



100

50.4

100

ZERO

SPAN

ERROR

3-wire

4-wire

Range I
Range II

0...20 r
4...20 r

interface

Analog Modules



Analog modules
Contents

interface

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Analog modules Selection by function

interface

CATALOG PAGE		
FUNCTION	INPUT DATA	OUTPUT DATA
Signal conditioners for analog signals	0...10 V	4...20 mA
	0...10 V	0...10 V
	± 10 V	± 10 V
	4...20 mA	0...10 V
	4...20 mA	4...20 mA
RTD signal conditioner for PT100	0...20 mA	0...20 mA
	3 wire PT100	0...10 V
	4 wire PT100	0...10 V
	3 wire PT100	0...20 mA / 4...20 mA
	4 wire PT100	0...20 mA / 4...20 mA
Thermocouple signal conditioner	3 wire PT100	0...10 V / 0...20 mA / 4...20 mA
	type J	0...10 V / 0...20 mA / 4...20 mA
	type K	0...10 V / 0...20 mA / 4...20 mA
Limit value monitoring of analog signals	0...20 mA	Semiconductor switching output
	± 10 V	2 normally open contacts
	± 20 mA	2 normally open contacts
Constant voltage source 10 V	24 V DC	10 V / 0...30 mA

Analog modules General information **interface**

Wieland signal conditioners for measurement and control technology

The basis of modern automation is the preparation and transfer of physical variables such as temperature, pressure, speed or humidity. These variables are recorded by sensors which use interfaces to simultaneously convert them into electrically measurable, standardised signals. The most frequently used signals are 1-5 V, 0 – 10 V, ± 10 V, 0–20 mA and 4–20 mA. In the reverse, controller modules or control systems supply these standardised signals as variables for actuators and indicators. There is often a distance between the recording and processing sites, whereby the transmission link invariably lies in a hostile industrial environment.

Wieland signal conditioners offer a reliable solution for the transmission of these relatively weak signals. Resistive, inductive or capacitive interference or earth loops are prevented by advanced technology. They ensure that the analog standard signals are electrically isolated. The signal input and output are supplied by integrated DC/DC transformers which are electrically isolated from the mains.

Along with signal conditioners for standardised signals, temperature input modules for Pt100 sensors and thermocouples are also available, with or without electrical isolation. All the modules are intended for installation on standard DIN rail.



The **dipos** modules should be emphasised since both the existing and additional functionality has been implemented in these modules.

dipos signal conditioners modules offer the following benefits:

- Overall widths from 12.5 mm
- Modular system
- Permanent wiring with pluggable modules
- Settings can be secured against unauthorised access via a sealed cover
- 4 kV insulation voltage
- 100% ground connection
- Signals or supply potentials can be duplicated via jumpers
- Screw or spring-clamp terminals
- Labelling of individual channels as well as groups

Product ranges

dipos AKT

Signal conditioners for standardized signals that can be mounted on TS 35 rails with 3-way isolation.

dipos Pt

Temperature signal conditioner modules for Pt100, Pt1000 and Ni temperature sensors.

The following types are available:

- One temperature input range/one standard signal output
- Two defined temperature input ranges/two standard signal outputs, input and output characteristics are selectable
- Four openly selectable temperature input ranges/two standard signals output with or without wire damage detection

dipos TC

Temperature signal conditioner modules for thermocouple elements sensors type J and K.

The following types are available:

- Two defined temperature input ranges/two standard signal outputs, input and output characteristics are selectable

dipos UET

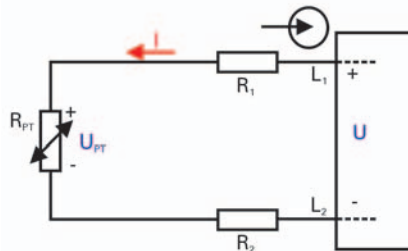
Isolating trip amplifiers for generating threshold-dependent switching points. The respective threshold value is represented via an LC display, depending on the equipment. The measured value input is potential-free.

2, 3 or 4 wire connection technology for Pt sensors

The range provided by Wieland offers devices for all connection technologies. The appropriate technique is used, corresponding to the accuracy requirement. The individual measurement types are described in detail as follows.

The obvious benefit of a 2-wire connection lies in the minimum wiring costs. It should however be noted that greater errors can occur during measurement using this method. In the case of a Pt100 transformer, an additional resistance of only one ohm is sufficient for an error of 2.5 °C. This error acts as an offset (zero displacement). This type of increase in resistance can be caused by cable resistances, contact resistances, soldered connections, plugs etc. In order to compensate for these errors, the Wieland modules offer a zero balance. This does not however prevent errors from occurring during operation that are caused by variations in the ambient temperature.

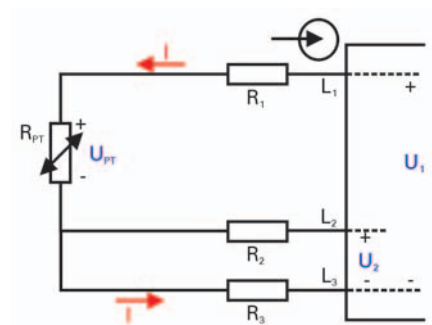
In practice, a 2-wire connection is only recommended if the application does not require a high level of accuracy.



In the case of a 3-wire connection, one of the sensor cables is used for measuring the cable and contact resistances. The influence of the additional resistances can thus be largely eliminated. This however only applies under one condition which is often not observed:

The resistances of the three cables and the respective connectors must match exactly.

