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JUMO PROCESS CONTROL INC.

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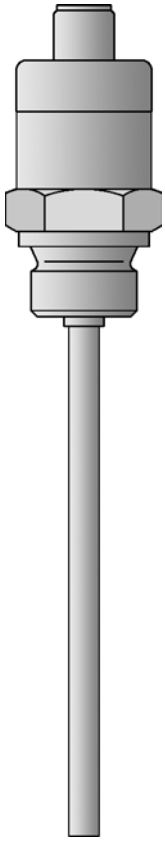
JUMO CANtrans T resistance thermometers with CANopen output



- **for temperatures from -50 to +450°C**
- **as single or twin resistance thermometer**
- **vibration-proof construction**
- **limit monitoring**
- **settable through standard CANopen software tools**

Resistance thermometers are predominantly used for measuring temperatures in liquids and gases. An important selection criterion is their reliable sealing against both positive and negative pressures. Applications can be found in medical technology, mechanical engineering, drive technology, commercial vehicles, and railways.
The measuring insert is normally fitted with a Pt1000 temperature sensor to EN 60 751, Class B. The temperature measurement is digitized, linearized and made available for further processing via the serial CANopen bus protocol (CAN slave). A large variety of useful extra functions can be implemented through the DS 404 device profile. All settings can be made using standard CANopen software tools.

For pressure transmitters with CANopen output, Data Sheet 40.2055

Technical data

Connection	circular connector M 12x1, 5-pole to IEC 60 947-5-2
Process connection	thread, stainless steel 1.4571
Protection tube	stainless steel 1.4571
Measuring insert	Pt1000 temperature sensor, EN 60 751, Class B, 2-wire circuit
Protection	IP67, to EN 60 529, with screwed-on connector
Response time	$t_{0.9}$ = 12 sec, in water 0.2 m/sec

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CAN transmitter

Protocol	CiA DS 301, V4.02, CANopen slave	
Profile	CiA DS 404, V1.2 Measuring devices and closed-loop controllers	
Baud rate	20kbaud to 1Mbaud, setting via LSS or SDO	
Module ID	1 — 127, setting via LSS or SDO	
PDO	0 Rx, 1 Tx	
SDO	1 Rx, 1 Tx	
Emergency	yes	
Heartbeat	yes	
LSS	yes	
SYNC	yes	
Operation, project design	All parameters are accessible via the CANopen object directory (EDS) and can be set using standard CANopen software tools.	
Input		
Measurement input	Pt1000 to EN 60 751, Class B	
Range limits	-50 to +150°C, -50 to +450°C	
Sampling rate	250msec	
Output		
Output signal	CANopen as per CiA DS 404 V1.2, in °C, can be switched over to °F, K selectable decimal place 0, 1, 2	
Transfer characteristic	linear with temperature	
Electrical connection	circular connector M 12x1, 5-pole to IEC 60 947-5-2	
Supply		
Supply voltage	10 — 30V DC	
Current drawn	approx. 45mA max.	
Monitoring		
	measurement circuit - underrange (low limit is freely selectable) - overrange (high limit is freely selectable) probe short-circuit probe break	
Extra functions		
	min./max. measurement storage	
	fine calibration	
	changeover °C, °F, K	
	selectable decimal place 0, 1, 2	
Ambient conditions		
Operating temperature range	-20 to +85°C	
Storage temperature range	-40 to +85°C	
Temperature effect	≤ ± 0.0025% / °C deviation from 22°C of range span	
Accuracy	Class B to EN 60 751, ± 0.2% max. of range span	
EMC	EN 61 326 interference emission, Class B immunity to interference, industrial requirements	
Mechanical shock	to IEC 68-2-27 (for Type 902910/10)	EL 50mm: 50g / 3msec; EL 100mm: 30g / 3msec EL 200mm: 15g / 3msec
Mechanical vibration	to IEC 68-2-6 (for Type 902910/10)	EL 50mm: 10g max. at 10 — 2000Hz EL 100mm: 5g max. at 10 — 300Hz EL 200mm: 2g max. at 10 — 100Hz
Protection	IP67, to EN 60 529, with screwed-on connector	

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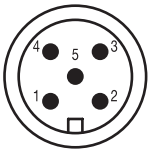
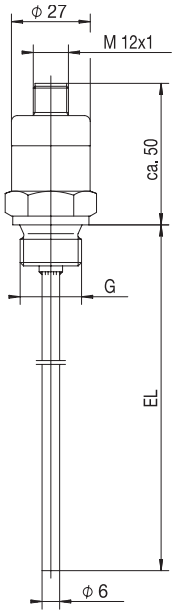
Connection diagram



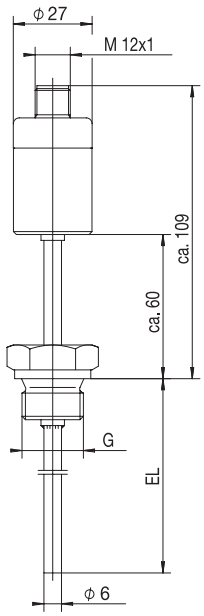
Circular connector M 12x1
5-pole to
IEC 60 947-5-2

Connection		Terminal assignment
Supply 10—30 V DC	V+	2
	V-	3
Output CANopen	screen	1
	CAN_H	4
	CAN_L	5

