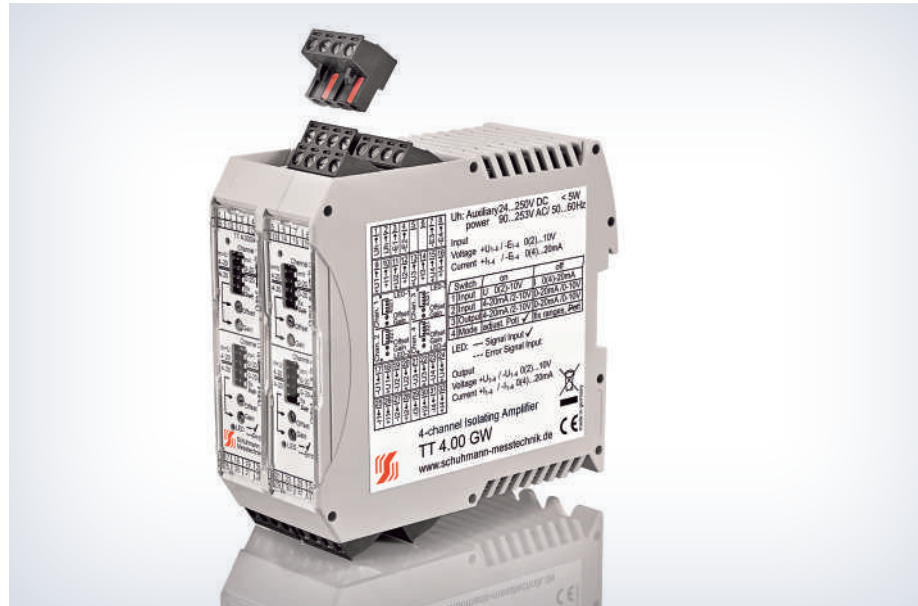
Type: TT 2.00 GW 315 wide range

Schuhmann GmbH & Co. KG
 Römerstraße 2
 D-74363 Güglingen
 Tel. +49 71 35 50 56
 E-mail: info@schuhmann-messtechnik.de
 www.schuhmann-messtechnik.de



FEATURES

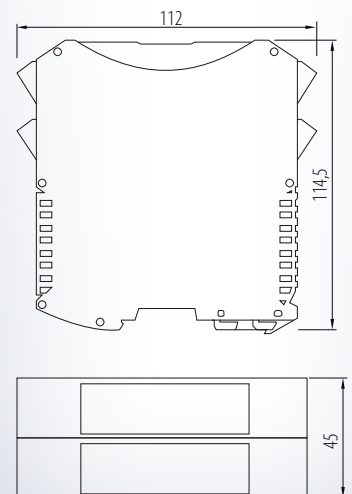
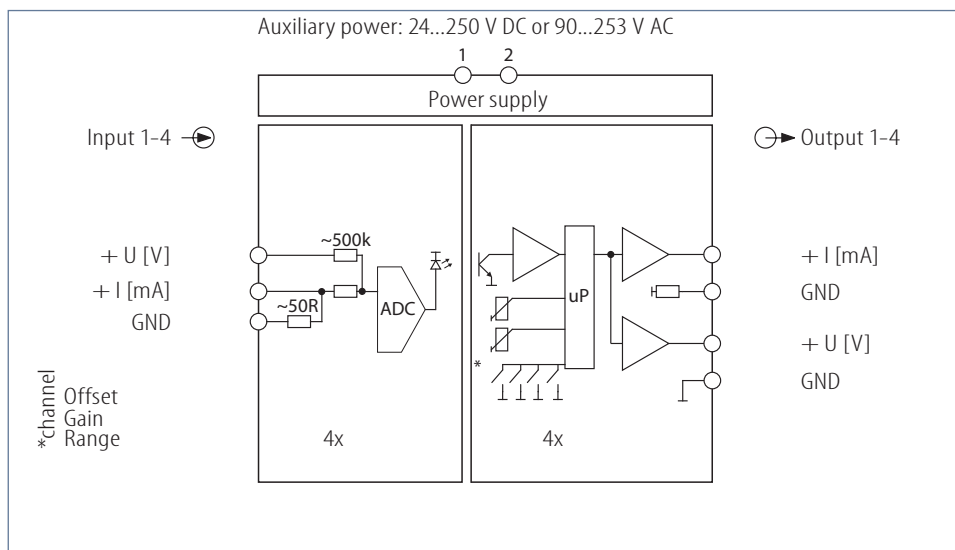
- **Inputs:**
4 x current 0(4)...20 mA or
4 x voltage 0(2)...10 V
- **Outputs simultaneous:**
4 x current 0(4)...20 mA and
4 x voltage 0(2)...10 V
- **Function, switchable:**
- fixed calibration or
- adjustable by trimmer
- **Pluggable screw-clamps**
- **Galvanic 3-way isolation per channel**



FUNCTION

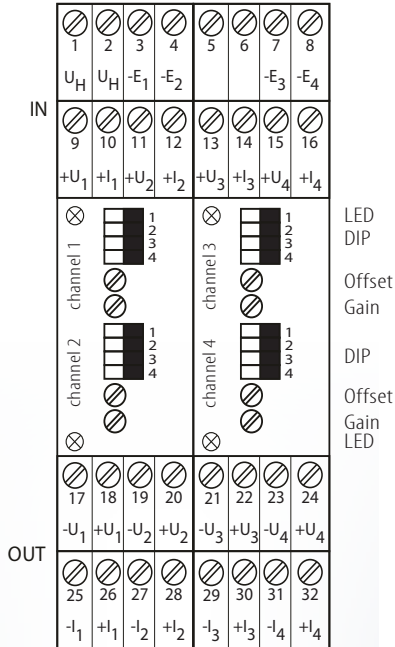
The 4-channel TT 4.00 GW is used for the precise potential isolation of different measuring signals. The unit has 4 DIP-switches on frontside. To select the transmission or the signal conversion ranges, use the DIP-switches 1 - 3. Fixed calibrated standard measurement ranges, for input and output, are stored in the device: 0(4)...20 mA/ 0(2)...10 V = DIP-switch 4 OFF. Each output channel can alternatively be set separately and the individual range can be set. The fine adjustment of the offset and the final value is carried out by trimmer = DIP-switch 4 ON.

The galvanic 3-way isolation is used to protect against faulty measurement or damage downstream equipment such as analog control units, control rooms, control systems, PLC units. The integrated protection circuit with suppressor diode protects the secondary circuit from voltage spikes and transient surges.

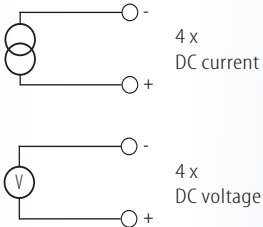


TT 4.00 GW

Connection diagram:



U_{Hi} : Auxiliary power



Inputs:	Outputs:
U1 [V]: 3 -, 9 +	U1 [V]: 17 -, 18 +
I1 [mA]: 3 -, 10 +	I1 [mA]: 25 -, 26 +
U2 [V]: 4 -, 11 +	U2 [V]: 19 -, 20 +
I2 [mA]: 4 -, 12 +	I2 [mA]: 27 -, 28 +
U3 [V]: 7 -, 13 +	U3 [V]: 21 -, 22 +
I3 [mA]: 7 -, 14 +	I3 [mA]: 29 -, 30 +
U4 [V]: 8 -, 15 +	U4 [V]: 23 -, 24 +
I4 [mA]: 8 -, 16 +	I4 [mA]: 31 -, 32 +

Schuhmann GmbH & Co. KG
 Römerstraße 2
 D-74363 Güglingen
 Tel. +49 71 35 50 56
 E-mail: info@schuhmann-messtechnik.de
 www.schuhmann-messtechnik.de

Input:

I: DC current:	0(4)...20 mA	input resistance approx. 50 Ω
connection:	see connection diagram	
U: DC voltage:	0(2)...10 V	input resistance approx. 500 k Ω
connection:	see connection diagram	

Output:

I: load-independent DC current:	0(4)...20 mA	permissible load max. 540 Ω
Output current limiting:	22,0 mA	
connection:	see connection diagram	
U: load-independent DC voltage:	0(2)...10 V	permissible load \geq 5 k Ω simultan. permissible load \geq 1 k Ω exclusive

Gain adjustment: trimmer \pm 25 % (DIP-switch 4 = ON)
 Offset adjustment: trimmer \pm 25 % (DIP-switch 4 = ON)

connection: see connection diagram

Adjustment:

DIP-switch for range selection:



on off

Switch	Function	ON	OFF
1	input	U [V]	I [mA]
2*	input	4...20 mA/ 2...10 V	0...20 mA/ 0...10 V
3*	output	4...20 mA/ 2...10 V	0...20 mA/ 0...10 V
4	calibration	adjustment with trimmer	fixed calibrated*

*unchangeable factory setting: DIP4=OFF (trimmers are inactive)

Display:

LED status	green, active	input signals are in standard range, device ready for use
	green, flashing	input signals are not in standard range

Environmental conditions:

Storage temperature:	-40...+70 $^{\circ}$ C
Operating temperature:	-40...55 $^{\circ}$ C
Isolation voltage:	
2,5 kV eff. 1 sec.	input/ output
4 kV eff. 1 sec.	auxiliary power
500 V eff. 1 sec.	channel/ channel

Auxiliary power:

Wide range:	24...250 V DC
	90...253 V AC
	< 5 W
Influence of aux. power:	< 0,1 %

Characteristics of transmission:

Transmission error:	< 0,12 %
Linearity error:	< 0,1 %
Temperature error:	< 100 ppm/ K
Load influence I:	< 50 ppm of final value
Load influence U:	< 0,2 % at 1 k Ω load
Setting time:	< 30 msec.

Directive:

EMC Directive:	2014/30/EU*
Low Voltage Directive:	2014/35/EU

*minimum deviations possible during HF-radiation influence

Mounting details:

Housing for top hat rail	
Type of protection:	IP 40 housing IP 20 clamps
Rail-mounting fixed according to	EN 50022-35 x 7,5 mm
Width:	45 mm
Weight:	320 g
Material:	Polyamide PA
Flammability class:	V0 (UL94)
Approval:	CE
Connection:	pluggable screw clamps 0,2...2,5 mm ²

For safety reasons we recommend to mount the housing for top hat rail with a distance of approx. 5 mm to each other. Please check DIP-switch before initial operation!

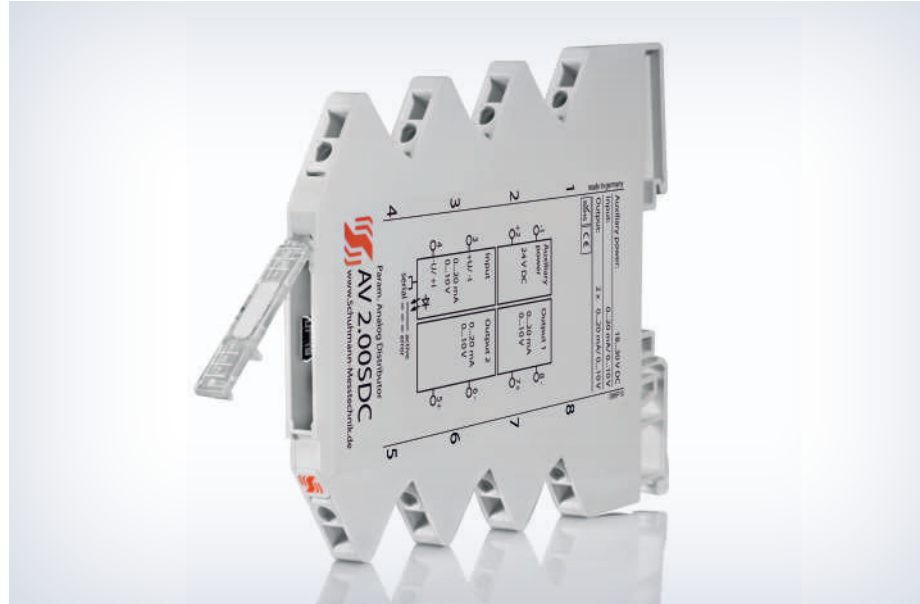
Ordering information:

Type: TT 4.00 GW wide range

07.03.2023

FEATURES

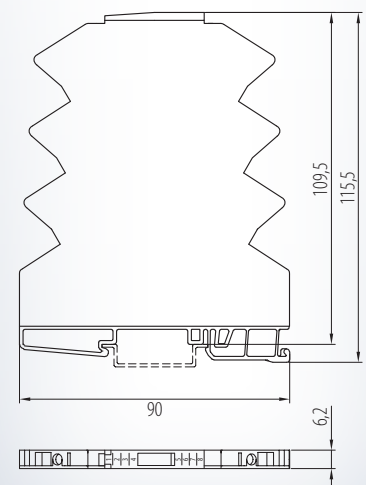
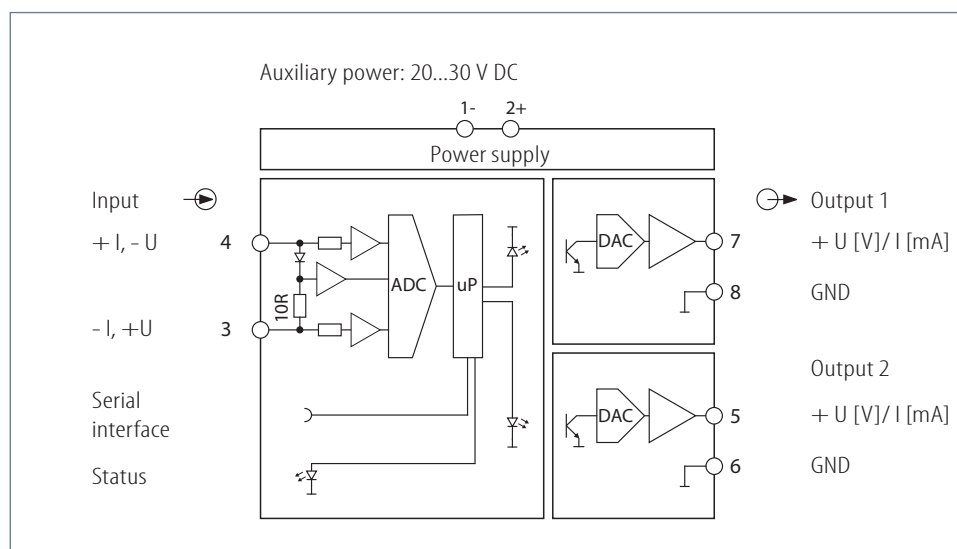
- **1 input:**
Current 0(4)...20 mA or
Voltage 0(2)...10 V
- **2 outputs:**
Current 0(4)...20 mA/
Voltage 0(2)...10 V
- **Parameterization without
auxiliary power via PC-interface**
- **Galvanic 4-way isolation
of 1 kV**
- **Low internal consumption**



FUNCTION

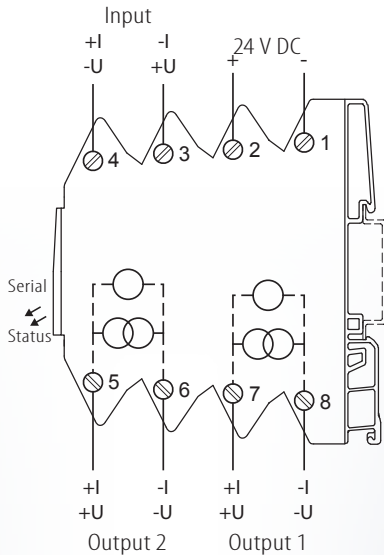
The AV 2.00 SDC is used for duplicating an input signal to 2 galvanically isolated individual output signals. This guarantees a safe decoupling between sensor and evaluation circuit and any influence of other sensor circuits among each other is absolutely impossible.

He is able to process currents respectively voltages within a range of 0...20 mA or 0...10 V. The input is being defined by range start and range end, signal damping as well as fixed limits of error detection can be freely selected. The 2 outputs are separately and individually adjustable for current or voltage output. For each output the range start and range end, minimum/ maximum limits and a fixed value in case of error detection can be adjusted in clear text.



AV 2.00 SDC

Connection diagram:



Input:

I: DC current: 0(4)...20 mA input resistance approx. 10 Ω
 connection: terminal 3 -, 4 +

U: DC voltage: 0(2)...10 V input resistance approx. 50 kΩ
 connection: terminal 4 -, 3 +

Within the described measuring ranges the range start, range end, signal damping as well as the limits for a detection of error can be freely selected.

Output:

I: load-independent DC current: 0(4)...20 mA permissible load max. 400 Ω
 connection output 1: terminal 8 -, 7 +
 connection output 2: terminal 6 -, 5 +

U: load-independent DC voltage: 0(2)...10 V permissible load ≥ 2 kΩ
 connection output 1: terminal 8 -, 7 +
 connection output 2: terminal 6 -, 5 +

The 2 outputs are adjustable independently of each other for current or voltage source. For each output channel the output range start and output range end, the minimum/ maximum limits for current and voltage output as well as a fixed predetermined value in case of error detection can be adjusted in clear text.

Adjustment:

Measuring ranges and parameterization are adjustable in parameter data by KALIB-Software. You need a PC and the interface adapter USB2 with KALIB-Software.

Preset parameterization (change possible):

Input: 0...20 mA
 Output 1/ 2: 0...20 mA

Display:

LED status: green, active input signals are in standard range, device ready for use
 green, flashing input out of predetermined limits or exceeding of measuring range

Environmental conditions:

Storage temperature: -40...+70 °C
 Operating temperature: 0...55 °C
 Isolation voltage:
 2,5 kV eff. 1 sec. input/ output
 2,5 kV eff. 1 sec. auxiliary power
 1,0 kV eff. 1 sec. output 1/ output 2

Auxiliary power:

24 V DC: 20...30 V DC
 < 2 W

Influence of auxiliary power: < 0,1 %

Characteristics of transmission:

Transmission error: < 0,12 %
 Resolution: 15 bit
 Linearity error: < 0,1 %
 Temperature error: < 100 ppm/ K
 Load influence I: < 50 ppm
 of final value
 Load influence U: < 0,2 % at 2 kΩ load
 Setting time: < 50 msec.

Directive:

EMC Directive: 2014/30/EU*
 Low Voltage Directive: 2014/35/EU

*minimum deviations possible during HF-radiation influence

Mounting details:

Housing for top hat rail
 Type of protection: IP 20
 Mounting rail fixed according to EN 50022-35 x 6,2 mm
 Width: 6,2 mm
 Weight: 52 g
 Material: Polyamide PA
 Flammability class: V0 (UL 94)
 Approval: CE
 Connection: screw clamps
 0,14...2,5 mm²

For safety reasons we recommend to mount the housing for top hat rail with a distance > 1 mm to each other. Please check parameterization before initial operation!

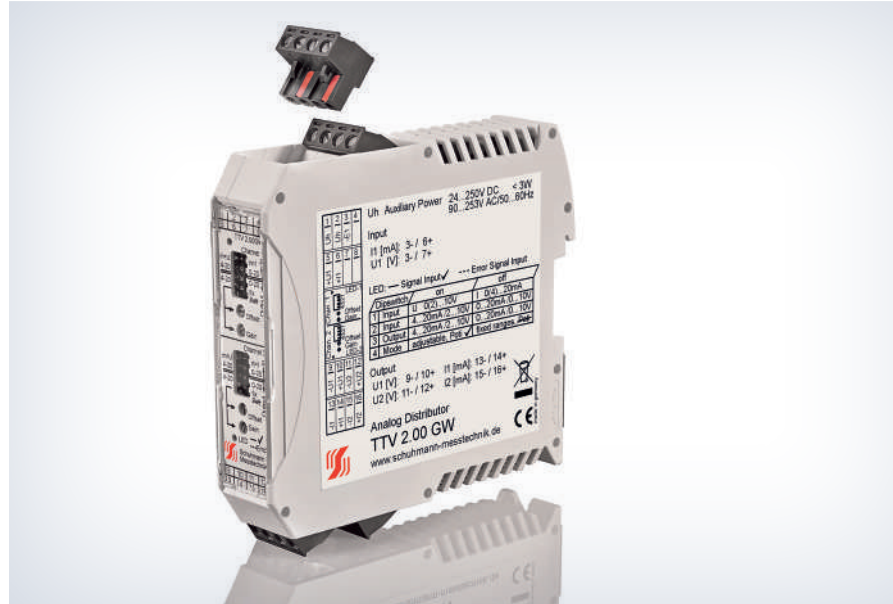
Ordering information:

Type: AV 2.00 SDC 24 V DC
 Accessories: USB2/ USB-Simulator with KALIB-Software

Schuhmann GmbH & Co. KG
 Römerstraße 2
 D-74363 Güglingen
 Tel. + 49 71 35 50 56
 E-mail: info@schuhmann-messtechnik.de
 www.schuhmann-messtechnik.de

FEATURES

- **1 Input:**
Current 0(4)...20 mA or
Voltage 0(2)...10 V
- **Outputs simultaneous:**
2 x current 0(4)...20 mA and
2 x voltage 0(2)...10 V
- **Function, switchable:**
- fixed calibration or
- adjustable by trimmer
- **Pluggable screw-clamps**
- **Galvanic 3-way isolation per channel**



FUNCTION

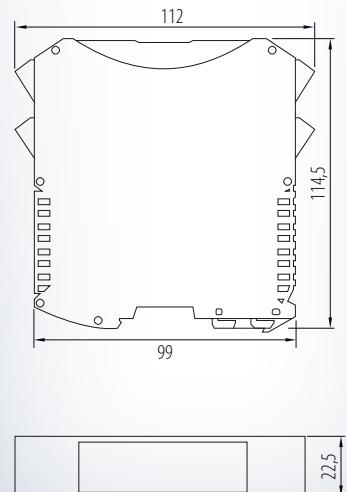
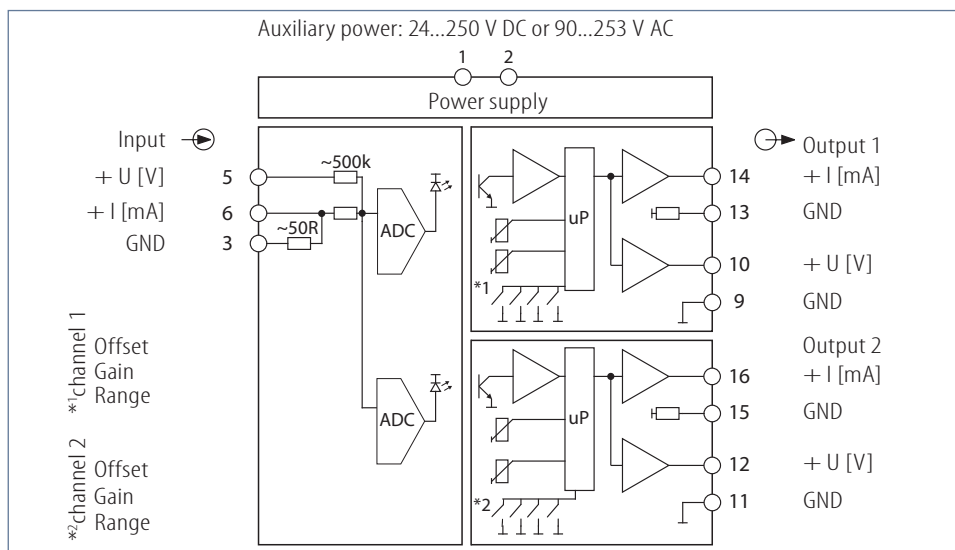
The TTV 2.00 GW transfers the input signal to 2 galvanically isolated output channels. The unit has 4 DIP-switches on frontside.

To select the transmission or the signal conversion ranges, use the DIP-switches 1 - 3.

Fixed calibrated standard measurement ranges, for input and output, are stored in the device: 0(4)...20 mA/ 0(2)...10 V = DIP-switch 4 OFF.

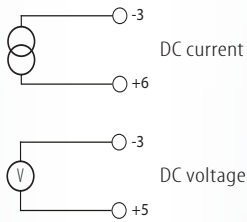
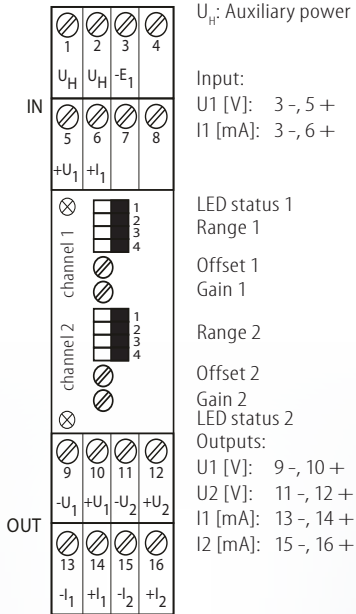
Each output channel can alternatively be adjusted separately and the individual range can be set. The fine adjustment of the offset and the final value is carried out by trimmer = DIP-switch 4 ON.

The galvanic 3-way isolation is used to protect against faulty measurement or damage downstream equipment such as analog control units, control rooms, control systems, PLC units. The integrated protection circuit with suppressor diode protects the secondary circuit from voltage spikes and transient surges.



TTV 2.00 GW

Connection diagram:



Input:

I: DC current:	0(4)...20 mA	input resistance approx. 50 Ω
connection:	terminal 3-, 6+	
U: DC voltage:	0(2)...10 V	input resistance approx. 500 kΩ
connection:	terminal 3-, 5+	

Output:

I: load-independent DC current:	0(4)...20 mA	permissible load max. 540 Ω
Output current limiting:	22,0 mA	
connection:	see connection diagram	
U: load-independent DC voltage:	0(2)...10 V	permissible load ≥ 5 kΩ simultan. permissible load ≥ 1 kΩ exclusive
Gain adjustment:	trimmer ± 25 %	(DIP-switch 4 = ON)
Offset adjustment:	trimmer ± 25 %	(DIP-switch 4 = ON)
connection:	see connection diagram	

Adjustment:

DIP-switch for range selection:

Switch	Function	ON	OFF
1	input	U [V]	I [mA]
2*	input	4...20 mA/ 2...10 V	0...20 mA/ 0...10 V
3*	output	4...20 mA/ 2...10 V	0...20 mA/ 0...10 V
4	calibration	adjustment with trimmer	fixed calibrated*

*unchangeable factory setting: DIP4=OFF (trimmers are inactive)

Display:

LED status	green, active	input signals are in standard range, device ready for use
	green, flashing	input signals are not in standard range

Environmental conditions:

Storage temperature:	-40...+70 °C
Operating temperature:	-40...55 °C
Isolation voltage:	
2,5 kV eff. 1 sec.	input/ output
4 kV eff. 1 sec.	auxiliary power
500 V eff. 1 sec.	channel/ channel

Auxiliary power:

Wide range:	24...250 V DC 90...253 V AC < 3 W
Influence of aux. power:	< 0,1 %

Characteristics of transmission:

Transmission error:	< 0,12 %
Linearity error:	< 0,1 %
Temperature error:	< 100 ppm/ K
Load influence I:	< 50 ppm of final value
Load influence U:	< 0,2 % at 1 kΩ load
Setting time:	< 30 msec.

Directive:

EMC Directive:	2014/30/EU*
Low Voltage Directive:	2014/35/EU
*minimum deviations possible during HF-radiation influence	

Mounting details:

Housing for top hat rail	
Type of protection:	IP 40 housing IP 20 clamps
Rail-mounting fixed according to	EN 50022-35 x 7,5 mm
Width:	22,5 mm
Weight:	160 g
Material:	Polyamide PA
Flammability class:	V0 (UL94)
Approval:	CE
Connection:	pluggable screw clamps 0,2...2,5 mm ²

For safety reasons we recommend to mount the housing for top hat rail with a distance of approx. 5 mm to each other. Please check DIP-switch before initial operation!

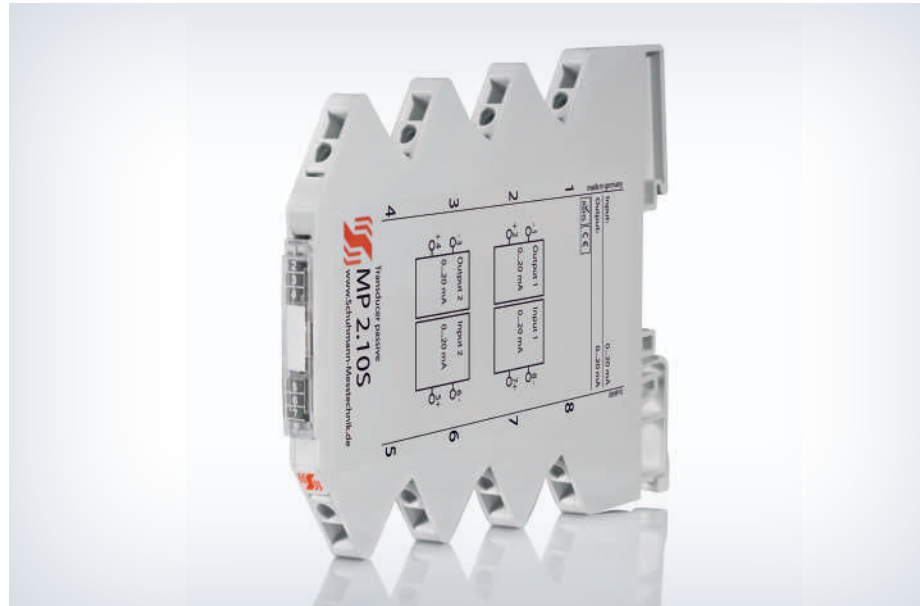
Ordering information:

Type: TTV 2.00 GW wide range

Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen
Tel. + 49 71 35 50 56
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de

FEATURES

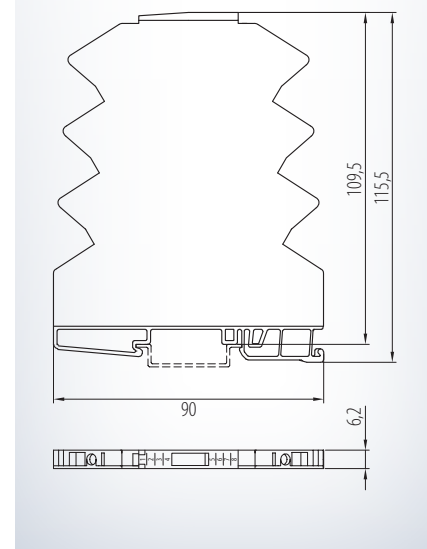
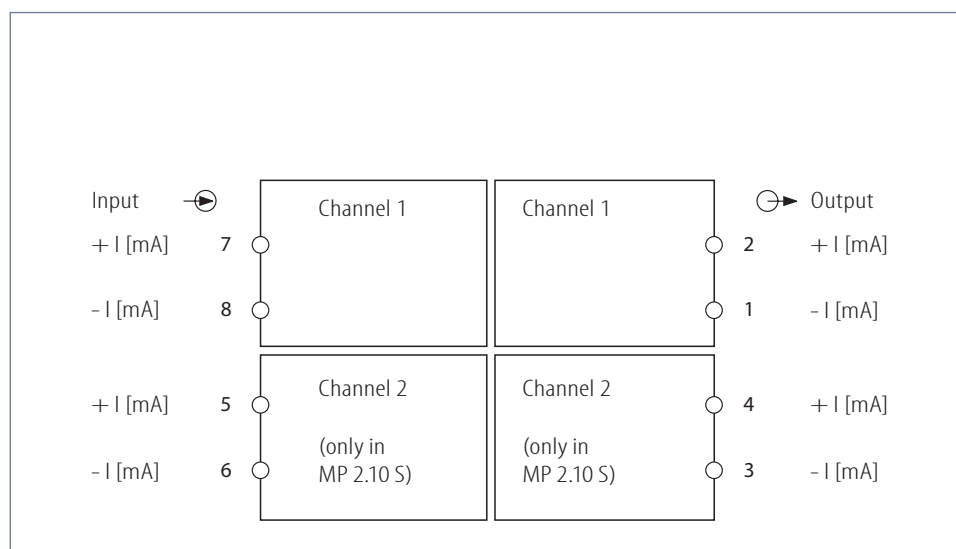
- **Input:**
Current 0(4)...20 mA
1x at MP 1.10 S
2x at MP 2.10 S
- **Output:**
Current 0(4)...20 mA
1x at MP 1.10 S
2x at MP 2.10 S
- **No auxiliary power required**
- **Galvanic 2-way isolation of 500 V**



FUNCTION

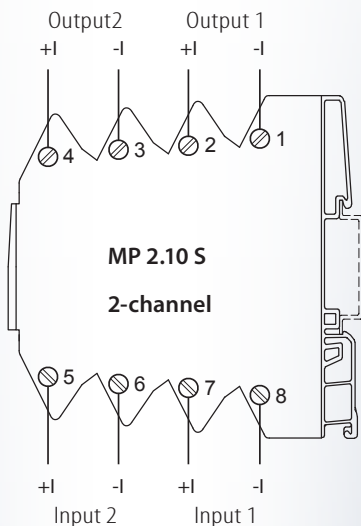
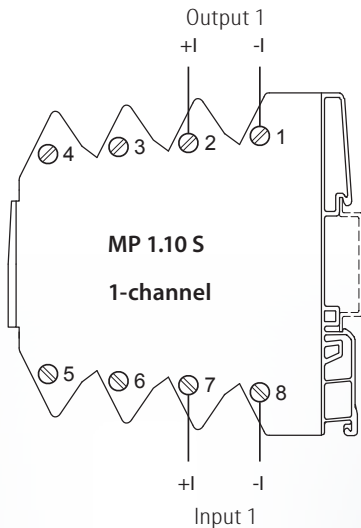
The MP 1.10 S is used for the galvanic isolation of direct current circuits. The ratio of transmission input to output is 1:1. The transducer has only a low power consumption; this capacity is removed from the measuring signal. As far as load is concerned you have to consider that the internal resistance of the transmitter must be added to the input resistance of the final device and is not supposed to exceed the total load of the measuring transducer.

Disturbances by coupling of different signal circuits as well as earth or mass potential differences can easily be avoided or eliminated afterwards by the MP x.10 S. The integrated protective switching with suppressor diode (33 V) protects the secondary circuit from voltage peaks and transient excess voltage. **Attention: with output open the primary loop is interrupted.**



MP 1.10 S MP 2.10 S

Connection diagram:



Input:

I: load-independent DC current:	0(4)...20 mA
input resistance:	$R_i = R_A + 135 \Omega$
max. input current:	35 mA
U_{min} input:	$2,7 V + 0,02 A \times R_A$ (resistance measuring circuit), e.g. at measuring circuit load of 500Ω : $2,7 V + 0,02 A \times 500 \Omega = 12,7 V$ are necessary
connection channel 1:	terminal 8 -, 7 +
connection channel 2:	terminal 6 -, 5 +

transfer ratio is 1:1.

Output:

I: load-independent DC current:	0(4)...20 mA
max. load:	<u>(input voltage - 2,7 V)</u> 0,02 A
output current:	max. 21 mA
connection channel 1:	terminal 1 -, 2 +
connection channel 2:	terminal 3 -, 4 +

Environmental conditions:

Storage temperature:	-40...+70 °C
Operating temperature:	0...55 °C
Isolation voltage:	500 V eff. 1 sec. output/ input

Auxiliary power:

As this device operates without auxiliary power the internal resistance R_i of the load has to be considered. Here the load resistance to be connected may not be exceeded.

Characteristics of transmission:

Transmission error:	< 0,12 %
Linearity error:	< 0,1 %
Temperature error:	< 0,02 %/ K
Load influence I:	< 0,06 % per 100 Ω change of R_A
Setting time:	6 ms at 500 Ω and 20 mA

Directive:

EMC Directive:	2014/30/EU*
Low Voltage Directive:	2014/35/EU
*minimum deviations possible during HF-radiation influence	

Mounting details:

Housing for top hat rail	
Type of protection:	IP 20
Mounting rail fixed according to	EN 50022-35 x 6,2 mm
Width:	6,2 mm
Weight:	60 g
Material:	Polyamide PA
Flammability class:	V0 (UL 94)
Approval:	CE
Connection:	screw clamps 0,14...2,5 mm ²

For safety reasons we recommend to mount the housing for top hat rail with a distance > 1 mm to each other.

Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen
Tel. + 49 71 35 50 56
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de

Ordering information:

Type: MP 1.10 S	1-channel
MP 2.10 S	2-channel

13.10.2020



Title	Specification	PC-Interface	Available designs	Auxiliary power	Page
FEEDING ISOLATING AMPLIFIER					
standard signals, integrated transmitter feeding, 0(4)...20 mA, 0(2)...10 V					
STV 2.00 GW	input switchable ± 20 mA, ± 10 V, ± 60 mV to ± 100 V, output simultaneous ± 20 mA, ± 10 V, max. 1 kHz, parameterizable	X	G 22,5	24...250 V DC, 90...253 V AC	02-01
TTS 1.00 MW	1-channel, input I/ U, output I/ U, fixed calibrated, adjustable, with transmitter feeding		G 12,5	24...250 V DC, 90...253 V AC	02-03
TTS 1.14 MW	1-channel, current input 4...9,0 mA/ 4...10,2 mA/ 4...13,5 mA or 4...18,0 mA output I/ U, fixed calibrated, adjustable, with transmitter feeding		G 12,5	24...250 V DC, 90...253 V AC	02-05
UTS 19.00 GW	input I/ U switchable, output I/ U simultaneous, trimmer		G 22,5	24...250 V DC, 90...253 V AC	02-07
MTS 1.20 SDC	current input and output, 1:1, with transmitter feeding		G 6,2	20...30 V DC	02-09
ANALOG DISTRIBUTOR WITH TRANSMITTER FEEDING					
distribution of universal analog I/ U input signals, 2 or 4 outputs 0(4)...20 mA/ 0(2)...10 V, transmitter feeding					
TTSV 2.00 GW	2-channel output I/ U / I/ U, with transmitter feeding		G 22,5	24...250 V DC, 90...253 V AC	02-11
TTSV 4.00 GW	4-channel output I/ U / I/ U, with transmitter feeding		G 45	24...250 V DC, 90...253 V AC	02-13
LIMIT SWITCHES WITH TRANSMITTER FEEDING					
bargraph status display, integrated transmitter feeding, input: 0(4)...20 mA, 0(2)...10 V					
GS 2.10 GW	front side push-buttons, output 2 changer, with transmitter feeding		G 22,5	24...250 V DC, 90...253 V AC	03-87

* Designs: G = housing,
T = housing for door installation,
E = eurocard

3 Year
Warranty

3 Year
Warranty



FEATURES

- **Input, switchable:**
Current ± 20 mA or
Voltage ± 10 V, 60 mV to 100 V
- **Output, simultaneous:**
Current ± 20 mA and
Voltage ± 10 V
- **Integrated transmitter feeding**
- **Linearity tolerance $< 0,1$ %**
frequency range 0...1 kHz
- **Parameterization via PC-interface**
- **Galvanic 3-way isolation**
of 4 kV



FUNCTION

Accurate calibration and high-precision potential isolation: the STV 2.00 GW is a universal Bipolar Feeding Isolating Amplifier with calibrated, switchable measuring ranges for the different analog measuring signals for conversion and galvanic isolation.

It has a bipolar input for current or voltage and one bipolar output which can do current and voltage simultaneously.

A LED on front side indicates if the input is within or outside the range.

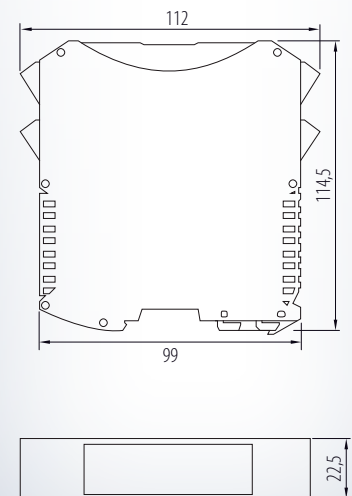
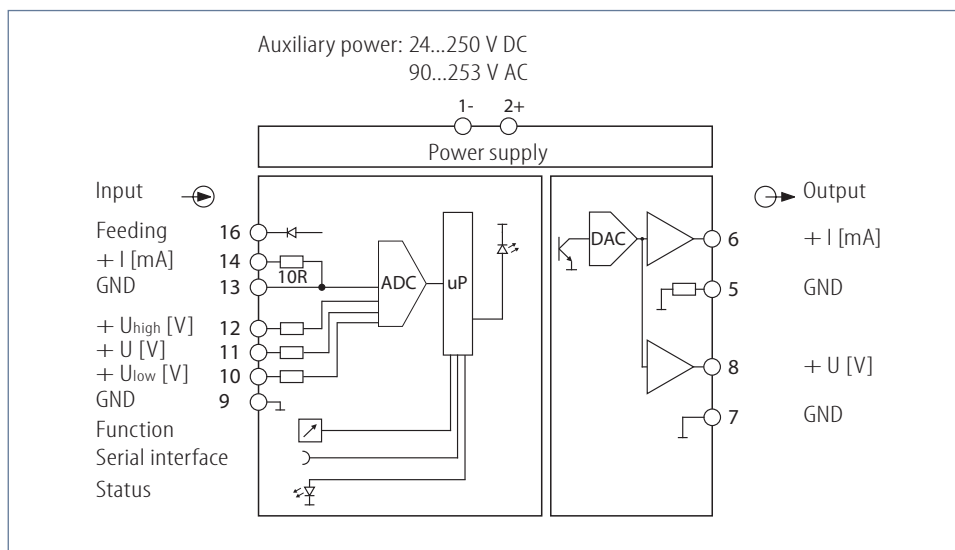
The different characteristics of transmission can be selected by turn-switch. Fixed calibrated measuring ranges for input and output are stored in **position 0...E**. See table on side.

At **position F** the transmission ranges can be individually defined with the USB2-Adapter in connection with KALIB-Software:

Input: absorbability 0,4 ms...50 sec., range, zero point, final value.

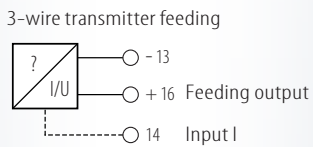
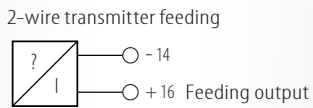
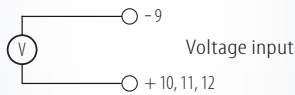
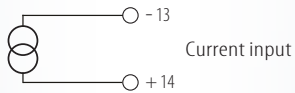
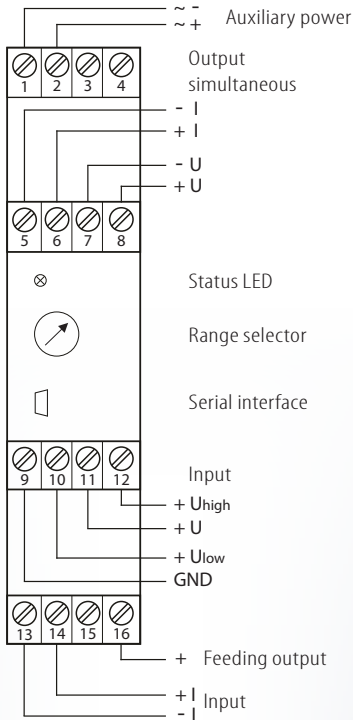
Output: range, zero point, final value, output minimum, output maximum.

With its frequency range of 0..1 kHz the STV 2.00 GW is ideal for very fast applications and can be used for e.g. measuring of water hardness, recording of rotation direction and speed, 2- and 3-wire transmitter feeding.



STV 2.00 GW

Connection diagram:



Input:

I: DC current:	-20...0...+20 mA	input resistance approx. 10 Ω
connection:	terminal 13 -, 14 +	
U: DC voltage:	-10...0...+10 V/ 100 V	input resistance approx. 1 MΩ (at signals < 200 mV a screened line is recommended!)
connection U _{low} (max. 1 V):	terminal 9 -, 10 +	
connection U (max. 10 V):	terminal 9 -, 11 +	
connection U _{high} (max. 100 V):	terminal 9 -, 12 +	
transmitter feeding:	approx. 15 V at 20 mA, I _k =30...50 mA	

Output:

I: load-independent DC current:	-20...0...+20 mA	permissible load max. 500 Ω
connection:	terminal 5 -, 6 +	
U: load-independent DC voltage:	-10...0...+10 V	permissible load ≥ 5 kΩ
connection:	-12...0...+12 V	permissible load ≥ 6 kΩ
connection:	terminal 7 -, 8 +	

Adjustment:

Range selection by front side turn-switch:

Position	Input	Output	Position	Input	Output
0	4...20 mA	4...20 mA	8	20...0 mA	4...20 mA
0	0...20 mA	0...20 mA	9	0...10 V	0...20 mA
0	-20...0...+20 mA	-20...0...+20 mA	9	-10...0...+10 V	-20...0...+20 mA
1	4...20 mA	0...20 mA	A	0...10 V	4...20 mA
2	0...20 mA	4...20 mA	B	0...10 V	0...10 V
3	0...20 mA	0...10 V	B	2...10 V	2...10 V
3	-20...0...+20 mA	-10...0...+10 V	B	-10...0...+10 V	-10...0...+10 V
4	4...20 mA	0...10 V	C	0...60 mV	0...20 mA
5	20...4 mA	0...20 mA	C	-60...0...+60 mV	-20...0...+20 mA
6	20...4 mA	4...20 mA	D	0...60 mV	0...10 V
7	20...0 mA	0...20 mA	E	0...100 V	4...20 mA
F	user-defined adjustment (via KALIB-Software)				

You need a PC to adjust the measuring ranges and parameter for **position F** as well as KALIB-Software and USB2 interface adapter. **Input: absorbability, range, zero point, final value.**

Output: range, zero point, final value, output minimum, output maximum.

Display:

LED Status:	green, active	input signals are in standard range, device ready for use
	red, active	input out of predetermined limits

Environmental conditions:

Storage temperature:	-40...+70 °C
Operating temperature:	0...55 °C
Isolation voltage:	4 kV eff. 1 sec.
	input-output-auxiliary voltage

Auxiliary power:

Wide range:	24...250 V DC
	90...253 V AC
	< 3 W
Infl. of auxiliary power:	< 0,1 %

Characteristics of transmission:

Transmission error:	
0 Hz at Outp. I	< 0,1 % of final value
at Outp. U	< 0,2 % of final value
1 kHz Sine	< 1 %
Resolution:	16 bit
Temperature error:	< 100 ppm/ K
Load influence I:	< 50 ppm
	of final value
Load influence U:	< 100 ppm
	at 1 kΩ load
Sampling rate:	approx. 12 kHz
Frequency:	≤ 1 kHz sine

Directive:

EMC Directive:	2014/30/EU*
Low Voltage Directive:	2014/35/EU
	*minimum deviations possible during HF-radiation infl.

Mounting details:

Housing for top hat rail	
Type of protection:	IP 40 housing
	IP 20 clamps
Rail-mounting fixed according to	EN 50022-35 x 6,2 mm
Width:	22,5 mm
Weight:	145 g
Material:	Polyamide PA
Flammability class:	V0 (UL94)
Approval:	CE
Connection:	pluggable
	screw clamps
	0,2...2,5 mm ²

For safety reasons we recommend to mount the housing for top hat rail with a distance of approx. 5 mm to each other.

Please check switch position before initial operation!

Ordering information:

Type: STV 2.00 GW wide range
Accessories: USB2/ USB-Sim. with KALIB-Software

Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen
Tel. +49 71 35 50 56
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de



FEATURES

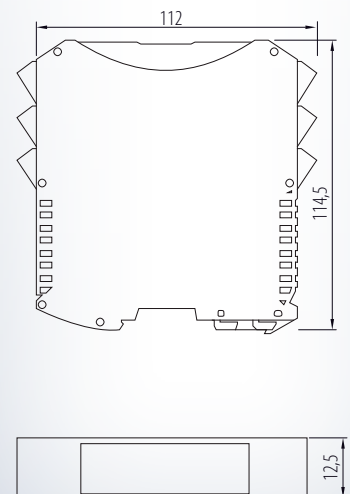
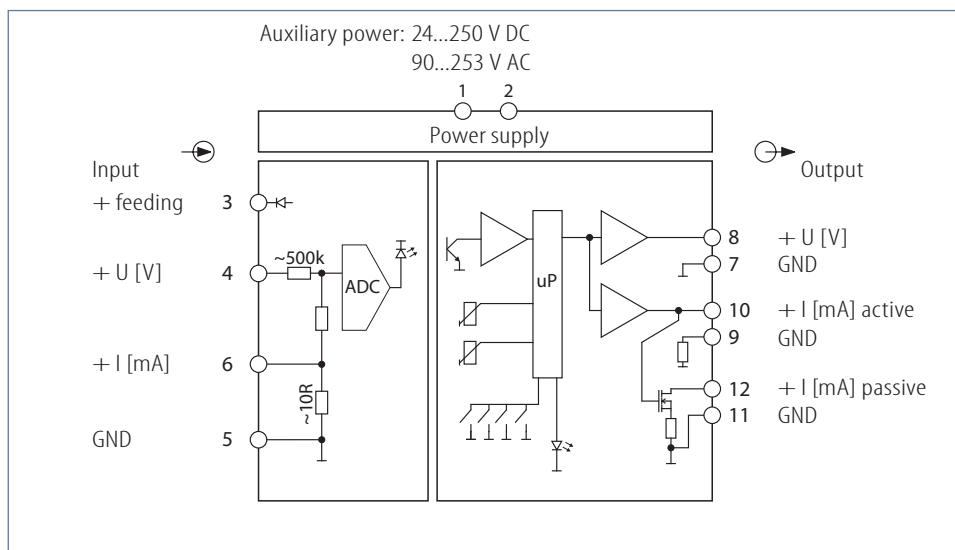
- **Input:**
Current 0(4)...20 mA or
Voltage 0(2)...10 V
- **Output, simultaneous:**
Current 0(4)...20 mA (active or
passive) and voltage 0(2)...10 V
- **Integrated transmitter feeding**
- **Function, switchable:**
- fixed calibration or
- adjustable by trimmer
- **Pluggable screw-clamps**
- **Galvanic 3-way isolation**



FUNCTION

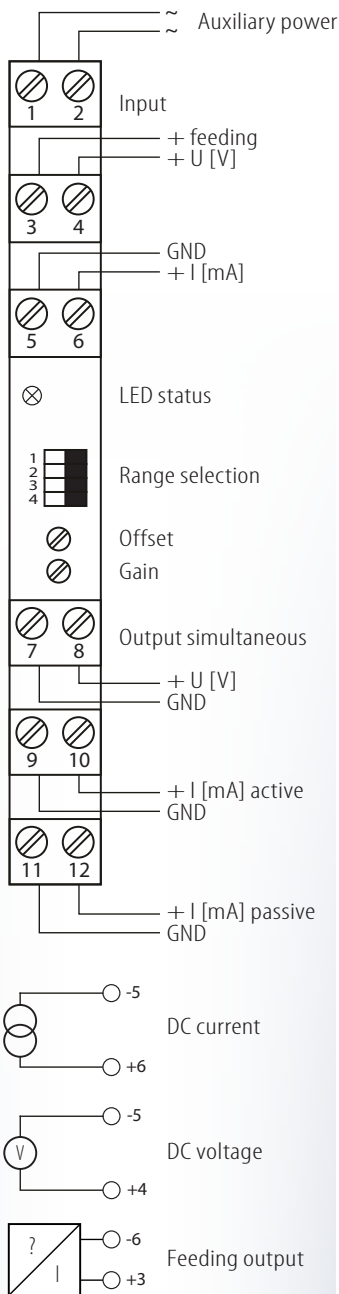
The TTS 1.00 MW is used for the precise potential isolation of different measuring signals. The unit has 4 DIP-switches on frontside. To select the transmission or the signal conversion ranges, use the DIP-switches 1 - 3. Fixed calibrated standard measurement ranges, for input and output, are stored in the device: 0(4)...20 mA/ 0(2)...10 V = DIP-switch 4 OFF. The fine adjustment of the offset and the final value is carried out by trimmer = DIP-switch 4 ON.

Its output can do current (active or passive) and voltage simultaneous. Because of the integrated transmitter feeding, 2-/3-wire transmitters will be fed. The galvanic 3-way isolation is used to protect against faulty measurement or damage downstream equipment such as analog control units, control rooms, control systems, PLC units. The integrated protection circuit with suppressor diode protects the secondary circuit from voltage spikes and transient surges.



TTS 1.00 MW

Connection diagram:



Input:

I: DC current:	0(4)...20 mA	input resistance approx. 10 Ω
connection:	terminal 5 -, 6 +	
U: DC voltage:	0(2)...10 V	input resistance approx. 500 kΩ
connection:	terminal 5 -, 4 +	
transmitter feeding:	approx. 18...21 V	
connection:	terminal 6 -, 3 +	

Output:

I: load-independent DC current:	0(4)...20 mA	permissible load max. 540 Ω
Output current limiting:	22,0 mA	
connection:	terminal 9 -, 10 +	
or:		
loop-powered DC current:	0(4)...20 mA	max. permissible voltage 30 V
connection:	terminal 11 -, 12 +	
Caution: do not use output I active (load-independent) and I passive (loop pow.) at the same time!		
U: load-independent DC voltage:	0(2)...10 V	permis. load ≥ 5 kΩ simultaneous permis. load ≥ 1 kΩ exclusive
connection:	terminal 7 -, 8 +	
Gain adjustment:	trimmer ± 25 %	(DIP-switch 4 = ON)
Offset adjustment:	trimmer ± 25 %	(DIP-switch 4 = ON)

Adjustment:

DIP-switch for range selection:

	1	2	3	4
on	Switch	Function	ON	OFF
off	1	input	U [V]	I [mA]
	2*	input	4...20 mA / 2...10 V	0...20 mA / 0...10 V
	3*	output	4...20 mA / 2...10 V	0...20 mA / 0...10 V
	4	calibration	adjustment with trimmer	fixed calibrated*

*unchangeable factory setting: DIP4=OFF (trimmers are inactive)

Display:

LED status	green, active	input signals are in standard range, device ready for use
	green, flashing	input signals are not in standard range

Environmental conditions:

Storage temperature:	-40...+70 °C
Operating temperature:	-40...+55 °C
Isolation voltage:	2,5 kV eff. 1 sec. input/output
	4 kV eff. 1 sec. auxiliary power

Auxiliary power:

Wide range:	24...250 V DC
	90...253 V AC
	< 3 W
Influence of aux. power:	< 0,1 %

Characteristics of transmission:

Transmission error:	< 0,12 %
Linearity error:	< 0,1 %
Temperature error:	< 100 ppm/ K
Load influence I:	< 50 ppm of final value
Load influence U:	< 0,2 % at 1 kΩ load
Setting time:	< 30 msec.

Directive:

EMC Directive:	2014/30/EU*
Low Voltage Directive:	2014/35/EU
*minimum deviations possible during HF-radiation influence	

Mounting details:

Housing for top hat rail	IP 30 housing
Type of protection:	IP 20 clamps
Rail-mounting fixed according to	EN 50022-35 x 7,5 mm
Width:	12,5 mm
Weight:	90 g
Material:	Polyamide (PA)
Flammability class:	V0 (UL94)
Approval:	CE
Connection:	pluggable screw clamps 0,2...2,5 mm ²

For safety reasons we recommend to mount the housing for top hat rail with a distance of approx. 5 mm to each other. Please check DIP-switch before initial operation!

Ordering information:

Type: TTS 1.00 MW wide range

Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen
Tel. +49 71 35 50 56
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de



Feeding Isolating Amplifier with Special Input for Current

TTS 1.14 MW

FEATURES

- **Input:**
Current 4...9,0 mA/ 4...10,2 mA/
4...13,5 mA or 4...18,0 mA
- **Output, simultaneous:**
Current 0(4)...20 mA (active or
passive) and voltage 0(2)...10 V
- **Integrated transmitter feeding**
- **Function, switchable:**
- fixed calibration or
- adjustable by trimmer
- **Pluggable screw-clamps**
- **Galvanic 3-way isolation**



FUNCTION

The TTS 1.14 MW is used for the precise potential isolation of different measuring signals. The unit has 4 DIP-switches on frontside.

To select the transmission or the signal conversion ranges, use the DIP-switches 1 - 3.

The calibrated measurement ranges for input 4...9,0 mA/ 4...10,2 mA/ 4...13,5 mA/ 4...18,0 mA as well as on the output side the ranges 0(4)...20 mA/ 0(2)...10 V, are stored in the device = DIP-switch 4 OFF.

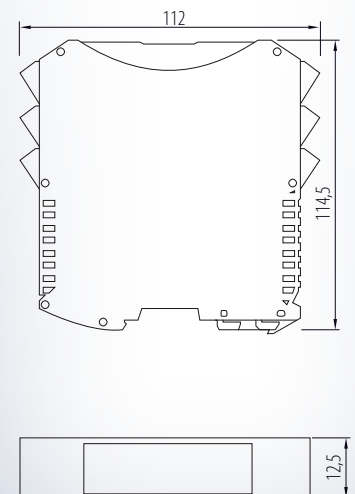
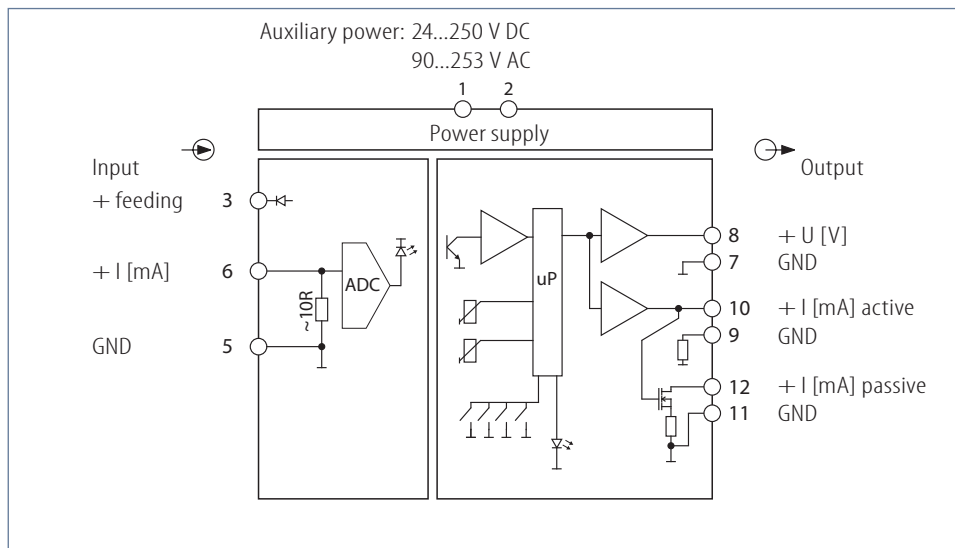
The fine adjustment of the offset and the final value is carried out by trimmer = DIP-switch 4 ON.

Its output can do current (active or passive) and voltage simultaneous.

Because of the integrated transmitter feeding, 2-/3-wire transmitters will be fed.

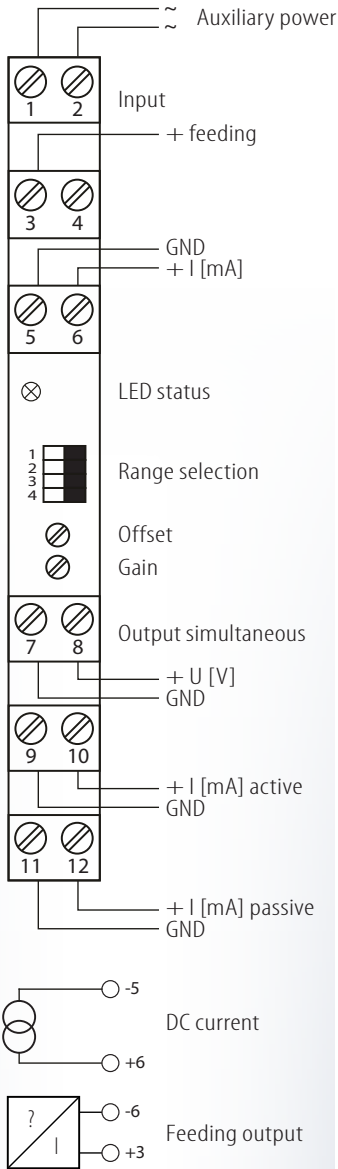
The galvanic 3-way isolation is used to protect against faulty measurement or damage downstream equipment such as analog control units, control rooms, control systems, PLC units.

The integrated protection circuit with suppressor diode protects the secondary circuit from voltage spikes and transient surges.



TTS 1.14 MW

Connection diagram:



Input:

I: DC current: 4...9,0 mA / 4...10,2 mA / 4...13,5 mA / 4...18,0 mA input resistance approx. 10 Ω
 connection: terminal 5 -, 6 +
 transmitter feeding: approx. 16...21 V
 connection: terminal 6 -, 3 +

Output:

I: load-independent DC current: 0(4)...20 mA permissible load max. 540 Ω
 Output current limiting: 22,0 mA
 connection: terminal 9 -, 10 +
 or:
 loop-powered DC current: 0(4)...20 mA max. permissible voltage 30 V
 connection: terminal 11 -, 12 +

Caution: do not use output I active (load-independent) and I passive (loop pow.) at the same time!

U: load-independent DC voltage: 0(2)...10 V permis. load ≥ 5 kΩ simultaneous
 permis. load ≥ 1 kΩ exclusive
 connection: terminal 7 -, 8 +
 Gain adjustment: trimmer ± 25 % (DIP-switch 4 = ON)
 Offset adjustment: trimmer ± 25 % (DIP-switch 4 = ON)

Adjustment:

DIP-switch for range selection:

Switch 1 + 2	Function/ Range	Switch 1 + 2	Function/ Range
1 OFF / 2 OFF	input 4...9,0 mA	1 ON / 2 OFF	input 4...10,2 mA
1 OFF / 2 ON	input 4...13,5 mA	1 ON / 2 ON	input 4...18,0 mA

on off

Switch	Function	ON	OFF
3*	output	4...20 mA / 2...10 V	0...20 mA / 0...10 V
4	calibration	adjustment with trimmer	fixed calibrated*

*unchangeable factory setting: DIP4=OFF (trimmers are inactive)

Display:

LED status green, active input signals are in standard range, device ready for use
 green, flashing input signals are not in standard range

Environmental conditions:

Storage temperature: -40...+70 °C
 Operating temperature: -40...+55 °C
 Isolation voltage:
 2,5 kV eff. 1 sec. input/output
 4 kV eff. 1 sec. auxiliary power

Auxiliary power:

Wide range: 24...250 V DC
 90...253 V AC
 < 3 W
 Influence of aux. power: < 0,1 %

Characteristics of transmission:

Transmission error: < 0,12 %
 Linearity error: < 0,1 %
 Temperature error: < 100 ppm/ K
 Load influence I: < 50 ppm
 of final value
 Load influence U: < 0,2 %
 at 1 kΩ load
 Setting time: < 30 msec.

Directive:

EMC Directive: 2014/30/EU*
 Low Voltage Directive: 2014/35/EU
 *minimum deviations possible during
 HF-radiation influence

Mounting details:

Housing for top hat rail
 Type of protection: IP 30 housing
 IP 20 clamps
 Rail-mounting fixed according to
 EN 50022-35 x 7,5 mm
 Width: 12,5 mm
 Weight: 90 g
 Material: Polyamide (PA)
 Flammability class: V0 (UL94)
 Approval: CE
 Connection: pluggable
 screw clamps
 0,2...2,5 mm²

For safety reasons we recommend to mount the housing for top hat rail with a distance of approx. 5 mm to each other. Please check DIP-switch before initial operation!

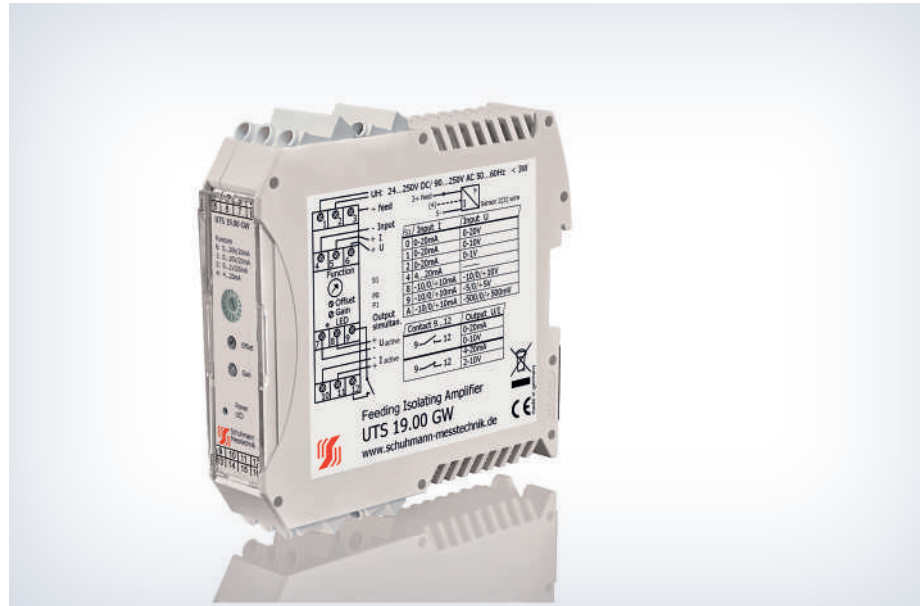
Ordering information:

Type: TTS 1.14 MW wide range

Schuhmann GmbH & Co. KG
 Römerstraße 2
 D-74363 Güglingen
 Tel. +49 71 35 50 56
 E-mail: info@schuhmann-messtechnik.de
 www.schuhmann-messtechnik.de

FEATURES

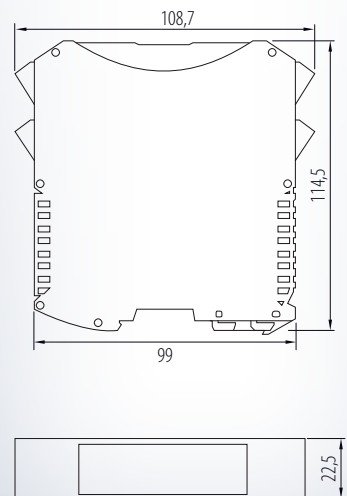
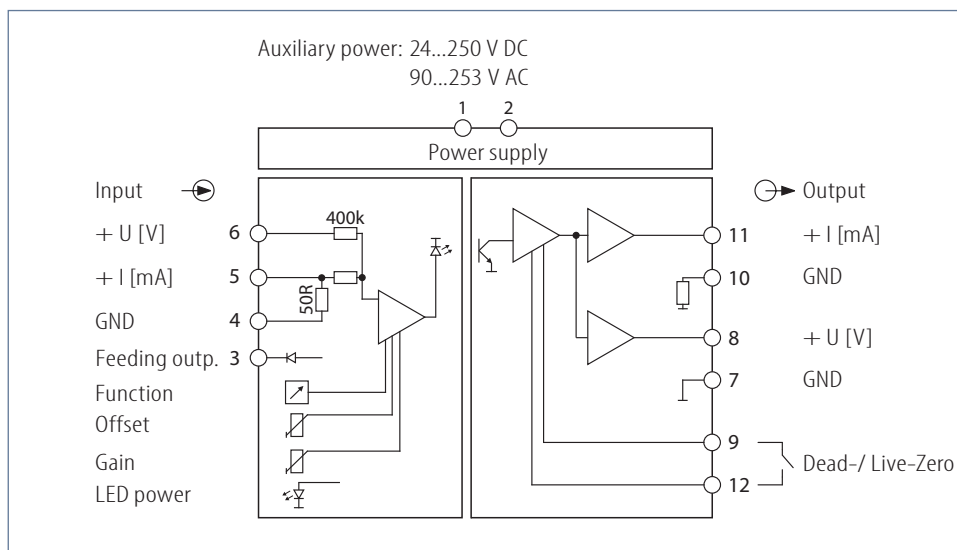
- **Input, switchable:**
Current 0(4)...20 mA, ± 10 mA or
Voltage 0(2)...10 V, ± 10 V
- **Output, simultaneous:**
Current 0(4)...20 mA and
Voltage 0(2)...10 V
- **Integrated transmitter feeding**
- **Fine adjustment of offset and gain by trimmer**
- **Galvanic 3-way isolation of 4 kV**



FUNCTION

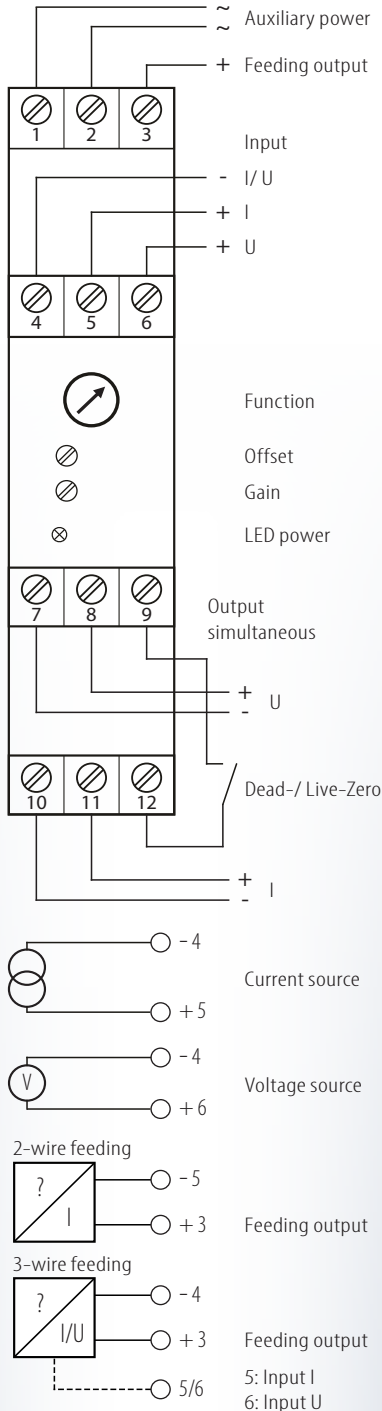
Isolating amplifiers are mainly used for the galvanic isolation or conversion of analog signals. The UTS 19.00 GW is used for the connection of 2- and 3-wire transmitters. This guarantees a safe decoupling between sensor and evaluation circuit and any influence of sensor circuits among each other is absolutely impossible. It has one input for current or voltage and one output which can do current and voltage simultaneous. Fine adjustment of offset and gain is being made by trimmer.

The desired input range can be chosen from the table on the side, the adjustment is carried out by turn switch. The output ranges are switchable. The integrated protective switching with suppressor diode protects the secondary circuit from peaks and transient excess voltage.



UTS 19.00 GW

Connection diagram:



Input:

I: DC current:	0(4)...20 mA	input resistance approx. 50 Ω
connection:	terminal 4 -, 5 +	
U: DC voltage:	0...1/ 5/ 10/ 20 V	input resistance approx. 40 kΩ/ V
connection:	terminal 4 -, 6 +	

transmitter feeding: approx. 16...22 V, max. 20 mA/ 16 V

Input ranges selection by front side turn-switch:

Position	Input U	Input I
0	0...20 V	0...20 mA
1*	0...10 V	0...20 mA
2	0...1 V	0...20 mA
4	-	4...20 mA
8	-10...0...+10 V	-10...0...+10 mA
9	-5...0...+5 V	-10...0...+10 mA
A	-500...0...+500 mV	-10...0...+10 mA

Measuring range errors at change-over of the individual measuring ranges ≤ 0,5 %.

Output:

I: load-independent DC current:	0(4)...20 mA	permissible load max. 600 Ω
connection:	terminal 10 -, 11 +	

U: load-independent DC voltage:	0(2)...10 V	perm. load ≥ 5 kΩ simult. operation perm. load ≥ 1 kΩ exclusive
---------------------------------	-------------	--------------------------------------------------------------------

Gain adjustment: trimmer ± 5 %
Offset adjustment: trimmer ± 7 %
connection: terminal 7 -, 8 +

Output ranges switchable by connection of terminal 9 + 12 (Dead-/ Live-Zero):

Terminal 9/ 12	Output U	Output I
Open*	0...10 V	0...20 mA
Closed	2...10 V	4...20 mA

* Factory setting: transmission 1:1; with Live-Zero transmission.

Position	Input I	Output I	Clamp 9/ 12	Remark
1*	0...20 mA	0...20 mA	Open*	transmission 1:1 with Live-Zero transmission
1*	4...20 mA	4...20 mA	Open*	
1	0...20 mA	4...20 mA	Closed	basic offset at output 4 mA

Display:

LED power green, active device active

Environmental conditions:

Storage temperature: -40...+70 °C
Operating temperature: 0...55 °C
Isolation voltage: 4 kV eff. 1 sec.
input-output-auxiliary power

Auxiliary power:

Wide range: 24...250 V DC
90...253 V AC
< 3 W

Influence of auxiliary power: < 0,1 %

Characteristics of transmission:

Transmission error: < 0,12 %
Linearity error: < 0,15 %
Temperature error: < 100 ppm/K
Load influence I: < 50 ppm of final value
Load influence U: < 0,5 % at 1 kΩ load
Setting time: < 200 msec.

Directive:

EMC Directive: 2014/30/EU*
Low Voltage Directive: 2014/35/EU
*minimum deviations possible during HF-radiation influence

Mounting details:

Housing for top hat rail
Type of protection: IP 20 housing
IP 20 clamps
Rail-mounting fixed according to EN 50022-35 x 7,5 mm
Width: 22,5 mm
Weight: 140 g
Material: Polyamide PA
Flammability class: V0 (UL94)
Approval: CE
Connection: screw clamps
≤ 2,5 mm²

For safety reasons we recommend to mount the housing for top hat rail with a distance of approx. 5 mm to each other. Please check switch position before initial operation!

Ordering information:

Type: UTS 19.00 GW wide range

Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen
Tel. +49 71 35 50 56
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de

FEATURES

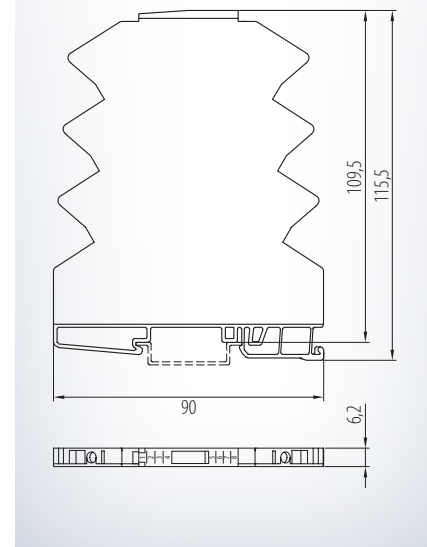
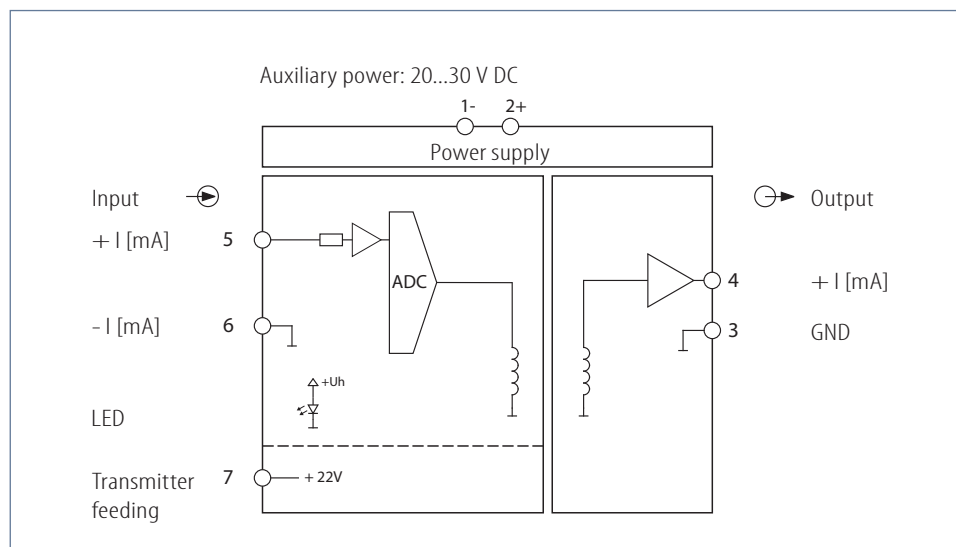
- **Input:**
current 0(4)...20 mA
- **Output:**
current 0(4)...20 mA
- **Integrated 2-wire transmitter feeding**
- **Galvanic 3-way isolation of 500 V**
- **Low internal consumption**



FUNCTION

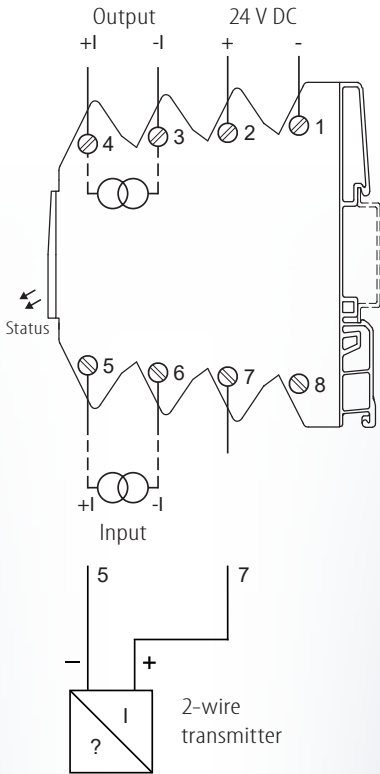
The MTS 1.20 SDC is used for the exact potential isolation of different measuring signals. The galvanic 3-way isolation protects against mismeasurement or damage of the following instruments, such as analog control devices, control rooms, guidance systems, PLC units. The transmission of input and output is 1:1. It is possible to transmit Live-Zero.

The integrated protective switching with suppressor diode protects the secondary circuit from voltage peaks and transient excess voltage. The MTS 1.20 SDC also has an integrated 2-wire transmitter feeding.



MTS 1.20 SDC

Connection diagram:



Input:

I: load-independent DC current: 0(4)...20 mA input resistance approx. 20 Ω
 connection: terminal 6 -, 5 +

Transmitter feeding: max. 22 V
 max. 26 mA
 connection: terminal 5 -, 7 +

Type	Input I	loop-powered	Output I	Remark
MTS 1.20 SDC	(0) 4...20 mA	yes	(0) 4...20 mA	with Live-Zero transmission

Output:

I: load-independent DC current: 0(4)...20 mA permissible load max. 400 Ω
 connection: terminal 3 -, 4 +

Display:

LED status: green, active device ready for use

Environmental conditions:

Storage temperature: -40...+70 °C
 Operating temperature: 0...55 °C
 Isolation voltage:
 500 V eff. 2 sec. inp./ auxiliary power
 500 V eff. 2 sec. outp./ auxiliary power
 500 V eff. 2 sec. output/ input

Auxiliary power:

24 V DC: 20...30 V DC
 < 1,5 W

Influence of auxiliary power: < 0,1 %

Characteristics of transmission:

Transmission error: < 0,12 %
 Linearity error: < 0,1 %
 Temperature error: < 100 ppm/ K
 Load influence I:
 of final value
 < 0,4 %
 Setting time: < 50 msec.

Directive:

EMC Directive: 2014/30/EU*
 Low Voltage Directive: 2014/35/EU

*minimum deviations possible during HF-radiation influence

Mounting details:

Housing for top hat rail
 Type of protection: IP 20
 Mounting rail fixed according to EN 50022-35 x 6,2 mm
 Width: 6,2 mm
 Weight: 52 g
 Material: Polyamide PA
 Flammability class: V0 (UL 94)
 Approval: CE
 Connection: screw clamps
 0,14...2,5 mm²

For safety reasons we recommend to mount the housing for top hat rail with a distance > 1 mm to each other.

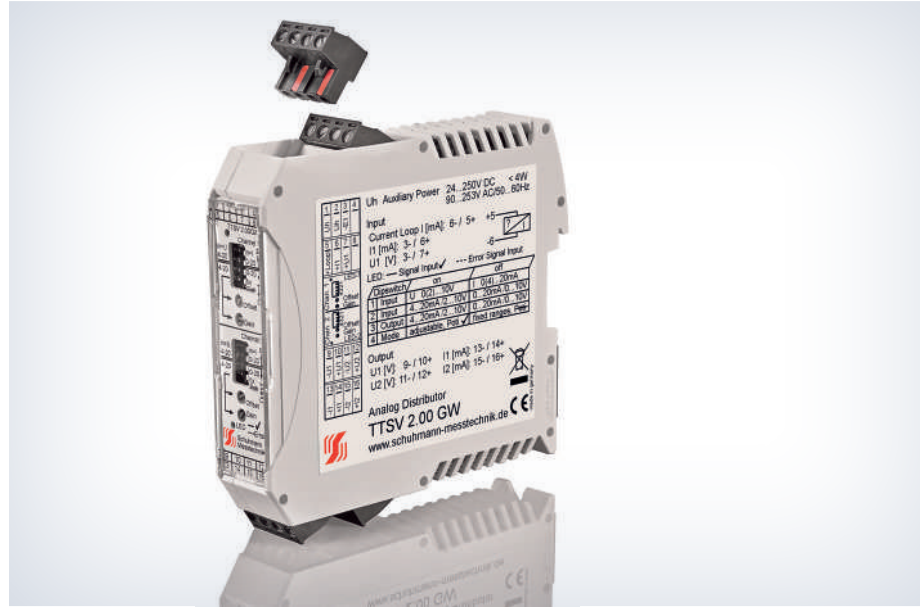
Ordering information:

Type: MTS 1.20 SDC 24 V DC transmitter feeding

Schuhmann GmbH & Co. KG
 Römerstraße 2
 D-74363 Güglingen
 Tel. + 49 71 35 50 56
 E-mail: info@schuhmann-messtechnik.de
 www.schuhmann-messtechnik.de

FEATURES

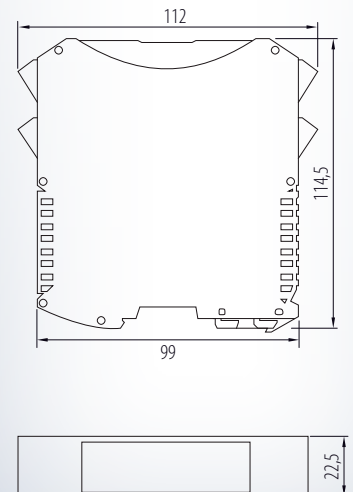
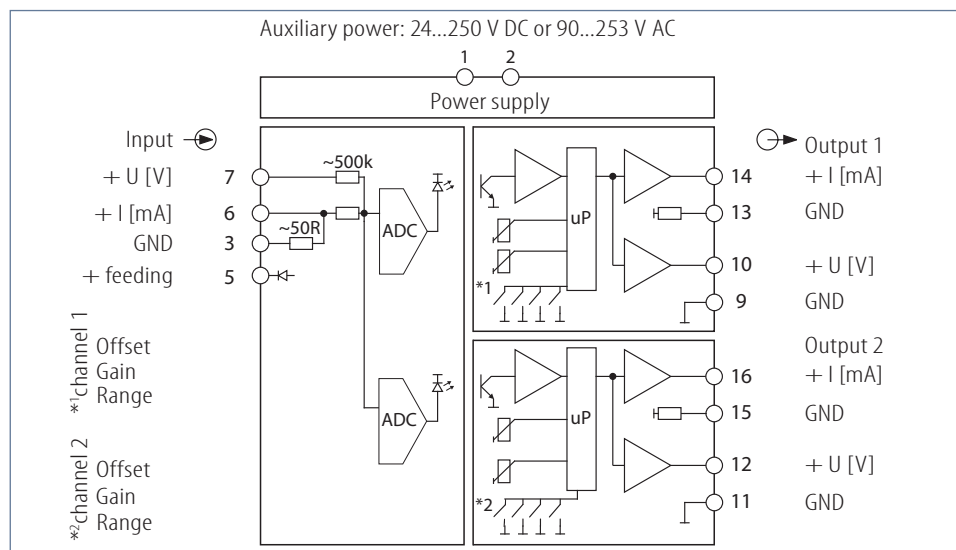
- **1 Input:**
Current 0(4)...20 mA or
Voltage 0(2)...10 V
- **Outputs simultaneous:**
2 x current 0(4)...20 mA and
2 x voltage 0(2)...10 V
- **Integrated transmitter feeding**
- **Function, switchable:**
- fixed calibration or
- adjustable by trimmer
- **Pluggable screw-clamps**
- **Galvanic 3-way isolation
per channel**



FUNCTION

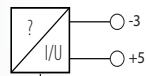
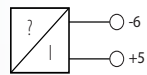
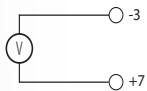
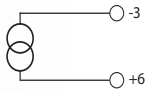
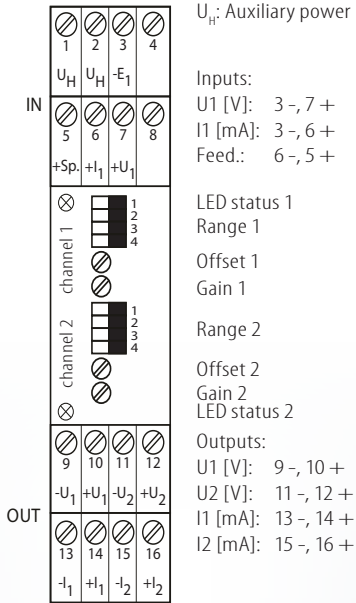
The TTSV 2.00 GW transfers the input signal to 2 galvanically isolated output channels. The unit has 4 DIP-switches on frontside. To select the transmission or the signal conversion ranges, use the DIP-switches 1 - 3. Fixed calibrated standard measurement ranges, for input and output, are stored in the device: 0(4)...20 mA / 0(2)...10 V = DIP-switch 4 OFF. Each output channel can alternatively be adjusted separately and the individual range can be set. The fine adjustment of the offset and the final value is carried out by trimmer = DIP-switch 4 ON.

Because of the integrated transmitter feeding, 2-/3-wire transmitters will be fed. The galvanic 3-way isolation is used to protect against faulty measurement or damage downstream equipment such as analog control units, control rooms, control systems, PLC units. The integrated protection circuit with suppressor diode protects the secondary circuit from voltage spikes and transient surges.



TTSV 2.00 GW

Connection diagram:



7: input U
6: input I

Input:

I: DC current:	0(4)...20 mA	input resistance approx. 50 Ω
connection:	terminal 3-, 6+	
U: DC voltage:	0(2)...10 V	input resistance approx. 500 kΩ
connection:	terminal 3-, 7+	
transmitter feeding:	approx. 20...24 V, max. 20 mA/ 22 V	
connection:	see connection diagram	

Output:

I: load-independent DC current:	0(4)...20 mA	permissible load max. 540 Ω
Output current limiting:	22,0 mA	
connection:	see connection diagram	
U: load-independent DC voltage:	0(2)...10 V	permissible load ≥ 5 kΩ simultan. permissible load ≥ 1 kΩ exclusive

Gain adjustment: trimmer ± 25 % (DIP-switch 4 = ON)
Offset adjustment: trimmer ± 25 % (DIP-switch 4 = ON)

connection: see connection diagram

Adjustment:

DIP-switch for range selection:

Switch	Function	ON	OFF
1	input	U [V]	I [mA]
2*	input	4...20 mA/ 2...10 V	0...20 mA/ 0...10 V
3*	output	4...20 mA/ 2...10 V	0...20 mA/ 0...10 V
4	calibration	adjustment with trimmer	fixed calibrated*

*unchangeable factory setting: DIP4=OFF (trimmers are inactive)

Display:

LED status	green, active	input signals are in standard range, device ready for use
	green, flashing	input signals are not in standard range

Environmental conditions:

Storage temperature:	-40...+70 °C
Operating temperature:	-40...55 °C
Isolation voltage:	
2,5 kV eff. 1 sec.	input/ output
4 kV eff. 1 sec.	auxiliary power
500 V eff. 1 sec.	channel/ channel

Auxiliary power:

Wide range:	24...250 V DC 90...253 V AC < 4 W
Influence of aux. power:	< 0,1 %

Characteristics of transmission:

Transmission error:	< 0,12 %
Linearity error:	< 0,1 %
Temperature error:	< 100 ppm/ K
Load influence I:	< 50 ppm of final value
Load influence U:	< 0,2 % at 1 kΩ load
Setting time:	< 30 msec.

Directive:

EMC Directive:	2014/30/EU*
Low Voltage Directive:	2014/35/EU
*minimum deviations possible during HF-radiation influence	

Mounting details:

Housing for top hat rail	
Type of protection:	IP 40 housing IP 20 clamps
Rail-mounting fixed according to	EN 50022-35 x 7,5 mm
Width:	22,5 mm
Weight:	160 g
Material:	Polyamide PA
Flammability class:	V0 (UL94)
Approval:	CE
Connection:	pluggable screw clamps 0,2...2,5 mm ²

For safety reasons we recommend to mount the housing for top hat rail with a distance of approx. 5 mm to each other. Please check DIP-switch before initial operation!

