

**BL 3.50/20/180 SN DKGN BX****Weidmüller Interface GmbH & Co. KG**

Klingenbergstraße 26

D-32758 Detmold

Germany

www.weidmueller.com

**Product image**

Similar to illustration

Female connectors with clamping yoke screw system for connecting conductors at 3.50 mm pitch. They provide space for labelling and can be coded.

**General ordering data**

|              |                                                                                                                                      |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Version      | PCB plug-in connector, female plug, 3.50 mm, Number of poles: 20, 180°, Clamping yoke connection, Clamping range, max.: 1.5 mm², Box |
| Order No.    | <a href="#">1620710000</a>                                                                                                           |
| Type         | BL 3.50/20/180 SN DKGN BX                                                                                                            |
| GTIN (EAN)   | 4008190160685                                                                                                                        |
| Qty.         | 24 pc(s).                                                                                                                            |
| Product data | IEC: 320 V / 17 A / 0.2 - 1.5 mm²<br>UL: 300 V / 10 A / AWG 28 - AWG 14                                                              |
| Packaging    | Box                                                                                                                                  |

Creation date March 24, 2021 12:58:58 PM CET

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## Technical data

## Dimensions and weights

|                |            |                 |            |
|----------------|------------|-----------------|------------|
| Depth          | 18.5 mm    | Depth (inches)  | 0.728 inch |
| Height         | 13 mm      | Height (inches) | 0.512 inch |
| Net weight     | 15.5 g     | Width           | 70 mm      |
| Width (inches) | 2.756 inch |                 |            |

## System Parameters

|                                              |                                     |                   |                             |
|----------------------------------------------|-------------------------------------|-------------------|-----------------------------|
| Product family                               | OMNIMATE Signal - series BL/SL 3.50 |                   |                             |
| Type of connection                           | Field connection                    |                   |                             |
| Wire connection method                       | Clamping yoke connection            |                   |                             |
| Pitch in mm (P)                              | 3.5 mm                              |                   |                             |
| Pitch in inches (P)                          | 0.138 inch                          |                   |                             |
| Conductor outlet direction                   | 180°                                |                   |                             |
| Number of poles                              | 20                                  |                   |                             |
| L1 in mm                                     | 66.5 mm                             |                   |                             |
| L1 in inches                                 | 2.618 inch                          |                   |                             |
| Number of rows                               | 1                                   |                   |                             |
| Pin series quantity                          | 1                                   |                   |                             |
| Rated cross-section                          | 1.5 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   | IP 20                               |                   |                             |
| Volume resistance                            | ≤5 mΩ                               |                   |                             |
| Can be coded                                 | Yes                                 |                   |                             |
| Stripping length                             | 6 mm                                |                   |                             |
| Clamping screw                               | M 2                                 |                   |                             |
| Screwdriver blade                            | 0.4 x 2.5                           |                   |                             |
| Screwdriver blade standard                   | DIN 5264                            |                   |                             |
| Plugging cycles                              | 25                                  |                   |                             |
| Plugging force/pole, max.                    | 7 N                                 |                   |                             |
| Pulling force/pole, max.                     | 5 N                                 |                   |                             |
| Tightening torque                            | Torque type                         | Wire connection   |                             |
|                                              | Usage information                   | Tightening torque | min. 0.2 Nm<br>max. 0.25 Nm |

## Material data

|                                       |          |                                       |                            |
|---------------------------------------|----------|---------------------------------------|----------------------------|
| Insulating material                   | PBT      | Colour                                | Signal green               |
| Colour chart (similar)                | RAL 6032 | Insulating material group             | IIIa                       |
| Comparative Tracking Index (CTI)      | ≥ 200    | Insulation strength                   | ≥ 10 <sup>8</sup> Ω        |
| UL 94 flammability rating             | V-0      | Contact material                      | Copper alloy               |
| Contact surface                       | tinned   | Layer structure of plug contact       | 4...8 µm Sn hot-dip tinned |
| Storage temperature, min.             | -40 °C   | Storage temperature, max.             | 70 °C                      |
| Operating temperature, min.           | -50 °C   | Operating temperature, max.           | 100 °C                     |
| Temperature range, installation, min. | -30 °C   | Temperature range, installation, max. | 100 °C                     |

