

# Signal converters – WAVESERIES

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## Be prepared for every application

### With the WAVESERIES signal converters

Universal signal & serial interface converters offer a lot of benefits for signal processing. A service technician who does not have the right spare isolator or converter available and has to operate a part of the system manually for a day or two before the spare part arrives will understand this all too well. This is a waste of time and money. This is why Weidmüller has developed a signal converter with unique flexibility that combines an isolator, a converter, an encoder, a lineariser and a trip amplifier in a single module. The combination of the best features and exceptional configuration options is what makes the WAVESERIES universal signal converter unique. Designed for process industry applications, the signal converter operates accurately and stably with all common sensor types in a wide ambient temperature and power supply range. A 24 V DC power supply is provided for sensors or field devices using two-wire technology. Alternatively, the universal signal converter offers a passive loop powered input.

## G

In addition, Weidmüller's WAVESERIES serial interface converters enable data to be exchanged between data processing systems, controllers and peripheral devices. These process converters are ideal for use in harsh, process-oriented environments. Different versions of the interface converter are available for different applications. In order to ensure high transmission reliability, the serial interface converters are designed with a high-port 4kV 3-way isolation and are galvanically isolated.



**Universal input signals:**

Temperature signals such as RTDs, thermocouples, potentiometers, frequency transmitters, DC voltage signals and current signals in one module.

**Inputs and outputs are PC-configurable**

The input and output signals are easy to configure via an interface (CBX200 USB) using a PC.

**Easy to service**

The electronic unit can be removed from the housing without using any tools.

**Testing without additional wiring**

Current and voltage inputs can be tested via an additional test contact without disconnecting the existing wiring.

**Secure connection**

9-pole connector for the RS232 interface

**High data transmission speeds**

Up to 115 kBit/s and freely adjustable

# Selection table



## Selection table

Order No.	Product	Input									Miscellaneous	Sensor feed	Width
		Amount	0...20 mA	4...20 mA	0...10 V	0...5 V	TC	RTD	Frequency				
<b>Signal converters – WAVESERIES</b>													
<b>Universal transducer</b>													
8939670000	WAS6 TTA	1	X	X	X	X	X	X	X	X	-200...500 mV, T192-20...50 V, 2 Hz...100 kHz, RTD, TC, resistance, potentiometer	X	45 mm
8939680000	WAZ6 TTA	1	X	X	X	X	X	X	X	X	-200...500 mV, T192-20...50 V, 2 Hz...100 kHz, RTD, TC, resistance, potentiometer	X	45 mm
8964310000	WAS6 TTA EX	1	X	X	X	X	X	X	X	X	-200...500 mV, T192-20...50 V, 2 Hz...100 kHz, RTD, TC, resistance, potentiometer	X	45 mm
8964320000	WAZ6 TTA EX	1	X	X	X	X	X	X	X	X	-200...500 mV, T192-20...50 V, 2 Hz...100 kHz, RTD, TC, resistance, potentiometer	X	45 mm
<b>Limit value &amp; current monitoring</b>													
8742610000	PAS CMR 0,5...2,5 A DC										Input range 7.5 A		15.3 mm
8742620000	PAS CMR 2,0...5,0 A DC										Input range 15 A		15.3 mm
8742630000	PAS CMR 4,5...10 A DC										Input range 30 A		15.3 mm

Amount	Output					Configuration	Auxiliary power	Rated voltage	Isolation	Connection system	Special characteristics
	0...20 mA	4...20 mA	0...10 V	Relay	Miscellaneous						
3	X	X	X	X	1 x analogue output + 2 x Limit value relay output	Software	18 V - 230 V AC/DC	300 V	3-way	S	
3	X	X	X	X	1 x analogue output + 2 x Limit value relay output	Software	18 V - 230 V AC/DC	300 V	3-way	Z	
3	X	X	X	X	1 x analogue output + 2 x Limit value relay output	Software	18 V - 230 V AC/DC	300 V	3-way	S	ATEX approval Zone 2
3	X	X	X	X	1 x analogue output + 2 x Limit value relay output	Software	18 V - 230 V AC/DC	300 V		Z	ATEX approval Zone 2
1				X	Reed contact activated from 0.5 A DC	-	-	-	2-way	S	
1				X	Reed contact activated from 2 A DC	-	-	-	2-way	S	
1				X	Reed contact activated from 4,5 A DC	-	-	-	2-way	S	