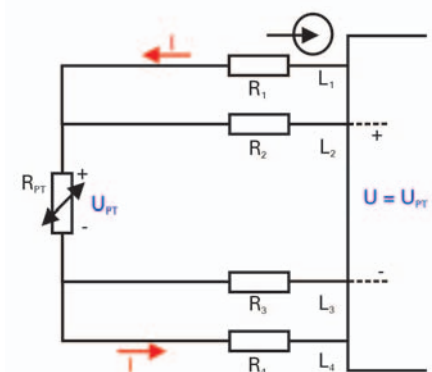
A differential of 0.39 ohm already causes an error of 1 degree (Pt100). Only the respective state can be equalised by carrying out an adjustment during commissioning. It is not possible to remedy the sources of error that are caused by temperature.



In the case of 4-wire technology, two cables take over the temperature measurement and two additional cables measure at high resistance the voltage drop that arises via the resistance-type sensor.

All the effects caused by contact or cable resistances are fully eliminated.

The error is maximum 0.004% per ohm. There is practically no influence produced on the output variable. It is irrelevant if the resistances have different values and are subjected to different conditions due to the application.



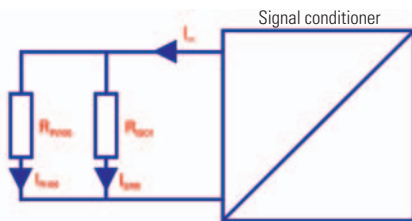
Analog modules General information *interface*

The influence of the insulation resistance on the temperature measurement

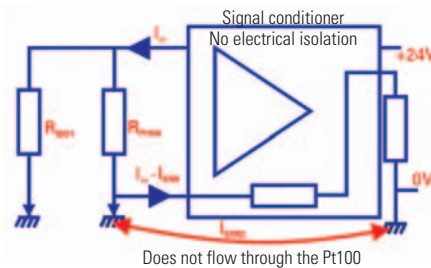
The design of the thermometers used in resistance thermometers and thermo-elements has properties which can lead to measuring errors. This is independent of the type and manufacturer. One of the most frequent sources of error is the insulation in the thermometer. If it is not sufficient, it can seriously impair the measurement. Causes of a low-resistance insulation can be heat, vibration, physical, chemical or radioactive influences.

Measurement with Pt100

The Pt100 element is a low-resistance sensor. If the insulation resistance is too low, the measurement is influenced.

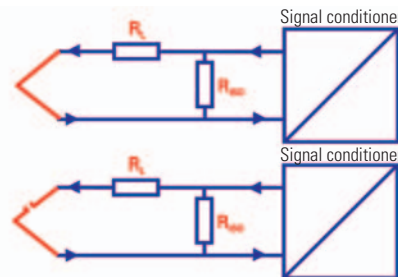


The diagram shows the electrical circuit diagram of the Pt100, connected to a signal conditioner module. Apart from the current flowing over the sensor, a minor current normally also flows over the insulation resistance R_{ISO1} . If the insulation resistance falls, the proportion that flows over the insulation resistance also naturally rises. Due to the constant current that is supplied by the signal conditioner module, the voltage drop is also reduced. This produces a measured temperature value that is too low, regardless of whether the RTD signal conditioner is operated with or without electrical isolation. During operation without electrical isolation, leakage current can however be caused between the sensor and earth if the insulation resistance is too low. This also leads to a lower temperature display. An insulated signal conditioner module rules this out.



Measurement via thermocouples

Limited by the structure of the thermocouples, other errors arise due to the extremely small insulation resistances. The EMF (electromotive force) of thermocouples is not particularly susceptible in the event of a low insulation resistance. The problem lies in the fact that a new measuring point occurs due to the low insulation resistance. If this measuring point is found in the vicinity of the existing point, the influence is negligible. However, if it is located where there is a temperature differential to the measuring point, the measuring error can be considerable. As a result, it is almost impossible to diagnose a break in the sensor.



Analog modules Signal conditioners *dipos* AKT

interface



dipos E-3-AKT 0002
In / Out: 0...10 V / 4...20 mA



dipos E-3-AKT 0005
In / Out: ± 10 V / ± 10 V * or
In / Out: 0...10 V / 0...10 V
and 4...20 mA

Approvals:

Approvals:

Properties

- Modular analog technology
- 4 kV insulation voltage
- Excellent stability
- Designed for rough environment conditions
- Pluggable functionality
- Can be sealed
- Coding option
- Integrated ground shield connection

