Analogue Signal Conditioning Qs and As

Where are analogue conditioners used?

In all types of electronic industrial and marine measurement and control systems – for example in processes such as power plants, steelworks, water and waste plants, oil and gas production and chemical processing. In fact, wherever temperature, pressure, level, flow, weight, speed, etc., is measured and controlled as part of a continuous or batch production process. Such measurement parameters – after being accurately produced – must not be degraded on their way from the field to the control room, despite external influences from the atmosphere and installation. Conversion or changes to these signals requires electronics of the highest quality, which can also withstand wide ambient temperature changes, electro-magnetic interference, vibration, corrosive or hazardous conditions.

What functions do analogue conditioners provide?

One or more of the following:

1) Isolation of high level DC measurement and control signals. (Why do we need isolation? – see the notes that follow later in this catalogue.)

2) Conversion of high level signals, such as 0...5 V input to 4...20 mA output

3) Amplification, linearisation and transmission of low-level senor inputs, such as millivolts from thermocouples, into high level DC outputs to enable transmission over distances 100 m or more.

4) Initiation of status indications and alarms by creating relay contact closure outputs from analogue inputs.

Why do we need separate analogue modules nowadays? Surely the control system (PLC or DCS) can perform the same functions?

1) Sometimes this is true, but look at where the cabling from the field devices (transmitters, sensors, valves and actuators) needs to go. It will usually go not just straight to the control system. Many signals are also passed to local indicators and alarms, and each will need isolating from the others.

2) Often sensors - like thermocouples for temperature – need isolating, converting and linearising locally to a standardised high level signal (e.g. 4...20 mA) for long distance transmission – instead of running expensive compensation cable to the control system.

3) Where the control system has no isolated analogue inputs, a separate isolator will often be needed.

4) Where the control system cannot provide power for the sensor / transmitter and it is convenient to do this from an isolating module.

5) Where a high integrity, dedicated display is required, separate from the control system display, and the input needs splitting.

6) Where local linearisation is needed for a plant operator – for example where a liquid volume indicator is needed for filling a bulk storage tank, but the measurement is level (level to volume conversion depends on the shape of the tank).

7) Where the control system only takes 4...20 mA analogue inputs and the sensors provide other less common ranges, such as 0...20 mV, 2...10 V, 0...10 kΩ, 0...1 mA, 4...12 kHz, 0...5 A AC etc

8) Where the control system needs to be protected from electrical noise pulses on it's analogue inputs

9) Where expansion of the analogue inputs would mean an expensive new I/O board for the control system

How can I select the right product for my application?

1) Weidmüller has a formidable range of analogue conditioners, covering most application requirements, and our range is expanding. We also have some useful tools for selection and configuration.

2) If you cannot find a suitable product for your application, it doesn't mean we don't have one! Tell us your requirement, and if we can't provide a solution from our current range of products, there may be a customised version that we could create for you.

