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Product Bulletin

PB 1081AG

LioN-R PROFIBUS I/O Modules from Lumberg Automation™

The ruggedized PROFIBUS I/O modules from the LioN-R family provide secure data communication in harsh industrial environments and have an extremely robust I/O technology.

The active modules combine optimal functional reliability with maximum mechanical stability. This is because the modules are fully potted in a metal housing and there is galvanic isolation between the sensor/actuator and the higher-level bus system, and has short-circuit proof outputs.

A new product to serve your needs.
Be certain.

- Due to their extremely robust design, the I/O modules can withstand even the harshest environmental conditions
- Optimal electrical reliability and channel-based diagnostics guarantee maximum machine uptime
- Standardized M12 connection technology allows economical and future-proof installations

In mechanical engineering, PROFIBUS DP (Decentral Periphery) protocol is especially widespread in Europe and Asia. The protocol is also making its way into the United States. Practically all well-known suppliers of controllers use this protocol as specified by the manufacturer-independent PROFIBUS User Organization (PNO). The ruggedized LioN-R modules securely connect sensors and actuators to controllers, are certified by the PNO, and fulfill numerous national and international standards. The modules are extremely robust in design and provide reliable protection to the controllers from interference, due to the galvanic isolation between the inputs and outputs and the higher-level bus system. Finally yet importantly, the metal housing of the LioN-R modules fulfills the requirements of modern machine design for convenient on-machine mounting.

Applications

The decentralized PROFIBUS LioN-R I/O modules typically used at the field level fulfill the requirements of mechanical engineering, by enabling reliable and flexible solutions for on-machine applications. System operators benefit from higher productivity, while manufacturers benefit from the competitive edge offered by the modules. This is because the modules allow the sensors and actuators to be networked securely with controllers, even under the harshest environmental conditions. Due to their robust design, they can withstand welding sparks, filings, aggressive coolants and lubricants. The range of applications for LioN-R modules for PROFIBUS encompasses metal processing, materials handling, welding lines and automated systems traditionally found in food and beverage applications.

Your Benefits

Securely networking actuators and sensor via PROFIBUS is now possible with the new ruggedized LioN-R I/O modules. The fully encapsulated metal housing guarantees optimal mechanical stability. The innovative technology, such as short-circuit proof outputs offer optimal functional reliability; thereby, maximizing the productivity of the system. The simple diagnostic concept also allows faults to be located quickly, due to the precise channel and bus diagnosis. Finally, the standardized M12 connection technology, when compared with parallel wiring, considerably reduces the time and effort required for installation, maintenance and storage. It also ensures that systems can be expanded quickly and simply at any time.

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LioN-R Modules from Lumberg Automation™ for PROFIBUS

The easy diagnostic concept saves time when locating faults, reducing operating costs as a result.

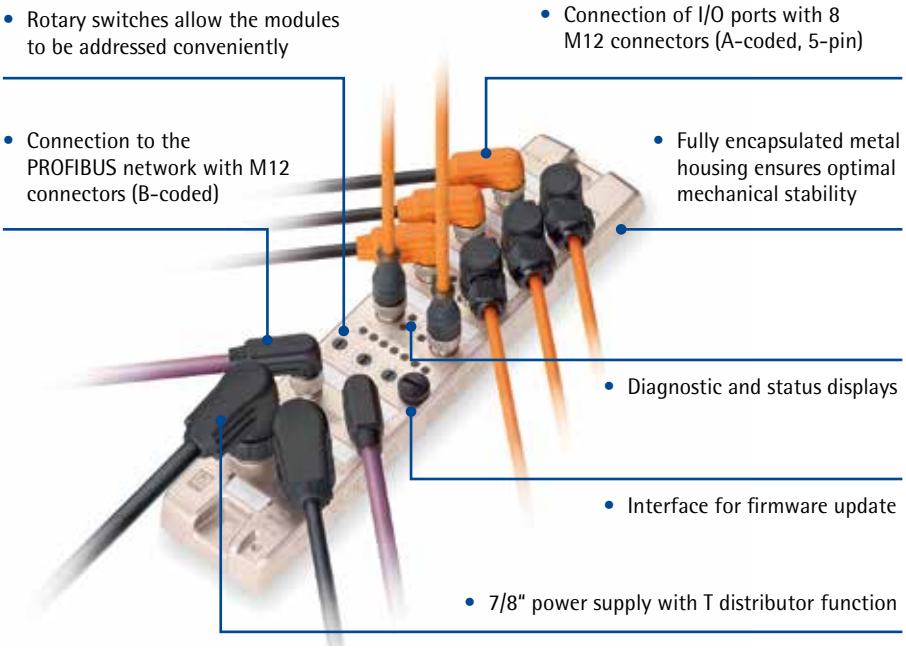
The ruggedized LioN-R modules for PROFIBUS come in three variants: 16 digital input channels, or 16 digital output channels, or a combination of these channels (8 digital input/8 digital output). The two bus interfaces are characterized by vibration-proof M12 connection technology in the same way as the 16 I/O slots. The embedded I/O ports with metal threads ensure optimal mechanical stability. The optimized slot arrangement makes them easy to use, even with T-distributors. In addition, the module address can be set conveniently using a rotary switch. The power supply with a nominal voltage of 24 V DC is connected using 7/8" connectors. All variants satisfy the requirements of ingress protection (IP) class IP67 with an operating temperature range of -10°C to +60°C. The I/O modules are certified by the PNO and UL (Underwriters Laboratories).