Ordering information:

Type: TTSV 2.00 GW wide range

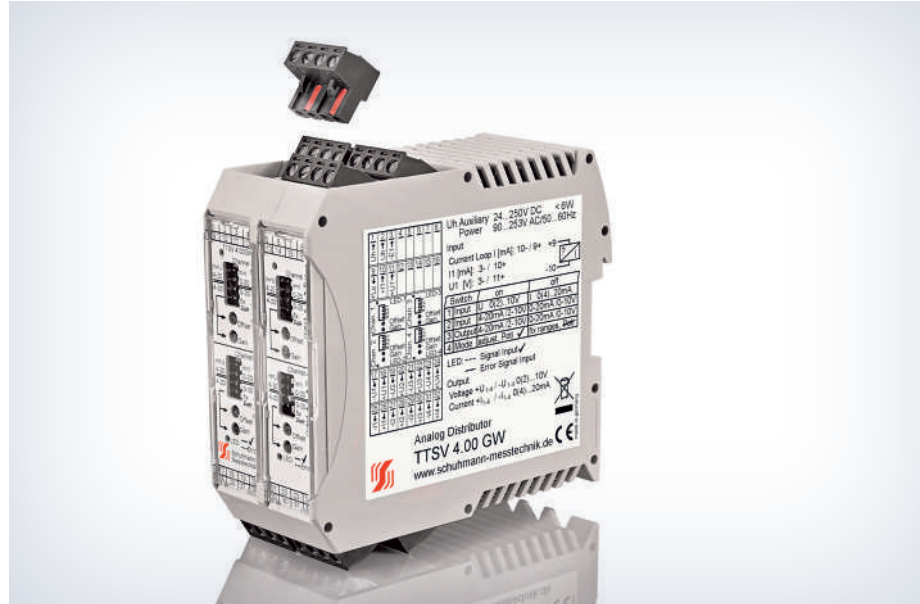
Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen
Tel. + 49 71 35 50 56
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de

Analog Distributor with Transmitter Feeding

TTSV 4.00 GW

FEATURES

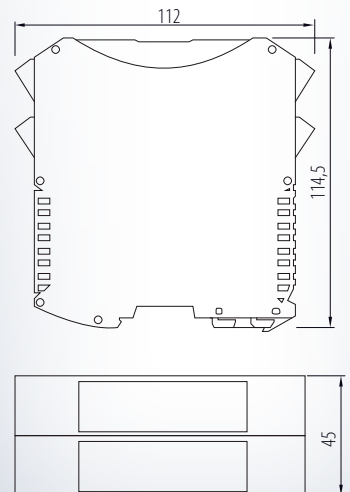
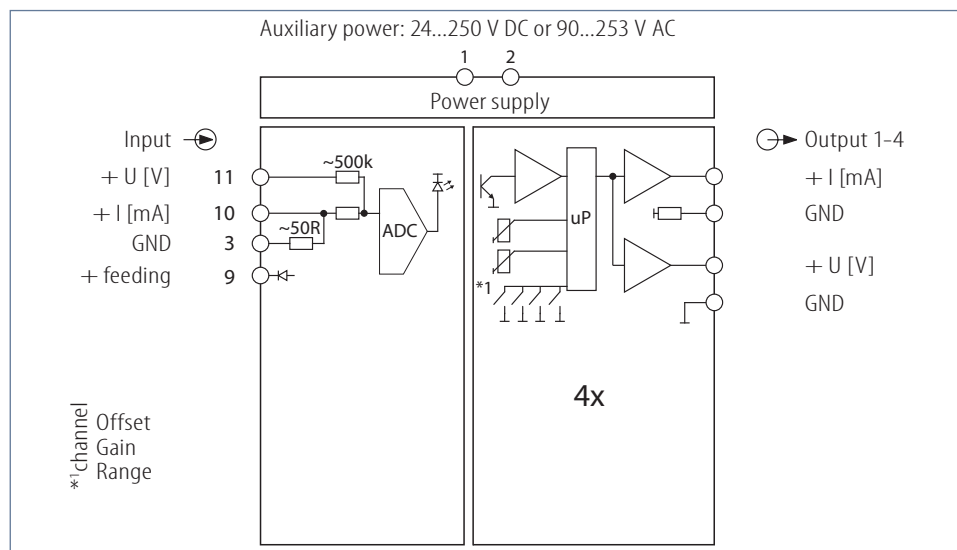
- **1 Input:**
Current 0(4)...20 mA or
Voltage 0(2)...10 V
- **Outputs simultaneous:**
4 x current 0(4)...20 mA and
4 x voltage 0(2)...10 V
- **Integrated transmitter feeding**
- **Function, switchable:**
- fixed calibration or
- adjustable by trimmer
- **Pluggable screw-clamps**
- **Galvanic 3-way isolation
per channel**



FUNCTION

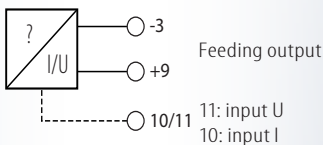
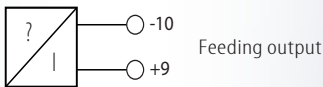
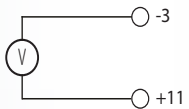
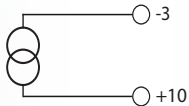
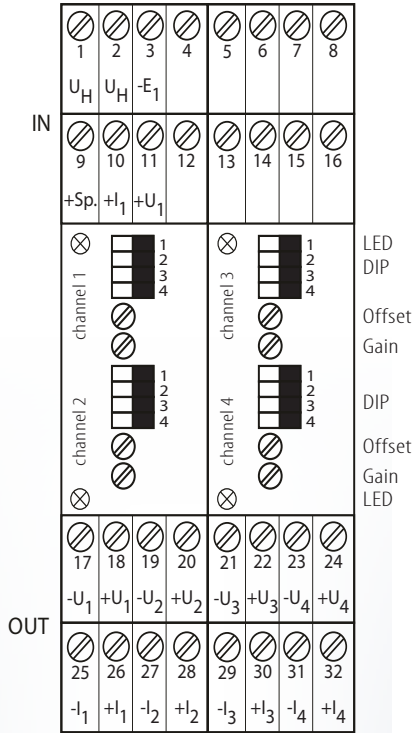
The TTSV 4.00 GW transfers the input signal to 4 galvanically isolated output channels. The unit has 4 DIP-switches on frontside. To select the transmission or the signal conversion ranges, use the DIP-switches 1 - 3. Fixed calibrated standard measurement ranges, for input and output, are stored in the device: 0(4)...20 mA/ 0(2)...10 V = DIP-switch 4 OFF. Each output channel can alternatively be adjusted separately and the individual range can be set. The fine adjustment of the offset and the final value is carried out by trimmer = DIP-switch 4 ON.

Because of the integrated transmitter feeding, 2-/3-wire transmitters will be fed. The galvanic 3-way isolation is used to protect against faulty measurement or damage downstream equipment such as analog control units, control rooms, control systems, PLC units. The integrated protection circuit with suppressor diode protects the secondary circuit from voltage spikes and transient surges.



TTSV 4.00 GW

Connection diagram:



Input:

I: DC current:	0(4)...20 mA	input resistance approx. 50 Ω
connection:	terminal 3-, 10+	
U: DC voltage:	0(2)...10 V	input resistance approx. 500 kΩ
connection:	terminal 3-, 11+	
Transmitterspeisung:	ca. 20...24 V, max. 20 mA/ 22 V	

Output:

I: load-independent DC current:	0(4)...20 mA	permissible load max. 540 Ω
Output current limiting:	22,0 mA	
connection:	see connection diagram	
U: load-independent DC voltage:	0(2)...10 V	permissible load ≥ 5 kΩ simultan. permissible load ≥ 1 kΩ exclusive

Gain adjustment: trimmer ± 25 % (DIP-switch 4 = ON)
Offset adjustment: trimmer ± 25 % (DIP-switch 4 = ON)

connection: see connection diagram

Adjustment:

DIP-switch for range selection:

Switch	Function	ON	OFF
1	input	U [V]	I [mA]
2*	input	4...20 mA/ 2...10 V	0...20 mA/ 0...10 V
3*	output	4...20 mA/ 2...10 V	0...20 mA/ 0...10 V
4	calibration	adjustment with trimmer	fixed calibrated*

*unchangeable factory setting: DIP4=OFF (trimmers are inactive)

Display:

LED status	green, active	input signals are in standard range, device ready for use
	green, flashing	input signals are not in standard range

Environmental conditions:

Storage temperature:	-40...+70 °C
Operating temperature:	-40...55 °C
Isolation voltage:	2,5 kV eff. 1 sec. input/ output 4 kV eff. 1 sec. auxiliary power 500 V eff. 1 sec. channel/ channel

Auxiliary power:

Wide range:	24...250 V DC 90...253 V AC < 6 W
Influence of aux. power:	< 0,1 %

Characteristics of transmission:

Transmission error:	< 0,12 %
Linearity error:	< 0,1 %
Temperature error:	< 100 ppm/ K
Load influence I:	< 50 ppm of final value
Load influence U:	< 0,2 % at 1 kΩ load
Setting time:	< 30 msec.

Directive:

EMC Directive:	2014/30/EU*
Low Voltage Directive:	2014/35/EU
*minimum deviations possible during HF-radiation influence	

Mounting details:

Housing for top hat rail	
Type of protection:	IP 40 housing IP 20 clamps
Rail-mounting fixed according to	EN 50022-35 x 7,5 mm
Width:	45 mm
Weight:	320 g
Material:	Polyamide PA
Flammability class:	V0 (UL94)
Approval:	CE
Connection:	pluggable screw clamps 0,2...2,5 mm ²

For safety reasons we recommend to mount the housing for top hat rail with a distance of approx. 5 mm to each other. Please check DIP-switch before initial operation!

Ordering information:

Type: TTSV 4.00 GW wide range

Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Göglingen
Tel. + 49 71 35 50 56
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de



Title	Specification	PC-Interface	Available designs	Auxiliary power	Page
LIMIT SWITCHES					
analog input signals, 0(4)...20 mA, 0(2)...10 V, 2 changer, integrated 4-digits display, energy and drop-out delays per relay, parameterizable					
DGS 1.00 GW	1-channel, current or voltage input, transmitter feeding, software parameterizable	X	G 22,5	24...250 V DC, 90...253 V AC	03-01
DGS 1.00 GW 148	1-channel, top value measurement f= 6 Hz (half sinus), current or voltage input, transmitter feeding, software parameterizable	X	G 22,5	24...250 V DC, 90...253 V AC	03-01-xx
DGW 1.00 TW	1-channel, current or voltage input, transmitter feeding		T	24...250 V DC, 90...253 V AC	03-13
DGS 2.00 GW	2-channel, current or voltage input, transmitter feeding, software parameterizable t	X	G 22,5	24...250 V DC, 90...253 V AC	03-17
DGW 2.00 TW	2-channel, current or voltage input, transmitter feeding		T	24...250 V DC, 90...253 V AC	03-29

LIMIT SWITCHES FOR TEMPERATURE SIGNALS					
temperature sensor, 2 changer, integrated 4-digits display, energy and drop-out delays per relay, function temperature monitor and temperature limiter, parameterizable					
DGS 2.01 GW	PT 100 input signal	X	G 22,5	24...250 V DC, 90...253 V AC	03-33
DGW 2.01 TW	PT 100 input signal		T	24...250 V DC, 90...253 V AC	03-45
GSP 2.01 SDC	input PT 100, output: 2 closer max. 100 mA/ 30 V	X	G 6,2	20...30 V DC	03-49
GSP 2.81 SDC	input KTY signal, output: 2 closer max. 100 mA/ 30 V	X	G 6,2	20...30 V DC	03-51

TEMPERATURE MEASURING TRANSDUCER					
temperature sensor with monitoring function, analog output 0(4)...20 mA/ 0(2)...10 V, input PT 100, PT 1000, NI 1000, KTY, thermocouples etc.					
MU 1.00 GW	input: PT 100, PT 500, PT 1000, NI 1000, different KTY, poti up to 5 kOhms, thermocouples(2) J, K, T, R, S, B, E, L, etc. connection: 2-, 3- and 4-wire, alarm function, detection of sensor break and short-circuit, temperature decrease, trend function output: 0(4)...20 mA or 0(2)...10 V, 2 closer as limit switch, parameterizable	X	G 22,5	24...250 V DC, 90...253 V AC	08-01

More devices see back page

* Designs: G = housing,
T = housing for door installation,
E = eurocard

3 Year
Warranty



Title	Specification	PC-Interface	Available designs	Auxiliary power	Page
UNIVERSAL LIMIT SWITCH 2 x 8-digit LCD-display, scalable analog output, transmitter feeding, sensor inputs I, U, PT 100, 0...100 V, 0...50 mV, thermocouples, etc., parameterizable					
DGS 4.00 GW	input 1: PT 100, PT1000, NI, KTY, thermocouples, resistance, input 2: 0(4)...20 mA/ 0(2)...10 V output: 4 relays = 4 changer, I/ U	X	G 45	24...250 V DC, 90...253 V AC	03-53
DGS 6.00 GW	input 1: PT 100, PT1000, NI, KTY, thermocouples, resistance, input 2: 0(4)...20 mA/ 0(2)...10 V output: 6 relays = 6 changer, I/ U	X	G 45	24...250 V DC, 90...253 V AC	03-53

ELECTRODE RELAY input 2x electrode feeding max. 1,5 mA/ 10 V AC, conductivity adjustable, parameterizable					
ER 2.00 MW	input: 4 electrodes, output: 2 changer	X	G 12,5	24...250 V DC, 90...253 V AC	03-83

LIMIT SWITCHES bargraph status display, input: 0(4)...20 mA, 0(2)...10 V					
GS 2.00 GW	front side push-buttons, output 2 changer		G 22,5	24...250 V DC, 90...253 V AC	03-85
GS 2.10 GW	front side push-buttons, output 2 changer, with transmitter feeding		G 22,5	24...250 V DC, 90...253 V AC	03-87

LIMIT SWITCHES indication of contact state by LED, Min-Max-Function/ tendency/ alarm/ window, parameterizable					
GSP 2.00 SDC	input 0(4)...20 mA and 0(2)...10 V, output: 2 closer max. 100 mA / 30V	X	G 6,2	20...30 V DC	03-89
GSP 3.00 SDC	input 0(4)...20 mA and 0(2)...10 V, output: 3 closer with common root to 24 V	X	G 6,2	20...30 V DC	03-91
GSP 4.00 SDC	input 0(4)...20 mA and 0(2)...10 V, output: 4 closer with common root to 24 V	X	G 6,2	20...30 V DC	03-91

More devices see next page

* Designs: G = housing,
T = housing for door installation,
E = eurocard

3 Year
Warranty



Title	Specification	PC-Interface	Available designs	Auxiliary power	Page
FREQUENCY INPUT LIMIT SWITCHES namur or square wave signal, parameterizable					
GSF 2.00 SDC	input: frequency 0...10 kHz, namur/ contact, output: 2 closer max. 100 mA/ 30 V	X	G 6,2	20...30 V DC	03-93
GSF 2.00 SDC 021	input: frequency 0...10 kHz, square wave signal 24 V DC, output: 2 closer max. 100 mA/ 30 V	X	G 6,2	20...30 V DC	03-95
LIVE-ZERO MONITORING DEVICE control of current loops 4...20 mA, self-monitored closed current circuit					
GSP 2.04 SDC	output: 2 closer max. 100 mA/ 30 V, parameterizable	X	G 6,2	20...30 V DC	03-97
ST 1.00 SDC	standard signals I-U/ I-U, calibrated switching/ Live-Zero input monitoring; transistor output		G 6,2	20...30 V DC	01-01

* Designs: G = housing,
T = housing for door installation,
E = eurocard

3 Year
Warranty

3 Year
Warranty



Parameterizable, 1-channel, digital limit switch

DGS 1.00 GW

FEATURES

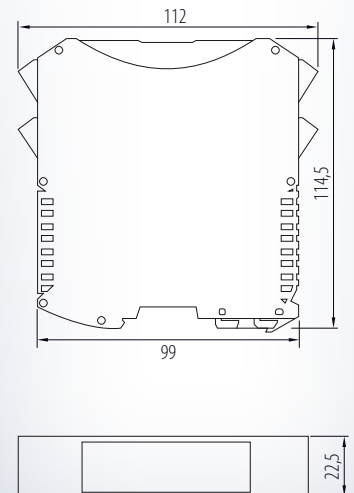
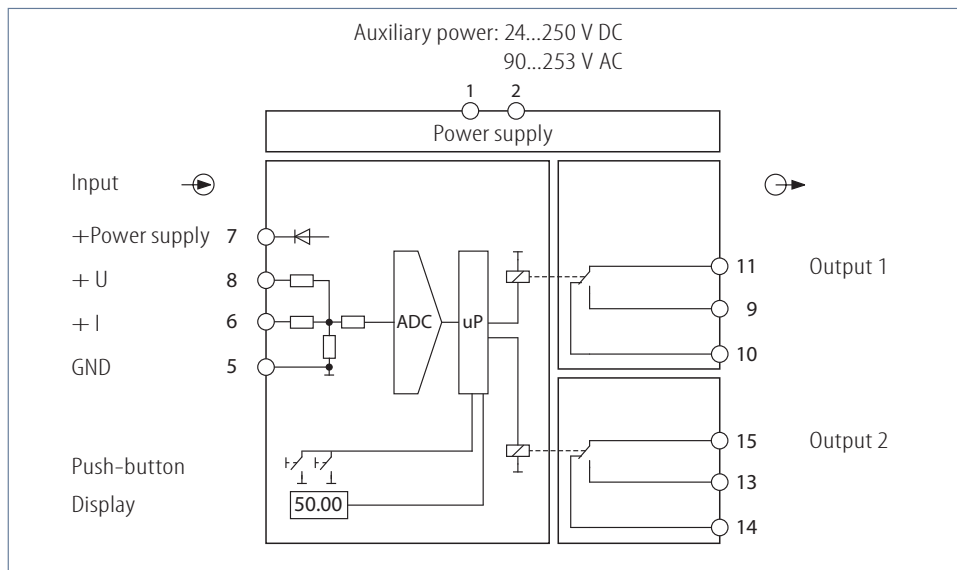
- **Input:**
Current 0(4)...20mA or
Voltage 0(2)...10V
- **Output:**
2 relays with change over contacts
- **2-wire transmitter feeding**
- **Parameterization and setting via
push-button or integrated interface**
- **Actual value indication via display**
- **3-Way galvanic insulation of 4 kV**



FUNCTIONALITY

The digital DGS 1.00 GW is used for limit value monitoring of standardised signals. The parameterization is done by the two front side push-buttons and the 4-digit display or via the integrated interface with the USB2 interface/ USB-Simulator in connection with the KALIB-Software. The parameter files can be stored and easily transferred to other devices. The 4-digit actual value display is freely scalable. In relation to the input, the switch-on and switch-off points (limit values) of the two independent relays

can be freely defined. This automatically results in a hysteresis. Hysteresis, pick-up and drop-out delays and the behaviour of the relays in case of sensor break and alarm limits of the relays can be set separately. The relay states are indicated by LEDs on the front. The DGS 1.00 GW has an additional integrated 2-wire transmitter feeding.





PRESENTATION NOTES

Symbolism of buttons

Button color	Button press short	Button press long (>2 s)
black		
red		

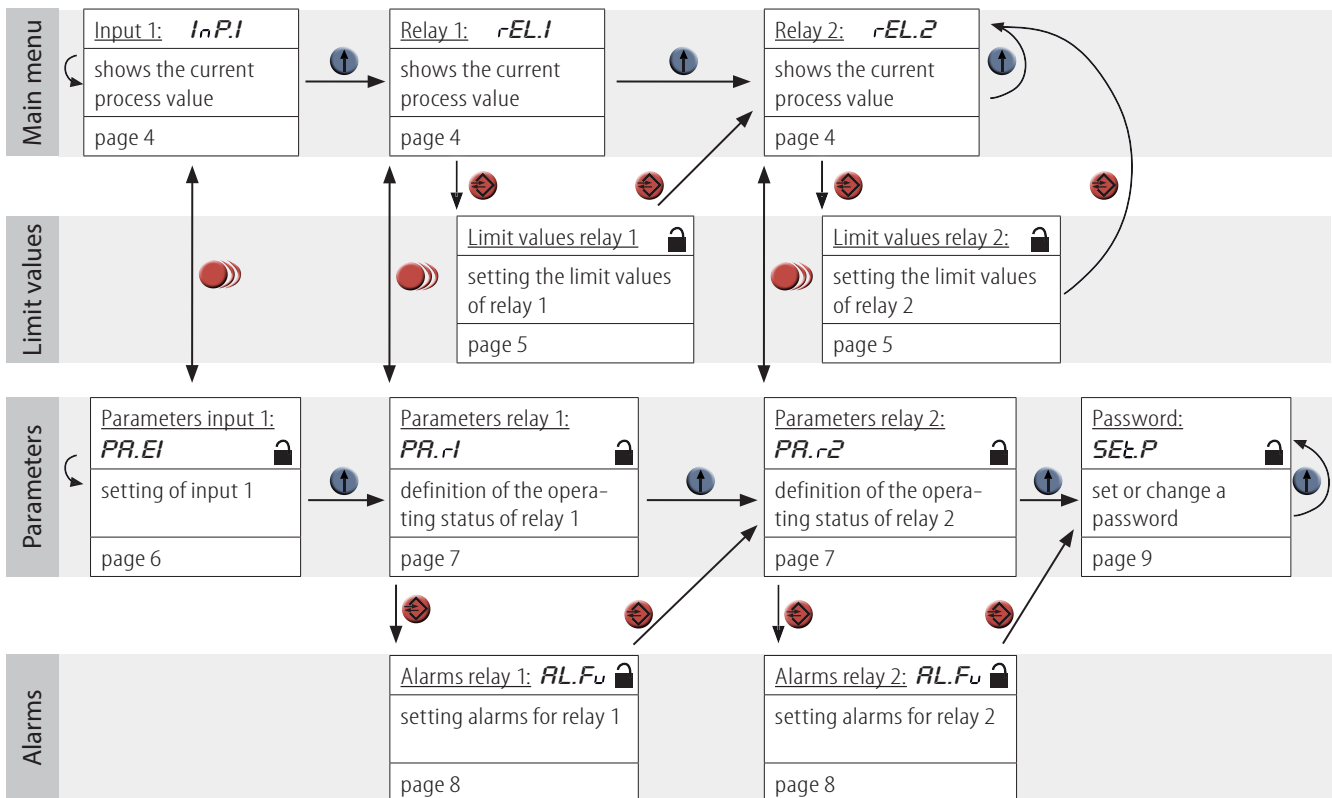
Symbolism of arrows

- logical transition in the program flow
- temporal transition in the program flow
- logical change in program flow
- temporal change in the program sequence

Symbolism of the display

- number flashes on the display
- decimal point representation
- space

MENU OVERVIEW



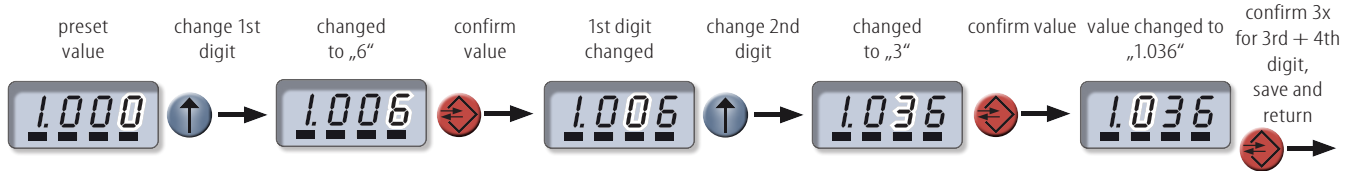
Program sections with can be protected from changing by setting a password.

Legend: select continue switch level home Automatic display change: display channel 1 display channel 2

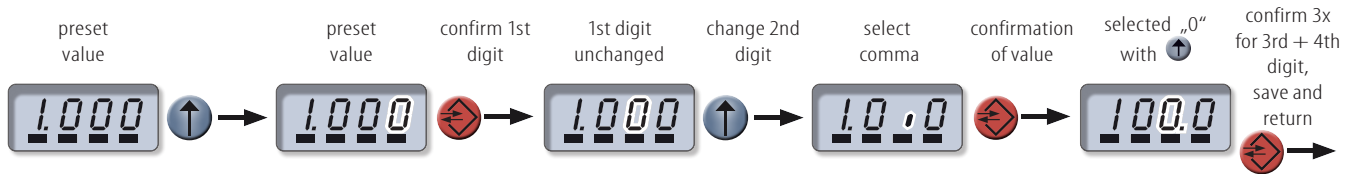


CHANGE VALUE (to change, select in the respective menu item with):

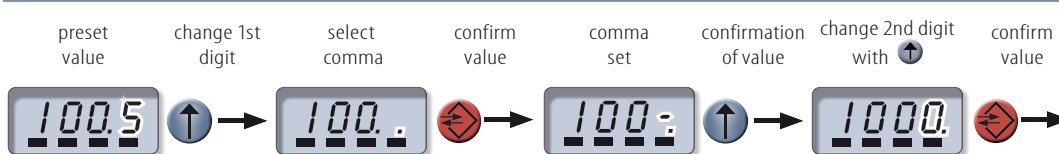
Change value:



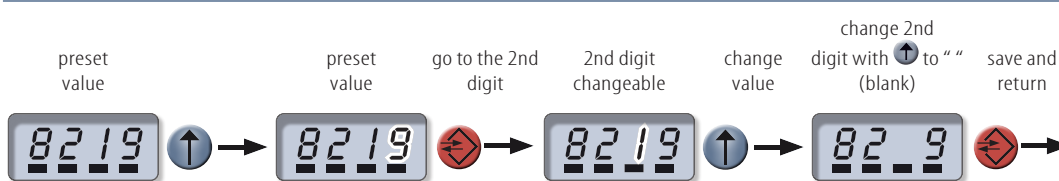
Define decimal point position:










Remove decimal point:



Remove digits:



Legend:

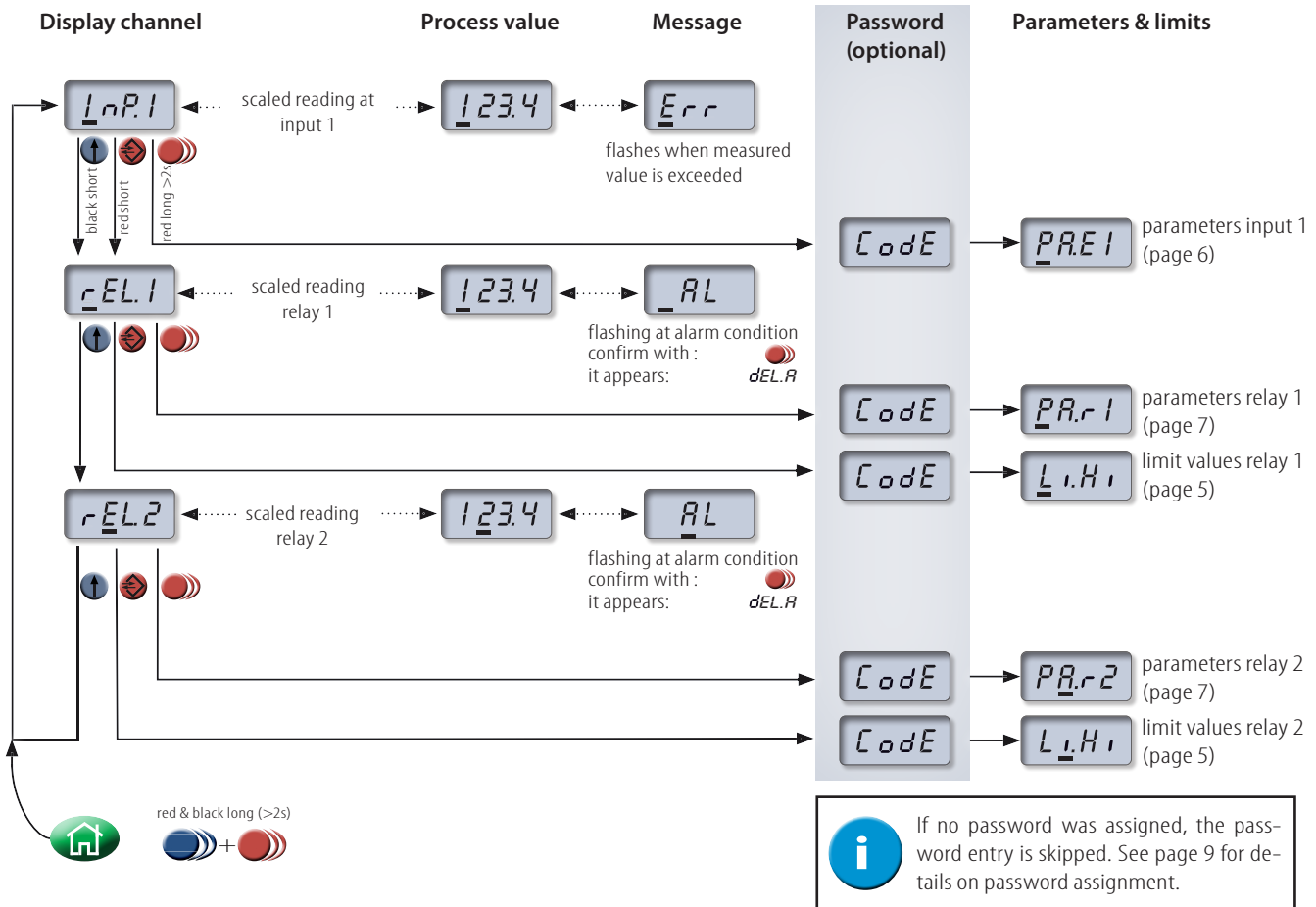
 select
  continue
  switch level
  home
  Automatic display change:
  display channel 1
  display channel 2





DISPLAY OF PROCESS VALUE

Description of the main menu



NAVIGATION TO THE STARTING POINT

Home function

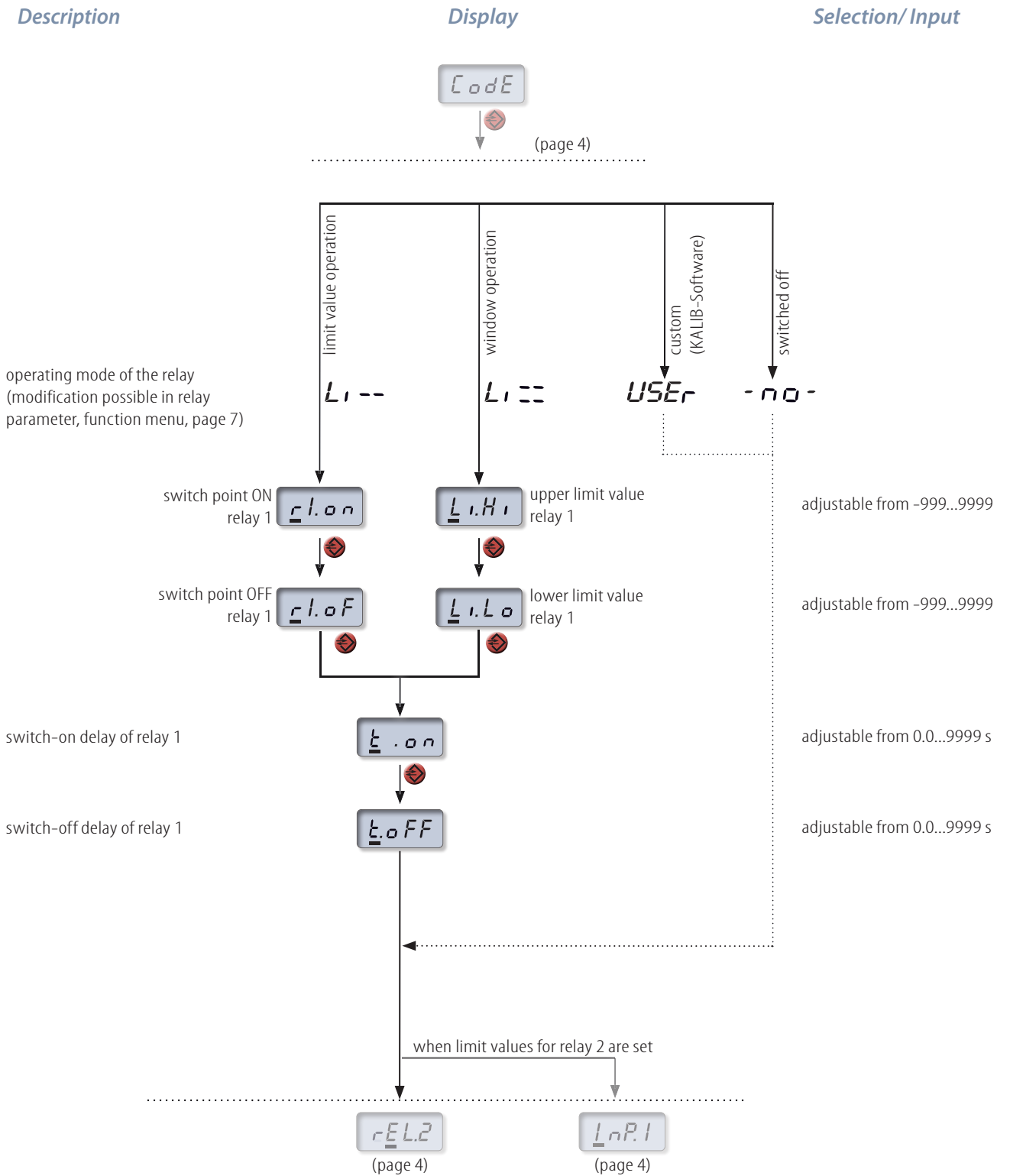


By using the home function it is possible to jump directly to the start, independent of the current menu window. To do this, press the red and black buttons simultaneously for two seconds. A short **HOME** appears on the screen. Previous entries are thereby discarded.

Legend: select (black short), continue (red short), switch level (red long), home (green house), Automatic display change: display channel 1 (black bars), display channel 2 (red bars)



LIMIT VALUES RELAY 1 (EQUIVALENT FOR RELAY 2)

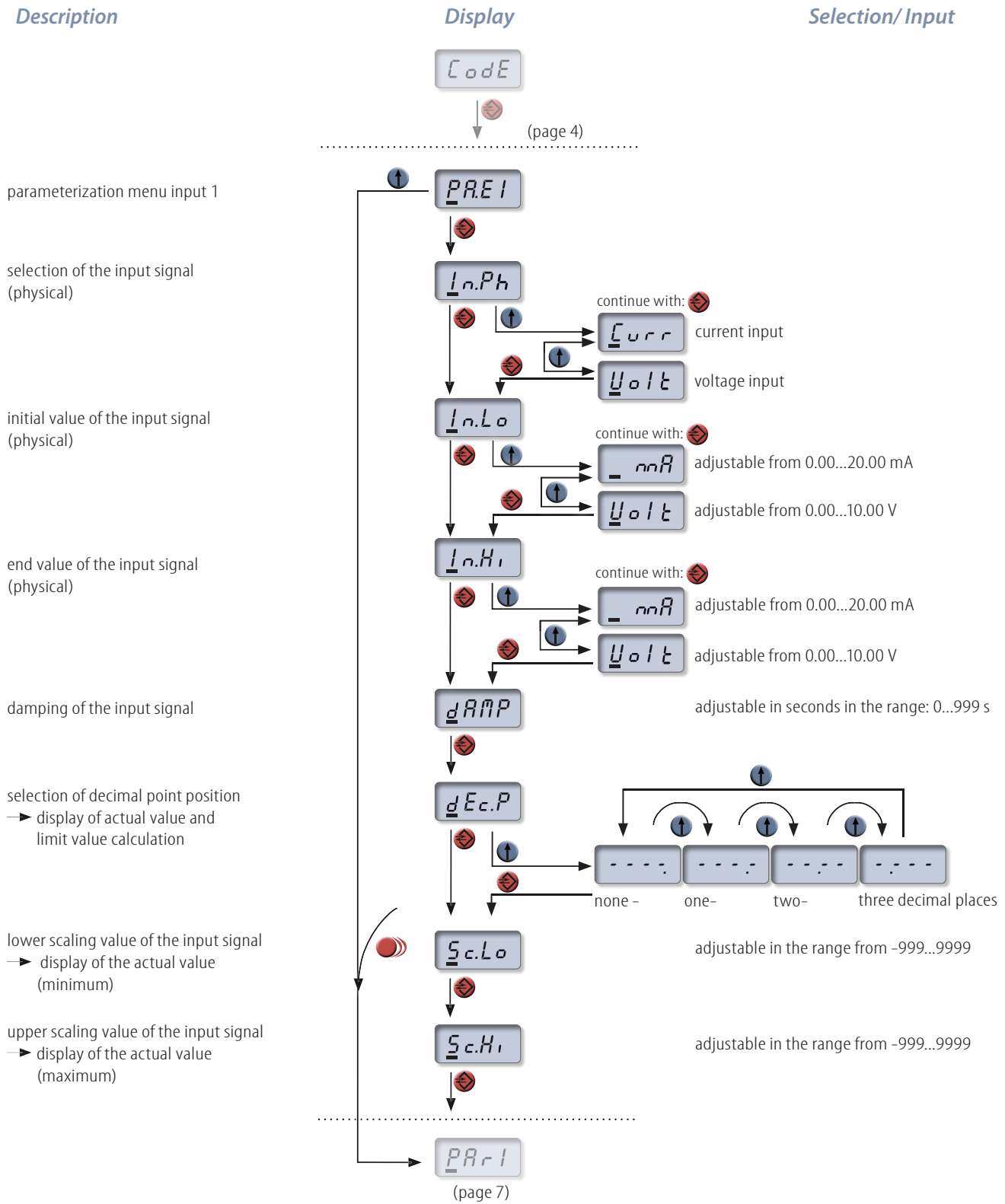


Legend:

- select
- continue
- switch level
- home
- Automatic display change:
- display channel 1
- display channel 2



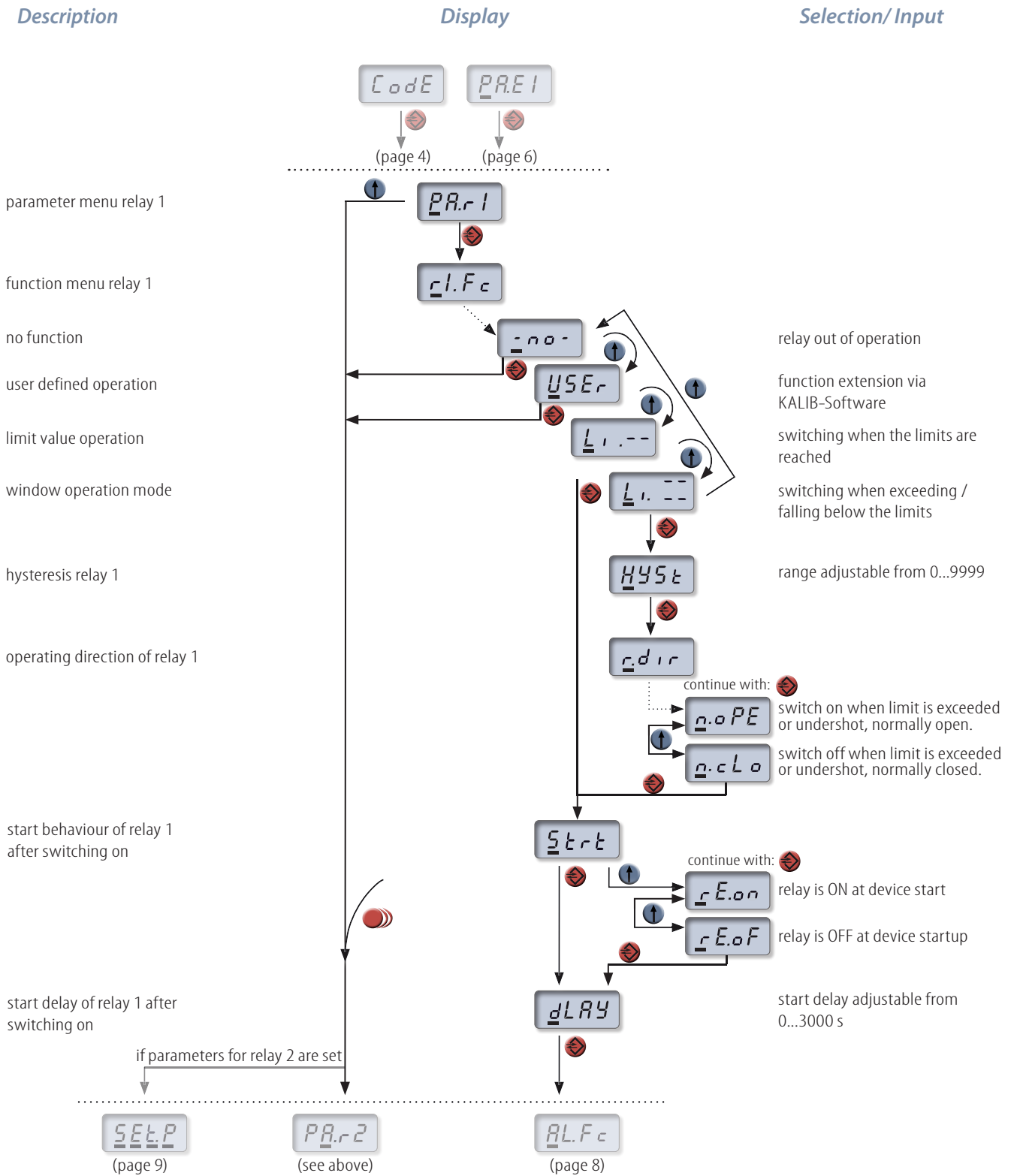
DEFINITION OF THE PARAMETERS FOR INPUT 1



Legend: select (up arrow), continue (right arrow), switch level (red circle), home (blue circle), Automatic display change: display channel 1 (two bars), display channel 2 (three bars)



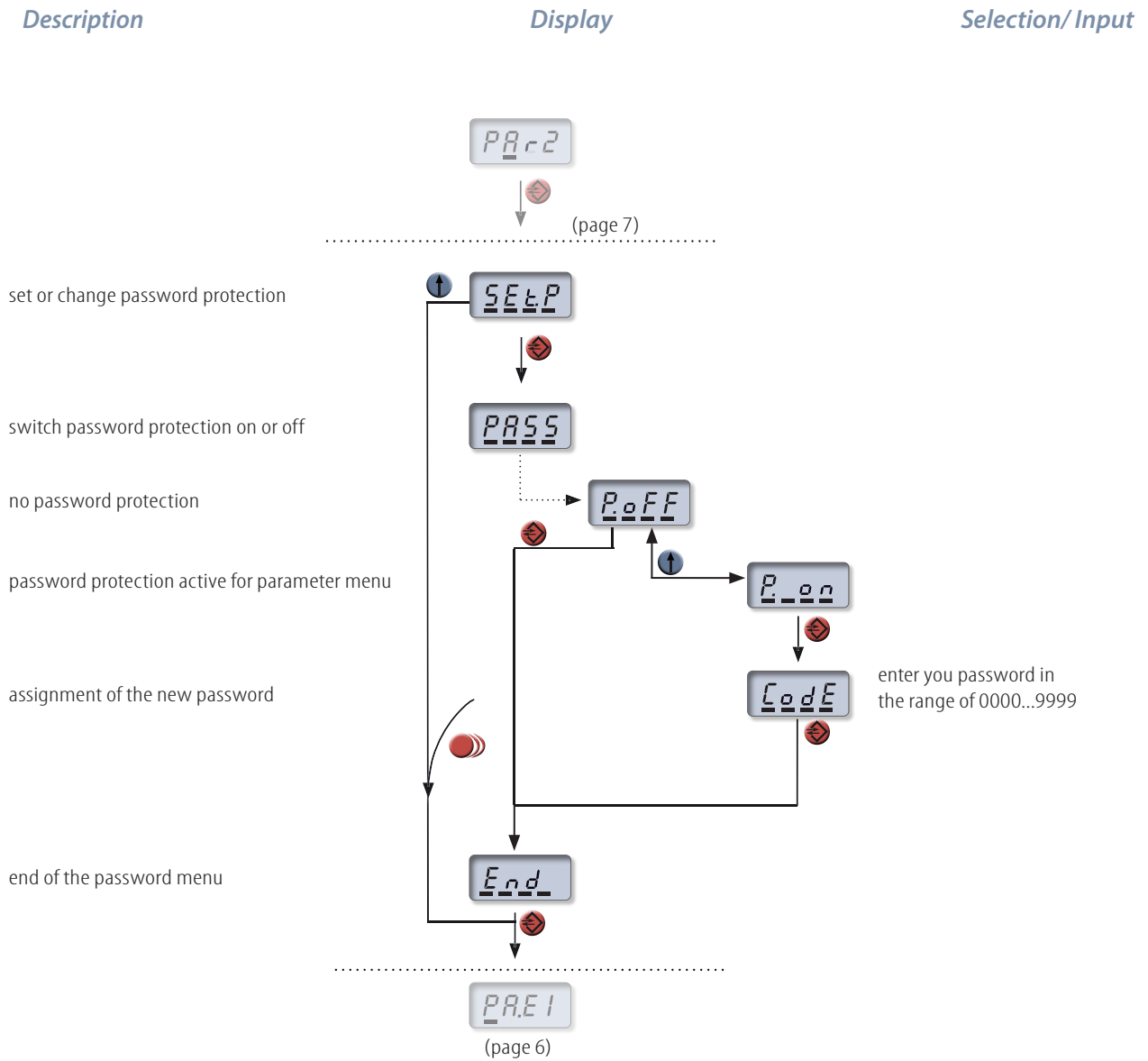
DEFINITION OF PARAMETERS FOR RELAY 1 (EQUIVALENT FOR RELAY 2)



Legend: select continue switch level home Automatic display change: display channel 1 display channel 2



PASSWORD SETTINGS



Legend:

- select
- continue
- switch level
- home
-
- Automatic display change:
- display channel 1
- display channel 2



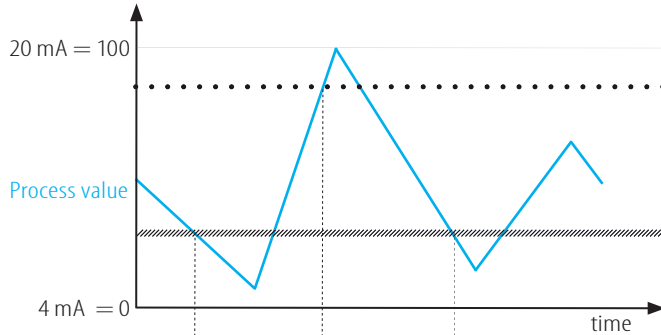
EXAMPLES

LIMIT VALUE OPERATION MODE

A current input of 4...20 mA should be scaled to a range of 0...100. The upper limit value is 80 and the lower limit value is 30. The effects on relay 1 are shown with an example process value.

DGS settings:

<i>In.Ph</i>	<i>curr</i>
<i>In.Hi</i>	20 mA
<i>In.Lo</i>	4 mA
<i>dEc.P</i>	----
<i>Sc.Lo</i>	0.000
<i>Sc.Hi</i>	100.0
<i>rl.Fc</i>	<i>LI.--</i>



Upper limit value is greater than lower limit value



Legend:

••• *rl.on* = 80.00
 ///// *rl.off* = 30.00

Upper limit value is below lower limit value



Legend:

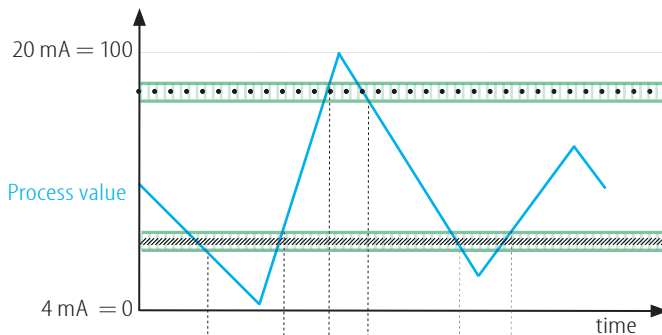
••• *rl.off* = 80.00
 ///// *rl.on* = 30.00

WINDOW OPERATION MODE

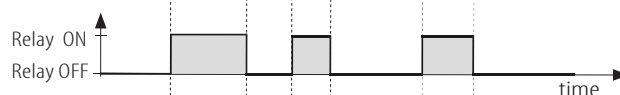
A current input of 4...20 mA should be scaled to a range of 0...100. In window mode the upper limit value is 80 and the lower limit value is 30. The hysteresis is set to a value of 10 here. The effects on relay 1 are shown with an example process value.

DGS settings:

<i>In.Ph</i>	<i>curr</i>
<i>In.Hi</i>	20 mA
<i>In.Lo</i>	4 mA
<i>dEc.P</i>	----
<i>Sc.Lo</i>	0.000
<i>Sc.Hi</i>	100.0
<i>rl.Fc</i>	<i>LI.==</i>
<i>HYS</i>	10.00



Relay switch on when limit is exceeded or undershot



Legend:

••• *Li.Hi* = 80.00 ///// *Li.Lo* = 30.00
 r.dir = noPE ■■■ *HYS* = 10.00

Relay switch off when limit is exceeded or undershot



Legend:

••• *Li.Hi* = 80.00 ///// *Li.Lo* = 30.00
 r.dir = noLo ■■■ *HYS* = 10.00



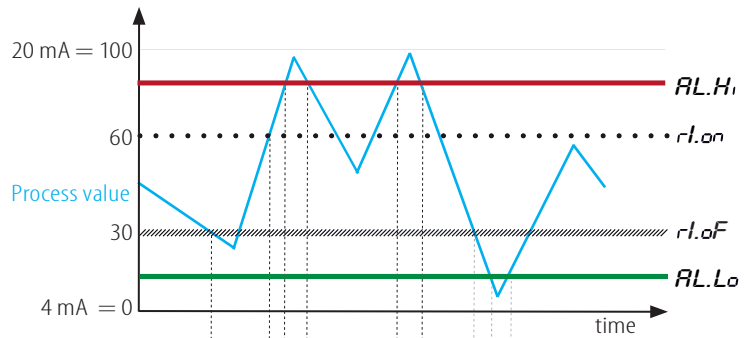
EXAMPLES

ALARMS

A current input of 4...20 mA should be scaled to a range of 0...100. The device is operated in limit value mode with the limits 60 and 30. Additionally, alarms are now used. For example, the upper alarm limit is defined at 80 and the lower alarm limit at 15. In the following examples the possible alarm settings are explained.

DGS settings:

<i>I_{n.Ph}</i>	<i>curr</i>
<i>I_{n.Hi}</i>	20 mA
<i>I_{n.Lo}</i>	4 mA
<i>dEc.P</i>	---
<i>Sc.Lo</i>	0.000
<i>Sc.Hi</i>	100.0
<i>rl.Fc</i>	LI.--
<i>rl.on</i>	60.00
<i>rl.oF</i>	30.00
<i>RL.Hi</i>	80.00
<i>RL.Lo</i>	15.00



Exceeding or dropping below the alarm limits switches relay ON

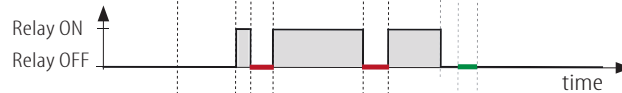
Alarm function: *on.R*



i States caused by alarms are marked in the respective color.

Exceeding or dropping below the alarm limits switches relay OFF

Alarm function: *oF.R*



Single exceeding or dropping below the alarm limits switches relay permanently ON

Alarm function: *on.RH*



Single exceeding or dropping below the alarm limits switches relay permanently OFF

Alarm function: *oF.RH*

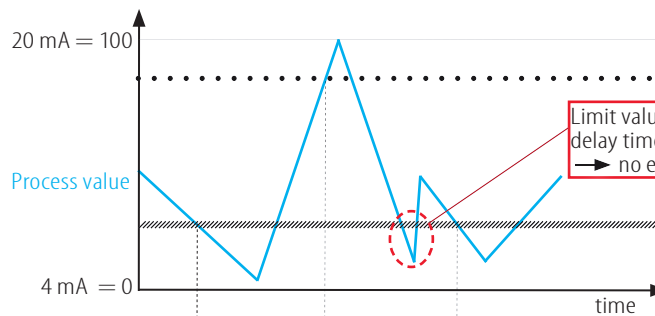


TIME DELAY

A current input of 4...20 mA should be scaled to a range of 0...100. An upper limit value of 80 and a lower limit value of 30 are defined. Additionally a time delay of 2 seconds for switching on and 4 seconds for switching off is set. The effects on relay 1 shall be shown by an example process value.

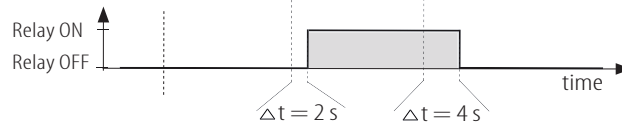
DGS settings:

<i>I_{n.Ph}</i>	<i>curr</i>
<i>I_{n.Hi}</i>	20 mA
<i>I_{n.Lo}</i>	4 mA
<i>dEc.P</i>	---
<i>Sc.Lo</i>	0.000
<i>Sc.Hi</i>	100.0
<i>rl.Fc</i>	LI.--
<i>t.on</i>	2 s
<i>t.oFF</i>	4 s



Limit value undercut shorter than delay time when switching off → no effect

Time delay when switching ON and OFF

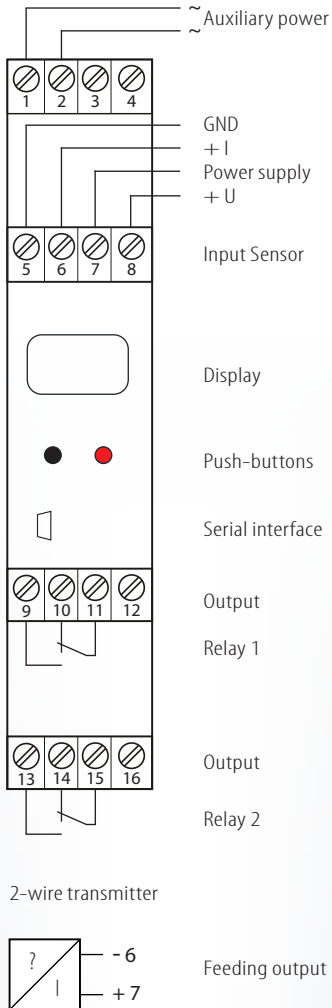


Legend:

••• *rl.on* = 80.00
 // // *rl.oF* = 30.00

DGS 1.00 GW

Connection diagram:



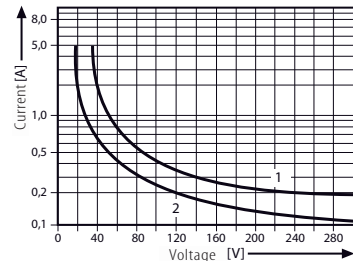
Input:

I: impressed direct current:	0(4)...20 mA	input resistance approx. 10 Ω
connection:	terminal 5 -, 6 +	
U: impressed DC voltage:	0(2)...10 V	input resistance approx. 1 MΩ
connection:	terminal 5 -, 8 +	
Transmitter feeding:	ca. 20 V at 20 mA	
connection:	terminal 6 -, 7 +	

Output:

2 relay outputs:	change-over contact	DC current limit range
max. switching current:	5 A	
max. switching voltage:	250 V AC	
mechanical life:	30 x 10 ⁶ cycles	
contact lifetime:	10 ⁵ cycles	
wiring:	see wiring diagram	

- 1 - resistive load
- 2 - inductive load



Adjustment::

The functionality of the device is adjustable via two front side push buttons and the display or via the KALIB-Software. For this you need a PC and the **USB2 interface/USB-Simulator** in connection with the **KALIB-Software**.

Display:

4-digit LC-display with four bars to indicate the respective relay or input channel that is currently being processed or displayed.



relay 1 ↖ ↗ relay 2
input 1

Environmental conditions:

Storage temperature:	-40...+70 °C
Operating temperature:	0...55 °C
Insulation voltage:	4 kV eff. 1 sec.
Input/ output/ auxiliary voltage:	3 kV eff. 1 sec.

Auxiliary power:

Wide range:	24...250 V DC
	90...253 V AC
	< 3 W

Characteristics of transmission:

Linearity error:	< 0,2 % of final value
Temperature error:	< 100 ppm/ K

Directive:

EMV directive:	2014/30/EU*
Low voltage directive:	2014/35/EU

*slight deviation is possible during the interference of the HF radiation

Mounting details

Housing for top hat rail:

Protection class:	IP 30 housing
	IP 20 plug-in terminals
Mounting rail fastening according to:	EN 50022-35 x 7,5 mm
Width:	22,5 mm
Weight:	160 g
Material:	Polyamide PA
Flammability class:	V0 (UL94)
Approval:	CE
Connection type:	pluggable
	screw terminals
	0,2...2,5 mm ²

For safety reasons, it is recommended to mount the housings for top-hat rail with a distance of approx. 5 mm between each other

Order information:

Type: DGS 1.00 GW wide range
Accessories: USB2 / USB-Simulator with KALIB-Software

Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen
Tel. + 49 71 35 50 56
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de



Parameterizable, 1-channel, digital limit switch

DGS 1.00 GW 148

FEATURES

- **Input:**
Top value measurement: $f=6$ Hz (half sinus)
Input: 0(4)...20 mA
- **Output:**
2 relays with change over contacts
- 2-wire transmitter feeding
- Parameterization and setting via push-button or integrated interface
- Actual value indication via display
- 3-Way galvanic insulation of 4 kV

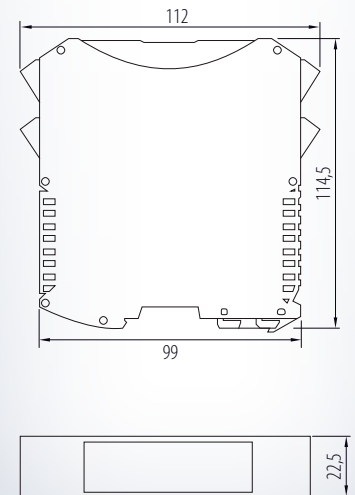
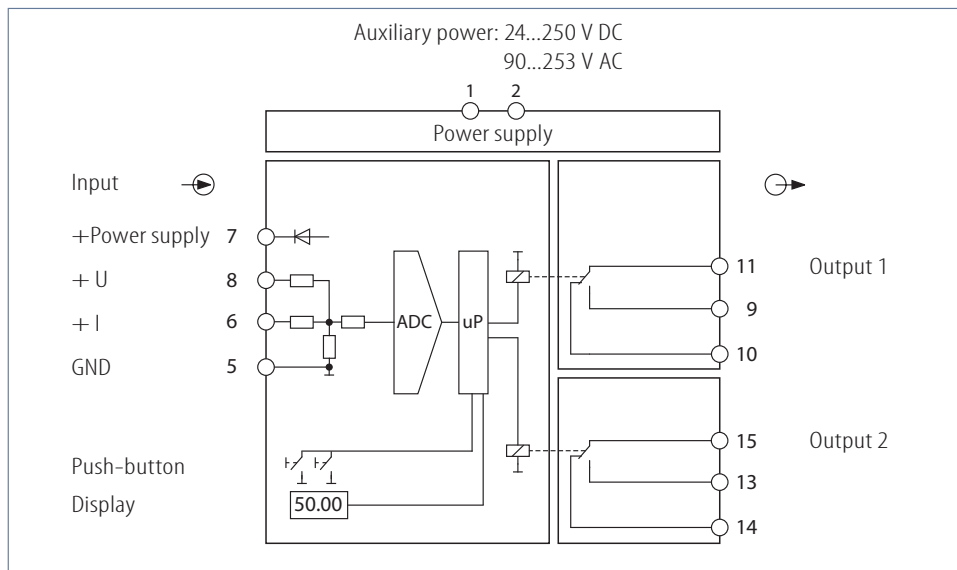


Abbildung ähnlich

FUNCTIONALITY

The digital DGS 1.00 GW 148 is used for the top value measurement: $f=6$ Hz (half sinus). The parameterization is done by the two front side push-buttons and the 4-digit display or via the integrated interface with the USB2 interface/ USB-Simulator in connection with the KALIB-Software. The parameter files can be stored and easily transferred to other devices. The 4-digit actual value display is freely scalable. In relation to the input, the switch-on and switch-off points (limit value)

es) of the two independent relays can be freely defined. This automatically results in a hysteresis. Hysteresis, pick-up and drop-out delays and the behaviour of the relays in case of sensor break and alarm limits of the relays can be set separately. The relay states are indicated by LEDs on the front. The DGS 1.00 GW 148 has an additional integrated 2-wire transmitter feeding.





PRESENTATION NOTES

Symbolism of buttons

Button color	Button press short	Button press long (>2 s)
black		
red		

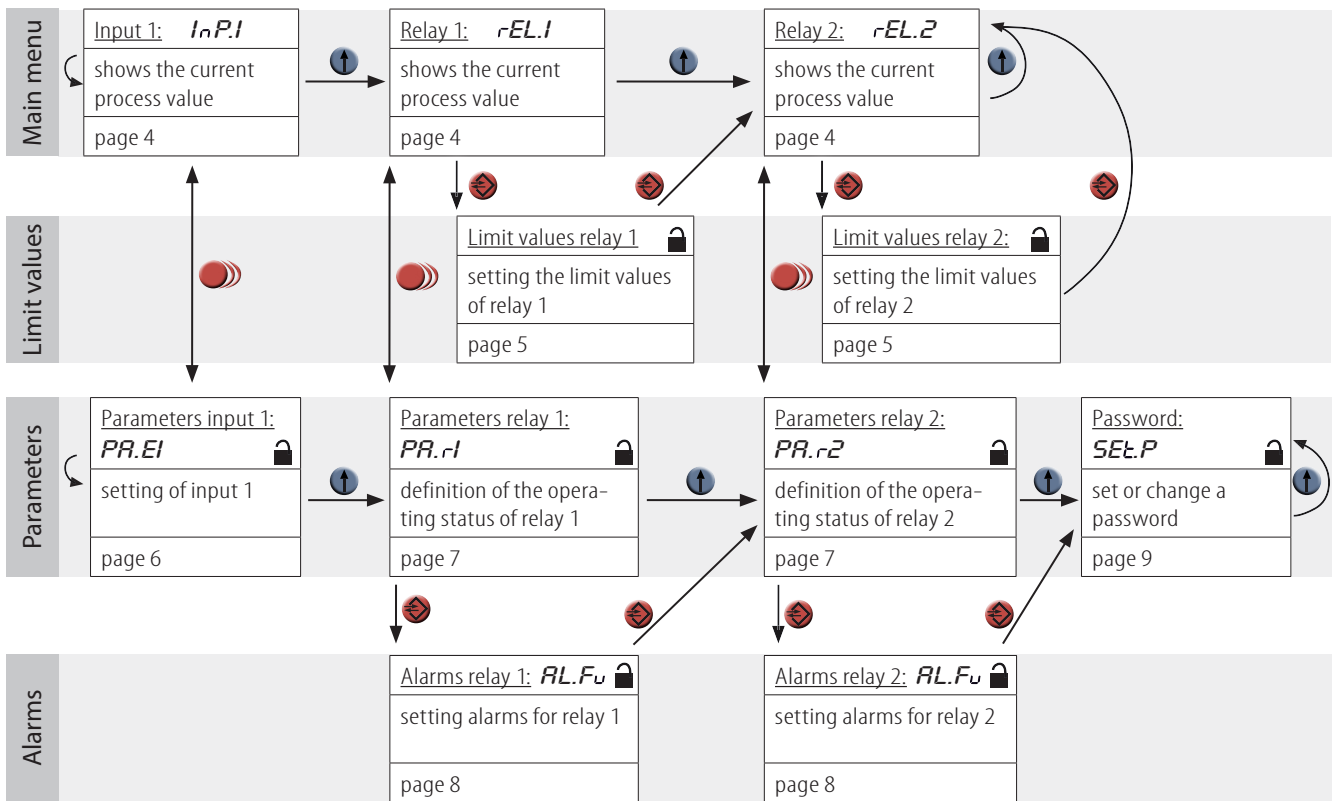
Symbolism of arrows

- logical transition in the program flow
- temporal transition in the program flow
- logical change in program flow
- temporal change in the program sequence

Symbolism of the display

- number flashes on the display
- decimal point representation
- space

MENU OVERVIEW



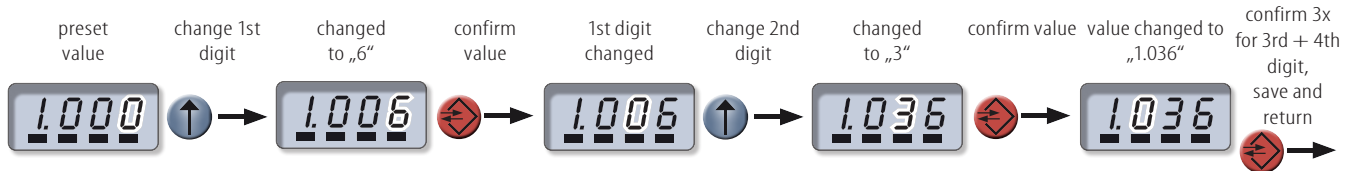
Program sections with can be protected from changing by setting a password.

Legend: select continue switch level home Automatic display change: display channel 1 display channel 2

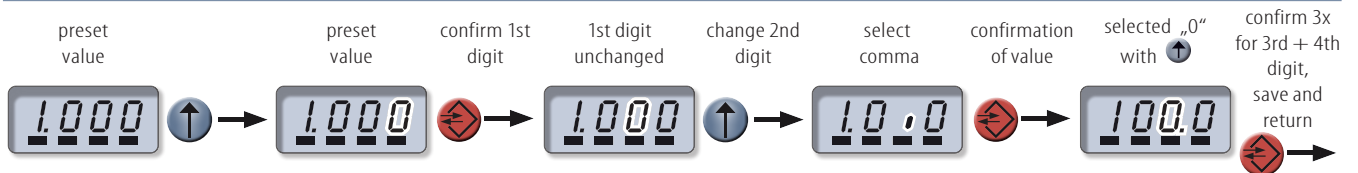


CHANGE VALUE (to change, select in the respective menu item with):

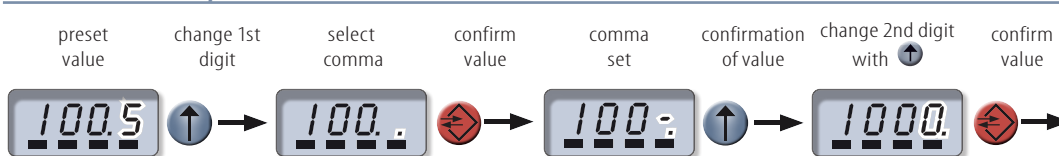
Change value:



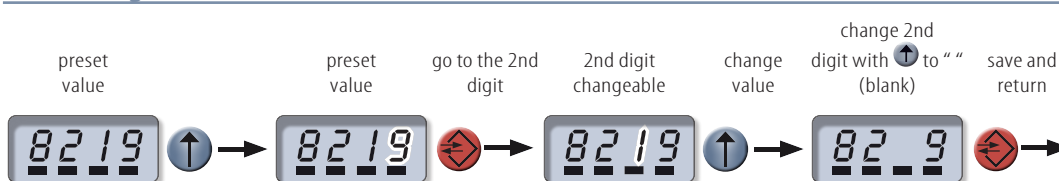
Define decimal point position:










Remove decimal point:



Remove digits:



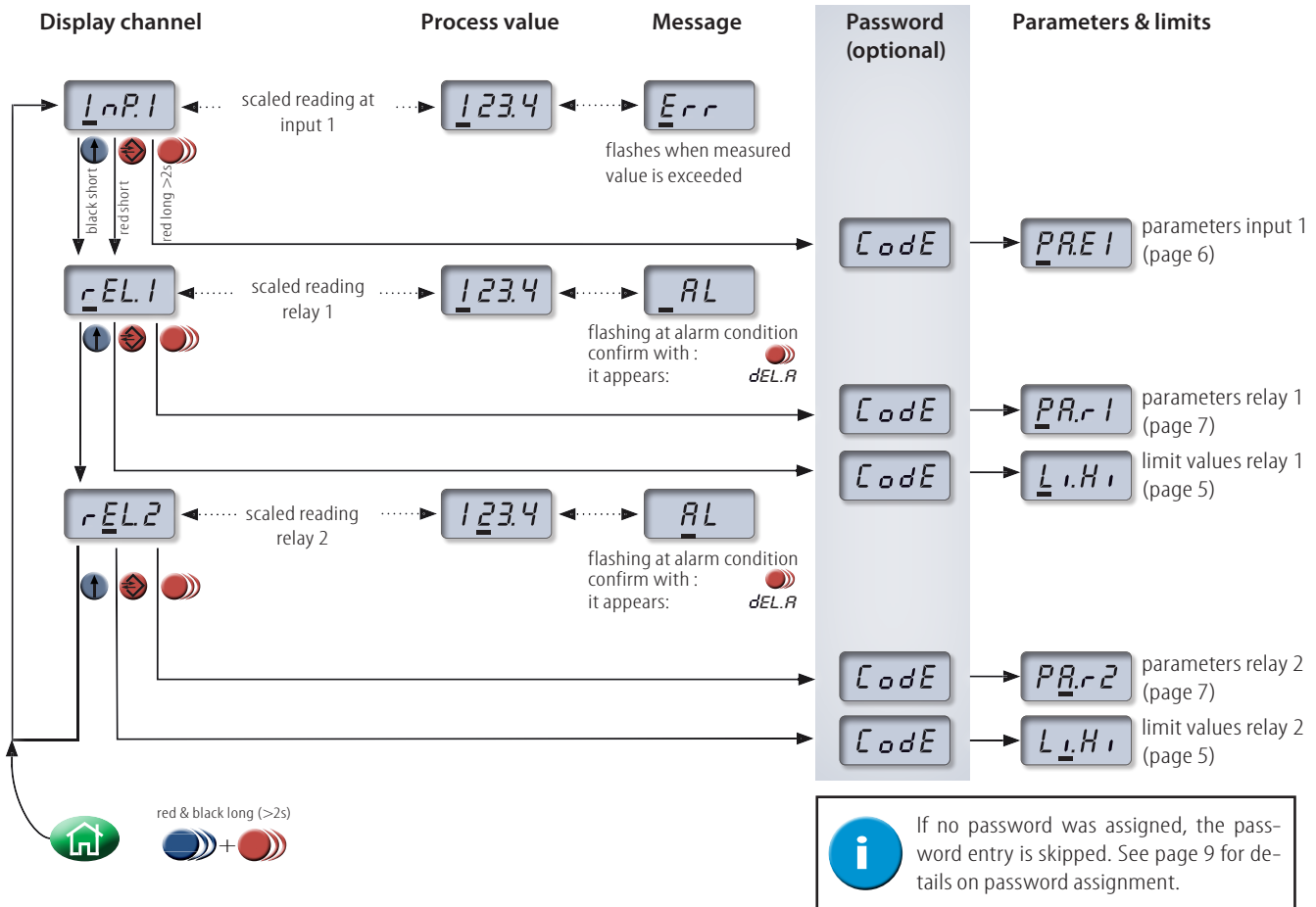
Legend:

-  select
-  continue
-  switch level
-  home
- 
- Automatic display change:  display channel 1
-  display channel 2



DISPLAY OF PROCESS VALUE

Description of the main menu



NAVIGATION TO THE STARTING POINT

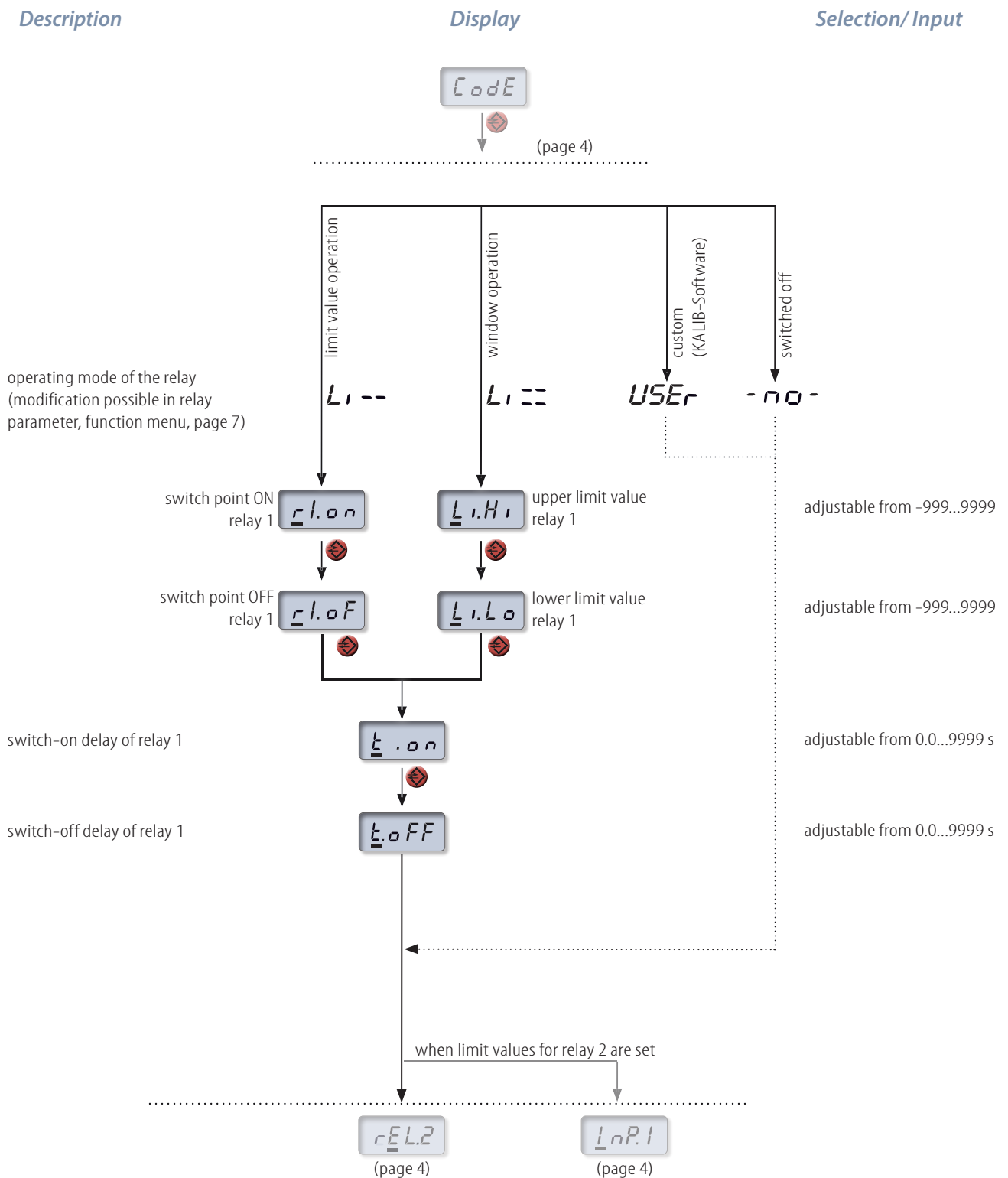
Home function



By using the home function it is possible to jump directly to the start, independent of the current menu window. To do this, press the red and black buttons simultaneously for two seconds. A short **HOME** appears on the screen. Previous entries are thereby discarded.



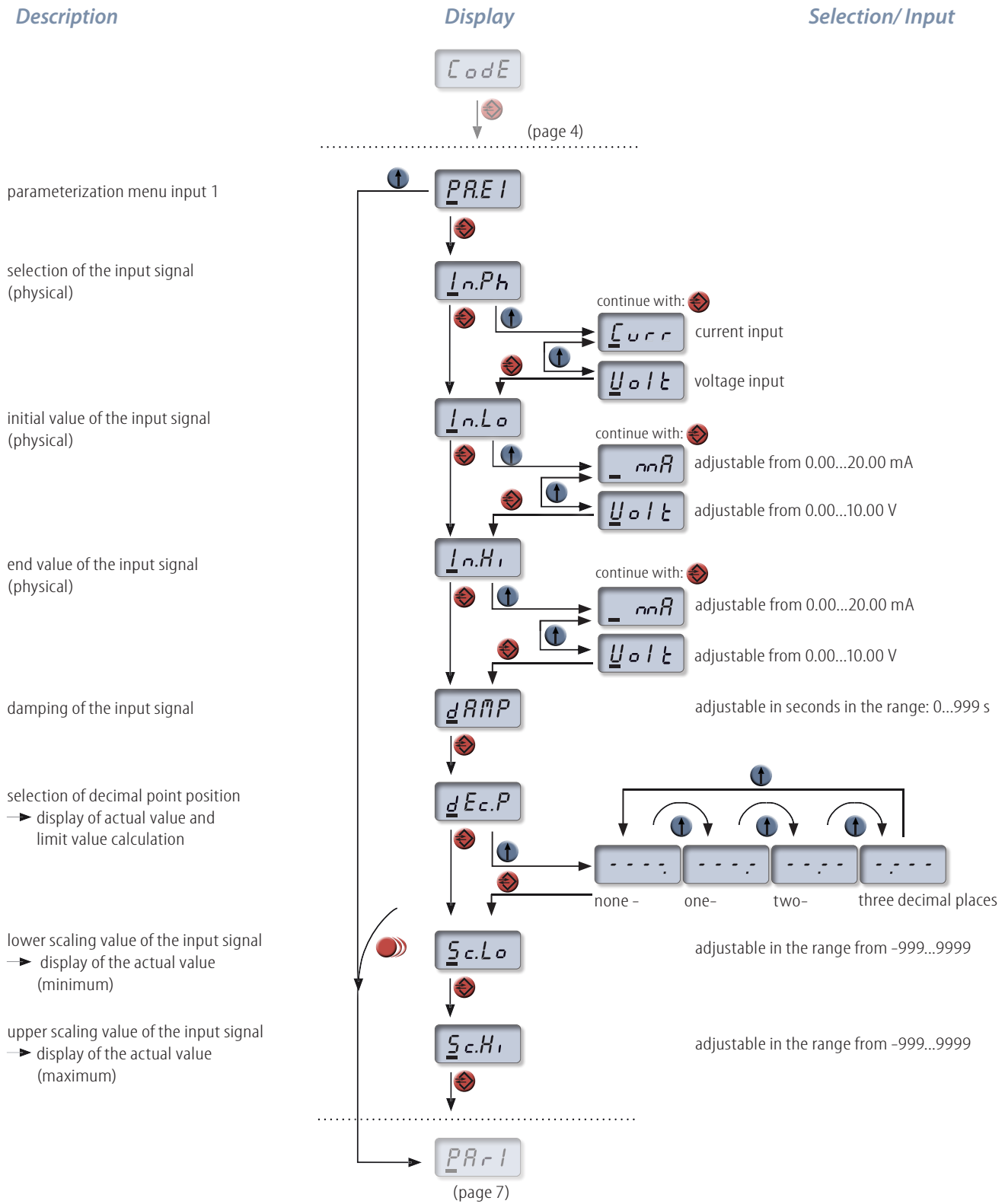
LIMIT VALUES RELAY 1 (EQUIVALENT FOR RELAY 2)



Legend: select continue switch level home Automatic display change: display channel 1 display channel 2



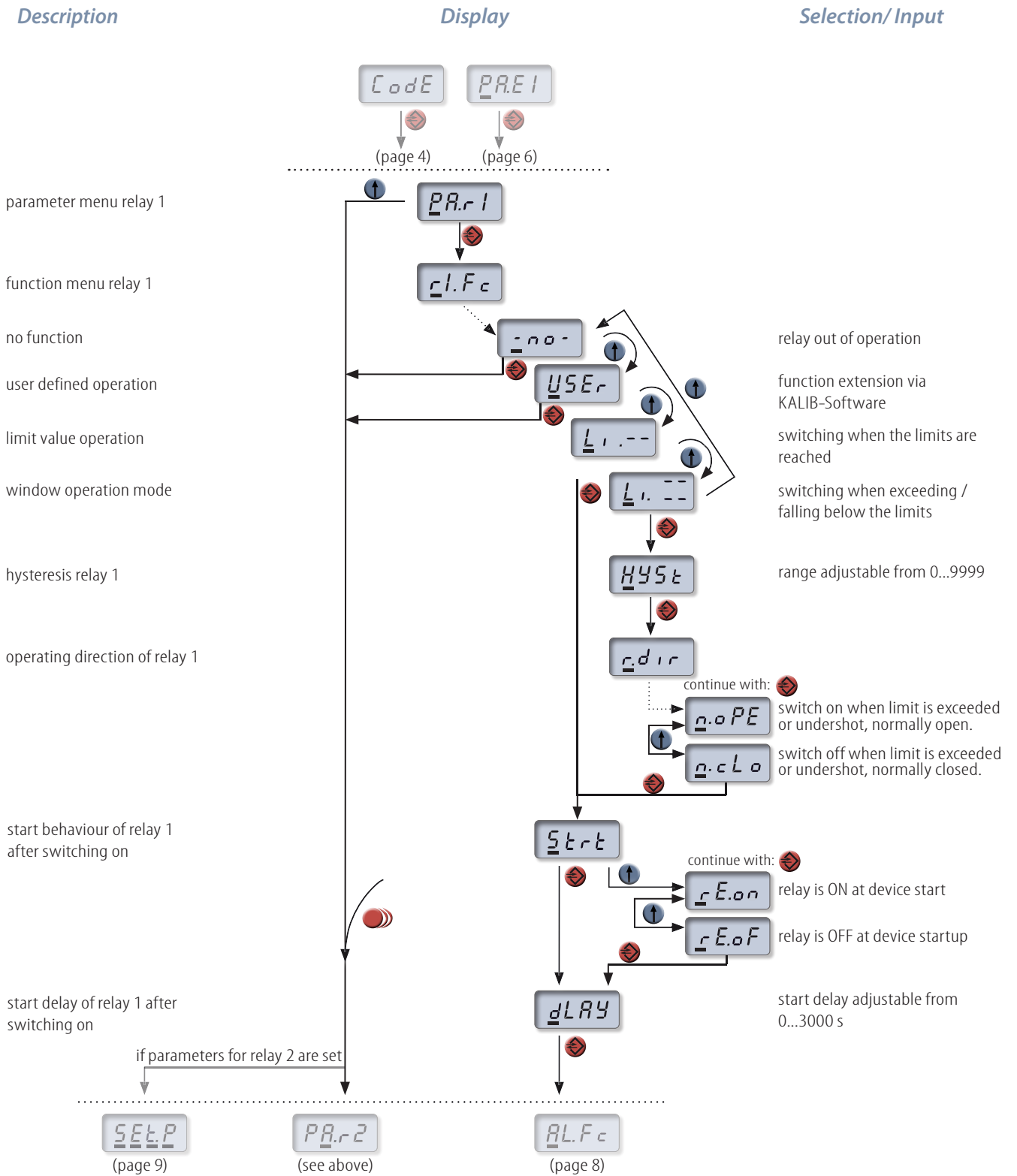
DEFINITION OF THE PARAMETERS FOR INPUT 1



Legend: select continue switch level home Automatic display change: display channel 1 display channel 2



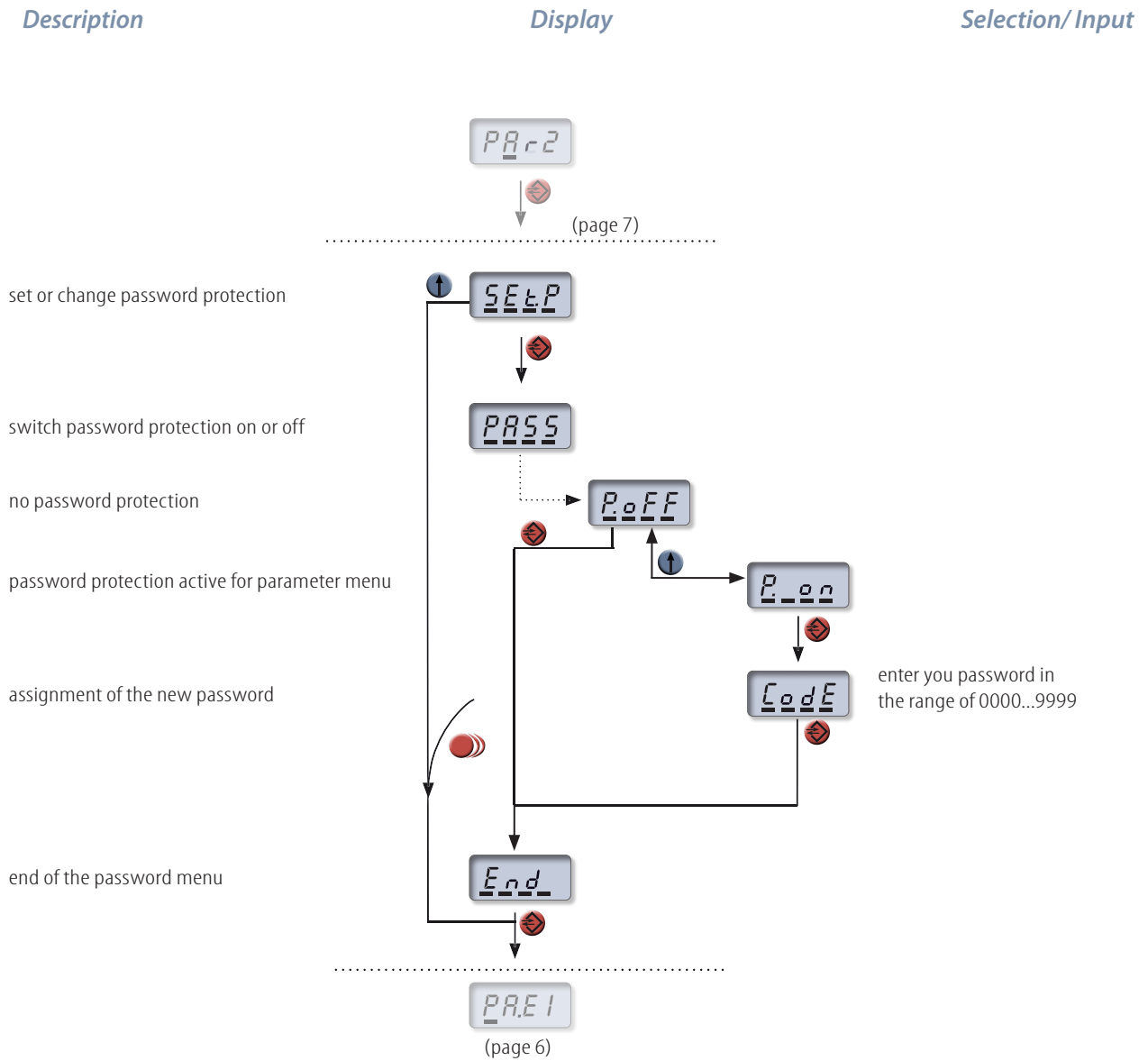
DEFINITION OF PARAMETERS FOR RELAY 1 (EQUIVALENT FOR RELAY 2)



Legend: select continue switch level home Automatic display change: display channel 1 display channel 2



PASSWORD SETTINGS



Legend: select (up arrow), continue (right arrow), switch level (two red circles), home (blue circle with white arrow), Automatic display change: display channel 1 (two bars), display channel 2 (two bars)



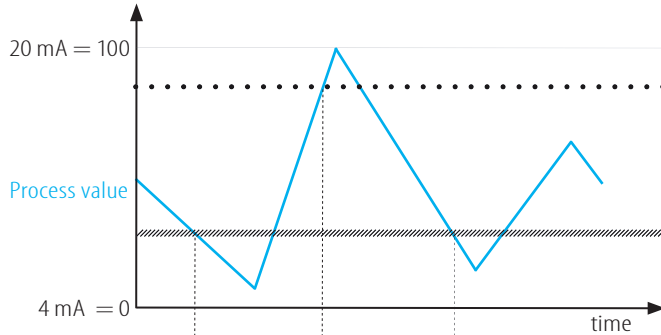
EXAMPLES

LIMIT VALUE OPERATION MODE

A current input of 4...20 mA should be scaled to a range of 0...100. The upper limit value is 80 and the lower limit value is 30. The effects on relay 1 are shown with an example process value.

DGS settings:

<i>In.Ph</i>	<i>curr</i>
<i>In.Hi</i>	20 mA
<i>In.Lo</i>	4 mA
<i>dEc.P</i>	----
<i>Sc.Lo</i>	0.000
<i>Sc.Hi</i>	100.0
<i>rl.Fc</i>	<i>LI.--</i>



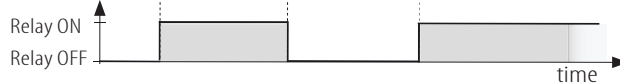
Upper limit value is greater than lower limit value



Legend:

••• *rl.on* = 80.00
 // // *rl.of* = 30.00

Upper limit value is below lower limit value



Legend:

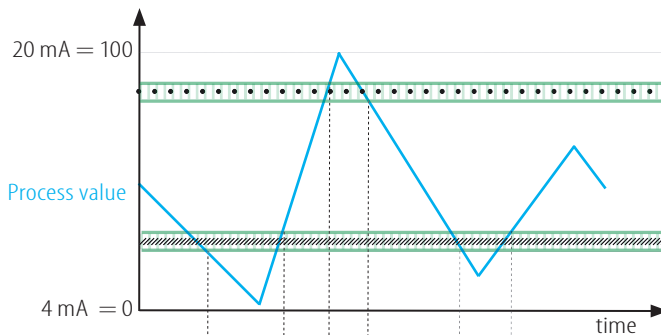
••• *rl.of* = 80.00
 // // *rl.on* = 30.00

WINDOW OPERATION MODE

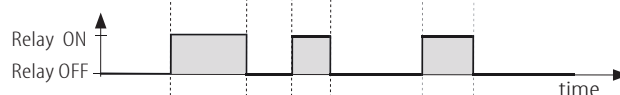
A current input of 4...20 mA should be scaled to a range of 0...100. In window mode the upper limit value is 80 and the lower limit value is 30. The hysteresis is set to a value of 10 here. The effects on relay 1 are shown with an example process value.

DGS settings:

<i>In.Ph</i>	<i>curr</i>
<i>In.Hi</i>	20 mA
<i>In.Lo</i>	4 mA
<i>dEc.P</i>	----
<i>Sc.Lo</i>	0.000
<i>Sc.Hi</i>	100.0
<i>rl.Fc</i>	<i>LI.::</i>
<i>HYS</i>	10.00



Relay switch on when limit is exceeded or undershot



Legend:

••• *Li.Hi* = 80.00 // // *Li.Lo* = 30.00
 r.dir = noPE ■■■ *HYS* = 10.00

Relay switch off when limit is exceeded or undershot



Legend:

••• *Li.Hi* = 80.00 // // *Li.Lo* = 30.00
 r.dir = noLo ■■■ *HYS* = 10.00



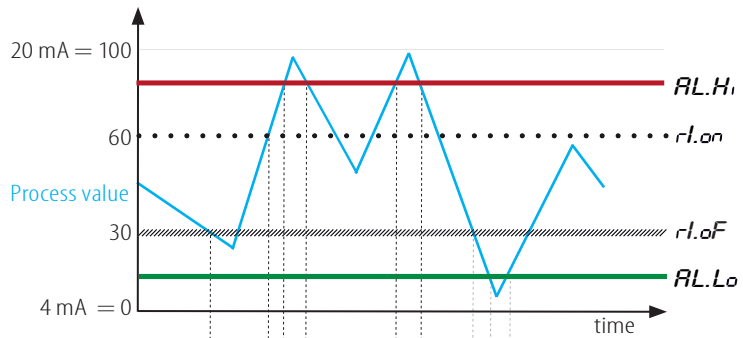
EXAMPLES

ALARMS

A current input of 4...20 mA should be scaled to a range of 0...100. The device is operated in limit value mode with the limits 60 and 30. Additionally, alarms are now used. For example, the upper alarm limit is defined at 80 and the lower alarm limit at 15. In the following examples the possible alarm settings are explained.

DGS settings:

<i>I_{n.Ph}</i>	<i>curr</i>
<i>I_{n.Hi}</i>	20 mA
<i>I_{n.Lo}</i>	4 mA
<i>dEc.P</i>	---
<i>Sc.Lo</i>	0.000
<i>Sc.Hi</i>	100.0
<i>rl.Fc</i>	LI.--
<i>rl.on</i>	60.00
<i>rl.oF</i>	30.00
<i>RL.Hi</i>	80.00
<i>RL.Lo</i>	15.00



Exceeding or dropping below the alarm limits switches relay ON

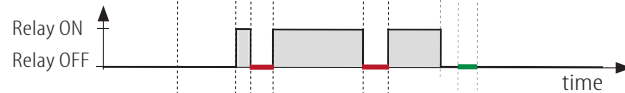
Alarm function: *on.R*



i States caused by alarms are marked in the respective color.

