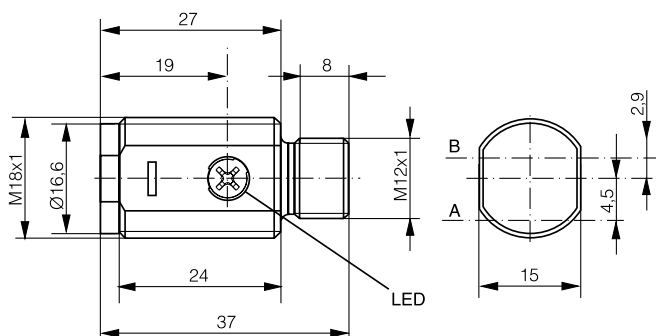
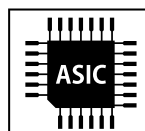


1000 mm

- ✓ M18 short housing
- ✓ IO-Link
- ✓ Immunity to mutual interferences



A: emitter axis B: receiver axis

OPTICAL DATA		INTERFACE	
Sensing distance	110% $S_d$	Output on pin 4	SIO Selectable / IO-Link
Operating distance ( $S_d$ )	5... 1000 mm <sup>1</sup>	Output on pin 2	SIO Selectable
Sensitivity adjustment	Depend on teach domain	Output Polarity	PNP
Light source	LED, red 630 nm	IO-Link	✓
Light spot size (distance)	Ø 11 mm (500 mm) / Ø 21 mm (1 m)	MTTF (@40°C)	TBD
Temperature drift (0... 0.8 $S_d$ )	≤ % $S_d$		

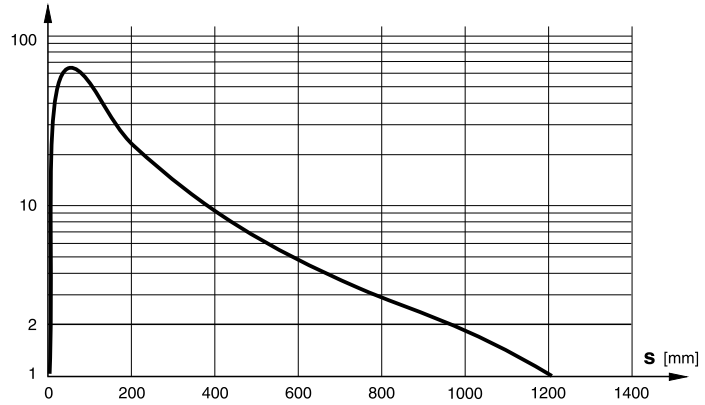
<sup>1</sup> Object with 90% reflectance (standard white paper)

ELECTRICAL DATA		MECHANICAL DATA	
Supply voltage range ( $U_B$ )	10... 30 VDC	Enclosure rating	IP67
Residual ripple	≤ 10% $V_{pp}$	Ambient temperature operation	-25... +65°C
Output current	≤ 200 mA	Shock and vibration	IEC 60947-5-2
Signal PNP high/low	≤ ( $U_B$ -2.0 V)/approx. 0 V	Weight (connector version)	14 g
Power consumption (no load)	≤ 25 mA	Housing material	Stainless steel V2A
Response time	≤ 1 ms	Window material	PMMA
SIO Switching frequency	≤ 1000 Hz	Connector type	M12 4-pin
Short circuit protection	✓	Max tightening torque	20 Nm
Voltage reversal protection	✓		
Cable length max.	≤ 20 m (IO-Link) / ≤ 300 m (SIO)		

## SENSING RANGE

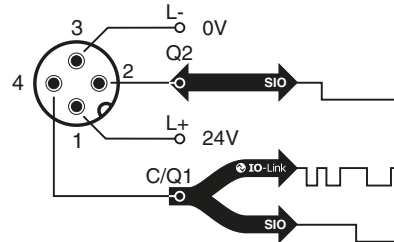
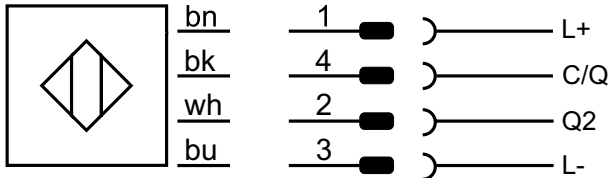
## EXCESS GAIN

Target	Operating range
90%	5 ... 1,000 mm
18%	5 ... 450 mm
6%	6 ... 250 mm



## WIRING DIAGRAM

## PIN ASSIGNMENT



IO-LINK CHARACTERISTICS	VALUE FOR ISTR-M18MP-NMS-A0
Vendor ID	0156 <sub>n</sub>
Device ID	A0301 <sub>n</sub>
IO-Link Protocol	1.1
SIO-Mode	Supported
Process data	1 byte input / 1 byte output
Baudrate	COM2 (38.4 kBaud)
Minimum cycle time	4 ms



IODD files may be downloaded from  
<https://www.contrinex.com/en-ch/collections/smart-photoelectric-basic>  
 Select the product name to display the product page with corresponding downloads.  
 Alternatively, just click/scan the QR code on the left.

