

Operating Manual

Pressure Sensor P42



Note



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Please read these installation and operating instructions carefully. All instructions in this manual must be followed exactly to ensure proper operation of the unit.

If you have any questions regarding the product, installation or commissioning, please contact Anderson-Negele Support:

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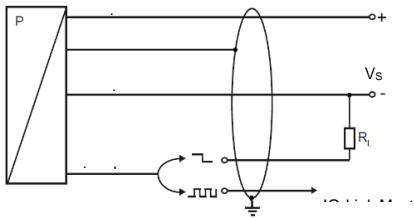



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1. Device

<p>P 42 Pressure Transmitter</p> <p>pressure ranges from 0 ... 0.2 bar up to 0 ... 40 bar</p> <p>various process connections</p>		
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Device ID (dec)	Device ID (hex)	Input	Pressure
2057	00809	0 ... 0.2 bar	gauge
2089	00829	0 ... 0.4 bar	gauge
2153	00869	0 ... 1 bar	gauge
2185	00889	0 ... 2 bar	gauge
2217	008A9	0 ... 4 bar	gauge
2281	008E9	0 ... 10 bar	gauge
2409	00969	0 ... 40 bar	gauge
41	00029	0 ... 0.4 bar	absolute
105	00069	0 ... 1 bar	absolute
137	00089	0 ... 2 bar	absolute
169	000A9	0 ... 4 bar	absolute
233	000E9	0 ... 10 bar	absolute
361	00169	0 ... 40 bar	absolute
2569	00A09	-1 ... 0.2 bar	compound
2601	00A29	-1 ... 0.4 bar	compound
2665	00A69	-1 ... 1 bar	compound
2697	00A89	-1 ... 2 bar	compound
2729	00AA9	-1 ... 4 bar	compound
2793	00AE9	-1 ... 10 bar	compound
2921	00B69	-1 ... 40 bar	compound

2. Modes

2.1 SIO mode

In this mode the transmitter operates like a normal pressure transmitter with standard output signal. The digital output is always on Pin 4 of M12 connector.

2.2 IO-Link mode

The pressure transmitter switches to the IO-Link communication mode, when it operates under an IO-Link master. IO-Link communication is only possible over Pin 4 of M12 connector plug.



3. Communication

Vendor ID:	0x0472 1138d
Bit rate:	COM2
Minimum cycle time:	5 msec
SIO mode supported:	yes
Block parameterization:	yes
Data storage:	yes
Supported profiles:	Smart Sensor Profile V1.0 Device Identification Process Data Variable

4. Parameter overview

Parameter	Index	Type
Device Access Locks	12	UIntegerT (16 Bit)
Vendor name	16	StringT (64 Byte)
Vendor text	17	StringT (64 Byte)
Product name	18	StringT (64 Byte)
Product ID	19	StringT (64 Byte)
Product text	20	StringT (64 Byte)
Serial number	21	StringT (16 Byte)
Hardware version	22	StringT (64 Byte)
Firmware version	23	StringT (64 Byte)
Application specific tag	24	StringT (32 Byte)
Device status	36	UIntegerT (8 Bit)
Detailed device status	37	OctetStringT (30 Byte)
Process data input	40	RecordT (16 Bit)
Set point	60	UInteger (16 Bit)
Set point mode	61	UInteger (8 or 16 Bit)
Output configuration	147	UIntegerT (8 Bit)
Set point delay on	208	UInteger (16 Bit)
Set point delay off	209	UInteger (16 Bit)
Pressure unit	212	UIntegerT (8 Bit)
Minimum pressure	213	UInteger (16 Bit)
Maximum pressure	214	UInteger (16 Bit)



5. System commands

System command information:

Address	Type	Declaration
index 2, subindex 0	UInteger (8 Bit)	WriteOnly

System commands	Text	Description
1	upload start	start block parameter upload
2	upload end	stop block parameter upload
3	download start	start block parameter download
4	download end	stop block parameter download
5	store	finalize block parameterization and start data storage
6	break	cancel block parameterization
128	device reset	same effect as power up device
130	restore factory settings	restore factory settings
131	reset min/max	reset minimum and maximum values with actual pressure value
160	set zero	pressure deviation up to $\pm 3\%$ of nominal pressure is set to zero