## Conductors suitable for connection

|                                         |                      |
|-----------------------------------------|----------------------|
| Clamping range, min.                    | 0.08 mm <sup>2</sup> |
| Clamping range, max.                    | 1.5 mm <sup>2</sup>  |
| Wire connection cross section AWG, min. | AWG 28               |
| Wire connection cross section AWG, max. | AWG 14               |

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|                                                                     |                                                                                                                                                                        |                              |                              |      |
|---------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|------------------------------|------|
| 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, 0.2 mm <sup>2</sup> min. |                                                                                                                                                                        |                              |                              |      |
| w. plastic collar ferrule, DIN 46228 pt 4, 1.5 mm <sup>2</sup> max. |                                                                                                                                                                        |                              |                              |      |
| w. wire end ferrule, DIN 46228 pt 1, 0.2 mm <sup>2</sup> min.       |                                                                                                                                                                        |                              |                              |      |
| w. wire end ferrule, DIN 46228 pt 1, 1.5 mm <sup>2</sup> max.       |                                                                                                                                                                        |                              |                              |      |
| Plug gauge in accordance with EN 60999 a x b; ø                     | 2.4 mm x 1.5 mm                                                                                                                                                        |                              |                              |      |
| Clampable conductor                                                 | Cross-section for conductor connection                                                                                                                                 | Type                         | fine-wired                   |      |
|                                                                     |                                                                                                                                                                        | nominal                      | 0.5 mm <sup>2</sup>          |      |
|                                                                     | wire end ferrule                                                                                                                                                       | Stripping length             | nominal                      | 8 mm |
|                                                                     |                                                                                                                                                                        | Recommended wire-end ferrule | <a href="#">H0.5/12 OR</a>   |      |
|                                                                     |                                                                                                                                                                        | Stripping length             | nominal                      | 6 mm |
|                                                                     |                                                                                                                                                                        | Recommended wire-end ferrule | <a href="#">H0.5/6</a>       |      |
|                                                                     | Cross-section for conductor connection                                                                                                                                 | Type                         | fine-wired                   |      |
|                                                                     |                                                                                                                                                                        | nominal                      | 0.75 mm <sup>2</sup>         |      |
|                                                                     | wire end ferrule                                                                                                                                                       | Stripping length             | nominal                      | 8 mm |
|                                                                     |                                                                                                                                                                        | Recommended wire-end ferrule | <a href="#">H0.75/12 W</a>   |      |
|                                                                     |                                                                                                                                                                        | Stripping length             | nominal                      | 6 mm |
|                                                                     |                                                                                                                                                                        | Recommended wire-end ferrule | <a href="#">H0.75/6</a>      |      |
|                                                                     | Cross-section for conductor connection                                                                                                                                 | Type                         | fine-wired                   |      |
|                                                                     |                                                                                                                                                                        | nominal                      | 1 mm <sup>2</sup>            |      |
|                                                                     | wire end ferrule                                                                                                                                                       | Stripping length             | nominal                      | 8 mm |
|                                                                     |                                                                                                                                                                        | Recommended wire-end ferrule | <a href="#">H1.0/12 GE</a>   |      |
|                                                                     |                                                                                                                                                                        | Stripping length             | nominal                      | 6 mm |
|                                                                     |                                                                                                                                                                        | Recommended wire-end ferrule | <a href="#">H1.0/6</a>       |      |
|                                                                     | Cross-section for conductor connection                                                                                                                                 | Type                         | fine-wired                   |      |
|                                                                     |                                                                                                                                                                        | nominal                      | 0.25 mm <sup>2</sup>         |      |
|                                                                     | wire end ferrule                                                                                                                                                       | Stripping length             | nominal                      | 8 mm |
|                                                                     |                                                                                                                                                                        | Recommended wire-end ferrule | <a href="#">H0.25/10 HBL</a> |      |
|                                                                     |                                                                                                                                                                        | Stripping length             | nominal                      | 5 mm |
|                                                                     |                                                                                                                                                                        | Recommended wire-end ferrule | <a href="#">H0.25/5</a>      |      |
|                                                                     | Cross-section for conductor connection                                                                                                                                 | Type                         | fine-wired                   |      |
|                                                                     |                                                                                                                                                                        | nominal                      | 0.34 mm <sup>2</sup>         |      |
|                                                                     | wire end ferrule                                                                                                                                                       | Stripping length             | nominal                      | 8 mm |
|                                                                     |                                                                                                                                                                        | Recommended wire-end ferrule | <a href="#">H0.34/10 TK</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. |                              |                              |      |

