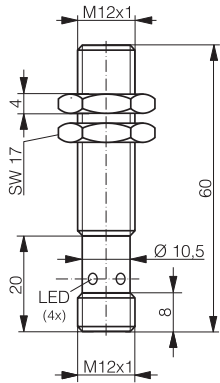
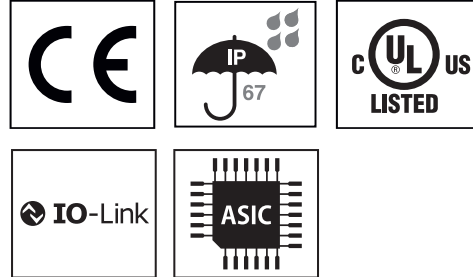
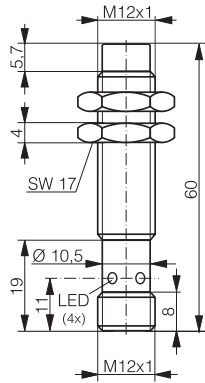


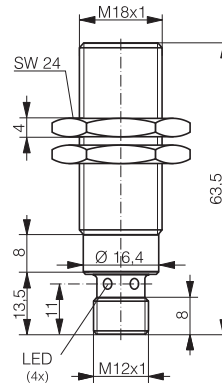
HOUSING	OPERATING DISTANCE	MOUNTING	✓	✓
M12... M18	Up to 20 mm	Embeddable / Non-embeddable	✓	✓



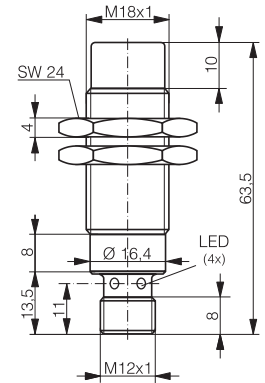
IDWE-M12MP-NMS-A0



IDWN-M12MP-NMS-A0



IDWE-M18MP-NMS-A0



IDWN-M18MP-NMS-A0

DETECTION DATA		INTERFACE	
Sensing distance ( $S_d$ )	See details on page 2	Output on pin 4	SIO Selectable / IO-Link
Temperature drift of $S_d$	$\leq 10\% S_d$	Output on pin 2	SIO Selectable
		Output Polarity	PNP
		IO-Link	✓
		MTTF (@40°C)	1073 y

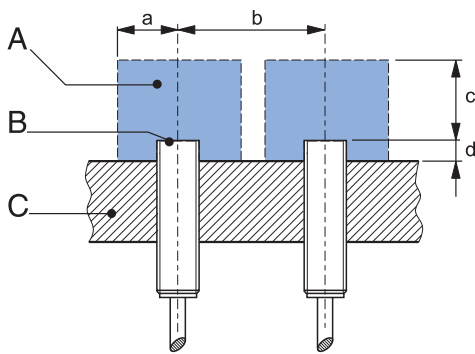
Note: all data measured according to IEC 60947-5-2 standard with  $U_b = 20 \dots 30VDC$ ,  $T_a = 23^\circ C \pm 5^\circ C$ .

ELECTRICAL DATA		MECHANICAL DATA	
Supply voltage range ( $U_B$ )	10...30 VDC	Mounting	See details on page 2
Residual ripple	$\leq 20\% U_B$	Housing material	Chrome-plated brass
Output current	$\leq 200$ mA	Sensing face material	PBTP
Output voltage drop	$\leq 2.0$ VDC	Max tightening torque	See details on page 2
Power consumption (no-load)	$\leq 10$ mA	Ambient operating temperature	-25...+70°C <sup>1</sup>
Residual current	$\leq 0.1$ mA	Enclosure rating	IP 67
Max. sampling rate	1000 Hz	Weight (cable / connector)	See details on page 2
Short-circuit protection	✓	Shock and vibration	IEC 60947-5-2 / 7.4
Voltage reversal protection	✓		
Cable length max.	$\leq 20$ m (IO-Link) / $\leq 300$ m (SIO)		