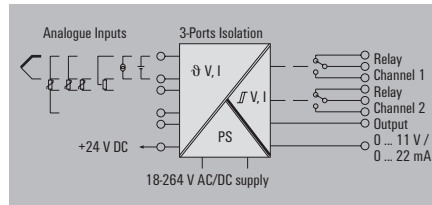
Connection system: S = screw / Z = tension clamp / P = Push In, ILP = Input Loop Powered, OLP = Output Loop Powered

## Universal transducer

## WAVE TTA

- Input and outputs can be configured on PC with the TTA-SET software, download at [www.weidmueller.com](http://www.weidmueller.com)
- Universal input signals
- Loop-powered or passive input
- Pluggable connection terminals

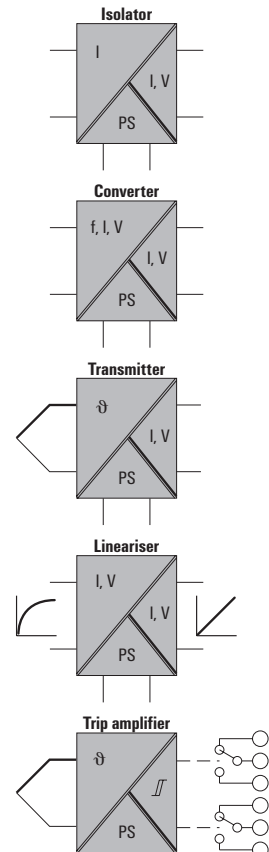
## WAS6 TTA / WAZ6 TTA



## Technical data

Input	
Sensor	Thermocouples: B, E, J, K, L, N, R, S, T (IEC 60584), PT100, PT1000, (EN 60571) Ni100, Ni1000, (JIS1604), Cu10, Cu25, Cu50, Cu100 (DIN 43760) 2-/3-/4-wire
Potentiometer	10...50 $\Omega$ , 50...100 $\Omega$ , 100...200 $\Omega$ , 200...400 $\Omega$ , 400...800 $\Omega$ , 800 $\Omega$ ...2 k $\Omega$ , 2...6.5 k $\Omega$ , 6.5...100 $\Omega$
Resistance	10 $\Omega$ ...5 k $\Omega$
Input frequency	adjustable, 2 Hz...100 kHz
Input voltage	-200...500 mV (min. 4 mV span), -20...50 V DC (min. 0.5 V span)
Input current	-20...+50 mA (min. interval 0.4 mA)
Sensor supply	24 V DC / 22 mA
Output analogue	
Output voltage	adjustable between -10...+10 V (min. span 2.5 V)
Output current	adjustable between 0 and 20 mA (min. span of 5 mA)
Load impedance, voltage/current	> 10 k $\Omega$ @ 0...10 V / > 20 k $\Omega$ @ -10...+10 V / < 700 $\Omega$
Signal output	direct or inverted
Transmit function	Linear, $x^{1/2}$ , $x^{3/2}$ , $x^{5/2}$ or user-defined curve (101 points)
Output digital	
Type	2 x 1 C0 contact (hard gold-plated), Process alarms (4x) with hysteresis, with alarm delay (configurable) 0...180 s
Switching voltage AC, max. / DC, max.	250 V /
General data	
Configuration	Using free Windows software, TTA Set Software
Voltage supply	18...264 V AC/DC
Power consumption	< 3.5 W
Accuracy	< 0.1 % span (DC, RTD); 0.2 % span (or 1 °C) + C/J failure
Temperature coefficient	< 0.1 % / K (DC, RTD); < 0.1 % FSR / K + C/J error 0.07 °C/K (thermocouples)
Ambient temperature / Storage temperature	/ -40 °C...70 °C / -40 °C...85 °C
Step response time	50 ms...1 sec (RTD, mV inputs), 110 ms...1 sec (V, mA inputs)
Humidity	5...95 %, no condensation
Approvals	CE; cULus; DETNORVER; EAC
Insulation coordination	
Standards	DIN EN 50178, DIN EN 61000-4-2
EMC standards	EN 55011, EN 61000-6
Rated voltage	300 V
Impulse withstand voltage	6 kV
Pollution degree	2
Overvoltage category	III
Clearance & creepage distances	$\geq 5.5$ mm (1 mm input/output)
Insulation voltage	2.5 kV
Dimensions	
Clamping range (nominal / min. / max.)	mm <sup>2</sup>
Depth x width x height	mm
Note	
Screw connection	
2.5 / 0.5 / 2.5	2.5 / 0.5 / 2.5
112.4 / 45 /	112.4 / 45 /
Tension-clamp connection	

