

Signal converter

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Signal converter

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Accessories

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Analogue Signal Processing

Analogue signal processing

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Problems

The real environment can be measured in many different forms, for example in terms of temperature, humidity or air pressure. The values of these physical variables change constantly. Elements which monitor the statuses and status changes of a given environment and supply an indication of this changed environment must be able to portray the continuous change.

In industrial monitoring tasks, sensors are responsible for registering ambient statuses. Sensors provide signals which allow detailed conclusions for downstream evaluation and monitoring systems with detailed conclusions about the statuses or status changes, for example in a production process. Sensor signals monitor continuous changes in the monitored field. They occur in digital and analogue form. As a rule, they supply an electrical voltage or current value which corresponds proportionally to the physical variables being monitored.

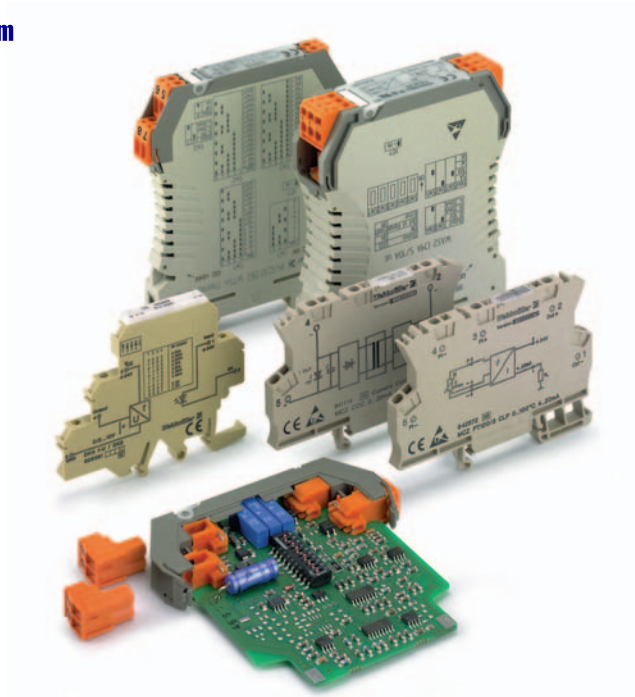
If automation processes are expected to reach certain statuses or keep them Constant, then analogue signal processing is required. It is also important in areas where this has already been part of long established practice, for example process engineering or the chemicals industry.

In process engineering, standardised electrical signals are normally used. Currents from 0... 20 mA, 4... 20 mA or voltages from 0...10 V have become established as the output variable for sensors of various different physical parameters.

Weidmüller takes account of the continuing trend to automate – including and in particular with analogue signal processing – and offers a wide range of products tailor-made to the requirements involved in handling sensor signals. Units for the common signals (0...20 mA, 4...20 mA, 0...10 V) generate an output signal as proportional values of the variable input signal. “Protective separation” e.g. of the sensor circuit from the evaluation circuit is also taken into account. “Protective separation” prevents mutual interference of several sensor circuits, for example as in the case of earth ground circuits in linked measuring circuits.

The wide range of products completely covers the functions involved in signal conversion, signal separation and signal monitoring. The products thus satisfy nearly all applications in industrial measuring technology, and safeguard elementary functions between field signals and further processing systems. The mechanical properties of the products are built up around a continuous concept.

Signal converters can be used with other Weidmüller products and combined with each other. They are designed from an electrical and mechanical point of view so as to entail a minimum wiring workload and maintenance.



The product programme contains the following functions:

- dc/dc converters
- Current converters
- Voltage converters
- Temperature transformers for resistance thermometers and thermoelements
- Frequency converters
- Potentiometer transducers
- ac transducers
- Bridge transducers (strain gauges)
- Threshold monitoring modules
- AD/DA converters

The stated products are available as pure signal conversion, 2-way isolation, 3-way isolation and passive disconnectors – depending on the production functions in each case.

Analogue Signal Processing

Weidmüller interface units

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2-way isolation separates the signals and decouples the measuring circuits. Potential differences, caused by long line leads and joint reference points, are eliminated. Signal isolation also protects from destruction by overvoltage together with inductive and capacitive gaps.

3-way isolation also separates the supply voltage to the input and output circuit and allows for operation with only one operating voltage.

Passive isolators have another crucial advantage: they do not need any additional power supply. The power supply for the module comes from the input or output circuit and is transferred to the input/output. The outstanding feature of this current loop feed is its very low own consumption.

There is a wide range of products for measuring temperature. **PT100** signals are converted in 2, 3 and 4-conductor system to standardised signals 0-20 mA, 4-20 mA and 0-10 V.

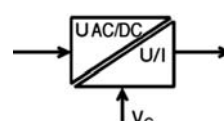
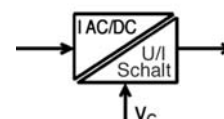
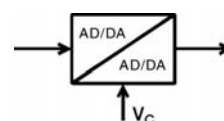
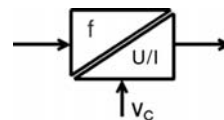
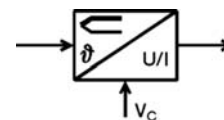
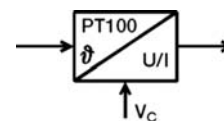
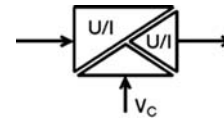
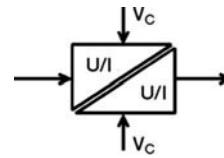
The modules for connecting to commercially available **thermocouples** have cold joint compensation as a standard feature. In addition, they amplify and linearise the voltage signal issued by the thermocouple. This guarantees exact conditioning of the analogue signal, eliminating interference or fault sources.

Frequency converters convert frequency into analogue standard signals so that subsequent controllers can directly process pulse sequences for speed or velocity measurement.

No kind of automation is conceivable without **AD or DA converters**. To bring together the analogue signals which portray the environment with the digital processing of the process monitoring system, analogue signals have to be converted into digital ones. Weidmüller also offers these modules for the common input and output signals 0 ... 20 mA, 4 ... 20 mA and 0 ... 10 V, with 8 bit or 12 bit available on the digital side. All modules have an additional input for freezing the current measured value.

Current monitoring modules control the current values up to 60 A for dc or ac current. If the values fall below or above the setting, then the switch output is triggered. Modules with analogue outputs monitor the current flow continuously using subsequent controllers.

Voltage monitoring modules are used to monitor dc and ac voltage. The freely adjustable switching threshold can be used to detect and report fluctuations in voltage as a result of switching procedures or mains overload.



Advantages of the WAVESERIES

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The concept

The modules in the WAVESERIES are ideal when users need analogue separating transducers. Weidmüller's WAVESERIES combines the compact, space-saving design of the enclosure type (WAVEBOX) with many different functions. The product family offers a wide range of signal transducers.

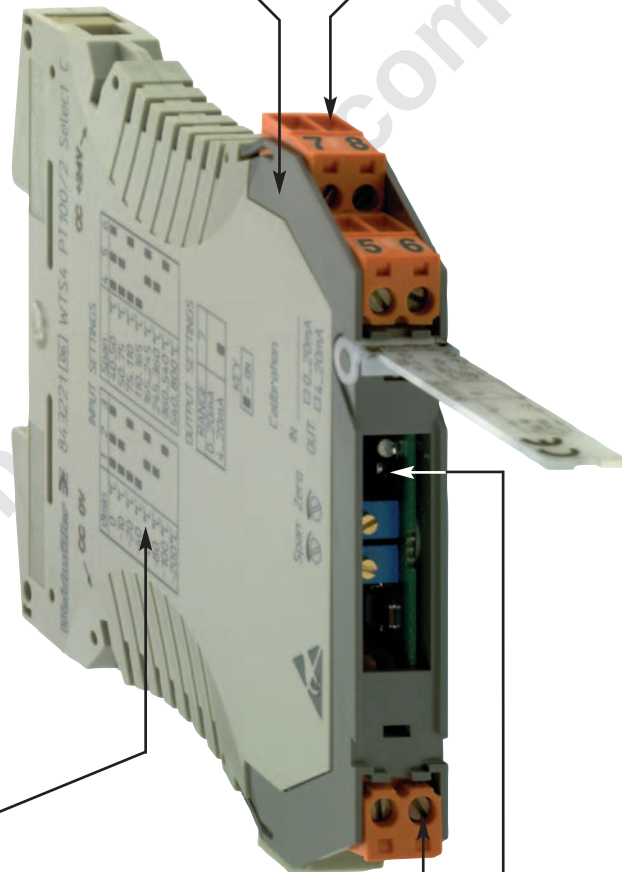
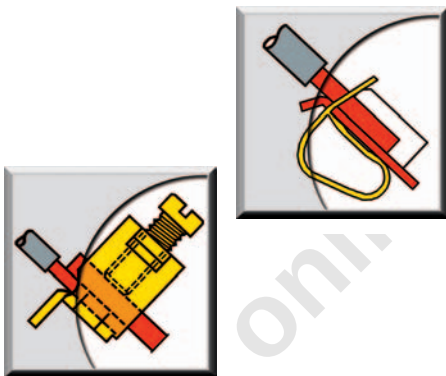
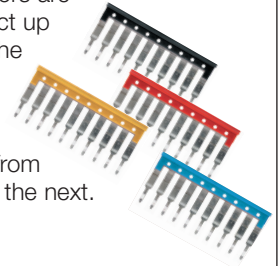
- Independent connection technology – screw or spring with pluggable socket connector
- Assembly without tools
- Fast commissioning – pluggable spare boards
- Standardised current and voltage signals
- Cross connectors for low wiring workload
- Highly functional
- Clear type designations for simple selection
- Ideal size – for more space in the switchgear cabinet
- Cost-saving

Replacement

The PCB can be removed from the enclosure without any tools. Simple press in the locking hook at the top section and pull out the upper part with connection level and PCB.

Cross connection

Cross connectors are used to connect up enclosures in the same family to bridge and transmit the power supply from one module to the next.



Enclosure (WAVEBOX)

The WAVEBOX is an ideal combination of technology, design and functionality. The enclosure consists of recyclable plastic and comes in four different widths. It needs practically no tools for assembly and fulfils the EMC requirements. Ventilation slots allow good heat dissipation.

Coding

The coding elements can be used to code the module for screw and also tension clamp connections without loss of poles. In this way, it is not possible to confuse the plugs.

Connecting

Screw connection BLZ and the tension clamp system BLZF offer the greatest possible flexibility in the wiring stage (up to 2.5 mm²).

Safety

"Protective separation" has to be guaranteed as per EN 50178. WAVESERIES complies with this requirement to the full with analogue signal transmission with potential separation.

Advantages of the MICROSERIES and MCZ SERIES

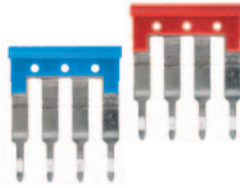
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Connecting

Screw connection BLZ and the tension clamp system BLZF offer the greatest possible flexibility in the wiring stage (up to 2.5 mm²).

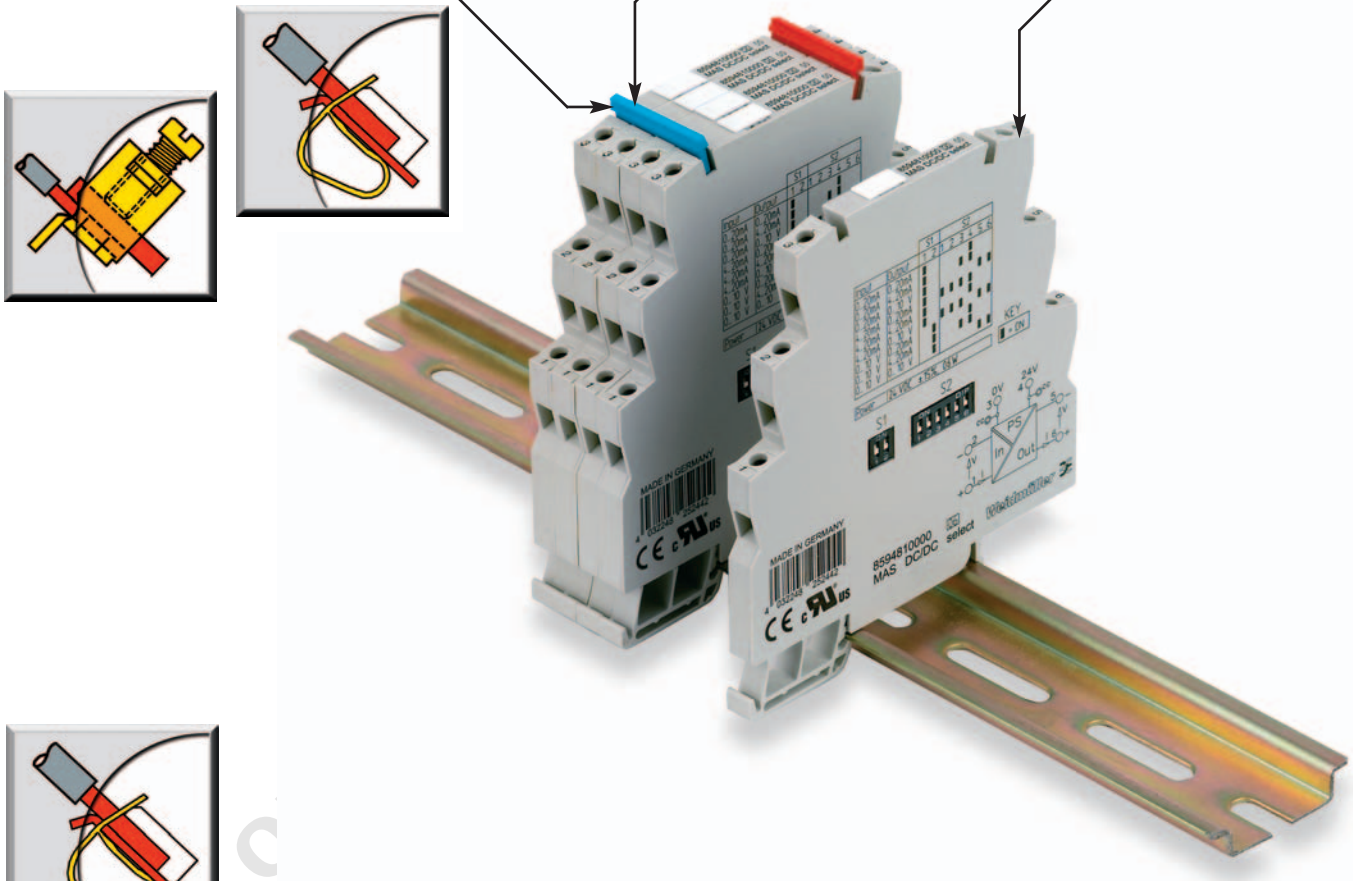
Cross connection

The supply voltage can be bridged from one module to the next.



Width

MICROANALOGUE sets standards for analogue signal processing. With a width of just 6 mm, MICROSERIES is highly functional with a completely closed enclosure.



Connecting

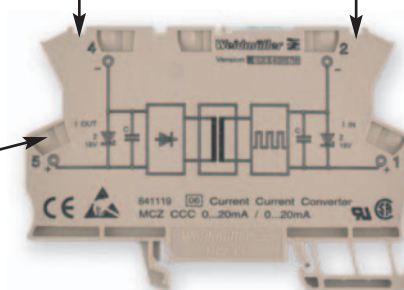
Tension spring connection

Width

Just 6 mm wide (without cover plate), the MCZ SERIES offers enough space for electronic circuits.

Cross connection

The power supply and another potential can be cross connected



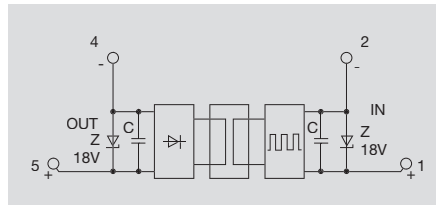
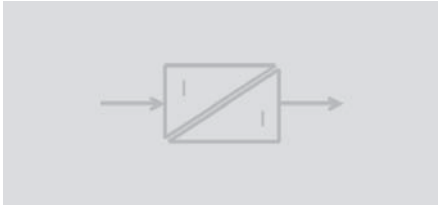
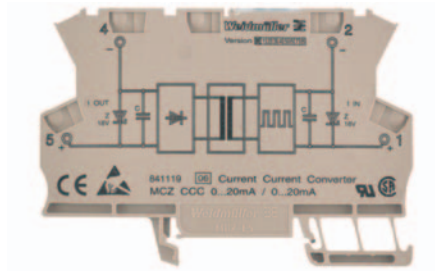
DC/DC passive isolator

Input current loop-fed

Passive isolator for electrical isolation of standard 0/4...20 mA signals. It is fed by the measuring signal and does not need any auxiliary power supply. Special features of this component are its low power consumption and the operating current of <100 μ A.

MCZ CCC

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Technical data

Input

Input voltage/Input current
Max. voltage/Max. current
Operating current
Voltage drop

/0(4)...20 mA current loop
15 V/50 mA
< 100 μ A
2.5...3 V at 20 mA

Output

Output voltage/Output current
Load resistance voltage/Current
Accuracy
Temperature coefficient
Influence of load impedance
Residual ripple
Chopper frequency

/0(4)...20 mA
/ < = 500 Ω
< 0.1 % of final value
< 50ppm/K of measurm. value at 0 Ω load resist.
0.05 % of measurement value/100 Ω load resistance
< 10 mVeff
Approx. 200 kHz

General data

Operation temperature
Storage temperature
Approvals

-25 °C...+60 °C
-40 °C...+85 °C
CSA / UL/UR / CE / ESD

Insulation coordinates

Standards
EMC standards
Isolation voltage Input, output

EN 60529, EN 61010-1
EN 50081-1, EN 50082-2
510 Veff

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Tension clamp c.

1.50 / 0.50 / 1.50
91.0 x 6.0 x 63.2

Information

Ordering data

Type of connection

Tension clamp c.

Type	Qty.	Order No.
MCZ CCC 0-20mA/0-20mA	10	8411190000

Information

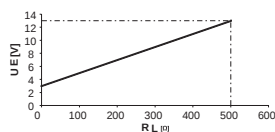
Accessories

Information

DC/DC passive isolator

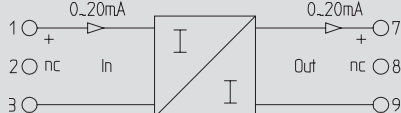
Input current loop-fed

- Galvanic isolation
- Very low power consumption
- Secure disconnection



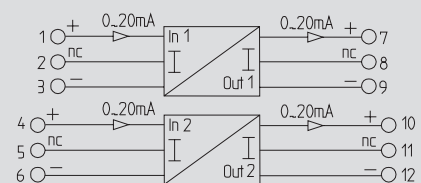
CCC LP

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CCC LP

(2-channel)



Technical data

Input

Input voltage/Input current
Max. voltage/Max. current
Operating current
Voltage drop

Output

Output voltage/Output current
Load resistance voltage/Current
Accuracy
Temperature coefficient
Influence of load impedance
Residual ripple
Chopper frequency

General data

Operation temperature
Storage temperature
Approvals

Insulation coordinates

Standards
EMC standards
Rated voltage
Impulse withstand voltage
Isolation voltage Input, output
Overvoltage category
Pollution severity
Clearance & creepage path

/0(4)...20 mA current loop

18 V/50 mA

< 100 μ A

approx. 3V at $R_L=0 \Omega$; approx. 13V at $R_L=500 \Omega$; ($I_{in}=20$ mA)

/0(4)...20 mA

/ $\leq$ 500 Ω

< 0.1 % of final value

< 50 ppm/K of final value

< 0.1 % of measurement value/100 Ω load resistance

< 20 mVeff

approx. 170 kHz

-25 $^{\circ}$ C...+70 $^{\circ}$ C

-40 $^{\circ}$ C...+80 $^{\circ}$ C

CSA / GL / UL/UR / CE / ESD

EN 50178 (safe separation)

EN 50081, EN50082, EN55011

300 V

6 kV

4 kVeff / 1 s

III

2

$\geq$ 5.5 mm

/0(4)...20 mA current loop

18 V/50 mA

< 100 μ A

approx. 3V at $R_L=0 \Omega$; approx. 13V at $R_L=500 \Omega$; ($I_{in}=20$ mA)

/0(4)...20 mA

/ $\leq$ 500 Ω

< 0.1 % of final value

< 50 ppm/K of final value

< 0.1 % of measurement value/100 Ω load resistance

< 20 mVeff

approx. 170 kHz

-25 $^{\circ}$ C...+70 $^{\circ}$ C

-40 $^{\circ}$ C...+80 $^{\circ}$ C

CSA / GL / UL/UR / CE / ESD

EN 50178 (safe separation)

EN 50081, EN50082, EN55011

300 V

6 kV

4 kVeff / 1 s

III

2

$\geq$ 5.5 mm

Dimensions

Clamping range (rating- / min. / max.)
Length x width x height

mm²
mm

Information

Screw connection

Tension clamp c.

2.50 / 0.50 / 2.50

1.50 / 0.50 / 2.50

92.4 x 17.5 x 112.4

92.4 x 17.5 x 112.4

Tu=23 $^{\circ}$ C, single module

Screw connection

Tension clamp c.

2.50 / 0.50 / 2.50

1.50 / 0.50 / 2.50

92.4 x 17.5 x 112.4

92.4 x 17.5 x 112.4

Tu=23 $^{\circ}$ C, single module

Ordering data

Type of connection

Screw connection
Tension clamp c.

Type

Qty.

Order No.

WAS5 CCC LP 0-20/0-20mA

1

8444950000

WAZ5 CCC LP 0-20/0-20mA

1

8444960000

Type

Qty.

Order No.

WAS5 CCC LP 0-20/0-20mA

1

8463580000

WAZ5 CCC LP 0-20/0-20mA

1

8463590000

Information

Accessories

Information

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Delivery times see page X.2

Weidmüller

J.7

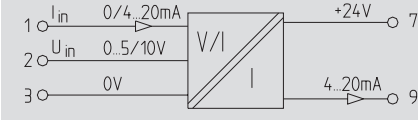
DC/DC passive isolator

Output current loop-fed

- Galvanic isolation
- Very low power consumption
- Input range selected via DIP switch
- Calibration not necessary

OLP

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Switch position/setting options

Input	SW 1			
	1	2	3	4
0...20 mA	☐	☐	☐	☐
4...20 mA	☒	☐	☐	☐
0...5 V	☒	☒	☒	☐
0...10 V	☐	☒	☐	☐
Transmission frequency				
10 Hz	☐	☐	☐	☒
100 Hz	☐	☐	☐	☐

■ = on
□ = off

Technical data

Input

Input voltage	0... (5)10 V
Max. voltage	30 Vdc
Input resistance voltage/Current	0...5V: 210 kΩ; 0...10V: 430 kΩ/51 Ω
Input current	0(4)...20 mA
Max. current	40 mA

Output

Output current	4...20 mA (current loop)
Output signal limit	approx. 24 mA
Load resistance voltage/Current	/RL=(Ub-12V) / 20 mA e.g. 600 Ω at 24V
Accuracy	0.2 % of measuring range final value
Temperature coefficient	≤ 150 ppm/K
Residual ripple	50 mVeff at 500 Ω
Step response time	< 10 Hz: 80 ms; 100 Hz: 50 ms
Cut-off freq. (-3dB)	10 Hz/ 100 Hz switchable

General data

Supply voltage	min. 12 Vdc/ max. 30 Vdc
Operation temperature	0 °C...+55 °C (fitted)
Storage temperature	-20 °C...+85 °C
Default settings	0...20mA, 10 Hz
Approvals	CE / ESD / cURus

Insulation coordinates

Standards	EN 50178
EMC standards	EN 50082-2, EN 50081-1, -2, EN 55011
Rated voltage	300 V
Impulse withstand voltage	4 kV
Isolation voltage input, output	4 kVeff / 5s
Overvoltage category	III
Pollution severity	2
Clearance & creepage path	≥ 5.5 mm

Dimensions

Clamping range (rating- / min. / max.)	mm²
Length x width x height	mm

Information

Screw connection

2.50 / 0.50 / 2.50	1.50 / 0.50 / 2.50
92.4 x 17.5 x 112.4	92.4 x 17.5 x 112.4

Tu=23°C, single module

Ordering data

Type of connection

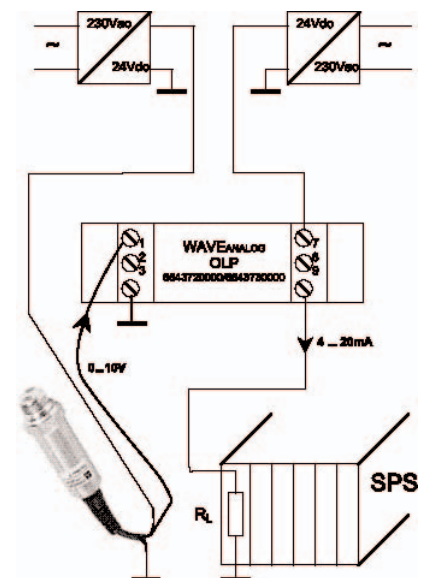
Screw connection
Tension clamp c.

Type	Qty.	Order No.
WAS5 OLP	1	8543720000
WAZ5 OLP	1	8543730000

Information

Accessories

Information



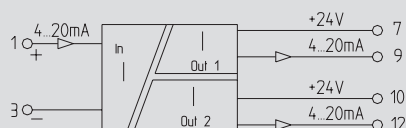
DC/DC passive isolator

Loop splitter

- Galvanic isolation
- Input and output current loop feed
- Very low power consumption
- Calibration not necessary

20LP

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Technical data

Input

Input current
Max. current
Voltage drop

4...20 mA (current loop)
40 mA
3.8 V

Output

Output current/
Output signal limit
Load resistance voltage/Current
Accuracy
Temperature coefficient
Step response time
Cut-off freq. (-3dB)

2 x 4...20 mA (current loop)/
approx. 31 mA
 $R_L = (U_b - 12V) / 20 \text{ mA}$ e.g. 600 Ω at 24V
typical 0.1%, max. 0.2%
 $\leq 150 \text{ ppm/K}$
 $< 20 \text{ ms}$
30 Hz

General data

Supply voltage
Operation temperature
Storage temperature
Approvals

min. 12 Vdc/ max. 30 Vdc
0 °C...+55 °C (fitted)
-20 °C...+85 °C
CE / ESD / cURus

Insulation coordinates

Standards
EMC standards
Rated voltage
Impulse withstand voltage
Isolation voltage Input, output/
Overvoltage category
Pollution severity
Clearance & creepage path

EN 50178
EN 50082-2, EN 50081-1, -2, EN 55011
300 V
4 kV
4 kVeff / 5s/
III
2
 $\geq 5.5 \text{ mm}$

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Screw connection

2.50 / 0.50 / 2.50
92.4 x 17.5 x 112.4

Tension clamp c.

1.50 / 0.50 / 2.50
92.4 x 17.5 x 112.4

Information

Tu=23°C, single module

Ordering data

Type of connection

Screw connection
Tension clamp c.

Type

WAS5 CCC 20LP
WAZ5 CCC 20LP

Qty.

1
1

Order No.