CORRECTION FACTORS					
	Steel FE 360	Copper	Aluminum	Brass	Stainless S. V2A
IDWE-M12MP-NMS-A0	1	0.28	0.33	0.43	0.8
IDWN-M12MP-NMS-A0	-	-	-	-	-
IDWE-M18MP-NMS-A0	1	0.31	0.34	0.44	0.72
IDWN-M18MP-NMS-A0	1	0.34	0.38	0.48	0.74

Note: the operating distance of the sensor must be multiplied by the correction factor of the material. For example, the operating distance on Aluminum is  $S_{n,Al} = S_n \times CF_{Al}$ . In case of embeddable mounting, the distance is multiplied by the additional correction factor of the support, thus  $S_{n,Al} = S_n \times CF_{Al} \times CF_{emb,Al}$ .

### INSTALLATION CONDITIONS / MAX. TIGHTENING TORQUE

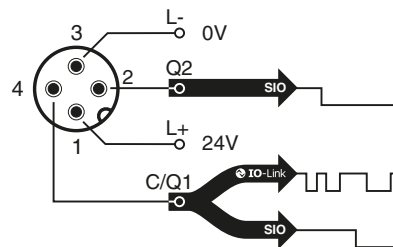
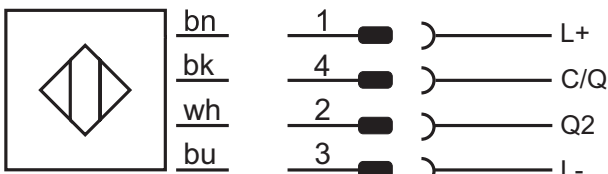


A : metal free zone  
 B : sensing face  
 C : support

	a	b	c	d	Max. Tightening Torque
IDWE-M12MP-NMS-A0	12	14	18	2	10 Nm (6 Nm first 10 mm)
IDWN-M12MP-NMS-A0	-	-	-	-	10 Nm
IDWE-M18MP-NMS-A0	19	24	30	4	25 Nm
IDWN-M18MP-NMS-A0	30	40	60	20	25 Nm

Note: additional installation information can be found in the glossary of the Contrinex General Catalog.

### WIRING DIAGRAM PIN ASSIGNMENT



### AVAILABLE TYPES

All the below specifications where obtain with a  $3^*S_d \times 3^*S_d \times 1$  mm<sup>3</sup>, FE360 standard target

Part number	Part reference	$S_d$	Mounting	Repeat accuracy	Resolution		Linearity	Weight
					Static	Dynamic		
330-020-479	IDWE-M12MP-NMS-A0	6 mm	Embeddable	$< 3 \mu\text{m}^{(1)} / < 13 \mu\text{m}^{(2)}$	$< 2 \mu\text{m}^{(3)}$	$< 5 \mu\text{m}^{(3)}$	$\pm 50 \mu\text{m}^{(4)}$	27 g
330-020-480	IDWN-M12MP-NMS-A0	10 mm	Non-embeddable	$< 6 \mu\text{m}^{(1)} / < 30 \mu\text{m}^{(2)}$	$< 3 \mu\text{m}^{(3)}$	$< 7.5 \mu\text{m}^{(3)}$	$\pm 100 \mu\text{m}^{(4)}$	27 g
330-020-481	IDWE-M18MP-NMS-A0	10 mm	Embeddable	$< 6 \mu\text{m}^{(1)} / < 50 \mu\text{m}^{(2)}$	$< 4 \mu\text{m}^{(3)}$	$< 10 \mu\text{m}^{(3)}$	$\pm 100 \mu\text{m}^{(4)}$	56 g
330-020-482	IDWN-M18MP-NMS-A0	20 mm	Non-embeddable	$< 10 \mu\text{m}^{(1)} / < 100 \mu\text{m}^{(2)}$	$< 6 \mu\text{m}^{(3)}$	$< 20 \mu\text{m}^{(3)}$	$\pm 200 \mu\text{m}^{(4)}$	56 g