## Typical functions



## Ordering data

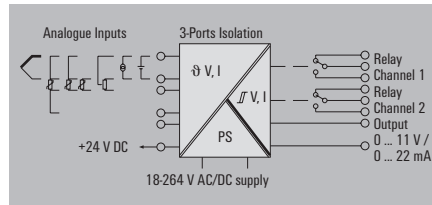
Type	Qty.	Order No.
<b>Screw connection</b>		
WAS6 TTA	1	8939670000
<b>Tension-clamp connection</b>		
WAZ6 TTA	1	8939680000

CBX200 USB configuration adapter - 8978580000

WAVE TTA EX

- Input and outputs can be configured on PC with the TTA-SET software, download at www.weidmueller.com
- Universal input signals
- Loop-powered or passive input
- Pluggable connection terminals
- ATEX 3 G Ex nA IIC T4
- UL Class I, Div.2

WAS6 TTA EX / WAZ6 TTA EX



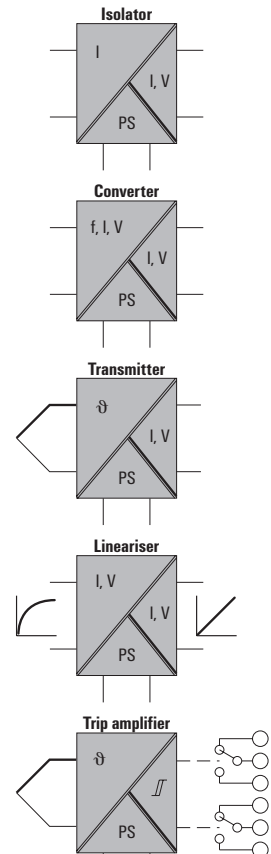
Technical data

<b>Input</b>	
Sensor	
Potentiometer	
Resistance	
Input frequency	
Input voltage	
Input current	
Sensor supply	
<b>Output analogue</b>	
Output voltage	
Output current	
Load impedance, voltage/current	
Signal output	
Transmit function	
<b>Data for Ex applications (ATEX)</b>	
Marking	
<b>Output digital</b>	
Type	
Switching voltage AC, max. / DC, max.	
<b>General data</b>	
Configuration	
Voltage supply	
Power consumption	
Accuracy	
Temperature coefficient	
Ambient temperature / Storage temperature	
Step response time	
Humidity	
Approvals	
<b>Insulation coordination</b>	
Standards	
EMC standards	
Rated voltage	
Impulse withstand voltage	
Pollution degree	
Overvoltage category	
Clearance & creepage distances	
Insulation voltage	
<b>Dimensions</b>	
Clamping range (nominal / min. / max.)	mm <sup>2</sup>
Depth x width x height	mm
<b>Note</b>	

