



stay connected

ENGLISH MANUAL

for devices of the MVP12 series
Art.-No. 59712 | 59812

This document is valid for the following products:

Product designation	Art.-No.
MVP12-P6 DIO16CGND 8xM12A IOL_12 B0	59712
MVP12-P6 DIO16CGND 8xM12A IOL_12 E0	59812

Document status:

Manual number	59712
Language	EN
Version	1.1
Date	2023-08

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NOTE

Translation of the original instructions

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1 Introduction

Purpose of this document

This document instructs the technical staff of the machine manufacturer or machine operator on the safe use of the described devices.

It does not include instructions on the safe use of the machine in which the devices are integrated. For such information, please refer to the operating instructions of the machine.

- Read this chapter carefully before you start working with the documentation or the device.
- Read the documentation carefully before starting up the device.
- Store the manual in a place that is accessible to all users at all times for the entire service life of the device.

You will need general knowledge about automation engineering in order to understand this manual. In addition, planning and using automation systems requires technical knowledge which is not contained in this manual.



Glossary

You can find explanations of the terms/abbreviations used at:
murrelektronik.com/products-industries/glossary/

1.1 Service and support

Sales and distribution

Our sales employees in the indoor and outdoor service and our technicians will support you at any time.

Customer Service Center (CSC)

Our staff of the Customer Service Center will help you with all questions concerning installation and start-up. They support you, for example, if you have problems with combining hardware and software products from different manufacturers with Murrelektronik products.

A number of support tools and measurement facilities are available for field bus systems and EMC interferences.

Please do not hesitate to call us at +49 (0) 7191 47-2050 or send an e-mail to support@murrelektronik.com

Service addresses

Murrelektronik GmbH has a policy of customer proximity, both at national and international level. Please visit our website to find your contact person:
www.murrelektronik.com

1.2 Scope of delivery

The scope of delivery includes:

- 1x MVP
- 1x operating instructions
- 10x designation label
- 1x grounding set (1 ring cable lug + 1 lock washer)

1.3 Applicable documents

Document	Art.-No.
Operating instructions	59712
Product data	59712
Product data	59812

You will find the applicable documents included in the scope of delivery or online: shop.murrelektronik.com

1.4 Environmentally friendly disposal

Comply with country-specific waste disposal regulations!

- Always dispose of scrap devices in compliance with the applicable country-specific regulations on waste disposal (e.g., the European Waste Code 16 02 14).

Scrap materials may only be sorted by qualified persons!

- Proceed with caution when dismantling the device since you could injure yourself.
- Sort the separated components into the correct recycling line.



Disposal

The product can be returned to Murrelektronik GmbH free of charge for disposal. The same is true for the original packaging and any batteries or power packs. Any units that have been contaminated with hazardous substances will not be accepted for repair or disposal.

Returns

- Label the product and the packaging with **"For disposal"**.
- Package the product.
- Send the package to:

Murrelektronik GmbH
Falkenstraße 3
71570 Oppenweiler / GERMANY

We will make sure that the items are disposed of in accordance with German legislation. The most recent owner is responsible for transport to the return point until items arrive at their destination.

1.5 About this manual

1.5.1 Symbols

This document includes information and notes that must be observed for your own safety and to avoid injuries and equipment damage. They are marked as follows:



DANGER!

Immediate danger.

→ Failure to observe this warning involves an imminent risk of death or serious injuries.



WARNING!

Possible danger.

→ Failure to observe this warning can lead to death or serious injuries.



CAUTION!

Low-risk danger.

→ Failure to observe this warning can lead to mild or moderate injuries.

NOTICE

Possible material damage.

→ Failure to observe the warning may cause damage to the device and/or the system.



NOTE

Other technical information and notes of Murrelektronik GmbH.



RECOMMENDATION

Notes with this symbol are recommendations of Murrelektronik GmbH.



PRODUCTS AND ACCESSORIES

This symbol indicates accessories or product recommendations.

Instruction for use

→ An arrow marks instructions.

→ Read and observe the instructions.

1 | If they are numbered, it is absolutely necessary to follow them in the correct order.

2 | Read and observe the instructions.

1.5.2 Trademarks

Trademarks of the following companies and institutions are used in this documentation:

IO-Link c/o PROFIBUS Nutzerorganisation e.V. (PNO)

1.5.3 Specifications

Specification	Link
IO-Link Version 1.1 dated 2018-03	www.io-link.com

2 For your safety

2.1 General safety instructions

Qualified personnel Only qualified and safety-trained personnel may assemble, commission and operate the device.

Target group This document is intended for specialists in automation technology.

Five safety rules of electrical engineering When working on electrical systems, always observe the five safety rules of electrical engineering:

- 1 | Disconnect from the mains.
- 2 | Secure against reconnection.
- 3 | Verify that the system is dead.
- 4 | Carry out earthing and short circuiting.
- 5 | Provide protection from adjacent live parts.



NOTE

Interventions in the hardware and software of the device dare, if they are not described in this document, only be carried out by qualified personnel from Murrelektronik GmbH.



NOTE

The operating instructions must always be available to the operator of the machine where the device is used.

2.2 Intended purpose

The product has been designed and manufactured for:

- industrial use
- operation within the specified environmental conditions
- field use.



NOTE

Radio interference may occur if the device is used in a domestic or mixed environment.

- ➔ Follow standards for domestic or mixed environments!
-

2.2.1 Foreseeable misuse

Foreseeable misuse

The device:

- ➔ must not be altered with regard to design, engineering, or electrical features.
- ➔ should only be used in the application fields described in this manual, in the technical data or in the operating instructions.
- ➔ must not be used as a safety-related device. It does not meet the relevant standards. Safety functions of the system are not ensured.
- ➔ should only be used in the respective IP-protected environment.
- ➔ should only be cleaned with oil-free compressed air and a leather cloth.
- ➔ must not be used as a climbing aid.

2.2.2 Warranty and liability

Warranty and liability claims cannot be made if:

- the product is not used according to its designated use,
- damage is caused due to non-observance of the operating instructions,
- the personnel was/is not qualified.

3 Description

- IO-Link hub in 50 mm plastic housing
- 1 x M12 IO-Link (common GND)
- 8 x M12 I/O
- 16 configurable digital inputs/outputs



3.1 Product Designation Code

The product designation provides information on the device function.