Quick select – Analogue Signal Conditioning

Selection table

Order No.	Product	Input										Width
		Amount	0...20 mA	4...20 mA	0...10 V	0...5 V	TC	RTD	Frequency	Miscellaneous	Sensor feed	
	Intrinsically safe signal converter for the Ex zone											
8965340000	ACT20X-HDI-SDO-RNO-S	1								Namur Initiator		22.5 mm
8965350000	ACT20X-HDI-SDO-RNC-S	1								Namur Initiator		22.5 mm
8965370000	ACT20X-2HDI-2SDO-RNO-S	2								Namur Initiator		22.5 mm
8965380000	ACT20X-2HDI-2SDO-RNC-S	2								Namur Initiator		22.5 mm
8965360000	ACT20X-HDI-SDO-S	1								Namur Initiator		22.5 mm
8965390000	ACT20X-2HDI-2SDO-S	2								Namur Initiator		22.5 mm
8965400000	ACT20X-SDI-HDO-L-S	1								NPN PNP switching signal		22.5 mm
8965420000	ACT20X-2SDI-2HDO-S	2								NPN PNP switching signal		22.5 mm
8965410000	ACT20X-SDI-HDO-H-S	1								NPN PNP switching signal		22.5 mm
8965470000	ACT20X-HTI-SAO-S	1	X				X	X				22.5 mm
8965480000	ACT20X-2HTI-2SAO-S	2	X				X	X				22.5 mm
8965490000	ACT20X-HUI-SAO-S	1	X	X	X	X	X	X			X	22.5 mm
1318220000	ACT20X-HUI-SAO-LP-S	1	X	X	X	X	X	X				12.5 mm
8965430000	ACT20X-HAI-SAO-S	1		X						HART®- transparent	X	22.5 mm
8965440000	ACT20X-2HAI-2SAO-S	2		X						HART®- transparent	X	22.5 mm
8965450000	ACT20X-SAI-HAO-S	1		X						HART®- transparent		22.5 mm
8965460000	ACT20X-2SAI-2HAO-S	2		X						HART®- transparent		22.5 mm
	Signal converter in 6 mm width											
1176020000	ACT20M-AI-2SAO-S	1	X	X	X	X					X	6.1 mm
1175990000	ACT20M-CI-2CO-S	1	X	X								6.1 mm
1176000000	ACT20M-AI-AO-S	1	X	X	X	X					X	6.1 mm
1176010000	ACT20M-AI-AO-E-S	1	X	X	X	X						6.1 mm
1175980000	ACT20M-CI-CO-S	1	X	X								6.1 mm
1176030000	ACT20M-UI-AO-S	1	X	X	X	X	X	X			X	6.1 mm
1176070000	ACT20M-CI-CO-ILP-S	1	X	X								6.1 mm
1176080000	ACT20M-2CI-2CO-ILP-S	2	X	X								6.1 mm
1176040000	ACT20M-CI-CO-OLP-S	1	X	X							X	6.1 mm
1176050000	ACT20M-2CI-2CO-OLP-S	2	X	X							X	6.1 mm
1375450000	ACT20M-BAI-AO-S	1								-10(20)...+10(20) mA, -5(10)...+5(10) V		6.1 mm
1375470000	ACT20M-BAI-2AO-S	1								-10(20)...+10(20) mA, -5(10)...+5(10) V		6.1 mm
1375480000	ACT20M-TCI-AO-S	1					X					6.1 mm
1375500000	ACT20M-TCI-AO-E-S	1					X					6.1 mm
1375510000	ACT20M-RTI-AO-S	1						X				6.1 mm
1375520000	ACT20M-RTI-AO-E-S	1						X				6.1 mm
1435590000	ACT20M-RTCI-CO-OLP-S	1					X	X				6.1 mm
1435610000	ACT20M-RTI-CO-EOLP-S	1						X				6.1 mm
8425720000	MCZ PT100/3 CLP 0...100C	1						X				6.1 mm
8483680000	MCZ PT100/3 CLP 0...120C	1						X				6.1 mm
8604420000	MCZ PT100/3 CLP 0...150C	1						X				6.1 mm
8473010000	MCZ PT100/3 CLP 0...200C	1						X				6.1 mm
8473020000	MCZ PT100/3 CLP 0...300C	1						X				6.1 mm
8473000000	MCZ PT100/3 CLP -50C...+150C	1						X				6.1 mm
8604430000	MCZ PT100/3 CLP -40C...100C	1						X				6.1 mm
8411190000	MCZ CCC 0-20mA/0-20mA	1	X									6 mm
8260280000	MCZ SC 0-10V	1			X							6 mm
8227350000	MCZ SC 0-20MA	1	X									6 mm
8461480000	MCZ CFC 0-20MA	1	X									6 mm
8461470000	MCZ VFC 0-10V	1		X								6 mm
	Network-compatible signal converters											
1334490000	ACT20C-AI-AO-MTCP-S	1	X	X	X						X	22.5 mm
1510370000	ACT20C-GTW-100-MTCP-S	1								RJ45, Modbus TCP		22.5 mm
1510240000	ACT20C-CMT-10-AO-RC-S	1								0...10 A AC/DC		22.5 mm
1510420000	ACT20C-CMT-60-AO-RC-S	1								0...60 A AC/DC		22.5 mm

