

WAVESERIES **Thermo Signal Conditioners** **for Current and Voltage Output**

Type

Screw-type connection
WTS4 Thermo Select

Cat. No.

8432300000

Tension clamp connection
WTS4 Thermo Select

8432310000

Read these instructions before using the product
and retain for future information.

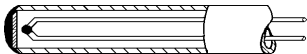
1 General instructions

The WAVESERIES Thermo signal conditioner should only be installed by qualified staff. The Thermo signal conditioner should only be powered up following professional installation.

2 Application

WAVESERIES Thermo signal conditioners can be used to connect to the following thermocouple types: K, J, T, E, N, R, S and B. The temperature range and the type of thermocouple can be set by the DIP switches on the printed circuit board.

Note!! The Thermo signal conditioner only processes signals from fully insulated thermocouples.



Insulated from housing.

3 Mounting and dismounting

Warning!! Mounting and dismounting may only be carried out when the power supply has been disconnected. Failure to observe will lead to considerable damage!

3.1 Mounting onto TS 35 DIN rails

(s. Fig. 1)

3.2 Pluggable electronic components for range alteration (depending on model)

(s. Fig. 2)

1. Remove connector, (depending on model either screw-type or tension clamp).
2. Press locking clips on both sides of the enclosure.
3. Pull out the circuit board.

Warning!! The circuit board can only be inserted in one position.

The connectors have been coded by the manufacturer, ensuring that they cannot be reversed.

3.3 Pluggable cross-connections for voltage supply

(s. Fig. 3)

A maximum feed through of 2 A is possible.

If a signal conditioner is accidentally rotated through 180°, the cross-connection cannot be inserted.

3.4 Labelling possibilities

(s. Fig. 4)

WS 10 connector markers can be used to label module.

4 Calibration

Warning!! The power supply must be disconnected, before changing the signal conditioner settings using the DIP switches.
Failure to observe will lead to considerable damage!

Note!! The module calibrates itself, when using the DIP switches on the printed circuit board to set the temperature range.

4.1 Setting the DIP switches

Warning!! The Thermo signal conditioner must be protected against a direct electrostatic discharge when setting the DIP switches.

Thermocouple types

Type	DIP switch 1		
	1	2	3
K	ON	ON	ON
J	OFF	ON	ON
T	ON	OFF	ON
E	OFF	OFF	ON
N	ON	ON	OFF
R	OFF	ON	OFF
S	ON	OFF	OFF
B	OFF	OFF	OFF

Selecting the min. temperature

	DIP switch 1			
T_{\min}	4	5	6	7
0 °C	ON	ON	ON	ON
-10 °C	ON	ON	ON	OFF
-20 °C	ON	ON	OFF	ON
-30 °C	ON	ON	OFF	OFF
-40 °C	ON	OFF	ON	ON
-50 °C	ON	OFF	ON	OFF
-100 °C	ON	OFF	OFF	ON
-200 °C	OFF	ON	ON	ON
+50 °C	OFF	ON	ON	OFF
-100 °C	OFF	ON	OFF	ON
+150 °C	OFF	ON	OFF	OFF
+200 °C	OFF	OFF	ON	ON
+250 °C	OFF	OFF	ON	OFF
+500 °C	OFF	OFF	OFF	ON
Special range	OFF	OFF	OFF	OFF

Selecting the temperature span

	DIP switch 2				
Span	1	2	3	4	5
100 °C	ON	ON	ON	ON	ON
150 °C	ON	ON	ON	ON	OFF
200 °C	ON	ON	ON	OFF	ON
250 °C	ON	ON	ON	OFF	OFF
300 °C	ON	ON	OFF	ON	ON
350 °C	ON	ON	OFF	ON	OFF
400 °C	ON	ON	OFF	OFF	ON
450 °C	ON	ON	OFF	OFF	OFF
500 °C	ON	OFF	ON	ON	ON
550 °C	ON	OFF	ON	ON	OFF
600 °C	ON	OFF	ON	OFF	ON
650 °C	ON	OFF	ON	OFF	OFF
700 °C	ON	OFF	OFF	ON	ON
750 °C	ON	OFF	OFF	ON	OFF
800 °C	ON	OFF	OFF	OFF	ON
850 °C	ON	OFF	OFF	OFF	OFF
900 °C	OFF	ON	ON	ON	ON
950 °C	OFF	ON	ON	ON	OFF
1000 °C	OFF	ON	ON	OFF	ON

1050 °C	OFF	ON	ON	OFF	OFF
1100 °C	OFF	ON	OFF	ON	ON
1150 °C	OFF	ON	OFF	ON	OFF
1200 °C	OFF	ON	OFF	OFF	ON
1250 °C	OFF	ON	OFF	OFF	OFF
1300 °C	OFF	OFF	ON	ON	ON
1350 °C	OFF	OFF	ON	ON	OFF
1400 °C	OFF	OFF	ON	OFF	ON
1450 °C	OFF	OFF	ON	OFF	OFF
1500 °C	OFF	OFF	OFF	ON	ON
1600 °C	OFF	OFF	OFF	ON	OFF
1700 °C	OFF	OFF	OFF	OFF	ON
1800 °C	OFF	OFF	OFF	OFF	OFF

Warning!! Should a temperature range be selected, that is above the maximum possible range, then the module sets itself to the greatest possible range.