Art.-No. 59712

MVP12-P6 DIO16CGND 8xM12A IOL_12 B0	
MVP12-P6	Product family + module size
DIO	<ul style="list-style-type: none"> ■ D = digital ■ I = input ■ O = output
8xM12A	Number, size, and coding of the slots <ul style="list-style-type: none"> ■ A = A-coding
IOL	■ IOL = IO-Link
B0	Basic Firmware Features

Art.-No. 59812

MVP12-P6 DIO16CGND 8xM12A IOL_12 E0	
MVP12-P6	Product family + module size
DIO	<ul style="list-style-type: none"> ■ D = digital ■ I = input ■ O = output
CGND	■ Common Ground
8xM12A	Number, size, and coding of the slots <ul style="list-style-type: none"> ■ A = A-coding
IOL	■ IOL = IO-Link
E0	Extended Firmware Features

3.2 Device structure

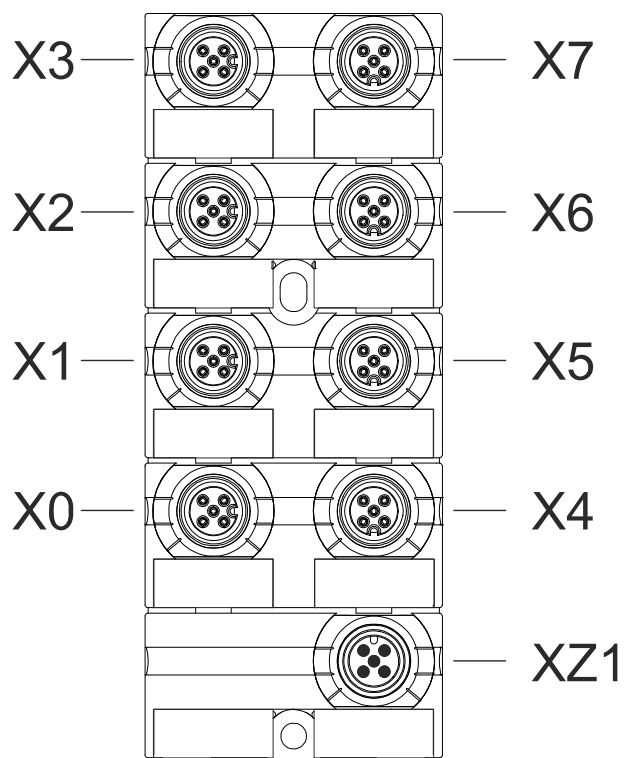




Fig. 3-1: Device structure and port designations

Art.-No.	Port designation	Explanation
59712, 59812	X0 ... X7	Digital inputs and outputs
	XZ1	Device supply, IO-Link

3.3 PIN assignment

IO-Link	XZ1 (M12 male connectors)	
	Pin 1	24 V $\overline{\text{DC}}$ US (L+)
	Pin 2	24 V $\overline{\text{DC}}$ UA (P24)
	Pin 3	0 V
	Pin 4	C/Q IO-Link
	Pin 5	0 V
DIO	X0 ... X7 (M12 female connectors)	
	Pin 1	24 V $\overline{\text{DC}}$ US (L+)
	Pin 2	DIO
	Pin 3	0 V
	Pin 4	DIO
	Pin 5	\perp

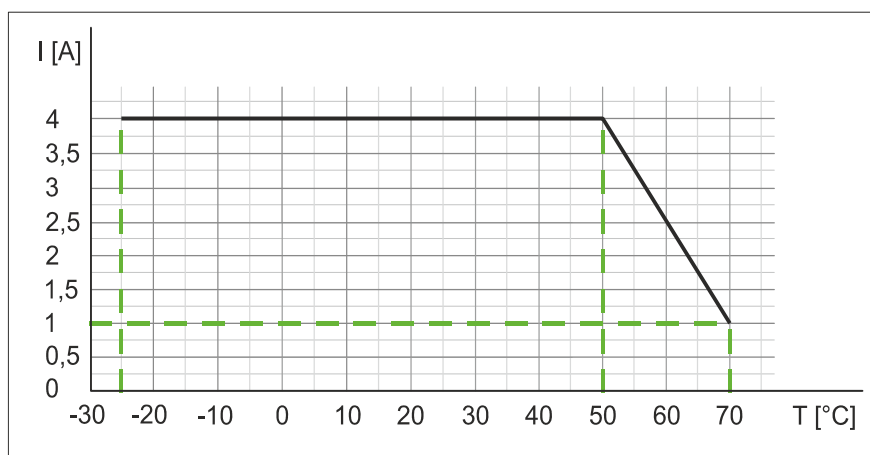
4 Technical Data

4.1 Art.-No. 59712

4.1.1 Electrical data

Device supply		
Operating voltage US/UA		24 V $\overline{---}$
Operating voltage range US/UA		18 ... 30 V $\overline{---}$
Total current US	≤ 50 °C (see derating)	≤ 4 A
Total current UA	≤ 50 °C (see derating)	≤ 4 A
Power consumption when idling		≤ 50 mA
Galvanic isolation		No

Total current US/UA



IO-Link		
Communication speed		COM3
Transfer rate		230,400 bit/s
Bus protocol		IO-Link V1.1.2, compatible with IO-Link V1.1.3
IO-Link cycle time		≥ 1 ms
VendorID		0x012F
DeviceID		0x0C0013
Process data		2 bytes (inputs), 2 bytes (outputs)

Sensor power supply		
Connection/female connector		M12 A-coded
Operating voltage		24 V $\overline{---}$
Power supply	Per port	≤ 0.5 A

Input (DI)		
Connection/female connector		M12 A-coded
Cable cross-section		≤ 0.75 mm ²
Cable length		≤ 30 m
Input characteristic	EN 61131-2	Type 1 + Type 3
Input filter		1 ms

Output (DO)		
Connection/female connector		M12 A-coded
Cable cross-section		≤0.75 mm ²
Cable length		≤30 m
Output current	Per pin	≤2 A
Switching frequency	Resistive load	≤25 Hz

4.1.2 Environmental characteristics

Climatic		
Operating temperature		-25 °C ... +70 °C
Storage temperature		-40 °C ... +85 °C
Installation height	Above sea level	≤3000 m
Relative humidity		≤95 %