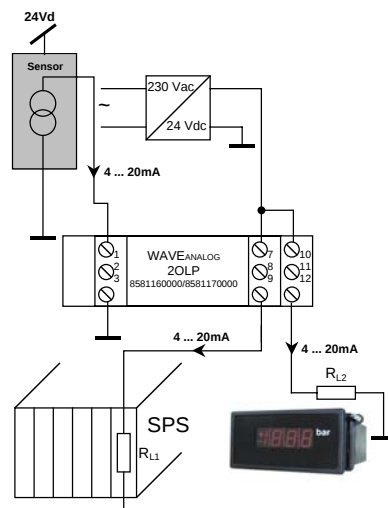
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Information

Accessories

Information

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Delivery times see page X.2



DC/DC 2-way isolator

Power supply on the output side

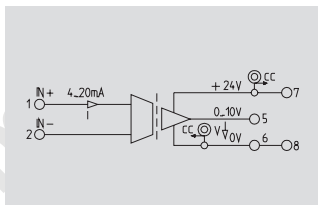
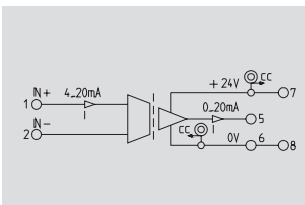
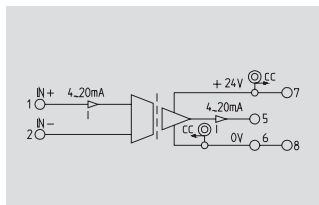
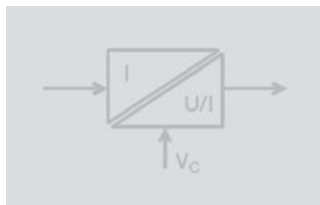
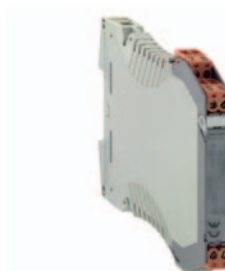
- Signal conversion
- Galvanic isolation between input/output signal
- Power supply can be cross-connected via plug-in jumpers

4...20mA/4...20mA

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4...20mA/0...20mA

4...20mA/0...10V



Technical data

Input

Input voltage/Input current
Max. voltage
Max. current

Output

Output voltage/Output current
Load resistance voltage/Current
Accuracy
Temperature coefficient
Step response time
Cut-off freq. (-3dB)

General data

Supply voltage
Current consumption
Current-carrying cap. of cross-connect.
Operation temperature
Storage temperature
Approvals

Insulation coordinates

Standards
EMC standards
Rated voltage
Impulse withstand voltage
Isolation voltage Input, output/
Overvoltage category
Pollution severity
Clearance & creepage path

4...20 mA (current loop)
7 V
25 mA

4...20 mA
/ < = 500 Ω
+/- 0.2% of final value
≤ 250 ppm/K of final value
≤ 30 ms (typically 20 ms)
≥ 15 Hz (typically 20 Hz)

24 Vdc +/- 20 %
≤ 32 mA at Iout = 20 mA
≤ 2 A
0 °C...+55 °C (fitted)
-20 °C...+85 °C
CSA / UL/UR / CE / ESD

EN 50178
EN 50081, EN50082, EN55011
300 V
4 kV
1.2 kVeff / 5s/
III
2
≥ 3 mm

4...20 mA (current loop)
7 V
25 mA

0...20 mA
/ < = 500 Ω
+/- 0.2% of final value
≤ 250 ppm/K of final value
≤ 30 ms (typically 20 ms)
≥ 15 Hz (typically 20 Hz)

24 Vdc +/- 20 %
≤ 32 mA at Iout = 20 mA
≤ 2 A
0 °C...+55 °C (fitted)
-20 °C...+85 °C
CSA / UL/UR / CE / ESD

EN 50178
EN 50081, EN50082, EN55011
300 V
4 kV
1.2 kVeff / 5s/
III
2
≥ 3 mm

4...20 mA (current loop)
7 V
25 mA

0...10 V/
≥ 1 kΩ/
+/- 0.2% of final value
≤ 250 ppm/K of final value
≤ 30 ms (typically 20 ms)
≥ 15 Hz (typically 20 Hz)

24 Vdc +/- 20 %
≤ 20 mA at Iout = 10 mA
≤ 2 A
0 °C...+55 °C (fitted)
-20 °C...+85 °C
CSA / UL/UR / CE / ESD

EN 50178
EN 50081, EN50082, EN55011
300 V
4 kV
1.2 kVeff / 5s/
III
2
≥ 3 mm

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Information

Screw connection Tension clamp c.

2.50 / 0.50 / 2.50 1.50 / 0.50 / 2.50
92.4 x 12.5 x 112.4 92.4 x 12.5 x 112.4

Tu=23°C, single module

Screw connection Tension clamp c.

2.50 / 0.50 / 2.50 1.50 / 0.50 / 2.50
92.4 x 12.5 x 112.4 92.4 x 12.5 x 112.4

Tu=23°C, single module

Screw connection Tension clamp c.

2.50 / 0.50 / 2.50 1.50 / 0.50 / 2.50
92.4 x 12.5 x 112.4 92.4 x 12.5 x 112.4

Tu=23°C, single module

Ordering data

Type of connection

Screw connection
Tension clamp c.

Type	(Qty.=1)	Order No.
WAS4 CCC DC 4-20/4-20mA		8444980000
WAZ4 CCC DC 4-20/4-20mA		8444990000

Type	(Qty.=1)	Order No.
WAS4 CCC DC 4-20/0-20mA		8445010000
WAZ4 CCC DC 4-20/0-20mA		8445020000

Type	(Qty.=1)	Order No.
WAS4 CVC DC 4-20/0-10V		8445040000
WAZ4 CVC DC 4-20/0-10V		8445050000

Information

Accessories

Information

Voltage supply 24V and 0V with ZQV 2.5N/2 cross-connection

Voltage supply 24V and 0V with ZQV 2.5N/2 cross-connection

Voltage supply 24V and 0V with ZQV 2.5N/2 cross-connection

DC/DC 2-way isolator

Double sided power supply

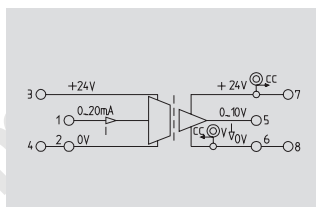
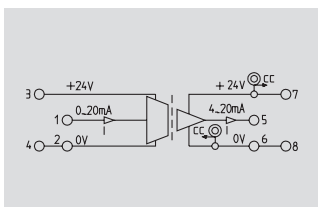
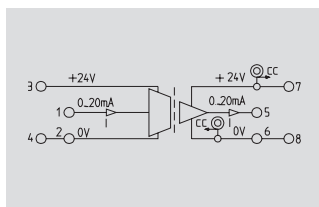
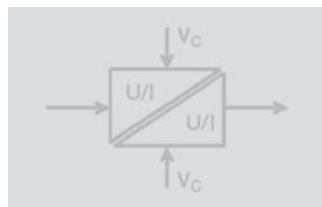
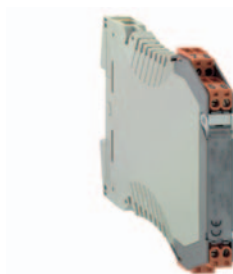
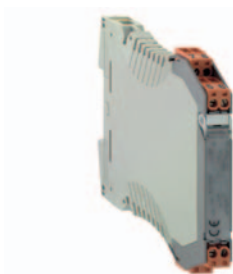
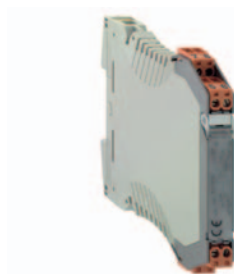
- Signal conversion
- Galvanic isolation between input/output signal
- Power supply can be cross-connected via plug-in jumpers

0...20mA/0...20mA

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0...20mA/4...20mA

0...20mA/0...10V



Technical data

Input	
Input voltage/Input current	/0...20 mA
Max. voltage/Max. current	/25 mA
Input resistance voltage/Current	/50 Ω
Output	
Output voltage/Output current	/0...20 mA
Load resistance voltage/Current	/< = 500 Ω
Accuracy	+/- 0.2% of final value
Temperature coefficient	<= 250 ppm/K of final value
Step response time	<= 30 ms (typically 16 ms)
Cut-off freq. (-3dB)	>= 15 Hz (typically 25 Hz)
General data	
Supply voltage	24 Vdc +/- 20 %
Current consumption input	< 11 mA at lin = 20 mA
Current consumption output	< 32 mA at lout = 20 mA
Current-carrying cap. of cross-connect.	<= 2 A
Operation temperature	0 °C...+55 °C (fitted)
Storage temperature	-20 °C...+85 °C
Approvals	CSA / UL/UR / CE / ESD
Insulation coordinates	
Standards	EN 50178
EMC standards	EN 50081, EN50082, EN55011
Rated voltage	300 V
Impulse withstand voltage	4 kV
Isolation voltage Input, output	1.2 kVeff / 5s
Overvoltage category	III
Pollution severity	2
Clearance & creepage path	>= 3 mm

Dimensions	Screw connection	Tension clamp c.
Clamping range (rating- / min. / max.)	2.50 / 0.50 / 2.50	1.50 / 0.50 / 2.50
Length x width x height	92.4 x 12.5 x 112.4	92.4 x 12.5 x 112.4
Information	Tu=23°C, single module	

Ordering data

Type of connection	Type	(Qty.=1)	Order No.
Screw connection Tension clamp c.	WAS4 CCC DC 0-20/0-20mA		8445070000
	WAZ4 CCC DC 0-20/0-20mA		8445080000
Information			

Accessories

Information	Voltage supply 24V and 0V with ZQV 2.5N/2 cross-connection
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Articles with coloured order number are kept permanently in stock at the central warehouse in Germany.
Delivery times see page X.2

DC/DC 2-way isolator

Double sided power supply

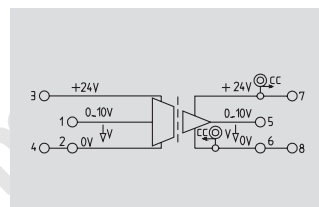
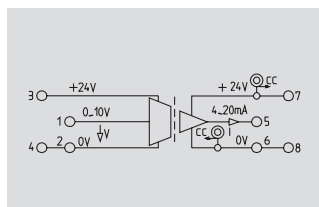
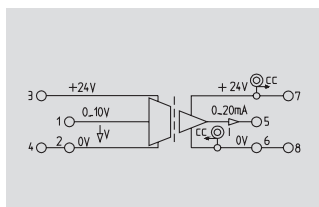
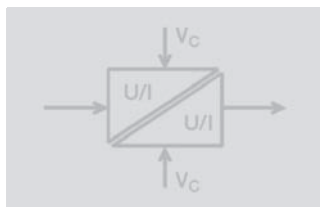
- Signal conversion
- Galvanic isolation between input/output signal
- Power supply can be cross-connected via plug-in jumpers

0...10V/0...20mA

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0...10V/4...20mA

0...10V/0...10V



Technical data

Input

Input voltage/Input current
Max. voltage/Max. current
Input resistance voltage/Current

Output

Output voltage/Output current
Load resistance voltage/Current
Accuracy
Temperature coefficient
Step response time
Cut-off freq. (-3dB)

General data

Supply voltage
Current consumption input
Current consumption output
Current-carrying cap. of cross-connect.
Operation temperature
Storage temperature
Approvals

Insulation coordinates

Standards
EMC standards
Rated voltage
Impulse withstand voltage
Isolation voltage Input, output
Overvoltage category
Pollution severity
Clearance & creepage path

0...10 V/
15 V/
500 kΩ/

/0...20 mA
< = 500 Ω
+/- 0.2% of final value
≤ 250 ppm/K of final value
≤ 30 ms (typically 25 ms)
≥ 13 Hz (typically 17 Hz)

24 Vdc +/- 20 %
< 11 mA at U_{in} = 10 V
< 32 mA at I_{out} = 20 mA
≤ 2 A
0 °C...+55 °C (fitted)
-20 °C...+85 °C
CSA / UL/UR / CE / ESD

EN 50178
EN 50081, EN50082, EN55011
300 V
4 kV
1.2 kVeff / 5s
III
2
≥ 3 mm

0...10 V/
15 V/
500 kΩ/

/4...20 mA
< = 500 Ω
+/- 0.2% of final value
≤ 250 ppm/K of final value
≤ 30 ms (typically 25 ms)
≥ 13 Hz (typically 17 Hz)

24 Vdc +/- 20 %
< 11 mA at U_{in} = 10 V
< 32 mA at I_{out} = 20 mA
≤ 2 A
0 °C...+55 °C (fitted)
-20 °C...+85 °C
CSA / UL/UR / CE / ESD

EN 50178
EN 50081, EN50082, EN55011
300 V
4 kV
1.2 kVeff / 5s
III
2
≥ 3 mm

0...10 V/
15 V/
500 kΩ/

/0...10 V/
≥ 1 kΩ/
+/- 0.2% of final value
≤ 250 ppm/K of final value
≤ 30 ms (typically 25 ms)
≥ 13 Hz (typically 17 Hz)

24 Vdc +/- 20 %
< 11 mA at U_{in} = 10 V
< 20 mA at I_{out} = 10 mA
≤ 2 A
0 °C...+55 °C (fitted)
-20 °C...+85 °C
CSA / UL/UR / CE / ESD

EN 50178
EN 50081, EN50082, EN55011
300 V
4 kV
1.2 kVeff / 5s
III
2
≥ 3 mm

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Information

Screw connection Tension clamp c.

2.50 / 0.50 / 2.50 1.50 / 0.50 / 2.50
92.4 x 12.5 x 112.4 92.4 x 12.5 x 112.4

Tu=23°C, single module

Screw connection Tension clamp c.

2.50 / 0.50 / 2.50 1.50 / 0.50 / 2.50
92.4 x 12.5 x 112.4 92.4 x 12.5 x 112.4

Tu=23°C, single module

Screw connection Tension clamp c.

2.50 / 0.50 / 2.50 1.50 / 0.50 / 2.50
92.4 x 12.5 x 112.4 92.4 x 12.5 x 112.4

Tu=23°C, single module

Ordering data

Type of connection

Screw connection
Tension clamp c.

Type	(Qty.=1)	Order No.
WAS4 VCC DC 0-10/0-20mA		8447050000
WAZ4 VCC DC 0-10/0-20mA		8447080000

Type	(Qty.=1)	Order No.
WAS4 VCC DC 0-10/4-20mA		8447100000
WAZ4 VCC DC 0-10/4-20mA		8447110000

Type	(Qty.=1)	Order No.
WAS4 VCC DC 0-10/0-10V		8447130000
WAZ4 VCC DC 0-10/0-10V		8447140000

Information

Accessories

Information

Voltage supply 24V and 0V with ZQV 2.5N/2 cross-connection

Voltage supply 24V and 0V with ZQV 2.5N/2 cross-connection

Voltage supply 24V and 0V with ZQV 2.5N/2 cross-connection

DC/DC 3-way isolator

10Hz Cut-off frequency

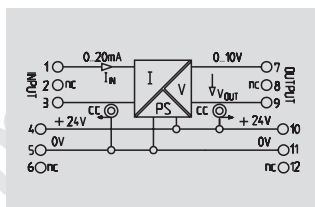
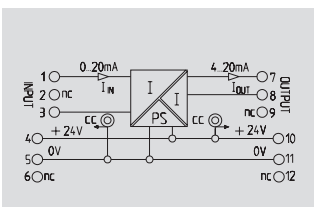
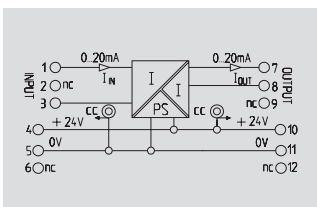
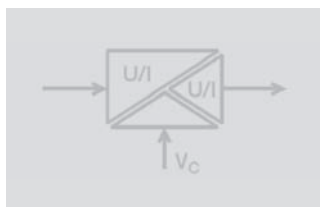
- Signal conversion
- Galvanic isolation between input/output signal
- Power supply can be cross-connected via plug-in jumpers

0... (4)20mA/0... (4)20mA

0...20mA/4...20mA

0...20mA/0...10V

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Technical data

Input			
Input voltage/Input current	/0(4)...20 mA	/0...20 mA	/0...20 mA
Max. voltage			
Max. current	25 mA	25 mA	25 mA
Output			
Output voltage/Output current	/0(4)...20 mA	/4...20 mA	0...10 V/
Load resistance voltage/Current	/< = 600 Ω	/< = 600 Ω	>= 1 kΩ/
Accuracy	0.2 %	0.2 %	0.2 %
Temperature coefficient	+/- 250 ppm/K	+/- 250 ppm/K	+/- 250 ppm/K
Step response time	<= 45 ms	<= 45 ms	<= 45 ms
Cut-off freq. (-3dB)	10 Hz	10 Hz	10 Hz
General data			
Supply voltage	24 Vdc +/- 25 %	24 Vdc +/- 25 %	24 Vdc +/- 25 %
Power consumption	< 1.5 W at Iout = 20 mA	< 1.5 W at Iout = 20 mA	< 1.3 W at Iout = 5 mA
Current-carrying cap. of cross-connect.	<= 2 A	<= 2 A	<= 2 A
Operation temperature	0 °C...+55 °C (horiz. mounting)	0 °C...+55 °C (horiz. mounting)	0 °C...+55 °C (horiz. mounting)
Storage temperature	-20 °C...+85 °C	-20 °C...+85 °C	-20 °C...+85 °C
Approvals	CE / cURus	CE / cURus	CE / cURus
Insulation coordinates			
Standards	EN 50178	EN 50178	EN 50178
EMC standards	EN 50081, EN50082, EN55011	EN 50081, EN50082, EN55011	EN 50081, EN50082, EN55011
Rated voltage	300 V	300 V	300 V
Impulse withstand voltage	4 kV	4 kV	4 kV
Isolation voltage Input, output/	2 kVeff / 5s/	2 kVeff / 5s/	2 kVeff / 5s/
Overvoltage category	III	III	III
Pollution severity	2	2	2
Clearance & creepage path	>= 3 mm	>= 3 mm	>= 3 mm

Dimensions	Screw connection	Tension clamp c.	Screw connection	Tension clamp c.	Screw connection	Tension clamp c.
Clamping range (rating- / min. / max.)	2.50 / 0.50 / 2.50	1.50 / 0.50 / 2.50	2.50 / 0.50 / 2.50	1.50 / 0.50 / 2.50	2.50 / 0.50 / 2.50	1.50 / 0.50 / 2.50
Length x width x height	92.4 x 17.5 x 112.4	92.4 x 17.5 x 112.4	92.4 x 17.5 x 112.4	92.4 x 17.5 x 112.4	92.4 x 17.5 x 112.4	92.4 x 17.5 x 112.4
Information	Tu=23°C, single module		Tu=23°C, single module		Tu=23°C, single module	

Ordering data

Type of connection	Type	(Qty.=1)	Order No.	Type	(Qty.=1)	Order No.	Type	(Qty.=1)	Order No.
Screw connection	WAS5 CCC 0-20/0-20mA		8540180000	WAS5 CCC 0-20/4-20mA		8540250000	WAS5 CVC 0-20mA/0-10V		8540270000
	WAZ5 CCC 0-20/0-20mA		8540190000	WAZ5 CCC 0-20/4-20mA		8540260000	WAZ5 CVC 0-20mA/0-10V		8540280000
Information									

Accessories

Information	Voltage supply 24V and 0V with ZQV 2.5N/2 cross-connection	Voltage supply 24V and 0V with ZQV 2.5N/2 cross-connection	Voltage supply 24V and 0V with ZQV 2.5N/2 cross-connection
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Articles with coloured order number are kept permanently in stock at the central warehouse in Germany.
Delivery times see page X.2

DC/DC 3-way isolator

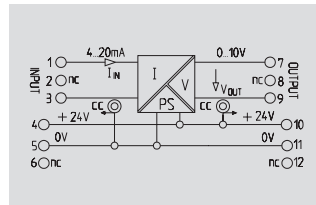
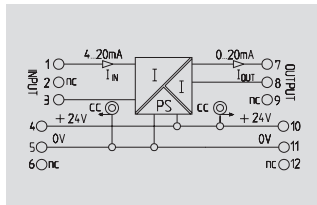
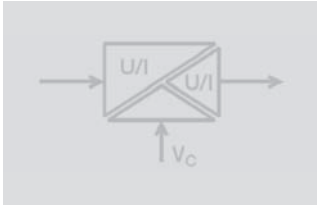
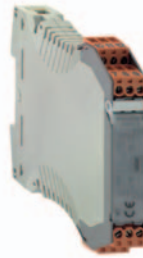
10Hz Cut-off frequency

- Signal conversion
- Galvanic isolation between input/output signal
- Power supply can be cross-connected via plug-in jumpers

4...20mA/0...20mA

4...20mA/0...10V

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Technical data

Input

Input voltage/Input current
Max. voltage
Max. current

Output

Output voltage/Output current
Load resistance voltage/Current
Accuracy
Temperature coefficient
Step response time
Cut-off freq. (-3dB)

General data

Supply voltage
Power consumption
Current-carrying cap. of cross-connect.
Operation temperature
Storage temperature
Approvals

Insulation coordinates

Standards
EMC standards
Rated voltage
Impulse withstand voltage
Isolation voltage Input, output/
Overvoltage category
Pollution severity
Clearance & creepage path

/4...20 mA

25 mA

/0...20 mA

< = 600 Ω

0.2 %

+/- 250 ppm/K

<= 45 ms

10 Hz

24 Vdc +/- 25 %

< 1.5 W at Iout = 20 mA

<= 2 A

0 °C...+55 °C (horiz. mounting)

-20 °C...+85 °C

CE / cURus

EN 50178

EN 50081, EN50082, EN55011

300 V

4 kV

2 kVeff / 5s/

III

2

>= 3 mm

/4...20 mA

25 mA

0...10 V/

>= 1 kΩ/

0.2 %

+/- 250 ppm/K

<= 45 ms

10 Hz

24 Vdc +/- 25 %

< 1.3 W at Iout = 5 mA

<= 2 A

0 °C...+55 °C (horiz. mounting)

-20 °C...+85 °C

CE / cURus

EN 50178

EN 50081, EN50082, EN55011

300 V

4 kV

2 kVeff / 5s/

III

2

>= 3 mm

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Information

Screw connection Tension clamp c.

2.50 / 0.50 / 2.50 1.50 / 0.50 / 2.50
92.4 x 17.5 x 112.4 92.4 x 17.5 x 112.4

Tu=23°C, single module

Screw connection Tension clamp c.

2.50 / 0.50 / 2.50 1.50 / 0.50 / 2.50
92.4 x 17.5 x 112.4 92.4 x 17.5 x 112.4

Tu=23°C, single module

Ordering data

Type of connection

Screw connection
Tension clamp c.

Type	(Qty.=1)	Order No.
WAS5 CCC 4-20/0-20MA		8540200000
WAZ5 CCC 4-20/0-20MA		8540210000

Type	(Qty.=1)	Order No.
WAS5 CVC 4-20mA/0-10V		8540230000
WAZ5 CVC 4-20mA/0-10V		8540240000

Information

Accessories

Information

Voltage supply 24V and 0V with ZQV 2.5N/2 cross-connection

Voltage supply 24V and 0V with ZQV 2.5N/2 cross-connection

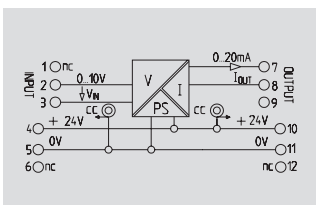
DC/DC 3-way isolator

10Hz Cut-off frequency

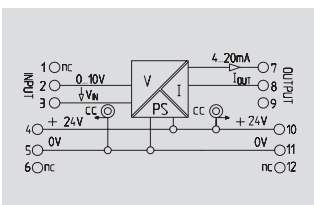
- Signal conversion
- Galvanic isolation between input/output signal
- Power supply can be cross-connected via plug-in jumpers

0...10V/0...20mA

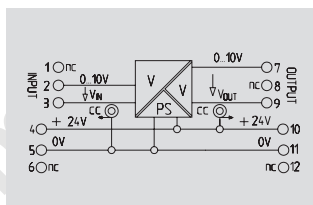
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0...10V/4...20mA



0...10V/0...10V



Technical data

Input

Input voltage/Input current
Max. voltage
Max. current

Output

Output voltage/Output current
Load resistance voltage/Current
Accuracy
Temperature coefficient
Step response time
Cut-off freq. (-3dB)

General data

Supply voltage
Power consumption
Current-carrying cap. of cross-connect.
Operation temperature
Storage temperature
Approvals

Insulation coordinates

Standards
EMC standards
Rated voltage
Impulse withstand voltage
Isolation voltage Input, output/
Overvoltage category
Pollution severity
Clearance & creepage path

0...10 V/

15 V

/0...20 mA

/< = 600 Ω

0.2 %

+/- 250 ppm/K

<= 45 ms

10 Hz

24 Vdc +/- 25 %

< 1.5 W at Iout = 20 mA

<= 2 A

0 °C...+55 °C (horiz. mounting)

-20 °C...+85 °C

CE / cURus

EN 50178

EN 50081, EN50082, EN55011

300 V

4 kV

2 kVeff / 5s/

III

2

>= 3 mm

0...10 V/

15 V

/4...20 mA

/< = 600 Ω

0.2 %

+/- 250 ppm/K

<= 45 ms

10 Hz

24 Vdc +/- 25 %

< 1.5 W at Iout = 20 mA

<= 2 A

0 °C...+55 °C (horiz. mounting)

-20 °C...+85 °C

CE / cURus

EN 50178

EN 50081, EN50082, EN55011

300 V

4 kV

2 kVeff / 5s/

III

2

>= 3 mm

0...10 V/

15 V

0...10 V/

>= 1 kΩ/

0.2 %

+/- 250 ppm/K

<= 45 ms

10 Hz

24 Vdc +/- 25 %

< 1.3 W at Iout = 5 mA

<= 2 A

0 °C...+55 °C (horiz. mounting)

-20 °C...+85 °C

CE / cURus

EN 50178

EN 50081, EN50082, EN55011

300 V

4 kV

2 kVeff / 5s/

III

2

>= 3 mm

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Information

Screw connection

2.50 / 0.50 / 2.50
92.4 x 17.5 x 112.4

Tension clamp c.

1.50 / 0.50 / 2.50
92.4 x 17.5 x 112.4

Tu=23°C, single module

Screw connection

2.50 / 0.50 / 2.50
92.4 x 17.5 x 112.4

Tension clamp c.

1.50 / 0.50 / 2.50
92.4 x 17.5 x 112.4

Tu=23°C, single module

Screw connection

2.50 / 0.50 / 2.50
92.4 x 17.5 x 112.4

Tension clamp c.

1.50 / 0.50 / 2.50
92.4 x 17.5 x 112.4

Tu=23°C, single module

Ordering data

Type of connection

Screw connection
Tension clamp c.

Type	(Qty.=1)	Order No.
WAS5 VCC 0-10V/0-20MA		8540310000
WAZ5 VCC 0-10V/0-20MA		8540320000

Information

Type	(Qty.=1)	Order No.
WAS5 VCC 0-10V/4-20MA		8540290000
WAZ5 VCC 0-10V/4-20MA		8540300000

Type	(Qty.=1)	Order No.
WAS5 VCC 0-10V/0-10V		8540330000
WAZ5 VCC 0-10V/0-10V		8540340000

Accessories

Information

Voltage supply 24V and 0V with ZQV 2.5N/2 cross-connection

Voltage supply 24V and 0V with ZQV 2.5N/2 cross-connection

Voltage supply 24V and 0V with ZQV 2.5N/2 cross-connection

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Delivery times see page X.2

Weidmüller

J.15

DC/DC 3-way isolator

20kHz Cut-off frequency

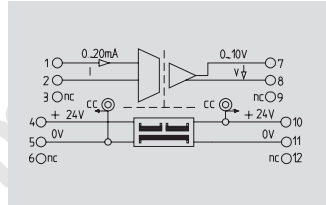
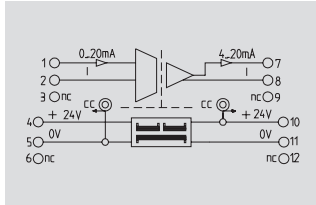
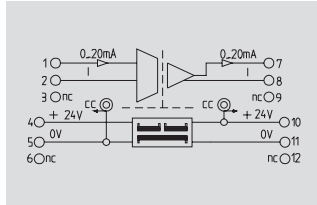
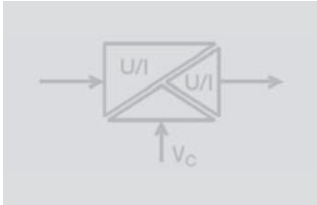
- Signal conversion
- Galvanic isolation between input/output signal
- Power supply can be cross-connected via plug-in jumpers

0(4)...20mA/0(4)...20mA

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0...20mA/4...20mA

0...20mA/0...10V



Technical data

Input

Input voltage/Input current
Max. voltage/Max. current
Input resistance voltage/Current

Output

Output voltage/Output current
Load resistance voltage/Current
Accuracy
Temperature coefficient
Step response time
Cut-off freq. (-3dB)

General data

Supply voltage
Power consumption
Current-carrying cap. of cross-connect.
Operation temperature
Storage temperature
Approvals

Insulation coordinates

Standards
EMC standards
Rated voltage
Impulse withstand voltage
Isolation voltage Input, output
Coupling cap. in- resp. output/power supply
Overvoltage category
Pollution severity
Clearance & creepage path

/0...20 mA

/50 mA

/50 Ω

/0...20 mA

/< = 600 Ω

< 0.2 % of final value

<= 250 ppm/K of final value

<= 40 μs (type 30 μs)

>= 15 kHz (typ. 20 kHz)

24 Vdc +/- 25 %

< 1.5 W at I_{out} = 20 mA

<= 2 A

0 °C...+55 °C

-20 °C...+85 °C

CSA / UL/UR / CE / ESD

EN 50178

EN 50081, EN50082, EN55011

300 V

4 kV

1.2 kVeff / 5s

1 nF

III

2

>= 3 mm

/0...20 mA

/50 mA

/50 Ω

/4...20 mA

/< = 600 Ω

< 0.2 % of final value

<= 250 ppm/K of final value

<= 40 μs (type 30 μs)

>= 15 kHz (typ. 20 kHz)

24 Vdc +/- 25 %

< 1.5 W at I_{out} = 20 mA

<= 2 A

0 °C...+55 °C

-20 °C...+85 °C

CSA / UL/UR / CE / ESD

EN 50178

EN 50081, EN50082, EN55011

300 V

4 kV

1.2 kVeff / 5s

1 nF

III

2

>= 3 mm

/0...20 mA

/50 mA

/50 Ω

0...10 V/

>= 2 kΩ/

< 0.2 % of final value

<= 250 ppm/K of final value

<= 40 μs (type 30 μs)

>= 15 kHz (typ. 20 kHz)

24 Vdc +/- 25 %

< 1.3 W at I_{out} = 5 mA

<= 2 A

0 °C...+55 °C

-20 °C...+85 °C

CSA / UL/UR / CE / ESD

EN 50178

EN 50081, EN50082, EN55011

300 V

4 kV

1.2 kVeff / 5s

1 nF

III

2

>= 3 mm

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Information

Screw connection Tension clamp c.