6. Identification

Parameter	Index	Sub-index	Type	Declaration	Factory setting
Vendor name	16	0	StringT (64 Byte)	ReadOnly	Negele Messtechnik GmbH
Vendor text	17	0	StringT (64 Byte)	ReadOnly	www.anderson-negele.com
Product name	18	0	StringT (64 Byte)	ReadOnly	P42
Product ID	19	0	StringT (64 Byte)	ReadOnly	P42
Product text	20	0	StringT (64 Byte)	ReadOnly	IO-Link Pressure Transmitter
Serial number	21	0	StringT (16 Byte)	ReadOnly	
Hardware version	22	0	StringT (64 Byte)	ReadOnly	V1.2
Firmware version	23	0	StringT (64 Byte)	ReadOnly	n011
Application specific tag	24	0	StringT (32 Byte)	ReadWrite	this is an App Specific Tag



7. Observation

Process data input	RecordT (16 Bit)	Description
pressure	IntegerT (16 Bit)	actual pressure

The process data length of the sensor is 16 bit. The switching state of output signal (BCD1) as well as the current measured value are transmitted. The 14 bit of the measured value are scaled according to the measuring range.

Bit 15	Bit 14 ... 2	Bit 1	Bit 0
Signed bit	measured value	0	BCD1 / output 1

Parameter	Index	Sub-index	Type	Declaration	Description
Pressure	40	3	Integer (14 Byte)	ReadOnly	measured value (range according to the following table)

Value range:

Pressure range	Min. value	Max. value	Unit [bar] multiplier	Unit [mbar] multiplier
0 ... 0.2 bar	-250 d	2250 d	* 0.0001	* 0.1
0 ... 0.4 bar	-500 d	4500 d	* 0.0001	* 0.1
0 ... 1 bar	-125 d	1125 d	* 0.001	* 1
0 ... 2 bar	-250 d	2250 d	* 0.001	* 1
0 ... 4 bar	-500 d	4500 d	* 0.001	* 1
0 ... 7 bar	-875 d	7875 d	* 0.001	* 1
0 ... 10 bar	-125 d	1125 d	* 0.01	* 10
0 ... 20 bar	-250 d	2250 d	* 0.01	* 10
0 ... 40 bar	-500 d	4500 d	* 0.01	* 10
-1 ... 0.2 bar	-1150 d	350 d	* 0.001	* 1
-1 ... 0.4 bar	-1175 d	575 d	* 0.001	* 1
-1 ... 1 bar	-1250 d	1250 d	* 0.001	* 1
-1 ... 2 bar	-1375 d	2375 d	* 0.001	* 1
-1 ... 4 bar	-1625 d	4625 d	* 0.001	* 1
-1 ... 7 bar	-2000 d	8000 d	* 0.001	* 1
-1 ... 10 bar	-237 d	1137 d	* 0.01	* 10
-1 ... 20 bar	-362 d	2262 d	* 0.01	* 10
-1 ... 40 bar	-612 d	4512 d	* 0.01	* 10

Parameter	Index	Sub-index	Type	Declaration	Description
State output signal	40	1	Boolean	ReadOnly	indicates state of output signal 0: inactive 1: active



8. Parameter

8.1. Output configuration

Parameter	Index	Sub-index	Type	Declaration	Description	Factory setting
Output configuration	147	0	UIntegerT (8 Bit)	ReadWrite	0: PNP 1: NPN	0

8.2. Pressure unit

Parameter	Index	Sub-index	Type	Declaration	Description	Factory setting
Pressure unit	212	0	IntegerT (8 Bit)	ReadWrite	configuration of pressure unit 0: [bar] 1: [mbar] 2: [psi] 3: [MPa]	0