<sup>(1)</sup> measured under  $3\sigma$  confidence level (99.7%) at  $0.33 S_d$ , constant temperature and constant voltage supply

<sup>(2)</sup> measured under  $3\sigma$  confidence level (99.7%) at  $0.67 S_d$ , constant temperature and constant voltage supply

<sup>(3)</sup> measured under  $\sigma$  confidence level (RMS value) at  $0.67 S_d$ , constant temperature and constant voltage supply

<sup>(4)</sup> measured under a range condition from 5% to 95%  $S_d$ , constant temperature and constant voltage supply

IO-LINK CHARACTERISTICS	VALUE FOR IDWx-MxxMP-NMS-A0
Vendor ID	0156 <sub>h</sub>
Device ID	320101 <sub>h</sub>
IO-Link Protocol	1.1
SIO-Mode	Supported
Process data	4 bytes input / 1 bytes output
Baudrate	COM2 (38.4 kBaud)
Minimum cycle time	4 ms



IODD files may be downloaded from  
[www.contrinex.com/product-range/inductive-sensors/](http://www.contrinex.com/product-range/inductive-sensors/).  
 Select the product name to display the product page with corresponding downloads.  
 Alternatively, just click/scan the QR code on the left.

### 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>	Standard Command <sup>(1)</sup>	W	uint8	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 for SP1 --> TP1, 44 <sub>h</sub> = Two Value Teach for SP1 --> TP2, 45 <sub>h</sub> = Two Value Teach for SP2 --> TP1, 46 <sub>h</sub> = Two Value Teach for SP2 --> TP2, 47 <sub>h</sub> = Dynamic Start SP1, 48 <sub>h</sub> = Dynamic Stop SP1, 49 <sub>h</sub> = Dynamic Start SP2, 4A <sub>h</sub> = Dynamic Stop SP2, 4F <sub>h</sub> = Teach Cancel, 80 <sub>h</sub> = Device Reset, 82 <sub>h</sub> = Restore Factory Settings, A0 <sub>h</sub> = Locate Device, A1 <sub>h</sub> = Clear MHM BIN	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	FF <sub>h</sub>	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>DEVICE ACCESS LOCKS</b>						
0C <sub>h</sub>	-	Device Access Lock	R/W	uint16	Parameter Access, Data Storage, Local Parameterization and Local User Interface Locks	0000 <sub>h</sub>
<b>PROFILE PARAMETER</b>						
0D <sub>h</sub>	-	Profile Characteristic	R	uint16	<ProfileID1>, <ProfileID2>, <ProfileID3>, <FCID> [0018] <sub>h</sub> , [800A] <sub>h</sub> , [800C] <sub>h</sub> , [800D] <sub>h</sub> (Type 4.3.1) (DMSS)	-
<b>PD DESCRIPTOR</b>						
0E <sub>h</sub>	-	PD Input Descriptor	R	array	<DataType><TypeLength><BitOffset> - [1] <sub>h</sub> , [8] <sub>h</sub> , [0] <sub>h</sub> , [2] <sub>h</sub> , [8] <sub>h</sub> , [8] <sub>h</sub> , [2] <sub>h</sub> , [10] <sub>h</sub> , [10] <sub>h</sub>	-
0F <sub>h</sub>	-	PD Output Descriptor	R	array	<DataType><TypeLength><BitOffset> - [1] <sub>h</sub> , [1] <sub>h</sub> , [0] <sub>h</sub>	-

