

JUMO dTRANS T09 DS

Cable transmitter for temperature with
IO-Link interface



Use  IO-Link
Universal · Smart · Easy



Operating Manual



70709100T90Z001K000

V2.00/EN/00732819/2022-11-09

The basic principles of IO-Link are available on the website www.IO-Link.com

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1.1 Safety information

General

This manual contains information that must be observed in the interest of your own safety and to avoid material damage. This information is supported by symbols which are used in this manual as indicated.

Please read this manual before starting up the device. Store this manual in a place that is accessible to all users at all times.

If difficulties occur during startup, please do not intervene in any way that could jeopardize your warranty rights!

Warning symbols



CAUTION!

This symbol in connection with the signal word indicates that **material damage or data loss** will occur if the respective precautionary measures are not taken.



READ THE DOCUMENTATION!

This symbol, which is attached to the device, indicates that the associated **documentation for the device** must be **observed**. This is necessary to identify the nature of the potential hazard, and to take measures to prevent it.

Note symbols



NOTE!

This symbol refers to **important information** about the product, its handling, or additional benefits.



REFERENCE!

This symbol refers to **additional information** in other sections, chapters, or other manuals.



DISPOSAL!

At the end of its service life, the device and any batteries present do not belong in the trash! Please ensure that they are **disposed of** properly and in an **environmentally friendly** manner.

1 Introduction

1.2 Description and intended use

The cable transmitter for Pt100 or Pt1000 sensors is ideal for simple retrofitting of plants. It is equipped with an IO-Link interface according to specification 1.1. IO-Link supports bidirectional communication and is used to exchange the process data, parameters, diagnostic information, and status messages.

The cable transmitter's high level of vibration and shock resistance makes it reliable and durable. It is connected on the input and output side via M12 plug connectors.

JUMO dTRANS T09 DS: cable transmitter for temperature with IO-Link interface (707091)

The cable transmitter is UL-approved. The approval stipulates use of the cable transmitter indoors only.


The protection offered by the cable transmitter may be impaired if the cable transmitter is used in a way that does not comply with the manufacturer's intended use.

1.3 Hot media

Hot media may result in the device surfaces becoming hot and presenting a risk of injury.

- Allow the device and plant to cool down.
- Wear suitable protective equipment.
- If required, install contact protection.

1.4 Approvals

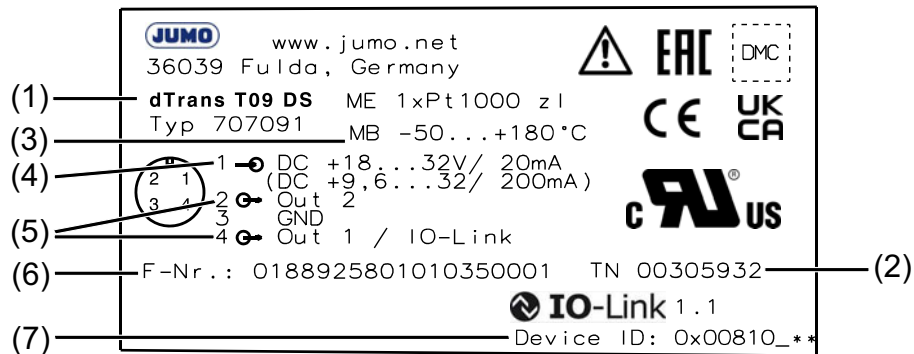
	Designation	UL
	Testing agency	-
	Certificate no.	2022-07-27-E201387
	Inspection basis	UL 61010-1, 3 Ed. Mai 2012 revised 19. Juli 2019 und CAN/CSA-C22.2 No. 61010-1 (2012-05). 3. Ed. with revision through 2018-11
	Valid for	Type 707090, 707091

2 Identifying the device version

2.1 Nameplate

Position

The nameplate is located on the housing surface.



- | | |
|---------------------------|--|
| (1) Device name | (2) Part no. |
| (3) Input measuring range | (4) Voltage supply and maximum current consumption ^a
⇒ For more in-depth information, see "Technical Data" |
| (5) Outputs | (6) Fabrication number |
| (7) Device ID | |

^a The specifications outside the brackets „()“ refer to use of the device in IO-Link operation. The specifications inside the brackets „()“ refer to use of the device in switch operation.

Part no.

The part no. clearly identifies an article in the catalog. It is important for communication between the customer and the sales department.

Device ID

The device ID can help when localizing the device description file (IODD), which can be found on the manufacturer's website and also downloaded if necessary.

Downloading the IODD:

1. Open the website www.jumo.de (change the language to English if necessary)
2. Use the search function to select the device
3. Under "Software", download the ZIP file containing the collection of IODDs
4. Extract all files from the ZIP folder
5. Use the device ID to locate the IODD and save it

The IODD is now available for use with the IO-Link master's configuration tool. This can be used to configure and check the device.

Instead of the manufacturer's website, you can also use the address: <http://ioddfinder.io-link.com>.

Fabrication number (F-Nr)

Among other things, the fabrication number indicates the date of manufacture (year/calendar week).



Date of manufacture

The device's date of manufacture (year and calendar week) is part of the fabrication number. Digits 12 to 15 denote the year of manufacture (YY) and the calendar week (WW).

2 Identifying the device version

2.2 Order details

The following order details include the transmitter 707090 that belongs to the device series. Further information can be found in the joint data sheet 707090 or the associated operating manual 707090.