Output						Configuration	Auxiliary power	Rated voltage	Isolation	Connection system	Special characteristics
Amount	0...20 mA	4...20 mA	0...10 V	Relay	Miscellaneous						
1				X	Relay output, Status relay	Software	24 V DC	300 V	3-way	S	With ATEX approval, intrinsic safety
1				X	Relay output, Status relay	Software	24 V DC	300 V	3-way	S	With ATEX approval, intrinsic safety
2				X	Relay output, Status relay	Software	24 V DC	300 V	3-way	S	With ATEX approval, intrinsic safety
2				X	Relay output, Status relay	Software	24 V DC	300 V	3-way	S	With ATEX approval, intrinsic safety
1					Transistor output, Status relay	Software	24 V DC	300 V	3-way	S	With ATEX approval, intrinsic safety
2					Transistor output, Status relay	Software	24 V DC	300 V	3-way	S	With ATEX approval, intrinsic safety
1					Status relay	Software	24 V DC	300 V	3-way	S	With ATEX approval, intrinsic safety
2					Status relay	Software	24 V DC	300 V	3-way	S	ATEX approval, intrinsic safety ignition protection IIC
1					Status relay	Software	24 V DC	300 V	3-way	S	ATEX approval, intrinsic safety ignition protection IIB
1	X	X			Status relay	Software	24 V DC	300 V	3-way	S	With ATEX approval, intrinsic safety
2	X	X			Status relay	Software	24 V DC	300 V	3-way	S	With ATEX approval, intrinsic safety
1	X			X	Limit value relay output, Status relay	Software	24 V DC	300 V	3-way	S	With ATEX approval, intrinsic safety
1		X				Software	output loop	300 V	2-way	S	With ATEX approval, intrinsic safety, Supply on output side
1		X			Status relay	Software	24 V DC	300 V	3-way	S	ATEX approval, intrinsic safety, HART®- transparent
2		X			Status relay	Software	24 V DC	300 V	3-way	S	ATEX approval, intrinsic safety, HART®- transparent
1		X			Status relay	Software	24 V DC	300 V	3-way	S	ATEX approval, intrinsic safety, HART®- transparent
2		X			Status relay	Software	24 V DC	300 V	3-way	S	ATEX approval, intrinsic safety, HART®- transparent
2	X	X	X			DIP switch	24 V DC	300 V	3-way	S	ATEX approval
2	X	X				DIP switch	24 V DC	300 V	3-way	S	ATEX approval
1	X	X	X			DIP switch	24 V DC	300 V	3-way	S	ATEX approval
1	X	X	X			DIP switch	24 V DC	300 V	3-way	S	ATEX approval
1	X	X					24 V DC	300 V	3-way	S	ATEX approval
1	X	X	X			Software	24 V DC	300 V	3-way	S	ATEX approval
1	X	X					input loop	300 V	2-way	S	ATEX approval, Passive converter
2	X	X					input loop	300 V	2-way	S	ATEX approval, Passive converter
1	X	X					output loop	300 V	2-way	S	ATEX approval, Passive converter
2	X	X					output loop	300 V	2-way	S	ATEX approval, Passive converter
1	X	X	X			DIP switch	24 V DC	300 V	2-way	S	ATEX approval
2	X	X	X		2 x -10(20)...+10(20) mA	DIP switch	24 V DC	300 V	2-way	S	ATEX approval
1	X	X	X		internal CJC, external CJC	DIP switch	24 V DC	300 V	2-way	S	ATEX approval
1	X	X	X		internal CJC, external CJC	DIP switch	24 V DC	300 V	2-way	S	ATEX approval
1	X	X	X		0(1)...5 V	DIP switch	24 V DC	300 V	2-way	S	ATEX approval
1	X	X			0(1)...5 V	DIP switch	24 V DC	300 V	2-way	S	ATEX approval
1		X			20...4 mA	DIP switch	output loop	300 V	2-way	S	Passive converter, ATEX approval
1		X			20...4 mA	DIP switch	output loop	300 V	2-way	S	Passive converter, ATEX approval
1		X					output loop		2-way	Z	Passive converter OLP
1		X					output loop		2-way	Z	Passive converter OLP
1		X					output loop		2-way	Z	Passive converter OLP
1		X					output loop		2-way	Z	Passive converter OLP
1		X					output loop		2-way	Z	Passive converter OLP
1		X					output loop		2-way	Z	Passive converter OLP
1		X					output loop		2-way	Z	Passive converter OLP
1	X						input loop	100 V	2-way	Z	passive isolator ILP
2					Limit value transistor output	potentiometer	24 V DC			Z	
2					Limit value transistor output	potentiometer	24 V DC			Z	
1					Frequency: 0...1/ 4/ 8/ 16 kHz	DIP switch	24 V DC	100 V	2-way	Z	Frequency output
1					Frequency: 0...1/ 4/ 8/ 16 kHz	DIP switch	24 V DC	100 V	2-way	Z	Frequency output
1	X	X	X		Software	Software	24 V DC	300 V	4-way	S	Network-compatible, Ethernet
0						Software	24 V DC	30 V	3-way	S	Modbus TCP Gateway
1	X	X	X	X	± 10 V, ± 20 mA, Limit value relays	Software	24 V DC	300 V	3-way	S	Through hole current monitor
1	X	X	X	X	± 10 V, ± 20 mA, Limit value relays	Software	24 V DC	300 V	3-way	S	Through hole current monitor