2.50 / 0.50 / 2.50 1.50 / 0.50 / 2.50
92.4 x 17.5 x 112.4 92.4 x 17.5 x 112.4

Tu=23°C, single module

Screw connection Tension clamp c.

2.50 / 0.50 / 2.50 1.50 / 0.50 / 2.50
92.4 x 17.5 x 112.4 92.4 x 17.5 x 112.4

Tu=23°C, single module

Screw connection Tension clamp c.

2.50 / 0.50 / 2.50 1.50 / 0.50 / 2.50
92.4 x 17.5 x 112.4 92.4 x 17.5 x 112.4

Tu=23°C, single module

Ordering data

Type of connection

Screw connection
Tension clamp c.

Type	(Qty.=1)	Order No.
WAS5 CCC HF 0-20/0-20mA		8447160000
WAZ5 CCC HF 0-20/0-20mA		8447170000

Type	(Qty.=1)	Order No.
WAS5 CCC HF 0-20/4-20mA		8447190000
WAZ5 CCC HF 0-20/4-20mA		8447200000

Type	(Qty.=1)	Order No.
WAS5 CVC HF 0-20/0-10V		8447220000
WAZ5 CVC HF 0-20/0-10V		8447230000

Information

Accessories

Information

Voltage supply 24V and 0V with ZQV 2.5N/2 cross-connection

Voltage supply 24V and 0V with ZQV 2.5N/2 cross-connection

Voltage supply 24V and 0V with ZQV 2.5N/2 cross-connection

DC/DC 3-way isolator

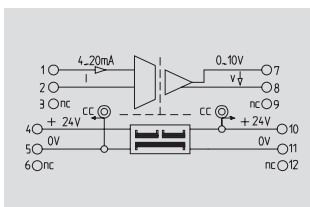
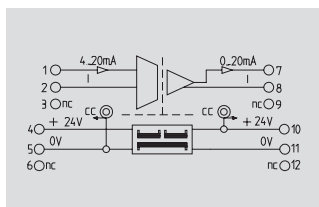
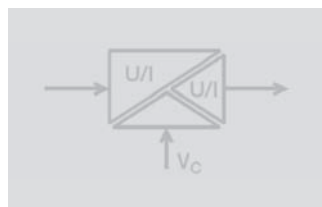
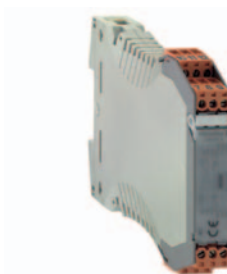
20kHz Cut-off frequency

- Signal conversion
- Galvanic isolation between input/output signal
- Power supply can be cross-connected via plug-in jumpers

4...20mA/0...20mA

4...20mA/0...10V

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Technical data

Input

Input voltage/Input current
Max. voltage/Max. current
Input resistance voltage/Current

Output

Output voltage/Output current
Load resistance voltage/Current
Accuracy
Temperature coefficient
Step response time
Cut-off freq. (-3dB)

General data

Supply voltage
Power consumption
Current-carrying cap. of cross-connect.
Operation temperature
Storage temperature
Approvals

Insulation coordinates

Standards
EMC standards
Rated voltage
Impulse withstand voltage
Isolation voltage Input, output
Coupling cap. in- resp. output/power supply
Overvoltage category
Pollution severity
Clearance & creepage path

/4...20 mA

/50 mA

/50 Ω

/0...20 mA

/< = 600 Ω

< 0.2 % of final value

<= 250 ppm/K of final value

<= 40 μs (type 30 μs)

>= 15 kHz (typ. 20 kHz)

24 Vdc +/- 25 %

< 1.5 W at Iout = 20 mA

<= 2 A

0 °C...+55 °C

-20 °C...+85 °C

CSA / UL/UR / CE / ESD

EN 50178

EN 50081, EN50082, EN5011

300 V

4 kV

1.2 kVeff / 5s

1 nF

III

2

>= 3 mm

/4...20 mA

/50 mA

/50 Ω

0...10 V/

>= 2 kΩ/< = 600 Ω

< 0.2 % of final value

<= 250 ppm/K of final value

<= 40 μs (type 30 μs)

>= 15 kHz (typ. 20 kHz)

24 Vdc +/- 25 %

< 1.3 W at Iout = 5 mA

<= 2 A

0 °C...+55 °C

-20 °C...+85 °C

CSA / UL/UR / CE / ESD

EN 50178

EN 50081, EN50082, EN5011

300 V

4 kV

1.2 kVeff / 5s

1 nF

III

2

>= 3 mm

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Information

Screw connection Tension clamp c.

2.50 / 0.50 / 2.50 1.50 / 0.50 / 2.50
92.4 x 17.5 x 112.4 92.4 x 17.5 x 112.4

Tu=23°C, single module

Screw connection Tension clamp c.

2.50 / 0.50 / 2.50 1.50 / 0.50 / 2.50
92.4 x 17.5 x 112.4 92.4 x 17.5 x 112.4

Tu=23°C, single module

Ordering data

Type of connection

Screw connection
Tension clamp c.

Type	(Qty.=1)	Order No.
WAS5 CCC HF 4-20/0-20mA		8447250000
WAZ5 CCC HF 4-20/0-20mA		8447260000

Type	(Qty.=1)	Order No.
WAS5 CVC HF 4-20/0-10V		8447280000
WAZ5 CVC HF 4-20/0-10V		8447290000

Information

Accessories

Information

Voltage supply 24V and 0V with ZQV 2.5N/2 cross-connection

Voltage supply 24V and 0V with ZQV 2.5N/2 cross-connection

Articles with coloured order number are kept permanently in stock at the central warehouse in Germany.
Delivery times see page X.2

DC/DC 3-way isolator

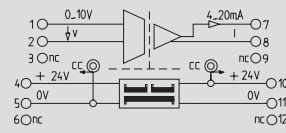
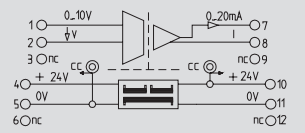
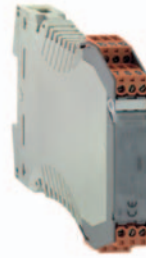
20kHz Cut-off frequency

- Signal conversion
- Galvanic isolation between input/output signal
- Power supply can be cross-connected via plug-in jumpers

0...10V/0...20mA

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0...10V/4...20mA



Technical data

Input

Input voltage/Input current
Max. voltage/Max. current
Input resistance voltage/Current

Output

Output voltage/Output current
Load resistance voltage/Current
Accuracy
Temperature coefficient
Step response time
Cut-off freq. (-3dB)

General data

Supply voltage
Power consumption
Current-carrying cap. of cross-connect.
Operation temperature
Storage temperature
Approvals

Insulation coordinates

Standards
EMC standards
Rated voltage
Impulse withstand voltage
Isolation voltage Input, output
Coupling cap. in- resp. output/power supply
Overvoltage category
Pollution severity
Clearance & creepage path

0...10 V/
15 V/
500 kΩ/

/0...20 mA
/< = 600 Ω
+/- 0.2% of final value
≤ 250 ppm/K of final value
≤ 40 μs (type 30 μs)
≥ 15 kHz (typ. 20 kHz)

24 Vdc +/- 25 %
≤ 1.5 W at I_{out} = 20 mA
≤ 2 A
0 °C...+55 °C
-20 °C...+85 °C
CSA / UL/UR / CE / ESD

EN 50178
EN 50081, EN50082, EN55011
300 V
4 kV
1.2 kVeff / 5s
1 nF
III
2
≥ 3 mm

0...10 V/
15 V/
500 kΩ/

/4...20 mA
/< = 600 Ω
+/- 0.2% of final value
≤ 250 ppm/K of final value
≤ 40 μs (type 30 μs)
≥ 15 kHz (typ. 20 kHz)

24 Vdc +/- 25 %
≤ 1.5 W at I_{out} = 20 mA
≤ 2 A
0 °C...+55 °C
-20 °C...+85 °C
CSA / UL/UR / CE / ESD

EN 50178
EN 50081, EN50082, EN55011
300 V
4 kV
1.2 kVeff / 5s
1 nF
III
2
≥ 3 mm

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Information

Screw connection Tension clamp c.

2.50 / 0.50 / 2.50 1.50 / 0.50 / 2.50
92.4 x 17.5 x 112.4 92.4 x 17.5 x 112.4

Tu=23°C, single module

Screw connection Tension clamp c.

2.50 / 0.50 / 2.50 1.50 / 0.50 / 2.50
92.4 x 17.5 x 112.4 92.4 x 17.5 x 112.4

Tu=23°C, single module

Ordering data

Type of connection

Screw connection
Tension clamp c.

Type	(Qty.=1)	Order No.
WAS5 VCC HF 0-10/0-20mA		8447310000
WAZ5 VCC HF 0-10/0-20mA		8447320000

Type	(Qty.=1)	Order No.
WAS5 VCC HF 0-10/4-20mA		8447340000
WAZ5 VCC HF 0-10/4-20mA		8447350000

Information

Accessories

Information

Voltage supply 24V and 0V with ZQV 2.5N/2 cross-connection

Voltage supply 24V and 0V with ZQV 2.5N/2 cross-connection

DC/DC 3-way isolator

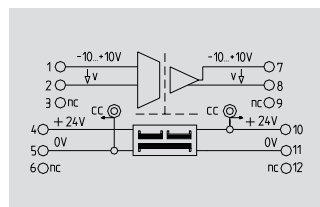
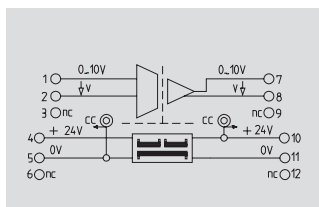
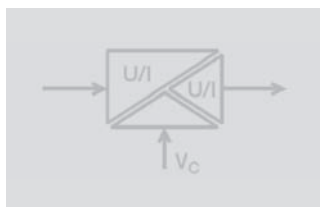
20kHz Cut-off frequency

- Signal conversion
- Galvanic isolation between input/output signal
- Power supply can be cross-connected via plug-in jumpers

0...10V/0...10V

-10V...+10V/-10V...+10V

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Technical data

Input

Input voltage/Input current
Max. voltage/Max. current
Input resistance voltage/Current

Output

Output voltage/Output current
Load resistance voltage/Current
Accuracy
Temperature coefficient
Step response time
Cut-off freq. (-3dB)

General data

Supply voltage
Power consumption
Current-carrying cap. of cross-connect.
Operation temperature
Storage temperature
Approvals

Insulation coordinates

Standards
EMC standards
Rated voltage
Impulse withstand voltage
Isolation voltage Input, output
Coupling cap. in- resp. output/power supply
Overvoltage category
Pollution severity
Clearance & creepage path

0...10 V/
15 V/
500 kΩ/

0...10 V/
≥ 2 kΩ/
± 0.2% of final value
≤ 250 ppm/K of final value
≤ 40 μs (type 30 μs)
≥ 15 kHz (typ. 20 kHz)

24 Vdc ± 25 %
≤ 1.3 W at I_{out} = 5 mA
≤ 2 A
0 °C...+55 °C
-20 °C...+85 °C
CSA / UL/UR / CE / ESD

EN 50178
EN 50081, EN50082, EN55011
300 V
4 kV
1.2 kVeff / 5s
1 nF
III
2
≥ 3 mm

-10...+10 V/
± 15 V/
500 kΩ/

-10...+10 V/
≥ 2 kΩ/
± 0.2 % of measuring range
≤ 250 ppm/K of measuring range
≤ 40 μs (type 30 μs)
≥ 15 kHz (typ. 20 kHz)

24 Vdc ± 25 %
≤ 1.3 W at I_{out} = 5 mA
≤ 2 A
0 °C...+55 °C
-20 °C...+85 °C
CE / ESD / cURus

EN 50178
EN 50081, EN50082, EN55011
300 V
4 kV
1.2 kVeff / 5s
1 nF
III
2
≥ 3 mm

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Information

Screw connection Tension clamp c.

2.50 / 0.50 / 2.50 1.50 / 0.50 / 2.50
92.4 x 17.5 x 112.4 92.4 x 17.5 x 112.4
T_u=23°C, single module

Screw connection Tension clamp c.

2.50 / 0.50 / 2.50 1.50 / 0.50 / 2.50
92.4 x 17.5 x 112.4 92.4 x 17.5 x 112.4
T_u=23°C, single module

Ordering data

Type of connection

Screw connection
Tension clamp c.

Type	(Qty.=1)	Order No.
WAS5 VVC HF 0-10/0-10V		8447370000
WAZ5 VVC HF 0-10/0-10V		8447380000

Type	(Qty.=1)	Order No.
WAS5 VVC HF +10V/+10V		8561610000
WAZ5 VVC HF +10V/+10V		8587000000

Information

Accessories

Information

Voltage supply 24V and 0V with ZQV 2.5N/2 cross-connection

Voltage supply 24V and 0V with ZQV 2.5N/2 cross-connection

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Delivery times see page X.2

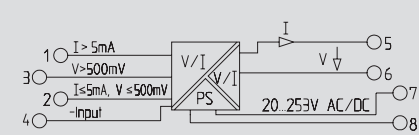
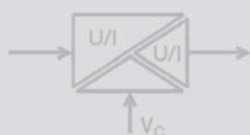
DC/DC 3-way isolator

Configurable

- Universal adjustable via DIP-switch
- Service tool WAVETOOL via internet
- Voltage supply 20...230 V ac/dc
- Low power loss
- Adjustable transmission frequency

PRO DC/DC

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Switch position/setting options

Input Input range	Switch							
	S1				S2			
	1	2	3	4	1	2	3	4
0 ... ±60 mV	☐	☐	☐	☐	☐	☐	☐	☐
0 ... ±100 mV	☒	☐	☐	☐	☐	☐	☐	☐
0 ... ±150 mV	☐	☒	☐	☐	☐	☐	☐	☐
0 ... ±300 mV	☒	☒	☐	☐	☐	☐	☐	☐
0 ... ±500 mV	☐	☐	☒	☐	☐	☐	☐	☐
0 ... ±1 V	☒	☐	☒	☐	☐	☒	☐	☐
0 ... ±5 V	☐	☒	☒	☐	☐	☒	☐	☐
0 ... ±10 V	☒	☒	☒	☐	☐	☒	☐	☐
0 ... ±100 V	☐	☐	☐	☒	☐	☒	☐	☐
0 ... ±0.3 mA	☒	☐	☐	☒	☒	☐	☐	☐
0 ... ±1 mA	☐	☒	☐	☒	☒	☐	☐	☐
0 ... ±5 mA	☒	☐	☐	☒	☐	☒	☐	☐
0 ... ±10 mA	☐	☐	☒	☒	☒	☐	☐	☐
0 ... ±20 mA	☒	☐	☒	☒	☐	☒	☐	☐
0 ... ±50 mA	☐	☒	☒	☒	☐	☒	☐	☐
4 ... ±20 mA*	☒	☒	☒	☒	☒	☐	☐	☐

*Offset conversion not calibrated

Switch S2		4
calibrated ranges		☒
Span-pot. activated: input x 0.33 ... x 3.30		

Output Output range	Switch					
	S1			S3		
	5	6	7	1	2	
0 ... ±10 V	☐	☐	☐	☒	☐	
2 ... 10 V	☒	☐	☐	☐	☒	
0 ... ±5 V	☐	☒	☐	☒	☐	
1 ... 5 V	☒	☒	☐	☒	☐	
0 ... ±20 mA	☐	☐	☒	☐	☐	
4 ... 20 mA	☒	☐	☒	☐	☐	

Offset (in % of output voltage)	S1			S2
	8	9	10	5
0 %	☐	☐	☐	☒
-100 %	☒	☐	☐	☐
-50 %	☐	☒	☐	☐
+50 %	☒	☐	☐	☐
+100 %	☐	☐	☒	☐

Zero pot. activated: additional ±25 %

Switch S3		3
Bandwidth 10 kHz		☐
Bandwidth 10 Hz		☒
Set range can be documented on side of housing.		

■ = on
□ = off

Technical data

Input	
Input voltage/Input current	
Input resistance voltage/Current	
Max. current	
Output	
Output voltage/Output current	
Load resistance voltage/Current	
Accuracy	
Temperature coefficient	
Cut-off freq. (-3dB)	
Offset	
Adjustment range, zero point	
Adjustment range, amplification	
Displacement	
General data	
Supply voltage	
Power consumption	
Operation temperature	
Storage temperature	
Default settings	
Approvals	
Insulation coordinates	
Standards	
EMC standards	
Rated voltage	
Impulse withstand voltage	
Isolation voltage Input, output/	
Overvoltage category	
Pollution severity	

+/- 20 mV...+/- 200 V/+/-0.1mA...+/- 100 mA
ca. 1 MΩ/< 5 mA: ca. 100 Ω; >5 mA: ca. 5 Ω
lin < 5mA: < 100mA, lin > 5mA < 300mA
0...+/- 10 V/0...+/- 20 mA
>= 1 kΩ/< = 600 Ω
< 0.1 % of final value
< 60 ppm/K of end value
> 10 kHz/ < 10 Hz
20 μA resp. 10 mV
+25 % of measuring range of the chosen output range
0.33...3.30 x final value of the chosen output range
-100%, -50%, 0%, 50%, 100% of measuring range
22...230 Vac/dc +10 %/ 48...62 Hz
approx. 1 W
-10 °C...+70 °C
-40 °C...+85 °C
0...10V / 0...10V / 10Hz
GL / CE / cURus
EN 50178
DIN EN 61326, EN 61326/A1, EN 50081-2, EN 61000-6-2
600 V
5 kV, 1.2/50 μs (IEC 255-4)
4 kVeff/
III
2

Dimensions	
Clamping range (rating- / min. / max.)	mm²
Length x width x height	mm
Information	
Tu=23°C, single module	

Screw connection	Tension clamp c.
2.50 / 0.50 / 2.50	1.50 / 0.50 / 2.50
92.4 x 12.5 x 112.4	92.4 x 12.5 x 112.4

Ordering data

Type of connection	
Screw connection	
Tension clamp c.	
Information	

Type	Qty.	Order No.
WAS4 PRO DC/DC	1	8560740000
WAZ4 PRO DC/DC	1	8560750000
Information		

Accessories

Information

Information accessories

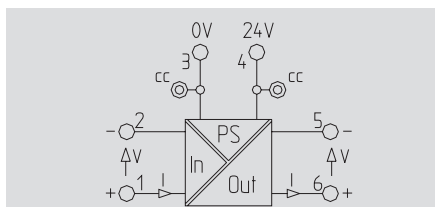
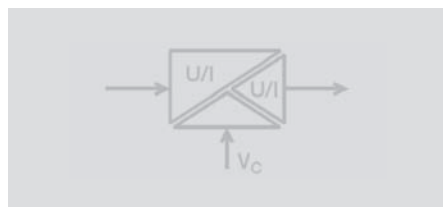
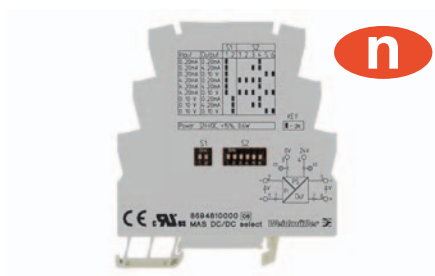
DC/DC 3-way isolator

Configurable

- 3-way isolation
- DIP-switch
- Power supply can be cross connected
- Low power loss

DC/DC select

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Technical data

Input

Input voltage/Input current
Input resistance voltage/Current
Voltage drop

Output

Output voltage/Output current
Load resistance voltage/Current
Accuracy
Temperature coefficient
Cut-off freq. (-3dB)

General data

Supply voltage
Power consumption
Current-carrying cap. of cross-connect.
Operation temperature
Storage temperature
Default settings
Approvals

Insulation coordinates

Standards
EMC standards
Rated voltage
Isolation voltage Input, output/
Overvoltage category
Pollution severity

0...10 V/0(4)...20 mA
100 kΩ/
< 0.1 V at I_{in}=20 mA (Current Input)

0...10 V/0(4)...20 mA
≥ 10 kΩ / < = 600 Ω
< 0.5% of final value
< 150 ppm/K of final value
> 100 Hz

24 Vdc +/- 15 %
approx. 0.6 W
≤ 20 A
0 °C...+55 °C
-20 °C...+85 °C
0...20mA / 0...20mA
CE / cURus

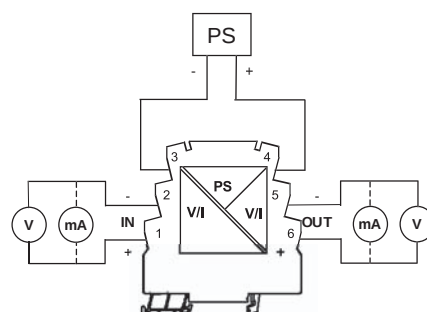
EN 50178
DIN EN 61326
50 V
500 Veff/
II
2

Switch position/setting options

Input	Output	Switch					
		S1		S2			
		1	2	1	2	3	4
0 ... 20 mA	0 ... 20 mA	■	□	□	□	■	□
0 ... 20 mA	4 ... 20 mA	■	□	□	□	■	□
0 ... 20 mA	0 ... 10 V	■	□	□	□	■	□
4 ... 20 mA	0 ... 20 mA	■	□	■	■	■	□
4 ... 20 mA	4 ... 20 mA	■	□	■	□	■	□
4 ... 20 mA	0 ... 10 V	■	□	■	□	■	□
0 ... 10 V	0 ... 20 mA	□	■	□	□	■	□
0 ... 10 V	4 ... 20 mA	□	■	□	□	■	□
0 ... 10 V	0 ... 10 V	□	■	□	□	■	■

■ = on
□ = off

Connection



Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Information

Screw connection

2.50 / 0.50 / 2.50
88.0 x 6.1 x 97.8

Tension clamp c.

1.50 / 0.50 / 2.50
92.0 x 6.1 x 97.8

Tu=23°C, single module

Ordering data

Type of connection

Screw connection
Tension clamp c.

Type

MAS DC/DC select
MAZ DC/DC select

Qty.

10
1

Order No.

8594810000
8594840000

Information

Accessories

Information

Information accessoriesVoltage supply 24V and 0V with ZQV 4N/x cross-connection

Articles with coloured order number are kept permanently in stock at the central warehouse in Germany.
Delivery times see page X.2

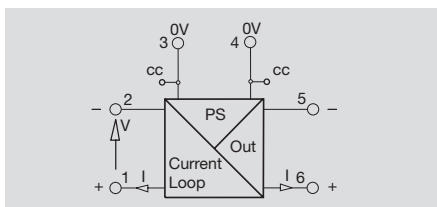
Supply isolator

Without HART

- 2-conductor technology
- 3-way isolation
- Voltage supply cross-connection

MAS RPS

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Technical data

Input

Input current	4...20 mA (sensor circuit)
Sensor	2-conductor
Feed voltage	16.5 V / constant for 3...22 mA

Output

Output current	4...20 mA
Output signal limit	22...25 mA
Load resistance voltage/Current	$I_{L} < 600 \Omega$
Accuracy	$< 0.1 \%$
Offset current	$< 30 \mu A$
Temperature coefficient	$< 50 \text{ ppm/K}$
Residual ripple	$< 10 \text{ mVeff}$

General data

Supply voltage	24 Vdc $\pm 15 \%$
Power consumption	approx. 1 W
Current-carrying cap. of cross-connect.	$\leq 20 A$
Operation temperature	0 °C...+55 °C
Storage temperature	-25 °C...+85 °C
Approvals	CE / cURus

Insulation coordinates

Standards	EN 50178
EMC standards	DIN EN 61326 class B
Rated voltage	300 V
Isolation voltage Input, output	1.5 kVac
Overvoltage category	II
Pollution severity	2

Dimensions

Clamping range (rating- / min. / max.)	mm ²
Length x width x height	mm

Screw connection

2.50 / 0.50 / 2.50
88.0 x 6.1 x 97.8

Information

Ordering data

Type of connection

Screw connection

Type	Qty.	Order No.
MAS RPS	1	8721150000

Information

Accessories

Information

Voltage supply 24V and 0V with ZQV 4N/x cross-connection

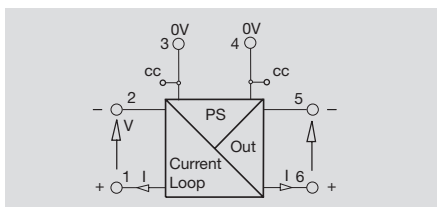
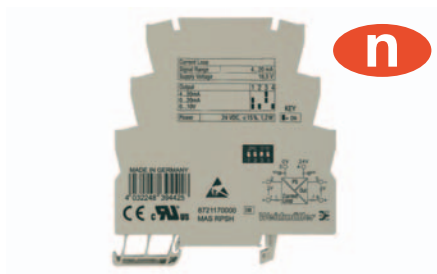
Supply isolator

With HART

- 2-conductor technology
- 3-way isolation
- With Hart transmission
- Output switchable

MAS RPSH

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Technical data

Input	
Input current	4...20 mA (sensor circuit)
Sensor	2-conductor
Feed voltage	16.5 V / constant for 3...22 mA
Output	
Output current	0(4)...20 mA
Output voltage	0...10 V
Output signal limit	22...25 mA resp. 11...12.5 V
Load resistance voltage/Current	$\geq 10 \text{ k}\Omega / \approx 600 \Omega$
Accuracy	$I_{out} < 0.1 \% / U_{out} < 0.2 \%$
Offset current	$< 30 \mu\text{A}$
Temperature coefficient	$< 50 \text{ ppm/K}$
Residual ripple	$< 10 \text{ mVeff}$
General data	
Supply voltage	24 Vdc $\pm 15 \%$
Power consumption	approx. 1 W
Communication	according to HART Specification
Current-carrying cap. of cross-connect.	$\leq 20 \text{ A}$
Operation temperature	0 °C...+55 °C
Storage temperature	-25 °C...+85 °C
Approvals	CE / cURus
Insulation coordinates	
Standards	EN 50178 (safe separation)
EMC standards	DIN EN 61326 class B
Rated voltage	600 V
Isolation voltage Input, output	2.5 kVac
Overvoltage category	II
Pollution severity	2
Dimensions	
Clamping range (rating- / min. / max.)	mm ² 1.50 / 0.50 / 2.50
Length x width x height	mm 88.0 x 6.1 x 97.8
Screw connection	
Clamping range (rating- / min. / max.)	mm ² 1.50 / 0.50 / 2.50
Length x width x height	mm 88.0 x 6.1 x 97.8
Information	

Ordering data

Type of connection	Type	Qty.	Order No.
Screw connection	MAS RPSH	1	8721170000
Information			

Accessories

Information
Voltage supply 24V and 0V with ZQV 4N/x cross-connection

Articles with coloured order number are kept permanently in stock at the central warehouse in Germany.
Delivery times see page X.2

PT100 / RTD - signal isolator/converter

PT100, 2-Conductor converter

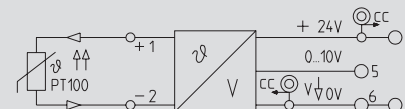
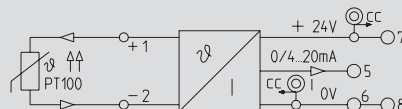
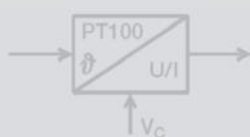
- 2-conductor technology
- Adjustable temperature range
– 200 °C ... + 800 °C
- Power supply can be cross connected via
plug-in jumper

PT100/2 0(4)...20mA

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PT100/2 0...10V



Technical data

Input	
Sensor	
Feed current	
Output	
Output voltage/Output current	
Load resistance voltage/Current	
Accuracy	
General data	
Supply voltage/Current consumption	
Operation temperature/Storage temperature	
Approvals	
Standards	
EMC standards	
Dimensions	
Clamping range (rating- / min. / max.)	mm²
Length x width x height	mm
Information	

PT100/2-conductor	
1.45 mA	
Screw connection	
2.50 / 0.50 / 2.50	
Tension clamp c.	
92.4 x 12.5 x 112.4	
Information	
Tu=23°C, single module	

PT100/2-conductor	
1.45 mA	
Screw connection	
2.50 / 0.50 / 2.50	
Tension clamp c.	
92.4 x 12.5 x 112.4	
Information	
Tu=23°C, single module	

Ordering data

Temperature input range	Type of connection
Adjustable -200...+800 °C	Screw connection
Adjustable -200...+800 °C	Tension clamp c.
Special adjustment	Screw connection
Special adjustment	Tension clamp connection
0...100 °C	Screw connection
0...100 °C	Tension clamp connection
0...100 °C	Screw connection
0...100 °C	Tension clamp connection
Information	

Type	Qty.	Order No.
WTS4 PT100/2 C 0/4-20mA	1	8432210000
WTZ4 PT100/2 C 0/4-20mA	1	8432220000
WTS4 PT100/2 C 0/4-20mA variable	1	8432219999
WTZ4 PT100/2 C 0/4-20mA variable	1	8432229999
WTS4 PT100/2 C 0-20mA 0...100C	1	8432210001
WTZ4 PT100/2 C 0-20mA 0...100C	1	8432220001
WTS4 PT100/2 C 4-20mA 0...100C	1	8432210011
WTZ4 PT100/2 C 4-20mA 0...100C	1	8432220011
Information		
Specify temperature range by special calibrations.		