(1) Basic type		
707090	JUMO dTRANS T09 AS – Cable transmitter for temperature with analog output of 4 to 20 mA	
707091	JUMO dTRANS T09 DS – Cable transmitter for temperature with IO-Link interface	
(2) Configuration		
8	Default setting ^a	
9	Customer-specific setting	
(3) Measurement input^b		
1011	1× Pt100 in four-wire circuit	
1013	1× Pt1000 in four-wire circuit	
(4) Extra codes		
061	With UL approval	

^a In the JUMO dTRANS T09 AS version the output is scaled to 0 to 100 °C per default. In the JUMO dTRANS T09 DS version the output is not scalable (fixed setting at -50 to +260 °C).
⇒ For an overview of the default configuration, see "Parameter overview", Page 23.

^b If feature Pt100 is selected, the connection of a Pt1000 sensor is not possible. Likewise, if feature Pt1000 is selected, the connection of a Pt100 sensor is not possible.

	(1)		(2)		(3)		(4)
Order code		/		-		/	
Order example	707090	/	8	-	1011	/	061

2.3 Scope of delivery

Designation
1 cable transmitter in the version ordered
1 operating manual

2 Identifying the device version

2.4 Accessories

Designation		Part no.
Connecting cable (input side)	M12 connecting cable (PUR), 5-pole (shielded)	500 mm 1 500 m m
		00638312 00638313
Connecting cable (output side)	Connecting cable (PVC), with socket M12 × 1, 4-pole, 2000 mm	00404585
Cable socket M12 × 1 for self-assembly (output side)	straight, without connecting ca- ble, 5-pole	00419130
	angled, without connecting ca- ble, 5-pole	00419133

Designation
IO-Link master upon request
Device data (IODD) on www.jumo.de or on http://ioddfinder.io-link.com .

3 Mounting

The cable transmitter may only be installed, connected and started up by qualified and authorized personnel observing these operating instructions, the applicable standards, and the legal requirements (depending on the application).

If you experience difficulties during installation and startup, please contact the manufacturer.

The device can be installed in any position.



NOTE!

The cable transmitter is not suitable for safety-critical applications.



NOTE!

The cable transmitter is not suitable for installation and application in potentially explosive areas.



NOTE!

The cable transmitter and the connected temperature sensor must be connected to the potential equalization system of the plant via the process connection. Suitable shielded lines must also be used to ensure continuous shielding.

Mounting the cable transmitter

Insert the cable transmitter into the corresponding connecting cable and tighten it by hand.



NOTE!

Mount the device so that abrasion at the process connection is avoided.



NOTE!

When using the device with UL approval, the user must make sure that the accessory he uses is also approved for a UL application (e. g. cable with UL approval AVLV2/8 and/or cable with UL approval CYJV/7 or CYJV/8 or PVVA/7 or PVVA2/8, in each case approved for ambient temperatures > 90 °C).

4.1 Display and connection elements



- (1) Input
M12 plug connector (A-coded, socket)
- (2) Status LED
- (3) Output
M12 plug connector (A-coded, pin)

Status LED



NOTE!

The green status LED lights up continuously as soon as the device is supplied with power. When an IO-Link connection is established, the status LED flashes.

4 Electrical connection

4.2 Connection diagram

Terminal assignment		
Switch operation		
Voltage supply ^a DC 9.6 to 32 V	1 BN (brown) ^b 3 BU (blue)	L+ L-
Switching output 1	4 BK (black)	C/Q = OUT1
Switching output 2	2 WH (white)	I/Q = OUT2
IO-Link operation		
Voltage supply ^a DC 18 to 32 V	1 BN (brown) 3 BU (blue)	L+ L-
IO-Link	4 BK (black)	C/Q = IO-Link
Switching output 2	2 WH (white)	I/Q = OUT2

^a The auxiliary energy of the transmitter must meet SELV requirements. Optionally, an energy-limited electrical circuit according to DIN EN 61010-1 can be used.

^b The color coding is **only** valid for A-coded standard cables!

4.3 Connection examples

IO-Link operation with 1 switching output	Switch operation with 2 switching outputs
p-switching (PNP)	p-switching (PNP)
n-switching (NPN)	n-switching (NPN)

Color coding: connecting cable round plug M12 × 1	1 BN	Brown
	2 WH	White
	3 BU	Blue
	4 BK	Black

The color coding is **only** valid for A-coded standard cables!

Starting up the IO-Link master and configuration tool

If you are using a conventional IO-Link master, you must complete the following steps to configure the sensor.

1. Start up the hardware and software for the IO-Link master
2. Load the sensor's device description file (IODD)
 - a) Open the website www.jumo.de (change the language to English if necessary)
 - b) Use the search function to select the sensor
 - c) Under "Software", download the ZIP file containing the collection of IODDs
 - d) Extract all files from the ZIP folder
3. Start the configuration tool
4. Update the device catalog (import the IODD; localize using the "device ID" on the nameplate or the text file in the IODD collection)
5. Create a new project
6. Establish a connection
7. Configure, extract, monitor, etc., the sensor

Instead of the manufacturer's website, you can also use the address: <http://ioddfinder.io-link.com>.

Configuration tool (overview)

Depending on the configuration tool, the menu structure contains different areas. The typical structure is listed below:

- Identification and information
These areas show information on the manufacturer and device as well as general information.
- Parameters
This section is used to configure the device.
 - General parameters
 - Switching points ⇒ chapter 6.1 "Switching points", Page 14
 - Fine adjustment ⇒ chapter 6.2 "Fine adjustment", Page 18
 - Event settings ⇒ chapter 6.4 "Fault signaling", Page 21
 - Versions
 - Service information
- Monitoring
In this area process data can be extracted (snapshot).
- Diagnosis and events
These areas show diagnostic data and information about events.
- Process data
This area shows the current process data, which is extracted cyclically.