8.3. Set point

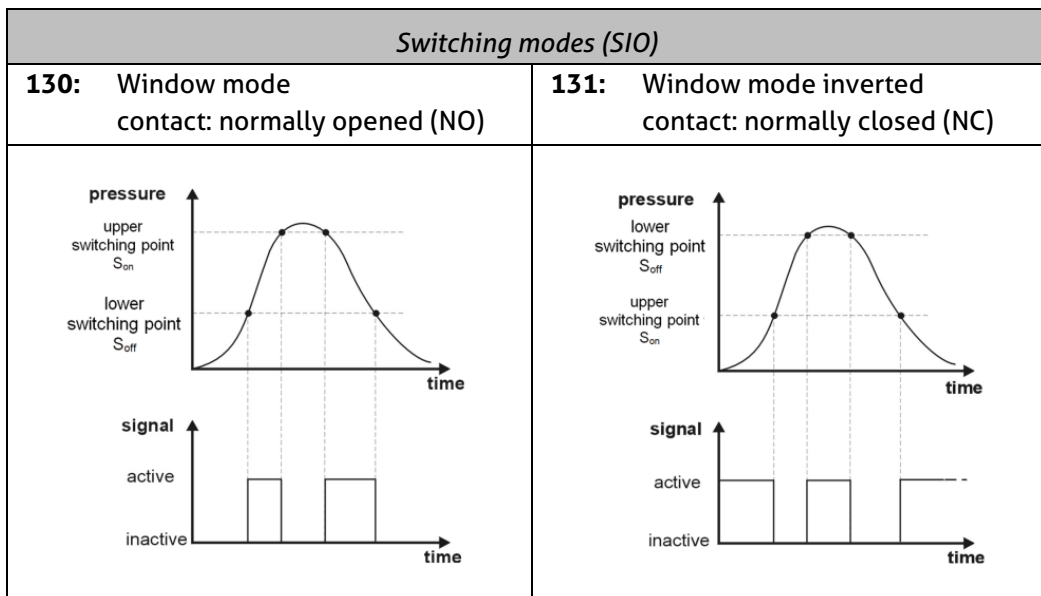
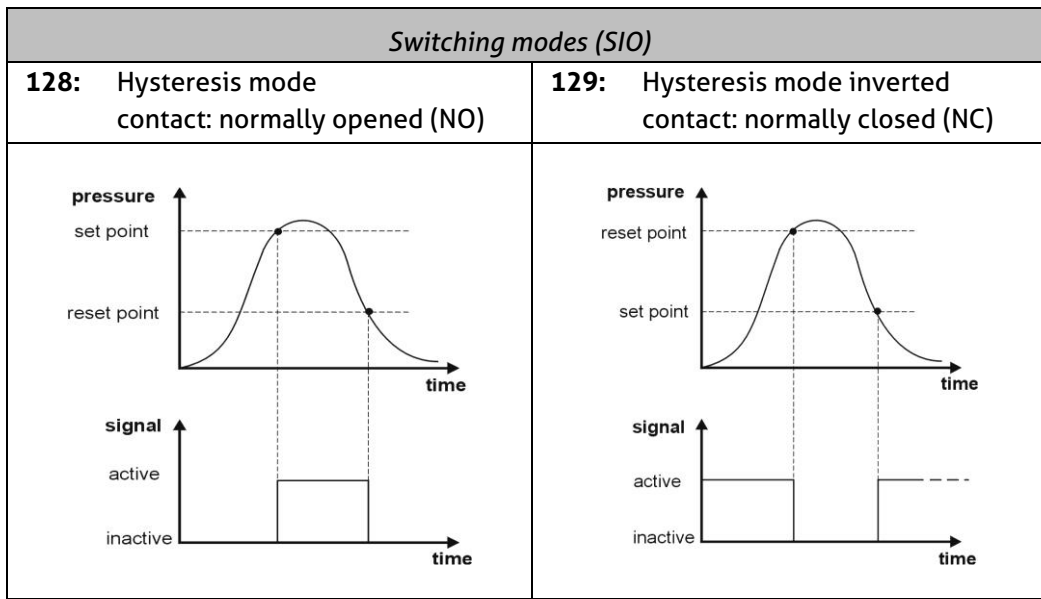
Parameter	Index	Sub-index	Type	Declaration	Description	Factory setting
Set point 1	60	1	Integer (16 Bit)	ReadWrite	configuration of 1 st set point	850 ¹
Set point 2	60	2	Integer (16 Bit)	ReadWrite	configuration of 2 nd set point	750 ¹
Delay set point on	208	0	UInteger (16 Bit)	ReadWrite	configuration of delay time for activation output signal (SIO) range: 0 ... 500 (0...50 sec) e.g. 15 (15 x 0.1 sec = 1.5 sec)	0
Delay set point off	209	0	UInteger (16 Bit)	ReadWrite	configuration of delay time for deactivation output signal (SIO) range: 0 ... 500 (0...50 sec) e.g. 20 (20 x 0.1 sec = 2 sec)	0

