**lumbergautomation**

A **BELDEN** BRAND

New Product Bulletin

## Lumberg Automation™ LioN-M Modules for ProfiNet I/O

Cost-effective solution for ProfiNet I/O networks thanks to integrated dual-port switch and easy diagnostic concept.



**The New LioN-M Modules Supports Real Time (RT) in the Transmission of I/O Data. Isychronous Real Time (IRT) is Supported in the Integrated Switch of the Module to Provide the Build Up of a line Topology with other Profinet Slaves that Require IRT.**

- Universal I/O functionality offers maximum flexibility when planning the network and commissioning the modules
- Short-circuit proof I/O and a long product life ensure a high level of functional reliability
- The optimum arrangement of I/O slots, together with the clear labeling of the network ports make for simple handling

The new LioN-M modules act as the interface for communication between field level and control level. In other words, sensor signals are collected in the modules and forwarded in real time via ProfiNet I/O to the higher-level controllers and on to the actuators in the field (compliant with both the RT and the IRT standard). The modules have 16 digital channels for input onlu or Universal as inputs or outputs in any combination. In addition, to their robust design, they can withstand rugged environmental conditions and extreme temperatures and weigh 380 g – among the lightest of their kind in the market.

### Applications

The LioN-M modules for ProfiNet I/O were especially designed for complex installations with high signal density and high real-time requirements. These include machinery used in auto body shops, gearbox manufacture and paint shops The modules can also be used in filling equipment, high-bay warehouses or conveyor belts. They are also ideally suited for printing, paper, textile, and wood processing machinery. LioN-M modules enable planning and design staff to create high-availability solutions in the field of machinery and plant construction. Project buyers, system integrators and maintenance specialists for machinery and plant can also benefit from these powerful modules.

### Benefits

A high level of economy comes with the LioN-M modules, since their universal I/O functionality enables them to be used to flexibly connect sensors and actuators via ProfiNet I/O. As is usual for fieldbus systems, the integrated dual-port switch supports both RT and IRT realtime standards while permitting a number of modules to be connected in a line topology - meaning that there is usually no need to install cost intensive star cabling or additional switches. You can also continue to use existing cable routes, ducts, and energy chains without changing their physical layout. The optimum arrangement of I/O slots and the clear labeling of the network ports make these LioN-M modules easy to handle. Finally yet importantly, their short-circuit proof I/O allow the modules to offer a high level of operational reliability and a long product life.
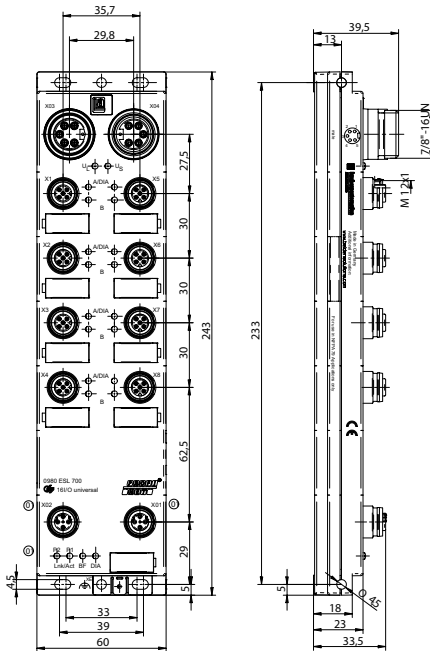
## Universal I/O Functionality now also for ProfiNet I/O Networks – Easy, Safe and Flexible

LioN-M Profinet modules use vibration-resistant M12 connection technology and utilize a special protocol that is called DCP. Through this protocol the module receives the necessary PROFINET name and an IP-address if desired. This switch also makes it easy to wire up a line topology – entirely without any external modules. The easy diagnostic concept enables fast and precise fault location for each individual I/O port. This markedly shortens maintenance and downtime, or, to put it another way, increases the system's availability.

PROFINET slaves receive their PROFINET name by DCP protocol.

### The Advantages at a Glance:

- Connection of sensors and actuators via ProfiNet I/O
- Integrated dual-port switch (10/100 Mbps)
- Support for the real-time standards RT and IRT
- Setup in line topology
- 16 digital channels as inputs (module 0980 ESL 701 (16DI)) or universally as inputs and outputs (module 980 ESL 700 (16DIO))
- Vibration-resistant M12 connections for network ports and I/O slots
- Color coding of network ports
- Configuration via controllers' user interface
- Strong and compact PBT casing
- Industrial protection class IP67
- Temperature range -10°C to +60°C
- Power supply with 24 V voltage rating and a range from 19 V to 30 V
- Integrated T piece for power supply simplifies wiring
- Flexible front or side attachment or directly onto profile rails
- Optimally geared to Lumberg Automation™ M12 and 7/8″ connectors, Hirschmann Industrial Ethernet switches and Belden cables