Exceeding or dropping below the alarm limits switches relay OFF

Alarm function: *oF.R*



Single exceeding or dropping below the alarm limits switches relay permanently ON

Alarm function: *on.RH*



Single exceeding or dropping below the alarm limits switches relay permanently OFF

Alarm function: *oF.RH*

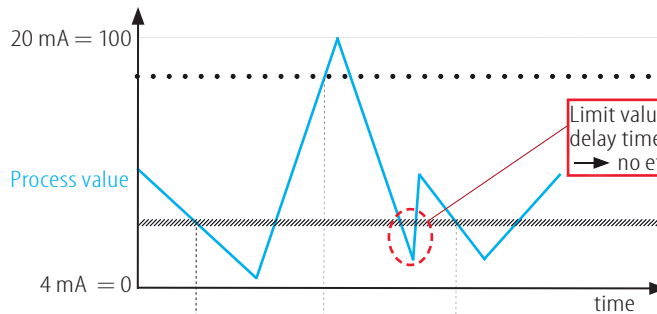


TIME DELAY

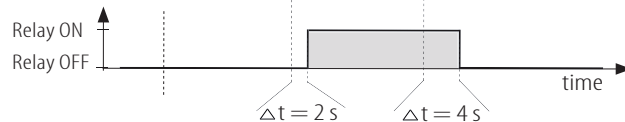
A current input of 4...20 mA should be scaled to a range of 0...100. An upper limit value of 80 and a lower limit value of 30 are defined. Additionally a time delay of 2 seconds for switching on and 4 seconds for switching off is set. The effects on relay 1 shall be shown by an example process value.

DGS settings:

<i>I_{n.Ph}</i>	<i>curr</i>
<i>I_{n.Hi}</i>	20 mA
<i>I_{n.Lo}</i>	4 mA
<i>dEc.P</i>	---
<i>Sc.Lo</i>	0.000
<i>Sc.Hi</i>	100.0
<i>rl.Fc</i>	LI.--
<i>t.on</i>	2 s
<i>t.oFF</i>	4 s



Time delay when switching ON and OFF

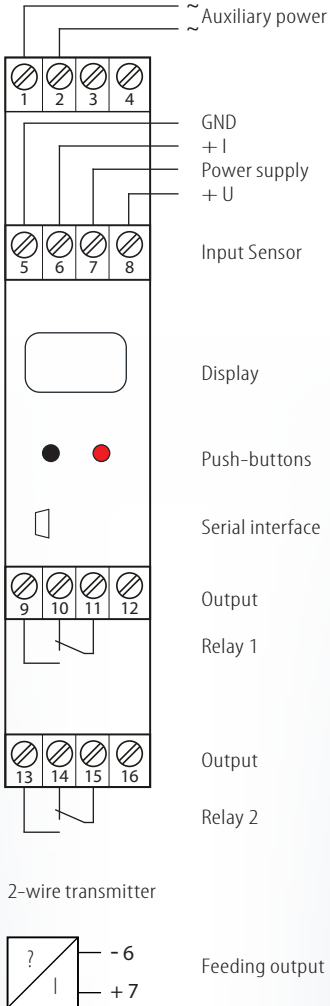


Legend:

- *rl.on* = 80.00
- //// *rl.oF* = 30.00

DGS 1.00 GW 148

Connection diagram:



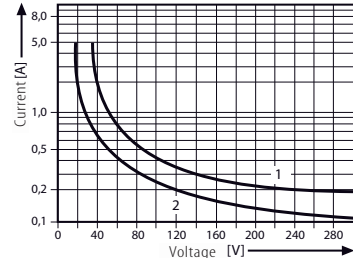
Input:

I: impressed direct current:	0(4)...20 mA	input resistance approx. 10 Ω
connection:	terminal 5 -, 6 +	
Top value measurement: f=6 Hz (half sinus)		
Transmitter feeding:	ca. 20 V at 20 mA	
connection:	terminal 6 -, 7 +	

Output:

2 relay outputs:	change-over contact	DC current limit range
max. switching current:	5 A	
max. switching voltage:	250 V AC	
mechanical life:	30 x 10 ⁶ cycles	
contact lifetime:	10 ⁵ cycles	
wiring:	see wiring diagram	

1 - resistive load
2 - inductive load



Adjustment::

The functionality of the device is adjustable via two front side push buttons and the display or via the KALIB-Software. For this you need a PC and the **USB2 interface/USB-Simulator** in connection with the **KALIB-Software**.

Display:

4-digit LC-display with four bars to indicate the respective relay or input channel that is currently being processed or displayed.



relay 1 ↖ relay 2
input 1

Environmental conditions:

Storage temperature:	-40...+70 °C
Operating temperature:	0...55 °C
Insulation voltage:	4 kV eff. 1 sec.
Input/ output/ auxiliary voltage:	3 kV eff. 1 sec.

Auxiliary power:

Wide range:	24...250 V DC
	90...253 V AC
	< 3 W

Characteristics of transmission:

Linearity error:	< 0,2 % of final value
Temperature error:	< 100 ppm/ K

Directive:

EMV directive:	2014/30/EU*
Low voltage directive:	2014/35/EU

*slight deviation is possible during the interference of the HF radiation

Mounting details

Housing for top hat rail:

Protection class:	IP 30 housing
	IP 20 plug-in terminals
Mounting rail fastening according to:	EN 50022-35 x 7,5 mm
Width:	22,5 mm
Weight:	160 g
Material:	Polyamide PA
Flammability class:	V0 (UL94)
Approval:	CE
Connection type:	pluggable screw terminals
	0,2...2,5 mm ²

For safety reasons, it is recommended to mount the housings for top-hat rail with a distance of approx. 5 mm between each other

Order information:

Type: DGS 1.00 GW 148 wide range
Accessories: USB2 / USB-Simulator with KALIB-Software

Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen
Tel. + 49 71 35 50 56
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de

FEATURES

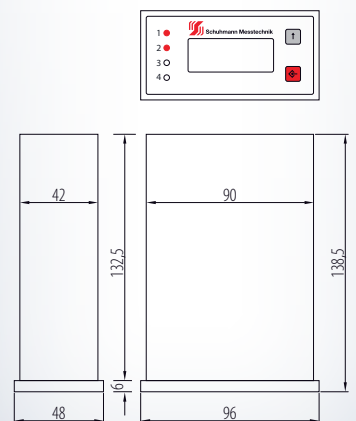
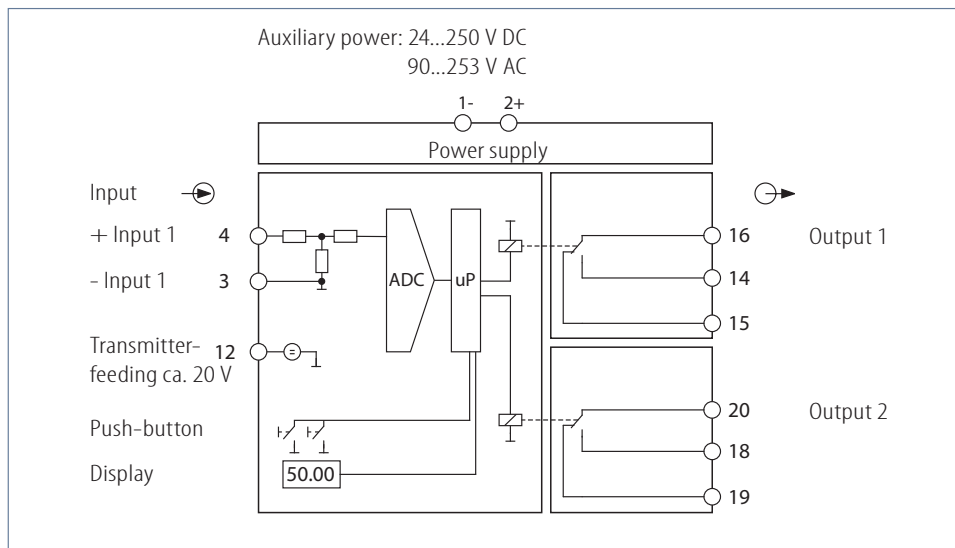
- **Input:**
Current 0(4)...20 mA or
Voltage 0(2)...10 V
- **Output:**
2 relays with change over contacts
- **Parameterization, handling and
actual value indication by display**
- **Integrated transmitter feeding**
- **Galvanic 3-way isolation of 4 kV**



FUNCTION

The digital DGW 1.00 TW is used for the limit value control of standard inputs. The parameterization is carried out by front side push-buttons and indicated by display. The 4-digit actual value indication is free scalable. Based on the input, the ON and OFF switchpoints (limits) of the two independent relays can be freely defined. This automatically results in a hysteresis.

The ON-delay and the delay release times of the relays are separately adjustable. The status indication of the relays by LEDs. It has a 2- and a 3-wire transmitter feeding. At the current input 4...20 mA or the optional voltage input of 2...10 V the Live-Zero monitoring is active. At the same time, each relay out of the valid range of 3,9...20,8 mA (1,9...10,4 V) is falling off.





OVERVIEW-MENU

adjustable range	description	main menu* ¹		description	available display
	actual indicated value, scale				operating mode
	change value				
- 999 ... + 9999 (comma free settable)	display* ² scale start \triangleq zero point	←			operating mode (PR.oF) parameterizing mode (PR.oN)
	change value				
- 999 ... + 9999 (comma free settable)	display* ² scale end \triangleq full scale	←			
	change value				
value from scale start to scale end possible	switch on point relay 1	←		change value ↑ → switch on point relay 2	
	change value				
value from scale start to scale end possible	switch off point relay 1	←		↑ → switch off point relay 2	
	change value				
0,1 ... 999,9 sec. (comma fix)	on-delay relay 1	←		↑ → on-delay relay 2	
	change value				
0,1 ... 999,9 sec. (comma fix)	delayed release relay 1	←		↑ → delayed release relay 2	
	change value				
dERd2Ero (0...20 mA) LIFE2Ero (4...20 mA)* ³	select zero point	←			
	change value				
	back to actual indicated value				operating mode displayed for 2 seconds

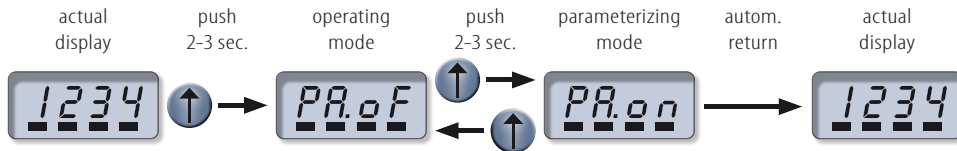
Legend: selection next

*¹ There is a constant change between the actual indicated value and the display of the menu item.

*² The display is free scalable, e. g. instead of the 4...20 mA 0...100 m³ is being displayed.

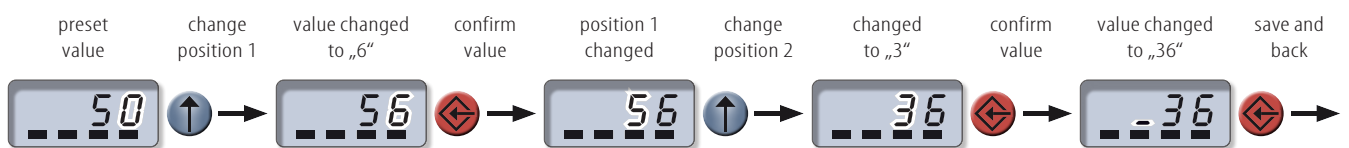
*³ Live-Zero is monitoring the range: relay out of range of 3,9...20,8.

changeover parameterizing mode/operating mode:

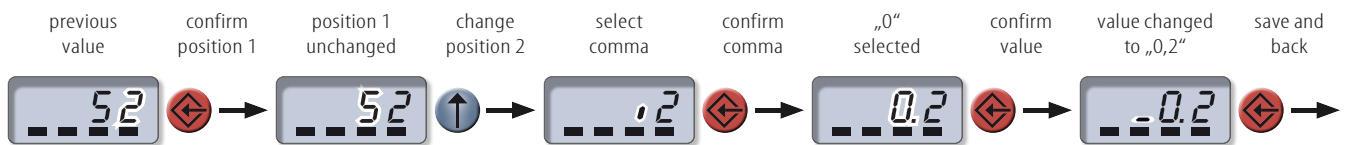


CHANGE VALUE (select to change the menu item):

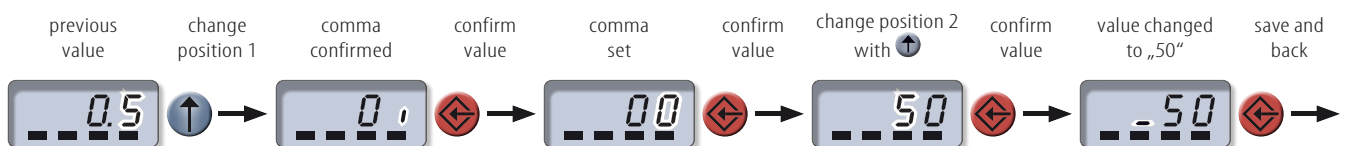
change value:



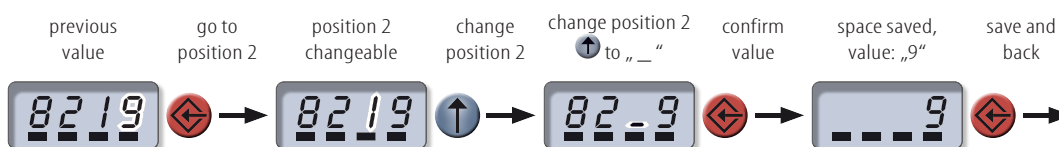
define decimal place:









delete decimal place:





delete positions:



Details of operation:






The displayed position gets changed with the push-button . Values such as  to , minus , comma , and space  are possible.

Use the push-button  to confirm the actual position and go to the next or return to the main menu after changing the last digit. Break-off possible by pushing  longer.

Optional door installation:

Push red push-button longer than 2 seconds.: code requested. Enter default code to change parameters, otherwise display only.

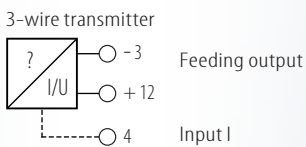
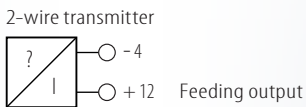
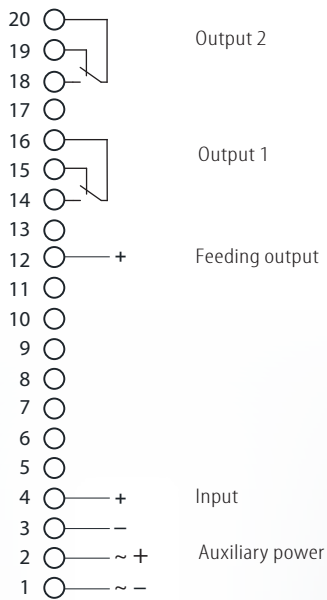
Legend:

-  Digit on display blinks
-  Display of comma
-  space
-  selection
-  confirm

DGW 1.00 TW

Connection diagram:

DGW 1.00 TW



Input:

I: load-independent DC current: 0(4)...20 mA input resistance approx. 50 Ω
connection: terminal 3 -, 4 +

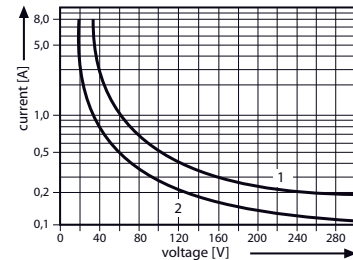
optional/ alternatively:

U: load independent DC voltage 0(2)...10 V input resistance approx. 100 kΩ
connection: terminal 3 -, 4 +
transmitter feeding: approx. 20 V at 20 mA

Output:

2 relay outputs: changer
max. switching current: 8 A
max. switching voltage: 250 V AC
mechanical life cycle: 30 x 10⁶ cycles
contact life cycle: 10⁵ cycles
connection: see connection diagram
1 - resistive load
2 - inductive load

limit range DC current



Adjustment:

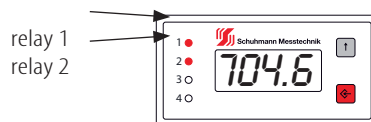
The functions are adjusted by two front side push-buttons and display (see page 03-11 and 03-11).

Display:

4-digit-LC-display, indication of relay status by 2 LEDs

LED relay 1 red, active relay 1 tightend

LED relay 2 red, active relay 2 tightend



Environmental conditions:

Storage temperature: -40...+70 °C
Operating temperature: 0...55 °C
Isolation voltage: 4 kV eff. 1 sec.
input-output-auxiliary voltage

Auxiliary power:

Wide range: 24...250 V DC
90...253 V AC
< 3 W

Characteristics of transmission:

Linearity error: < 0,03 % of final value
Temperature error: < 30 ppm/ K

Directive:

EMV Directive: 2014/30/EU*
Low Voltage Directive: 2014/35/EU

*minimum deviations possible during HF-radiation influence

Mounting details:

Door installation:

Type of protection: IP 54 Front
Front frame: 96 x 48 mm
Installation depth: 138,5 mm
Weight: 290 g
Material: PC/ ABS
Flammability class: V0 (UL94)
Approval: CE
Connection: pluggable screw clamps 0,14...1,5 mm²

Ordering information:

Voltage input **optional!**
Please specify special signals in clear text:
0(2)...10 V

Type: DGW 1.00 TW wide range door installation

Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen
Tel. + 49 71 35 50 56
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de



FEATURES

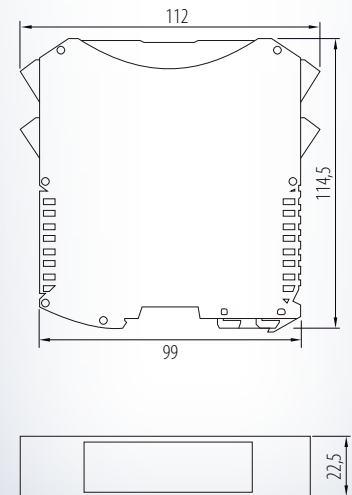
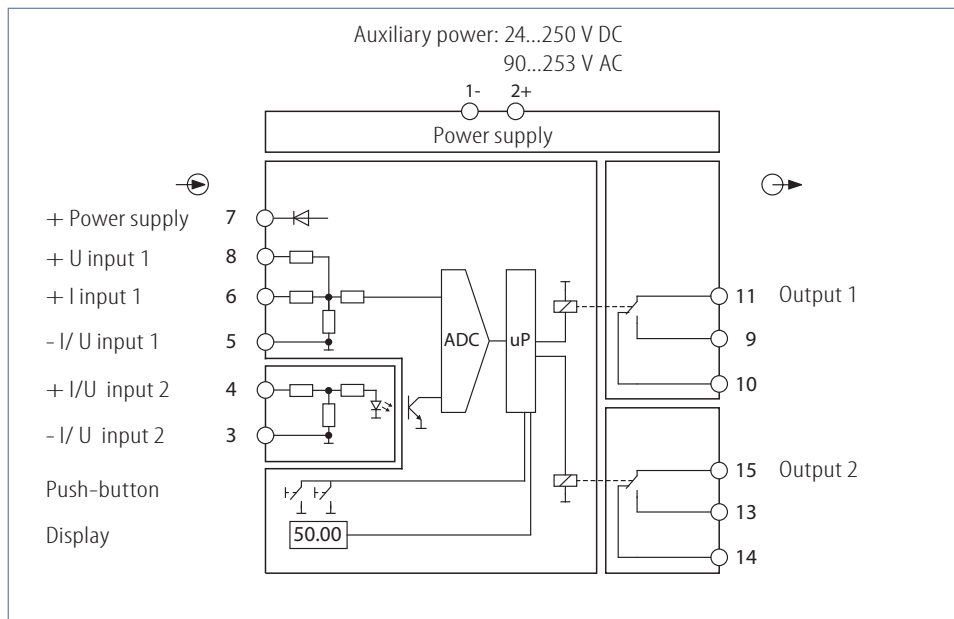
- **2 Inputs:**
Current 0(4)...20mA or
Voltage 0(2)...10V
- **Output:**
2 relays with changeover contacts
- **2-wire transmitter feeding**
- **Parameterization and setting via
push-button or integrated interface**
- **Actual value indication via display**
- **3-Way galvanic insulation of 4 kV**



FUNCTIONALITY

The digital DGS 2.00 GW is used for limit value monitoring of standardized signals. Parameterization is done via the two front side push-buttons and the 4-digit display or via the integrated interface with the USB2 interface/ USB-Simulator in connection with the KALIB-Software. The parameter files can be stored and easily transferred to other devices. The 4-digit actual value display is freely scalable. In relation to the input, the switch-on and switch-off points (limit values) of the two

independent relays can be freely defined. This automatically results in a hysteresis. Hysteresis, pick-up and drop-out delays, the behaviour of the relays in case of sensor break and alarm limits of the relays can be set separately. The relay states are indicated by LEDs on the front side. The DGS 2.00GW has an additional integrated transmitter feeding.





PRESENTATION NOTES

Symbolism of buttons

Button color	Button press short	Button press long (>2 s)
black		
red		

Symbolism of arrows

- logical transition in the program flow
- temporal transition in the program flow
- logical change in program flow
- temporal change in the program sequence

Symbolism of the display

- number flashes on the display
- decimal point representation
- space

MENU OVERVIEW



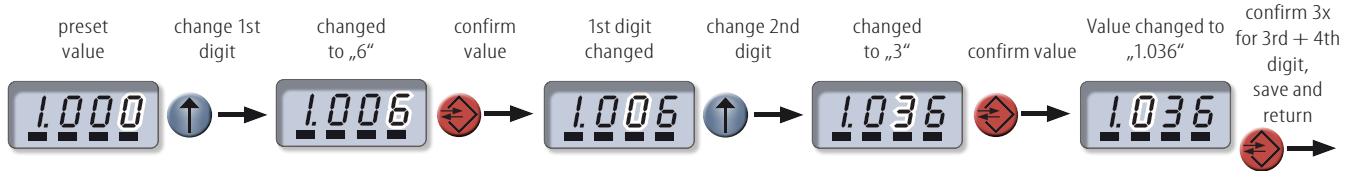
Program sections with can be protected by a password from changing the settings.

Legend: select continue switch level home Automatic display change: display channel 1 display channel 2

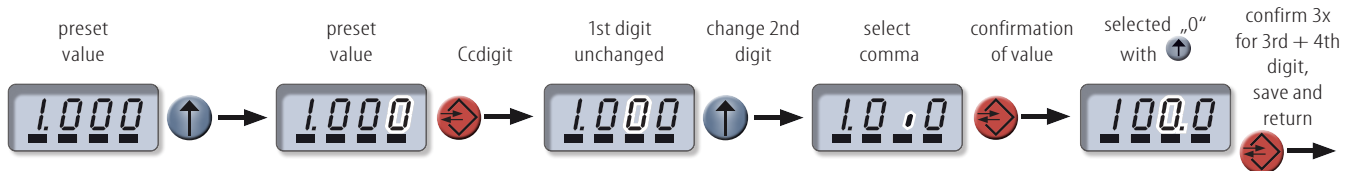


CHANGE VALUE (to change, select in the respective menu item with):

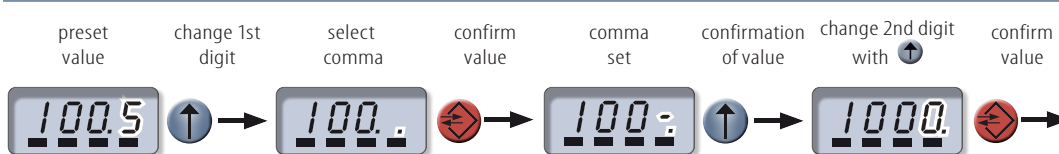
Change value:



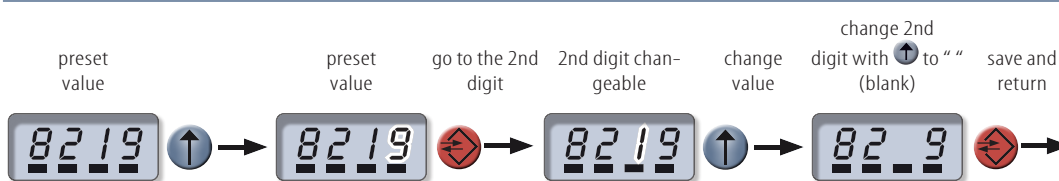
Define decimal point position:









Remove decimal point:



Remove digits:



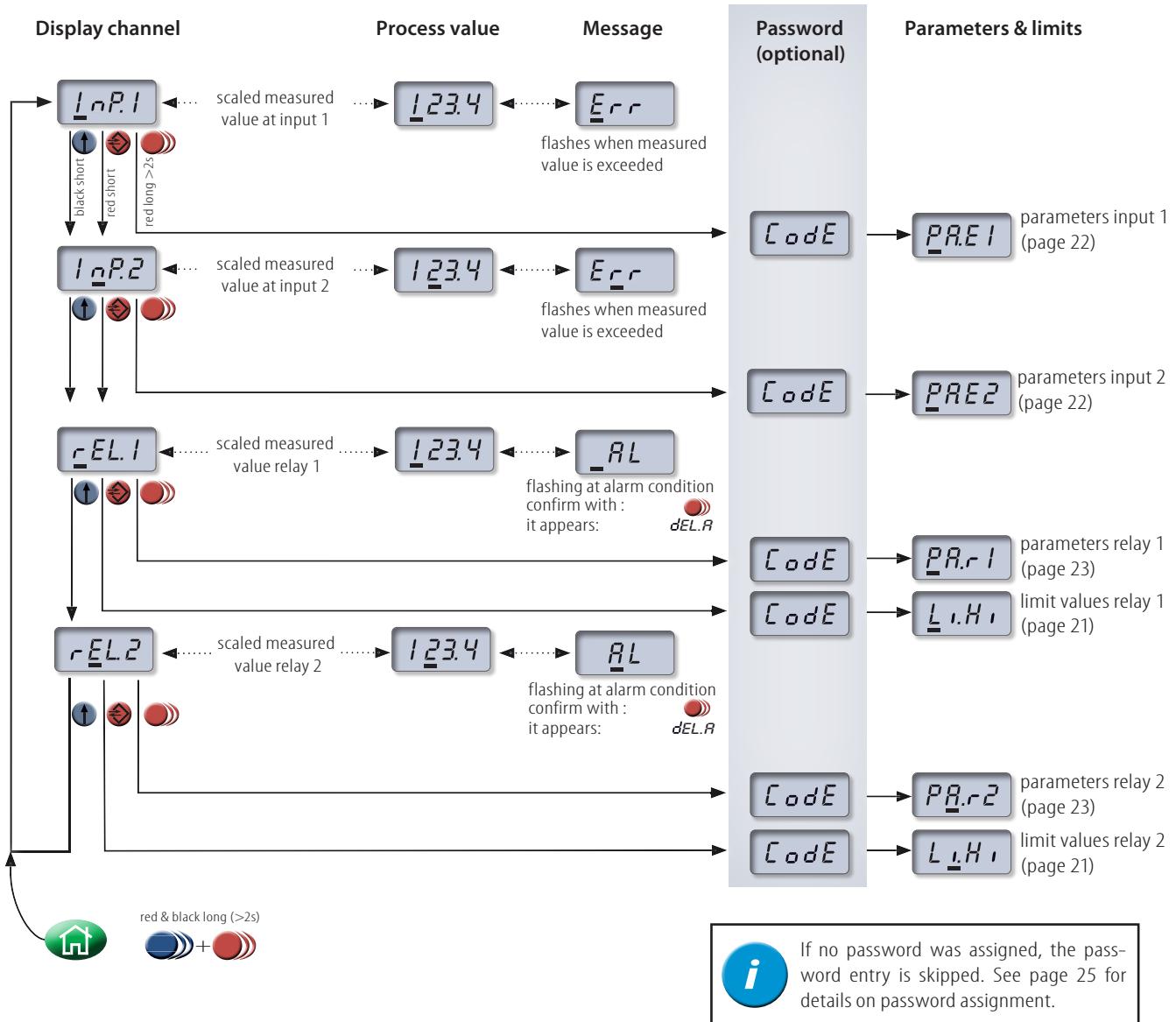
Legend:

- select 
- continue 
- switch level 
- home 
-  Automatic display change:
- display channel 1 
- display channel 2 



DISPLAY OF PROCESS VALUE

Description of the main menu



NAVIGATION TO THE STARTING POINT

Home function

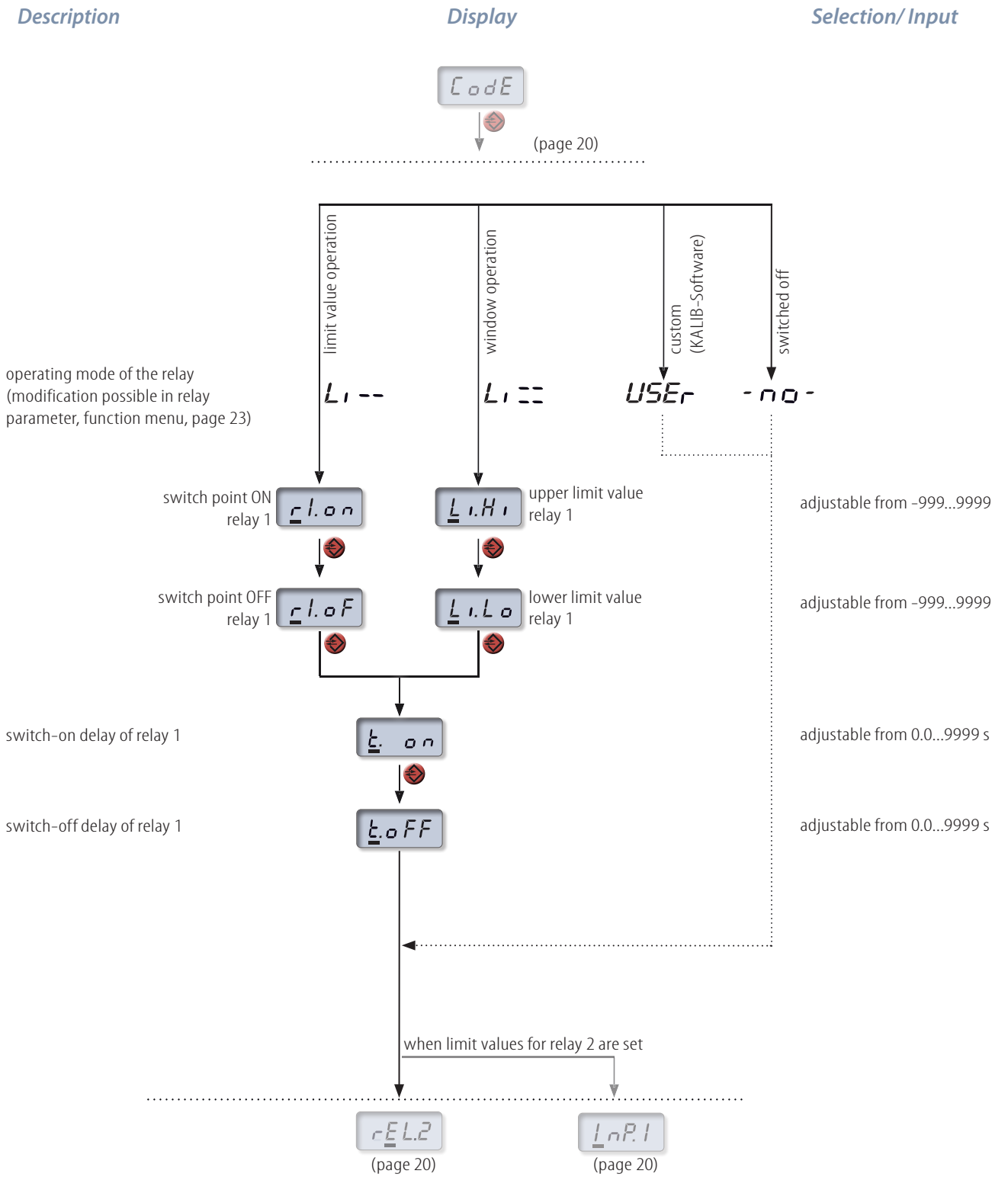


By using the home function it is possible to jump directly to the start, independent of the current menu window. To do this, press the red and black buttons simultaneously for two seconds. A short **HOME** appears on the screen. Previous entries are thereby discarded.

Legend: select (blue arrow), continue (red arrow), switch level (red circle), home (green house), Automatic display change: display channel 1 (black bar), display channel 2 (white bar)



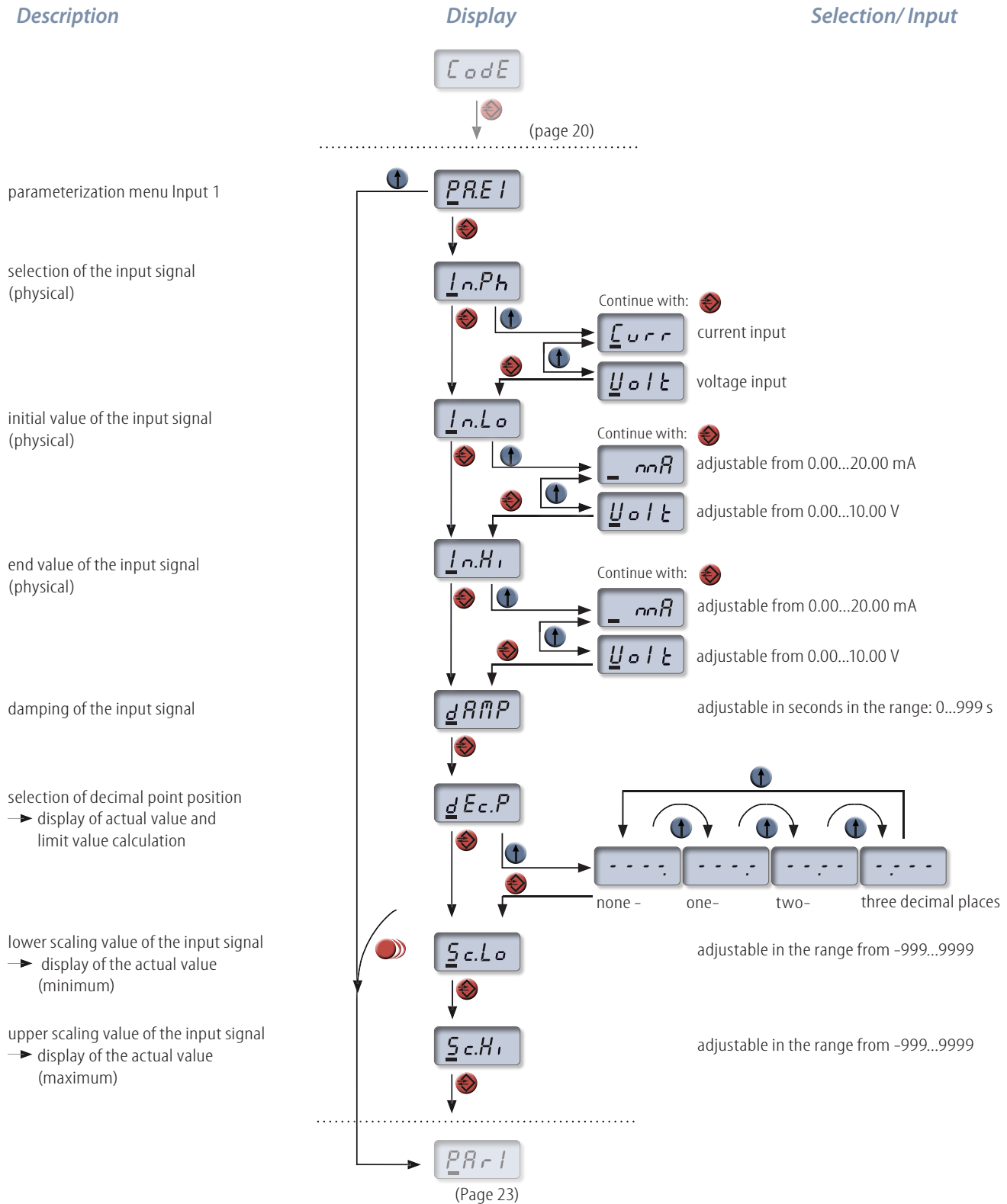
LIMIT VALUES RELAY 1 (EQUIVALENT FOR RELAY 2)



Legend: select (up arrow), continue (right arrow), switch level (red double arrow), home (blue double arrow), Automatic display change: display channel 1 (two bars), display channel 2 (two bars)



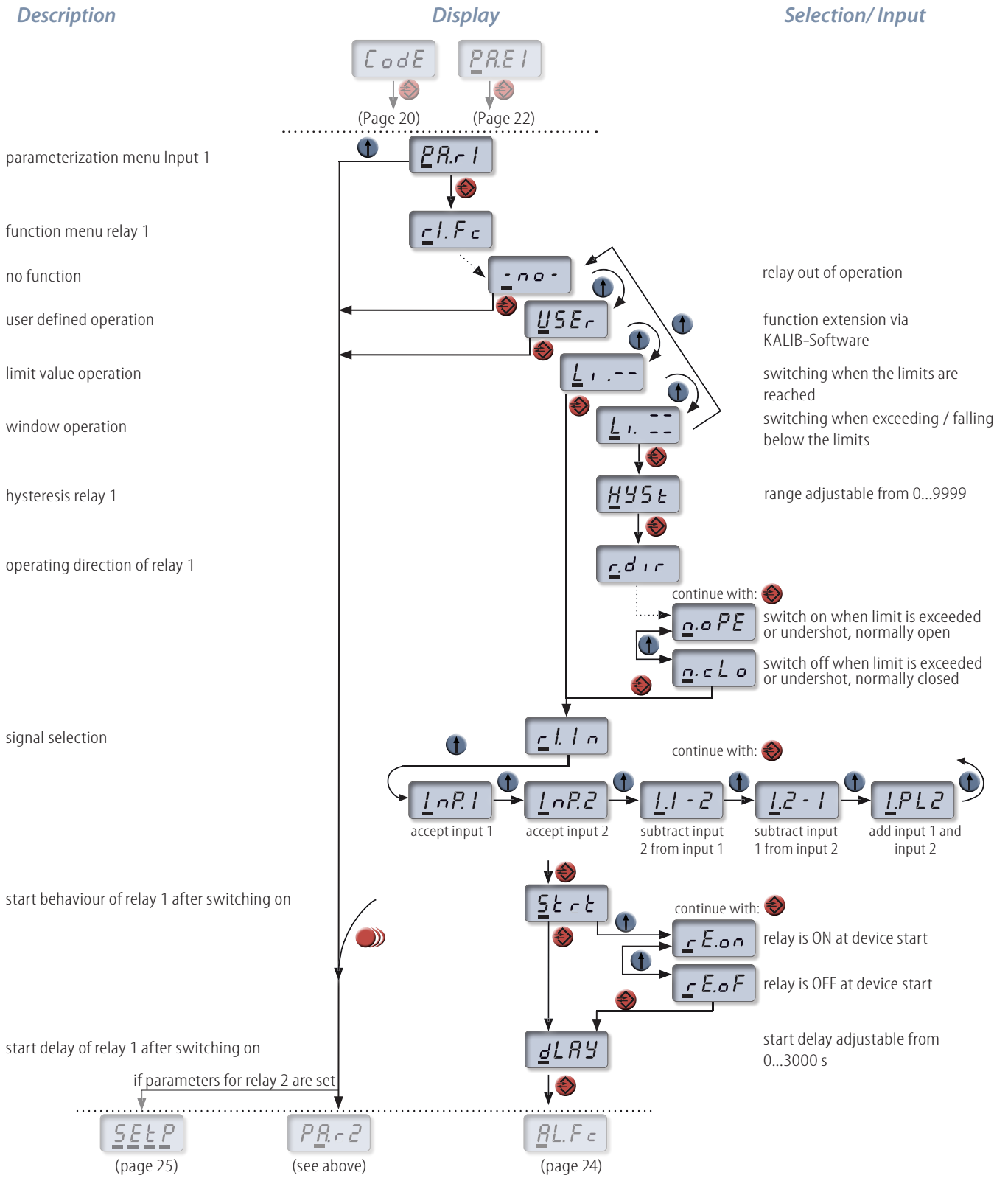
DEFINITION OF THE PARAMETERS FOR INPUT 1



Legend: select continue switch level home Automatic display change: display channel 1 display channel 2



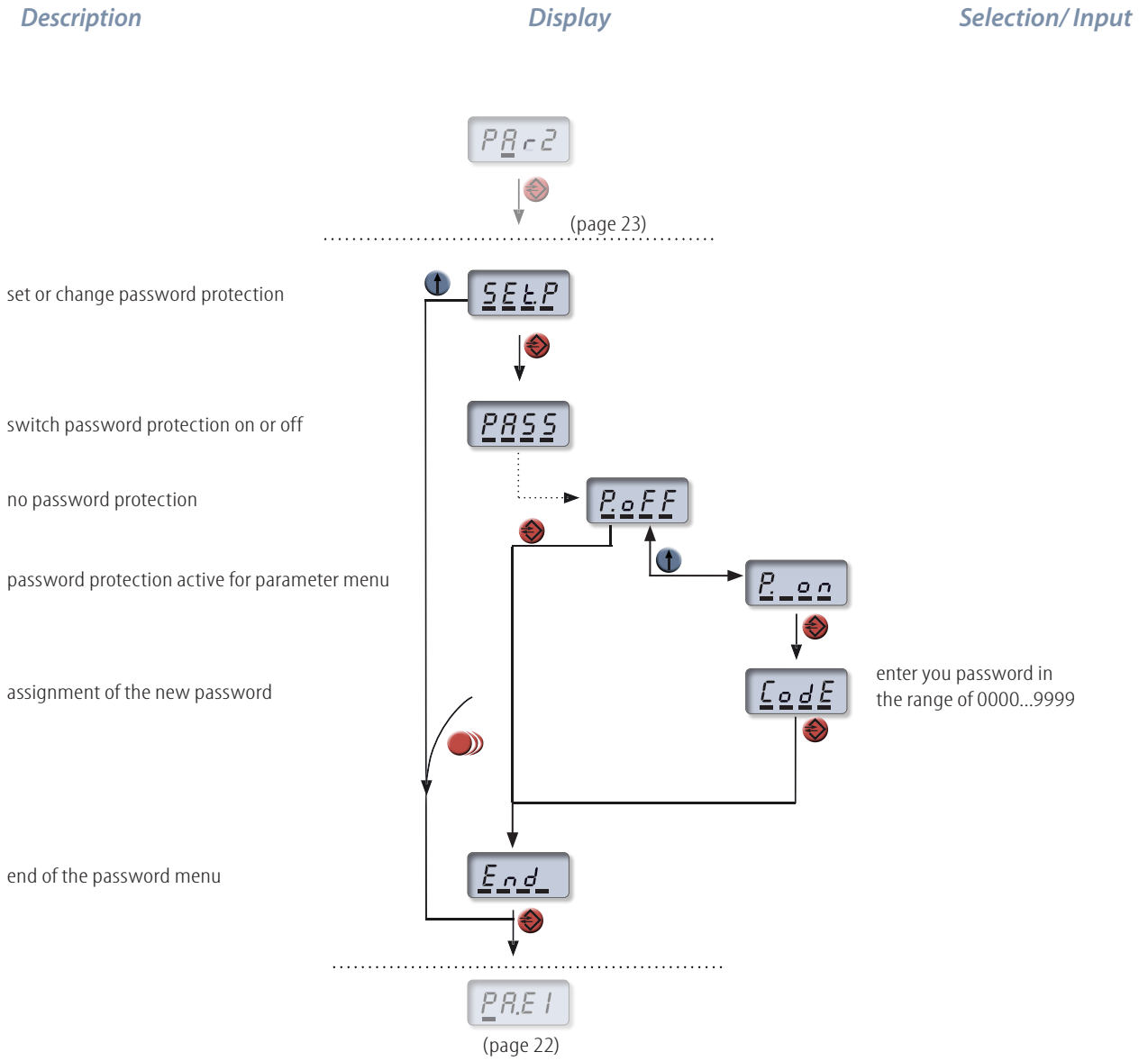
DEFINITION OF THE PARAMETERS FOR INPUT 1 (EQUIVALENT FOR RELAY 2)



Legend: select continue switch level home Automatic display change: display channel 1 display channel 2



PASSWORD SETTINGS



Legend: select (up arrow) continue (right arrow) switch level (two red circles) home (blue circle with house icon) Automatic display change: display channel 1 (two bars) display channel 2 (two bars)



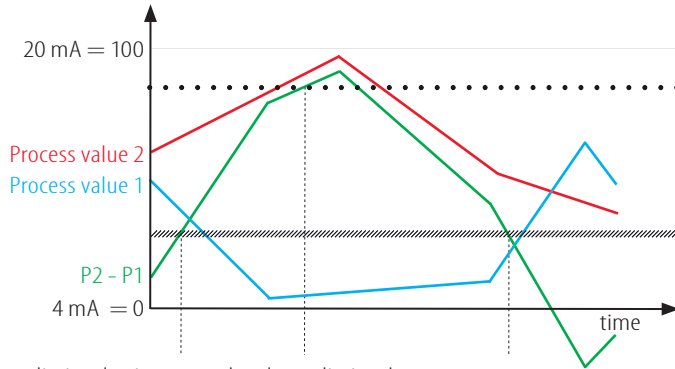
EXAMPLES

LIMIT VALUE OPERATION MODE

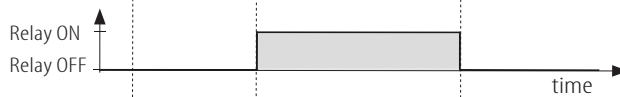
Two current inputs of 4...20 mA should be scaled to a range of 0...100. In limit value mode the upper limit value is 80 and the lower limit value is 30. The signal source for the relay is calculated by subtraction (process value 2 - process value 1). The effects on relay 1 are shown with an example process value.

DGS settings:

<i>In.Ph</i>	<i>curr</i>
<i>In.Hi</i>	20 mA
<i>In.Lo</i>	4 mA
<i>dEc.P</i>	---
<i>Sc.Lo</i>	0.000
<i>Sc.Hi</i>	100.0
<i>rl.Fc</i>	<i>L1--</i>
<i>rl.In</i>	<i>1.2-1</i>



Upper limit value is greater than lower limit value:



Legend:

••• *rl.on* = 80.00
 // // // *rl.of* = 30.00

Upper limit value is smaller than lower limit value:



Legend:

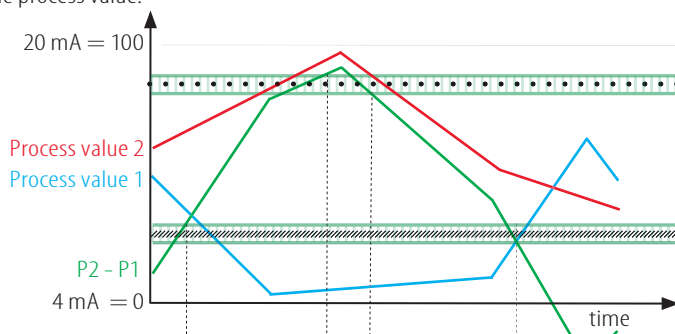
••• *rl.of* = 80.00
 // // // *rl.on* = 30.00

WINDOW OPERATION MODE

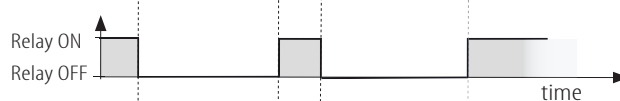
Two current inputs of 4...20 mA should be scaled to a range of 0...100. In window mode the upper limit value is 80 and the lower limit value is 30. Here the hysteresis is set to a value of 10. The signal source for the relay is calculated by subtraction (process value 2 - process value 1). The effects on relay 1 are shown with an example process value.

DGS settings:

<i>In.Ph</i>	<i>curr</i>
<i>In.Hi</i>	20 mA
<i>In.Lo</i>	4 mA
<i>dEc.P</i>	---
<i>Sc.Lo</i>	0.000
<i>Sc.Hi</i>	100.0
<i>rl.Fc</i>	<i>L1--</i>
<i>HYSk</i>	10.00
<i>rl.In</i>	<i>1.2-1</i>



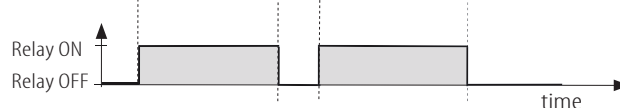
Relay switch on when limit is exceeded or undershot:



Legend:

••• *Li.Hi* = 80.00 // // // *Li.Lo* = 30.00
 r.dir = noPE *HYSk* = 10.00

Relay switch off when limit is exceeded or undershot:



Legend:

••• *Li.Hi* = 80.00 // // // *Li.Lo* = 30.00
 r.dir = noLo *HYSk* = 10.00



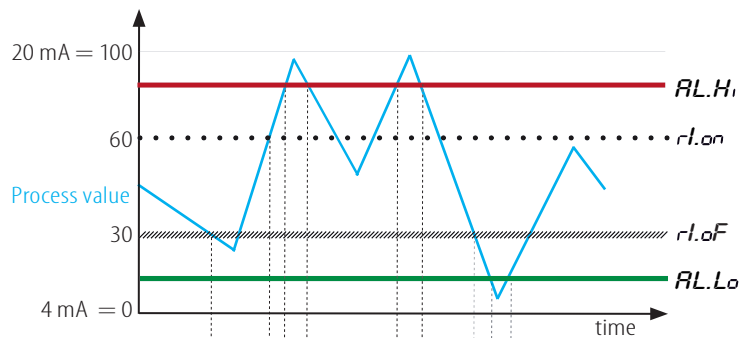
EXAMPLES

ALARMS

A current input of 4...20 mA should be scaled to a range of 0...100. The device is operated in limit value mode with the limits 60 and 30. Additionally, alarms are now used. For example, the upper alarm limit is defined at 80 and the lower alarm limit at 15. In the following examples the possible alarm settings are explained.

DGS settings:

<i>I_{n.Ph}</i>	<i>curr</i>
<i>I_{n.Hi}</i>	20 mA
<i>I_{n.Lo}</i>	4 mA
<i>dEc.P</i>	---
<i>Sc.Lo</i>	0.000
<i>Sc.Hi</i>	100.0
<i>rl.Fc</i>	LI.--
<i>rl.on</i>	60.00
<i>rl.oF</i>	30.00
<i>RL.Hi</i>	80.00
<i>RL.Lo</i>	15.00



Exceeding or dropping below the alarm limits switches relay ON

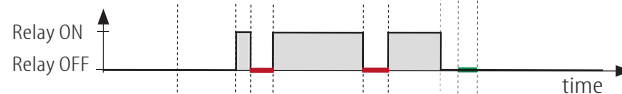
Alarm function: *on.R*



i States caused by alarms are marked in the respective color.

Exceeding or dropping below the alarm limits switches relay OFF

Alarm function: *oF.R*



Single exceeding or dropping below the alarm limits switches relay permanently ON

Alarm function: *on.RH*



Single exceeding or dropping below the alarm limits switches relay permanently OFF

Alarm function: *oF.RH*

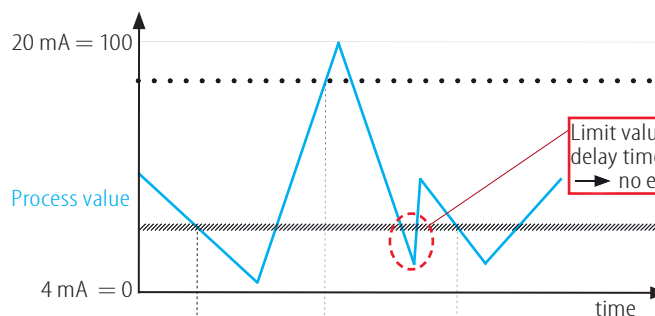


TIME DELAY

A current input of 4...20 mA should be scaled to a range of 0...100. An upper limit value of 80 and a lower limit value of 30 are defined. Additionally a time delay of 2 seconds for switching on and 4 seconds for switching off is set. The effects on relay 1 shall be shown by an example process value.

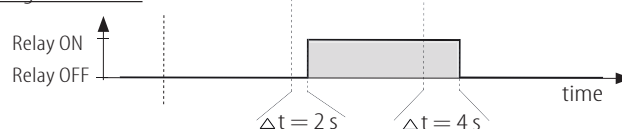
DGS settings:

<i>I_{n.Ph}</i>	<i>curr</i>
<i>I_{n.Hi}</i>	20 mA
<i>I_{n.Lo}</i>	4 mA
<i>dEc.P</i>	---
<i>Sc.Lo</i>	0.000
<i>Sc.Hi</i>	100.0
<i>rl.Fc</i>	LI.--
<i>t.on</i>	2 s
<i>t.oFF</i>	4 s



Limit value undercut shorter than delay time when switching off → no effect

Time delay when switching ON and OFF

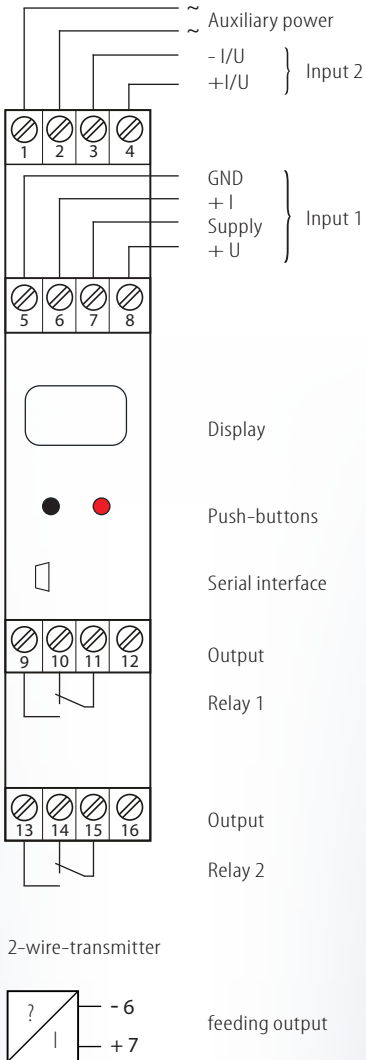


Legend:

••• *rl.on* = 80.00
 // // // *rl.oF* = 30.00

DGS 2.00 GW

Connection diagram:



Input 1:

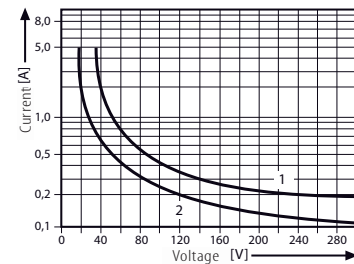
I: impressed direct current:	0(4)...20 mA	input resistance approx. 10 Ω
connection:	terminal 5 -, 6 +	
U: impressed DC voltage:	0(2)...10 V	input resistance approx. 1 MΩ
connection:	terminal 5 -, 8 +	
Transmitter feeding:	ca. 20 V at 20 mA	
connection:	terminal 6 -, 7 +	

Input 2:

I: impressed direct current:	0(4)...20 mA	input resistance approx. 10 Ω
connection:	terminal 3 -, 4 +	
U: impressed DC voltage:	0(2)...10 V	input resistance approx. 100 kΩ
connection:	terminal 3 -, 4 +	

Output:

2 relay outputs:	change-over contact	DC current limit range
max. switching current:	5 A	
max. switching voltage:	250 V AC	
mechanical life:	30 x 10 ⁶ cycles	
contact lifetime:	10 ⁵ cycles	
wiring:	see wiring diagram	



1 - resistive load
2 - inductive load

Adjustment:

The functionality of the device is adjustable via two front side push-buttons and the display or via the KALIB-Software. For this you need a PC and the interface adapter **USB2 / USB-Simulator** in connection with the **KALIB-Software**.

Display:

4-digit LC-display with four bars to indicate the respective relay or input channel that is currently being processed or displayed.



relay1 relay 2
input 1 input 2

Environmental conditions:

Storage temperature:	-40...+70 °C
Operating temperature:	0...55 °C
Insulation voltage:	4 kV eff. 1 sec.
Input/ output/ auxiliary voltage:	
Input 1 - Input 2:	3 kV eff. 1 sec.
	1 kV eff. 1 sec.

Auxiliary power:

Wide range:	24...250 V DC
	90...253 V AC
	< 3 W

Characteristic of transmission:

Linearity error:	< 0,2 % of final value
Temperature error:	< 100 ppm/ K

Directive:

EMV directive:	2014/30/EU*
Low voltage directive	: 2014/35/EU

*slight deviation is possible during the interference of the HF radiation

Monting details

Housing for top hat rail:

Protection class:	IP 30 housing
	IP 20 plug-in terminals
Mounting rail fastening according to:	
	EN 50022-35 x 7,5 mm
Width:	22,5 mm
Weight:	160 g
Material:	Polyamide PA
Flammability class:	V0 (UL94)
Approval:	CE
Connection type:	pluggable screw terminals
	0,2...2,5 mm ²

For safety reasons, it is recommended to mount the housings for top-hat rail with a distance of approx. 5 mm between each other

Order information:

Type: DGS 2.00 GW wide range
Accessories: USB2 / USB-Simulator with KALIB-Software

Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen
Tel. + 49 71 35 50 56
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de

FEATURES

- **2 Inputs:**
Current 0(4)...20 mA or
Voltage 0(2)...10 V
- **Output:**
2 relays with change over contacts
- **Parameterization, handling and
actual indication by display**
- **Integrated transmitter feeding**
- **Galvanic 3-way isolation of 4 kV**

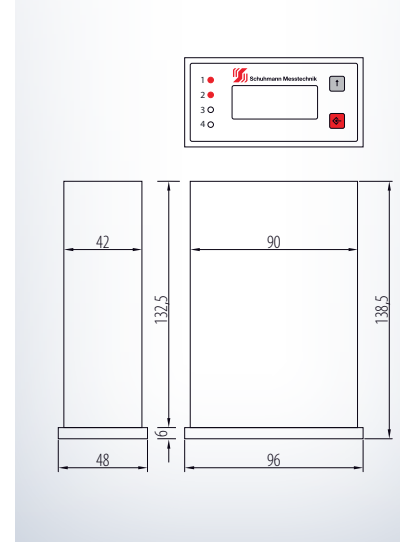
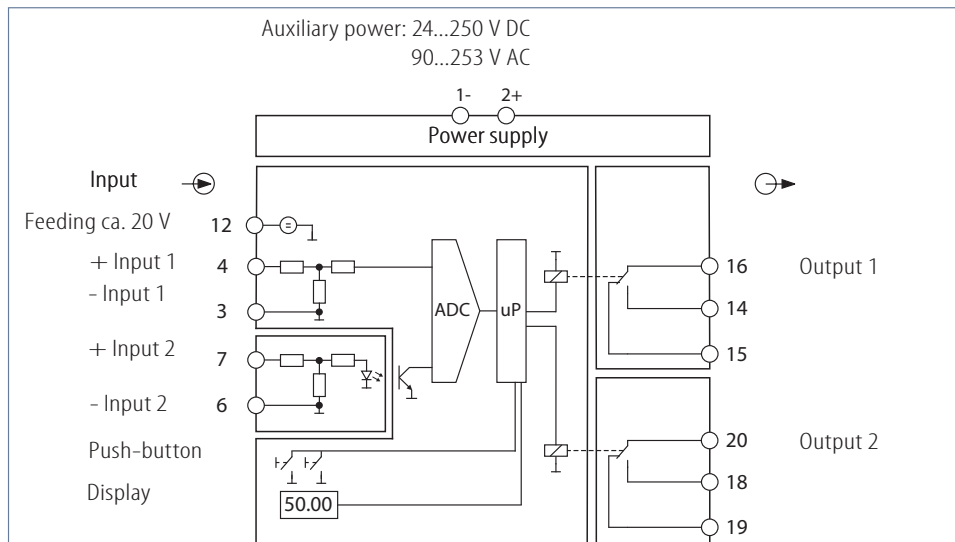


FUNCTION

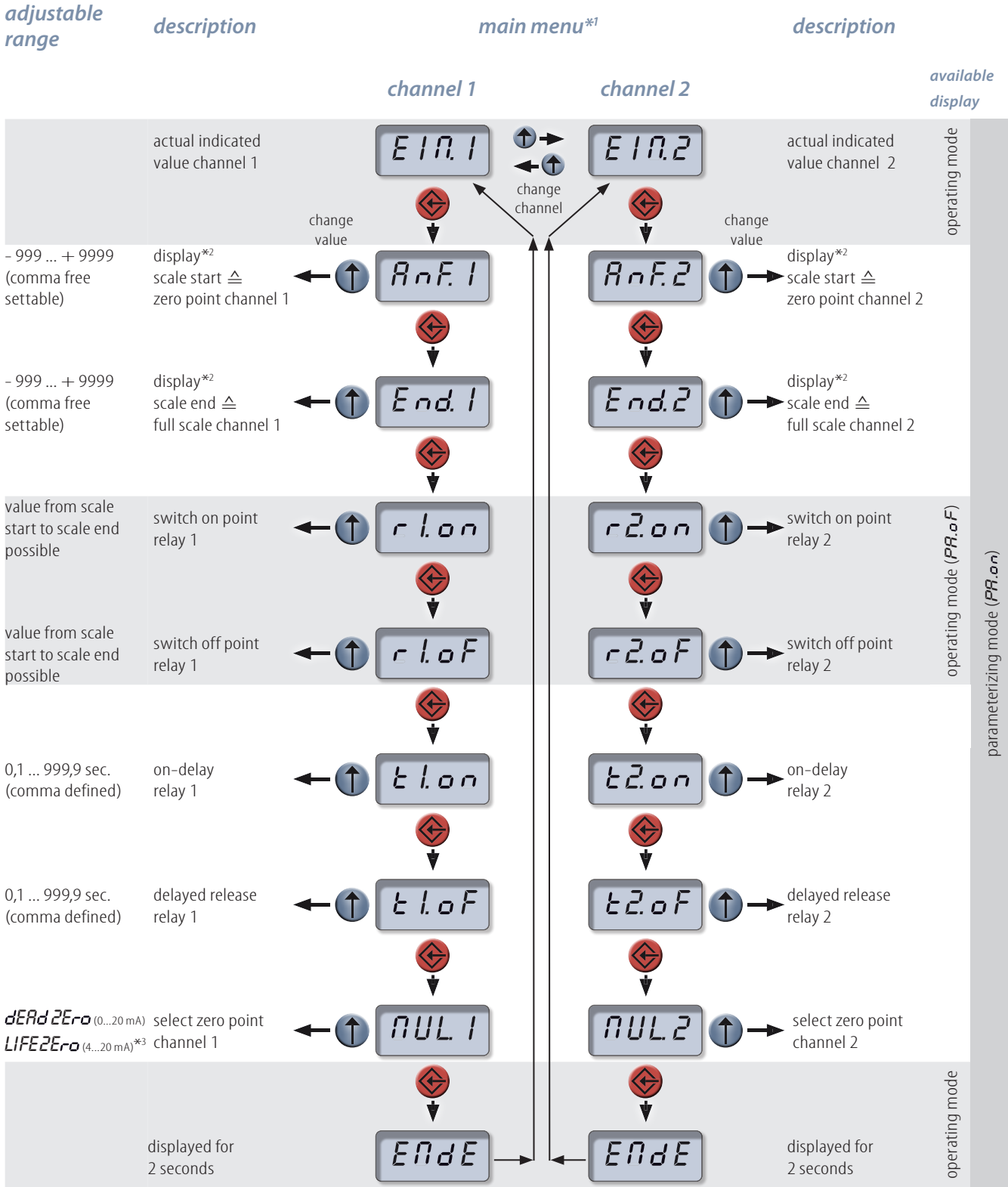
The digital DGW 2.00 TW is used for the limit value control of standard inputs. The parameterization is carried out by front side push-buttons and indicated by display. The 4-digit actual value indication is free scalable. Based on the input, the ON and OFF switchpoints (limits) of the two independent relays can be freely defined. This automatically results in a hysteresis.

The ON-delay and the delay release times of the relays are separately adjustable. The status indication of the relays are indicated by LEDs.

It has a 2- and a 3-wire transmitter feeding. At the current input 4...20 mA or the optional voltage input of 2...10 V the Live-Zero monitoring is active. At the same time, each relay out of the valid range of 3,9...20,8 mA (1,9...10,4 V) is falling off.



OVERVIEW-MENU



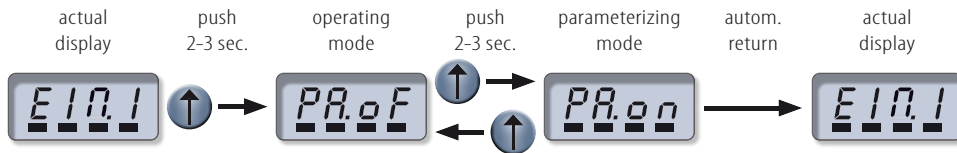
Legend: selection next

*¹ There is a constant change between the actual indicated value and the display of the menu item.

*² The display is free scalable, e.g. instead of the 4...20 mA 0...100 m³ is being displayed.

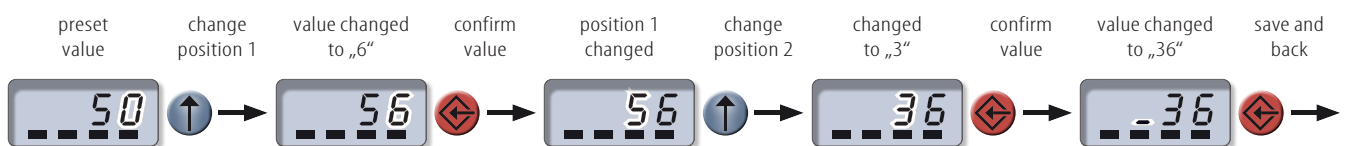
*³ Live-Zero is monitoring the range: relay out of range of 3,9...20,8 mA fallen off.

changeover parameterizing mode/ operating mode:

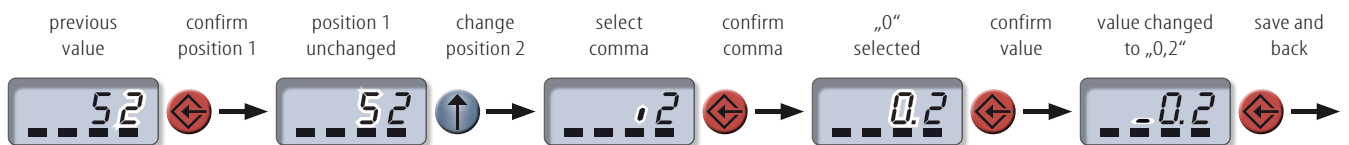


CHANGE VALUE (select to change the menu item):

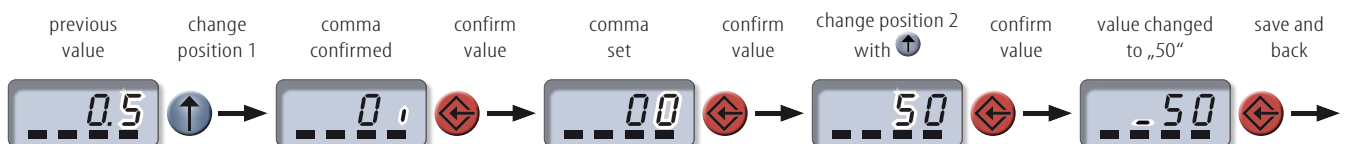
change value:



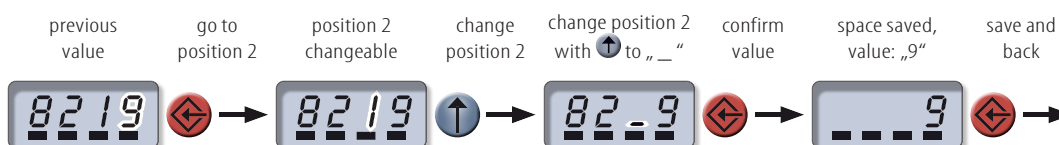
define decimal place:









delete decimal place:





delete positions:



Details of operation:


The displayed position gets changed with the push-button . Values such as  to , minus , comma , and space  are possible.

Use the push-button  to confirm the actual position and go to the next or return to the main menu after changing the last digit. Break-off possible by pushing  longer.

Optional door installation:

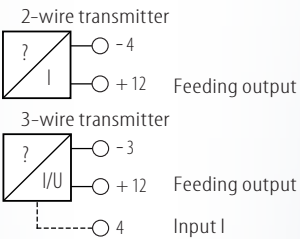
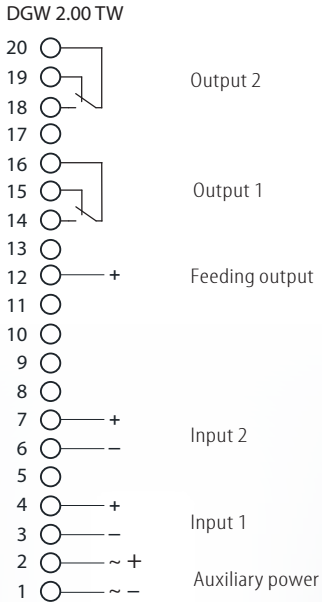
Push red push-button longer than 2 seconds: code requested. Enter default code to change parameters, otherwise display only.

Legend:

-  Digit on display blinks.
-  Display of comma.
-  space
-  selection
-  confirm

DGW 2.00 TW

Connection diagram:



Input:

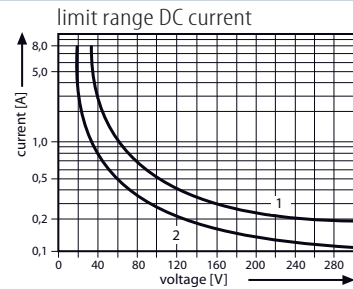
I: load-independent DC current: 0(4)...20 mA input resistance approx. 50 Ω
 connection input 1: terminal 3 -, 4 +
 connection input 2: terminal 6 -, 7 +

optional/ alternatively:

U: load independent DC voltage: 0(2)...10 V input resistance approx 100 kΩ
 transmitter feeding: approx. 20 V at 20 mA

Output:

2 relay outputs: changer
 max. switching current: 8 A
 max. switching voltage: 250 V AC
 mechanical life cycle: 30 x 10⁶ cycles
 contact life cycle: 10⁵ cycles
 connection: see connection diagram
 1 - resistive load
 2 - inductive load

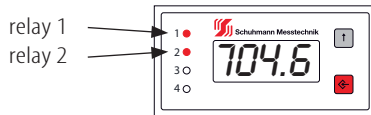


Adjustment:

The functions are adjusted by 2 front side push-buttons and display (see Seite 03-24 und 03-25).

Display:

4-digit LC-display, indication of relay status by 2 LEDs
 LED relay 1 red, active relay 1 tightend
 LED relay 2 red, active relay 2 tightend



Environmental conditions:

Storage temperature: -40...+70 °C
 Operating temperature: 0...55 °C
 Isolation voltage: 4 kV eff. 1 sec.
 input-output-auxiliary power

Auxiliary power:

Wide range: 24...250 V DC
 90...253 V AC
 < 3 W

Characteristics of transmission:

Linearity error: < 0,03 %
 of final value
 Temperature error: < 30 ppm/ K

Directive:

EMV Directive: 2014/30/EU*
 Low Voltage Directive: 2014/35/EU
 *minimum deviations possible during
 HF-radiation influence

Mounting details:

Door installation:
 Type of protection: IP 54 Front
 Front frame: 96 x 48 mm
 Installation depth: 138,5 mm
 Weight: 290 g
 Material: PC/ ABS
 Flammability class: V0 (UL94)
 Approval: CE
 Connection: pluggable
 screw clamps
 0,14...1,5 mm²

Ordering information:

Voltage input **optional!**
 Please specify special signals in clear text:
0(2)...10 V

Type: DGW 2.00 TW wide range door installation

Schuhmann GmbH & Co. KG
 Römerstraße 2
 D-74363 Güglingen
 Tel. + 49 71 35 50 56
 E-mail: info@schuhmann-messtechnik.de
 www.schuhmann-messtechnik.de



Digital limit switch for temperature signals, parameterizable

DGS 2.01 GW

FEATURES

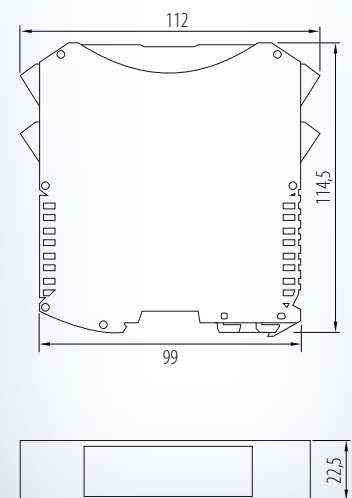
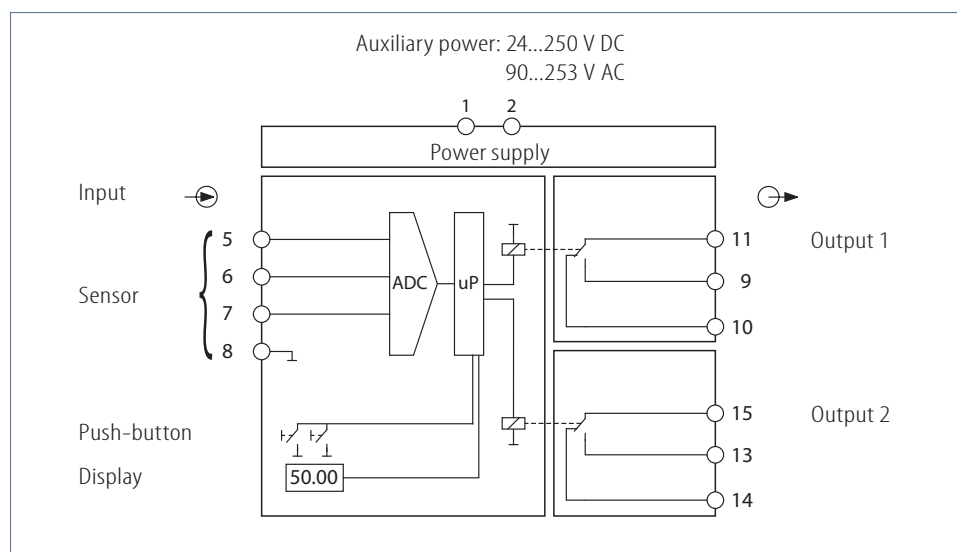
- **Input:**
PT 100, PT 500, PT 1000, NI 1000 and KTY
- **Output:**
2 relays with changeover contacts
- **Parameterization and adjustment**
by push-button or integrated interface
- **Current value indication** via display
- **3-Way galvanic isolation** of 4 kV



FUNCTIONALITY

The digital devices of the DGS series are used for limit value monitoring of common temperature sensors. The DGS 2.01 GW has an input for different temperature sensors like PT 100, PT 500, PT 1000, NI 1000, and KTY. Parameterization is done by the two front side push-buttons and the 4-digit display or via the integrated interface with the USB2 adapter/USB-Simulator in connection with the KALIB-Software. The parameter files can be stored and easily transferred to other devices.

Further – also customer-specific – sensors can be loaded via the KALIB-Software. In relation to the input, the switch-on and switch-off points (limit values) of the two independent relays can be freely defined. This automatically results in a hysteresis. Hysteresis, pick-up and drop-out delays, the behaviour of the relays in case of sensor break and the alarm limits can be set separately. The relay states are indicated by LEDs on the front side.





PRESENTATION NOTES

Symbolism of buttons

Button color	Button press short	Button press long (>2 s)
black		
red		

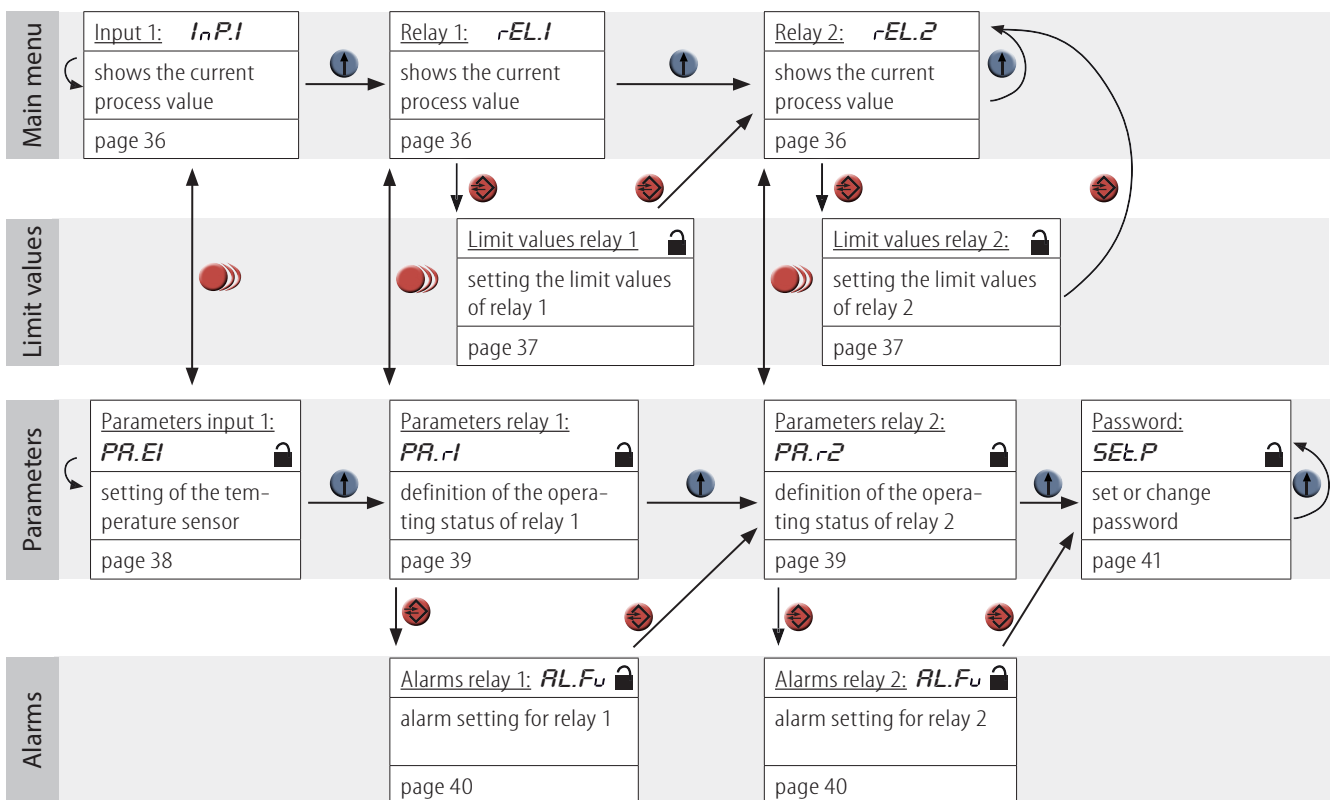
Symbolism of arrows

- logical transition in the program flow
- temporal transition in the program flow
- logical change in program flow
- temporal change in the program sequence

Symbolism of the display

- number flashes on the display
- decimal point representation
- space

MENU OVERVIEW



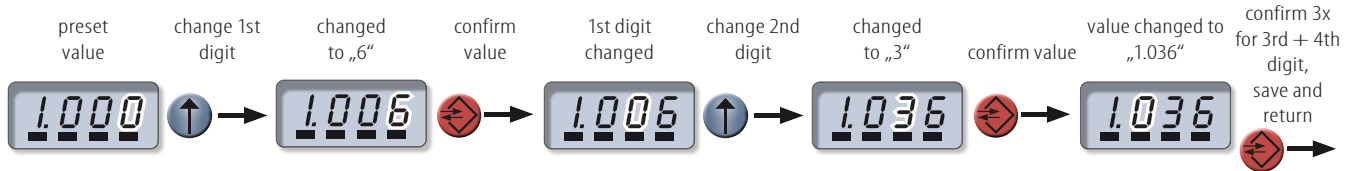
Program sections with can be protected from changing by setting a password.

Legend: select continue switch level home Automatic display change: display channel 1 display channel 2

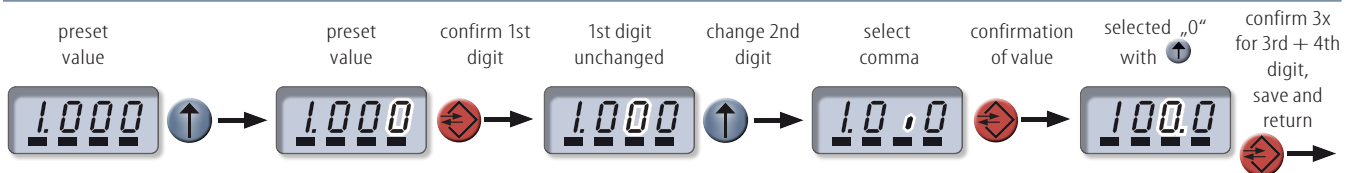


CHANGE VALUE (to change, select in the respective menu item with):

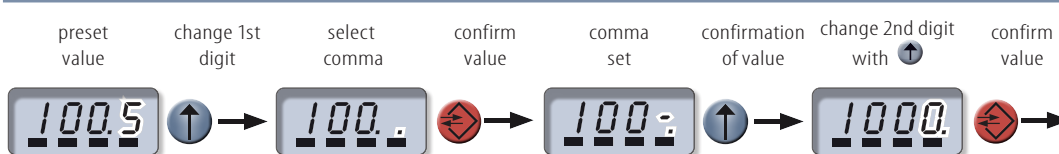
Change value:



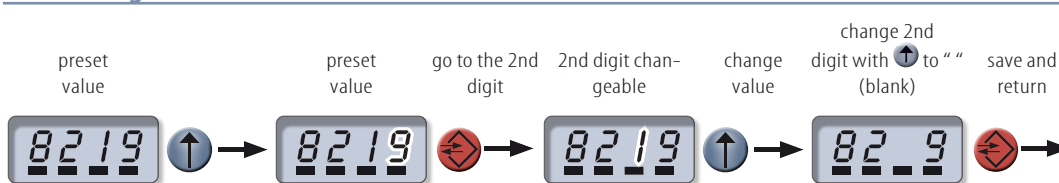
Define decimal point position:



Remove decimal point:



Remove digits:

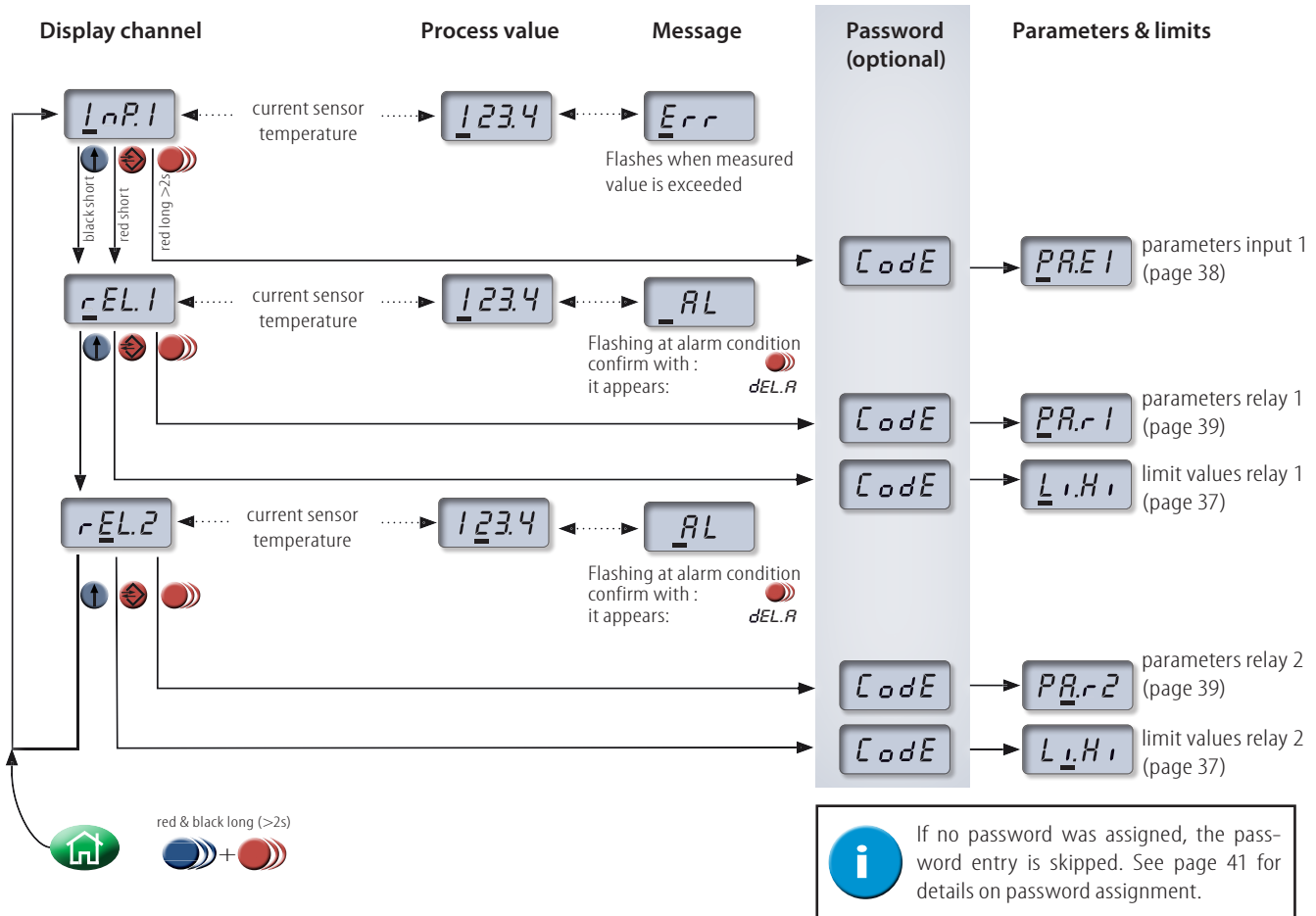


Legend: select continue switch level home Automatic display change: display channel 1 display channel 2



DISPLAY OF PROCESS VALUE

Description of the main menu



NAVIGATION TO THE STARTING POINT

Home function

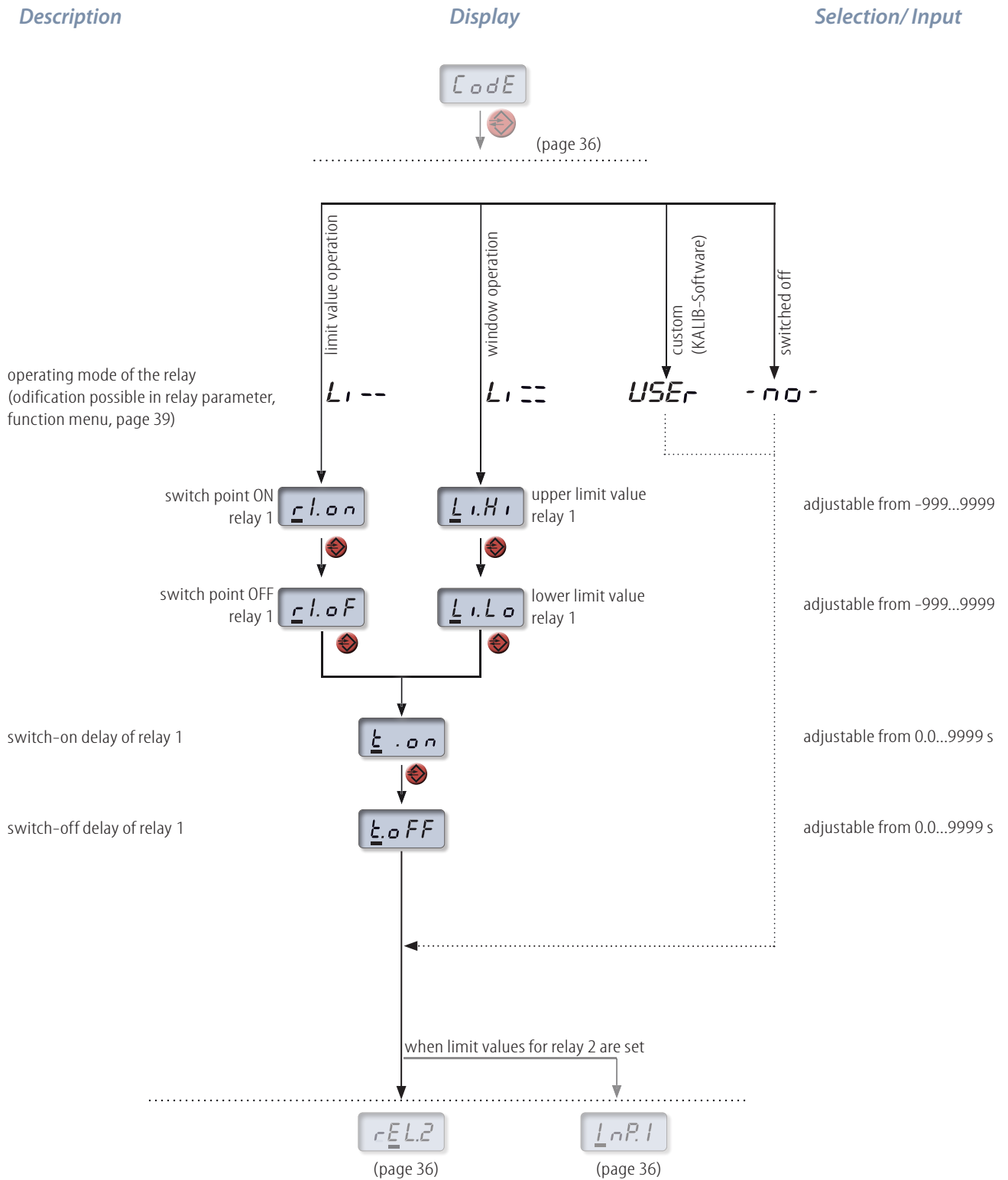


Using the home function it is possible to jump directly to the start, independent of the current menu window. To do this, press the red and black buttons simultaneously for two seconds. A short **HOME** appears on the screen. Previous entries are thereby discarded.

