

Your Global Automation Partner

TURCK

PT1000 | PT2000

Pressure Transmitter

IO-Link Parameters – IO-Link Version 1.1



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1 About this manual

This manual describes the parameterization of devices using IO-Link. The manual contains general information on IO-Link and a list of the available parameters.

1.1 Target groups

These instructions are aimed at qualified personal and must be carefully read by anyone mounting, commissioning, operating, maintaining, dismantling or disposing of the device.

1.2 Explanation of symbols used

The following symbols are used in these instructions:



DANGER

DANGER indicates a dangerous situation with high risk of death or severe injury if not avoided.



WARNING

WARNING indicates a dangerous situation with medium risk of death or severe injury if not avoided.



CAUTION

CAUTION indicates a dangerous situation of medium risk which may result in minor or moderate injury if not avoided.



NOTICE

NOTICE indicates a situation which may lead to property damage if not avoided.



NOTE

NOTE indicates tips, recommendations and useful information on specific actions and facts. The notes simplify your work and help you to avoid additional work.



CALL TO ACTION

This symbol denotes actions that the user must carry out.



RESULTS OF ACTION

This symbol denotes relevant results of actions.

1.3 Other documents

Besides this document, the following material can be found on the Internet at www.turck.com:

- Data sheet
- Quick Start Guide
- Instructions for use

1.4 Feedback about these instructions

We make every effort to ensure that these instructions are as informative and as clear as possible. If you have any suggestions for improving the design or if some information is missing in the document, please send your suggestions to techdoc@turck.com.

2 Notes on the product

2.1 Product identification

PT	10R	-	10	03	-	IOL	-	H1141	-	D830
----	-----	---	----	----	---	-----	---	-------	---	------

PT	10R	Pressure range	-	10	03	Mechanical version	-	IOL	Output mode	-
----	-----	----------------	---	----	----	--------------------	---	-----	-------------	---