Connection system: S = screw / **Z** = tension clamp, **ILP (Input Loop Powered)** = Input Loop Powered, **OLP (Output Loop Powered)** = Output Loop Powered

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Selection table

Order No.	Product	Input										Width
		Amount	0...20 mA	4...20 mA	0...10 V	0...5 V	TC	RTD	Frequency	Miscellaneous	Sensor feed	
	Signal converters											
7760054114	ACT20P-CI-CO	1	X	X						2-/3-wire transmitter	X	12.5 mm
7760054115	ACT20P-CI-2CO	1	X	X						2-/3-wire transmitter	X	12.5 mm
7760054117	ACT20P-2CI-2CO-12	2	X									12.5 mm
8411190000	MCZ CCC 0-20mA/0-20mA	1	X									6 mm
	Strain gauge transmitter											
1067250000	ACT20P-BRIDGE-S	1								4-,6-, wire strain gauges	X	22.5 mm
	Universal measuring transducer											
1481970000	ACT20P-PRO DCDC II-S	1	X	X	X	X				± 100 mA, ± 300 V	X	12.5 mm
1453210000	ACT20P-UI-AO-DO-LP-S	1	X	X	X	X	X	X		± 25 mA, ± 5 A DC, ± 28 V DC, ± 300 V DC, 300 V AC	X	12.5 mm
1477420000	ACT20P-AI-AO-DC-S	1	X	X	X	X				0...11V, 0...22mA	X	12.5 mm
8939670000	WAS6 TTA	1	X	X	X	X	X	X	X	Adjustable: -200...500 mV -20...50 V	X	45 mm
8939680000	WAZ6 TTA	1	X	X	X	X	X	X	X	2 Hz...100 kHz	X	45 mm
8964310000	WAS6 TTA EX	1	X	X	X	X	X	X	X	RTD, TC, resistor,	X	45 mm
8964320000	WAZ6 TTA EX	1	X	X	X	X	X	X	X	potentiometer	X	45 mm
	Measuring- and monitoring modules											
7940045760	ACT20P-UI-2RCO-DC-S	1	X	X	X	X	X	X		± 25 mA, ± 5 A DC, ± 30 V DC, ± 300 V DC, potentiometer, Widerstand	X	22.5 mm
8260280000	MCZ SC 0-10V	1			X							6 mm
8227350000	MCZ SC 0-20MA	1	X									6 mm
	AC/DC measuring transducer											
1510470000	ACT20P-CMT-10-AO-RC-S	1								0...10 A AC/DC		22.5 mm
1510540000	ACT20P-CMT-30-AO-RC-S	1								0... 30 A AC/DC		22.5 mm
1510440000	ACT20P-CMT-60-AO-RC-S	1								0... 60 A AC/DC		22.5 mm
8523400000	WAS1 CMA 1/5/10A ac	1								Adjustable: 0...10 A AC		22.5 mm
8523410000	WAZ1 CMA 1/5/10A ac	1								Adjustable: 0...10 A AC		22.5 mm
8528650000	WAS1 CMA LP 1/5/10A ac	1								Adjustable: 0...10 A AC		22.5 mm
8528660000	WAZ1 CMA LP 1/5/10A ac	1								Adjustable: 0...10 A AC		22.5 mm
8975590000	WAS1 CMA LP 1/5/10A EX	1								Adjustable: 0...10 A AC		22.5 mm
	DC/DC 3-way isolator											
8447160000	WAS5 CCC HF 0-20/0-20MA	1	X									17.5 mm
8447170000	WAZ5 CCC HF 0-20/0-20MA	1	X									17.5 mm
8447220000	WAS5 CVC HF 0-20/0-10V	1	X									17.5 mm
8447250000	WAS5 CCC HF 4-20/0-20MA	1		X								17.5 mm
8447280000	WAS5 CVC HF 4-20/0-10V	1		X								17.5 mm
8447310000	WAS5 VCC HF 0-10/0-20MA	1			X							17.5 mm
8447340000	WAS5 VCC HF 0-10/4-20MA	1			X							17.5 mm
8447370000	WAS5 VVC HF 0-10/0-10V	1			X							17.5 mm
8447380000	WAZ5 VVC HF 0-10/0-10V	1			X							17.5 mm
8561610000	WAS5 VVC HF +-10V/+-10V	1								-10V ...+10V		17.5 mm
8540180000	WAS5 CCC 0-20/0-20mA	1	X									17.5 mm
8540190000	WAZ5 CCC 0-20/0-20mA	1	X									17.5 mm
8540250000	WAS5 CCC 0-20/4-20mA	1	X									17.5 mm
8540270000	WAS5 CVC 0-20mA/0-10V	1	X									17.5 mm
8540200000	WAS5 CCC 4-20/0-20MA	1		X								17.5 mm
8540230000	WAS5 CVC 4-20mA/0-10V	1		X								17.5 mm
8540310000	WAS5 VCC 0-10V/0-20MA	1			X							17.5 mm
8540320000	WAZ5 VCC 0-10V/0-20MA	1			X							17.5 mm
8540290000	WAS5 VCC 0-10V/4-20MA	1			X							17.5 mm
8540300000	WAZ5 VCC 0-10V/4-20MA	1			X							17.5 mm
8540330000	WAS5 VVC 0-10V/0-10V	1			X							17.5 mm
8540340000	WAZ5 VVC 0-10V/0-10V	1			X							17.5 mm

