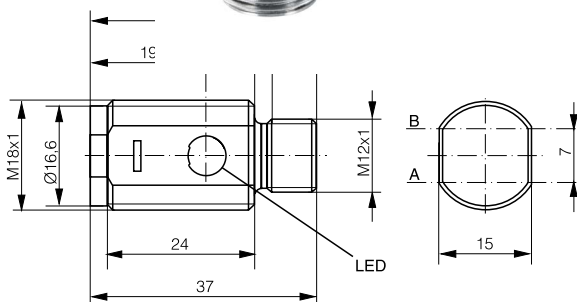
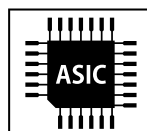


7,000 mm

- ✓ M18 short housing
- ✓ IO-Link
- ✓ Sensitivity adjustment via IO-Link
- ✓ Polarizing filter
- ✓ Calibrated range
- ✓ 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)	30 ... 7000 mm	Output on pin 2	SIO Selectable
Sensitivity adjustment	2500 ... 7000 mm	Output Polarity	PNP
Light source	LED, red 630 nm	IO-Link	✓
Light spot size (distance)	Ø 21 mm (1 m) / Ø 110 mm (6 m)		
Temperature drift (0 ... 0.8 S_d)	≤ % S_d		

¹Reference reflector LXR-0000-084

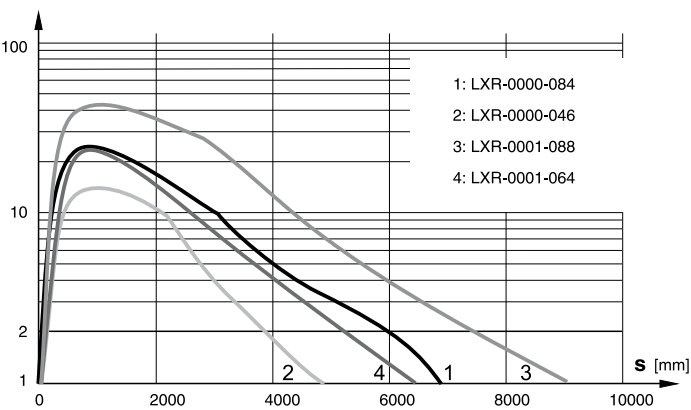
ELECTRICAL DATA		MECHANICAL DATA	
Supply voltage range (U_B)	10 ... 30 VDC	Enclosure rating	IP67
Residual ripple	≤ 10% V_{pp}	Ambient temperature operation	-25 ... +65°C
Output current	≤ 100 mA	Shock and vibration	IEC 60947-5-2
Signal PNP high/low	≤ (U_B - 2.0 V)/approx. 0 V	Weight (connector version)	14 g
Power consumption (no load)	≤ 15 mA	Housing material	Stainless steel V2A
Response time	≤ 0.5 ms	Window material	PMMA
SIO Switching frequency	≤ 1 KHz	Connector type	M8 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 distance
LXR-0000-084	20 ... 7,000 mm
LXR-0000-046	20 ... 4,900 mm ¹
LXR-0001-088	20 ... 9,200 mm ¹
LXR-0001-064	20 ... 6,500 mm ¹

¹Indicative value



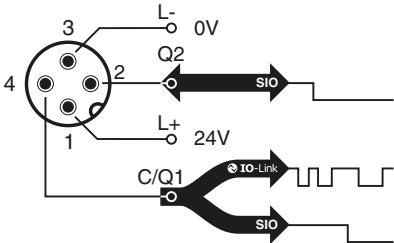
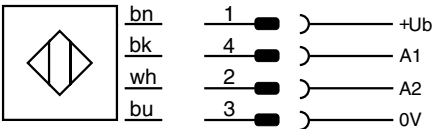
IO-LINK FUNCTIONALITIES

Vendor ID	0156 _h
Device ID	A0401 _h
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

IO-Link specifications and IODD files may be downloaded from www.contrinex.com (Download section)

WIRING DIAGRAM

PIN ASSIGNMENT



AVAILABLE TYPES

Part number	Part reference	Operating Range	Switching Frequency
620-600-485	ISRR-M18MP-NMS-A0	30...7'000 mm	≤ 1000 Hz