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

**FUNCTION CLASS - IDENTIFICATION (8000<sub>h</sub>)**

10 <sub>h</sub>	-	Vendor Name	R	char [16]	"Contrinex"	-
11 <sub>h</sub>	-	Vendor Text	R	char [32]	"www.contrinex.com"	-
12 <sub>h</sub>	-	Product Name	R	char [32]	"IDWx-MxxMP-NMS-A0"	-
13 <sub>h</sub>	-	Product ID	R	char [16]	330-020-4xx	-
14 <sub>h</sub>	-	Product Text	R	char [32]	DMSS series inductive 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>

**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> - 03 <sub>h</sub>	Detailed Device Status <sup>(1)</sup>	R	uint8 [3]	-	-

**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]	00 <sub>h</sub> : IDLE 01 <sub>h</sub> : SP1 SUCCESS 02 <sub>h</sub> : SP2 SUCCESS 03 <sub>h</sub> : SP12 SUCCESS 04 <sub>h</sub> : WAIT FOR COMMAND 05 <sub>h</sub> : BUSY 06 <sub>h</sub> : Reserved 07 <sub>h</sub> : ERROR 08 <sub>h</sub> ...12 <sub>h</sub> : Reserved	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 Value Source	R/W	uint8	00 <sub>h</sub> : Distance (VTARGET) 01 <sub>h</sub> : Counter 02 <sub>h</sub> : Temperature	00 <sub>h</sub>
	03 <sub>h</sub>	Sensor Mode	R/W	uint8	00 <sub>h</sub> : Fast (1 kHz) 02 <sub>h</sub> : Standard (250 Hz) 20 <sub>h</sub> : Fine (14 Hz)	02 <sub>h</sub>

**SSC1 PARAMETER**

3C <sub>h</sub>	01 <sub>h</sub>	Setpoint 1	R/W	uint32	0...110% S <sub>d</sub>	100% S <sub>d</sub>
	02 <sub>h</sub>	Setpoint 2	R/W	uint32	0...110% 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>	SSC1 Configuration Hysteresis	R/W	uint32	-	5%
<b>SSC2 PARAMETER</b>						
400C <sub>h</sub>	01 <sub>h</sub>	Setpoint 1	R/W	uint32	0...110% S <sub>d</sub>	80% S <sub>d</sub>
	02 <sub>h</sub>	Setpoint 2	R/W	uint32	0...110% S <sub>d</sub> but must be lower than Setpoint 1. N/A if Single Point mode is selected	0% S <sub>d</sub>
<b>SSC2 CONFIGURATION</b>						
400D <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>
	07 <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>
	08 <sub>h</sub>	Hysteresis	R/W	uint32	-	5%
<b>OSS CONFIGURATION</b>						
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>(2)</sup> 7 = Not INPUT <sup>(2)</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>(2)</sup> 7 = Not INPUT <sup>(2)</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>

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

<sup>(2)</sup> Only available if OSS2 Logic = 4 = INPUT

	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>
<b>TMU - SENSOR TIMER UNIT</b>						
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>
<b>CTU - SENSOR COUNTER UNIT</b>						
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>(1)</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>
<b>SMU - SENSOR MONITOR UNIT</b>						
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>
	08 <sub>h</sub>	EVENT FLAG <sup>(1)(2)</sup>	R	uint8	0 = B0 (Coil failure) 1 = B1 (Short circuit on output) 2 = B2 (EMC disturbances) 3 = B3 (Collision on output) 4 = B4 (Over temperature) 5 = B5 (Under voltage)	00 <sub>h</sub>
<b>SMAU - Sensor Measurement Alarm Unit</b>						
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 = Active 2 = Active / IO-Link Event Generation	01 <sub>h</sub>
	04 <sub>h</sub>	Sensor Alarm 1 Source	R/W	uint8	0 = Distance (VTARGET) 1 = Counter 2 = Temperature 3 = MHM Median 4 = MHM Deviation 50% 5 = MHM Deviation To Target Value	00 <sub>h</sub>
	05 <sub>h</sub>	Sensor Alarm 2 Threshold	R/W	uint16	0...65535	0000 <sub>h</sub>
	06 <sub>h</sub>	Sensor Alarm 2 Hysteresis	R/W	uint16	-	0000 <sub>h</sub>