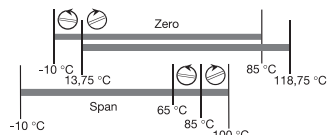
Type	Qty.	Order No.
WTS4 PT100/2 V 0-10V	1	8432180000
WTZ4 PT100/2 V 0-10V	1	8432190000
WTS4 PT100/2 V 0-10V variable	1	8432189999
WTZ4 PT100/2 Vn 0-10V variable	1	8432199999
WTS4 PT100/2 V 0-10V 0...100C	1	8432180001
WTZ4 PT100/2 V 0-10V 0...100C	1	8432190001
Information		
Specify temperature range by special calibrations.		

Application

Example for Zero and Span

Temperature adjustment:

Tmin	-10 °C
Span	75...110 °C
Span	95 °C
Adjustment of Span	+ 25 %



Temperature coefficient

Measurement range $\geq 200 \text{ K} \leq 200 \text{ ppm} / ^\circ\text{C}$ (typ. 80 ppm / °C)
 $100 \text{ K} \leq \text{Measurement range} < 200 \text{ K} \leq 225 \text{ ppm} / ^\circ\text{C}$ (typ. 90 ppm / °C)
 $40 \text{ K} \leq \text{Measurement range} < 100 \text{ K} \leq 450 \text{ ppm} / ^\circ\text{C}$ (typ. 180 ppm / °C)

Aids

- Voltage supply 24 Vdc, 50 mA
- Simulator for PT 100 or precision-resistance-decade
- Ampere-voltmeter which can be calibrated to an accuracy of >0.1% of the end value.

Switch position/setting options

	1	2	3	Span	4	5	6
0 °C	■	■	■	40 ... 50 °C	■	■	■
-10 °C	■	■	■	50 ... 75 °C	■	■	■
-20 °C	■	■	■	75 ... 110 °C	■	■	■
-40 °C	■	■	■	110 ... 165 °C	■	■	■
-60 °C	■	■	■	165 ... 245 °C	■	■	■
-80 °C	■	■	■	245 ... 360 °C	■	■	■
-100 °C	■	■	■	360 ... 540 °C	■	■	■
-200 °C	■	■	■	540 ... 800 °C	■	■	■
Output 1)				PT 100			
Range	7			2 - wire	8	9	10
0 ... 20 mA	■	■	■	2 - wire	■	■	■
4 ... 20 mA	■	■	■	3 - wire	■	■	■
				4 - wire	■	■	■

1) only modules with current output

■ = on
□ = off

PT100 / RTD - signal isolator/converter

PT100, 3-Conductor converter

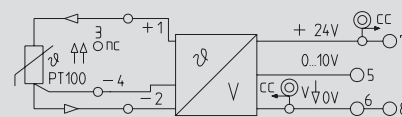
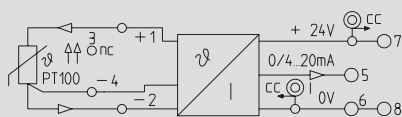
- 3-conductor technology
- Adjustable temperature range
– 200 °C ...+ 800 °C
- Power supply can be cross connected via plug-in jumper

PT100/3 0(4)...20mA

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PT100/3 0...10V



Technical data

Input	
Sensor	
Feed current	
Output	
Output voltage/Output current	
Load resistance voltage/Current	
Accuracy	
General data	
Supply voltage/Current consumption	
Operation temperature/Storage temperature	
Approvals	
Standards	
EMC standards	
Dimensions	
Clamping range (rating- / min. / max.)	mm²
Length x width x height	mm
Information	

PT100/3-conductor	
1.45 mA	
/0(4)...20 mA	
/< = 600 Ω	
+/-0.5% of measuring range	
24 Vdc +/- 20 %/< 48 mA at Iout = 20 mA	
0 °C...+55 °C/-20 °C...+85 °C	
CSA / UL/UR / CE / ESD	
EN 50178, EN 60751, IEC751	
EN 50081, EN50082, EN55011	
Screw connection	Tension clamp c.
2.50 / 0.50 / 2.50	1.50 / 0.50 / 2.50
92.4 x 12.5 x 112.4	92.4 x 12.5 x 112.4
Tu=23°C, single module	

PT100/3-conductor	
1.45 mA	
0...10 V/	
>= 1 kΩ/	
+/-0.5% of measuring range	
24 Vdc +/- 20 %/< 38 mA at Iout = 20 mA	
0 °C...+55 °C/-20 °C...+85 °C	
CSA / UL/UR / CE / ESD	
EN 50178, EN 60751, IEC751	
EN 50081, EN50082, EN55011	
Screw connection	Tension clamp c.
2.50 / 0.50 / 2.50	1.50 / 0.50 / 2.50
92.4 x 12.5 x 112.4	92.4 x 12.5 x 112.4
Tu=23°C, single module	

Ordering data

Temperature input range	Type of connection
Adjustable -200...+800 °C	Screw connection
Adjustable -200...+800 °C	Tension clamp c.
Special adjustment	Screw connection
Special adjustment	Tension clamp connection
0...100 °C	Screw connection
0...100 °C	Tension clamp connection
0...100 °C	Screw connection
0...100 °C	Tension clamp connection
Information	

Type	Qty.	Order No.
WTS4 PT100/3 C 0/4-20mA	1	8432150000
WTZ4 PT100/3 C 0/4-20mA	1	8432160000
WTS4 PT100/3 C 0/4-20mA variabel	1	8432159999
WTZ4 PT100/3 C 0/4-20mA variabel	1	8432169999
WTS4 PT100/3 C 0-20mA 0...100C	1	8432150001
WTZ4 PT100/3 C 0-20mA 0...100C	1	8432160001
WTS4 PT100/3 C 4-20mA 0...100C	1	8432150011
WTZ4 PT100/3 C 4-20mA 0...100C	1	8432160011
Specify temperature range by special calibrations.		

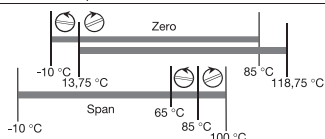
Type	Qty.	Order No.
WTS4 PT100/3 V 0-10V	1	8432090000
WTZ4 PT100/3 V 0-10V	1	8432130000
WTS4 PT100/3 V 0-10V variabel	1	8432099999
WTZ4 PT100/3 V 0-10V variabel	1	8432139999
WTS4 PT100/3 V 0-10V 0...100C	1	8432090001
WTZ4 PT100/3 V 0-10V 0...100C	1	8432130001
Specify temperature range by special calibrations.		

Application

Example for Zero and Span

Temperature adjustment:

Tmin	-10 °C
Span	75...110 °C
Span	95 °C
Adjustment of Span	+ 25 %



Temperature coefficient

Measurement range ≥ 200 K ≤ 200 ppm / °C (typ. 80 ppm / °C)
 $100\text{K} \leq \text{Measurement range} < 200\text{K} \leq 250$ ppm / °C (typ. 100 ppm / °C)
 $40\text{K} \leq \text{Measurement range} < 100\text{K} \leq 500$ ppm / °C (typ. 200 ppm / °C)

Aids

- Voltage supply 24 Vdc, 50 mA
- Simulator for PT 100 or precision-resistance-decade
- Ampere-/voltmeter which can be calibrated to an accuracy of >0.1% of the end value.

Switch position/setting options

Tmin	1	2	3	Span	4	5	6
0 °C	■	■	■	40 ... 50 °C	■	■	■
-10 °C	■	■	■	50 ... 75 °C	■	■	■
-20 °C	■	■	■	75 ... 110 °C	■	■	■
-40 °C	■	■	■	110 ... 165 °C	■	■	■
-60 °C	■	■	■	165 ... 245 °C	■	■	■
-80 °C	■	■	■	245 ... 360 °C	■	■	■
-100 °C	■	■	■	360 ... 540 °C	■	■	■
-200 °C	■	■	■	540 ... 800 °C	■	■	■
Output 1)				1) only modules with current output			
Range				7			
0 ... 20 mA				■			
4 ... 20 mA				■			

PT100 / RTD - signal isolator/converter

PT100, 4-Conductor converter

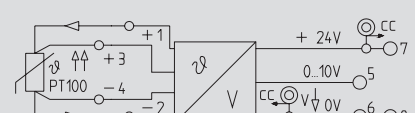
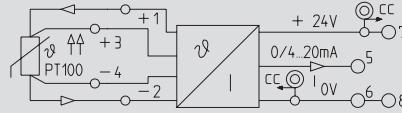
- 4-conductor technology
- Adjustable temperature range
– 200 °C ... + 800 °C
- Power supply can be cross connected via plug-in jumper

PT100/4 0(4)...20mA

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PT100/4 0...10V



Technical data

Input

Sensor
Feed current

Output

Output voltage/Output current
Load resistance voltage/Current
Accuracy

General data

Supply voltage/Current consumption
Operation temperature/Storage temperature
Approvals
Standards
EMC standards

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Information

PT100/4-conductor
1.45 mA

/0(4)...20 mA

/< = 600 Ω

100K<=MR <600K: 0.1%;MR>=600K: 0.2% of MR

24 Vdc +/- 20 %/< 48 mA at I_{out} = 20 mA

0 °C...+55 °C/-20 °C...+85 °C

CSA / UL/UR / CE / ESD

EN 50178, EN 60751, IEC751

EN 50081, EN50082, EN55011

Screw connection

2.50 / 0.50 / 2.50

92.4 x 12.5 x 112.4

Tu=23°C, single module

Tension clamp c.

1.50 / 0.50 / 2.50

92.4 x 12.5 x 112.4

PT100/4-conductor
1.45 mA

0...10 V/

>= 1 kΩ/

100K<=MR <600K: 0.1%;MR>=600K: 0.2% of MR

24 Vdc +/- 20 %/< 38 mA at I_{out} = 20 mA

0 °C...+55 °C/-20 °C...+85 °C

CSA / UL/UR / CE / ESD

EN 50178, EN 60751, IEC751

EN 50081, EN50082, EN55011

Screw connection

2.50 / 0.50 / 2.50

92.4 x 12.5 x 112.4

Tu=23°C, single module

Tension clamp c.

1.50 / 0.50 / 2.50

92.4 x 12.5 x 112.4

Ordering data

Temperature input range	Type of connection
Adjustable -200...+800 °C	Screw connection
Adjustable -200...+800 °C	Tension clamp c.
Special adjustment	Screw connection
Special adjustment	Tension clamp connection
0...100 °C	Screw connection
0...100 °C	Tension clamp connection
0...100 °C	Screw connection
0...100 °C	Tension clamp connection

Information

Type	Qty.	Order No.
WTS4 PT100/4 C 0/4-20mA	1	8432270000
WTZ4 PT100/4 C 0/4-20mA	1	8432280000
WTS4 PT100/4 C 0/4-20mA variable	1	8432279999
WTZ4 PT100/4 C 0/4-20mA variable	1	8432289999
WTS4 PT100/4 C 0...20mA 0...100C	1	8432270001
WTZ4 PT100/4 C 0...20mA 0...100C	1	8432280001
WTS4 PT100/4 C 4-20mA 0...100C	1	8432270011
WTZ4 PT100/4 C 4-20mA 0...100C	1	8432280011

Specify temperature range by special calibrations

Type	Qty.	Order No.
WTS4 PT100/4 V 0-10V	1	8432240000
WTZ4 PT100/4 V 0-10V	1	8432250000
WTS4 PT100/4 V 0-10V variabel	1	8432249999
WTZ4 PT100/4 V 0-10V variabel	1	8432259999
WTS4 PT100/4 V 0-10V 0...100C	1	8432240001
WTZ4 PT100/4 V 0-10V 0...100C	1	8432250001

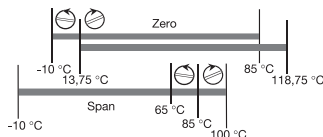
Specify temperature range by special calibrations

Application

Example for Zero and Span

Temperature adjustment:

T _{min}	-10 °C
Span	75...110 °C
Span	95 °C
Adjustment of Span	+ 25 %



Temperature coefficient

Measurement range $\geq 200 \text{ K} \leq 200 \text{ ppm} / ^\circ\text{C}$ (typ. 80 ppm / °C)
 $100 \text{ K} \leq \text{Measurement range} < 200 \text{ K} \leq 225 \text{ ppm} / ^\circ\text{C}$ (typ. 90 ppm / °C)
 $40 \text{ K} \leq \text{Measurement range} < 100 \text{ K} \leq 450 \text{ ppm} / ^\circ\text{C}$ (typ. 180 ppm / °C)

Aids

- Voltage supply 24 Vdc, 50 mA
- Simulator for PT 100 or precision-resistance-decade
- Ampere-voltmeter which can be calibrated to an accuracy of >0.1% of the end value.

Switch position/setting options

	1	2	3	Span	4	5	6
0 °C	■	■	■	40 ... 50 °C	■	■	■
-10 °C	■	■	■	50 ... 75 °C	■	■	■
-20 °C	■	■	■	75 ... 110 °C	■	■	■
-40 °C	■	■	■	110 ... 165 °C	■	■	■
-60 °C	■	■	■	165 ... 245 °C	■	■	■
-80 °C	■	■	■	245 ... 360 °C	■	■	■
-100 °C	■	■	■	360 ... 540 °C	■	■	■
-200 °C	■	■	■	540 ... 800 °C	■	■	■

Output 1)	7	PT 100	8	9	10
Range					
0 ... 20 mA	■		2 - wire	■	■
4 ... 20 mA	■		3 - wire	■	■
			4 - wire	■	■

1) only modules with current output

■ = on
□ = off

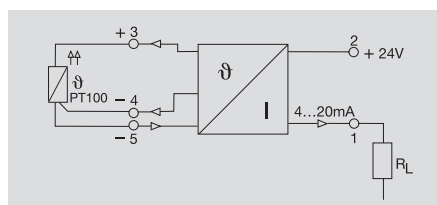
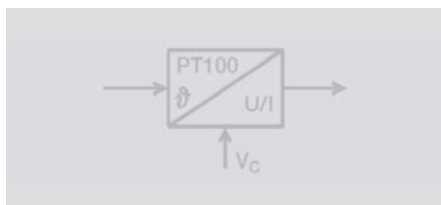
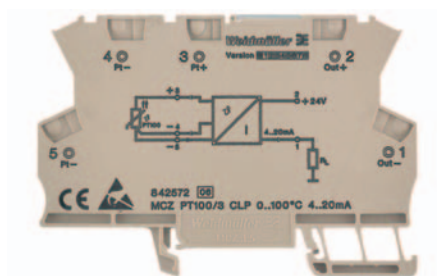
PT100 / RTD - signal isolator/converter

PT100, 2-/3-Conductor disconnector converter

- For 2- or 3-conductor PT100 sensors
- Loop-fed output current
- High accuracy and linearity

MCZ PT100/3 CLP

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Technical data

Input		
Sensor		PT100/2-/3-conductor
Feed current		0.8 mA
Output		
Output current		4...20 mA (current loop)
Load resistance voltage/Current		$I_{<} = 600 \Omega$
Accuracy/Influence of cable resistance		typical 0.2%, max. 0.5% of FSR/max. 0.6 K/ Ω
Response time		10 ms
General data		
Operation temperature/Storage temperature		0 °C...+50 °C/-20 °C...+85 °C
Approvals		CSA;UL/UR;CE;ESD;
Standards		EN 50178, EN 60751, IEC751
EMC standards		EMVG, EN 50081-1, EN 50082-2
Dimensions		
Clamping range (rating- / min. / max.)	mm²	1.50 / 0.50 / 1.50
Length x width x height	mm	91.0 x 6.0 x 63.2
Information		
		Tu=23°C, single module

Ordering data

Temperature input range	Type of connection	Type	Qty.	Order No.
0...100 °C	Tension clamp c.	MCZ PT100/3 CLP 0...100C	10	8425720000
0...120 °C	Tension clamp c.	MCZ PT100/3 CLP 0...120C	10	8483680000
0...150 °C	Tension clamp c.	MCZ PT100/3 CLP 0...150C	10	8604420000
0...200 °C	Tension clamp c.	MCZ PT100/3 CLP 0...200C	10	8473010000
0...300 °C	Tension clamp c.	MCZ PT100/3 CLP 0...300C	10	8473020000
-50...+150 °C	Tension clamp c.	MCZ PT100/3 CLP -50C...+150C	10	8473000000
-40...+100 °C	Tension clamp c.	MCZ PT100/3 CLP -40C...100C	10	8604430000

Information

Application

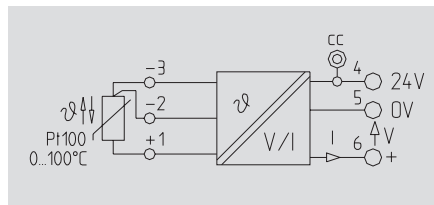
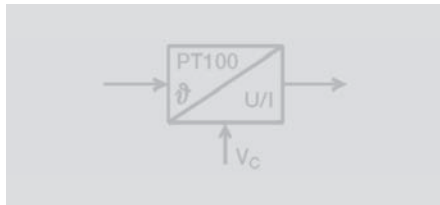
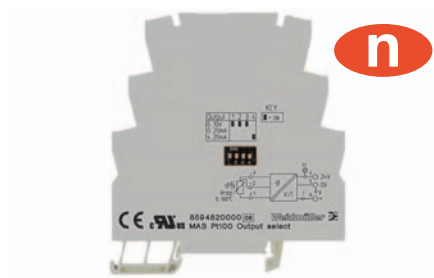
PT100 / RTD - signal isolator/converter

PT100, 2-/3-Conductor disconnector converter

- 2-way isolation between input/output and power supply
- PT100 2-/ 3-conductor
- Output can be switched calibrated via DIP-switch

PT100 Output select

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Technical data

Input

Sensor
Feed current
Temperature input range

Output

Output voltage/Output current
Load resistance voltage/Current
Accuracy
Temperature coefficient
Step response time

General data

Supply voltage
Power consumption
Current-carrying cap. of cross-connect.
Operation temperature
Storage temperature
Default settings
Approvals

Insulation coordinates

Standards
EMC standards
Rated voltage
Impulse withstand voltage
Isolation voltage Input, output/
Overvoltage category
Pollution severity
Clearance & creepage path

PT100/2-/3-conductor

0.8 mA

0...100 °C

0...10V / 0...5V/0(4)...20 mA

>= 10 kΩ / < = 600 Ω

< 0.5 % out of measuring range

<= 250 ppm/K of final value

< 0.7 s

24 Vdc +/- 10 %

approx. 0.6 W

<= 20 A

0 °C...+55 °C

-20 °C...+85 °C

0...20mA

CE / ESD / cURus

EN 50178, EN 60751, IEC751

EN 50081, EN 50082, EN 55011, EN 61000-6-2, EN 61326

100 V

1.5 kV

500 Veff/

III

2

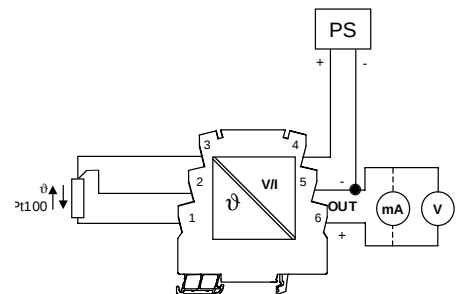
>= 1.5mm

Output	Switch			
	1	2	3	4
0 ... 10 V	■	■	■	□
0 ... 20 mA	□	□	□	□
4 ... 20 mA	□	□	□	■
0 ... 5 V	■	■	■	■

■ = ein

□ = aus

Connection



Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Information

Screw connection

2.50 / 0.50 / 2.50
88.0 x 6.1 x 97.8

Tension clamp c.

1.50 / 0.50 / 2.50
92.0 x 6.1 x 97.8

Tu=23°C, single module

Ordering data

Type of connection

Screw connection
Tension clamp c.

Type	Qty.	Order No.
MAS PT100 0...100C	1	8594820000
MAZ PT100 0...100C	1	8594850000

Information

Accessories

Information

Information accessoriesVoltage supply 24V and 0V with ZQV 4N/x cross-connection

PT100 / RTD - signal isolator/converter

RTD, signal disconnecter converter

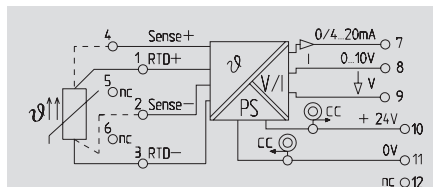
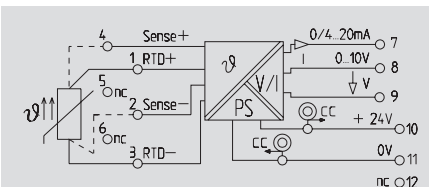
- Universal adjustable via DIP-switch
- 3-way isolation
- Linearization
- Power supply can be cross connected via plug-in jumper

PRO RTD

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PRO RTD 1000



Technical data

Input

Sensor
Temperature input range

Output

Output current/Output voltage
Offset current/Offset voltage
Load resistance voltage/Current
Step response time
Line resistance in measuring circuit
Influence of cable resistance
Wire break detection
Fine adjustment
Status indicator

General data

Supply voltage
Power consumption
Current-carrying cap. of cross-connect.
Operation temperature
Storage temperature
Default settings
Approvals

Insulation coordinates

Standards
EMC standards
Rated voltage
Impulse withstand voltage
Isolation voltage Input, output
Overvoltage category
Pollution severity
Clearance & creepage path

PT100/2-/3-/4-cond.; Ni100/2-/3-/4-cond.; potentiometer:
min. 0...100Ω, max. 0...100kΩ; resistance: 0...450Ω
configurable

0(4)...20 mA/0...10 V
max. 100 μA/max. 0.05 V
≥ 1 kΩ/≤ 600 Ω
fast: 1.2 s/ slow: 2.2 s

50 Ω
max. + 0.25°C at 50 Ω cond. resistance
LED flashes (output value > 20mA, > 10V)
≥ ±5%, Version 1: ≥ 12.5% / Poti: 12.5%...25%
active: LED on/cond. broken: LED flashing/Error: LED off

24 Vdc +/- 25 %
830...880...980mW at Iout=20mA

≤ 2 A
0 °C...+55 °C
-20 °C...+85 °C

PT100/3-cond./ 0...100°C / 4...20mA / man. adjustment: off /
slow step response
GL / CE / cULRus

EN 50178, EN 60751, IEC 751, DIN 43760
EN 50081, EN50082, EN55011

300 V
4 kV
2 kVeff / 5s

III
2
≥ 3 mm

PT1000/2-/3-/4-cond.; Ni1000/2-/3-/4-cond.; potentiometer:
min. 0-1kΩ, max. 0-100kΩ; resistance: 0-4,5kΩ
configurable

0(4)...20 mA/0...10 V
max. 100 μA/max. 0.05 V
≥ 1 kΩ/≤ 600 Ω
fast/slow: 2-/3-/4-cond.: 1.2s/2.3s; Poti: 0.5s/1.2s

50 Ω for 3- and 4-conductor
max. + 0.25°C at 50 Ω cond. resistance
LED flashes (output value > 20mA, > 10V)
≥ ±5%, Poti: ±12.5% ... ±25%
active: LED on/cond. broken: LED flashing/Error: LED off

24 Vdc +/- 25 %
830...880...980mW at Iout=20mA

≤ 2 A
0 °C...+55 °C
-20 °C...+85 °C

PT1000/3-cond./ 0...100°C / 4...20mA / man. adjustment: off /
slow step response

EN 50178, EN 60751, IEC 751, DIN 43760
EN 50081, EN50082, EN55011

300 V
4 kV
2 kVeff / 5s

III
2
≥ 3 mm

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Information

Screw connection

2.50 / 0.50 / 2.50
92.4 x 17.5 x 112.4

Tension clamp c.

1.50 / 0.50 / 2.50
92.4 x 17.5 x 112.4

Tu=23°C, single module

Screw connection

2.50 / 0.50 / 2.50
92.4 x 17.5 x 112.4

Tension clamp c.

1.50 / 0.50 / 2.50
92.4 x 17.5 x 112.4

Tu=23°C, single module

Ordering data

Type of connection

Screw connection
Tension clamp c.

Type

WAS5 PRO RTD
WAZ5 PRO RTD

Qty.

1
1

Order No.

8560700000
8560710000

Type

WAS5 PRO RTD 1000
WAZ5 PRO RTD 1000

Qty.

1
1

Order No.