6 Functions



CAUTION!

Write operations to some R/W parameters result in them being saved to the EEPROM. This memory module has only a limited number of write cycles (approx. 100,000).

Frequent writing of certain parameters can therefore result in a memory error.

- ▶ Fast writing cycles should thus be avoided.

6.1 Switching points

Depending on the operating mode, the sensor has 1 or 2 switching outputs. It automatically detects the connection type and responds accordingly. Separate parameters are available for both switching outputs.

Operating mode	Output	Pin at the M12 connection
SIO mode (SIO = Standard IO)	Switching output 1	C/Q (OUT1)
	Switching output 2	I/Q (OUT2)
IO-Link mode	IO-Link communication	C/Q (IO-Link)
	Switching output 2	I/Q (OUT2)

Parameter

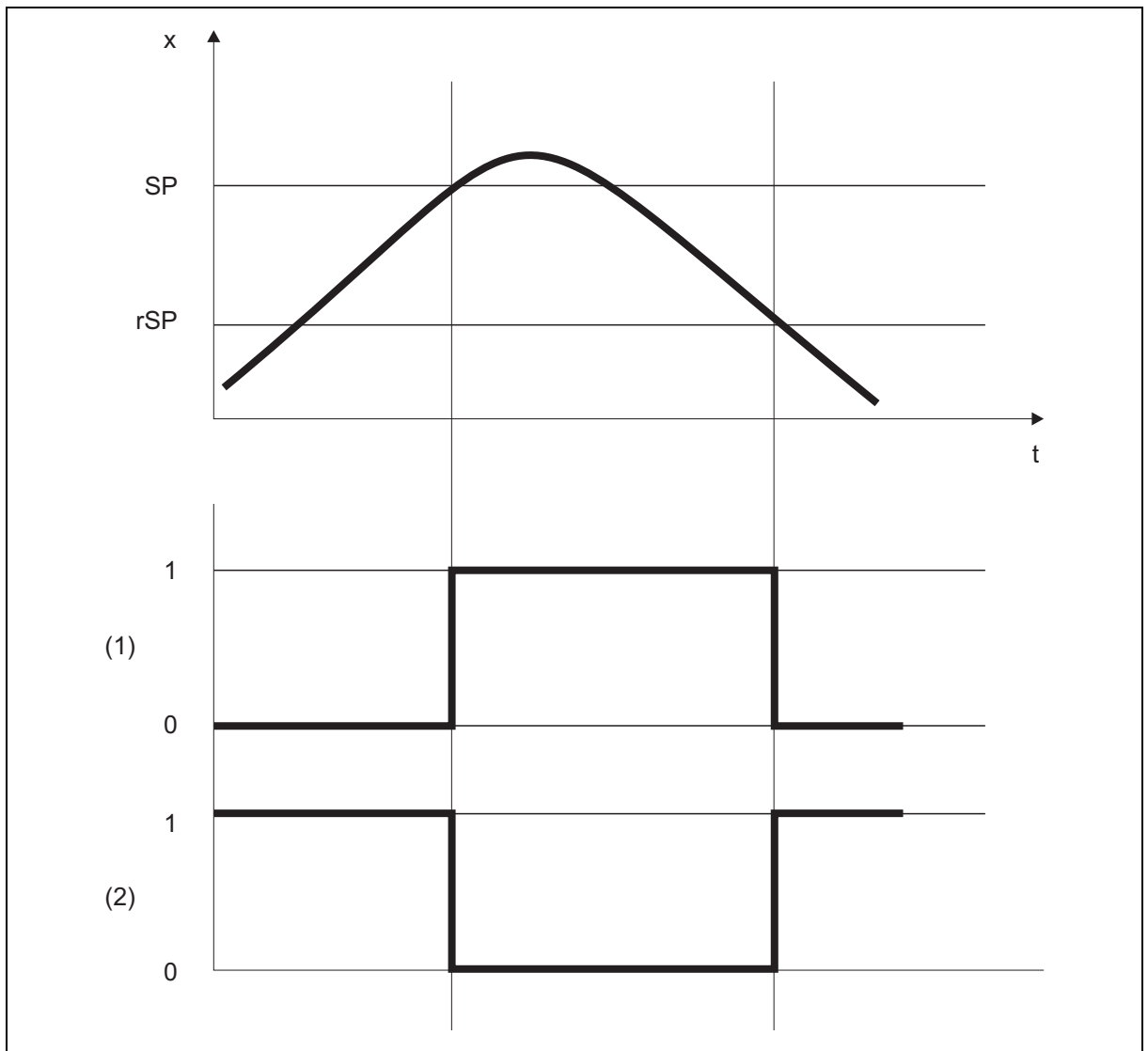
Parameter	Selection/settings	Description
Switching behavior	Inactive Hysteresis function, N/O Contact Hysteresis function, N/C Contact Window function, N/O Contact Window function, N/C Contact	When inactive is selected, the selected switching output is not activated.
Switching point (SP) or window high (FH)	-999 to 0 to +999	The selected switching output is only activated if $rSP < SP$ or $FL < FH$. ⇒Chapter 6.1.1 ⇒Chapter 6.1.2
Release point (rSP) or window low (FL)	-999 to 0 to +999	
Switch-on delay (VSP)	0 to 100 s	⇒Chapter 6.1.3
Switch-off delay (VrSP)	0 to 100 s	
Output driver mode	p-switching n-switching	⇒Chapter 4.3

6.1.1 Hysteresis function

The hysteresis function switches the output as soon as the switching point "SP" is reached. When the release point "rSP" is reached, the output switches again.