Mechanical		
Vibration test	EN 60068 Parts 2-6	5 ... 500 Hz; Const. amplitude 1 mm; Acceleration 15 g
Shock test	EN 60068 Parts 2-27	50 g @ 11 ms

Electrical safety		
Degree of protection	IP Rating is not a part of UL approval.	IP65, IP67, IP68
Protection class		III
Degree of pollution		2

Emitted EMC interference		
Radio interference field strength	EN 61000-6-4 Emission	QP: 40 dB μ V/m @ 30 ... 230 MHz QP: 47 dB μ V/m @ 230 ... 1000 MHz

EMC immunity		
Electrostatic discharge (housing)	EN 61000-4-2	±4 kV @ contact ±8 kV @ air
Electromagnetic high-frequency fields (housing)	EN 61000-4-3 RF field	10 V/m
Rapid transient electric disturbances (burst) DC inputs/outputs	EN 61000-4-4	±2 kV I/O supply ±1 kV data line/ ±1 kV I/O line
Magnetic field	EN 61000-4-8	30 A/m @ 50 Hz
Conducted interferences, high-frequency fields	EN 61000-4-6, asymmetric	10 V

4.1.3 Protection

Device protection		
Overvoltage protection		Yes
Overload protection of device supply	To be ensured through load circuit monitoring	Yes
Reverse polarity protection of device supply		Yes
Short-circuit protection, sensor supply		Electronically
Short-circuit protection, output (DO)		Electronically
Protective circuit for input	Internal	Suppressor diode

4.1.4 Mechanical data


Material data		
Housing material		Valox 553 black
Flame resistance	IEC 60695-2-1	
Assembly data		
Weight	Net	200 g
Dimensions	L x W x H	126 x 50 x 34.5 mm

4.1.5 Product reliability

Product reliability		
MTTF	SN 29500 (at 40 °C and rated data)	216 years

4.1.6 Conformity, Approvals

Conformity, Approvals		
Product standard	EN 61131-2 Programmable logic controllers, Part 2	
CE	2014/30/EU 2011/65/EU	
UKCA	Electromagnetic Compatibility Regulations 2016, The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equip- ment Regulations 2012	
EMC	2014/30/EU	
REACH	No. 1907/2006	SVHC List
WEEE	2012/19/EU	
cULus		E201820
RoHS	2011/65/EU & 2015/863	Exception 6c&7a&7c1
China RoHS	SJ/T 11364-2014	25 EPUP

Hazardous substance (有害物質)							
	Part Name	Lead	Mercury	Cadmium	Hexavalent	Polybrominated	Polybrominated
	零件名稱	(Pb) 鉛	(Hg) 汞	(Cd) 鎘	Chromium	biphenyls	diphenyl ethers
					(Cr (VI)) 六价铬	(PBB) 多溴联苯	(PBDE) 多溴联苯醚
	Component part PCB ^{1 2} 组件部分 印刷电路板	X	0	0	0	0	0
	Connection Terminal / Screws / Housing ³ 接线端子 / 拧 / 外壳	X	0	0	0	0	0
0 : Indicates that the content of the harmful substance in all homogeneous materials of the component part is below the limit defined in GB/T 26572. 0 : 表明該有害物質在組成部分的所有均質材料的含量低於按GB/ T26572定義的限制。 X: Indicates that the content of the harmful substance in at least one homogeneous material of the component part exceeds the limit defined in GB/T 26572. X: 表示該有害物質在組成部分中的至少一個均質材料的含量超過按GB / T26572定義的限制。							

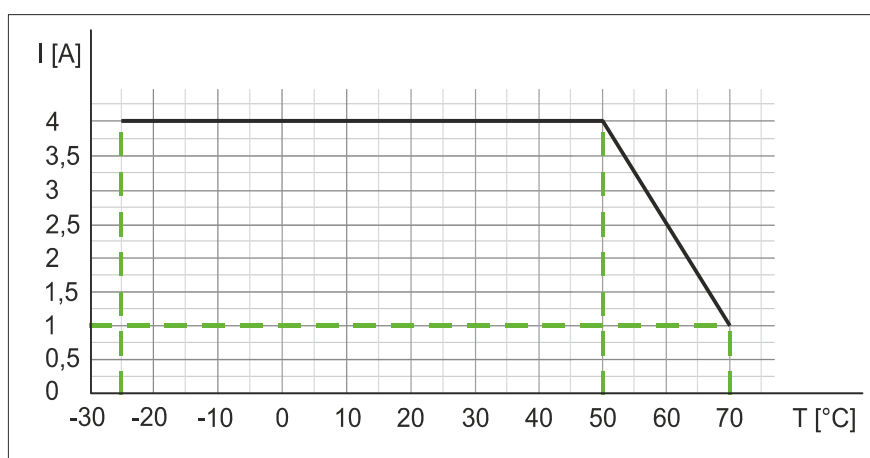
- 1 EU RoHS Directive 2011/65/EU, Annex III: Exemption 7(a) Lead in high melting temperature type solders (i.e., lead-based alloys containing 85 % by weight or more lead)
- 2 EU RoHS Directive 2011/65/EU, Annex III: Exemption 7(c)-I Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g., piezoelectronic devices, or in a glass or ceramic matrix compound.
- 3 EU RoHS Directive 2011/65/EU, Annex III: Exemption 6(c) Copper alloy containing up to 4 % lead by weight.