8679490000
on demand

Information

Accessories

Information

Voltage supply 24V and 0V with ZQV 2.5N/2
cross-connection

Voltage supply 24V and 0V with ZQV 2.5N/2
cross-connection

Articles with coloured order number are kept permanently in stock at the central warehouse in Germany.
Delivery times see page X.2

DC/DC signal converter – configurable

WAVEANALOG PRO RTD

WAVEANALOG PRO RTD 1000

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Switch positions/possible settings

Selection of input		Switch 1		
Input		1	2	3
PT100 2-conductor		■	■	■
PT100 3-conductor		□	■	■
PT100 4-conductor		■	□	■
R 2-conductor		□	□	■
Ni100 2-conductor		■	■	□
Ni100 3-conductor		□	■	□
Ni100 4-conductor		■	□	□
Potentiometer		□	□	□

■ = on
□ = off

Switch positions/possible settings

Selection of input		Switch 1		
Input		1	2	3
PT1000 2-conductor		■	■	■
PT1000 3-conductor		□	■	■
PT1000 4-conductor		■	□	■
R 2-conductor		□	□	■
Ni1000 2-conductor		■	■	□
Ni1000 3-conductor		□	■	□
Ni1000 4-conductor		■	□	□
Potentiometer		□	□	□

■ = on
□ = off

Selection of output		Switch 2		Switching on the manual adjustment	
Output		6	7	manual adjustment	S.1
0...10V		■	□		
0...20mA		□	□	off	□
4...20mA		□	■	on	■

Selection of the step response		S.2
step response		8
slow		■
fast		□

Selection of minimum input size				Switch 1				
θ _{min}	R _{min}	Pot _{min}		4	5	6	7	
0°C	0 Ω	0%		■	■	■	■	
-10°C	10 Ω	10%		■	■	■	□	
-20°C	20 Ω	20%		■	■	□	■	
-25°C	20 Ω	25%		■	■	□	□	
-30°C	30 Ω	30%		■	□	■	■	
-40°C	40 Ω	40%		■	□	■	□	
-50°C	50 Ω	50%		■	□	□	■	
-60°C	60 Ω	60%		■	□	□	□	
-70°C	70 Ω	70%		□	■	■	■	
-80°C	80 Ω	80%		□	■	■	□	
-90°C	90 Ω			□	■	□	■	
-100°C	100 Ω			□	■	□	□	
-150°C	150 Ω			□	□	■	■	
-200°C	200 Ω			□	□	■	□	
Special range				□	□	□	■	

Selection of minimum input size				Switch 1				
θ _{min}	R _{min}	Pot _{min}		4	5	6	7	
0°C	0 Ω	0%		■	■	■	■	
-10°C	100 Ω	10%		■	■	■	□	
-20°C	200 Ω	20%		■	■	□	■	
-25°C	200 Ω	25%		■	■	□	□	
-30°C	300 Ω	30%		■	□	■	■	
-40°C	400 Ω	40%		■	□	■	□	
-50°C	500 Ω	50%		■	□	□	■	
-60°C	600 Ω	60%		■	□	□	□	
-70°C	700 Ω	70%		□	■	■	■	
-80°C	800 Ω	80%		□	■	■	□	
-90°C	900 Ω			□	■	□	■	
-100°C	1000 Ω			□	■	□	□	
-150°C	1500 Ω			□	□	■	■	
-200°C	2000 Ω			□	□	■	□	
Special range				□	□	□	■	

Accuracy, slow/fast step response

PT 100, Ni100: 0.3% of measuring range 0.8%

Measuring range:

Potentiometer: 0.2% of final value / 0.3%

Resistance: 0.2% of final value / 0.3%

Temperature coefficient

Measuring range ≥ 200 K ≤ 200 ppm / °C

100 K ≤ Measuring range < 200 K ≤ 250 ppm / °C

40 K ≤ Measuring range < 100 K ≤ 400 ppm / °C

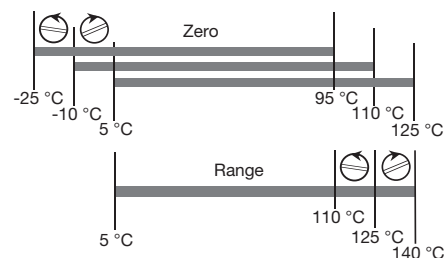
Choice of measuring range				Switch 2				
T	R	Potentiometer		1	2	3	4	5
40K	20Ω	20%		■	■	■	■	■
50K	25Ω	25%		■	■	■	■	□
60K	30Ω	30%		■	■	■	□	■
70K	35Ω	35%		■	■	■	□	□
80K	40Ω	40%		■	■	□	■	■
90K	45Ω	45%		■	■	□	■	□
100K	50Ω	50%		■	■	□	□	■
110K	55Ω	55%		■	■	□	□	v
120K	60Ω	60%		■	□	■	■	■
125K	62.5Ω	62.5%		■	□	■	■	□
130K	65Ω	65%		■	□	■	□	■
140K	70Ω	70%		■	□	■	□	□
150K	75Ω	75%		■	□	□	■	■
160K	80Ω	80%		■	□	□	■	□
170K	85Ω	85%		■	□	□	□	■
180K	90Ω	90%		■	□	□	□	□
190K	95Ω	95%		□	■	■	■	■
200K	100Ω	100%		□	■	■	■	□
250K	125Ω	---		□	■	■	□	■
300K	150Ω	---		□	■	■	□	□
350K	175Ω	---		□	■	□	■	■
400K	200Ω	---		□	■	□	■	□
450K	225Ω	---		□	■	□	□	■
500K	250Ω	---		□	■	□	□	□
550K	275Ω	---		□	□	■	■	■
600K	300Ω	---		□	□	■	■	□
650K	325Ω	---		□	□	■	□	■
700K	350Ω	---		□	□	■	□	□
750K	375Ω	---		□	□	□	■	■
800K	400Ω	---		□	□	□	■	□
850K	425Ω	---		□	□	□	□	■
900K	450Ω	---		□	□	□	□	□

Choice of measuring range				Switch 2				
T	R	Potentiometer		1	2	3	4	5
40K	200Ω	20%		■	■	■	■	■
50K	250Ω	25%		■	■	■	■	□
60K	300Ω	30%		■	■	■	□	■
70K	350Ω	35%		■	■	■	□	□
80K	400Ω	40%		■	■	□	■	■
90K	450Ω	45%		■	■	□	■	□
100K	500Ω	50%		■	■	□	□	■
110K	550Ω	55%		■	■	□	□	v
120K	600Ω	60%		■	□	■	■	■
125K	625Ω	62.5%		■	□	■	■	□
130K	650Ω	65%		■	□	■	□	■
140K	700Ω	70%		■	□	■	□	□
150K	750Ω	75%		■	□	□	■	■
160K	800Ω	80%		■	□	□	■	□
170K	850Ω	85%		■	□	□	□	■
180K	900Ω	90%		■	□	□	□	□
190K	950Ω	95%		□	■	■	■	■
200K	1000Ω	100%		□	■	■	■	□
250K	1250Ω	---		□	■	■	□	■
300K	1500Ω	---		□	■	■	□	□
350K	1750Ω	---		□	■	□	■	■
400K	2000Ω	---		□	■	□	■	□
450K	2250Ω	---		□	■	□	□	■
500K	2500Ω	---		□	■	□	□	□
550K	2750Ω	---		□	□	■	■	■
600K	3000Ω	---		□	□	■	■	□
650K	3250Ω	---		□	□	■	□	■
700K	3500Ω	---		□	□	■	□	□
750K	3750Ω	---		□	□	□	■	■
800K	4000Ω	---		□	□	□	■	□
850K	4250Ω	---		□	□	□	□	■
900K	4500Ω	---		□	□	□	□	□

Examples for setting zero and range

Temperature setting:

Output	4...20 mA
DIP switch	-10 °C...+110 °C
Range	75...110 °C
Range	120 °C
Range adjustment	± 12,5 %



Setting aid WAVEtool

The service tool is used for fast, uncomplicated configuration of WAVEANALOGUE PRO.

Download from the internet:

<http://www.weidmueller.com>

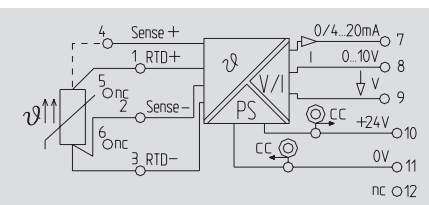
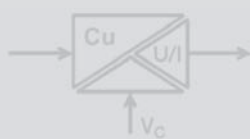
PT100 / RTD - signal isolator/converter

RTD, signal disconnecter converter

- Universally adjustable via DIP-switch
- 3-way isolation
- Linearization
- Power supply can be cross connected via plug-in jumper

PRO RTD Cu

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Technical data

Input	
Sensor	Cu 10, Cu 25, Cu 50, Cu 100; 3-/4-cond.
Temperature input range	adjustable -200...+260 °C
Output	
Output current/Output voltage	0(4)...20 mA/0...10 V
Offset current/Offset voltage	max. 100 µA/max. 0.05 V
Load resistance voltage/Current	>= 1 kΩ/< = 600 Ω
Step response time	fast: 1.2 s/ slow: 2.2 s
Line resistance in measuring circuit	5 Ω Cu 10; 15 Ω Cu 25; 25 Ω Cu 50; 50 Ω Cu 100
Influence of cable resistance	max. + 0.25°C at max. cond. resistance
Wire break detection	LED flashes (output value > 20mA, > 10V)
Fine adjustment	>= +/- 12.5 %
Status indicator	active: LED on/cond. broken; LED flashing/Error: LED off
General data	
Supply voltage	24 Vdc +/- 25 %
Power consumption	880...980...1030mW at Iout=20mA
Current-carrying cap. of cross-connect.	<= 2 A
Operation temperature	0 °C...+55 °C
Storage temperature	-20 °C...+85 °C
Default settings	CU 10/3-cond.; 0...100°C; 4...20mA; no filter, manual adjustment off; slow step response
Approvals	GL / CE / ESD / cURus
Insulation coordinates	
Standards	EN 50178
EMC standards	EN 50081, EN50082, EN55011
Rated voltage	300 V
Impulse withstand voltage	4 kV
Isolation voltage Input, output	2 kVeff / 5s
Overvoltage category	III
Pollution severity	2
Clearance & creepage path	>= 3 mm
Dimensions	
Clamping range (rating- / min. / max.)	mm²
Length x width x height	mm
Information	
Tu=23°C, single module	
Screw connection	
2.50 / 0.50 / 2.50	1.50 / 0.50 / 2.50
92.4 x 17.5 x 112.4	92.4 x 17.5 x 112.4
Tension clamp c.	
Tu=23°C, single module	

Ordering data

Type of connection	Type	Qty.	Order No.
Screw connection	WAS5 PRO RTD Cu	1	8638950000
Tension clamp c.	WAZ5 PRO RTD Cu	1	on demand

Information

Accessories

Information	Voltage supply 24V and 0V with ZQV 2.5N/2 cross-connection
-------------	--

Selection of connection		Selection of sensor	
Connection	Switch 1	Type	Switch 1
3-wire	■	Cu 10	■ ■
4-wire	□	Cu 25	■ □
		Cu 50	□ ■
		Cu 100	□ □

Selection of minimum input values				
θ min	Switch 1			
	4	5	6	7
- 0 °C	■	■	■	■
-10 °C	■	■	■	□
-20 °C	■	■	□	■
-25 °C	■	■	□	□
-30 °C	■	□	■	■
-40 °C	■	□	■	□
-50 °C	■	□	□	■
-60 °C	■	□	□	□
-70 °C	□	■	■	■
-80 °C	□	■	■	□
-90 °C	□	■	□	■
-100 °C	□	■	□	□
-150 °C	□	□	■	■
-200 °C	□	□	■	□
special range	□	□	□	□

Selection of the measurement range					
Span	Switch 2				
	1	2	3	4	5
40 K	■	■	■	■	■
50 K	■	■	■	■	□
60 K	■	■	■	□	■
70 K	■	■	■	□	□
80 K	■	■	□	■	■
90 K	■	■	□	■	□
100 K	■	■	□	□	■
110 K	■	■	□	□	□
120 K	■	□	■	■	■
125 K	■	□	■	■	□
130 K	■	□	■	□	■
140 K	■	□	■	□	□
150 K	■	□	□	■	■
160 K	■	□	□	■	□
170 K	■	□	□	□	■
180 K	■	□	□	□	□
190 K	□	■	■	■	■
200 K	□	■	■	■	□
210 K	□	■	■	□	■
220 K	□	■	■	□	□
230 K	□	■	□	■	■
240 K	□	■	□	■	□
250 K	□	■	□	□	■
260 K	□	■	□	□	□
270 K	□	□	■	■	■
280 K	□	□	■	■	□
290 K	□	□	■	□	■
300 K	□	□	■	□	□
350 K	□	□	□	■	■
400 K	□	□	□	■	□
450 K	□	□	□	□	■
460 K	□	□	□	□	□

Selection of Output		Switching on the manual fine adjustment	
Output	Switch 2	man. adj.	Switch 1
0...10 V	6 7	■ □	8
0...20 mA	□ □	off	□
4...20 mA	□ ■	on	■

Selection of step set time	
Time of step response	Schalter 2
slow	■
fast	□

■ = on
□ = off

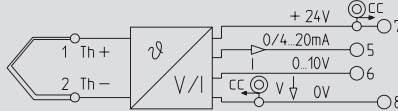
Thermo element, signal isolator/converter

Thermo disconnecter converter Type: K, J, T, E, N, R, S, B

- Calibration not necessary
- Cold-junction compensation
- Output signal selectable
- Power supply can be cross connected via plug-in jumper

Thermo Select

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Technical data

Input

Sensor
Temperature input range

Output

Output voltage/Output current
Load resistance voltage/Current
Temperature coefficient
Step response time
Wire break detection

General data

Supply voltage
Current consumption
Current-carrying cap. of cross-connect.
Operation temperature
Storage temperature
Approvals

Insulation coordinates

Standards
EMC standards

thermo-elements (IEC 584) type: K,J,T,E,N,R,S,B
-200...+1820 °C

0...10 V/0(4)...20 mA

>= 1 kΩ / <= 600 Ω

+/- (200 ppm from span + 0.075 K)/K

with filter: 1.1 s; without filter: 6 s

LED flashes (output value > 20mA, > 10V)

24 Vdc +/- 20 %

< 38 mA at Iout = 20 mA

<= 2 A

0 °C...+55 °C

-20 °C...+85 °C

CSA / UL/UR / CE / ESD

EN 50178, EN 60584, IEC 584

EN 50081, EN50082, EN55011

Switch position/setting options

SW 1				SW 2					
Type	1	2	3	Span	1	2	3	4	5
K	■	■	■	100 C°	■	■	■	■	■
J	□	■	■	150 C°	■	■	■	■	□
T	■	□	■	200 C°	■	■	■	□	■
E	□	□	■	250 C°	■	■	■	□	□
N	■	■	□	300 C°	■	■	□	■	■
R	□	■	□	350 C°	■	■	□	■	□
S	■	□	□	400 C°	■	■	□	□	■
B	□	□	□	450 C°	■	■	■	□	□
SW 1				500 C°	■	■	■	■	■
				550 C°	■	□	■	■	□
Tmin	4	5	6	7	600 C°	■	□	■	□
0 C°	■	■	■	■	650 C°	■	□	■	□
-10 C°	■	■	■	□	700 C°	■	□	■	□
-20 C°	■	■	□	■	750 C°	■	□	■	□
-30 C°	■	■	□	□	800 C°	■	□	□	■
-40 C°	■	□	■	■	850 C°	■	□	□	□
-50 C°	■	□	■	■	900 C°	□	■	■	■
-100 C°	■	□	□	■	950 C°	□	■	■	■
-150 C°	■	□	□	□	1000 C°	□	■	■	■
-200 C°	□	■	■	■	1050 C°	□	■	■	■
+50 C°	□	■	■	□	1100 C°	□	■	■	■
+100 C°	□	■	□	■	1150 C°	□	■	□	■
+150 C°	□	■	□	□	1200 C°	□	■	□	■
+200 C°	□	□	■	■	1250 C°	□	■	□	■
+250 C°	□	□	■	□	1300 C°	□	■	■	■
+500 C°	□	□	□	■	1350 C°	□	□	■	■
SW 2				1400 C°	□	□	■	□	■
				1450 C°	□	□	■	□	■
Output	6	7							
0 - 10 V	■	□							
0 - 20 mA	□	□							
4 - 20 mA	□	■							
Filter 8									
off				□					
on				■					

■ = on
□ = off

Temperature coefficient

K	-200°C ... -150°C	± (5K + 0.1% of set range)
	-150°C ... 1200°C	± (3K + 0.1% of set range)
	1200°C ... 1372°C	± (4K + 0.1% of set range)
J	-200°C ... -150°C	± (4K + 0.1% of set range)
	-150°C ... 1200°C	± (3K + 0.1% of set range)
T	-200°C ... -150°C	± (5K + 0.1% of set range)
	-150°C ... 400°C	± (3K + 0.1% of set range)
E	-200°C ... -150°C	± (4K + 0.1% of set range)
	-150°C ... 1000°C	± (3K + 0.1% of set range)
N	-200°C ... -150°C	± (6K + 0.1% of set range)
	-150°C ... 1300°C	± (3K + 0.1% of set range)
R	-50°C ... 200°C	± (10K + 0.1% of set range)
	200°C ... 1760°C	± (6K + 0.1% of set range)
S	-50°C ... 200°C	± (10K + 0.1% of set range)
	200°C ... 1760°C	± (6K + 0.1% of set range)
B	50°C ... 250°C	± (25K + 0.1% of set range)
	250°C ... 500°C	± (10K + 0.1% of set range)
	500°C ... 1820°C	± (6K + 0.1% of set range)

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Information

Screw connection

2.50 / 0.50 / 2.50 1.50 / 0.50 / 2.50
92.4 x 12.5 x 112.4 92.4 x 12.5 x 112.4

TU=23°C, single module

Ordering data

Type of connection

Screw connection
Tension clamp c.

Type	Qty.	Order No.
WTS4 THERMO	1	8432300000
WTS4 THERMO	1	8432310000

Information

Accessories

Information

Voltage supply 24V and 0V with ZQV 2.5N/2
cross-connection

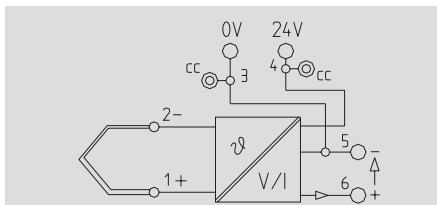
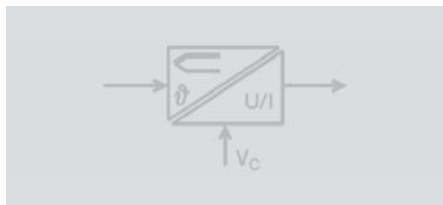
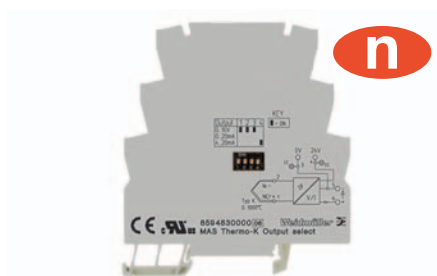
Thermo element, signal isolator/converter

Thermo disconnecter converter type: K

- 2-way isolation between input/output and voltage supply
- Cold-junction compensation
- Linearization
- Output can be switched calib. via DIP-switch

Thermo K Output Select

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Technical data

Input

Sensor
Temperature input range

Output

Output voltage/Output current
Load resistance voltage/Current
Accuracy
Temperature coefficient
Step response time
Wire break detection
Residual ripple

General data

Supply voltage
Power consumption
Current-carrying cap. of cross-connect.
Operation temperature
Storage temperature
Default settings
Approvals

Insulation coordinates

Standards
EMC standards
Rated voltage
Impulse withstand voltage
Isolation voltage Input, output/
Overvoltage category
Pollution severity
Clearance & creepage path

thermo-elements according IEC 584, type: K
0...1000 °C

0...10V / 0...5V/0(4)...20 mA

$\geq 10 \text{ k}\Omega / < = 600 \Omega$

$< 0.6 \%$ of measuring range

$\leq 250 \text{ ppm/K}$ of final value

$< 0.7 \text{ s}$

output value: $> 20 \text{ mA}$, $> 10 \text{ V}$

$< 20 \text{ mVeff}$

24 Vdc $\pm 10 \%$

approx. 0.6 W

$\leq 20 \text{ A}$

0 °C...+55 °C

-20 °C...+85 °C

0...20mA

CE / ESD / cURus

EN 50178, EN 60584, IEC 584

EN 50081, EN 50082, EN 55011, EN 61000-6-2, EN 61326

100 V

1.5 kV

500 Veff/

III

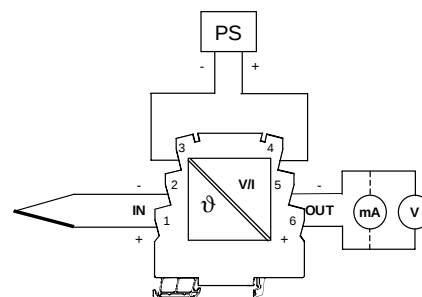
2

$\geq 1.5 \text{ mm}$

Output	Switch			
	1	2	3	4
0 ... 10 V	■	■	■	□
0 ... 20 mA	□	□	□	□
4 ... 20 mA	□	□	□	■
0 ... 5 V	■	■	■	■

■ = on
□ = off

Connection



Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Information

Screw connection

2.50 / 0.50 / 2.50
88.0 x 6.1 x 97.8

Tension clamp c.

1.50 / 0.50 / 2.50
92.0 x 6.1 x 97.8

Tu=23°C, single module

Ordering data

Type of connection

Screw connection
Tension clamp c.

Type

MAS Thermo-K 0...1000°C Output select1
MAZ Thermo-K 0...1000°C Output select1

Qty.

Order No.

8594830000
8594860000

Information

Accessories

Information

Voltage supply 24V and 0V with ZQV 4N/x
cross-connection

Articles with coloured order number are kept permanently in stock at the central warehouse in Germany.
Delivery times see page X.2

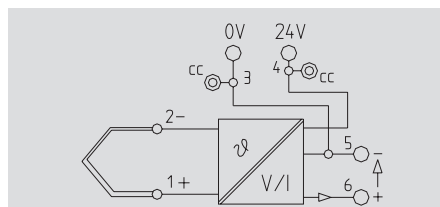
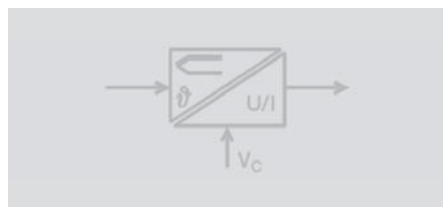
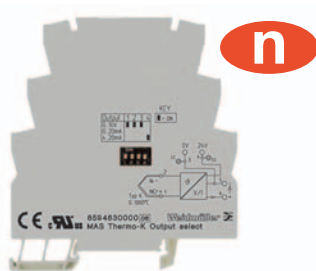
Thermo element, signal isolator/converter

Thermo disconnecter converter type: J

- 2-way isolation between input/output and voltage supply
- Cold-junction compensation
- Linearization
- Output can be switched calib. via DIP-switch

Thermo J Output Select

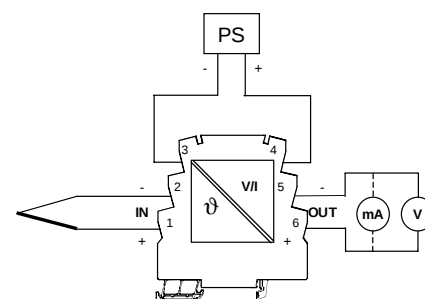
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Output	Switch			
	1	2	3	4
0 ... 10 V	■	■	■	□
0 ... 20 mA	□	□	□	□
4 ... 20 mA	□	□	□	■
0 ... 5 V	■	■	■	■

■ = on
□ = off

Connection



Technical data

Input

Sensor
Temperature input range

Output

Output voltage/Output current
Load resistance voltage/Current
Accuracy
Temperature coefficient
Step response time
Wire break detection
Residual ripple

General data

Supply voltage
Power consumption
Current-carrying cap. of cross-connect.
Operation temperature
Storage temperature
Default settings
Approvals

Insulation coordinates

Standards
EMC standards
Rated voltage
Impulse withstand voltage
Isolation voltage Input, output/
Overvoltage category
Pollution severity
Clearance & creepage path

thermo-elements according IEC 584, type: J
0...700 °C

0...10V / 0...5V/0(4)...20 mA

>= 10 kΩ / < = 600 Ω

< 0.7 % of measuring range

<= 250 ppm/K of final value

< 0.7 s

output value: > 20 mA, > 10 V

< 20 mVeff

24 Vdc +/- 10 %

approx. 0.6 W

<= 20 A

0 °C...+55 °C

-20 °C...+85 °C

0...20mA

CE / ESD / cURus

EN 50178, EN 60584, IEC 584

EN 50081, EN 50082, EN 55011, EN 61000-6-2, EN 61326

100 V

1.5 kV

500 Veff/

III

2

>= 1.5mm

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Information

Screw connection

2.50 / 0.50 / 2.50
88.0 x 6.1 x 97.8

Tension clamp c.

1.50 / 0.50 / 2.50
92.0 x 6.1 x 97.8

Tu=23°C, single module

Ordering data

Type of connection

Screw connection
Tension clamp c.

Type

Qty.

Order No.

MAS Thermo-J 0...700°C Output select 1 **8615210000**
MAZ Thermo-J 0...700°C Output select 1 **8615240000**

Information

Accessories

Information

Voltage supply 24V and 0V with ZQV 4N/x
cross-connection

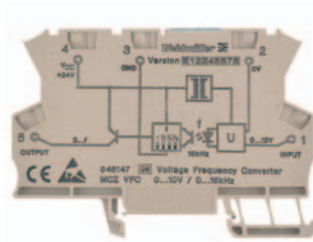
Frequency signal isolator/converter

DC/f disconnecter converter

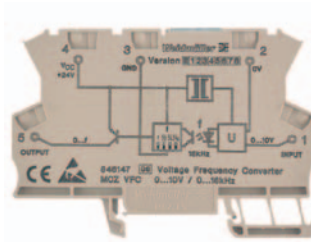
By the conversion of analog signals to frequency it is possible to read in analog signals out of the array via the counter-inputs of the controller.

MCZ VFC

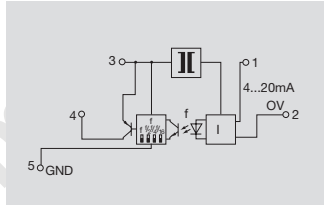
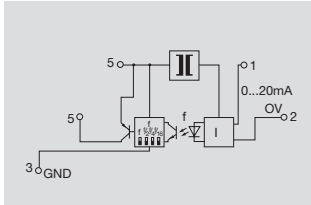
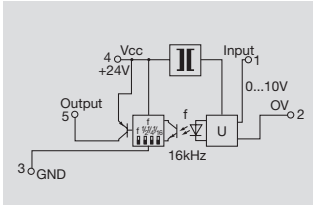
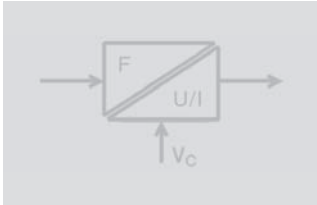
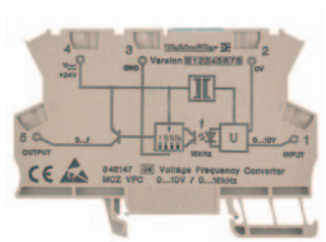
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MCZ CFC



MCZ CFC



Technical data

Input

Input voltage/Input current
Max. voltage/Max. current
Input resistance voltage/Current
Voltage drop

Output

Output frequency/
Output level
Output current
Fine adjustment
Accuracy
Temperature coefficient
Status indicator

General data

Supply voltage
Current consumption
Current-carrying cap. of cross-connect.
Operation temperature
Storage temperature
Approvals

Insulation coordinates

Standards
EMC standards
Rated voltage
Impulse withstand voltage
Isolation voltage Input, output
Overvoltage category
Pollution severity
Clearance & creepage path

0...10 V/
30 V/
100 kΩ/

0...1/ 4/ 8/ 16 kHz/
PNP, Ub-0.7 V
max. 20 mA
+/- 10 %, internal
0.2% of FSR
≤ 250 ppm/K
LED, pulsing

24 Vdc +/- 10 %
14 mA without load
≤ 20 A
0 °C...+50 °C
-20 °C...+85 °C
CE / ESD

EN 50178
EN 50081, EN50082, EN55011
100 V
1.5 kV
1 kVdc
III
2
≥ 1.5mm

/0...20 mA
/50 mA
/50 Ω
1 V at 20 mA

0...1/ 4/ 8/ 16 kHz/
PNP, Ub-0.7 V
max. 20 mA
+/- 10 %, internal
0.2% of FSR
≤ 250 ppm/K
LED, pulsing

24 Vdc +/- 10 %
14 mA without load
0 °C...+50 °C
-20 °C...+85 °C
CE / ESD

EN 50178
EN 50081, EN50082, EN55011
100 V
1.5 kV
1 kVdc
III
2
≥ 1.5mm

/4...20 mA (current loop)
/50 mA
/
5.8...6.4 V at 20 mA

0...1/ 4/ 8/ 16 kHz/
PNP, Ub-0.7 V
max. 20 mA
+/- 10 %, internal
0.15 % of FSR
≤ 250 ppm/K
LED, pulsing

24 Vdc +/- 20 %
14 mA without load
0 °C...+50 °C
-20 °C...+85 °C
CE / ESD

EN 50178
EN 50081, EN50082, EN55011
150 V
2.5 kV
III
2
≥ 2 mm

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Information

Tension clamp c.

1.50 / 0.50 / 1.50
91.0 x 6.0 x 63.2

Tension clamp c.

1.50 / 0.50 / 1.50
91.0 x 6.0 x 63.2

Tension clamp c.

1.50 / 0.50 / 1.50
91.0 x 6.0 x 63.2

Without DC/DC-converter input is current-loop-fed

Ordering data

Type of connection

Tension clamp c.

Type (Qty.=1) Order No.
MCZ VFC 0-10V 8461470000

Type (Qty.=1) Order No.
MCZ CFC 0-20MA 8461480000

Type (Qty.=1) Order No.
MCZ CFC 4-20MA 8461490000

Information

Accessories

Information

Voltage supply 24V,0V and GND with ZQV 4/x cross-connection

Voltage supply 24V,0V and GND with ZQV 4/x cross-connection

Voltage supply 24V,0V and GND with ZQV 4/x cross-connection

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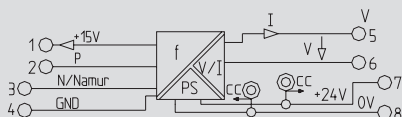
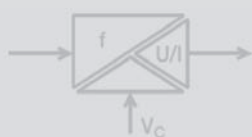
Frequency signal isolator/converter

f/DC disconnecter converter

- 3-way isolation
- Max. input frequency 100 kHz
- Input and output adjustable via DIP-switch
- Calibration not necessary
- Special partitions can be programmed

PRO Frequency

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Technical data

Input

Sensor/
Rated input level
Resolution

Output

Output voltage/Output current
Load resistance voltage/Current
Offset current/Offset voltage
Accuracy
Temperature coefficient
Step response time
Status indicator

General data

Supply voltage
Power consumption
Current-carrying cap. of cross-connect.
Operation temperature
Storage temperature
Default settings
Approvals

Insulation coordinates

Standards
EMC standards
Rated voltage
Impulse withstand voltage
Isolation voltage Input, output/
Overvoltage category
Pollution severity
Clearance & creepage path

2-, 3-wire PNP/NPN, namur initiator, push-pull step/
threshold / hysteresis: namur: ca 1.7 mA/ca 0.2 mA;
NPN: ca 6.5 V/ca 0.2V; PNP: ca 6.7V/ca 0.5V
0.1 mHz resp. 5 ppm of measurement value

0...10 V/0(4)...20 mA

>= 1 kΩ / < = 600 Ω

max. 100 μA/max. 0.05 V

0.2 % of output range

max. 200 ppm/K of output range

360 ms + 2-fold period time of input frequency

LED green

24 Vdc +/- 25 %

max. 1.6 W at I_{out} = 20 mA

<= 2 A

0 °C...+55 °C

-20 °C...+85 °C

0...10kHz / 4...20mA

CE / ESD / cURus

EN 50178 (safe separation)

EN 50081, EN 50082, EN 55011, EN 61000-6-2, EN 61326

300 V

6 kV

4 kVeff / 5s/

III

2

>= 5.5 mm

Dimensions

Clamping range (rating- / min. / max.)

