



**Product:** [0980 SSL 3031-121-007D-101](#) 

**LioN-Safety 8/4-F-DI 4-F-DO 2-IOLM M12 – PROFINET / PROFIsafe**

## Product Description

LioN-Safety 8/4-F-DI 4-F-DO 2-IOLM M12 PROFINET / PROFIsafe , M12 L-coded Power Supply, Metal 60mm, IoT Protocols (OPC UA, MQTT, CoAP, REST)

## Technical Specifications

### Product Description

|                                   |                                      |
|-----------------------------------|--------------------------------------|
| Brand:                            | Belden                               |
| Product Family:                   | I/O Systems: Active - Standalone     |
| Product Sub Family:               | LioN-Safety                          |
| Item Description:                 | 0980 SSL 3031-121-007D-101           |
| Part Number:                      | 935023002                            |
| Device Type:                      | FS I/O Device                        |
| Protocol:                         | PROFISAFE                            |
| I/O Function:                     | 8/4 FS DI, 4 FS DO, 2 IOLM           |
| Bus Connection:                   | M12 LAN, 4-poles, D-coded            |
| Power Connection (System Supply): | M12 Power, 5-poles, L-coded          |
| I/O Connection:                   | M12, 5-poles, A-coded                |
| I/O Type:                         | Functional Safety Digital In-/Output |

### General Data

|                                           |                                                                         |
|-------------------------------------------|-------------------------------------------------------------------------|
| Housing Material:                         | Metal, Zinc Die-cast                                                    |
| Housing Plating:                          | Nickel, matt                                                            |
| Housing Color:                            | Grey Metallic                                                           |
| Protection Degree / IP Rating**:          | IP65, IP67, IP69K                                                       |
| Potted:                                   | Yes                                                                     |
| Dimensions (W x H x D):                   | 60 mm x 31 mm x 200 mm                                                  |
| Weight:                                   | approx. 500 g                                                           |
| Ambient Temperature (Operation)*:         | -40 °C to 70 °C ( 2000m ASL 63°C)                                       |
| Ambient Temperature (Storage/Transport):  | -40 °C to 85 °C                                                         |
| Permissible Humidity (Operation):         | 5 % ... 98 % (For UL applications max. 80 %)                            |
| Permissible Humidity (Storage/Transport): | 5 % ... 98 % (For UL applications max. 80 %)                            |
| Air Pressure (Operation):                 | 70 kPa ... 106 kPa (up to 3000 m above sea level)                       |
| Air Pressure (Storage/Transport):         | 70 kPa ... 106 kPa (up to 3000 m above sea level)                       |
| Flammability Class:                       | UL 94 (IEC 61010)                                                       |
| Protection Class:                         | III, IEC 61140, EN 61140, VDE 0140-1                                    |
| Pollution Degree:                         | 3 acc. to EN 60664-1, VDE 0110-1                                        |
| Vibration Resistance:                     | 15 g / 5 -500 Hz                                                        |
| Shock Resistance:                         | 50 g / 11ms                                                             |
| Mean Time To Failure (MTTF):              | 84 years. acc. to EN ISO 13849-1                                        |
| Contact Base Material:                    | M12, D-coded, CuSn, Gold-plated   M12 Power, L-coded, CuNi, Gold-plated |
| Contact Bearer Material:                  | PA                                                                      |
| O-Ring Material:                          | FKM                                                                     |

|                                            |                                                                                                                          |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Mounting:                                  | 2 hole screw mounting. Use standard M4 x 25 / 30 screws with toothed lock washer (as per DIN 125) and self-locking nuts. |
| Fastening Torque (Fixing Screw):           | M4: 1 Nm                                                                                                                 |
| Fastening Torque (Ground Connection (FE)): | M4: 1 Nm                                                                                                                 |
| Fastening Torque (Bus Connection):         | M12: 0.5 Nm                                                                                                              |
| Fastening Torque (Power Connection):       | M12: 0.5 Nm                                                                                                              |
| Fastening Torque (I/O Connection):         | M12: 0.5 Nm                                                                                                              |
| Included in Delivery:                      | Attachable Labels: 15x, Sealing Caps: 5x M12                                                                             |

Safety

|                                        |          |
|----------------------------------------|----------|
| SIL/ SIL CL (IEC 62061/ IEC 61508):    | up to 3  |
| Performance Level IL (ISO 13849):      | up to e  |
| Category Cat. (ISO 13849):             | up to 4  |
| Probability of failure per hour (PFH): | 1,43 E-9 |
| Mission Time:                          | 20 years |
| Safety Reaction Time:                  | 42ms     |
| Safety Digital Inputs:                 | 8/4      |
| Safety Digital Outputs:                | 4        |

