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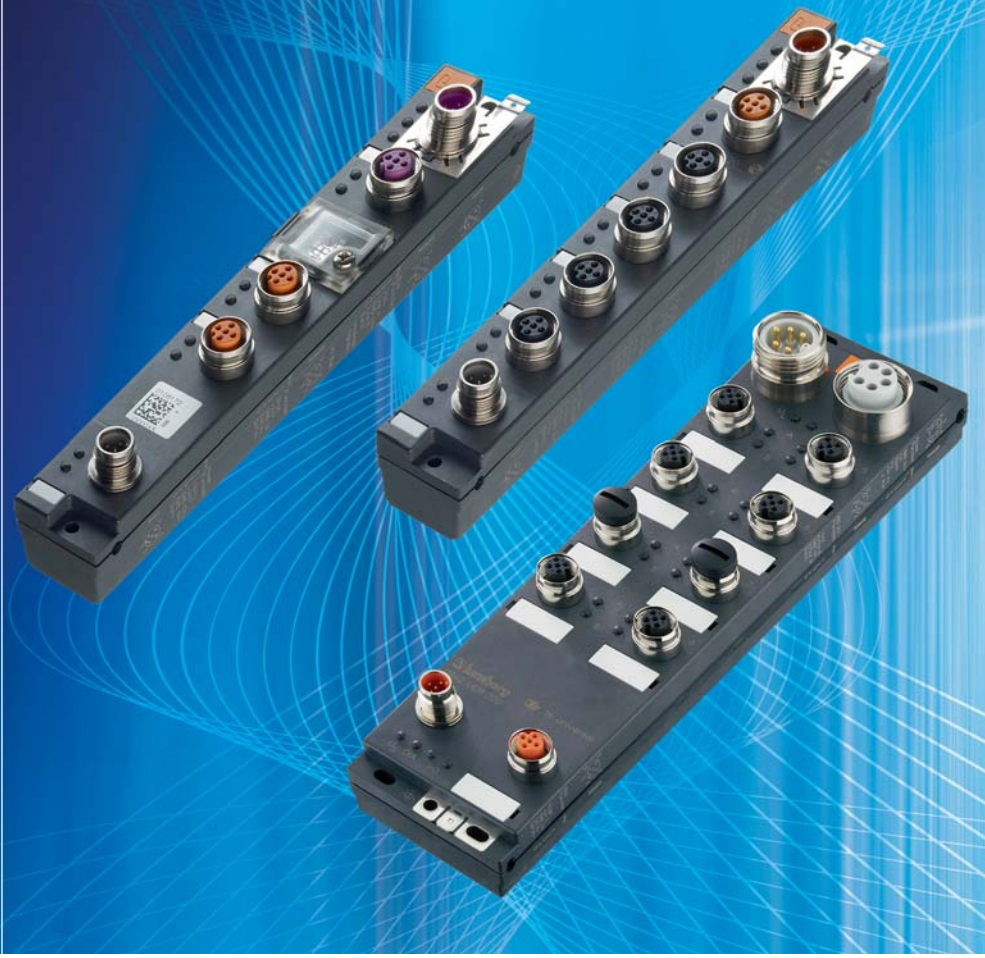
LioN-Link

The Modular, Fieldbus Independent I/O System



Optimization of Field Wiring Through the Utilization of a Modular IP 67 Fieldbus Solution

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LioN-Link: The open system for more freedom, more applications and more industries.

About Belden®

Effective Signal Transmission Solutions

At Belden, our customers and their requirements are our top priority. All of our leading brands – Belden®, Hirschmann™ and Lumberg Automation™ – enjoy an excellent reputation for quality and added value in their respective core markets.

The combination of proven experience and innovation behind these brands has made Belden the largest provider of an integrated range of wired and wireless systems.

Belden offers an extensive product range, including cables, connectors, I/O modules and networking components. Thanks to cooperation between our brands, we are able to provide complete signal transmission solutions from a single source with worldwide market access and delivery.

Products, People and Performance

Our extensive product range means we can deliver complete solutions backed up by comprehensive technical services. We can provide consultation, development, design and training to meet your standards and expectations.

We work with qualified partners and local experts to ensure that our world class products integrate seamlessly into your applications, helping you to achieve the best possible performance and added value.

Connectivity Solutions for Automation Technology

The Lumberg Automation™ and Hirschmann™ brands are synonymous with high quality connectors and innovative wiring solutions for use in virtually all areas of automation. Our customers use Lumberg Automation™ and Hirschmann™ products in machine building and plant engineering, building wiring installation and photovoltaic applications.

The product portfolio for these two brands comprises a wide range of connectors for sensors and actuators, single and double ended cordsets as well as distribution systems and I/O modules for connection to fieldbus and Ethernet networks.

Thanks to many years of close cooperation with system integrators and end customers in the machine building market, Lumberg Automation™ is able to deliver customized solutions using a wide range of products designed according to the latest market standards and leading edge technologies.

Lumberg Automation™ and Hirschmann™ products are renowned for their high mechanical and electrical loading capacity, excellent chemical resistance and ease of use.

Together, Lumberg Automation™ and Hirschmann™ are among Europe's leading suppliers of connectors and wiring solutions for automation technology.

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From the Solution of a Problem to the LioN-Link Standard

Lumberg Automation™ offers effective connectivity solutions for demanding applications at field level.

The development and manufacturing expertise of Lumberg Automation™ is evident not only in the extensive and continuously expanding range of catalog products, but also in the company's individual and flexible customer solutions.

The LioN-Link decentralized I/O fieldbus system, which can be used to create line topologies of up to 100 meters in length, consists of bus coupler modules, which function as the interface to higher level fieldbuses such as **Profibus, CANopen®, DeviceNet or ProfiNet,** and **protocol independent I/O modules**.

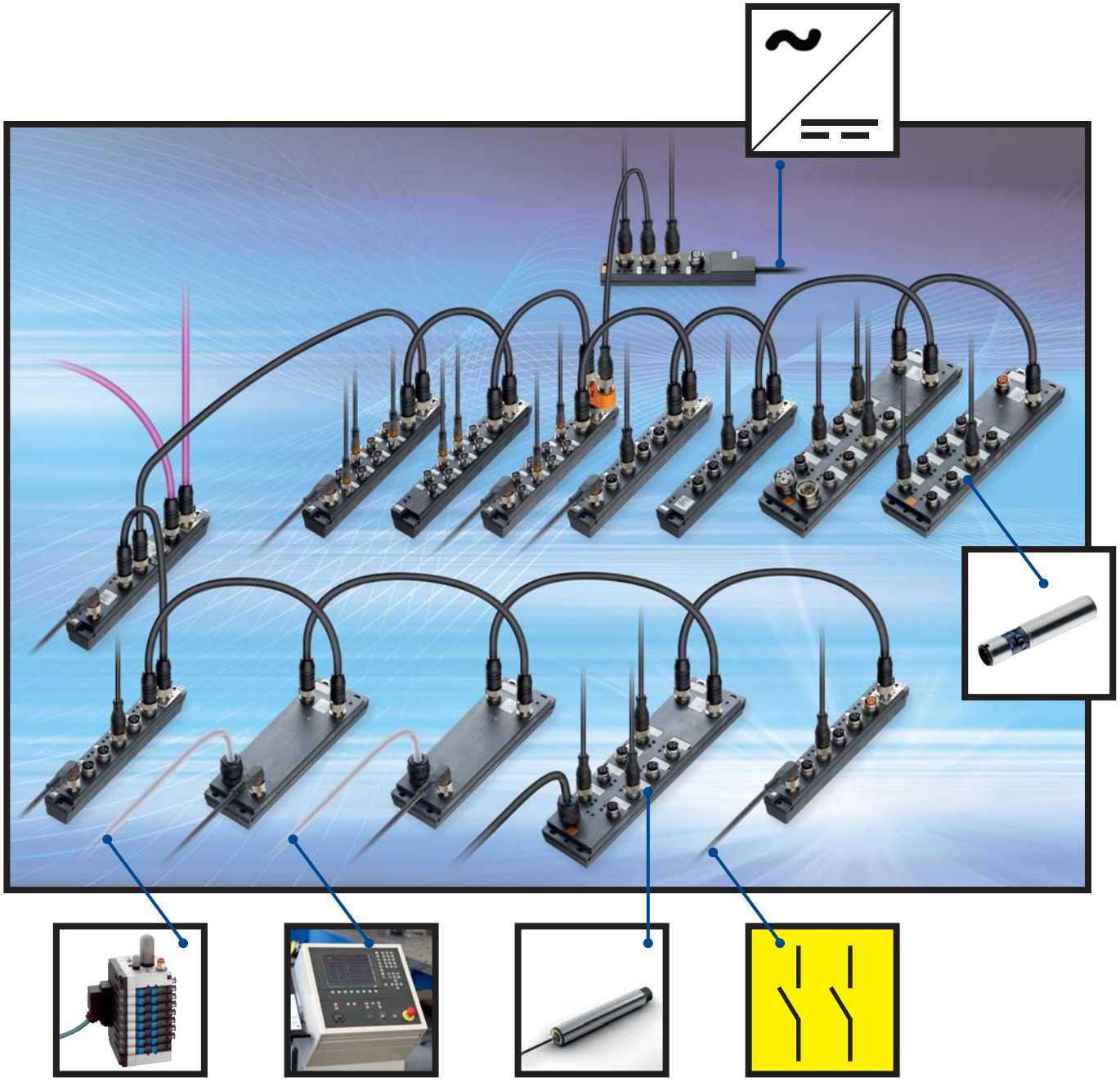
Engineers therefore only have to make minimal changes to the hardware if their end customers use different transmission protocols for the connection of systems to their communications network. Only the BusHead requires an address setting, the fieldbus independent I/O modules are commissioned without module addressing. Furthermore, a terminator is not required in either link line. Both features contribute to protection against manipulation.

The bus coupler and I/O modules, whose connections are designed for M12 or M8 connectors, are easy to install and commission thanks to the plug and play principle. They also offer comprehensive diagnostics options, meet the requirements for **degree of protection IP 67** and have high vibration and shock resistance. Lumberg Automation™ fieldbus systems are thus ideal for use in extreme environments.

The LioN-Link I/O fieldbus system not only facilitates secure data communication, but also contributes to the **efficient operation** of machines and systems, however the field wiring may look. With LioN-Link it is always possible to implement customized solutions. The system offers a high degree of flexibility, which is very useful in the planning phase and during subsequent retrofitting or conversion. It also helps to reduce power consumption.

LioN-Link offers a complete range of connection components at field level. **These include components for the control of electric drives, the networking of intelligent sensors and actuators (e.g. proximity switches, motor starters and valves), straightforward retrofitting/conversion of machines, safety applications and decentralized power supplies**.

CANopen® is a registered Community Trademark of CAN in Automation e.V.



Close to a Process

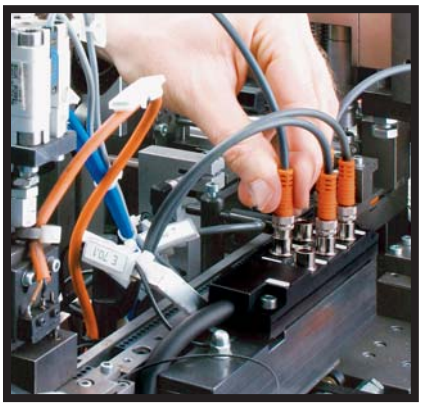
All LioN-Link modules are compliant with the IP 67 protection standard and are vibration and shock proof, which means that they can be used close to the process directly at field level.

Thanks to an innovative technological development, the complete production process can be carried out without encapsulation, making LioN-Link modules ideal for use in the smallest handling robots due to their low weight.

Universal I/O Functionality

No matter what the final design of your field wiring may be, a single I/O module is all you need to realize a whole range of different configurations. Each signal pin can be used as both an input and an output – without any additional configuration.

This gives you maximum flexibility when it comes to planning, making changes during commissioning and when retrofitting at a later date.



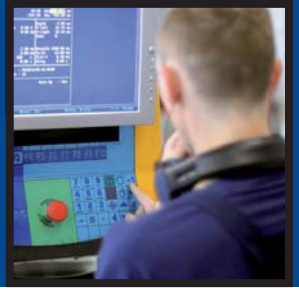
Quick, Fast and Easy Installation

Thanks to the staggered arrangement of the ports and the optimization of the distance between the ports, it is easy to screw on both molded and field attachable connectors. The LioN-Link modules are designed for both rear and lateral installation and can even be attached directly to profile rails.

Color Coding

Thanks to the color coding of the individual plug connections, the function of the plug-in position can be recognized directly at first glance (fieldbus, link, power supply or I/O). This allows you to quickly attach the connection cable you need.

Color	Function
Purple	Profibus bus connection
Black	CANopen®/DeviceNet bus connection
Green	ProfiNet
Orange	LioN-Link connection
Grey	Power supply connection



Easy Wiring with Standard Connectors

Thanks to the utilization of standard components you are also assured of uninterrupted procurement and individual part inventory availability. All of the connectors and cables necessary for the LioN-Link system can be acquired anywhere in the world.

Standard M12 connectors are used exclusively for fieldbus and link, standard M8/M12 connectors for the coupling of the sensors and actuators and standard M12/7/8" connectors for the power supply.