Thermocouples: B, E, J, K, L, N, R, S, T (IEC 60584), PT100, PT1000, (EN 60571) Ni100, Ni1000, (JIS1604), Cu10, Cu25, Cu50, Cu100 (DIN 43760) 2-/3-/4-wire
10...50 $\Omega$ , 50...100 $\Omega$ , 100...200 $\Omega$ , 200...400 $\Omega$ , 400...800 $\Omega$ , 800 $\Omega$ ...2 k $\Omega$ , 2...6.5 k $\Omega$ , 6.5...100 $\Omega$
10 $\Omega$ ...5 k $\Omega$
adjustable, 2 Hz...100 kHz
-200...500 mV (min. 4 mV span), -20...50 V DC (min. 0.5 V span)
-20...+50 mA (min. interval 0.4 mA)
24 V DC / 22 mA
adjustable between -10...+10 V (min. span 2.5 V)
adjustable between 0 and 20 mA (min. span of 5 mA)
> 10 k $\Omega$ @ 0...10 V / > 20 k $\Omega$ @ -10...+10 V / < 700 $\Omega$
direct or inverted
Linear, $x^{1/2}$ , $x^{3/2}$ , $x^{5/2}$ or user-defined curve (101 points)
II 3 G Ex nA nC IIC T4 Gc
2 x 1 C0 contact (hard gold-plated), Process alarms (4x) with hysteresis, with alarm delay (configurable) 0...180 s
250 V /
Using free Windows software, TTA Set Software
24...240 V AC/DC; 24...36 V AC / 24...50 V DC (ATEX Zone 2)
< 3.5 W
< 0.1 % span (DC, RTD); 0.2 % span (or 1 °C) + CJ failure
< 0.1 % / K (DC, RTD); < 0.1 % FSR / K + CJ error 0.07 °C/K (thermocouples)
/ -40 °C...70 °C / -40 °C...85 °C
50 ms...1 sec (RTD, mV inputs), 110 ms...1 sec (V, mA inputs)
5...95 %, no condensation
CE; cULus; cULusEX; EAC; WATEXIECEX
DIN EN 50178, DIN EN 60079, DIN EN 61000-4-2
EN 55011, EN 61000-6
300 V
6 kV
2
III
$\geq$ 5.5 mm (1 mm input/output)
2.5 kV

<b>Screw connection</b>	<b>Tension-clamp connection</b>
2.5 / 0.5 / 2.5	2.5 / 0.5 / 2.5
112.4 / 45 /	112.4 / 45 /

Typical functions



Ordering data

Type	Qty.	Order No.
<b>Screw connection</b>		
WAS6 TTA EX	1	8964310000
<b>Tension-clamp connection</b>		
WAZ6 TTA EX	1	8964320000

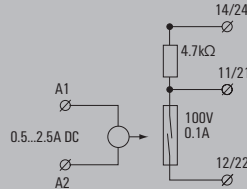
CBX200 USB configuration adapter - 8978580000

## Limit value &amp; current monitoring

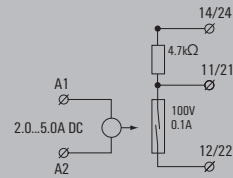
## Relay output

- Monitors currents up to 10 A DC
- Used with valves, servo-controls or DC motors
- Pull-up / pull-down resistor 4.7 k $\Omega$

## PAS CMR 0.5...2.5 A DC



## PAS CMR 2.0...5.0 A DC



## Technical data

## Input

Input current  
Max. current  
Making current threshold  
Input resistance, current  
Secure off  
Pulse duration

## Output

Switching current  
Switching voltage AC / Switching voltage DC  
Max. switching frequency  
Contact assembly  
Contact material

## General data

Configuration  
Ambient temperature  
Humidity  
Approvals

## Insulation coordination

Standards  
EMC standards  
Rated voltage  
Impulse withstand voltage  
Insulation voltage  
Overvoltage category  
Pollution degree  
Clearance & creepage distances

0.5...2.5 A DC  
7.5 A for 10 s  
 $\leq 500$  mA  
 $< 50$  m $\Omega$   
 $\leq 50$  mA  
min. 1 ms

100 mA  
/ 1 V...100 V1 V...100 V  
15 Hz  
1 NO contact  
RH/Rd (Reed contact)\*

none  
0 °C...55 °C  
5-95% relative humidity,  $T_a = 40^\circ\text{C}$ , without condensation  
CE; cULus