Embedded I/O ports with metal threads

Two I/O channels per M12 port

Benefits at a Glance

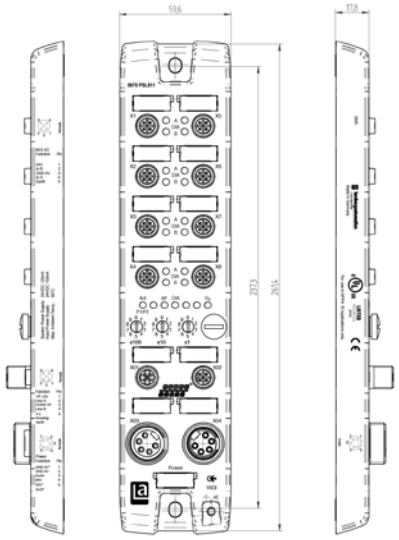
- Galvanic isolation between sensors and actuators and the bus system, together with short-circuit proof outputs, ensure maximum functional reliability
- The simple diagnostic concept saves time when locating faults, reducing operating costs as a result
- Three variants (16 DI, 16 DO, 8 DI/8 DO) offer maximum flexibility
- Standardized M12 connection technology reduces the amount of wiring necessary and allows machines and systems to be expanded easily and quickly
- The optimized slot arrangement makes them easy to use, even with T distributors for power, bus communication and I/Os
- International protection class IP67
- PNO and UL certification, as well as national and international approvals
- Extremely compact design (thanks to embedded ports) for space-saving installations
- Tailored optimally to LioN-M and LioN-Link modules, as well as to actuator and sensor cordsets (M12, M8), fieldbus and power cables, and field-attachable connectors from Lumberg Automation



Technical Specifications

Product Description			
Type	**0970 PSL 811-PB-DP 16DI-M12-R**	**0970 PSL 812-PB-DP 16DO-M12-R**	**0970 PSL 813-PB-DP 8DI8DO-M12-R**
			
