

EN

# Parameter and Process Data

**PT5x**



 **IO-Link**

## IO-Link

**PT5x-#.#####.####.#####.####**

**PT5xH-#.#####.####.#####.####**

### Device ID

Product	Hex	Decimal
PT5x	0x0401	1025

IO-Link Version: V 1.1  
 Data Storage: Yes  
 Block Parameter: Yes  
 Min. Cycle Time: 14 ms  
 SIO-Mode: Yes  
 COM-Mode: Yes

### Process Data (Length: 48 Bit)

Subindex	Bit Offset	Name	Data type	Bit length	Range
1	0	Switch Output 1	Boolean	1 bit	0 = false/off 1 = true/on
2	1	Switch Output 2	Boolean	1 bit	0 = false/off 1 = true/on
3	2	Sensor Error	Boolean	1 bit	0 = false/off 1 = true/on
4	3	Configuration Error	Boolean	1 bit	0 = false/off 1 = true/on
5	4	Out of Range +	Boolean	1 bit	0 = false/off 1 = true/on
6	5	Out of Range -	Boolean	1 bit	0 = false/off 1 = true/on
7	6	Reserved	-	10 bit	
1	16	Temperature value	Float	32 bit	

**Octet 0**

Bit Offset	47	46	45	44	43	42	41	40
	Temperature value							

**Octet 1**

Bit Offset	39	38	37	36	35	34	33	32
	Temperature value							

**Octet 2**

Bit Offset	31	30	29	28	27	26	25	24
	Temperature value							

**Octet 3**

Bit Offset	23	22	21	20	19	18	17	16
	Temperature value							

**Octet 4**

Bit Offset	15	14	13	12	11	10	9	8
	Reserved							

**Octet 5**

Bit Offset	7	6	5	4	3	2	1	0
	Reserved		Out of Range -	Out of Range +	Configuration Error	Sensor Error	SW2	SW1

Name	Index	Subindex	Data type	Access rights	Byte length	Value range	Description
<b>System commands</b>							
System Command	2	0	UInt8	W	1		Command Code Definition Public: 0x00 – 0x9F Vendor specific: 0xA0 – 0xFF - 65 (41h): Teach SP1 single value - 66 (42h): Teach SP2 single value - 126 (7Eh): Locator start - 127 (7Fh): Locator stop - 128 (80h): Device reset - 129 (81h): Application reset - 130 (82h): Restore factory settings - 131 (83h): Back-to-box
<b>Baumer commands</b>							
Baumer Command	1000	0	UInt8	W	1		- 21 (15h): Reset Custom Calibration
<b>General information of sensors</b>							
Device locks	12	0	UInt16	R/W	2		0x0004 = Local parameterization 0x0008 = Local user interface
Profile Characteristics, DeviceProfileID	13	1	UInt16	R	2		0x0018, Measuring and Switching Sensor, floating point, 1 channel
Profile Characteristics, FunctionClasses	13	2	UInt16	R	2		0x4000, ID, Identification and Diagnosis
Profile Characteristics, FunctionClasses	13	3	UInt16	R	2		0x8000, Device Identification
Profile Characteristics, FunctionClasses	13	4	UInt16	R	2		0x8002, PDV, Process Data Variable (Process Data Mapping)
Profile Characteristics, FunctionClasses	13	5	UInt16	R	2		0x8003, Device Diagnosis
Profile Characteristics, FunctionClasses	13	6	UInt16	R	2		0x800D, Multiple Adjustable Switching Signal Channel
Profile Characteristics, FunctionClasses	13	7	UInt16	R	2		0x800E, Measurement Data Channel, (floating point)
Profile Characteristics, FunctionClasses	13	8	UInt16	R	2		0x8010, Adjustable Switching Sensor, 2 channel
Profile Characteristics, FunctionClasses	13	9	UInt16	R	2		0x8100, Extended Identification
Profile Characteristics, FunctionClasses	13	10	UInt16	R	2		0x8101, Locator
PDInputDescriptor	14	1	UInt24	R	3		01 02 00
PDInputDescriptor	14	2	UInt24	R	3		01 04 02
PDInputDescriptor	14	3	UInt24	R	3		03 10 06
PDInputDescriptor	14	4	UInt24	R	3		04 32 16
Vendor Name	16	0	String	R	18	ASCII	Baumer
Vendor Text	17	0	String	R	14	ASCII	Passion for Sensors
Product Name	18	0	String	R	32	ASCII	Baumer Article PP56
Product ID	19	0	String	R	16	ASCII	Baumer Article Family (IODD match) PP5x
Product Text	20	0	String	R	64	ASCII	Temperature sensor
Serial number	21	0	String	R	16	ASCII	Serial Number Eg: K46227X04014251
Hardware Revision	22	0	String	R	16	ASCII	Hardware Revision Eg. 00.00.01
Software Revision	23	0	String	R	16	ASCII	Software Revision Eg. 00.00.04
Application Specific Tag	24	0	String	R/W	16	ASCII	The application specific tag can be used by the end user to store data that is specific to the end users application. The value does not influence the sensor operation.

