UMB ISO Converter ISOCON

Operational Manual

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1 Scope of supply

The following items are included with delivery:
- UMB ISO Converter (ISOCON)

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2 Order numbers and variant code

2.1 Product variants

Variant	Order number
UMB ISO Converter ISOCON	8160.UISO

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3 About this manual

3.1 Other applicable documents
The following documents contain further information on installation, maintenance and calibration:

▸ Quick installation guide

3.2 General signs and symbols
The signs and symbols used in the operational manual have the following meaning:

Practical tip

i This symbol indicates important and useful information.

Action

✓ Prerequisite that must be met before performing an action.

▸ Step 1

⇨ Intermediate result of an action

▸ Step 2

⇨ Result of a completed action

List

– List item, 1st level

– List item, 2nd level

3.3 Explanation of warnings
To avoid personal injury and material damage, you must observe the safety information and warnings in the operating manual. The warnings use the following danger levels:

⚠ **WARNING**

WARNING

This indicates a potentially hazardous situation. If the hazardous situation is not avoided, it may result in death or serious injuries.

⚠ **CAUTION**

CAUTION

This indicates a potentially hazardous situation. If the hazardous situation is not avoided, it may result in moderately serious or minor injuries.

NOTICE

NOTE

This indicates a situation from which damage may arise. If the situation is not avoided, products may be damaged.

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4 General safety instructions

4.1 Intended use
The UMB ISO Converter (ISOCON) is used to build UMB networks.

4.2 Potential misuse
Any use of the product that does not comply with the intended use, be this intentional or negligent, is forbidden by the manufacturer.

▸ Use the product only as described in the operational manual.

4.3 Pay attention to all documents
The ISOCON can be used to connect multiple devices in a network. To avoid damage and injury, read the manuals of all devices used.

▸ Read this manual and all manuals for the devices used in the network before unpacking, commissioning, and operating the equipment.

▸ Pay attention to all safety information and warnings.

▸ Ensure that the protection provided by the ISOCON is not compromised.

4.4 Personnel qualification
The equipment described in this manual must be installed, operated, maintained and repaired by qualified personnel only.

▸ Obtain training from OTT HydroMet if necessary.

4.5 Operator obligations
The installer is responsible for observing the safety regulations. Unqualified personnel working on the product can cause risks that could lead to serious injury.

▸ Have all activities carried out by qualified personnel.

▸ Ensure that everybody who works on or with the product has read and understood the operational manual.

▸ Ensure that safety information is observed.

▸ File the operational manual together with the documentation of the entire system and ensure that it is accessible at all times.

▸ The operational manual is part of the product, forward the operational manual together with the product.

4.6 Personnel obligations
To avoid equipment damage and injury when handling the product, personnel are obliged to the following:

▸ Read the operational manual carefully before using the product for the first time.

▸ Pay attention to all safety information and warnings.

▸ If you do not understand the information and procedure explanations in this manual, stop the action and contact the service provider for assistance.

▸ Wear the necessary personal protective equipment.

4.7 Correct handling
If the product is not installed, used and maintained correctly, there is a risk of injury. The manufacturer does not accept any liability for personal injury or material damage resulting from incorrect handling.

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- ▸ Install and operate the product under the technical conditions described in the operational manual.
- ▸ Do not change or convert the product in any way.
- ▸ Do not perform any repairs yourself.
- ▸ Get OTT HydroMet to examine and repair any defects.
- ▸ Ensure that the product is correctly disposed of. Do not dispose of it in household waste.

4.8 Certification

CE (EU)
The equipment meets the essential requirements of EMC Directive 2014/30/EU.

FCC (US)
FCC Part 15, Class "B" Limits

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

IC (CA)
Canadian Radio Interference-Causing Equipment Regulation, ICES-003, "Class B"

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

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5 Product description

5.1 Design and function

The UMB ISO Converter (ISOCON) is an intelligent interface converter with electrical isolation for building UMB networks. The devices are easily installed on standard EN mounting rails and networked together by means of mounting rail bus connectors. The 24 V feed for the power supply takes place via the bus connector. Two, 6 pole DIP switches are provided in the device for configuration of the ISOCON.