PROFINET

|                                      |                                                      |
|--------------------------------------|------------------------------------------------------|
| Protocol:                            | PROFINET                                             |
| Safety Communication:                | PROFIsafe (V2.6.1)                                   |
| Connection:                          | M12 LAN, 4-poles, D-coded                            |
| Number of Connections:               | 2                                                    |
| Specification:                       | V2.44                                                |
| Conformance Class:                   | C (CC-C)                                             |
| Performance Class:                   | RT (switch supports IRT)                             |
| Netload Class:                       | III                                                  |
| Transmission Rate:                   | Fast Ethernet (10/100 Mbit/s), Full Duplex           |
| Transmission Method:                 | 100 BASE-TX, with auto negotiation and auto crossing |
| Cycle Time / Update Rate:            | min. 1 ms                                            |
| Addressing:                          | DCP                                                  |
| Media Redundancy Protocol (MRP):     | Supported, MRP client                                |
| Shared Device:                       | Supported                                            |
| Shared Input:                        | not supported                                        |
| Topology Detection:                  | LLDP, SNMP V3                                        |
| Easy Device Replacement:             | Supported, based on LLDP                             |
| Supported Network Protocols (Other): | ARP, HTTP, Ping, SNMP V1, TCP/IP                     |

IIoT Protocols

|           |                                                    |
|-----------|----------------------------------------------------|
| OPC UA:   | Cyclic data read/write, Diagnosis data, Event data |
| MQTT:     | Cyclic data read/write, Diagnosis data, Event data |
| REST API: | Cyclic data read/write, Diagnosis data, Event data |
| CoAP:     | Cyclic data read/write, Diagnosis data, Event data |

IO-Links

|                               |                           |
|-------------------------------|---------------------------|
| Protocol:                     | IO-Link Master            |
| Connection:                   | M12 5-poles, A-coded      |
| Number of Connections:        | 2                         |
| Specification:                | v1.1.3 ready, IEC 61131-9 |
| IO-Link Class:                | Class A                   |
| Transmission Rate / COM Mode: | COM1, COM2, COM3          |
| Cycle Time / Update Rate:     | 400µs                     |
| Parameter Storage:            | supported                 |

Power Supply

|                                   |                             |
|-----------------------------------|-----------------------------|
| Connection Module Supply Voltage: | M12 Power, 5-poles, L-coded |
| Number of Connections:            | 2                           |

|                                         |                             |
|-----------------------------------------|-----------------------------|
| Current Carrying Capacity of Connector: | max. 16 A                   |
| Module Supply Voltage (Nominal):        | 24 V DC (SELV/PELV)         |
| Module Supply Voltage (Range):          | 18 V DC to 30 V DC          |
| Current Consumption (typ.):             | typ. 180mA (at 24 V DC)     |
| Reverse Polarity Protection:            | Yes                         |
| Status Indicator (System Supply):       | LED green                   |
| Diagnostic Indicator:                   | LED red                     |
| Connection Sensor Supply Voltage:       | M12 Power, 5-poles, L-coded |
| Current Carrying Capacity of Connector: | max. 16 A                   |
| Sensor Supply Voltage (Nominal):        | 24 V DC (SELV/PELV)         |
| Sensor Supply Voltage (Range):          | 18 V DC to 30 V DC          |
| Reverse Polarity Protection:            | Yes                         |
| Status Indicator (Sensor Supply):       | LED green                   |
| Diagnostic Indicator:                   | LED red                     |
| Current Carrying Capacity of Connector: | max. 16 A                   |
| Actuator Supply Voltage (Nominal):      | 24 V DC (SELV/PELV)         |
| Actuator Supply Voltage (Range):        | 18 V DC to 30 V DC          |
| Reverse Polarity Protection:            | Yes                         |
| Status Indicator (Actuator Supply):     | LED green                   |
| Diagnostic Indicator:                   | LED red                     |

IO-Link Master Channels

|                                    |                                                            |
|------------------------------------|------------------------------------------------------------|
| Number of IO-Link Master Channels: | max. 2, configurable                                       |
| Connection:                        | M12, 5-poles, A-coded                                      |
| IO-Link Class A Ports:             | 2x, X7 and X8                                              |
| IO-Link Specification:             | V1.1.3                                                     |
| Parameter Storage:                 | Supported                                                  |
| Supported COM Modes:               | 4.8 kBaud (COM 1), 38.4 kBaud (COM 2), 230.4 kBaud (COM 3) |
| Cycle Time / Update Rate:          | min. 1 ms for all channels at 32 Byte IN / OUT             |
| Nominal Voltage:                   | 24 V DC via US (system power supply)                       |
| Nominal Current C/Q (Pin 4):       | 500mA                                                      |
| Nominal Current 1L+ (Pin 1):       | 4A                                                         |
| Perm. Conductor Length to Device:  | ≤ 20 m                                                     |
| Status Indicator (IOL):            | LED green per channel                                      |
| Diagnostic Indicator:              | LED red per port                                           |

