

## BL-I/O 3.50/10F NPN LED SN BK BX

**Weidmüller Interface GmbH & Co. KG**  
 Klingenbergstraße 26  
 D-32758 Detmold  
 Germany

www.weidmueller.com



Female plugs with spring connection (PUSH IN) as a plug-in connection level for decentralised I/O electronic components; used together with male headers in a 3.50-mm pitch.

### General ordering data

|              |  |
|--------------|--|
| Version      | PCB plug-in connector, female plug, 3.50 mm, Number of poles: 10, 180°, PUSH IN with actuator, Clamping range, max. : 1.5 mm², Box |
| Order No.    | <a href="#">1938010000</a>   |
| Type         | BL-I/O 3.50/10F NPN LED SN BK BX   |
| GTIN (EAN)   | 4032248610228  |
| Qty.         | 20 items   |
| Product data | IEC: 200 V / 2.2 A / 0.2 - 1.5 mm²<br>UL: 50 V / 5 A / AWG 24 - AWG 16   |
| Packaging    | Box  |

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## Technical data

## Approvals

Approvals



ROHS Conform

UL File Number Search [UL Website](#)

Certificate No. (UR) E60693

## Dimensions and weights

|            |         |                 |             |
|------------|---------|-----------------|-------------|
| Depth      | 27.6 mm | Depth (inches)  | 1.0866 inch |
| Height     | 10.3 mm | Height (inches) | 0.4055 inch |
| Width      | 42 mm   | Width (inches)  | 1.6535 inch |
| Net weight | 11.97 g |                 |             |

## Environmental Product Compliance

RoHS Compliance Status Compliant with exemption

RoHS Exemption (if applicable/known) 7cl

REACH SVHC No SVHC above 0.1 wt%

## System Parameters

|  |                                     |                   |                             |
|--|-------------------------------------|-------------------|-----------------------------|
| Product family                               | OMNIMATE Signal - series BL/SL 3.50 |                   |                             |
| Type of connection                           | Field connection                    |                   |                             |
| Wire connection method                       | PUSH IN with actuator               |                   |                             |
| Pitch in mm (P)                              | 3.50 mm                             |                   |                             |
| Pitch in inches (P)                          | 0.138 "                             |                   |                             |
| Conductor outlet direction                   | 180°                                |                   |                             |
| Number of poles                              | 10                                  |                   |                             |
| L1 in mm                                     | 31.50 mm                            |                   |                             |
| L1 in inches                                 | 1.240 "                             |                   |                             |
| Number of rows                               | 1                                   |                   |                             |
| Pin series quantity                          | 2                                   |                   |                             |
| Rated cross-section                          | 1 mm <sup>2</sup>                   |                   |                             |
| Touch-safe protection acc. to DIN VDE 57 106 | Safe from finger touch              |                   |                             |
| Touch-safe protection acc. to DIN VDE 0470   | IP20 plugged/ IP10 unplugged        |                   |                             |
| Volume resistance                            | ≤5 mΩ                               |                   |                             |
| Can be coded                                 | Yes                                 |                   |                             |
| Stripping length                             | 8 mm                                |                   |                             |
| Screwdriver blade                            | 0.4 x 2.5                           |                   |                             |
| Screwdriver blade standard                   | DIN 5264                            |                   |                             |
| Plugging cycles                              | 25                                  |                   |                             |
| Plugging force/pole, max.                    | 6 N                                 |                   |                             |
| Pulling force/pole, max.                     | 6 N                                 |                   |                             |
| Tightening torque                            | Torque type                         | Screw flange      |                             |
|  | Usage information                   | Tightening torque | min. 0.15 Nm<br>max. 0.2 Nm |

## Material data

|                        |          |                           |       |
|------------------------|----------|---------------------------|-------|
| Insulating material    | PBT      | Colour                    | black |
| Colour chart (similar) | RAL 9011 | Insulating material group | IIIa  |

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|---------------------------------------|----------|---------------------------------------|----------|
| Comparative Tracking Index (CTI)      | ≥ 200    | Moisture Level (MSL)                  |          |
| UL 94 flammability rating             | V-0      | Contact base material                 | Cu-alloy |
| Contact material                      | Cu-alloy | Contact surface                       | tinned   |
| Storage temperature, min.             | -40 °C   | Storage temperature, max.             | 70 °C    |
| Operating temperature, min.           | -50 °C   | Operating temperature, max.           | 75 °C    |
| Temperature range, installation, min. | -30 °C   | Temperature range, installation, max. | 75 °C    |