5.2 Product overview
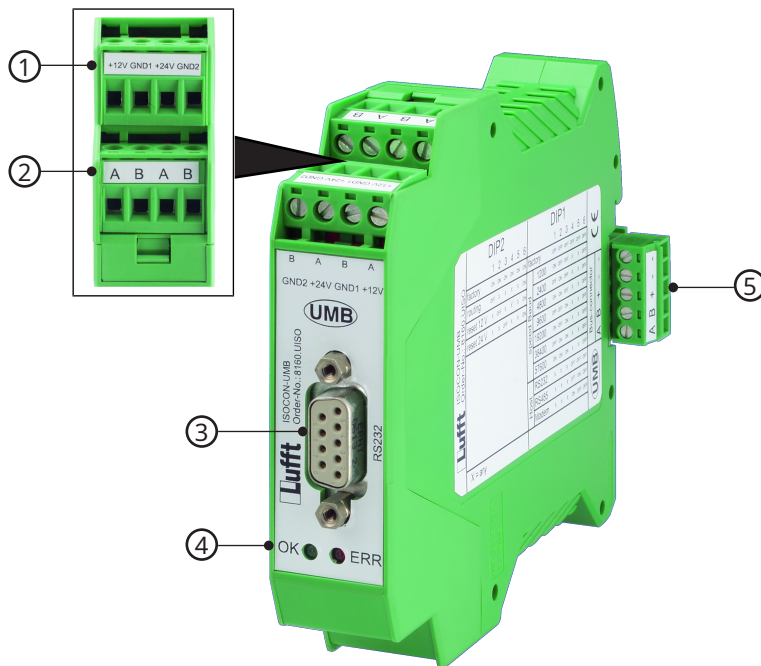
1	Sensor voltage output 12 V/24 V (SS3-2)	4	Status LED's
2	RS-485 sensor interface (SS3-1)	5	Power supply and RS-485 bus interface
3	RS-232 interface		

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6 Transport, storage, and unpacking

6.1 Transport
- ▸ Transport the product always in its original packaging.
- ▸ Ensure that the product is not mechanically stressed during transport.

6.2 Storage
- ▸ Store within specified temperature ranges.
- ▸ Store in dry area.
- ▸ Store in original box where possible.

6.3 Unpacking
- ▸ Carefully remove the product from the packaging.
- ▸ Check that the delivery is complete and undamaged.
- ▸ If you find any damage or if the delivery is incomplete, then immediately contact your supplier or manufacturer.
- ▸ Keep the original packaging for any further transportation.

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7 Installation

7.1 Mechanical installation

7.1.1 Installing mounting rail bus connector

▸ Clip the mounting rail bus connector onto a grounded DIN rail.
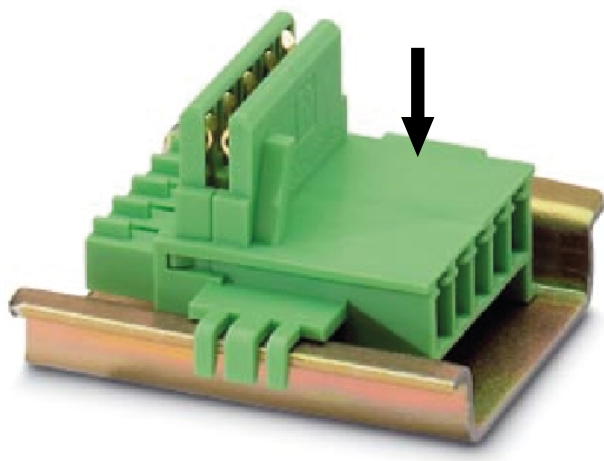
7.2 Electrical installation
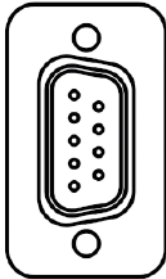
7.2.1 Electrical connections

ℹ️ Pay attention to all safety instructions and warnings regarding electricity in the manuals of the devices installed with ISOCON.