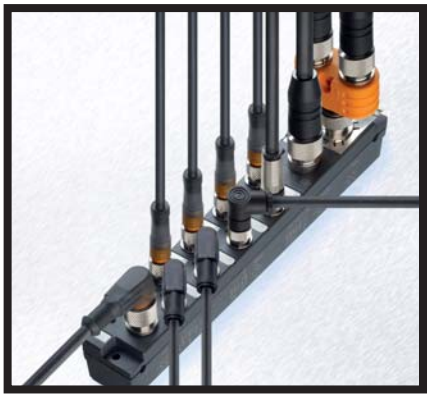
Advantages

- Reduced variety of part types
- Easy worldwide procurement

Link Wiring with:

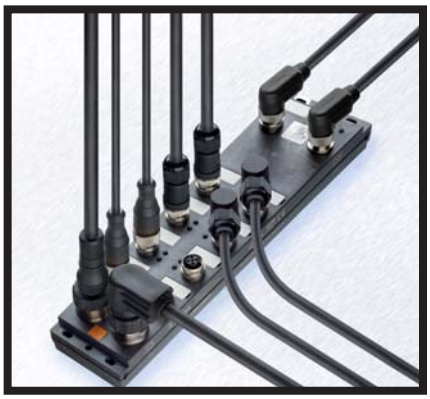
CAN/DeviceNet Thin cables

... or



Standard actuator/sensor cordsets, single and double ended

... or

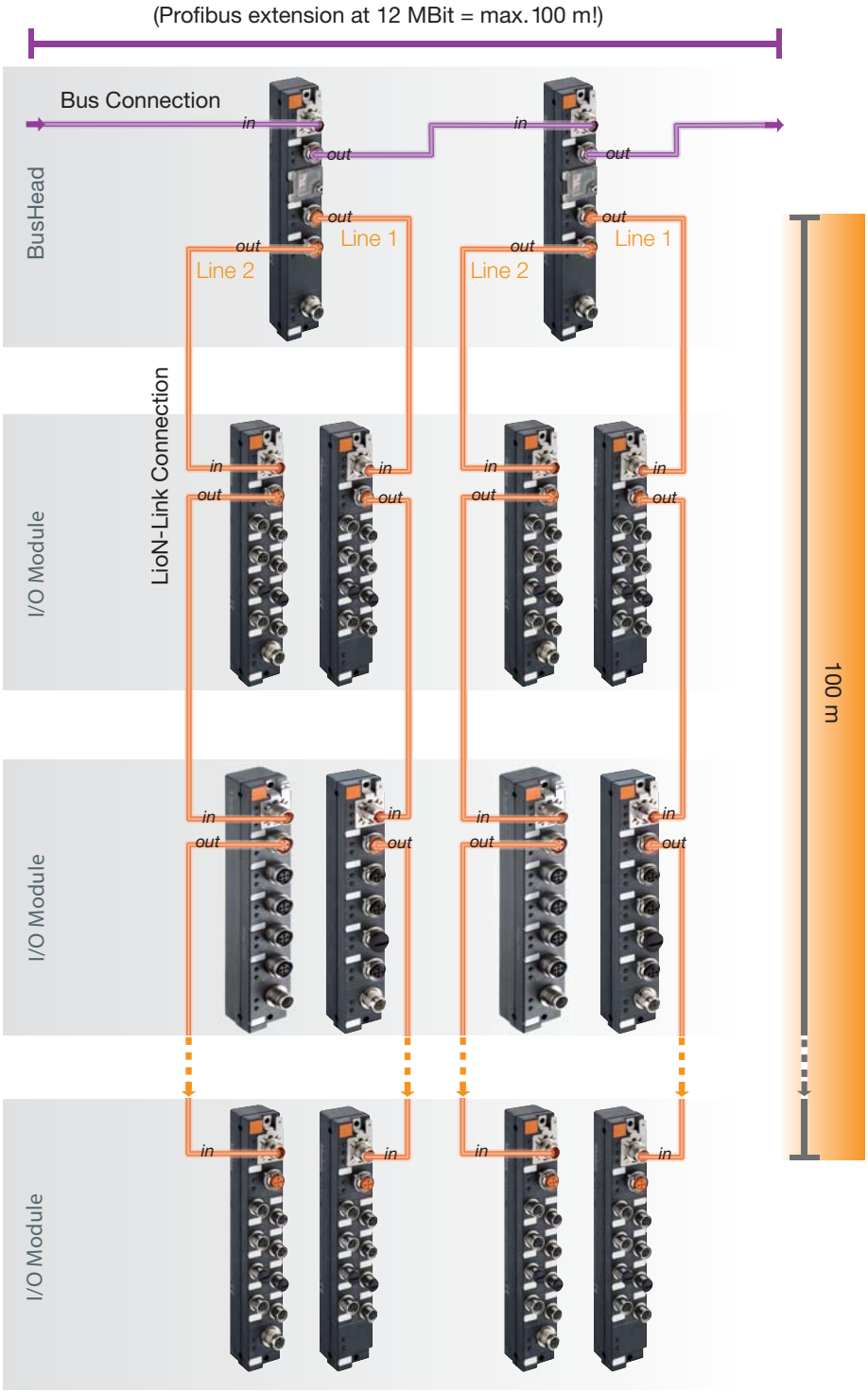


Field attachable M12 connectors

LioN-Link Wiring, Ideal for Large I/O Expansion

Effective Connectivity Solutions with the LioN-Link Power Module

The LioN-Link 0941 UNC 601/...M power module is used for decentralized power supply for I/O modules. It has four ports, two potential circuits and a 10 m lead with a conductor gauge of 5x1 mm². This provides for bridging distances of up to 25 m without voltage loss as well as for configuring separate potential groups each with their own fuses.

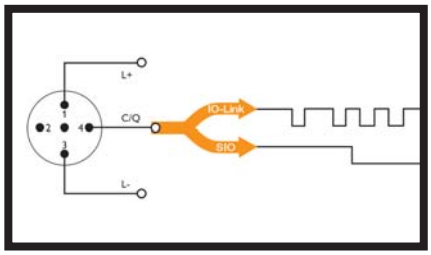


Effective Connectivity Solutions with LioN-Link
Support for I/O-Link: 0940 PSL 602/0940 ESL 601 and 0942 UEM 620

A strong Connection with LioN-Link and I/O-Link

From a user perspective, the issue of the wiring of analog signals in machines and systems has always been problematic due to the use of shielded connection cables. Although the processability of the various components such as cables and connectors has improved significantly in recent years, the assembly of a shielded cable still remains quite an elaborate procedure.

Lumberg Automation™ offers an effective solution to this problem. Thanks to the integration of an I/O-Link interface into the LioN-Link system in conjunction with I/O-Link capable sensors, users can now utilize standard wiring components such as unshielded M12 connection cables to set up the connection.



The 0942 UEM 620 I/O-Link master module provides point-to-point connections for the intelligent sensors and actuators by means of the I/O-Link protocol. The four ports can be configured as digital I/Os or for communications mode. The module is wired with three-conductor, unshielded standard cords that can be up to 20 m in length. The PROFIBUS bus coupler module allows users to connect up to six master modules. In combination with a PROFINET bus coupler module from the LioN-Link family, the I/O-Link master module can also be used in Ethernet networks.

LioN-Link ProfiNet BusHead

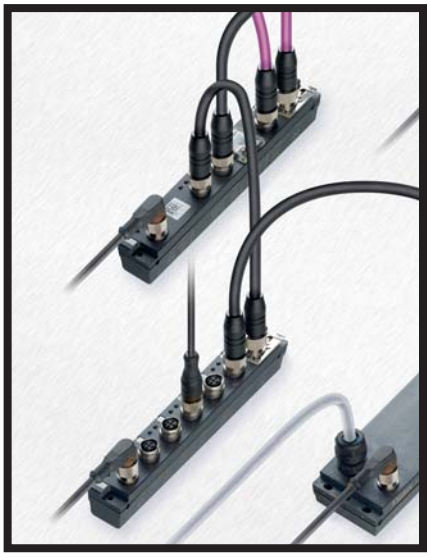
Lumberg Automation™ has developed a new bus coupler with PROFINET interface for the modular, decentralized LioN-Link system. This bus coupler has an integrated switch, which allows wiring of the PROFINET network in the line structure familiar from PROFIBUS networks.

There is also an integrated web server, which can be accessed via a standard TCP/IP connection. With this connection, various information can be retrieved and settings can be adjusted using a standard web browser. In addition to retrieving device information, it is also possible to set IP addresses directly. Diagnostic data for the connected LioN-Link I/O modules is also displayed, as is status information. The integration of a monitoring function facilitates the checking of the sensors and actuators connected to the I/O modules. This is facilitated by the graphical representation of the LioN-Link system structure in the web browser.

These useful tools make the system much easier to use, particularly with regard to commissioning, installation and maintenance.

Effective Connectivity Solutions with LioN-Link. Outputs for Safety Critical Applications with 0942 UEM 612

The 0942 UEM 612 I/O module is suitable for intrinsically safe actuator control or reliable emergency power off functions. It has four digital outputs for increased output current limiting of 2 A per line and a maximum total of 6 A. The module has outputs that are designed for safety critical applications up to Performance Level D of the new machinery directive.



Effective Connectivity Solutions with LioN-Link Shadow Mode: 0940 PSL 603 and 0942 UEM 620

Customized Solutions for High Flexibility

The 0940 PSL 603 bus coupler module permits the integration of up to 30 shadow modules in a Profibus network. Serving as inactive secondary components, these modules each provide eight digital I/O connections.

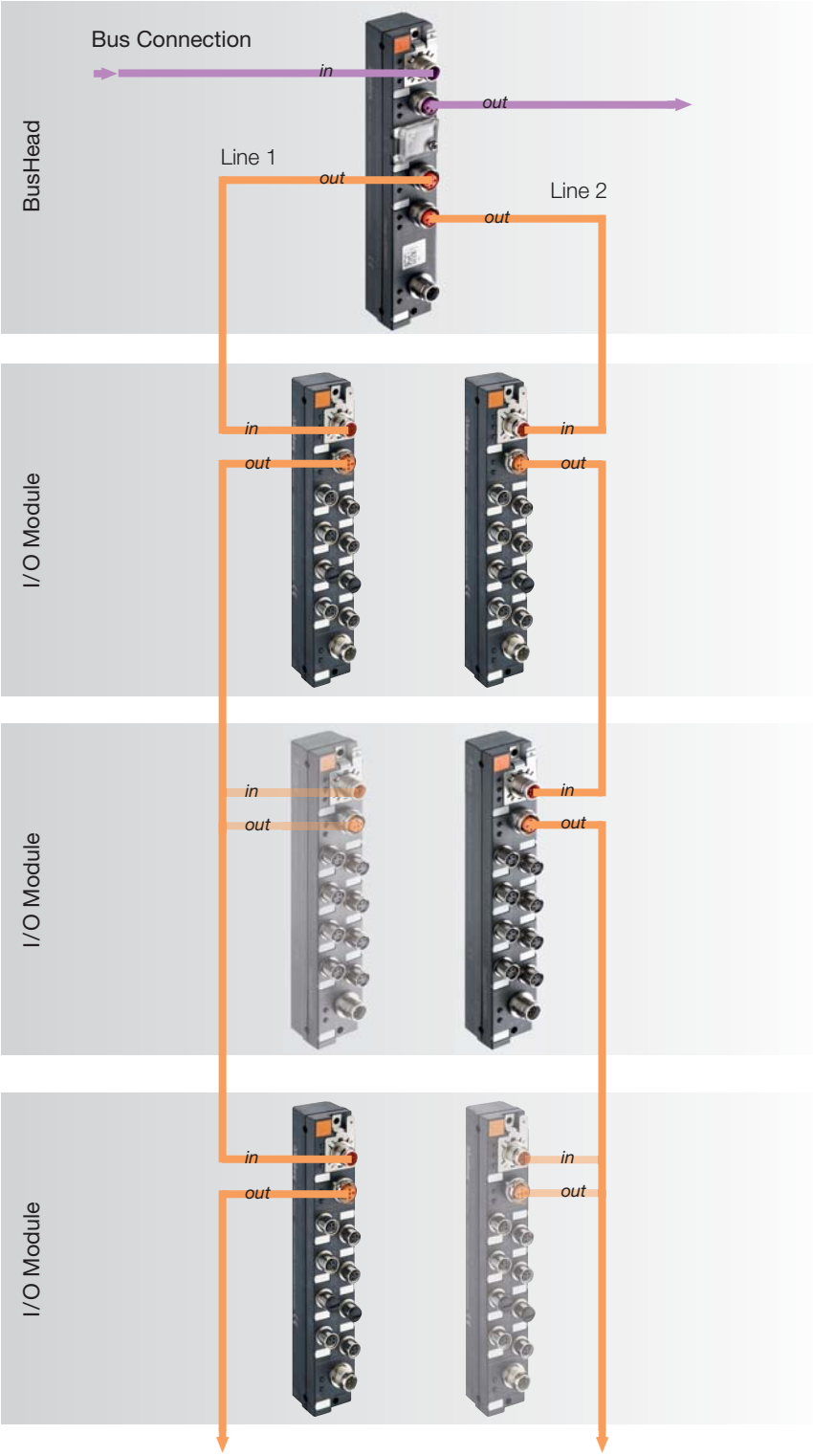
They can be activated by means of a hot plug function without compromising the higher level Profibus communication. In this way, systems can be retrofitted or upgraded when in operation and without the need for additional hardware.

The Lumberg Automation™ shadow module supports the management of just one, dynamically adaptable, but downwards compatible control software over the entire life cycle or plant manufacture cycle. Retaining the created hardware configuration and control program, it is possible to configure any assembly line individually in accordance with the equipment level.

Partial assembly of the sub bus system (due to different equipment levels) does not lead to a bus error. I/O modules that exist logically, but not physically, are ignored by the BusHead and no error message is generated.

This requires a configuration file, in which the commissioning engineer specifies the available equipment. When control is activated, this configuration is transferred in the form of a binary pattern to the BusHead, which analyzes it for comparison with the original configuration and applies the differences as the current status. If a module then fails during operation, this failure is identified according to the previous LioN-Link standard and signaled as a bus error. Only universal modules of type 0942 UEM 670 (8 x M8) are used in the I/O area. The I/O memory area is always reserved for a complete assembly, irrespective of the respective equipment level.

The I/O modules can also be parameterized as dedicated input or output modules, whereby the I/O address space is not affected and is nevertheless reserved (shadow mode).



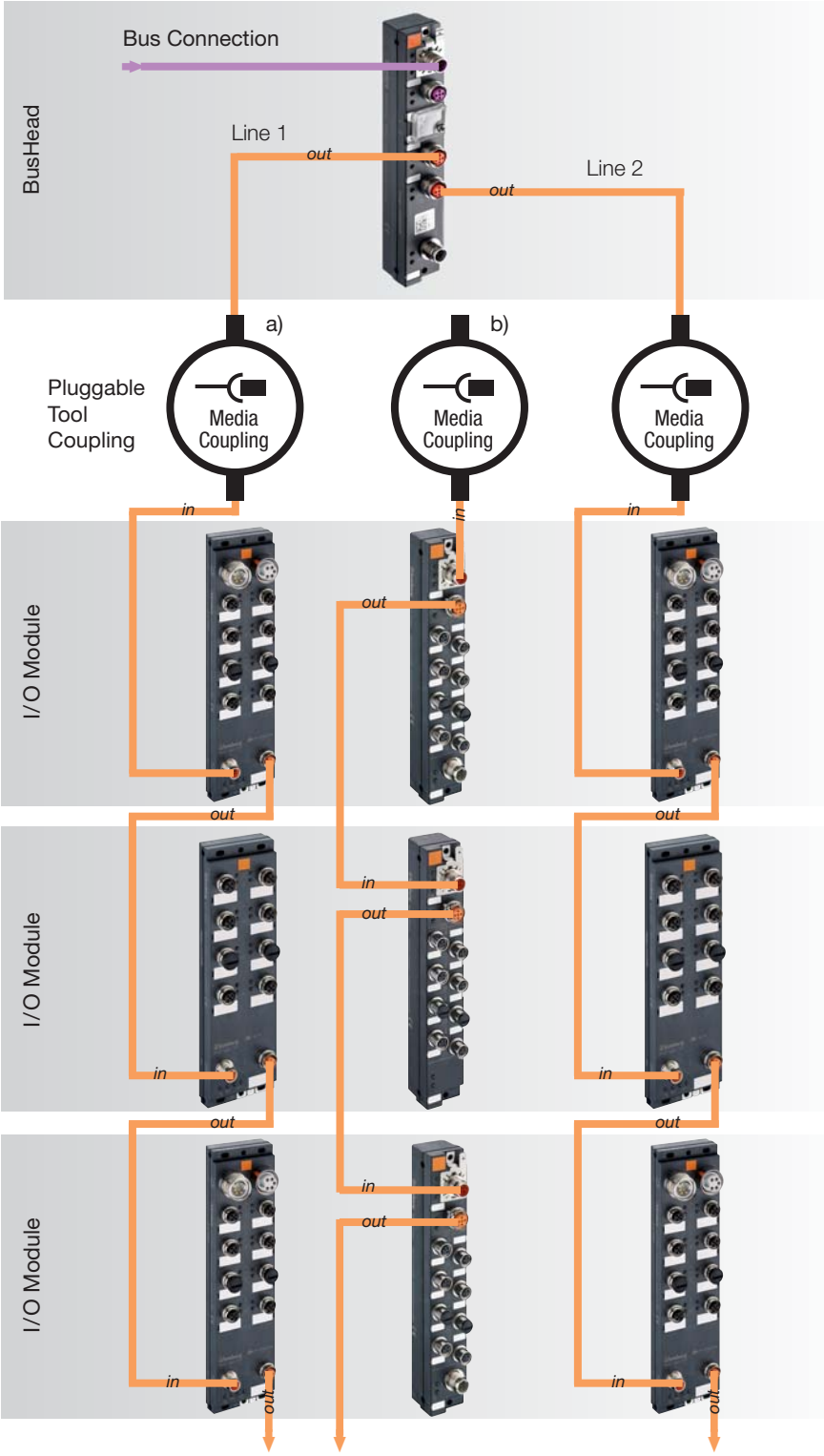
Effective Connectivity Solutions with LioN-Link Tool Changer Mode: 0940 PSL 603

The Fast System for Increasing Productivity and Efficiency

With the 0940 PSL 603 bus coupler module, Lumberg Automation™ has upgraded the LioN-Link product family for other areas of application and provides the options of quick and simple tool change.