### Conductors suitable for connection

|   |                        |
|---|------------------------|
| Clamping range, min.                            | 0.2 mm <sup>2</sup>    |
| Clamping range, max.                            | 1.5 mm <sup>2</sup>    |
| Wire connection cross section AWG, min.         | AWG 24                 |
| Wire connection cross section AWG, max.         | AWG 16                 |
| Solid, min. H05(07) V-U                         | 0.2 mm <sup>2</sup>    |
| Solid, max. H05(07) V-U                         | 1.5 mm <sup>2</sup>    |
| Flexible, min. H05(07) V-K                      | 0.2 mm <sup>2</sup>    |
| Flexible, max. H05(07) V-K                      | 1.5 mm <sup>2</sup>    |
| w. plastic collar ferrule, DIN 46228 pt 4, min. | 0.2 mm <sup>2</sup>    |
| w. plastic collar ferrule, DIN 46228 pt 4, max. | 0.75 mm <sup>2</sup>   |
| w. wire end ferrule, DIN 46228 pt 1, min.       | 0.2 mm <sup>2</sup>    |
| w. wire end ferrule, DIN 46228 pt 1, max.       | 1 mm <sup>2</sup>      |
| Plug gauge in accordance with EN 60999 a x b; ø | 2.4 mm x 1.5 mm; 1.9mm |

|  |  |                              |                               |
|--|--|------------------------------|-------------------------------|
| Clampable conductor                    | Cross-section for conductor connection | Type                         | fine-wired                    |
|  |  | nominal                      | 0.25 mm <sup>2</sup>          |
| wire end ferrule                       | wire end ferrule                       | Stripping length             | nominal 10 mm                 |
|  |  | Recommended wire-end ferrule | <a href="#">H0.25/12 HBL</a>  |
|  |  |                              |                               |
| Cross-section for conductor connection | Cross-section for conductor connection | Type                         | fine-wired                    |
|  |  | nominal                      | 0.34 mm <sup>2</sup>          |
| wire end ferrule                       | wire end ferrule                       | Stripping length             | nominal 10 mm                 |
|  |  | Recommended wire-end ferrule | <a href="#">H0.34/12 TK</a>   |
|  |  |                              |                               |
| Cross-section for conductor connection | Cross-section for conductor connection | Type                         | fine-wired                    |
|  |  | nominal                      | 0.5 mm <sup>2</sup>           |
| wire end ferrule                       | wire end ferrule                       | Stripping length             | nominal 10 mm                 |
|  |  | Recommended wire-end ferrule | <a href="#">H0.5/14 OR</a>    |
|  |  |                              |                               |
| Cross-section for conductor connection | Cross-section for conductor connection | Type                         | fine-wired                    |
|  |  | nominal                      | 0.75 mm <sup>2</sup>          |
| wire end ferrule                       | wire end ferrule                       | Stripping length             | nominal 10 mm                 |
|  |  | Recommended wire-end ferrule | <a href="#">H0.75/14T HBL</a> |
|  |  |                              |                               |

Reference text The outside diameter of the plastic collar should not be larger than the pitch (P). Length of ferrules is to be chosen depending on the product and the rated voltage.

### Rated data acc. to IEC

|   |                        |   |       |
|---|------------------------|---|-------|
| tested acc. to standard                       | IEC 60664-1, IEC 61984 | Rated current, min. number of poles (Tu=20°C) | 2.2 A |
| Rated current, max. number of poles (Tu=20°C) | 2 A                    | Rated current, min. number of poles (Tu=40°C) | 2.2 A |

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### Technical data

|   |        |   |                   |
|---|--------|---|-------------------|
| Rated current, max. number of poles (Tu=40°C)                             | 2 A    | Rated voltage for surge voltage class / pollution degree II/2         | 200 V             |
| Rated voltage for surge voltage class / pollution degree III/2            | 160 V  | Rated voltage for surge voltage class / pollution degree III/3        | 50 V              |
| Rated impulse voltage for surge voltage class/ pollution degree II/2      | 2500 V | Rated impulse voltage for surge voltage class/ pollution degree III/2 | 2.5 kV            |
| Rated impulse voltage for surge voltage class/ contamination degree III/3 | 0.8 kV | Short-time withstand current resistance                               | 3 x 1s with 120 A |

#### Rated data acc. to CSA

|                                   |  |                                   |                |
|-----------------------------------|--|-----------------------------------|----------------|
| Institute (CSA)                   | CSA  | Certificate No. (CSA)             | 200039-1202189 |
| Rated voltage (Use group B / CSA) | 50 V   | Rated voltage (Use group D / CSA) | 50 V           |
| Rated current (Use group B / CSA) | 5 A  | Rated current (Use group D / CSA) | 5 A            |
| Wire cross-section, AWG, min.     | AWG 22   | Wire cross-section, AWG, max.     | AWG 16         |
| Reference to approval values      | Specifications are maximum values, details - see approval certificate. |                                   |                |