Output						Configuration	Auxiliary power	Rated voltage	Isolation	Connection system	Special characteristics
Amount	0...20 mA	4...20 mA	0...10 V	Relay	Miscellaneous						
1	X	X					24 V DC	300 V	3-way	S	HART®- transparent
2	X	X					24 V DC	300 V	3-way	S	HART®- transparent
2	X	X					24 V DC	300 V	3-way	S	HART®- transparent
1	X						input loop	100 V	2-way	Z	passive isolator ILP
1	X	X	X		Reset button (TARE)		10...60 V DC	300 V	3-way	S	
1	X	X	X		± 10 V, ± 20 mA	Display, DIP switch	24 V - 230 V AC/DC	600 V	3-way	S	aktiv or passiv output
1		X			Output Loop powered, NPN output, Limit value	Software	output loop	300 V	3-way	S	Output Loop powered
1	X	X	X		0...11V, 0...22mA	DIP switch, Button, LED	12...60 V DC	300 V	3-way	S	
3	X	X	X	X	1 analogue output	Software	18 V - 230 V AC/DC	300 V	3-way	S	
3	X	X	X	X	2 relay outputs	Software	18 V - 230 V AC/DC	300 V	3-way	Z	
3	X	X	X	X		Software	18 V - 230 V AC/DC	300 V	3-way	S	ATEX approval
3	X	X	X	X		Software	18 V - 230 V AC/DC	300 V	3-way	Z	ATEX approval
1				X	2 x Limit value relay outputs	Software, Display	9...60 V DC	300 V	3-way	S	
2					Limit value transistor output	potentiometer	24 V DC			Z	
2					Limit value transistor output	potentiometer	24 V DC			Z	
1	X	X	X	X	± 10 V, ± 20 mA, Limit value relays	DIP switch, potentiometer	24 V DC	300 V	3-way	S	Through hole current converter
1	X	X	X	X	± 10 V, ± 20 mA, Limit value relays	DIP switch, potentiometer	24 V DC	300 V	3-way	S	Through hole current converter
1	X	X	X	X	± 10 V, ± 20 mA, Limit value relays	DIP switch, potentiometer	24 V DC	300 V	3-way	S	Through hole current converter
1	X	X	X			DIP switch	24 V DC	300 V	2-way	S	
1	X	X	X			DIP switch	24 V DC	300 V	2-way	Z	
1	X	X	X			DIP switch	output loop	300 V	2-way	S	
1	X	X	X			DIP switch	output loop	300 V	2-way	Z	
1	X	X	X			DIP switch	output loop	300 V	2-way	S	ATEX approval
1	X						24 V DC	300 V	3-way	S	
1	X						24 V DC	300 V	3-way	Z	
1			X				24 V DC	300 V	3-way	S	
1	X						24 V DC	300 V	3-way	Z	
1			X				24 V DC	300 V	3-way	S	
1	X						24 V DC	300 V	3-way	Z	
1		X					24 V DC	300 V	3-way	S	
1			X				24 V DC	300 V	3-way	Z	
1			X				24 V DC	300 V	3-way	S	
1					-10V ...+10V		24 V DC	300 V	3-way	Z	
1	X						24 V DC	300 V	3-way	S	
1	X						24 V DC	300 V	3-way	Z	
1		X					24 V DC	300 V	3-way	S	
1			X				24 V DC	300 V	3-way	S	
1	X						24 V DC	300 V	3-way	S	
1			X				24 V DC	300 V	3-way	S	
1	X						24 V DC	300 V	3-way	S	
1	X						24 V DC	300 V	3-way	Z	
1		X					24 V DC	300 V	3-way	S	
1		X					24 V DC	300 V	3-way	Z	
1			X				24 V DC	300 V	3-way	S	
1			X				24 V DC	300 V	3-way	Z	