## AVAILABLE TYPES

Part number	Part reference	Operating range	Switching Frequency SIO
620-600-486	ISTR-M18MP-NMS-A0	5...1000mm	≤ 1000 Hz

Note: additional suffix can appear to indicate a revision version or a special version.

Operators of the products we supply are responsible for compliance with measures for the protection of persons. The use of our equipment in applications where the safety of persons might be at risk is only authorized if the operator observes and implements separate, appropriate and necessary measures for the protection of persons and machines. Terms of delivery and rights to change design reserved.

**CONFIGURATION PARAMETER (IO-LINK / SIO MODE)**

Index	Sub Hex	Name	Access	Data Type	Value	Default
<b>SYSTEM</b>						
02 <sub>h</sub>	00 <sub>h</sub>	System Command <sup>(1)</sup>	W	uint8	80 <sub>h</sub> = Device Reset 81 <sub>h</sub> = Application Reset 83 <sub>h</sub> = Back-To-Box AA <sub>h</sub> = Teach Domain Near 7E <sub>h</sub> = Locator Start 7F <sub>h</sub> = Locator Stop 05 <sub>h</sub> = ParamDownloadStore 40 <sub>h</sub> = Teach Apply 41 <sub>h</sub> = Single Value Teach SP1 42 <sub>h</sub> = Single Value Teach SP2 43 <sub>h</sub> = Two Value Teach SP1 TP1 44 <sub>h</sub> = Two Value Teach SP1 TP2 45 <sub>h</sub> = Two Value Teach SP2 TP1 46 <sub>h</sub> = Two Value Teach SP2 TP2 47 <sub>h</sub> = Dynamic Teach SP1 Start 48 <sub>h</sub> = Dynamic Teach SP1 Stop 49 <sub>h</sub> = Dynamic Teach SP2 Start 4A <sub>h</sub> = Dynamic Teach SP2 Stop 4F <sub>h</sub> = Teach Cancel Abort	N/A
<b>DATA STORAGE</b>						
03 <sub>h</sub>	01 <sub>h</sub>	DS_Command <sup>(1)</sup>	R/W	uint8	00 <sub>h</sub> : Reserved 01 <sub>h</sub> : DS_UploadStart 02 <sub>h</sub> : DS_UploadEnd 03 <sub>h</sub> : DS_DownloadStart 04 <sub>h</sub> : DS_DownloadEnd 05 <sub>h</sub> : DS_Break 06 <sub>h</sub> – FF <sub>h</sub> : Reserved	N/A
	02 <sub>h</sub>	State_Property <sup>(1)</sup>	R	uint8	Bit 0: Reserved Bit 1 and 2: State of Data Storage (00 <sub>h</sub> : Inactive, 01 <sub>h</sub> : Upload, 02 <sub>h</sub> : Download, 03 <sub>h</sub> : Data Storage Locked) Bit 3 to 6: Reserved Bit 7: DS_UPLOAD_FLAG (00 <sub>h</sub> : no DS_UPLOAD_ FLAG, 01 <sub>h</sub> : DS_UPLOAD_REQ pending)	N/A
	03 <sub>h</sub>	Data_Storage_Size	R	uint32	–	N/A
	04 <sub>h</sub>	Parameter_Checksum	R	uint32	–	N/A
	05 <sub>h</sub>	Index_List	R	array of byte	–	N/A
<b>PROFILE PARAMETER</b>						
0D <sub>h</sub>	–	Profile Characteristic	R	array	<ProfileID1>, <ProfileID2>, .. <FCID> (Type 2.7) (AdSS), 0x000E, 0x4000, 0x800C, 0x8011, 0x8012, 0x8101	–
<b>PD DESCRIPTOR</b>						
0E <sub>h</sub>	–	PD Input Descriptor	R	array	(Type 2.7) (AdSS) <DataType><TypeLength><Bit offset> – [01] <sub>h</sub> [08] <sub>h</sub> [00] <sub>h</sub>	–
0F <sub>h</sub>	–	PD Output Descriptor	R	array	(Type 2.7) (AdSS) <DataType><TypeLength><Bit offset> [01] <sub>h</sub> [01] <sub>h</sub> [00] <sub>h</sub> [02] <sub>h</sub> [07] <sub>h</sub> [01] <sub>h</sub>	–
<b>FUNCTION CLASS – IDENTIFICATION (8000<sub>h</sub>)</b>						
10 <sub>h</sub>	–	Vendor Name	R	char [16]	“Contrinex AG”	–
11 <sub>h</sub>	–	Vendor Text	R	char [32]	“www.contrinex.com”	–
12 <sub>h</sub>	–	Product Name	R	char [32]	ISTR-M18MP-NMS-A0	–
13 <sub>h</sub>	–	Product ID	R	char [16]	620-600-486	–
14 <sub>h</sub>	–	Product Text	R	char [32]	AdSS photoelectric sensor	–
15 <sub>h</sub>	–	Serial Number	R	char [16]	123456	–
16 <sub>h</sub>	–	Hardware Revision	R	char [16]	1.0.0	–
17 <sub>h</sub>	–	Firmware Revision	R	char [16]	1.0.0	–
18 <sub>h</sub>	–	Application Specific Tag	R/W	char [32]	<user string, 32 bytes (variable length)>	<vendor specific>