The Lumberg Automation™ LioN-Link system can be connected or disconnected during operating time without affecting the superimposed Profibus strand. Bus errors are thus avoided. Areas of application in this case are tool couplings on automatic assembly machines or robot systems.

The LioN-Link system from Lumberg Automation™ saves both time and money and thus a permanent increase in productivity.



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Effective Connectivity Solutions with LioN-Link Motion Drive Control: 0940 PSL 602 and 0942 UEM 620

Direct current drives are increasingly being utilized in many areas of automation technology for a wide variety of tasks. The advantages are obvious – small, compact, energy efficient drives with a high degree of performance efficiency. From a cost perspective, these drives often represent a good alternative to other solutions. However, integration into a uniform bus concept is often difficult. The components needed for this purpose are not readily available.

This gap has now been filled by a new module in the LioN-Link family from Lumberg Automation™ – Motion Drive Control. This system makes it possible to set up the connection between drives and the various bus systems.

The new module is equipped with four outlets that can be configured for brushless (EC) motors as well as for brush loaded (DC) motors and all types of digital actuators such as direct current motors or valves. Some of the special features of the LioN-Link Motion module include dynamic rpm control, parameterizable start/stop ramps for EC motors and an integrated brake resistance for DC motors.

These parameters can also be modified at any time during operation when a suitable control system is utilized. The demand for increased dynamics and maximum possible flexibility has been met as a result. The module also provides eight digital inputs. The wiring complexity is thus minimized for the sensor system allocated.

The good diagnostics capability that is a feature of the entire LioN-Link system is of course included with the Motion Drive Control distribution box. As a result, motor and sensor faults can be diagnosed according to channel, both visually and in the form of software messages. And of course we have also satisfied stringent requirements with respect to the type of protective system and resistance to vibrations and shocks, as is the case with the entire LioN-Link system.

Key Features

- Networking across multiple segments
- Each conveying zone is divided into segments. Multiple rollers are combined in each segment, i.e. communication with the bus system beyond this segment is possible
- Utilization of standard sensors
- Reduced wiring complexity through the use of connectors
- Only one 24 V network, no AC network and no pneumatic components required
- Energy saving (savings potential can be realized with effective motor control, as the motors are only started when they are needed)
- Dynamic rpm control (acceleration and deceleration) allows soft startup and braking of the rollers
- Comprehensive diagnostics options
- Up to 10,000 motors with one fieldbus master
- LioN-Link: a compact system for I/O and motor control

Advantages for System Users

- Reduced operating costs, e.g. energy saving or control optimized utilization of rollers
- Minimal investment costs, good price/performance ratio thanks to an optimum control concept
- Low maintenance costs thanks to standardized components. Rapid replacement through utilization of M8/M12 connectors

Advantages for Conveyor Manufacturers

- Activation via Profibus with diagnostic functionality and fault management
- Easy commissioning and installation thanks to minimal wiring complexity with M8/M12 connectors
- Variable motor roller running characteristics with acceleration and deceleration profiles, which can be optimized specifically for the product to be conveyed
- Interface to other fieldbus systems and Ethernet technologies

Advantages for System Integrators and Machine Builders

- Very good diagnostics capability
- Low servicing costs loss thanks to durability and reliability
- LioN-Link: one system for all inputs and outputs plus motor control

Advantages of the LioN-Link System at a Glance

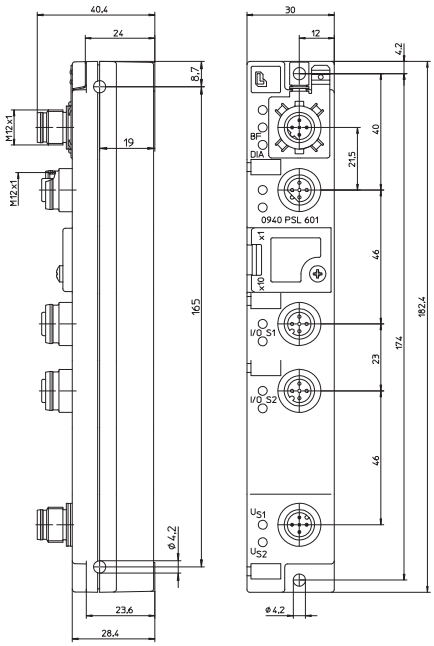
Per BusHead:

- 15 devices per line
- 100 m extension per line
- Unlimited distance between two devices up to maximum extension
- Cycle time approx. 2 ms
- No terminators
- Wiring with standard components:
  - Reduced variety of part types and costs
  - Easy purchasing worldwide (manufacturer independent)
- Input modules are supplied using the LioN-Link, no additional connection cable required
- Plug and play commissioning without special utilities
- Diagnostics for periphery faults and bus errors
- Visual differentiation of connections by means of color coding
- Low weight, ideal for small handling robots
- No module addressing and no terminator required
- Universal modules are configuration free
- Supply of safety critical actuators can take place decentrally in the field, no individual wiring
- Expansion of the PROFIBUS network WITHOUT repeaters and retaining the max. baud rate

LioN-Link BusHead Profibus-Slave

0940 PSL 601

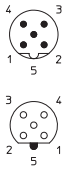
LioN-Link BusHead IP 67 bus coupler module for the connection between the higher level fieldbus and the fieldbus independent I/O modules, with M12 bus connection, rotary switches for addressing, M12 LioN-Link connection, M12 power supply connection



Diagnostic Indication

LED	Indication	Condition
I/O Line 1, I/O Line 2	red green off	wrong configuration/module exchanged online, communication with PLC branch not in use (module not connected)
U_{S1}	green	sensor/system power supply Line 1
U_{S2}	green	sensor/system power supply Line 2
BF	red	bus error
DIA	red	common indication for periphery faults

Pin Assignment

Bus connection M12, B coded	LioN-Link connection M12	Power supply M12
 1 = +5 V [1] 2 = Line A 3 = GND (0 V) [1] 4 = Line B 5 = Earth	 1 = Drain 2 = 24 V System 3 = 0 V System 4 = Data + 5 = Data -	 1 = +24 V] 2 = +24 V] 3 = 0 V] 4 = 0 V] 5 = Earth

[1] = internal signals

Technical Data

Degree of protection	IP 67
Operating temperature range	-10°C/+60°C
Weight	200 g
Housing material	PBT
Bus system	**Profibus DP**
ID number	0A36 hex
GSD file	Lum_0A36.GSD
Transmission rate	max. 12 MBaud
Address range	1–125 dec
Rotary address switches	1–99 dec
Default address	99 dec
System/sensors power supply	**U_{S1}, U_{S2}***
Rated voltage	24 V DC
Voltage range	19–30 V DC
Power consumption	typ. 100 mA
Reverse polarity protection	yes
Indication	LED green
Output current per branch	max. 3 A
Included in delivery/accessories	Dust covers M12, attachable labels

* Both supply points on the BusHead must always be connected.

Diagnostic

Diagnosis according to Profibus specification, diagnosis for communication status, module breakdown and periphery faults in the Link system

Purpose

BusHead for LioN-Link standard modules

Designation
0940 PSL 601

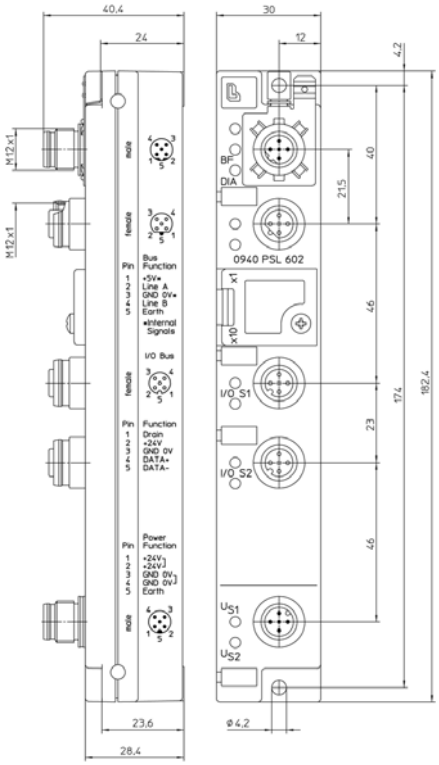
The application of these products in harsh environments should always be checked before use.
Specifications subject to alteration.

LioN-Link BusHead Profibus-Slave

0940 PSL 602

LioN-Link BusHead IP 67 bus coupler module for the connection between the higher level fieldbus and the fieldbus independent I/O modules, with M12 bus connection, rotary switches for addressing, M12 LioN-Link connection, M12 power supply connection

- Supports Profibus DP-V1 (acyclic communication)



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I/O Line 1, I/O Line 2	red green off	wrong configuration/module exchanged online, communication with PLC branch not in use (module not connected)
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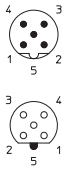
 1 = +5 V [1] 2 = Line A 3 = GND (0 V) [1] 4 = Line B 5 = Earth	1 = Drain 2 = 24 V System 3 = 0 V System 4 = Data + 5 = Data -	1 = +24 V ┐ 2 = +24 V ┘ 3 = 0 V ┐ 4 = 0 V ┘ 5 = Earth

[1] = internal signals

Technical Data

Degree of protection	IP 67
Operating temperature range	-10°C/+60°C
Weight	200 g
Housing material	PBT
Bus system	**Profibus DP**
ID number	0B99 hex
GSD file	Lum_0B99.GSD
Transmission rate	max. 12 MBaud
Address range	1–125 dec
Rotary address switches	1–99 dec
Default address	99 dec
System/sensors power supply	**U_{S1}, U_{S2}***
Rated voltage	24 V DC
Voltage range	19–30 V DC
Power consumption	typ. 100 mA
Reverse polarity protection	yes
Indication	LED green
Output current per branch	max. 3 A
Included in delivery/accessories	Dust covers M12, attachable labels

* Both supply points on the BusHead must always be connected.

Diagnostic

Diagnosis according to Profibus specification, diagnosis for communication status, module breakdown and periphery faults in the Link system

Purpose

BusHead for LioN-Link standard modules, Motion module “0942 UEM 783” and I/O-Link module “0942 UEM 620”

Designation
0940 PSL 602

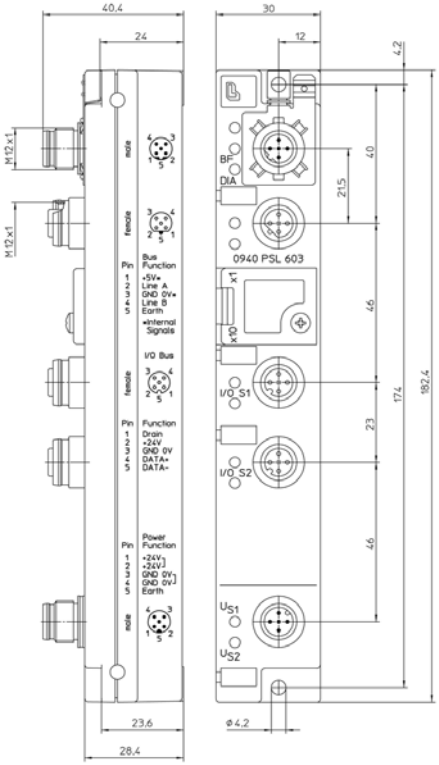
The application of these products in harsh environments should always be checked before use.
Specifications subject to alteration.

LioN-Link BusHead Profibus-Slave

0940 PSL 603

LioN-Link BusHead IP 67 bus coupler module for the connection between the higher level fieldbus and the fieldbus independent I/O modules, with M12 bus connection, rotary switches for addressing, M12 LioN-Link connection, M12 power supply connection

- Profibus-Slave, for applications such as tool change or options handling with LioN-Link I/O module 0942 UEM 670



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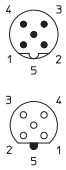
 1 = +5 V [1] 2 = Line A 3 = GND (0 V) [1] 4 = Line B 5 = Earth	 1 = Drain 2 = 24 V System 3 = 0 V System 4 = Data + 5 = Data -	 1 = +24 V ┐ 2 = +24 V ┘ 3 = 0 V ┐ 4 = 0 V ┘ 5 = Earth

[1] = internal signals

Technical Data

Degree of protection	IP 67
Operating temperature range	-10°C/+60°C
Weight	200 g
Housing material	PBT
Bus system	**Profibus DP**
ID number	0B98 hex
GSD file	Lum_0B98.GSD
Transmission rate	max. 12 MBaud
Address range	1–125 dec
Rotary address switches	1–99 dec
Default address	99 dec
System/sensors power supply	**U_{S1}, U_{S2}***
Rated voltage	24 V DC
Voltage range	19–30 V DC
Power consumption	typ. 100 mA
Reverse polarity protection	yes
Indication	LED green
Output current per branch	max. 3 A
Included in delivery/accessories	Dust covers M12, attachable labels

* Both supply points on the BusHead must always be connected.

Diagnostic

Diagnosis according to Profibus specification, diagnosis for communication status, module breakdown and periphery faults in the Link system

Purpose

BusHead for LioN-Link standard modules, "shadow module 0942 UEM 670" and "tool change mode"

Designation
0940 PSL 603

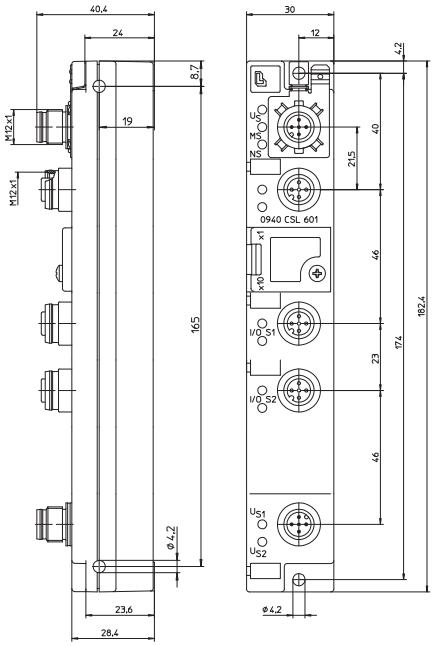
The application of these products in harsh environments should always be checked before use.
Specifications subject to alteration.