Description	LioN-R PROFIBUS-DP module with 16 digital inputs for connecting standard sensors, 8 x M12 sockets, A-coded, 5 poles, rotary switch for setting addresses, PROFIBUS connection, 2 x M12, 5 poles, B-coded, 2 x 7/8“ power supply, 5 poles	LioN-R PROFIBUS-DP module with 16 digital outputs, galvanically isolated, for connecting standard actuators, 8 x M12 sockets, A-coded, 5 poles, rotary switch for setting addresses, PROFIBUS connection, 2 x M12, 5 poles, B-coded, 2 x 7/8“ power supply, 5 poles	LioN-R PROFIBUS-DP module with 8 digital input and 8 digital output channels, galvanically isolated, 8 x M12 sockets, A-coded, 5 poles, rotary switch for setting addresses, PROFIBUS connection, 2 x M12, 5 poles, B-coded, 2 x 7/8“ power supply, 5 poles
Technical Data			
Protection Class	IP67		
Operating Temperature Range	-10°C to +60°C		
Weight	615 g		
Housing Material	Metal (diecast zinc)		
Bus System			
ID Number	0E94		
GSD File	LUM_0E94.gsd		
Transmission Rate	max. 12 MBaud		
Address Range	1 to 125 dez (default address: 126 dez)		
System/Sensors Power Supply			
Rated Voltage	24 V DC		
Voltage Range	18 to 30 V DC		
Power Consumption	typ. 60 mA		
Input Power Supply			
Voltage Range	min. (Us – 1,5 V)	–	min. (Us – 1,5 V)
Sensor Current/Port	200 mA (at T_A = +30°C)	–	200 mA (at T_A = +30°C)
Indicator	LED green/red	–	LED green/red
Inputs (Type 3 acc. to IEC 61131-2)			
Rated Input Current	24 V DC	–	24 V DC
Number of Digital Channels	16	–	8
Sensor Type	PNP (source)	–	PNP (source)
Status Indicator	LED yellow channel A/LED white channel B	–	LED yellow channel A/LED white channel B
Diagnostic Indicator	LED red per port	–	LED red per port
Actuator Power Supply			
Rated Output Current	–	24 V DC	
Voltage Range	–	18 to 30 V DC	
Reverse Polarity Protection	–	yes/antiparallel diode	
Indicator	–	LED green	
Outputs			
Rated Output Current	–	1.6 A per channel	
Short Circuit-proof	–	yes	
Max. Current Carrying Capacity	–	9 A per module	
Number of Digital Channels	–	16	8
Channel Type N.O.	–	p-switching	
Status Indicator	–	LED yellow channel A/LED white channel B	
Diagnostic Indicator	–	LED red per port	
Included in Delivery			
M12 Dust Covers	4 pieces		
Attachable Labels	10 pieces		

Technical Data



Diagnostic Indicator

LED	Indicator	Condition
Us	Green	Logic/sensor power supply OK
Us	Red	Logic/sensor power supply outside limits
UL	Green	Actuator power supply OK
UL	Red	Actuator power supply outside limits
1..8 A	Yellow	Channel status
1..8 DIA A	Red	Periphery error
1..8 B	White	Channel status
1..8 DIA B	Red	Periphery error
ACT	Yellow	PROFIBUS communication active
BF	Red	Bus error, no data exchange with controller
BF	Green	Data exchange with controller
DIA	Green	No peripheral error message available
DIA	Red	Peripheral error message to controller

Bit Assignment 0970 PSL 811

Bit	7	6	5	4	3	2	1	0
M12 Input 16DI								
Byte 0	4B	4A	3B	3A	2B	2A	1B	1A
Byte 1	8B	8A	7B	7A	6B	6A	5B	5A

Bit Assignment 0970 PSL 812

Bit	7	6	5	4	3	2	1	0
M12 Output 16DO								
Byte 0	4B	4A	3B	3A	2B	2A	1B	1A
Byte 1	8B	8A	7B	7A	6B	6A	5B	5A

Bit Assignment 0970 PSL 813

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

Pin Assignment

Bus Connection M12, B-coded

In
M12 male, 5 poles

Out
M12 female, 5 poles

1 = VP (+5V)*
2 = Line A
3 = DGND (0V)*
4 = Line B
5 = n.c.

Thread = shielded

Power Supply 7/8”

In
7/8“ male, 5 poles

Out
7/8“ female, 5 poles

1 = GND Actuator UL
2 = GND System/ Sensor US
3 = Earth (FE)
4 = 24 V System/ Sensor US
5 = 24 V Actuator UL

Input/Output M12, A-coded

In
1 = +24 V DC
2 = IN B
3 = GND (0 V)
4 = IN A
5 = Earth (FE)

Out
1 = n. c.
2 = OUT B
3 = GND
4 = OUT A
5 = Earth (FE)

Housing = FE

* Signals isolated galvanically from sensors/actuators

Always Stay Ahead with Belden

In a highly competitive environment, it is crucial to have reliable partners who are able to add value to your business. When it comes to signal transmissions, Belden is the number one solutions provider. We understand your business and want to know your specific challenges and targets to see how effective signal transmission solutions can push you ahead of the competition. By combining the strengths of our four leading brands, Belden®, GarrettCom®, Hirschmann™ and Lumberg Automation™, we are able to offer the solution you need. Today it may be a single cable, a switch or a connector, thus solving a specific issue; tomorrow it can be a complex range of integrated applications, systems and solutions.

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