<sup>(1)</sup>This parameter is stored in a volatile memory

**FUNCTION & LOCATION TAG**

19 <sub>h</sub>	–	Function Tag	R/W	char [32]	<user string, 32 bytes (variable length)>	***
1A <sub>h</sub>	–	Location Tag	R/W	char [32]	<user string, 32 bytes (variable length)>	***

**FUNCTION CLASS – DIAGNOSIS (8003<sub>h</sub>)**

24 <sub>h</sub>	00 <sub>h</sub>	Device Status <sup>(1)</sup>	R	uint8	0 = Device is OK, 1 = Maintenance required, 2 = Out of specification, 3 = Functional check, 4 = Failure, 5 ... 255 Reserved	–
25 <sub>h</sub>	00 <sub>h</sub>	Detailed Device Status <sup>(1)</sup>	R	array	1800 <sub>h</sub> / EMC disturbance 1801 <sub>h</sub> / Under IOL voltage 1803 <sub>h</sub> / Short circuit 1804 <sub>h</sub> / Under voltage 1805 <sub>h</sub> / Disturbances on receiver 1806 <sub>h</sub> / LED regulation limit 180C <sub>h</sub> / Temperature limit	–

**FUNCTION CLASS – TEACH-IN CHANNEL SELECT (8004<sub>h</sub>)**

3A <sub>h</sub>	–	Teach Select <sup>(1)</sup>	R/W	uint8	00 <sub>h</sub> : Default (SSC1) 01 <sub>h</sub> : SSC1 02 <sub>h</sub> : SSC2 FF <sub>h</sub> : ALL	00 <sub>h</sub>
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**FUNCTION CLASS – TEACH STATUS (8007<sub>h</sub> TO 8009<sub>h</sub>)**

3B <sub>h</sub>	01 <sub>h</sub>	Teach State <sup>(1)</sup>	R	bool[4]	0 <sub>h</sub> = IDLE 1 <sub>h</sub> = SP1 SUCCESS 2 <sub>h</sub> = SP2 SUCCESS 3 <sub>h</sub> = SP12 SUCCESS 4 <sub>h</sub> = WAIT FOR COMMAND 5 <sub>h</sub> = BUSY 6 <sub>h</sub> = Reserved 7 <sub>h</sub> = ERROR 8 <sub>h</sub> ...11 <sub>h</sub> = Reserved 12 <sub>h</sub> ...15 <sub>h</sub> = Vendor specific	00 <sub>h</sub>
	02 <sub>h</sub>	Flag SP1 → TP1 <sup>(1)</sup>	R	bool	00 <sub>h</sub> : Teach point not taught or not successful 01 <sub>h</sub> : Teach point successfully taught	00 <sub>h</sub>
	03 <sub>h</sub>	Flag SP1 → TP2 <sup>(1)</sup>	R	bool	00 <sub>h</sub> : Teach point not taught or not successful 01 <sub>h</sub> : Teach point successfully taught	00 <sub>h</sub>
	04 <sub>h</sub>	Flag SP2 → TP1 <sup>(1)</sup>	R	bool	00 <sub>h</sub> : Teach point not taught or not successful 01 <sub>h</sub> : Teach point successfully taught	00 <sub>h</sub>
	05 <sub>h</sub>	Flag SP2 → TP2 <sup>(1)</sup>	R	bool	00 <sub>h</sub> : Teach point not taught or not successful 01 <sub>h</sub> : Teach point successfully taught	00 <sub>h</sub>