CANopen

LioN-Link BusHead CANopen®-Slave

0940 CSL 601

LioN-Link BusHead IP 67 bus coupler module for the connection between the higher level fieldbus and the fieldbus independent I/O modules, with M12 bus connection, rotary switches for addressing, M12 LioN-Link connection, M12 power supply connection



Diagnostic Indication

LED	Indication	Condition
I/O Line 1, I/O Line 2	red green off	wrong configuration/module exchanged online, communication with PLC branch not in use (module not connected)
U_{S1}	green	sensor/system power supply Line 1
U_{S2}	green	sensor/system power supply Line 2
MS	green green flashing red red flashing red/green flashing	device is ready for operating wrong configuration unrecoverable fault recoverable fault self test is running
NS	green green flashing red flashing red	online, communication with PLC online, no communication with PLC timeout state of one or more I/O connections failed communication device, BUS-OFF status, duplicate MAC-ID

Pin Assignment

Bus connection M12	LioN-Link connection M12	Power supply M12
 1 = Drain 2 = 24 V 3 = GND (0 V) 4 = CAN_H 5 = CAN_L Housing / = Earth	 1 = Drain 2 = 24 V Sensor/System 3 = 0 V Sensor/System 4 = Data + 5 = Data -	 1 = +24 V ┐ 2 = +24 V ┘ 3 = 0 V ┐ 4 = 0 V ┘ 5 = Earth

Technical Data

Degree of protection	IP 67
Operating temperature range	-10°C/+60°C
Weight	200 g
Housing material	PBT
Bus system	**CANopen®**
GSD/EDS file	0940CSL601.EDS
Transmission rate	max. 1 MBaud
Address range	1–99 dec
Rotary address switches	1–99 dec
Default address	63 dec
Supply of the fieldbus interface	**U_S**
Rated voltage	24 V DC
Voltage range	11–30 V DC
Power consumption	typ. 10 mA
Reverse polarity protection	yes
Indication	LED green
System/sensors power supply	**U_{S1}, U_{S2}***
Rated voltage	24 V DC
Voltage range	19–30 V DC
Power consumption	system: typ. 60 mA / fieldbus: typ. 10 mA
Reverse polarity protection	yes
Indication	LED green
Output current per branch	max. 3 A
Included in delivery/accessories	Dust covers M12, attachable labels

* Both supply points on the BusHead must always be connected.

Diagnostic

Diagnosis for communication status, module breakdown and periphery faults in the Link system

Note

A maximum of 16 LioN-Link I/O modules can be operated on this BusHead

Designation
0940 CSL 601

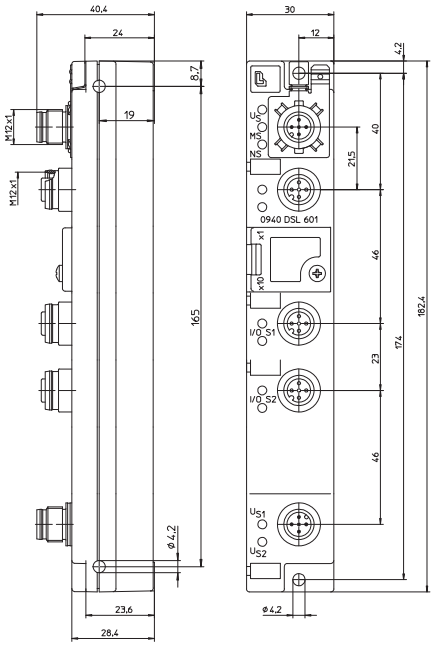
The application of these products in harsh environments should always be checked before use.
Specifications subject to alteration.

DeviceNet

LioN-Link BusHead DeviceNet-Slave

0940 DSL 601

LioN-Link BusHead IP 67 bus coupler module for the connection between the higher level fieldbus and the fieldbus independent I/O modules, with M12 bus connection, rotary switches for addressing, M12 LioN-Link connection, M12 power supply connection



Bit Assignment

Bit	7	6	5	4	3	2	1	0
				Input				
Byte 0	0	0	0	0	US1	US2	KS1	KS2
Byte 1	DIAG S_8	DIAG S_7	DIAG S_6	DIAG S_5	DIAG S_4	DIAG S_3	DIAG S_2	DIAG S_1
Byte 2	DIAG S_16	DIAG S_15	DIAG S_14	DIAG S_13	DIAG S_12	DIAG S_11	DIAG S_10	DIAG S_9
Byte 3	STATUS S_8	STATUS S_7	STATUS S_6	STATUS S_5	STATUS S_4	STATUS S_3	STATUS S_2	STATUS S_1
Byte 4	STATUS S_16	STATUS S_15	STATUS S_14	STATUS S_13	STATUS S_12	STATUS S_11	STATUS S_10	STATUS S_9

USx: Low voltage Line x
KSx: Short circuit on Line x
DIAG S_x: Diagnostic message I/O module x
STATUS S_x: Configuration error I/O module x

Diagnostic Indication

LED	Indication	Condition
I/O Line 1, I/O Line 2	red green off	wrong configuration/module exchanged online, communication with PLC branch not in use (module not connected)
U_S	green	power supply of fieldbus interface
U_{S1}	green	sensor/system power supply Line 1
U_{S2}	green	sensor/system power supply Line 2
MS	green green flashing red red flashing red/green flashing	device is ready for operating wrong configuration unrecoverable fault recoverable fault self test is running
NS	green green flashing red flashing red	online, communication with PLC online, no communication with PLC timeout state of one or more I/O connections failed communication device, BUS-OFF status, duplicate MAC-ID

Pin Assignment

Bus connection M12	LioN-Link connection M12	Power supply M12
 1 = Drain 2 = 24 V 3 = GND (0 V) 4 = CAN_H 5 = CAN_L Housing / = Earth	 1 = Drain 2 = 24 V Sensor/System 3 = 0 V Sensor/System 4 = Data + 5 = Data -	 1 = +24 V] 2 = +24 V] 3 = 0 V] 4 = 0 V] 5 = Earth

Technical Data

Degree of protection	IP 67
Operating temperature range	-10°C/+60°C
Weight	200 g
Housing material	PBT
Bus system	**DeviceNet**
EDS file	00_0940DSL601.eds
Transmission rate	max. 500 kBaud
Address range	1–63 dec
Rotary address switches	1–63 dec
Default address	63 dec
Supply of the fieldbus interface	**U_S**
Rated voltage	24 V DC
Voltage range	11–30 V DC
Power consumption	typ. 10 mA
Reverse polarity protection	yes
Indication	LED green
System/sensors power supply	**U_{S1}, U_{S2}***
Rated voltage	24 V DC
Voltage range	19–30 V DC
Power consumption	typ. 50 mA
Reverse polarity protection	yes
Indication	LED green
Output current per branch	max. 3 A
Included in delivery/accessories	Dust covers M12, attachable labels

* Both supply points on the BusHead must always be connected.

Diagnostic

Diagnosis for communication status, module breakdown and periphery faults in the Link system

Note

A maximum of 16 LioN-Link I/O modules can be operated on this BusHead

Designation
0940 DSL 601

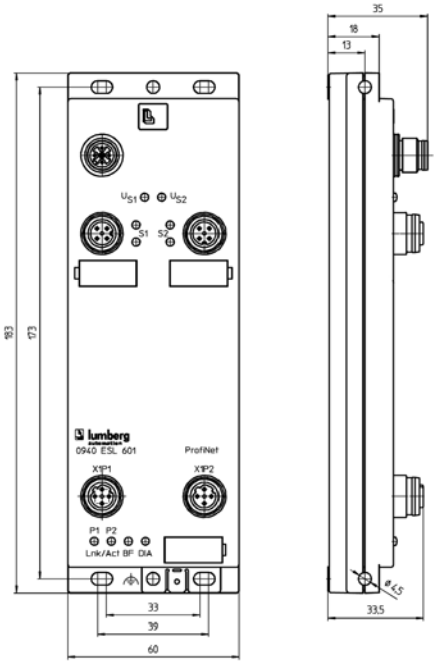
The application of these products in harsh environments should always be checked before use.
Specifications subject to alteration.

LioN-Link BusHead ProfiNet-I/O-Device-Slave (ProfiNet LAN)

0940 ESL 601

LioN-Link BusHead IP 67 bus coupler module for the connection between the higher level fieldbus and the fieldbus independent I/O modules, with M12 LioN-Link connection, M12 power supply connection

- M12 LAN connection, D coded, integrated 3-port switch, web server, IRT (Isochrone Real Time communication)



Diagnostic Indication

LED	Indication	Condition
I/O_{S1}	red green	wrong configuration/module exchanged online, communication with PLC
I/O_{S2}	red green off	wrong configuration/module exchanged online, communication with PLC branch not in use
U_{S1}	green	sensor/system power supply Line 1
U_{S2}	green	sensor/system power supply Line 2
LNK/ACT	green orange (flashing)	connection to an Ethernet device I/O device exchanging data
BF	red	no I/O controller or wrong LioN-Link configuration
DIA	red	common indication for periphery faults

Pin Assignment

LAN connection M12, D coded	LioN-Link connection M12	Power supply M12
1 = TD+ 2 = RD+ 3 = TD- 4 = RD- Housing = Shield	1 = Drain 2 = 24 V Sensor/System 3 = 0 V Sensor/System 4 = Data + 5 = Data -	1 = +24 V ┐ 2 = +24 V ┘ 3 = 0 V ┐ 4 = 0 V ┘ 5 = Earth

Technical Data

Degree of protection	IP 67
Operating temperature range	-10°C/+60°C
Weight	800 g
Housing material	PBT
Bus system	**PROFINET IO**
VendorID	0016A hex
DeviceID	0302 hex
GSDML file	gsdml-v2.2-Lumberg Automation-LioN Link-20090623.xml
Transmission rate	100 Mbit/s full duplex
Transmission method	100Base-TX
Default IP address	0
System/sensors power supply	**U_{S1}, U_{S2}***
Rated voltage	24 V DC
Voltage range	19 – 30 V DC
Power consumption	typ. 100 mA
Reverse polarity protection	yes
Indication	LED green
Output current per branch	max. 3 A
Connection	M12 plug insert (5 poles), see pin assignment
Included in delivery/accessories	Dust covers M12, attachable labels

* Both supply points on the BusHead must always be connected.

Purpose

BusHead for LioN-Link standard modules, Motion module “0942 UEM 783” and I/O-Link module “0942 UEM 620”

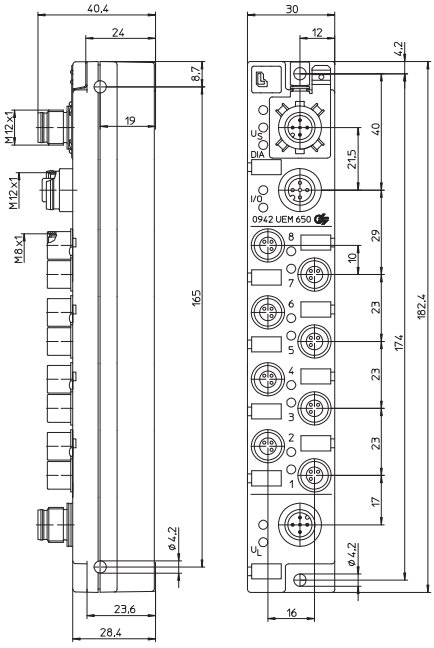
Designation
0940 ESL 601

The application of these products in harsh environments should always be checked before use.
Specifications subject to alteration.

LioN-Link I/O Module with 8 Digital Inputs and Outputs

0942 UEM 650

8 IN/8 OUT universalLioN-Link I/O module with 8 digital I/O channels, channels can be used universally as inputs or outputs, M8 sockets (8x), 3 poles, M12 actuator supply



Bit Assignment

Bit	7	6	5	4	3	2	1	0
			M8 Input					
Byte 0	8	7	6	5	4	3	2	1
			M8 Output					
Byte 0	8	7	6	5	4	3	2	1

Diagnostic Indication

LED	Indication	Condition
1...8	yellow	channel status
1...8	red	periphery faults (actuator short circuit/overload)
I/O	red red flashing green	wrong configuration/module exchanged not recognized by the BusHead online, communication with BusHead
U_S	green	sensor/system power supply
U_L	green	actuator power supply
DIA	red	common indication for periphery faults

Pin Assignment

LioN-Link connection M12	Actuator/sensor connection M8	Actuator supply M12
 1 = Drain 2 = 24 V Sensor/System 3 = 0 V Sensor/System 4 = Data + 5 = Data -	 1 = +24 V 3 = 0 V 4 = In/Out	 1 = +24 V 2 = n.c. 3 = GND (0 V) 4 = n.c. 5 = Earth

Technical Data

Degree of protection	IP 67
Operating temperature range	-10°C/+60°C
Weight	175 g
Housing material	PBT

System/sensors power supply	**U_S**
Rated voltage	24 V DC
Voltage range	19 – 30 V DC
Power consumption	typ. 70 mA
Operating indication	LED green

Input power supply	**U_S**
Voltage range	min. (U_{System} – 1.5 V)
Sensor current	700 mA/module
Short circuit proof	yes
Indication	LED green

Input wiring	**Type 3 acc. to IEC 61131-2**
Rated input voltage	24 V DC
Channel type N.O.	p-switching
Number of digital channels	max. 8
Channel status indicator	LED yellow per channel
Diagnostic indication	LED red per channel

Output power supply	**U_L**
Rated voltage	24 V DC
Voltage range	19 – 30 V DC
Reverse polarity protection	yes/antiparallel diode
Indication	LED green

Output wiring	
Rated output current	0.5 A per channel
Short circuit proof	yes
Max. output current	4 A per module
Overload proof	yes
Number of digital channels	max. 8
Channel type N.O.	p-switching
Channel status indicator	LED yellow per channel
Diagnostic indication	LED red per channel

Included in delivery/accessories	Dust covers M12, attachable labels

Diagnostic

Periphery fault diagnosis for sensor short circuit, actuator short circuit, sensor low voltage detection

Designation
0942 UEM 650

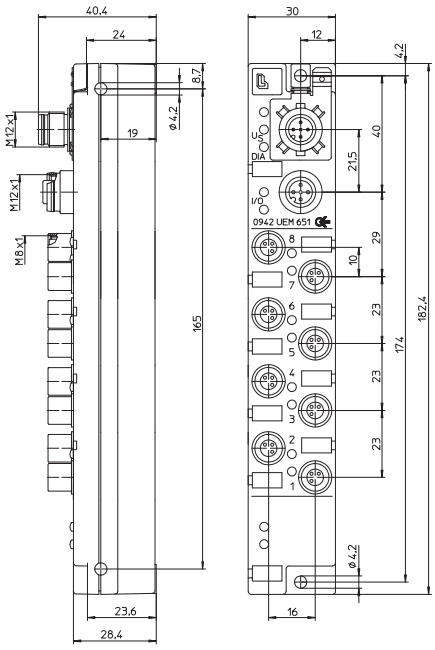
The application of these products in harsh environments should always be checked before use.
Specifications subject to alteration.