7.2.1.1 RS-232 9-pole SUB-D socket

This connection serves to connect the UMB network to the host system. As the UMB system works according to the master-slave principle, only one master may be connected on a UMB network. The RS-232 interface is configured via the DIP1 switch.

Pin assignment

Pin number	Assignment	Comment	
1	N/C	Not connected	
2	TXD	Transmit data	
3	RXD	Receive data	
4	DTR*	DEE operational readiness	
5	GND	Operational earth	
6	DSR*	Operational readiness	
7	CTS	Readiness to transmit	
8	RTS	Switch on transmission	
9	RI	Ring signal	

* The pins 4 and 6 are internally bridged.

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7.2.1.2 Sensor power supply and RS-485 sensor connection

Pin assignment SS3–2

Pin number	Assignment	Comment
1	+12 V	Switchable electrically isolated power supply for all 12 V sensors
2	GND1	Electrically isolated earth for all 12 V sensors
3	+24 V	Switchable power supply for all 24 V sensors
4	GND2	Earth for all 24 V sensors

Pin assignment SS3–1

Pin number	Assignment	Comment
1	A	2 wire RS-485 A
2	B	2 wire RS-485 B
3	A	2 wire RS-485 A, internally bridged with Pin 1
4	GND2	2 wire RS-485 B, internally bridged with Pin 2

ℹ️ A terminator of approx. 120 Ohms is recommended between terminals A and B on long lines (> 300 m).

7.2.1.3 Mounting rail bus connection

1	Earth 24 V power supply, feed		4	B1, internal bus
2	Earth 24 V power supply, feed		5	A1, internal bus
3	+24 V power supply, feed			

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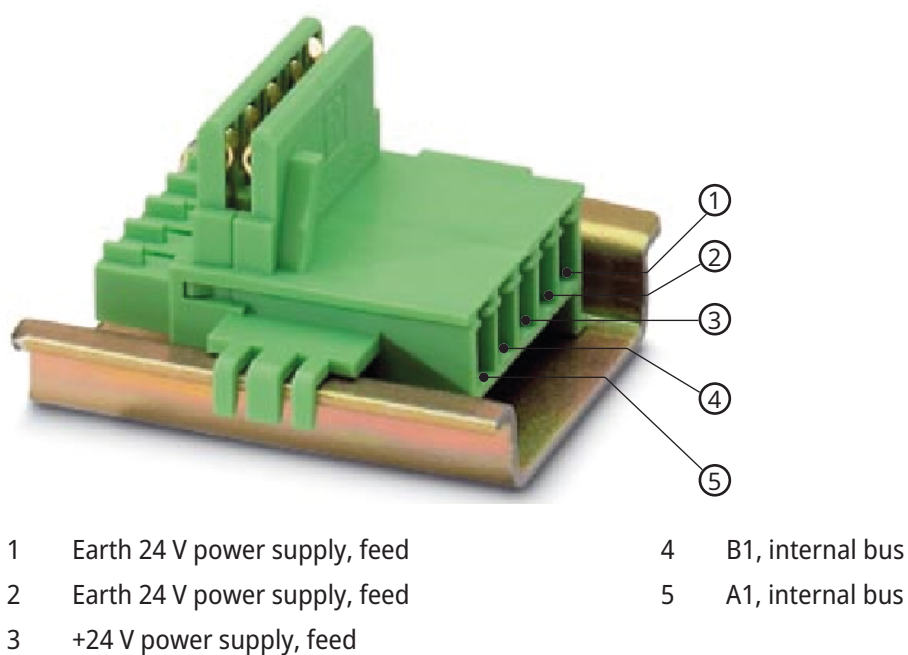
7.2.2 Configuring and installing ISOCON

NOTICE

Damage due to static discharge!

Static discharge can damage electronic equipment.

▸ To discharge the electrical charge from your body before opening the housing, touch a grounded surface, e.g. the metal housing of the control panel.