4.2 Art.-No. 59812

4.2.1 Electrical data

Device supply		
Operating voltage US/UA		24 V \overline{DC}
Operating voltage range US/UA		18 ... 30 V \overline{DC}
Total current US	≤ 50 °C (see derating)	≤ 4 A
Total current UA	≤ 50 °C (see derating)	≤ 4 A
Power consumption when idling		≤ 50 mA
Galvanic isolation		No

Total current US/UA



IO-Link		
Communication speed		COM3
Transfer rate		230,400 bit/s
Bus protocol		IO-Link V1.1.2, compatible with IO-Link V1.1.3
IO-Link cycle time		≥ 1 ms
VendorID		0x012F
DeviceID		0x0C0014
Process data		4 bytes (inputs), 2 bytes (outputs)

Sensor power supply		
Connection/female connector		M12 A-coded
Operating voltage		24 V \overline{DC}
Power supply	Per port	≤ 0.5 A

Input (DI)		
Connection/female connector		M12, A-coded
Cable cross section		≤ 0.75 mm ²
Cable length		≤ 30 m
Input characteristic	EN 61131-2	Type 1 + Type 3
Input filter		1 ... 10 ms, adjustable

Output (DO)		
Connection/female connector		M12 A-coded
Cable cross-section		≤0.75 mm ²
Cable length		≤30 m
Output current	Per pin	≤2 A
Switching frequency	Resistive load	≤25 Hz

4.2.2 Environmental characteristics

Climatic		
Operating temperature		-25 °C ... +70 °C
Storage temperature		-40 °C ... +85 °C
Installation height	Above sea level	≤3000 m
Relative humidity		≤95 %

Mechanical		
Vibration test	EN 60068 Parts 2-6	5 ... 500 Hz; Const. amplitude 1 mm; Acceleration 15 g
Shock test	EN 60068 Parts 2-27	50 g @ 11 ms

Electrical safety		
Degree of protection	IP Rating is not a part of UL approval.	IP65, IP67, IP68
Protection class		III
Degree of pollution		2

Emitted EMC interference		
Radio interference field strength	EN 61000-6-4 Emission	QP: 40 dB μ V/m @ 30 ... 230 MHz QP: 47 dB μ V/m @ 230 ... 1000 MHz

EMC immunity		
Electrostatic discharge (housing)	EN 61000-4-2	±4 kV @ contact ±8 kV @ air
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Rapid transient electric disturbances (burst) DC inputs/outputs	EN 61000-4-4	±2 kV I/O supply ±1 kV data line/ ±1 kV I/O line
Magnetic field	EN 61000-4-8	30 A/m @ 50 Hz
Conducted interferences, high-frequency fields	EN 61000-4-6, asymmetric	10 V

4.2.3 Protection

Device protection		
Overvoltage protection		Yes
Overload protection of device supply	To be ensured through load circuit monitoring	Yes
Reverse polarity protection of device supply		Yes
Short-circuit protection, sensor supply		Electronically
Short-circuit protection, output (DO)		Electronically
Protective circuit for input	Internal	Suppressor diode

4.2.4 Mechanical data


Material data		
Housing material		Valox 553 black
Flame resistance	IEC 60695-2-1	
Assembly data		
Weight	Net	200 g
Dimensions	L x W x H	126 x 50 x 34.5 mm

4.2.5 Product reliability

Product reliability		
MTTF	SN 29500 (at 40 °C and rated data)	216 years

4.2.6 Conformity, Approvals

Conformity, Approvals		
Product standard	EN 61131-2 Programmable logic controllers, Part 2	
CE	2014/30/EU 2011/65/EU	
UKCA	Electromagnetic Compatibility Regulations 2016, The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equip- ment Regulations 2012	
EMC	2014/30/EU	
REACH	No. 1907/2006	SVHC List
WEEE	2012/19/EU	
cULus		E201820
RoHS	2011/65/EU & 2015/863	Exception 6c&7a&7c1
China RoHS	SJ/T 11364-2014	25 EPUP

Hazardous substance (有害物質)							
	Part Name 零件名稱	Lead	Mercury	Cadmium	Hexavalent	Polybrominated	Polybrominated
		(Pb) 鉛	(Hg) 汞	(Cd) 鎘	Chromium (Cr (VI)) 六价铬	biphenyls (PBB) 多溴联苯	diphenyl ethers (PBDE) 多溴联苯醚
	Component part PCB ^{1 2} 组件部分 印刷电路板	X	0	0	0	0	0
	Connection Terminal / Screws / Housing ³ 接线端子 / 拧 / 外壳	X	0	0	0	0	0
0 : Indicates that the content of the harmful substance in all homogeneous materials of the component part is below the limit defined in GB/T 26572. 0 : 表明該有害物質在組成部分的所有均質材料的含量低於按GB/ T26572定義的限制。 X: Indicates that the content of the harmful substance in at least one homogeneous material of the component part exceeds the limit defined in GB/T 26572. X: 表示該有害物質在組成部分中的至少一個均質材料的含量超過按GB / T26572定義的限制。							

- 1 EU RoHS Directive 2011/65/EU, Annex III: Exemption 7(a) Lead in high melting temperature type solders (i.e., lead-based alloys containing 85 % by weight or more lead)
- 2 EU RoHS Directive 2011/65/EU, Annex III: Exemption 7(c)-I Electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g., piezoelectronic devices, or in a glass or ceramic matrix compound.
- 3 EU RoHS Directive 2011/65/EU, Annex III: Exemption 6(c) Copper alloy containing up to 4 % lead by weight.

5 Mounting

5.1 Requirements

- Prerequisites for mounting:
- Even mounting surface to avoid mechanical tension.
- Provide proper grounding.
- Suitable installation site in terms of vibration and shock load, temperature and humidity (see chap. 4 "Technical Data").
- Protected to avoid tearing off the connecting cables by personnel or device.