LioN-Link I/O Module with 8 Digital Inputs

0942 UEM 651

8 IN

LioN-Link I/O module with 8 digital inputs to connect standard sensors, M8 sockets (8 x), 3 poles



Bit Assignment

Bit	7	6	5	4	3	2	1	0
			M8 Input					
Byte 0	8	7	6	5	4	3	2	1

Diagnostic Indication

LED	Indication	Condition
1...8	yellow	channel status
1...8	red	periphery fault
I/O	red red flashing green	wrong configuration/module exchanged not recognized by the BusHead online, communication with BusHead
U_S	green	sensor/system power supply
DIA	red	common indication for periphery faults

Pin Assignment

LioN-Link connection M12	Actuator/sensor connection M8
1 = Drain 2 = 24 V Sensor/System 3 = 0 V Sensor/System 4 = Data + 5 = Data -	1 = +24 V 3 = 0 V 4 = In

Technical Data

Degree of protection	IP 67
Operating temperature range	-10°C/+60°C
Weight	175 g
Housing material	PBT
System/sensors power supply	**U_S**
Rated voltage	24 V DC
Voltage range	19–30 V DC
Power consumption	typ. 70 mA
Operating indication	LED green
Input power supply	**U_S**
Voltage range	min. (U_{System} – 1.5 V)
Sensor current	700 mA/module
Short circuit proof	yes
Indication	LED green
Input wiring	**Type 3 acc. to IEC 61131-2**
Rated input voltage	24 V DC
Channel type N.O.	p-switching
Number of digital channels	max. 8
Channel status indicator	LED yellow per channel
Diagnostic indication	LED red per channel
Included in delivery/accessories	Dust covers M12, attachable labels

Diagnostic

Periphery fault diagnosis for sensor short circuit, sensor low voltage detection

Designation
0942 UEM 651

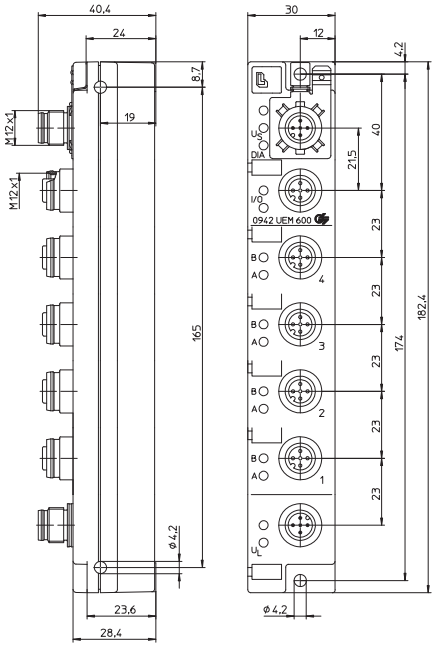
The application of these products in harsh environments should always be checked before use.
Specifications subject to alteration.

LioN-Link I/O Module with 8 Digital Inputs and Outputs

0942 UEM 600

8 IN/8 OUT

universal LioN-Link I/O module with 8 digital I/O channels, channels can be used universally as inputs or outputs, M12 sockets (4x), 5 poles, M12 actuator supply



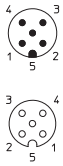
Bit Assignment

Bit	7	6	5	4	3	2	1	0
				M12 Input				
Byte 0	4B	4A	3B	3A	2B	2A	1B	1A
				M12 Output				
Byte 0	4B	4A	3B	3A	2B	2A	1B	1A

Diagnostic Indication

LED	Indication	Condition
1...4 A/B	yellow	channel status
1...4 A/B	red	periphery fault
I/O	red red flashing green	wrong configuration/module exchanged not recognized by the BusHead online, communication with BusHead
U_S	green	sensor/system power supply
U_L	green	actuator power supply
DIA	red	common indication for periphery faults

Pin Assignment

LioN-Link connection M12	Actuator/sensor connection M12	Actuator supply M12
 1 = Drain 2 = 24 V Sensor/System 3 = 0 V Sensor/System 4 = Data + 5 = Data -	1 = +24 V 2 = In/Out B 3 = 0 V 4 = In/Out A 5 = Earth	1 = +24 V 2 = n.c. 3 = GND (0 V) 4 = n.c. 5 = Earth

Technical Data

Degree of protection	IP 67
Operating temperature range	-10°C/+60°C
Weight	200 g
Housing material	PBT

System/sensors power supply	**U_S**
Rated voltage	24 V DC
Voltage range	19 – 30 V DC
Power consumption	typ. 70 mA
Operating indication	LED green

Input power supply	**U_S**
Voltage range	min. (U_{System} – 1.5 V)
Sensor current	700 mA/module
Short circuit proof	yes
Indication	LED green

Input wiring	**Type 3 acc. to IEC 61131-2**
Rated input voltage	24 V DC
Channel type N.O.	p-switching
Number of digital channels	max. 8
Channel status indicator	LED yellow per channel
Diagnostic indication	LED red per channel

Output power supply	**U_L**
Rated voltage	24 V DC
Voltage range	19 – 30 V DC
Reverse polarity protection	yes/antiparallel diode
Indication	LED green

Output wiring	
Rated output current	1.6 A per channel
Short circuit proof	yes
Max. output current	4 A per module
Overload proof	yes
Number of digital channels	max. 8
Channel type N.O.	p-switching
Channel status indicator	LED yellow per channel
Diagnostic indication	LED red per channel

Included in delivery/accessories
Dust covers M12, attachable labels

Diagnostic

Periphery fault diagnosis for sensor short circuit, actuator short circuit/channel, sensor low voltage detection

Designation
0942 UEM 600

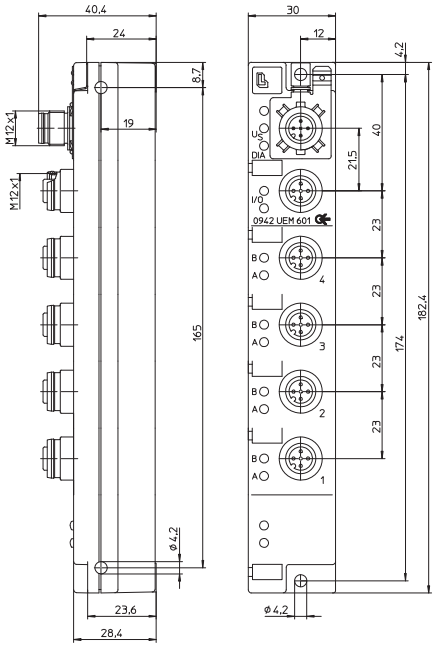
The application of these products in harsh environments should always be checked before use.
Specifications subject to alteration.

LioN-Link I/O Module with 8 Digital Inputs

0942 UEM 601

8 IN

LioN-Link I/O module with 8 digital inputs to connect standard sensors, M12 sockets (4x), 5 poles



Bit Assignment

Bit	7	6	5	4	3	2	1	0
				M12 Input				
Byte 0	4B	4A	3B	3A	2B	2A	1B	1A

Diagnostic Indication

LED	Indication	Condition
1...4 A/B	yellow	channel status
1...4 A	red	periphery fault
I/O	red red flashing green	wrong configuration/module exchanged not recognized by the BusHead online, communication with BusHead
U_S	green	sensor/system power supply
DIA	red	common indication for periphery faults

Pin Assignment

LioN-Link connection M12	Actuator/sensor connection M12
1 = Drain 2 = 24 V Sensor/System 3 = 0 V Sensor/System 4 = Data + 5 = Data -	1 = +24 V 2 = In B 3 = GND (0 V) 4 = In A 5 = Earth

Technical Data

Degree of protection	IP 67
Operating temperature range	-10°C/+60°C
Weight	175 g
Housing material	PBT
System/sensors power supply	**U_S**
Rated voltage	24 V DC
Voltage range	19–30 V DC
Power consumption	typ. 70 mA
Operating indication	LED green
Input power supply	**U_S**
Voltage range	min. (U_{System} – 1.5 V)
Sensor current	700 mA/module
Short circuit proof	yes
Indication	LED green
Input wiring	**Type 3 acc. to IEC 61131-2**
Rated input voltage	24 V DC
Channel type N.O.	p-switching
Number of digital channels	max. 8
Channel status indicator	LED yellow per channel
Diagnostic indication	LED red per channel
Included in delivery/accessories	Dust covers M12, attachable labels

Diagnostic

Periphery fault diagnosis for sensor short circuit, sensor low voltage detection

Designation
0942 UEM 601

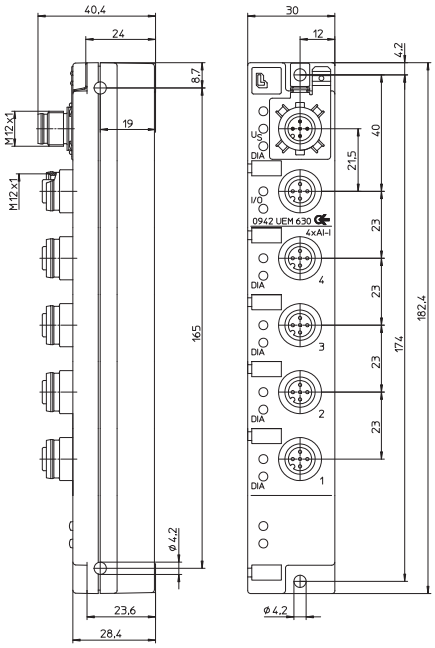
The application of these products in harsh environments should always be checked before use.
Specifications subject to alteration.

LioN-Link I/O Module with 4 Analog Inputs

0942 UEM 630

4 IN

LioN-Link I/O module with 4 analog inputs 0(4)–20 mA to connect standard sensors, M12 sockets (4x), 5 poles



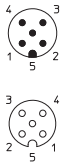
Bit Assignment

Bit	7	6	5	4	3	2	1	0
	M12 Input							
Byte 0 Byte 1	Channel 1							
Byte 2 Byte 3	Channel 2							
Byte 4 Byte 5	Channel 3							
Byte 6 Byte 7	Channel 4							

Diagnostic Indication

LED	Indication	Condition
1...4	yellow	channel status
1...4 DIA	red	periphery fault
I/O	red red flashing green	wrong configuration/module exchanged not recognized by the BusHead online, communication with BusHead
U_S	green	sensor/system power supply
DIA	red	common indication for periphery faults

Pin Assignment

LioN-Link connection M12	Sensor connection M12
 1 = Drain 2 = +24 V 3 = GND (0 V) 4 = Data + 5 = Data -	1 = +24 V 2 = Signal + 3 = GND (0 V) 4 = GND (0 V) 5 = Earth

Technical Data

Degree of protection	IP 67
Operating temperature range	-10°C/+60°C
Weight	175 g
Housing material	PBT
Input power supply	**U_S**
Voltage range	24 V DC
Sensor current	700 mA/module
Short circuit proof	yes
Power consumption	system: typ. 50 mA
Input wiring	**Current inputs**
Measurement signal	(0)4–20 mA
Resolution	12 bit + sign
Measuring fault (full measuring range)	±1.2%
Temperature fault (full measuring range)	±0.01%/K
Output formats	Siemens S7
Input impedance	≤400 Ω
Conversion time	typ. 25 ms per channel
Potential separation channel/channel	no
Potential separation power/channel	no
Number of analog channels	max. 4
Channel status indicator	LED yellow: channel active
Module diagnostic	Module status Sensor short circuit
Indication	LED red/green (I/O)
Channel diagnostic	
0–20 mA	Overload at current measurement
4–20 mA	Overload at current measurement/Underflow/Broken wire
Indication	LED red (DIA)
GSD configuration	
Module way	Resolution 12 bit, 10 bit (Conversion time ≤3 ms/module)
Channel way	Measuring range 0–20 mA or 4–20 mA Broken wire (only 4–20 mA), Channel on/off, Diagnostic on/off
Included in delivery/accessories	Dust covers M12, attachable labels

Designation
0942 UEM 630

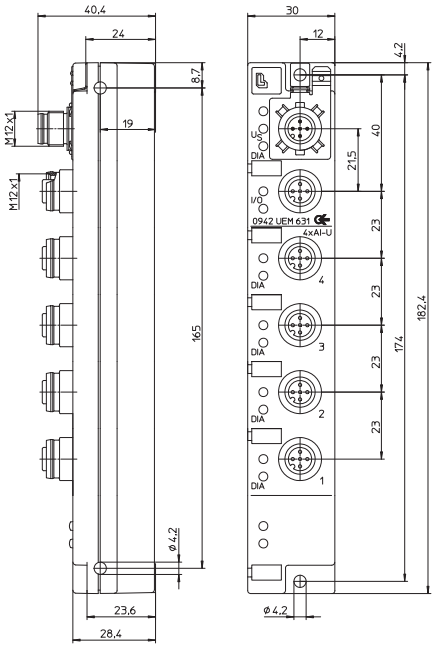
The application of these products in harsh environments should always be checked before use.
Specifications subject to alteration.

LioN-Link I/O Module with 4 Analog Inputs

0942 UEM 631

4 IN

LioN-Link I/O module with 4 analog inputs 0–10 V to connect standard sensors, M12 sockets (4x), 5 poles



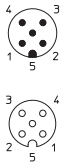
Bit Assignment

Bit	7	6	5	4	3	2	1	0
				M12 Input				
Byte 0 Byte 1				Channel 1				
Byte 2 Byte 3				Channel 2				
Byte 4 Byte 5				Channel 3				
Byte 6 Byte 7				Channel 4				

Diagnostic Indication

LED	Indication	Condition
1...4	yellow	channel status
1...4 DIA	red	periphery fault
I/O	red red flashing green	wrong configuration/module exchanged not recognized by the BusHead online, communication with BusHead
U_S	green	sensor/system power supply
DIA	red	common indication for periphery faults

Pin Assignment

LioN-Link connection M12	Sensor connection M12
 1 = Drain 2 = +24 V 3 = GND (0 V) 4 = Data + 5 = Data -	1 = +24 V 2 = Signal + 3 = GND (0 V) 4 = GND (0 V) 5 = Earth

Technical Data

Degree of protection	IP 67
Operating temperature range	-10°C/+60°C
Weight	175 g
Housing material	PBT
Input power supply	**U_S**
Voltage range	24 V DC
Sensor current	700 mA/module
Short circuit proof	yes
Power consumption	system: typ. 50 mA
Input wiring	**Voltage inputs**
Measurement signal	0-10 V
Resolution	12 bit + sign
Measuring fault (full measuring range)	±1.2%
Temperature fault (full measuring range)	±0.01%/K
Output formats	Siemens S7
Input impedance	20 kΩ
Conversion time	typ. 25 ms per channel
Potential separation channel/channel	no
Potential separation power/channel	no
Number of analog channels	max. 4
Channel status indicator	LED yellow: channel active
Module diagnostic	Module status Sensor short circuit
Indication	LED red/green (I/O)
Channel diagnostic	Overflow
Indication	LED red (DIA)
GSD configuration	
Module way	Resolution 12 bit, 10 bit (Conversion time ≤3 ms/module)
Channel way	Channel on/off, Diagnostic on/off
Included in delivery/accessories	Dust covers M12, attachable labels

Designation
0942 UEM 631

The application of these products in harsh environments should always be checked before use.
Specifications subject to alteration.

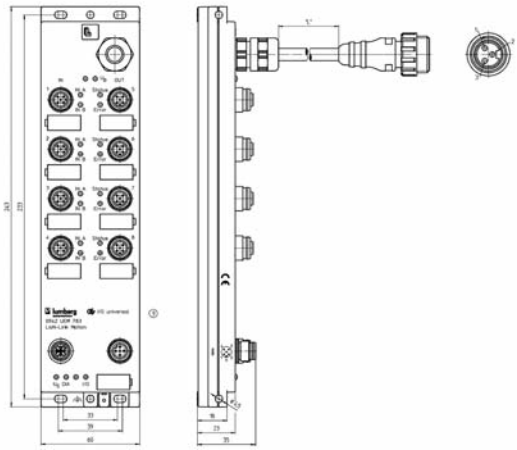
LioN-Link I/O Module with 8 Digital Inputs and 4 Digital or Analog Outputs (Motion Drive Control)

0942 UEM 783

8 IN/4 OUT (digital or analog)

LioN-Link Motion module with 8 digital inputs and 4 universal outputs that can be configured for the connection of brushless motors, DC motors or for valves. System specific specifications such as speed and acceleration/deceleration can be transmitted via the DP-V1* protocol. Power supply is via a connecting cable with 7/8" connector.