Connection system: S = screw / **Z** = tension clamp, **ILP (Input Loop Powered)** = Input Loop Powered, **OLP (Output Loop Powered)** = Output Loop Powered

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Selection table

Order No.	Product	Input										Width
		Amount	0...20 mA	4...20 mA	0...10 V	0...5 V	TC	RTD	Frequency	Miscellaneous	Sensor feed	
	DC/DC 2-way isolator											
8444980000	WAS4 CCC DC 4-20/4-20MA	1		X								12.5 mm
8444990000	WAZ4 CCC DC 4-20/4-20MA	1		X								12.5 mm
8445010000	WAS4 CCC DC 4-20/0-20MA	1		X								12.5 mm
8445040000	WAS4 CVC DC 4-20/0-10V	1		X								12.5 mm
8445050000	WAZ4 CVC DC 4-20/0-10V	1		X								12.5 mm
	DC/DC passive isolator											
8581160000	WAS5 CCC 20LP	1										17.5 mm
8581170000	WAZ5 CCC 20LP	1										17.5 mm
8975640000	WAS5 CCC 20LP EX	1										17.5 mm
8543720000	WAS5 OLP	1										17.5 mm
8543730000	WAZ5 OLP	1										17.5 mm
8444950000	WAS5 CCC LP 0-20/0-20mA	1	X									17.5 mm
8444960000	WAZ5 CCC LP 0-20/0-20mA	1	X									17.5 mm
8463580000	WAS5 CCC LP 0-20/0-20mA	1	X									17.5 mm
8463590000	WAZ5 CCC LP 0-20/0-20mA	1	X									17.5 mm
	Temperature measuring transducer											
8560700000	WAS5 PRO RTD							X				12.5 mm
8560710000	WAZ5 PRO RTD							X				12.5 mm
8679490000	WAS5 PRO RTD 1000							X				12.5 mm
8638950000	WAS5 PRO RTD Cu							X				12.5 mm
8432280000	WTZ4 PT100/4 C 0/4-20mA							X				12.5 mm
8432250000	WTZ4 PT100/4 V 0-10V							X				12.5 mm
8432130000	WTZ4 PT100/3 V 0-10V							X				12.5 mm
8432160000	WTZ4 PT100/3 C 0/4-20mA							X				12.5 mm
8432190000	WTZ4 PT100/2 V 0-10V							X				12.5 mm
8432220000	WTZ4 PT100/2 C 0/4-20mA							X				12.5 mm
8560720000	WAS5 PRO Thermo						X					12.5 mm
8560730000	WAZ5 PRO Thermo						X					12.5 mm
8432300000	WTS4 THERMO						X					12.5 mm
8432310000	WTZ4 THERMO						X					12.5 mm
1375480000	ACT20M-TCI-AO-S	1					X					6.1 mm
1375500000	ACT20M-TCI-AO-E-S	1					X					6.1 mm
1375510000	ACT20M-RTI-AO-S	1						X				6.1 mm
1375520000	ACT20M-RTI-AO-E-S	1						X				6.1 mm
1435590000	ACT20M-RTCI-CO-OLP-S	1					X	X				6.1 mm
1435610000	ACT20M-RTI-CO-EOLP-S	1						X				6.1 mm
8425720000	MCZ PT100/3 CLP 0...100C	1						X				6.1 mm
8483680000	MCZ PT100/3 CLP 0...120C	1						X				6.1 mm
8604420000	MCZ PT100/3 CLP 0...150C	1						X				6.1 mm
8473010000	MCZ PT100/3 CLP 0...200C	1						X				6.1 mm
8473020000	MCZ PT100/3 CLP 0...300C	1						X				6.1 mm
8473000000	MCZ PT100/3 CLP -50C...+150C	1						X				6.1 mm
8604430000	MCZ PT100/3 CLP -40C...100C	1						X				6.1 mm