Function Specific Tag	25	0	String	R/W	32	ASCII	The function specific tag can be used by the end user to store data that is specific to the end users application. The value does not influence the sensor operation.						
Location Tag	26	0	String	R/W	32	ASCII	The location tag can be used by the end user to store data that is specific to the end users application. The value does not influence the sensor operation.						
Status / Diagnosis	36	1	Uint8	R	1	0-0xFF	0x00 = OK. 0x01 = Maintenance-Required 0x02 = Out-of-Specification 0x03 = Functional-Check 0x04 = Failure 0x05-0xFF = Reserved						
Detailed Device Status[0]	37	0	Uint8	R	3		0x5010 COMPONENT MALFUNCTION						
Detailed Device Status[1]			Uint16										
Detailed Device Status[2]			Uint8										
Detailed Device Status[3]			Uint16										
Detailed Device Status[4]			Uint8										
Detailed Device Status[5]			Uint16										
Detailed Device Status[6]			Uint8										
Detailed Device Status[7]			Uint16										
Part Number			86					1	String	R	16	ASCII	Part article number / Material number
User Date, Day			104					4	Uint8	R/W	1	1-31	A user write and readable day tag
User Date, Month	104	5	Uint8	R/W	1	1-12	A user write and readable month tag						
User Date, Year	104	6	Uint16	R/W	2	1900-2100	A user write and readable year tag						
Production Date, Day	118	4	Uint8	R	1	1-31	A readable production day tag						
Production Date, Month	118	5	Uint8	R	1	1-12	A readable production month tag						
Production Date, Year	118	6	Uint16	R	2	1900-2100	A readable production year tag						
<b>Sensor values</b>													
Temperature unit	74	1	Uint16	R/W	2		13 = Celsius 14 = Fahrenheit 29 = Kelvin						
Damping input	121	32	Uint32	R/W	4	0-60000 ms	Damping for the input						
Process value, Temperature	216	1	Float32	R	4		Current measured temperature						
Process Value, Temperature, Min	216	4	Float32	R	4		Lifetime minimum temperature						
Process Value, Temperature, Max	216	5	Float32	R	4		Lifetime maximum temperature						
Device Temperature, Current	208	1	Float32	R	4		Current temperature inside the device						
Device Temperature, Min	208	4	Float32	R	4		Lifetime minimum device temperature						
Device Temperature, Max	208	5	Float32	R	4		Lifetime maximum device temperature						
RTD Sensor type	234	1	Uint8	R	1		The type of sensor element on the device 1 = Pt A3850						
RTD Base value	234	2	Float32	R	4		The resistance of the sensor element						
Wiring Type	235	1	Uint8	R	1		The wiring to the sensor element 1 = 2 Wire 2 = 3 Wire 3 = 4 Wire						
MDC1 Lower Specification Limit	16512	1	Float32	R	4		Lowest value at which accuracy for the device is guaranteed.						
MDC1 Upper Specification Limit	16512	2	Float32	R	4		Highest value at which accuracy for the device is guaranteed.						
MDC1 Unit Code	16512	3	Uint16	R	2		1000 = Kelvin 1001 = Celsius 1002 = Fahrenheit						
MDC1 Scale	16512	4	Uint8	R	1		0 = No scale						