* = Only with 0940 PSL 602



Bit Assignment

Bit	7	6	5	4	3	2	1	0
				M12 Input				
Byte 0	4B	4A	3B	3A	2B	2A	1B	1A
				M12 Output				
	Socket 8		Socket 7		Socket 6		Socket 5	
Byte 0	Dir	Start	Dir	Start	Dir	Start	Dir	Start

Diagnostic Indication

LED	Indication	Condition
1...4 A/B	yellow	channel status
1...4 A/B	red	periphery faults (actuator short circuit/overload)
I/O	red red flashing green	wrong configuration/module exchanged not recognized by the BusHead online, communication with BusHead
U_S	green	sensor/system power supply
U_L	green	actuator power supply
DIA	red	common indication for periphery faults

Pin Assignment

LioN-Link connection M12	Actuator/sensor connection M12			Power supply for motors		
1 = Drain	In	Out		Function	Wire color	
2 = 24 V Sensor/System	1 = +24 V DC	1 = +24 V DC		1 = Diag. Out	Black	
3 = 0 V Sensor/System	2 = In B	2 = Dir		2 = +24 V	Brown	
4 = Data +	3 = 0 V	3 = 0 V		3 = 0 V	Blue	
5 = Data -	4 = In A	4 = Dia				
	5 = Earth	5 = Speed (0-10 V)				

Technical Data

Degree of protection	IP 67
Operating temperature range	-10°C/+60°C
Weight	175 g
Housing material	PBT

System/sensors power supply	**U_S**
Rated voltage	24 V DC
Voltage range	19–30 V DC
Power consumption	typ. 100 mA
Reverse polarity protection	no
Operating indication	LED green

Input power supply	**U_S**
Voltage range	24 V DC
Sensor current	700 mA/module
Short circuit proof	yes
Indication	LED green
Connection	M12 connector (5 poles), see pin assignment

Input wiring	**Type 3 acc. to IEC 61131-2**
Rated input voltage	24 V DC
Input current at 24 V DC	typ. 5 mA
Short circuit proof sensor supply	yes
Channel type N.O.	p-switching
Number of digital channels	max. 8
Channel status indicator	LED yellow per channel
Diagnostic indication	LED red per channel
Connection	M12 coupling (5 poles), see pin assignment

Output power supply	**U_L**
Rated voltage	24 V DC
Voltage range	19–27 V DC
Reverse polarity protection	yes/antiparallel diode
Indication	LED green
Connection	7/8" connector (3 poles), see pin assignment

Output wiring I	**Type 3 acc. to IEC 61131-2 Output module Pin 2**
Rated output current	1.5 A per channel
Signal status "1"	max. 4 A (max. 50 ms)
Signal status "0"	max. 1 mA (standard specification)
Short circuit proof	yes
Max. output current	7.2 A per module
Overload proof	yes
Number of digital channels	max. 4
Channel type N.O.	p-switching
Channel status indicator	LED yellow per channel
Diagnostic indication	LED red per channel
Connection	M12 coupling (5 poles), see pin assignment

Output wiring II	**Output module Pin 5**
Voltage range	0–10 V DC (motor dependent)
Number of channels	max. 4 analog
Channel type	PWM output
Connection	M12 coupling (5 poles), see pin assignment

Included in delivery/accessories	Dust covers M12, attachable labels

Diagnostic

Periphery fault diagnosis for sensor short circuit, actuator short circuit/channel, sensor low voltage detection

Note

Only to be used in combination with BusHead 0940 PSL 602. Module used to control brushless (EC) motors as well as brush loaded (DC) motors and all types of digital actuators (e.g. valves or direct current motors)

Designation
0942 UEM 783

The application of these products in harsh environments should always be checked before use.
Specifications subject to alteration.

LioN-Link I/O Module with 8 Digital Inputs and Outputs (Shadow Mode)

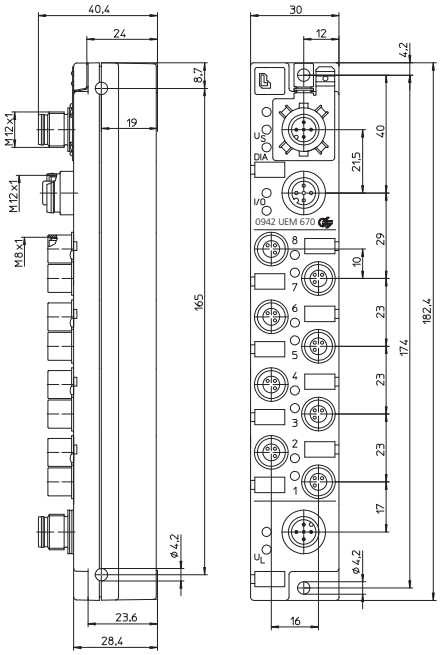
0942 UEM 670

8 IN/8 OUT universal

LioN-Link I/O module with 8 digital I/O channels, channels can be used universally as inputs or outputs, M8 sockets, 3 poles

Input or output functionality can be switched off while retaining the respective address range*.

* = Only with 0940 PSL 603



Bit Assignment

Bit	7	6	5	4	3	2	1	0
			M8 Input					
Byte 0	8	7	6	5	4	3	2	1
			M8 Output					
Byte 0	8	7	6	5	4	3	2	1

Diagnostic Indication

LED	Indication	Condition
1...8	yellow	channel status
1...8	red	periphery faults (actuator short circuit/overload)
I/O	red red flashing green	wrong configuration/module exchanged not recognized by the BusHead online, communication with BusHead
U_S	green	sensor/system power supply
U_L	green	actuator power supply
DIA	red	common indication for periphery faults

Pin Assignment

LioN-Link connection M12	Actuator/sensor connection M8	Actuator supply M12
 1 = Drain 2 = 24 V Sensor/System 3 = 0 V Sensor/System 4 = Data + 5 = Data -	 1 = +24 V 3 = 0 V 4 = In/Out	 1 = +24 V 2 = n.c. 3 = GND (0 V) 4 = n.c. 5 = Earth

Technical Data

Degree of protection	IP 67
Operating temperature range	-10°C/+60°C
Weight	175 g
Housing material	PBT

System/sensors power supply	**U_S**
Rated voltage	24 V DC
Voltage range	19 – 30 V DC
Power consumption	typ. 70 mA
Operating indication	LED green

Input power supply	**U_S**
Voltage range	24 V DC
Sensor current	700 mA/module
Short circuit proof	yes
Indication	LED green

Input wiring	**Type 3 acc. to IEC 61131-2**
Rated input voltage	24 V DC
Channel type N.O.	p-switching
Number of digital channels	max. 8
Channel status indicator	LED yellow per channel
Diagnostic indication	LED red per channel

Output power supply	**U_L**
Rated voltage	24 V DC
Voltage range	19 – 30 V DC
Reverse polarity protection	yes/antiparallel diode
Indication	LED green

Output wiring	
Rated output current	0.5 A per channel
Short circuit proof	yes
Max. output current	4 A per module
Overload proof	yes
Number of digital channels	max. 8
Channel type N.O.	p-switching
Channel status indicator	LED yellow per channel
Diagnostic indication	LED red per channel

Included in delivery/accessories	Dust covers M12, attachable labels

Diagnostic

Periphery fault diagnosis for sensor short circuit, actuator short circuit, sensor low voltage detection

Note

This I/O module can only be used with the BusHead 0940 PSL 603.

In addition to being used as a dedicated input or output module, this module can also be operated in Shadow Input and Shadow Output mode.
The process data in both modes is 1 input and 1 output byte. In Shadow Input mode the input byte is set to 0. The outputs can be activated via the output byte. In Shadow Output mode, however, the outputs cannot be activated and the inputs can be used normally.

Designation
0942 UEM 670

The application of these products in harsh environments should always be checked before use.
Specifications subject to alteration.

IO-Link

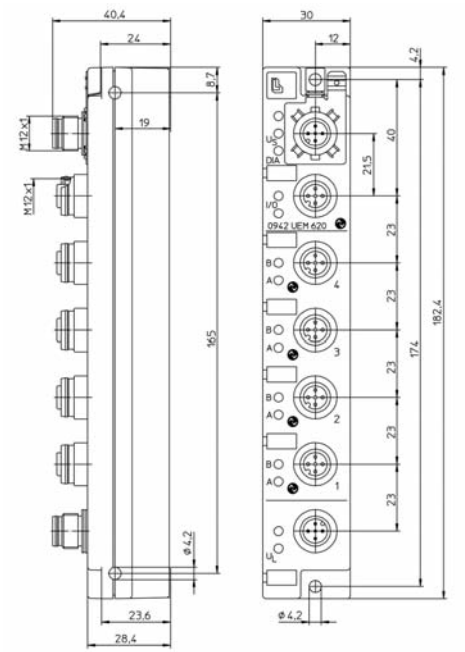
LioN-Link I/O Module with 8 Digital Inputs and 4 I/O-Link Inputs (I/O-Link-Master)

0942 UEM 620

8 IN/4 I/O-Link IN universal

LioN-Link I/O module with 4 I/O-Link channels, each channel can be configured universally in standard digital I/O mode (SIO mode) or in communications mode, M12 sockets, 4 poles

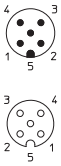
- Only with BusHead 0940 PSL 602 or ProfiNet BusHead 0940 ESL 601



Diagnostic Indication

LED	Indication	Condition
1...4 A | IOL: 1...4 B | DIA:	green yellow red flashing red	I/O-Link communications mode standard I/O mode (SIO) I/O-Link diagnostic: IOL fault SIO mode: periphery fault
I/O	yellow red red flashing green	channel status in SIO mode wrong configuration/module exchanged not recognized by the BusHead online, communication with BusHead
U_S	green	sensor/system power supply
U_L	green	I/O-Link supply
DIA	red	common indication for periphery faults

Pin Assignment

LioN-Link connection M12	I/O-Link connection M12	I/O-Link supply M12
 1 = Drain 2 = 24 V Sensor/System 3 = 0 V Sensor/System 4 = Data + 5 = Data -	 1 = +24 V DC 2 = In B 3 = (0 V) 4 = IO-Data/In A 5 = Earth	 1 = +24 V DC 2 = n.c. 3 = GND 0 V 4 = n.c. 5 = Functional earth

Technical Data

Degree of protection	IP 67
Operating temperature range	-10°C/+60°C
Weight	175 g
Housing material	PBT
System/sensors power supply	**U_S**
Rated voltage	24 V DC
Voltage range	19 – 30 V DC
Power consumption	typ. 70 mA
Operating indication	LED green
Input power supply	**U_S**
Voltage range	24 V DC
Sensor current	700 mA/module
Short circuit proof	yes
Indication	LED green
Input wiring	**Type 3 acc. to IEC 61131-2**
Rated input voltage	24 V DC
Channel type N.O.	p-switching
Number of digital channels	max. 8
Channel status indicator	LED A green/yellow
Diagnostic indication	LED red
I/O-Link power supply	**U_L**
Rated voltage	24 V DC
Voltage range	19 – 30 V DC
Reverse polarity protection	yes/antiparallel diode
Indication	LED green
I/O-Link	Specification 1.0
Included in delivery/accessories	Dust covers M12, attachable labels

Note

The information in the operating instructions must be observed

Bit Assignment

Channel 1: 1 byte, 1 word or not configured																
Byte				**Byte 0**									**Byte 1**			
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Port				**1**									**1**			
Channel 2: 1 byte, 1 word or not configured																
Byte				**Byte 2**									**Byte 3**			
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Port				**2**									**2**			
Assignment	I/O-Link-Device process data/High Byte									I/O-Link-Device process data/Low Byte						
Channel 3: 1 byte, 1 word or not configured																
Byte				**Byte 4**									**Byte 5**			
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Port				**3**									**3**			
Assignment	I/O-Link-Device process data/High Byte									I/O-Link-Device process data/Low Byte						
Channel 4: 1 byte, 1 word or not configured																
Byte				**Byte 6**									**Byte 7**			
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Port				**4**									**4**			
Assignment	I/O-Link-Device process data/High Byte									I/O-Link-Device process data/Low Byte						
2 Bytes (module status)																
Byte				**Byte 8**									**Byte 9**			
Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Port					**4**	**3**	**2**	**1**	**4**	**3**	**2**	**1**	**4**	**3**	**2**	**1**
Assignment					Pin 4 = DI	Pin 4 = DI	Pin 4 = DI	Pin 4 = DI	1=IO-Link 0=SIO	1=IO-Link 0=SIO	1=IO-Link 0=SIO	1=IO-Link 0=SIO	Pin 2 = DI	Pin 2 = DI	Pin 2 = DI	Pin 2 = DI

Designation
0942 UEM 620

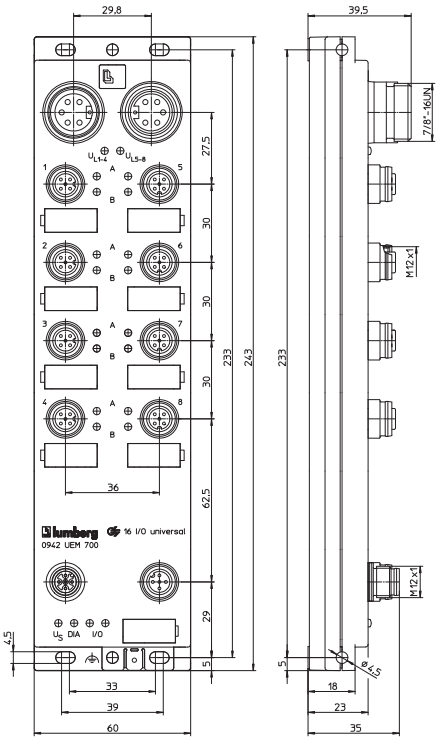
The application of these products in harsh environments should always be checked before use.
Specifications subject to alteration.

LioN-Link I/O Module with 16 Digital Inputs and Outputs

0942 UEM 700

16 IN/16 OUT universal

LioN-Link I/O module with 16 digital I/O channels, channels can be used universally as inputs or outputs, M12 sockets (8x), 5 poles, 7/8" actuator supply



Bit Assignment

Bit	7	6	5	4	3	2	1	0
M12 Input								
Byte 0	4B	4A	3B	3A	2B	2A	1B	1A
Byte 1	8B	8A	7B	7A	6B	6A	5B	5A
M12 Output								
Byte 0	4B	4A	3B	3A	2B	2A	1B	1A
Byte 1	8B	8A	7B	7A	6B	6A	5B	5A

Diagnostic Indication

LED	Indication	Condition
1...8 A/B	yellow	channel status
1...8	red	periphery faults (actuator short circuit/overload)
I/O	red red flashing green	wrong configuration/module exchanged not recognized by the BusHead online, communication with BusHead
U_S	green	sensor/system power supply
U_L	green	actuator power supply
DIA	red	common indication for periphery faults

Pin Assignment

LioN-Link connection M12	Actuator/sensor connection M12	Actuator supply 7/8"
1 = Drain 2 = 24 V Sensor/System 3 = 0 V Sensor/System 4 = Data + 5 = Data -	1 = +24 V 2 = In/Out B 3 = 0 V 4 = In/Out A 5 = Earth	1 = GND (0 V) 2 = GND (0 V) 3 = Earth 4 = 24 V ($U_{L\,1-4}$) 5 = 24 V ($U_{L\,5-8}$)

Technical Data

Degree of protection	IP 67
Operating temperature range	-10°C/+60°C
Weight	375 g
Housing material	PBT

System/sensors power supply	**U_S**
Rated voltage	24 V DC
Voltage range	19 – 30 V DC
Power consumption	typ. 100 mA

Input power supply	**U_S**
Voltage range	min. (U_{System} – 1.5 V)
Sensor current	700 mA
Short circuit proof	yes
Indication	LED green

Input wiring	**Type 3 acc. to IEC 61131-2**
Rated input voltage	24 V DC
Channel type N.O.	p-switching
Number of digital channels	max. 16
Channel status indicator	LED yellow per channel

Output power supply	**U_L**
Rated voltage	24 V DC
Voltage range	19 – 30 V DC
Reverse polarity protection	yes/antiparallel diode
Indication	LED green

Output wiring	
Rated output current	1.6 A per channel
Short circuit proof	yes
Max. output current	9 A (12 A*) per module

* Test proven and approved under the following conditions:

· Looped through sensor/system power supply	max. 2.5 A
· Power supply cable	STL 204 (5 x 1.00 mm²)
· Operating temperature range	max. 40°C

Overload proof	yes
Number of digital channels	max. 16
Channel type N.O.	p-switching
Channel status indicator	LED yellow per channel
Diagnostic indication	LED red per channel

Designation
0942 UEM 700

The application of these products in harsh environments should always be checked before use.
Specifications subject to alteration.