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## Rated data acc. to IEC

|                                                                           |                        |                                                                       |                   |
|---------------------------------------------------------------------------|------------------------|-----------------------------------------------------------------------|-------------------|
| tested acc. to standard                                                   | IEC 60664-1, IEC 61984 | Rated current, min. number of poles (Tu=20°C)                         | 17 A              |
| Rated current, max. number of poles (Tu=20°C)                             | 12 A                   | Rated current, min. number of poles (Tu=40°C)                         | 14.5 A            |
| Rated current, max. number of poles (Tu=40°C)                             | 10 A                   | Rated voltage for surge voltage class / pollution degree II/2         | 320 V             |
| Rated voltage for surge voltage class / pollution degree III/2            | 160 V                  | Rated voltage for surge voltage class / pollution degree III/3        | 160 V             |
| Rated impulse voltage for surge voltage class/ pollution degree II/2      | 2.5 kV                 | 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 | 2.5 kV                 | Short-time withstand current resistance                               | 3 x 1s with 100 A |

## Rated data acc. to CSA

|                                   |                                                                                   |                                   |                |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------|----------------|
| Institute (CSA)                   |  | Certificate No. (CSA)             | 154685-1318353 |
| Rated voltage (Use group B / CSA) | 300 V                                                                             | Rated voltage (Use group D / CSA) | 300 V          |
| Rated current (Use group B / CSA) | 10 A                                                                              | Rated current (Use group D / CSA) | 10 A           |
| Wire cross-section, AWG, min.     | AWG 28                                                                            | Wire cross-section, AWG, max.     | AWG 14         |
| Reference to approval values      | Specifications are maximum values, details - see approval certificate.            |                                   |                |

## Rated data acc. to UL 1059

|                                       |                                                                                     |                                       |        |
|---------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------|--------|
| Institute (UR)                        |  | Certificate No. (UR)                  | E60693 |
| Rated voltage (Use group B / UL 1059) | 300 V                                                                               | Rated voltage (Use group D / UL 1059) | 300 V  |
| Rated current (Use group B / UL 1059) | 10 A                                                                                | Rated current (Use group D / UL 1059) | 10 A   |
| Wire cross-section, AWG, min.         | AWG 28                                                                              | Wire cross-section, AWG, max.         | AWG 14 |
| Reference to approval values          | Specifications are maximum values, details - see approval certificate.              |                                       |        |

## Packing

|           |       |            |        |
|-----------|-------|------------|--------|
| Packaging | Box   | VPE length | 50 mm  |
| VPE width | 77 mm | VPE height | 113 mm |

## Type tests

|                              |            |                                                                                  |
|------------------------------|------------|----------------------------------------------------------------------------------|
| Test: Durability of markings | Standard   | DIN EN 61984 section 7.3.2 / 09.02 taking pattern from DIN EN 60068-2-70 / 07.96 |
|                              | Test       | mark of origin, type identification, approval marking SEV, approval marking CSA  |
|                              | Evaluation | available                                                                        |
|                              | Test       | durability                                                                       |
|                              | Evaluation | passed                                                                           |