5.2 Dimensions

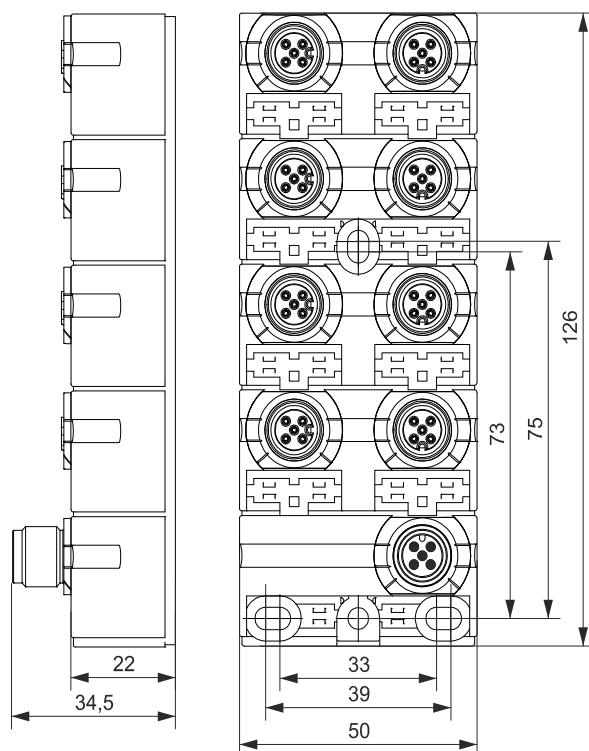


Fig. 5-1: Dimension in mm

5.3 Mounting distance

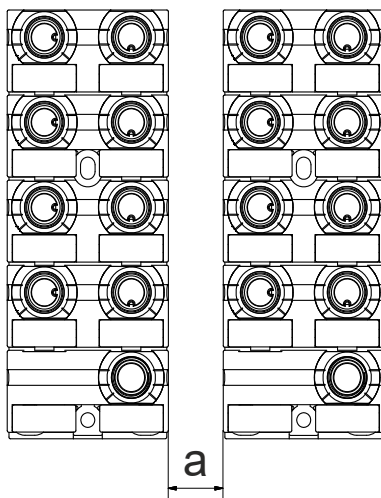


Fig. 5-2: Abstand zwischen Geräten

a | Stecker gerade: 5 mm
Stecker gewinkelt: 50 mm



NOTE

➔ If angled male connectors are used, a minimum distance of 50 mm is required.

5.4 Functional ground

FE connection

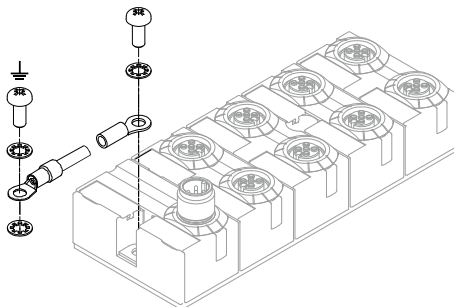


Fig. 5-3: Ring cable lug fastening

M4	2 Nm		Art.-No. 7000-98001-000000
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5.5 Mounting the device

NOTICE

Material damage due to incorrect installation.

The fastening screws and tightening torques depend on the surface of the installation site.

- ➔ Use fastening screws that are suitable for the mounting surface structure.
- ➔ Carefully tighten the screws. The indicated tightening torques must be adhered to.

NOTICE

Material damage through improper use.

Do not use the devices as climbing aids. Improper use can cause the devices to break off or to be damaged otherwise.

- ➔ Install the devices in such a way that they cannot be used as climbing aid.

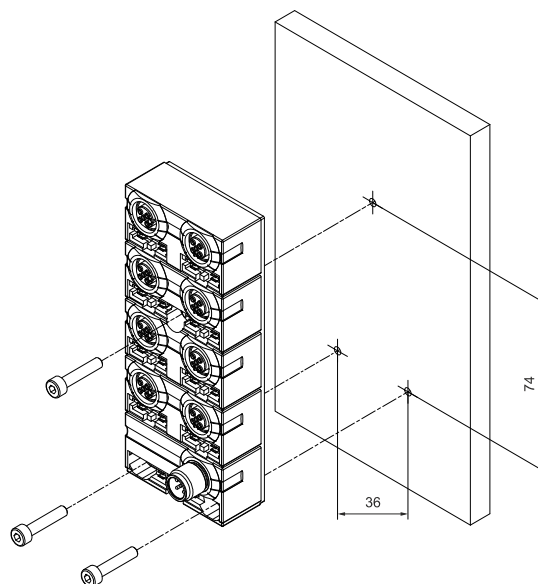


Fig. 5-4: Fastening, dimensions in mm

M4	2 Nm		Art.-No. 7000-98001-0000000
----	------	---	--------------------------------

Mounting

Mount the device in the order indicated below:

- 1 | Align housing.
- 2 | Slightly tighten an M4 bolt.
- 3 | Slightly tighten the second M4 bolt.
- 4 | Slightly tighten the third M4 bolt.
- 5 | Carefully tighten all three M4 bolts.
- 6 | *Grounding the device:*
Fasten the ring cable lug (see 5.4 "Functional ground").

6 Installation



WARNING!

High electrical voltages.

Electric shock may cause life-threatening injuries.

- Only qualified personnel are allowed to connect the device.
- Observe the five safety rules of electrical engineering.

Protective measures during connection work

- According to IEC 60364 - Protection against electric shock.



CAUTION!

Hot surface

Burnings and line damage caused by touching the devices.

- Wear thermally suitable protective gloves.
- Only use lines with a temperature resistance of at least 80 °C.

6.1 Connection lines



WARNING!

Risk of fire due to short circuit!

Supply lines and/or devices damaged by short circuit can cause overheating and fires!

- Provide intelligent current monitoring or fuse.



NOTE

Maximum cable length of the sensor and actuator cables is limited to 30 m.

6.2 Ensure tight seal

NOTICE

Damage to and failure of the device due to ingress of liquids.

The degree of protection Variable "<Schutzart>" not defined. is only guaranteed if all connections are sealed with plug connectors, screw plugs, or sealing caps.

➔ Seal unused male and female connectors.

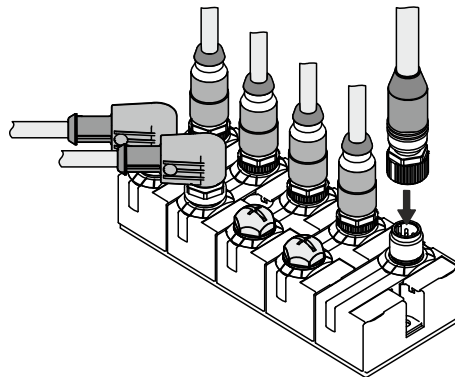


Fig. 6-1: Connecting cables

M12	0,6 Nm		Art.-No. 7000-99102-0000000
-----	--------	---	--------------------------------



PRODUCTS AND ACCESSORIES

You will find a wide range of connecting lines in the catalog or in the Murrelektronik online shop shop.murrelektronik.com

7 Operation



NOTE

After writing an application-specific tag in the IO-Link hub, the hub briefly interrupts the IO-Link connection if the text is not the same as the text stored in the hub.

7.1 LED indication

The MVP devices are equipped with the following separate LED indicators:






- LED indication for IO-Link and US sensor supply
- LED indication for actuator supply UA
- LED indication for inputs/outputs

Indication takes place by means of static lighting or flashing of the LEDs.