The hysteresis function distinguishes between N/C and N/O contacts.

Switching requirement: Switching point "SP" \geq Release point "rSP"



- x = Measured value
- t = Time
- SP = Switching point
- rSP = Release point
- (1) = N/O contact
- (2) = N/C contact

6 Functions

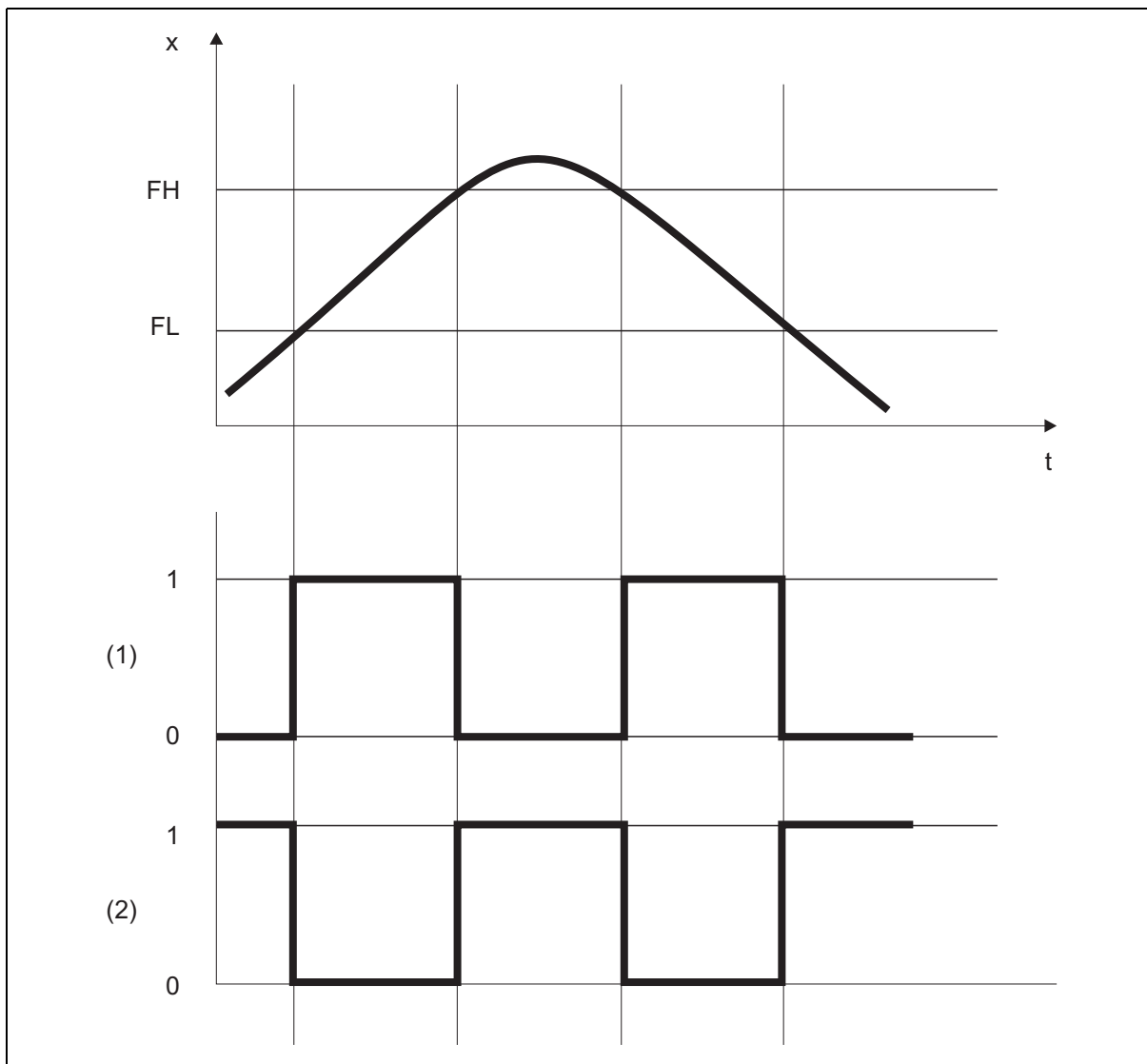
6.1.2 Window function

Under the window function, the window range is defined using the parameters window low "FL" (lower value) and window high "FH" (upper value). The output switches when the current measured value (x) is between the two limits $[(x > FL) \& (x < FH)]$.

The window function distinguishes between N/C and N/O contacts.

Requirement: Window high "FH" \geq Window low "FL"

The window high "FH" and window low "FL" switching points have a fixed symmetrical hysteresis of $\pm 0.25\%$ of the measuring range.