Length x width x height

Information

Screw connection

2.50 / 0.50 / 2.50

92.4 x 12.5 x 112.4

Tension clamp c.

1.50 / 0.50 / 2.50

92.4 x 12.5 x 112.4

TU=23°C, single module

Ordering data

Type of connection

Screw connection

Tension clamp c.

Type

WAS4 PRO Freq

WAZ4 PRO Freq

Qty.

1

1

Order No.

8581180000

8581190000

Information

Accessories

Information

Voltage supply 24V and 0V with ZQV 2.5N/2
cross-connection

Selecting the operating mode

Operating mode	Switch 2
0...fmax	☐ ☐
fmin...fmax	☐ ☒
saving	☐ ☐
fmin	☒ ☐

$$f = (A+B) \times C$$

Selecting the frequency				
A	Switch 1			
0	☐	☐	☐	☐
1	☐	☐	☐	☒
2	☐	☐	☒	☐
3	☐	☐	☒	☒
4	☐	☒	☐	☐
5	☐	☒	☐	☒
6	☐	☒	☐	☒
7	☐	☒	☐	☒
8	☒	☐	☐	☐
9	☒	☐	☐	☒
10	☒	☐	☐	☐
11	☒	☐	☒	☐
12	☒	☐	☐	☐
13	☒	☐	☐	☐
14	☒	☐	☐	☐
15	☒	☐	☐	☐

Selecting the frequency							
B	Switch 1						
0	☐	☐	☐	☐	☐	☐	☐
0,1	☐	☐	☐	☐	☐	☒	☐
0,2	☐	☐	☐	☐	☒	☐	☐
0,3	☐	☐	☐	☒	☐	☐	☐
0,4	☐	☐	☒	☐	☐	☐	☐
0,5	☐	☐	☒	☐	☐	☐	☐
0,6	☐	☐	☒	☐	☐	☐	☐
0,7	☐	☐	☒	☐	☐	☐	☐
0,8	☒	☐	☐	☐	☐	☐	☐
0,9	☒	☐	☐	☐	☐	☐	☐

Selecting the frequency		
C	Switch 2	
	1	2
x1	☐	☐
x10	☐	☐
x100	☒	☐
x1000	☒	☐

Selecting the output

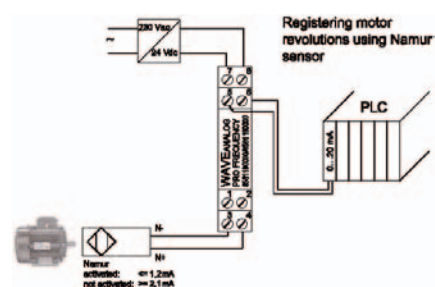
Output	Switch 2			
0...10 V	☒	☐	☒	☒
0...20 mA	☐	☐	☐	☐
4...20 mA	☐	☒	☐	☐
0...5 V	☒	☒	☒	☐

Special range (frequency generator is required)

Funktion	Switch 2			
	1	2	3	4
save min. frequency	☐	☒	☒	☒
save max. frequency	☒	☐	☒	☒
select special range	☒	☒	☒	☒

■ = ein
□ = aus

Application



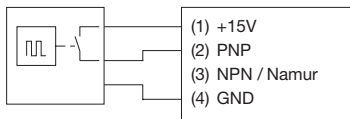
Frequency signal transformer

WAVEANALOGUE PRO Frequency

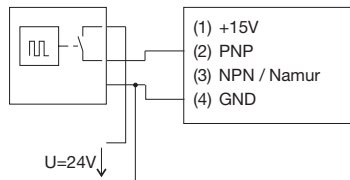
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Connection configuration of the sensors

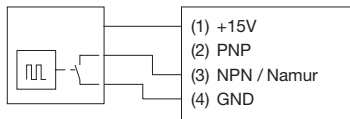
3-wire initiator with PNP output



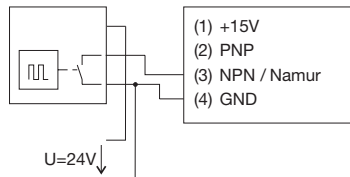
3-wire initiator with PNP output and external supply



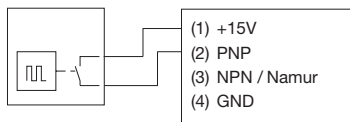
3-wire initiator with NPN output



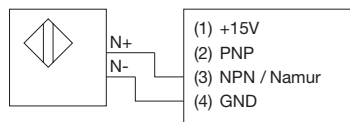
3-wire initiator with NPN output and external supply



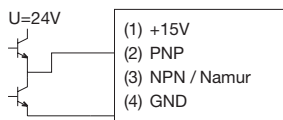
2-wire initiator



Namur initiator



Push pull output cascade



Setting help for any input and output values

Setting the input range using the DIP switches (no frequency generator required):

There are 2 different cases:

1. Lower measuring frequency = 0 Hz

- Choose operating mode “= ... fmax” S2.3 = 0 and S2.4 = 0
- Set the upper measuring frequency using DIP switches S1 and S2.1, S2.2 (see table)
- That's all

2. Lower measuring frequency ≠ 0 Hz

- First the lower measuring frequency must be saved. Select mode “save fmin”. S2.3 = 1 and S2.4 = 0. Set the frequency using DIP switches S1 and S2.1, S2.2 (see table)
- To save the frequency, briefly connect the module to the power supply.
- Select mode “fmin...fmax” S2.3 = 0 and S2.4 = 1
- Set the upper measuring frequency using DIP switches S1 and S2.1, S2.2 (see table).
- That's all.

Adjusting the input range using a frequency generator

- Select the switch setting for saving the frequency: S2.1 = 0, S2.2 = 1, S2.3 = 1 and S2.4 = 1
- Apply min. frequency to the module
- Connect the module to the power supply
- The LED lights up when the input frequency is being measured. If the LED goes off, the frequency has been saved and the module can be disconnected from the power supply again.
- Repeat with max. frequency: S2.1 = 1, S2.2 = 0, S2.3 = 1 and S2.4 = 1
- Select special range: S2.1 = 1, S2.2 = 1, S2.3 = 1 and S2.4 = 1

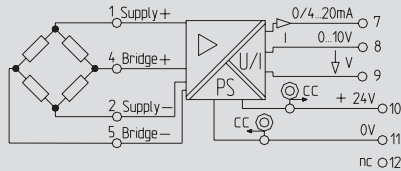
Bridge measuring converter

Configurable

- 3-way isolation
- Input and output selectable via DIP-switch
- Calibration not necessary
- Inverse output signal

PRO BRIDGE

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Switch position/setting options

Input voltage	SW 1									
	1	2	3	4	5	6	7	8	9	10
0...10 mV										
0...20 mV										
0...50 mV										
0...100 mV										
0...200 mV										
0...500 mV										
-10 mV...10 mV										
-20 mV...20 mV										
-50 mV...50 mV										
-100 mV...100 mV										
-200 mV...200 mV										
-500 mV...500 mV										
Ausgang										
0...+10 V										
0...+5 V										
0...20 mA										
4...20 mA										

Bridge supply voltage

+10V			
+5V			
+4,8...+10,2V adjustable			
+4,8...+10,2V adjustable man. adjustment and offset possible			

Transmission method

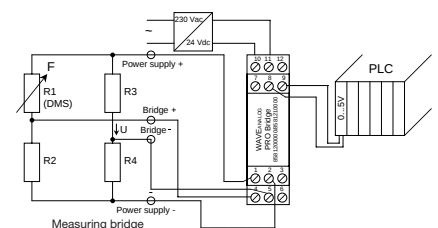
standard output signal		
inverse output signal		

■ = on
□ = off

Status LED

LED on	normal operating
LED off	Error
LED blinks slow	measurement range undershoot $U_{in} < U_{max} + 10\%$
LED blinks fast	measurement range overshoot $U_{in} < U_{max} - 10\%$

Application

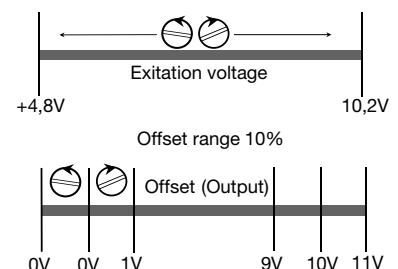


Example for bridge supply voltage

Temperature adjustment:

Input voltage	0...10 mA
Output	0...10 V
Bridge supply voltage	+4,8...10,2 V
Bridge excitation	1 mV/V

(Declaration from manufacturer)



Technical data

Input

Input voltage/
Input resistance voltage

Output

Output voltage/Output current
Load resistance voltage/Current
Offset current/Offset voltage

Accuracy

Temperature coefficient

Step response time

Status indicator

Wire break detection

Bridge supply voltage

General data

Supply voltage

Power consumption

Current-carrying cap. of cross-connect.

Operation temperature

Storage temperature

Default settings

Approvals

Insulation coordinates

Standards

EMC standards

Rated voltage

Impulse withstand voltage

Isolation voltage Input, output/

Overvoltage category

Pollution severity

Clearance & creepage path

-500mV...+500mV/

> 1 MΩ

0...5 V, 5...0 V, 10...0 V, 0...10 V/

0...20 mA, 20...0 mA, 4...20 mA, 20...4 mA

>= 1 kΩ / <= 600 Ω

max. 100 μA / max. 0.05 V

0.3 % of output range

+/- 250 ppm/K of output range

typ. < 200 ms

LED green

output: 0 V resp. 0/4 mA

+10 V, +5 V, 4,8...10,2 V; offset adjustable; max. 40mA

24 Vdc +/- 25 %

max. 1.9 W at I_{out}= 20 mA

<= 2 A

0 °C...+55 °C

-20 °C...+85 °C

-500 mV...+500 mV / 0...10 V / + 10 V / standard

CE / ESD / cURus

EN 50178

EN 61000-6-2, EN 50081-2

300 V

4 kV

2 kVeff / 5s/

III

2

>= 3 mm

Dimensions

Clamping range (rating- / min. / max.)

mm²

Length x width x height

mm

Information

Screw connection

2.50 / 0.50 / 2.50

Tension clamp c.

1.50 / 0.50 / 2.50

TU=23°C, single module

Ordering data

Type of connection

Screw connection
Tension clamp c.

Type

WAS5 PRO Bridge

Qty.

1

Order No.

8581200000

WAZ5 PRO Bridge

1

8581210000

Information

Accessories

Information

Voltage supply 24V and 0V with ZQV 2.5N/2
cross-connection

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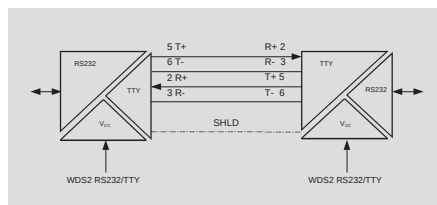
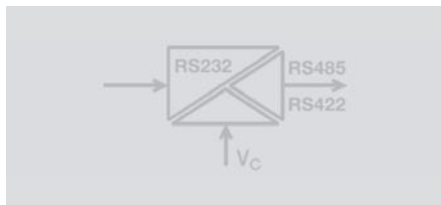
Serial interface converter

RS232/RS485/422

- 3-way isolation
- RS232 connection via SUB-D 9
- RS485/422, TTY shield connection via KLBÜ
- DTE or DCE assignment selectable
- Bidirectional communication

RS232/RS485/422

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Technical data

RS232

Connection/Input current
Assignment

RS485/422

Terminating resistors
Connection
Bit distortion
Bit delay
Control of data direction/
Shield connection
Status indicator
Max. bit rate
Transmission channels
Transmission distance

General data

Supply voltage
Power consumption
Operation temperature
Storage temperature
Approvals

Insulation coordinates

Standards
EMC standards
Rated voltage
Impulse withstand voltage
Pollution severity
Overvoltage category
Clearance & creepage path
Isolation voltage Input, output

SUB-D9 (pin)/
DTE/DCE switchable via DIP-Switch

pull down/ pull up via DIP-switch
BLZ screw connection
< 1.5%
<= 3µs
selfcontrolling or via RS232 RTS/CTS/
KLBÜ 4-6/Z1
LED green: supply voltage, TxD, RxD
115.2 kBit/s
half duplex (RS485-2 wire)
full duplex (RS485-4 wire and RS422)
max. 1200m twisted pair

24 Vdc +/- 25 %
approx. 1.5 W
0 °C...+55 °C (horiz. mounting)
-20 °C...+85 °C
CE / ESD / cURus

EN 50178
EN 61000-6-2, EN 61000-6-4, EN 55011
between adjacent electric circuits: 300 V
between electric circuits and PE: 150 V
4 kV
2
III
between adjacent electric circuits: 3mm
between electric circuits and PE: 1.5mm
2 kVdc / 1 min.

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Information

Screw connection

2.50 / 0.50 / 2.50
92.4 x 22.5 x 112.4

Tu=23°C, single module

Ordering data

Type of connection

Screw connection

Type	Qty.	Order No.
WDS2 RS232/RS485/422	1	8615700000

Information

Accessories

Information

Voltage supply 24V and 0V with ZQV 2.5N/2
cross-connection

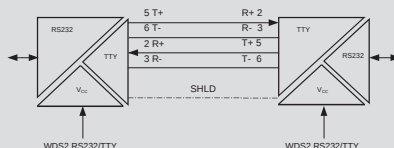
Serial interface converter

RS232/TTY

- 3-way isolation
- RS232 connection via SUB-D 9
- RS485/422, TTY shield connection via KLBÜ
- DTE or DCE assignment selectable
- Bidirectional communication

RS232/TTY

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Technical data

RS232

Connection/Input current
Assignment

TTY

Connection
Bit distortion
Bit delay
Burden
Shield connection/
Status indicator
Max. bit rate
Transmission channels
Transmission distance

General data

Supply voltage
Power consumption
Operation temperature
Storage temperature
Approvals

Insulation coordinates

Standards
EMC standards
Rated voltage
Impulse withstand voltage
Pollution severity
Overvoltage category
Clearance & creepage path
Isolation voltage Input, output

SUB-D9 (pin)/
DTE/DCE switchable via DIP-Switch

BLZ screw terminal

< 1.5%

<= 3 µs

<= 500 Ω

KLBÜ 4-6 Z/1/

LED green: supply voltage, TxD, RxD

19.2 kBit/s

full duplex

max. 1000m twisted pair

24 Vdc +/- 25 %

approx. 0.8 W

0 °C...+55 °C (horiz. mounting)

-20 °C...+85 °C

CE / ESD / cURus

EN 50178

EN 61000-6-2, EN 61000-6-4, EN 55011

between adjacent electric circuits: 300 V

between electric circuits and PE: 150 V

4 kV

2

III

between adjacent electric circuits: 3mm

between electric circuits and PE: 1.5mm

2 kVdc / 1 min.

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Information

Screw connection

2.50 / 0.50 / 2.50
92.4 x 22.5 x 112.4

Tu=23°C, single module

Ordering data

Type of connection

Screw connection

Type

WDS2 RS232/TTY

Qty.

1

Order No.

8615690000

Information

Accessories

Information

Voltage supply 24V and 0V with ZQV 2.5N/2
cross-connection

Articles with coloured order number are kept permanently in stock at the central warehouse in Germany.
Delivery times see page X.2

AD-/DA-Converter

AD-Converter 8-Bit

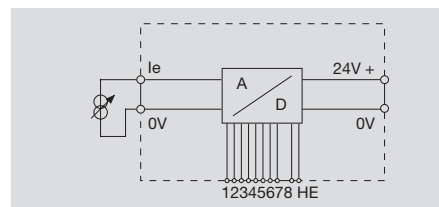
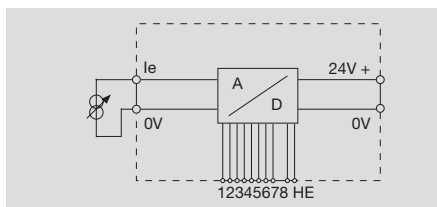
RS I-D8 0...20mA

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RS I-D8 4...20mA

Terminal PIN							
MSB				LSB			
E8	E7	E6	E5	E4	E3	E2	E1
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0
-	-	-	-	-	-	-	-
1	1	1	1	1	1	0	1
1	1	1	1	1	1	1	0
1	1	1	1	1	1	1	1

Digital value
Analog voltage
0 V
+10 V



Technical data

Input

Input voltage/Input current
Max. voltage/Max. current
Input resistance voltage/Current
Resolution

/0...20 mA
3.5 V/25 mA
/≥ 51 Ω
78 μA = 1 LSB

/4...20 mA
3.5 V/25 mA
/≥ 51 Ω
62.5 μA = 1 LSB

Output

Number of outputs
Output level
Signs
Output current
Accuracy
Cut-off freq. (-3dB)
Conversion time

8Bit (1 Bit sign)
17 V = H, 0 V = L
≤ 25 mA (as source)
± 1 LSB
5 kHz at full scale (sinus)
≤ 4 μs

8Bit (1 Bit sign)
17 V = H, 0 V = L
≤ 25 mA (as source)
± 1 LSB
5 kHz at full scale (sinus)
≤ 4 μs

General data

Supply voltage
Current consumption
Operation temperature
Storage temperature
Approvals

24 Vdc ± 20 %
35 mA (plus output current)
0 °C...+50 °C
-40 °C...+80 °C
CE / ESD

24 Vdc ± 20 %
35 mA (plus output current)
0 °C...+50 °C
-40 °C...+80 °C
CE

Insulation coordinates

EMC standards

EMVG, EN 50081-1, EN 50082-2

EMVG, EN 50081-1, EN 50082-2

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Screw connection

4 / 0.50 / 4
70.0 x 35.0 x 72.0

Screw connection

4 / 0.50 / 4
70.0 x 35.0 x 72.0

Information

Ordering data

Type of connection

Screw connection

Type	Qty.	Order No.
RS I-D8 0...20mA	1	1160561001

Type	Qty.	Order No.
RS I-D8 4...20mA	1	1168561001

Information

Accessories

Information

AD-/DA-Converter

AD-Converter 8-Bit

RS U-D8 +/-10V

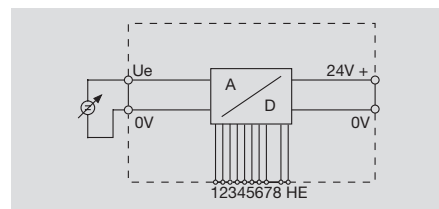
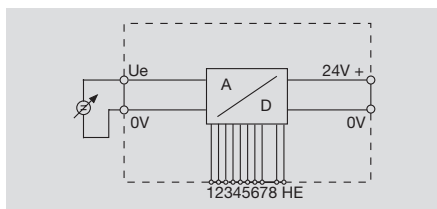
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RS U-D8 0...10V



Terminal PIN								Digital value	Analog current
MSB	E8	E7	E6	E5	E4	E3	E2		
0	0	0	0	0	0	0	0	0	0 V
0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	
0	0	0	0	0	0	0	0	0	
-	-	-	-	-	-	-	-	-	
1	1	1	1	1	1	1	0	1	
1	1	1	1	1	1	1	1	0	
1	1	1	1	1	1	1	1	1	+10 V



Technical data

Input

Input voltage/Input current
Max. voltage/Max. current
Input resistance voltage/Current
Resolution

-10...+10 V/
/< = 55 µA
≥ 200 kΩ/
78 mV = 1 LSB

0...10 V/
/< = 25 µA
≥ 400 kΩ/
39 mV = 1 LSB

Output

Number of outputs
Output level
Signs
Output current
Accuracy
Cut-off freq. (-3dB)
Conversion time

8Bit (1 Bit sign)
17 V = H, 0 V = L
MSB: H = positive; L = negative
≤ 25 mA (as source)
± 1 LSB
5 kHz at full scale (sinus)
≤ 4 µs

8Bit (1 Bit sign)
17 V = H, 0 V = L
≤ 25 mA (as source)
± 1 LSB
5 kHz at full scale (sinus)
≤ 4 µs

General data

Supply voltage
Current consumption
Operation temperature
Storage temperature
Approvals

24 Vdc ± 20 %
35 mA (plus output current)
0 °C...+50 °C
-40 °C...+80 °C
CE / ESD

24 Vdc ± 20 %
35 mA (plus output current)
0 °C...+50 °C
-40 °C...+80 °C
CE

Insulation coordinates

EMC standards

EMVG, EN 50081-1, EN 50082-2

EMVG, EN 50081-1, EN 50082-2

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Screw connection

4 / 0.50 / 4
70.0 x 35.0 x 72.0

Screw connection

4 / 0.50 / 4
70.0 x 35.0 x 72.0

Information

Ordering data

Type of connection	
Screw connection	

Type	Qty.	Order No.
RS U-D8 +/-10V	1	1122361001

Type	Qty.	Order No.
RS U-D8 0...10V	1	1160361001

Information

Accessories

Information

Articles with coloured order number are kept permanently in stock at the central warehouse in Germany.
Delivery times see page X.2

Weidmüller

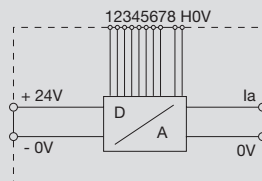
J.45

AD-/DA-Converter

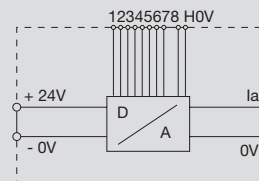
DA-Converter 8-Bit

RS D8-I 0...20mA

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RS D8-I 4...20mA



Technical data

Input

Input/Output
Max. voltage
Max. current
Input voltage/Input current
Signs
Resolution

Output

Output voltage/Output current
Offset current/Offset voltage
Load resistance voltage/Current
Accuracy
Conversion time

General data

Supply voltage
Current consumption
Operation temperature
Storage temperature
Approvals

Insulation coordinates

EMC standards

8 Bit / Analogue
max. 30 V

5...24 V/

78 μ A = 1 LSB

/0...20 mA (as source)

max. 0.08 mA/

/< = 600 Ω

+/- 1 LSB

<= 30 μ s

24 Vdc +/- 20 %

25 mA (plus output current)

0 °C...+50 °C

-40 °C...+80 °C

CE / ESD

EMVG, EN 50081-1, EN 50082-2

8 Bit / Analogue
max. 30 V

5...24 V/

62.5 μ A = 1 LSB

/4...20 mA (as source)

4 mA/

/< = 600 Ω

+/- 1 LSB

<= 30 μ s

24 Vdc +/- 20 %

25 mA (plus output current)

0 °C...+50 °C

-40 °C...+80 °C

CE

EMVG, EN 50081-1, EN 50082-2

Dimensions

Clamping range (rating- / min. / max.)
Length x width x height

mm²
mm

Screw connection

4 / 0.50 / 4
70.0 x 35.0 x 72.0

Screw connection

4 / 0.50 / 4
70.0 x 35.0 x 72.0

Information

Ordering data

Type of connection

Screw connection

Type	Qty.	Order No.
RS D8-I 0...20mA	1	1165861001

Type	Qty.	Order No.
RS D8-I 4...20mA	1	1169261001

Information

Accessories

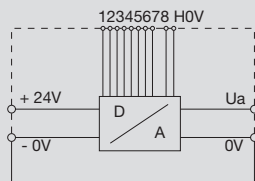
Information

AD-/DA-Converter

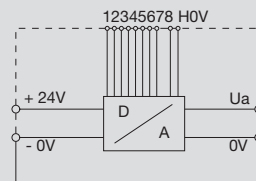
DA-Converter 8-Bit

RS D8-U +/-10V

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RS D8-U 0...10V



Technical data

Input

Input/Output
Max. voltage
Max. current
Input voltage/Input current
Signs
Resolution

8 Bit / Analogue
max. 30 V
2.5 mA
5...24 V/
MSB: H = positive; L = negative
78 mV = 1 LSB

8 Bit / Analogue
max. 30 V
2.5 mA
5...24 V/

39 mV = 1 LSB

Output

Output voltage/Output current
Offset current/Offset voltage
Load resistance voltage/Current
Accuracy
Conversion time

-10...+10 V/<= 10 mA max. current
/<= 20 mV
>= 1 kΩ/<= 600 Ω
+/- 1 LSB
<= 30 μs

0...10 V/<= 10 mA max. current
/<= 20 mV
>= 1 kΩ/<= 600 Ω
+/- 1 LSB
<= 30 μs

General data

Supply voltage
Current consumption
Operation temperature
Storage temperature
Approvals

24 Vdc +/- 20 %
25 mA (plus output current)
0 °C...+50 °C
-40 °C...+80 °C
CE

24 Vdc +/- 20 %
25 mA (plus output current)
0 °C...+50 °C
-40 °C...+80 °C
CE / ESD

Insulation coordinates

EMC standards

EMVG, EN 50081-1, EN 50082-2

EMVG, EN 50081-1, EN 50082-2

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Screw connection

4 / 0.50 / 4
70.0 x 35.0 x 72.0

Screw connection

4 / 0.50 / 4
70.0 x 35.0 x 72.0

Information

Ordering data

Type of connection

Screw connection

Type Qty. Order No.
RS D8-U +/-10V 1 1123361001

Type Qty. Order No.
RS D8-U 0...10V 1 1160761001

Information

Accessories

Information

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Delivery times see page X.2

Weidmüller

J.47

AD-/DA-Converter

AD-Converter 12-Bit

RS I-D12 0...20mA

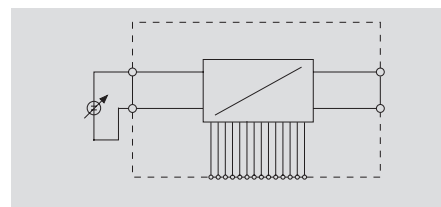
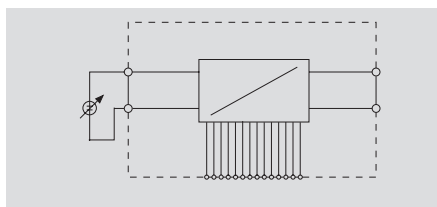
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RS I-D12 4...20mA

Terminal PIN											
MSB						LSB					
12	11	10	9	8	7	6	5	4	3	2	1
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	1	0
0	0	0	0	0	0	0	0	0	0	1	1
1	1	1	1	1	1	1	1	1	1	0	1
1	1	1	1	1	1	1	1	1	1	1	0
1	1	1	1	1	1	1	1	1	1	1	1

Digital value
Analog current
4 mA

20 mA



Technical data

Input

Input voltage/Input current
Max. voltage/Max. current
Input resistance voltage/Current
Resolution

/0...20 mA
/30 mA
/500 Ω
4.9 μA = 1 LSB

/4...20 mA
/30 mA
/500 Ω
4 μA = 1 LSB

Output

Number of outputs
Output level
Signs
Output current
Accuracy
Conversion time

12Bit
24 V = H, 0 V = L
≤ 25 mA (as source)
± 1 LSB
≤ 50 μs

12Bit
24 V = H, 0 V = L
≤ 25 mA (as source)
± 1 LSB
≤ 50 μs

General data

Supply voltage
Current consumption
Operation temperature
Storage temperature
Approvals

24 Vdc ± 20 %
0 °C...+50 °C
-40 °C...+80 °C
CE / ESD

24 Vdc ± 20 %
0 °C...+50 °C
-40 °C...+80 °C
CE / ESD

Insulation coordinates

EMC standards

EMVG, EN 50081-1, EN 50082-2

EMVG, EN 50081-1, EN 50082-2

Dimensions

Clamping range (rating- / min. / max.)
Length x width x height

mm²
mm

Screw connection

4 / 0.50 / 4
70.0 x 90.0 x 47.4

Screw connection

4 / 0.50 / 4
70.0 x 90.0 x 47.4

Information

Ordering data

Type of connection

Screw connection

Type	Qty.	Order No.
RS I-D12 0...20MA	1	1168461001

Type	Qty.	Order No.
RS I-D12 4...20MA	1	1169161001

Information

Accessories

Information

AD-/DA-Converter

AD-Converter 12-Bit

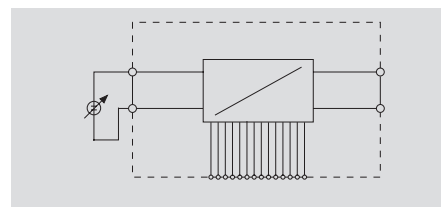
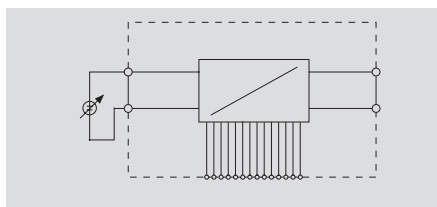
RS U-D12 +/-10V

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RS U-D12 0...10V

Terminal PIN											
MSB						LSB					
12	11	10	9	8	7	6	5	4	3	2	1
0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	1
0	0	0	0	0	0	0	0	0	0	1	0
0	0	0	0	0	0	0	0	0	0	1	1
1	1	1	1	1	1	1	1	1	1	0	1
1	1	1	1	1	1	1	1	1	1	1	0
1	1	1	1	1	1	1	1	1	1	1	1

Digital value
Analog current
4 mA
20 mA



Technical data

Input

Input voltage/Input current
Max. voltage/Max. current
Input resistance voltage/Current
Resolution

Output

Number of outputs
Output level
Signs
Output current
Accuracy
Conversion time

General data

Supply voltage
Current consumption
Operation temperature
Storage temperature
Approvals

Insulation coordinates

EMC standards

-10...+10 V/
+/- 15 V/
100 kΩ/
4.88 mV = 1 LSB

12Bit
24 V = H, 0 V = L
MSB: H = positive; L = negative
≤ 25 mA (as source)
+/- 1 LSB
≤ 50 μs

24 Vdc +/- 20 %
0 °C...+50 °C
-40 °C...+80 °C
CE / ESD

EMVG, EN 50081-1, EN 50082-2

0...10 V/
15 V/
100 kΩ/
2.44 mV = 1 LSB

12Bit
24 V = H, 0 V = L
≤ 25 mA (as source)
+/- 1 LSB
≤ 50 μs

24 Vdc +/- 20 %
0 °C...+50 °C
-40 °C...+80 °C
CE / ESD

EMVG, EN 50081-1, EN 50082-2

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Information

Screw connection

4 / 0.50 / 4
70.0 x 90.0 x 47.4

Screw connection

4 / 0.50 / 4
70.0 x 90.0 x 47.4

Ordering data

Type of connection

Screw connection

Type Qty. Order No.