7.1.1 LED indication US and IO-Link






The device has a combined LED for the IO-Link status and the status of the US sensor supply. This can give rise to a mixture of green and red flashing codes (in case of overlap orange flashing code).

Combined LED indication IO-Link and US

LED indication	LED state	Description
 Green	Permanently on	IO-Link not in OPERATE status, no cyclic data communication; sensor power supply OK
 Green	Flashing 1 Hz	IO-Link in OPERATE status, cyclic data communication; sensor power supply OK
 Red	Permanently on	Short circuit DO, temperature warning etc.
 Red	Flashing 1 Hz	Communication error IO-Link
 Off		Device off, no IO-Link connection

Tab. 7-1: Indication IO-Link and US

Firmware update

LED indication	LED state	Description
 Green	Permanently on	IO-Link in IDLE status, Firmware update completed successfully
 Green	Flashing 1 Hz	IO-Link in status PREOPERATE/OPERATE, update is not yet performed
 Red	Permanently on	Update failed
 Green/ Red	Flashing 2 Hz	IO-Link in status PREOPERATE/OPERATE, Update is being performed
 Off		Device off, no IO-Link connection

Tab. 7-2: Firmware update







NOTE

At US <18 V, an error-free operation is no longer guaranteed.

7.1.2 LED indication UA




LED indication UA

LED indication	LED state	Description
 Green	Permanently on	OK, 17.5 V < UA < 30 V
 Red	Permanently on	Undervoltage, 12.5 V < UA < 17 V
 Red	Flashing 1 Hz	Overvoltage UA > 30.5 V
 Off		Device off, UA < 12 V

Tab. 7-3: LED indication UA

7.1.3 LED indication for inputs and outputs

LED indication digital inputs/outputs

LED indication	LED state	Voltage at input	Description	Logical value
 Yellow	Permanently on	24 V	Channel on	1
 Red	Permanently on	0 V	Short-circuit or overload DO	0
 Off		0 V	Device off or firmware update is being performed	0

Tab. 7-4: LED indication for digital inputs/outputs

7.2 IO-Link object directory

7.2.1 DPP (Direct Parameter Page)

ISDU index	DPP index	Object name	Access	Length in bytes	Meaning/default value	
Identification						
					Art.-No. 59712	Art.-No. 59812
0x0000	0x00	MasterCommand	W	1		
	0x01	MasterCycleTime	R/W	1		
	0x02	MinCycleTime	R	1		
	0x03	M-sequenceCapability	R	1		
	0x04	RevisionID	R/W	1		
	0x05	ProcessDataIn	R	1		
	0x06	ProcessDataOut	R	1		
	0x07	VendorID 1 (MSB)	R	1	0x012F	
	0x08	VendorID 2 (MSB)	R	1		
	0x09	DeviceID 1 (octet 2, MSB)	R/W	1	0x0C	
	0x0A	DeviceID 1 (octet 1, MSB)		1	0x00	
	0x0B	DeviceID 1 (octet 0, LSB)		1	0x0C0013	0x0C0014
	0x0C	FunctionID 1 (MSB)	R	1		
	0x0D	FunctionID 2 (LSB)	R	1		
	0x0E	Reserved	R	1		
	0x0F	SystemCommand	W	1		
0x0002		SystemCommand	R	1		
0x0003		DataStorageIndex	R	Variable		
0x000D		ProfileCharacteristic	R	Variable		
0x000E		PDInputDescriptor	R	Variable		
0x000F		PDOutputDescriptor	R	Variable		
0x0010		VendorName	R	64	Murrelektronik GmbH	
0x0011		VendorText	R	64	www.murrelektronik.com	
0x0012		ProductName	R	64	MVP12-P6 DIO16CGND 8xM12A IOL_12 B0	MVP12-P6 DIO16CGND 8xM12A IOL_12 E0
0x0013		ProductID	R	64	59712	59812
0x0014		ProductText	R	64	Digital I/O Hub MVP12-P60, IO-Link common GND DIO16 8xM12A Basic Firmware Edition: 2 Byte IN / 2 Byte OUT	Digital I/O Hub MVP12-P60, IO-Link common GND DIO16 8xM12A Extended Firmware Edition: 4 Byte IN / 2 Byte OUT
0x0015		SerialNumber	R	16	Running serial number set during production	
0x0016		HardwareRevision	R	64	e.g. "01.00"	
0x0017		FirmwareRevision	R	64	e.g. "V.1.00.00"	
0x0018		ApplicationSpecificTag	R	16 ... 32	User-specific designation e.g. "System 3/port 4"	
0x0019		FunctionTag	R	32		
0x001A		LocationTag	R	32		
Diagnostic						
0x0020		Error Count	R	2		

ISDU index	DPP index	Object name	Access	Length in bytes	Meaning/default value	
0x0024		DeviceStatus	R	1	0: Device is operating properly 1: Maintenance Required 2: Out of Specification 3: Functional Check 4: Failure 5 ... 255: Reserved	
0x0025		DetailedDeviceStatus	R	Variable	6 x (Octet 1: EventQualifier, Octet 2, 3: EventCode)	
0x0028		ProcessDataInput	R	PD- Length		
0x0029		ProcessDataOutput	R	PD- Length		
0x0031 ... 0x003F		Reserved for profiles				