¹ range according to table on page 6



8.4. Output logic

Parameter	Index	Sub-index	Type	Declaration	Description	Factory setting
Output logic	61	2	UInteger (8 Bit)	ReadWrite	configuration of general behaviour of output signal setting: 128 up to 131 (according to following tables)	128





8.5. Minimum pressure

Parameter	Index	Sub-index	Type	Declaration	Description	Factory setting
Minimum pressure	213	0	Integer (16 Bit)	ReadWrite	this shows the minimum pressure during operation	-

8.6. Maximum pressure

Parameter	Index	Sub-index	Type	Declaration	Description	Factory setting
Maximum pressure	214	0	Integer (16 Bit)	ReadWrite	this shows the maximum pressure during operation	-

8.7. Setup

Parameter	Index	Sub-index	Type	Declaration	Description	Factory setting
Device access lock	12	0	UInteger (16 Bit)	ReadWrite	configuration of various lock of device 0: unlocked 1 up to 11: locked (see following table)	0

Setting	IO-Link	data storage	parametrization	user interface
1	locked			
2		locked		
3	locked	locked		
4			locked	
5	locked		locked	
6		locked	locked	
7	locked	locked	locked	
8				locked
9	locked			locked
10		locked		locked
11	locked	locked		locked



9. Diagnosis

Parameter	Index	Sub-index	Type	Declaration	Description	Factory setting
Device status	36	0	UIntegerT (8 Bit)	ReadOnly	0: device is OK 2: process value out of limit -10 ... 110 % FSO 4: sensor module error	0
Detailed device status	37	0	Octet StringT (30 Byte)	ReadOnly	Indicates the 10 latest subsequent events that occurred. One event is coded in 3-byte array.	0, 0, 0

10.Events

Code	Device status	Process data quality	Class	Name	Description
0x0000 0d	0	valid	-	no malfunction	no malfunction
0x1000 4096d	4	invalid	error	general malfunction	error
0x8C10 35856d	2	valid	warning	process variable range overrun	process data uncertain
0x8C30 35888d	2	valid	warning	process variable range underrun	process data uncertain



11. Error types

Code	Name	Description
0x8000 32768d	device application error (no detail)	service has been refused by the device application and no detailed information of the incident is available
0x8011 32785d	index not available	access occurs to a not existing index
0x8012 32786d	subindex not available	access occurs to a not existing subindex
0x8023 32803d	access denied	write access on read-only parameter
0x8030 32816d	parameter value out of range	written parameter value is outside its permitted value range
0x8031 32817d	parameter value to high	written parameter is above allowed limit
0x8032 32818d	parameter value to low	written parameter is below allowed limit
0x8033 32819d	parameter length overrun	written parameter length is above its predefined length
0x8034 32820d	parameter length under-run	written parameter length is below its predefined length
0x8035 32821d	function not available	written command is not supported by the device application
0x8041 32833d	inconsistent parameter set	parameter inconsistencies were found at the end of block parameter transfer, device plausibility check failed



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