RS U-D12 +/-10V 1 1168261001

Type Qty. Order No.

RS U-D12 0...10V 1 1168361001

Information

Accessories

Information

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Delivery times see page X.2

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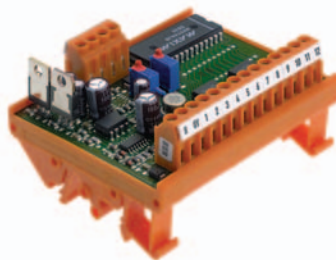
J.49

AD-/DA-Converter

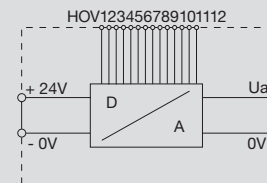
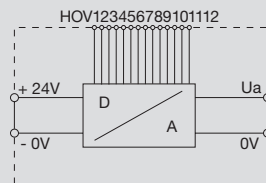
DA-Converter 12-Bit

RS D12-I 0...20mA

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RS D12-I 4...20mA



Technical data

Input

Input/Output
Max. voltage
Max. current
Input voltage/Input current
Signs
Resolution

12 Bit / analogue

24 Vdc +/- 20 %/4.2 mA

4.9 μ A = 1 LSB

Output

Output voltage/Output current
Offset current/Offset voltage
Load resistance voltage/Current
Accuracy
Conversion time

/0...20 mA (as source)

/

/< = 600 Ω

+/- 1 LSB

<= 4 μ s

General data

Supply voltage
Current consumption
Operation temperature
Storage temperature
Approvals

24 Vdc +/- 20 %

60 mA

0 °C...+50 °C

-40 °C...+80 °C

CE / ESD

Insulation coordinates

EMC standards

EMVG, EN 50081-1, EN 50082-2

12 Bit / analogue

24 Vdc +/- 20 %/4.2 mA

4 μ A = 1 LSB

/4...20 mA (as source)

/

/< = 600 Ω

+/- 1 LSB

<= 4 μ s

24 Vdc +/- 20 %

60 mA

0 °C...+50 °C

-40 °C...+80 °C

CE / ESD

EMVG, EN 50081-1, EN 50082-2

Dimensions

Clamping range (rating- / min. / max.)
Length x width x height

mm²
mm

Screw connection

4 / 0.50 / 4
70.0 x 90.0 x 47.4

Screw connection

4 / 0.50 / 4
70.0 x 90.0 x 47.4

Information

Ordering data

Type of connection

Screw connection

Type Qty. Order No.

RS D12-I 0...20mA 1 **1166061001**

Type Qty. Order No.

RS D12-I 4...20mA 1 **1165961001**

Information

Accessories

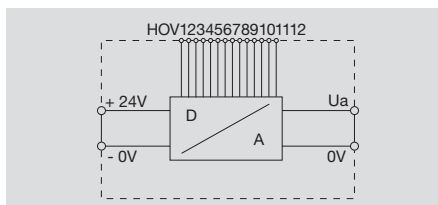
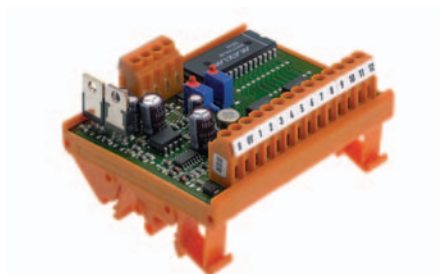
Information

AD-/DA-Converter

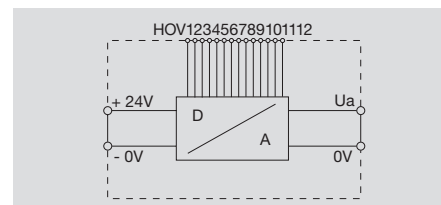
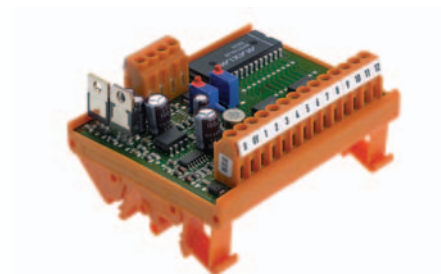
DA-Converter 12-Bit

RS D12-U +/-10V

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RS D12-U 0...10V



Technical data

Input

Input/Output
Max. voltage
Max. current
Input voltage/Input current
Signs
Resolution

12 Bit / analogue

24 Vdc +/- 20 %/4.2 mA
MSB: H = positive; L = negative
4.88 mV = 1 LSB

12 Bit / analogue

24 Vdc +/- 20 %/4.2 mA
2.44 mV = 1 LSB

Output

Output voltage/Output current
Offset current/Offset voltage
Load resistance voltage/Current
Accuracy
Conversion time

-10...+10 V/<= 10 mA
/
>= 1 kΩ/<= 600 Ω
+/- 1 LSB
<= 4 μs

0...10 V/<= 10 mA
/
>= 1 kΩ/<= 600 Ω
+/- 1 LSB
<= 4 μs

General data

Supply voltage
Current consumption
Operation temperature
Storage temperature
Approvals

24 Vdc +/- 20 %
40 mA
0 °C...+50 °C
-40 °C...+80 °C
CE / ESD

24 Vdc +/- 20 %
40 mA
0 °C...+50 °C
-40 °C...+80 °C
CE / ESD

Insulation coordinates

EMC standards

EMVG, EN 50081-1, EN 50082-2

EMVG, EN 50081-1, EN 50082-2

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Screw connection

4 / 0.50 / 4
70.0 x 90.0 x 47.4

Screw connection

4 / 0.50 / 4
70.0 x 90.0 x 47.4

Information

Ordering data

Type of connection

Screw connection

Type	Qty.	Order No.
RS D12-U +/-10V	1	1160861001

Type	Qty.	Order No.
RS D12-U 0...10V	1	1166161001

Information

Accessories

Information

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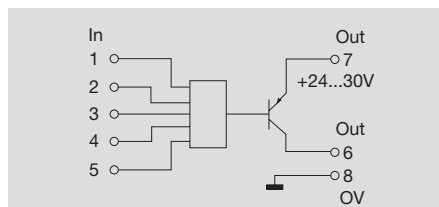
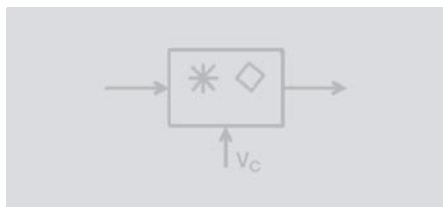
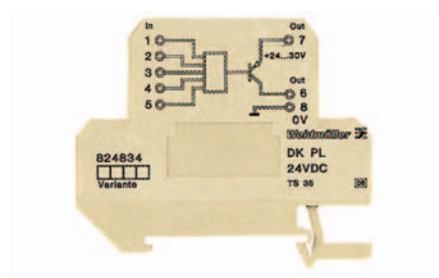
Preprocessing logic

Preprocessing logic

- Logic function and time function can be combined
- Individually programmable (further functions on request)

DKPL

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Technical data

Input	
Rated input level/	24 Vdc = high, 0 V = low/
Input current	approx. 1.5 mA each input (24V)
Max. voltage	30 Vdc
Pulse duration/	> 1 ms/
Output	
Output level/	PNP, Ub-1 V/
Output current/	max. 20 mA/
Switching thresholds/	high > 18 V, low < 7 V/
General data	
Supply voltage	24 Vdc +/- 20 %
Current consumption	< 10 mA
Operation temperature	0 °C...+50 °C
Storage temperature	-40 °C...+60 °C
Approvals	CE / ESD

Dimensions		Screw connection
Clamping range (rating- / min. / max.)	mm²	4 / 0.50 / 4
Length x width x height	mm	65.0 x 6.0 x 57.0
Information		

Ordering data

Type of connection	Type	Qty.	Order No.
Screw connection	DKPL 35 24VDC	5	8248340000
not programmed - functions see following page			
Information			

Accessories

Information	
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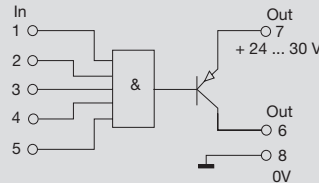
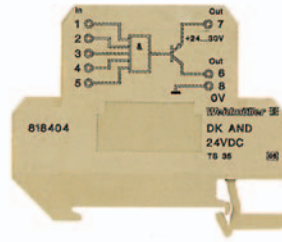
Preprocessing logic

Preprocessing logic

- Logic functions
- Compact design
- PLC load reduction

AND

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Technical data

Input

Rated input level/
Input current
Max. voltage
Pulse duration/

24 Vdc = high, 0 V = low/
approx. 1.5 mA each input (24V)
30 Vdc
> 50 µs/

Output

Output level/
Output current/
Switching thresholds/

PNP, Ub-1.8 V/
max. 20 mA/
high <15 V, low < 9 V/

General data

Supply voltage
Current consumption
Operation temperature
Storage temperature
Approvals

24...30 Vdc
< 5 mA
0 °C...+50 °C
-40 °C...+60 °C
CE / ESD

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Screw connection

4 / 0.50 / 4
65.0 x 6.0 x 57.0

Information

Ordering data

Type of connection

Screw connection

Type	Qty.	Order No.
DK AND 35 24VDC	5	8184040000

Information

Accessories

Information

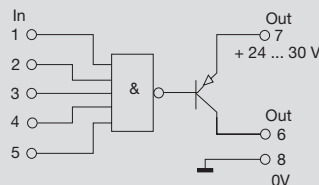
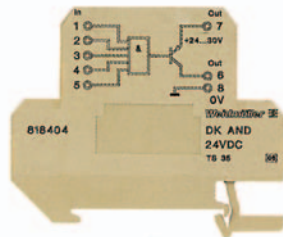
Preprocessing logic

Preprocessing logic

- Logic functions
- Compact design
- PLC load reduction

NAND

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Technical data

Input

Rated input level/
Input current
Max. voltage
Pulse duration/

24 Vdc = high, 0 V = low/
approx. 1.5 mA each input (24V)
30 Vdc
> 50 µs/

Output

Output level/
Output current/
Switching thresholds/

PNP, Ub-1.8 V/
max. 20 mA/
high <15 V, low < 9 V/

General data

Supply voltage
Current consumption
Operation temperature
Storage temperature
Approvals

24...30 Vdc
< 5 mA
0 °C...+50 °C
-40 °C...+60 °C
CE / ESD

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Screw connection

4 / 0.50 / 4
65.0 x 6.0 x 57.0

Information

Ordering data

Type of connection

Screw connection

Type

DK NAND 35 24VDC

Qty.

5

Order No.

8248320000

Information

Accessories

Information

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Delivery times see page X.2

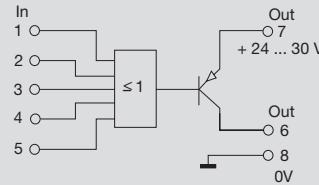
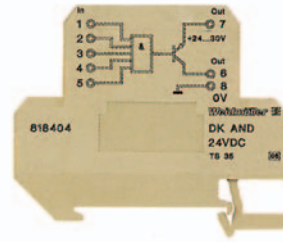
Preprocessing logic

Preprocessing logic

- Logic functions
- Compact design
- PLC load reduction

OR

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Technical data

Input

Rated input level/
Input current
Max. voltage
Pulse duration/

24 Vdc = high, 0 V = low/
approx. 1.5 mA each input (24V)
30 Vdc
> 50 µs/

Output

Output level/
Output current/
Switching thresholds/

PNP, Ub-1.8 V/
max. 20 mA/
high <15 V, low < 9 V/

General data

Supply voltage
Current consumption
Operation temperature
Storage temperature
Approvals

24...30 Vdc
< 5 mA
0 °C...+50 °C
-40 °C...+60 °C
CE / ESD

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Screw connection

4 / 0.50 / 4
65.0 x 6.0 x 57.0

Information

Ordering data

Type of connection

Screw connection

Type

DK OR 35 24VDC

Qty.

5

Order No.

8218440000

Information

Accessories

Information

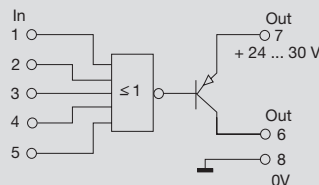
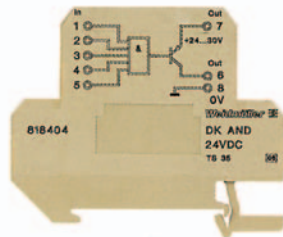
Preprocessing logic

Preprocessing logic

- Logic functions
- Compact design
- PLC load reduction

NOR

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Technical data

Input

Rated input level/
Input current
Max. voltage
Pulse duration/

24 Vdc = high, 0 V = low/
approx. 1.5 mA each input (24V)
30 Vdc
> 50 µs/

Output

Output level/
Output current/
Switching thresholds/

PNP, Ub-1.8 V/
max. 20 mA/
high <15 V, low < 9 V/

General data

Supply voltage
Current consumption
Operation temperature
Storage temperature
Approvals

24...30 Vdc
< 5 mA
0 °C...+50 °C
-40 °C...+60 °C
CE / ESD

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Screw connection

4 / 0.50 / 4
65.0 x 6.0 x 57.0

Information

Ordering data

Type of connection

Screw connection

Type	Qty.	Order No.
DK NOR 35 24VDC	5	8248330000

Information

Accessories

Information

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Monitoring modules

Current and voltage monitoring

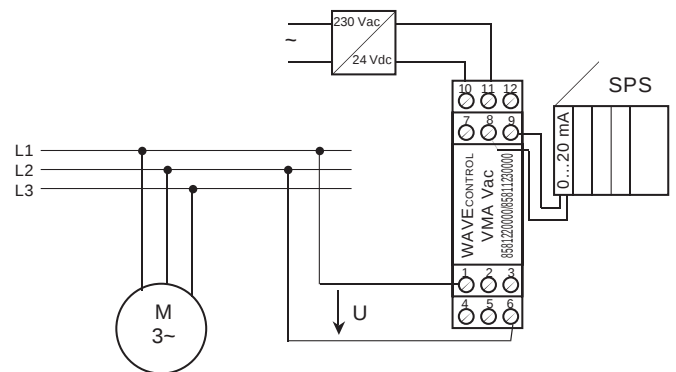
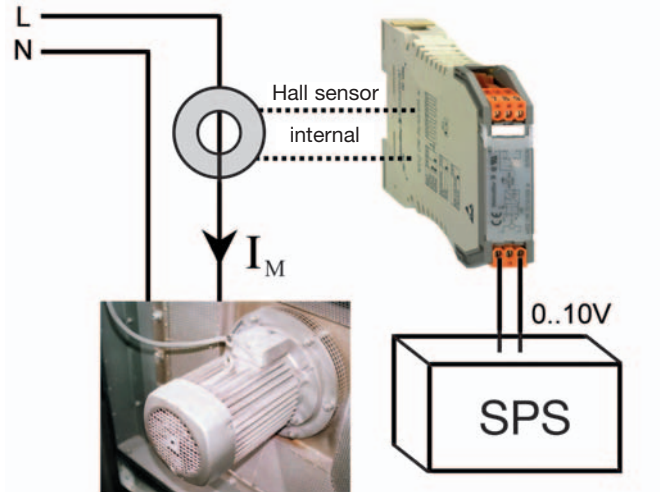
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The monitoring of current and voltage allows constant control of individual systems or installation parts. Deviations or interruptions occurring in the electric circuits can be evaluated as operation interruptions. Specific measures can be taken to remedy the problem.

Products for monitoring current convert sinus or non-sinus ac and dc current up to 60 A into analogue standard signals. The measuring procedures are based on two principles. On the one hand, ac current up to 10 A and 50/60 Hz are measured using the **transforming method**. The module is looped directly into the measuring circuit. From 10 A ac/dc, the **Hall sensor** is used.

The conductor is pushed through the module free of potential and allows current measurements up to 60 A ac/dc. Often there are high-frequency signal parts on the line being measured. To take account of the signal parts, so-called **TRMS converters** (true root mean square) are connected up in series. They allow measurements up to 2 kHz regardless of the curve shape. Available outputs are standard signals 0..20 mA, 4..20 mA, 4 ..20 mA current loop feed, 0..10 V or a switch output.

Modules for voltage monitoring measure the mains voltage up to max. 450 V ac. The unit provides isolated qualitative information in the form of a standard signal (0..20 mA, 4..20 mA, 0..10 V). Extreme loads or load relief on the power supply can cause short-term voltage fluctuations with a negative influence on the process. The WAVECONTROL module VMA transmits the relevant information to the control so that suitable process safety measures can be taken.



Current monitoring

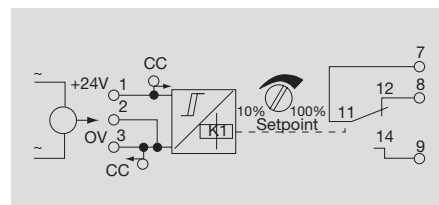
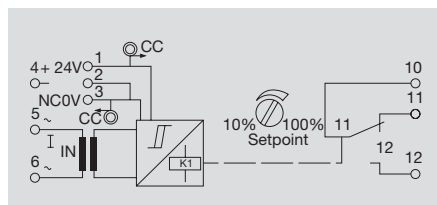
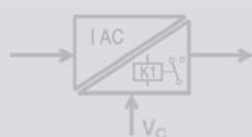
Relay output

- Current range adjustable via DIP-switch
- Switchable hysteresis
- Operating current or closed current principle

1/5/10A ac

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20/40/60A ac



Technical data

Input

Input current
Input frequency
Max. current
Max. voltage
Sensor
Diameter of bushing

0...1 Aac/ 0...5 Aac/ 0...10 Aac
50...60 Hz
100 A for 1s
250 Vac
Transforming (internally)

0...20 Aac/ 0...40 Aac/ 0...60 Aac
50...60 Hz
dependent on conductor cross-section
400 Vac, > 400V ac depends on wire insulation
hall sensor (internal)
8 mm

Output

Switching thresholds
Hysteresis
Switching voltage max./Switching voltage min.
Switching current max./Switching current min.
Step response time
Temperature coefficient
Status indicator

10...100 % by front poten.
5 % or 10 % of threshold value
60 Vdc/ 250 Vac/6 Vdc/ac
7 A/100 mA
typ. 700 ms
≤ 800 ppm/K
LED green

10...100 % by front poten.
5 % or 10 % of threshold value
60 Vdc/ 250 Vac/6 Vdc/ac
7 A/100 mA
typ. 700 ms
≤ 250 ppm/K
LED green

General data

Supply voltage
Current consumption
Current-carrying cap. of cross-connect.
Operation temperature
Storage temperature
Default settings
Approvals
Contact arrangement

24 Vdc +/- 10 %
8.3 mA (Relay not triggered)/ 24 mA (Relay triggered)
≤ 2 A
0 °C...+50 °C
-20 °C...+70 °C
0...5A / 10% Hysteresis / current principle
CE / ESD / cURus
1 changeover contact

24 Vdc +/- 10 %
23 mA (Relay not triggered)/ 47 mA (Relay triggered)
≤ 2 A
0 °C...+50 °C
-20 °C...+70 °C
0...40A / 10% Hysteresis / current principle
CE / ESD / cURus
1 changeover contact

Insulation coordinates

Rated voltage
Impulse withstand voltage
Pollution severity
Overvoltage category
Clearance & creepage path
Isolation voltage Input, output

300 V
4 kV
2
III
≥ 3 mm
4 kVeff / 5s

300 V
4 kV
2
III
≥ 3 mm
4 kVeff / 5s

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Screw connection

2.50 / 0.50 / 2.50
92.4 x 22.5 x 112.4

Tension clamp c.

1.50 / 0.50 / 2.50
92.4 x 22.5 x 112.4

Screw connection

2.50 / 0.50 / 2.50
92.4 x 22.5 x 112.4

Tension clamp c.

1.50 / 0.50 / 2.50
92.4 x 22.5 x 112.4

Information

Tu=23°C, single module

Tu=23°C, single module

Ordering data

Type of connection

Screw connection
Tension clamp c.

Type

WAS2 CMR 1/5/10A ac
WAZ2 CMR 1/5/10A ac

Qty.

1
1

Order No.

8516560000
8516570000

Type

WAS2 CMR 20/40/60A ac
WAZ2 CMR 20/40/60A ac

Qty.

1
1

Order No.

8513340000
8526600000

Information

Voltage supply 24V and 0V with ZQV 2.5N/2 cross-connection

Voltage supply 24V and 0V with ZQV 2.5N/2 cross-connection

Accessories

Information

Current monitoring

Analogue output

- Input and output adjustable via DIP-switch
- Calibration not necessary

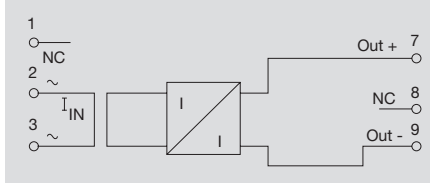
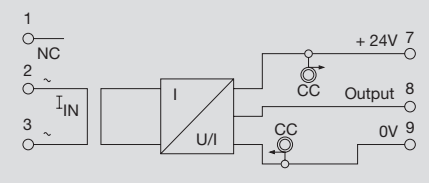
1/5/10A ac

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1/5/10A ac 4...20mA

Current loop



Technical data

Input

Input current
Input frequency
Max. current
Voltage of measuring circuit
Sensor
Diameter of bushing

0...1 Aac/ 0...5 Aac/ 0...10 Aac
50...60 Hz
100 A for 1s
250 Vac
Transforming (internally)

0...1 Aac/ 0...5 Aac/ 0...10 Aac
50...60 Hz
100 A for 1s
250 Vac
Transforming (internally)

Output

Output current/Output voltage
Offset current
Output signal limit
Load resistance voltage/Current
Step response time
Accuracy
Temperature coefficient
Status indicator

0(4)...20 mA/0...10 V
max. 100 μ A
approx. 13 V resp. 24 mA
 $\geq 1 \text{ k}\Omega$ / $\leq 600 \Omega$
typ. 700 ms
0.5% FSR
 $\leq 200 \text{ ppm/K}$
LED ON: OK; FLASHING: signal out of range; OFF: Error

4...20 mA (current loop)/
max. 100 μ A
approx. 24 mA
 $\leq 600 \Omega$
typ. 700 ms
0.5% FSR
 $\leq 200 \text{ ppm/K}$
LED ON: OK; FLASHING: signal out of range; OFF: Error

General data

Supply voltage
Current consumption
Current-carrying cap. of cross-connect.
Operation temperature/Storage temperature
Default settings
Approvals

24 Vdc $\pm 10 \%$
40 mA at $I_{out}=20 \text{ mA}$
 $\leq 2 \text{ A}$
0 $^{\circ}\text{C}$...+50 $^{\circ}\text{C}$ / -20 $^{\circ}\text{C}$...+70 $^{\circ}\text{C}$
0...5Aac, 4...20mA
CE / ESD / cURus

13...30 Vdc
0 $^{\circ}\text{C}$...+50 $^{\circ}\text{C}$ / -20 $^{\circ}\text{C}$...+70 $^{\circ}\text{C}$
0...5Aac, 4...20mA
CE / ESD / cURus

Insulation coordinates

Rated voltage
Impulse withstand voltage
Pollution severity
Overvoltage category
Clearance & creepage path
Isolation voltage Input, output

300 V
6 kV
2
III
 $\geq 5.5 \text{ mm}$
4 kVeff / 5s

300 V
6 kV
2
III
 $\geq 5.5 \text{ mm}$
4 kVeff / 5s

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Screw connection

2.50 / 0.50 / 2.50
72.0 x 22.5 x 92.4

Tension clamp c.

1.50 / 0.50 / 2.50
72.0 x 22.5 x 92.4

Screw connection

2.50 / 0.50 / 2.50
72.0 x 22.5 x 92.4

Tension clamp c.

1.50 / 0.50 / 2.50
72.0 x 22.5 x 92.4

Information

Tu=23 $^{\circ}\text{C}$, single module

Tu=23 $^{\circ}\text{C}$, single module

Ordering data

Type of connection

Screw connection
Tension clamp c.

Type	Qty.	Order No.
WAS1 CMA 1/5/10A ac	1	8523400000
WAZ1 CMA 1/5/10A ac	1	8523410000

Type	Qty.	Order No.
WAS1 CMA LP 1/5/10A ac	1	8528650000
WAZ1 CMA LP 1/5/10A ac	1	8528660000

Information

Accessories

Information

Voltage supply 24V and 0V with ZQV 2.5N/2 cross-connection

Current monitoring

Analogue output

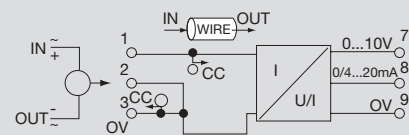
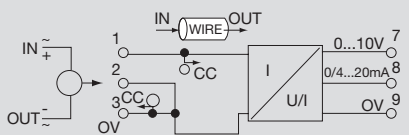
- Input and output adjustable via DIP-switch
- Calibration not necessary

5/10A ac/dc

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20/25/30A ac/dc



Technical data

Input

Input current
Input frequency
Max. current
Voltage of measuring circuit
Sensor
Diameter of bushing

0...5 Aac/dc/ 0...10 Aac/dc
0...2 kHz (true RMS to DC converter)
dependent on conductor cross-section
400 Vac, >400V ac depends on conductor insulation
hall sensor (internal)
8 mm

0...20 Aac/dc/0...25 Aac/dc / 0...30 Aac/dc
0...2 kHz (true RMS to DC converter)
dependent on conductor cross-section
400 Vac, >400V ac depends on conductor insulation
hall sensor (internal)
8 mm

Output

Output current/Output voltage
Offset current
Output signal limit
Load resistance voltage/Current
Step response time
Accuracy
Temperature coefficient
Status indicator

0(4)...20 mA/0...10 V
max. 150 μ A
approx. 13 V resp. 24 mA
 $\geq 1 \text{ k}\Omega / < 600 \Omega$
typ. 700 ms
0.5% FSR
 $\leq 650 \text{ ppm/K}$
LED ON: OK; FLASHING: signal out of range; OFF: Error

0(4)...20 mA/0...10 V
max. 150 μ A
approx. 13 V resp. 24 mA
 $\geq 1 \text{ k}\Omega / < 600 \Omega$
typ. 700 ms
0.5% FSR
 $\leq 650 \text{ ppm/K}$
LED ON: OK; FLASHING: signal out of range; OFF: Error

General data

Supply voltage
Current consumption
Current-carrying cap. of cross-connect.
Operation temperature/Storage temperature
Default settings
Approvals

24 Vdc +/- 10 %
50 mA at Iout=20 mA
 $\leq 2 \text{ A}$
0 °C...+50 °C/-20 °C...+70 °C
0...5A, 4...20mA
CE / ESD / cURus

24 Vdc +/- 10 %
50 mA at Iout=20 mA
 $\leq 2 \text{ A}$
0 °C...+50 °C/-20 °C...+70 °C
0...25A, 4...20mA
CE / ESD / cURus

Insulation coordinates

Rated voltage
Impulse withstand voltage
Pollution severity
Overvoltage category
Clearance & creepage path
Isolation voltage Input, output

300 V
6 kV
2
III
 $\geq 5.5 \text{ mm}$
4 kVeff / 5s

300 V
6 kV
2
III
 $\geq 5.5 \text{ mm}$
4 kVeff / 5s

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Screw connection

2.50 / 0.50 / 2.50
92.4 x 22.5 x 112.4

Tension clamp c.