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

CONFIGURATION PARAMETER (IO-LINK / SIO MODE)						
Index	Sub Hex	Name	Access	Data Type	Value	Default
SYSTEM						
02 _h	00 _h	System Command ⁽¹⁾	W	uint8	80 _h = Device Reset 81 _h = Application Reset 83 _h = Back-To-Box A8 _h Alignment Apply A9 _h Alignment OFF 7E _h = Locator Start 7F _h = Locator Stop 05 _h = ParamDownloadStore	N/A
DATA STORAGE						
03 _h	01 _h	DS_Command ⁽¹⁾	R/W	uint8	00 _h : Reserved 01 _h : DS_UploadStart 02 _h : DS_UploadEnd 03 _h : DS_DownloadStart 04 _h : DS_DownloadEnd 05 _h : DS_Break 06 _h – FF _h : Reserved	N/A
	02 _h	State_Property ⁽¹⁾	R	uint8	Bit 0: Reserved Bit 1 and 2: State of Data Storage (00 _h : Inactive, 01 _h : Upload, 02 _h : Download, 03 _h : Data Storage Locked) Bit 3 to 6: Reserved Bit 7: DS_UPLOAD_FLAG (00 _h : no DS_UPLOAD_ FLAG, 01 _h : DS_UPLOAD_REQ pending)	N/A
	03 _h	Data_Storage_Size	R	uint32	–	N/A
	04 _h	Parameter_Checksum	R	uint32	–	N/A
	05 _h	Index_List	R	array of byte	–	N/A
PROFILE PARAMETER						
0D _h	–	Profile Characteristic	R	array	<ProfileID1>, <ProfileID2>, .. <FCID> (Type 1.1) (FSS), 0x0002, 0x4000, 0x800C, 0x8101	–
PD DESCRIPTOR						
0E _h	–	PD Input Descriptor	R	array	(Type 1.1) (FSS) <DataType><TypeLength><Bit offset> [0x01, 0x07, 0x00]	–
0F _h	–	PD Output Descriptor	R	array	(Type 1.1) (FSS) (PDO.BOOL1) <DataType><TypeLength><Bit offset> [0x01, 0x01, 0x00]	–
FUNCTION CLASS – IDENTIFICATION (8000 _h)						
10 _h	–	Vendor Name	R	char [16]	“Contrinex AG”	–
11 _h	–	Vendor Text	R	char [32]	“www.contrinex.com”	–
12 _h	–	Product Name	R	char [32]	ISRR-C23PP-NMS-A0	–
13 _h	–	Product ID	R	char [16]	620-600-475 (Basic LR)	–
14 _h	–	Product Text	R	char [32]	FSS photoelectric sensor	–
15 _h	–	Serial Number	R	char [16]	123456	–
16 _h	–	Hardware Revision	R	char [16]	1.0.0	–
17 _h	–	Firmware Revision	R	char [16]	1.0.0	–
18 _h	–	Application Specific Tag	R/W	char [32]	<user string, 32 bytes (variable length)>	<vendor specific>

⁽¹⁾ This parameter is stored in a volatile memory

FUNCTION & LOCATION TAG						
19 _h	–	Function Tag	R/W	char [32]	<user string, 32 bytes (variable length)>	***
1A _h	–	Location Tag	R/W	char [32]	<user string, 32 bytes (variable length)>	***
FUNCTION CLASS – DIAGNOSIS (8003 _h)						
24 _h	00 _h	Device Status ⁽¹⁾	R	uint8	0 = Device is OK, 1 = Maintenance required, 2 = Out of specification, 3 = Functional check, 4 = Failure, 5 ... 255 Reserved	–
25 _h	00 _h	Detailed Device Status ⁽¹⁾	R	array	1800 _h / EMC disturbance 1801 _h / Under IOL voltage 1803 _h / Short circuit 1804 _h / Under voltage 1805 _h / Disturbances on receiver 1806 _h / LED regulation limit 180C _h / Temperature limit	–
SCU – SENSOR CONFIGURATION UNIT						
40 _h	01 _h	Sensor Startup Time	R/W	uint16	0 ... 65535 ms	0000 _h
	02 _h	Sensor Mode	R/W	uint8	00 _h : Fast 02 _h : Medium 24 _h : Fine	00 _h
	03 _h	Gain Value	R	uint16	–	–
OSS CONFIGURATION						
42 _h	01 _h	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 _h
	02 _h	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 Logic Functionalities	00 _h
	03 _h	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 _h
	04 _h	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 _h
	05 _h	OSS1 Source A1 – Sensor Physical Output 1 Source A1 (PIN4) when used in SIO mode	R/W	uint8	0 = SSC1 1 = TSSP 2 = ALR1 3 = ALR2 4 = ALR3 5 = INPUT_STATE 6 = INPUT STATE INV	00 _h
	06 _h	OSS1 Source A2 – Sensor Physical Output 1 Source A2 (PIN4) when used in SIO mode	R/W	uint8	0 = SSC1 1 = TSSP 2 = ALR1 3 = ALR2 4 = ALR3 5 = INPUT_STATE 6 = INPUT STATE INV	00 _h
	07 _h	OSS2 Source A1 – Sensor Physical Output 2 Source A2 (PIN2) when used in SIO mode	R/W	uint8	0 = SSC1 1 = TSSP 2 = ALR1 3 = ALR2 4 = ALR3	00 _h
	08 _h	OSS2 Source A2 – Sensor Physical Output 2 Source A2 (PIN2) when used in SIO mode	R/W	uint8	0 = SSC1 1 = TSSP 2 = ALR1 3 = ALR2 4 = ALR3	00 _h

TMU – SENSOR TIMER UNIT

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

CTU – SENSOR COUNTER UNIT

44 _h	01 _h	Counter Mode	R/W	uint8	0 = Falling Edge 1 = Rising Edge 2 = Both	00 _h
	02 _h	Counter Value ⁽²⁾	R/W	uint16	0 ... 65535 ms	0000 _h
	03 _h	Counter Source	R/W	uint8	0 = SSC1 1 = TSSP 2 = ALR1 3 = ALR2 4 = ALR3	00 _h
	04 _h	Counter Reset Source	R/W	uint8	–	01 _h

