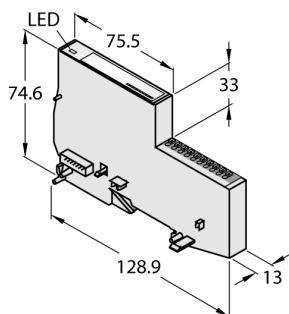


# BL20 Economy Module

4 IO-Link Master Channels, 32 Bytes of I/O Data

4 Configurable Digital Channels, PNP, Channel Diagnostics, 0.5 A

BL20-E-4IOL-10



- Fieldbus-independent
- Electronics and connection technology in one housing
- Connectivity: Push-in terminals
- Protection class IP20
- LEDs indicate status and diagnostic
- Electronics galvanically separated from the field level via optocouplers
- IO-Link master acc. to specification V1.1, 4-channel
- 4 universal digital channels, PNP, channel diagnostics, 0.5 A

## Functional principle

Electronics and connection technology are integrated in the housing. A base module is not needed. Economy modules and modules with separate electronics and connection technology can be fitted into a station, provided the base modules feature tension spring connections.

The use of gateways makes economy modules completely independent from the higher level fieldbus.

|      |                |
|------|----------------|
| Type | BL20-E-4IOL-10 |
| ID   | 100001334      |

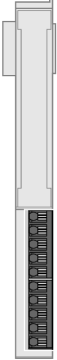
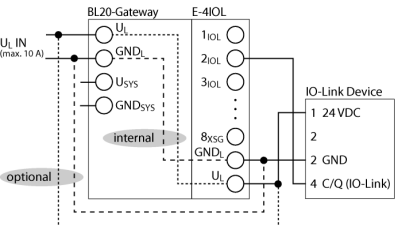
|                                        |             |
|----------------------------------------|-------------|
| Number of channels                     | 4/4         |
| Rated voltage from the supply terminal | 24 VDC      |
| Nominal voltage $V_n$                  | 24 VDC      |
| Admissible range                       | 18...30 VDC |
| Nominal current from field supply      | ≤ 80 mA     |
| Nominal current from module bus        | ≤ 40 mA     |
| Max. field supply current              | 10 A        |
| Power dissipation, typical             | ≤ 2 W       |

|                           |                                     |
|---------------------------|-------------------------------------|
| Input type                | PNP                                 |
| Low-level signal voltage  | < 5 V                               |
| High level signal voltage | > 11 V                              |
| Low level signal current  | < 1.5 mA DI / < 5 mA SIO            |
| High level signal current | 2.1 ... 3.7 mA DI / 5 ... 11 mA SIO |
| Electrical isolation      | electronics to the field level      |
| Output connectivity       | Push-in                             |

|                                |                                 |
|--------------------------------|---------------------------------|
| Output type                    | PNP                             |
| Output voltage                 | 24 VDC                          |
| Output delay                   | 3 ms                            |
| Load type                      | resistive, inductive, lamp load |
| Load resistance, resistive     | > 48 Ω                          |
| Load resistance, inductive     | < 1.2 H                         |
| Lamp load                      | < 3 W                           |
| Switching frequency, resistive | < 200 Hz                        |
| Switching frequency, inductive | < 2 Hz                          |
| Switching frequency, lamp load | < 20 Hz                         |
| Electrical isolation           | electronics to the field level  |
| Input connectivity             | Push-in                         |

|                               |                                                         |
|-------------------------------|---------------------------------------------------------|
| IO-Link                       |                                                         |
| IO-Link specification         | V 1.1                                                   |
| IO-Link port type             | Class A                                                 |
| Frame type                    | supports all specified frame types                      |
| Supported devices             | max. 30 byte input / 30 byte output                     |
| Transmission rate             | 4.8 kbps (COM 1) / 38.4 kbps (COM 2) / 230 kbps (COM 3) |
|                               |                                                         |
| Number of diagnostics bytes   | 8                                                       |
| Number of parameter bytes     | 32                                                      |
| Number of input bytes         | 32                                                      |
| Number of output bytes        | 32                                                      |
|                               |                                                         |
| Dimensions (W x L x H)        | 13 x 128.9 x 74.6 mm                                    |
| Approvals                     | CE                                                      |
| Ambient temperature           | 0...+55 °C                                              |
| Storage temperature           | -40...+85 °C                                            |
| Relative humidity             | 15...95 %, no condensation allowed                      |
| Vibration test                | Acc. to EN 61131                                        |
| Shock test                    | Acc. to IEC 60068-2-27                                  |
| Drop and topple               | acc. to IEC 68-2-31 and free fall to IEC 68-2-32        |
| Electromagnetic compatibility | Acc. to EN 50082-2                                      |
| Protection class              | IP20                                                    |
| MTTF                          | 388 years acc. to SN 29500 (Ed. 99) 20 °C               |