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

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

	07 <sub>h</sub>	Sensor Alarm 2 Configuration	R/W	uint8	0 = Always OFF 1 = Active 2 = Active / IO-Link Event Generation	01 <sub>h</sub>
	08 <sub>h</sub>	Sensor Alarm 2 Source	R/W	uint8	0 = Distance (VTARGET) 1 = Counter 2 = Temperature 3 = MHM Median 4 = MHM Deviation 50% 5 = MHM Deviation To Target Value	01 <sub>h</sub>
	09 <sub>h</sub>	Sensor Alarm 3 Threshold	R/W	uint16	-25...70°C	70°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 = Active 2 = Active / IO-Link Event Generation	01 <sub>h</sub>
	12 <sub>h</sub>	Sensor Alarm 3 Source	R/W	uint8	0 = Distance (VTARGET) 1 = Counter 2 = Temperature 3 = MHM Median 4 = MHM Deviation 50% 5 = MHM Deviation To Target Value	02 <sub>h</sub>

#### FUNCTION AND LOCATION TAG

48 <sub>h</sub>	01 <sub>h</sub>	Function Tag	R/W	char []	<user string, 32 bytes (variable length)>	****
	02 <sub>h</sub>	Location Tag	R/W	char []	<user string, 32 bytes (variable length)>	****

#### DEVICE CHARACTERISTIC

49 <sub>h</sub>	01 <sub>h</sub>	Profile Compatibility	R	char []	"SSP 4.3.1 DMSS"	-
	02 <sub>h</sub>	Detection Range Max.	R	char []	Depend 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...+70°C"	-
	06 <sub>h</sub>	Storage Temperature Range (T <sub>s</sub> )	R	char []	"-25...+70°C"	-
	07 <sub>h</sub>	Enclosure Rating	R	char []	"IP 67"	-

#### MHM - MEASUREMENT HISTOGRAM MODULE

4A <sub>h</sub>	01 <sub>h</sub>	MHM Source	R/W	uint8	0 = Distance 1 = Temperature	00 <sub>h</sub>
	02 <sub>h</sub>	MHM Trigger	R/W	uint8	0 <sup>(2)</sup> = When Input = 1 1 = When TSSP = 1	00 <sub>h</sub>
	03 <sub>h</sub>	Range Start	R/W	uint16	0...110% S <sub>d</sub>	0% S <sub>d</sub>
	04 <sub>h</sub>	Range End	R/W	uint16	0...110% S <sub>d</sub>	100% S <sub>d</sub>
	05 <sub>h</sub>	BIN 1 <sup>(1)</sup>	R	uint32	Firstbin of valuedefinedby("RangeEnd"- "RangeStart")/16	4 x 00 <sub>h</sub>
	06 <sub>h</sub>	BIN 2 <sup>(1)</sup>	R	uint32	...	4 x 00 <sub>h</sub>
	07 <sub>h</sub>	BIN 3 <sup>(1)</sup>	R	uint32	...	4 x 00 <sub>h</sub>
	08 <sub>h</sub>	BIN 4 <sup>(1)</sup>	R	uint32	...	4 x 00 <sub>h</sub>
	09 <sub>h</sub>	BIN 5 <sup>(1)</sup>	R	uint32	...	4 x 00 <sub>h</sub>
	10 <sub>h</sub>	BIN 6 <sup>(1)</sup>	R	uint32	...	4 x 00 <sub>h</sub>
	11 <sub>h</sub>	BIN 7 <sup>(1)</sup>	R	uint32	...	4 x 00 <sub>h</sub>
	12 <sub>h</sub>	BIN 8 <sup>(1)</sup>	R	uint32	...	4 x 00 <sub>h</sub>
	13 <sub>h</sub>	BIN 9 <sup>(1)</sup>	R	uint32	...	4 x 00 <sub>h</sub>
	14 <sub>h</sub>	BIN 10 <sup>(1)</sup>	R	uint32	...	4 x 00 <sub>h</sub>
	15 <sub>h</sub>	BIN 11 <sup>(1)</sup>	R	uint32	...	4 x 00 <sub>h</sub>
	16 <sub>h</sub>	BIN 12 <sup>(1)</sup>	R	uint32	...	4 x 00 <sub>h</sub>
	17 <sub>h</sub>	BIN 13 <sup>(1)</sup>	R	uint32	...	4 x 00 <sub>h</sub>
	18 <sub>h</sub>	BIN 14 <sup>(1)</sup>	R	uint32	...	4 x 00 <sub>h</sub>