Dimensions (mm): W x H x D
17.5 x 100 x 100

Description	Type	Part No.	Std. Pack	Type	Part No.	Std. Pack
dipos AKT	dipos E-3-AKT 0002	82.031.0002.0	1	dipos E-3-AKT 0005	82.031.0005.0	1
Required matching module base	see Accessories below			* ± 10 V at input only ± 10 V at output see Accessories below		
Technical Data						
Measured input						
Voltage signal	0...10 V (± 20 V permissible input signal)			0...10 V / ± 10 V (± 20 V permissible input signal)		
Input resistance	1 MOhm			1 MOhm		
Measured output						
Voltage signal				0...10 V / ± 10 V		
Load (for voltage signal)				max. 5 mA		
Current signal	4...20 mA			4...20 mA		
Load (for current signal)	0...500 Ohm (note load error)			0...500 Ohm (note load error)		
Output residual ripple	max. 15 mV _{SS}			max. 15 mV _{SS}		
Measuring accuracy						
Transmission error	$\pm 0.1\%$ of final value (at 20°C ambient temperature)			$\pm 0.1\%$ of final value (at 20°C ambient temperature)		
Temperature coefficient	max. 200 ppm/K (of final value)			max. 200 ppm/K (of final value)		
Load error	< 0.02% / 100 Ohm (adjustment at 100 ohm load)			< 0.02% / 100 Ohm (adjustment at 100 ohm load)		
Limit frequency	approx. 500 Hz (-3 dB)			approx. 500 Hz (-3 dB)		
ZERO/SPAN adjustment range	approx. $\pm 2\%$ of scope of measuring range			approx. $\pm 2\%$ of scope of measuring range		
Electrical isolation						
Test voltage (input, output, supply voltage)	3 x 4 kV / 50 Hz, 1 min.			3 x 4 kV / 50 Hz, 1 min.		
Surge (input, output, supply voltage)	3 x 6 kV 1.2 / 50 μ s			3 x 6 kV 1.2 / 50 μ s		
Dielectric strength	2 kV _{eff} (terminals to mounting rail)			2 kV _{eff} (terminals to mounting rail)		
General data						
Supply voltage U _v	24 V DC +25% / -20%, polarised			24 V DC +25% / -20%, polarised		
U _v -input protected against polarity reversal	EN 61000-4-2/3/4/5/6					
Power consumption (at U _v 24 V)	approx. 50 mA + output current			approx. 50 mA + output current		
Temperature ranges						
• Ambient operating temperature	0...60°C (at U _v 24 V)			0...60°C (at U _v 24 V)		
• Storage	-25...+60°C			-25...+60°C		
• Transport	-25...+70°C			-25...+70°C		
Standards/specifications	DIN EN 50178, EMC directive 89/336/EWG			DIN EN 50178, EMC directive 89/336/EWG		
Approvals						
EMC						
Emitted interference	EN 55022/KI. B, EN 61000-6-3, CISPR 22/KI. B			EN 55022/KI. B, EN 61000-6-3, CISPR 22/KI. B		
Interference immunity	EN 61000-4-2/3/4/5/6			EN 61000-4-2/3/4/5/6		
Accessories						
Module base, width 17.5 mm, 6 connections per side						
- Screw terminal		80.060.1010.1	1		80.060.1010.1	1
- Spring clamp terminal		80.060.1011.1	1		80.060.1011.1	1
Coding branch		Z5.563.0453.0	25		Z5.563.0453.0	25
Pluggable jumper		Z8.000.0229.5	50		Z8.000.0229.5	50
Large marking tag, white, blank		04.249.4053.0	5		04.249.4053.0	5
Small marking tag, red, blank		04.249.1053.0	5		04.249.1053.0	5
blue, blank		04.249.1553.0	5		04.249.1553.0	5
white, blank		04.249.2053.0	5		04.249.2053.0	5
Marking mat	fasis BM	80.063.8001.0	10	fasis BM	80.063.8001.0	10

Analog modules Signal conditioners *dipos* AKT interface



dipos E-3-AKT 0101
In / Out: $\pm 10\text{ V} / \pm 10\text{ V}^*$ or
In / Out: $0 \dots 10\text{ V} / 0 \dots 10\text{ V}$

Approvals:



dipos E-3-AKT 0200
In / Out: $4 \dots 20\text{ mA} / 0 \dots 10\text{ V}$

Approvals:

Properties

- Modular analog technology
- 4 kV insulation voltage
- Excellent stability
- Designed for rough environment conditions
- Pluggable functionality
- Can be sealed
- Coding option
- Integrated ground shield connection