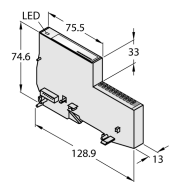
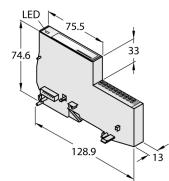
Connection Overview

|                                                                                   |                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                  |    |  |                  |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|--|-----------------|---|--|-----------------|---|--|-----------------|---|--|-----------------|---|--|-----------------|---|--|-----------------|---|--|-----------------|---|--|-----------------|---|--|------------------|----|--|------------------|
|  | <p><b>I/O Channels</b></p> <p>Channels 1 to 4 are IO-Link master channels. Channels 5 to 8 are XSG channels (optionally usable as digital inputs or outputs). The terminals 9 and 10 are used for sensor supply.</p> | <p><b>Pin Assignment</b></p> <table><tr><td>1</td><td></td><td>C/Q (Channel 1)</td></tr><tr><td>2</td><td></td><td>C/Q (Channel 2)</td></tr><tr><td>3</td><td></td><td>C/Q (Channel 3)</td></tr><tr><td>4</td><td></td><td>C/Q (Channel 4)</td></tr><tr><td>5</td><td></td><td>XSG (Channel 5)</td></tr><tr><td>6</td><td></td><td>XSG (Channel 6)</td></tr><tr><td>7</td><td></td><td>XSG (Channel 7)</td></tr><tr><td>8</td><td></td><td>XSG (Channel 8)</td></tr><tr><td>9</td><td></td><td>GND<sub>L</sub></td></tr><tr><td>10</td><td></td><td>+ U<sub>L</sub></td></tr></table> | 1 |  | C/Q (Channel 1) | 2 |  | C/Q (Channel 2) | 3 |  | C/Q (Channel 3) | 4 |  | C/Q (Channel 4) | 5 |  | XSG (Channel 5) | 6 |  | XSG (Channel 6) | 7 |  | XSG (Channel 7) | 8 |  | XSG (Channel 8) | 9 |  | GND <sub>L</sub> | 10 |  | + U <sub>L</sub> |
| 1                                                                                 |                                                                                                                                                                                                                      | C/Q (Channel 1)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                  |    |  |                  |
| 2                                                                                 |                                                                                                                                                                                                                      | C/Q (Channel 2)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                  |    |  |                  |
| 3                                                                                 |                                                                                                                                                                                                                      | C/Q (Channel 3)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                  |    |  |                  |
| 4                                                                                 |                                                                                                                                                                                                                      | C/Q (Channel 4)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                  |    |  |                  |
| 5                                                                                 |                                                                                                                                                                                                                      | XSG (Channel 5)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                  |    |  |                  |
| 6                                                                                 |                                                                                                                                                                                                                      | XSG (Channel 6)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                  |    |  |                  |
| 7                                                                                 |                                                                                                                                                                                                                      | XSG (Channel 7)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                  |    |  |                  |
| 8                                                                                 |                                                                                                                                                                                                                      | XSG (Channel 8)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                  |    |  |                  |
| 9                                                                                 |                                                                                                                                                                                                                      | GND <sub>L</sub>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                  |    |  |                  |
| 10                                                                                |                                                                                                                                                                                                                      | + U <sub>L</sub>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                  |    |  |                  |
|                                                                                   | <p><b>Attention:</b></p> <p>The IO-Link devices must be supplied with the same potential as U<sub>L</sub> of the gateway or the BR / PF module (if used).</p>                                                        | <p><b>Wiring Diagram</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                 |   |  |                  |    |  |                  |

# LED display

| LED                    | Color | Status            | Meaning                                                                                                                                                         |
|------------------------|-------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| D                      |       | OFF               | No error message or diagnostics active.                                                                                                                         |
|                        | RED   | ON                | Failure of module bus communication. Check if more than 2 adjacent electronic modules are pulled. Relevant modules are located between gateway and this module. |
|                        | RED   | FLASHING (0.5 Hz) | Upcoming module diagnostics                                                                                                                                     |
| IO-Link channels 1...4 |       | OFF               | Status channel x = 0 (OFF)                                                                                                                                      |
| IO-Link mode           | GREEN | FLASHING          | IO-Link communication active<br>valid process data                                                                                                              |
|                        | RED   | ON                | No IO-Link communication<br>and/or module error, invalid process data                                                                                           |
|                        | RED   | FLASHING          | IO-Link communication active<br>and/or module error, invalid process data                                                                                       |
| IO-Link channels 1...4 |       | OFF               | Status channel x = 0 (OFF)                                                                                                                                      |
| SIO mode               | GREEN | ON                | Status channel x = 1 (ON)                                                                                                                                       |
| XSG channels 5...8     |       | OFF               | Status channel x = 0 (OFF)                                                                                                                                      |
|                        | GREEN | ON                | Status channel x = 1 (ON)                                                                                                                                       |
|                        | RED   | FLASHING (0.5 Hz) | Short-circuit output channel x                                                                                                                                  |

## Accessories

| Type code     | Ident no. |                                                                                                   | Dimension drawing                                                                                                                                                                                                                                    |
|---------------|-----------|---------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BL20-E-10UL   | 100001335 | BL20 ECO module with 10 connection terminals for wiring 24 VDC potential from the UL field supply |  <p>Isometric view of the BL20-E-10UL module. Dimensions: LED (top), 75.5 (width), 33 (height), 74.6 (depth), 128.9 (length), 13 (width of terminal block).</p>   |
| BL20-E-10GNDL | 100001336 | BL20 ECO module with 10 connection terminals for wiring GND potential from the UL field supply    |  <p>Isometric view of the BL20-E-10GNDL module. Dimensions: LED (top), 75.5 (width), 33 (height), 74.6 (depth), 128.9 (length), 13 (width of terminal block).</p> |