Pressure range

bar relative

1VR -1...0 bar

1V -1...1 bar

1.5V -1...1.5 bar

2.5V -1...2.5 bar

5V -1...5 bar

9V -1...9 bar

15V -1...15 bar

24V -1...24 bar

1R 0...1 bar

1.6R 0...1.6 bar

2.5R 0...2.5 bar

4R 0...4 bar

6R 0...6 bar

10R 0...10 bar

16R 0...16 bar

25R 0...25 bar

40R 0...40 bar

60R 0...60 bar

100R 0...100 bar

160R 0...160 bar

250R 0...250 bar

400R 0...400 bar

600R 0...600 bar

1000R 0...1000 bar

psi relative

15PSIVG -15.0 psi

15PSIV -15...15 psi

45PSIV -15...45 psi

85PSIV -15...85 psi

130PSIV -15...130 psi

185PSIV -15...185 psi

285PSIV -15...285 psi

485PSIV -15...485 psi

15PSIG 0...15 psi

20PSIG 0...20 psi

30PSIG 0...30 psi

60PSIG 0...60 psi

100PSIG 0...100 psi

150PSIG 0...150 psi

200PSIG 0...200 psi

300PSIG 0...300 psi

500PSIG 0...500 psi

750PSIG 0...750 psi

1000PSIG 0...1000 psi

2000PSIG 0...2000 psi

3000PSIG 0...3000 psi

5000PSIG 0...5000 psi

7500PSIG 0...7500 psi

14500PSIG 0...14500 psi

bar absolute

1 A 0...1 bar a

1.6 A 0...1.6 bar a

2.5 A 0...2.5 bar a

4 A 0...4 bar a

6 A 0...6 bar a

10 A 0...10 bar a

16 A 0...16 bar a

psi absolute

15PSIA 0...15 psi a

20PSIA 0...20 psi a

30PSIA 0...30 psi a

60PSIA 0...60 psi a

100PSIA 0...100 psi a

150PSIA 0...150 psi a

200PSIA 0...200 psi a

Process connection

Male thread

13 G1/8", DIN 3852 design E

40 G1/4" manometer connection

04 G1/4", DIN 3852 design E⁽¹⁾

43 G1/2", front sealing

08 G1/2", manometer connection⁽³⁾

14 1/8"-27 NPT⁽³⁾

03 1/4"-18 NPT⁽³⁾

05 7/16"-20 UNF straight⁽³⁾

41 M10 x 1, back sealing

20 M20 x 1.5

10 R1/4", acc. to EN 10226

47 Male thread G1/4" PVDF thread with front sealing (≤ 16 bar)

48 Male thread G1/2" PVDF thread with front sealing (≤ 16 bar)

46 Male thread G1/8" front sealing

30 Male thread G 1/2", back sealing DIN 3852

Female thread

01 G1/4"⁽⁴⁾

17 1/2"-14 NPT

18 7/16"-20 UNF

44 7/16"-20 UNF with Schrader nipple

Tube connection

42 Cutting tube - (Tube: Ø 6/4, Steel 1.4301/AlSi 304)

Design/Functional Principle

10 Cylinder, ceramic measuring cell⁽¹⁾

20 Cylinder, metal measuring cell⁽²⁾

Output mode

IOL IO-Link and two switching outputs

H1141	Electrical connections	/	D830	Special design
-------	------------------------	---	------	----------------

Electrical connections

M12 x 1 connector

H1141 M12 x 1

Standard

O For oxygen applications

D830 EPDM sealing

X Peak pressure aperture

Functional principle

PT Pressure transmitter

Note

⁽¹⁾ Pressure range [-1...60 bar], [-30...750 psi]

⁽²⁾ Pressure range [-1...1000 bar], [-30...14500 psi]

⁽³⁾ Preferred types

2.2 Turck service

Turck supports you with your projects, from initial analysis to the commissioning of your application. The Turck product database under www.turck.com contains software tools for programming, configuration or commissioning, data sheets and CAD files in numerous export formats.

The contact details of Turck subsidiaries worldwide can be found on p. [▶ 18].

3 Software-supported IO-Link parameterization

The ports of the IO-Link master can be configured in IO-Link mode (IOL) or in standard IO mode (SIO).

If a port is configured in SIO mode, the IO-Link master behaves at this port like a normal digital input. The connected IO-Link device transfers its conventional switching output to the IO-Link master – there is no communication between the device and the master.

If a port is configured in IOL mode, the IO-Link master tries to wake up the connected IO-Link device via the "Wake-up Request". If the master receives a response from the IO-Link device, both devices start to communicate with each other. The communication parameters are exchanged first of all; the cyclic data exchange of the process data (process data objects) then starts.

When IO-Link communication (IOL mode) is active, both a cyclic and acyclic communication service is available.

There are two ways of setting the parameters via IO-Link:

- via on-request data objects (e.g. close to the PLC via the IO-Link function block)
- via tool-based engineering using FDT/DTM (e.g. PACTware with the use of DTM or the IODD or the web demo and Turck configuration tool)

Device parameters (on-request data objects)

Device parameters are exchanged acyclically and on request of the IO-Link master. The IO-Link master always sends a request to the device first, then the device responds. This applies when the data is written into the device and also when data is read from the device. On-request data objects (ORDO) enable parameter values to be written into the device (write) or device states to be read from the device (read).

IO-Link configuration in PROFINET

SIDI (Simple IO-Link Device Integration) enables IO-Link devices in PROFINET applications to be configured directly in the programming environment (e.g. TIA Portal). The Turck IO-Link devices are integrated in the GSDML file of the TBEN, TBPN and FEN20 series IO-Link masters and can be set in the programming environment as submodules of a modular I/O system. The user has access here to all device properties and parameters.