Dimensions (mm): W x H x D

17.5 x 100 x 100

Description	Type	Part No.	Std. Pack	Type	Part No.	Std. Pack
dipos AKT	dipos E-3-AKT 0101	82.031.0101.0	1	dipos E-3-AKT 0200	82.031.0005.0	1
	* $\pm 10\text{ V}$ at input only $\pm 10\text{ V}$ at output					
Required matching module base	see Accessories below			see Accessories below		
Technical Data						
Measured input						
Voltage signal	$\pm 10\text{ V} / 0 \dots 10\text{ V}$ ($\pm 20\text{ V}$ permitted input signal for voltage signal)					
Input resistance	1 MOhm					
Current signal				4...20 mA		
Input resistance				55 Ohm		
Measured output						
Voltage signal	$\pm 10\text{ V} / 0 \dots 10\text{ V}$			0...10 V		
Load (for voltage signal)	max. 5 mA			max. 5 mA		
Current signal						
Load (for current signal)				0...500 Ohm (note load error)		
Output residual ripple				max. 15 mV _{SS}		
Measuring accuracy						
Transmission error	$\pm 0.1\%$ of final value (at 20 °C ambient temperature)			$\pm 0.1\%$ of final value (at 20 °C ambient temperature)		
Temperature coefficient	max. 200 ppm/K (of final value)			max. 200 ppm/K (of final value)		
Load error	< 0.02% / 100 Ohm (adjustment at 100 ohm load)			< 0.02% / 100 Ohm (adjustment at 100 ohm load)		
Limit frequency	approx. 500 Hz (-3 dB)			approx. 500 Hz (-3 dB)		
ZERO/SPAN adjustment range	approx. $\pm 2\%$ of scope of measuring range			approx. $\pm 2\%$ of scope of measuring range		
Electrical isolation						
Test voltage (input, output, supply voltage)	3 x 4 kV / 50 Hz, 1 min.			3 x 4 kV / 50 Hz, 1 min.		
Surge (input, output, supply voltage)	3 x 6 kV 1.2 / 50 μs			3 x 6 kV 1.2 / 50 μs		
Dielectric strength	2 kV _{eff} (terminals to mounting rail)			2 kV _{eff} (terminals to mounting rail)		
General data						
Supply voltage U _v	24 V DC +25% / -20%, polarised			24 V DC +25% / -20%, polarised		
Power consumption (at U _v 24 V)	approx. 50 mA + output current			approx. 50 mA + output current		
Temperature ranges						
• Ambient operating temperature	0...60 °C (at U _v 24 V)			0...60 °C (at U _v 24 V)		
• Storage	-25...+60 °C			-25...+60 °C		
• Transport	-25...+70 °C			-25...+70 °C		
Standards/specifications	DIN EN 50178, EMC directive 89/336/EWG			DIN EN 50178, EMC directive 89/336/EWG		
Approvals						
EMC						
Noise emission	EN 55022/KI. B, EN 61000-6-3, CISPR 22/KI. B			EN 55022/KI. B, EN 61000-6-3, CISPR 22/KI. B		
Interference immunity	EN 61000-4-2/3/4/5/6			EN 61000-4-2/3/4/5/6		
Accessories						
Module base, width 17.5 mm, 6 connections per side						
- Screw terminal		80.060.1010.1	1		80.060.1010.1	1
- Spring clamp terminal		80.060.1011.1	1		80.060.1011.1	1
Coding branch		Z5.563.0453.0	25		Z5.563.0453.0	25
Pluggable jumper		Z8.000.0229.5	50		Z8.000.0229.5	50
Large marking tag, white, blank		04.249.4053.0	5		04.249.4053.0	5
Small marking tag, red, blank		04.249.1053.0	5		04.249.1053.0	5
blue, blank		04.249.1553.0	5		04.249.1553.0	5
white, blank		04.249.2053.0	5		04.249.2053.0	5
Marking mat	fasis BM	80.063.8001.0	10	fasis BM	80.063.8001.0	10

Analog modules Signal conditioners *dipos* AKT

interface



Properties

- Modular analog technology
- 4kV insulation voltage
- Excellent stability
- Designed for rough environment conditions
- Pluggable functionality
- Can be sealed
- Coding option
- Integrated ground shield connection

Dimensions (mm): W x H x D
6 x 63.2 x 91

dipos E-3-AKT 0205
In / Out: 0...20 mA / 0...20 mA* or
In / Out: 4...20 mA / 4...20 mA and 0...10 V
Approvals:

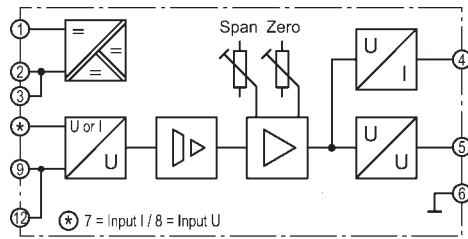
dipos E-3-AKT 0303
In / Out: 0...20 mA / 0...20 mA* or
In / Out: 4...20 mA / 4...20 mA
Approvals:

Description	Type	Part No.	Std. Pack	Type	Part No.	Std. Pack
dipos AKT	dipos E-3-AKT 0205	82.031.0205.0	1	dipos E-3-AKT 0303	82.031.0303.0	1
	* at 0...20 mA at input only 0...20 mA at output					
Required matching module base	see Accessories below			see Accessories below		
Technical Data						
Measured input						
Voltage signal						
Input resistance						
Current signal						
Input resistance						
Measured output						
Voltage signal						
Load (for voltage signal)						
Current signal						
Load (for current signal)						
Output residual ripple						
Measuring accuracy						
Transmission error						
Temperature coefficient						
Load error						
Limit frequency						
ZERO/SPAN adjustment range						
Electrical isolation						
Test voltage (input, output, supply voltage)						
Surge (input, output, supply voltage)						
Dielectric strength						
General data						
Supply voltage U_v						
Power consumption (at U_v 24 V)						
Temperature ranges						
• Ambient operating temperature						
• Storage						
• Transport						
Standards/specifications						
Approvals						
EMC						
Noise emission						
Interference immunity						
Accessories						
Module base, Width 17.5 mm, 6 Connections per side						
– Screw terminal		80.060.1010.1	1		80.060.1010.1	1
– Spring clamp terminal		80.060.1011.1	1		80.060.1011.1	1
Coding branch		Z5.563.0453.0	25		Z5.563.0453.0	25
Pluggable jumper		Z8.000.0229.5	50		Z8.000.0229.5	50
Large marking tag, white, blank		04.249.4053.0	5		04.249.4053.0	5
Small marking tag	red, blank	04.249.1053.0	5		04.249.1053.0	5
	blue, blank	04.249.1553.0	5		04.249.1553.0	5
	white, blank	04.249.2053.0	5		04.249.2053.0	5