Digital Input Channels

|                                   |                                                               |
|-----------------------------------|---------------------------------------------------------------|
| Number of Digital Input Channels: | up to 8                                                       |
| Connection:                       | M12, 5-poles, A-coded                                         |
| Number of Ports:                  | 4x, X1 to X4                                                  |
| Channel Type:                     | Type 3 acc. to IEC 61131-2                                    |
| Input Wiring:                     | 2-, 3-, 4-wire                                                |
| Nominal Voltage:                  | 24 V DC via US (module power supply)                          |
| Nominal Current:                  | typ. 3 mA                                                     |
| Sensor Current Supply:            | max. 1500 mA per port                                         |
| Sensor Type:                      | PNP                                                           |
| Input Voltage Range "0" signal:   | -3 V DC ...+5 V DC                                            |
| Input Voltage Range "1" signal:   | 11 V DC ... 30 V DC                                           |
| Input Filter Time:                | configurable                                                  |
| Protective Circuit:               | Electronically: Overload protection, short-circuit protection |
| Diagnostic Indicator:             | LED white or yellow per channel                               |

Digital Output Channels

|                                    |                       |
|------------------------------------|-----------------------|
| Number of Digital Output Channels: | 4                     |
| Connection:                        | M12, 5-poles, A-coded |
| Number of Ports:                   | 2x, X5 and X6         |
| Channel Type:                      | p-switching           |

|                             |                                                               |
|-----------------------------|---------------------------------------------------------------|
| Output Wiring:              | 2-wire                                                        |
| Nominal Voltage:            | 24 V DC via UL                                                |
| Output Current per Channel: | max. 2 A                                                      |
| Output Current per Module:  | max. 8 A                                                      |
| Galvanically Isolated:      | Yes                                                           |
| Protective Circuit:         | Electronically: Overload protection, short-circuit protection |
| Overload Behavior:          | Auto off and on switching / Manual restart                    |
| Status Indicator (Outputs): | LED white or yellow per channel                               |
| Diagnostic Indicator:       | LED red per channel                                           |

Electrical Isolation

|                                    |                        |
|------------------------------------|------------------------|
| US (System Supply Voltage) / FE:   | 32V DC (clamp voltage) |
| US / UL (Actuator Supply Voltage): | 500 V DC               |
| UL / FE:                           | 32V DC (clamp voltage) |
| Bus connection / FE:               | 2000 V DC              |

EMC Conformance

|                                             |                                                                                                                            |
|---------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| EMC Directive:                              | 2014/30/EU                                                                                                                 |
| EN 61000-4-2 Electrostatic Discharge (ESD): | Criterion B; 4 kV contact discharge, 8 kV air discharge                                                                    |
| EN 61000-4-3 Electromagnetic Field:         | Criterion A; Field intensity: 10 V/m                                                                                       |
| EN 61000-4-4 Fast Transients (Burst):       | Criterion B/DS, 2 kV                                                                                                       |
| EN 61000-4-5 Surge Voltage:                 | Criterion B; DC supply lines: $\pm 0.5$ kV/ $\pm 0.5$ kV (symmetrical/asymmetrical); For I/O ports with cables $\leq 30$ m |
| EN 61000-4-6 Conducted immunity:            | Criterion A; Test voltage 10 V                                                                                             |
| EN 55022 Radio Interference Properties:     | Class A                                                                                                                    |
| EN 55032 Radio Interference Properties:     | Class A                                                                                                                    |

Safety & Environmental Compliance

|                       |     |
|-----------------------|-----|
| CE:                   | Yes |
| RoHS Compliant:       | Yes |
| China RoHS-Compliant: | Yes |

Approvals

|                   |                                      |
|-------------------|--------------------------------------|
| FS-Certification: | TÜV (Rheinland) IEC 61508, ISO 13849 |
| UL:               | cULus Listed, UL 61010-1             |
| CSA:              | Yes, via UL                          |
| PNO:              | Yes                                  |
| IO-Link:          | Yes                                  |

Notes

|                                      |                                                                                            |
|--------------------------------------|--------------------------------------------------------------------------------------------|
| Protection Degree / IP Rating Note:  | *only if mounted and locked in combination with Hirschmann / Lumberg Automation connector. |
| System Power Supply Connection Note: | *do not connect / disconnect under voltage!                                                |

Variants

| Item #    | Item Description           |
|-----------|----------------------------|
| 935023002 | 0980 SSL 3031-121-007D-101 |