4 IO-Link parameters

4.1 General parameters

Parameter	Content
Vendor ID	317 (0x13D)
Device ID	98320 (0x18010)
IO-Link version	1.1
Bitrate	COM2 (38.4 kbit/s)
Minimum cycle time	3.3 ms
SIO supported	True
M-Sequence Capability	ISDU supported
Block Parameter	True
Data Storage	True
ProfileCharacteristic	

4.2 Process input data

Name	Byte.Bit-offset	Bit length	Subindex access supported	Data type	Value	Description
Measurement value	0.0	16	False	Integer		
Scale	2.0	8	False	Integer		
Switching output 1	3.0	1	False	Boolean	False/true	
Switching output 2	3.1	1	False	Boolean	False/true	
Overpressure	3.2	1	False	Boolean	False/true	
Underpressure	3.3	1	False	Boolean	False/true	
Short circuit	3.4	1	False	Boolean	False/true	
Voltage out of Specification	3.5	1	False	Boolean	False/true	
Temperature critical	3.6	1	False	Boolean	False/true	
Device fault	3.7	1	False	Boolean	False/true	

4.3 Standard parameters

Name	Index (dec.)	Index (hex.)	Sub-index (dec.)	Sub-index (hex.)	Subindex access supported	Access	Byte. Bit-offset	Bit length	Data type	Value	Default	Description
Min Cycle Time	0	0x0	3	0x3	True	Read	2.0	8	UInteger			
IO-Link Version ID	0	0x0	5	0x5	True	Read	4.0	8	UInteger		17	
Vendor ID 1	0	0x0	8	0x8	True	Read	7.0	8	UInteger			
Vendor ID 2	0	0x0	9	0x9	True	Read	8.0	8	UInteger			
Device ID 1	0	0x0	10	0xA	True	Read	9.0	8	UInteger			
Device ID 2	0	0x0	11	0xB	True	Read	10.0	8	UInteger			
Device ID 3	0	0x0	12	0xC	True	Read	11.0	8	UInteger			
Standard Command	2	0x2	0	0x0	True	Write	0.0	8	UInteger	0...		System command
										166		Device reset
										128		Application reset
										129		Restore factory settings
										130		Erase minimum value
										160		Erase maximum value
										161		Correct zero point
										162		Erase overload counter
										163		Teach SP1
165		Teach SP2										
Parameter (write) Access Lock	12	0xC	1	0x1	False	Read/write	0.0	1	Boolean	false/true		Device access locks
Data Storage Lock	12	0xC	2	0x2	False	Read/write	0.1	1	Boolean	false/true		Device access locks
Local Parameterization Lock	12	0xC	3	0x3	False	Read/write	0.2	1	Boolean	false/true		Device access locks
Local User Interface Lock	12	0xC	4	0x4	False	Read/write	0.3	1	Boolean	false/true		Device access locks
Vendor Name	16	0x10	0	0x0	True	Read	0.0	512	String		Turck	Vendor name
Vendor Text	17	0x11	0	0x0	True	Read	0.0	512	String		www.turck.com	Additional manufacturer information

Name	Index (dec.)	Index (hex.)	Sub-index (dec.)	Sub-index (hex.)	Subindex access supported	Access	Byte. Bit-offset	Bit length	Data type	Value	Default	Description
Product Name	18	0x12	0	0x0	True	Read	0.0	512	String			Manufacturer's device designation
Product ID	19	0x13	0	0x0	True	Read	0.0	512	String			ID
Product Text	20	0x14	0	0x0	True	Read	0.0	512	String			Device category
Serial Number	21	0x15	0	0x0	True	Read	0.0	128	String			Device serial number
Hardware Version	22	0x16	0	0x0	True	Read	0.0	512	String			Hardware revision
Firmware Version	23	0x17	0	0x0	True	Read	0.0	512	String			Firmware revision
Application Specific Tag	24	0x18	0	0x0	True	Read/write	0.0	32	String		***	Any user generated content
Error Count	32	0x20	0	0x0	True	Read	0.0	16	UInteger		0	
Device Status	36	0x24	0	0x0	True	Read	0.0	8	UInteger	0...255		
												0 Device is OK
												1 Maintenance required
												2 Out of specification
												3 Functional check
												4 Failure
Detailed Device Status	37	0x25	0	0x0	False	Read	0.0	10	Array			
Process Data Input	40	0x28	0	0x0	True	Read	0.0	32	Process-Data InUnion			