▸ Unscrew the top of the housing on the left and right.
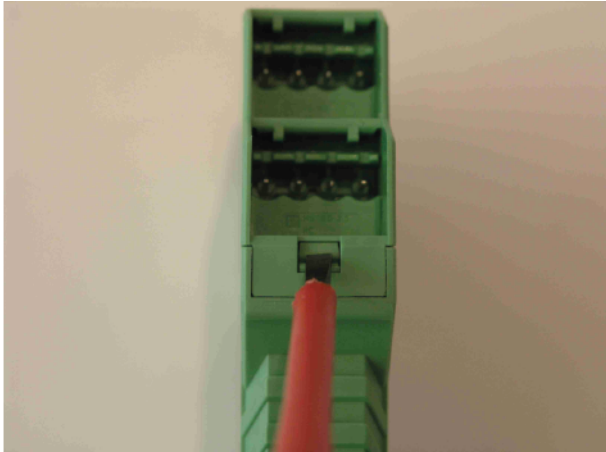
▸ Pull the printed circuit board out of the housing until the end stop.
▸ Set the desired configuration on both DIP switches (see tables below).
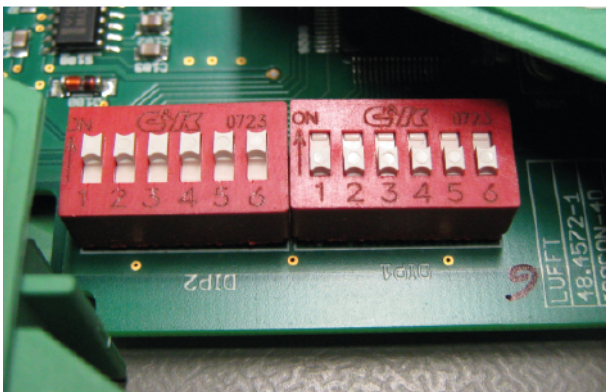
▸ Close the housing so that the top and bottom sections engage together.
▸ Install the ISOCON on the mounting rail bus connector.

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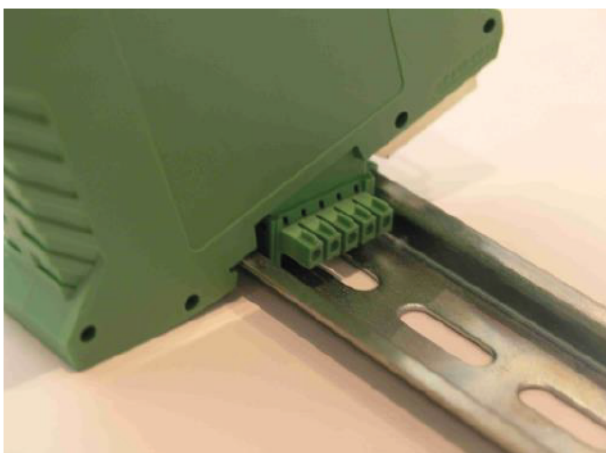
DIP1 switch configuration

The host communication is configured with the DIP1 switch.

Setting	DIP1 switch						Comment
	1	2	3	4	5	6	
Factory setting	OFF	OFF	OFF	OFF	OFF	OFF	Host communication: RS-232, baud rate 19200 baud
1200 Baud	ON	OFF	OFF	X	X	OFF	Firmware updates for the USB sensors are not possible at these baud rates.
2400 Baud	OFF	ON	OFF	X	X	OFF	Firmware updates for the USB sensors are not possible at these baud rates.
4800 Baud	ON	ON	OFF	X	X	OFF	–
9600 Baud	OFF	OFF	ON	X	X	OFF	–
19200 Baud	ON	OFF	ON	X	X	OFF	–
38400 Baud	OFF	ON	ON	X	X	OFF	–
57600 Baud	ON	ON	ON	X	X	OFF	–
Host communication RS-232	X	X	X	OFF	OFF	OFF	–
Host communication RS-485/2D	X	X	X	OFF	ON	OFF	–
Watchdog RS-232	X	X	X	ON	OFF	OFF	If the "Watchdog RS-232" function is activated, the ISOCON monitors the data traffic on the RS-232 interface. If there is no data enquiry for more than 45 minutes, the 12 V/24 V output is reset in accordance with DIP2. This function can be used to reset a modem, for example.
Diagnostic mode, for internal use only	X	X	X	X	X	ON	–

X: Any desired setting is possible.