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|-----------------------------------------------------------|----------------|------------------------------------------------------------------------------------|-------------------------------------|
| Test: Misengagement (Non-interchangeability)              | Standard       | DIN EN 61984 section 6.3 and 6.9.1 / 09.02, DIN IEC 60512 part 7 section 5 / 05.94 |                                     |
|                                                           | Test           | 180° turned with coding elements                                                   |                                     |
|                                                           | Evaluation     | passed                                                                             |                                     |
| Test: Clampable cross section                             | 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 28/1                            |
|                                                           |                | Type of conductor and conductor cross-section                                      | AWG 28/19                           |
|                                                           |                | Type of conductor and conductor cross-section                                      | AWG 16/1                            |
|                                                           |                | Type of conductor and conductor cross-section                                      | AWG 16/19                           |
|                                                           | Evaluation     | passed                                                                             |                                     |
| Test for damage to and accidental loosening of conductors | Standard       | DIN EN 60999-1 section 9.4 / 12.00                                                 |                                     |
|                                                           | Requirement    | 0.2 kg                                                                             |                                     |
|                                                           | Conductor type | Type of conductor and conductor cross-section                                      | AWG 28/1                            |
|                                                           |                | Type of conductor and conductor cross-section                                      | AWG 28/19                           |
|                                                           | Evaluation     | passed                                                                             |                                     |
|                                                           | Requirement    | 0.3 kg                                                                             |                                     |
|                                                           | Conductor type | Type of conductor and conductor cross-section                                      | 2 × AWG 24/1                        |
|                                                           |                | Type of conductor and conductor cross-section                                      | 2 × AWG 24/19 with wire end ferrule |
|                                                           | 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 16/7                            |
|                                                           | Evaluation     | passed                                                                             |                                     |

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|               |                |                                               |                                     |
|---------------|----------------|-----------------------------------------------|-------------------------------------|
| Pull-out test | Standard       | DIN EN 60999-1 section 9.5 / 12.00            |                                     |
|               | Requirement    | ≥5 N                                          |                                     |
|               | Conductor type | Type of conductor and conductor cross-section | AWG 28/1                            |
|               |                | Type of conductor and conductor cross-section | AWG 28/19                           |
|               | Evaluation     | passed                                        |                                     |
|               | Requirement    | ≥10 N                                         |                                     |
|               | Conductor type | Type of conductor and conductor cross-section | 2 × AWG 24/1                        |
|               |                | Type of conductor and conductor cross-section | 2 × AWG 24/19 with wire end ferrule |
|               | Evaluation     | passed                                        |                                     |
|               | Requirement    | ≥40 N                                         |                                     |
|               | Conductor type | Type of conductor and conductor cross-section | H05V-U1.5                           |
|               |                | Type of conductor and conductor cross-section | H05V-K1.5                           |
|               |                | Type of conductor and conductor cross-section | AWG 16/7                            |
|               | Evaluation     | passed                                        |                                     |

## Classifications

|             |             |             |             |
|-------------|-------------|-------------|-------------|
| ETIM 6.0    | EC002638    | ETIM 7.0    | EC002638    |
| ECLASS 9.0  | 27-44-03-09 | ECLASS 9.1  | 27-44-03-09 |
| ECLASS 10.0 | 27-44-03-09 | ECLASS 11.0 | 27-46-02-02 |

## 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          | <ul style="list-style-type: none"> <li>• Additional colours on request</li> <li>• Gold-plated contact surfaces on request</li> <li>• Rated current related to rated cross-section &amp; min. No. of poles.</li> <li>• Max. outer diameter of the conductor: 2.9 mm</li> <li>• Wire end ferrule without plastic collar to DIN 46228/1</li> <li>• Wire end ferrule with plastic collar to DIN 46228/4</li> <li>• P on drawing = pitch</li> <li>• 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.</li> <li>• Long term storage of the product with average temperature of 50 °C and average humidity 70%, 36 months</li> </ul> |

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## Technical data

### Approvals

Approvals



|                       |         |
|-----------------------|---------|
| ROHS                  | Conform |
| UL File Number Search | E60693  |

### Downloads

|                                             |                                                 |
|---------------------------------------------|-------------------------------------------------|
| Approval/Certificate/Document of Conformity | <a href="#">Declaration of the Manufacturer</a> |
| Engineering Data                            | <a href="#">STEP</a>                            |
| Engineering Data                            | <a href="#">WSCAD</a>                           |