4.4 Parameters

Name	Index (dec.)	Index (hex.)	Sub-index (dec.)	Sub-index (hex.)	Subindex access supported	Access	Byte. Bit offset	Bit length	Data type	Value	Default	Description
Function Tag	25	0x19	0	0x0	True	Read/write	0.0	256	String	NaN ... NaN	***	
Location Tag	26	0x1A	0	0x0	True	Read/write	0.0	256	String	NaN ... NaN	***	
Globally Unique Identifier	70	0x46	0	0x0	True	Read	0.0	288	String	NaN ... NaN		
Operating Hours counter	75	0x4B	0	0x0	True	Read	0.0	32	UInteger	NaN ... NaN	0	
Temperature Over-run	76	0x4C	1	0x1	False	Read/write	1.0	1	Boolean	False/ true	True	
Device Hardware Fault	76	0x4C	2	0x2	False	Read/write	0.1	1	Boolean	False/ true	True	
Supply Voltage Under-run	76	0x4C	3	0x3	False	Read/write	0.2	1	Boolean	False/ true	True	
Short Circuit	76	0x4C	4	0x4	False	Read/write	0.3	1	Boolean	False/ true	True	
Measurement Range Overrun	76	0x4C	5	0x5	False	Read/write	0.4	1	Boolean	False/ true	True	
Over Pressure	76	0x4C	6	0x6	False	Read/write	0.5	1	Boolean	False/ true	False	
Under Pressure	76	0x4C	7	0x7	False	Read/write	0.6	1	Boolean	False/ true	False	
Min Value Recorded	76	0x4C	8	0x8	False	Read/write	0.7	1	Boolean	False/ true	False	
Max Value Recorded	76	0x4C	9	0x9	False	Read/write	0.0	1	Boolean	False/ true	False	
Overload counter	77	0x4D	0	0x0	True	Read	0.0	32	UInteger	NaN ... NaN	0	
Error behavior	86	0x56	0	0x0	True	Read/write	0.0	8	UInteger	0...3	3	
										0		Tri-State
										1		NPN/PNP: open/ PushPull: high
										2		NPN/PNP: closed/ PushPull: low
3		Last valid state										

Name	Index (dec.)	Index (hex.)	Sub-index (dec.)	Sub-index (hex.)	Subindex access supported	Access	Byte. Bit offset	Bit length	Data type	Value	Default	Description
Error behavior	87	0x57	0	0x0	True	Read/write	0.0	8	UInteger	0...3	3	
										0	Tri-state	
										1	NPN/PNP: open/ PushPull: high	
										2	NPN/PNP: closed/ PushPull: low	
									3	Last valid state		
Filter time constant	90	0x5A	0	0x0	True	Read/write	0.0	16	UInteger	NaN ... NaN	0	
Offset correction	104	0x68	0	0x0	True	Read/write	0.0	16	Integer	NaN ... NaN	0	
Maximum value memory	105	0x69	0	0x0	True	Read	0.0	16	Integer	NaN ... NaN		
Minimum value memory	106	0x6A	0	0x0	True	Read	0.0	16	Integer	NaN ... NaN		
Teach-In Select	108	0x6C	0	0x0	True	Read/write	0.0	4	UInteger	0...2	0	
										0	Default channel	
										1	SSC1	
										2	SSC2	
State	109	0x6D	1	0x1	False	Read	0.0	4	UInteger	0...7		
										0	Idle	
										1	SP1 success	
										2	SP2 success	
										3	SP12 success	
										4	Wait command	
										5	Busy	
7	Error											
Flag SP1 TP1	109	0x6D	2	0x2	False	Read	0.4	1	Boolean	False/ true		
Flag SP1 TP2	109	0x6D	3	0x3	False	Read	0.5	1	Boolean	False/ true		
Flag SP2 TP1	109	0x6D	4	0x4	False	Read	0.6	1	Boolean	False/ true		
Flag SP2 TP2	109	0x6D	5	0x5	False	Read	0.7	1	Boolean	False/ true		