Analog output (4-20 mA) functions							
Temperature at 4mA	202	2	Float32	R/W	4	-200 - 600 °C/°F/K	Temperature corresponding to 4mA output current
Temperature at 20mA	202	4	Float32	R/W	4	-200 - 600 °C/°F/K	Temperature corresponding to 20mA output current
Lower current limit	202	7	Uint32	R/W	4	3800-22500 mA	Lower truncation current, when input derived current is below this limit.
Upper current limit	202	9	Uint32	R/W	4	3800-22500 mA	Upper truncation current, when input derived current is above this limit.
Error current	116	3	Uint16	R/W	2	3500-23000 mA	Output current during alarm, e.g. sensor error
Damping 4-20mA output	121	22	Uint32	R/W	4	0-60000 ms	Damping for the analog output
Switch 1 functions							
Switch 1 SP1	60	1	Float32	R/W	4	-200 - 1000 °C/°F/K	Setpoint 1 for switch 1
Switch 1 SP2	60	2	Float32	R/W	4	-200 - 1000 °C/°F/K	Setpoint 2 for switch 1
Switch 1 Logic	61	1	Uint8	R/W	1		Switch output state in active switch range 0 = High-Active 1 = Low-Active
Switch 1 Mode	61	2	Uint8	R/W	1		Mode for switching 0 = deactivated 1 = Single point 2 = Window 3 = Two point
Switch 1 Hysteresis	61	3	Float32	R/W	4	0 - 1000 °C/°F/K	Hysteresis for switch setpoints
Switch 1 Circuit	78	1	Uint8	R/W	1		Switch output hardware drive mode 0 = OFF. 1 = Push-Pull. 2 = PNP 3 = NPN
Switch 1 Binary Signal Function	78	2	Uint16	R/W	2		Signal source for the switch function 256 (0100h) = SSC1 state
Switch 1 Overlay Function	78	5	Uint16	R/W	2		Switch output overwrite state during alarm, e.g. sensor error. 0 = No overwrite 1 = Output High 2 = Output Low 3 = Output Floating (High Impedance)
Switch 1 Damping	121	2	Uint32	R/W	4	0-60000 ms	Damping for switch output
Switch 2 functions							
Switch 2 SP1	62	1	Float32	R/W	4	-200 - 1000 °C/°F/K	Setpoint 1 for switch 2
Switch 2 SP2	62	2	Float32	R/W	4	-200 - 1000 °C/°F/K	Setpoint 2 for switch 2
Switch 2 Logic	63	1	Uint8	R/W	1		Switch output state in active switch range 0 = High-Active 1 = Low-Active
Switch 2 Mode	63	2	Uint8	R/W	1		Mode for switching 0 = deactivated 1 = Single point 2 = Window 3 = Two point
Switch 2 Hysteresis	63	3	Float32	R/W	4	0 - 1000 °C/°F/K	Hysteresis for switch setpoints
Switch 2 Circuit	78	11	Uint8	R/W	1		Switch output hardware drive mode 0 = OFF. 1 = Push-Pull. 2 = PNP 3 = NPN 4 = IOOUT
Switch 2 Binary Signal Function	78	12	Uint16	R/W	2		Signal source for the switch function 512 (0200h) = SSC2 state

Switch 2 Overlay Function	78	15	Uint16	R/W	2		Switch output overwrite state during alarm, e.g. sensor error. 0 = No overwrite 1 = Output High 2 = Output Low 3 = Output Floating (High Impedance)
Switch 2 Damping	121	12	Uint32	R/W	4	0-60000 ms	Damping for switch output
<b>Teach functions</b>							
Teach Select	58	1	Uint8	R/W	1	1-2	Switch Channel to perform teach on 1 = SSC1.1 2 = SSC1.2
Teach Result	59	1	Uint8	R	1		Bit 0-3 - Teach state xxxx0000b = Idle xxxx0001b = SP1 success xxxx0010b = SP2 success xxxx0011b = SP1 and SP2 success xxxx0101b = Busy xxxx0111b = Error Bit 4-7 - Teach status xx00xxxxb = SP1 not succeeded xx11xxxxb = SP1 succeeded 00xxxxxxb = SP2 not succeeded 11xxxxxxb = SP2 succeeded
<b>Display functions</b>							
Display Orientation	1016	1	Uint8	R/W	1		Orientation for display text 0 = Normal orientation 18 = 180° rotated
Max. Of Decimals	1016	3	Uint8	R/W	1	0-2	Max trailing digits limit. Display value is dynamic, and can max show 5 digits at large screen including the sign.
Backlight Color	1017	1	Uint16	R/W	2		Background color for main screen 0 = None 28 = Green 224 = Red 255 = White
Backlight Intensity	1017	2	Uint8	R/W	1	10-100%	Backlight intensity
Passkey Enable	1018	1	Uint8	R/W	1		Passkey activation when accessing menu 0 = Disable 1 = Enable
Passkey	1018	2	Uint32	R/W	4	0-9999	Passkey when accessing menu, if enabled (index 1018.1)
Display Language	1019	1	Uint16	R/W	2		25966 = English 25701 = German 26226 = French 25697 = Custom
Display Layout	1019	2	Uint8	R/W	1		Layout for main screen 18 = Value (large) + details 19 = Value (large)
Display Menu Timeout	1019	3	Uint16	R/W	2	10-65535s	Display main page return timeout
Warnings Enable	1020	1	Uint8	R/W	1		Activation of warning indications 0 = Disable 1 = Enable
Warning Low Limit	1020	2	Float32	R/W	4	-200 - 1000 °C/°F/K	Lower value of warning range
Warning High Limit	1020	3	Float32	R/W	4	-200 - 1000 °C/°F/K	Upper value of warning range
Low Warning Indication	1020	4	Uint8	R/W	1		Warning mode for exceeded lower limit 0 = Value 1 = Info 2 = Error Message 3 = User Message
High Warning Indication	1020	5	Uint8	R/W	1		Warning mode for exceeded upper limit 0 = Value 1 = Info