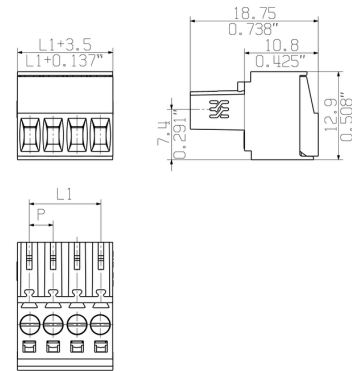
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# Drawings

## Dimensional drawing



## Graph



## Graph



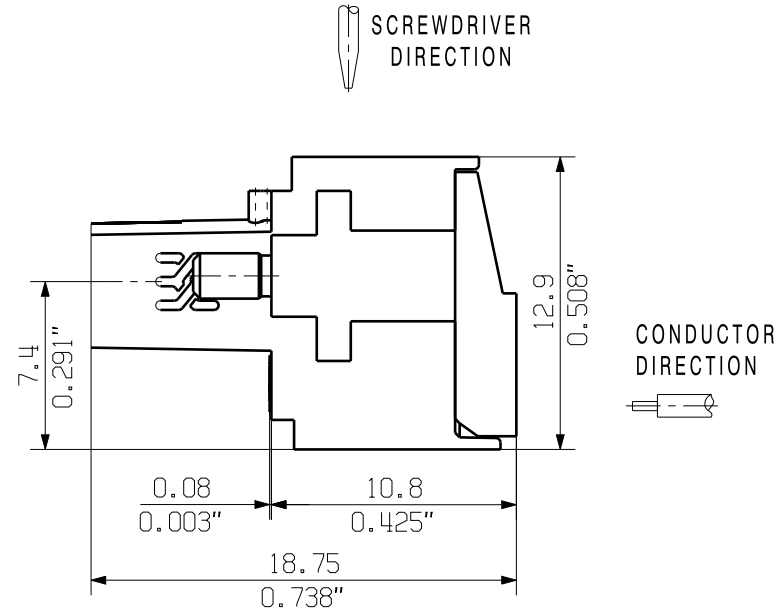
## Graph



## Graph



BL 3.50/04/180F



BL 3.50/04/180



M 1/1



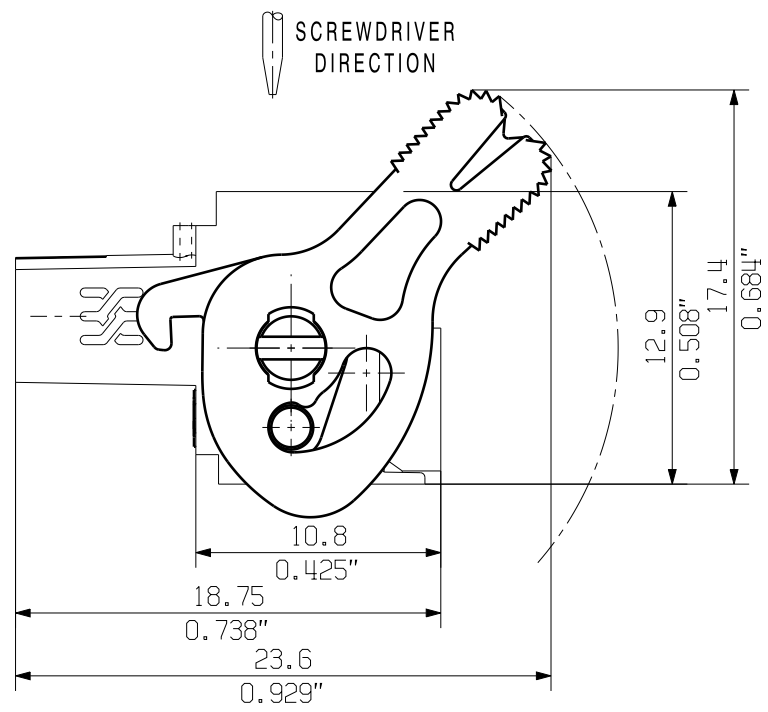
BL 3.50/04/180LH



M 1/1



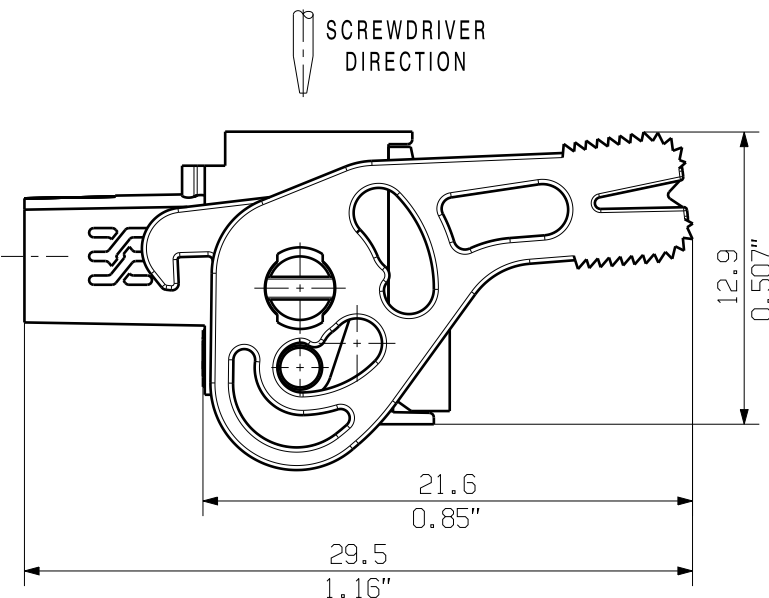
BL 3.50/04/180LR



M 1/1



BL 3.50/04/180LR REDESIGN



M 1/1



P= 3.50 RASTER PITCH

For the mounting of PCBs, it should be noted that the rated data given in the catalogue relates only to the connection elements. The necessary creepage and clearance paths must be observed in connection with the respective applicant in accordance to VDE 0110. The current-carrying capacity and pitch tolerance is to be determined according to DIN IEC 326 part 3 very fine.

Weidmüller connectors are tested to the DIN VDE 0627 standard, and are valid for its field of application. Provided that the connectors are used to the intended purpose, all requirements with respect to the occurring of electrical, mechanical, thermic and corrosive stress will be satisfied.

|    |                  |                            |
|----|------------------|----------------------------|
| 24 | 80.5             | 3.169                      |
| 23 | 77.0             | 3.032                      |
| 22 | 73.5             | 2.894                      |
| 21 | 70.0             | 2.756                      |
| 20 | 66.5             | 2.618                      |
| 19 | 63.0             | 2.480                      |