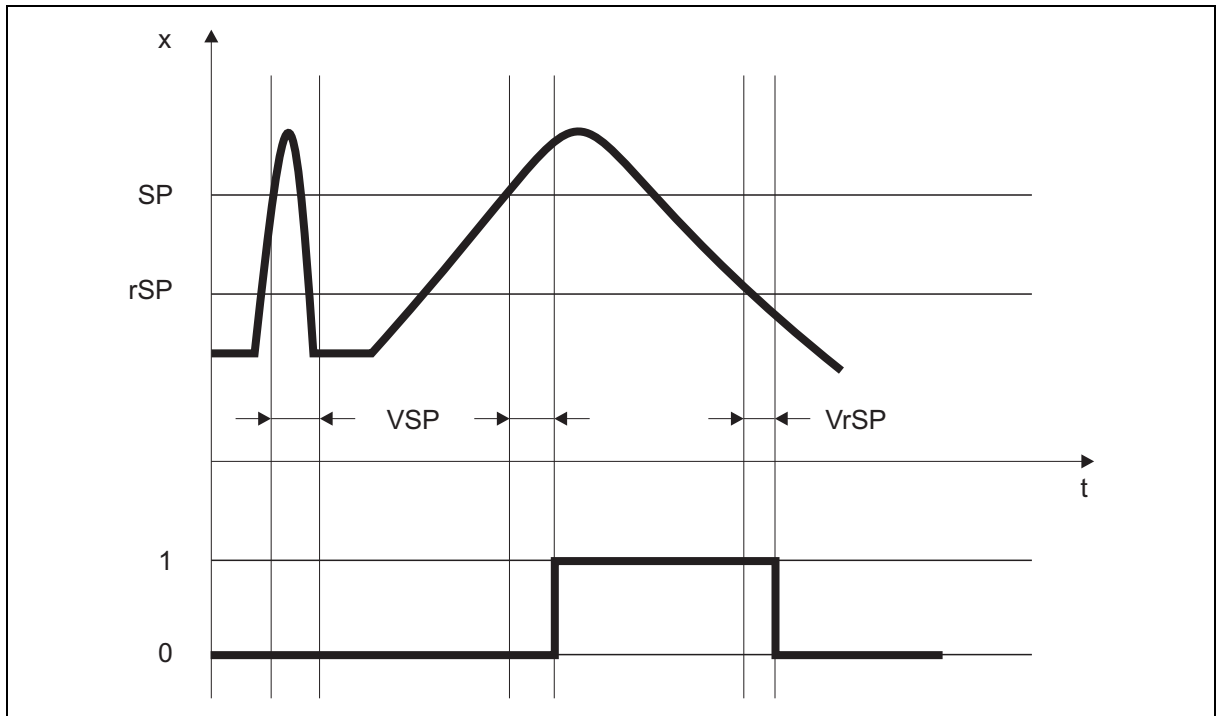


- x = Measured value
- t = Time
- FH = Window high
- FL = Window low
- (1) = N/O contact
- (2) = N/C contact

6.1.3 Switch-on delay/switch-off delay

The switch-on delay "VSP" and switch-off delay "VrSP" prevent switching of the output being triggered by peaks or drops in the measured values.

If the necessary measured value is no longer measured once the delay time has passed, the output is not switched.



- x = Measured value
- t = Time
- SP = Switching point
- rSP = Release point
- VSP = Switch-on delay
- $VrSP$ = Switch-off delay

6 Functions

6.2 Fine adjustment

You can use customer-specific fine adjustment to correct the measured values of the sensor. In contrast to offsetting, which is used to specify a constant correction value for the entire characteristic line, fine adjustment can also be used to change the gradient of the characteristic line.



NOTE!

This data is not stored in the parameter manager.

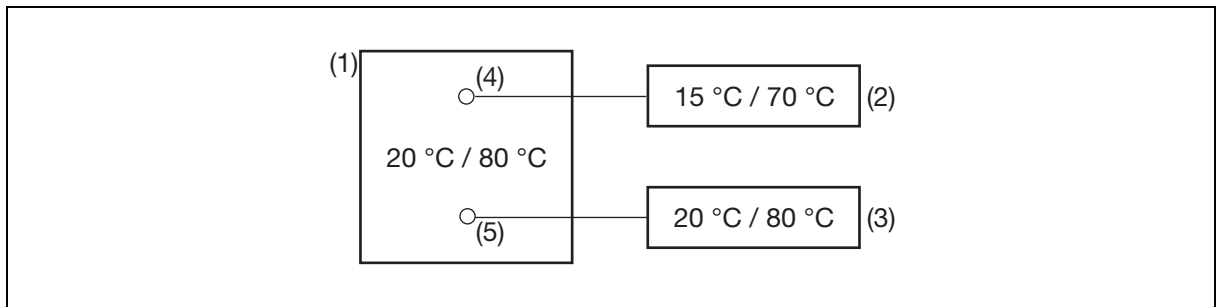
Parameter

Parameter	Selection/settings	Description
Active	No, Yes	Fine adjustment is only active if you select Yes
Actual start value	-999 to 0 to +999	Lower measured value
Target start value	-999 to 0 to +999	Lower reference value
Actual end value	-999 to 0 to +999	Upper measured value
Target end value	-999 to 0 to +999	Upper reference value

Example

The temperature inside a furnace is measured and displayed. Due to a deviation in the measurement, the sensor's measured value does not correspond to the actual value (reference measurement). The amount of deviation is different at the upper and lower measuring points, meaning an offset correction is not suitable.

- Active: Yes
- Actual start value: 15 °C (measured value)
- Target start value: 20 °C (reference measurement)
- Actual end value: 70 °C (measured value)
- Target end value: 80 °C (reference measurement)



- (1) Furnace
- (2) Measured values from the sensor
- (3) Reference values
- (4) Sensor
- (5) Reference measurement

Performing fine adjustment

- Determine the lower value (as low and constant as possible) with the reference measuring device.
Example: Set furnace temperature to 20 °C.
- Enter the measured value as the actual start value and the reference value as the target start value.
Example: Enter 15 and 20.
- Determine the upper value (as high and constant as possible) with the reference measuring device.
Example: Increase furnace temperature to 80 °C.
- Enter the measured value as the actual end value and the reference value as the target end value.
Example: Enter 70 and 80.