Legend: select (blue arrow up), continue (red arrow right), switch level (red double arrow right), home (green house icon), Automatic display change: display channel 1 (black bar), display channel 2 (red bar)



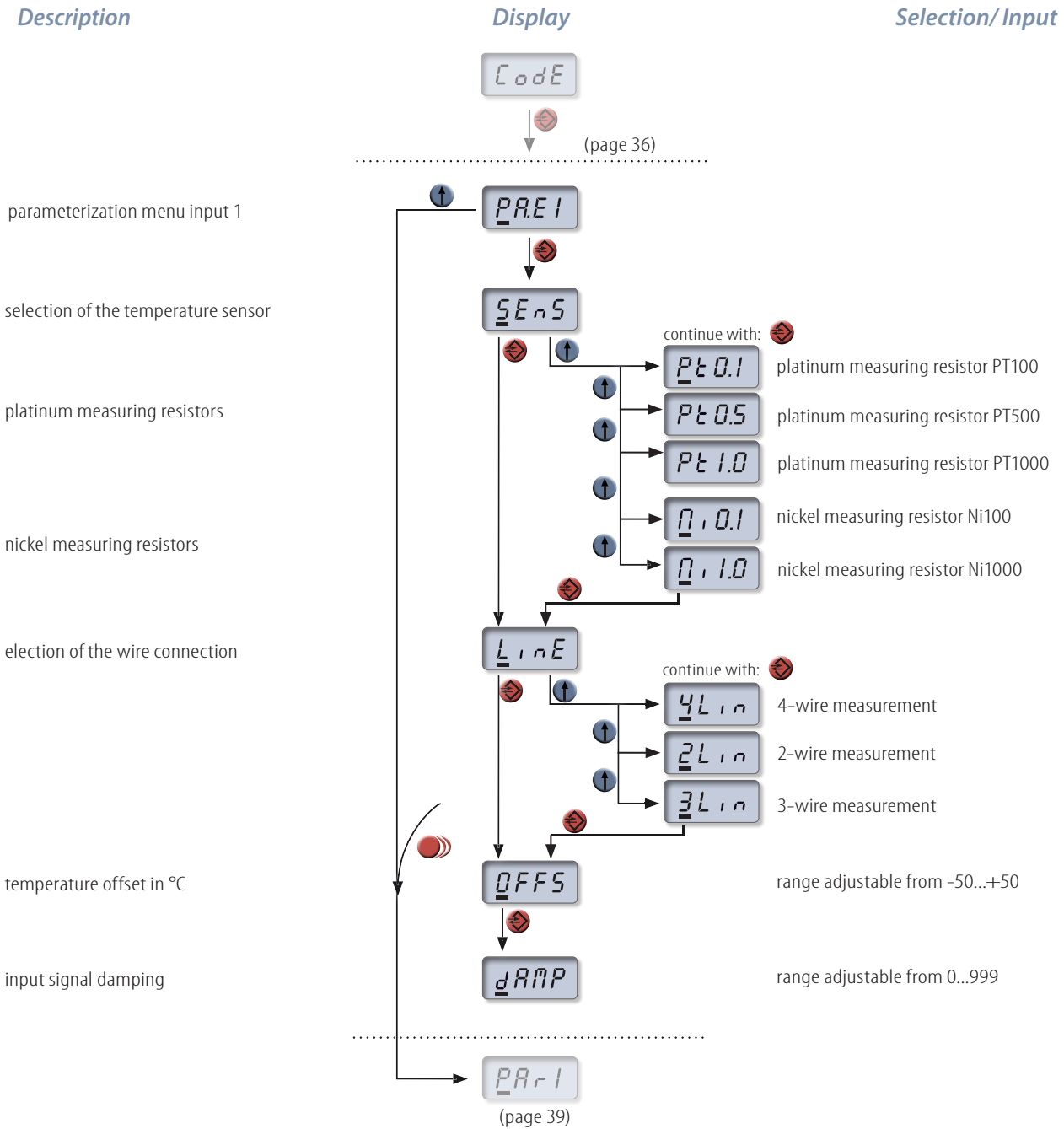
LIMIT VALUES RELAY 1 (EQUIVALENT FOR RELAY 2)



Legend: select (up arrow) continue (right arrow) switch level (red circle) home (blue circle) Automatic display change: display channel 1 (two bars) display channel 2 (four bars)



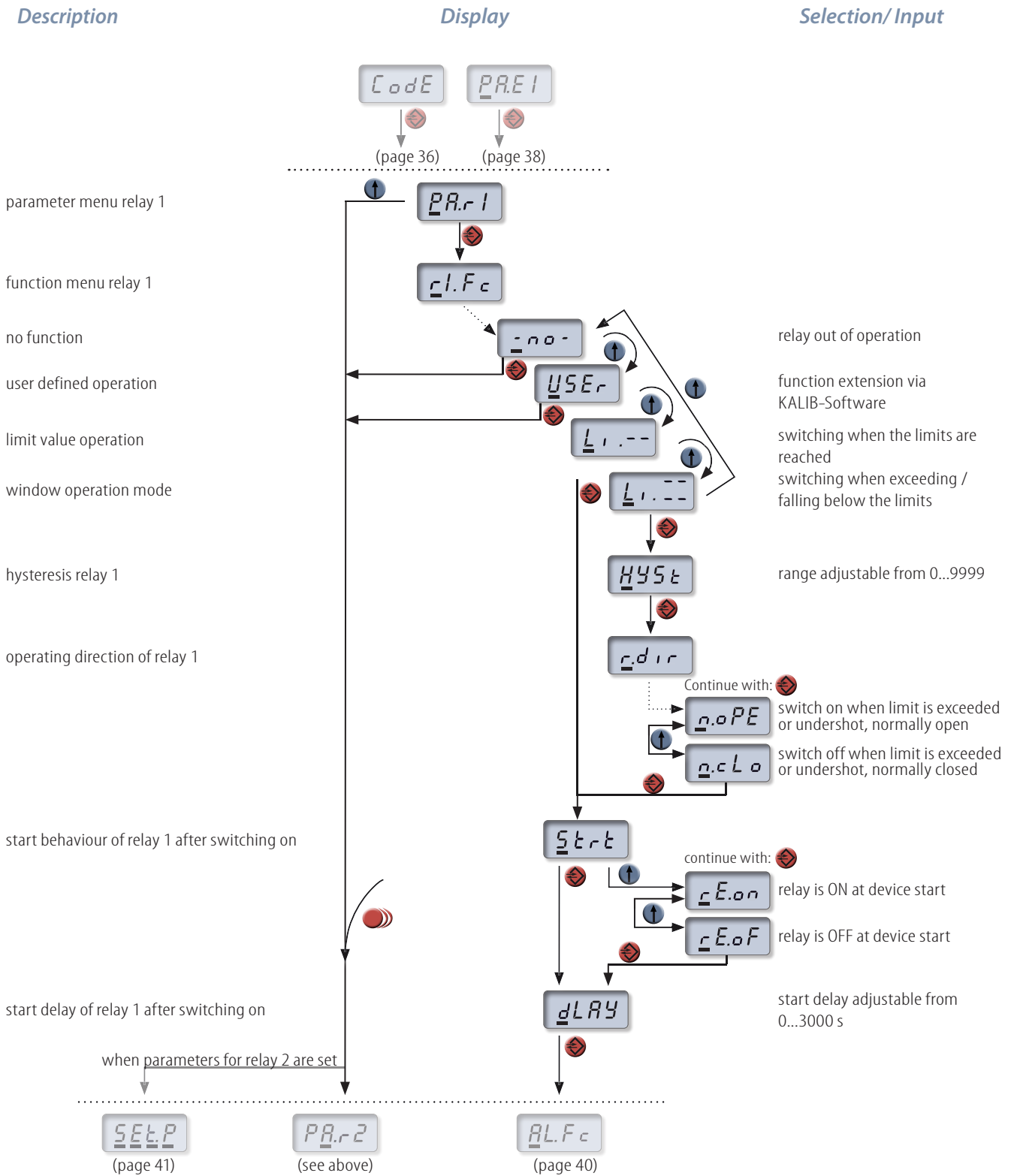
DEFINITION OF THE PARAMETERS FOR INPUT 1



Legend: select (up arrow), continue (right arrow), switch level (two red circles), home (blue circle with plus), Automatic display change: display channel 1 (two black bars), display channel 2 (two white bars)



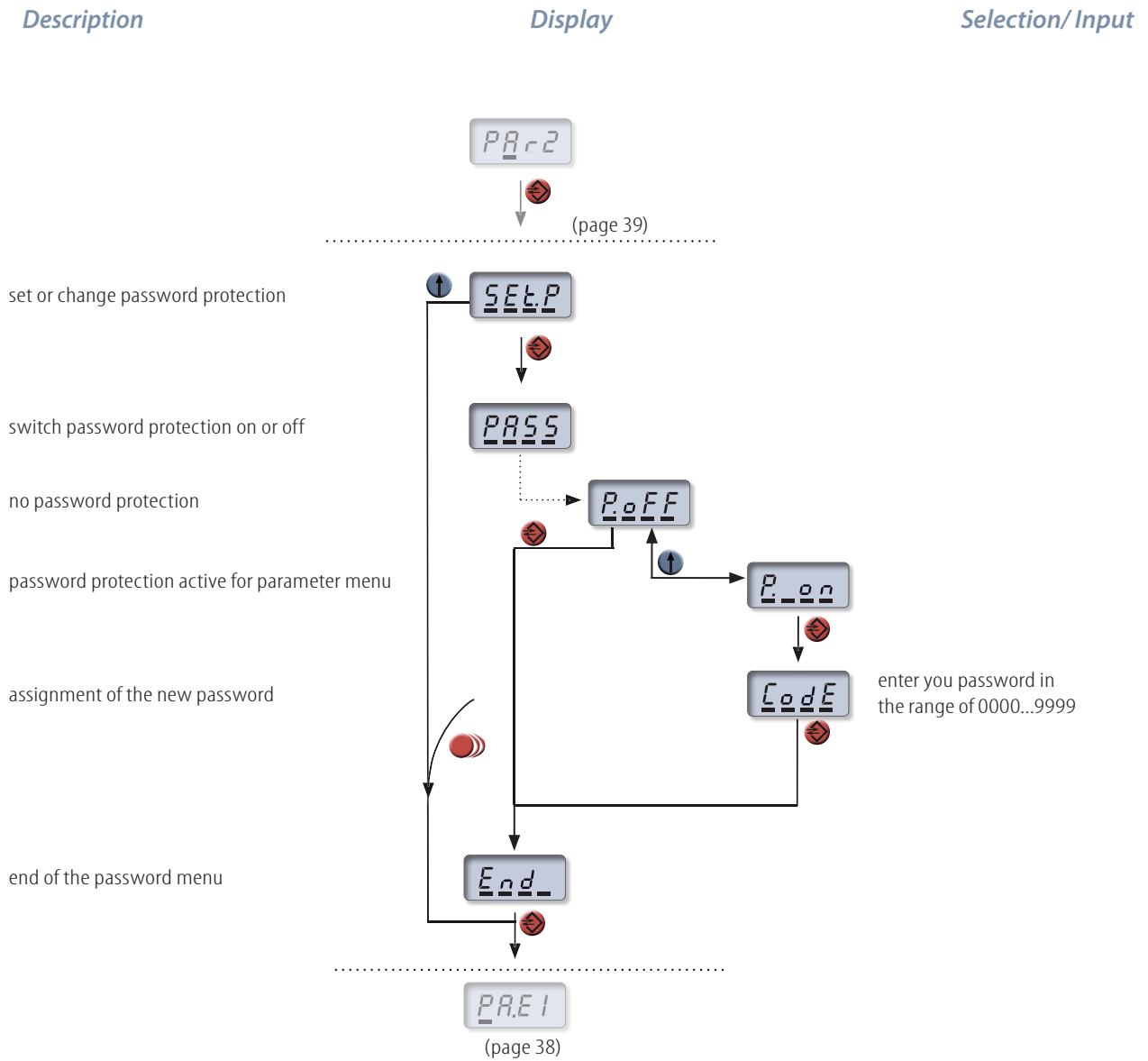
DEFINITION OF PARAMETERS FOR RELAY 1 (EQUIVALENT FOR RELAY 2)



Legend: select (up arrow), continue (right arrow), switch level (red circle), home (blue circle), Automatic display change: display channel 1 (dashed line), display channel 2 (dotted line)



PASSWORD SETTINGS



Legend: select (↑) continue (↔) switch level (⦿) home (⦿) Automatic display change: display channel 1 (—□□□) display channel 2 (□□□—)



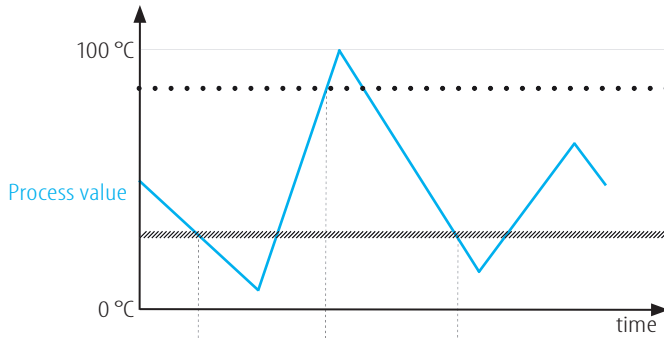
EXAMPLES

LIMIT VALUE OPERATION MODE

A temperature measurement with a PT500 element will be performed in 3-wire operation. The upper limit value is 80°C and the lower limit value is 30°C. The effects on relay 1 are shown with an example process value.

DGS settings:

<i>SEnS</i>	<i>Pt0.5</i>
<i>LinE</i>	<i>3.Lin</i>
<i>rL.Fc</i>	<i>LI..</i>



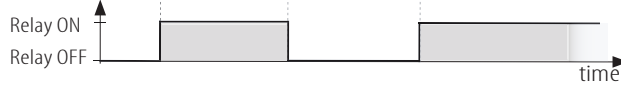
Upper limit value is greater than lower limit value:



Legend:

- *rL.on* = 80.00
- //// *rL.oF* = 30.00

Upper limit value is below lower limit value:



Legend:

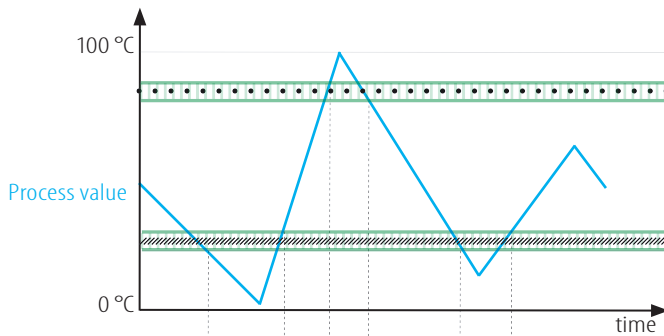
- *rL.oF* = 80.00
- //// *rL.on* = 30.00

WINDOW OPERATION MODE

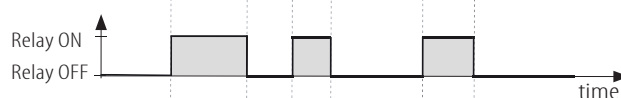
A temperature measurement with a PT500 element shall be performed in 3-wire operation. The upper limit value is 80°C and the lower limit value is 30°C. The hysteresis is set here to a value of 10°C. The effects on relay 1 are shown with an example process value

DGS settings:

<i>SEnS</i>	<i>Pt0.5</i>
<i>LinE</i>	<i>3.Lin</i>
<i>rL.Fc</i>	<i>LI..</i>
<i>HYS</i>	10.00



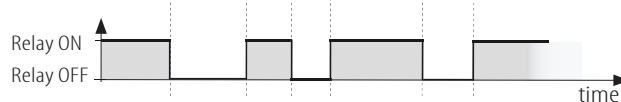
Relay switch on when limit is exceeded or undershot:



Legend:

- *Li.Hi* = 80.00
- //// *Li.Lo* = 30.00
- r.dir* = *noPE*
- ▢ *HYS* = 10.00

Relay switch off when limit is exceeded or undershot:



Legend:

- *Li.Hi* = 80.00
- //// *Li.Lo* = 30.00
- r.dir* = *noLo*
- ▢ *HYS* = 10.00



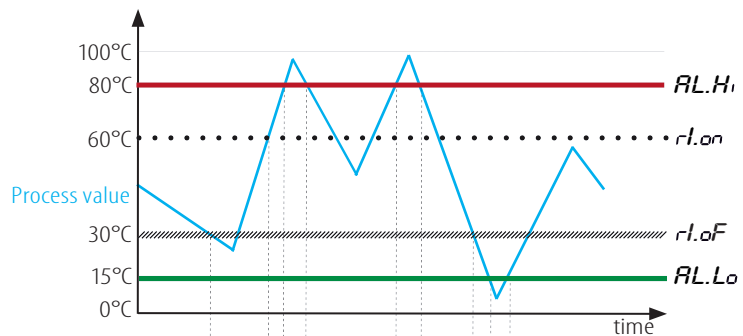
EXAMPLES

ALARMS

A temperature measurement with a PT500 element will be performed in 3-wire operation. Thereby the device is operated in limit value mode with the limits 60°C and 30°C. Additionally, alarms are now used. The upper alarm limit is defined at 80°C and the lower alarm limit at 15°C. In the following examples the possible alarm settings are explained.

DGS settings:

SEnS	Pt0.5
LinE	3.Lin
rI.Fc	LI--
rI.oN	60.00
rI.oF	30.00
AL.Hi	80.00
AL.Lo	15.00



Exceeding or dropping below the alarm limits switches relay ON

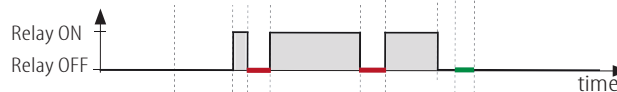
Alarm function: *oN.R*



i States caused by alarms are marked in the respective color.

Exceeding or dropping below the alarm limits switches relay OFF

Alarm function: *oF.R*



Single exceeding or dropping below the alarm limits switches relay permanently ON

Alarm function: *oN.RH*



Single exceeding or dropping below the alarm limits switches relay permanently OFF

Alarm function: *oF.RH*

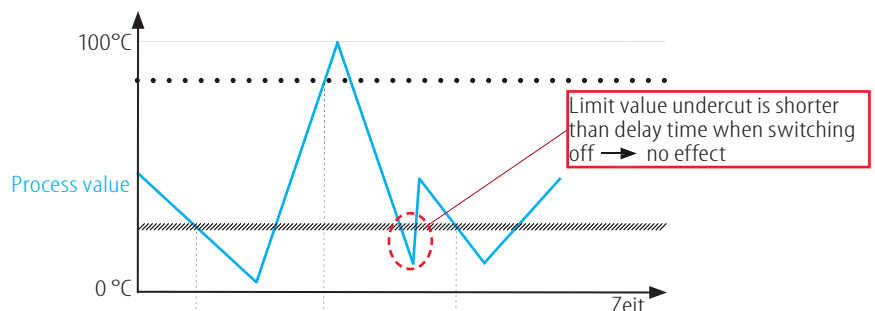


TIME DELAY

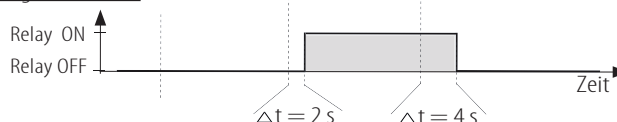
A temperature measurement with a PT500 element will be performed in 3-wire operation. Thereby the device is operated in limit value mode with the limits 80°C and 30°C. Additionally a time delay of 2 seconds for switching on and 4 seconds for switching off is set. The effects on relay 1 shall be shown by means of an example process value.

DGS settings:

SEnS	Pt0.5
LinE	3.Lin
rI.Fc	LI--
t.oN	2 s
t.oFF	4 s



Time delay when switching ON and OFF

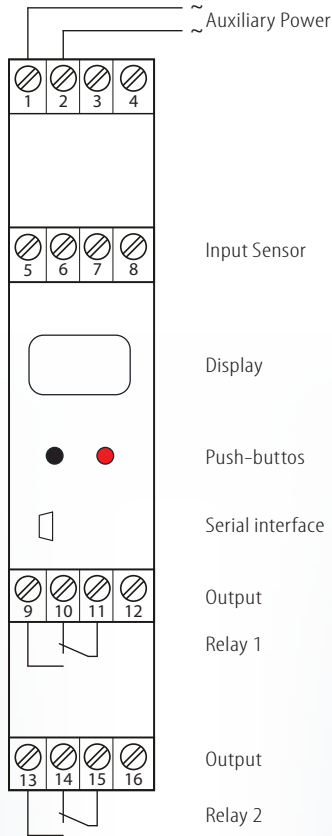


Legend:

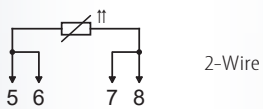
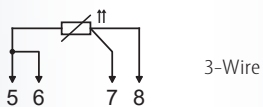
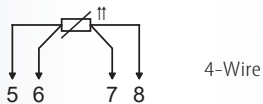
••• rI.oN = 80.00
 // rI.oF = 30.00

DGS 2.01 GW

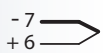
Connection diagram:



Input Sensor:
PT, KTY, NI, resistance, potentiometer



Thermocouple:



Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen
Tel. +49 71 35 50 56
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de

Input:

Adjustable via push-button and interface

Sensor type	Measuring range
PT 100/500/1000	-199...+849 °C
NI 100/500/1000	-58...+208 °C

Adjustable only via interface:

KTY 10/11/13/81/82/83	-58...150 °C
KT 100/110/130/210/230	-58...150 °C
Potentiometer (2-wire) User	0...500 Ω/ 5 kΩ

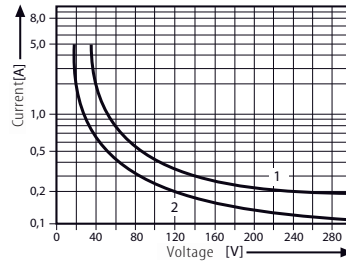
Further temperature sensor curves can be created via the KALIB-Software by the user.

Output:

2 relay outputs: change-over contact DC current limit range

max. switching current:	5 A
max. switching voltage:	250 V AC
mechanical life:	30 x 10 ⁶ cycles
contact lifetime:	10 ⁵ cycles
connection:	see wiring diagram

- 1 - resistive load
- 2 - inductive load



Adjustment:

The functionality of the device is adjustable via two front side push buttons and the display or via the KALIB-Software. For this you need a PC and the interface adapter **USB2/ USB simulator** in connection with **KALIB-Software**.

Display:

4-digit LC display with four bars to indicate the respective relay or input channel that is currently being processed or displayed.



Environmental conditions:

Storage temperature:	-40...+70 °C
Operating temperature:	0...55 °C
Insulation voltage:	4 kV eff. 1 sec.
Input-output auxiliary voltage:	3kV eff. 1 sec.

Auxiliary power:

Wide range:	24...250 V DC
	90...253 V AC
	< 3 W

Characteristic of transmission:

Linearity error:	< 0.2 % of final value
Temperature error:	< 100 ppm/ K

Directive:

EMC Directive:	2014/30/EU*
Low voltage directive:	2014/35/EU
*slight deviations are possible during the interference of the HF radiation	

Mounting details:

Housing for top hat rail:

Protection class:	IP 30 housing
	IP 20 plug-in terminals
Mounting rail fastening according to:	EN 50022-35 x 7,5 mm

Width:	22,5 mm
Mass:	160 g
Material:	Polyamide PA
Flammability class:	V0 (UL94)
Approval:	CE
Connection type:	pluggable screw terminals
	0,2...2,5 mm ²

For safety reasons, it is recommended to mount the housings for top-hat rail with a distance of approx. 5 mm between each other.

Order information:

Type: DGS 2.01 GW wide range
Accessories: USB2/ USB-Simulator with KALIB-Software

07.03.2023

FEATURES

- **Input:**
PT 100
optional PT 500/ PT 1000
- **Output:**
2 relays with change over contacts
Relay 1: limit value function
Relay 2: limit value or alarm function
- **Parameterization, operation and actual value over display**
- **Galvanic 4-way isolation of 4 kV**



FUNCTION

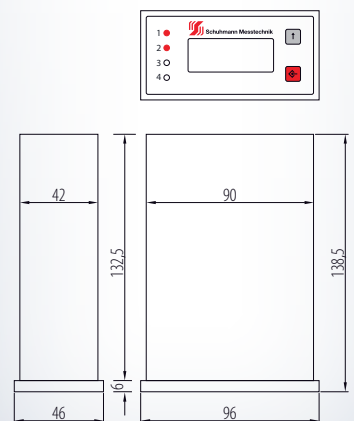
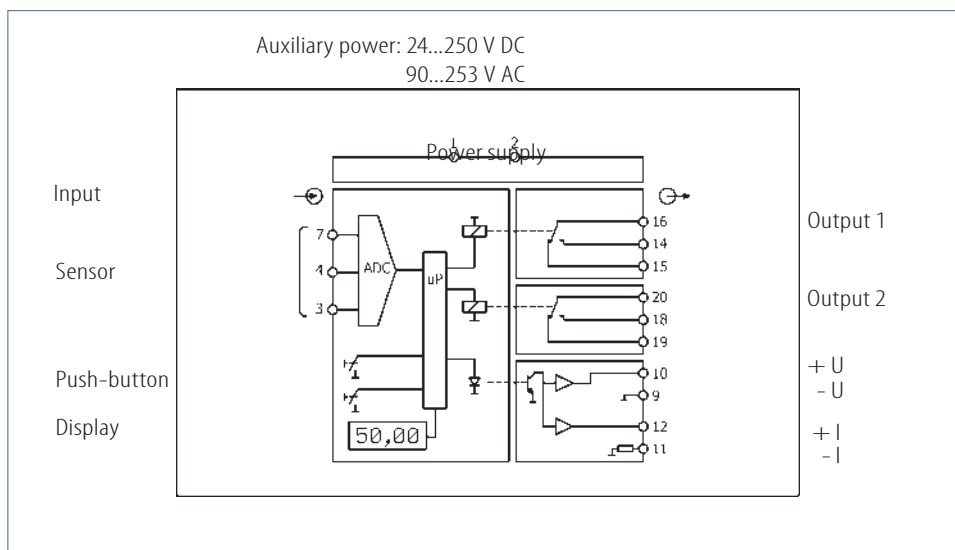
The DGW 2.01 TW has an input for PT 100 respectively optional PT 500 oder PT 1000. It has two relay outputs.

The parameterization is carried out by front side push-buttons and indicated by display.

The 4-digital actual value indication is free scalable. Based on the input, the ON and OFF switchpoints (limits) of the two independent relays can be freely defined. This automatically results in a hysteresis.

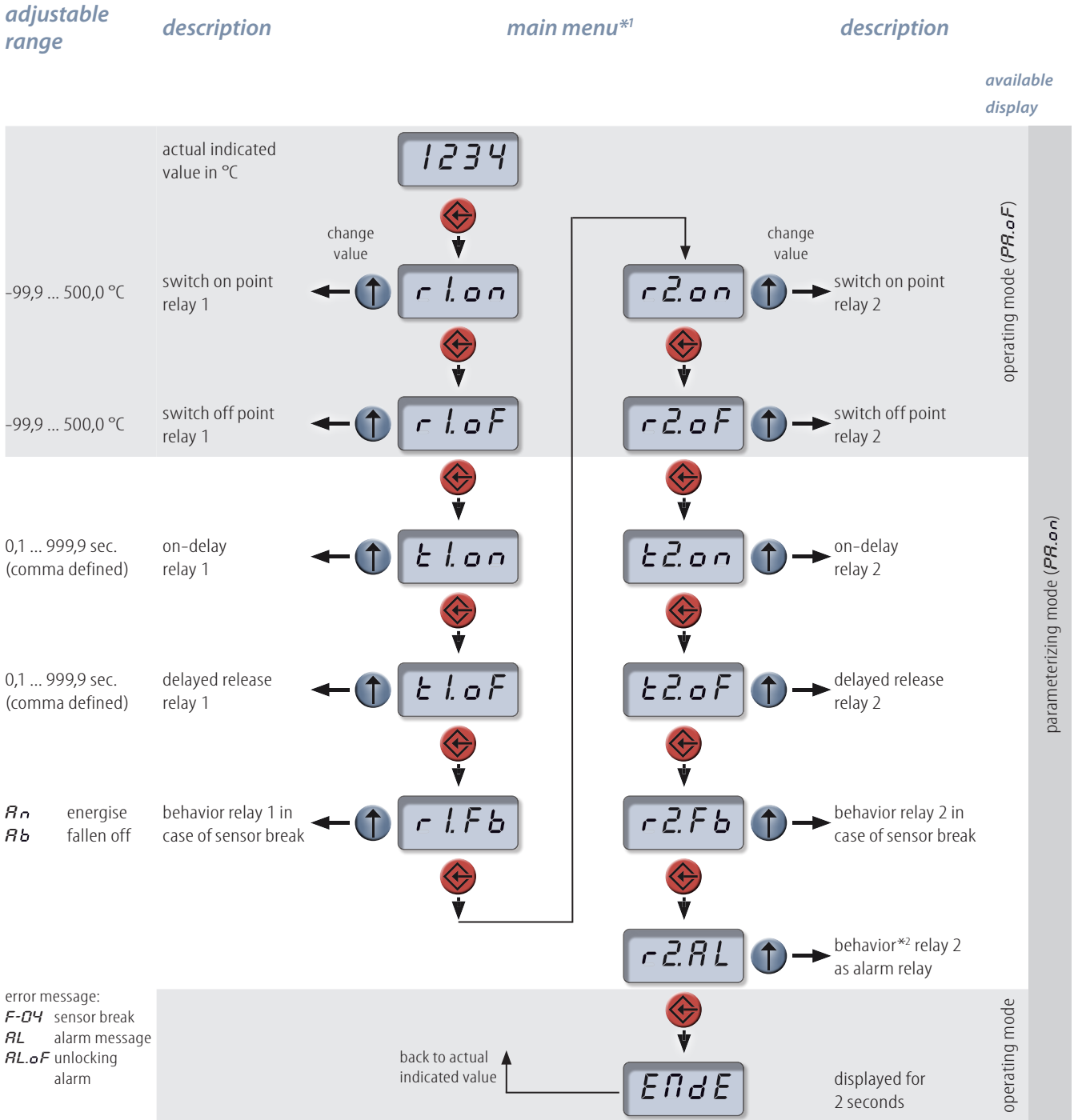
The ON-delay and the delay release time of the relays are separately adjustable. The relay status is indicated by LEDs.

An alarm function can be realized with the relay 2, in which the pane, via the tresholds for on and off, can be set. Is has a simultaneous analog voltage and current output.





OVERVIEW-MENU



Legend: ↑ selection ↻ next

*1 There is a constant change between the actual indicated value and the display of the menu item.

*2 alarm relay: (window: acceptance region between switching and tripping point)

RLS no alarm function, hysteresis

Rb.h relay 2 fallen off outside acceptance region and locked

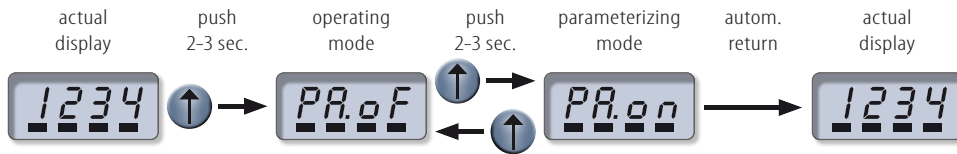
Rn.h relay 2 energised outside acceptance region and locked

Rb relay 2 fallen off outside acceptance region

Rn relay 2 energised outside acceptance region

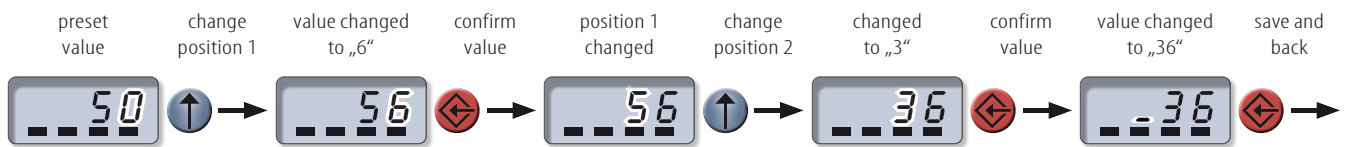
*3 menu point *r1.Fb* and *r2.Fb* at DGW 2.08 not available !

changeover parameterizing mode/ operating mode:

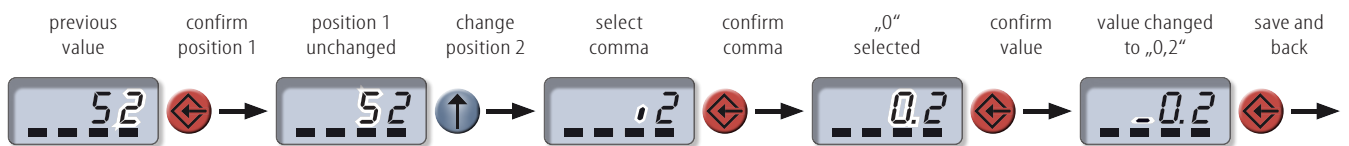


CHANGE VALUE (select to change the menu item):

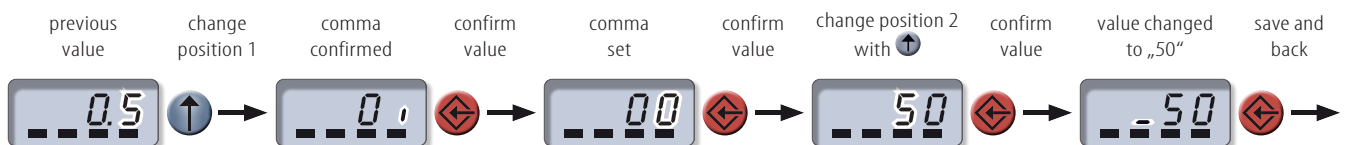
change value:



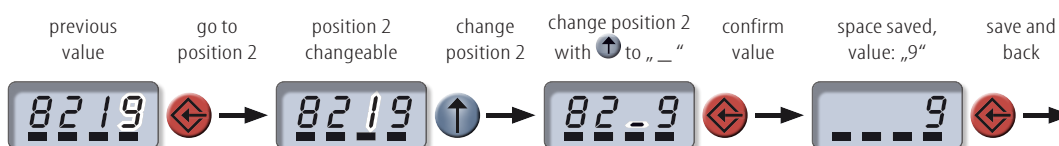
define decimal place:









delete decimal place:





delete positions:



Details of operation:

The displayed position gets changed with the push-button . Values such as  to , minus , comma , and space  are possible.

Use the push-button  to confirm the actual position and go to the next or return to the main menu after changing the last digit. Break-off possible by pushing  longer.

Optional door installation:

Push red push-button longer than 2 seconds: code requested. Enter default code to change parameters, otherwise display only.

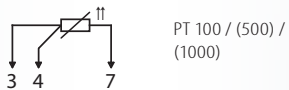
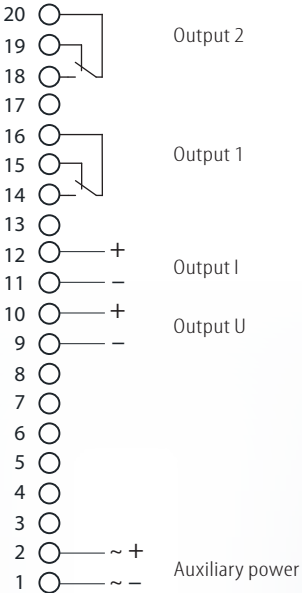
Legend:

-  Digit on display blinks.
-  Display of comma.
-  space
-  selection
-  confirm

DGW 2.01 TW

Connection diagram:

DGW 2.01 TW

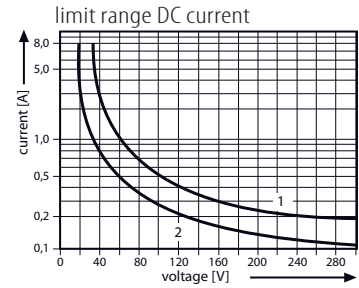


Input:

PT 100, 2-/3-wire range -100...500 °C
optional PT 500 / PT 1000

Output:

2 relay outputs: changer
max. switching current: 8 A
max. switching voltage: 250 V AC
mechanical life cycle: 30 x 10⁶ cycles
contact life cycle: 10⁵ cycles
connection: see connection diagram
1 - resistive load
2 - inductive load



Analog output simultaneous:

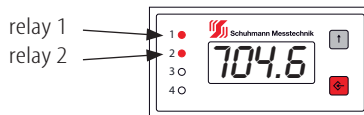
I: load-independent DC current: 0(4)...20 mA input resistance approx. 680 Ω
U: load-independent DC voltage: 0(2)...10 V input res. approx. ≥ 5 kΩ simultaneous operat.

Adjustment:

The functions are adjusted by 2 front side push-buttons and display (Seite 03-36 und 03-37).

Display:

4-digit LC-display, indication of relay status by 2 LEDs
LED relay 1 red, active relay 1 tightend
LED relay 2 red, active relay 2 tightend



Environmental conditions::

Storage temperature: -40...+70 °C
Operating temperature: 0...55 °C
Isolation voltage: 4 kV eff. 1 sec.
input-output-auxiliary voltage

Auxiliary power:

Wide range: 24...250 V DC
90...253 V AC
< 3 W

Characteristics of transmission::

Linearity error: < 0,15 % of final value
Temperature error: < 30 ppm/ K

Directive:

EMV Directive: 2014/30/EU*
Low Voltage Directive: 2014/35/EU

* minimum deviations possible during HF-radiation influence

Mounting details:

Door installation:

Type of protection: IP 54 Front
Front frame: 96 x 48 mm
Installation depth: 138,5 mm
Weight: 290 g
Material: PC/ ABS
Flammability class:: V0 (UL94)
Approval: CE
Connection: pluggable screw clamps
0,14...1,5 mm²

Ordering information:

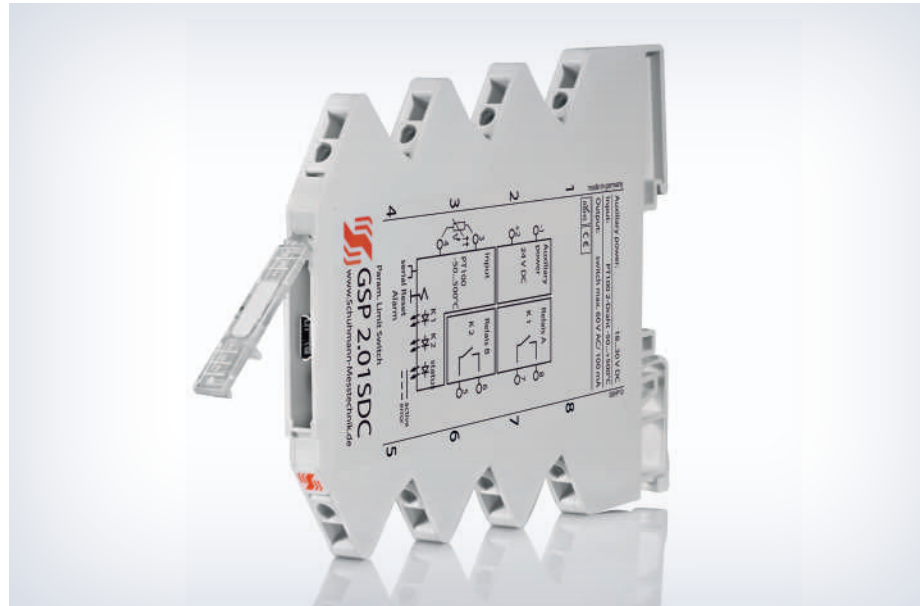
Please specify signals in clear text:
e.g. PT 100, 0...20 mA.

Type: DGW 2.01 TW wide range door installation

Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen
Tel. + 49 71 35 50 56
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de

FEATURES

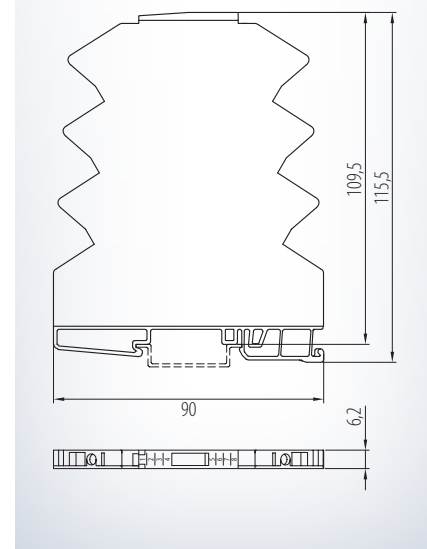
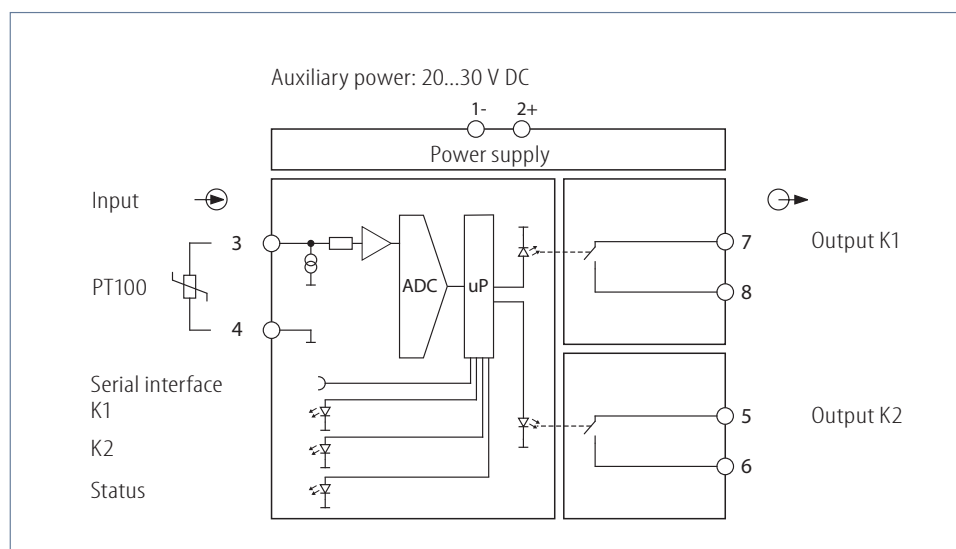
- **Input:**
PT100 temperature measurement
- **Output: 2x transistor**
- **Indication of contact state by LED**
- **Additional functions:**
Hysteresis, ON/OFF-delay, window, tendency, inverse function, alarm
- **Parameterization without auxiliary power via PC-interface**
- **Galvanic 3-way isolation of 2,5 kV**
- **Low internal consumption**



FUNCTION

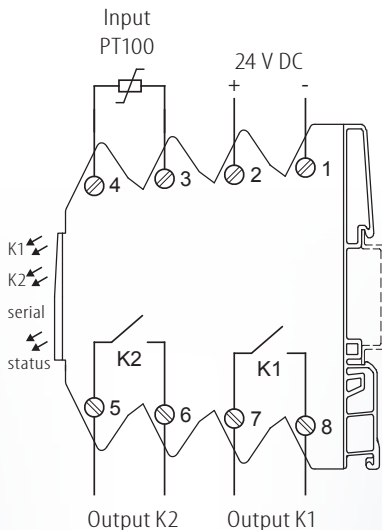
The GSP 2.01 SDC is used for measurement of temperature and control. All common PT100 sensors can be connected. The limit switch is being parameterized by the USB2 adapter in connection with KALIB-Software. For the output 2 potential free transistor switches are available which are equipped with limit values, hysteresis, ON/ OFF-delay, window, alarm, inverse function, tendency and sensor control each.

The temperature to be controlled is converted by the PT100 temperature sensor into a non-linear voltage signal. After internal preparation and linearization the value is compared the internally prepared limit value and then the transistor output will be energized.



GSP 2.01 SDC

Connection diagram:



Input:

PT100, 2-wire:	-50 °C...+550 °C	Measuring current 2 mA
connection:	terminal 3, 4	

Offset temperature/ line fault adjustable.

Output:

2 transistor outputs:

Load:	max. 30 V AC/ DC, max. 100 mA AC/ DC
connection K1:	terminal 7, 8
connection K2:	terminal 5, 6

Module for heavy loads: Relay interface module, 2 relays with 6 A, 250 V
Type: RE 2.00 S

Adjustment:

Measuring ranges, switching points and parameterization are adjustable in parameter data by KALIB-Software. For this you need a PC as well as the interface adapter **USB2/ USB-Simulator** with **KALIB-Software**.

Parameterization for each channel:

Limit value (+inverting):	-40,0 °C...+550,0 °C	adjustable in 0,1 °C steps
Limit value window (+inverting):	-40,0 °C...+550,0 °C	adjustable in 0,1 °C steps
Hysteresis:	+1,0 °C...+299,9 °C	adjustable in 0,1 °C steps
ON/ OFF-delay:	0,0...999,9 sec.	adjustable in 0,1 sec. steps
Tendency value rising, falling, both (+inverting):	+1,0 °C...+500,0 °C in 0,1...3240,0 sec.	adjustable in 0,1 °C/ 0,1 sec. steps

Functions:

limit value, limit value range, tendency, inverse function, alarm function, start state, start time

Display:

LED status:	green, active green, flashing	input signals are in standard range, device ready for use input out of predetermined limits or exceeding of measuring range
LED K1:	green, active	K1 closed
LED K2:	green, active	K2 closed

Environmental conditions:

Storage temperature:	-40...+70 °C
Operating temperature:	0...55 °C
Isolation voltage:	2,5 kV eff. 1 sec. input-output 2,5 kV eff. 1 sec. auxiliary voltage

Auxiliary power:

24 V DC:	20...30 V DC < 1,5 W
Influence of auxiliary power:	< 0,1 %

Characteristics of transmission:

Resolution:	10 bit
Linearity error:	< 0,5 % of final value
Temperature error:	< 30 ppm/ K
Response time:	< 10 msec.

Directive:

EMC Directive:	2014/30/EU*
Low Voltage Directive:	2014/35/EU
*minimum deviations possible during HF-radiation influence	

Mounting details:

Housing for top hat rail	
Type of protection:	IP 20
Mounting rail fixed according to	EN 50022-35 x 6,2 mm
Width:	6,2 mm
Weight:	52 g
Material:	Polyamide PA
Flammability class:	V0 (UL 94)
Approval:	CE
Connection:	screw clamps 0,14...2,5 mm ²

Please check parameterization before initial operation!

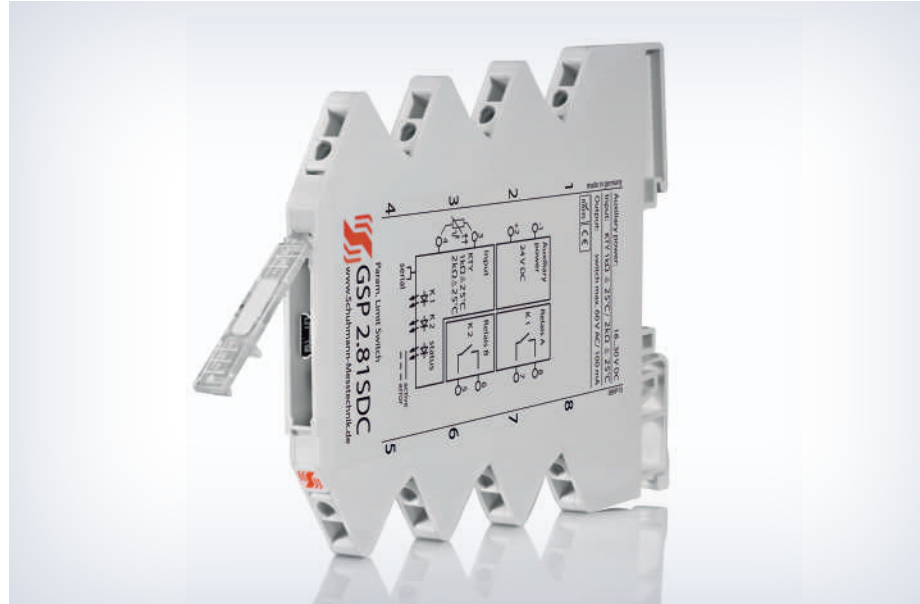
Ordering information:

Type:	GSP 2.01 SDC	24 V DC
Accessories:	USB2/ USB-Simulator with KALIB-Software, manual	

Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen
Tel. + 49 71 35 50 56
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de

FEATURES

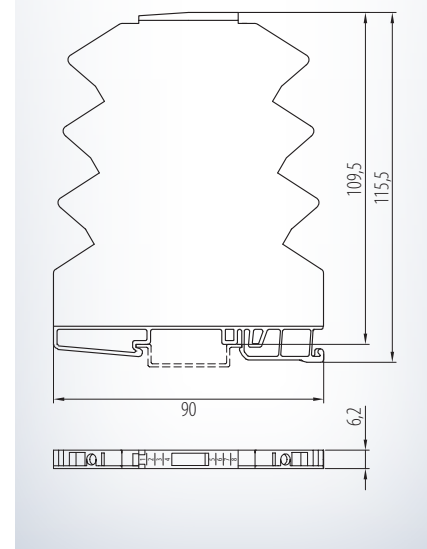
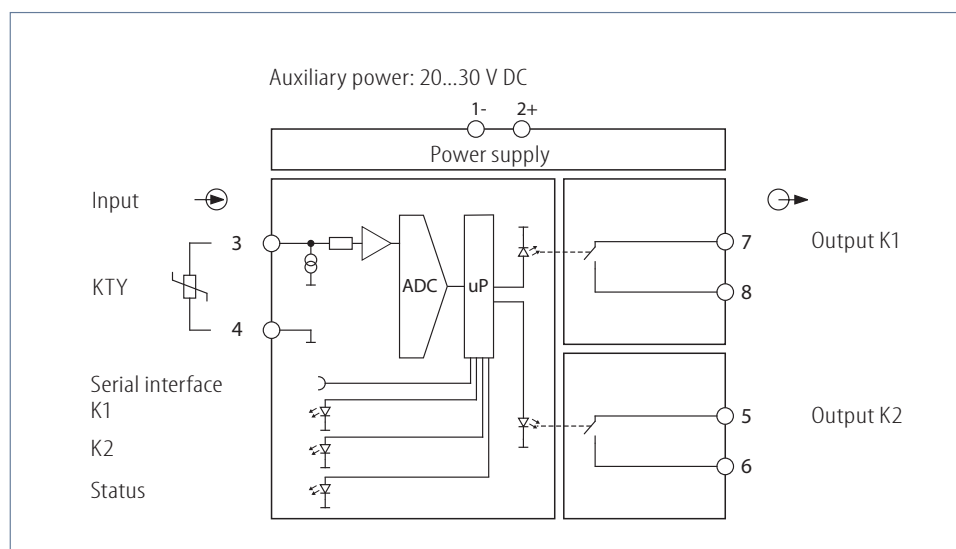
- **Input:**
KTY temperature measurement
- **Output: 2x transistor**
- **Indication of contact state by LED**
- **Additional functions:**
Hysteresis, ON/OFF-delay, window, tendency, inverse function, alarm
- **Parameterization without auxiliary power via PC-interface**
- **Galvanic 3-way isolation of 2,5 kV**
- **Low internal consumption**



FUNCTION

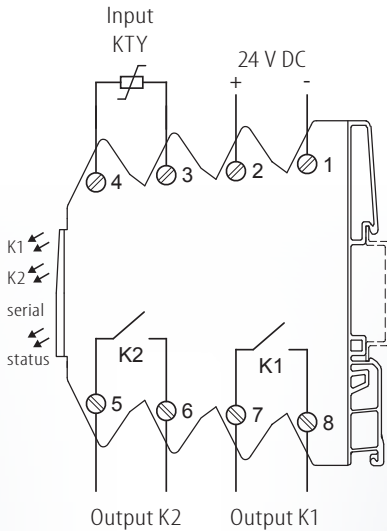
The GSP 2.81 SDC is used for measurement of temperature and control. All common kty sensors can be connected. The limit switch is being parameterized by the USB2 adapter in connection with KALIB-Software. For the output 2 potential free transistor switches are available which are equipped with limit values, hysteresis, ON/ OFF-delay, window, alarm, inverse function, tendency and sensor control each.

The temperature to be controlled is converted by the KTY temperature sensor into a non-linear voltage signal. After internal preparation and linearization the value is compared the internally prepared limit value and then the transistor output will be energized.



GSP 2.81 SDC

Connection diagram:



Input:

KTY Sensor	Adjustment	Measuring range	Measuring current
KT 100, 110, 130	2 kΩ at 25 °C	-50 °C...+150 °C	1 mA
KT 210, 230	1 kΩ at 25 °C	-50 °C...+150 °C	1 mA
KTY 10-x, 11-x, 13-x	2 kΩ at 25 °C	-50 °C...+150 °C	1 mA
KTY 21-x, 23-x	1 kΩ at 25 °C	-50 °C...+150 °C	1 mA
KTY 16-6, 19-x	2 kΩ at 25 °C	-50 °C...+150 °C	1 mA
KTY 81-x	1 kΩ at 25 °C	-50 °C...+150 °C	1 mA
KTY 82-x	1 kΩ at 25 °C	-50 °C...+150 °C	1 mA
KTY 83-x	1 kΩ at 25 °C	-50 °C...+150 °C	1 mA
KTY 84-x	1 kΩ at 100 °C	-50 °C...+150 °C	1 mA

connection: terminal 3 , 4

Output:

2 transistor outputs:

Load:	max. 30 V AC/ DC, max. 100 mA AC/ DC
connection K1:	terminal 7, 8
connection K2:	terminal 5, 6

Module for heavy loads: Relay interface module, 2 relays with 6 A, 250 V
Type: RE 2.00 S

Adjustment:

Measuring ranges, switching points and parameterization are adjustable in parameter data by KALIB-Software. You need a PC and the interface adapter USB2 with KALIB-Software.

Parameterization for each channel:

Limit value (+inverting):	-50,0 °C...+150,0 °C	adjustable in 0,1 °C steps
Limit value window (+inverting):	-50,0 °C...+150,0 °C	adjustable in 0,1 °C steps
Hysteresis:	+1,0 °C...+99,9 °C	adjustable in 0,1 °C steps
ON/ OFF-delay:	0,0...999,9 sec.	adjustable in 0,1 sec. steps
Tendency value rising, falling, both (+inverting):	+0,1 °C...+150,0 °C in 0,1...3240,0 sec. (0,1 °C/ 0,1 sec. steps)	
Functions:	limit value, limit value range, tendency, inverse function, alarm function, start state, start time	

Display:

LED status:	green, active	input signals are in standard range, device ready for use
	green, flashing	input out of predetermined limits or exceeding of measuring range
LED K1:	green, active	K1 closed
LED K2:	green, active	K2 closed

Environmental conditions:

Storage temperature:	-40...+70 °C
Operating temperature:	0...55 °C
Isolation voltage:	2,5 kV eff. 1 sec. input-output 2,5 kV eff. 1 sec. auxiliary voltage

Auxiliary power:

24 V DC:	20...30 V DC < 1,5 W
----------	-------------------------

Influence of auxiliary power:	< 0,1 %
-------------------------------	---------

Characteristics of transmission:

Resolution:	10 bit
Linearity error:	< 0,5 % of final value
Temperature error:	< 30 ppm/ K
Response time:	< 10 msec.

Directive:

EMC Directive:	2014/30/EU*
Low Voltage Directive:	2014/35/EU
*minimum deviations possible during HF-radiation influence	

Mounting details:

Housing for top hat rail	
Type of protection:	IP 20
Mounting rail fixed according to	EN 50022-35 x 6,2 mm
Width:	6,2 mm
Weight:	52 g
Material:	Polyamide PA
Flammability class:	V0 (UL 94)
Approval:	CE
Connection:	screw clamps 0,14...2,5 mm ²

Please check parameterization before initial operation!

Ordering information:

Type:	GSP 2.81 SDC 24 V DC
Accessories:	USB2/ USB-Simulator with KALIB-Software, manual

Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen
Tel. + 49 71 35 50 56
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de

FEATURES

- **Input:**
2x feeding of electrodes
Current max. 1,5 mA
Voltage max. 10 V AC
- **Output:**
2 relay (changer, invertible)
- **Function selection via DIP-switch**
- **Adjustment of conductivity by trimmer 0,5...50 k Ω**
- **Parameterization without auxiliary power via PC-interface: - hysteresis times**
- **Galvanic 4-way isolation**



FUNCTION

The Electrode Relay ER 2.00 MW is a limit switch that is used for minimum, maximum or level monitoring, the two-point control of tanks, silos and containers with electrically conductive liquids.

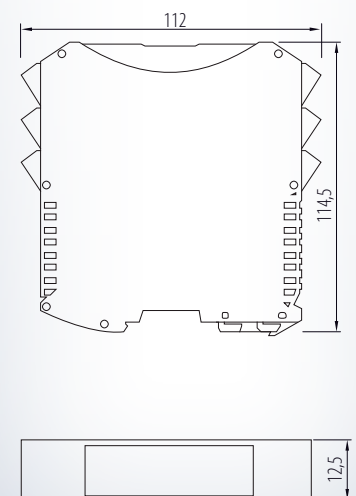
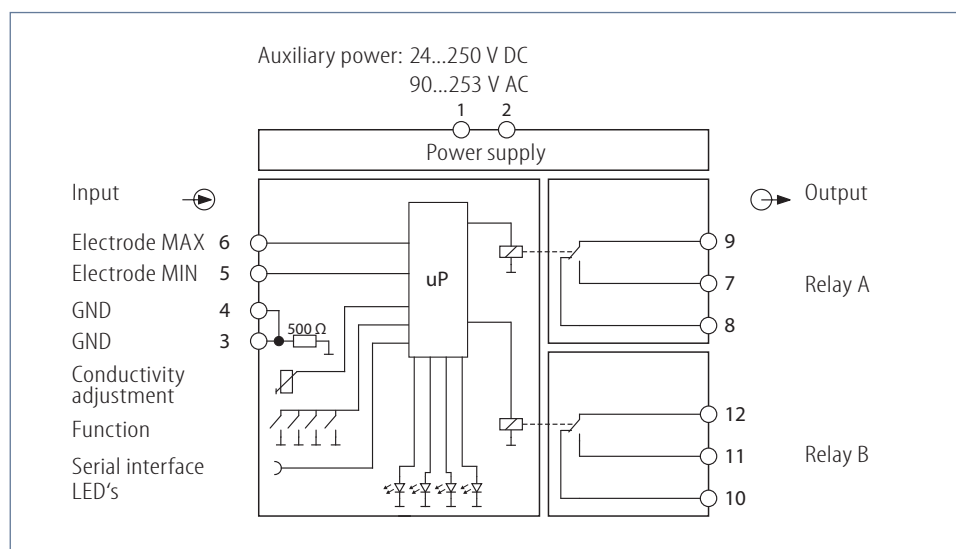
Internal an alternating voltage square wave signal is being generated. This signal is compared with the conductivity value adjusted via the front side trimmer and evaluated accordingly.

By using an alternating voltage at the electrodes corrosion of the probe rods and electrolytic decomposition of the medium can be avoided in almost all cases of the application.

Whether the relays should respond when the level rises or falls can be set via DIP-switch S1 and S2. The relay states are signaled by the front LEDs.

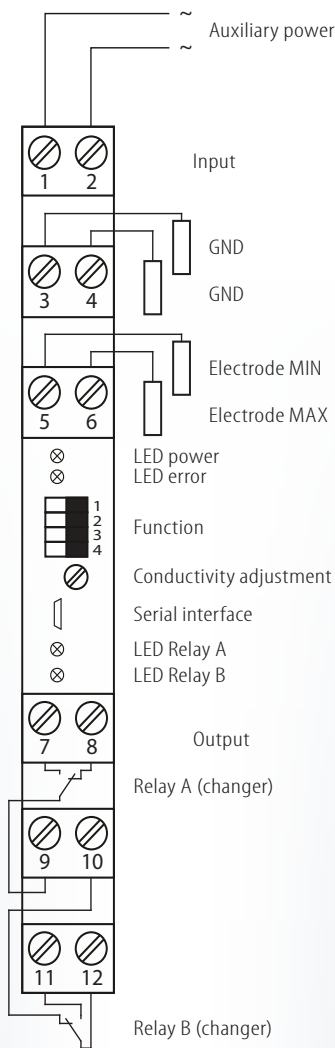
Furthermore, DIP-switch S3 can be used to select the switching function „between electrode MIN and MAX“ (relay switching together) as well as „separate min. and max. function“ (relay switching separately, two independent switching points).

The hysteresis times of the relays can be independently parameterized with the USB2 interface adapter or USB-Simulator in conjunction with the KALIB-Software and switched over with DIP-switch S4.



ER 2.00 MW

Connection diagram:



Input:

Minimal, maximal and ground electrode

maximal electrode current: $I_{max} = 1,5 \text{ mA}$
 maximal electrode voltage: $U_0 = 10 \text{ V AC}$
 Conductivity adjustment: $0,5...50 \text{ k}\Omega$
 connection: electrode MIN 3/ 5, electrode MAX 4/ 6

Output:

Relay output:

2 changer
 max. switching current: 6 A
 max. switching voltage: 250 V AC
 mechanical life cycle: 5×10^6 cycles
 electrical life cycle: 10^5 cycles
 connection: relay A - common 9, normally closed 8, normally open 7
 relay B - common 12, normally closed 10, normally open 11

Adjustment:

DIP-switch for function selection:



on off

Switch	Function	ON	OFF
1	Relay A	inverted	not inverted
2	Relay B	inverted	not inverted
3	switch. function	separate min. and max. function	betw. electrode MIN and MAX
4*	hysteresis time	hysteresis time 2	hysteresis time 1

*Factory setting:

Hysteresis time 1 für both relays 3 sec. / hysteresis time 2 für both relays 20 sec.

The hysteresis time can be parameterized by KALIB-Software - 0...255 sec. For this you need a PC as well as the interface adapter **USB2/ USB-Simulator** with **KALIB-Software**.

Conductivity adjustment: setting the conductivity value as comparison value for the electrodes.
 20-turn potentiometer: 1 turn equals approx. 2,5 kΩ.

Display:

LED power green, active device active, no error
 LED error red, active at switching function 1: R of electrode MIN > electrode MAX
 LED Relay A/B red, active Relay A/ B tightened

Environmental conditions:

Storage temperature: $-40...+70 \text{ }^\circ\text{C}$
 Operating temperature: $0...55 \text{ }^\circ\text{C}$
 Isolation voltage: 4 kV eff. 1 sec.
 input/ output/
 auxiliary power

Auxiliary power:

Wide range: 24...250 V DC
 90...253 V AC
 $< 3 \text{ W}$
 Influence of Aux. power: $< 0,1 \%$

Characteristics of transmission:

Setting time: approx. 5 sec.

Directive:

EMC Directive: 2014/30/EU*
 Low Voltage Directive: 2014/35/EU
 *minimum deviations possible during
 HF-radiation influence

Mounting details:

Housing for top hat rail
 Type of protection: IP 30 housing
 IP 20 clamps
 Mounting rail fixed according to
 EN 50022-35 x 7,5 mm
 Width: 12,5 mm
 Weight: 100 g
 Material: Polyamide (PA)
 Flammability class: V0 (UL94)
 Approval: CE
 Connection: pluggable
 screw clamps
 $0,2...2,5 \text{ mm}^2$

For safety reasons we recommend to mount the housing for top hat rail with a distance of approx. 5 mm to each other.

Ordering information:

Type: **ER 2.00 MW** wide range
 Accessories: USB2/ USB-Simulator with
 KALIB-Software

Schuhmann GmbH & Co. KG
 Römerstraße 2
 D-74363 Güglingen
 Tel. + 49 71 35 50 56
 E-mail: info@schuhmann-messtechnik.de
 www.schuhmann-messtechnik.de

FEATURES

- **Input:**
Current 0(4)...20 mA or
Voltage 0(2)...10 V
- **Output:**
2 relays (changer)
- **Adjustment of limit value by front side push-button**
- **Indication of**
- contact state by LED
- actual value by bargraph
- **Additional functions:**
Hysteresis, window, ON/ OFF-delay,
inverse function
- **Galvanic 3-way isolation of 4 kV**



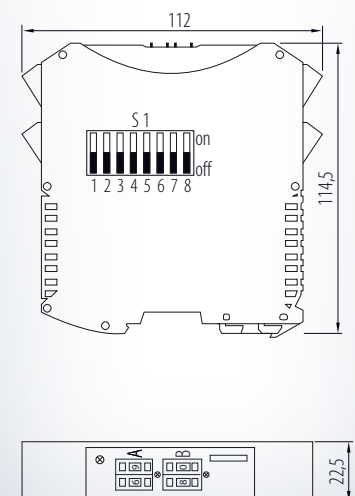
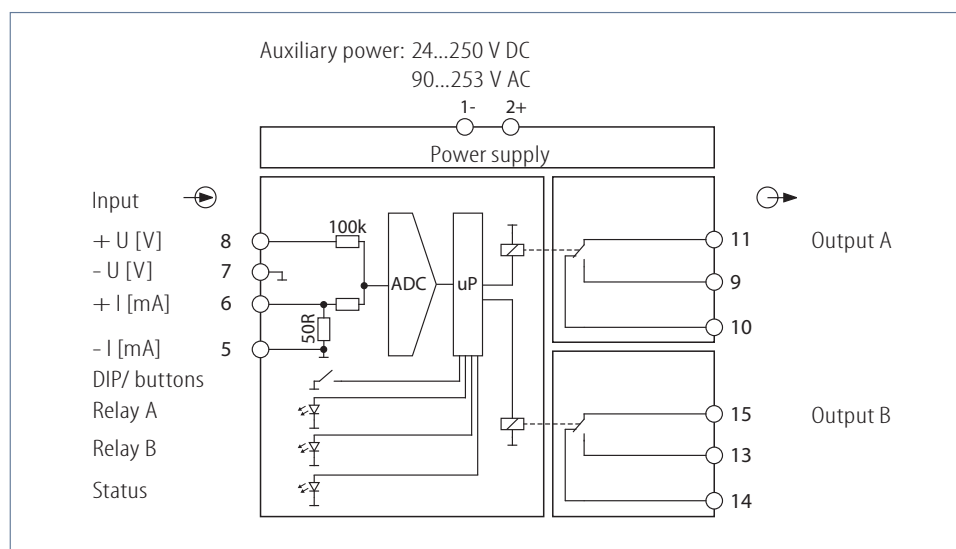
FUNCTION

The Limit Switch GS 2.00 GW is used for the control of limit values of standardized current or voltage signals.

Due to the 2 relays at the output with one potential free change-over contact each two switching functions can be realized. The switching status of the erected relay will be indicated by LED display.

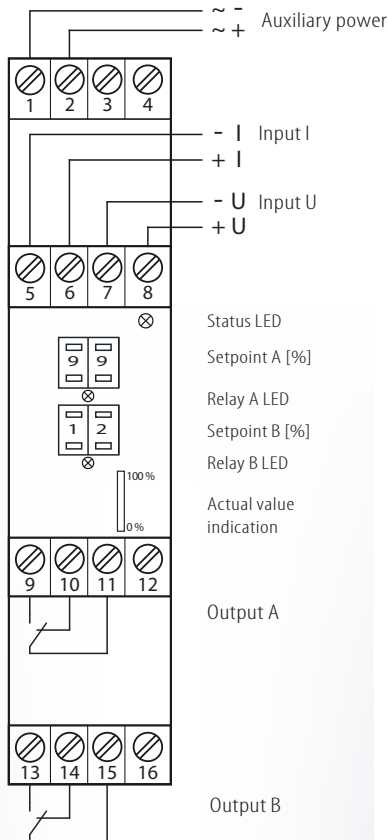
The switching point can be adjusted by the front side push-button the effective direction of the relay by the slide switch on the side.

The application range is e.g. threshold switch, supervisory relay, pump control of containers, control of final signals of positioning elements etc.



GS 2.00 GW

Connection diagram:



Input:

I: load-independent DC current connection:	0(4)...20 mA terminal 5 -, 6 +	input resistance approx. 50 Ω
U: load-independent DC voltage connection:	0(2)...10 V terminal 7 -, 8 +	input resistance approx. 100 kΩ

Output:

2 relay outputs:	changer
max. switching current/ voltage:	8 A/ 250 V AC
mech./ contact life cycle:	30 x 10 ⁶ cycles/ 10 ⁵ cycles
connection:	see connection diagram

Adjustment:

Select function with DIP switch on the side (S1-1 to S1-8):

	Switch	Adjustment	Function
Setpoint	front side A	0...99 %	limit value adjustment A
	front side B	0...99 %	limit value adjustment B
Input	S1 - 1	OFF	input current
	S1 - 1	ON	input voltage
	S1 - 2	OFF	input 0...20 mA/ 0...10 V
	S1 - 2	ON	input 4...20 mA/ 2...10 V
Relay A	S1 - 3	OFF	relay A is not inverted
	S1 - 3	ON	relay A is inverted
	S1 - 4	OFF	delay relay A ON/ OFF, 0,5 sec.
	S1 - 4	ON	delay relay A ON/ OFF, 5 sec.
Relay B	S1 - 5	OFF	relay B is not inverted
	S1 - 5	ON	relay B is inverted
	S1 - 6	OFF	delay relay B ON/ OFF, 0,5 sec.
	S1 - 6	ON	delay relay B ON/ OFF, 5 sec.
General	S1 - 7	OFF	switching hysteresis 0,5 %
	S1 - 7	ON	switching hysteresis 5 %
	S1 - 8	OFF	separate switching function for limit value
	S1 - 8	ON	common switching function A, B, switching between A [%] and B [%] (hysteresis)

Display:

LED Status	green, active green, flashing	input signal within range, ready for use limit exceeded
LED Relay A	red, active	relay A tightened
LED Relay B	red, active	relay B tightened
Actual value indication	front side bargraph up to 100 % green, from 100 % red	

Environmental conditions:

Storage temperature:	-40...+70 °C
Operating temperature:	0...55 °C
Isolation voltage:	4 kV eff. 1 sec. input-output 4 kV eff. 1 sec. auxiliary voltage

Auxiliary power:

Wide range:	24...250 V DC 90...253 V AC < 3 W
Influence of auxiliary power:	< 0,1 %

Characteristics of transmission:

Resolution:	10 bit
Linearity error:	< 0,1 % of final value
Temperature error:	< 30 ppm/K

Directive:

EMC Directive:	2014/30/EU*
Low Voltage Directive:	2014/35/EU
*minimum deviations possible during HF-radiation influence	

Mounting details:

Housing for top hat rail	
Type of protection:	IP 20 housing IP 10 screw clamps
Mounting rail fixed according to	EN 50022-35 x 6,2 mm
Width:	22,5 mm
Weight:	160 g
Material:	Polyamide PA
Flammability class:	V0 (UL94)
Approval:	CE
Connection:	screw clamps 0,2...2,5 mm ²

For safety reasons we recommend to mount the housing for top hat rail with a distance of approx. 5 mm to each other.

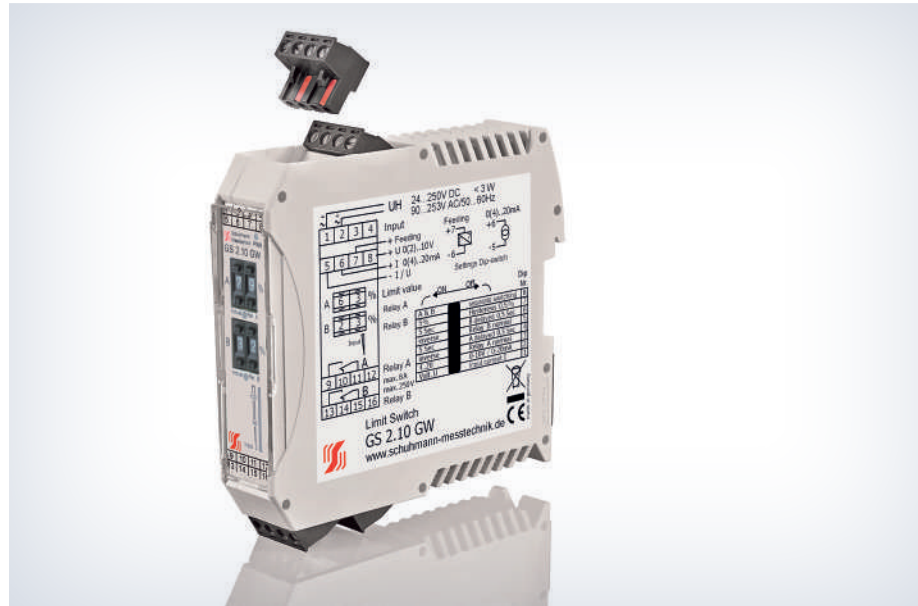
Ordering information:

Type:	GS 2.00 GW	wide range
-------	------------	------------

Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen
Tel. +49 71 35 50 56
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de

FEATURES

- **Input:**
Current 0(4)...20 mA or
Voltage 0(2)...10 V
- **Output:**
2 relays (changer)
- **Integrated transmitter feeding**
- **Adjustment of limit value by front side push-button**
- **Indication of**
- contact state by LED
- actual value by bargraph
- **Additional functions:**
hysteresis, window, ON/ OFF-delay,
inverse function
- **Galvanic 3-way isolation of 4 kV**



FUNCTION

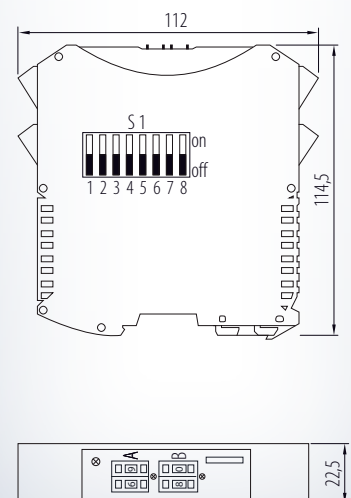
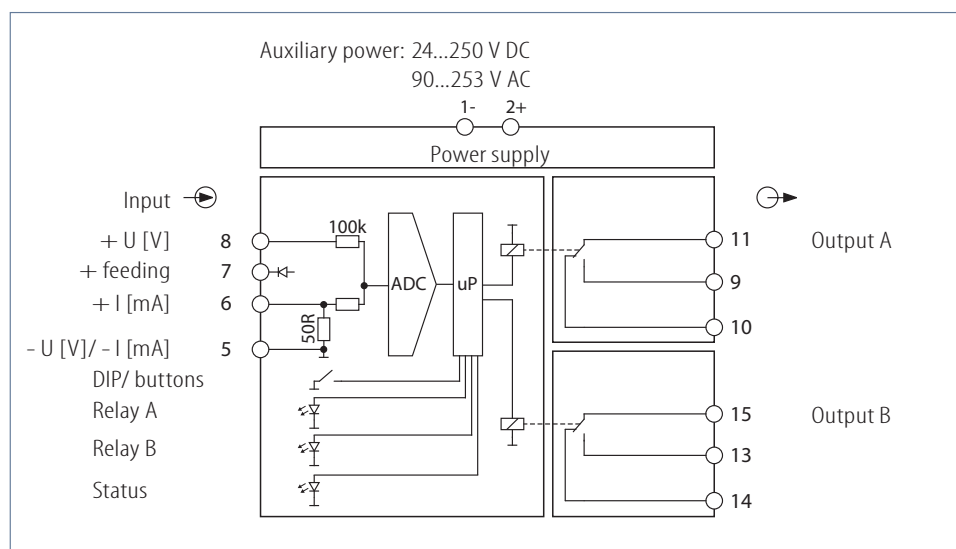
The Limit Switch GS 2.10 GW is used for the control of limit values of standardized current or voltage signals.

Due to the 2 relays at the output with one potential free change-over contact each two switching functions can be realized. The switching status of the erected relay will be indicated by LED display.

The switching point can be adjusted by the front side push-button the effective direction of the relay by the slide switch on the side.

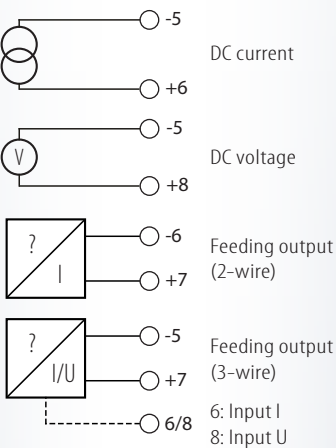
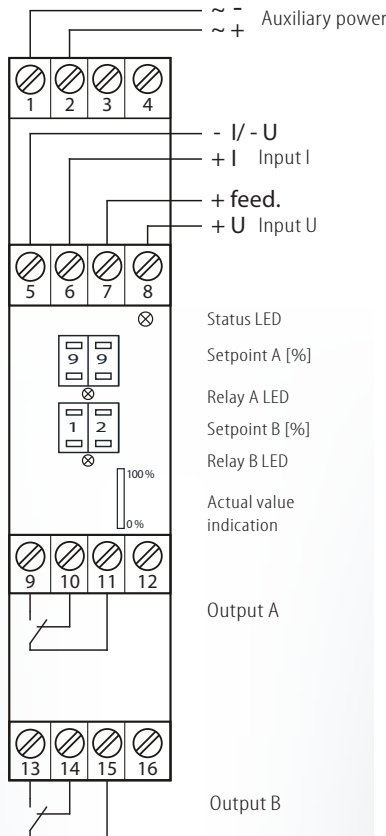
Because of the integrated transmitter feeding, 2- or 3-wire transmitters will be fed.

The application range is e.g. threshold switch, supervisory relay, pump control of containers, control of final signals of positioning elements etc.



GS 2.10 GW

Connection diagram:



Input:

I: load-independent DC current connection:	0(4)...20 mA terminal 5 -, 6 +	input resistance approx. 50 Ω
U: load-independent DC voltage connection:	0(2)...10 V terminal 7 -, 8 +	input resistance approx. 100 kΩ
transmitter feeding: connection:	approx. 20...24 V, max. 20 mA/ 22 V see connection diagram	

Output:

2 relay outputs: changer	8 A/ 250 V AC 30 x 10 ⁶ cycles/ 10 ⁵ cycles	see connection diagram
-----------------------------	----------------------------------------------------------------------	------------------------

Adjustment:

Select function with DIP switch on the side (S1-1 to S1-8):

Setpoint	Switch	Adjustment	Function
front side A	front side A	0...99 %	Limit value adjustment A
	front side B	0...99 %	Limit value adjustment B
Input	S1 - 1	OFF	Input current
	S1 - 1	ON	Input voltage
	S1 - 2	OFF	Input 0...20 mA/ 0...10 V
	S1 - 2	ON	Input 4...20 mA/ 2...10 V
Relay A	S1 - 3	OFF	Relay A is not inverted
	S1 - 3	ON	Relay A is inverted
	S1 - 4	OFF	Delay relay A ON/ OFF, 0,5 sec.
	S1 - 4	ON	Delay relay A ON/ OFF, 5 sec.
Relay B	S1 - 5	OFF	Relay B is not inverted
	S1 - 5	ON	Relay B is inverted
	S1 - 6	OFF	Delay relay B ON/ OFF, 0,5 sec.
	S1 - 6	ON	Delay relay B ON/ OFF, 5 sec.
General	S1 - 7	OFF	Switching hysteresis 0,5 %
	S1 - 7	ON	Switching hysteresis 5 %
	S1 - 8	OFF	Separate switching function for limit value
	S1 - 8	ON	Common switching function A, B, switching between A [%] and B [%] (hysteresis)

Display:

LED Status	green, active green, flashing	input signal within range, ready for use limit exceeded
LED Relay A	red, active	relay A tightened
LED Relay B	red, active	relay B tightened
Act. val. indic.	front side bargraph up to 100 % green, from 100 % red	

Environmental conditions:

Storage temperature:	-40...+70 °C
Operating temperature:	0...55 °C
Isolation voltage:	4 kV eff. 1 sec. input-output 4 kV eff. 1 sec. auxiliary voltage

Auxiliary power:

Wide range:	24...250 V DC 90...253 V AC < 3 W
Influence of auxiliary power:	< 0,1 %

Characteristics of transmission:

Resolution:	10 bit
Linearity error:	< 0,1 % of final value
Temperature error:	< 30 ppm/K

Directive:

EMC Directive:	2014/30/EU*
Low Voltage Directive:	2014/35/EU
*minimum deviations possible during HF-radiation influence	

Mounting details:

Housing for top hat rail	
Type of protection:	IP 20 housing IP 10 screw clamps
Mounting rail fixed according to	EN 50022-35 x 6,2 mm
Width:	22,5 mm
Weight:	160 g
Material:	Polyamide PA
Flammability class:	V0 (UL 94)
Approval:	CE
Connection:	screw clamps 0,2...2,5 mm ²

For safety reasons we recommend to mount the housing for top hat rail with a distance of approx. 5 mm to each other.

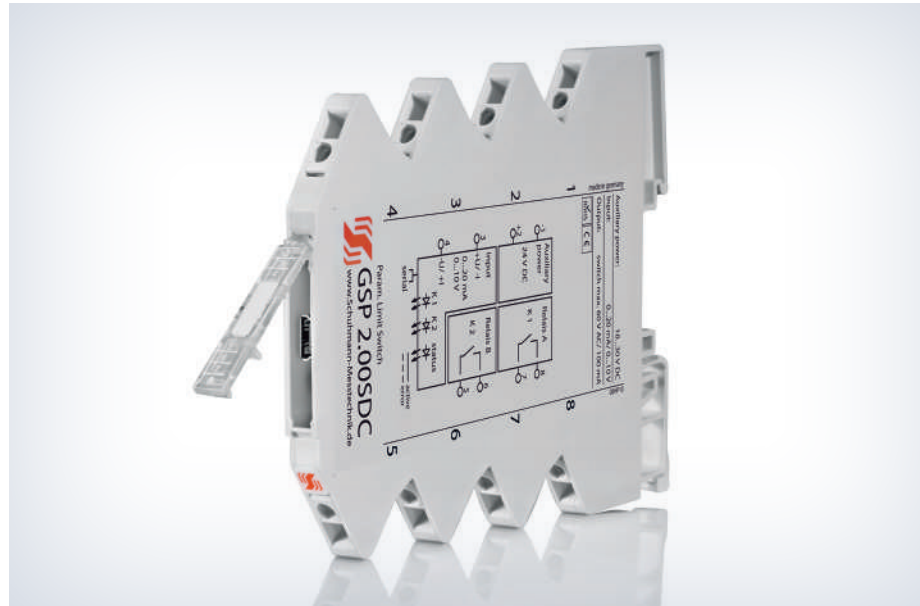
Ordering information:

Type: **GS 2.10 GW** wide range

Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen
Tel. +49 71 35 50 56
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de

FEATURES

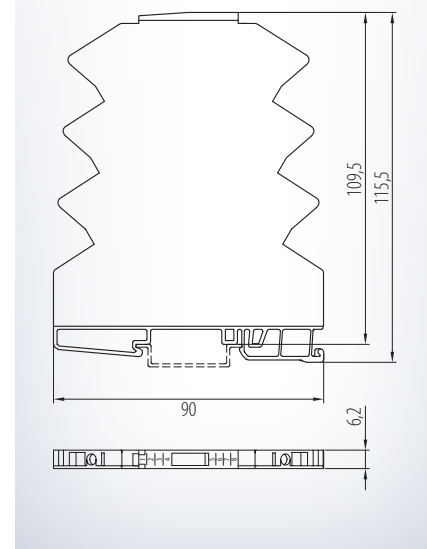
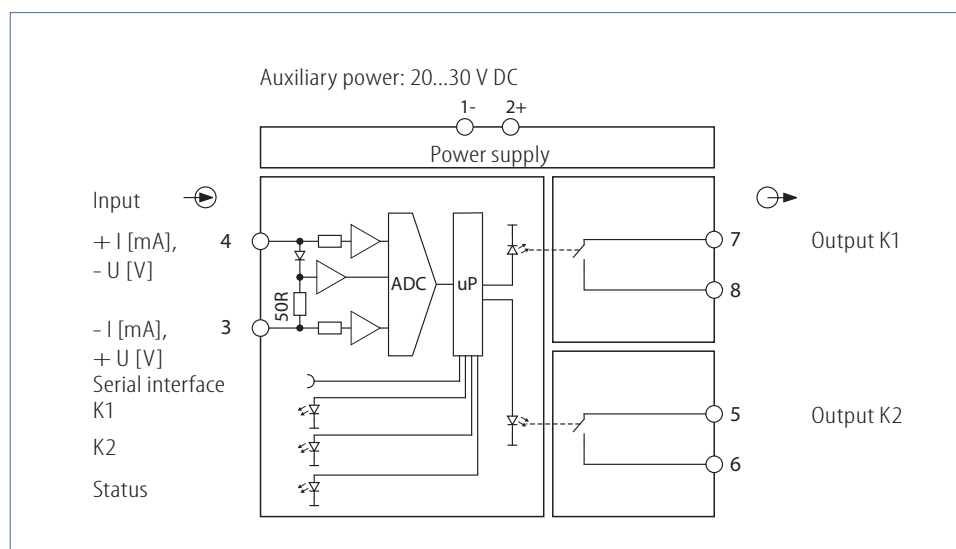
- **Input:** 0(4)...20 mA/ 0(2)...10 V
- **Output:** 2x transistor
- **Indication of contact state by LED**
- **Additional functions:**
Hysteresis, ON/ OFF-delay, window, tendency, inverse function, alarm
- **Parameterization without auxiliary power via PC-interface**
- **Galvanic 3-way isolation of 2,5 kV**
- **Low internal consumption**



FUNCTION

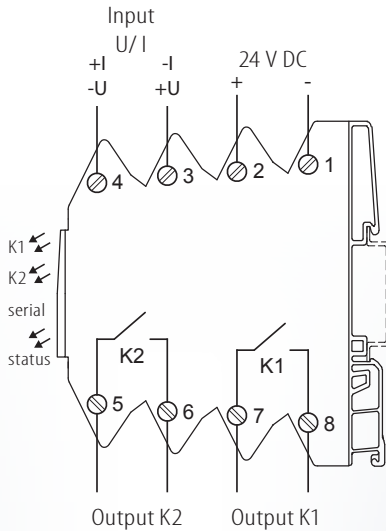
The GSP 2.00 SDC is used for the control of limit values of standardized signals. The limit switch is being parameterized by the USB2 adapter in connection with KALIB-Software. For the output 2 potential free transistor switches are available which are equipped with limit values, hysteresis, ON/ OFF-delay, window, alarm, inverse function, tendency and sensor control each. The devices can be applied as threshold switch and supervisory relay to monitor temperature, pressure, dry runtime, motor protection, speed, etc.

The values to be controlled can exist as DC signal or DC voltage signal. After internal preparation the input signal will be compared with the digital adjusted limit value and in case of exceeding or falling off the transistor output will be energized.



GSP 2.00 SDC

Connection diagram:



Input:

I: load-independent DC current:	0(4)...20 mA	input resistance approx. 100 Ω
connection:	terminal 3 -, 4 +	
U: load-independent DC voltage:	0(2)...10 V	input resistance approx. 100 kΩ
connection:	terminal 4 -, 3 +	

Output:

2 transistor outputs:	
Load:	max. 30 V AC/ DC, max. 100 mA AC/ DC
connection K1:	terminal 7, 8
connection K2:	terminal 5, 6
Module for heavy loads:	Relay interface module, 2 relays with 6 A, 250 V Type: RE 2.00 S

Adjustment:

Measuring ranges, switching points and parameterization are adjustable in parameter data by KALIB-Software. For this you need a PC as well as the interface adapter **USB2/ USB-Simulator** with **KALIB-Software**.

Parameterization for each channel:

Limit value adjustment:	0,0...110,0 %	adjustable in 0,1 % steps
Hysteresis:	0,1...90,0 %	adjustable in 0,1 % steps
ON/ OFF-delay:	0,0...999,0 sec.	adjustable in 0,1 sec. steps
Functions:	limit value, limit value range, tendency, inverse function, alarm function, start state, start time	

Display:

LED status:	green, active green, flashing	input signals are in standard range, device ready for use input out of predetermined limits or exceeding of measuring range
LED K1:	green, active	K1 closed
LED K2:	green, active	K2 closed

Environmental conditions:

Storage temperature:	-40...+70 °C
Operating temperature:	0...55 °C
Isolation voltage:	2,5 kV eff. 1 sec. input-output 2,5 kV eff. 1 sec. auxiliary voltage

Auxiliary power:

24 V DC:	20...30 V DC < 1,5 W
Influence of auxiliary power:	< 0,1 %

Characteristics of transmission:

Resolution:	10 bit
Linearity error:	< 0,5 % of final value
Temperature error:	< 30 ppm/ K
Response time:	< 10 msec.

Directive:

EMC Directive:	2014/30/EU*
Low Voltage Directive:	2014/35/EU
*minimum deviations possible during HF-radiation influence	

Mounting details:

Housing for top hat rail	
Type of protection:	IP 20
Mounting rail fixed according to	EN 50022-35 x 6,2 mm
Width:	6,2 mm
Weight:	52 g
Material:	Polyamide PA
Flammability class:	V0 (UL 94)
Approval:	CE
Connection:	screw clamps 0,14...2,5 mm ²

Please check parameterization before initial operation!