DIP2 switch configuration

The DIP2 switch can be used to activate various modes which contribute to data security.

Setting	DIP2 switch						Comment
	1	2	3	4	5	6	
Factory setting	ON	ON	ON	ON	ON	ON	12 V and 24 V reset functions are activated.
Automatic routing	OFF	X	X	X	X	ON	Function currently not available
Reset function 12 V	X	OFF	X	X	X	ON	Cyclically switches the 12 V power supply on and off if communication with the sensor is not possible.
Reset function 24 V	X	X	OFF	X	X	ON	Cyclically switches the 24 V power supply on and off if communication with the sensor is not possible.
Diagnostic mode, for internal use only	X	X	X	X	X	OFF	–

X: Any desired setting is possible.

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8 Commissioning

8.1 Commissioning ISOCON

‣ Ensure the power is off.

‣ Configure all modules in accordance with the requirements.

‣ Clip the required number of mounting rail bus connectors onto the grounded DIN rail.

‣ Connect all ISOCON modules.

‣ Connect one UMB sensor to each ISOCON module. Pay attention to the different voltage ranges (12 V/24 V) of the UMB sensors and the correct polarity on the power supply and bus connection.

‣ Connect the 24 V power supply to the mounting rail bus connectors.

‣ Connect the host system to any desired RS-232 interface of an ISOCON or to the RS-485 interface of an additional ISOCON converter. In this case, the host communication of this ISOCON converter must be set to RS-485/2D.

8.2 Status LED's

The 2 LED's on the front side display the correct configuration and functioning of the ISOCON.

LED	State	Meaning
Red LED	Lights up permanently after switch-on	Configuration fault
	Lights up during operation	The reset function for interrupting the sensor power supply is activated.
Green LED	Flashes briefly (20 ms) every 10 seconds	Displays the function of the device.
	Lights up for a longer period (> 500 ms)	Data is being received from the connected sensor.

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9 Maintenance

The product does not require any maintenance.

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10 Troubleshooting

10.1 Error elimination

Error	Possible cause	Corrective action
Red LED permanently lit	Incorrect DIP switch configuration	▸ Check DIP switch setting.
Red LED lights briefly	Incorrect sensor connection	▸ Connect the sensor correctly.

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11 Repair

11.1 Customer support

▸ Have repairs carried out by OTT HydroMet service personnel.

▸ Only carry out repairs yourself, if you have first consulted OTT HydroMet.

▸ Contact your local representative: www.otthydromet.com/en/contact-us

▸ Include the following information:

– instrument model

– instrument serial number

– details of the fault or problem

– examples of data files

– readout device or data acquistion system

– interfaces and power supplies

– history of any previous repairs or modifications

– pictures of the installation

– overview of the local environment conditions

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12 Notes on disposing of old devices

Member States of the European Union

In accordance with the German Electrical and Electronic Equipment Act (ElektroG; national implementation of EU Directive 2012/19/EU), OTT HydroMet takes back old devices in the Member States of the European Union and disposes of them in the proper manner. The devices that this concerns are labeled with the following symbol:

▶ For further information on the take-back procedure contact OTT HydroMet:

OTT HydroMet Fellbach GmbH
Service & Technical Support
Gutenbergstraße 20
70736 Fellbach
Germany
phone: +49 711 518 22 0
email: met-support@otthydromet.com

All other countries

▶ Dispose of the product in the proper manner following decommissioning.

▶ Observe the country-specific regulations on disposing of electronic equipment.

▶ Do NOT dispose of the product in household waste.