Diagnostic

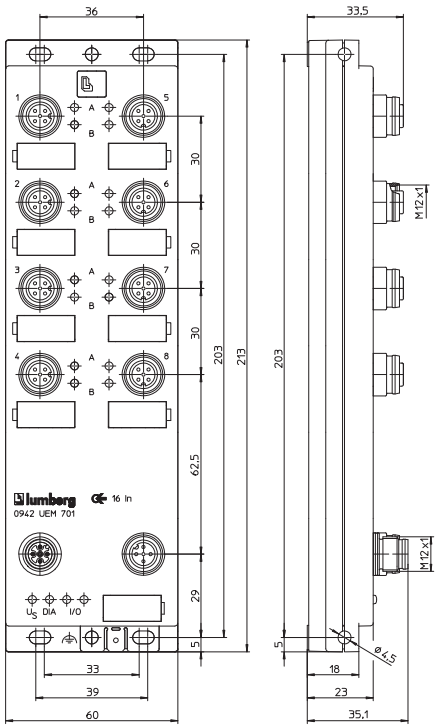
Periphery fault diagnosis for sensor short circuit, actuator short circuit, sensor low voltage detection

LioN-Link I/O Module with 16 Digital Inputs

0942 UEM 701

16 IN

LioN-Link I/O module with 16 digital inputs to connect standard sensors, M12 sockets (8x), 5 poles



Bit Assignment

Bit	7	6	5	4	3	2	1	0
				M12 Input				
Byte 0	4B	4A	3B	3A	2B	2A	1B	1A
Byte 1	8B	8A	7B	7A	6B	6A	5B	5A

Diagnostic Indication

LED	Indication	Condition
1...8 A/B	yellow	channel status
1...8 A	red	periphery faults (actuator short circuit/overload)
I/O	red red flashing green	wrong configuration/module exchanged not recognized by the BusHead online, communication with BusHead
U_S	green	sensor/system power supply
DIA	red	common indication for periphery faults

Pin Assignment

LioN-Link connection M12	Actuator/sensor connection M12
1 = Drain 2 = 24 V Sensor/System 3 = 0 V Sensor/System 4 = Data + 5 = Data -	1 = +24 V 2 = In/Out B 3 = 0 V 4 = In/Out A 5 = Earth

Technical Data

Degree of protection	IP 67
Operating temperature range	-10°C/+60°C
Weight	275 g
Housing material	PBT

System/sensors power supply	**U_S**
Rated voltage	24 V DC
Voltage range	19 – 30 V DC
Power consumption	typ. 100 mA

Input power supply	**U_S**
Voltage range	min. (U_{System} – 1.5 V)
Sensor current	700 mA
Short circuit proof	yes
Indication	LED green

Input wiring	**Type 3 acc. to IEC 61131-2**
Rated input voltage	24 V DC
Channel type N.O.	p-switching
Number of digital channels	max. 16
Channel status indicator	LED yellow per channel

Diagnostic

Periphery fault diagnosis for sensor short circuit, sensor low voltage detection

Designation
0942 UEM 701

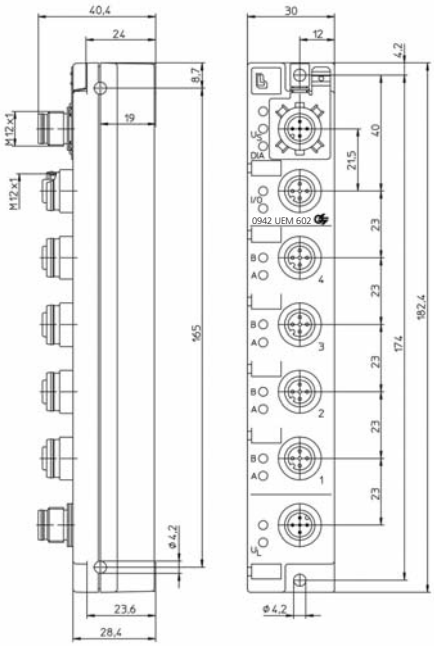
The application of these products in harsh environments should always be checked before use.
Specifications subject to alteration.

LioN-Link I/O Module with 4 Digital Outputs

0942 UEM 602

4 OUT

LioN-Link I/O module with 4 digital outputs, M12 sockets (4x), 5 poles, 2 A per channel, one channel per socket



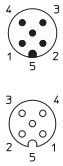
Bit Assignment

Bit	7	6	5	4	3	2	1	0
			M12 Output					
Byte 0	-	-	-	-	4A	3A	2A	1A

Diagnostic Indication

LED	Indication	Condition
1...4 A	yellow	channel status
1..4 DIA	red	periphery fault/output active with no actuator supply voltage
I/O	red red flashing green	wrong configuration/module exchanged not recognized by the BusHead online, communication with BusHead
U_S	green	sensor/system power supply
U_L	green	actuator power supply
DIA	red	common indication for periphery faults

Pin Assignment

LioN-Link connection M12	Actuator connection M12	Actuator supply M12
 1 = Drain 2 = 24 V Sensor/System 3 = 0 V Sensor/System 4 = Data + 5 = Data -	1 = n.c. 2 = n.c. 3 = 0 V 4 = Out A 5 = Earth	1 = +24 V DC 2 = +24 V DC 3 = GND 0 V 4 = GND 0 V 5 = Functional earth

Technical Data

Degree of protection	IP 67
Operating temperature range	-10°C/+60°C
Weight	200 g
Housing material	PBT
System/sensors power supply	**U_S**
Rated voltage	24 V DC
Voltage range	19 – 30 V DC
Power consumption	typ. 70 mA
Output power supply	**U_L**
Rated voltage	24 V DC
Voltage range	19 – 30 V DC
Reverse polarity protection	yes/antiparallel diode
Indication	LED green
Connection	M12 connector (3 or 5 poles)
Output wiring	
Rated output current	2.0 A per channel
Short circuit proof	yes
Max. output current	4 A (3 pole supply line); 6 A (5 pole supply line)
Overload proof	yes
Number of digital channels	max. 4
Channel type N.O.	p-switching
Channel status indicator	LED yellow per channel
Diagnostic indication	LED red per channel
Included in delivery/accessories	Dust covers M12, attachable labels

Diagnostic

Periphery fault diagnosis for actuator short circuit/overload per channel

Note

Particularly suitable for the control of hydraulic valves

Designation
0942 UEM 602

The application of these products in harsh environments should always be checked before use.
Specifications subject to alteration.

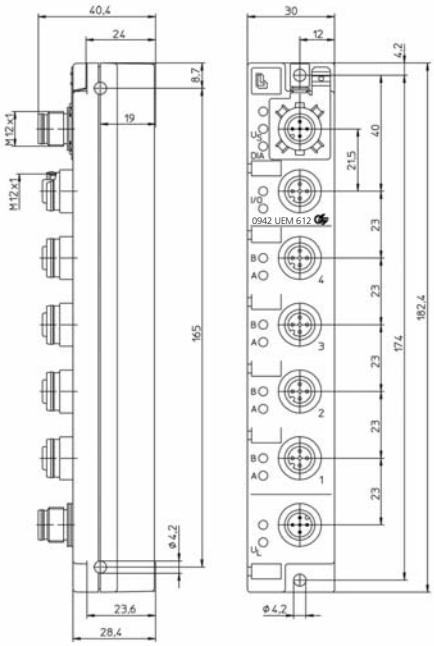
LioN-Link I/O Module with 4 Digital Outputs

0942 UEM 612

4 OUT

LioN-Link I/O module with 4 digital outputs, M12 sockets (4x), 5 poles, M12 actuator supply, 2 A per channel, one channel per socket

- Suitable for safety critical applications within Performance Levels A through D



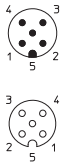
Bit Assignment

Bit	7	6	5	4	3	2	1	0
			M12 Output					
Byte 0	-	-	-	-	4A	3A	2A	1A

Diagnostic Indication

LED	Indication	Condition
1...4 A	yellow	channel status
1..4 DIA	red	periphery fault/output active with no actuator supply voltage
I/O	red red flashing green	wrong configuration/module exchanged not recognized by the BusHead online, communication with BusHead
U_S	green	sensor/system power supply
U_L	green	actuator power supply
DIA	red	common indication for periphery faults

Pin Assignment

LioN-Link connection M12	Actuator connection M12	Actuator supply M12
 1 = Drain 2 = 24 V Sensor/System 3 = 0 V Sensor/System 4 = Data + 5 = Data -	 1 = n.c. 2 = n.c. 3 = 0 V 4 = Out A 5 = Earth	 1 = +24 V DC 2 = +24 V DC 3 = GND 0 V 4 = GND 0 V 5 = Functional earth

Technical Data

Degree of protection	IP 67
Operating temperature range	-10°C/+60°C
Weight	200 g
Housing material	PBT
System/sensors power supply	**U_S**
Rated voltage	24 V DC
Voltage range	19 – 30 V DC
Power consumption	typ. 70 mA
Operating indication	LED green
Output power supply	**U_L**
Rated voltage	24 V DC
Voltage range	19 – 28.8 V DC (SELV/PELV acc. to EN60950-1)
Reverse polarity protection	yes/antiparallel diode, external fuse with 4/6 A medium time lag mandatory
Indication	LED green
Connection	M12 connector (3 or 5 poles)
Output wiring	
Rated output current	2.0 A per channel
Short circuit proof	yes
Max. output current	4 A (3 pole supply line); 6 A (5 pole supply line)
Overload proof	yes
Number of digital channels	max. 4
Channel type N.O.	p-switching
Channel status indicator	LED yellow per channel
Diagnostic indication	LED red per channel
Included in delivery/accessories	Dust covers M12, attachable labels

Diagnostic

Periphery fault diagnosis for actuator short circuit/overload per channel

Note

Due to the need to guarantee reliable, all pole disconnection of the output voltage supply on the customer side, utilization in emergency power off circuits is possible for applications up to Performance Level D. The absence of reaction between the logic and output supply circuits in the event of a hardware fault in the module is guaranteed.

The instructions in the LioN-Link manual must be observed in this case.

Designation
0942 UEM 612

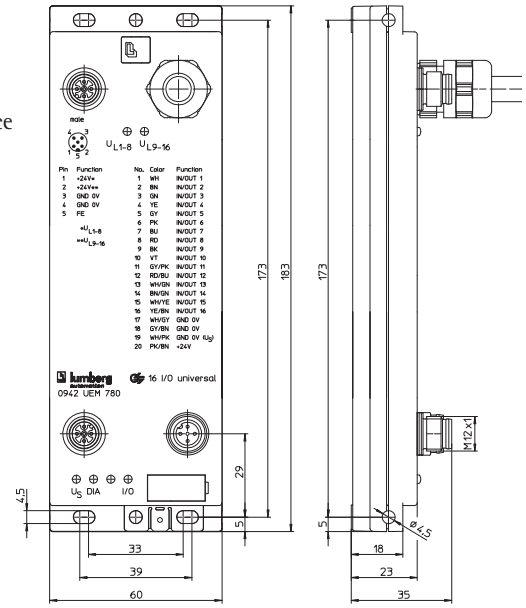
The application of these products in harsh environments should always be checked before use.
Specifications subject to alteration.

LioN-Link I/O Module with 16 Digital Inputs and Outputs

0942 UEM 780

16 IN/16 OUT universal

LioN-Link I/O module with 16 digital I/O channels, channels can be used universally as inputs or outputs, multipole cable interface to connect valve terminals, control consoles, manual tool changing devices, IP20 terminal boxes



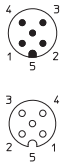
Bit Assignment

Bit	7	6	5	4	3	2	1	0
M12 Input								
Byte 0	RD	BU	PK	GY	YE	GN	BN	WH
Byte 1	YE/BN	WH/YE	BN/GN	WH/GN	RD/BU	GY/PK	VT	BK
M12 Output								
Byte 0	RD	BU	PK	GY	YE	GN	BN	WH
Byte 1	YE/BN	WH/YE	BN/GN	WH/GN	RD/BU	GY/PK	VT	BK

Diagnostic Indication

LED	Indication	Condition
I/O	red red flashing green	wrong configuration/module exchanged not recognized by the BusHead online, communication with BusHead
U_S	green	sensor/system power supply
U_L	green	actuator power supply
DIA	red	common indication for periphery faults

Pin Assignment

LioN-Link connection M12	Actuator supply M12
 1 = Drain 2 = 24 V Sensor/System 3 = 0 V Sensor/System 4 = Data + 5 = Data -	1 = +24 V ($U_{L\,1-8}$) 2 = +24 V ($U_{L\,9-16}$) 3 = GND (0 V) 4 = GND (0 V) 5 = Earth

Technical Data

Degree of protection	IP 67
Operating temperature range	-10°C/+60°C
Weight	800 g (with 5 m cable)
Housing material	PBT
System/sensors power supply	**U_S**
Rated voltage	24 V DC
Voltage range	19–30 V DC
Power consumption	140 mA
Input power supply	**U_S**
Voltage range	min. (U_{System} – 1.5 V)
Sensor current	700 mA
Short circuit proof	yes
Indication	LED green
Input wiring	**Type 3 acc. to IEC 61131-2**
Rated input voltage	24 V DC
Channel type N.O.	p-switching
Number of digital channels	max. 16
Output power supply	**U_L**
Rated voltage	24 V DC
Voltage range	19–30 V DC
Reverse polarity protection	yes/antiparallel diode
Indication	LED green
Output wiring	
Rated output current	0.5 A per channel
Short circuit proof	yes
Max. output current	6 A (3 A per group)
Group 1	Channel 1–8
Group 2	Channel 9–16
Overload proof	yes
Number of digital channels	max. 16
Channel type N.O.	p-switching

Diagnostic

Periphery fault diagnosis for sensor short circuit, actuator short circuit, sensor low voltage detection

Designation
0942 UEM 780/... M

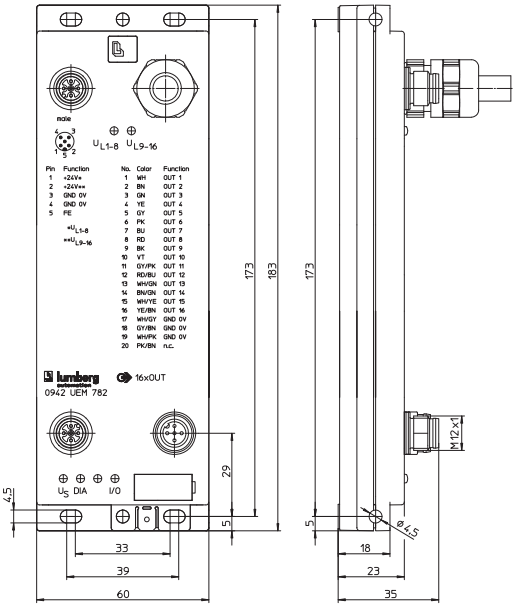
The application of these products in harsh environments should always be checked before use.
Specifications subject to alteration.