| 18 | 59.5             | 2.343                      |
| 17 | 56.0             | 2.205                      |
| 16 | 52.5             | 2.067                      |
| 15 | 49.0             | 1.929                      |
| 14 | 45.5             | 1.791                      |
| 13 | 42.0             | 1.654                      |
| 12 | 38.5             | 1.516                      |
| 11 | 35.0             | 1.378                      |
| 10 | 31.5             | 1.240                      |
| 9  | 28.0             | 1.102                      |
| 8  | 24.5             | 0.965                      |
| 7  | 21.0             | 0.827                      |
| 6  | 17.5             | 0.689                      |
| 5  | 14.0             | 0.551                      |
| 4  | 10.5             | 0.413                      |
| 3  | 7.0              | 0.276                      |
| 2  | 3.5              | 0.138                      |
| n  | POLZAHL<br>POLES | L1<br>[mm]<br>L1<br>[inch] |

GENERAL TOLERANCE:  
DIN ISO 2768-m

103300/5  
17.05.18 HELIS\_MA 01

Modification

Drawn 02.09.2008 HELIS\_MA

Responsible AMANN\_A

Checked

Approved LANG\_T

Cat.no.: .

**Weidmüller**

3 19675 **36**

Sheet 00 of 00 sheets

BL 3.50/./180

BUCHSENSTECKER  
FEMALE PLUG

Product file: BL 3.50

Scale: 5/1

Supersedes: .

Issue no. 36

Issue no. 36

Product file: BL 3.50

7382

Prüfung /  
Verification

ALLGEMEINGÜLTIGE KUNDENZEICHNUNG, AKTUELLER STAND NUR AUF ANFRAGE  
GENERAL CUSTOMER DRAWING, TOPICAL VERSION ONLY IF REQUIRED