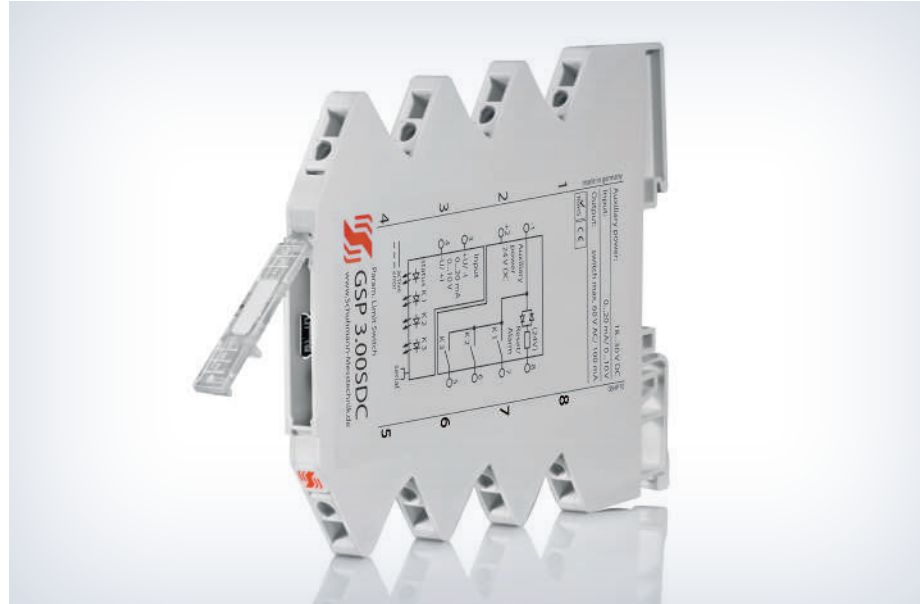
Ordering information:

Type:	GSP 2.00 SDC	24 V DC
Accessories:	USB2/ USB-Simulator with KALIB-Software, manual	

Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen
Tel. + 49 71 35 50 56
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de

FEATURES

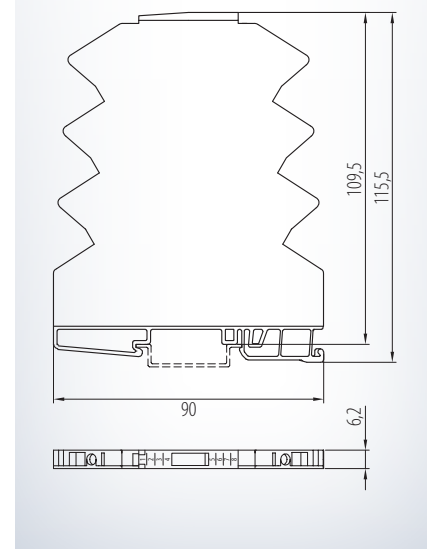
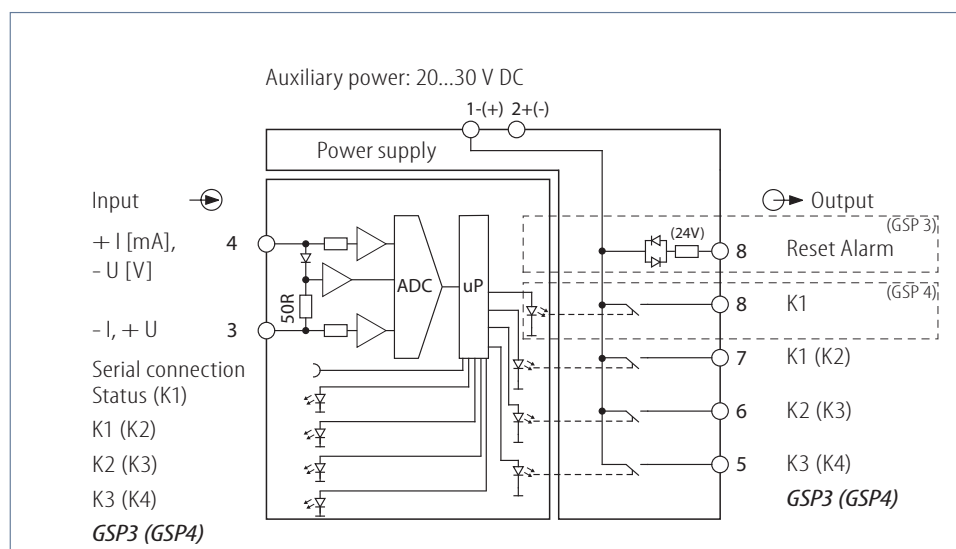
- **Input:** 0(4)...20 mA / 0(2)...10 V
- **Output:**
3x transistor (GSP 3.00 SDC)
4x transistor (GSP 4.00 SDC)
- **Indication of contact state by LED**
- **Additional functions:**
Hysteresis, ON/ OFF-delay, window, tendency, inverse function, alarm
- **Parameterization without auxiliary power via PC-interface**
- **Galvanic 2-way isolation of 2,5 kV**



FUNCTION

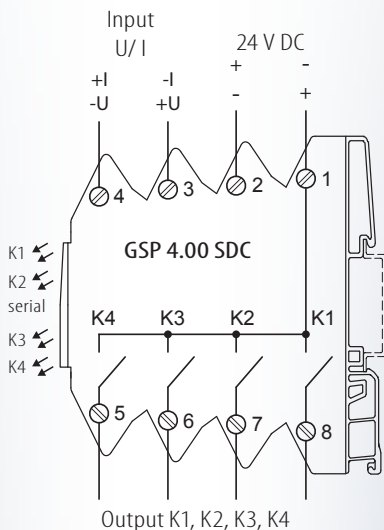
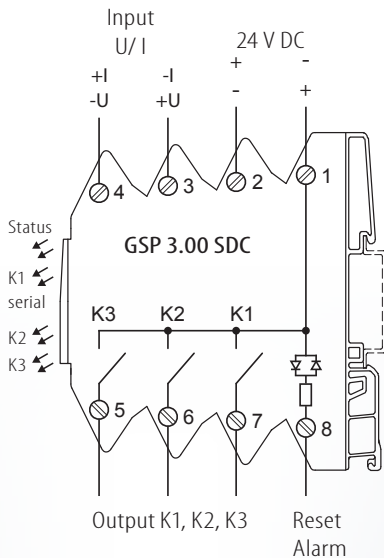
The GSP 3.00 SDC and GSP 4.00 SDC is used for the control of limit values of standardized signals. The limit switch is being parameterized by the USB2 adapter in connection with KALIB-Software. For the output are 3 or 4 transistor switches available which are equipped with limit values, hysteresis, ON/ OFF-delay, window, alarm, inverse function, tendency and sensor control each. The devices can be applied as threshold switch and supervisory relay to monitor temperature, pressure, dry runtime, motor protection, speed, etc.

The values to be controlled can exist as DC signal or DC voltage signal. After internal preparation the input signal will be compared with the digital adjusted limit value and in case of exceeding or falling off the transistor output will be energized. The GSP 3.00 SDC is equipped with a 24 V DC input to reset the alarm function.



GSP 3.00 SDC GSP 4.00 SDC

Connection diagram:



Input:

I: load-independent DC current:	0(4)...20 mA	input resistance approx. 100 Ω
connection:	terminal 3 -, 4 +	
U: load-independent DC voltage:	0(2)...10 V	input resistance approx. 100 kΩ
connection:	terminal 4 -, 3 +	

GSP 3.00 SDC:

is equipped with a 24 V DC input to reset the alarm function.

connection: terminal 8 + (at terminal 1 -) or terminal 8 - (at terminal 1 +)

Output:

transistor outputs:

Load: max. 30 V AC/ DC, max. 100 mA AC/ DC

connection: see connection diagram

The switching outputs refer to the auxiliary power with a common radix.

Module for heavy loads: Relay interface module, 2 relays with 6 A, 250 V

Type: RE 2.00 S

Adjustment:

Measuring ranges, switching points and parameterization are adjustable in parameter data by KALIB-Software. For this you need a PC as well as the interface adapter **USB2/ USB-Simulator** with **KALIB-Software**.

Parameterization for each channel:

Limit value adjustment:	0,0...110,0 %	adjustable in 0,1 % steps
Hysteresis:	0,1...90,0 %	adjustable in 0,1 % steps
ON/ OFF-delay:	0,0...999,0 sec.	adjustable in 0,1 sec. steps
Functions:	limit value, limit value range, tendency, inverse function, alarm function, start state, start time	

Display:

LED status:	green, active green, flashing	input signals are in standard range, device ready for use input out of predetermined limits or exceeding of measuring range
LED K1:	green, active	K1 closed
LED K2:	green, active	K2 closed
LED K3:	green, active	K3 closed
LED K4:	green, active	K4 closed

Environmental conditions:

Storage temperature:	-40...+70 °C
Operating temperature:	0...55 °C
Isolation voltage:	2,5 kV eff. 1 sec. input-output 2,5 kV eff. 1 sec. auxiliary voltage

Auxiliary power:

24 V DC:	20...30 V DC < 1,5 W
Influence of auxiliary power:	< 0,1 %

Characteristics of transmission:

Resolution:	10 bit
Linearity error:	< 0,5 % of final value
Temperature error:	< 30 ppm/ K
Response time:	< 10 msec.

Directive:

EMC Directive:	2014/30/EU*
Low Voltage Directive:	2014/35/EU
*minimum deviations possible during HF-radiation influence	

Mounting details:

Housing for top hat rail	
Type of protection:	IP 20
Mounting rail fixed according to	EN 50022-35 x 6,2 mm
Width:	6,2 mm
Weight:	52 g
Material:	Polyamide PA
Flammability class:	V0 (UL 94)
Approval:	CE
Connection:	screw clamps 0,14...2,5 mm ²

Please check parameterization before initial operation!

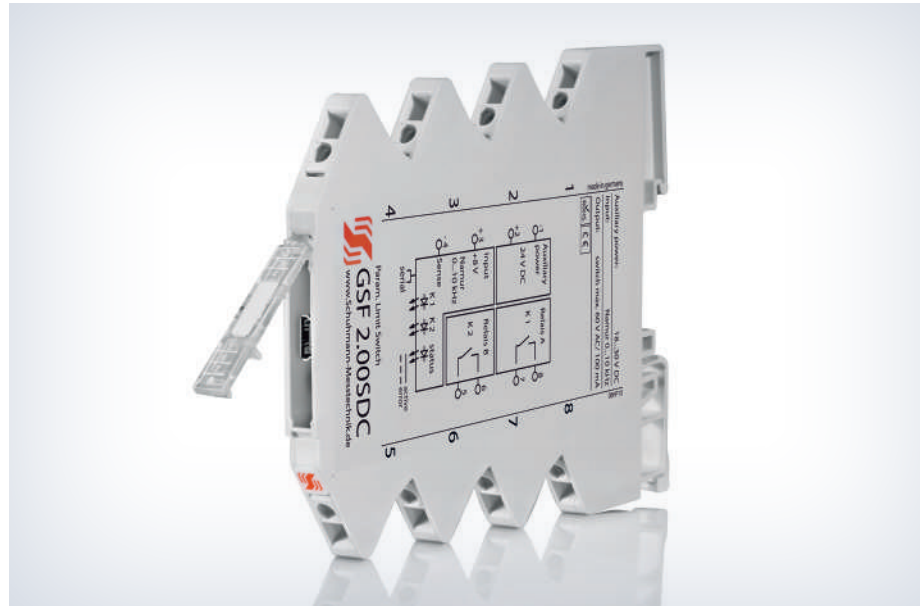
Ordering information:

Type:	GSP 3.00 SDC 24 V DC GSP 4.00 SDC 24 V DC
Accessories:	USB2/ USB-Simulator with KALIB-Software, manual

Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen
Tel. +49 71 35 50 56
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de

FEATURES

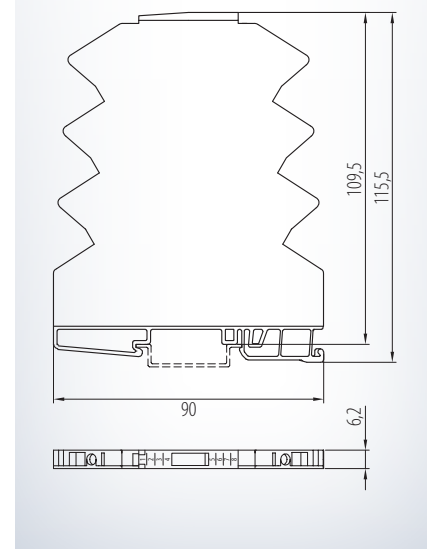
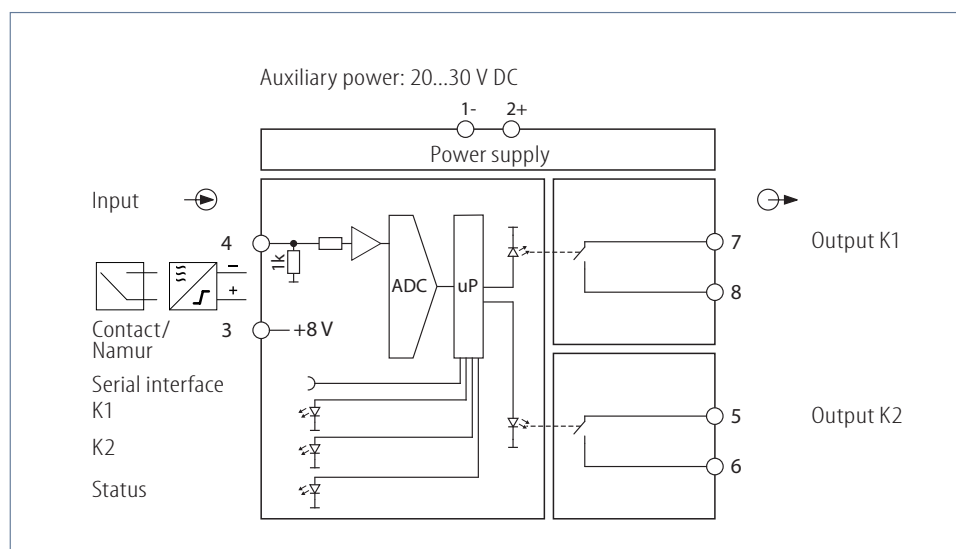
- **Frequency input:**
Namur max. 10 kHz
- **Output: 2x transistor**
- **Indication of contact state by LED**
- **Additional functions:**
Hysteresis, ON/OFF-delay, window, tendency, inverse function, alarm
- **Parameterization without auxiliary power via PC-interface**
- **Galvanic 3-way isolation of 2,5 kV**
- **Low internal consumption**



FUNCTION

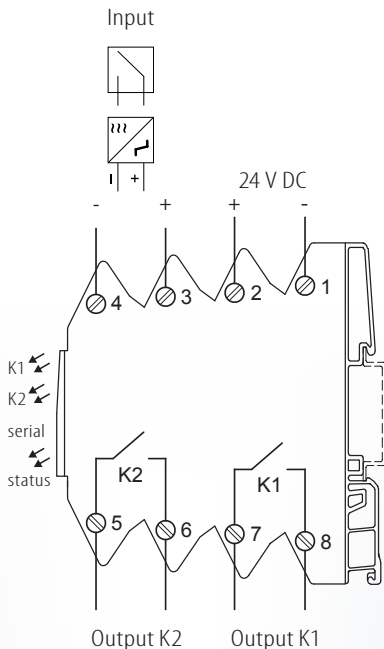
The GSF 2.00 SDC is used for the control of frequencies. As input signal **namur signals** are processed with a frequency range up to 10 kHz. As a result rotational speed on min./ max. or accelerations can be specified and given out as switching contact. The limit switch is being parameterized by the USB2 adapter in connection with KALIB-Software. For the output 2 potential free transistor switches are available which are equipped with limit values, hysteresis, ON/OFF-delay, window, alarm, inverse function, tendency and sensor control each.

The process variable to be controlled is supplied by a comparator to the processor as frequency after having passed an input filter. Due to the adjustable gate time the frequency can be recorded accordingly and depending on the set-point the transistor output will be energized.



GSF 2.00 SDC

Connection diagram:



Input:

Namur EN 50227 or potential free contact:

maximum voltage:	$U_{max} = 8 \text{ V}$
maximum current:	$I_{max} = 8 \text{ mA}$
connection:	terminal 4 -, 3 +

Output:

2 transistor outputs:

load:	max. 30 V AC/ DC, max. 100 mA AC/ DC
connection K1:	terminal 7, 8
connection K2:	terminal 5, 6

Module for heavy loads:

Relay interface module, 2 relays with 6 A, 250 V
Type: RE 2.00 S

Adjustment:

Measuring ranges, switching points and parameterization are adjustable in parameter data by KALIB-Software. For this you need a PC as well as the interface adapter **USB2/ USB-Simulator** with **KALIB-Software**.

Parameterization for each channel:

Limit value adjustment:	0...12000 Hz	adjustable in 1 Hz steps
Hysteresis:	5...11000 Hz	adjustable in 1 Hz steps
ON/ OFF-delay:	0,0...999,0 sec.	adjustable in 0,1 sec. steps
Functions:	limit value, limit value range, tendency, inverse function, alarm function, start state, start time	

Display:

LED status:	green, active	input signals are in standard range, device ready for use
	green, flashing	input out of predetermined limits or exceeding of measuring range
LED K1:	green, active	K1 closed
LED K2:	green, active	K2 closed

Environmental conditions:

Storage temperature:	-40...+70 °C
Operating temperature:	0...55 °C
Isolation voltage:	2,5 kV eff. 1 sec. input-output 2,5 kV eff. 1 sec. auxiliary voltage

Auxiliary power:

24 V DC:	20...30 V DC < 1,5 W
Influence of auxiliary power:	< 0,1 %

Characteristics of transmission:

Resolution:	10 bit
Linearity error:	< 0,5 % of final value
Temperature error:	< 30 ppm/ K
Response time:	< 10 msec.

Directive:

EMC Directive:	2014/30/EU*
Low Voltage Directive:	2014/35/EU
*minimum deviations possible during HF-radiation influence	

Mounting details:

Housing for top hat rail	
Type of protection:	IP 20
Mounting rail fixed according to	EN 50022-35 x 6,2 mm
Width:	6,2 mm
Weight:	52 g
Material:	Polyamide PA
Flammability class:	V0 (UL 94)
Approval:	CE
Connection:	screw clamps 0,14...2,5 mm ²

Please check parameterization before initial operation!

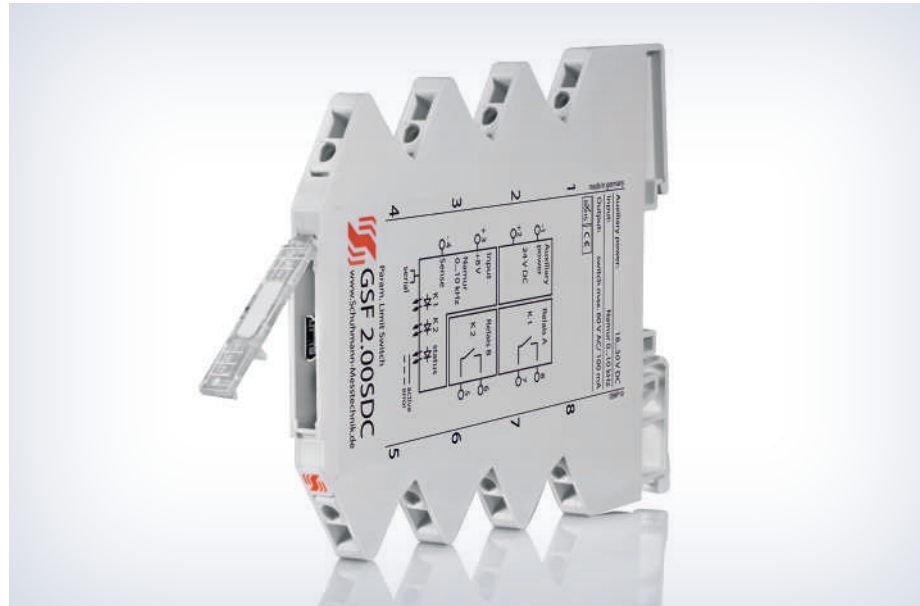
Ordering information:

Type:	GSF 2.00 SDC	24 V DC
Accessories:	USB2/ USB-Simulator with KALIB-Software, manual	

Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen
Tel. + 49 71 35 50 56
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de

FEATURES

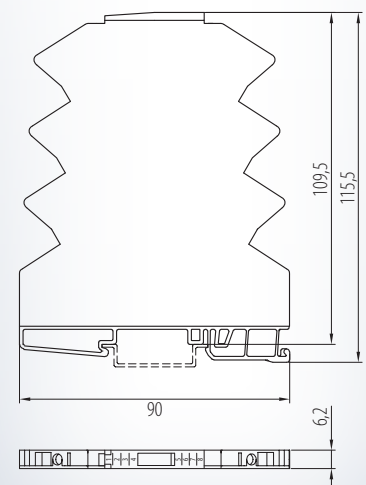
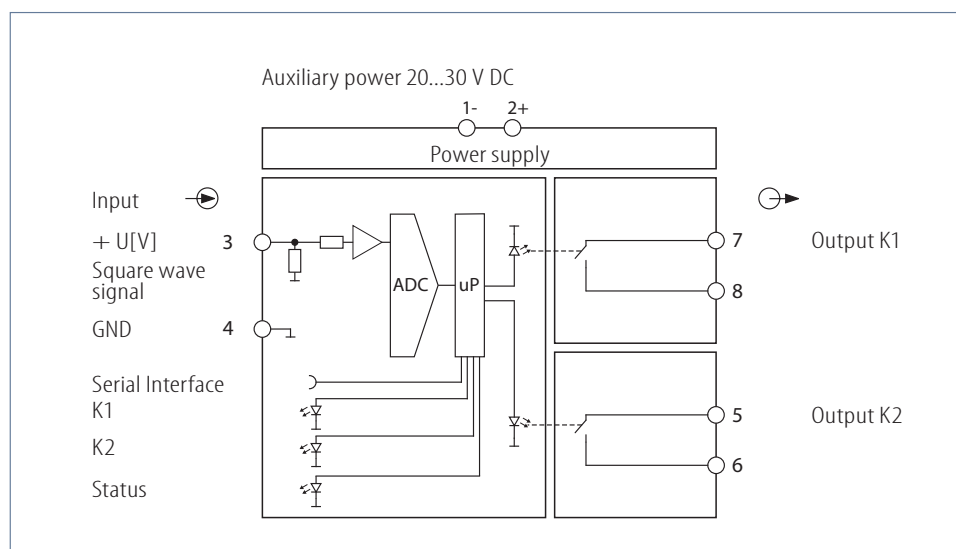
- **Frequency input:**
square wave signal 24 V DC/ 10 kHz
- **Output:** 2x transistor
- **Indication of contact state by LED**
- **Additional functions:**
Hysteresis, ON/OFF-delay, window, tendency, inverse function, alarm
- **Parameterization without auxiliary power via PC-interface**
- **Galvanic 3-way isolation of 2,5 kV**
- **Low internal consumption**



FUNCTION

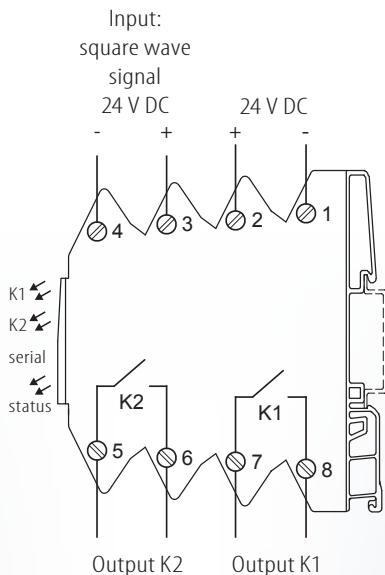
The GSF 2.00 SDC 021 is used for the control of frequencies. As input signal square wave signals are processed with a frequency range up to 10 kHz. As a result rotational speed on min./ max. or accelerations can be specified and given out as switching contact. The limit switch is being parameterized by the USB2 adapter in connection with KALIB-Software. For the output 2 potential free transistor switches are available which are equipped with limit values, hysteresis, ON/OFF-delay, window, alarm, inverse function, tendency and sensor control each.

The process variable to be controlled is supplied by a comparator to the processor as frequency after having passed an input filter. Due to the adjustable gate time the frequency can be recorded accordingly and depending on the set-point the transistor output will be energized.



GSF 2.00 SDC 021

Connection diagram:



Input:

Square wave signal:
maximum voltage: $U_{max} = 24 \text{ V DC}$
maximum frequency: $F_{max} = 10 \text{ kHz}$
connection: terminal 4 -, 3 +

Output:

2 transistor outputs:
load: max. 30 V AC/ DC, max. 100mA AC/ DC
connection K1: terminal 7, 8
connection K2: terminal 5, 6

Module for heavy loads:
Relay interface module, 2 relays with 6 A, 250 V
Type: RE 2.00 S

Adjustment:

Measuring ranges and parameterization are adjustable in parameter data by KALIB-Software. For this you need a PC as well as the interface adapter **USB2/ USB-Simulator** with **KALIB-Software**.

Parameterization for each channel:

Limit value adjustment:	0...12000 Hz	adjustable in 1 Hz steps
Hysteresis:	5...11000 Hz	adjustable in 1 Hz steps
ON/ OFF-delay:	0,0...999,0 sec.	adjustable in 0,1 sec. steps
Functions:	limit value, limit value range, tendency, inverse function, alarm function, start state, start time	

Display:

LED status:	green, active flashing	input signals are in standard range, device ready for use input out of predetermined limits or measuring range overflow
LED K1:	green, active	K1 closed
LED K2:	green, active	K2 closed

Environmental conditions:

Storage temperature: $-40...+70 \text{ }^\circ\text{C}$
Operating temperature: $0...55 \text{ }^\circ\text{C}$
Isolation voltage:
2,5 kV eff. 1 sec. input-output
2,5 kV eff. 1 sec. auxiliary voltage

Auxiliary power:

24 V DC $20...30 \text{ V DC}$
 $< 1,5 \text{ W}$

Influence of auxiliary power: $< 0,1 \%$

Characteristics of transmission:

Resolution: 10 bit
Linearity error: $< 0,5 \%$ of final value
Temperature error: $< 30 \text{ ppm/ K}$
Response time: $< 10 \text{ msec.}$

Directive:

EMC Directive: 2014/30/EU*
Low Voltage Directive: 2014/35/EU
*minimum deviations possible during HF-radiation influence

Mounting details:

Housing for top hat rail
Type of protection: IP 20
mounting rail fixed according to EN 50022-35 x 6,2 mm

Width: 6,2 mm
Weight: 52 g
Material: Polyamide PA
Flammability class: V0 (UL 94)
Approval: CE
Connection: screw clamps
 $0,14...2,5 \text{ mm}^2$

Please check parameterization before initial operation!

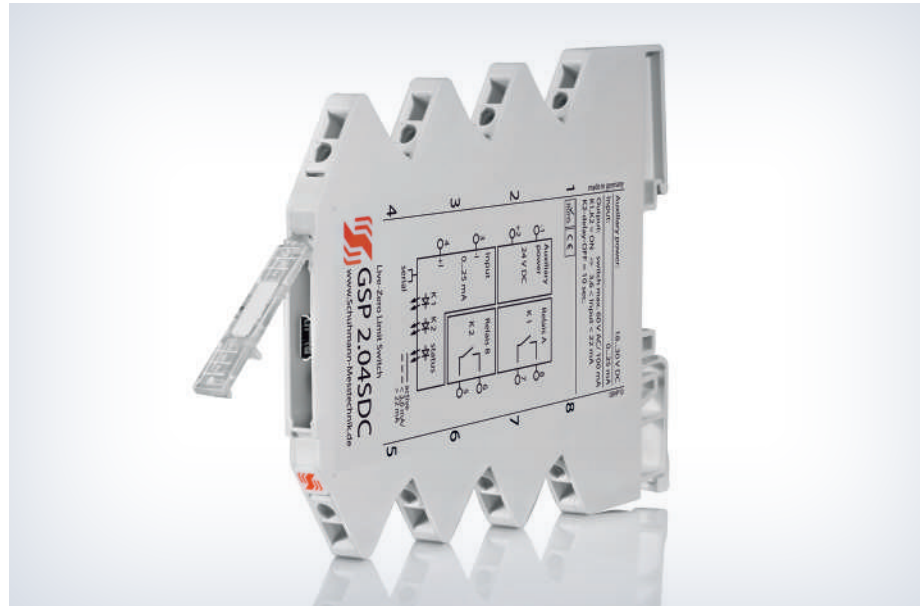
Ordering information:

Type: **GSF 2.00 SDC 021** 24 V DC
Accessories: USB2/ USB-Simulator with KALIB-Software

Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen
Tel. + 49 71 35 50 56
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de

FEATURES

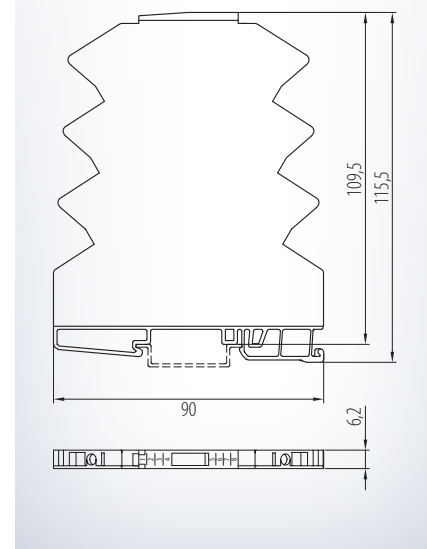
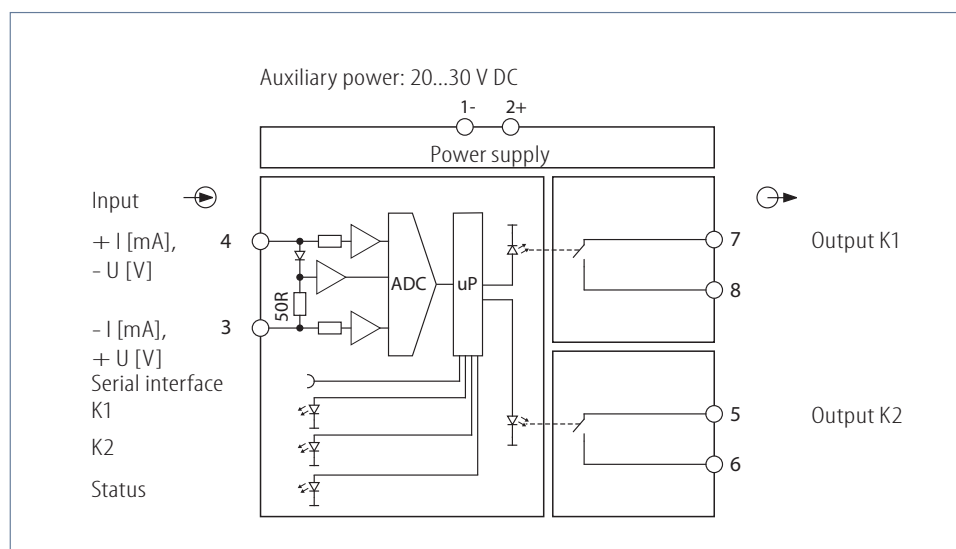
- *Indication of contact state by LED*
- *Control of 4...20 mA current loops*
- *Response time:
at K1 < 10 msec.
at K2 ~ 10 sec.*
- *Parameterization without
auxiliary power via PC-interface*
- *Galvanic 3-way isolation
of 2,5 kV*
- *Low internal consumption*



FUNCTION

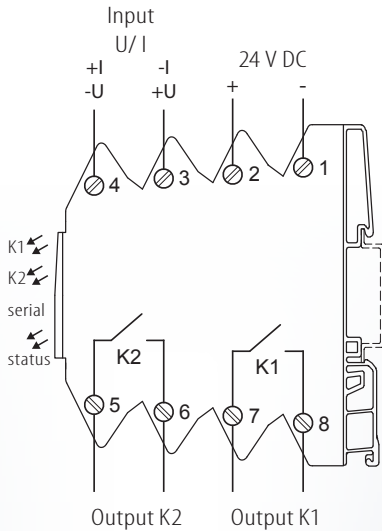
The Live-Zero Monitoring Device GSP 2.04 SDC is used for the protection and control of process engineering facilities. Hereby the 4...20 mA current loop is controlled against overload and wire break. In the range of 3,6 mA and 22,0 mA the switch K1 is closed at applied supply voltage.

In case of the loop current is falling below 3,6 mA or the value exceeds 22,0 mA, the potential free switch K1 is opening immediately. The switch K2 operates in the same way as K1 but with a turn-off delay of 10 sec. Those values are set ex work and can be changed by the USB2 adapter in connection with the KALIB-Software.



GSP 2.04 SDC

Connection diagram:



Input:

I: load-independent DC current:	0(4)...20 mA	input resistance approx. 100 Ω
connection:	terminal 3 -, 4 +	
U: load-independent DC voltage:	0(2)...10 V	input resistance approx. 100 kΩ
connection:	terminal 4 -, 3 +	

Output:

2 transistor outputs:	
Load:	max. 30 V AC/ DC, max. 100 mA AC/ DC
connection K1:	terminal 7, 8
connection K2:	terminal 5, 6
Module for heavy loads:	Relay interface module, 2 relays with 6 A, 250 V Type: RE 2.00 S

Adjustment:

Measuring ranges, switching points and parameterization are adjustable in parameter data by KALIB-Software. For this you need a PC as well as the interface adapter **USB2/ USB-Simulator** with **KALIB-Software**.

Parameterization for each channel:

Limit value adjustment:	0,0...110,0 %	adjustable in 0,1 % steps
Hysteresis:	0,1...90,0 %	adjustable in 0,1 % steps
ON/ OFF-delay:	0,0...999,0 sec.	adjustable in 0,1 sec. steps
Functions:	limit value, limit value range, tendency, inverse function, alarm function, start state, start time	

Preset parameterization (change possible):

Fixed inrush current at:	3,6 mA < I < 22,0 mA
Fixed breaking current at:	I < 3,6 mA and I > 22,0 mA
Switching delay at K1:	approx. 10 msec.
Turn-off delay at K2:	10 sec.

Display:

LED status:	green, active	input signals are in standard range, device ready for use
	green, flashing	input out of predetermined limits or exceeding of measuring range
LED K1:	green, active	K1 closed
LED K2:	green, active	K2 closed

Environmental conditions:

Storage temperature:	-40...+70 °C
Operating temperature:	0...55 °C
Isolation voltage:	2,5 kV eff. 1 sec. input-output 2,5 kV eff. 1 sec. auxiliary voltage

Auxiliary power:

24 V DC:	20...30 V DC < 1,5 W
Influence of auxiliary power:	< 0,1 %

Characteristics of transmission:

Resolution:	10 bit
Linearity error:	< 0,5 % of final value
Temperature error:	< 30 ppm/ K
Response time:	< 10 msec.

Directive:

EMC Directive:	2014/30/EU*
Low Voltage Directive:	2014/35/EU
*minimum deviations possible during HF-radiation influence	

Mounting details:

Housing for top hat rail	
Type of protection:	IP 20
Mounting rail fixed according to	EN 50022-35 x 6,2 mm
Width:	6,2 mm
Weight:	52 g
Material:	Polyamide PA
Flammability class:	V0 (UL 94)
Approval:	CE
Connection:	screw clamps 0,14...2,5 mm ²

Please check parameterization before initial operation!

Ordering information:

Type:	GSP 2.04 SDC	24 V DC
Accessories:	USB2/ USB-Simulator with KALIB-Software, manual	

Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen
Tel. + 49 71 35 50 56
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de



Title	Specification	PC-Interface	Available designs	Auxiliary power	Page
DIGITAL FREQUENCY ANALOG TRANSDUCER					
on-site service and actual value over display, frequency conversion, input contact or 2-wire initiator according to EN 50227 (NAMUR), potential free contact, opto 3-wire reflection light barrier, 24 V NPN-signal, 0,01 Hz...10 K Hz, output: I/ U free scalable, current: 0...20 mA or voltage 0...10 V, contact output: frequency divider/ multiplier, parameterization and handling by push-button or via the USB2-interface and the free KALIB-software. Display of actual value via LCD.					
DFA 1.10 GW	1 x sensor input universal 1 x output I/U 1 x contact relay (impulse)	X	G 22,5	24...250 V DC, 90...253 V AC	04-01
DFA 1.11 GW	1 x sensor input universal 1 x output I/U 1 x contact SSR (impulse)	X	G 22,5	24...250 V DC, 90...253 V AC	04-01
DFA 1.20 GW	2 x sensor input universal 1 x output I/U 1 x contact relay (impulse) 1 x contact relay (limit value)	X	G 22,5	24...250 V DC, 90...253 V AC	04-01
DFA 1.21 GW	2 x sensor input universal 1 x output I/U 1 x contact SSR (Impulse) 1 x contact relay (limit value)	X	G 22,5	24...250 V DC, 90...253 V AC	04-01
DFA 1.22 GW	2 x sensor input universal 2 x output I/U 1 x contact relay (impulse) 1 x contact relay (limit value)	X	G 22,5	24...250 V DC, 90...253 V AC	04-01
DFA 1.23 GW	2 x sensor input universal 2 x output I/U 1 x contact SSR (impulse) 1 x contact relay (limit value)	X	G 22,5	24...250 V DC, 90...253 V AC	04-01

More devices see back page

* Designs: G = housing,
T = housing for door installation,
E = eurocard





Title	Specification	PC-Interface	Available designs	Auxiliary power	Page
DIGITAL FREQUENCY ANALOG TRANSDUCER					
on-site service and actual value over display, frequency conversion, contact or 2-wire initiator according to EN 50227 (NAMUR), opto-3-wire, parameterizable					
DFA 2.00 GW	2x input: namur/ opto-3-wire/ contact, 0...100 Hz, 1x transistor output outputs: 0(4)...20 mA, 0(2)...10 V		G 72	24...250 V DC, 90...253 V AC	04-11
DFA 8.00 TW	input: namur/ contact, 0...10 kHz, outputs: 0(4)...20 mA, 0(2)...10 V		T	24...250 V DC, 90...253 V AC	04-15
DFA 8.30 TW	input: namur/ contact, 0...10 kHz, outputs: 0(4)...20 mA, 0(2)...10 V, transistor output, potential free changer, limit switch		T	24...250 V DC, 90...253 V AC	04-15
DFA 8.40 TW	inputs: 2x contact or 2x namur, addition/ subtraction outputs: 0(4)...20 mA, 0(2)...10V, transistor output, potential free changer, limit switch		T	24...250 V DC, 90...253 V AC	04-15
DIGITAL PULSE SUMMATOR					
control contact, reflecting light barrier or 2-wire initiator according to EN 50227 (NAMUR)					
SI 5.20 GW	2-channel, namur/ opto/ contact, switchable pulse storage per channel, switching the output signal and summing the input pulses, output signals: 2 pulse outputs max. 230 V/ 100 mA		G 72	24...250 V DC, 90...253 V AC	04-23
FREQUENCY DIVIDER					
IV 7.00 MW	input: namur/ reflecting light barrier/ contact/ 24 V signals/ tacho generator, 0...20 kHz output: transistor (max. 400 Hz) and relays pulse divider, multiplier, monitoring	X	G 12,5	24...250 V DC, 90...253 V AC	04-25
IV 7.10 MW	input: namur/ reflecting light barrier/ contact/ 24 V signals/ tacho generator, 0...20 kHz output: optocouple (max. 10 kHz) and relays pulse divider, multiplier, monitoring	X	G 12,5	24...250 V DC, 90...253 V AC	04-27
SWITCHING AMPLIFIER					
IV 5.00 MW	input: namur/ reflecting light barrier/ contact/ 24 V signals/ tacho generator, 0...400 Hz output: transistor (max. 400 Hz) and relays pulse contact, wipe time, monitoring	X	G 12,5	24...250 V DC, 90...253 V AC	04-29
IV 5.02 MW	input: namur/ reflecting light barrier/ contact/ 24 V signals/ tacho generator, 0...400 Hz output: 2 relays; pulse contact, wipe time, monitoring	X	G 12,5	24...250 V DC, 90...253 V AC	04-31
IV 5.10 MW	input: namur/ reflecting light barrier/ contact/ 24 V signals/ tacho generator, 0...400 Hz output: optocouple (max. 100 kHz) and relays pulse contact, wipe time, monitoring	X	G 12,5	24...250 V DC, 90...253 V AC	04-33

* Designs: G = housing,
T = housing for door installation,
E = eurocard



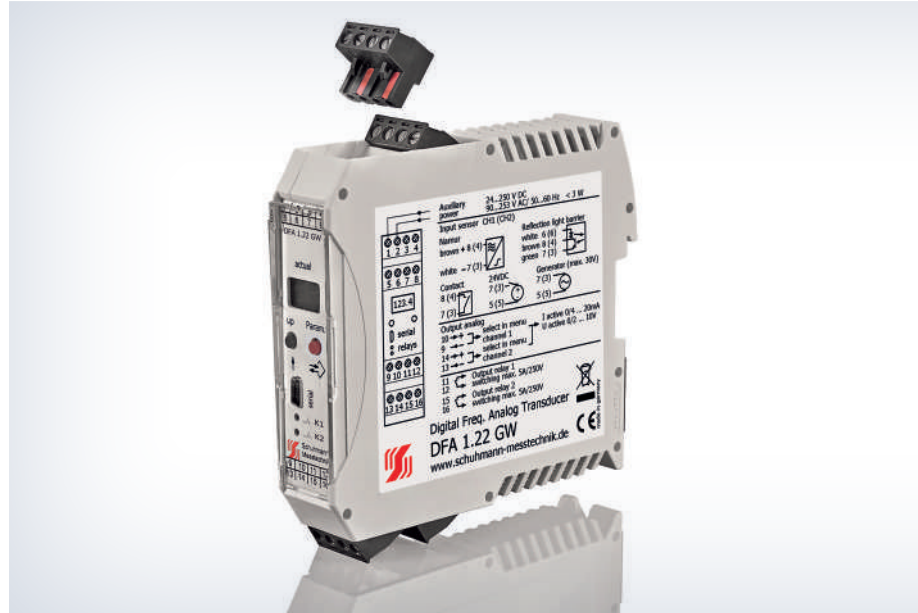


Parameterizable, digital Frequency Analog Transducer

DFA 1.XX GW

FEATURES

- **Input:**
2-wire initiator (Namur)/ potential free contact, opto reflection light barrier, 24 V NPN-signal, 0,01 Hz...10 kHz
- **Output I/U - free scalable:**
current 0...20 mA or voltage 0...10
- **Contact Output:**
frequency divider/multiplier
- **Parameterization and handling**
by push-button or PC interface
- **Display of actual value** via LCD
- **Galvanic 3-way-isolation** of 4 kV

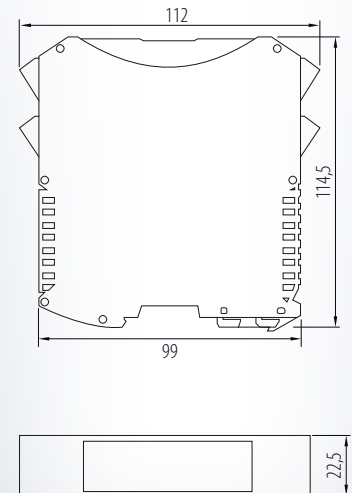
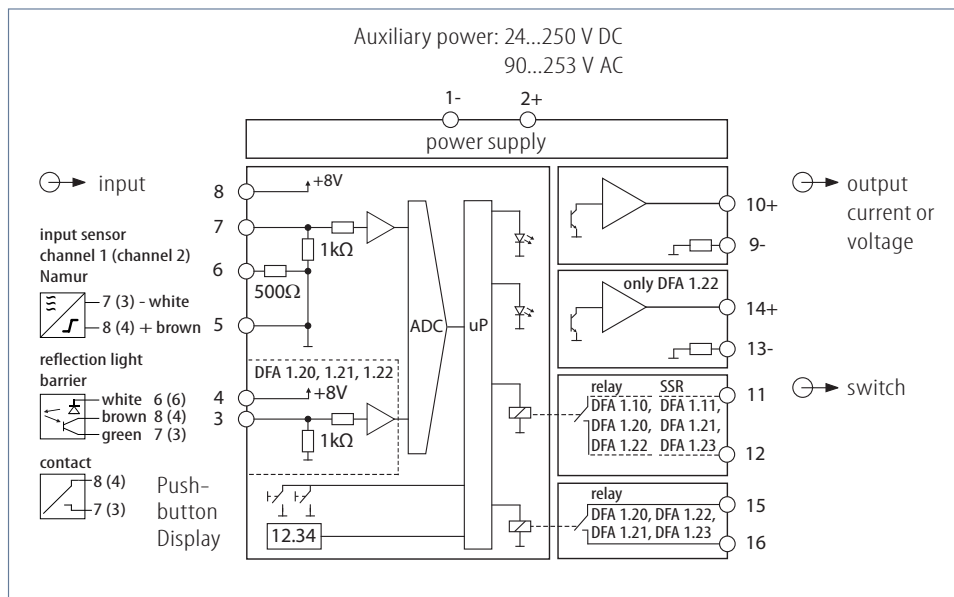


FUNCTION

The DFA 1-series is converting input signals of frequency sensors into standard current and voltage signals, e.g. at flow rate measurement, logging of rotation speed, monitoring of motors etc. The parameterization is carried out by front side push-buttons and LCD display or via the integrated USB2/ USB-Simulator Interface in connection with the KALIB-Software

For monitoring reasons the actual state of the current in- and outputs can be displayed on the display. Every sensor input/ frequency output/ limit can be freely evaluated. The two inputs can be added or subtracted.

Further details to be found at:
ORDERING INFORMATION.





PROCESS VALUE INDICATION DFA 1.10/

description	main menu	unit	actual display
actual value input 1		<i>L-SE</i> \triangleq l/sec. <i>L-Ml</i> \triangleq l/min. <i>q-h</i> \triangleq m ³ /h <i>HErt</i> \triangleq Hertz <i>rot</i> \triangleq 1000 U/min.	 process value input \rightarrow > 2 sec. parameterization menu page 3
actual value input 2		<i>L-SE</i> \triangleq l/sek. <i>L-Ml</i> \triangleq l/min. <i>q-h</i> \triangleq m ³ /h <i>HErt</i> \triangleq Hertz <i>rot</i> \triangleq 1000 U/min.	 process value input <i>Option:</i> only at DFA 1.20/ 1.21/ 1.22
analog output 1 in mA/V		<i>m n A</i> \triangleq mA <i>U o LT</i> \triangleq Volt	 process value analog output 1
analog output 2 in mA/V		<i>m n A</i> \triangleq mA <i>U o LT</i> \triangleq Volt	 process value analog output 2 <i>Option:</i> only at DFA 1.22
relay output 1 impuls		<i>IP-S</i> \triangleq Impulse/sek. <i>IP-M</i> \triangleq Impulse/min. <i>IP-h</i> \triangleq Impulse/h	 process value relay output 1
relay output 2 limit		<i>L-SE</i> \triangleq l/sec. <i>L-Ml</i> \triangleq l/min. <i>q-h</i> \triangleq m ³ /h <i>HErt</i> \triangleq Hertz <i>rot</i> \triangleq 1000 U/min.	 process value relay output 2 <i>Option:</i> only at DFA 1.20, 1.21/1.22

Legend: selection next \rightarrow automatic change of display display channel 1 display channel 2



PARAMETERIZATION MENU

description	menu	selection	change/save
<p>e. g. process value input 1</p> <p>selection of unit which ist being work for all in- and outputs</p>	<p>123.4 → PARA</p> <p>> 2 sec.</p> <p>DISP</p>	<p><i>L-SE</i> ≙ l/sec. <i>L-MI</i> ≙ l/min. <i>q-h</i> ≙ m³/h <i>HErt</i> ≙ Hertz <i>rot</i> ≙ 1000 U/min.</p>	<p>↑ change unit (display blinks) ↓ ⏏ press short, save selection</p>
<p>input sensor 1 only DFA 1.20/1.21/1.22</p>	<p>SEN.1</p>	<p>sensor 1 selection automatically or switch off</p> <p><i>Auto</i> = automatic sensor detection <i>-no-</i> = input deactivated</p>	<p>↑ change unit (display blinks) ↓ ⏏ press short, save selection</p>
<p>scaling of input 1 (all types)</p>	<p>INPu</p>	<p>input valence sensor 1 at <i>L-SE, L-MI, q-h</i>, --> 1 impulse equates x liter e. g.: <i>INPu</i> = 10,00 --> 10,00 liter / impuls at <i>HErt</i> --> <i>INPu</i> = 1,000 at <i>rot</i>, (U/min) --> x impulse/rotation e. g.: <i>INPu</i> = 250 --> 250 impulse/rotation</p>	<p>↑ change unit (display blinks) ↓ ⏏ press short, save selection</p>
<p>input sensor 2 only DFA 1.20/1.21/1.22</p>	<p>SEN.2</p>	<p>sensor 2 selection automatically or switch off (function like at sensor 1)</p>	<p>↑ change unit (display blinks) ↓ ⏏ press short, save selection</p>
<p>scaling of input 2 only DFA 1.20, 1.21, 1.22</p>	<p>INPu</p>	<p>input valence sensor 2 at <i>L-SE, L-MI, q-h</i>, --> 1 impulse equates x liter e. g.: <i>INPu</i> = 10,00 --> 10,00 liter / impuls at <i>HErt</i> --> <i>INPu</i> = 1,000 at <i>rot</i>, (1000 U/min.) --> x impulse/rotation e. g.: <i>INPu</i> = 250 --> 250 impulse/rotation</p>	<p>↑ change unit (display blinks) ↓ ⏏ press short, save selection</p>

Legend: ↑ selection ⏏ next automatic change of display display channel 1 display channel 2



PARAMETERIZATION MENU

description	menu	selection	change/save
signal selection analog output 1 (all types)	 press short	analog output signal current or voltage 0...20 mA/0...10 V <i>Curr</i> \triangleq current output active <i>VoLt</i> \triangleq voltage output active <i>-no-</i> \triangleq output deactivated	change unit (display blinks) press short, save selection
signal source analog output 1 only at DFA 1.20/1.21/1.22/1.23	 press short	Various input sources can be selected for the analog output 1 <i>E1</i> \triangleq only signals out of input 1 <i>E2</i> \triangleq only signals out of input 2 <i>E1 + E2</i> \triangleq addition of input 1 + input 2 <i>E1 - E2</i> \triangleq subtraction of input 1 - input 2 <i>E2 - E1</i> \triangleq subtraction of input 2 - input 1	change unit (display blinks) press short, save selection
scaling of analog output 1 (all types)	 press short	A scaling for the analog output 1 can be set e.g. at unit l/sec. and final value 20 mA: <i>S.c.A.L</i> = 35 \rightarrow 35 l/sec. \triangleq 20 mA (100 %) id est input: 0...35 l/sec. is going to be changed to output at e. g. 0...20 mA	change unit (display blinks) press short, save selection
range selection analog output 1 (all types)	 press short	at <i>Curr</i> 0,00 \rightarrow 0,00 mA at 0 % input signal at <i>Curr</i> 4,00 \rightarrow 4,00 mA at 0 % input signal at <i>VoLt</i> 0,00 \rightarrow 0,00 V at 0 % input signal at <i>VoLt</i> 2,00 \rightarrow 2,00 V at 0 % input signal	change unit (display blinks) press short, save selection
end of range analog output 1 (all types)	 press short	analog signal 1 final value at mA/V output at <i>Curr</i> 20,00 \rightarrow 20,00 mA at 100 % input signal at <i>VoLt</i> 10,00 \rightarrow 10,00 V at 100 % input signal	change unit (display blinks) press short, save selection
damping of analog signal 1 (all types)	 press short	Damping of analog signal 1 in seconds. After the given time constant the analog output signal has adjusted upon 90 %.	change unit (display blinks) press short, save selection

Legend: selection next \rightarrow automatic change of display display channel 1 display channel 2



PARAMETERIZATION MENU

description	menu	selection	change/save
signal selection analog output 2 only at DFA 1.22/1.23	 press short	analog output signal current or voltage 0...20 mA/ 0...10 V <i>Curr</i> \triangleq current output active <i>VolT</i> \triangleq voltage output active <i>-no-</i> \triangleq output deactivated	change unit (display blinks) press short, save selection
signal source analog output 2 only at DFA 1.20/1.21/1.22/1.23	 press short	Various input sources can be selected for the analog output 2 <i>E1</i> \triangleq only signals out of input 1 <i>E2</i> \triangleq only signals out of input 2 <i>E1 + E2</i> \triangleq addition of input 1 + input 2 <i>E1 - E2</i> \triangleq subtraction of input 1 - input 2 <i>E2 - E1</i> \triangleq subtraction of input 2 - input 1	change source (display blinks) press short, save selection
scaling of analog output 2 only at DFA 1.22/1.23	 press short	a scaling for the analog output 2 can be set e. g. at unit l/Sec. and final value 20 mA: <i>ScAL</i> = 35 \rightarrow 35 l/sec. \triangleq 20 mA id est input: 0...35 l/sec. is going to be changed to: output at e. g. 0...20 mA	change value (display blinks) press short, save selection
range selection analog output 2 only at DFA 1.22/1.23	 press short	analog signal 2 range selection at mA/Volt output at <i>Curr</i> 0,00 \rightarrow 0,00 mA at 0 % input signal at <i>Curr</i> 4,00 \rightarrow 4,00 mA at 0 % input signal at <i>VolT</i> 0,00 \rightarrow 0,00 V at 0 % input signal at <i>VolT</i> 2,00 \rightarrow 2,00 V at 0 % input signal	change value (display blinks) press short, save selection
end of range analog output 2 only at DFA 1.22/1.23	 press short	analog signal 2 final value at mA/Volt output at <i>Curr</i> 20,00 \rightarrow 20,00 mA at 100 % input signal at <i>VolT</i> 10,00 \rightarrow 10,00 V at 100 % input signal	change value (display blinks) press short, save selection
damping of analog signal 2 only at DFA 1.22/1.23	 press short	Damping of analog signal 2 in seconds. After the given time constant the analog output signal has adjusted upon 90 %.	change value (display blinks) press short, save selection

Legend: selection next \rightarrow automatic change of display display channel 1 display channel 2



PARAMETERIZATION MENU

description	menu	selection	change/save
output function of the impulse switch (all types)		output function of the impulse switch <i>PuLS</i> \triangleq impulses are going to be switched at the output <i>-no-</i> \triangleq output deactivated	change function (display blinks) press short, save selection
signal source impulse output only at DFA 1.20/1.21/1.22/1.23		various input sources can be selected for the analog output 2 <i>E1</i> \triangleq only signals out of input 1 <i>E2</i> \triangleq only signals out of input 2 <i>E1 + E2</i> \triangleq addition of input 1 + input 2 <i>E1 - E2</i> \triangleq subtraction of input 1 - input 2 <i>E2 - E1</i> \triangleq subtraction of input 2 - input 1	change source (display blinks) press short, save selection
impulse duration switch 1 only at DFA 1.20/1.21/1.22/1.23		display of unit <i>SEC</i> impulse duration switch at output 1 in seconds e. g.: <i>0.750</i> \triangleq 0,75 sec. switch impulse (on)	change value (display blinks) press short, save selection
validation switch 1 only at DFA 1.20/1.21/1.22/1.23		after <i>12.34</i> liter flow rate (<i>L-SE, L-NI, q-h</i>) a switch impulse is issued. e. g. 1000: after 1000 liter \rightarrow 1 impulse after x.x impulses (<i>HErt</i>) \rightarrow 1 switch impulse after x.x rotations (<i>rot</i>) \rightarrow 1 switch impulse	change value (display blinks) press short, save selection
output function of the limit switch only DFA 1.20/1.21/1.22/1.23		output function of the switch <i>Li--</i> \triangleq switch 2 a limit switch <i>-no-</i> \triangleq output switch 2 deactivated	change function (display blinks) press short, save selection
signal source impulse output only at DFA 1.20/1.21/1.22/1.23		limit is being generated by suitable source <i>E1</i> \triangleq only signals out of input 1 <i>E2</i> \triangleq only signals out of input 2 <i>E1 + E2</i> \triangleq addition of input 1 + input 2 <i>E1 - E2</i> \triangleq subtraction of input 1 - input 2 <i>E2 - E1</i> \triangleq subtraction of input 2 - input 1	change source (display blinks) press short, save selection

Legend: selection next automatic change of display display channel 1 display channel 2



PARAMETERIZATION MENU

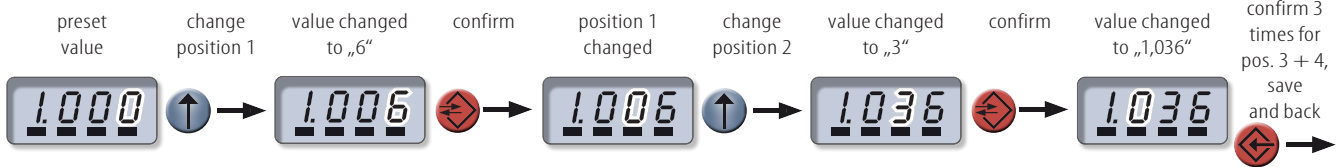
description	menu	selection	change/save
upper switch point switch 2 only at DFA 1.20/1.21/1.22/1.23		display of unit <i>L-SE, L-NI, 9-h, HErt, rot</i> upper limit value e.g. <i>12.34</i> , switching when actual value has exceeded > limit value	change value (display blinks) ↓ press short, save selection
lower switch point switch 2 nur DFA 1.20/1.21/1.22/1.23		display of unit <i>L-SE, L-NI, 9-h, HErt, rot</i> lower limit value e.g. <i>12.34</i> , switching when actual value has fallen below < limit value	change value (display blinks) ↓ press short, save selection
effective direction of switch 2 only at DFA 1.20/1.21/1.22/1.23		<i>r.no</i> : normally open, ON at exceeding / falling below <i>r.nc</i> : normally closed, OFF at exceeding / falling below	change function (display blinks) ↓ press short, save selection
switch-on delay of switch 2 only at DFA 1.20/1.21/1.22/1.23		display of unit <i>SEC</i> after e.g. <i>12.34</i> seconds delay switch 2 is being switched on.	change value (display blinks) ↓ press short, save selection
switch-off delay of switch 2 only at DFA 1.20/1.21/1.22/1.23		display of unit <i>SEC</i> after e.g. <i>12.34</i> seconds delay switch 2 is being switched off.	change value (display blinks) ↓ press short, save selection
end of parameterization (all types)			

Legend: selection next> automatic change of display display channel 1 display channel 2

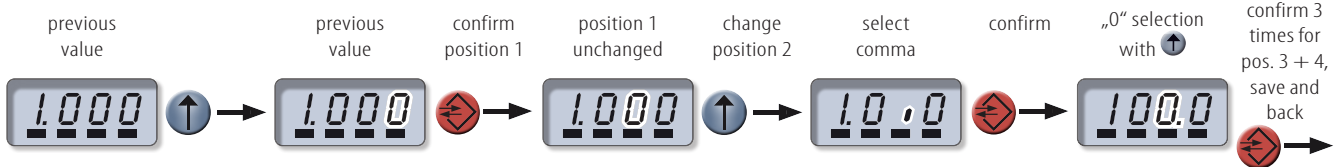


CHANGE VALUE (select with to change the menu item):

change value:



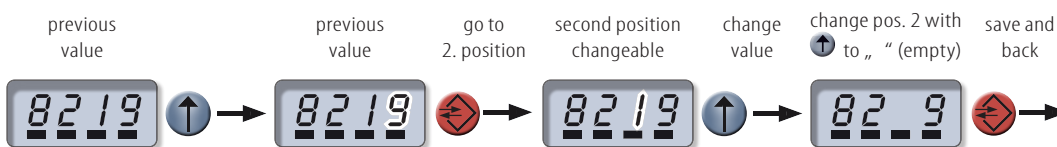
definition of decimal places:



delete decimal places:



delete position:



Details of operation:

The display position gets changed with the push-button . Values such as to , minus , comma , an space are possible.

The push-button is being used to save or select the next position. After the change of the last position, the change to the next menu item is possible with the push-button. For a break-off push longer.


Legend:

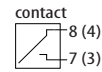
- Digit on display blinks
- Display of comma
- space
- selection
- next
- automatic change of display
- display channel 1
- display channel 2

Input:

Namur EN 50227 or potential free contact:

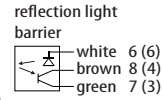
max. current: $I_{max} = 8 \text{ mA}$
 max. voltage: $U_{max} = 8 \text{ V}$
 connection input 1: terminal 8 + (brown), 7 - (white)
 connection input 2 (optional): terminal 4 + (brown), 3 - (white)

connection of sensor
 terminal channel 1 (channel 2)
 Namur
 7 (3) - white
 8 (4) + brown



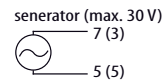
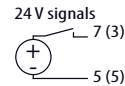
reflection light barrier:

LED current: $I_{max} = 12 \text{ mA}$
 signal current: $I_{max} = 8 \text{ mA}$
 connection input 1: terminal 6 (white), 8 (brown), 7 (green)
 connection output 2: terminal 6 (white), 4 (brown), 3 (green)



24 V signals/generator:

Max. input voltage: 30 V
 Max. input current: ca. 8 mA regulated



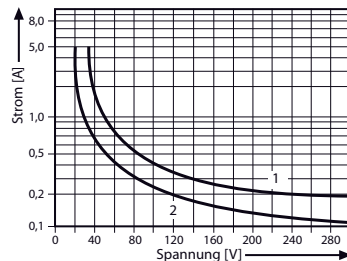
Output:

I: load-independent DC current: 0...20 mA, free adjustable permissible load max. 540 Ω
 connection: terminal 10 + , 9 - (at DFA 1.22 additional 13-, 14+)
 set up in menu *RI.oP = Curr*

U: load-independent DC voltage: 0...10 V, free adjustable permissible load max. ≥ 1 kΩ
 connection: terminal 10 + , 9 - (at DFA 1.22 additional 13-, 14+)
 set up in menu *RI.oP = VOLT*

relayoutput DFA 1.10, 1.20, 1.22: changer
 max. switching current / voltage: 5 A/ 250 V AC
 life cycle: mechanical 30 x 10⁶ cycles/electrical 30 x 10⁵ cycles
 contact life cycle: 10⁵ cycles
 impulse duration: 0,1...9999 sec.
 impulse valency: adjustable
 connection: terminal 11, 12 (at DFA 1.22, 1.23: additional 15, 16)

limit range DC current:
 1 - resistive load
 2 - inductive load



transistor output DFA 1.11, 1.21, 1.23: max. 250 Hz
 max. 50 mA
 max. 60 V
 Impulsdauer: 2 msec...9999 sec.
 Impulswertigkeit: adjustable
 Anschluss: terminal 11, 12 bipolar

Adjustment:

The functions are adjusted by two front side push-buttons and display (from page 04-02) or via the KALIB-Software. For this you need a PC as well as the interface adapter **USB2/USB-Simulator** with **KALIB-Software**. All parameterfiles can be saved and transferred to further units.

display:

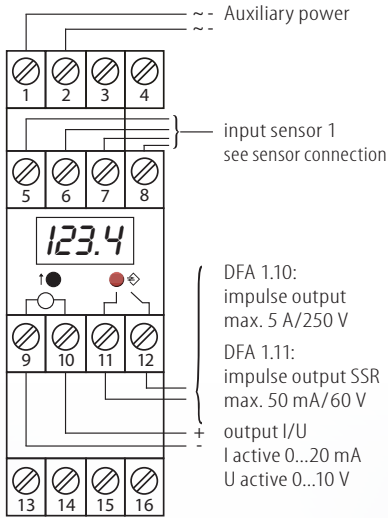
4-digit LC-display with four bargraphs to indicate the in- and outputs.
 1. display/parameter channel 1
 2. display/parameter channel 2



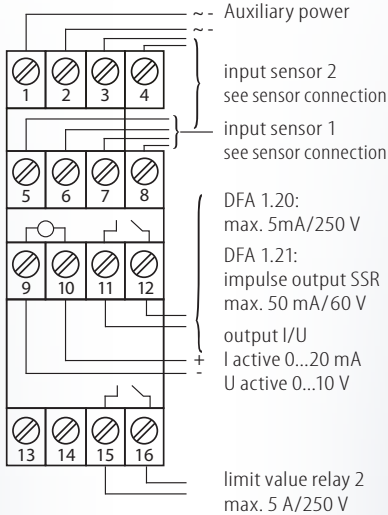
DFA 1.XX GW

Connection diagram:

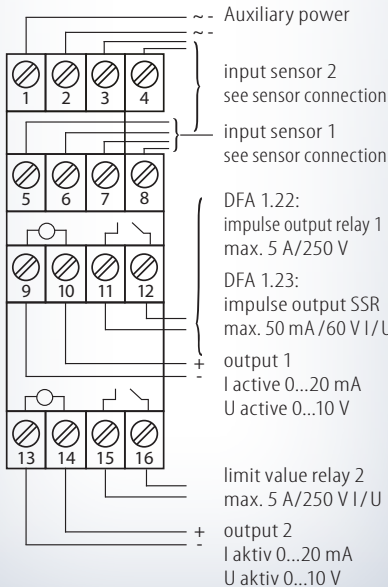
DFA 1.10 GW/DFA 1.11 GW



DFA 1.20 GW/DFA 1.21 GW



DFA 1.22 GW/DFA 1.23 GW



Environmental conditions:

Storage temperature: -40...+70 °C
 Operating temperature: 0...55 °C
 Isolation voltage: 4 kV eff. 1 sec.
 input-output-auxiliary power

Auxiliary power:

Housing for top hat rail:
 Wide range: 24...250 V DC
 90...253 V AC
 < 3 W

Characteristics of transmission:

Linearity error: < 0,1 % of final value
 Temperature error: < 100 ppm/K

Directive:

EMV Directive: 2014/30/EU*
 Low Voltage Directive: 2014/35/EU
 *minimum deviations possible during HF-radiation influence

Mounting details:

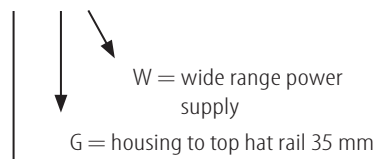
Housing for top hat rail:
 Type of protection: IP 20 housing
 IP 20 clamps
 Mounting rail fixed according to
 EN 50022-35 x 7,5 mm
 Width: 22,5 mm
 Weight: 160 g
 Material: Polyamid PA
 Flammability class: V0 (UL94)
 Approval: CE
 Connection: plugg.
 screw clamps
 0,2...2,5 mm²

For safety reasons we recommend to mount the housing for top hat rail with a distance of approx. 5 mm to each other.

Ordering information:

Type:

DFA 1.xx W



- 10 = 1 x sensor input universal
1 x output I/U
1 x contact relay (impulse)
- 11 = 1 x sensor input universal
1 x output I/U
1 x contact SSR (impulse)
- 20 = 2 x sensor input universal
1 x output I/U
1 x contact relay (impulse)
1 x contact relay (limit value)
- 21 = 2 x sensor input universal
1 x output I/U
1 x contact SSR (Impulse)
1 x contact relay (limit value)
- 22 = 2 x sensor input universal
2 x output I/U
1 x contact relay (impulse)
1 x contact relay (limit value)
- 23 = 2 x sensor input universal
2 x output I/U
1 x contact SSR (impulse)
1 x contact relay (limit value)



FEATURES

- **2 inputs:**
2-wire initiator (Namur) or potential free contact or reflecting light barrier or reflecting light barrier with amplifier
- **Self-optimizing switching threshold**
- **Output, simultaneously:**
current 0(4)...20 mA and/or voltage 0(2)...10 V and a switching output as a frequency divider (e.g. m³/pulse)
- **Frequency conversion 0,1 Hz...100 Hz**
- **Galvanic 3-way isolation**



FUNCTION

The range of applications includes primarily the transmission of instantaneous values and forms the basis for the display and/ or registration of the flow in pipelines.

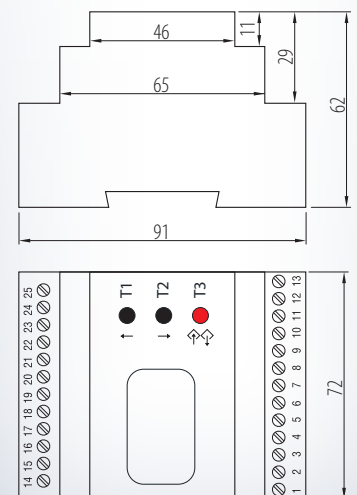
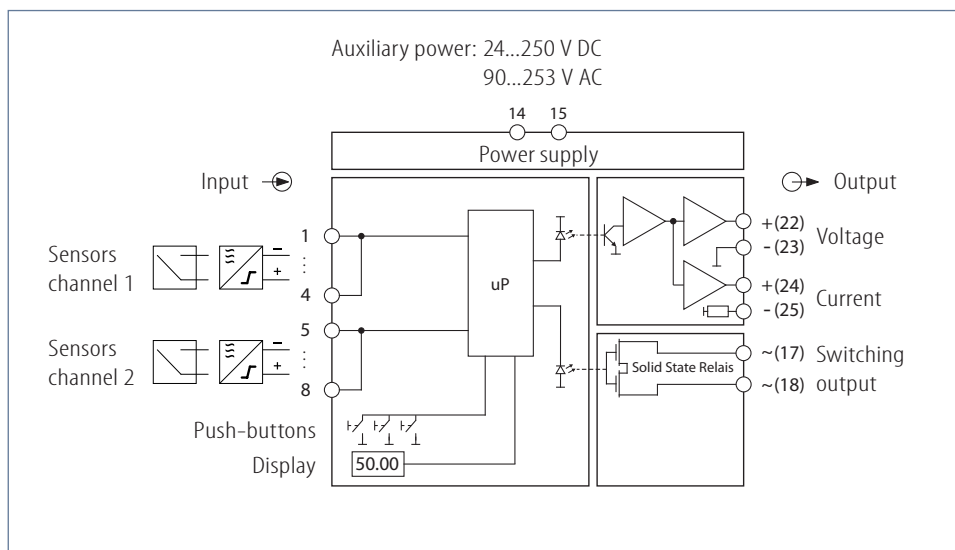
The current output also serves for regulation and monitoring tasks.

The microprocessor controlled frequency analog transducer converts the pulses from the donors of the water meter (main and secondary meter) in a direct current (digital to analog converter). The current here is proportional to the instantaneous flow.

At two donors, the pulses are added.

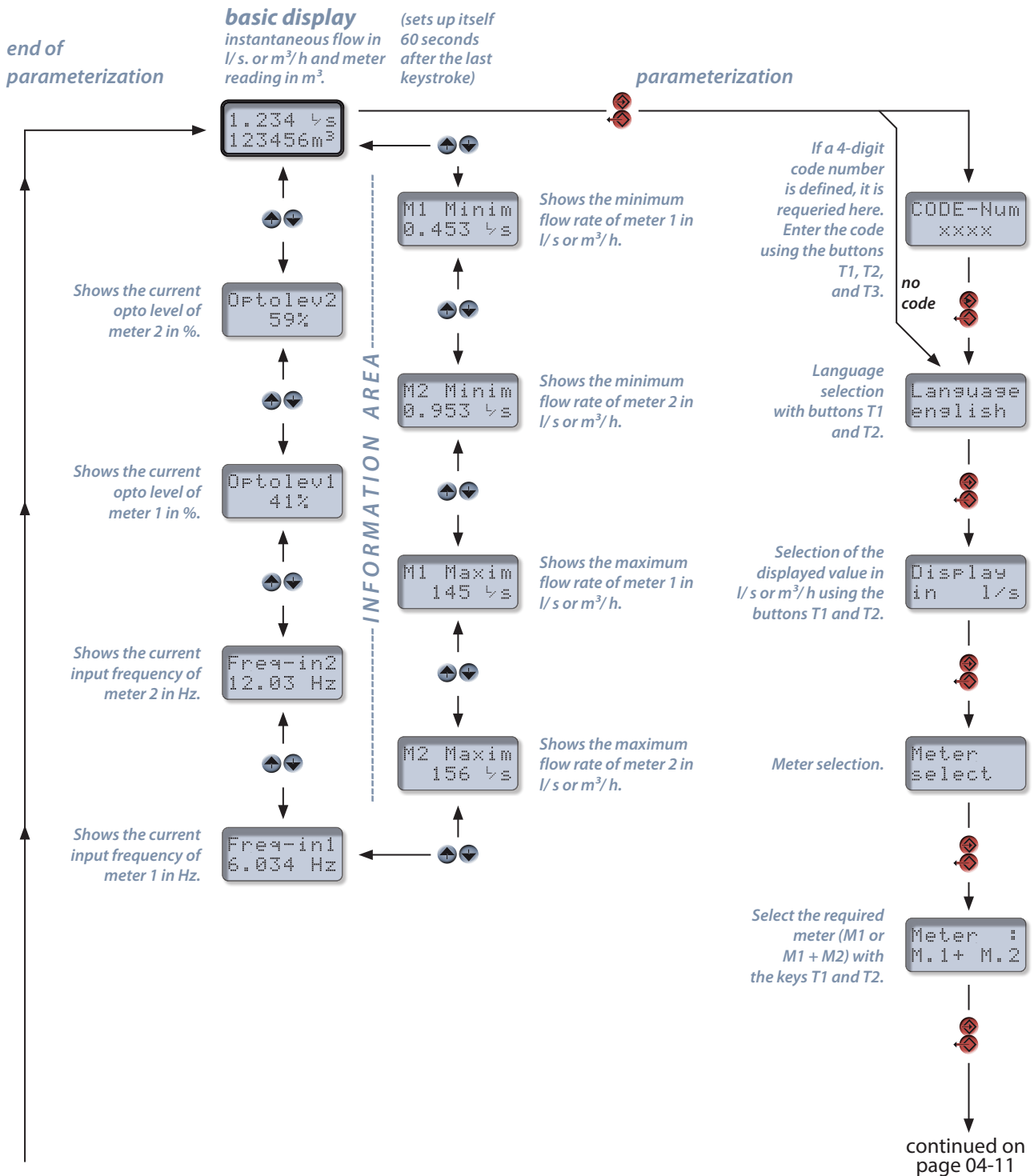
Furthermore, the device is used to scale high resolution pulses in decadal pulses (e.g. m³).

The programming of the transducer DFA 2.00 GW is performed by the three push buttons on the front panel.





OVERVIEW-MENÜ

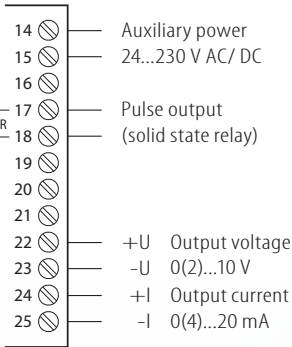


Legend: [T1/ T2] navigation/ selection (in parametrization) [T3] Next (parametrization); longer than 3 sec. --> abort

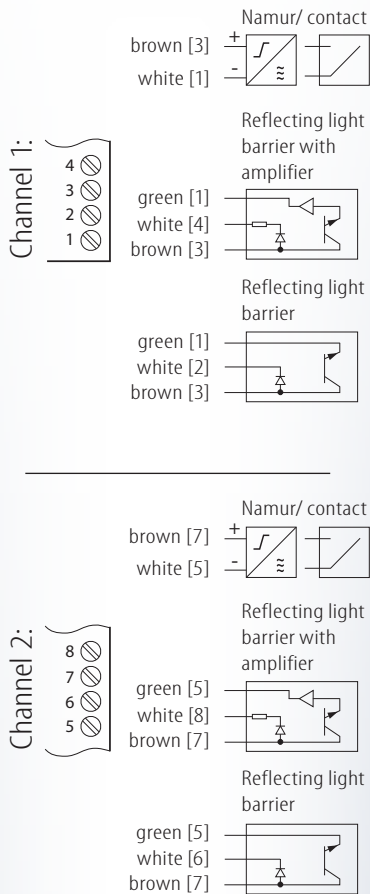
DFA 2.00 GW

Connection diagram:

Auxiliary power/ outputs:



Input channel 1 + channel 2:



Schuhmann GmbH & Co. KG
 Römerstraße 2
 D-74363 Güglingen
 Tel. +49 71 35 50 56
 E-mail: info@schuhmann-messtechnik.de
 www.schuhmann-messtechnik.de

Input:

Namur EN 50227 or potential free contact:

max. current:	$I_{max} = 8 \text{ mA}$
max. voltage:	$U_{max} = 8 \text{ V}$
connection terminals:	5, 7 (see connection diagram)

reflecting light barrier:

connection terminals:	5, 6, 7 (see connection diagram)
-----------------------	----------------------------------

reflecting light barrier with amplifier:

connection terminals:	5, 7, 8 (see connection diagram)
-----------------------	----------------------------------

input frequency range:

0,1 Hz ... 100 Hz

Output:

I: load-independent DC current:	0(4)...20 mA	permissible load max. 540 Ω
connection terminals:	24, 25 (see connection diagram)	

U: load-independent DC voltage:	0(2)...10 V	perm. load $\geq 3 \text{ k}\Omega$ simultaneous operat. perm. load $\geq 1 \text{ k}\Omega$ exclusive
connection terminals:	22, 23 (see connection diagram)	

pulse output (solid state relay):

max. 230 V AC
max. 100 mA

pulse length:	0,02...10 sec.
pulse or limit value:	adjustable
connection terminals:	17, 18 (see connection diagram)

Adjustment:

The function set up has to be carried out by 3 front side push buttons and the display (see at page 04-10 and 04-11).

Display:

LC-display:	2 x 8 digits	matrix - display for instantaneous value and parameterization
		- instantaneous flow (m^3/h or l/s)
		- min./ max. flow rate
		- current meter reading
		- menu navigation

Environmental conditions:

Storage temperature: $-20...+70 \text{ }^\circ\text{C}$

Operating temperature: $-10...+55 \text{ }^\circ\text{C}$

Isolation voltage:

1 kV eff. 1 sec.	input <-> output
4 kV eff. 1 sec.	auxiliary power <-> in-, output
4 kV eff. 1 sec.	output <-> output

Auxiliary power:

Wide range:	24...250 V DC
	90...253 V AC
	< 4 W

Influence of auxiliary power: < 0,1 %

Characteristics of transmission:

Linearity error:	< 0,2 %
Temperature error:	< 0,5 %
Load influence I:	< 50 ppm of final value
Load influence U:	< 0,2 % at 1 kΩ load
Setting time:	< 500 msec.

Directive:

EMC Directive: 2014/30/EU*

Low Voltage Directive: 2014/35/EU

*minimum deviations possible during HF-radiation influence

Mounting details:

Housing for top hat rail	
Type of protection:	IP 30 housing
Mounting rail fixed according to	
	EN 50022-35 x 6,2 mm
Width:	72 mm
Weight:	250 g
Material:	Polycarbonate (PC) + ABS
Approval:	CE
Connection:	screw clamps 0,2...2,5 mm ²

Please check parameter before initial operation!

Ordering information:

Type: DFA 2.00 GW wide range

25.01.2023



FEATURES

- **Input:**
2-wire initiator (Namur) or potential free contact
optional: second input for addition/ subtraction
- **Output:**
Current (0)4...20 mA and/ or Voltage 0(2)...10 V
optional:
Switching outputs with integrated frequency divider or limit switch
- **Pulse conversion 0,01 Hz...10 kHz**
- **Parameterization, handling and actual value indication by display**
- **Galvanic 3-way isolation of 4 kV**



FUNCTION

The DFA8 is converting an input signal generated by various frequency sensors into a standard current and voltage signal.

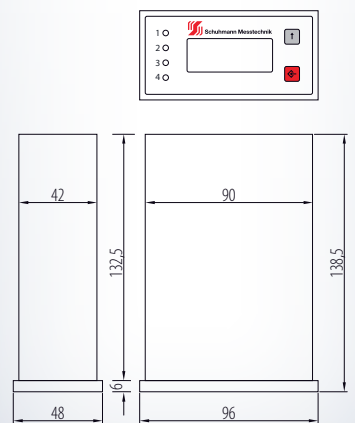
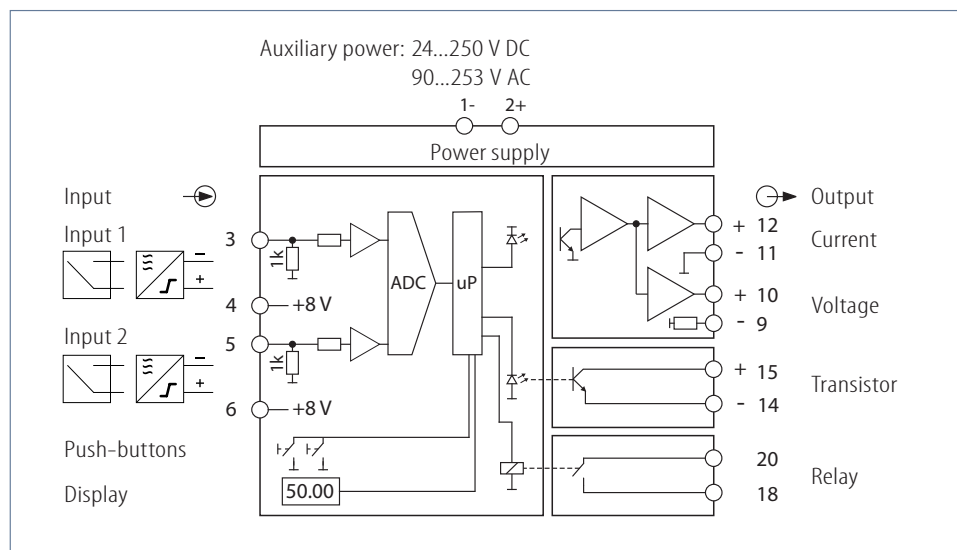
He is used for the flow rate measurement, logging of rotation speed, monitoring of motors etc.

The parameterization is made by the 2 front side push-buttons and indicated by display.

The 4-digit actual value display is free scalable. The actual flow through volume, the minimal or maximum measuring value of the past 60 minutes or 24 hours can be displayed.

The DFA 8.30 TW has 2 switching outputs, used as frequency divider or limit switch.

A second input which can be used as an adder or subtractor is available with the DFA 8.40 TW additional to the 2 switching outputs.



OVERVIEW-MENU FOR DFA 8.00 TW/ DFA 8.30 TW

description

actual indicated value in *L-SE* \triangleq l/sec.
q-h \triangleq m³/h
hertz \triangleq Hertz
rot \triangleq 1000 rpm
L/min \triangleq l/min.

actual value at input 1 as Hz.

minimal occurred value since last call up of this programm (up to max. 60 min.) or smallest measurand since 24 h if last call up is greater than 60 min.

maximal occurred value since last call up of this programm (up to max. 60 min.) or biggest measurand since 24 h if last call up is greater than 60 min.

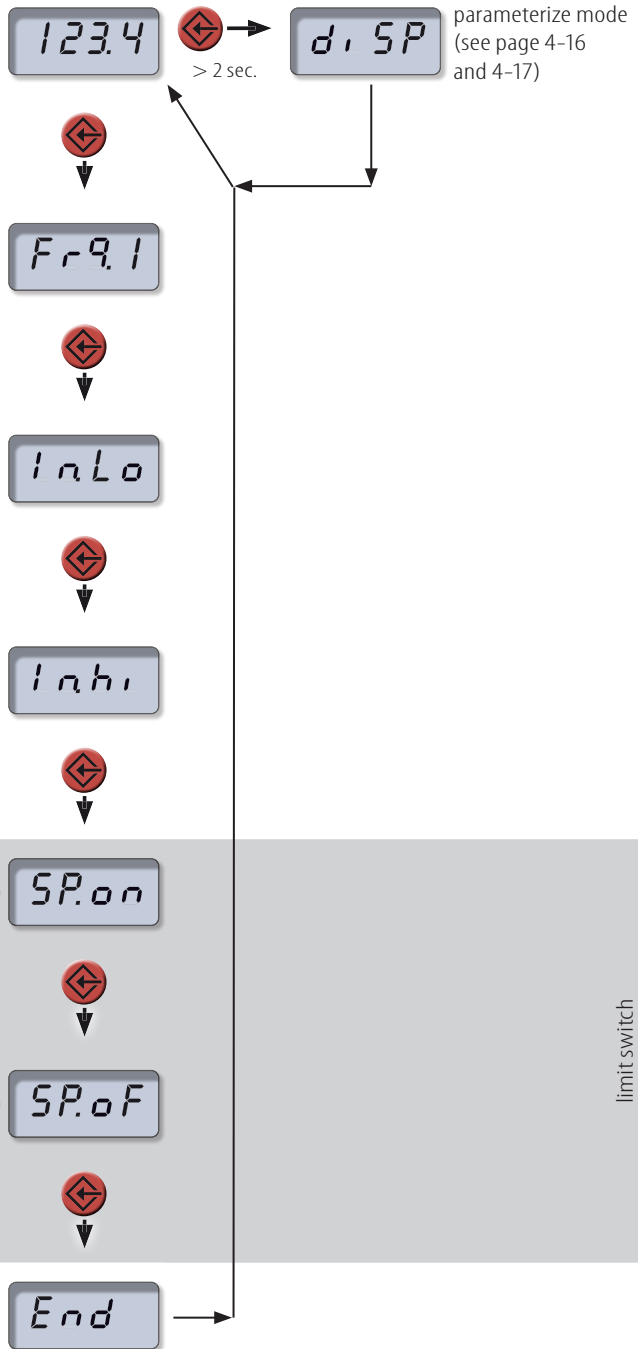
Limit switch:
 setpoint on: by overtravel of SP.on
 relay/ transistor turns on.

Limit switch:
 setpoint off: by underrun of SP.on
 relay/ transistor turns off.

The hysteresis is the difference between SP.on and SP.oF.

displayed for
 2 seconds

*main menu*1*



Option

Legend: selection next *1 There is a constant change between the actual indicated value and the display of the menu item.

OVERVIEW-MENU FOR DFA 8.40 TW

description

actual indicated value in *L-SE* \triangleq l/sec.
q-h \triangleq m³/h
hertz2 \triangleq Hertz
rot \triangleq 1000 rpm
L-Fl \triangleq l/min.

actual value at input 1 as Hz.

minimal occurred value at input 1 since last call up of this programm (up to max. 60 min.) or smallest measurement since 24 h if last call up is greater than 60 min.

maximal occurred value at input 1 since last call up of this programm (up to max. 60 min.) or biggest measurement since 24 h if last call up is greater than 60 min.

actual value at input 2 as Hz.

minimal occurred value at input 2 since last call up of this programm (up to max. 60 min.) or smallest measurement since 24 h if last call up is greater than 60 min.

maximal occurred value at input 2 since last call up of this programm (up to max. 60 min.) or biggest measurement since 24 h if last call up is greater than 60 min.

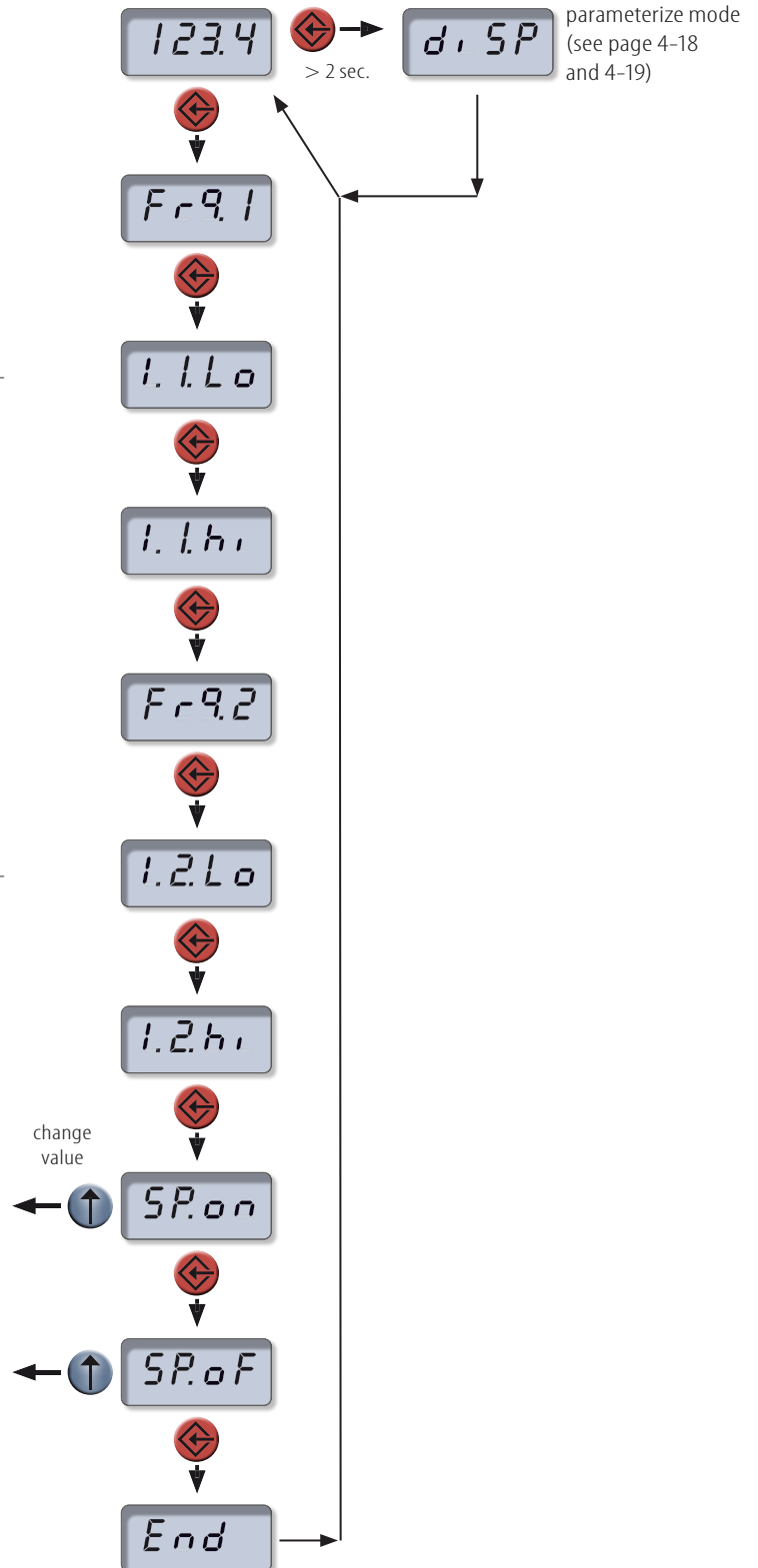
Limit switch:
setpoint on: by overtravel of SP.on relay/ transistor turns on.

Limit switch:
setpoint off: by underrun of SP.on relay/ transistor turns off.

The hysteresis is the difference between SP.on and SP.oF.

displayed for
2 seconds

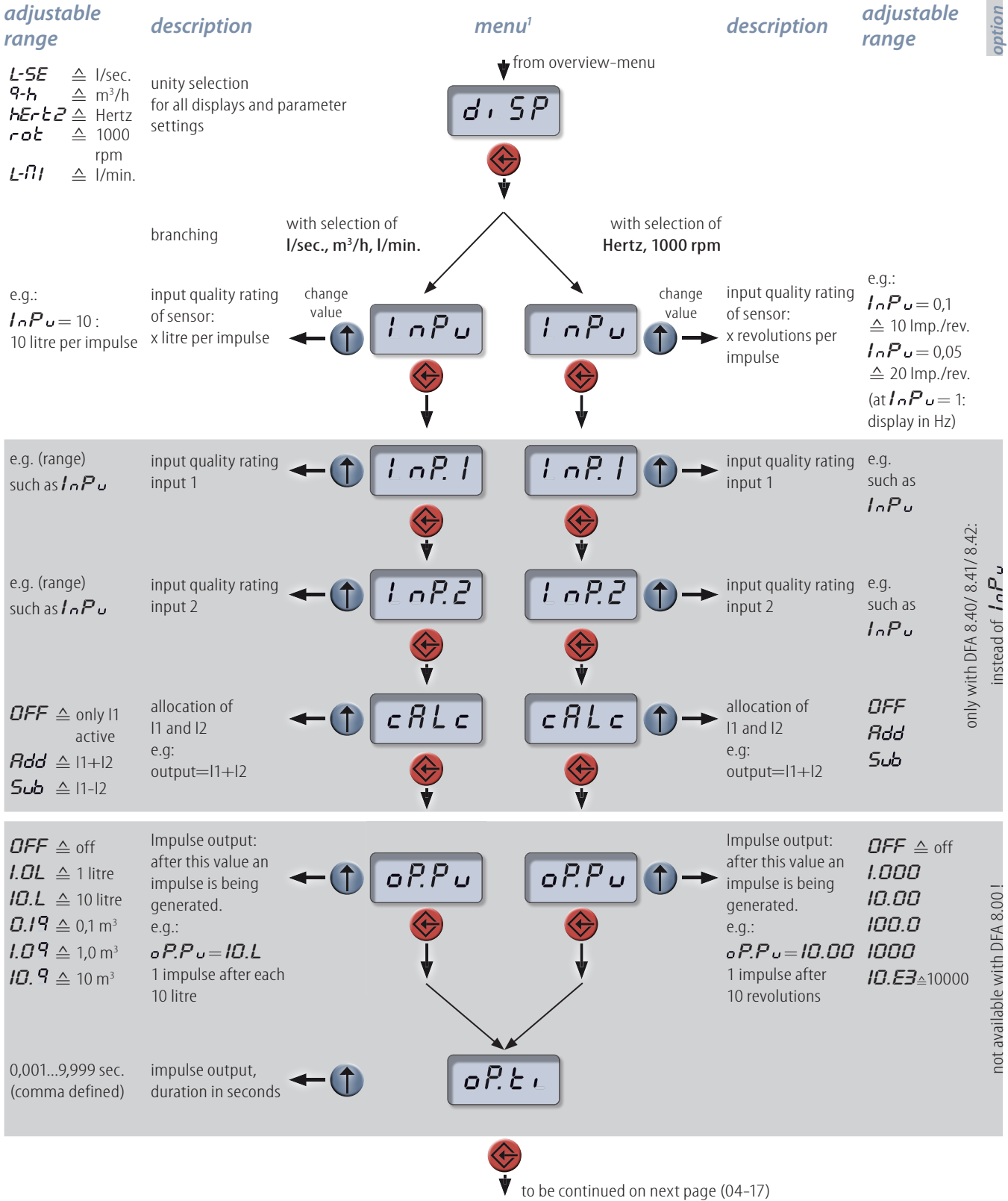
*main menu*1*



Legend:  selection  next *1 There is a constant change between the actual indicated value and the display of the menu item.