Dimensions

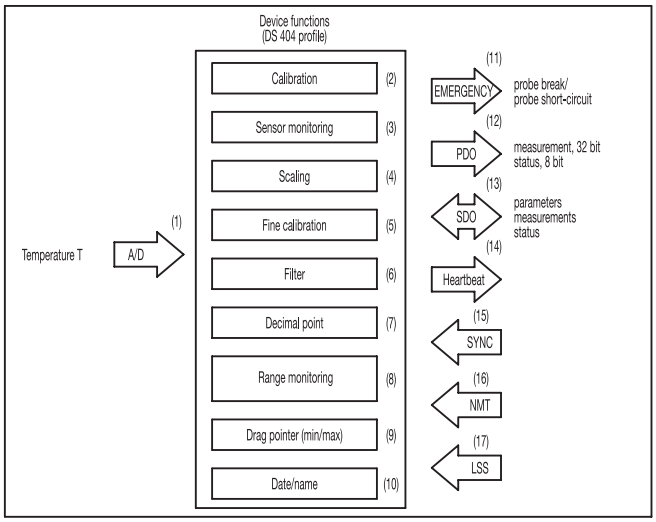


Type 902910/10



Type 902910/12

Block diagram



Operation

(1) The temperature measurement is digitized.
(2) The temperature signal is digitally calibrated ex-factory.
(3) The sensor monitoring facility continuously checks the correct performance of the sensor signal and triggers high-priority emergency telegrams in the event of an error.
(4) The temperature measurement can be scaled to any dimensional unit (or in % of measurement range).
(5) Fine calibration features a freely adjustable shift of the characteristic.
(6) Undesirable signal fluctuations can be suppressed by means of the (adjustable) filter constant.
(7) The measurement is output with a freely selectable decimal place.
(8) Range monitoring features freely selectable upper and lower limits. The result is output as a status byte with the measurement in the PDO telegram.
(9) The drag pointer function serves to store the minimum and maximum temperature values.
(10) Date and name of the last servicing action can be stored.
(11) An emergency telegram is triggered in the event of a sensor fault.
(12) The PDO telegram contains the 32-bit measurement and the 8-bit status. The measurement that is output can be controlled by means of different trigger conditions.
(13) SDO telegrams can be used for setting parameters, as well as for requesting measurements and status.
(14) The heartbeat signal serves to additionally monitor the transmitter function.
(15) The measurements can additionally be controlled by using the Sync command.
(16) NMT telegrams serve to control the operational state of the transmitter.
(17) The CAN module ID and CAN baud rate are set through LSS or SDO, according to choice.

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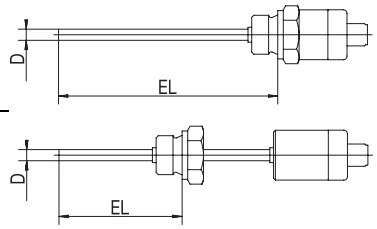
Order details: Resistance thermometers with CANopen output

(1) Basic version

		902910/10	Resistance thermometer with CANopen output
		902910/12	Resistance thermometer with CANopen output, extension tube for elevated temperatures



			(2) Operating temperature in °C
x		370	-50 to +150°C
	x	404	-50 to +450°C
			(3) Measuring insert
x	x	1005	1 x Pt1000
x	x	2005	2 x Pt1000
			(4) Tolerance class to EN 60 751
x	x	1	Class B (standard)
x	x	2	Class A
			(5) Protection tube diameter D in mm
x	x	6	6mm
			(6) Fitting length EL in mm (50 ≤ EL ≤ 500)
x	x	50	50mm
x	x	100	100mm
x	x	150	150mm
x	x	200	200mm
x	x	250	250mm
x	x	...	details in plain text (50mm steps)
			(7) Process connection
x	x	102	thread G 1/4 (1/4" pipe)
x	x	103	thread G 3/8 (3/8" pipe)
x	x	104	thread G 1/2 (1/2" pipe)
x	x	121	thread M 14x1.5
x	x	126	thread M 18x1.5
x	x	128	thread M 20x1.5
x	x	144	thread 1/2-14NPT
			(8) Extra codes
x	x	000	no extra code
x	x	100	customer-specific factory setting
x	x	310	stepped protection tube

	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)	
Order code		-		-		-		-		-		-		/		, ...
Order example	902910/10	-	370	-	1005	-	1	-	6	-	50	-	102	/	000	

1. List extra codes in sequence, separated by commas.

Accessories for resistance thermometers with CANopen output

	Sales No.
5-pole terminal box M 12x1, straight, with 5m long moulded connecting cable	90/00337625
5-pole terminal box M 12x1, angled, with 2m long moulded connecting cable	90/00375164
5-pole terminal box M 12x1, straight, no cable, assembly by customer	90/00419130
5-pole terminal box M 12x1, angled, no cable, assembly by customer	90/00419133
Tee	90/00419129
PC CAN interface for USB interface	40/00449941
PC configuration software for CANopen	40/00449942
EDS files on diskette	90/00434520
EDS files, for download (www.jumo.net, see Product Information)	-
Operating Instructions, for download (www.jumo.net, see Product Information)	40/00421871