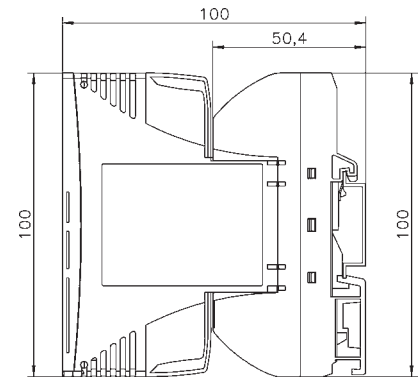
Analog modules Signal conditioners *dipos* AKT *interface*

dipos AKT

Wiring diagram



Dimension drawing



Analog modules RTD signal conditioners for Pt 100 *dipos* Pt

interface



- Mounting depth 12.5 mm
- 3 and 4 wire technology
- Current output selectable (0...20 mA und 4...20 mA)
- Adjustable zero/span
- Detection of wire breakage
- Overload signal at the output, red LED

dipos E-2-PT Thermocouple measuring for Pt100 sensors

Approvals:

Dimensions (mm): W x H x D
12.5 x 100 x 100

Description	Output signal	Type	Part No.	Std. Pack	Key for input temperature range
dipos Pt100 RTD signal conditioner					XX = 01 0...100 °C 02 0...200 °C 03 0...300 °C 04 0...400 °C 05 0...500 °C 20 -50...+50 °C 21 -100...+100 °C 31 0...150 °C 40 -50...+50 °C(*) / -100...+100 °C 41 0...100 °C(*) / 0...500 °C
Pt100 3 wire	0...10 V	dipos E-2-PT 3XX00	82.011.30XX.0	1	
Pt100 4 wire	0...10 V	dipos E-2-PT 4XX00	82.011.40XX.0	1	
Pt100 3 wire	0...20 mA / 4...20 mA (*)	dipos E-2-PT 3XX07	82.011.37XX.0	1	
Pt100 4 wire	0...20 mA / 4...20 mA (*)	dipos E-2-PT 4XX07	82.011.47XX.0	1	
Pt100 3 wire	0...10 V / 0...20 mA / 4...20 mA (*)	dipos E-2-PT 3XX08	82.011.38XX.0	1	
	(*) delivered as such				
Required matching module base		see Accessories below			see Accessories below
Technical data					Ordering example:
Measured input					Pt100 3 wire, Input 0...400 °C, Output 0...10 V
Input		Pt100 in accordance with IEC 60751			Part No. 82.011.3004.0
Temperature ranges		-100...+100 °C / -50...+50 °C 0...100 °C / 150 °C / 200 °C / 300 °C / 400 °C / 500 °C			
Supply current (Pt100)		approx. 1 mA			
Measured output					
Output signal		0...10 V / 0...20 mA / 4...20 mA			
Maximum load for voltage signal		5 mA			
Load for current signal		0...500 Ω (no load error)			
Output signal in event of wire breakage					
Voltage output:		approx. 13 V			
Current output:		approx. 26 mA			
Measuring accuracy					
Transmission error		≤ 0.2 % of final value (at 20 °C ambient temperature)			
Max. temperature co-efficient		200 ppm/K (ref. final value)			
Load error (deviation at 100 Ω load)		< 0.02 % / 100 Ω			
Zero/span adjustment range		approx. 3 % Approx. of scope of measuring range			
General data					
Supply data		24 V DC +25 % / -20 %, polarised			
Power consumption		approx. 15 mA + output current			
Ambient temperature range		0...60 °C (100 % capacity utilisation of device, series connected)			
Standards, specifications		DIN EN 50178, EMC directive 89/336/EWG			
EMC					
Emitted interference		EN 55022/KI. B, EN 61000-6-1, CISPR 22/KI. B			
Interference immunity		EN 61000-4-2/3/4/5/6			
Accessories					
Module base, overall width of 12.5 mm, 4 connections per side					
Screw terminal			80.060.0010.1	1	
Spring clamp terminal			80.060.0011.1	1	
Coding branch			Z5.563.0453.0	25	
Pluggable jumper			Z8.000.0229.5	50	
Large marker tag, white, blank			04.249.4053.0	5	
Small marker tag red, blank			04.249.1053.0	5	
blue, blank			04.249.1553.0	5	
white, blank			04.249.2053.0	5	

Analog modules

Thermocouple signal conditioner *dipos*^{TC}

interface



- Mounting depth 12.5 mm
- CJC incorporated
- Current output selectable (0...20 mA and 4...20 mA)
- Adjustable zero/span
- Detection of wire breakage
- Overload signal at the output, red LED

Diagram shows *dipos* P1100.
dipos^{TC} has an additional sensor socket on the front of the module

dipos E-2-TC Thermocouple signal conditioner Type J, K

Approvals:  

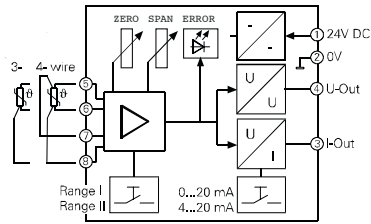
Dimensions (mm): W x H x D
12.5 x 100 x 100