**SCU – SENSOR CONFIGURATION UNIT**

40 <sub>h</sub>	01 <sub>h</sub>	Sensor Startup Time	R/W	uint16	0 ... 65535 ms	0000 <sub>h</sub>
	02 <sub>h</sub>	Sensor Mode	R/W	uint8	00 <sub>h</sub> : Fast 02 <sub>h</sub> : Medium 24 <sub>h</sub> : Fine	00 <sub>h</sub>
	03 <sub>h</sub>	Gain Value	R	uint16	–	–
	0C <sub>h</sub>	Domain Teach Status	R	uint8_t	0 = Teach Domain Ok 1 = Saturation of Domain Detected	00 <sub>h</sub>

**SSC1 PARAMETER**

3C <sub>h</sub>	01 <sub>h</sub>	Setpoint 1	R/W	uint32	Recommended value: (2234 ... 14894 = 15% S <sub>d</sub> to 100% S <sub>d</sub> )	100% S <sub>d</sub>
	02 <sub>h</sub>	Setpoint 2	R/W	uint32	Recommended value: (2234 ... 14894 = 15% S <sub>d</sub> to 100% S <sub>d</sub> ), but must be lower than Setpoint 1. N/A if Single-Point mode is selected.	0% S <sub>d</sub>

**SSC1 CONFIGURATION**

3D <sub>h</sub>	01 <sub>h</sub>	Logic	R/W	uint8	00 <sub>h</sub> : High active 01 <sub>h</sub> : Low active	00 <sub>h</sub>
	02 <sub>h</sub>	Mode	R/W	uint8	00 <sub>h</sub> : Deactivated 01 <sub>h</sub> : Single Point 02 <sub>h</sub> : Window Mode 03 <sub>h</sub> : Two Points	01 <sub>h</sub>

<sup>(1)</sup> This parameter is stored in a volatile memory

	03 <sub>h</sub>	Hysteresis Width	R/W	uint32	0 ... 16383 (e.g. If SSC1 Configuration Mode = Single Point, SP1 = 50% S <sub>d</sub> = 7447, Hysteresis Width = 10% of SP = 745)	8% of S <sub>d</sub>
	04 <sub>h</sub>	Hysteresis Selection	R/W	uint8	0 = User Hysteresis 1 = Internal Hysteresis	

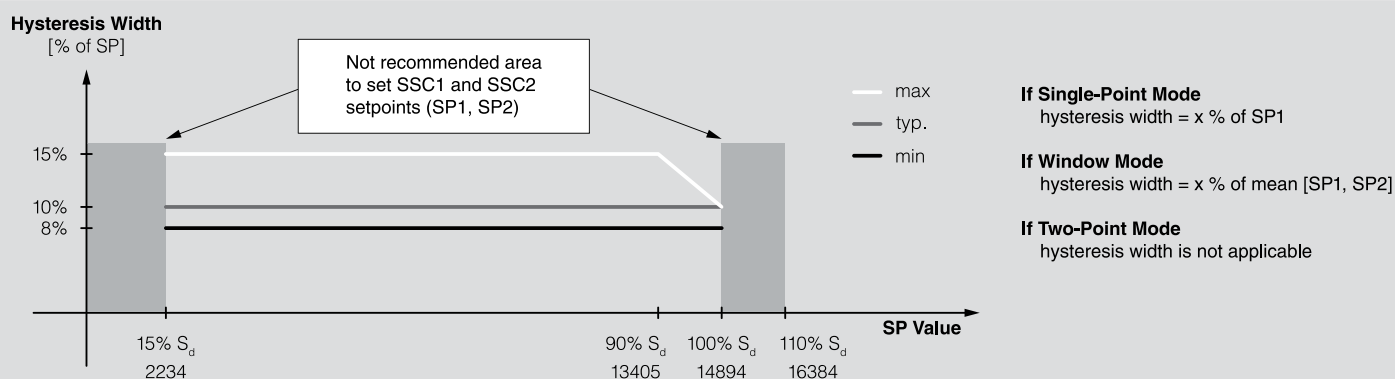
### SSC2 PARAMETER

3E <sub>h</sub>	01 <sub>h</sub>	Setpoint 1	R/W	uint32	Recommended value: (2234 ... 14894 = 15% S <sub>d</sub> to 100% S <sub>d</sub> )	80% S <sub>d</sub>
	02 <sub>h</sub>	Setpoint 2	R/W	uint32	Recommended value: (2234...14894 = 15% S <sub>d</sub> to 100% S <sub>d</sub> ), but must be lower than Setpoint 1. N/A if Single-Point mode is selected.	0% S <sub>d</sub>