SMU – SENSOR MONITOR UNIT

46 _h	01 _h	Current Temperature ⁽¹⁾	R	uint16	–	0000 _h
	02 _h	Max. Lifetime Temperature	R	uint16	–	0000 _h
	03 _h	Min. Lifetime Temperature	R	uint16	–	0000 _h
	04 _h	Lifetime Temperature Cycle Count	R	uint8	–	00 _h
	05 _h	Lifetime Operating Hours	R	uint32	–	00000000 _h
	06 _h	Lifetime Power-On Cycles	R	uint32	–	00000000 _h
	07 _h	Lifetime EMC Disturbances	R	uint32	–	00000000 _h
	08 _h	EVENT FLAG ⁽¹⁾⁽²⁾	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 _h

SMAU – SENSOR MEASUREMENT ALARM UNIT

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

DEVICE CHARACTERISTIC

49 _h	01 _h	Profile Compatibility	R	char []	SSP 1.1 FSS	–
	02 _h	Detection Range Max.	R	char []	Depends on sensor type	–
	03 _h	Supply Voltage Range (U _b)	R	char []	“10 ... 30 VDC”	–
	04 _h	Max. Output Current	R	char []	“≤ 200 mA”	–
	05 _h	Ambient Temperature Range (T _A)	R	char []	“–25 ... +65°C”	–
	06 _h	Storage Temperature Range (T _S)	R	char []	“–25 ... +65°C”	–
	07 _h	Enclosure Rating	R	char []	IP67	–

LEDC - LED CONFIGURATION

4B _h	01 _h	Yellow ON - SIO	R/W	uint8	0 = OSS1 1 = OSS2 2 = OSS1 or OSS2 3 = OFF	0
	02 _h	Green ON - SIO	R/W	uint8	0 = POWER 1 = OFF	0
	03 _h	Blinking Alarm - SIO	R/W	uint8	0 = ALR1 or ALR2 or ALR3 1 = OFF	0
	04 _h	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 _h	01 _h	SEM - selection	R/W	uint8	0 = Always OFF 1 = Active - state LED	1
	02 _h	SEM - yellow LED	R/W	uint8	0 = Disabled 1 = Enabled	1
	03 _h	SEM - green LED	R/W	uint8	0 = Disabled 1 = Enabled	1
	04 _h	SEM - Emission Frequency	R/W	uint8	0 = Normal 1 = Middle 2 = Low	0

ASC - ALIGNMENT SUPPORT CONFIGURATION

4D _h	01 _h	Alignment source	R/W	uint8	–	0
	02 _h	Alignment indicator	R/W	uint8	–	0
	03 _h	Alignment timing	R/W	uint8	–	1

FUNCTION CLASS – MDC DESCRIPTION PARAMETER (8005_h)

4080 _h	01 _h	Lower Limit	R	int32	Lower value measurement range, see range definition in table A.5. According to SSP ⁽¹⁾ , Table D.14 page 78.	0
	02 _h	Upper Limit	R	int32	Upper value measurement range, see range definition in table A.5. According to SSP ⁽¹⁾ , Table D.14 page 78.	0
	03 _h	Unit Code	R	uint16	See Unit table defined in table A.7. According to SSP ⁽¹⁾ , Table D.14 page 78.	0
	04 _h	Scale	R	int8	See Table B.2. According to SSP ⁽¹⁾ , Table D.14 page 78.	0

⁽¹⁾ 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	0
0	ALR3	ALR2	ALR1	OSSC2	OSSC1	TSSP	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
SSC1	0	Switching signal 1 is OFF
	1	Switching signal 1 is ON

PROCESS DATA OUTPUT

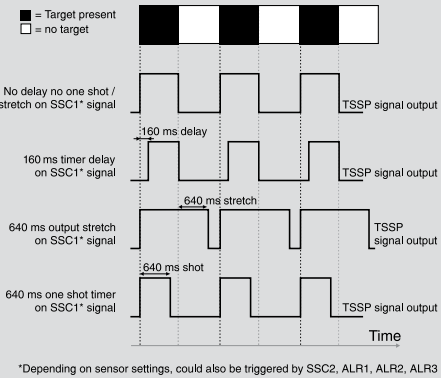
Bitoffset

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

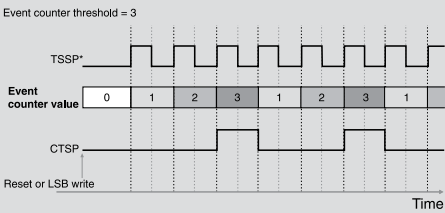
Name	Value	Description
DIS	0	Sensor is enabled
	1	Sensor is disabled

SMART SENSOR SIGNAL FLOWS

Sensor timer unit (TMU) parameter examples



Event counter (pulse divider) example



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

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

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