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13 Technical data

13.1 General technical data

Specification	Value
Housing	PA-V0, green
Connections	COMBICON plug-in connectors 0.2 – 2.5 mm^2 (AWG 24 – 12)
Protection type	IP20
Operating temperature range	-30 to +60 °C
Storage temperature range	-40 to +70 °C
Humidity range	0 to 95 %

13.2 Electrical data

Specification	Value
Power supply	24 V ±10 %
Power consumption	< 50 mA at 24 V; excluding sensor
Connection	Phoenix bus connector, gold, 5-pole
Function display	Green LED, flashes every 10 seconds
Sensor power supply, 12 V output	max. 150 mA, electrically isolated
Sensor power supply, 24 V output	max. 2 A (observe the maximum current of the internal bus)

13.3 Data transfer

RS-232 interface

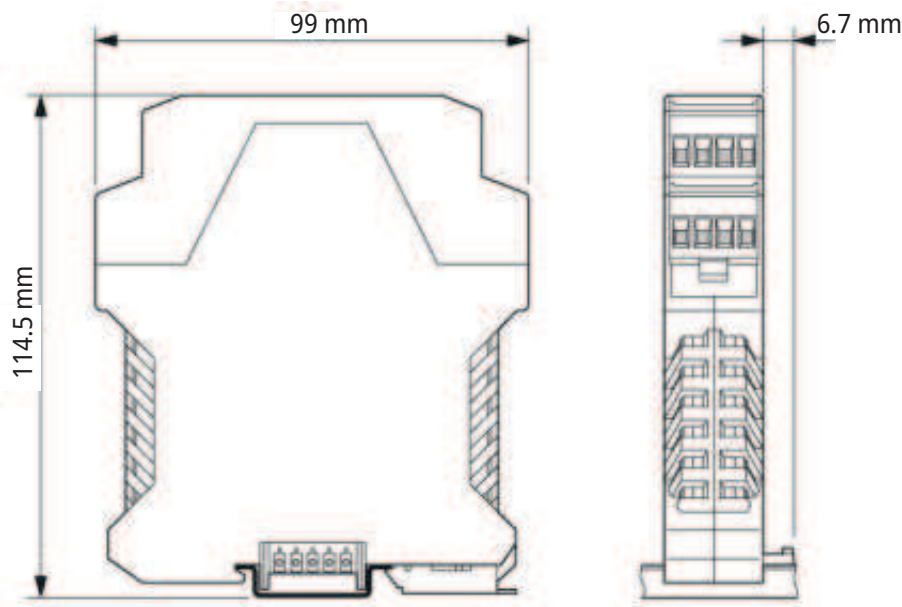| Specification	Value
Transmission type	Protocol-transparent, 8 data bits, 1 stop bit, no parity
Configuration	DIP switch
Transmission rates	1200, 2400, 4800, 9600, 19200, 38400, 57600 baud
Transmission length	0 to 15 m, from 38400 baud max. 5 m recommended
Connection	9-pole SUB-D socket

RS-485 interface sensor

Specification	Value
Standard	RS-485 2 wire, half-duplex
Transmission type	Protocol-transparent, 8 data bits, 1 stop bit, no parity
Tri-State	1 bit after stop bit edge
Transmission rate	19200 baud
Transfer size	0 to1200 m, twisted pair, screened
Function display	LED green on data reception, on for approx. 0.5 seconds
Connection	COMBICON plug-in connector 0.2 – 2.5 mm^2 (AWG 24 – 12)

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RS-485 interface internal bus

Specification	Value
Standard	RS-485 2 wire, half-duplex
Transmission type	Protocol-transparent, 8 data bits, 1 stop bit, no parity
Tri-State	2 bit after stop bit edge
Transmission rate	19200 baud
Connection	Phoenix bus connector, gold, 5-pole, maximum 8 A

13.4 Dimensions and weight

Specification	Value
Width	22.5 mm
Height with interface	118.6 mm
Weight	approx. 120 g

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Contact Information