### SSC2 CONFIGURATION

3F <sub>h</sub>	01 <sub>h</sub>	Logic	R/W	uint8	00 <sub>h</sub> : High active 01 <sub>h</sub> : Low active	00 <sub>h</sub>
	02 <sub>h</sub>	Mode	R/W	uint8	00 <sub>h</sub> : Deactivated 01 <sub>h</sub> : Single Point 02 <sub>h</sub> : Window Mode 03 <sub>h</sub> : Two Points	01 <sub>h</sub>
	03 <sub>h</sub>	Hysteresis Width	R/W	uint32	0 ... 16383 (e.g. If SSC1 Configuration Mode = Single Point, SP1 = 50% S <sub>d</sub> = 7447, Hysteresis Width = 10% of SP = 745)	8% of S <sub>d</sub>
	04 <sub>h</sub>	Hysteresis Selection	R/W	uint8	0 = User Hysteresis 1 = Internal Hysteresis	

### HYSTERESIS WIDTH RECOMMENDED BY CONTRINEX



### OSS CONFIGURATION

42 <sub>h</sub>	01 <sub>h</sub>	OSS1 Logic – Sensor Physical Output 1 Logic (PIN4) when used in SIO mode	R/W	uint8	0 = OUTPUT: High active (NO) 1 = OUTPUT: Low active (NC) 2 = OUTPUT: ON 3 = OUTPUT: OFF	00 <sub>h</sub>
	02 <sub>h</sub>	OSS2 Logic – Sensor Physical Output 2 Logic (PIN2) when used in SIO mode	R/W	uint8	0 = OUTPUT: High active (NO) 1 = OUTPUT: Low active (NC) 2 = OUTPUT: ON 3 = OUTPUT: OFF 4 = INPUT 5 = INPUT-TRIGGER Single Value Teach	00 <sub>h</sub>
	03 <sub>h</sub>	OSS1 Condition – Sensor Physical Output 1 Condition (PIN4) when used in SIO mode	R/W	uint8	0 = OSS1_A1 1 = OSS1_A1 AND OSS1_A2 2 = OSS1_A1 OR OSS1_A2 3 = OSS1_A1 XOR OSS1_A2	00 <sub>h</sub>
	04 <sub>h</sub>	OSS2 Condition – Sensor Physical Output 2 Condition (PIN2) when used in SIO mode	R/W	uint8	0 = OSS2_A1 1 = OSS2_A1 AND OSS2_A2 2 = OSS2_A1 OR OSS2_A2 3 = OSS2_A1 XOR OSS2_A2	00 <sub>h</sub>

	05 <sub>h</sub>	OSS1 Source A1 – Sensor Physical Output 1 Source A1 (PIN4) when used in SIO mode	R/W	uint8	0 = SSC1 1 = SSC2 2 = TSSP 3 = ALR1 4 = ALR2 5 = ALR3 6 = INPUT <sup>(1)</sup> 7 = Not INPUT <sup>(1)</sup>	00 <sub>h</sub>
	06 <sub>h</sub>	OSS1 Source A2 – Sensor Physical Output 1 Source A2 (PIN4) when used in SIO mode	R/W	uint8	0 = SSC1 1 = SSC2 2 = TSSP 3 = ALR1 4 = ALR2 5 = ALR3 6 = INPUT <sup>(1)</sup> 7 = Not INPUT <sup>(1)</sup>	00 <sub>h</sub>
	07 <sub>h</sub>	OSS2 Source A1 – Sensor Physical Output 2 Source A2 (PIN2) when used in SIO mode	R/W	uint8	0 = SSC1 1 = SSC2 2 = TSSP 3 = ALR1 4 = ALR2 5 = ALR3	00 <sub>h</sub>
	08 <sub>h</sub>	OSS2 Source A2 – Sensor Physical Output 2 Source A2 (PIN2) when used in SIO mode	R/W	uint8	0 = SSC1 1 = SSC2 2 = TSSP 3 = ALR1 4 = ALR2 5 = ALR3	00 <sub>h</sub>