Description	Output signal	Type	Part No.	Std. Pack	Part No. key for input temperature range
dipos thermocouple signal conditioner TC					
for type J thermocouple					XX = 03 0...300 °C
					06 0...600 °C
0...10 V / 0...20 mA / 4...20 mA (*)	dipos E-2-TC 0XX08	82.021.08XX.0		1	12 0...1200 °C
for type K thermocouple					
0...10 V / 0...20 mA / 4...20 mA (*)	dipos E-2-TC 1XX08	82.021.18XX.0		1	31 0...150 °C
Required matching module base	see Accessories below				
Technical data					Ordering example:
Measured input					TC type K, Input 0...100 °C
Input	Type J (Fe-CuNi) or Type K (NiCr-Ni) in accordance with IEC 60584-1				Part No. 82.021.1812.0
Temperature ranges	0...150/300/600/1200 °C				
Measured output					
Output signal	0...10 V, 0(4)...20 mA				
Maximum load for voltage signal	5 mA				
Load for current signal	0...500 Ω (no load error)				
Output signal in event of wire breakage					
Voltage output:	approx. 13 V				
Current output:	approx. 26 mA				
Measuring accuracy					
Transmission error	≤ 1 % of final value (at 20 °C ambient temperature)				
Transmission error for measuring range span ≤ 200K	≤ 2 % of final value (at 20 °C ambient temperature)				
Max. temperature co-efficient	200 ppm/K (ref. final value)				
Load error (deviation at 100 Ω load)	< 0.02 % / 100 Ω				
CJC compensation	directly at the TC terminal				
Zero/span adjustment range	approx. 5 % of scope of measuring range				
General data					
Supply data	24 V DC +25 % / -20 %, polarised				
Power consumption	approx. 25 mA + output current				
Ambient temperature range	0...60 °C (100 % capacity utilisation of device, series connected)				
Standards, specifications	DIN EN 50178, EMC directive 89/336/EWG				
EMC					
Emitted interference	EN 55022/KI. B, EN 61000-6-1, CISPR 22/KI. B				
Interference immunity	EN 61000-4-2/3/4/5/6				
Accessories					
Module base, overall width of 12.5 mm, 4 connections per side					
Screw terminal		80.060.0030.1		1	
Spring clamp terminal		80.060.0031.1		1	
Coding branch		Z5.563.0453.0		25	
Pluggable jumper		Z8.000.0229.5		50	
Large marker tag, white, blank		04.249.4053.0		5	
Small marker tag	red, blank	04.249.1053.0		5	
	blue, blank	04.249.1553.0		5	
	white, blank	04.249.2053.0		5	

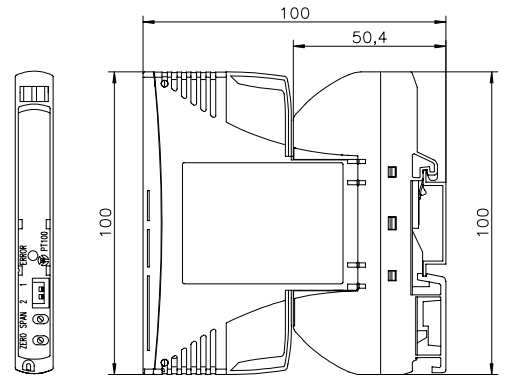
Analog modules
Signal conditioners

interface

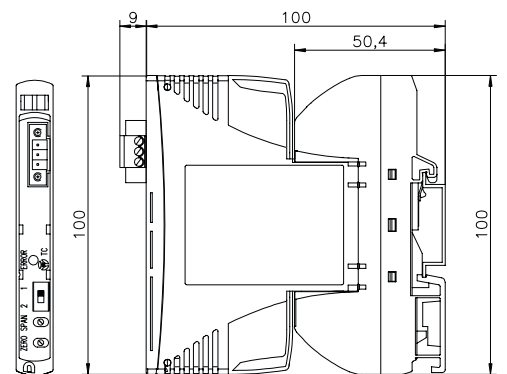
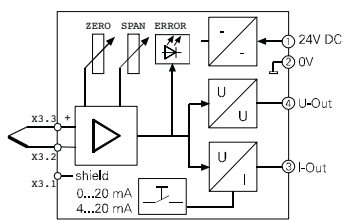
Wiring diagram



Dimension drawing



dipos TC



Analog modules

Function module UET Teach

interface



The function module **dipos** UET Teach monitors analog measuring signals when values fall below or exceed limit values. The limit values 'HI' and 'LO' are set at the front of the device via push buttons. The semiconductor output 'HI' will become inactive, if the measured value exceeds the 'HI' limit value or falls below the 'LO' limit value. Depending on switch position S1, the display indicates the limit values or the measured value. The measurement input is potential-free to the supply voltage and the semiconductor output.