Output						Configuration	Auxiliary power	Rated voltage	Isolation	Connection system	Special characteristics
Amount	0...20 mA	4...20 mA	0...10 V	Relay	Miscellaneous						
1		X					24 V DC	300 V	2-way	S	
1		X					24 V DC	300 V	2-way	Z	
1	X						24 V DC	300 V	2-way	S	
1			X				24 V DC	300 V	2-way	S	
1			X				24 V DC	300 V	2-way	Z	
2		X					output loop	300 V	2-way	S	
2		X					output loop	300 V	2-way	Z	
2		X					output loop	300 V	2-way	S	ATEX approval
1		X					output loop	300 V	2-way	S	
1		X					output loop	300 V	2-way	Z	
1	X						input loop	300 V	2-way	S	
1	X						input loop	300 V	2-way	Z	
2	X						input loop	300 V	2-way	S	
2	X						input loop	300 V	2-way	Z	
1	X	X	X			DIP switch	24 V DC	300 V	3-way	S	
1	X	X	X			DIP switch	24 V DC	300 V	3-way	Z	
1	X	X	X			DIP switch	24 V DC	300 V	3-way	S	
1	X	X	X			DIP switch	24 V DC	300 V	3-way	S	
1	X	X				DIP switch, potentiometer	24 V DC		3-way	Z	
1	X	X				DIP switch, potentiometer	24 V DC		3-way	Z	
1	X	X				DIP switch, potentiometer	24 V DC		3-way	Z	
1	X	X				DIP switch, potentiometer	24 V DC		3-way	Z	
1	X	X				DIP switch, potentiometer	24 V DC		3-way	Z	
1	X	X				DIP switch, potentiometer	24 V DC		3-way	Z	
1		X				DIP switch	24 V DC		3-way	S	
1		X				DIP switch	24 V DC		3-way	Z	
1	X	X	X			DIP switch	24 V DC		3-way	S	
1	X	X	X			DIP switch	24 V DC		3-way	Z	
1	X	X	X		internal CJC, external CJC	DIP switch	24 V DC	300 V	2-way	S	ATEX approval
1	X	X	X		internal CJC, external CJC	DIP switch	24 V DC	300 V	2-way	S	ATEX approval
1	X	X	X		0(1)...5 V	DIP switch	24 V DC	300 V	2-way	S	ATEX approval
1	X	X			0(1)...5 V	DIP switch	24 V DC	300 V	2-way	S	ATEX approval
1		X			20...4 mA	DIP switch	output loop	300 V	2-way	S	Passive converter, ATEX approval
1		X			20...4 mA	DIP switch	output loop	300 V	2-way	S	Passive converter, ATEX approval
1		X					output loop		2-way	Z	Passive converter OLP
1		X					output loop		2-way	Z	Passive converter OLP
1		X					output loop		2-way	Z	Passive converter OLP
1		X					output loop		2-way	Z	Passive converter OLP
1		X					output loop		2-way	Z	Passive converter OLP
1		X					output loop		2-way	Z	Passive converter OLP
1		X					output loop		2-way	Z	Passive converter OLP