7.2.2 ISDU (Indexed Service Data Unit)

Art.-No. 59812

ISDU index	Object name	Access	Length in bytes	Meaning	Default value
0x0040	Status: Power Supply Status US	R	1	Indicates the status of US - 0x00 = OK - 0x01 = undervoltage - 0x02 = overvoltage	-
0x0041	Status: Power Supply Value US	R	1	Indicates the measured voltage value of US in steps of 0.1 V. Update every 10 ms.	-
0x0042	Status: Power Supply Status UA	R	1	Indicates the status of UA - 0x00 = OK - 0x01 = undervoltage - 0x02 = overvoltage - 0x03 = OFF/not connected	-
0x0043	Status: Power Supply Value UA	R	1	Indicates the measured voltage value of UA in steps of 0.1 V. Update every 10 ms.	-
0x0044	Status: Internal Temperature Value °C	R	1	Indicates the internal device temperature from -25 °C to +70 °C in steps of 0.1 °C. Update every 10 ms.	-
0x0045	Status: Internal Temperature Value °F	R	1	Indicates the internal device temperature from -13 °F to +158 °F in steps of 0.1 °F. Update every 10 ms.	-
0x0050	Diagnosis: Short Circuit Detection DO	R	16	Allows the detection of a short circuit occurred on a specific channel. - Subindex 1: X0 Pin 4 - Subindex 2: X0 Pin 2 ... - Subindex 15: X7 Pin 4 - Subindex 16: X7 Pin 2	-
0x0060	Identification: Identification ID	R/W	2	Identification number for device identification. The value is shown in the input process data.	0x0000
0x0061	Identification: User-Defined Serial Number	R/W	2	User-defined serial number which ensures that the device is connected to the correct master.	0x0000
0x0062	Diagnosis: Disable General Diagnosis	R/W	16	Configurable diagnostics: 0 = active 1 = deactivated	0
0x0070	In-/outputs: Bit Mapping Layout	R/W	1	Bit mapping layout of the process data. 0 = port-based bit mapping 1 = pin-based bit mapping	0
0x0072	In-/Outputs: Channel Configuration	R/W	16	Setting of the I/O function per channel. - Subindex 1: X0 Pin 4 - Subindex 2: X0 Pin 2 ... - Subindex 15: X7 Pin 4 - Subindex 16: X7 Pin 2 Setting per channel (subindex): 0 = auto-configuration/universal (DIO) 1 = input 2 = output	0
0x0080	Inputs: Inverting Input Logic	R/W	2	Inverting of the input logic per channel. - Bit 0: X0 Pin 4 - Bit 1: X0 Pin 2 ... - Bit 14: X7 Pin 4 - Bit 15: X7 Pin 2 Setting per channel (subindex): 0 = normal, no inverting 1 = inverted	0

ISDU index	Object name	Access	Length in bytes	Meaning	Default value
0x0081	Inputs: Signal Extension/Impulse Stretching	R/W	16	<p>Extension of the input pulses in steps of 10 ms.</p> <ul style="list-style-type: none"> - Subindex 1: X0 Pin 4 - Subindex 2: X0 Pin 2 ... - Subindex 15: X7 Pin 4 - Subindex 16: X7 Pin 2 <p>Setting per channel (subindex): 0 = 0 ms/OFF 1 = 10 ms 2 = 20 ms 3 = 30 ms ... 255 = reserved</p>	0
0x0082	Inputs: Input Debounce/Filter Time	R/W	16	<p>Setting of the input filter time per channel.</p> <ul style="list-style-type: none"> - Subindex 1: X0 Pin 4 - Subindex 2: X0 Pin 2 ... - Subindex 15: X7 Pin 4 - Subindex 16: X7 Pin 2 <p>Setting per channel (subindex): 0 = OFF (no filtering) 1 = 1 µs 2 = 10 µs 3 = 100 µs 4 = 1 ms 5 = 2 ms 6 = 3 ms 7 = 5 ms 8 = 10 ms</p>	4
0x0090	Outputs: Short Circuit Recovery Behavior	R/W	2	<p>Defines the behavior of each individual output (channel) after a short circuit/overload:</p> <ul style="list-style-type: none"> - Bit 0: X0 Pin 4 - Bit 1: X0 Pin 2 ... - Bit 14: X7 Pin 4 - Bit 15: X7 Pin 2 <p>Setting per channel (subindex): 0 = automatic reset after 60 sec. 1 = manual reset via output process data</p> <p>For a manual reset, set the respective bit in the process data from 0 to 1.</p>	0
0x0091	Outputs: Fail-Safe Behavior	R/W	16	<p>Defines the behavior of each individual output (channel) in case of a loss of communication with the master.</p> <ul style="list-style-type: none"> - Subindex 1: X0 Pin 4 - Subindex 2: X0 Pin 2 ... - Subindex 15: X7 Pin 4 - Subindex 16: X7 Pin 2 <p>Setting per channel (subindex): 0 = logical 0/OFF 1 = logical 1/ON 2 = maintain last state</p>	0

7.3 Diagnostic

7.3.1 Vendor-specific IO-Link events



NOTE

In addition to the vendor-specific IO-Link events listed here, the standard events of the IO-Link specification also apply, version see chapter 1.5.3 "Specifications".

Event code	Event type	Description	Action
0x4000	Error	Temperature error	Overload
0x4210	Warning	Allowed device temperature exceeded	Localize the heat source
0x4220	Warning	Device temperature dropped below admissible value	Isolate the device
0xFF91	Notification	Upload of the Data storage (DS) by the Master required	Perform DS-Upload
0x5100	Error	General fault in supply voltage (UL1)	Check availability
0x5110	Warning	Overvoltage in the main power supply (UL1)	Check the permitted voltage range
0x5111	Warning	Undervoltage in the main power supply (UL1)	Check the permitted voltage range
0x1830	Warning	Secondary sensor supply voltage (UL2) is over-run	Check the permitted voltage range
0x1831	Warning	Secondary sensor supply voltage (UL2) is under-run	Check the current consumption of connected consumers
0x1832	Error	Secondary power supply fault (UL2) - below shutdown voltage	Check the current consumption of connected consumers
0x7710	Error	Short circuit	Check installation
0x8CA0	Error	DIO pin current overload/shortcircuit - Port 0 Pin 4	Check installation
0x8CA1	Error	DIO pin current overload/ shortcircuit - Port 0 Pin 2	Check installation
0x8CA2	Error	DIO pin current overload/ shortcircuit - Port 1 Pin 4	Check installation
0x8CA3	Error	DIO pin current overload/ shortcircuit - Port 1 Pin 2	Check installation
0x8CA4	Error	DIO pin current overload/shortcircuit - Port 2 Pin 4	Check installation
0x8CA5	Error	DIO pin current overload/ shortcircuit - Port 2 Pin 2	Check installation
0x8CA6	Error	DIO pin current overload/shortcircuit - Port 3 Pin 4	Check installation
0x8CA7	Error	DIO pin current overload/ shortcircuit - Port 3 Pin 2	Check installation
0x8CA8	Error	DIO pin current overload/shortcircuit - Port 4 Pin 4	Check installation
0x8CA9	Error	DIO pin current overload/ shortcircuit - Port 4 Pin 2	Check installation
0x8CAA	Error	DIO pin current overload/shortcircuit - Port 5 Pin 4	Check installation
0x8CAB	Error	DIO pin current overload/ shortcircuit - Port 5 Pin 2	Check installation
0x8CAC	Error	DIO pin current overload/shortcircuit - Port 6 Pin 4	Check installation
0x8CAD	Error	DIO pin current overload/ shortcircuit - Port 6 Pin 2	Check installation
0x8CAE	Error	DIO pin current overload/shortcircuit - Port 7 Pin 4	Check installation
0x8CAF	Error	DIO pin current overload/ shortcircuit - Port 7 Pin 2	Check installation
0x8CD0	Error	Power pin current overload/ shortcircuit - Port 0 Pin 1	Check installation
0x8CD1	Error	Power pin current overload/ shortcircuit - Port 1 Pin 1	Check installation
0x8CD2	Error	Power pin current overload/ shortcircuit - Port 2 Pin 1	Check installation
0x8CD3	Error	Power pin current overload/ shortcircuit - Port 3 Pin 1	Check installation
0x8CD4	Error	Power pin current overload/ shortcircuit - Port 4 Pin 1	Check installation
0x8CD5	Error	Power pin current overload/ shortcircuit - Port 5 Pin 1	Check installation
0x8CD6	Error	Power pin current overload/ shortcircuit - Port 6 Pin 1	Check installation
0x8CD7	Error	Power pin current overload/ shortcircuit - Port 7 Pin 1	Check installation