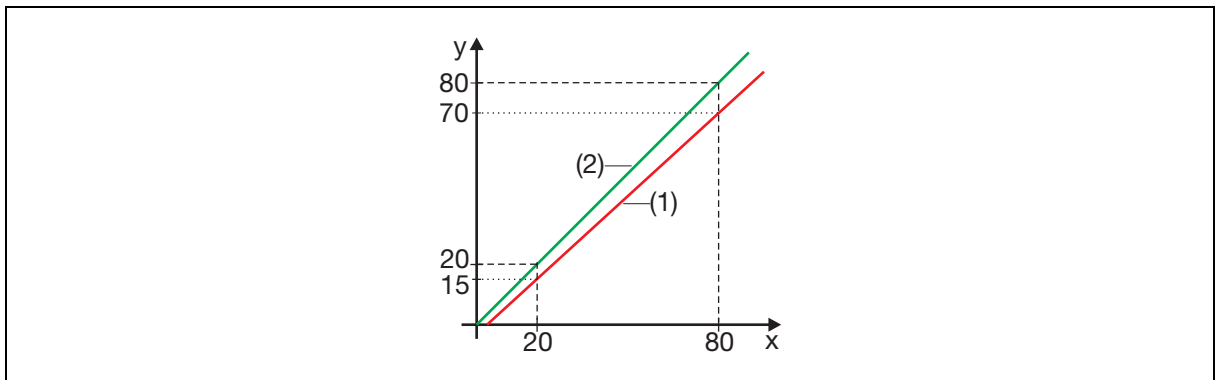


NOTE!

The actual start value and actual end value can also be selected with the teach function.
⇒ chapter 6.3 "Teach functions", Page 20

Characteristic line

The following diagram shows the changes in the characteristic line caused by the fine adjustment (point of intersection with the x axis as well as the gradient).



- y Measured value
x Reference value
(1) Characteristic line before fine adjustment
(2) Characteristic line after fine adjustment

Resetting the fine adjustment

To reverse the fine adjustment, the "Active" parameter must be set to "No".

6 Functions

6.3 Teach functions

The teach functions can be used to transfer certain commands to the sensor.

Teach functions in the area of "General parameters"

Teach function	Description
Reset to default settings	All parameters under "General parameters", "Switching points", "Fine adjustment" and "Event settings" are reset to the default settings. The parameters under "Service information" stay the same.

Teach functions in the area of "Fine adjustment"

Teach function	Description
Set actual start value	The current measured value is adopted as the actual start value.
Set actual end value	The current measured value is adopted as the actual end value.

Teach functions in the area of "Service information"

Teach function	Description
Reset all	All parameters under "Service information" are reset to the default settings.
Reset operating hours counter	The operating hours counter is reset to the default settings.
Reset drag indicator min.	The stored minimum value is reset to the default settings.
Reset drag indicator max.	The stored maximum value is reset to the default settings.



NOTE!

After executing a teach function, the data may have to be exported from the sensor again in certain circumstances.

6.4 Fault signaling

IO-Link offers a range of fault signaling options (device status, event codes, PDValid-Flag). Furthermore, malfunctions can also be signaled within the process data via the process value itself or the status of the process value.

Overview

Description	Signaling via process value in PDI ^a	Process value status in PDI (1 byte)	Device status	Event code (Standard event)	Event activation or deactivation possible	Event error type
No error	-	-	0 (device is working properly)	-	-	-
Process value invalid	Yes	Bit0 (Process data invalid)	4 (failure)	0x1000	Yes	Error
Overrange	Yes			0x8C20	Yes	Error
Underrange	Yes				Yes	Error
Error in configuration data	No	Bit1 (Parameter error)	4 (failure)	0x6320	No	Error
Error in calibration data	No	Bit2 (Device is defective)	4 (failure)	0x5000	Yes	Error
Device is defective (Probe break, probe short circuit)	Yes					
Undervoltage	No	-	2 (Outside the specification)	0x5111	No	Warning
Temperature error, overload	No	-	4 (failure)	0x4000	No	Error

^a PDI = Process Data Input

6 Functions

Device status and event codes

Various events can be activated or deactivated via configuration parameters.

PD-Valid Flag

If the device status is 4 (failure), the PDValid-Flag is set to zero (false). This means that all of the process data is invalid. In order to determine the precise cause, the process value or status bits can be evaluated.

Process value

The fault signaling is displayed as a floating-point value or integer value. The following statuses are defined:

Error	Error code for floating-point values (TFLOAT)	Error code for integer values (TINT32)
Measuring range underflow	1.0×10^{37}	2147483638
Measuring range overflow	2.0×10^{37}	2147483639
Not a valid input value	3.0×10^{37}	2147483640
Division by zero	4.0×10^{37}	2147483641
Mathematical error	5.0×10^{37}	2147483642
Probe short circuit	7.0×10^{37}	2147483644
Probe break	8.0×10^{37}	2147483645

Process value status

⇒ See chapter 7.1 "Process data", Page 23

7.1 Process data

The data is transferred in a cycle via the IO-Link interface to the IO-Link master (PDI = Process Data Input). The entire process data can be extracted via index 40 and subindex 0.