Dimensions (mm): W x H x D
22.5 x 100 x 100

dipos UET-Teach Function module 0...20 mA

Description	Output signal	Type	Part No.	Std. Pack
Function module dipos UET Teach 0...20 mA		dipos E-4-UET 0311T	82.041.0311.0	1
Required matching module base		see Accessories below		
Technical data				
Potential-free measurement input				
Measuring range		0...20 mA		
Permitted input signal		± 30 mA		
Input resistance		100 Ohm		
Control input - TEACH (related to U _v 0V)		15...30 V DC Transfer of measured value as teaching value when "S1" is in position "IN" and in event of rising edge at the control input		
LED display		Height of digits 7 mm, red		
Display range (dimensions)		0.00 ... 20.45		
Accuracy of display		±2 digit / ±5 digit (20°C / 50°C)		
Setting range of limit value (setting value limited at max. value)		0.00 ... 20.40 (HI and LO)		
Switch output				
High side switch at 24V U _v (OUT _{HI})		10 min. short-circuit proof		
Output current		0.002 ... 0.2 A short circuit current type. 0.9 A		
Switching function		OUT _{HI} active if limit value _{LO} < Measured value < limit value _{HI}		
Switching delay		typ. 3 ms		
Switching hysteresis		±20 µA		
Status display		LED, green (ON if switch output is active)		
Dielectric strength				
Measurement input/supply voltage		500 V DC		
Terminals to mounting rails		2 kV _{eff}		
Permitted temperatures				
Ambient operating temperature at U _v 24 V		0...50°C		
Storage/transport temperature		-25...+60°C / -25...+70°C		
General Data				
Supply voltage (U _v)		24 V DC +25% / -20% (input protected against reversed polarity)		
Power consumption U _v 24 V		approx. 45 mA (both relays active)		
CE mark		yes		
Accessories				
Module base dipos M-4 UET				
Overall width 22.5 mm, 8 Connections per side				
- Screw terminal		80.060.2010.1		1
- Spring loaded terminal		80.060.2011.1		1
Coding branch		Z5.563.0453.0		25
Pluggable jumper		Z8.000.0229.5		50
Marker tag, large, white, unmarked		04.249.4053.0		5
Marker tag, small	red, unmarked	04.249.1053.0		5
	blue, unmarked	04.249.1553.0		5
	white, unmarked	04.249.2053.0		5

Analog modules Function module *dipos* UET interface



The function module *dipos* UET monitors analog measuring signals when values fall below or exceed limit values. The limit values 'HI' and 'LO' are set at the front of the device via push buttons. The semiconductor output 'HI' will become inactive, if the measured value exceeds the 'HI' limit value or falls below the 'LO' limit value. Depending on switch position S1, the display indicates the limit values or the measured value. The measurement input is potential-free to the supply voltage and the semiconductor output.

Dimensions (mm): W x H x D
22.5 x 100 x 100

dipos E-4-UET Function module ± 10 V

dipos E-4-UET Function module ± 20 mA

Description	Type	Part No.	Std. Pack	Type	Part No.	Std. Pack
Function module <i>dipos</i> UET ± 10 V	<i>dipos</i> E-4-UET 0110	82.041.0100.0	1			
Function module <i>dipos</i> UET ± 20 mA				<i>dipos</i> E-4-UET 0410	82.041.0400.0	1
Required matching module base	see Accessories below			see Accessories below		
Technical data						
Potential-free measurement input						
Measuring range	± 10 V			± 20 mA		
Permitted input signal	± 30 V			± 30 mA		
Input resistance	1 MOhm			100 Ohm		
LED display	7 mm high digits, red			7 mm high digits, red		
Display range (dimensions)	-20.40 ... + 20.40			-20.40 ... +20.40		
Accuracy of display	± 2 digit / ± 5 digit (20°C / 50°C)			± 2 digit / ± 5 digit (20°C / 50°C)		
Setting range of limit value (setting value limited at max. value)	-20.40 ... + 20.40 (HI and LO)			-20.40 ... + 20.40 (HI and LO)		
Switch output						
Relay	2 x 1 normally open contact			2 x 1 normally open contact		
Switching current	2 A AC/DC			2 A AC/DC		
Switching voltage	24 V DC; 250 V AC			24 V DC; 250 V AC		
Contact material	AgCdO + 1 μ Au			AgCdO + 1 μ Au		
Switching delay on/off	10 ms / 8 ms			10 ms / 8 ms		
Switching hysteresis	min. ± 20 mV			min. ± 20 μ A		
Adjustable from	± 0.02 V ... +4.99 V			± 0.02 mA ... +4.99 mA		
Status display	LED, green (ON if switch output is active)			LED, green (ON if switch output is active)		
Dielectric strength						
Measurement input/supply voltage	500 V DC			500 V DC		
Terminals to mounting rails	2 kV _{eff}			2 kV _{eff}		
Permitted temperatures						
Ambient operating temperature at U _v 24 V	0...50°C			0...50°C		
Storage/transport temperature	-25...+60°C / -25...+70°C			-25...+60°C / -25...+70°C		
General Data						
Supply voltage (U _v)	24 V DC +25% / -20% (input protected against reversed polarity)			24 V DC +25% / -20% (input protected against reversed polarity)		
Power consumption U _v 24 V	approx. 45 mA (both relays active)			approx. 45 mA (both relays active)		
CE mark	yes			yes		
Accessories						
Module base <i>dipos</i> M-4 UET						
Overall width 22.5 mm, 8 Connections per side						
- Screw terminal		80.060.2010.1	1		80.060.2010.1	1
- Spring loaded terminal		80.060.2011.1	1		80.060.2011.1	1
Coding branch		Z5.563.0453.0	25		Z5.563.0453.0	25
Pluggable jumper		Z8.000.0229.5	50		Z8.000.0229.5	50
Marker tag, large, white, unmarked		04.249.4053.0	5		04.249.4053.0	5
Marker tag, small	red, unmarked	04.249.1053.0	5		04.249.1053.0	5
	blue, unmarked	04.249.1553.0	5		04.249.1553.0	5
	white, unmarked	04.249.2053.0	5		04.249.2053.0	5