Tab. 7-5: IO-Link events

7.4 Process data

7.4.1 Port-Based Bitmapping

7.4.1.1 Input data

Byte 0 inputs X0 ... X3								
Bit	7	6	5	4	3	2	1	0
Contact	Pin2_X3	Pin4_X3	Pin2_X2	Pin4_X2	Pin2_X1	Pin4_X1	Pin2_X0	Pin4_X0

Byte 1 inputs X4 ... X7								
Bit	7	6	5	4	3	2	1	0
Contact	Pin2_X7	Pin4_X7	Pin2_X6	Pin4_X6	Pin2_X5	Pin4_X5	Pin2_X4	Pin4_X4



NOTE

Byte 2 and 3 are supported only by E0 devices.

Byte 2				
Bit	7	6	5	4
Diagnostic	Global status 0 = no diagnostic 1 = fault detected	Channel X 0 = channel 1 ... 15 = channel 16	Channel X 0 = channel 1 ... 15 = channel 16	Channel X 0 = channel 1 ... 15 = channel 16

Byte 2				
Bit	3	2	1	0
Diagnostic	DIA at channel X 0 = channel 1 ... 15 = channel 16	Error/Warning at Input/Output (short-circuit or overload)	Error/Warning because of temperature rating (threshold can be defined inside object)	Error/Warning at power supply (too low or high)

Byte 3	
Bit	7 ... 0
Device Identification	User defined bits, e. g. for tool change applications 0 = not used 1 ... 255 = ID value is read out from object

7.4.1.2 Output data

Process data
Digital outputs

Byte 0 outputs X0 ... X3

Bit	7	6	5	4	3	2	1	0
Contact	Pin2_X3	Pin4_X3	Pin2_X2	Pin4_X2	Pin2_X1	Pin4_X1	Pin2_X0	Pin4_X0

Byte 1 outputs X4 ... X7

Bit	7	6	5	4	3	2	1	0
Contact	Pin2_X7	Pin4_X7	Pin2_X6	Pin4_X6	Pin2_X5	Pin4_X5	Pin2_X4	Pin4_X4

7.4.2 Pin-Based Bitmapping

7.4.2.1 Input data

Process data Digital inputs

Byte 0 inputs X0 ... X7

Bit	7	6	5	4	3	2	1	0
Contact	Pin4_X7	Pin4_X6	Pin4_X5	Pin4_X4	Pin4_X3	Pin4_X2	Pin4_X1	Pin4_X0

Byte 1 inputs X0 ... X7

Bit	7	6	5	4	3	2	1	0
Contact	Pin2_X7	Pin2_X6	Pin2_X5	Pin2_X4	Pin2_X3	Pin2_X2	Pin2_X1	Pin2_X0



NOTE

Byte 2 and 3 are supported only by E0 devices.

Byte 2				
Bit	7	6	5	4
Diagnostic	Global status 0 = no diagnostic 1 = fault detected	Channel X 0 = channel 1 ... 15 = channel 16	Channel X 0 = channel 1 ... 15 = channel 16	Channel X 0 = channel 1 ... 15 = channel 16

Byte 2				
Bit	3	2	1	0
Diagnostic	DIA at channel X 0 = channel 1 ... 15 = channel 16	Error/Warning at Input/Output (short-circuit or overload)	Error/Warning because of temperature rating (threshold can be defined inside object)	Error/Warning at power supply (too low or high)

Byte 3	
Bit	7 ... 0
Device Identification	User defined bits, e. g. for tool change applications 0 = not used 1 ... 255 = ID value is read out from object

7.4.2.2 Output data

Output Process Data

Byte 0 outputs X0 ... X7

Bit	7	6	5	4	3	2	1	0
Contact	Pin4_X7	Pin4_X6	Pin4_X5	Pin4_X4	Pin4_X3	Pin4_X2	Pin4_X1	Pin4_X0

Byte 1 outputs X0 ... X7

Bit	7	6	5	4	3	2	1	0
Contact	Pin2_X7	Pin2_X6	Pin2_X5	Pin2_X4	Pin2_X3	Pin2_X2	Pin2_X1	Pin2_X0

8 Maintenance and cleaning



NOTE

- Replace defective or damaged devices.
-

Device cleaning:

- Use only oil-free compressed air or spirit
- Use only lint-free materials (e.g. leather cloth)
- Do not use contact spray

9 Appendix

9.1 Accessories

Description	Art.-No.
Screw Plug M12 Metal	996049
Plastic M12 screw plug, VE10	58627
Crimping cable lugs, ring form 10 mm ² (M4) (narrow)	4000-71004-0000004
Grounding strap screw-down set M4	4000-71003-0101604

Designation	Art.-No.
6-part screwdriver set	7000-98001-0000000
M12 torque wrench set, AF 13	7000-99102-0000000



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10 Legal notes

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