Designation	Data type	Value range	Default	Description
Temperature process value	TFLOAT or TINT32		0	The "Data format" configuration parameter can be used to switch between the data type TFLOAT and TINT32. ⇒Chapter 7.2
Temperature process value unit	TUINT8	0 = °C 1 = °F	°C	
Temperature process value status	TUINT8 (bit field)	Bit 0 = Process value invalid (overrange or underderrange) Bit 1 = Error in configuration data Bit 2 = Error in calibration data (device is defective)	0	In order to provide a simple way to identify errors, alongside IO-Link's standard troubleshooting functions, a status byte is included in the process data. This signals errors in the sensor and is easy to analyze in the higher-level system. Errors are entered on a bit by bit basis but can also be combined to contain several device errors. ⇒Chapter 6.4
Switching output	TUINT8 (bit field)	Bit 0 = Switching output 1 Bit 1 = Switching output 2	0	0 = Not switched 1 = Switched

7 Parameter overview

7.2 Configuration data

The configuration is stored in the parameter manager and is transferred via the IO-Link interface in an acyclic process.

General

Designation	Index	Subindex	Data type	Value range	Default	Access right ^a	Description
Data format	64	0	TENUM (1 byte)	0 = Floating point 1 = Integer	Floating point	RW	
Temperature process value unit	120	0	TENUM (1 byte)	0 = °C 1 = °F	°C	RW	
Temperature process value offset	121	0	TFLOAT	-999 to 999	0	RW	
Temperature filter time constant	122	0	TFLOAT	0 to 100 s	0	RW	
Standard command	2	0	Button	130 = Reset to default setting	-	WO	The default data is loaded.

^a RW = Read and write access
RO = Read-only access
WO = Write-only access

7 Parameter overview

Switching output 1 and 2

Designation	Index	Sub-index	Data type	Value range	Default	Access right	Description
Switching behavior	200 and 201	1	TENUM	0 = Inactive 1 = Hysteresis function N/O contact 2 = Hysteresis function N/C contact 3 = Window function N/O contact 4 = Window function N/C contact	Inactive	RW	Index 200 = Switching output 1 Index 201 = Switching output 2
Switching point/ Window high	200 and 201	2	TFLOAT	-999 to 999	0	RW	
Release point/ Window low	200 and 201	3	TFLOAT	-999 to 999	0	RW	
Switch on Delay	200 and 201	4	TFLOAT	0 to 100 s	0	RW	
Switch off Delay	200 and 201	5	TFLOAT	0 to 100 s	0	RW	
Output mode	200 and 201	6	TENUM (1 byte)	0 = p-switching 1 = n-switching	p-switching	RW	

Events

Designation	Index	Sub-index	Data type	Value range	Default	Access right	Description
Event settings	111	0	TUINT8 (bit field)	Bit 0 = Process data invalid Bit 1 = Process data overrange Bit 2 = Process data underrange Bit 3 = Device hardware error	0	RW	0 = Inactive 1 = Active

7 Parameter overview

Fine adjustment data

Designation	Index	Subindex	Data type	Value range	Default	Access right	Description
Active	220	0	TENUM (1 byte)	0 = No 1 = Yes	No	RW	
Actual start value	221	0	TFLOAT	-999 to 999	0	RW	
Actual end value	222	0	TFLOAT	-999 to 999	0	RW	
Target start value	223	0	TFLOAT	-999 to 999	0	RW	
Target end value	224	0	TFLOAT	-999 to 999	0	RW	
Standard command	2	0	Button	160 = Set actual start value	-	WO	
Standard command	2	0	Button	161 = Set actual end value	-	WO	



NOTE!

This data is not stored in the parameter manager and is transferred via the IO-Link interface in an acyclic process.

7.3 Service data

The service data is written to the EEPROM in a cyclical process (every 10 minutes) and can be reset via the teach functions.

Designation	Index	Subindex	Data type	Value range	Access right	Description
Operating hours counter	3000	0	TUINT32		RO	
Drag indicator temperature process value min.	3002	0	TFLOAT		RO	
Drag indicator temperature process value max.	3003	0	TFLOAT		RO	
Reset all	3100	0	Device command	1 = Reset	WO	Resets all drag indicators and the operating hours counter
Reset operating hours counter	3100	0	Device command	2 = Reset	WO	
Reset drag indicator temperature min.	3100	0	Device command	3 = Reset	WO	
Reset drag indicator temperature max.	3100	0	Device command	4 = Reset	WO	
VDN version	1000	0	TSTRING	12 byte	RO	
Bootloader version	1001	0	TSTRING	14 byte	RO	

8 Technical data

8.1 Input

RTD temperature probe	Pt100 (DIN EN 60751:2009 / IEC 60751:2008) in four-wire circuit or Pt1000 (DIN EN 60751:2009 / IEC 60751:2008) in four-wire circuit ^a		
Measuring range	-50 to +260 °C		
Sampling rate	160 ms		
Input filter	Digital filter 2nd order, filter constant can be set		
	Calibration accuracy of the electronic components	Temperature influence of the electronic components	Measuring current
Pt100	≤ ±0.08 % ^{b,c}	≤ 0.003 % pro K ^d	≤ 1 mA
Pt1000	≤ ±0.1 % ^{b,c}	≤ 0.0025 % pro K ^d	≤ 500 µA
Sensor line resistance	≤ 11 Ω per line		
Galvanic isolation	No galvanic isolation between sensor and output		

^a If feature Pt100 is selected, the connection of a Pt1000 sensor is not possible. Likewise, if feature Pt1000 is selected, the connection of a Pt100 sensor is not possible. See order details.

^b Information provided as a % relates to the measuring range of 310 K.

^c The tolerance of the temperature sensor must be added to ensure the measuring accuracy of the transmitter.

^d Deviation of the ambient temperature from the reference temperature (25 °C).