DIP switch 2

Output	6	7
0 ... 10 V	ON	OFF
0 ... 20 mA	OFF	OFF
4 ... 20 mA	OFF	ON

DIP switch 2

Filter	8
OFF	OFF
ON	ON

5 Electrical connection

(s. Fig. 5)

6 Dimensions

(s. Fig. 6)

7 Notes on CE labelling of WAVESERIES modules

WAVESERIES modules, that carry CE-labelling, fulfil the requirements of the EU-Guidelines 89/336/EU “electromagnetic compatibility” and the therein listed harmonised European Norms (EN).

The declarations of conformity are, in accordance with the above-mentioned EU-Guideline, Article 10, held at the following address for the relevant authorities:

Weidmüller Interface GmbH & Co.
Postfach 3030
D-32720 Detmold

8 Technical data

Input

Thermocouple	according to IEC 584 (fully insulated)
Thermocouple types	K, J, T, E, N, R, S, B adjustable by DIP switches
Selecting the min. temperature	adjustable by DIP switches
Selecting the temperature span	adjustable by DIP switches

Accuracy (at 23 °C ambient temperature)

Type K	-200 ... -150 °C	±5 K +0.1 K from span
	-150 ... 1200 °C	±3 K +0.1 K from span
	1200 ... 1372 °C	±4 K +0.1 K from span
Type J	-200 ... -150 °C	±4 K +0.1 K from span
	-150 ... 1200 °C	±3 K +0.1 K from span
Type T	-200 ... -150 °C	±5 K +0.1 K from span
	-150 ... 400 °C	±3 K +0.1 K from span
Type E	-200 ... -150 °C	±4 K +0.1 K from span
	-150 ... 1000 °C	±3 K +0.1 K from span
Type N	-200 ... -150 °C	±6 K +0.1 K from span
	-150 ... 1300 °C	±3 K +0.1 K from span
Type R	-50 ... 200 °C	±10 K +0.1 K from span
	-200 ... 1760 °C	±6 K +0.1 K from span
Type S	-50 ... 200 °C	±10 K +0.1 K from span
	200 ... 1760 °C	±6 K +0.1 K from span
Type B	50 ... 250 °C	±25 K +0.1 K from span
	250 ... 500 °C	±10 K +0.1 K from span
	500 ... 1820 °C	±6 K +0.1 K from span
Temperature coefficient		± (200 ppm from span + 0.075 K) / K

Step response time	max. 1.1 s
- with active filter function:	max. 6 s
Open-circuit recognition	output signal > 10 V or > 20 mA, LED blinking
Sensor current for open-circuit recognition	typ. 0.25 μ A

Output

Output signal	adjustable using DIP switches
Turning on the filter function	adjustable using DIP switches
Output offset voltage	max. 0.05 V
Load resistance	$\geq 1 \text{ k}\Omega$
Output offset current	max. 100 μ A
Load resistance	$\leq 500 \Omega$

Connection data

Connection	BLZ/SL
Insulating stripping length	$8 \pm 0.5 \text{ mm}$
Solid core	0.5 ... 2.5 mm^2
Flexible core	0.5 ... 2.5 mm^2
With ferrules	0.5 ... 1.5 mm^2

EMC specification

according to EN 55011, class B,
group 1
according to EN 50081-1
according to EN 50082-2

General

Current consumption

- by current output

28 mA ... 33 mA ... 38 mA

$I_{out} = 20 \text{ mA}$

- by voltage output

18 mA ... 23 mA ... 28 mA

$U_{out} = 10 \text{ V}$

Voltage supply

19.2 Vdc ... 24 Vdc ... 28.8 Vdc

Cross-connection, upper

24 V, max. 2 A

Cross-connection, lower

0 V, max. 2 A

Operating temperature

0 ... +55 °C

Storage temperature

-20 ... +85 °C

Approvals

CE, CSA, UL

9 Accessories

Cross-connection ZQV 2,5N/2 black	1718080000
Cross-connection ZQV 2,5N/2 red	1717900000
Cross-connection ZQV 2,5N/2 blue	1717990000
Cross-connection ZQV 2,5N/2 yellow	1693800000

Terminal connector, 2-pole for screw-type connection

BLZ 5,08/2

- orange	1526460000
- black	1526410000

Terminal connector, 2-pole for tension clamp connection

BLZ 5,08/2

- orange	1707460000
- black	1707700000

Connector markers

WS 10/5 Multicard for plotter labelling	1635010000
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WS 10/5 blank	1060860000
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In the interest of protecting the environment, return any spare operating instructions to your local stockist for re-use.

Printed on chlorine-free bleached paper.