Connection system: S = screw / **Z =** tension clamp, **ILP (Input Loop Powered) =** Input Loop Powered, **OLP (Output Loop Powered) =** Output Loop Powered

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Selection table

Order No.	Product	Input										Width
		Amount	0...20 mA	4...20 mA	0...10 V	0...5 V	TC	RTD	Frequency	Miscellaneous	Sensor feed	
	Frequency measuring transducer											
8581180000	WAS4 PRO Freq								X	2-, 3-Draht PNP/NPN; Namur Initiator, Gegentaktstufe		12.5 mm
8581190000	WAZ4 PRO Freq								X	Namur Initiator, push-pull step		12.5 mm
8461480000	MCZ CFC 0-20MA	1	X									6 mm
8461470000	MCZ VFC 0-10V	1		X								6 mm
	Voltage measuring transducer											
8581220000	WAS2 VMA V ac									Adjustable: 0...450 V AC		22.5 mm
8581230000	WAZ2 VMA V ac									Adjustable: 0...450 V AC		22.5 mm
	Interface converters											
8615700000	WDS2 RS232/RS485/422	1								RS232/RS485/422		
8615690000	WDS2 RS232/TTY	1								RS232/TTY		
	Limit monitoring											
8543820000	WAS5 DC/Alarm	1	X	X	X							17.5 mm
8543880000	WAZ5 DC/Alarm	1	X	X	X							17.5 mm
	Current monitoring											
8742610000	PAS CMR 0,5...2,5 A DC									0,5...2,5 A DC		15.3 mm
8742620000	PAS CMR 2,0...5,0 A DC									2,0...5,0 A DC		15.3 mm
8742630000	PAS CMR 4,5...10 A DC									4,5...10 A DC		15.3 mm
	Voltage monitoring											
8705640000	WAS5 VMR 1ph									24...260 V AC/DC 1-phase		17.5 mm
8705630000	WAS2 VMR 3ph									80...250 V AC/DC 3-phase		22.5 mm
8978580000	CBX200	1								ACT20X		

Output						Configuration	Auxiliary power	Rated voltage	Isolation	Connection system	Special characteristics
Amount	0...20 mA	4...20 mA	0...10 V	Relay	Miscellaneous						
1	X	X	X			DIP switch	24 V DC	300 V	3-way	S	
1	X	X	X			DIP switch	24 V DC	300 V	3-way	Z	
1					Frequency: 0...1/ 4/ 8/ 16 kHz	DIP switch	24 V DC	100 V	2-way	Z	Frequency output
1					Frequency: 0...1/ 4/ 8/ 16 kHz	DIP switch	24 V DC	100 V	2-way	Z	Frequency output
1	X	X				DIP switch	24 V DC	300 V	3-way	S	
1	X	X				DIP switch	24 V DC	300 V	3-way	Z	
1					RS232/RS485/422	DIP switch	24 V DC		3-way	S	
1					RS232/TTY	DIP switch	24 V DC		3-way	S	
2				X		DIP switch, potentiometer	24 V DC	300 V	3-way	S	
2				X		DIP switch, potentiometer	24 V DC	300 V	3-way	Z	
1				X					2-way	S	
1				X					2-way	S	
1				X					2-way	S	
1				X	Monitoring of low and surge voltages	DIP switch, potentiometer	input loop	300 V	3-way	S	Adjustable switching thresholds
1				X	Monitoring of low and surge voltages	DIP switch, potentiometer	input loop	600 V	2-way	S	Adjustable switching thresholds
1						Software	USB				Programming accessories

Connection system: S = screw / **Z** = tension clamp, **ILP (Input Loop Powered)** = Input Loop Powered, **OLP (Output Loop Powered)** = Output Loop Powered

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