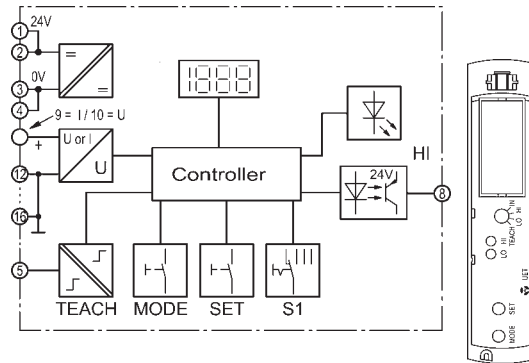
Analog modules

Function module *dipos* UET

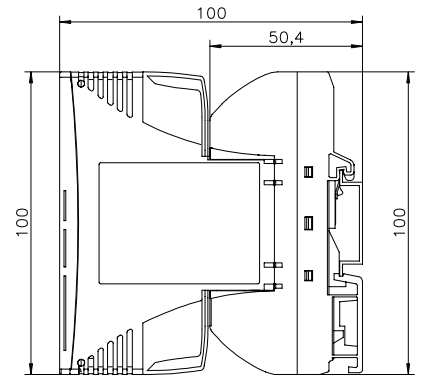
interface

dipos UET Teach

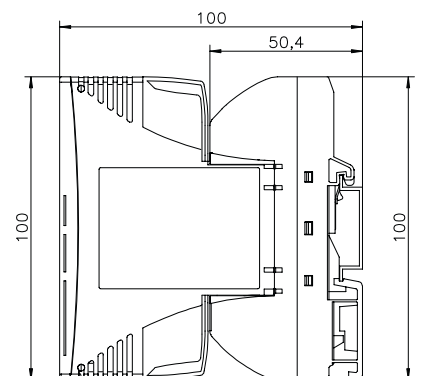
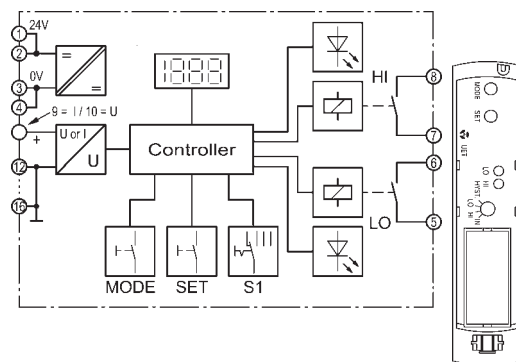
Wiring diagram



Dimension drawing



dipos UET



Analog modules


Constant voltage source 10 V *dipos* KSO

interface



- Overall width 12.5 mm
- Output voltage can be set between 9.5 V and 10.5 V
- Detection of wire breakage
- Overload signal at the output, red LED

dipos E-2-KSQ Constant voltage source 10 V

Approvals:  

Dimensions (mm): W x H x D
12.5 x 100 x 100

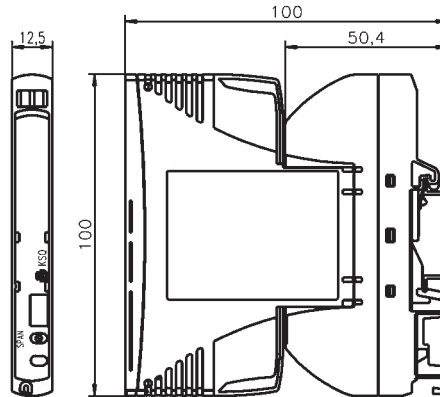
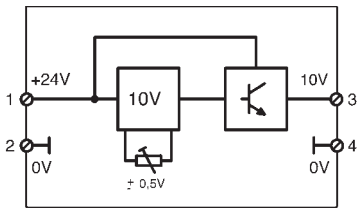
Description	Output signal	Type	Part No.	Std. Pack
<i>dipos</i> KSO 10 V Constant voltage source		<i>dipos</i> E-2-KSQ	82.081.0000.0	1
Required matching module base		see Accessories below		
Technical data				
Measured input				
Operating voltage U_V		24 V DC (16...30 V DC), polarised		
Power consumption at $U_V = 24$ V		approx. 10 mA + output current		
Measured output				
Output voltage		10 V DC constant, short circuit proof		
Setting range		9.5 V...10.5 V DC		
Permitted output load		0...30 mA		
Short-circuit current		approx. 50 mA		
Maximum residual ripple		10 mV _{SS}		
Output protection		Protective diodes		
Measuring accuracy				
Intrinsic error		± 1 % of final value (at $U_V = 24$ V, and 20 °C ambient temperature)		
Maximum temperature coefficient		150 ppm/K of final value		
General data				
Isolation		2 kV _{eff.} (terminals to mounting rail)		
Ambient temperature range		0 °C...+60 °C (at $U_V = 24$ V)		
Storage temperature		-25 °C...+60 °C		
Transport temperature		-25 °C...+70 °C		
EMC				
Emitted interference		EN 55022/Kl. B, EN 61000-6-1, CISPR 222/Kl. B		
Interference immunity		EN 61000-4-2/3/4/5/6		
Accessories				
Module base, overall width of 12.5 mm, 4 connections per side				
Screw terminal		80.060.0020.1		1
Spring clamp terminal		80.060.0021.1		1
Coding branch		Z5.563.0453.0		25
Pluggable jumper		Z8.000.0229.5		50
Large marker tag, white, blank		04.249.4053.0		5
Small marker tag	red, blank	04.249.1053.0		5
	blue, blank	04.249.1553.0		5
	white, blank	04.249.2053.0		5

Analog modules

Constant voltage source 10 V *dipos* KSQ

interface

dipos KSQ Constant voltage source



interface