



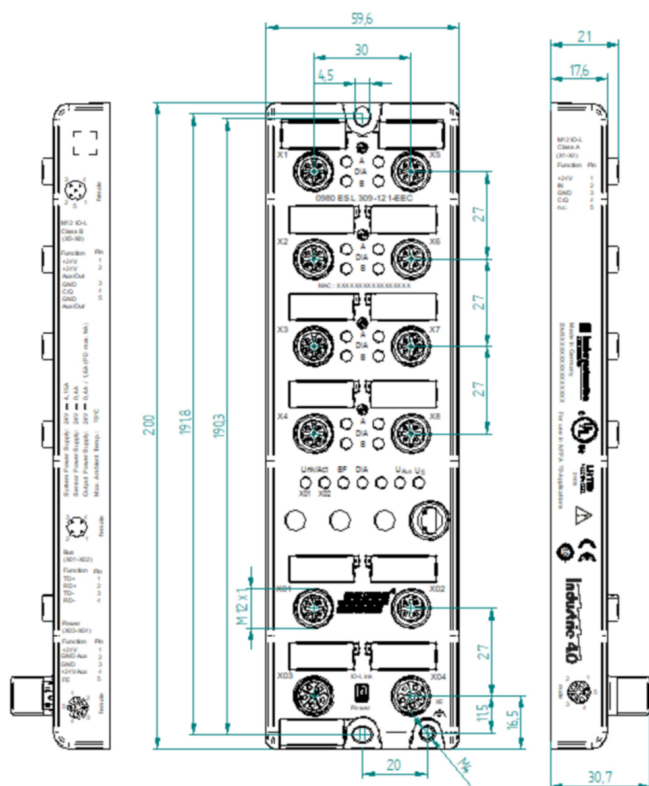
**Product:** [0980 ESL 309-121-EEC](#)

LioN-P, PROFINET IO-Link Master, 4DI 4DO 8IOL (8x M12), M12 L-coded Power Supply, Metal, 60 mm, EEC

### Product Description

LioN-P, IO-Link Master, PROFINET, industrial metal housing, 60 mm, up to IP69K, 4 digital input and 4 digital output channels (2 A) with galvanic isolation and 8 IO-Link Master, 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, EEC (Extended Environmental Conditions -40°C)

### Technical Drawing



### Technical Specifications

#### Product Description

|                     |                                  |
|---------------------|----------------------------------|
| Brand:              | Belden                           |
| Product Family:     | I/O Systems: Active - Standalone |
| Product Sub Family: | LioN-P                           |
| Item Description:   | 0980 ESL 309-121-EEC             |
| Part Number:        | 934878050                        |

#### Product Life Cycle

|              |                |
|--------------|----------------|
| Device Type: | IO-Link Master |
| Protocol:    | PROFINET       |

|                                   |                                       |
|-----------------------------------|---------------------------------------|
| I/O Function:                     | 4DI 4DO 8IOL                          |
| 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/ Digital Output/IO-Link |

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)*:          | -40 °C to 70 °C  |
| Ambient Temperature (Storage/Transport):   | -40 °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):               | 582 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:                       | II   |
| 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, ≤ 2000 ms                                 |
| Media Redundancy Protocol (MRP):     | Supported, MRP client                                |
| Shared Device:                       | Supported  |
| Topology Detection:                  | LLDP, SNMP V1  |
| Easy Device Replacement:             | Supported, based on LLDP                             |
| Supported Network Protocols (Other): | ARP, HTTP, Ping, SNMP V1, 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.):             | 180 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                      |
| Connection Actuator Supply Voltage:     | via Module Supply Connection |
| 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. 8, configurable                                       |
| Connection:                                | M12, 5-poles, A-coded                                      |
| IO-Link Class A Ports:                     | 4x, X1 to X4   |
| IO-Link Class B Ports:                     | 4x, X5 to X8   |
| IO-Link Specification:                     | V1.1.2   |
| 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. 8 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):               | max. 500 mA (via US)                                       |
| Nominal Current 1L+ (Pin 1):               | max. 500 mA (via US)                                       |
| Nominal Current 2L+/Uaux (Pin 2, B Ports): | max. 2 A per port (via Uaux)                               |
| 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: | max. 12, configurable   |
| Connection:                       | M12, 5-poles, A-coded   |
| Number of Ports:                  | 8x, X1 to X8  |
| Channel Type:                     | Type 1 acc. to IEC 61131-2                                    |
| Input Wiring:                     | 2-, 3-wire  |
| Nominal Voltage:                  | 24 V DC via US (module power supply)                          |
| Nominal Current:                  | typ. 3 mA   |
| Sensor Current Supply:            | max. 500 mA per port via 1L+                                  |
| Sensor Type:                      | PNP   |
| Input Voltage Range "0" signal:   | -0,3V DC ... 5 V DC   |
| Input Voltage Range "1" signal:   | 15 V DC ... 30 V DC   |
| Protective Circuit:               | Electronically: Overload protection, short-circuit protection |
| Status Indicator (Inputs):        | LED white or yellow per channel                               |
| Diagnostic Indicator:             | LED red per port  |

Digital Output Channels

|                                    |  |
|------------------------------------|--|
| Number of Digital Output Channels: | max. 12, configurable  |
| Connection:                        | M12, 5-poles, A-coded  |
| Number of Ports:                   | 8x, X1 to X8   |
| Channel Type:                      | p-switching  |
| Output Wiring:                     | 2-wire   |
| Nominal Voltage:                   | Pin 4: 24 V DC via US (system power supply) / Pin 2: 24 V DC via Uaux (auxiliary power supply) |
| Output Current per Channel:        | max. 2 A (Pin 2) / max. 0.5 A (Pin 4)  |
| Output Current per Module:         | max. 9 A   |
| Galvanically Isolated:             | Pin 4: No / Pin 2: 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 port   |

Electrical Isolation

|                                  |           |
|----------------------------------|-----------|
| US (System Supply Voltage) / FE: | 500 V DC  |
| Uaux / 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                      |
| 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     |
|-----------|----------------------|
| 934878050 | 0980 ESL 309-121-EEC |

|                      |   |
|----------------------|---|
| Update and Revision: | Revision Number: 0.59 Revision Date: 11-14-2022 |
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