DIN EN 50178 (secure separation)  
EN 55011, EN 61000-6-1, 2, 3, 4  
300 V  
6 kV  
4 kV<sub>eff</sub> / 1 min.  
III  
2  
 $\geq 5$  mm (grout encapsulated)

2...5.0 A DC  
15 A for 10 s  
 $\leq 2$  A  
 $< 50$  m $\Omega$   
 $\leq 300$  mA  
min. 1 ms

100 mA  
/ 1 V...100 V1 V...100 V  
15 Hz  
1 NO contact  
RH/Rd (Reed contact)\*

none  
0 °C...55 °C  
5-95% relative humidity,  $T_a = 40^\circ\text{C}$ , without condensation  
CE; cULus

DIN EN 50178 (secure separation)  
EN 55011, EN 61000-6-1, 2, 3, 4  
300 V  
6 kV  
4 kV<sub>eff</sub> / 1 min.  
III  
2  
 $\geq 5$  mm (grout encapsulated)

## Dimensions

Clamping range (nominal / min. / max.) mm<sup>2</sup>  
Length x width x height mm

## Note

## Screw connection

1.5 / 2.5 / 2.5  
92 / 15.3 /

\* The peak current should be limited to 100 mA when under capacitive loads.

## Screw connection

1.5 / 2.5 / 2.5  
92 / 15.3 /

\* The peak current should be limited to 100 mA when under capacitive loads.

## Ordering data

Screw connection

Type	Qty.	Order No.
PAS CMR 0.5...2.5 A DC	10	8742610000

Type	Qty.	Order No.
PAS CMR 2.0...5.0 A DC	10	8742620000

## Note

## Accessories

## Note

Cross-connectors and markers - refer to WAVESERIES accessories

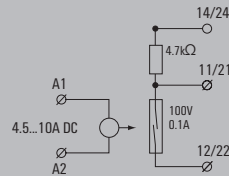
Cross-connectors and markers - refer to WAVESERIES accessories



## Relay output

- Monitors currents up to 10 A DC
- Used with valves, servo-controls or DC motors
- Pull-up / pull-down resistor 4.7 k $\Omega$

## PAS CMR 4.5...10 A DC



## Technical data

### Input

Input current  
Max. current  
Making current threshold  
Input resistance, current  
Secure off  
Pulse duration

4.5...10 A DC  
30 A for 10 s  
 $\leq 4,5$  A  
 $< 50$  m $\Omega$   
 $\leq 600$  mA  
min. 1 ms

### Output

Switching current  
Switching voltage AC / Switching voltage DC  
Max. switching frequency  
Contact assembly  
Contact material

100 mA  
/ 1 V...100 V1 V...100 V  
15 Hz  
1 NO contact  
RH/Rd (Reed contact)\*

### General data

Configuration  
Ambient temperature  
Humidity  
Approvals

none  
0 °C...55 °C  
5-95% relative humidity,  $T_a = 40^\circ\text{C}$ , without condensation  
CE, cULus

### Insulation coordination

Standards  
EMC standards  
Rated voltage  
Impulse withstand voltage  
Insulation voltage  
Overvoltage category  
Pollution degree  
Clearance & creepage distances

DIN EN 50178 (secure separation)  
EN 55011, EN 61000-6-1, 2, 3, 4  
300 V  
6 kV  
4 kV<sub>eff</sub> / 1 min.  
III  
2  
 $\geq 5$  mm (grout encapsulated)

## Dimensions

Clamping range (nominal / min. / max.) mm<sup>2</sup>  
Length x width x height mm

## Screw connection

1.5 / 2.5 / 2.5  
92 / 15.3 / 95

## Note

\* The peak current should be limited to 100 mA when under capacitive loads.

## Ordering data

Screw connection

Type	Qty.	Order No.
PAS CMR 4,5...10 A DC	10	8742630000

## Note

## Accessories

### Note

Cross-connectors and markers - refer to WAVESERIES accessories