



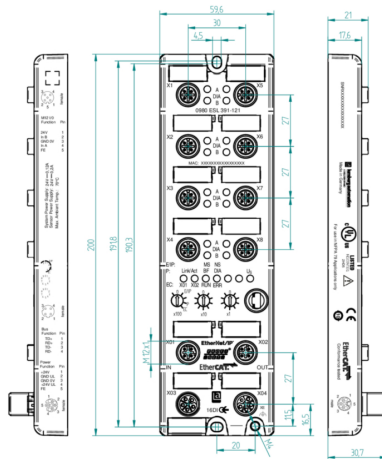
**Product:** [0980 ESL 391-121](#)

LioN-P, Multiprotocol I/O Device, 16DI (8x M12), M12 L-coded Power Supply, Metal, 60 mm

**Product Description**

LioN-P, I/O Standalone, Multiprotocol (PROFINET, EtherNet/IP and EtherCAT), Industrial Metal Housing, 60 mm, up to IP69K, 16 digital input channels, 8 x M12 A-coded I/O connection, 5-poles, 2 x M12 D-coded bus connection, 4-poles, 2 x M12 L-coded power supply connection, 5-poles

**Technical Drawing**



**Technical Specifications**

**Product Description**

|                                   |                                  |
|-----------------------------------|----------------------------------|
| Brand:                            | Belden                           |
| Product Family:                   | I/O Systems: Active - Standalone |
| Product Sub Family:               | LioN-P                           |
| Item Description:                 | 0980 ESL 391-121                 |
| Part Number:                      | 934879001                        |
| Device Type:                      | I/O Module                       |
| Protocol:                         | Multiprotocol                    |
| I/O Function:                     | 16DI                             |
| Bus Connection:                   | M12, 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:                         | Digital Input                    |

**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:                                    | 500 g                                                                                                                    |
| Ambient Temperature (Operation)*:          | -20 °C to 70 °C                                                                                                          |
| Ambient Temperature (Storage/Transport):   | -25 °C to 85 °C                                                                                                          |
| Permissible Humidity (Operation):          | 5 % ... 95 % (For UL applications max. 80 %)                                                                             |
| Permissible Humidity (Storage/Transport):  | 5 % ... 95 % (For UL applications max. 80 %)                                                                             |
| Air Pressure (Operation):                  | 80 kPa ... 106 kPa (up to 2000 m above sea level)                                                                        |
| Air Pressure (Storage/Transport):          | 80 kPa ... 106 kPa (up to 2000 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):               | 444 years. acc. to Telcordia SR-332 (2011) 20°C                                                                          |
| 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                                                                             |

PROFINET

|                                      |                                                      |
|--------------------------------------|------------------------------------------------------|
| Protocol:                            | PROFINET                                             |
| Connection:                          | M12 LAN, 4-poles, D-coded                            |
| Number of Connections:               | 2                                                    |
| Specification:                       | V2.3X                                                |
| Conformance Class:                   | 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                                                  |
| Fast Startup (FSU):                  | Supported, ≤ 1000 ms                                 |
| Media Redundancy Protocol (MRP):     | Supported, MRP client                                |
| Shared Device:                       | Not Supported                                        |
| Topology Detection:                  | LLDP, SNMP V1                                        |
| Easy Device Replacement:             | Supported, based on LLDP                             |
| Supported Network Protocols (Other): | ARP, HTTP, Ping, SNMP V1, TCP/IP                     |

EtherNet/IP

|                                               |                                                      |
|-----------------------------------------------|------------------------------------------------------|
| Protocol (EtherNet/IP):                       | EtherNet/IP                                          |
| Connection:                                   | M12 LAN, 4-poles, D-coded                            |
| Number of Connections:                        | 2                                                    |
| Specification:                                | CIP V3.1x, EIP Adaption of CIP V1.1x                 |
| Transmission Rate:                            | Fast Ethernet (10/100 Mbit/s), Full Duplex           |
| Transmission Method:                          | 100 BASE-TX, with auto negotiation and auto crossing |
| Cycle Time / Requested Packet Interval (RPI): | min. 1 ms                                            |
| Addressing:                                   | BootP, DHCP, Rotary Address Switches                 |
| Address Switches Range:                       | 0 to 255 dec                                         |
| Connection Types:                             | Input Only, Listen Only                              |
| CIP Msg Connection Limit:                     | 6                                                    |
| CIP I/O Connection Limit:                     | 3                                                    |

|                                      |                                                 |
|--------------------------------------|-------------------------------------------------|
| Device Level Ring (DLR):             | Supported, beacon based                         |
| Quick Connect (QC):                  | Supported, ≤ 500 ms                             |
| Supported Network Protocols (Other): | ACD, ARP, BootP, DHCP, HTTP, IGMP, Ping, TCP/IP |

### EtherCAT

|                                      |                                                                                            |
|--------------------------------------|--------------------------------------------------------------------------------------------|
| Protocol:                            | EtherCAT                                                                                   |
| Connection:                          | M12 LAN, 4-poles, D-coded                                                                  |
| Number of Connections:               | 2                                                                                          |
| Specification:                       | ETG.1000 V1.2                                                                              |
| 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. 250 µs                                                                                |
| Addressing:                          | Auto-increment addressing, fixed position addressing                                       |
| Mailbox Protocols:                   | CANopen over EtherCAT (CoE), File access over EtherCAT (FoE), Ethernet over EtherCAT (EoE) |
| Supported Network Protocols (Other): | Over EoE: HTTP, Ping, TCP/IP                                                               |

### 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.):             | 120 mA (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                     |

### Digital Input Channels

|                                   |                                                               |
|-----------------------------------|---------------------------------------------------------------|
| Number of Digital Input Channels: | max. 16, fixed                                                |
| Connection:                       | M12, 5-poles, A-coded                                         |
| Number of Ports:                  | 8x, X1 to X8                                                  |
| 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. 5 mA                                                     |
| Sensor Current Supply:            | max. 200 mA per port (at 30°C)                                |
| 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:                | 3 ms, fixed                                                   |
| Protective Circuit:               | Electronically: Overload protection, short-circuit protection |
| Status Indicator (Inputs):        | LED white or yellow per channel                               |
| Diagnostic Indicator:             | LED red per port                                              |

### Electrical Isolation

|                                  |           |
|----------------------------------|-----------|
| US (System Supply Voltage) / FE: | 500 V DC  |
| 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, 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                                                                                                                    |

Safety & Environmental Compliance

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

Approvals

|          |                          |
|----------|--------------------------|
| UL:      | cULus Listed, UL 61010-1 |
| UL-File: | E230848                  |
| CSA:     | Yes, via UL              |
| PNO:     | Yes                      |
| ODVA:    | Yes                      |
| ETG:     | 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!                                                  |
| Update and Revision:                 | Revision Number: 0.92 Revision Date: 05-24-2023                                              |

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