PARAMETERIZING-MENU



only with DFA 8.40/ 8.41/ 8.42: instead of *I_nP_u*
 not available with DFA 8.00 !

Legend: selection next *¹ There is a constant change between the actual indicated value and the display of the menu item.



PARAMETERIZING-MENU

adjustable range

description

*menu*1*

option

- 0-20 \triangleq 0...20 mA/ 0...10 V
- 4-20 \triangleq 4...20 mA/ 2...10 V
- 0-10 \triangleq 0...10 mA/ 0...5 V
- 20-0 \triangleq 20...0 mA/ 10...0 V
- 20-4 \triangleq 20...4 mA/ 10...2 V
- 10-0 \triangleq 10...0 mA/ 5...0 V

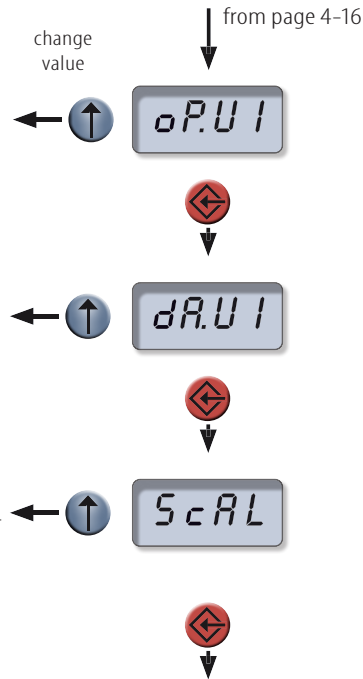
1,0...999,9 sec.
(comma defined)

e.g.:
at unit I/sec. and final value 20 mA:
 $ScAL = 35$
35 I/sec. \triangleq 20 mA
i.e.:
input: 0...35 I/sec.
will be changed into:
output: 0...20 mA

select outputsignal

attenuation of the
outputsignal

define scaling for outputrange:
coupling between 100% input-
and 100% outputrange:
 $x \triangleq$ final value analoge output
Inputfrequency filter =
 $ScAL$ -value * 1,5



- $SP.rE \triangleq$ relay: limit value
transistor: impulse output
- $SP.t.r \triangleq$ transistor: limit value
relay: impulse output

Limit switch
selection of output:
relay or transistor

0...99,99 sec.

raising delay
for limit value

0...99,99 sec.

switching off delay
for limit value

displayed for
2 seconds

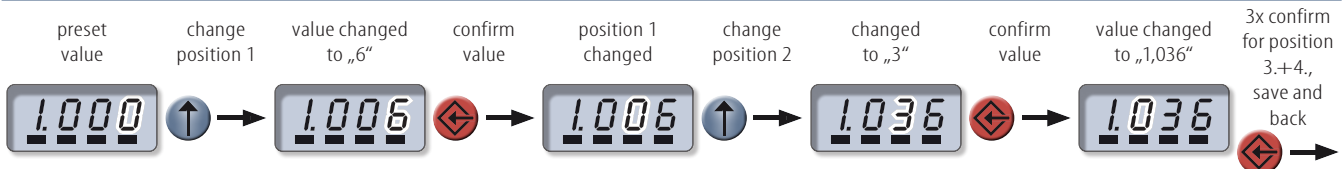
limit switch
only with DFA 8.30 TW/ DFA 8.40 TW

back to overview-menu, page 4-16/ 4-17

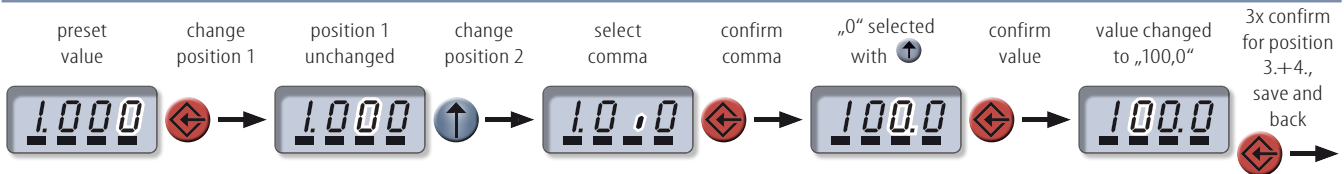
Legend: selection next *1 There is a constant change between the actual indicated value and the display of the menu item.

CHANGE VALUE (select  to change the menu item):

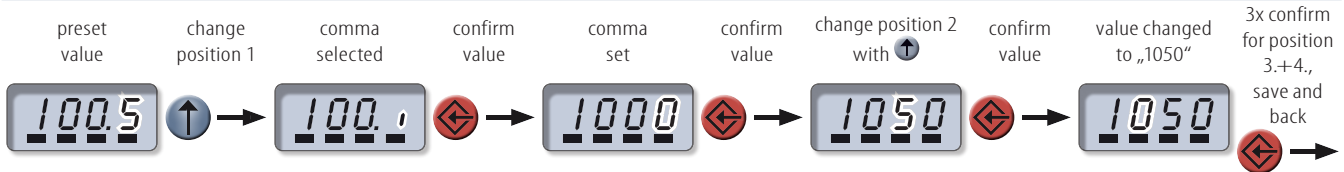
change value:



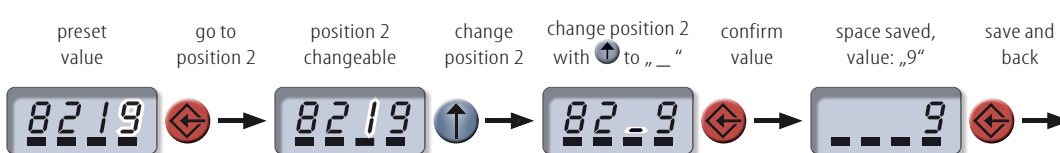
define decimal place:









delete decimal place:





delete positions:








Details of operation:

The displayed position gets changed with the push-button . Values such as  to , minus , comma , and space  are possible.

Use the push-button  to confirm the actual position and go to the next or return to the main menu after changing the last digit. Break-off possible by pushing  longer.

Legend:

-  Digit on display blinks.
-  Display of comma.
-  space
-  selection
-  confirm

Input:

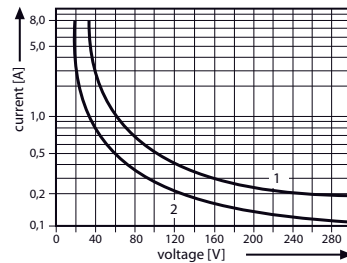
Namur EN 50227 or potential free contact:

max. current:	$I_{\max} = 8 \text{ mA}$
max. voltage:	$U_{\max} = 8 \text{ V}$
connection input 1:	terminal 4 -, 5 + (door installation: 3 -, 4 +)
connection input 2 (optional):	terminal 6 -, 3 + (door installation: 5 -, 6 +)

Output:

I: load-independent DC current:	0(4)...20 mA	permissible load max. 600 Ω
connection:	see connection diagram	(door installation: 11 -, 12 +)
U: load-independent DC voltage:	0(2)...10 V	permissible load max. $\geq 3 \text{ k}\Omega$
		simultaneous operation
		permissible load max. $\geq 1 \text{ k}\Omega$
		exclusive
connection:	see connection diagram	(door installation: 9 -, 10 +)
Transistor output (optional):	max. 50 Hz	
	max. 50 V	
	max. 50 mA	
pulse length:	0,01...10 sec.	
pulse or limit value:	adjustable	
connection:	see connection diagram	(door installation: 14 -, 15 +)
Relay output (optional):	closer (door installation: changer)	
max. switching current:	8 A	
max. switching voltage:	250 V AC	
mechanical life cycle:	30×10^6 cycles	
contact life cycle:	10^5 cycles	
pulse length:	0,1...10 sec.	
pulse or limit value:	adjustable	
connection:	terminal 10, 11 (door installation: 18, 19, 20)	

Direct current limit range:
1 - ohmic load
2 - inductive load



Adjustment:

The function set up has to be carried out by front side push-button and display (see at Page 04-14).

Display:

4-digit LC-display with 4 bargraphs to indicate the relay status of inputs and outputs.

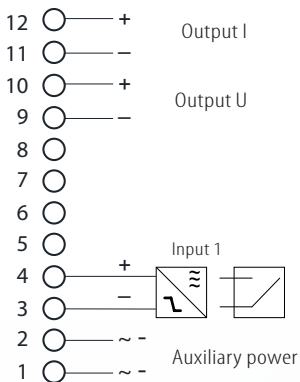


- 1: input 1
- 2: input 2
- 3: status pulse output
- 4: status output limit value

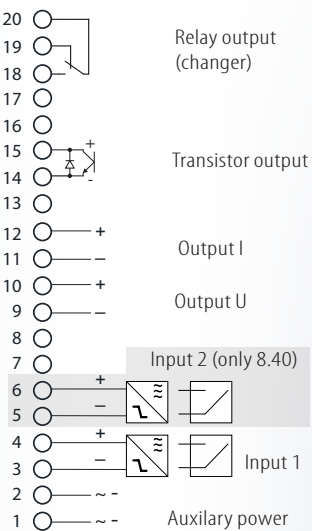
DFA 8.00 TW

Connection diagram:

DFA 8.00 TW



DFA 8.30 TW/ DFA 8.40 TW



Environmental conditions:

Storage temperature: -40...+70 °C
 Operating temperature: 0...55 °C
 Isolation voltage: 4 kV eff. 1 sec.
 input-output-auxiliary voltage

Auxiliary power:

Housing for top hat rail:
 Wide range: 24...250 V DC
 90...253 V AC
 < 3 W

Door installation:

Wide range: 24...250 V DC
 90...253 V AC
 < 3 W

Characteristics of transmission:

Linearity error: < 0,1 % of final value
 Temperature error: < 10 ppm/K

Directive:

EMC Directive: 2014/30/EU*
 Low Voltage Directive: 2014/35/EU
 *minimum deviations possible during
 HF-radiation influence

Mounting details:

Housing for top hat rail:

Type of protection: IP 40 housing
 IP 10 clamps
 Mounting rail fixed according to
 EN 50022-35 x 6,2 mm

Width: 22,5 mm
 Weight: 210 g
 Material: Polyamide PA
 Flammability class: V0 (UL94)
 Approval: CE
 Connection: screw clamps
 ≤ 2 x 2,5 mm²

Door installation:

Type of protection: IP 54 Front
 Front frame: 96 x 48 mm
 Installation depth: 138,5 mm
 Weight: 290 g
 Material: PC/ ABS
 Flammability class: V0 (UL94)
 Approval: CE
 Connection: plugg. screw clamps
 0,14...1,5 mm²

For safety reasons we recommend to mount the housing for top hat rail with a distance of approx. 5 mm to each other.

Ordering information:

Type:

DFA 8.00 TW wide range housing
 analog output I and U

with limit switch, pulse output:

DFA 8.30 TW wide range door inst.
 analog output I and U
 relay output (changer)
 transistor output

with 2 inputs, limit switch, pulse output:

DFA 8.40 TW wide range door inst.
 analog output I and U
 relay output (changer)
 transistor output

Schuhmann GmbH & Co. KG
 Römerstraße 2
 D-74363 Güglingen
 Tel. + 49 71 35 50 56
 E-mail: info@schuhmann-messtechnik.de
 www.schuhmann-messtechnik.de

Switching Amplifier with Impulse Summation

SI 5.20 GW

FEATURES

- **2 Inputs:**
2-wire initiator (Namur) or potential free contact or optocoupler or reflecting light barrier or NPN/ PNP input
- **2 transistor outputs: 230 V, 100 mA**
- **Impulse summator**
- **Signal multiplier**
- **Pulse storage per channel**
- **Pulse duration adjustable**
- **Galvanic 3-way isolation of 1,5 kV**

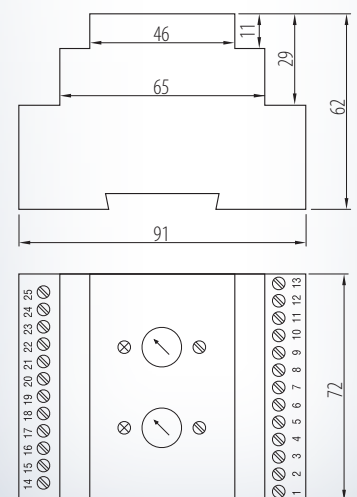
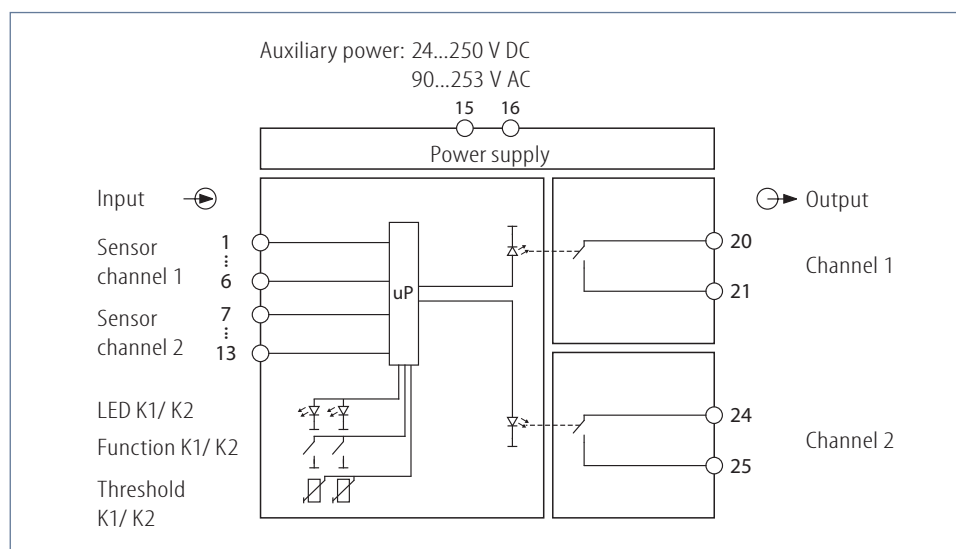


FUNCTION

The 2-channel Switching Amplifier enables the preparation of digital pulses. The preparation of pulses is used for various applications, e.g. determination of quantities, piece and event counting, supply of a sensor and processing for digital PLC-inputs.

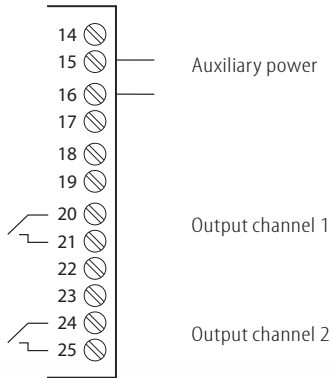
The input signals are processed both with inductive or capacitive proximity switches and optoelectronic sensors. The following input signals can be processed: two-wire initiator according to EN 50227 (former DIN 19234) for NAMUR-sensors, reflecting light barriers, potential free contacts and sensors with transistor output.

The SI 5.20 GW can be compared with a pulse converter which prolongs the input pulses and prepares the signals. In function as an impulse summator the input pulses can be produced at the same time or temporally overlapping. The built-in microprocessor is able to store up to 100 input signals; thus, a protected feeding of the prepared signals is guaranteed. The inputs and outputs are galvanically isolated between each other and the auxiliary power.

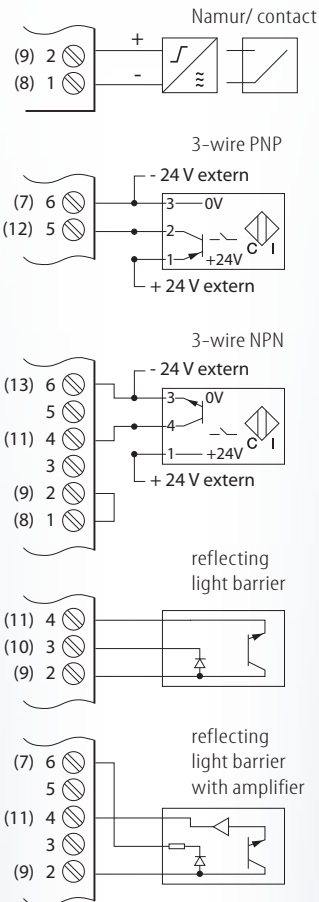


SI 5.20 GW

Connection diagram:



Input channel 1 (channel 2):



Input:

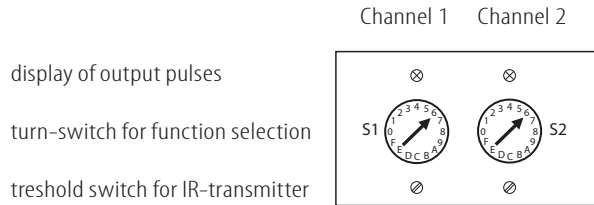
Transmitter	Short-circuit current	Switching point
Namur	8 mA	1,6 mA
Reed contact	8 mA	1,6 mA
IR-transmitter	5 mA	1 mA, adjustable by front trimmer
Transistor	5 mA	1 mA

Connection: see connection diagram

Output:

Transistor outputs: LED pulse-display at front side
load: max. 230 V AC/ DC, max. 100 mA AC/ DC
connection: see connection diagram

Adjustment:



S1/ S2	Function	Wipe time	Pulse storage	Output
0	output=input	no	without	
1	switching amplifier	50 ms	without	
2	switching amplifier	100 ms	without	
3	switching amplifier	300 ms	without	
4	switching amplifier	2000 ms	without	
5	switching amplifier	100 ms	with	
6	switching amplifier	300 ms	with	
7	switching amplifier	2000 ms	with	
8	IN1 + IN2	50 ms	with	
9	IN1 + IN2	100 ms	with	
A	IN1 + IN2	300 ms	with	
B	IN1 + IN2	2000 ms	with	
C	IN1 + IN2	50 ms	with	inverse
D	IN1 + IN2	100 ms	with	inverse
E	IN1 + IN2	300 ms	with	inverse
F	IN1 + IN2	2000 ms	with	inverse

When setting function to addition of the inputs (IN1 + IN2) both outputs run in parallel. Thus, a signal multiplication can be generated also.

Environmental conditions:

Storage temperature: -40...+70 °C
Operating temperature: 10...55 °C
Isolation voltage:
1,5 kV eff. 1 sec. input/ output
1,5 kV eff. 1 sec. output 1/ output 2
1,5 kV eff. 1 sec. auxiliary power

Auxiliary power:

Wide range:
24...250 V DC
90...253 V AC
< 3 W

Influence of auxiliary power: < 0,1 %

Characteristics of transmission:

min. input pulse duration: 6 msec.
Setting time: < 200 msec.
Pulse storage per channel: 100 Impulses

Directive:

EMC Directive: 2014/30/EU*
Low Voltage Directive: 2014/35/EU
*minimum deviations possible during HF-radiation influence

Mounting details:

Housing for top hat rail
Type of protection: IP 20 housing
IP10 clamps
Mounting rail fixed according to
EN 50022-35 x 6,2 mm

Width: 72 mm
Weight: 200 g
Material: PC-ABS
Flammability class: VO (UL 94)
Approval: CE
Connection: screw clamps
≤ 2,5 mm²

Ordering information:

Type: SI 5.20 GW wide range

Schuhmann GmbH & Co. KG

Römerstraße 2

D-74363 Güglingen

Tel. + 49 71 35 50 56

E-mail: info@schuhmann-messtechnik.de

www.schuhmann-messtechnik.de



FEATURES

- **Input, max. 20 kHz:**
2-wire proximity switch (NAMUR) or potential-free contact or reflecting light barrier or 24 V DC signal/ tacho generator
- **Output, simultaneously:**
1 solid state relay (bipolar),
1 relay (changer)
- **Parameterization without auxiliary power via PC-interface:**
- division/ multiplication factor
- wipe time, inverse, memory, etc.
- **Line monitoring**
- **Galvanic 3-way isolation**



FUNCTION

The Frequency Divider IV 7.00 MW is being used for binary signal transmission out of control circuits into signal circuits.

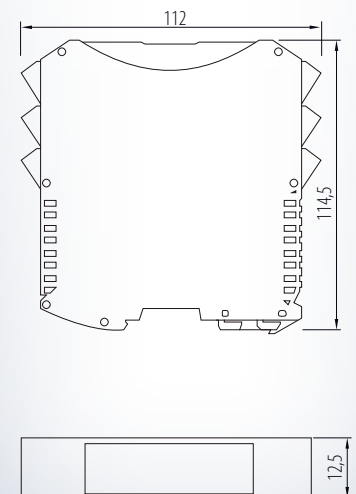
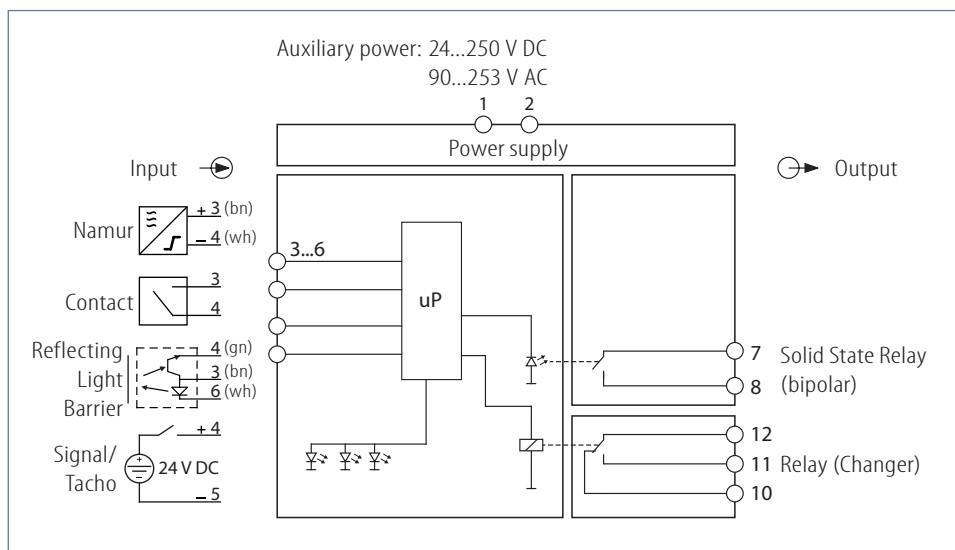
The activation has to be carried out by a 2-wire proximity switch according to EN 50227 (NAMUR) or potential-free contacts. A reflecting light barrier or a 24 V DC signal/ tacho generator can also be used for this.

A division and a multiplication factor can be set by KALIB-Software. These values are also used to calculate ratios, e.g. 2/ 3.

Additional functions such as wipe time, starting characteristics, input filter, pulse memory and limits for short circuit or wire break detection can be set.

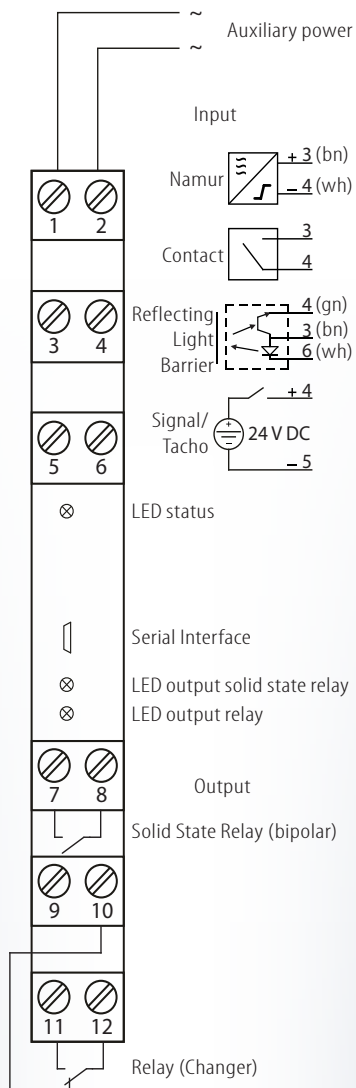
The simultaneous outputs can be parameterized separately and also be used as an alarm contact for wire break or short circuit.

The IV 7.00 MW has a solid state relay output (bipolar) and a relay output (1 changer). At higher frequencies the relay can be deactivated via KALIB-Software.



IV 7.00 MW

Connection diagram:



Input:

Namur EN 50227 or potential free contact or reflecting light barrier:

maximum current:	$I_{max} = 8 \text{ mA}$
maximum voltage:	$U_{max} = 8 \text{ V}$
min. impulse duration:	$> 25 \mu\text{s}$ (default filter 1 ms, changeable via KALIB-Software)
connection:	terminal 3 +, 4 -

24 V DC signal/ tacho, connect.: terminal 4 +, 5 -

Output:

Solid state relay output:	bipolar
load:	max. 100 V/ 50 mA/ 400 Hz
connection:	terminal 7, 8
Relay output:	1 changer
load:	max. 250 V AC/ 5 A
connection:	common 12, normally closed 10, normally open 11

Adjustment:

The parameterization will be carried out for commissioning via KALIB-Software. For this you need a PC as well as the interface adapter **USB2/ USB-Simulator** with **KALIB-Software**.

Each output can be configured separately:

input filter:	off; 0,5 - 20 msec.	frequency input filter (factory setting: 1 ms)
multiplication factor:	1...30000	output = input * factor
division factor:	1...30000	output = input / factor
wire break limits:	10,00...46,99 %	adjustable in 0,02 % steps
short circuit limits:	52,99...94,99 %	adjustable in 0,02 % steps
mode:	off/ contin. pulse/ pulse contact*/ Namur wire break and short circuit/ pulse memory overflow (only relay)/ pulse failure/ impulse generator	
*wipe time ON:	0,002...30,000 sec.	adjustable in 1 msec. steps
*wipe time OFF:	0,002...30,000 sec.	adjustable in 1 msec. steps
*pulse memory:	2...10000 pulses	
extended functions:	inverse operation, start state (on/ off), start time (0...30 sec.)	

Display:

LED status:	green, active	input signals are in standard range, device ready for use
	green, flashing	Namur wire br. or short circ./ pulse mem. overfl./ pulse failure
LED's output:	yellow, active	output active

Environmental conditions:

Storage temperature:	-40...+70 °C
Operating temperature:	0...55 °C
Isolation voltage:	
1 kV eff. 1 sec.	input/ output
3,75 kV eff. 1 sec.	auxiliary power

Auxiliary power:

Wide range:	24...250 V DC
	90...253 V AC
	< 3 W
Influence of Aux. power:	< 0,1 %

Directive:

EMC Directive:	2014/30/EU*
Low Voltage Directive:	2014/35/EU
*minimum deviations possible during HF-radiation influence	

Mounting details:

Housing for top hat rail	
Type of protection:	IP 40 housing
	IP 20 clamps
Mounting rail fixed according to	EN 50022-35 x 7,5mm
Width:	12,5 mm
Weight:	100 g
Material:	Polyamide (PA)
Flammability class:	V0 (UL94)
Approval:	CE
Connection:	pluggable screw clamps
	$\leq 2 \times 2,5 \text{ mm}^2$

For safety reasons we recommend to mount the housing for top hat rail with a distance of approx. 5 mm to each other.

Ordering information:

Type:	IV 7.00 MW wide range
Accessories:	USB2/ USB-Simulator with KALIB-Software

Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen
Tel. +49 71 35 50 56
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de

FEATURES

- **Input, max. 20 kHz:**
2-wire proximity switch (NAMUR) or potential-free contact or reflecting light barrier or 24 V DC signal/ tacho generator
- **Output, simultaneously:**
1 optocoupler (max. 10 kHz),
1 relay (changer)
- **Parameterization without auxiliary power via PC-interface:**
- division/ multiplication factor
- wipe time, inverse, memory, etc.
- **Line monitoring**
- **Galvanic 3-way isolation**



FUNCTION

The Frequency Divider IV 7.10 MW is being used for binary signal transmission out of control circuits into signal circuits.

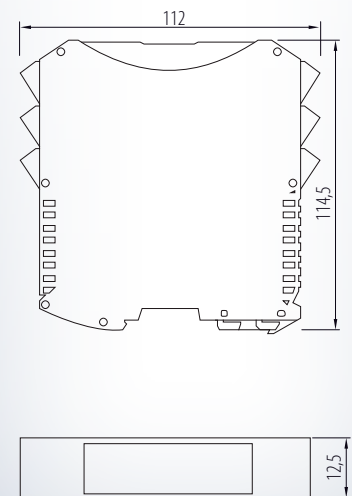
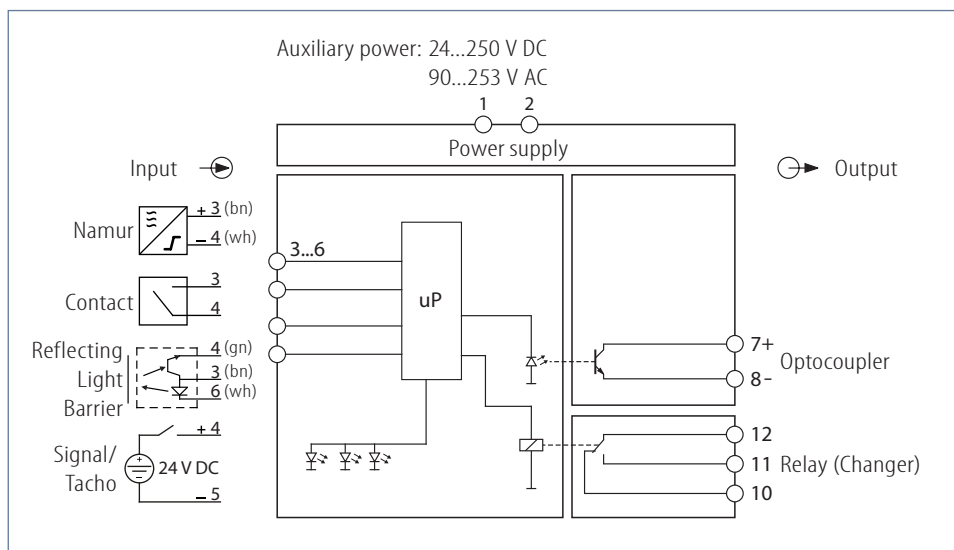
The activation has to be carried out by a 2-wire proximity switch according to EN 50227 (NAMUR) or potential-free contacts. A reflecting light barrier or a 24 V DC signal/ tacho generator can also be used for this.

A division and a multiplication factor can be set by KALIB-Software. These values are also used to calculate ratios, e.g. 2/ 3.

Additional functions such as wipe time, starting characteristics, input filter, pulse memory and limits for short circuit or wire break detection can be set.

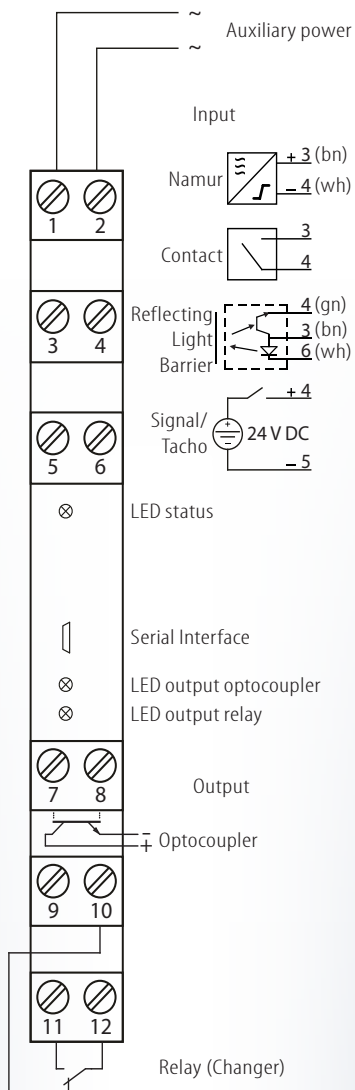
The simultaneous outputs can be parameterized separately and also be used as an alarm contact for wire break or short circuit.

The IV 7.10 MW has an optocoupler (max. 10 kHz) and a relay output (1 changer). At higher frequencies the relay can be deactivated via KALIB-Software.



IV 7.10 MW

Connection diagram:



Input:

Namur EN 50227 or potential free contact or reflecting light barrier:

maximum current:	$I_{\max} = 8 \text{ mA}$
maximum voltage:	$U_{\max} = 8 \text{ V}$
min. impulse duration:	$> 25 \mu\text{s}$ (default filter 1 ms, changeable via KALIB-Software)
connection:	terminal 3 +, 4 -

24 V DC signal/ tacho, connect.: terminal 4 +, 5 -

Output:

Optocoupler output:

load:	max. 50 V/ 50 mA/ <10 kHz
connection:	terminal 7+, 8-

Relay output:

load:	max. 250 V AC/ 5 A
connection:	common 12, normally closed 10, normally open 11

Adjustment:

The parameterization will be carried out for commissioning via KALIB-Software. For this you need a PC as well as the interface adapter **USB2/ USB-Simulator** with **KALIB-Software**.

Each output can be configured separately:

input filter:	off; 0,5 - 20 msec.	frequency input filter (factory setting: 1 ms)
multiplication factor:	1...30000	output = input * factor
division factor:	1...30000	output = input / factor
wire break limits:	10,00...46,99 %	adjustable in 0,02 % steps
short circuit limits:	52,99...94,99 %	adjustable in 0,02 % steps
mode:	off/ contin. pulse/ pulse contact*/ Namur wire break and short circuit/ pulse memory overflow (only relay)/ pulse failure/ impulse generator	
*wipe time ON:	0,002...30,000 sec.	adjustable in 1 msec. steps
*wipe time OFF:	0,002...30,000 sec.	adjustable in 1 msec. steps
*pulse memory:	2...10000 pulses	
extended functions:	inverse operation, start state (on/ off), start time (0...30 sec.)	

Display:

LED status:	green, active	input signals are in standard range, device ready for use
	green, flashing	Namur wire br. or short circ./ pulse mem. overfl./ pulse failure
LED's output:	yellow, active	output active

Environmental conditions:

Storage temperature:	-40...+70 °C
Operating temperature:	0...55 °C
Isolation voltage:	1 kV eff. 1 sec. input/ output
	3,75 kV eff. 1 sec. auxiliary power

Auxiliary power:

Wide range:	24...250 V DC
	90...253 V AC
	< 3 W
Influence of Aux. power:	< 0,1 %

Directive:

EMC Directive:	2014/30/EU*
Low Voltage Directive:	2014/35/EU
*minimum deviations possible during HF-radiation influence	

Mounting details:

Housing for top hat rail	
Type of protection:	IP 40 housing
	IP 20 clamps
Mounting rail fixed according to	EN 50022-35 x 7,5mm
Width:	12,5 mm
Weight:	100 g
Material:	Polyamide (PA)
Flammability class:	V0 (UL94)
Approval:	CE
Connection:	pluggable screw clamps
	≤ 2 x 2,5 mm ²

For safety reasons we recommend to mount the housing for top hat rail with a distance of approx. 5 mm to each other.

Ordering information:

Type:	IV 7.10 MW wide range
Accessories:	USB2/ USB-Simulator with KALIB-Software

Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen
Tel. +49 71 35 50 56
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de

FEATURES

- **Input, max. 400 Hz:**
2-wire proximity switch (NAMUR) or potential-free contact or reflecting light barrier or 24 V DC signal/ tacho generator
- **Output, simultaneously:**
1 solid state relay (bipolar),
1 relay (changer)
- **Adjustable via DIP switches:**
- function
- pulse duration
- **Parameterization without auxiliary power via PC-interface:**
- wipe time, inverse, memory, etc.
- **Galvanic 3-way isolation**



FUNCTION

The Switching Amplifier IV 5.00 MW is being used for binary signal transmission out of control circuits into signal circuits.

The activation has to be carried out by a 2-wire proximity switch according to EN 50227 (NAMUR) or potential-free contacts. A reflecting light barrier or a 24 V DC signal/ tacho generator can also be used for this.

It is possible to specify different operating modes by the KALIB-Software, e.g. specific wipe times. Additional functions such as starting characteristics, input filter, pulse memory and limits for short circuit or wire break detection can be set.

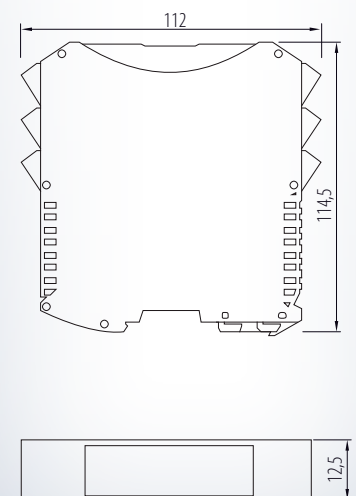
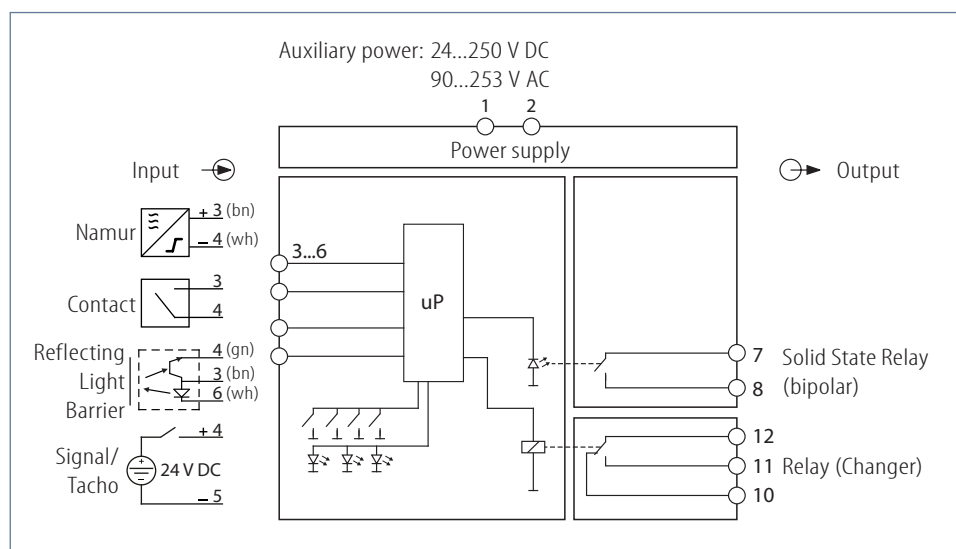
The simultaneous outputs can be parameterized separately and also be used as an alarm contact for wire break or short circuit.

The change between pulse contact and continuous pulse is made via DIP-switch S1. The pulse duration can be changed with the DIP-switch S2 or the KALIB-Software.

The IV 5.00 MW has a solid state relay output (bipolar) and a relay output (1 changer). At higher frequencies the relay can be deactivated via DIP-switch S3 or the KALIB-Software.

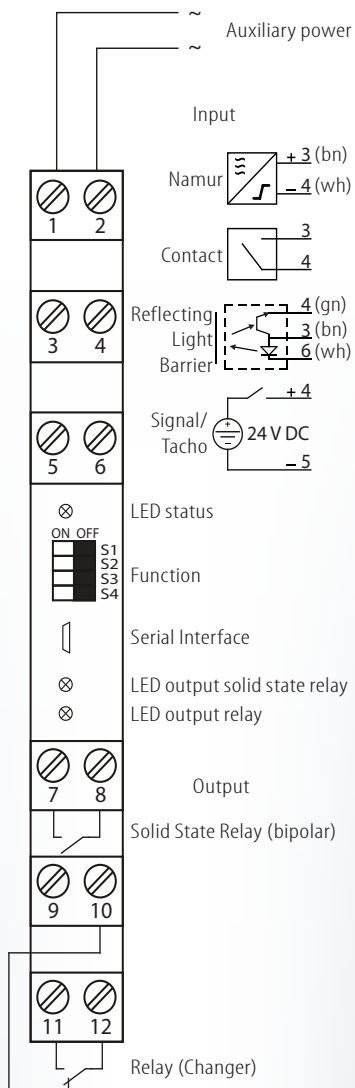
Factory setting:

wipe pulse, duration: 0,1 sec., relay active.



IV 5.00 MW

Connection diagram:



Input:

Namur EN 50227 or potential free contact or reflecting light barrier:

maximum current, voltage: $I_{max} = 8 \text{ mA}; U_{max} = 8 \text{ V}$
 min. impulse duration: $> 25 \mu\text{s}$ (default filter 1 ms, changeable via KALIB-Software)
 connection: terminal 3 +, 4 -

24 V DC signal/ tacho, connect.: terminal 4 +, 5 -

Output:

Solid state relay output: bipolar
 load: max. 100 V/ 50 mA/ 400 Hz
 connection: terminal 7, 8

Relay output: 1 changer
 load: max. 250 V AC/ 5 A
 connection: common 12, normally closed 10, normally open 11

Adjustment:

Switch	Function	ON	OFF
S1	output	pulse contact	continuous pulse (1:1)
S2	output	pulse contact 100 msec. (S1=ON)	pulse contact 10 msec. (S1=ON)
S3	relay	relay active	relay not active
S4	function select.	DIP-switch values (S1...S3) active	

ON OFF

Switch	Function	ON	OFF
S1	KALIB-Software values active*1, DIP - switch S1...S3 without function.		
S2			
S3			
S4	function select.		KALIB-Software values active

ON OFF

The extended parameterization is being made via PC and the interface adapter **USB2/ USB-Simulator** in connection with the **KALIB-Software** (DIP-switch S4=OFF).

*1Each output can be configured separately (DIP-switch S4=OFF, DIP-switch S1...S3 without function):

input filter: off; 0,5 - 20 msec. frequency input filter (factory setting: 1 ms)
 wire break limits: 10,00...46,99 % adjustable in 0,02 % steps
 short circuit limits: 52,99...94,99 % adjustable in 0,02 % steps
 mode: off/ contin. pulse/ pulse contact*/ Namur wire break and short circuit/
 pulse memory overflow (only relay)/ pulse failure/ impulse generator
 *wipe time ON/ OFF: each 0,002...30,000 sec. adjustable in 1 msec. steps
 *pulse memory: 2...10000 pulses
 extended functions: inverse operation, start state (on/ off), start time (0...30 sec.)

Display:

LED status: green, active input signals are in standard range, device ready for use
 green, flashing Namur wire br. or short circ./ pulse mem. overfl./ pulse failure
 LED's output: yellow, active output active

Environmental conditions:

Storage temperature: -40...+70 °C
 Operating temperature: 0...55 °C
 Isolation voltage:
 1 kV eff. 1 sec. input/ output
 3,75 kV eff. 1 sec. auxiliary power

Auxiliary power:

Wide range: 24...250 V DC
 90...253 V AC
 < 3 W
 Influence of Aux. power: < 0,1 %

Directive:

EMC Directive: 2014/30/EU*
 Low Voltage Directive: 2014/35/EU
 *minimum deviations possible during
 HF-radiation influence

Mounting details:

Housing for top hat rail
 Type of protection: IP 40 housing
 IP 20 clamps
 Mounting rail fixed according to
 EN 50022-35 x 7,5mm
 Width: 12,5 mm
 Weight: 100 g
 Material: Polyamide (PA)
 Flammability class: V0 (UL94)
 Approval: CE
 Connection: plugg. screw clamps
 $\leq 2 \times 2,5 \text{ mm}^2$

For safety reasons we recommend to mount the housing for top hat rail with a distance of approx. 5 mm to each other. Please check switch position before initial operation!

Ordering information:

Type: **IV 5.00 MW** wide range
 Accessories: USB2/ USB-Simulator with
 KALIB-Software

Schuhmann GmbH & Co. KG
 Römerstraße 2
 D-74363 Güglingen
 Tel. +49 71 35 50 56
 E-mail: info@schuhmann-messtechnik.de
 www.schuhmann-messtechnik.de

Switching Amplifier, Output 2 relay

IV 5.02 MW

FEATURES

- **Input, max. 400 Hz:**
2-wire proximity switch (NAMUR) or potential-free contact or reflecting light barrier or 24 V DC signal/ tacho generator
- **Output, simultaneously:**
2 relay (changer)
- **Adjustable via DIP switches:**
- function
- pulse duration
- **Parameterization without auxiliary power via PC-interface:**
- wipe time, inverse, memory, etc.
- **Galvanic 3-way isolation**



FUNCTION

The Switching Amplifier IV 5.02 MW is being used for binary signal transmission out of control circuits into signal circuits.

The activation has to be carried out by a 2-wire proximity switch according to EN 50227 (NAMUR) or potential-free contacts. A reflecting light barrier or a 24 V DC signal/ tacho generator can also be used for this.

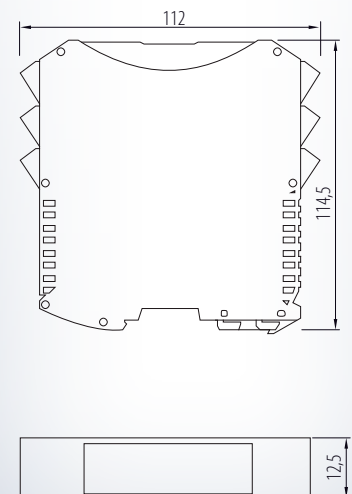
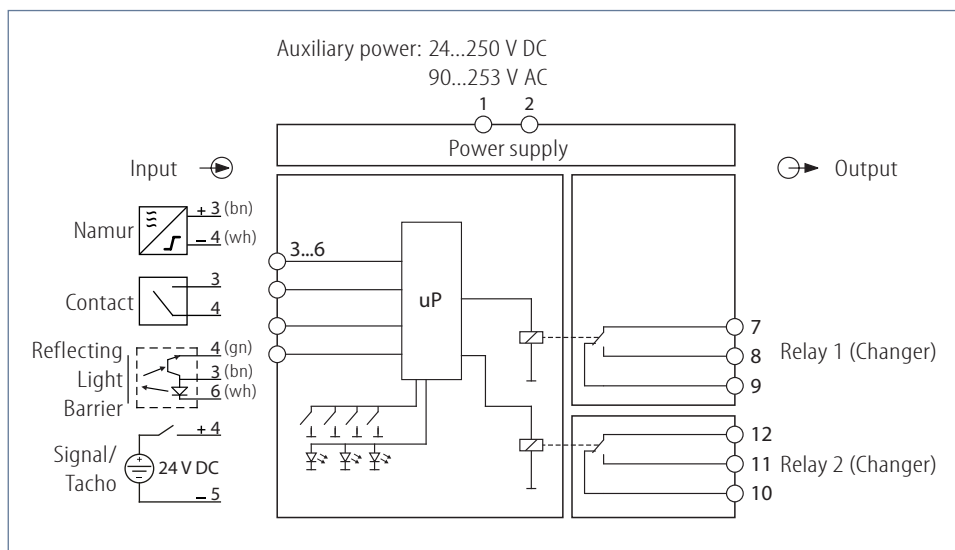
It is possible to specify different operating modes by the KALIB-Software, e.g. specific wipe times. Additional functions such as starting characteristics, input filter, pulse memory and limits for short circuit or wire break detection can be set.

The simultaneous outputs can be parameterized separately and also be used as an alarm contact for wire break or short circuit.

The change between pulse contact and continuous pulse is made via DIP-switch S1. The pulse duration can be changed with the DIP-switch S2 or the KALIB-Software.

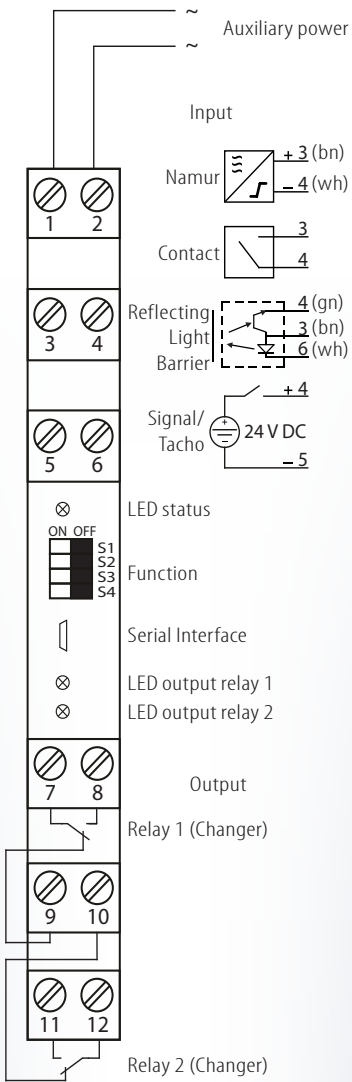
The IV 5.02 MW has two relay outputs (changer). Relay 2 can be deactivated via DIP-switch S3 or the KALIB-Software.

Factory setting:
wipe pulse, duration: 0,1 sec., relay 2 active.



IV 5.02 MW

Connection diagram:



Input:

Namur EN 50227 or potential free contact or reflecting light barrier:

maximum current, voltage: $I_{max} = 8 \text{ mA}; U_{max} = 8 \text{ V}$
 min. impulse duration: $> 25 \mu\text{s}$ (default filter 1 ms, changeable via KALIB-Software)
 connection: terminal 3 +, 4 -

24 V DC signal/ tacho, connect.: terminal 4 +, 5 -

Output:

Relay output 1: 1 changer
 load: max. 250 V AC/ 5 A
 connection: common 7, normally closed 9, normally open 8

Relay output 2: 1 changer
 load: max. 250 V AC/ 5 A
 connection: common 12, normally closed 10, normally open 11

Adjustment:

Switch	Function	ON	OFF
S1	output	pulse contact	continuous pulse (1:1)
S2	output	pulse contact 100 msec. (S1=ON)	pulse contact 10 msec. (S1=ON)
S3	relay	relay 1 + 2	only relay 1
S4	function select.	DIP-switch values (S1...S3) active	

ON OFF

Switch	Function	ON	OFF
S1	KALIB-Software values active*1, DIP - switch S1...S3 without function.		
S2			
S3			
S4	function select.		KALIB-Software values active

ON OFF

The extended parameterization is being made via PC and the interface adapter **USB2/ USB-Simulator** in connection with the **KALIB-Software** (DIP-switch S4=OFF).

*1Each output can be configured separately (DIP-switch S4=OFF, DIP-switch S1...S3 without function):

input filter: off; 0,5 - 20 msec. frequency input filter (factory setting: 1 ms)
 wire break limits: 10,00...46,99 % adjustable in 0,02 % steps
 short circuit limits: 52,99...94,99 % adjustable in 0,02 % steps
 mode: off/ contin. pulse/ pulse contact*/ Namur wire break and short circuit/
 pulse memory overflow (only relay 2)/ pulse failure/ impulse generator
 *wipe time ON/ OFF: each 0,002...30,000 sec. adjustable in 1 msec. steps
 *pulse memory: 2...10000 pulses
 extended functions: inverse operation, start state (on/ off), start time (0...30 sec.)

Display:

LED status: green, active input signals are in standard range, device ready for use
 green, flashing Namur wire br. or short circ./ pulse mem. overfl./ pulse failure
 LED's output: yellow, active output active

Environmental conditions:

Storage temperature: -40...+70 °C
 Operating temperature: 0...55 °C
 Isolation voltage: 1 kV eff. 1 sec. input/ output
 3,75 kV eff. 1 sec. auxiliary power

Auxiliary power:

Wide range: 24...250 V DC
 90...253 V AC
 < 3 W
 Influence of Aux. power: < 0,1 %

Directive:

EMC Directive: 2014/30/EU*
 Low Voltage Directive: 2014/35/EU
 *minimum deviations possible during HF-radiation influence

Mounting details:

Housing for top hat rail
 Type of protection: IP 40 housing
 IP 20 clamps
 Mounting rail fixed according to EN 50022-35 x 7,5mm
 Width: 12,5 mm
 Weight: 100 g
 Material: Polyamide (PA)
 Flammability class: V0 (UL94)
 Approval: CE
 Connection: plugg. screw clamps $\leq 2 \times 2,5 \text{ mm}^2$

For safety reasons we recommend to mount the housing for top hat rail with a distance of approx. 5 mm to each other. Please check switch position before initial operation!

Ordering information:

Type: **IV 5.02 MW** wide range
 Accessories: USB2/ USB-Simulator with KALIB-Software

Schuhmann GmbH & Co. KG
 Römerstraße 2
 D-74363 Güglingen
 Tel. +49 71 35 50 56
 E-mail: info@schuhmann-messtechnik.de
 www.schuhmann-messtechnik.de



Switching Amplifier, continuous pulse max. 10 kHz

IV 5.10 MW

FEATURES

- **Input, max. 400 Hz/
at continuous pulse max. 10 kHz:**
2-wire proximity switch (NAMUR) or
potential-free contact or
reflecting light barrier or
24 V DC signal/ tacho generator
- **Output, simultaneously:**
1 optocoupler (max. 10 kHz), 1 relay
- **Adjustable via DIP switches:**
- function
- pulse duration
- **Parameterization without
auxiliary power via PC-interface:**
- wipe time, inverse, memory, etc.
- **Galvanic 3-way isolation**



FUNCTION

The Switching Amplifier IV 5.10 MW is being used for binary signal transmission out of control circuits into signal circuits.

The activation has to be carried out by a 2-wire proximity switch according to EN 50227 (NAMUR) or potential-free contacts. A reflecting light barrier or a 24 V DC signal/ tacho generator can also be used for this.

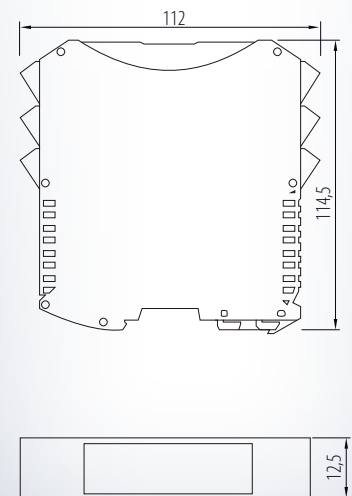
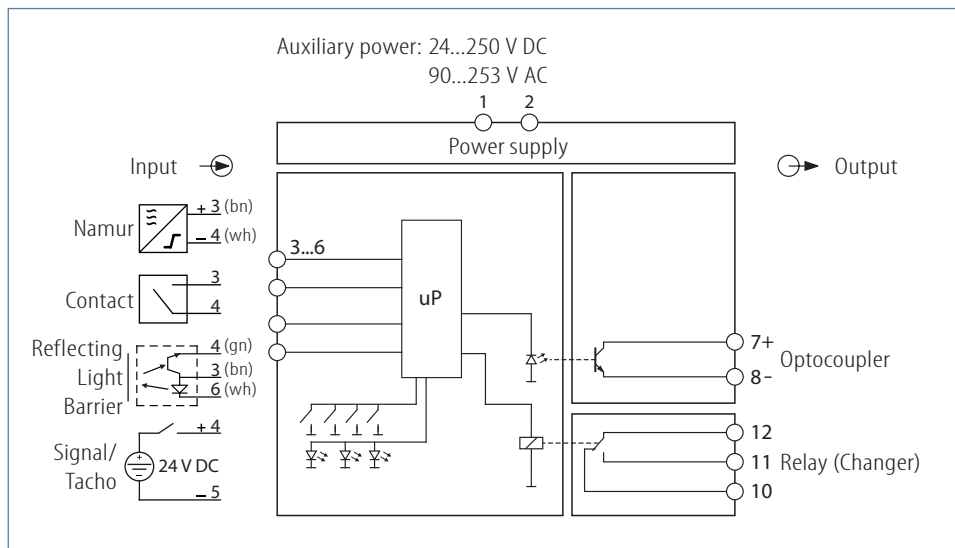
It is possible to specify different operating modes by the KALIB-Software, e.g. specific wipe times. Additional functions such as starting characteristics, input filter, pulse memory and limits for short circuit or wire break detection can be set.

The simultaneous outputs can be parameterized separately and also be used as an alarm contact for wire break or short circuit.

The change between pulse contact (max. 400 Hz) and continuous pulse (max. 10 kHz) is made via DIP-switch S1. The pulse duration can be changed with the DIP-switch S2 or the KALIB-Software.

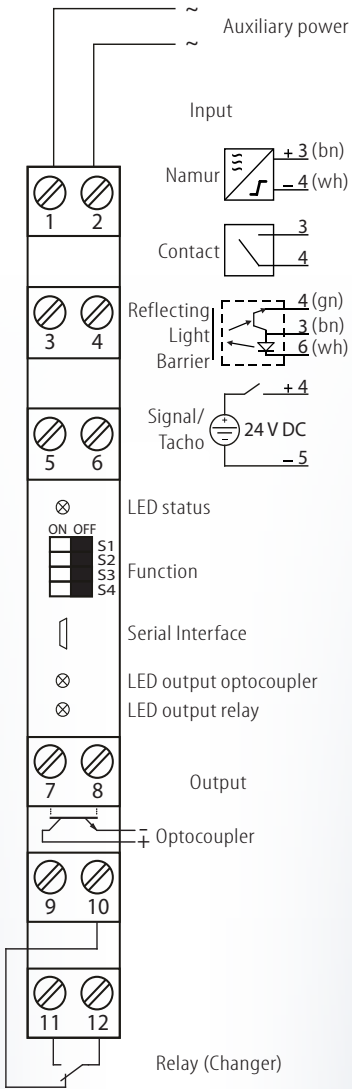
The IV 5.10 MW has an optocoupler (max. 10 kHz) and a relay output (1 changer). At higher frequencies the relay can be deactivated via DIP-switch S3 or the KALIB-Software.

Factory setting:
wipe pulse, duration: 0,1 sec., relay active.



IV 5.10 MW

Connection diagram:



Input:

Namur EN 50227 or potential free contact or reflecting light barrier:

maximum current, voltage: $I_{max} = 8 \text{ mA}; U_{max} = 8 \text{ V}$
 min. impulse duration: $> 25 \mu\text{s}$ (default filter 1 ms, changeable via KALIB-Software)
 connection: terminal 3 +, 4 -

24 V DC signal/ tacho, connect.: terminal 4 +, 5 -

Output:

Optocoupler output:

load: max. 50 V/ 50 mA/ <10 kHz
 connection: terminal 7+, 8-

Relay output: 1 changer

load: max. 250 V AC/ 5 A
 connection: common 12, normally closed 10, normally open 11

Adjustment:

Switch	Function	ON	OFF
S1	output	pulse contact	continuous pulse (1:1)
S2	output	pulse contact 100 msec. (S1=ON)	pulse contact 10 msec. (S1=ON)
S3	relay	relay active	relay not active
S4	function select.	DIP-switch values (S1...S3) active	

ON OFF

Switch	Function	ON	OFF
S1	KALIB-Software values active*1, DIP - switch S1...S3 without function.		
S2			
S3			
S4	function select.		KALIB-Software values active

ON OFF

The extended parameterization is being made via PC and the interface adapter **USB2/ USB-Simulator** in connection with the **KALIB-Software** (DIP-switch S4=OFF).

*1Each output can be configured separately (DIP-switch S4=OFF, DIP-switch S1...S3 without function):

input filter: off; 0,5 - 20 msec. frequency input filter (factory setting: 1 ms)
 wire break limits: 10,00...46,99 % adjustable in 0,02 % steps
 short circuit limits: 52,99...94,99 % adjustable in 0,02 % steps
 mode: off/ contin. pulse/ pulse contact*/ Namur wire break and short circuit/
 pulse memory overflow (only relay)/ pulse failure/ impulse generator
 *wipe time ON/ OFF: each 0,002...30,000 sec. adjustable in 1 msec. steps
 *pulse memory: 2...10000 pulses
 extended functions: inverse operation, start state (on/ off), start time (0...30 sec.)

Display:

LED status: green, active input signals are in standard range, device ready for use
 green, flashing Namur wire br. or short circ./ pulse mem. overfl./ pulse failure
 LED's output: yellow, active output active

Environmental conditions:

Storage temperature: -40...+70 °C
 Operating temperature: 0...55 °C
 Isolation voltage:
 1 kV eff. 1 sec. input/ output
 3,75 kV eff. 1 sec. auxiliary power

Auxiliary power:

Wide range: 24...250 V DC
 90...253 V AC
 < 3 W
 Influence of Aux. power: < 0,1 %

Directive:

EMC Directive: 2014/30/EU*
 Low Voltage Directive: 2014/35/EU
 *minimum deviations possible during HF-radiation influence

Mounting details:

Housing for top hat rail
 Type of protection: IP 40 housing
 IP 20 clamps
 Mounting rail fixed according to
 EN 50022-35 x 7,5mm
 Width: 12,5 mm
 Weight: 100 g
 Material: Polyamide (PA)
 Flammability class: V0 (UL94)
 Approval: CE
 Connection: plugg. screw clamps
 ≤ 2 x 2,5 mm²

For safety reasons we recommend to mount the housing for top hat rail with a distance of approx. 5 mm to each other. Please check switch position before initial operation!

Ordering information:

Type: **IV 5.10 MW** wide range
 Accessories: USB2/ USB-Simulator with KALIB-Software

Schuhmann GmbH & Co. KG
 Römerstraße 2
 D-74363 Güglingen
 Tel. +49 71 35 50 56
 E-mail: info@schuhmann-messtechnik.de
 www.schuhmann-messtechnik.de



Title	Specification	PC-Interface	Available designs	Auxiliary power	Page
SIMULATOR					
current and voltage transmitter for testing and replication of 2-wire transmitters, potentiometer simulation up to 1000 ohms					
USB-Simulator	input (metering): -20...0...+20 mA/ -10...0...+10 V output (simulation): 0...20 mA active 0...20 mA passive 0...10 V active Interface for all parameterizable Schuhmann products, incl. measuring lines and case.	X			05-01
Simulator 90	hand-held housing (incl. accu, measuring lines and mains adapter)				05-03
Case for Simulator 90	specially designed compartment for the Simulator 90 and the mains adapter				05-03

SETPOINT ADJUSTER					
front side push-buttons, parameterizable, galvanic 2-way isolation of 4 kV					
SE 30.00 GW	LCD for setpoint/ parameters output: 0...20 mA active 0...20 mA passive 0...10 V active input: 2x potential free contact for setpoint up/ down	X	G 22,5	24...250 V DC, 90...253 V AC	05-05
SE 30.24 GW	LCD for setpoint/ parameters output: 0...20 mA active 0...20 mA passive 0...10 V active input: 2x 24V-signal for setpoint up/ down	X	G 22,5	24...250 V DC, 90...253 V AC	05-05

* Designs: G = housing,
T = housing for door installation,
E = eurocard



3 Year
Warranty

FEATURES

- **Simulation of**
 - Current: 0...20 mA active or passive
 - Voltage: 0...10 V
- **Metering**
 - Current -20...0...+20 mA
 - Voltage -10...0...+10 V
- **USB2 Interface function:** interface for parameterizable Schuhmann products
- **Galvanic 3-way isolation of 500 V**
- **Including USB-connecting lines, case and measuring lines**



FUNCTION

The universal measurement- and test equipment USB-Simulator is designed for the technician on site who has to simulate and meter current and voltage.

The unit is being operated via the usb port of a PC or notebook.

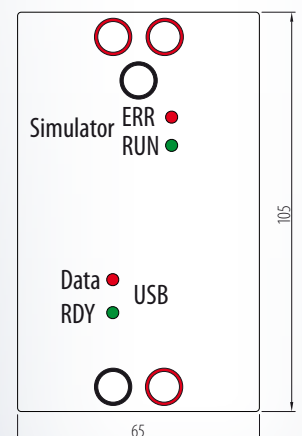
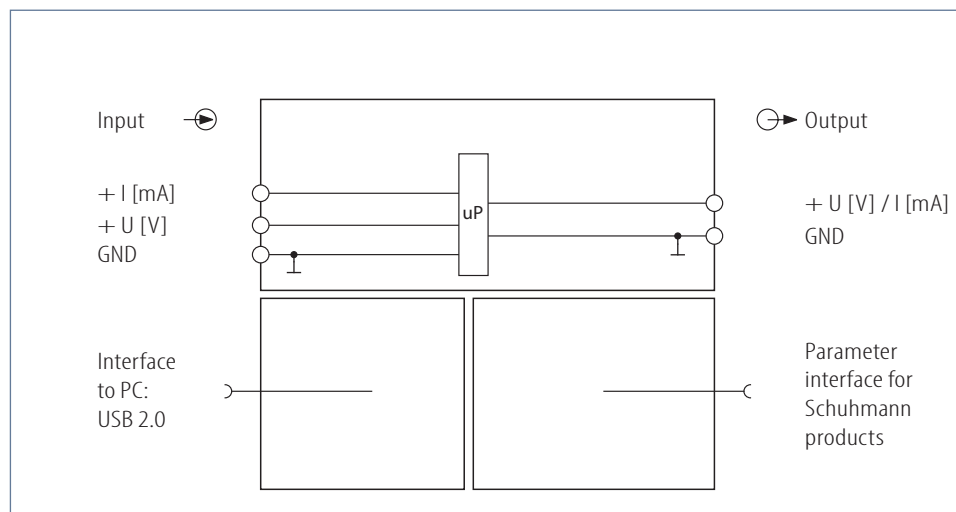
The operation is carried out by the KALIB-Software.

Caution: KALIB-Software and the USB-Driver have to be installed before the adapter will be connected to the PC.

To avoid damage to the simulator, first select function, then connect the measuring lines.

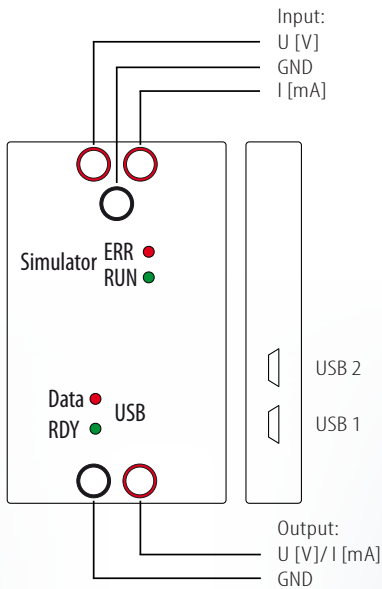
The range of application is divided as follows:

- **Current or voltage transmitter:**
For the calibration and testing of loops and transducers.
- **Voltmeter and amperemeter:**
With a resolution of 0,1 V respectively 0,1 mA, measurements can be made directly on measuring loops or devices to be checked.
- **USB2 Interface functionality:**
The USB-Simulator can be used instead of the USB2 Interface for all parameterizable Schuhmann products.
Overview: www.schuhmann-messtechnik.de



USB-Simulator

Connection diagram:



USB-Simulator incl. USB connecting cables, case and measuring lines

Schuhmann GmbH & Co. KG
 Römerstraße 2
 D-74363 Güglingen
 Tel. + 49 71 35 50 56
 E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de

Function:

All output values are being selected by KALIB-Software.

Input:

USB interface for the connection with the PC: USB 1
 Directly fed by PC:
 auxiliary power: 5 V DC
 current consumption: max. 300 mA
 protocol: USB 2.0 B
 Measuring inputs:
 Current: -20...0...+20 mA
 Voltage: -10...0...+10 V

Output:

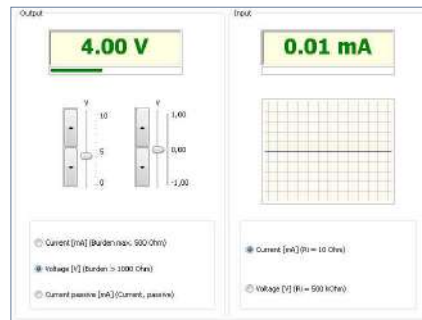
USB interface for the connection with Schuhmann devices: USB 2
 Current active: 0...21 mA
 Current passive: 0...21 mA
 Voltage: 0...10,5 V

Display:

LED USB RDY: green, active USB communication with the PC in order (driver loaded)
 LED USB Data: red, active data sent between PC and device (USB 1) or between the device and the unit to be parameterized (USB 2)
 LED Sim. RUN: green, active simulator on, input/ output active
 LED Sim. ERR: red, active error at the output signal (overcurrent/ wire break)

Included in delivery:

USB-Simulator
 PC-cable: USB-cable type A/Mini-B (length approx. 2 m)
 Device-cable: mini-USB-cable type A/B (length approx. 2 m)
 Case
 Measuring lines
 Software: KALIB-Software for parameterization
 USB-driver suitable for Windows 8, 8.1, 10 in 32- and 64-bit



Environmental conditions:

Storage temperature: -40...+70 °C
 Operating temperature: 10...55 °C
 Isolation voltage:
 500 V eff. 1 sec. input/ output/ USB 1/ USB 2

Auxiliary power:

5 V DC from PC via USB-cable

Accuracy:

Input error (U/ I): < 0,2 %
 Output error (U/ I): < 0,2 %

Directive:

EMC Directive: 2014/30/EU*
 Low Voltage Directive: 2014/35/EU
 *minimum deviations possible during HF-radiation influence

Mounting details:

Dimensions: 105 x 65 x 39 mm
 Weight: 120 g
 Material: ABS
 Flammability class: UL 94 HB
 Approval: CE
 Connection: safety socket 4 mm USB-cable

Ordering information:

Type: USB-Simulator
 incl. USB connecting cables,
 case, measuring lines

13.10.2021



FEATURES

- **Simulation of:**
 - Current: 0...22 mA
 - Voltage: 0...11 V
 - 2-wire transmitter 4...20 mA
 - Potentiometer up to approx. 1000 Ω
- **Metering:**
 - Current 0...100 mA
 - Voltage 0...50 V
 - 2-wire transmitter 4...20 mA
- **Incl. mains adapter, accumulator and measuring lines**



FUNCTION

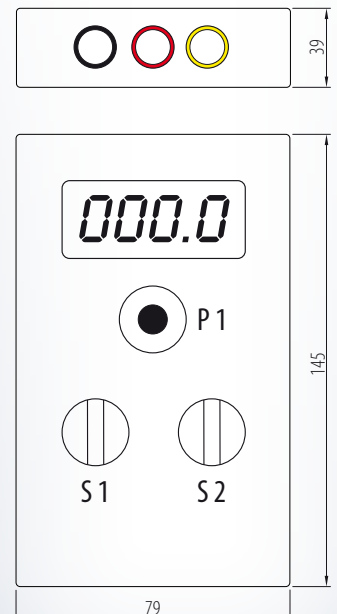
The universal hand-held Simulator is made for technicians to measure and simulate currents, voltages and resistances on-site.

The device has a replaceable fuse to prevent overcurrent damage.

Caution: To avoid damage to the simulator, first select function, then connect the measuring lines.

The range of application is divided as follows:

- **Current or voltage transmitter:**
For the calibration and testing of loops and transducers.
- **Voltmeter and amperemeter:**
With a resolution of 0,1 V respectively 0,1 mA, measurements can be made directly on measuring loops or devices to be checked.
- **2-wire simulator (4...20 mA):**
The Simulator can be used instead of a 2-wire transmitter, in order to control or adjust the measuring circuit.
- **Testing of 2-wire transmitter:**
The device generates a voltage of approx. 13 V, current limiting can be adjusted by a potentiometer, the current output (4...20 mA) appears on the LCD-display.
- **Simulation of a potentiometer transmitter:**
The internal 10-step potentiometer is switched on the sockets and the device can be used as an potentiometer up to approx. 1000 Ω.



Simulator

Function:

All output values are being adjusted by the 10-step potentiometer P1.

Appliance	Range	Accuracy	Switch setting		Connecting socket		
			S 1	S 2	black	red	yellow
current transmitter	0...22 mA max. 600 Ω	0,5 %	current	transmit	-	+	
voltage transmitter	0...11 V min. 10 kΩ	1 %	voltage	transmit	-	+	
simulation of a (4...20 mA) 2-wire transmitter	0...22 mA 10...30 V	2 %	2-wire	2-wire	-	+	
testing of a 2-wire transmitter (Poti 0...100 %)	max. 22 mA 13V	2 %	current	transmit	-	+	
current measuring	0...100 mA $R_i = 30 \Omega$	0,5 %	current	measu- ring	-	+	
voltage measuring	0...50 V $R_i = 100 \text{ k}\Omega$	1 %	voltage	measu- ring	-	+	
simulation of a potentiometer transmitter, 3-wire	approx. 15...1015 Ω	-	any	OFF/Poti	begin- ning CCW	wiper S	end CW

The unit is equipped with an replaceable safety fuse (200 mA) to avoid damage during current measuring.

The included mains adapter is used to charge the accu as well as for possible supply via grid energy. If the accu is almost discharged, the display shows "BAT". The charging is being indicated by integrated LED at the side. Charging time for the accumulator is approx. 15 hours (Simulator switched off). The integrated current and voltage limitation prevents accu from overloading.



Simulator incl. mains adapter,
accumulator and measuring lines

Accessories: case

Environmental conditions:

Storage temperature: -40...+70 °C

Operating temperature: 10...55 °C

Auxiliary power:

12 V DC from: mains adapter 230VAC/ 12VDC
or NiMH-accu 9 V, ≥100 mAh
or battery 9 V (not included)

**Caution: do not plug in mains adapter at
battery operation!**

Operating time at	Accu (100 mAh)	Battery
20 mA, load 300 Ω	4 h	16 h
20 mA, load 600 Ω	2 h	8 h
10 V, load 50 kΩ	16 h	64 h

Directive:

EMC Directive: 2014/30/EU*

Low Voltage Directive: 2014/35/EU

*minimum deviations possible during
HF-radiation influence

Characteristics of transmission:

Transmission error: < 0,12 %

Linearity error: < 0,5 %

Linearity error 2-wire: < 2 %

Temperature error: < 100 ppm/ K

Load influence I: < 50 ppm
of final value

Load influence U: < 0,5 %
at 1 kΩ load

Setting time: < 50 msec.

Mounting details:

Dimensions: 145 x 79 x 39 mm

Weight: 300 g (incl. accu)

Material: ABS

Flammability class: UL 94 HB

Approval: CE

Connection: safety socket 4 mm

Ordering information:

Type: Simulator

incl. mains adapter, accumulator,
measuring lines

Accessories: case

Schuhmann GmbH & Co. KG

Römerstraße 2

D-74363 Güglingen

Tel. + 49 71 35 50 56

Fax + 49 71 35 53 55

www.schuhmann-messtechnik.de



FEATURES

- **Outputs simultaneous:**
Current 0(4)...20 mA active or passive (loop-powered)
Voltage 0(2)...10 V
- **Front side operation,**
digitally adjustable 0...100,0 %
or alternatively
controlled via external signals
(24 V DC/ contact)
- **Parameterization without auxiliary
power via PC-interface**
- **Galvanic 2-way isolation
of 4 kV between auxiliary power**



FUNCTION

The devices of the SE 30 series serve as a setpoint adjuster.

A simultaneously current- (active and passive) or voltage output signal is available.

The adjustment respectively a change of the setpoint at the output is carried out by front push-buttons or with the USB2 interface/ USB-Simulator in connection with the KALIB-Software.

Alternatively, external control inputs for changing the specification of the setpoint can be used. This allows, for example, the control of the SE 30 series by a PLC.

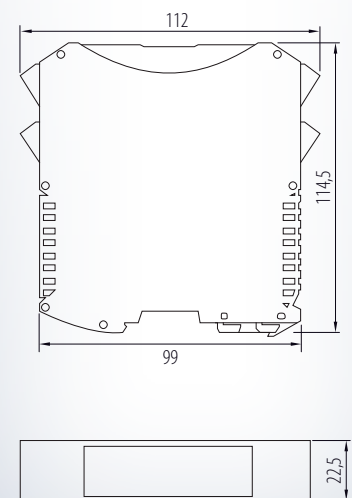
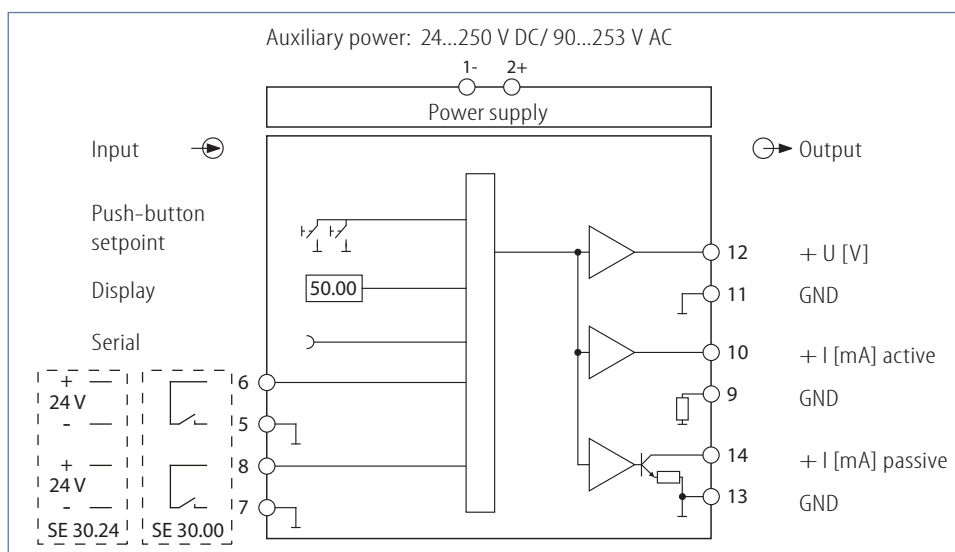
SE 30.00 GW: potential-free contacts
SE 30.24 GW: 24 V DC control pulse inputs

With the KALIB-Software, all parameters and in addition, the functions of external signals (saw tooth/ limit) are adjustable.

The digital adjustment is carried out in steps starting with 0,1 %. So the selection of the actuator and actuating element to the required output values is easy.

The 4-digit setpoint display is free scalable.

Factory setting:
0,0...100,0 % display \cong 4...20 mA output.

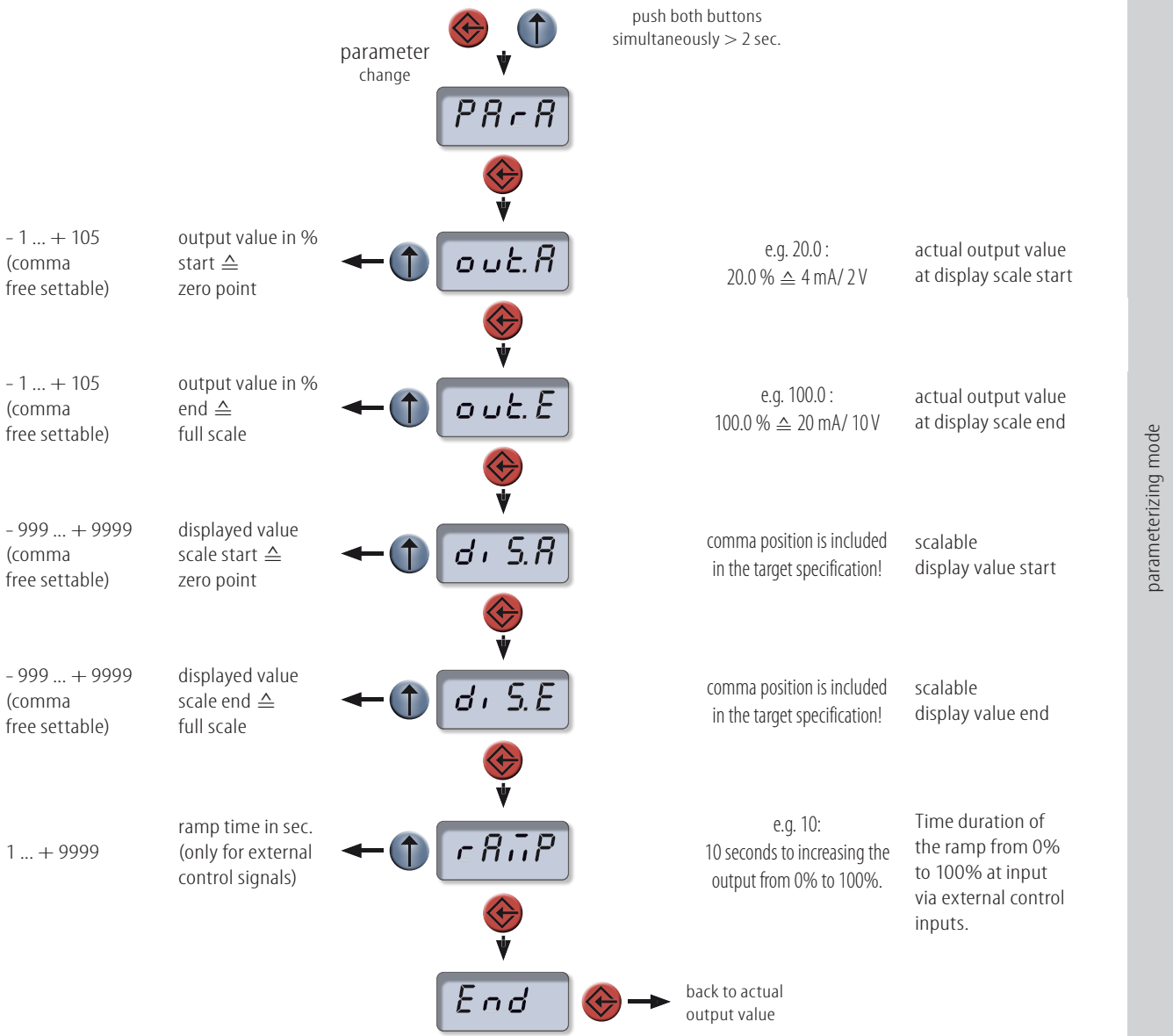




OVERVIEW-MENU

adjustable range	function	display*1	description
	actual output value/ setpoint	<p>up down (Bargraph for external control)</p> <p> </p>	<p>change output value: in steps 0,1 / 1 / 10 changes at longer pressing (slow/ fast)</p> <p>down</p> <p>up</p>

operating mode



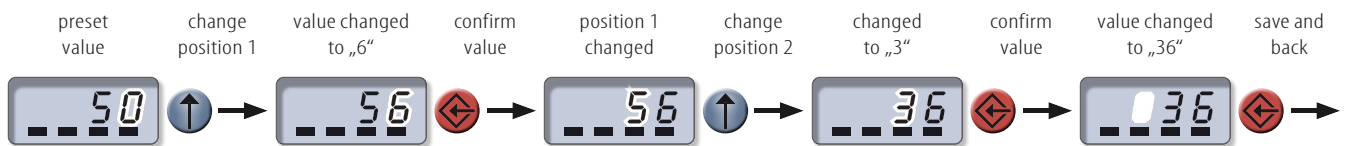
Legend: selection next

*1 There is a constant change between the actual indicated value and the display of the menu item.

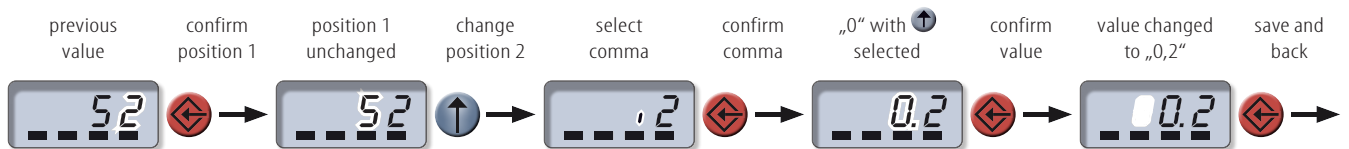


CHANGE VALUE (select to change the menu item):

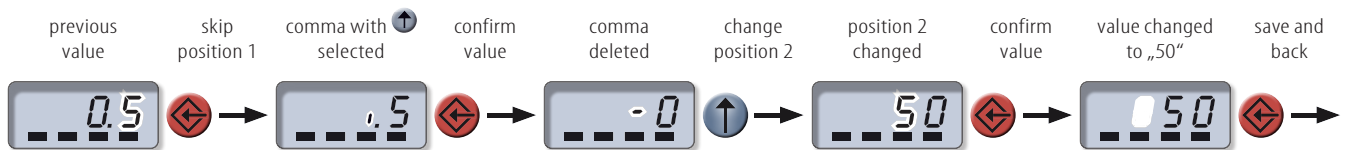
change value:



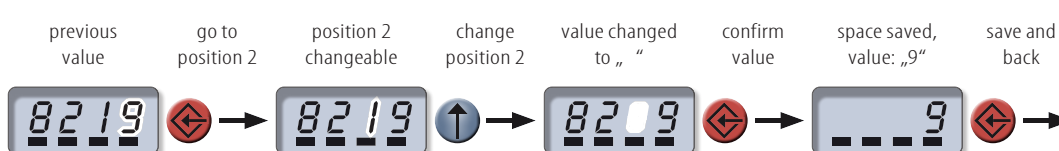
define decimal place:




delete decimal place:





delete positions:










Operating instructions:

The displayed position gets changed with the push-button .

Values such as  to , minus , comma  [] and space (end of input)  are possible.

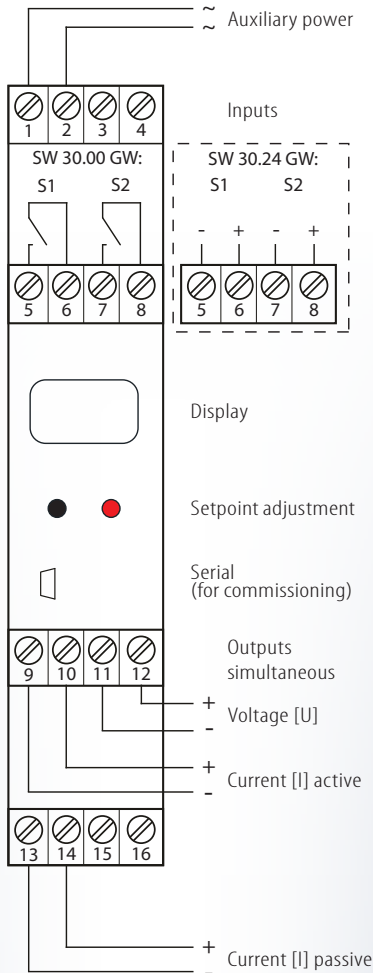
Use the push-button  to confirm the actual position and go to the next or return to the next menu item after changing the last position. To abort, push and hold the button  longer.

Legend:

-  number blinks on display
-  minus blinks on display
-  comma blinks on display
-  (comma-representation)
-  space (blank position)
-  selection
-  confirm

SE 30.00 GW SE 30.24 GW

Connection diagram:



Input:

Switching inputs to control the external setpoint.

S1: Up S2: Down

Potential free contact: **SE 30.00 GW**

24 V DC control input: **SE 30.24 GW**

Min. impulse duration: > 10 msec.

Output:

I: load-independent DC current: 0(4)...20 mA permissible load max. 500 Ω
connection: terminal 9 -, 10 +

or:

loop-powered DC current: 0(4)...20 mA max. permissible voltage 30 V
connection: terminal 13 -, 14 +

U: load-independent DC voltage: 0(2)...10 V permissible load ≥ 3 k Ω simultaneous
connection: terminal 11 -, 12 + ≥ 1 k Ω exclusive

The maximum limits for current- and voltage output are fixed at 21 mA respectively 10,5 V.

Adjustment:

Output value is adjustable with the push-buttons:



Step size changes after longer pushing (slow/ fast).

The parameterization can be carried out for commissioning alternatively via the KALIB-Software. For this you need a PC and the interface adapter **USB2/ USB-Simulator** with **KALIB-Software**. It can be set the same parameters as also on display and in addition, the functions of external signals (saw tooth/ limit) are adjustable.

Examples of parameterization (see page 05-06):

out.A = 20[%] (\triangleq 4 mA) out.E = 100[%] (\triangleq 20 mA) dis.A = 4,0 dis.E = 20,0

Display 4,0 \triangleq 4,0 mA at output

Display 20,0 \triangleq 20,0 mA at output, adjustable in 0,1 steps

out.A = 0[%] (\triangleq 0 mA) out.E = 50[%] (\triangleq 10 mA) dis.A = -10,00 dis.E = 60,00

Display -10,00 \triangleq 0,00 mA at output

Display 60,00 \triangleq 10,00 mA at output, adjustable in 0,01 steps

Factory setting: 0,1 % step size; 0,0...100,0 % Display \triangleq 4,0...20,0 mA at output

Environmental conditions:

Storage temperature: -40...+70 $^{\circ}$ C

Operating temperature: 10...55 $^{\circ}$ C

Isolating voltage:
4 kV eff. 1 sec. Auxiliary power

(only SE 30.24 GW):
500 V eff. 1 sec. Input/ Output

Auxiliary power:

Wide range: 24...250 V DC

90...253 V AC
< 3 W

Influence of aux. power: < 0,1 %

Characteristics of transmission:

Transmission error: < 0,1 %

Temperature error: < 100 ppm/ K

Load influence I:
< 50 ppm
of final value

Load influence U:
< 0,1 %
at 1 k Ω Load

Directive:

EMC Directive: 2014/30/EU*

Low Voltage Directive: 2014/35/EU

*minimum deviations possible during
HF-radiation influence.