Name	Index (dec.)	Index (hex.)	Sub-index (dec.)	Sub-index (hex.)	Subindex access supported	Access	Byte. Bit offset	Bit length	Data type	Value	Default	Description
Setpoint 1	110	0x6E	1	0x1	True	Read/write	0.0	16	Integer	NaN ... NaN	5000	
Setpoint 2	110	0x6E	2	0x2	True	Read/write	2.0	16	Integer	NaN ... NaN	2500	
Logic	111	0x6F	1	0x1	True	Read/write	0.0	8	UInteger	0...1 0 1	0	High active Low active
Mode	111	0x6F	2	0x2	True	Read/write	1.0	8	UInteger	0...3 0 2 3	3	Deactivated Window Two point
Hysteresis	111	0x6F	3	0x3	True	Read/write	2.0	16	UInteger	0...0 0	0	
Setpoint 1	112	0x70	1	0x1	True	Read/write	0.0	16	Integer	NaN ... NaN	6000	
Setpoint 2	112	0x70	2	0x2	True	Read/write	2.0	16	Integer	NaN ... NaN	3000	
Logic	113	0x71	1	0x1	True	Read/write	0.0	8	UInteger	0...1 0 1	0	High active Low active
Mode	113	0x71	2	0x2	True	Read/write	1.0	8	UInteger	0...3 0 2 3	3	Deactivated Window Two point
Hysteresis	113	0x71	3	0x3	True	Read/write	2.0	16	UInteger	0...0 0	0	
Function	114	0x72	0	0x0	True	Read/write	0.0	8	UInteger	0...2 0 1 2	0	PNP NPN Push pull
Function	115	0x73	0	0x0	True	Read/write	0.0	8	UInteger	0...2 0 1 2	0	PNP NPN Push pull
Delay Setpoint 1	116	0x74	0	0x0	True	Read/write	0.0	16	UInteger	NaN ... NaN	0	
Delay Setpoint 1	117	0x75	0	0x0	True	Read/write	0.0	16	UInteger	NaN ... NaN	0	

Name	Index (dec.)	Index (hex.)	Sub-index (dec.)	Sub-index (hex.)	Subindex access supported	Access	Byte. Bit offset	Bit length	Data type	Value	Default	Description
Delay Setpoint 2	118	0x76	0	0x0	True	Read/write	0.0	16	UInteger	NaN ... NaN	0	
Delay Setpoint 2	119	0x77	0	0x0	True	Read/write	0.0	16	UInteger	NaN ... NaN	0	
Lower value measurement range	16512	0x4080	1	0x1	True	Read	0.0	32	Integer	NaN ... NaN	0	
Upper value measurement range	16512	0x4080	2	0x2	True	Read	4.0	32	Integer	NaN ... NaN	10000	
Unit code	16512	0x4080	3	0x3	True	Read	8.0	16	UInteger	NaN ... NaN	1130	
Scale	16512	0x4080	4	0x4	True	Read	10.0	8	Integer	NaN ... NaN	3	

4.5 Events

Code	Type	Name	Description
16912	Warning	Device temperature over-run	Clear source of heat
20480	Error	Device hardware fault	Device exchange
20753	Warning	Primary supply voltage under-run	Check tolerance
30480	Error	Short circuit	Check installation
35872	Error	Measurement range over-run	Check application
36002	Warning	Over pressure	
36003	Warning	Under pressure	
36006	Notification	New maximum recorded	
36007	Notification	New minimum recorded	