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

<sup>(2)</sup> Option 0 only available if OSS2Logic = 4 = INPUT

	19 <sub>h</sub>	BIN 15 <sup>(1)</sup>	R	uint32	...	4 x 00 <sub>h</sub>
	20 <sub>h</sub>	BIN 16 <sup>(1)</sup>	R	uint32	Lastbin of value defined by ("RangeEnd" - "RangeStart")/16	4 x 00 <sub>h</sub>
	21 <sub>h</sub>	Median <sup>(1)</sup>	R	uint16	-	2 x 00 <sub>h</sub>
	22 <sub>h</sub>	Deviation 50% <sup>(1)</sup>	R	uint16	-	2 x 00 <sub>h</sub>
	23 <sub>h</sub>	Target Value	R/W	uint16	-	2 x 00 <sub>h</sub>
	24 <sub>h</sub>	Deviation <sup>(1)</sup>	R	uint16	Deviation = Median - Target Value	2 x 00 <sub>h</sub>

#### FUNCTION CLASS - MDC DESCRIPTION PARAMETER (8005<sub>h</sub>)

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 C5 page 39	0
	02 <sub>h</sub>	Upper Limit	R	int32	Upper value measurement range, see range definition in Table A.5 According to SSP C5 page 40	0
	03 <sub>h</sub>	Unit Code	R	uint16	See Unit table defined in Table A.7. According to SSP C5 page 41	0
	04 <sub>h</sub>	Scale	R	int8	See Table B.2. According to SSP C5 page 42	0

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

## PROCESS DATA REPRESENTATION

### PROCESS DATA STRUCTURE - DISTANCE, COUNTER, TEMPERATURE SENSING MODE

#### PROCESS DATA INPUT

Bitoffset

Byte	7	6	5	4	3	2	1	0
0	ALR3	ALR2	ALR1	SSC2	SSC1	TSS	OSS2	OSS1
1	Scale Value							
2	Measurement value (LSB)							
3	Measurement value (MSB)							

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
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
TSS	0	Timered selected signal is OFF
	1	Timered selected signal 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

#### 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

### Smart sensor signal flow chart

SMAU = Sensor measurement alarm unit  
 MHM = Measurement histogram module  
 CTU = Sensor counter unit  
 TMU = Sensor timer unit  
 OSS = Output switching signal configuration  
 SSC = Switching signal configuration

### Sensor timer unit (TMU) parameter examples

\*Depending on sensor settings, could also be triggered by SSC2, ALR1, ALR2, ALR3

### Event counter (pulse divider) example

\*Depending on sensor settings, could also be triggered by SSC1, SSC2, ALR1, ALR2, ALR3

## 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>	01 <sub>h</sub>	MHM Trigger 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
1802 <sub>h</sub>	Error	Emittor Failure	Emittor Failure 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
1807 <sub>h</sub>	Error	Ferrite, Coil, PCB Failure	Ferrite, Coil, PCB Failure 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	Value Teached
5010 <sub>h</sub>	Error	Component malfunction	Repair or exchange
7710 <sub>h</sub>	Error	Short circuit	Check installation