Mounting details:

Housing for top hat rail

Type of protection: IP 40 housing
IP 20 clamps

Mounting rail fixed according to
EN 50022-35 x 7,5 mm

Width: 22,5 mm

Weight: 116 g

Material: Polyamide PA

Flammability class: V0 (UL94)

Approval: CE

Connection: pluggable screw clamps
0,2...2,5 mm²

**For safety reasons we recommend to
mount the housing for top hat rail with a
distance of approx. 5 mm to each other.**

Ordering information:

Accessories: USB2/ USB-Simulator with
KALIB-Software

Type: **SE 30.00 GW**

SE 30.24 GW

wide range contact-IN

wide range 24V-IN

Schuhmann GmbH & Co. KG

Römerstraße 2

D-74363 Güglingen

Tel. + 49 71 35 50 56

E-mail: info@schuhmann-messtechnik.de

www.schuhmann-messtechnik.de



Title	Specification	PC-Interface	Available designs	Auxiliary power	Page
ANALOG CALCULATOR					
addition, subtraction, linearization, multiplying, min- and maximum selector, calculator of the square root					
AS 3.00 SDC	3 inputs ± 20 mA, 1 output I or U, addition, subtraction, linearization, parameterizable	X	G 6,2	20...30 V DC	06-01
AS 3.00 MW	3 inputs ± 20 mA, 1 output I or U, addition, subtraction, linearization, parameterizable	X	G 12,5	24...250 V DC, 90...253 V AC	06-03
AS 3.10 SDC	3 inputs ± 10 V, 1 output I or U, addition, subtraction, linearization, parameterizable	X	G 6,2	20...30 V DC	06-05
AS 3.10 MW	3 inputs ± 10 V, 1 output I or U, addition, subtraction, linearization, parameterizable	X	G 12,5	24...250 V DC, 90...253 V AC	06-07

ANALOG MEMORY					
AWS 1.00 SDC	parameterizable analog memory, input ± 20 mA, output 0...20 mA or 0...10 V, contact for memorize, parameterizable	X	G 6,2	20...30 V DC	06-09
AWS 1.00 MW	parameterizable analog memory, input ± 20 mA, output 0...20 mA or 0...10 V, contact for memorize, parameterizable	X	G 12,5	24...250 V DC, 90...253 V AC	06-11
AWS 1.10 SDC	parameterizable analog memory, input ± 10 V, output 0...20 mA or 0...10 V, contact for memorize, parameterizable	X	G 6,2	20...30 V DC	06-13

* Designs: G = housing,
T = housing for door installation,
E = eurocard



3 Year
Warranty

FEATURES

■ Calculating functions:



- Minimum-/ Maximum selector
- Linearization

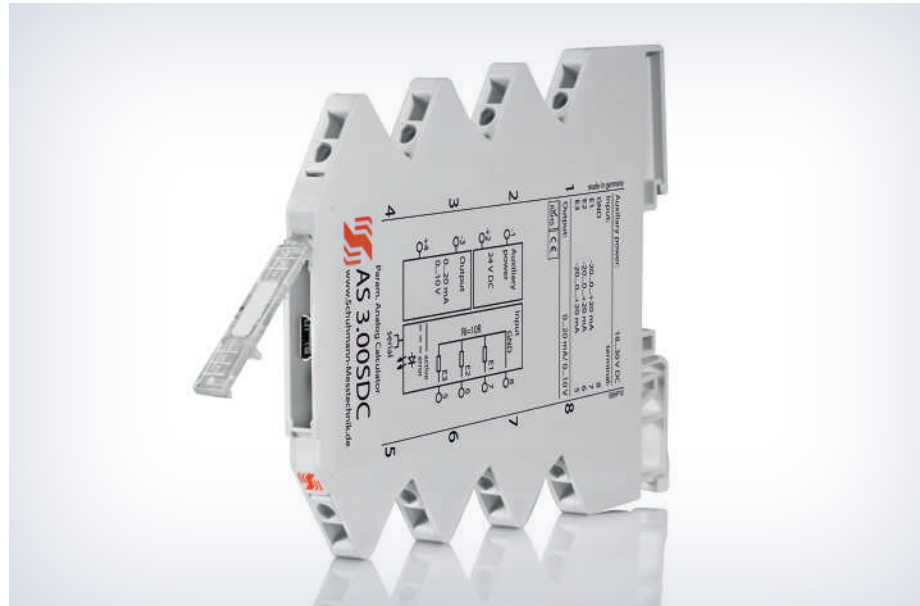
■ Freely configurable:

- 3 inputs ± 20 mA
- 1 output 0(4)...20 mA/ 0(2)...10 V

■ Parameterization without auxiliary power via PC-interface

■ Galvanic 3-way isolation of 2,5 kV

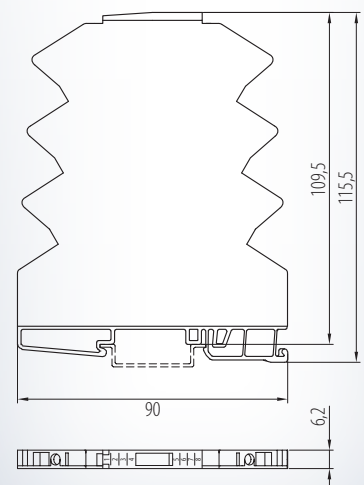
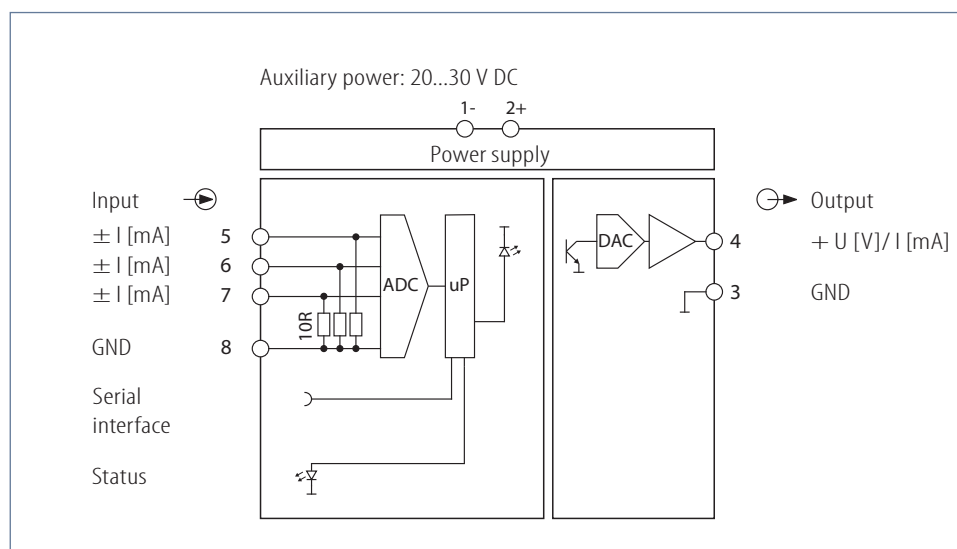
■ Low internal consumption



FUNCTION

The Analog Calculator is used for calculations such as addition, subtraction and linearization of analog values which as a result have an analog signal in kind of a current or a voltage. Due to its customized setting of all individual input signals, the mode of calculation and the output signal the device has a large range of application. It is equipped with bipolar current inputs as well as a current and voltage output.

The AS 3.00 SDC is being parameterized by the USB2 adapter in connection with KALIB-Software. The basic calculation units can be selected directly, linearizations are produced by a table of values and a polynomial calculation with optimization. Actual measured values of input and output can also be visualized.



FEATURES

■ Calculating functions:



- Minimum-/ Maximum selector
- Linearization

■ Freely configurable:

- 3 inputs ± 20 mA
- 1 output 0(4)...20 mA/ 0(2)...10 V

■ Parameterization without auxiliary power via PC-interface

■ Wide range auxiliary power 24...250 V DC/ 90...253 V AC

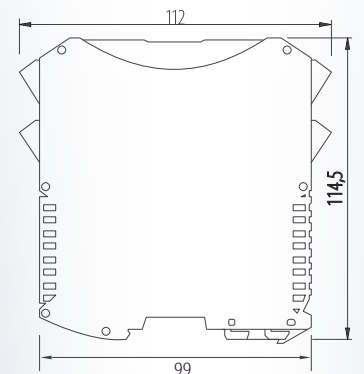
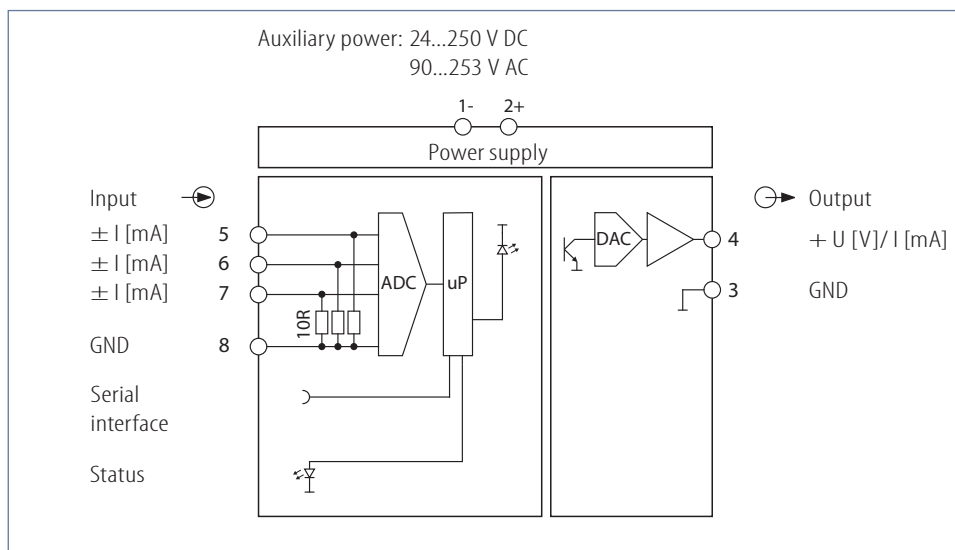
■ Galvanic 3-way isolation of 2,5 kV



FUNCTION

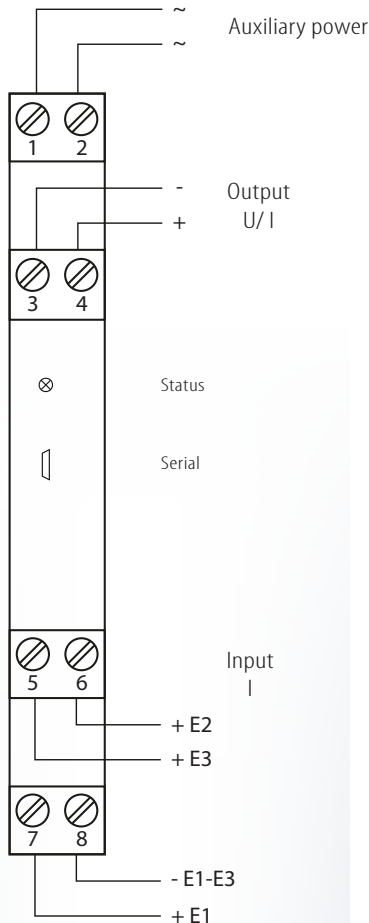
The Analog Calculator is used for calculations such as addition, subtraction and linearization of analog values which as a result have an analog signal in kind of a current or a voltage. Due to its customized setting of all individual input signals, the mode of calculation and the output signal the device has a large range of application. It is equipped with bipolar current inputs as well as a current and voltage output.

The AS 3.00 MW is being parameterized by the USB2 adapter in connection with KALIB-Software. The basic calculation units can be selected directly, linearizations are produced by a table of values and a polynomial calculation with optimization. Actual measured values of input and output can also be visualized.



AS 3.00 MW

Connection diagram:



Input:

I: DC current (bipolar): -20...0...+20 mA; input resistance approx. 10 Ω
 connection: E1 = terminal 8 -, 7 + ; E2 = terminal 8 -, 6 + ; E3 = terminal 8 -, 5 +
 Adjustable per input: range start, range end: -20,5...0...+20,5 mA
 Cut-Off-Min: on falling below this value is set as input
 Cut-Off-Max: on exceeding this value is set as input
 error limit Min: on falling below a defined fixed value is set as output
 error limit Max: on exceeding a defined fixed value is set as output
 evaluation of input between -100%...0%...+100%
 (with -100%...0% ⇒ calculated inversion of input)

Basic calculating: output = E1 + E2 + E3
 output = E1 × E2
 output = E1 / E2
 output = Min/ Max (E1, E2, E3) (minimum-/ maximum selector)

output = (E1 + E2) / E3
 output = (E1 + E2) × E3
 output = f (E1, E2, E3)
 Functions: User-defined functions possible based on pairs of variates (linearization).
 Other calculation functions on request.

Output:

I: load-independent DC current: 0(4)...20 mA permissible load max. 580 Ω
 connection: terminal 3 -, 4 +

U: load-independent DC voltage: 0(2)...10 V permissible load ≥ 1 kΩ
 connection: terminal 3 -, 4 +

The minimum/ maximum limits for current and voltage output are freely selectable and adjustable in clear text. On exceeding or falling below the limits at the output, the specified limit is set at the output (only within the error limits at the input).

Adjustment:

Measuring ranges and parameterization are adjustable in parameter data by KALIB-Software. You need a PC and the interface adapter USB2 with KALIB-Software.

Display:

LED status: green, active input signals are in standard range, device ready for use
 green, flashing input out of predetermined limits or exceeding of measuring range

Environmental conditions:

Storage temperature: -40...+70 °C
 Operating temperature: 0...55 °C
 Isolation voltage:
 2,5 kV eff. 1 sec. input-output
 2,5 kV eff. 1 sec. auxiliary voltage

Auxiliary power:

Wide range: 24...250 V DC
 90...253 V AC
 < 3 W

Influence of auxiliary power: < 0,1 %

Characteristics of transmission:

Transmission error: < 0,12 %
 Resolution: 15 bit
 Linearity error: < 0,1 %
 Temperature error: < 100 ppm/ K
 Load influence I: < 50 ppm of final value
 Load influence U: < 0,2 % at 1 kΩ load
 Setting time: < 500 msec.

Directive:

EMC Directive: 2014/30/EU*
 Low Voltage Directive: 2014/35/EU
 *minimum deviations possible during HF-radiation influence

Mounting details:

Housing for top hat rail
 Type of protection: IP 40 housing
 IP 20 clamps
 Mounting rail fixed according to EN 50022-35 x 6,2 mm
 Width: 12,5 mm
 Weight: 108 g
 Material: Polyamide PA
 Flammability class: V0 (UL 94)
 Approval: CE
 Connection: plugg. screw clamps
 0,14...2,5 mm²

For safety reasons we recommend to mount the housing for top hat rail with a distance > 1 mm to each other. Please check parameter before initial operation!

Ordering information:

Type: **AS 3.00 MW** wide range
 Accessories: USB2/ USB-Simulator with KALIB-Software, manual

Schuhmann GmbH & Co. KG
 Römerstraße 2
 D-74363 Güglingen
 Tel. + 49 71 35 50 56
 E-mail: info@schuhmann-messtechnik.de
 www.schuhmann-messtechnik.de

FEATURES

■ Calculating functions:



- Minimum-/ Maximum selector
- Linearization

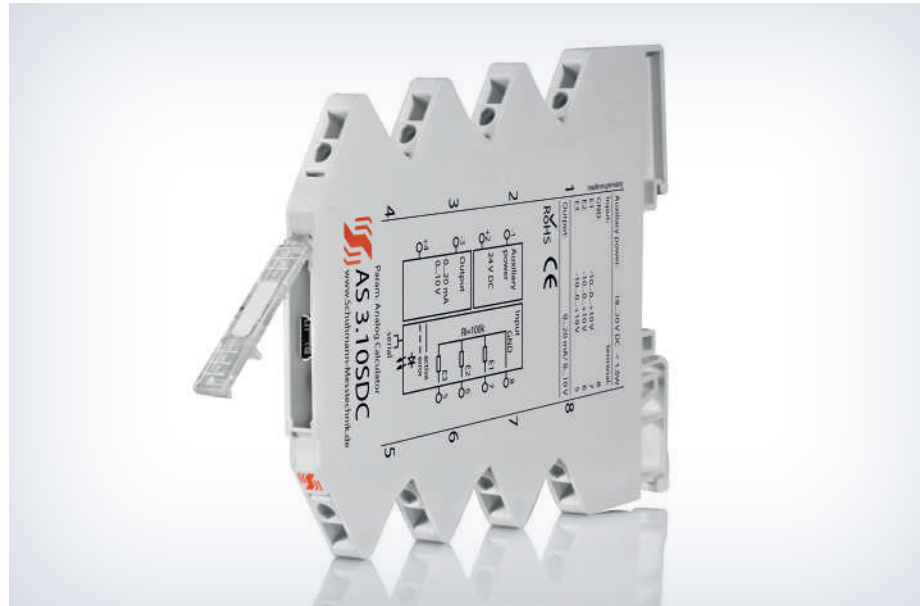
■ Freely configurable:

- 3 inputs $\pm 10\text{ V}$
- 1 output $0(4)\dots 20\text{ mA} / 0(2)\dots 10\text{ V}$

■ Parameterization without auxiliary power via PC-interface

■ Galvanic 3-way isolation of 2,5 kV

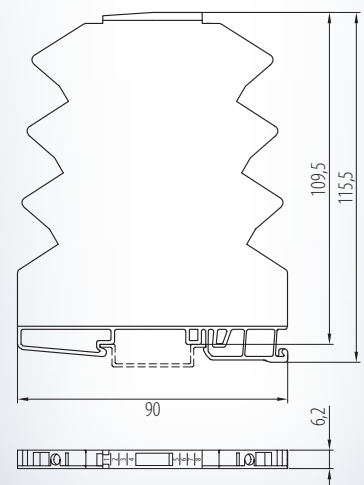
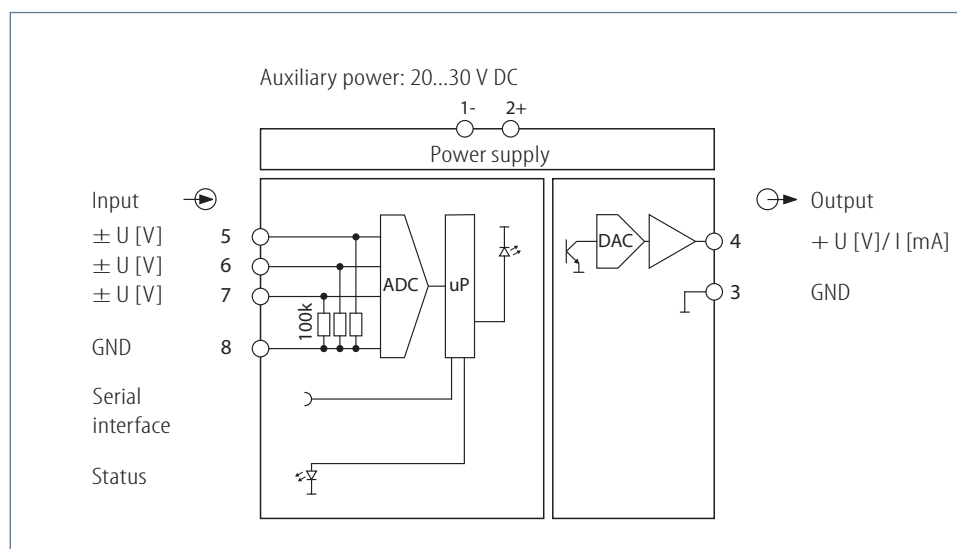
■ Low internal consumption



FUNCTION

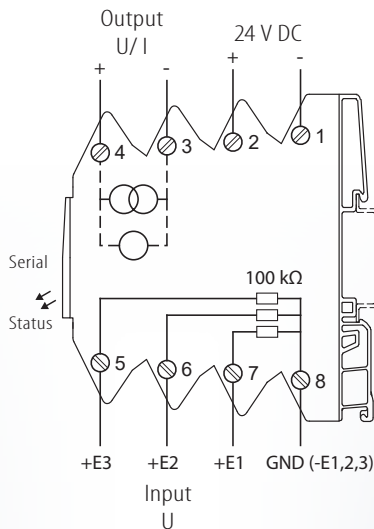
The Analog Calculator is used for calculations such as addition, subtraction and linearization of analog values which as a result have an analog signal in kind of a current or a voltage. Due to its customized setting of all individual input signals, the mode of calculation and the output signal the device has a large range of application. It is equipped with bipolar voltage inputs as well as a current and voltage output.

The AS 3.10 SDC is being parameterized by the USB2 adapter in connection with KALIB-Software. The basic calculation units can be selected directly, linearizations are produced by a table of values and a polynomial calculation with optimization. Actual measured values of input and output can also be visualized.



AS 3.10 SDC

Connection diagram:



Input:

I: DC voltage (bipolar): -10...0...+10 V; input resistance approx. 100 kΩ
 connection: E1 = terminal 8 -, 7 + ; E2 = terminal 8 -, 6 + ; E3 = terminal 8 -, 5 +
 Adjustable per input: range start, range end: -10,25...0...+10,25 V
 Cut-Off-Min: on falling below this value is set as input
 Cut-Off-Max: on exceeding this value is set as input
 error limit Min: on falling below a defined fixed value is set as output
 error limit Max: on exceeding a defined fixed value is set as output
 evaluation of input between -100%...0%...+100%
 (with -100%...0% ⇒ calculated inversion of input)

Basic calculating:
 output = E1 + E2 + E3
 output = E1 × E2
 output = E1 / E2
 output = Min/ Max (E1, E2, E3) (minimum-/ maximum selector)
 output = (E1 + E2) / E3
 output = (E1 + E2) × E3

Functions:
 output = f (E1, E2, E3)
 User-defined functions possible based on pairs of variates (linearization).
 Other calculation functions on request.

Output:

I: load-independent DC current: 0(4)...20 mA permissible load max. 580 Ω
 connection: terminal 3 -, 4 +

U: load-independent DC voltage: 0(2)...10 V permissible load ≥ 1 kΩ
 connection: terminal 3 -, 4 +

The minimum/ maximum limits for current and voltage output are freely selectable and adjustable in clear text. On exceeding or falling below the limits at the output, the specified limit is set at the output (only within the error limits at the input).

Adjustment:

Measuring ranges and parameterization are adjustable in parameter data by KALIB-Software.
 You need a PC and the interface adapter USB2 with KALIB-Software.

Display:

LED status: green, active input signals are in standard range, device ready for use
 green, flashing input out of predetermined limits or exceeding of measuring range

Environmental conditions:

Storage temperature: -40...+70 °C
 Operating temperature: 0...55 °C
 Isolation voltage:
 2,5 kV eff. 1 sec. input-output
 2,5 kV eff. 1 sec. auxiliary voltage

Auxiliary power:

24 V DC: 20...30 V DC
 < 1,5 W
 Influence of auxiliary power: < 0,1 %

Characteristics of transmission:

Transmission error: < 0,12 %
 Resolution: 15 bit
 Linearity error: < 0,1 %
 Temperature error: < 100 ppm/ K
 Load influence I: < 50 ppm
 of final value
 Load influence U: < 0,2 % at 1 kΩ load
 Setting time: < 500 msec.

Directive:

EMC Directive: 2014/30/EU*
 Low Voltage Directive: 2014/35/EU
 *minimum deviations possible during HF-radiation influence

Mounting details:

Housing for top hat rail
 Type of protection: IP 20
 Mounting rail fixed according to EN 50022-35 x 6,2 mm
 Width: 6,2 mm
 Weight: 52 g
 Material: Polyamide PA
 Flammability class: V0 (UL 94)
 Approval: CE
 Connection: screw clamps
 0,14...2,5 mm²

For safety reasons we recommend to mount the housing for top hat rail with a distance > 1 mm to each other. Please check parameter before initial operation!

Ordering information:

Type: AS 3.10 SDC 24 V DC
 Accessories: USB2/ USB-Simulator with KALIB-Software, manual

Schuhmann GmbH & Co. KG
 Römerstraße 2
 D-74363 Güglingen
 Tel. + 49 71 35 50 56
 Fax + 49 71 35 53 55
 www.schuhmann-messtechnik.de

FEATURES

■ Calculating functions:



- Minimum-/ Maximum selector
- Linearization

■ Freely configurable:

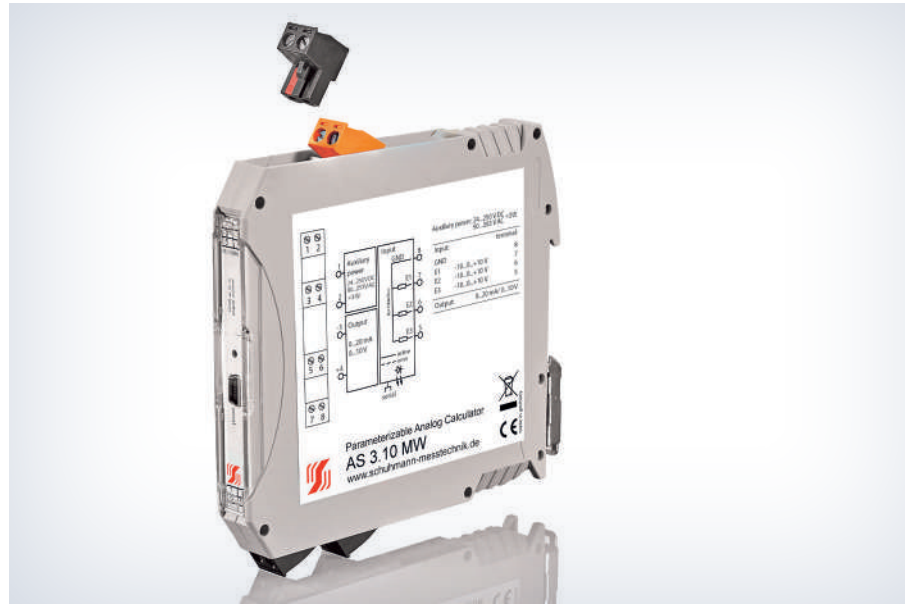
- 3 inputs ± 10 V
- 1 output 0(4)...20 mA/ 0(2)...10 V

■ Parameterization without auxiliary power via PC-interface

■ Wide range auxiliary power

24...250 V DC / 90...253 V AC

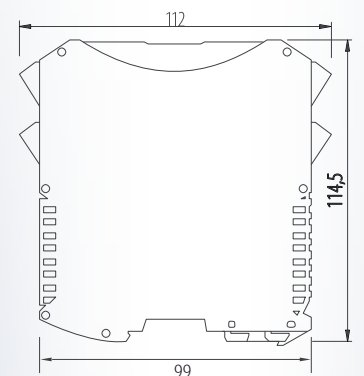
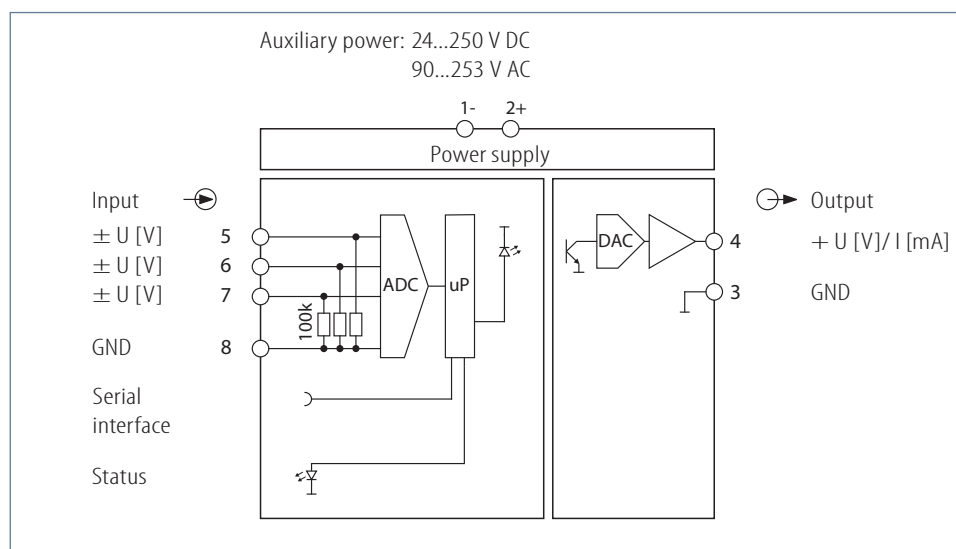
■ Galvanic 3-way isolation of 2,5 kV



FUNCTION

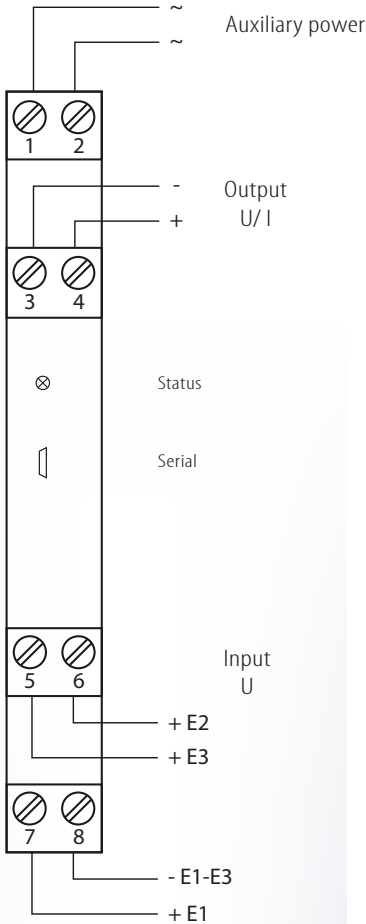
The Analog Calculator is used for calculations such as addition, subtraction and linearization of analog values which as a result have an analog signal in kind of a current or a voltage. Due to its customized setting of all individual input signals, the mode of calculation and the output signal the device has a large range of application. It is equipped with bipolar voltage inputs as well as a current and voltage output.

The AS 3.10 MW is being parameterized by the USB2 adapter in connection with KALIB-Software. The basic calculation units can be selected directly, linearizations are produced by a table of values and a polynomial calculation with optimization. Actual measured values of input and output can also be visualized.



AS 3.10 MW

Connection diagram:



Input:

I: DC voltage (bipolar): -10...0...+10 V; input resistance approx. 100 kΩ
 connection: E1 = terminal 8 -, 7 + ; E2 = terminal 8 -, 6 + ; E3 = terminal 8 -, 5 +
 Adjustable per input: range start, range end: -10,25...0...+10,25 V
 Cut-Off-Min: on falling below this value is set as input
 Cut-Off-Max: on exceeding this value is set as input
 error limit Min: on falling below a defined fixed value is set as output
 error limit Max: on exceeding a defined fixed value is set as output
 evaluation of input between -100%...0%...+100%
 (with -100%...0% ⇒ calculated inversion of input)

Basic calculating:

output = E1 + E2 + E3
 output = E1 × E2
 output = E1 / E2
 output = Min/ Max (E1, E2, E3) (minimum-/ maximum selector)

Functions:

output = (E1 + E2) / E3
 output = (E1 + E2) × E3
 output = f (E1, E2, E3)
 User-defined functions possible based on pairs of variates (linearization).
 Other calculation functions on request.

Output:

I: load-independent DC current: 0(4)...20 mA permissible load max. 580 Ω
 connection: terminal 3 -, 4 +

U: load-independent DC voltage: 0(2)...10 V permissible load ≥ 1 kΩ
 connection: terminal 3 -, 4 +

The minimum/ maximum limits for current and voltage output are freely selectable and adjustable in clear text. On exceeding or falling below the limits at the output, the specified limit is set at the output (only within the error limits at the input).

Adjustment:

Measuring ranges and parameterization are adjustable in parameter data by KALIB-Software.
 You need a PC and the interface adapter USB2 with KALIB-Software.

Display:

LED status:	green, active	input signals are in standard range, device ready for use
	green, flashing	input out of predetermined limits or exceeding of measuring range

Environmental conditions:

Storage temperature: -40...+70 °C
 Operating temperature: 0...55 °C
 Isolation voltage:
 2,5 kV eff. 1 sec. input-output
 2,5 kV eff. 1 sec. auxiliary voltage

Auxiliary power:

Wide range: 24...250 V DC
 90...253 V AC
 < 3 W

Influence of auxiliary power: < 0,1 %

Characteristics of transmission:

Transmission error: < 0,12 %
 Resolution: 15 bit
 Linearity error: < 0,1 %
 Temperature error: < 100 ppm/ K
 Load influence I: < 50 ppm
 of final value
 Load influence U: < 0,2 % at 1 kΩ load
 Setting time: < 500 msec.

Directive:

EMC Directive: 2014/30/EU*
 Low Voltage Directive: 2014/35/EU
 *minimum deviations possible during HF-radiation influence

Mounting details:

Housing for top hat rail
 Type of protection: IP 40 housing
 IP 20 clamps
 Mounting rail fixed according to
 EN 50022-35 x 6,2 mm
 Width: 12,5 mm
 Weight: 108 g
 Material: Polyamide PA
 Flammability class: V0 (UL 94)
 Approval: CE
 Connection: plugg. screw clamps
 0,14...2,5 mm²

For safety reasons we recommend to mount the housing for top hat rail with a distance > 1 mm to each other. Please check parameter before initial operation!

Ordering information:

Type: **AS 3.10 MW** wide range
 Accessories: USB2/ USB-Simulator with KALIB-Software, manual

Schuhmann GmbH & Co. KG
 Römerstraße 2
 D-74363 Güglingen
 Tel. + 49 71 35 50 56
 E-mail: info@schuhmann-messtechnik.de
 www.schuhmann-messtechnik.de



Parameterizable Isolating Amplifier with Analog Memory

AWS 1.00 SDC

FEATURES

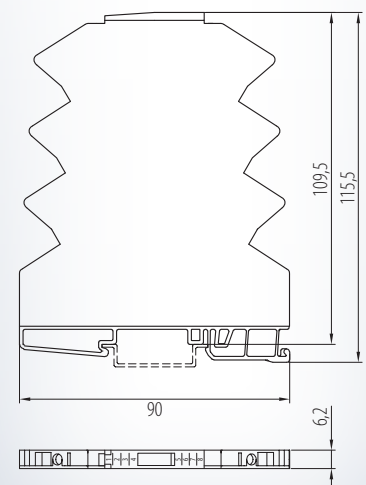
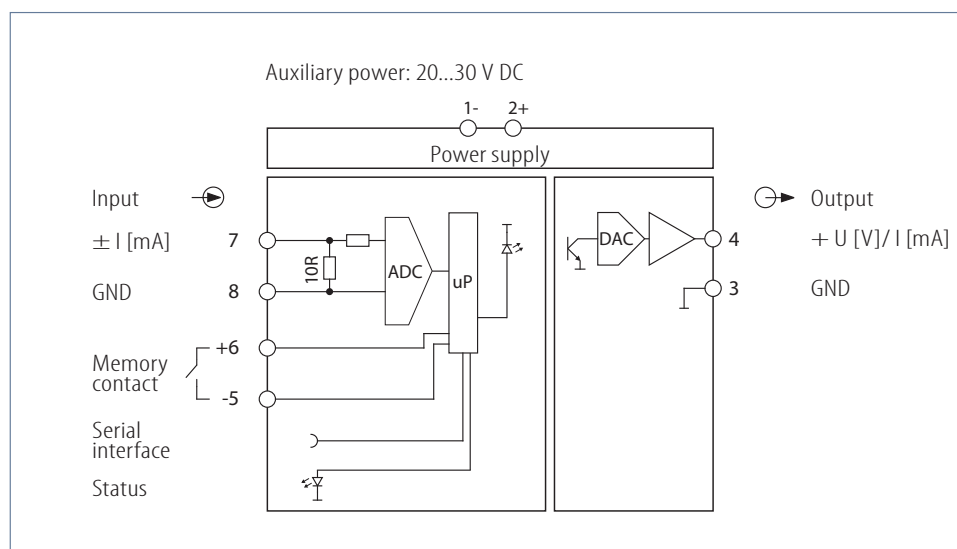
- **Bipolar input:**
Current $\pm 20\text{ mA}$
- **Output:**
Current $0(4)\dots 20\text{ mA}$ or
Voltage $0(2)\dots 10\text{ V}$
- **Storage of input signal via contact input**
- **Parameterization without auxiliary power via PC-interface**
- **Galvanic 3-way isolation of 2,5 kV**
- **Low internal consumption**



FUNCTION

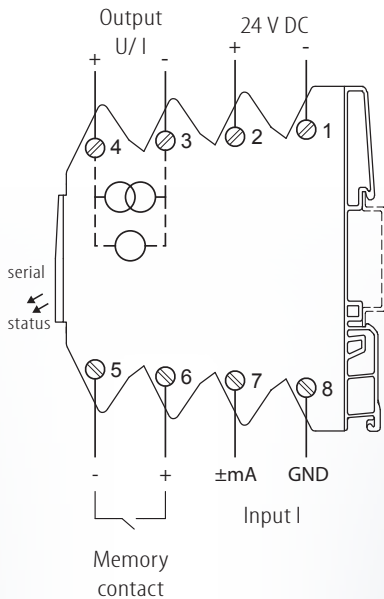
Amplifiers are used for the galvanic isolation or conversion of analog signals. This guarantees a safe decoupling between sensor and evaluation circuit and any influence of other sensor circuits among each other is absolutely impossible. Due to its individual setting of input and output signals the device has a large range of application. It is equipped with one bipolar current input as well as a current or voltage output. It is being parameterized by the USB2 Interface in connection with KALIB-Software.

The AWS 1.00 SDC memorizes direct current signals which are available for a short time only. The external activation to memorize a defined time value can be carried out by a contact or a potential free transistor output. Typical applications are amongst other things e.g. memorizing of desired value in discontinuous processes, storage of signals in case of disturbances of previous instruments, by cyclic requests of inputs via multiplexer or to hold a transmitter signal for the purpose of repairing the readings recorder.



AWS 1.00 SDC

Connection diagram:



Input:

I: DC current (bipolar): -20...0...+20 mA input resistance approx. 10 Ω
 -10...0...+10 mA
 connection: terminal 8 -, 7 +

Memory contact: output = stored value when contact is active
 output = input when contact is inactive
 connection: terminal 5 -, 6 +

Within the described measuring ranges the beginning respectively the end can be freely selected. The functioning of storage is adjustable (active at closed or open contact).

Output:

I: load-independent DC current: 0(4)...20 mA permissible load max. 580 Ω
 connection: terminal 3 -, 4 +

U: load-independent DC voltage: 0(2)...10 V permissible load ≥ 1 kΩ
 connection: terminal 3 -, 4 +

The minimum/ maximum limits for current and voltage output are freely selectable and adjustable in clear text. On exceeding or falling below the error limits at the input, for the output a defined fixed value can be predetermined in case of error.

Adjustment:

Measuring ranges and parameterization are adjustable by KALIB-Software.
 For this you need a PC as well as the interface adapter **USB2/ USB-Simulator** with **KALIB-Software**.

Display:

LED status: green, active input signals are in standard range, device ready for use, storage inactive
 green, active/
 3 impulses storage active
 green, flashing input out of predetermined limits or exceeding of measuring range

Environmental conditions:

Storage temperature: -40...+70 °C
 Operating temperature: 0...55 °C
 Isolation voltage:
 2,5 kV eff. 1 sec. input-output
 2,5 kV eff. 1 sec. auxiliary voltage

Auxiliary power:

24 V DC: 20...30 V DC
 < 1,5 W

Influence of auxiliary power: < 0,1 %

Characteristics of transmission:

Transmission error: < 0,12 %
 Resolution: 15 bit
 Linearity error: < 0,1 %
 Temperature error: < 100 ppm/ K
 Load influence I: < 50 ppm
 of final value
 Load influence U: < 0,2 % at 1 kΩ load
 Setting time: < 500 msec.

Directive:

EMC Directive: 2014/30/EU*
 Low Voltage Directive: 2014/35/EU

*minimum deviations possible during HF-radiation influence

Mounting details:

Housing for top hat rail
 Type of protection: IP 20
 Mounting rail fixed according to EN 50022-35 x 6,2 mm
 Width: 6,2 mm
 Weight: 52 g
 Material: Polyamide PA
 Flammability class: V0 (UL 94)
 Approval: CE
 Connection: screw clamps
 0,14...2,5 mm²

For safety reasons we recommend to mount the housing for top hat rail with a distance > 1 mm to each other. Please check parameterization before initial operation!

Ordering information:

Type: **AWS 1.00 SDC** 24 V DC
 Accessories: USB2/ USB-Simulator with KALIB-Software

Schuhmann GmbH & Co. KG
 Römerstraße 2
 D-74363 Güglingen
 Tel. + 49 71 35 50 56
 Fax + 49 71 35 53 55
 www.schuhmann-messtechnik.de

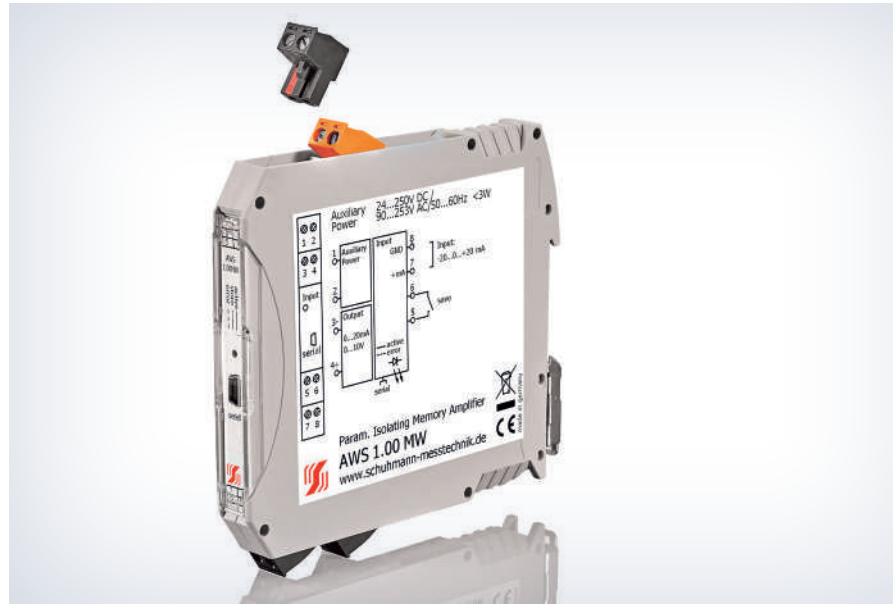


Parameterizable Isolating Amplifier with Analog Memory

AWS 1.00 MW

FEATURES

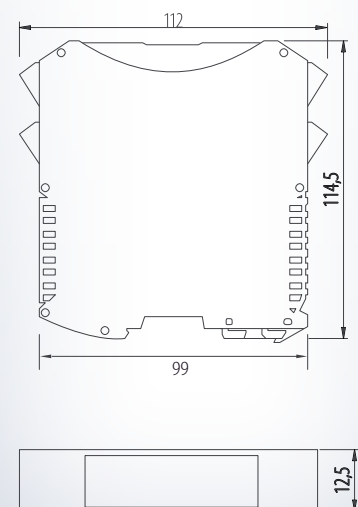
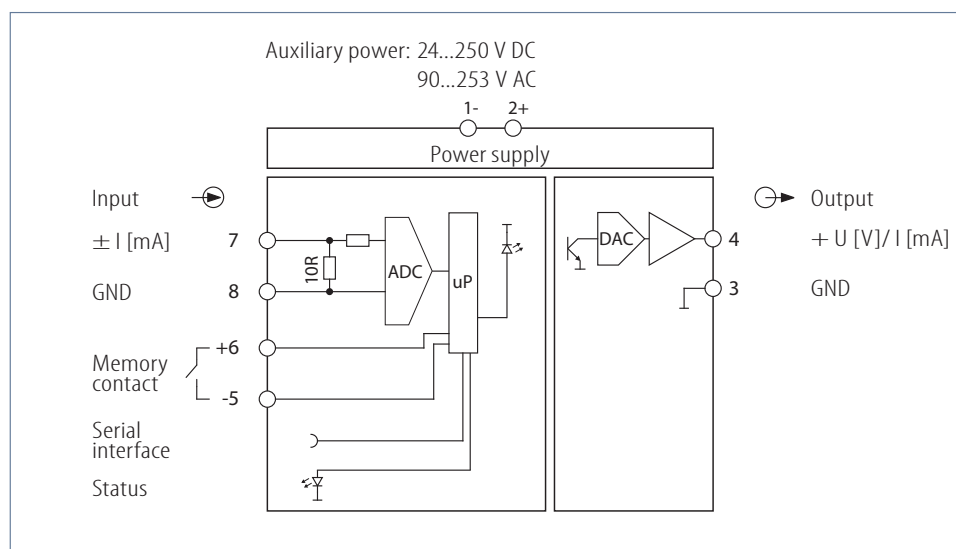
- **Bipolar input:**
Current $\pm 20 \text{ mA}$
- **Output:**
Current $0(4)\dots 20 \text{ mA}$ or
Voltage $0(2)\dots 10 \text{ V}$
- **Storage of input signal
via contact input**
- **Parameterization without
auxiliary power via PC-interface**
- **Galvanic 3-way isolation
of 2,5 kV**
- **Low internal consumption**



FUNCTION

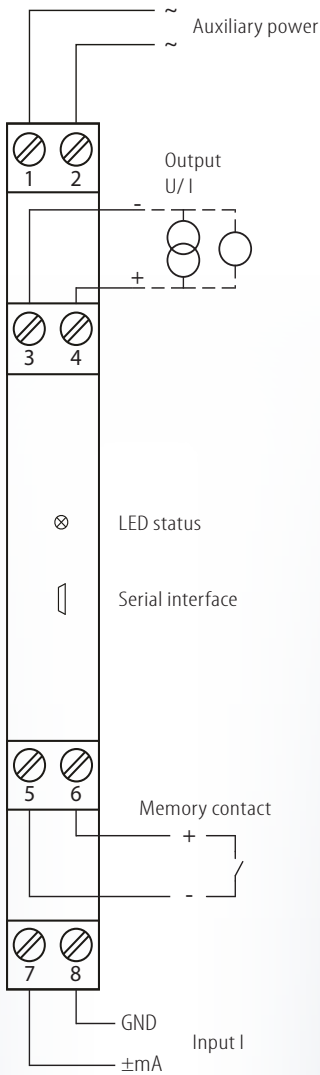
Amplifiers are used for the galvanic isolation or conversion of analog signals. This guarantees a safe decoupling between sensor and evaluation circuit and any influence of other sensor circuits among each other is absolutely impossible. Due to its individual setting of input and output signals the device has a large range of application. It is equipped with one bipolar current input as well as a current or voltage output. It is being parameterized by the USB2 Interface in connection with KALIB-Software.

The AWS 1.00 MW memorizes direct current signals which are available for a short time only. The external activation to memorize a defined time value can be carried out by a contact or a potential free transistor output. Typical applications are amongst other things e.g. memorizing of desired value in discontinuous processes, storage of signals in case of disturbances of previous instruments, by cyclic requests of inputs via multiplexer or to hold a transmitter signal for the purpose of repairing the readings recorder.



AWS 1.00 MW

Connection diagram:



Input:

I: DC current (bipolar):	-20...0...+20 mA	input resistance approx. 10 Ω
	-10...0...+10 mA	
connection:	terminal 8 -, 7 +	

Memory contact:	output = stored value when contact is active
	output = input when contact is inactive
connection:	terminal 5 -, 6 +

Within the described measuring ranges the beginning respectively the end can be freely selected. The functioning of storage is adjustable (active at closed or open contact).

Output:

I: load-independent DC current:	0(2)...20 mA	permissible load max. 580 Ω
connection:	terminal 3 -, 4 +	

U: load-independent DC voltage:	0(2)...10 V	permissible load ≥ 1 kΩ
connection:	terminal 3 -, 4 +	

The minimum/ maximum limits for current and voltage output are freely selectable and adjustable in clear text. On exceeding or falling below the error limits at the input, for the output a defined fixed value can be predetermined in case of error.

Adjustment:

Measuring ranges and parameterization are adjustable by KALIB-Software.

For this you need a PC as well as the interface adapter **USB2/ USB-Simulator** with **KALIB-Software**.

Display:

LED status:	green, active	input signals are in standard range, device ready for use, storage inactive
	green, active/ 3 impulses	storage active
	green, flashing	input out of predetermined limits or exceeding of measuring range

Environmental conditions:

Storage temperature:	-40...+70 °C
Operating temperature:	0...55 °C
Isolation voltage:	2,5 kV eff. 1 sec. input-output
	2,5 kV eff. 1 sec. auxiliary voltage

Auxiliary power:

Wide range:	24...250 V DC
	90...253 V AC
	< 3 W

Influence of auxiliary power: < 0,1 %

Characteristics of transmission:

Transmission error:	< 0,12 %
Resolution:	15 bit
Linearity error:	< 0,1 %
Temperature error:	< 100 ppm/ K
Load influence I:	< 50 ppm
	of final value
Load influence U:	< 0,2 % at 1 kΩ load
Setting time:	< 500 msec.

Directive:

EMC Directive:	2014/30/EU*
Low Voltage Directive:	2014/35/EU

*minimum deviations possible during HF-radiation influence

Mounting details:

Housing for top hat rail	
Type of protection:	IP 20
Mounting rail fixed according to	EN 50022-35 x 6,2 mm
Width:	6,2 mm
Weight:	52 g
Material:	Polyamide PA
Flammability class:	V0 (UL 94)
Approval:	CE
Connection:	screw clamps
	0,14...2,5 mm ²

For safety reasons we recommend to mount the housing for top hat rail with a distance > 1 mm to each other. Please check parameterization before initial operation!

Ordering information:

Type:	AWS 1.00 MW	wide range
Accessories:	USB2/ USB-Simulator with KALIB-Software	

Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen
Tel. + 49 71 35 50 56
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de



FEATURES

- **Bipolar input:**
Voltage $\pm 10\text{ V}$
- **Output:**
Current $0(4)\dots 20\text{ mA}$ or
Voltage $0(2)\dots 10\text{ V}$
- **Storage of input signal
via contact input**
- **Parameterization without
auxiliary power via PC-interface**
- **Galvanic 3-way isolation
of 2,5 kV**
- **Low internal consumption**

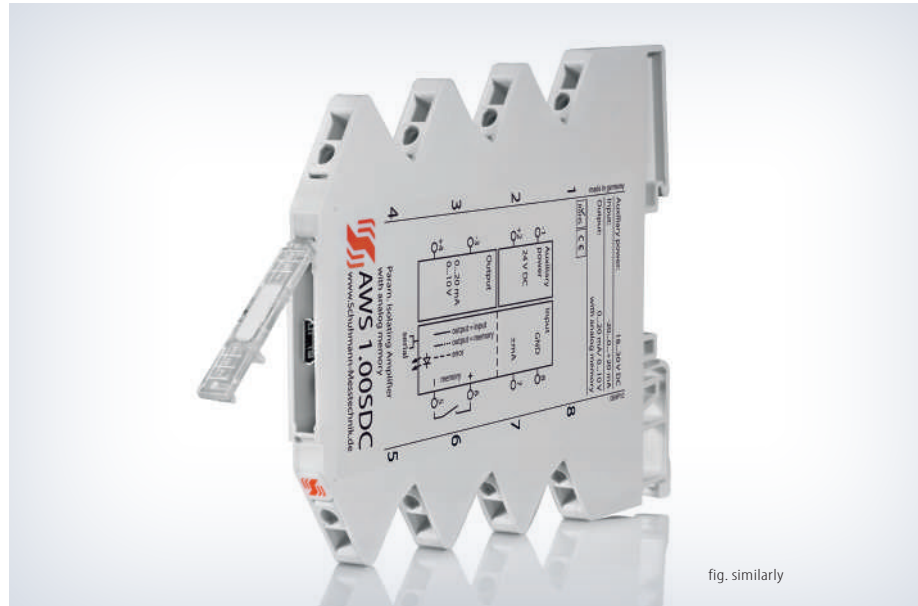
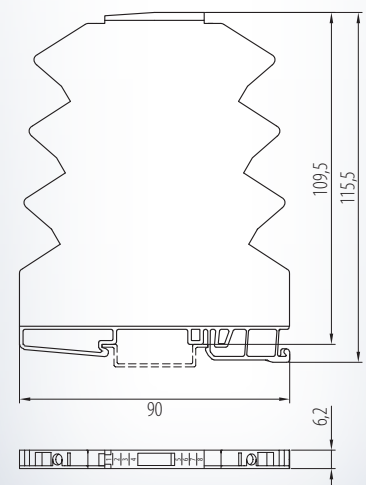
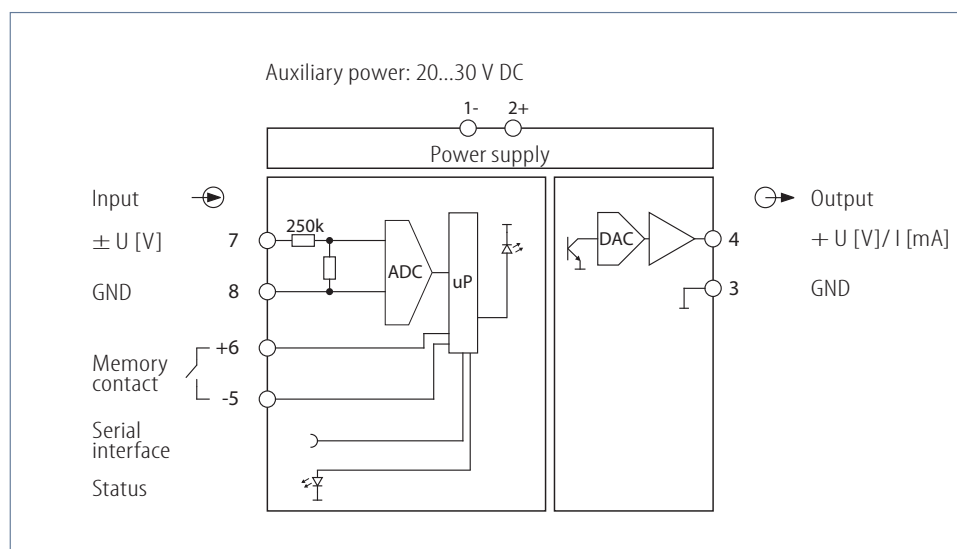


fig. similarly

FUNCTION

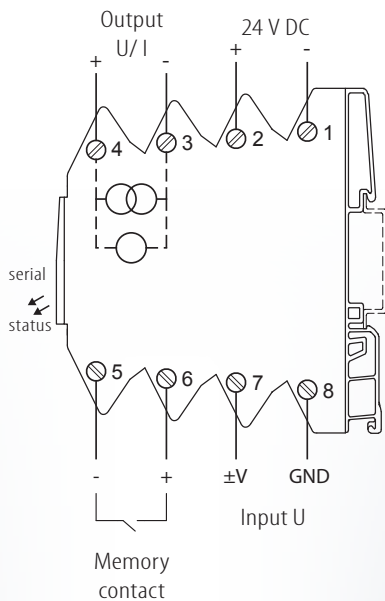
Amplifiers are used for the galvanic isolation or conversion of analog signals. This guarantees a safe decoupling between sensor and evaluation circuit and any influence of other sensor circuits among each other is absolutely impossible. Due to its individual setting of input and output signals the device has a large range of application. It is equipped with bipolar voltage inputs as well as a current and voltage output. It is being parameterized by the USB2 Interface in connection with KALIB-Software.

The AWS 1.10 SDC memorizes direct voltage signals which are available for a short time only. The external activation to memorize a defined time value can be carried out by a contact or a potential free transistor output. Typical applications are amongst other things e.g. memorizing of desired value in discontinuous processes, storage of signals in case of disturbances of previous instruments, by cyclic requests of inputs via multiplexer or to hold a transmitter signal for the purpose of repairing the readings recorder.



AWS 1.10 SDC

Connection diagram:



Input:

I: DC voltage (bipolar): -10...0...+10 V input resistance approx. 250 kΩ
 connection: terminal 8 -, 7 +

Memory contact: output = stored value when contact is active
 output = input when contact is inactive
 connection: terminal 5 -, 6 +

Within the described measuring ranges the beginning respectively the end can be freely selected. The functioning of storage is adjustable (active at closed or open contact).

Output:

I: load-independent DC current: 0(4)...20 mA permissible load max. 580 Ω
 connection: terminal 3 -, 4 +

U: load-independent DC voltage: 0(2)...10 V permissible load ≥ 1 kΩ
 connection: terminal 3 -, 4 +

The minimum/ maximum limits for current and voltage output are freely selectable and adjustable in clear text. On exceeding or falling below the error limits at the input, for the output a defined fixed value can be predetermined in case of error.

Adjustment:

Measuring ranges and parameterization are adjustable by KALIB-Software. For this you need a PC as well as the interface adapter **USB2/ USB-Simulator** with **KALIB-Software**.

Display:

LED status: green, active input signals are in standard range, device ready for use, storage inactive
 green, active/ 3 impulses storage active
 green, flashing input out of predetermined limits or exceeding of measuring range

Environmental conditions:

Storage temperature: -40...+70 °C
 Operating temperature: 0...55 °C
 Isolation voltage:
 2,5 kV eff. 1 sec. input-output
 2,5 kV eff. 1 sec. auxiliary voltage

Auxiliary power:

24 V DC: 20...30 V DC
 < 1,5 W

Influence of auxiliary power: < 0,1 %

Characteristics of transmission:

Transmission error: < 0,12 %
 Resolution: 15 bit
 Linearity error: < 0,1 %
 Temperature error: < 100 ppm/ K
 Load influence I: < 50 ppm
 of final value
 Load influence U: < 0,2 % at 1 kΩ load
 Setting time: < 500 msec.

Directive:

EMC Directive: 2014/30/EU*
 Low Voltage Directive: 2014/35/EU

*minimum deviations possible during HF-radiation influence

Mounting details:

Housing for top hat rail
 Type of protection: IP 20
 Mounting rail fixed according to EN 50022-35 x 6,2 mm
 Width: 6,2 mm
 Weight: 52 g
 Material: Polyamide PA
 Flammability class: V0 (UL 94)
 Approval: CE
 Connection: screw clamps
 0,14...2,5 mm²

For safety reasons we recommend to mount the housing for top hat rail with a distance > 1 mm to each other. Please check parameterization before initial operation!

Ordering information:

Type: **AWS 1.10 SDC** 24 V DC
 Accessories: USB2/ USB-Simulator with KALIB-Software

Schuhmann GmbH & Co. KG
 Römerstraße 2
 D-74363 Güglingen
 Tel. + 49 71 35 50 56
 Fax + 49 71 35 53 55
 www.schuhmann-messtechnik.de



Title	Specification	PC-Interface	Available designs	Auxiliary power	Page
AC CURRENT TRANSDUCER					
galvanic 3-way isolation of 4 kV, potential free changeover contact, analog output: 0(4)...20 mA and 0(2)...10 V, calibrated signal switching, operating status display, incl. CURRENT SENSOR, parameterizable					
UW 13.00 GW 60A	multi-range: 1A, 5A, 10A, 15A, 20A, 25A, 30A, 35A, 40A, 45A, 50A, 60A AC	X	G 22,5	24...250 V DC, 90...253 V AC	07-01
UW 13.00 GW 100A	multi-range: 1A, 5A, 10A, 15A, 20A, 25A, 30A, 35A, 40A, 45A, 50A, 60A, 70A, 80A, 90A, 100A AC	X	G 22,5	24...250 V DC, 90...253 V AC	07-01
UW 13.00 GW 200A	multi-range: 60A, 70A, 80A, 90A, 100A, 120A, 140A, 160A, 180A, 200A AC	X	G 22,5	24...250 V DC, 90...253 V AC	07-01
UW 13.00 GW 400A	multi-range: 120A, 140A, 160A, 180A, 200A, 240A, 280A, 320A, 360A, 400A AC	X	G 22,5	24...250 V DC, 90...253 V AC	07-01
UW 13.00 GW 600A	multi-range: 180A, 210A, 240A, 270A, 300A, 360A, 420A, 480A, 540A, 600A AC	X	G 22,5	24...250 V DC, 90...253 V AC	07-01
AC CURRENT TRANSDUCER					
TF 39.00 GW	input: 1 A AC, 5 A AC, output: 0(2)...10 V, 0(4)...20 mA active or passive, simulation mode		G 22,5	24...250 V DC, 90...253 V AC	07-05
AC VOLTAGE TRANSDUCER					
UW 13.01 GW	input AC: 0...xxx V 50Hz, output: 0...20 mA or 4...20 mA, 2...10 V		G 22,5	24...250 V DC, 90...253 V AC	07-07

* Designs: G = housing,
T = housing for door installation,
E = eurocard

3 Year
Warranty

3 Year
Warranty

FEATURES

- **Input, switchable:**
AC current up to 600 A AC,
True RMS value recording
- **Output, simultaneous:**
Current 0(4)...20 mA and
Voltage 0(2)...10 V
1 relay as limit-switch
- **Clip-on sensor specification**
60 A / 100 A / 200 A / 400 A / 600 A AC
- **Parameterization via PC-interface**
- **Galvanic 3-way isolation**
of 4 kV



FUNCTION

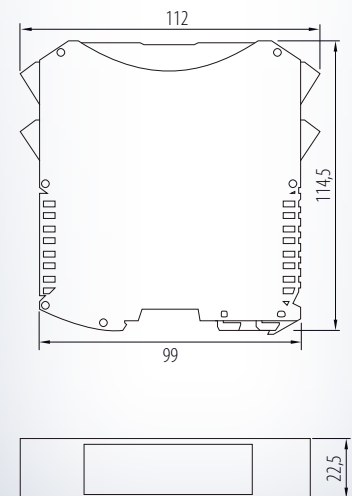
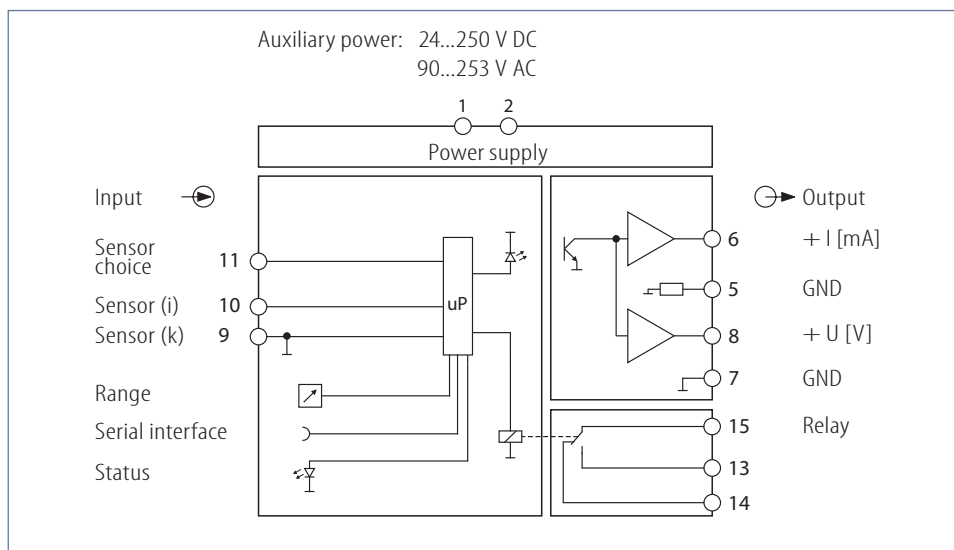
The UW 13.00 GW and the clip-on sensor included in delivery is one unit.

The recording of true RMS measuring, online actual values, operating conditions of small and large pumps, motors etc. is very simple to realise with the clip-on sensor.

The clip-on sensor is recording AC current signals in a range from 1 A up to 60 A AC and is also available for larger currents such as 100 A, 200 A, 400 A and 600 A.

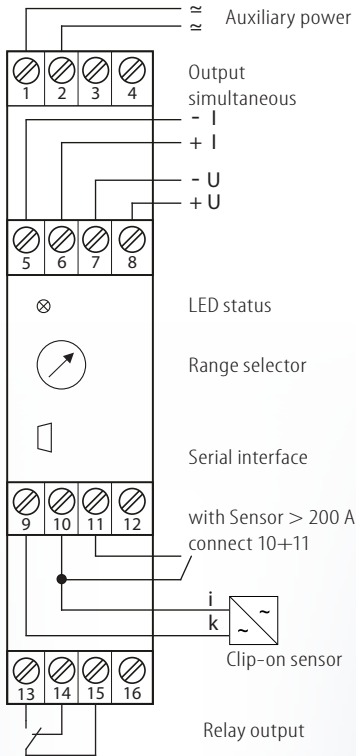
The measuring range can be selected by turn-switch on front side. Signal attenuation, relay switching-point, hysteresis, switching-delay and the output signal are adjustable by the USB2 Interface in connection with the KALIB-Software.

Relay status is being indicated by LED on front side. By new installation, modernization, retrofitting or extension of a plant the mounting of the sensor is easy due to the clip-on system of it and even possible during operation.



UW 13.00 GW

Connection diagram:



Input:

Only connect the included clip-on sensor at the input!

Connection: terminal 9 (k), 10 (i)

It is recommended to perform a screened signal cable between sensor and current transformer!

- AC current 50/ 60 Hz, up to 600 A AC (depending on clip-on sensor)
- True RMS value recording

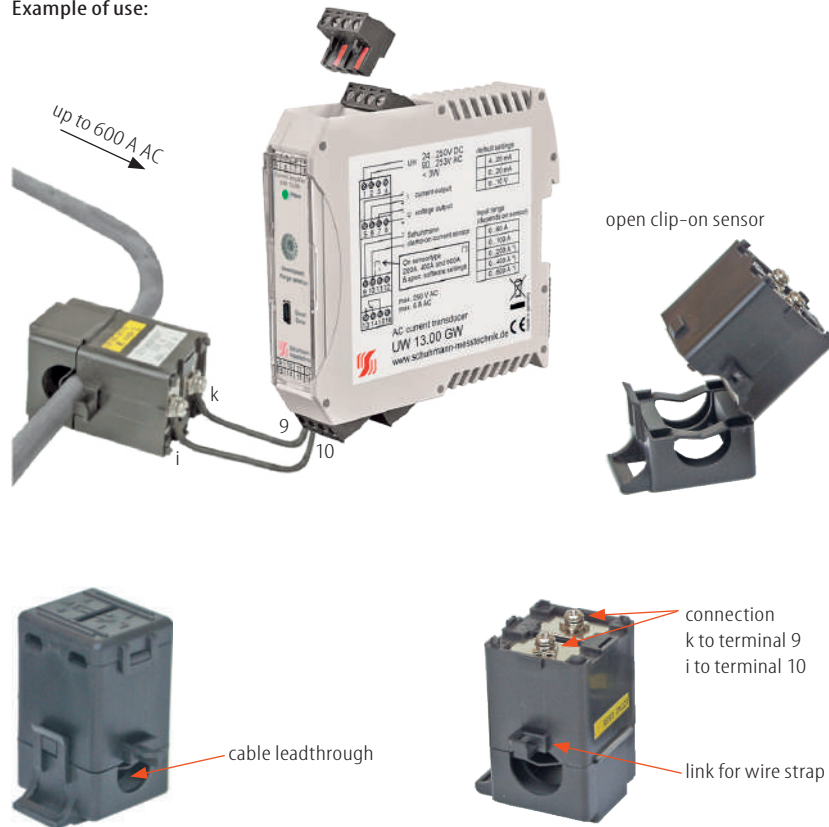
Clip-on sensor:

- easy mounting on wire
- insulating resistance min. 50 M Ω
- screwed connection
- test voltage 2,2 kV eff. 1 min.
- output with excess voltage protective diode

available range:

Sensor	Rated current	max. current	max. cable - \emptyset	Dimension
60 A	60 A AC	100 A AC	10 mm	26 x 23 x 48 mm
100 A	100 A AC	200 A AC	16 mm	31 x 30 x 54 mm
200 A	200 A AC	400 A AC	24 mm	36 x 45 x 76 mm
400 A	400 A AC	600 A AC	35 mm	60 x 40 x 80 mm
600 A	600 A AC	800 A AC	35 mm	60 x 40 x 80 mm

Example of use:



Output:

I: load-independent AC current: connection:	0(4)...20 mA terminal 5-, 6+	permissible load max. 500 Ω
U: load-independent AC voltage: connection:	0(2)...10 V terminal 7-, 8+	permissible load \geq 5 k Ω
Relay output:	changer	
maximum switching current:	6 A	
maximum switching voltage:	250 V AC	
mechanical life cycle:	30 x 10 ⁶ cycles	
contact life cycle:	10 ⁵ cycles	
connection:	terminal 13, 14, 15	

Schuhmann GmbH & Co. KG
 Römerstraße 2
 D-74363 Güglingen
 Tel. + 49 71 35 50 56
 E-mail: info@schuhmann-messtechnik.de
 www.schuhmann-messtechnik.de

Adjustment:

Input range by turn-switch on front side:

Position	Sensor 60 A	Sensor 100 A	Sensor 200 A*	Sensor 400 A*	Sensor 600 A*
0	0...1 A	0...1 A	-	-	-
1	0...5 A	0...5 A	-	-	-
2	0...10 A	0...10 A	-	-	-
3	0...15 A	0...15 A	-	-	-
4	0...20 A	0...20 A	-	-	-
5	0...25 A	0...25 A	-	-	-
6	0...30 A	0...30 A	0...60 A	0...120 A	0...180 A
7	0...35 A	0...35 A	0...70 A	0...140 A	0...210 A
8	0...40 A	0...40 A	0...80 A	0...160 A	0...240 A
9	0...45 A	0...45 A	0...90 A	0...180 A	0...270 A
A	0...50 A	0...50 A	0...100 A	0...200 A	0...300 A
B	0...60 A	0...60 A	0...120 A	0...240 A	0...360 A
C	-	0...70 A	0...140 A	0...280 A	0...420 A
D	-	0...80 A	0...160 A	0...320 A	0...480 A
E	-	0...90 A	0...180 A	0...360 A	0...540 A
F	-	0...100 A	0...200 A	0...400 A	0...600 A

* Connect terminal 10 + 11 and change over the KALIB-Software to change the clip-on sensor!
(otherwise factory setting)

Adjustment of switching points and parameterization via USB2 Interface in connection with the KALIB-Software.

For this you need a PC as well as the interface adapter **USB2/ USB-Simulator** with **KALIB-Software**.

Parameterizable values:

Sensor:	60 A/ 100 A/ 200 A/ 400 A/ 600 A	
Output signal:	0(4)...20 mA, 0(2)...10 V	(factory sett.: 4...20 mA)
Output filter:	0,5/ 1/ 2/ 4/ 8/ 16/ 32/ 64 sec.	(factory setting: 4 sec.)
Output limit:	50,0...110,0 %	(0,1 % steps) (factory setting: 110,0 %)
Switching point relay ON:	0,0...100,0 %	adjustable in 0,1 % steps
Switching point relay OFF:	0,0...100,0 %	adjustable in 0,1 % steps
Delay relay ON:	0...1000 sec.	adjustable in 1 sec. steps
Delay relay OFF:	0...1000 sec.	adjustable in 1 sec. steps

Display:

LED status:	green, active	input signal within range, ready for operation
	red, active	relay tightened

UW 13.00 GW

Environmental conditions:

Storage temperature: -20...+70 °C
Operating temperature: 0...55 °C
Isolation voltage: 4 kV eff. 1 sec.
input/ output/ auxiliary voltage

Auxiliary power:

Wide range: 24...250 V DC
90...253 V AC
< 3 W
Infl. of auxiliary power: < 0,1 %

Characteristics of transmission:

Transmission error: < 1 % of final value
Linearity error: ± 0,1 %
Resolution: 10 bit
Temperature error: < 100 ppm/ K
Load influence I: < 50 ppm
of final value
Load influence U: < 0,2%
at 1 kΩ load

Directive:

EMC Directive: 2014/30/EU*
Low Voltage Directive: 2014/35/EU
*minimum deviations possible during
HF-radiation influence

Mounting details:

Housing for top hat rail
Type of protection: IP 40 housing
IP 20 clamps
Rail-mounting fixed according to
EN 50022-35 x 6,2 mm
Width: 22,5 mm
Weight: 170 g
Material: Polyamide PA
Flammability class: V0 (UL94)
Approval: CE
Connection: pluggable
screw clamps
0,2...2,5 mm²

For safety reasons we recommend to mount the housing for top hat rail with a distance of approx. 5 mm to each other. Please check switch position before initial operation!

Ordering information:

Type:

Output: 0(4)...20 mA and 0(2)...10 V (factory sett.: 4...20 mA), with clip-on sensor:

UW 13.00 GW 60 A	wide range	Sensor 60 A
UW 13.00 GW 100 A	wide range	Sensor 100 A
UW 13.00 GW 200 A	wide range	Sensor 200 A
UW 13.00 GW 400 A	wide range	Sensor 400 A
UW 13.00 GW 600 A	wide range	Sensor 600 A

Accessories:

USB2/ USB-Simulator with KALIB-Software

Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen
Tel. + 49 71 35 50 56
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de



Adjustable AC current Isolating Amplifier

TF 39.00 GW

FEATURES

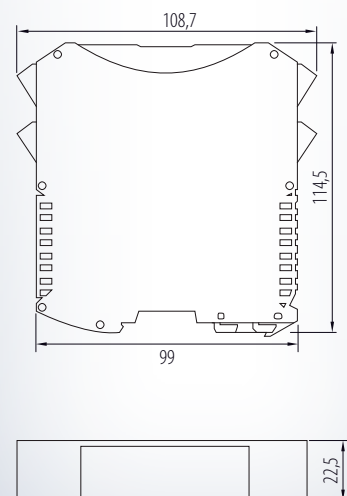
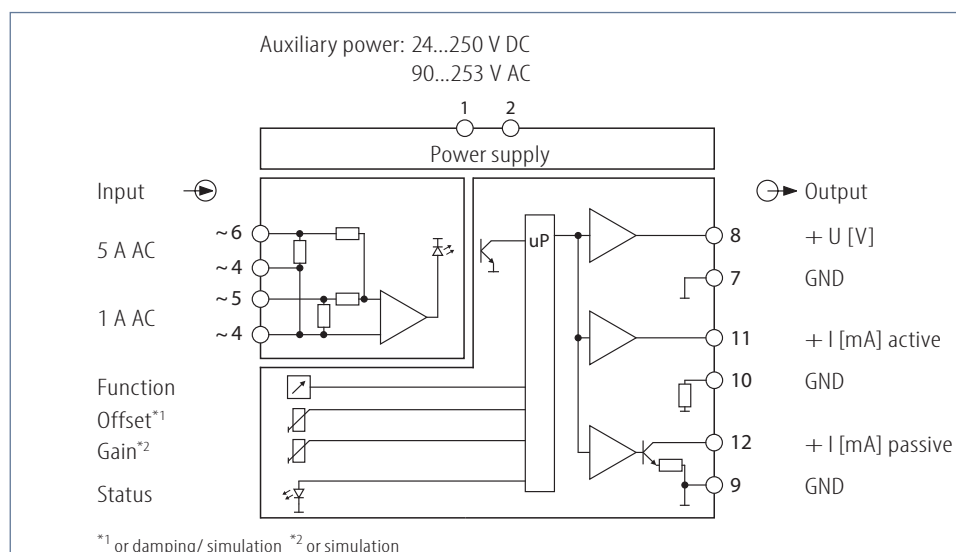
- **1 input for AC current:**
1 A AC, 50/ 60 Hz or
5 A AC, 50/ 60 Hz
- **Outputs simultaneous:**
Voltage 0(2)...10 V and
Current 0(4)...20 mA active or
loop-powered
- **Function, switchable:**
- fixed calibration or
- adjustable by trimmer or
- simulation mode for outputs
- **Galvanic 3-way isolation
of 2,5 kV**
- **Low internal consumption**



FUNCTION

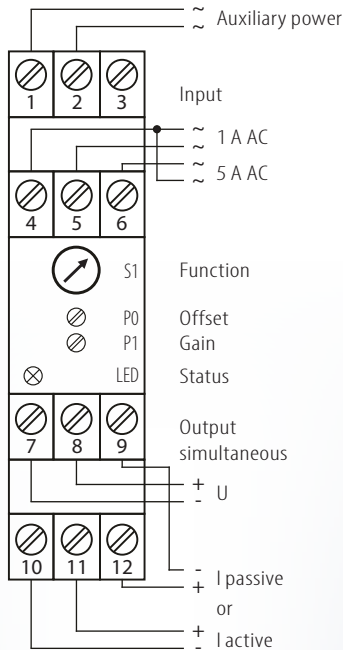
Amplifiers are used for the galvanic isolation or conversion of analog signals. This guarantees a safe decoupling between sensor and evaluation circuit and any influence of other sensor circuit among each other is absolutely impossible. This Amplifier is equipped with one standard **AC current input** (1 A AC or 5 A AC) as well as current and voltage outputs.

The TF 39.00 GW can be switched to different characteristics of transmission by front side turn-switch. Fixed calibrated measuring ranges for input and output are stored in switch setting 0...7. In position 8...D the transmission ranges can be adjusted by zero point and range trimmer. A damping of 3 seconds is selectable in addition. Position E and F are used for simulation during initial operation, here a fixed output value can be generated by zero point and range trimmer, without input signal.



TF 39.00 GW

Connection diagram:



Input:

I: AC current:	1 A AC	max. 2 A AC/ 5 sec. 50/ 60 Hz
connection:	terminal 4 ~, 5 ~	
U: AC current:	5 A AC	max. 10 A AC/ 5 sec. 50/ 60 Hz
connection:	terminal 4 ~, 6 ~	

Output:

I: load-independent DC current:	0(4)...20 mA	permissible load max. 500 Ω
connection:	terminal 10 -, 11 +	
or:		
loop-powered DC current:	0(4)...20 mA	max. permissible voltage 30 V
connection:	terminal 9 -, 12 +	
U: load-independent DC voltage:	0(2)...10 V	permissible load ≥ 2 kΩ
connection:	terminal 7 -, 8 +	

The maximum limits for current- and voltage output are fixed at 22 mA respectively 11 V.

Adjustment:

The characteristics of transmission are adjustable by front side turn-switch.

S1	Input	Output simultan.	Damping	Position turn-switch S1
0	0-1 A AC	0-20 mA/ 0-10 V fixed calibrated	0,5...10 s over P0 adjustable	0...7
1	0-5 A AC			
2	0-1 A AC			
3	0-5 A AC			
4	0-1 A AC			
5	0-5 A AC			
6	0-1 A AC			
7	0-5 A AC	4-20 mA/ 2-10 V change value Offset/ Gain	3 s	8...D
8	0-1 A AC			
9	0-5 A AC			
A	0-1 A AC			
B	0-5 A AC	0-20 mA/ 0-10 V	3 s	
C	like „8“			
D	like „9“			
E	Simulation via P0 0-100%			E
F	Simulation via P1 0-100%			F

Display:

LED status:	green, active	input signals are in standard range, device ready for use
	green, flashing	input signal out of the acceptable range or exceeding of measuring range or simulation mode

Environmental conditions:

Storage temperature:	-40...+70 °C
Operating temperature:	0...55 °C
Isolation voltage:	2,5 kV eff. 1 sec. input-output 2,5 kV eff. 1 sec. auxiliary voltage

Auxiliary power:

Wide range:	24...250 V DC 90...253 V AC < 3 W
Influence of auxiliary power:	< 0,1 %

Characteristics of transmission:

Transmission error:	< 1 %
Resolution:	13 bit
Linearity error:	< 1 %
Temperature error:	< 200 ppm/ K
Load influence I:	< 50 ppm of final value
Load influence U:	< 0,2 % at 2 kΩ load
damping:	0,5...10 sec.

Directive:

EMC Directive:	2014/30/EU*
Low Voltage Directive:	2014/35/EU
*minimum deviations possible during HF-radiation influence	

Mounting details:

Housing for top hat rail	
Type of protection:	IP 20 housing IP 20 clamps
Rail-mounting fixed according to	EN 50022-35 x 7,5 mm
Width:	22,5 mm
Weight:	140 g
Material:	Polyamide PA
Flammability class:	V0 (UL94)
Approval:	CE
Connection:	screw clamps ≤ 2,5 mm ²

Please check switch position before initial operation!

Ordering information:

Type: TF 39.00 GW wide range

Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen
Tel. +49 71 35 50 56
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de

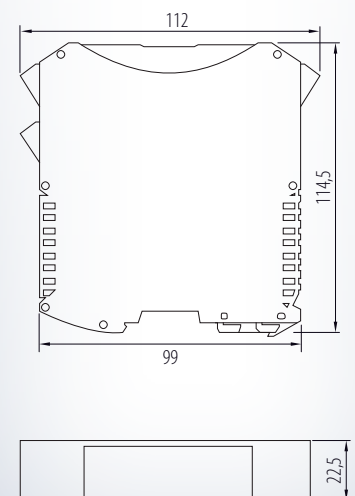
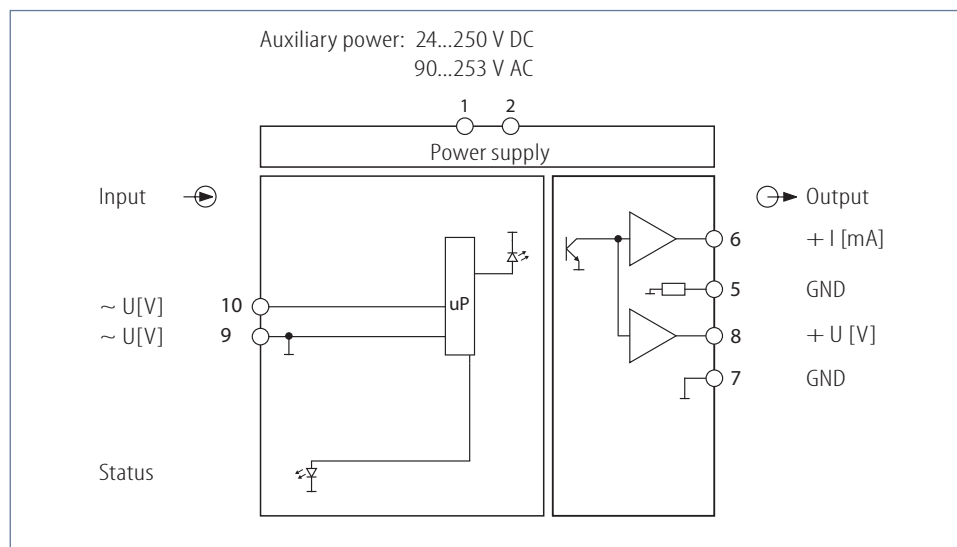
FEATURES

- **Input:**
AC voltage up to 500 V AC,
True RMS value recording
- **Output, simultaneous:**
Current 0(4)...20 mA and
Voltage 0(2)...10 V
- **Galvanic 3-way isolation**
of 4 kV



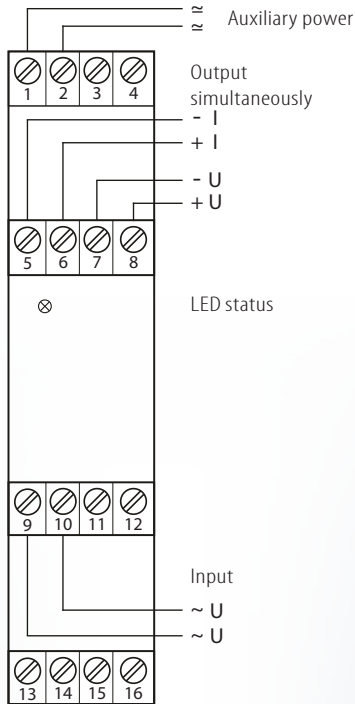
FUNCTION

The UW 13.01 GW is being used to convert a AC voltage signal into a standard signal. It has an AC voltage input and an output for current and voltage simultaneous. Indication of operating state is displayed by LED on front side.



UW 13.01 GW

Connection diagram:



Input:

U: AC voltage: max. 500 V AC, 50 Hz
True RMS value recording

Customer specification of and input setting, e.g.

input: 0...20 V AC
or input: 0...100 V AC
or input: 0...400 V AC

connection: terminal 9, 10

Output:

Customer specification, factory setting: 4...20 mA

I: load-independent AC current: 0(4)...20 mA permissible load max. 500 Ω

U: load-independent AC voltage: 0(2)...10 V permissible load $\geq 5 \text{ k}\Omega$

Display:

LED status: green, active input signal within range, ready for operation

Environmental conditions:

Storage temperature: $-20...+70 \text{ }^\circ\text{C}$
Operating temperature: $0...55 \text{ }^\circ\text{C}$
Isolation voltage: 4 kV eff. 1 sec.
input/ output/ auxiliary voltage

Auxiliary power:

Wide range: 24...250 V DC
90...253 V AC
< 3 W
Infl. of auxiliary power: < 0,1 %

Characteristics of transmission:

Transmission error: < 1 % of final value
Linearity error: $\pm 0,1 \%$
Resolution: 10 bit
Temperature error: < 100 ppm/ K
Load influence I: < 50 ppm
of final value
Load influence U: < 0,2% at 1 kΩ load
Set time: 4 sec. factory set
(0,5...64 sec. possible)

Directive:

EMC Directive: 2014/30/EU*
Low Voltage Directive: 2014/35/EU
*minimum deviations possible during
HF-radiation influence

Mounting details:

Housing for top hat rail
Type of protection: IP 40 housing
IP 20 clamps
Mounting rail fixed according to
EN 50022-35 x 6,2 mm
Width: 22,5 mm
Weight: 170 g
Material: Polyamide PA
Flammability class: V0 (UL94)
Approval: CE
Connection: pluggable
screw clamps
0,2...2,5 mm²

For safety reasons we recommend to mount the housing for top hat rail with a distance of approx. 5 mm to each other. Please check switch position before initial operation!

Ordering information:

Type: UW 13.01 GW wide range

Please specify input- and output signal in clear text, e.g.:
Input: 0...10 V AC, output: 4...20 mA



Title	Specification	PC-Interface	Available designs	Auxiliary power	Page
MEASURING TRANSDUCER FOR TEMPERATURE SENSORS					
MU 1.00 GW	input: PT 100, PT 500, PT 1000, NI 1000, different KTY, Poti up to 5 kOhms, thermocouples(2) J, K, T, R, S, B, E, L, etc. connection: 2-, 3- and 4-wire, alarm function, detection of sensor break and short-circuit, temperature decrease, trend function output: 0(4)...20 mA or 0(2)...10 V, 2 closer as limit switch, parameterizable	X	G 22,5	24...250 V DC, 90...253 V AC	08-01
MU 1.00 S	input: PT 100, PT 1000, NI 1000, different KTY, poti up to 5 kOhms, thermocouples(2) J, K, T, R, S, B, E, etc. connection: 2-, 3- and 4-wire, alarm function, detection of sensor break and short-circuit, temperature decrease, trend function output: 0(4)...20 mA or 0(2)...10 V, parameterizable	X	G 6,2	20...30 V DC	08-03
MU 1.01 S	input: PT 100, PT 1000, NI 1000, KTY, poti up to 5 kOhms, connection: 2-, 3- and 4-wire output: 0(4)...20 mA or 0(2)...10 V	X	G 6,2	20...30 V DC	08-03
MU 1.08 S	input: thermocouples(2) J, K, T, R, S, B, E, etc. output: 0(4)...20 mA or 0(2)...10 V, parameterizable	X	G 6,2	20...30 V DC	08-03
MPU 1.00 GW	input: PT 100, PT 500, PT 1000, NI 1000, poti up to 5 kOhms, connection: 2-, 3- and 4-wire output simultaneous: 0(4)...20 mA (active or passive), 0(2)...10 V	X	G 22,5	24...250 V DC, 90...253 V AC	08-05

UNIVERSAL LIMIT SWITCH					
2 x 8-digit LCD-display, scalable analog output, transmitter feeding, sensor inputs I, U, PT 100, 0...100 V, 0...50 mV, thermocouples, etc., parameterizable					
DGS 4.00 GW	input 1: PT 100, PT1000, NI, KTY, thermocouples, resistance, input 2: 0(4)...20 mA/ 0(2)...10 V output: 4 relays = 4 changer, I/ U	X	G 45	20...30 V DC/ AC	03-53
DGS 6.00 GW	input 1: PT 100, PT1000, NI, KTY, thermocouples, resistance, input 2: 0(4)...20 mA/ 0(2)...10 V output: 6 relays = 6 changer, I/ U	X	G 45	90...253 V AC	03-53

More devices see back page

* Designs: G = housing,
T = housing for door installation,
E = eurocard





Title	Specification	PC-Interface	Available designs	Auxiliary power	Page
ISOLATING TRANSDUCER FOR POTENTIOMETERS					
2-wire, 3-wire and 4-wire					
WU 39.00 GW	input switchable: e.g. 1K, 10K, 50K, 1M0hms, 0...100 %, 0...80 %, output simultaneous: 0(4)...20 mA and 0(2)...10 V		G 22,5	24...250 V DC, 90...253 V AC	08-11
WU 39.04 GW	input switchable. 2-wire: 0...2 kOhms/ 0...10 kOhms, 0...20 kOhm/ 0...10 kOhm, output simultaneous: 0(4)...20 mA and 0(2)...10 V		G 22,5	24...250 V DC, 90...253 V AC	08-13
MU 1.00 GW	input: PT 100, PT 500, PT 1000, NI 1000, different KTY, poti up to 5 kOhms, thermocouples(2) J, K, T, R, S, B, E, L, etc. connection: 2-, 3- and 4-wire, alarm function, detection of sensor break and short-circuit, temperature decrease, trend function output: 0(4)...20 mA or 0(2)...10 V, 2 closer as limit switch, parameterizable	X	G 22,5	24...250 V DC, 90...253 V AC	08-01
MU 1.00 S	input: PT 100, PT 1000, NI 1000, different KTY, poti up to 5 kOhms, thermocouples(2) J, K, T, R, S, B, E, etc. connection: 2-, 3- and 4-wire, alarm function, detection of sensor break and short-circuit, temperature decrease, trend function output: 0(4)...20 mA or 0(2)...10 V, parameterizable	X	G 6,2	20...30 V DC	08-03

* Designs: G = housing,
T = housing for door installation,
E = eurocard

3 Year
Warranty

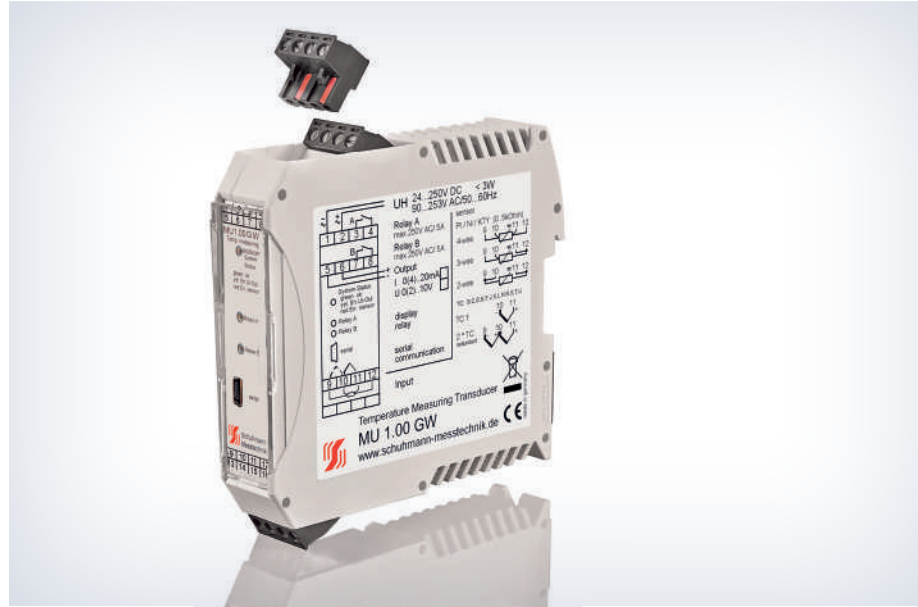


Parameterizable Temperature Measuring Transducer

MU 1.00 GW

FEATURES

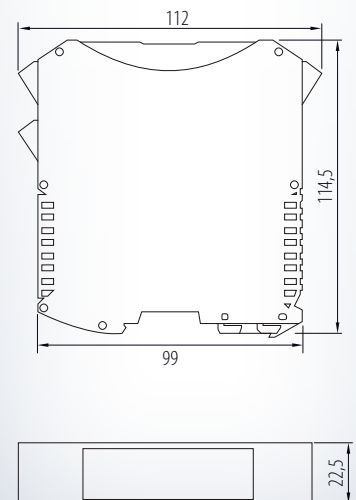
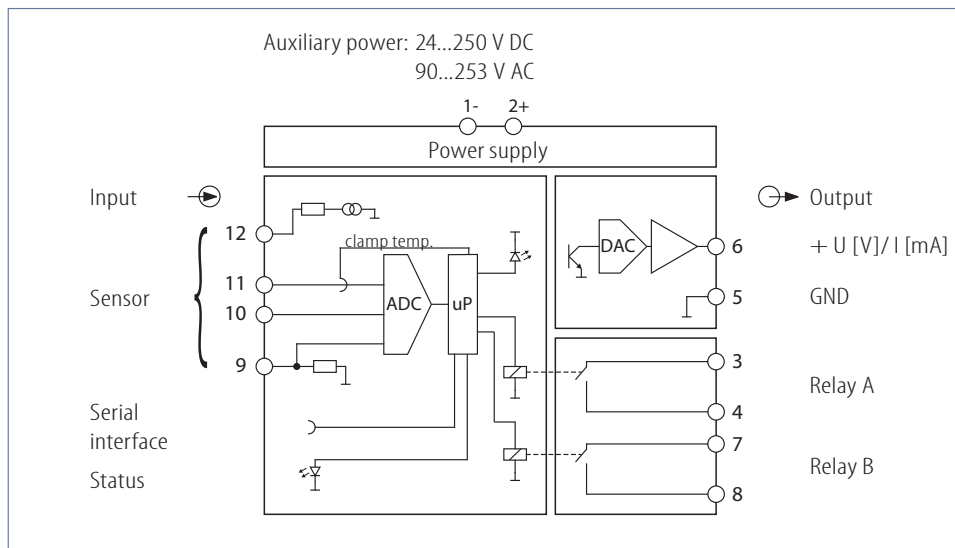
- **Input:**
PT 100, NI 1000, PTC, KTY, thermocouples, poti 0...5 kΩ, other sensors via software
- **Output: 0(4)...20 mA / 0(2)...10 V**
- **2 relays, function selectable**
- **Detection of sensor break and short-circuit**
- **Redundant measurement at thermocouples possible**
- **Int./ext. cold-junction compensation**
- **Parameterization without auxiliary power via PC-interface**
- **Galvanic 3-way isolation of 4 kV**



FUNCTION

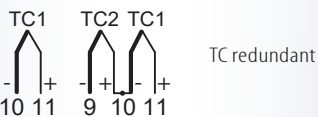
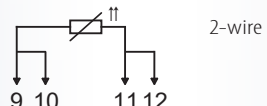
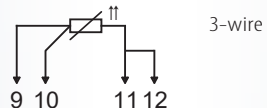
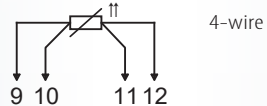
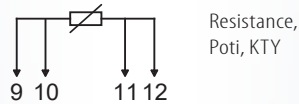
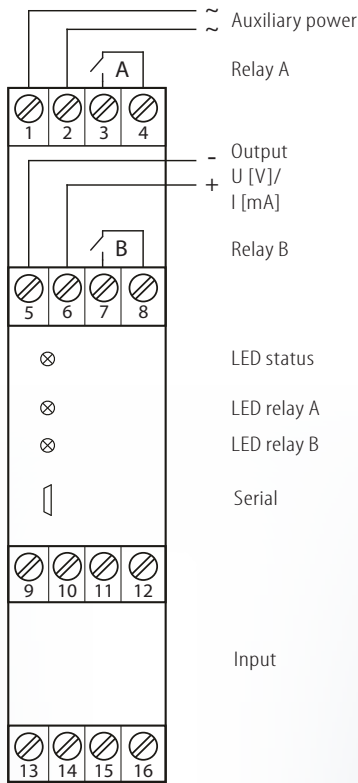
The MU 1.00 GW is processing sensor signals and is used for the precise measurement of virtually all temperature sensors. Measurements of temperatures within a range of -200 and +2400 °C can be made, for example in air-conditioning and process engineering. Sensor break and sensor short-circuit are signaled and can be used as safety functions. By PT-sensors different connections can be selected: 2-, 3-, 4-wire system. The measuring line of the 3- or 4-wire connection is detected on wire break or short-circuits.