#### TMU – SENSOR TIMER UNIT

43 <sub>h</sub>	01 <sub>h</sub>	Timer Mode	R/W	uint8	0 = No Timer 1 = Stretch ON 2 = Delay ON 3 = Delay and Stretch ON 4 = One Shot	00 <sub>h</sub>
	02 <sub>h</sub>	Timer Value	R/W	uint16	0... 65535 ms	0000 <sub>h</sub>
	03 <sub>h</sub>	Timer Source	R/W	uint8	0 = SSC1 1 = SSC2 2 = ALR1 3 = ALR2 4 = ALR3	00 <sub>h</sub>

#### CTU – SENSOR COUNTER UNIT

44 <sub>h</sub>	01 <sub>h</sub>	Counter Mode	R/W	uint8	0 = Falling Edge 1 = Rising Edge 2 = Both	00 <sub>h</sub>
	02 <sub>h</sub>	Counter Value <sup>(2)</sup>	R/W	uint16	0... 65535	0000 <sub>h</sub>
	03 <sub>h</sub>	Counter Source	R/W	uint8	0 = SSC1 1 = SSC2 2 = TSSP 3 = ALR1 4 = ALR2 5 = ALR3	00 <sub>h</sub>
	04 <sub>h</sub>	Counter Reset Source	R/W	uint8	0 = ALR1 1 = ALR2 2 = ALR3	01 <sub>h</sub>

#### SMU – SENSOR MONITOR UNIT

46 <sub>h</sub>	01 <sub>h</sub>	Current Temperature <sup>(1)</sup>	R	uint16	–	0000 <sub>h</sub>
	02 <sub>h</sub>	Max. Lifetime Temperature	R	uint16	–	0000 <sub>h</sub>
	03 <sub>h</sub>	Min. Lifetime Temperature	R	uint16	–	0000 <sub>h</sub>
	04 <sub>h</sub>	Lifetime Temperature Cycle Count	R	uint8	–	00 <sub>h</sub>
	05 <sub>h</sub>	Lifetime Operating Hours	R	uint32	–	00000000 <sub>h</sub>
	06 <sub>h</sub>	Lifetime Power-On Cycles	R	uint32	–	00000000 <sub>h</sub>
	07 <sub>h</sub>	Lifetime EMC Disturbances	R	uint32	–	00000000 <sub>h</sub>

<sup>(1)</sup> Only available if OSS2 Logic = 4 = INPUT

<sup>(2)</sup> This parameter is stored in a volatile memory

	08 <sub>h</sub>	EVENT FLAG <sup>(1)(2)</sup>	R	uint8	B1 Short circuit on output B2 EMC disturbances B3 Disturbances on receiver B4 LED regulation limit B5 Under voltage B6 Over temperature B7 Under temperature	00 <sub>h</sub>
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#### SMAU – SENSOR MEASUREMENT ALARM UNIT

47 <sub>h</sub>	01 <sub>h</sub>	Sensor Alarm 1 Threshold	R/W	uint16	0 ... 110% S <sub>d</sub>	10% S <sub>d</sub>
	02 <sub>h</sub>	Sensor Alarm 1 Hysteresis	R/W	uint16	–	5%
	03 <sub>h</sub>	Sensor Alarm 1 Configuration	R/W	uint8	0 = Always OFF 1 = High Active 2 = High Active / IO-Link event generation	00 <sub>h</sub>
	04 <sub>h</sub>	Sensor Alarm 1 Source	R/W	uint8	0 = Distance 1 = Counter 2 = Temperature	00 <sub>h</sub>
	05 <sub>h</sub>	Sensor Alarm 2 Threshold	R/W	uint16	0 ... 65535	100
	06 <sub>h</sub>	Sensor Alarm 2 Hysteresis	R/W	uint16	–	0000 <sub>h</sub>
	07 <sub>h</sub>	Sensor Alarm 2 Configuration	R/W	uint8	0 = Always OFF 1 = High Active 2 = High Active / IO-Link event generation	00 <sub>h</sub>
	08 <sub>h</sub>	Sensor Alarm 2 Source	R/W	uint8	0 = Distance 1 = Counter 2 = Temperature	01 <sub>h</sub>
	09 <sub>h</sub>	Sensor Alarm 3 Threshold	R/W	uint16	–25 ... 65°C	65°C
	10 <sub>h</sub>	Sensor Alarm 3 Hysteresis	R/W	uint16	–	0000 <sub>h</sub>
	11 <sub>h</sub>	Sensor Alarm 3 Configuration	R/W	uint8	0 = Always OFF 1 = High Active 2 = High Active / IO-Link event generation	00 <sub>h</sub>
	12 <sub>h</sub>	Sensor Alarm 3 Source	R/W	uint8	0 = Distance 1 = Counter 2 = Temperature	02 <sub>h</sub>