							2 = Error Message 3 = User Message
Low Warning Color	1020	6	Uint16	R/W	2		Backlight color for exceeded lower limit 0 = None 28 = Green 224 = Red 255 = White 284 = Green flashing 480 = Red flashing 511 = White flashing
High Warning Color	1020	7	Uint16	R/W	2		Backlight color for exceeded upper limit 0 = None 28 = Green 224 = Red 255 = White 284 = Green flashing 480 = Red flashing 511 = White flashing
Error Low Limit	1022	2	Float32	R/W	4	-200 - 1000 °C/°F/K	Lower value of error range
Error High Limit	1022	3	Float32	R/W	4	-200 - 1000 °C/°F/K	Upper value of error range
Low Error Indication	1022	4	Uint8	R/W	1		Error mode for exceeded lower limit 0 = Value 1 = Info 2 = Error Message 3 = User Message
High Error Indication	1022	5	Uint8	R/W	1		Error mode for exceeded upper limit 0 = Value 1 = Info 2 = Error Message 3 = User Message
Low Error Color	1022	6	Uint16	R/W	2		Backlight color for exceeded lower limit 0 = None 28 = Green 224 = Red 255 = White 284 = Green flashing 480 = Red flashing 511 = White flashing
High Error Color	1022	7	Uint16	R/W	2		Backlight color for exceeded upper limit 0 = None 28 = Green 224 = Red 255 = White 284 = Green flashing 480 = Red flashing 511 = White flashing
Low Limit Message	1023	1	String	R/W	16	ASCII	User message used when index 1020.4 or 1022.4 = 3
High Limit Message	1023	2	String	R/W	16	ASCII	User message used when index 1020.5 or 1022.5 = 3
<b>Calibration functions</b>							
Calibration Mode Selection	400	1	Uint8	R/W	1		0 = Disable 1 = 1 Point (Offset) 2 = 2 Point (Slope) 3 = 3 Point (polynom)
Calibration Point 1	401	1	Float32	R/W	4	-200 - 600 °C/°F/K	Target value at calibration point 1 Applies when index 400.1 = 1, 2 and 3
Calibration Point 2	401	2	Float32	R/W	4	-200 - 600 °C/°F/K	Target value at calibration point 2 Applies when index 400.1 = 2 and 3
Calibration Point 3	401	3	Float32	R/W	4	-200 - 600 °C/°F/K	Target value at calibration point 3 Applies when index 400.1 = 3
Measured Value At Point 1	402	1	Float32	R/W	4	-200 - 600 °C/°F/K	Value measured by the device at calibration point 1 Applies when index 400.1 = 1, 2 and 3



Measured Value At Point 2	402	2	Float32	R/W	4	-200 - 600 °C/°F/K	Value measured by the device at calibration point 2 Applies when index 400.1 = 2 and 3
Measured Value At Point 3	402	3	Float32	R/W	4	-200 - 600 °C/°F/K	Value measured by the device at calibration point 3 Applies when index 400.1 = 3
<b>Simulation functions</b>							
Current Output Simulation	248	2	Uint8	R/W	1		Overwrites current output, when active Set off at power up
							0 = Off
							3 = Simulation Value (index 248.5)
							30 = Lower Limit (index 202.7)
							31 = Upper Limit (index 202.9)
33 = Device Error (index 116.3)							
Current Output Simulation Value	248	5	Uint32	R/W	4	3500-23000 mA	Simulation current for index 248.2 = 3
Temperature Input Simulation	248	12	Uint8	R/W	1		Overwrites measured temperature, when active Set off at power up
							0 = Off
							3 = Simulation Value (index 248.13)
Temperature Input Simulation Value	248	13	Float32	R/W	4	-10000 - 10000 °C/°F/K	Simulation value for index 248.12 = 3
<b>Diagnostics Parameters</b>							
Uptime	211	1	Uint32	R	4		Time since power up
Total uptime	211	3	Uint32	R	4		Uptime across lifetime
Bootcycles	224	2	Uint32	R	4		Number of times the device has been rebooted across lifetime