Further temperature sensor cams can be produced by a table of value and assigned to the transducer by the USB2 Interface in connection with KALIB-Software. Higher functional safety offers the redundant connection of thermocouples to the transducer. Indication of status is signaled by a front sided LED. The integrated protective switching with suppressor diode protects the secondary circuit from voltage peaks and transient excess voltage. 2 relays for error evaluation, limit value monitoring and tendency function are available. Switching status of the relays are signaled by LEDs on front side.



MU 1.00 GW

Connection diagram:



Schuhmann GmbH & Co. KG
 Römerstraße 2
 D-74363 Güglingen
 Tel. +49 71 35 50 56
 E-mail: info@schuhmann-messtechnik.de
 www.schuhmann-messtechnik.de

Input:

Sensor	Measurement range	Additional temperature sensor cams can be created by using KALIB-Software.
Type B	400...1820 °C	Temperature compensation: - internal: ± 1 K typ., max $\pm 1,2$ K - external: at high temperature thermocouples recommended
Type C	400...2300 °C	
Type D	400...2400 °C	
Type E	-200...1000 °C	
Type J	-200...1200 °C	
Type K	-200...1372 °C	
Type L	-200...900 °C	
Type N	-200...1300 °C	
Type R	-50...1760 °C	
Type S	-50...1760 °C	
Type T	-200...400 °C	Redundancy at thermocouples: - thermocouple TC1 has priority over TC2 - at deviation TC1 to TC2 > 30 °C warning via LED
Type U	-200...400 °C	
KTY 81-110., KTY 82-122..		Input resistance: approx. 1 M Ω at thermocouples
KTY 83-110., KT 100/110/130		Sampling cycle: approx. 100 ms int.
KT 210/230, KTY 10/11/13-5..		limiting frequency: approx. 0,5 Hz
KTY 21/23-5..	-58...150 °C	connection: terminal 9, 10, 11, 12 PT- 2/3/4 wire, at 2-wire measurement with offset correction
PTC		
PT 100, PT 500, PT 1000	-200...850 °C	
NI 100, NI 500, NI 1000	-58...208 °C	
Poti (2-wire) User	0...500 Ω / 5 k Ω	

Output:

I: load-independent DC current:	0(4)...20 mA	permissible load max. 680 Ω
connection:	terminal 3 -, 4 +	
U: load-independent DC voltage:	0(2)...10 V	permissible load ≥ 2 k Ω
connection:	terminal 3 -, 4 +	
Relay A/ B:	1 NO contact per relay	
max. switching current/ -voltage:	6 A / 250 V AC	
Mechanical/ contact lifetime:	30 x 10 ⁶ cycles / 10 ⁵ cycles	

Adjustment:

Measuring ranges and parameterization are adjustable by KALIB-Software. For this you need a PC as well as the interface adapter **USB2/ USB-Simulator** with **KALIB-Software**.

Display:

LED status	green, active	input signals are in standard range, device ready for use
	yellow, active	failure output signal, warning message
	red, active	failure e.g. sensor break, short-circuit, sensor failure
LED relay A:	green, active	relay A is closed
LED relay B:	green, active	relay B is closed

Environmental conditions:

Storage temperature: -40...+70 °C
 Operating temperature: 0...55 °C
 Isolation voltage:
 4 kV eff. 1 sec. input-output
 4 kV eff. 1 sec. auxiliary voltage

Auxiliary power:

Wide range: 24...250 V DC
 90...253 V AC
 < 3 W

Influence of auxiliary power: < 0,1 %

Characteristics of transmission:

Transmission error: < 0,12 %
 Resolution: 0,1 °C, 16 bit
 Linearity error: < 0,03 %
 Temperature error: < 30 ppm/ K
 Load influence I: < 0,07 % of final value
 Load influence U: < 0,15 % at 2 k Ω load

Directive:

EMC Directive: 2014/30/EU*
 Low Voltage Directive: 2014/35/EU
 *minimum deviations possible during HF-radiation influence

Mounting details:

Housing for top hat rail
 Type of protection: IP 40 housing
 IP 20 clamps
 Mounting rail fixed according to EN 50022-35 x 6,2 mm
 Width: 22,5 mm
 Weight: 180 g
 Material: Polyamide PA
 Flammability class: V0 (UL 94)
 Approval: CE
 Connection: plugg. screw clamps
 $\leq 2,5$ mm²

Please check parameterization before initial operation!

Ordering information:

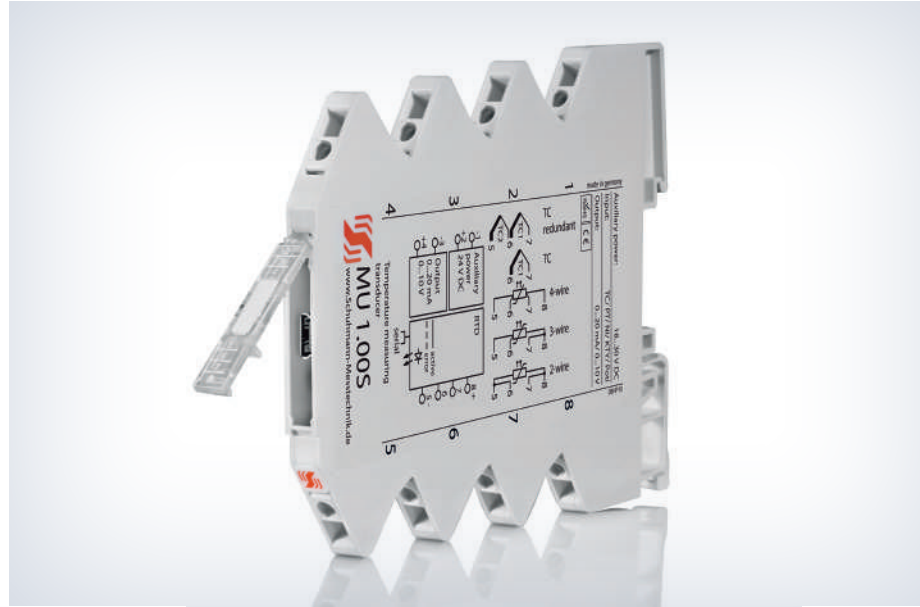
Type: **MU 1.00 GW** wide range
 Accessories: USB2/ USB-Simulator with KALIB-Software

07.03.2023



FEATURES

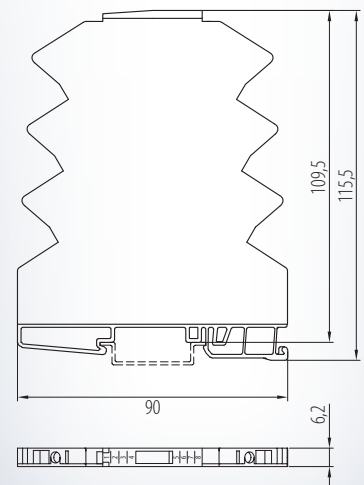
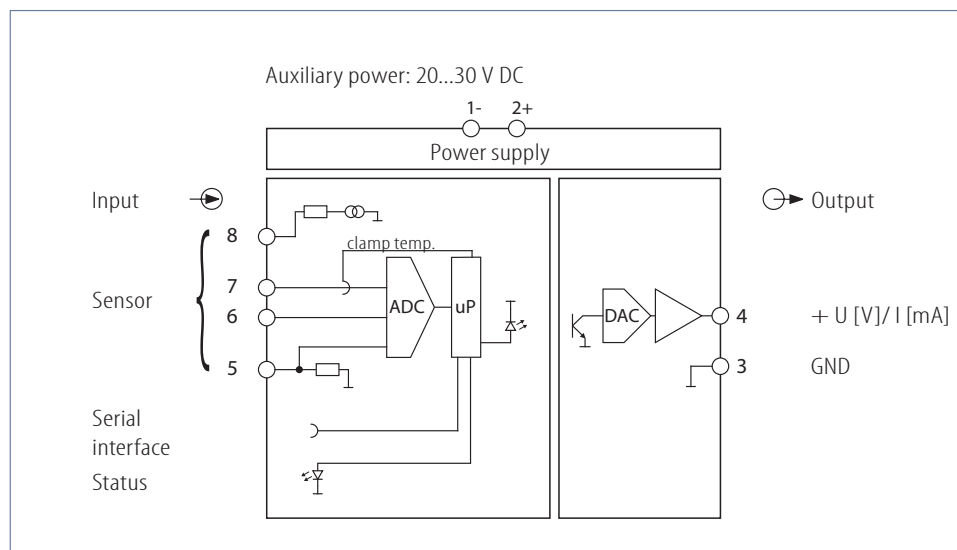
- **Input:**
PT 100, PT 500, PT 1000, NI 500,
NI 1000, PTC, KTY, thermocouples
e.g. type J, K, L, N, S, Poti 0...5 k Ω ,
other Sensors via Software
- **Output: 0(4)...20 mA/ 0(2)...10 V**
- **Detection of sensor break
and short-circuit**
- **Redundant measurement at
thermocouples possible**
- **Int./ext. cold-junction compensation**
- **Parameterization without
auxiliary power via PC-interface**
- **Galvanic 3-way isolation of 2,5 kV**



FUNCTION

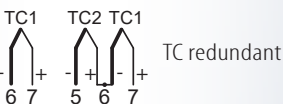
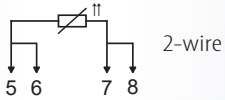
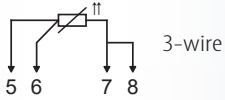
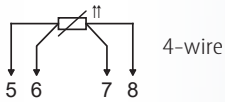
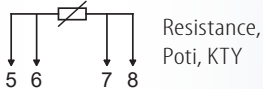
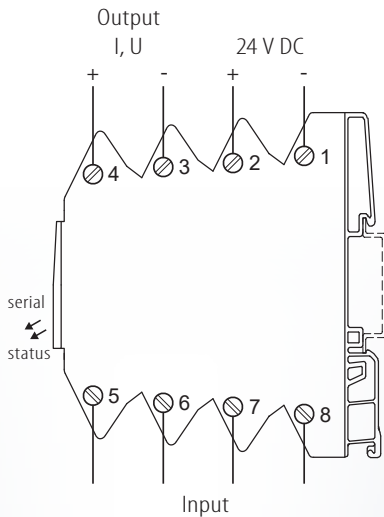
The MU 1.00 S is processing sensor signals and is used for the precise measurement of virtually all temperature sensors. Measurements of temperatures within a range of -200 and +2400 °C can be made, for example in air-conditioning and process engineering. Sensor break and sensor short-circuit are signaled and can be used as safety functions. By PT-sensors different connections can be selected: 2-, 3-, 4-wire system. The measuring line of the 3- or 4-wire connection is detected on wire break or short-circuits.

Further temperature sensor cams can be produced by a table of value and assigned to the transducer by the USB2 Interface in connection with KALIB-Software. Higher functional safety offers the redundant connection of thermocouples to the transducer. Indication of status is signaled by front sided LED. The integrated protective switching with suppressor diode protects the secondary circuit from voltage peaks and transient excess voltage.



MU 1.00 S

Connection diagram:



Input:

Sensor	Measurement range
Type B	400...1820 °C
Type C	400...2300 °C
Type D	400...2400 °C
Type E	-200...1000 °C
Type J	-200...1200 °C
Type K	-200...1372 °C
Type L	-200...900 °C
Type N	-200...1300 °C
Type R	-50...1760 °C
Type S	-50...1760 °C
Type T	-200...400 °C
Type U	-200...400 °C
KTY 81-110..	-58...150 °C
KTY 82-122..	-58...150 °C
KTY 83-110..	-58...150 °C
KT 100/110/130	-58...150 °C
KT 210/230	-58...150 °C
KTY 10/11/13-5..	-58...150 °C
KTY 21/23-5..	-58...150 °C
PTC	
PT100, PT500, PT1000	-200...850 °C
NI100, NI500, NI1000	-58...208 °C
Poti (2-wire) User	0...500 Ω / 5 kΩ

Additional temperature sensor cams can be created by using KALIB-Software.

Temperature compensation:
 - internal: ± 1 K typ., max $\pm 1,2$ K
 - external: to be recommended at high temperature thermocouples

Redundancy at thermocouples:
 - thermocouple TC1 has priority over TC2
 - at deviation TC1 to TC2 > 30 °C warning via LED

Input resistance: approx. 1 MΩ at thermocouples

Sampling cycle: approx. 100 ms int.
 limiting frequency: approx. 0,5 Hz

connection: terminal 5, 6, 7, 8
 PT- 2/3/4 wire, at 2-wire measurement with offset correction

Output:

I: load-independent DC current: 0(4)...20 mA
 connection: terminal 3 -, 4 +
 permissible load max. 400 Ω

U: load-independent DC voltage: 0(2)...10 V
 connection: terminal 3 -, 4 +
 permissible load ≥ 2 kΩ

Adjustment:

Measuring ranges and parameterization are adjustable by KALIB-Software. For this you need a PC as well as the interface adapter **USB2/ USB-Simulator** with **KALIB-Software**.

Display:

LED status: green, active
 green, flashing
 input signals are in standard range, device ready for use
 input out of predetermined limits
 or exceeding of measuring range or sensor error

Environmental conditions:

Storage temperature: -40...+70 °C
 Operating temperature: 0...55 °C
 Isolation voltage:
 2,5 kV eff. 1 sec. input-output
 2,5 kV eff. 1 sec. auxiliary voltage

Directive:

EMC Directive: 2014/30/EU*
 Low Voltage Directive: 2014/35/EU
 *minimum deviations possible during HF-radiation influence

Auxiliary power:

24 V DC: 20...30 V DC
 < 1,5 W

Influence of auxiliary power: < 0,1 %

Mounting details:

Housing for top hat rail
 Type of protection: IP 20
 Mounting rail fixed according to EN 50022-35 x 6,2 mm
 Width: 6,2 mm
 Weight: 55 g
 Material: Polyamide PA
 Flammability class: V0 (UL 94)
 Approval: CE
 Connection: screw clamps
 0,14...2,5 mm²

Characteristics of transmission:

Transmission error: < 0,12 %
 Resolution: 0,1 °C, 16 bit
 Linearity error: < 0,03 %
 Temperature error: < 30 ppm/ K
 Load influence I: < 0,07 %
 of final value
 Load influence U: < 0,15 % at 2 kΩ load

Please check parameterization before initial operation!

Ordering information:

Type: MU 1.00 S 24 V DC Universal
MU 1.01 S 24 V DC only PT100, NI, KTY, Poti
MU 1.08 S 24 V DC only thermocouples

Accessories: USB2/ USB-Simulator with KALIB-Software, manual

Schuhmann GmbH & Co. KG
 Römerstraße 2
 D-74363 Güglingen
 Tel. + 49 71 35 50 56
 Fax + 49 71 35 53 55
 www.schuhmann-messtechnik.de



FEATURES

- **Input, switchable:**
PT 100, PT 500, PT 1000, Ni 1000,
resistor up to 5 kΩ in 2-, 3- or
4-wire technology
- **Output, simultaneous:**
Current 0(4)...20 mA (active or
passive) and Voltage 0(2)...10 V
- **Potential-free relay output for
the detection of sensor errors**
- **Range, limit and offset
setting options**
- **Galvanic 4-way isolation**



FUNCTION

The MPU 1.00 GW is processing PT 100, PT 500, PT 1000 and Ni 1000 signals as well as resistors up to 5 kΩ.

It is used for the precise measurement of temperature with resistance thermometers in 2-, 3- or 4-wire technology.

Its outputs can do current (active or passive) and voltage simultaneous.

Additionally adjustable are minimum and maximum limits for the output signal.

A potential-free relay is available for the monitoring of sensor errors, which can be operated inverted or non-inverted.

The selection of the values, the operation/ setting/ parameterization for

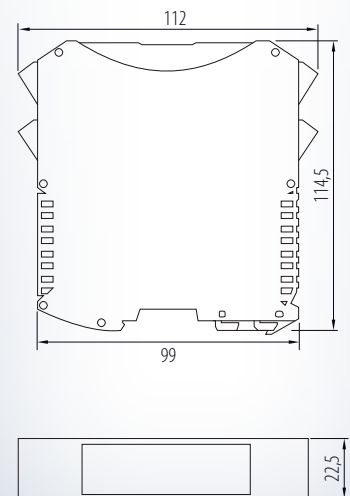
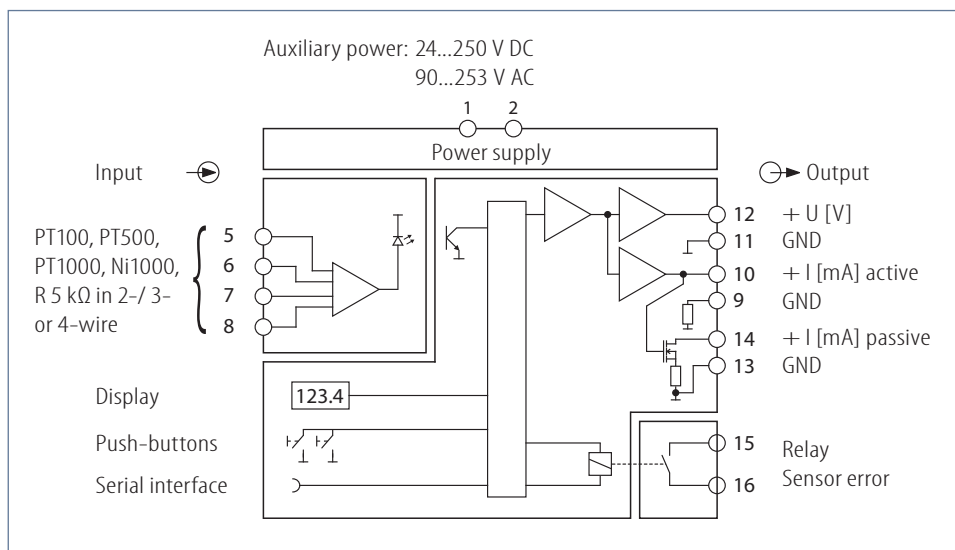
Input:

- measuring and temperature range
- 2-, 3-, 4-wire
- zero point correction for 2-wire measurement

Output:

- minimum and maximum limits
- relay (inverted or non-inverted)

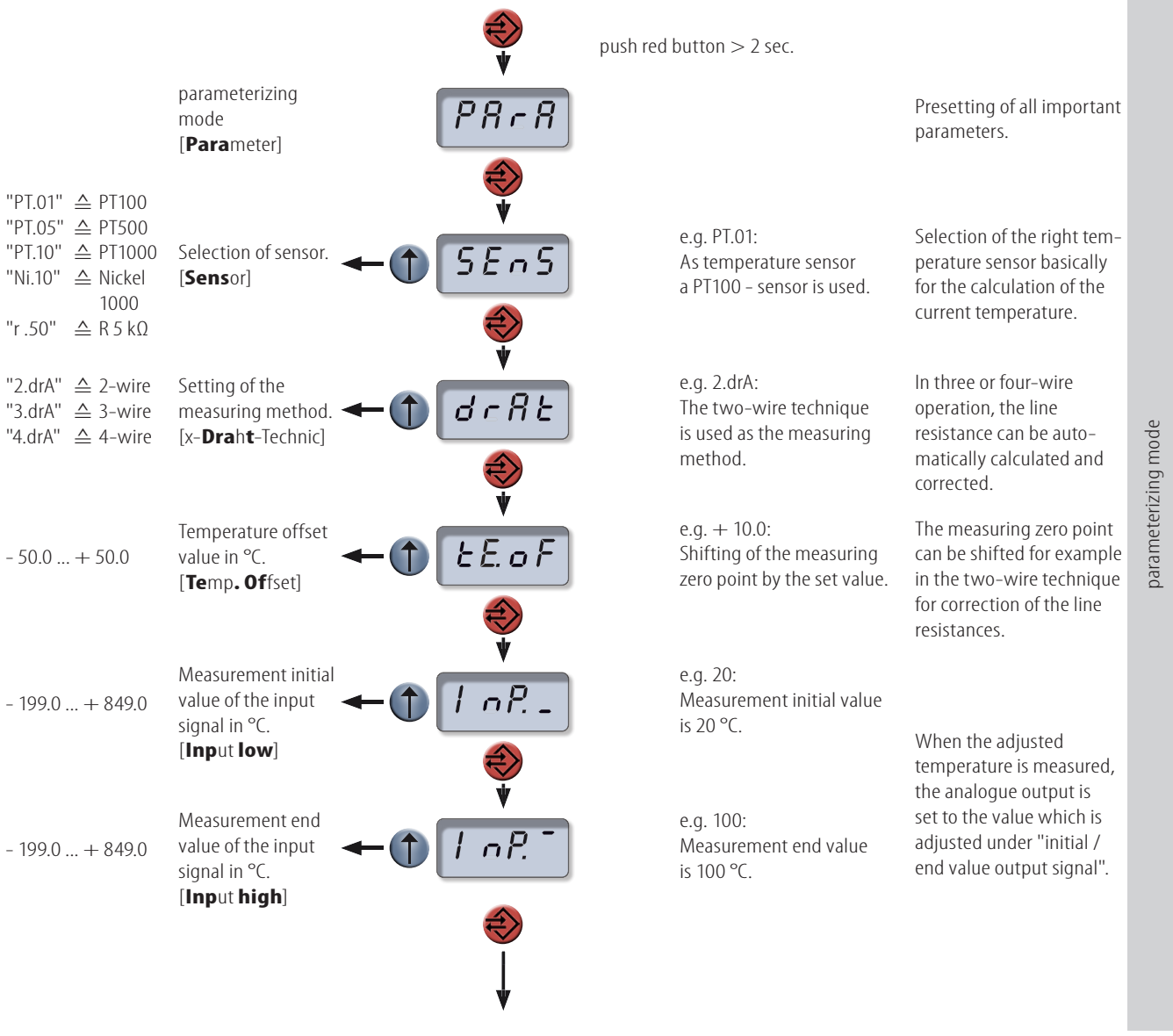
is made either with the front panel push-buttons with inclusion of the display, or with the USB2 interface adapter resp. USB-Simulator in connection with the KALIB-Software.





OVERVIEW-MENU

adjustable range	function	display* ¹	example	description
	Actual value display as well as error indication (Err) for sensor error.		example	
	Out of range		no range error	
	Output sensor error relay switching status (can also be switched in error-free state -> inverted)		range error	
			relay contact open	relay contact closed
			(relay contacts only refer to sensor errors, not range errors)	



Legend: selection next

*¹ There is a constant change between the actual indicated value and the display of the menu item.



OVERVIEW-MENU

adjustable range	function	display ^{*1}	example	description
"UoLt" \triangleq Volt "nnA" \triangleq mA "ProZ" \triangleq Percent	Display for analog output U [V]/I [mA]/ % [Display]		e.g. nnA: Values in the display refer to the unit "mA".	The values which are set in the following five menus refer to the unit set in this menu.
U: -0,3 ... + 10,7 I: -0,5 ... + 21,4 %: -3,0 ... + 107,0	Initial value output signal U [V]/I [mA]/ % [Output Anfang]		e.g. Output voltage (U): 1 \triangleq output voltage 1 V, if actual temp. is on measurement initial value.	<p>The unit of the value to be entered refers to the preselection of the display (diSP); U/ I or %.</p> <p>However, the current and voltage are always applied simultaneously to the corresponding terminals.</p> <p>All values are to consider absolute, i.e. 0...100 % \triangleq 0...20 mA \triangleq 0...10 V.</p>
U: -0,3 ... + 10,7 I: -0,5 ... + 21,4 %: -3,0 ... + 107,0	End value output signal U [V]/I [mA]/ % [Output Ende]		e.g. Output current (I): 17 \triangleq output current 17 mA, if actual temp. is on measurement end value.	
U: -0,3 ... + 10,7 I: -0,5 ... + 21,4 %: -3,0 ... + 107,0	minimal output signal U [V]/I [mA]/ % [Output Limit low]		e.g. Output voltage (U): 3 \triangleq minimal output voltage 3 V	
U: -0,3 ... + 10,7 I: -0,5 ... + 21,4 %: -3,0 ... + 107,0	maximum output signal U [V]/I [mA]/ % [Output Limit high]		e.g. Output current (I): 15 \triangleq maximum output current 15 mA	
U: -0,3 ... + 10,7 I: -0,5 ... + 21,4 %: -3,0 ... + 107,0	Output signal at sensor error U [V]/I [mA]/ % [UI. Error]		e.g. Output percent (%): 75 \triangleq 75 % of the output current or voltage (based on 0...20 mA / 0...10 V) at sensor error	
0 ... 999	Damping of the input signal in sec. [Damping]		e.g. 10: 10 sec. until the output has reached the level.	

parameterizing mode

Legend: selection next

*1 There is a constant change between the actual indicated value and the display of the menu item.



OVERVIEW-MENU

<i>adjustable range</i>	<i>function</i>	<i>display*¹</i>	<i>example</i>	<i>description</i>
"on.Er" / "oF.Er"	Relay state at sensor error. [Relay]		e.g. "on.Er": Relay contact closes at sensor error.	Relay state at sensor error -> can be operated inverted or non-inverted.
	End [End]			End of parameterization mode -> back to display mode

parameterizing mode

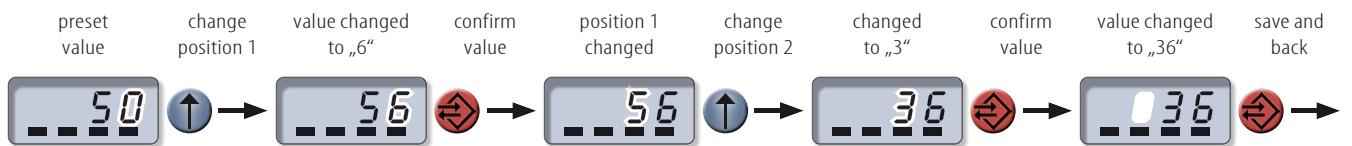
Legend: selection next

*¹ There is a constant change between the actual indicated value and the display of the menu item.

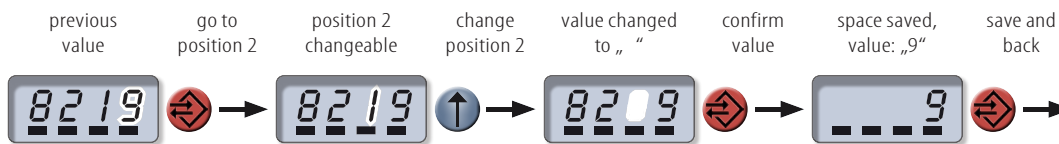


CHANGE VALUE (select to change the menu item):


change value:





delete positions:








Operating instructions:

The displayed position gets changed with the push-button .

Values such as  to , minus  and space (end of input)  are possible.

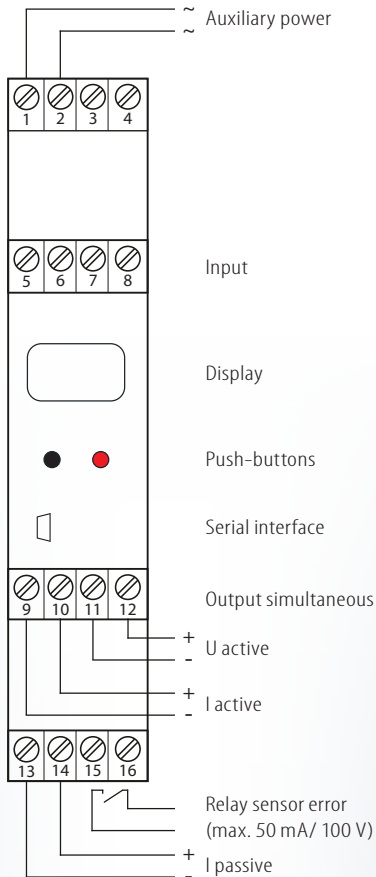
Use the push-button  to confirm the actual position and go to the next or return to the next menu item after changing the last position. To abort, push and hold the button  longer.

Legend:

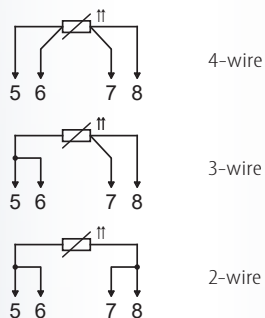
-  number blinks on display
-  minus blinks on display
-  space (blank position)
-  selection
-  confirm

MPU 1.00 GW

Connection diagram:



Input sensor:
PT100 / PT500 / PT1000 / Ni1000 / R 5 kΩ



Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen

Tel. +49 71 35 50 56

E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de

Input:

temperature sensor: PT100, PT500, PT1000, Ni1000, R 5 kΩ in 2-/ 3- or 4-wire
ranges: PT100/ 500/ 1000: -199 ... +849 °C
Ni1000: -58 ... +208 °C
R 5 kΩ: 0 ... 5250 Ω

connection: terminal 5, 6, 7, 8

Output:

I: load-independent DC current: 0(4)...20 mA permissible load max. 500 Ω
connection: terminal 9 -, 10 +

or:

loop-powered DC current: 0(4)...20 mA max. permissible voltage 30 V
connection: terminal 13 -, 14 +

Caution: do not use output I active (load-independent) and I passive (loop pow.) at the same time!

U: load-independent DC voltage: 0(2)...10 V permissible load ≥ 3 kΩ simultaneous
connection: terminal 11 -, 12 + ≥ 1 kΩ exclusive

The maximum limits for current and voltage output are fixed at 21,4 mA respectively 10,7 V.
The maximum load for the relay sensor error is 50 mA/ 100 V.

Adjustment:

The parameterization will be carried out for commissioning via the front-panel push-buttons or the KALIB-Software (see "OVERVIEW-MENU"). For this you need a PC as well as the interface adapter **USB2/ USB-Simulator** with **KALIB-Software**.

- [SEnS] -> Selection of sensor (PT100, PT500, PT1000, Ni1000, R 5 kΩ)
- [drRE] -> Setting of the measuring method (2-/ 3- oder 4-wire technology)
- [TEoF] -> Temperature offset value in °C
- [I nP.] -> Measurement initial value of the input signal in °C
- [I nP.~] -> Measurement end value of the input signal in °C
- [di SP] -> Display for analogue output (U [V]/ I [mA]/ %)
- [o.R nF] -> Initial value output signal (U [V]/ I [mA]/ %)
- [o.E n d] -> End value of the output signal (U [V]/ I [mA]/ %)
- [o.L, .] -> minimum output signal (U [V]/ I [mA]/ %)
- [o.L, ~] -> maximum output signal (U [V]/ I [mA]/ %)
- [U|, Er] -> Output signal at sensor error (U [V]/ I [mA]/ %)
- [dRiP] -> Damping of the input signal in sec.
- [rEl.] -> Relay status at sensor error (inverted or non-inverted)

Factory setting: sensor PT 100; measuring range 0...100 °C \triangleq output 0,0...20,0 mA

Environmental conditions:

Storage temperature: -40...+70 °C
Operating temperature: 0...55 °C
Isolation voltage: 4 kV eff. 1 sec.
auxiliary power
2,5 kV eff. 1 sec.
input-output-relay

Auxiliary power:

Wide range: 24...250 V DC
90...253 V AC
< 3 W

Influence of auxiliary power: < 0,1 %

Characteristics of transmission:

Transmission error: < 0,2 %
Linearity error: < 0,2 %
Temperature error: < 100 ppm/K
Load influence I: < 50 ppm
of final value
Load influence U: < 50 ppm at 1 kΩ load
Setting time: < 500 msec.

Directive:

EMC Directive: 2014/30/EU*
Low Voltage Directive: 2014/35/EU
*minimum deviations possible during HF-radiation influence

Mounting details:

Housing for top hat rail
Type of protection: IP 30 housing
IP 20 screw clamps
Mounting rail fixed according to
EN 50022-35 x 7,5 mm
Width: 22,5 mm
Weight: 160 g
Material: Polyamide PA
Flammability class: V0 (UL94)
Approval: CE
Connection: screw clamps
 $\leq 2 \times 2,5$ mm²

For safety reasons we recommend to mount the housing for top hat rail with a distance of approx. 5 mm to each other.

Ordering information:

Type: **MPU 1.00 GW** wide range
Accessories: USB2/ USB-Simulator with
KALIB-Software

14.03.2023



FEATURES

- 1 Input, switchable: for 2- and 3-wire resistance transmitter
- Output, simultaneous: Current 0(4)...20 mA and Voltage 0(2)...10 V
- Fine-adjustment of offset and gain by trimmer
- Galvanic 3-way isolation

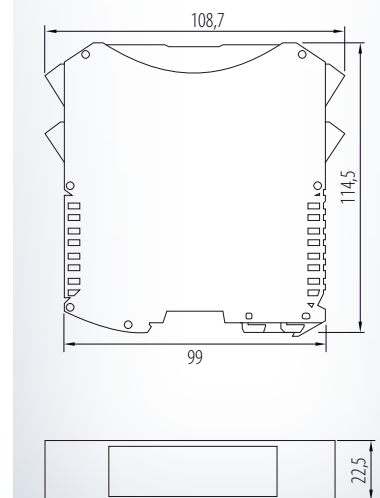
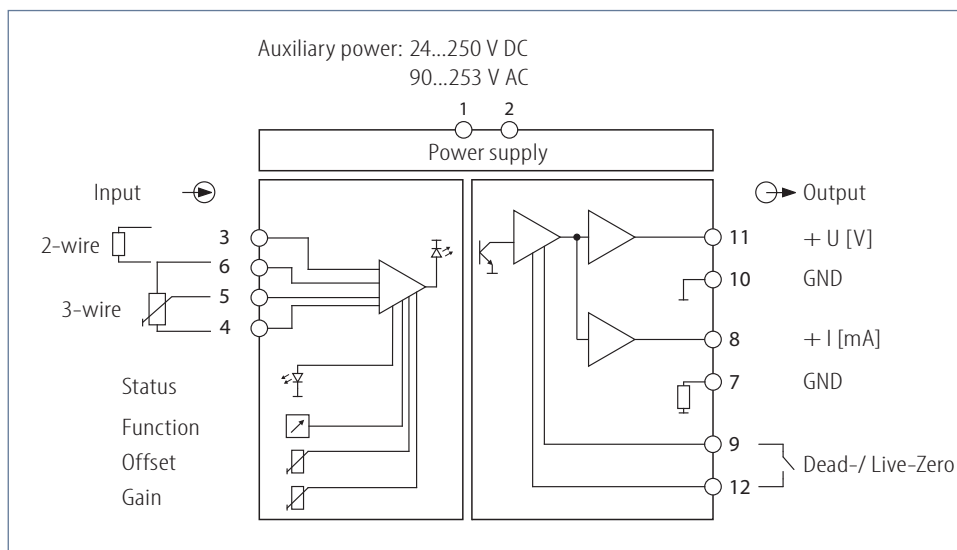


FUNCTION

The WU 39.00 GW converts the value of resistance input into a linear current and voltage signal and is used for e.g. analysis of position meters, filling-level meters etc. The line resistance can be compensated by a zero and range trimmer.

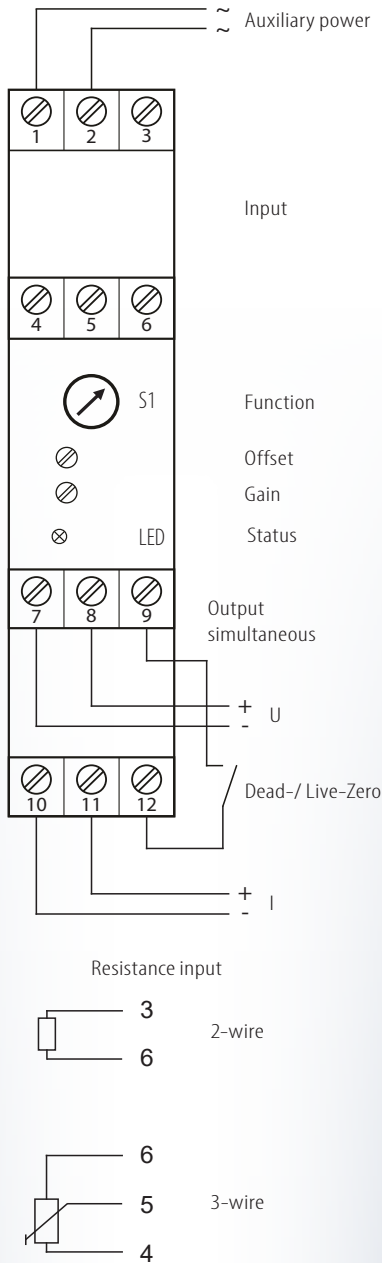
At the input a potentiometer or a resistance transmitter in 2-wire or 3-wire technique can be connected. In 3-wire technique, any transmitter in a range between 200 Ω...1 MΩ can be used.

The desired adjustments can be chosen from the table on the side and switched to different characteristics of transmission by turn-switch on front side. The device is equipped with a simultaneous output for current and voltage.



WU 39.00 GW

Connection diagram:



Input:

Resistance sensor: 2-/ 3-wire switchable by turn switch
 connection: terminal 3, 4, 5, 6

Adjustment:

Input ranges selectable by front side turn switch S1:

Position	Range	Type
0	0...50 kΩ	2-wire connection
4	0...10 kΩ	2-wire connection
6	0...5 kΩ	2-wire connection
7	0...1 kΩ	2-wire connection
8	200 Ω...1 MΩ at 0...100 %	3-wire connection

Measuring range errors at change-over of the individual measuring ranges ≤ 0,5 %.

Output:

I: load-independent DC current: 0(4)...20 mA permissible load max. 580 Ω
 connection: terminal 10 -, 11 +
 U: load-independent DC voltage: 0(2)...10 V permissible load ≥ 5 kΩ at simultaneous operation
 permissible load ≥ 1 kΩ exclusive

Gain adjustment: trimmer ± 15 %
 Offset adjustment: trimmer ± 30 %
 connection: terminal 7 -, 8 +

Output ranges switchable by connection of terminal 9 + 12 (Dead-/ Live-Zero):

Terminal 9/ 12	Output voltage	Output current
Open*	0...10 V	0...20 mA
Closed	2...10 V	4...20 mA

* factory setting

Display:

LED status: green, active device ready for use

Environmental conditions:

Storage temperature: -40...+70 °C
 Operating temperature: 0...55 °C
 Isolation voltage:
 4 kV eff. 1 sec. input/ output
 3,75 kV eff. 1 sec. auxiliary power

Auxiliary power:

Wide range: 24...250 V DC
 90...253 V AC
 < 3 W

Influence of auxiliary power: < 0,1 %

Characteristics of transmission:

Transmission error: < 0,2 %
 Linearity error: < 0,2 %
 Temperature error: < 100 ppm/K
 Load influence I: < 50 ppm of final value
 Load influence U: < 50 ppm at 1 kΩ load
 Setting time: < 500 msec.

Directive:

EMC Directive: 2014/30/EU*
 Low Voltage Directive: 2014/35/EU
 *minimum deviations possible during HF-radiation influence

Mounting details:

Housing for top hat rail
 Type of protection: IP 20 housing
 IP 20 clamps
 Rail-mounting fixed according to EN 50022-35 x 7,5 mm
 Width: 22,5 mm
 Weight: 140 g
 Material: Polyamide PA
 Flammability class: V0 (UL94)
 Approval: CE
 Connection: screw clamps
 ≤ 2,5 mm²

For safety reasons we recommend to mount the housing for top hat rail with a distance of approx. 5 mm to each other. Please check switch position before initial operation!

Ordering information:

Type: WU 39.00 GW wide range

Schuhmann GmbH & Co. KG
 Römerstraße 2
 D-74363 Güglingen
 Tel. +49 71 35 50 56
 E-mail: info@schuhmann-messtechnik.de
 www.schuhmann-messtechnik.de



Resistance Measuring Transducer with Special Input

WU 39.04 GW

FEATURES

- **1 Input, switchable:**
for 2-wire resistance transmitter
0...2 kΩ / 0...10 kΩ / 0...20 kΩ /
0...100 kΩ
- **Output, simultaneous:**
Current 0(4)...20 mA and
Voltage 0(2)...10 V
- **Fine-adjustment of**
offset and gain by trimmer
- **Galvanic 3-way isolation**

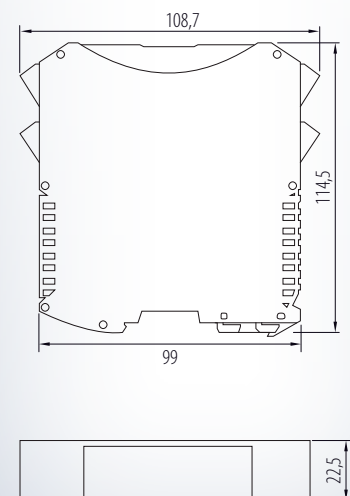
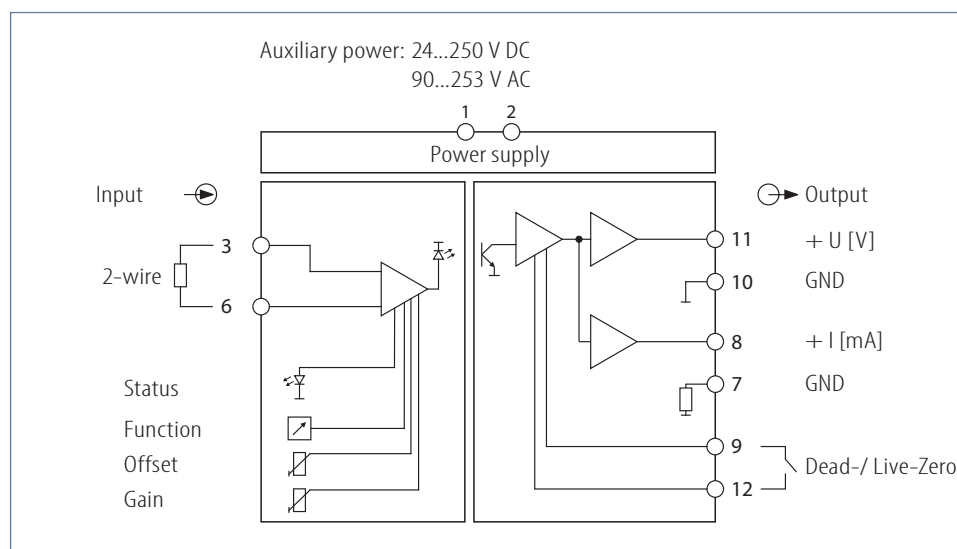


FUNCTION

The WU 39.04 GW converts the value of resistance input into a linear current and voltage signal and is used for e.g. analysis of position meters, filling-level meters etc. The line resistance can be compensated by a zero and range trimmer. At the input a potentiometer or a resistance transmitter in 2-wire technique can be connected.

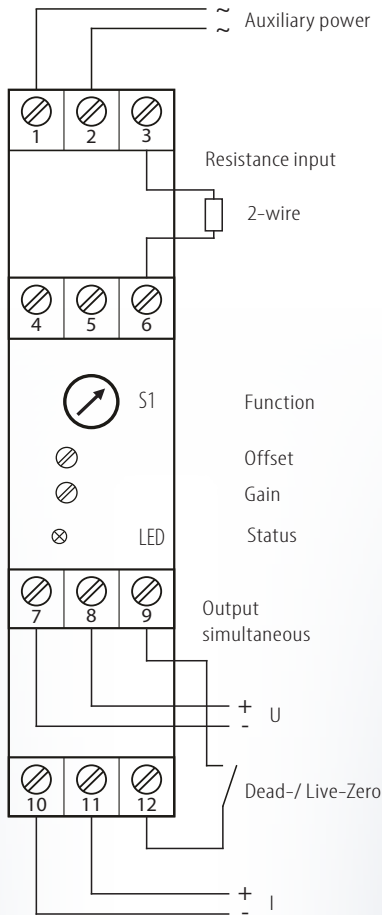
On the input side there are the calibrated special measuring ranges 0...2 kΩ / 0...10 kΩ / 0...20 kΩ and 0...100 kΩ available. These can be chosen from the table on the side and switched by turn-switch on front side.

The device is equipped with a simultaneous output for current and voltage.



WU 39.04 GW

Connection diagram:



Input:

Resistance sensor: 2-wire switchable by turn switch
 connection: terminal 3, 6

Adjustment:

Input ranges selectable by front side turn switch S1:

Position	Range	Type
0	0...100 kΩ	2-wire connection
4	0...20 kΩ	2-wire connection
6	0...10 kΩ	2-wire connection
7	0...2 kΩ	2-wire connection

Measuring range errors at change-over of the individual measuring ranges ≤ 0,5 %.

Output:

I: load-independent DC current: 0(4)...20 mA permissible load max. 580 Ω
 connection: terminal 10 -, 11 +

U: load-independent DC voltage: 0(2)...10 V permissible load ≥ 5 kΩ at simultaneous operation
 permissible load ≥ 1 kΩ exclusive

Gain adjustment: trimmer ± 15 %
 Offset adjustment: trimmer ± 30 %
 connection: terminal 7 -, 8 +

Output ranges switchable by connection of terminal 9 + 12 (Dead-/ Live-Zero):

Terminal 9/ 12	Output voltage	Output current
Open*	0...10 V	0...20 mA
Closed	2...10 V	4...20 mA

* factory setting

Display:

LED status: green, active device ready for use

Environmental conditions:

Storage temperature: -40...+70 °C
 Operating temperature: 0...55 °C
 Isolation voltage:
 4 kV eff. 1 sec. input/ output
 3,75 kV eff. 1 sec. auxiliary power

Auxiliary power:

Wide range: 24...250 V DC
 90...253 V AC
 < 3 W

Influence of auxiliary power: < 0,1 %

Characteristics of transmission:

Transmission error: < 0,2 %
 Linearity error: < 0,2 %
 Temperature error: < 100 ppm/K
 Load influence I: < 50 ppm of final value
 Load influence U: < 50 ppm at 1 kΩ load
 Setting time: < 500 msec.

Directive:

EMC Directive: 2014/30/EU*
 Low Voltage Directive: 2014/35/EU
 *minimum deviations possible during HF-radiation influence

Mounting details:

Housing for top hat rail
 Type of protection: IP 20 housing
 IP 20 clamps
 Rail-mounting fixed according to EN 50022-35 x 7,5 mm
 Width: 22,5 mm
 Weight: 140 g
 Material: Polyamide PA
 Flammability class: V0 (UL94)
 Approval: CE
 Connection: screw clamps ≤ 2,5 mm²

For safety reasons we recommend to mount the housing for top hat rail with a distance of approx. 5 mm to each other. Please check switch position before initial operation!

Ordering information:

Type: WU 39.04 GW wide range

Schuhmann GmbH & Co. KG
 Römerstraße 2
 D-74363 Güglingen
 Tel. + 49 71 35 50 56
 E-mail: info@schuhmann-messtechnik.de
 www.schuhmann-messtechnik.de



Title	Specification	PC-Interface	Available designs	Auxiliary power	Page
USB INTERFACE ADAPTER					
incl. the free „KALIB-Software“ for common Windows Operating Systems on CD as well as for download. It supports (32-bit and 64-bit): Windows XP, Windows Vista, Windows 7, Windows 8, Windows 8.1, Windows 10					
USB2	interface adapter with galvanic isolation of 3 kV	X			09-01
USB-Simulator	input (metering): -20...0...+20 mA / -10...0...+10 V output (simulation): 0...20 mA active 0...20 mA passive 0...10 V active Interface for all parameterizable Schuhmann products, incl. measuring lines and case.	X			05-01
MEASUREMENT CONVERTER					
Temperature Frequency Converter, PT 100 input, parameterizable					
AF 29.01 GDC	input 1/ 2: -50...+500 °C, PT 100 output: transistor 0...5,5 kHz	X	G 22,5	20...30 V DC	09-03
MEASURING POINT SWITCH					
multiplexer for extending the analog inputs of a PLC, selection switch for displays					
MUX 25.00 MDC	input: 4 x ±70 mA or ±12 V, channel selection by two address lines, output: selected input		G 12,5	20...30 V DC	09-05
POWER SUPPLY					
output simultaneous: current max. 22 mA, voltage max. 26 V, integrated current and voltage limitation, supply of 2-, 3- and 4-wire transducers					
NG 15.00 MW	current: maximal 22 mA, voltage: maximal 26 V		G 12,5	24...250 V DC, 90...253 V AC	09-07
Process Indicator with Profibus Interface					
BP-AZ 31 UC	6-digit 7 segment LED display with 2 additional status LED's, red		T	20...30 V AC / DC	09-09
BP-AZ 31 UC-GR	6-digit 7 segment LED display with 2 additional status LED's, green		T	20...30 V AC / DC	09-09

* Designs: G = housing,
T = housing for door installation,
E = eurocard

3 Year
Warranty

3 Year
Warranty

FEATURES

- Galvanic isolation of 3 kV between PC and connected device
- USB 2.0 B
- No additional auxiliary power required
- Status indication via 3 LEDs
- with driver and KALIB-Software, suitable for Windows 8, 8.1, 10



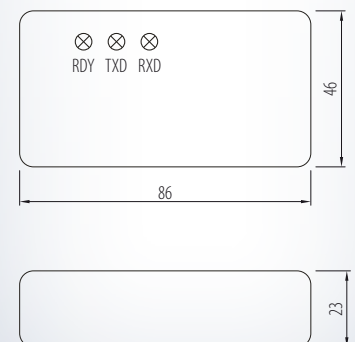
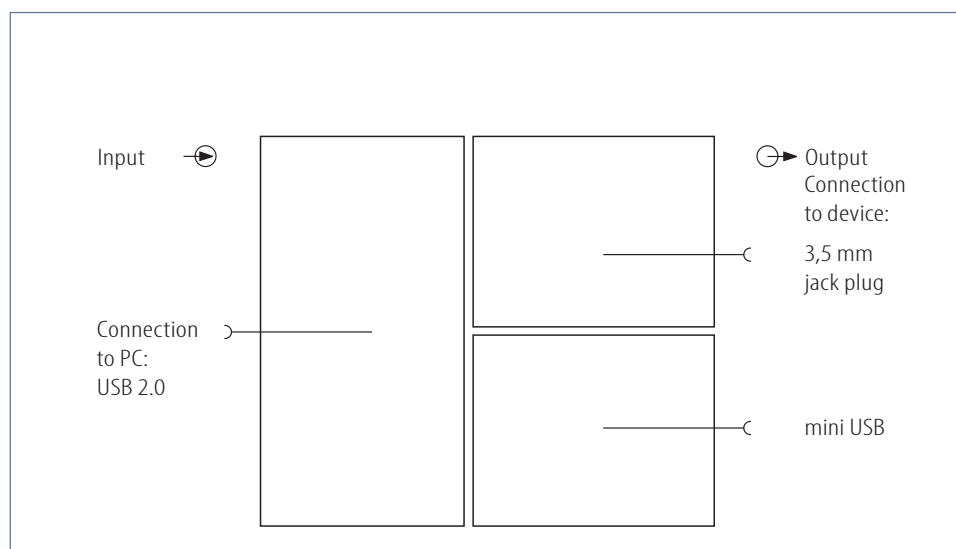
FUNCTION

To set up the parameterizable Schuhmann devices* the USB2 interface in connection with the KALIB-Software is required. The current overview of these devices is available on our homepage. The adapter serves as an interface between the PC and the connected device. The TTL signal of the Schuhmann device will be digitally prepared and then transferred by an optical coupler to the PC. With the KALIB-Software the following parameter can be defined: input, measuring start, measuring end, attenuation, failure limit etc. The settings can be saved in a file and easily transferred to further units.

Due to the galvanic isolation between device and computer potential delays as well as short-circuits of the normally earthed PC will be avoided. Most of the devices to be programmed* are supplied with power via the USB2 interface.

Caution: KALIB-Software and the USB-Driver have to be installed before the adapter will be connected to the PC.

* the overview of these devices is available on our website



USB2

Input:

USB2 interface for the connection with the PC.

Directly fed by PC:

auxiliary power:	5 V DC
current consumption:	max. 60 mA
protocol:	USB 2.0 B

Output:

TTL- respectively USB interface for the connection with the PC:

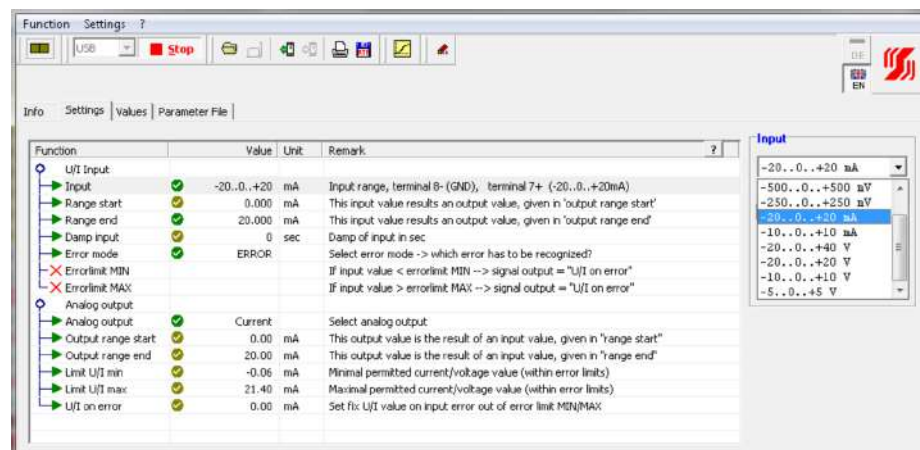
connections:	3,5 mm jack plug mini-USB
--------------	------------------------------

Display:

LED RDY:	green, active	USB communication with the PC in order (driver loaded)
LED TXD:	red, active	data sent from PC to the device
LED RXD:	red, active	PC receives data from the device

Included in delivery:

USB-Adapter:	USB2
PC-cable:	USB-cable type A/B (length approx. 2 m)
Device-cable:	mini-USB-cable type A/B (length approx. 2 m)
Software:	KALIB-Software (parameterization software) USB driver (suitable for Windows 8, 8.1, 10; each with 32- and 64-bit)



Environmental conditions:

Storage temperature:	-40...+70 °C
Operating temperature:	0...55 °C
Isolation voltage:	3 kV eff. 1 sec. input-output

Directive:

EMC Directive:	2014/30/EU*
Low Voltage Directive:	2014/35/EU
*minimum deviations possible during HF-radiation influence	

Mounting details:

Type of protection:	IP 20 housing
Dimension:	86 x 46 x 23 mm
Weight:	50 g
Material:	Polycarbonate (PC)
Flammability class:	V0 (UL94)
Approval:	CE
Connection:	cable

Ordering information:

Type: USB2

Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen
Tel. + 49 71 35 50 56

E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de



2-channel Temperature Frequency Converter

AF 29.01 GDC

FEATURES

- **2 Inputs:**
PT 100, 3-wire
- **2 Outputs:**
transistor output 24 V to 5 kHz
- **Indication of operation condition**
by 2 color LED per channel
- **Parameterization via PC-interface**
- **Galvanic 2-way isolation**
of 4 kV



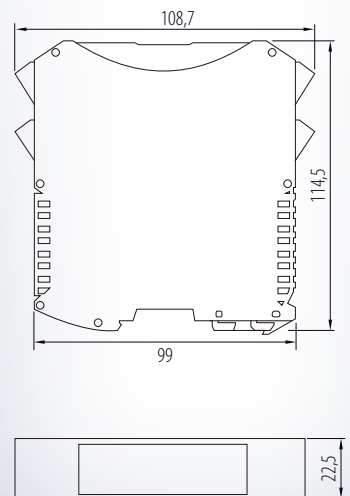
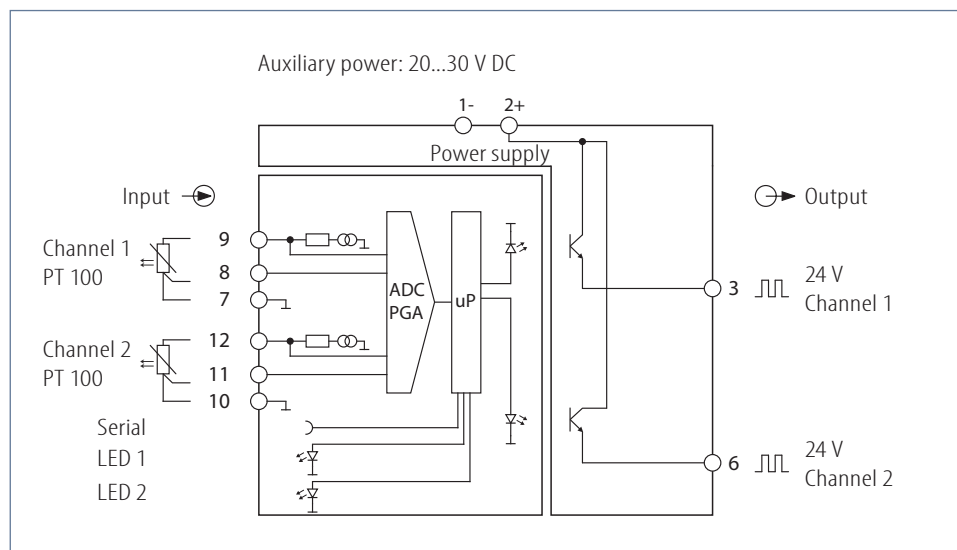
FUNCTION

The Temperature Frequency Converter is used to convert a PT 100 value of resistance into a frequency. Both 3-wire inputs the PT 100 value of resistance get collected and digitised. The measured values will be linearised and scaled according to the settings. This value is being converted into a continuous frequency which can subsequent processed as a 24 V signal at the output by a optocoupler.

With the USB2 Interface in connection with KALIB-Software a frequency range between 0...5000 Hz for -50°C (zero point) plus 500 °C (terminal value) can be selected.

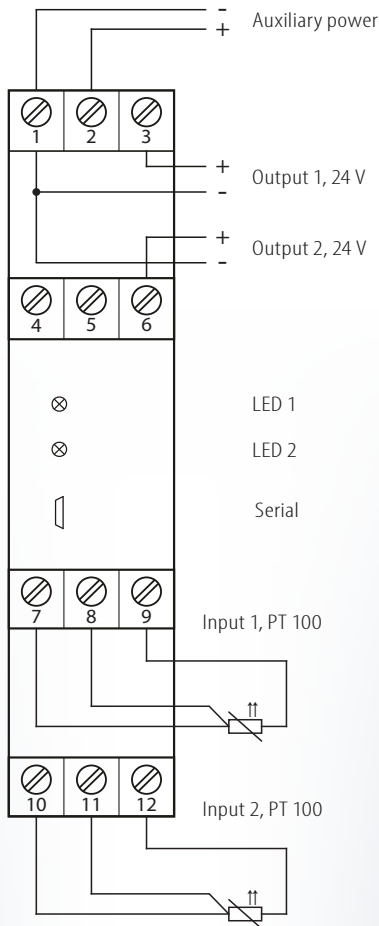
The frequency for sensor break/ short-circuit is adjustable.

The AF 29.01 GDC has 2 transistor outputs whose indication of operation is displayed by 2 LEDs on front side.



AF 29.01 GDC

Connection diagram:



Input:

2 x temperature:

Type:	PT 100, 3-wire
Measuring range:	-50...0...500 °C
measuring current:	approx. 2 mA
connection channel 1:	terminal 7 (-R), 8 (sense), 9 (+R)
connection channel 2:	terminal 10 (-R), 11 (sense), 12 (+R)

Output:

2 x transistor output:	24 V DC output signal, galvanic connected with the auxiliary power
load:	max. 50 mA
connection channel 1:	terminal 1 -, 3 +
connection channel 2:	terminal 1 -, 6 +

Adjustment:

Measuring ranges, switching points and parameterization are adjustable by KALIB-Software. For this you need a PC as well as the interface adapter **USB2/ USB-Simulator** with **KALIB-Software**.

Both outputs are parameterisable together (same settings for channel 1 and 2):

Input start:	-50...+500 °C	(factory setting: 0°C)
Input end:	-50...+500 °C	(factory setting: 400°C)
Frequency start:	0...5500 Hz	(factory setting: 0 Hz)
Frequency end:	0...5500 Hz	(factory setting: 4000 Hz)
Frequency at sensor break/ short circuit:	0...5500 Hz	(factory setting: 0 Hz)

Display:

LED 1, 2:	green, active red, orange active	impulse display channel 1, 2 input outside of input measuring range or failure by sensor break/ short circuit, signal output is the frequency set point at failure
-----------	-------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Environmental conditions:

Storage temperature:	-40...+70 °C
Operating temperature:	10...55 °C
Isolation voltage:	4 kV eff. 1 sec. input-auxiliary power

Auxiliary power:

24 V DC:	20...30 V DC < 3 W
Influence of auxiliary power:	< 0,1 %

Characteristics of transmission:

Transmission error:	< 0,1 %
Linearity error:	< 0,3 %
Temperature error:	< 100 ppm/K
Setting time:	< 2 sec.

Directive:

EMC Directive:	2014/30/EU*
Low Voltage Directive:	2014/35/EU
*minimum deviations possible during HF-radiation influence	

Mounting details:

Housing for top hat rail	
Type of protection:	IP 20 housing IP 20 clamps
Rail-mounting fixed according to	EN 50022-35 x 7,5 mm
Width:	22,5 mm
Weight:	140 g
Material:	Polyamide PA
Flammability class:	V0 (UL94)
Approval:	CE
Connection:	screw clamps ≤ 2,5 mm ²

For safety reasons we recommend to mount the housing for top hat rail with a distance of approx. 5 mm to each other. Please check switch position before initial operation!

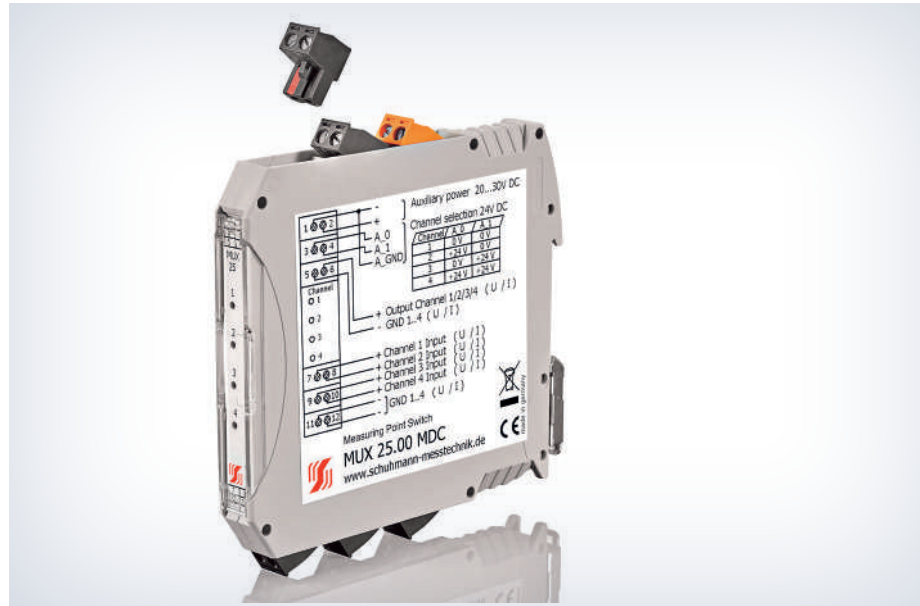
Ordering information:

Type:	AF 29.01 GDC 24 V DC
Accessories:	USB2/ USB-Simulator with KALIB-Software

Schuhmann GmbH & Co. KG
Römerstraße 2
D-74363 Güglingen
Tel. + 49 71 35 50 56
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de

FEATURES

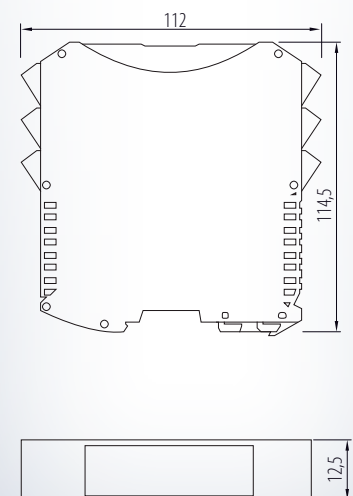
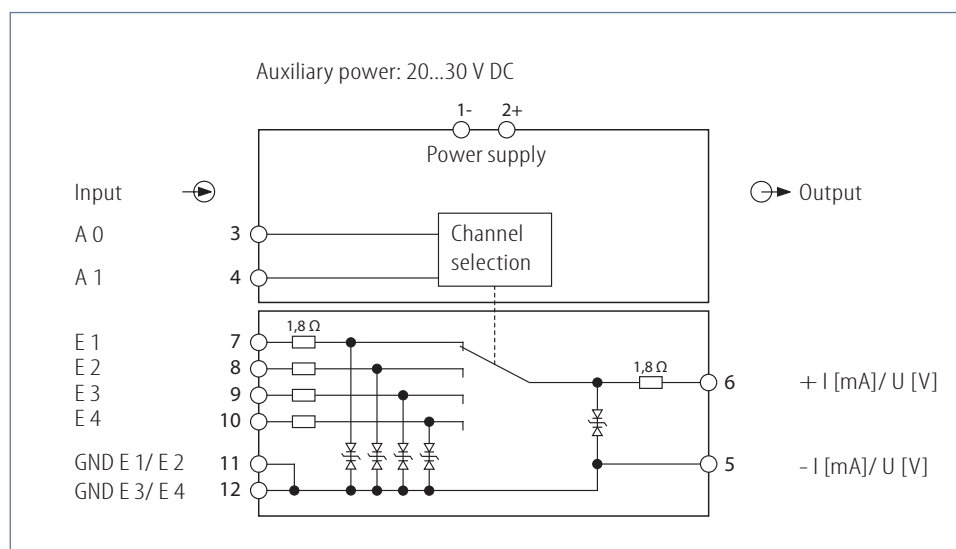
- 4 inputs:
current ± 70 mA or
voltage ± 12 V
- 1 output
- Switch by 2 control signals
- Galvanic 2-way isolation
of 2,5 kV



FUNCTION

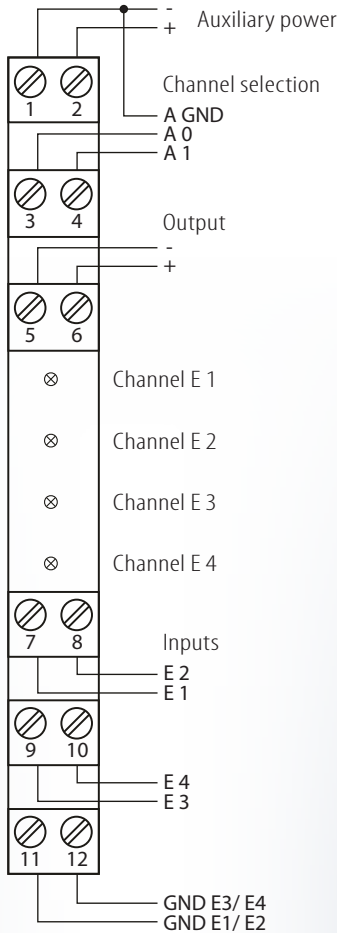
The multiplexer MUX 25.00 MDC provides the expandability of the analog inputs at a PLC. It has 4 inputs which can process analog signals like currents and voltages. Because of the channel selection by two address lines (e.g. 2 digital PLC outputs) is one of the 4 inputs connected through to the output.

The output is galvanically connected with the input. Auxiliary power/ channel selection are galvanically isolated across from the input/ output.



MUX 25.00 MDC

Connection diagram:



Input:

4 inputs E1-E4 usable as current or voltage input:

I: current:	± 70 mA
U: direct voltage:	± 12 V
signal limitation:	± 12 V
connection E1:	terminal 11 -, 7 +
connection E2:	terminal 11 -, 8 +
connection E3:	terminal 12 -, 9 +
connection E4:	terminal 12 -, 10 +

Adjustment:

The channel selection is made by the input A0 and A1:

demand signal:	24 V DC
switching time:	approx. 2 msec.
connection A 0:	terminal 1 -, 3 +
connection A 1:	terminal 1 -, 4 +

In case of working resistance the control response time has to be considered.

Selected input	Control input A1	Control input A0
E 1	0 V	0 V
E 2	0 V	24 V
E 3	24 V	0 V
E 4	24 V	24 V

Output:

Selected input is being put trough to the output directly.

connection: terminal 5 -, 6 +

Environmental conditions:

Storage temperature: -40...+70 °C
 Operating temperature: 10...55 °C
 Isolation voltage:
 2,5 kV eff. 1 sec.
 input/ output
 to auxiliary power/ channel selection

Auxiliary power:

24 V DC: 20...30 V DC
 < 3 W

Characteristics of transmission:

Setting time: < 2 msec.
 Internal resistance: approx. 30 Ohm

Directive:

EMC Directive: 2014/30/EU*
 Low Voltage Directive: 2014/35/EU

*minimum deviations possible during
 HF-radiation influence

Mounting details:

Housing for top hat rail
 Type of protection: IP 30 housing
 IP 20 clamps
 Mounting rail fixed according to
 EN 50022-35 x 7,5 mm
 Width: 12,5 mm
 Weight: 90 g
 Material: Polyamide (PA)
 Flammability class: V0 (UL94)
 Approval: CE
 Connection: pluggable
 screw clamps
 0,2...2,5 mm²

**For safety reasons we recommend to
 mount the housing for top hat rail with a
 distance of approx. 5 mm to each other.**

Ordering information:

Type: MUX 25.00 MDC 24V DC

Schuhmann GmbH & Co. KG
 Römerstraße 2
 D-74363 Güglingen
 Tel. + 49 71 35 50 56
 E-mail: info@schuhmann-messtechnik.de
 www.schuhmann-messtechnik.de

FEATURES

- **Output:**
Current max. 22 mA
Voltage max. 26 V
- **Integrated current and voltage limitation**
- **Supply of 2-, 3- and 4-wire transducers**
- **Pluggable screw-clamps**
- **Galvanic 2-way isolation**



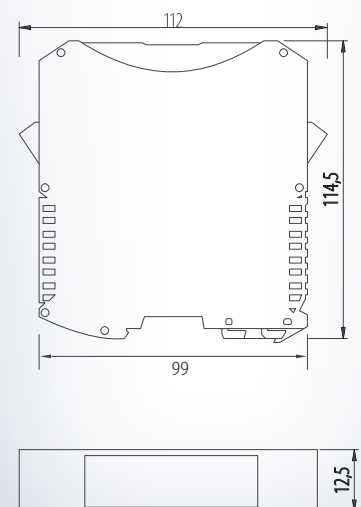
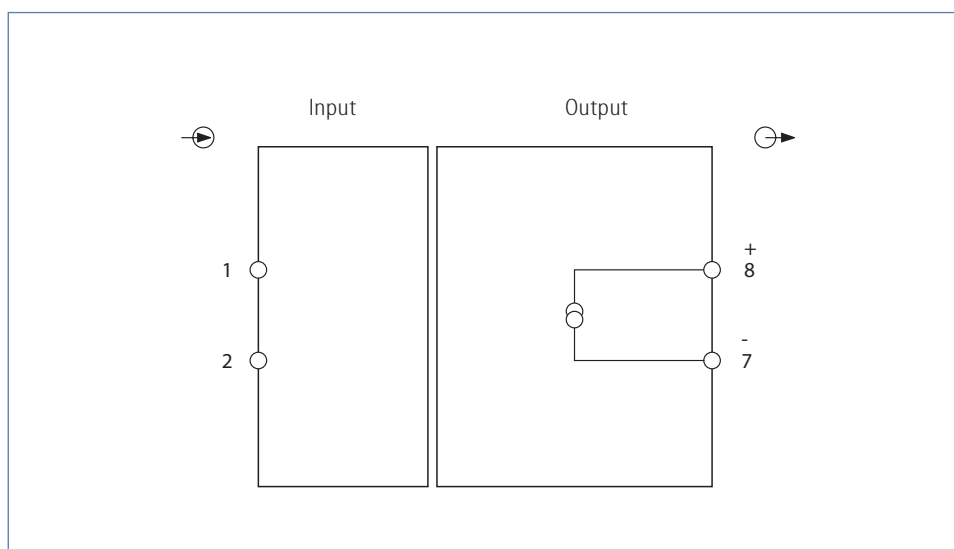
FUNCTION

The NG 15.00 MW is used to supply transmitters with an auxiliary power of 24 V DC. It is a feeding only devices, which is not used for signal evaluation of the measured quantity. The transducer is supplied with 24 V DC/ 20 mA. The integrated current and voltage limiting guarantees that in case of faulty measuring circuit 26 V DC is not exceeded. Due to the galvanic decoupling the measuring circuit is galvanically isolated from the supply circuit. The device is ideal for simple feeding of 2-, 3- and 4-wire transducers whereby not only the supply of the transducer but also a galvanic isolation of auxiliary power is guaranteed.

The feeding device consists of a built-in current source with integrated limiting which provides auxiliary power for the transducer to be connected

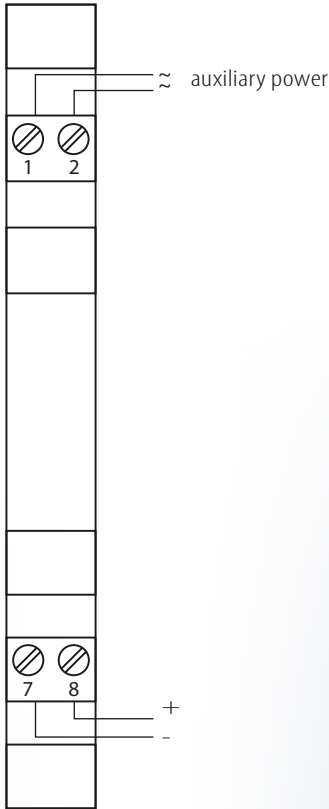
There is a limit to the no-load voltage at 26 V DC. In order to make the respective input short-circuit proof, the electronically limited current source is limiting its output signal – according to type of device – at 22 mA.

The limitation of open-circuit voltage takes place at 26 V DC



NG 15.00 MW

Connection diagram:



Output:

I: maximal 22 mA

U: maximal 26 V

Connection: terminal 7 -, 8 +

Environmental conditions:

Storage temperature: -40...+70 °C
Operating temperature: -40...+55 °C
Isolation voltage:
2,5 kV eff. 1 sec. input/ output
4 kV eff. 1 sec. auxiliary power

Auxiliary power:

Wide range: 24...250 V DC
90...253 V AC
< 3 W
Influence of aux. power: < 0,1 %

Directive:

EMC Directive: 2014/30/EU*
Low Voltage Directive: 2014/35/EU

*minimum deviations possible during
HF-radiation influence

Mounting details:

Housing for top hat rail
Type of protection: IP 30 housing
IP 20 clamps
Rail-mounting fixed according to
EN 50022-35 x 7,5 mm
Width: 12,5 mm
Weight: 90 g
Material: Polyamide (PA)
Flammability class: V0 (UL94)
Approval: CE
Connection: pluggable
screw clamps
0,2...2,5 mm²

**For safety reasons we recommend to
mount the housing for top hat rail with a
distance of approx. 5 mm to each other.**

Ordering information:

Type: NG 15.00 MW wide range

Schuhmann GmbH & Co. KG

Römerstraße 2

D-74363 Güglingen

Tel. + 49 71 35 50 56

E-mail: info@schuhmann-messtechnik.de

www.schuhmann-messtechnik.de

FEATURES

- 6-digit 7 segment LED display with 2 additional status LED's
- Display red or green
- Communication via Profibus-DP 9,6 kBaud...12 MBaud
- Slave-address adjustable on reverse
- Galvanic 3-way isolation

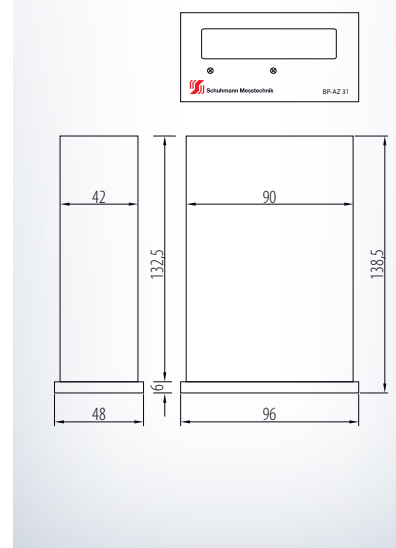
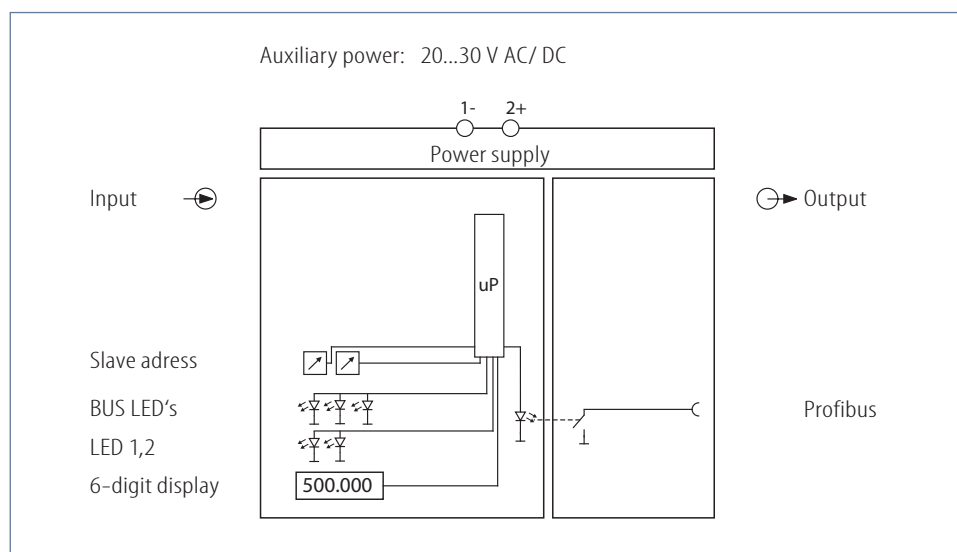


FUNCTION

The BP-AZ 31UC is suited for the direct connection to a Profibus-DP network which can be applied in plant engineering and construction as well as mechanical engineering. With the Profibus Interface a simple and cost saving connection to a modern guidance system is possible.

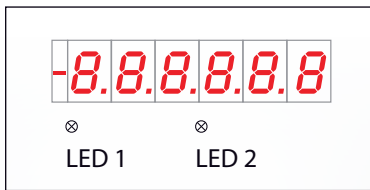
Due to the flexible representation of measuring values the application range includes: power stations, engines, food industry, large-scale installations, water treatment and chemical industry.

The 6-digit process indicator is communicated directly by the Profibus-DP. The values to be indicated will be transmitted via BCD-code. The indicated value ranges from -999999...999999 with any decimal place. Additionally 2 red status LED's are installed on the front side, sign and comma position will be transmitted by a Byte. On the reverse you can find LED's for diagnostics of the Profibus-DP communication, auxiliary power and 9-pole Profibus connection.



BP-AZ 31UC BP-AZ 31UC-GR

prefix
6. position + point 5
5. position + point 4
4. position + point 3
3. position + point 2
2. position + point 1
1. position



Settings:

Value mapping Profibus data – unit data:

Port	Byte D							Byte C							Byte B							Byte A																																			
	Bit	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0																								
value digit		LED 2	LED 1	prefix	point 5	point 4	point 3	point 2	point 1	6.								5.								4.								3.								2.								1.							
example:																																																									
transmission data: (BCD coded)		1	0	1	0	0	1	0	0	1	1	1	1	1	0	0	1	0	0	0	1	0	0	1	0	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	0	0															
display values		on	off	on	off	off	on	off	off	off							9								1								2								5								0								
actual display																																																									

If there is no communication to the Profibus-DP master, the indication is set to "000 000".

display	0	1	2	3	4	5	6	7	8	9	off	off	off	off	off	off
BCD Code	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111

Display:

LED BF:	red, active	Profibus-DP bus error
LED RUN:	green, active	device ready for use
LED DIA:	red, active	Profibus-DP diagnose error

Environmental conditions:

Storage temperature: -40...+70 °C
 Operating temperature: 0...55 °C
 Isolation voltage:
 4 kV eff. 1 sec. auxiliary voltage
 500 V eff. 1 sec. Profibus

Auxiliary power:

24 V UC 20...30 V AC/ DC
 < 3 W
 Influence of auxiliary power: < 0,1 %

Characteristics of transmission:

Field bus: Profibus DP
 Transfer rate: 9,6 kBit/s...12 MBit/s
 Min. slave interval: 2 msec.
 Field bus connection: 9 pole Sub D socket
 Addressing: 0...99 by turn-switch
 backside

The current GSD file and an example for a S7 is available on our website www.schuhmann-messtechnik.de

Directive:

EMC Directive: 2014/30/EU*
 Low Voltage Directive: 2014/35/EU

*minimum deviations possible during HF-radiation influence

Mounting details:

Housing for top hat rail
 Type of protection: IP 54 front
 Front frame: 96 x 48 mm
 Installation depth: 138,5 mm
 Width: 45 mm
 Weight: 290 g
 Material: PC/ ABS
 Flammability class: V0 (UL94)
 Approval: CE
 Connection: plugg. screw clamps
 0,14...1,5 mm²

Please check switch position before initial operation!

Schuhmann GmbH & Co. KG
 Römerstraße 2
 D-74363 Güglingen
 Tel. + 49 71 35 50 56
 E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de

Ordering information:

Type: BP-AZ 31 UC 24 V UC red
 BP-AZ 31 UC-GR 24 V UC green

Price and availability on request		
Title		Replacement
AF 2.01 GDC	Temperature-Frequency-Converter, 2-channel	AF 29.01 GDC
BP-AZ 31	Process Indicator with Profibus Interface	no longer available
DAF 9.00 G/ GDC/ TW	Digital Analog Frequency Transducer	on request
DAI 15.00 G/ GDC	Digital Analog-PWM-Transducer	on request
DFA 8.00 GUC/ GW	Digital Frequency Analog Transducer	DFA 1 series
DFA 8. 0 GW/ .10/ .20/ .31 GW	Digital Frequency Analog Transducer	DFA 1 series
DFA 8.40/ .41/ .42 GW	Digital Frequency Analog Transducer	DFA 1 series
DGW 1.00 G/ GDC	Digital Limit Switch, 1-channel	DGS 1.00 GW
DGW 2.00 G/ GDC	Digital Limit Switch, 2-channel	DGS 2.00 GW
DGW 2.01 G/ GDC	Digital Limit Switch for Pt100 Signal	DGS 2.01 GW
DGW 2.08 G/ GDC	Digital Limit Switch for Temperature Signal	on request
DGW 2.03/ GDC/ TW	Difference Limit Switch, 2-channel	on request
DGW 4.00 G/ GUC	Digital Multi-Channel Limit Switch, 4 relais	on request
DGW 6.00 G/ GUC	Digital Multi-Channel Limit Switch, 6 relais	on request
DT 1.13 GW	Analog memory	AWS 1.00 SDC/ MW, AWS 1.10 SDC
ER 16.00 GW/ ER 26.00 G/ GDC	Electrode relay	ER 2.00 MW
GS 2.00 G/ GDC	Limit Switch	GS 2.00 GW
GW 2.04 GW	Live-Zero-Control	on request
MPU 4.00 G/ GDC	Universal Temperature Converter	MPU 1.00 GW
MUX 25.00 G	Measuring point switch	MUX 25.00 MDC
NG 15.00 G/ GDC	Power Supply Unit	NG15.00MW
NG 18.00 G/ GDC	Power Supply Unit	no longer available
SE 20.00 GW	Setpoint adjuster	SE 30.00 GW/ SE 30.24 GW

Price and availability on request		
Tilte		Replacement
TR.00 UC/ W	Isolating Amplifier	TT 1.00 MW
TR 2.00/ TR 4.00/ UC	Multi-Channel Isolating Amplifier	TT 2.00 GW/ TT 4.00 GW
TRS.00 UC/ W	Feeding isolating Amplifier	TTS 1.00 MW
TRSV 2.00/ UC	Analog Distributor Transmitter Feeding, 2-channel	TTSV 2.00 GW/ TTSV 4.00 GW
TRV 2.00/ TRV 4.00/ UC	Analog Distributor	TTV 2.00 GW/ TTSV 4.00 GW
TS 1.00 GW	Isolating Amplifier	no longer available
TU 2.09 GW	Adder - Subtractor	AS 3.00 SDC/ MW/ AS 3.10 SDC/ MW
TV 1.xx	Isolating Amplifier	STV 2.00 GW/ STP 1.00 SDC/ STP 1.00 MW
TV 1.10 G	Transducer passive	no longer available
TV 1.2x	Isolating Amplifier	STV 2.00 GW/ STP 1.00 SDC/ STP 1.00 MW
TF 1.00 GW	Isolating Amplifier	TF 19.00 GW
TF 13.00 GW	AC Current Transducer 1A/ 5A	TF 39.00 GW
UT 1.00 G/ GDC	Isolating Amplifier	UT 19.00 GW
UT 1.04 G/ GDC	Isolating Amplifier, special input	UT 19.04 GW
UTS 1.00 GUC/ W	Universal Transmitter Feeding Device	UTS 19.00 GW
UTS 1.14 GW	Universal Transmitter Feeding Device	TTS 1.14 MW
UW 13.00 GUC	AC Current Transducer	UW 13.00 GW
UW 13.01 GUC	AC Voltage Transducer	UW 13.01 GW
WU 3.00 GW	Isolating Transducer for Potentiometers	WU 39.00 GW
ZM 20.00 GW	Setpoint adjuster/ Timestamp current adjuster	datasheet on request



Schuhmann Messtechnik



Schuhmann Messtechnik

Schuhmann GmbH & Co. KG
Römerstraße 2
74363 Güglingen
Germany

Tel. +49 7135 5056
E-mail: info@schuhmann-messtechnik.de
www.schuhmann-messtechnik.de