#### Rated data acc. to UL 1059

|                                       |  |                                       |        |
|---------------------------------------|--|---------------------------------------|--------|
| Institute (UR)                        | UR   | Certificate No. (UR)                  | E60693 |
| Rated voltage (Use group B / UL 1059) | 50 V   | Rated voltage (Use group D / UL 1059) | 50 V   |
| Rated current (Use group B / UL 1059) | 5 A  | Rated current (Use group D / UL 1059) | 5 A    |
| Wire cross-section, AWG, min.         | AWG 24   | Wire cross-section, AWG, max.         | AWG 16 |
| Reference to approval values          | Specifications are maximum values, details - see approval certificate. |                                       |        |

#### Packing

|           |          |            |           |
|-----------|----------|------------|-----------|
| Packaging | Box      | VPE length | 165.00 mm |
| VPE width | 97.00 mm | VPE height | 43.00 mm  |

#### Type tests

|   |                |  |                              |  |
|---|----------------|--|------------------------------|--|
| Test: Durability of markings                  | Standard       | draft DIN VDE 0627 section 6.2.2 / 09.91   |                              |  |
|   | Test           | mark of origin, type identification, pitch, type of material                       |                              |  |
|   | Evaluation     | available  |                              |  |
|   | Test           | durability   |                              |  |
| Test: Clampable cross section                 | Evaluation     | passed   |                              |  |
|   | Standard       | DIN EN 60999-1 section 7 and 9.1 / 12.00, DIN EN 60947-1 section 8.2.4.5.1 / 12.99 |                              |  |
|   | Conductor type | Type of conductor and conductor cross-section                                      | solid 0.2 mm <sup>2</sup>    |  |
|   |                | Type of conductor and conductor cross-section                                      | stranded 0.2 mm <sup>2</sup> |  |
|   |                | Type of conductor and conductor cross-section                                      | solid 1.5 mm <sup>2</sup>    |  |
|   |                | Type of conductor and conductor cross-section                                      | stranded 1.5 mm <sup>2</sup> |  |
| Type of conductor and conductor cross-section |                | AWG 24/1   |                              |  |

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**Technical data**

|   |   |   |                               |
|---|---|---|-------------------------------|
| Test for damage to and accidental loosening of conductors |   | Type of conductor and conductor cross-section | AWG 24/19                     |
|   |   | Type of conductor and conductor cross-section | AWG 16/1                      |
|   |   | Type of conductor and conductor cross-section | AWG 16/19                     |
|   | Evaluation                                    | passed  |                               |
|   | Standard                                      | DIN EN 60999 section 8.4 / 04.94              |                               |
|   | Requirement                                   | 0.2 kg  |                               |
|   | Conductor type                                | Type of conductor and conductor cross-section | stranded 0.05 mm <sup>2</sup> |
|   | Evaluation                                    | passed  |                               |
|   | Requirement                                   | 0.3 kg  |                               |
|   | Conductor type                                | Type of conductor and conductor cross-section | solid 0.5 mm <sup>2</sup>     |
| Pull-out test   |   | Type of conductor and conductor cross-section | AWG 24/1                      |
|   |   | Type of conductor and conductor cross-section | AWG 24/19                     |
|   | Evaluation                                    | passed  |                               |
|   | Requirement                                   | 0.4 kg  |                               |
|   | Conductor type                                | Type of conductor and conductor cross-section | solid 1.5 mm <sup>2</sup>     |
|   |   | Type of conductor and conductor cross-section | stranded 1.5 mm <sup>2</sup>  |
|   |   | Type of conductor and conductor cross-section | AWG 16/1                      |
|   |   | Type of conductor and conductor cross-section | AWG 16/19                     |
|   | Evaluation                                    | passed  |                               |
|   | Standard                                      | DIN EN 60999 section 8.5 / 04.94              |                               |
| Requirement   | ≥10 N   |   |                               |
| Pull-out test   | Conductor type                                | Type of conductor and conductor cross-section | AWG 24/1                      |
|   |   | Type of conductor and conductor cross-section | AWG 24/19                     |
|   | Evaluation                                    | passed  |                               |
|   | Requirement                                   | ≥30 N   |                               |
|   | Conductor type                                | Type of conductor and conductor cross-section | H05V-U0.5                     |
|   |   | Type of conductor and conductor cross-section | H05V-K0.5                     |
|   | Evaluation                                    | passed  |                               |
|   | Requirement                                   | ≥40 N   |                               |
| Conductor type  | Type of conductor and conductor cross-section | H05V-U1.5                                     |                               |

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**Technical data**

|            |   |           |
|------------|---|-----------|
|            | Type of conductor and conductor cross-section | H05V-K1.5 |
| Evaluation | passed  |           |

**Important note**

**IPC conformity** Conformity: The products are developed, manufactured and delivered according international recognized standards and norms and comply with the assured properties in the data sheet resp. fulfill decorative properties in accordance with IPC-A-610 "Class 2". Further claims on the products can be evaluated on request.