### Diagnostic Indication



| LED | Indication | Condition |
|---|---|---|
| U$_S$ | Green | Sensor power supply |
| U$_L$ | Green | Actuator power supply |
| 1...8 A | Yellow | Channel status 1 |
| 1...8 DIA A | Red | Periphery fault |
| 1...8 B | Yellow (alternative White) | Channel status 2 |
| 1...8 DIA B | Red | Periphery fault |
| P1 Lnk/Act | Green<br>Yellow flashing<br>Off | Connected to a Ethernet device<br>I/O device exchanging data<br>No connection to a ProfiNet device |
| P2 Lnk/Act | Green<br>Yellow flashing<br>Off | Connected to a ProfiNet device<br>I/O device exchanging data<br>No connection to a ProfiNet device |
| BF | Red<br>Red flashing with 2Hz<br>Off | No configuration, no or slow physical connection<br>No data exchange<br>No fault |
| DIA | Solid Red<br>Red flashing red with 2 Hz for 3 sec<br><br><br><br>Off | Watchdog time out, diagnostic, system fault<br>DCP signal service is acivated over the PROFINET network. (This is optional for identifying the module which is to be configured).<br>No fault. |

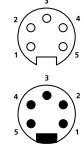Technical modifications reserved.

## Technical Specifications

| Product Description | | |
|---|---|---|
| **Type** | 0980 ESL 700 | 0980 ESL 701 |
| | | |
| **Description** | ProfiNet device with 16 digital I/O channels, channels can be used universally as inputs or outputs, M12 socket, M12 LAN-Ports, D-coded, 7/8" power supply | ProfiNet device with 16 digital input channels, M12 socket, M12 LAN-Ports, D-coded, 7/8" power supply |
| **Order-No** | 0980 ESL 700 | 0980 ESL 701 |
| **Technical Data** | | |
| **Protection Class** | IP67 | IP67 |
| **Operating Temperature** | -10°C to +60°C | -10°C to +60°C |
| **Weight** | 380 g | 380 g |
| **Housing Material** | PBT | PBT |
| **Bus System ProfiNet I/O** | | |
| **Transmission Rate** | 100 Mbps, Full Duplex | 100 Mbps, Full Duplex |
| **Transmission Method** | 100BASE-TX | 100BASE-TX |
| **Autonegotiation** | supported | supported |
| **System/Sensors Power Supply** | | |
| **Nominal Voltage** | 24 V DC | 24 V DC |
| **Voltage Range** | 19 – 30 V DC | 19 – 30 V DC |
| **Power Consumption** | typ. 90 mA | typ. 90 mA |
| **Reverse Polarity Protection** | yes | yes |
| **Input Power Supply Us** | | |
| **Voltage Range** | 19 – 30 V DC | 19 – 30 V DC |
| **Sensor Current** | 200 mA (at $T_{amb}$ 30°C) | 200 mA (at $T_{amb}$ 30°C) |
| **Short-circuit Proof** | yes | yes |
| **Indication** | LED green | LED green |
| **Inputs, Type 3, IEC 61131-3** | | |
| **Rated Input Voltage** | 24 V DC | 24 V DC |
| **Channel Type N.O.** | p-switching | p-switching |
| **Number of Digital Channels** | max. 16 | max. 16 |
| **Channel Status Indicator** | LED yellow per channel | LED yellow per channel |
| **Diagnostic Indication** | LED red per socket | LED red per socket |
| **Output Power Supply $U_L$** | | |
| **Nominal Voltage** | 24 V DC | – |
| **Voltage Range** | 19 – 30 V DC | – |
| **Reverse Polarity Protection** | yes/antiparallel diode | – |
| **Indication** | LED green | – |
| **Outputs** | | |
| **Rated Output Current** | 1,6 A per channel | – |
| **Short-circuit Proof** | yes | – |
| **Max. Output Current** | 9 A (12 A*) per module | – |
| **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 | – |
| **Included in Delivery** | | |
| **Dust Covers M12** | 4 pieces | 4 pieces |
| **Attachable Labels** | 10 pieces | 10 pieces |

The use of these products in aggressive media should be verified in each case.
Technical modifications reserved.

## Technical Data

### 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 |

### Pin Assignment

| LAN Connection M12, D-coded | Power Supply 7/8" | Input/Output M12 |
|---|---|---|
| 1 = TD+<br>2 = RD+<br>3 = TD-<br>4 = RD<br><br>Housing = shielding | 1 = GND (0 V) actuators<br>2 = GND (0 V) sensors<br>3 = Earth<br>4 = 24 V sensors<br>5 = 24 V actuators | 1 = +24 V<br>2 = IN/OUT B<br>3 = GND (0 V)<br>4 = IN/OUT A<br>5 = earth<br><br>Housing = FE |

### Always the Right Solution

Belden is the world's leading supplier of signal transmission solutions including cable, connectivity and active components for mission-critical applications ranging from industrial automation and alternative power generation through to professional broadcasting. Belden offers an extensive portfolio of highly specialized products for steering, control and field level, which the company produces and markets under its proprietary Belden®, Hirschmann™ , and Lumberg Automation™ brands. We would be glad to give you a more personal introduction to our integrated product palette for industrial applications and the worldwide Belden Service

You will find further information and technical details online at **www.lumberg-automationusa.com** or contact our Sales Team directly: **Tel. 717.217.2272.**