LioN-Link I/O Module with 16 Digital Outputs

0942 UEM 782

16 OUT

LioN-Link I/O module with 16 digital outputs, multipole cable interface to connect valve terminals, manual tool changing devices, IP20 terminal boxes



Bit Assignment

Bit	7	6	5	4	3	2	1	0
	M12 Output							
Byte 0	RD	BU	PK	GY	YE	GN	BN	WH
Byte 1	YE/BN	WH/YE	BN/GN	WH/GN	RD/BU	GY/PK	VT	BK

Diagnostic Indication

LED	Indication	Condition
I/O	red red flashing green	wrong configuration/module exchanged not recognized by the BusHead online, communication with BusHead
U_S	green	system power supply
U_L	green	actuator power supply
DIA	red	common indication for periphery faults

Pin Assignment

LioN-Link connection M12	Actuator/sensor connection M12
1 = Drain 2 = 24 V Sensor/System 3 = 0 V Sensor/System 4 = Data + 5 = Data -	1 = +24 V ($U_{L\,1-8}$) 2 = +24 V ($U_{L\,9-16}$) 3 = GND (0 V) 4 = GND (0 V) 5 = Earth

Technical Data

Degree of protection	IP 67
Operating temperature range	-10°C/+60°C
Weight	320 g (with 1 m cable)
Housing material	PBT
System power supply	**U_S**
Rated voltage	24 V DC
Voltage range	19 – 30 V DC
Power consumption	40 mA
Output power supply	**U_L**
Rated voltage	24 V DC
Voltage range	19 – 30 V DC
Reverse polarity protection	yes/antiparallel diode
Indication	LED green
Output wiring	
Rated output current	0.5 A per channel
Short circuit proof	yes
Max. output current	6 A (3 A per group)
Group 1	Channel 1 – 8
Group 2	Channel 9 - 16
Overload proof	yes
Number of digital channels	max. 16
Channel type N.O.	p-switching

Diagnostic

Periphery fault diagnosis for actuator short circuit

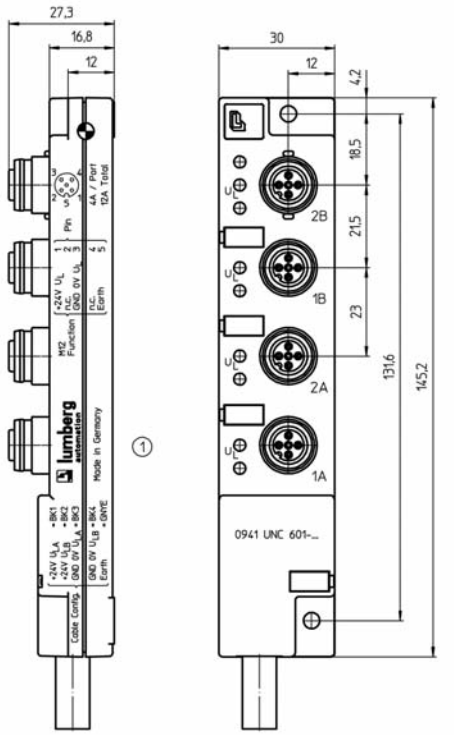
Designation
0942 UEM 782/... M

The application of these products in harsh environments should always be checked before use.
Specifications subject to alteration.

Power Distributor with 4 M12 Sockets

0941 UNC 601

LioN-Link power distributor,
4x M12 ports, 2 potential circuits,
10 m lead with 5x1 mm²



Pin Assignment

Power supply 1A- & 2A-M12	1B- & 2B-M12	Cable assignment	
		Function	**Wire color**
1 = 24 V U_{LA}	1 = 24 V U_{LB}	+24 V U_{LA}	black 1
2 = n.c.	2 = n.c.	+24 V U_{LB}	black [2]
3 = GND 0V U_{LA}	3 = GND 0V U_{LB}	GND 0 V U_{LA}	black 3
4 = n.c.	4 = n.c.	GND 0 V U_{LB}	black 4
5 = Earth	5 = Earth	Earth	green/yellow

Technical Data

Material	
Housing	PBT
Contact holder	PA
Contact M12	CuSn, pre-nickeled and 0.3 µm gold plated
threaded bush	CuZn, nickel plated
O-ring	FKM
Operating temperature range	-25°C/+70°C
Mechanical data	
Degree of protection	IP 67 Only in the locked or bolted state with the corresponding counterparts or dust covers
Electrical data	**Type 3 acc. to IEC 61131-2**
Rated current at 40°C	4 A/port, 12 A/module
Rated voltage	10–30V
Operating indication	LED green
Insulation resistance	$>10^9$ Ω
Degree of contamination	3
Included in delivery/accessories	Dust covers M12, attachable labels

Designation
0941 UNC 601/10M

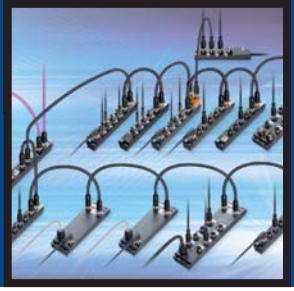
The application of these products in harsh environments should always be checked before use.
Specifications subject to alteration.

Wiring Accessories BusHead

Bus connection, 5 poles	Designation	
	0975 254 10... 0935 253 10...	Profibus signal cable, M12, B coded CAN/DeviceNet signal cable, Thin Cable, M12
	0979 PTX 101 0939 CTX 101	Profibus terminating resistor, M12, B coded CAN/DeviceNet terminating resistor, M12

LioN-Link connection, 5 poles	Designation	
	0935 253 10...	CAN/DeviceNet signal cable, Thin Cable, M12
	RST 5...	Actuator/sensor cordset, M12 male connector with molded cable
	RK(W)T 5...	Actuator/sensor cordset, M12 female/female right angle connector with molded cable
	RST 5-RKT 5...	Actuator/sensor cordset, M12 male and female connector
	RSC(W) 5/9 RSC(W) 5/9	Field attachable connector, M12 male/ male right angle connector or M12 female/female right angle connector, with threaded joint

Power supply connection, 5 poles	Designation	
	RKT 5... RKWT 5...	Actuator/sensor cordset, M12 female/female right angle connector with molded cable
	0906 UTP 101	T-connector with M12 male/female connector, 5 poles



Wiring Accessories I/O Modules

LioN-Link connection, 5 poles	Designation	
	0935 253 10...	CAN/DeviceNet signal cable, Thin Cable, M12
	RST 5...	Actuator/sensor cordset, M12 male connector with molded cable
	RK(W)T 5...	Actuator/sensor cordset, M12 female/female right angle connector with molded cable
	RST 5-RKT 5...	Actuator/sensor cordset, M12 male and female connector
	RSC(W) 5/9 RSC(W) 5/9	Field attachable connector, M12 male/ male right angle connector or M12 female/female right angle connector, with threaded joint
	0906 UTP 104	T-connector/splitter, 2-way, with mounting hole, M12 female connector with two M12 male connectors, 5-poles

Actuator/sensor connection, 3 and 5 poles	Designation	
	RSMV...	Actuator/sensor cordset, M8 male connector with molded cable
	RSMC... RSMCW...	Field attachable connector, M8 male/male right angle connector, with threaded joint
	RST...	Actuator/sensor cordset, M12 male connector with molded cable
	RSMV-RKM(WV)... RST-RKM...	Actuator/sensor cordset, M8/M12 male connector and M8/M12 female/female right angle connector
	RSC... RSCW...	Field attachable connector, M12 male/male right angle connector, with threaded joint

Power supply connection, 5 poles	Designation	
	RKT 5... RKWT 5... RKT 5-226/... M P89	Actuator/sensor cordset, M12 female/female right angle connector with molded cable
	0906 UTP 101	T-connector with M12 male/female connector, 5 poles

0942 UEM 65... 0942 UEM 60.../63...

Wiring Accessories I/O Modules

0942 UEM 78... 0942 UEM 70...

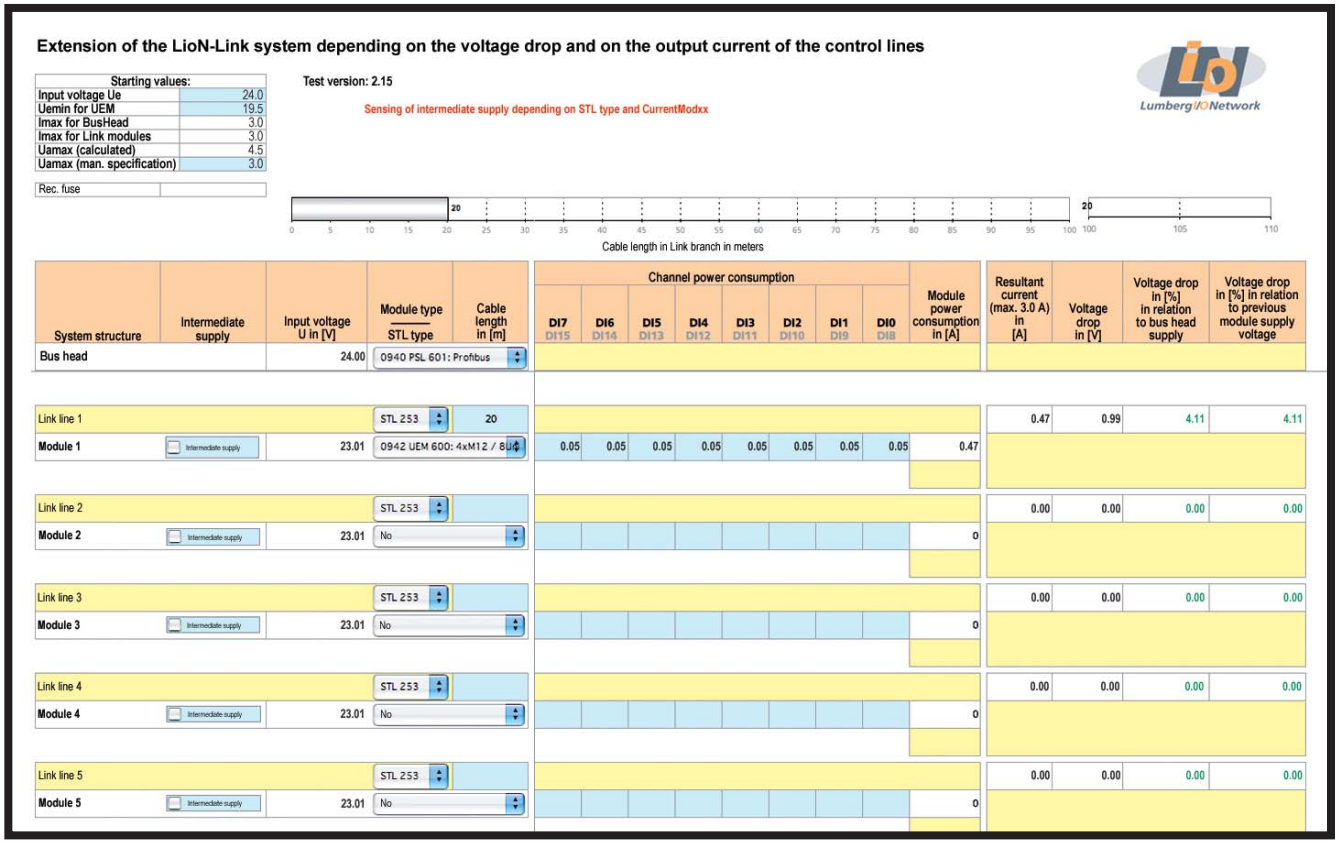
Power supply connection, 5 poles	Designation	
	RKT 5... RKWT 5...	Actuator/sensor cordset, M12 female/female right angle connector with molded cable
	0905 204 3...	Power supply double, 7/8", single or double ended, straight or angular
	RKC(W) 5... RKC 50...	Field attachable connector, M12/7/8" female/female right angle connector with threaded joint

Actuator/sensor connection, 5 poles	Designation	
	RST...	Actuator/sensor cordset, M12 male connector with molded cable
	RST-RKM...	Actuator/sensor cordset, M12 male connector and M8/M12 female connector
	RSC... RSCW...	Field attachable connector, M12 male/male right angle connector, with threaded joint

LioN-Link connection, 5 poles	Designation	
	0935 253 10...	CAN/DeviceNet signal cable, Thin Cable, M12
	RST 5...	Actuator/sensor cordset, M12 male connector with molded cable
	RK(W)T 5...	Actuator/sensor cordset, M12 female/female right angle connector with molded cable
	RST 5-RKT 5...	Actuator/sensor cordset, M12 male and female connector
	RSC(W) 5/9 RSC(W) 5/9	Field attachable connector, M12 male/ male right angle connector or M12 female/female right angle connector, with threaded joint

LioN-Link Configurator for Intermediate Supply

We provide a free calculation program to assist you in designing your LioN-Link network.
This allows you to plan the necessary intermediate supplies accurately and select their optimum location within the network.



Extension of the LioN-Link system depending on the voltage drop and on the output current of the control lines

Starting values:	
Input voltage Ue	24.0
Uemin for UEM	19.5
Imax for BusHead	3.0
Imax for Link modules	3.0
Uamax (calculated)	4.5
Uamax (man. specification)	3.0
Rec. fuse	

Test version: 2.15

Sensing of intermediate supply depending on STL type and CurrentModxx

Cable length in Link branch in meters

System structure	Intermediate supply	Input voltage U in [V]	Module type / STL type	Cable length in [m]	Channel power consumption DI7 DI15	DI6 DI14	DI5 DI13	DI4 DI12	DI3 DI11	DI2 DI10	DI1 DI9	DI0 DI8	Module power consumption in [A]	Resultant current (max. 3.0 A) in [A]	Voltage drop in [V]	Voltage drop in [%] in relation to bus head supply	Voltage drop in [%] in relation to previous module supply voltage
Bus head		24.00	0940 PSL 601: Profibus														
Link line 1			STL 253	20										0.47	0.99	4.11	4.11
Module 1	Intermediate supply	23.01	0942 UEM 600: 4xM12 / 8xM		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.47				
Link line 2			STL 253											0.00	0.00	0.00	0.00
Module 2	Intermediate supply	23.01	No										0				
Link line 3			STL 253											0.00	0.00	0.00	0.00
Module 3	Intermediate supply	23.01	No										0				
Link line 4			STL 253											0.00	0.00	0.00	0.00
Module 4	Intermediate supply	23.01	No										0				
Link line 5			STL 253											0.00	0.00	0.00	0.00
Module 5	Intermediate supply	23.01	No										0				

The table takes the following conditions into account:
Calculation of the voltage drop (in volts and percent) for each cable section between the designed Link modules of a Link branch, taking into account
- the Link cable length
- the Link cable cross section
- the Link module type
- the channel current load
- the module resultant current
- the total resultant current
- the Link connector M12

The program and instructions are available from the download portal at **www.beldensolutions.com**

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General Technical Information

Explanation of product features

UL approved

Highly resistant to oils, coolants, lubricants and emulsions

Highly resistant to vibrations and shocks

Important note

As a customer, you can expect our products to be in compliance with the latest technical standards. We therefore reserve the right to make design changes that may result in differences from the documented technical data.

If you have any special requirements or specifications, please consult our sales team. Our current terms and conditions of sale can be found on the Internet at **www.beldensolutions.com**

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