8.1.1 Measuring circuit monitoring

Process data invalid	IO-Link event configurable; appears in the process value as an error value
Ovrange	
Underrange	
Device is defective	

8.2 Output

Number	1 output in IO-Link operation (output signal according to IO-Link communication standard version 1.1, see section "Interface", Page 29) 2 outputs for switch operation (SIO mode; SIO = standard IO)
Switching functions configurable	Hysteresis function or window function Normally closed contact or normally open contact Output p-switching (PNP) or n-switching (NPN) Switch-on and switch-off delay
Switching current	≤100 mA per output
Voltage drop at switching transistor	≤ 2 V
Short-circuit proof	Yes (clocked)
Reverse polarity protected	Yes
Current limiting	Yes
Hysteresis	
For hysteresis function	Configurable
For window function	Fixed setting (symmetrical; ±0.25 % of the measuring range)
Switch-on, switch-off delay	0 to 100 s

8.3 Interface


Communication interface	IO-Link device V 1.1 (downward compatible to V 1.0)
Communication mode (data transfer rate)	COM3 (230.4 kBaud)
IO Device Description (IODD)	The IODD can be localized and downloaded on the JUMO website in the product area for this device or at www.io-link.com with the "IODDfinder".
Max. line length acc. to IO-Link standard	20 m
Min. cycle time	2 ms
Output mode	
Switching output type	Transistor switching output can be configured as NPN or PNP
Short-circuit proof	Yes (clocked)
Resistant to overload	Yes
Protected against polarity reversal	Yes
Ampacity of the switching outputs	100 mA in each case
Voltage drop of the switching outputs	Max. 2 V in each case

8 Technical data

8.4 Electrical data

Voltage supply In IO-Link operation In switch operation Nominal voltage	DC 18 to 32 V DC 9.6 to 32 V DC 24 V The transmitter is designed only for operation in SELV and PELV circuits in accordance with DIN EN 50178.
Current consumption In idle mode In IO-Link operation In switch operation	≤ 12 mA ≤ 20 mA ≤ 200 mA (with 2 switching outputs)
Electrical safety	Protection rating III according to DIN EN 61140
Intended use	Temperature measurement in industrial plants
Requirement	The auxiliary energy of the cable transmitter must meet SELV requirements. Furthermore, the device must be equipped with an electrical circuit that meets the requirements of EN 61010-1 with regard to "Limited-energy circuits".

8.5 General Information

Electrical connection (input side)	Machine connector M12 × 1, 4-pole, according to DIN EN 61076-2-101 (socket version with union nut)
Electrical connection (output side)	Machine connector M12 × 1, 4-pole, according to DIN EN 61076-2-101 (pin version)
Housing	Stainless steel
Protection type with mating connector	IP66, IP67, and IP69 according to DIN EN 60529
Installation position	Any
Weight	JUMO dTRANS T09 AS, type 707090 = ca. 35 g JUMO dTRANS T09 DS, type 707091 = ca. 43 g
Potential equalization	
Functional bonding conductor FB ^a	

^a The temperature probe must be connected to the plant's potential equalization system via the process connection. Suitable shielded lines must also be used to ensure continuous shielding.

8.6 Environmental influences

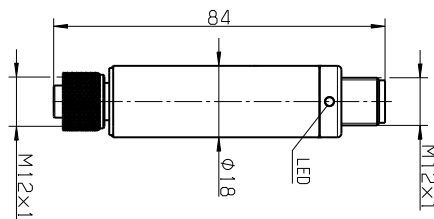
Transmitter

Ambient temperature	-40 to +85 °C
Storage temperature	-40 to +85 °C
Resistance to climatic conditions	
During operation	≤ 100 % relative humidity without condensation on device outer case
During storage	≤ 90 % relative humidity without condensation
Climate class	3K7 according to DIN EN 60721-3-3
Vibration strength	10 g at 10 to 2 000 Hz according to DIN EN 60068-2-6
Shock resistance	20 g for 11 ms according to DIN EN 60068-2-27 50 g for 1 ms according to DIN EN 60068-2-27
Calibration/reference conditions	DC 24 V at 25 °C ±5 °C (77 °F ±9 °F)
Electromagnetic compatibility (EMC)	DIN EN 61326
Interference emission	Class B ^a
Interference immunity	Industrial requirement

^a The product is suitable for industrial use as well as for households and small businesses.

8.7 Dimensions

Type 707091,
JUMO dTRANS T09 DS



Cable transmitter for temperature with IO-Link interface



* Figure with connection line (not included in scope of delivery, see accessories)

9 China RoHS

						
产品组别 Product group: 707091	产品中有害物质的名称及含量 China EEP Hazardous Substances Information					
部件名称 Component Name						
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
外壳 Housing (Gehäuse)	○	○	○	○	○	○
过程连接 Process connection (Prozessanschluss)	○	○	○	○	○	○
螺母 Nuts (Mutter)	○	○	○	○	○	○
螺栓 Screw (Schraube)	○	○	○	○	○	○
<p>本表格依据SJ/T 11364的规定编制。 This table is prepared in accordance with the provisions SJ/T 11364.</p> <p>○ : 表示该有害物质在该部件所有均质材料中的含量均在GB/T 26572规定的限量要求以下。 Indicate the hazardous substances in all homogeneous materials' for the part is below the limit of the GB/T 26572.</p> <p>× : 表示该有害物质至少在该部件的某一均质材料中的含量超出GB/T 26572规定的限量要求。 Indicate the hazardous substances in at least one homogeneous materials' of the part is exceeded the limit of the GB/T 26572.</p>						



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