#### DEVICE CHARACTERISTIC

49 <sub>h</sub>	01 <sub>h</sub>	Profile Compatibility	R	char []	SSP 2.7 AdSS	–
	02 <sub>h</sub>	Detection Range Max.	R	char []	Depends on sensor type	–
	03 <sub>h</sub>	Supply Voltage Range (U <sub>b</sub> )	R	char []	"10 ... 30 VDC"	–
	04 <sub>h</sub>	Max. Output Current	R	char []	"≤ 200 mA"	–
	05 <sub>h</sub>	Ambient Temperature Range (T <sub>A</sub> )	R	char []	"–25 ... +65°C"	–
	06 <sub>h</sub>	Storage Temperature Range (T <sub>S</sub> )	R	char []	"–25 ... +65°C"	–
	07 <sub>h</sub>	Enclosure Rating	R	char []	IP67	–

#### LEDC - LED CONFIGURATION

4B <sub>h</sub>	01 <sub>h</sub>	Yellow ON - SIO	R/W	uint8	0 = OSS1 1 = OSS2 2 = OSS1 or OSS2 3 = OFF	0
	02 <sub>h</sub>	Green ON - SIO	R/W	uint8	0 = POWER 1 = OFF	0
	03 <sub>h</sub>	Blinking Alarm - SIO	R/W	uint8	0 = ALR1 or ALR2 or ALR3 1 = OFF	0
	04 <sub>h</sub>	LED IO-Link	R/W	uint8	0 = Green STD IO-Link 1Hz 1 = Id mode Green 5Hz 2 = Same as SIO	0
		Blinking Alarm Short-circuit				

#### SEM - SENSOR ECO MODE

4C <sub>h</sub>	01 <sub>h</sub>	SEM - selection	R/W	uint8	0 = Always OFF 1 = Active - state LED	1
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<sup>(1)</sup>This parameter is stored in a volatile memory

<sup>(2)</sup>A read on this subindex clear all flags

	02 <sub>h</sub>	SEM - yellow LED	R/W	uint8	0 = Disabled 1 = Enabled	1
	03 <sub>h</sub>	SEM - green LED	R/W	uint8	0 = Disabled 1 = Enabled	1
	04 <sub>h</sub>	SEM - Emission Frequency	R/W	uint8	0 = Normal 1 = Middle 2 = Low	0
<b>FUNCTION CLASS – MDC DESCRIPTION PARAMETER (8005<sub>h</sub>)</b>						
4080 <sub>h</sub>	01 <sub>h</sub>	Lower Limit	R	int32	Lower value measurement range, see range definition in table A.5. According to SSP <sup>(1)</sup> , Table D.14 page 78.	0
	02 <sub>h</sub>	Upper Limit	R	int32	Upper value measurement range, see range definition in table A.5. According to SSP <sup>(1)</sup> , Table D.14 page 78.	0
	03 <sub>h</sub>	Unit Code	R	uint16	See Unit table defined in table A.7. According to SSP <sup>(1)</sup> , Table D.14 page 78.	0
	04 <sub>h</sub>	Scale	R	int8	See Table B.2. According to SSP <sup>(1)</sup> , Table D.14 page 78.	0

<sup>(1)</sup> [https://io-link.com/share/Downloads/Smart-Sensor-Profile/IOL-Smart-Sensor-Profile-2ndEd\\_V1.1\\_Sep2021.zip](https://io-link.com/share/Downloads/Smart-Sensor-Profile/IOL-Smart-Sensor-Profile-2ndEd_V1.1_Sep2021.zip)

## PROCESS DATA REPRESENTATION

### PROCESS DATA STRUCTURE

#### PROCESS DATA INPUT

##### Bitoffset

Byte	7	6	5	4	3	2	1	0
0	ALR3	ALR2	ALR1	OSSC2	OSSC1	TSSP	SSC2	SSC1

Name	Value	Description
ALR3	0	Alarm 3 is OFF
	1	Alarm 3 is ON
ALR2	0	Alarm 2 is OFF
	1	Alarm 2 is ON
ALR1	0	Alarm 1 is OFF
	1	Alarm 1 is ON
OSS2	0	Output switching signal 2 is OFF
	1	Output switching signal 2 is ON
OSS1	0	Output switching signal 1 is OFF
	1	Output switching signal 1 is ON
TSSP	0	Timered selected signal is OFF
	1	Timered selected signal is ON
SSC2	0	Switching signal 2 is OFF
	1	Switching signal 2 is ON
SSC1	0	Switching signal 1 is OFF
	1	Switching signal 1 is ON