5 Turck subsidiaries – contact information

Germany	Hans Turck GmbH & Co. KG Witzlebenstraße 7, 45472 Mülheim an der Ruhr www.turck.de
Australia	Turck Australia Pty Ltd Building 4, 19-25 Duerdin Street, Notting Hill, 3168 Victoria www.turck.com.au
Belgium	TURCK MULTIPROX Lion d'Orweg 12, B-9300 Aalst www.multiprox.be
Brazil	Turck do Brasil Automação Ltda. Rua Anjo Custódio Nr. 42, Jardim Anália Franco, CEP 03358-040 São Paulo www.turck.com.br
China	Turck (Tianjin) Sensor Co. Ltd. 18,4th Xinghuazhi Road, Xiqing Economic Development Area, 300381 Tianjin www.turck.com.cn
France	TURCK BANNER S.A.S. 11 rue de Courtalin Bat C, Magny Le Hongre, F-77703 MARNE LA VALLEE Cedex 4 www.turckbanner.fr
Great Britain	TURCK BANNER LIMITED Blenheim House, Hurricane Way, GB-SS11 8YT Wickford, Essex www.turckbanner.co.uk
India	TURCK India Automation Pvt. Ltd. 401-403 Aurum Avenue, Survey. No 109 /4, Near Cummins Complex, Baner-Balewadi Link Rd., 411045 Pune - Maharashtra www.turck.co.in
Italy	TURCK BANNER S.R.L. Via San Domenico 5, IT-20008 Bareggio (MI) www.turckbanner.it
Japan	TURCK Japan Corporation Syuuhou Bldg. 6F, 2-13-12, Kanda-Sudacho, Chiyoda-ku, 101-0041 Tokyo www.turck.jp
Canada	Turck Canada Inc. 140 Duffield Drive, CDN-Markham, Ontario L6G 1B5 www.turck.ca
Korea	Turck Korea Co, Ltd. B-509 Gwangmyeong Technopark, 60 Haan-ro, Gwangmyeong-si, 14322 Gyeonggi-Do www.turck.kr
Malaysia	Turck Banner Malaysia Sdn Bhd Unit A-23A-08, Tower A, Pinnacle Petaling Jaya, Jalan Utara C, 46200 Petaling Jaya Selangor www.turckbanner.my

Mexico	Turck Comercial, S. de RL de CV Blvd. Campestre No. 100, Parque Industrial SERVER, C.P. 25350 Arteaga, Coahuila www.turck.com.mx
Netherlands	Turck B. V. Ruiterlaan 7, NL-8019 BN Zwolle www.turck.nl
Austria	Turck GmbH Graumanngasse 7/A5-1, A-1150 Wien www.turck.at
Poland	TURCK sp.z.o.o. Wroclawska 115, PL-45-836 Opole www.turck.pl
Romania	Turck Automation Romania SRL Str. Siriului nr. 6-8, Sector 1, RO-014354 Bucuresti www.turck.ro
Russian Federation	TURCK RUS OOO 2-nd Pryadilnaya Street, 1, 105037 Moscow www.turck.ru
Sweden	Turck Sweden Office Fabriksstråket 9, 433 76 Jonsered www.turck.se
Singapore	TURCK BANNER Singapore Pte. Ltd. 25 International Business Park, #04-75/77 (West Wing) German Centre, 609916 Singapore www.turckbanner.sg
South Africa	Turck Banner (Pty) Ltd Boeing Road East, Bedfordview, ZA-2007 Johannesburg www.turckbanner.co.za
Czech Republic	TURCK s.r.o. Na Brne 2065, CZ-500 06 Hradec Králové www.turck.cz
Turkey	Turck Otomasyon Ticaret Limited Sirketi Inönü mah. Kayisdagi c., Yesil Konak Evleri No: 178, A Blok D:4, 34755 Kadiköy/ Istanbul www.turck.com.tr
Hungary	TURCK Hungary kft. Árpád fejedelem útja 26-28., Óbuda Gate, 2. em., H-1023 Budapest www.turck.hu
USA	Turck Inc. 3000 Campus Drive, USA-MN 55441 Minneapolis www.turck.us

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