- Notes**
- Rated data refer only to the component itself. Clearance and creepage distances to other components are to be designed in accordance with the relevant application standards.
  - P on drawing = pitch
  - Crimp form A for wire end ferrules with PZ 6/5 crimping tool are recommended for the largest cable sizes.
  - Total load-carrying capacity of the potential bridges when feeding with 1.5 mm<sup>2</sup> is max. 17.5 A (so the capacity is 2.18 A for poles 2 through 9)
  - Wire end ferrule without plastic collar to DIN 46228/1
  - Wire end ferrule with plastic collar to DIN 46228/4
  - Conductor < 0.2 mm<sup>2</sup> tinned
  - Max. outer diameter of the conductor: 2.9 mm
  - In accordance with IEC 61984, OMNIMATE-connectors are connectors without breaking capacity (COC). During designated use, connectors are not allowed to be engaged or disengaged when live or under load
  - Long term storage of the product with average temperature of 50 °C and maximum humidity 70%, 36 months

**Classifications**

|             |             |             |             |
|-------------|-------------|-------------|-------------|
| ETIM 8.0    | EC002638    | ETIM 9.0    | EC002638    |
| ETIM 10.0   | EC002638    | ECLASS 14.0 | 27-46-02-02 |
| ECLASS 15.0 | 27-46-02-02 |             |             |

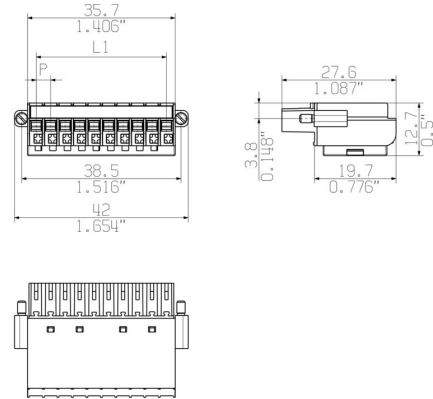
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Drawings

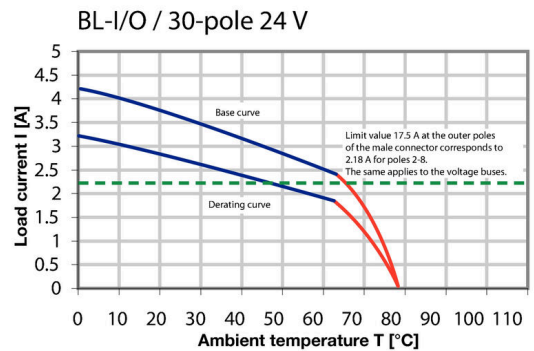
Dimensional drawing



Graph



Graph

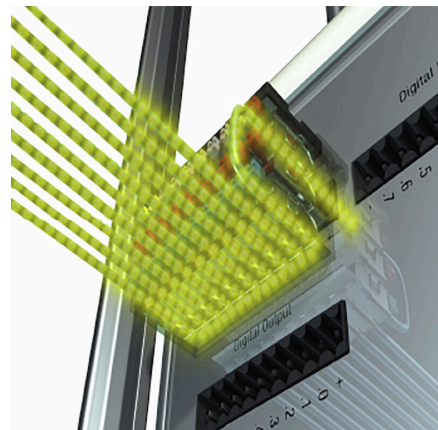


Product benefits



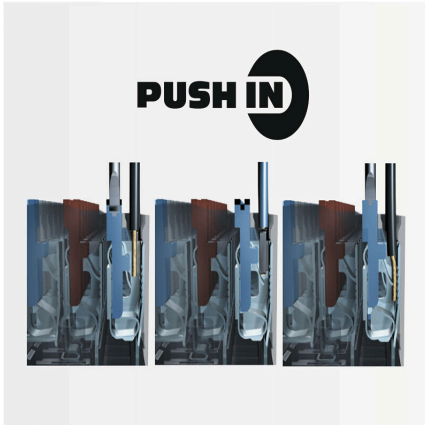
Solid PUSH IN contactSafe and durable

Product benefits



Multiplies the potentialLow wiring costs

**Product benefits**



PUSH IN - fast and secure  
Invented by Weidmüller

**Product benefits**



Integrated electronics  
For more space on the circuit board