#### PROCESS DATA OUTPUT

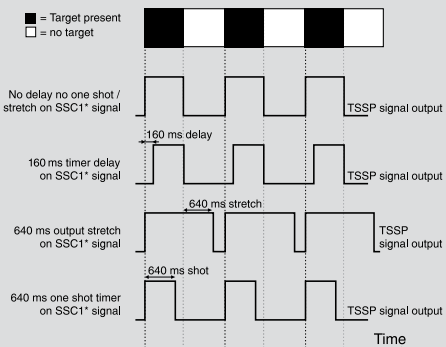
##### Bitoffset

Byte	7	6	5	4	3	2	1	0
0	RFU							DIS

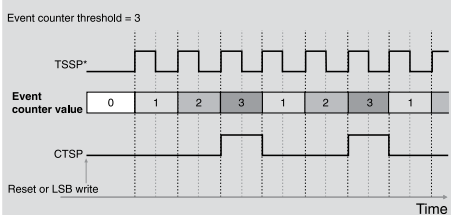
Name	Value	Description
DIS	0	Sensor is enabled
	1	Sensor is disabled

## SMART SENSOR SIGNAL FLOWS

### Sensor timer unit (TMU) parameter examples



### Event counter (pulse divider) example



## ERROR TYPES

Code	Additional code	Name	Description
80 <sub>h</sub>	11 <sub>h</sub>	Index Not Available	Access occurs to a not existing index
80 <sub>h</sub>	12 <sub>h</sub>	Subindex Not Available	Access occurs to a not existing subindex
80 <sub>h</sub>	20 <sub>h</sub>	Service Temporarily Not Available	Parameter is not accessible due to the current state of the device application
80 <sub>h</sub>	21 <sub>h</sub>	Service Temporarily Not Available – Local Control	Parameter is not accessible due to an ongoing local operation at the device
80 <sub>h</sub>	22 <sub>h</sub>	Service Temporarily Not Available – Device Control	Parameter is not accessible due to a remote triggered state of the device application
80 <sub>h</sub>	23 <sub>h</sub>	Access Denied	Write access on a read-only parameter
80 <sub>h</sub>	30 <sub>h</sub>	Parameter Value Out Of Range	Written parameter value is outside its permitted value range
80 <sub>h</sub>	31 <sub>h</sub>	Parameter Value Above Limit	Written parameter value is above its specified value range
80 <sub>h</sub>	32 <sub>h</sub>	Parameter Value Below Limit	Written parameter value is below its specified value range
80 <sub>h</sub>	33 <sub>h</sub>	Parameter Length Overrun	Written parameter length is above its predefined length
80 <sub>h</sub>	34 <sub>h</sub>	Parameter Length Underrun	Written parameter length is below its predefined length
80 <sub>h</sub>	35 <sub>h</sub>	Function Not Available	Written command is not supported by the device application
80 <sub>h</sub>	36 <sub>h</sub>	Function temporarily Not Available	Written command is not available due to the current state of the device
80 <sub>h</sub>	40 <sub>h</sub>	Invalid Parameter Set	Written single parameter collides with other actual parameter settings
80 <sub>h</sub>	41 <sub>h</sub>	Inconsistent Parameter Set	Parameter inconsistencies were found at the end of the block parameter transfer, device plausibility check failed
81 <sub>h</sub>	02 <sub>h</sub>	OSS1 source not available	First select OSS2 Logic = INPUT

## EVENTS

Code	Type	Name	Description
1800 <sub>h</sub>	Warning	EMC Disturbances	EMC Disturbances detected by sensor
1801 <sub>h</sub>	Warning	Under IOL Voltage	Under IOL Voltage detected by sensor
1803 <sub>h</sub>	Warning	Short Circuit	Short Circuit detected by sensor
1804 <sub>h</sub>	Error	Under Voltage	Under Voltage detected by sensor
1805 <sub>h</sub>	Warning	Disturbances on Receiver	Disturbances on Receiver detected by sensor
1806 <sub>h</sub>	Warning	LED Regulation Limit	LED Regulation Limit detected by sensor
1808 <sub>h</sub>	Notification	Alarm 1	Alarm 1 Threshold reached
1809 <sub>h</sub>	Notification	Alarm 2	Alarm 2 Threshold reached
180A <sub>h</sub>	Notification	Alarm 3	Alarm 3 Threshold reached
180B <sub>h</sub>	Notification	Trigger Teach	New SSC value is taught
180C <sub>h</sub>	Warning	Temperature Limit	Temperature limit reached