1.50 / 0.50 / 2.50
92.4 x 22.5 x 112.4

Screw connection

2.50 / 0.50 / 2.50
92.4 x 22.5 x 112.4

Tension clamp c.

1.50 / 0.50 / 2.50
92.4 x 22.5 x 112.4

Information

Tu=23°C, single module

Tu=23°C, single module

Ordering data

Type of connection

Screw connection
Tension clamp c.

Type

WAS2 CMA 5/10A uc
WAZ2 CMA 5/10A uc

Qty.

1
1

Order No.

8526610000
8526620000

Type

WAS2 CMA 20/25/30A uc
WAZ2 CMA 20/25/30A uc

Qty.

1
1

Order No.

8545830000
8545840000

Information

Accessories

Information

Voltage supply 24V and 0V with ZQV 2.5N/2 cross-connection

Voltage supply 24V and 0V with ZQV 2.5N/2 cross-connection

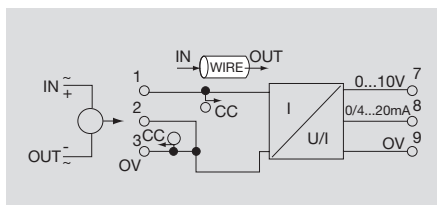
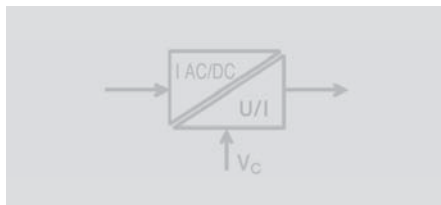
Current monitoring

Analogue output

- Input and output adjustable via DIP-switch
- Calibration not necessary

40/50/60A ac/dc

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Technical data

Input

Input current
Input frequency
Max. current
Voltage of measuring circuit
Sensor
Diameter of bushing

0...40 Aac/dc/ 0...50 Aac/dc/ 0...60 Aac/dc
0...2 kHz (true RMS to DC converter)
dependent on conductor cross-section
400 Vac, >400V ac depends on conductor insulation
hall sensor (internal)
8 mm

Output

Output current/Output voltage
Offset current
Output signal limit
Load resistance voltage/Current
Step response time
Accuracy
Temperature coefficient
Status indicator

0(4)...20 mA/0...10 V
max. 150 μ A
approx. 13 V resp. 24 mA
 $\geq 1 \text{ k}\Omega / < = 600 \Omega$
typ. 700 ms
0.5% FSR
 $\leq 650 \text{ ppm/K}$
LED ON: OK; FLASHING: signal out of range; OFF: Error

General data

Supply voltage
Current consumption
Current-carrying cap. of cross-connect.
Operation temperature/Storage temperature
Default settings
Approvals

24 Vdc $\pm 10 \%$
50 mA at $I_{out}=20 \text{ mA}$
 $\leq 2 \text{ A}$
0 °C...+50 °C/-20 °C...+70 °C
0...50A, 4...20mA
CE / ESD / cURus

Insulation coordinates

Rated voltage
Impulse withstand voltage
Pollution severity
Overvoltage category
Clearance & creepage path
Isolation voltage Input, output

300 V
6 kV
2
III
 $\geq 5.5 \text{ mm}$
4 kVeff / 5s

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Screw connection

2.50 / 0.50 / 2.50
92.4 x 22.5 x 112.4

Tension clamp c.

1.50 / 0.50 / 2.50
92.4 x 22.5 x 112.4

Information

Tu=23°C, single module

Ordering data

Type of connection

Screw connection
Tension clamp c.

Type

WAS2 CMA 40/50/60A uc
WAZ2 CMA 40/50/60A uc

Qty.

1
1

Order No.

8513330000
8526590000

Information

Accessories

Information

Voltage supply 24V and 0V with ZQV 2.5N/2
cross-connection

Current monitoring

Analogue output

- Max. conductor diameter 35mm
- Can be added sideways
- Mounting on mounting-rail TS35

CMA 100/5A

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CMA 250/5A

CMA 500/5A



Technical data

Input

Input current
Input frequency
Max. current
Voltage of measuring circuit
Diameter of bushing

Output

Output current
Load resistance voltage/Current
Accuracy

General data

Operation temperature/Storage temperature
Approvals

Insulation coordinates

Isolation voltage Input, output

100 Aac
Class 1: 50...60Hz / Class 1.5: 16...400Hz
thermal current I_{th} >3 kA
600 V eff (unfinished conductor)
35 mm

5 Aac
/ < = 600 Ω
class 1 / 1.5; residual current factor < 5

-5 °C...+40 °C/-40 °C...+85 °C
CE / cURus

4 kVeff / 1 min.

250 Aac
Class 1: 50...60Hz / Class 1.5: 16...400Hz
thermal current I_{th} >3 kA
600 V eff (unfinished conductor)
35 mm

5 Aac
/ < = 600 Ω
class 1 / 1.5; residual current factor < 5

-5 °C...+40 °C/-40 °C...+85 °C
CE / cURus

4 kVeff / 1 min.

500 Aac
Class 1: 50...60 Hz / Class 1.5: 16...400 Hz
thermal current I_{th} >3 kA
600 V eff (unfinished conductor)
35 mm

5 Aac
/ < = 600 Ω
class 1 / 1.5; residual current factor < 5

-5 °C...+40 °C/-40 °C...+85 °C
CE / cURus

4 kVeff / 1 min.

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Information

Screw connection (secondary)

50.0 x 78.0 x 90.5

Screw connection (secondary)

50.0 x 78.0 x 90.5

Screw connection (secondary)

50.0 x 78.0 x 90.5

Ordering data

Type of connection

Screw connection (secondary)

Type	(Qty.=1)	Order No.
CMA 100/5A		8662140000

Type	(Qty.=1)	Order No.
CMA 250/5A		8664570000

Type	(Qty.=1)	Order No.
CMA 500/5A		8664580000

Information

Accessories

Information

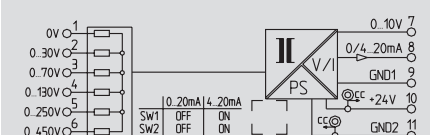
Voltage monitoring

Analogue output

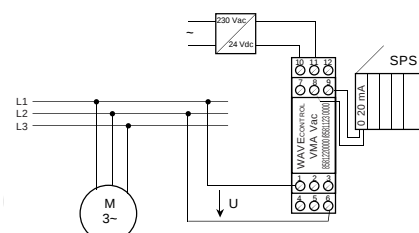
- 3-way disconnection
- Max. measuring-voltage 450 V_{ac}eff
- Output selectable via DIP-switch
- Calibration not necessary

VMA Vac

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Application



Technical data

Input

Input voltage
Input frequency
Input voltage
Max. voltage

0...30Vac/ 0...70Vac/ 0...130Vac/ 0...250Vac/ 0...450Vac
40...40 Hz sinus
0...30Vac/ 0...70Vac/ 0...130Vac/ 0...250Vac/ 0...450Vac
45 Vac / 100 Vac / 180 Vac / 270 Vac / 475 Vac (short time)

Output

Output voltage/Output current
Offset voltage/Offset current
Load resistance voltage/Current
Accuracy
Temperature coefficient
Step response time
Status indicator

0...10 V/0(4)...20 mA
max. 0.02 V/max. 40 μ A
 $\geq 1 \text{ k}\Omega$ / $\leq 600 \Omega$
1.3 % (40...60 Hz) typ. 1 % / 2 % (70...400 Hz) typ. 1.5 %
 $\leq 250 \text{ ppm/K}$
300 ms
LED green

General data

Supply voltage
Current consumption
Current-carrying cap. of cross-connect.
Default settings
Operation temperature
Storage temperature
Approvals

24 Vdc +/- 25 %
40...30...24 mA at I_{out}=20 mA
 $\leq 2 \text{ A}$
0...10V/0...20mA
0 °C...+50 °C
-20 °C...+70 °C
CE / ESD / cURus

Insulation coordinates

Standards
EMC standards
Rated voltage
Impulse withstand voltage
Isolation voltage Input, output/
Overvoltage category
Pollution severity
Clearance & creepage path

EN 50178
EN 50081-1, EN 61000-2-6, EN 61326
supply/output: 300 V; input/output, supply/output: 600 V
supply/output: 4 kV; input/output, supply/output: 6kV
4 kVeff / 5s/
III
2
supply/output: 3mm; input/output, supply/output: 5.5mm

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Screw connection

2.50 / 0.50 / 2.50
92.4 x 22.5 x 112.4

Tension clamp c.

1.50 / 0.50 / 2.50
92.4 x 22.5 x 112.4

Information

Tu=23°C, single module

Ordering data

Type of connection

Screw connection
Tension clamp c.

Type	Qty.	Order No.
WAS2 VMA V ac	1	8581220000
WAZ2 VMA V ac	1	8581230000

Information

Accessories

Information

Voltage supply 24V and 0V with ZQV 2.5N/2
cross-connection

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Delivery times see page X.2

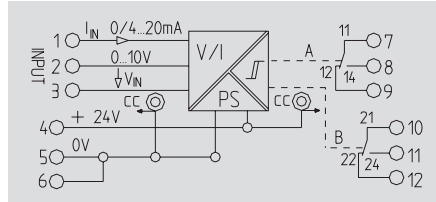
Threshold monitoring

Relay output

- 3-way disconnection
- Low trip / high trip
- FAILSAFE / NON FAILSAFE
- 2 Relay outputs 250Vac/3A

DC/Alarm

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Technical data

Input

Input voltage
Input current
Input resistance voltage/Current

Output

Contact arrangement
Contact material
Switching thresholds
Hysteresis
Switching voltage max./Switching voltage min.
Continuous current
Function
Temperature coefficient
Status indicator

General data

Supply voltage
Power consumption
Current-carrying cap. of cross-connect.
Operation temperature
Storage temperature
Default settings
Approvals

Insulation coordinates

Standards
EMC standards
Rated voltage
Impulse withstand voltage
Pollution severity
Overvoltage category
Clearance & creepage path
Isolation voltage Input, output

0...10 V
0(4)...20 mA
≥ 100 kΩ/≤ 110 Ω

2 change-over contacts
AgNi 90/10
1...90 % (independently for channel 1 and channel 2)
1...90 % (independently for channel 1 and channel 2)
253 Vac/
3 A
failsafe / non failsafe
≤ 500 ppm/K
LED green ON: OK, LED red ON: alarm (per channel)

24 Vdc +/- 25 %
typ. 1 W both relays picked up
≤ 2 A
0 °C...+55 °C (fitted)
-20 °C...+85 °C
channel A/B: low trip and FAILSAFE
CE / ESD / cURus

EN 50178
EN 61000-4-2, -3, -4, -5, -6

300 V
4 kV
2
III
≥ 3 mm
1.2 kVeff / 5s

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Information

Screw connection

2.50 / 0.50 / 2.50
92.4 x 17.5 x 112.4

Tension clamp c.

1.50 / 0.50 / 2.50
92.4 x 17.5 x 112.4

Tu=23°C, single module

Ordering data

Type of connection

Screw connection
Tension clamp c.

Type

WAS5 DC/Alarm
WAZ5 DC/Alarm

Qty.

1
1

Order No.

8543820000
8543880000

Information

Accessories

Information

Voltage supply 24V and 0V with ZQV 2.5N/2
cross-connection

Switch position/setting options

function	SW 1			
	1	2	3	4
Kanal A High Trip	■			
Kanal A Low Trip	□			
Kanal B High Trip		■		
Kanal B Low Trip		□		
FAILSAFE, Kanal 1 & 2			□	□
NON FAILSAFE, Kanal 1 & 2			■	■

■ = on
□ = off

NON FAILSAFE: The relay picks up when the alarm is triggered.

FAILSAFE: The relay drops out when the alarm is triggered. An alarm is also triggered in the FAILSAFE mode, if for example, the operating voltage to the module fails.

Low Trip: Alarm is triggered if the signal is undershoot the threshold.

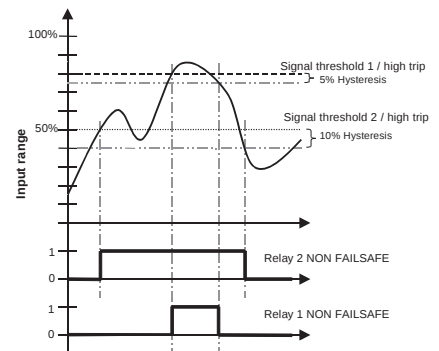
High Trip: Alarm is triggered if the signal is overshoot the threshold.

Signal threshold: Adjustments of the signal threshold (1...90%) are made for channel 1 with the potentiometer P1, and separately for channel 2 via potentiometer P2.

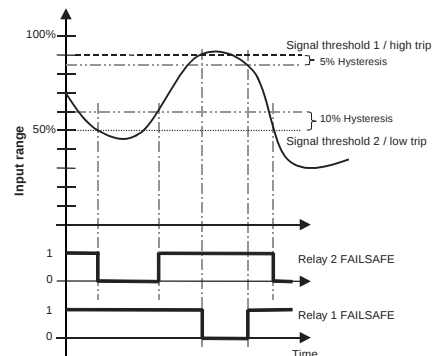
Hysteresis: Adjustments of the hysteresis (1...10%) are made for channel 1 with the potentiometer P3, and separately for channel 2 via potentiometer P3.

WAVEANALOG DC/Alarm – Alarm indication

Example 1



Example 2



Threshold monitoring

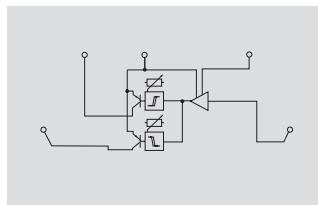
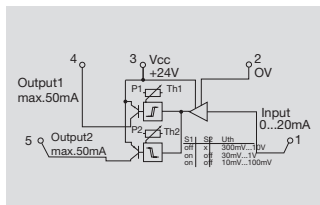
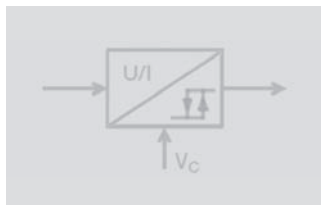
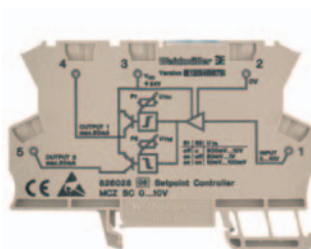
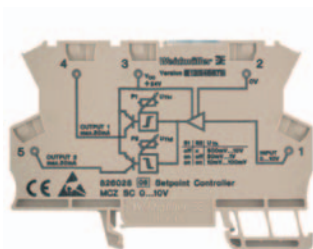
Transistor output

- 2 digital outputs
- Monitoring of upper and lower level

MCZ SC 0...10V

MCZ SC 0...20mA

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Technical data

Input

Input voltage/Input current
Input resistance voltage/Current
Voltage drop

Output

Contact arrangement/
Function
Switching thresholds
Hysteresis
Switching current max.
Step response time
Cut-off freq. (-3dB)
Temperature coefficient

General data

Supply voltage
Current consumption
Operation temperature
Storage temperature
Approvals

0...10 V/
60 kΩ/

double switch output PNP/
Uin < Uth1: Output 1 active / Uin > Uth2:
Output 2 active
via 2 potentiometers (12 turns)
1% of adjusted final value
50 mA - per channel (voltage drop at output
transistor: < 1.2 V at 50 mA)
< 250 μs (switch threshold at 90% of the
max. input signal; Rl<=1 kΩ)
100 Hz
250 ppm/K (max. 500 ppm/K)
24 Vdc +/- 20 %
15 mA
0 °C...+50 °C
-25 °C...+60 °C

/0.5...20 mA
/50 Ω
1 V

double switch output PNP/
lin < lth 1: Output 1 active / lin > lth2: Output
2 active
via 2 potentiometers (12 turns)
1% of final value
50 mA - per channel (voltage drop at output
transistor: < 1.2 V at 50 mA)
< 250 μs (switch threshold at 90% of the
max. input signal; Rl<=1 kΩ)
100 Hz
max. 250 ppm/K
24 Vdc +/- 20 %
15 mA
0 °C...+50 °C
-25 °C...+60 °C

Dimensions

Clamping range (rating- / min. / max.) mm²
Length x width x height mm

Information

Tension clamp c.

1.50 / 0.50 / 1.50
91.0 x 6.0 x 63.2

Tension clamp c.

1.50 / 0.50 / 1.50
91.0 x 6.0 x 63.2

Ordering data

Type of connection

Tension clamp c.

Type (Qty.=1) Order No.
MCZ SC 0-10V 8260280000

Type (Qty.=1) Order No.
MCZ SC 0-20MA 8227350000

Information

Accessories

Information

Voltage supply 24V and 0V with ZQV 4/x
cross-connection

Voltage supply 24V and 0V with ZQV 4/x
cross-connection

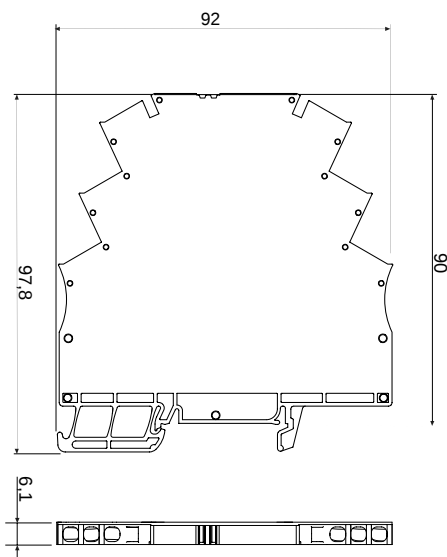
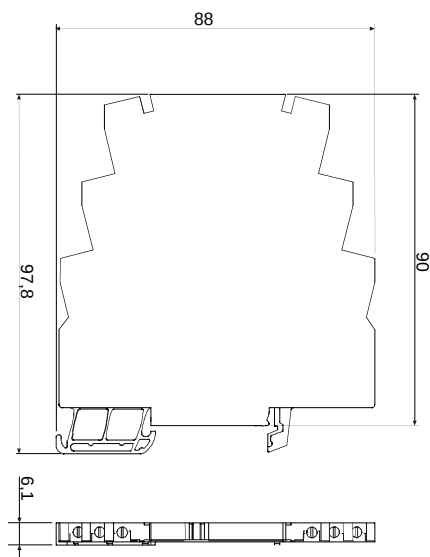
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Delivery times see page X.2

Accessories

MICROANALOG

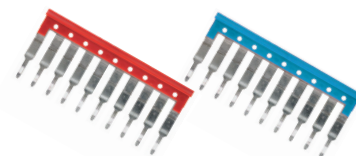
Srew connection

THE ONLINE DISTRIBUTOR OF ELECTRONIC COMPONENTS

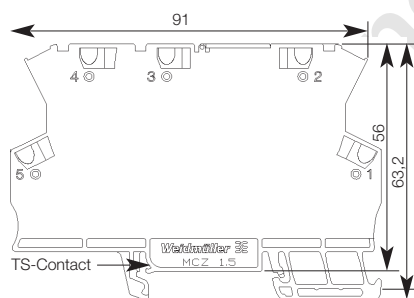


Accessories	
Cross connection, 2-poles, red	
Cross connection, 3-poles, red	
Cross connection, 4-poles, red	
Cross connection, 10-poles, red	
Cross connection, 41-poles, red	
Cross connection, 2-poles, blue	
Cross connection, 3-poles, blue	
Cross connection, 4-poles, blue	
Cross connection, 10-poles, blue	
Cross connection, 41-poles, blue	
Terminalmarker	

Type	Order no.	Qty
ZQV 4N/2 rt	1793950000	60
ZQV 4N/3 rt	1793980000	60
ZQV 4N/4 rt	1794010000	60
ZQV 4N/10 rt	1794040000	20
ZQV 4N/41 rt	1794070000	10
ZQV 4N/2 bl	1793960000	60
ZQV 4N/3 bl	1793990000	60
ZQV 4N/4 bl	1794020000	60
ZQV 4N/10 bl	1794050000	20
ZQV 4N/41 bl	1794080000	10
WS10/6	1060960000	200



MCZ



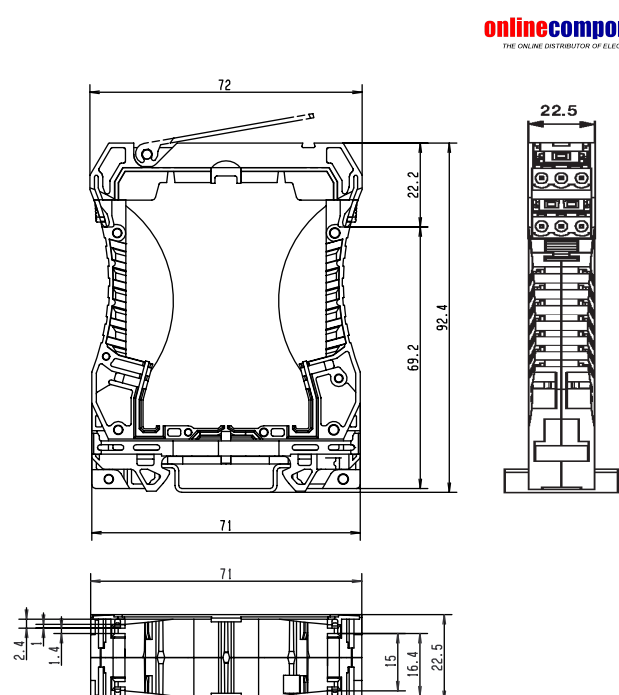
Accessories	
Cross connection, 2-poles, yellow	
Cross connection, 3-poles, yellow	
Cross connection, 4-poles, yellow	
Cross connection, 5-poles, yellow	
Cross connection, 6-poles, yellow	
Cross connection, 7-poles, yellow	
Cross connection, 8-poles, yellow	
Cross connection, 9-poles, yellow	
Cross connection, 10-poles, yellow	
Terminalmarker	

Type	Order no.	Qty
ZQV 4N/2 ge	1608950000	20
ZQV 4N/3 ge	1608960000	20
ZQV 4N/4 ge	1608970000	20
ZQV 4N/5 ge	1608980000	20
ZQV 4N/6 ge	1608990000	20
ZQV 4N/7 ge	1609000000	20
ZQV 4N/8 ge	1609010000	20
ZQV 4N/9 ge	1609020000	20
ZQV 4N/10 ge	1609030000	20
WS10/6	1060960000	200

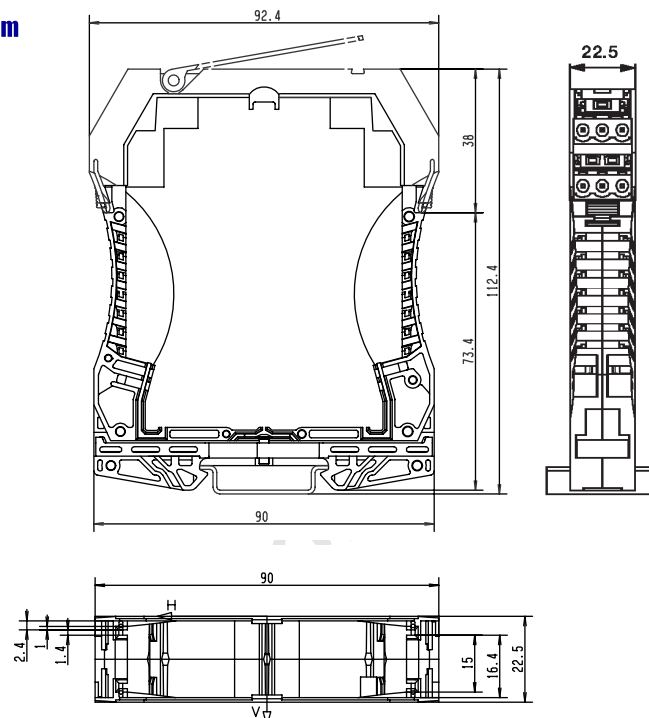


Accessories

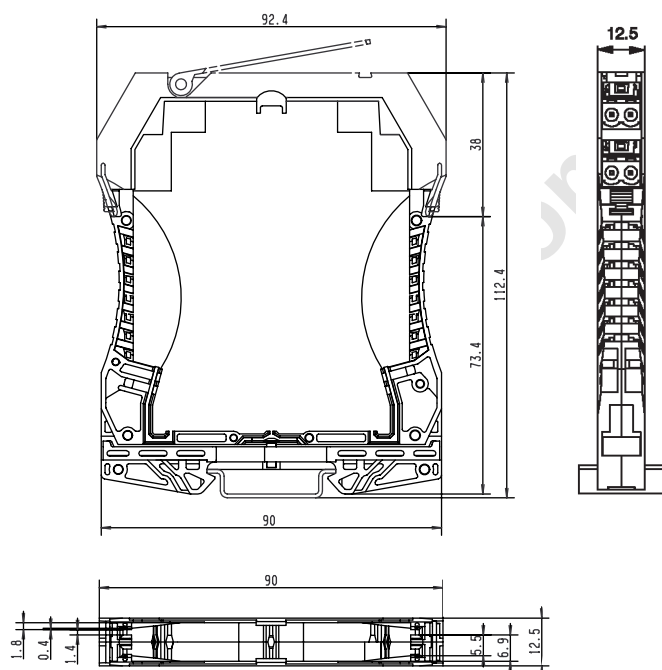
WAVEBOX S 22,5



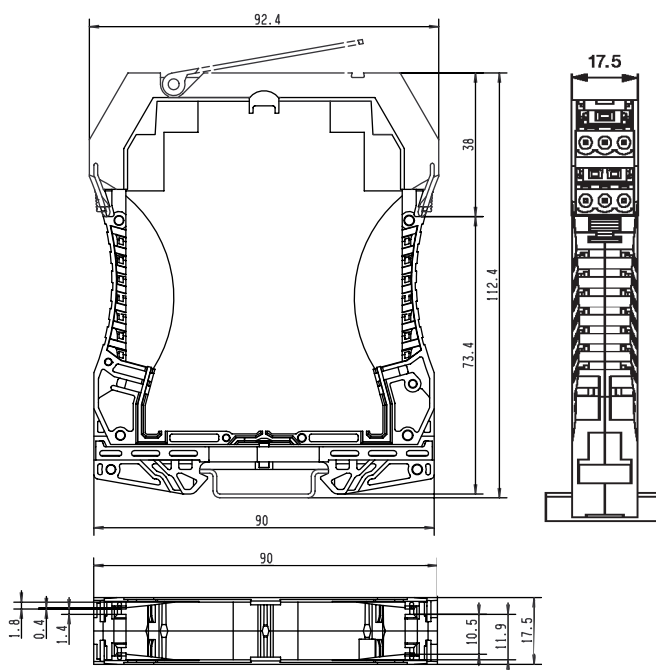
WAVEBOX L 22,5



WAVEBOX 12,5



WAVEBOX 17,5



Accessories	
Cross connection ZQV 2,5N/2 black	
Cross connection ZQV 2,5N/2 red	
Cross connection ZQV 2,5N/2 blue	
Cross connection ZQV 2,5N/2 yellow	
Terminal markers	
WS 10/5 Multicard	
WS 10/5 Neutral	

Type	Order no.	Qty
ZQV 2,5N/2 sw	1718080000	60
ZQV 2,5N/2 rt	1717900000	60
ZQV 2,5N/2 bl	1717990000	60
ZQV 2,5N/2 ge	1693800000	60
WS 10/5	1635010000	144
WS 10/5 Neutral	1060860000	200



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