

BL 3.50/16/180F SN BK BX**Weidmüller Interface GmbH & Co. KG**

Klingenbergstraße 26

D-32758 Detmold

Germany

www.weidmueller.com

Product image

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: 16, 180°, Clamping yoke connection, Clamping range, max. : 1.5 mm², Box |
| Order No. | 1615920000 |
| Type | BL 3.50/16/180F SN BK BX |
| GTIN (EAN) | 4008190064143 |
| Qty. | 24 pc(s). |
| Product data | IEC: 320 V / 17 A / 0.2 - 1.5 mm² UL: 300 V / 10 A / AWG 28 - AWG 14 |
| Packaging | Box |

Creation date July 22, 2024 3:44:35 AM CEST

Catalogue status 13.07.2024 / We reserve the right to make technical changes.

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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 |
| Width | 63 mm | Width (inches) | 2.48 inch |
| Net weight | 15.3 g | | |

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 " | | |
| Conductor outlet direction | 180° | | |
| Number of poles | 16 | | |
| L1 in mm | 52.5 mm | | |
| L1 in inches | 2.067 " | | |
| Number of rows | 1 | | |
| Pin series quantity | 1 | | |
| Rated cross-section | 1.5 mm ² | | |
| 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 | | |
| Protection degree | IP20, when fully mounted | | |
| 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 |
| | | | max. 0.25 Nm |
| | Torque type | Screw flange | |
| | Usage information | Tightening torque | min. 0.15 Nm |
| | | | max. 0.2 Nm |

Material data

| | | | |
|---------------------------------------|----------------------------|---------------------------------------|--------|
| Insulating material | PBT | Colour | black |
| Colour chart (similar) | RAL 9011 | Insulating material group | IIIa |
| Comparative Tracking Index (CTI) | ≥ 200 | UL 94 flammability rating | V-0 |
| Contact material | Cu-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 ² |
| Clamping range, max. | 1.5 mm ² |

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|---|--|------------------------------|------------------------------|
| Wire connection cross section AWG, min. | AWG 28 | | |
| Wire connection cross section AWG, max. | AWG 14 | | |
| Solid, min. H05(07) V-U | 0.2 mm² | | |
| Solid, max. H05(07) V-U | 1.5 mm² | | |
| Flexible, min. H05(07) V-K | 0.2 mm² | | |
| Flexible, max. H05(07) V-K | 1.5 mm² | | |
| w. plastic collar ferrule, DIN 46228 pt 4, 0.2 mm² min. | | | |
| w. plastic collar ferrule, DIN 46228 pt 4, 1.5 mm² max. | | | |
| w. wire end ferrule, DIN 46228 pt 1, min. | 0.2 mm² | | |
| w. wire end ferrule, DIN 46228 pt 1, max. | 1.5 mm² | | |
| 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 mm² |
| | wire end ferrule | Stripping length | nominal 8 mm |
| | | Recommended wire-end ferrule | H0.5/12 OR |
| | | Stripping length | nominal 6 mm |
| | | Recommended wire-end ferrule | H0.5/6 |
| | Cross-section for conductor connection | Type | fine-wired |
| | | nominal | 0.75 mm² |
| | wire end ferrule | Stripping length | nominal 8 mm |
| | | Recommended wire-end ferrule | H0.75/12 W |
| | | Stripping length | nominal 6 mm |
| | | Recommended wire-end ferrule | H0.75/6 |
| | Cross-section for conductor connection | Type | fine-wired |
| | | nominal | 1 mm² |
| | wire end ferrule | Stripping length | nominal 8 mm |
| | | Recommended wire-end ferrule | H1.0/12 GE |
| | | Stripping length | nominal 6 mm |
| | | Recommended wire-end ferrule | H1.0/6 |
| | Cross-section for conductor connection | Type | fine-wired |
| | | nominal | 0.25 mm² |
| | wire end ferrule | Stripping length | nominal 8 mm |
| | | Recommended wire-end ferrule | H0.25/10 HBL |
| | | Stripping length | nominal 5 mm |
| | | Recommended wire-end ferrule | H0.25/5 |
| | Cross-section for conductor connection | Type | fine-wired |
| | | nominal | 0.34 mm² |
| | wire end ferrule | Stripping length | nominal 8 mm |
| | | Recommended wire-end ferrule | H0.34/10 TK |
| 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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Technical data

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 | 352 mm |
| VPE width | 137 mm | VPE height | 26 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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Technical data

| | | |
|---|----------------|--|
| 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 solid 0.2 mm ² conductor cross-section |
| | | Type of conductor and stranded 0.2 mm ² conductor cross-section |
| | | Type of conductor and solid 1.5 mm ² conductor cross-section |
| | | Type of conductor and stranded 1.5 mm ² conductor cross-section |
| | | Type of conductor and AWG 28/1 conductor cross-section |
| | | Type of conductor and AWG 28/19 conductor cross-section |
| | | Type of conductor and AWG 16/1 conductor cross-section |
| | | Type of conductor and AWG 16/19 conductor cross-section |
| | 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 AWG 28/1 conductor cross-section |
| | | Type of conductor and AWG 28/19 conductor cross-section |
| | Evaluation | passed |
| | Requirement | 0.3 kg |
| | Conductor type | Type of conductor and 2 × AWG 24/1 conductor cross-section |
| | | Type of conductor and 2 × AWG 24/19 with conductor cross-section wire end ferrule |
| | Evaluation | passed |
| | Requirement | 0.4 kg |
| | Conductor type | Type of conductor and solid 1.5 mm ² conductor cross-section |
| | | Type of conductor and stranded 1.5 mm ² conductor cross-section |
| | | Type of conductor and AWG 16/7 conductor cross-section |
| | Evaluation | passed |

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Technical data

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

Classifications

| | | | |
|-------------|-------------|-------------|-------------|
| ETIM 6.0 | EC002638 | ETIM 7.0 | EC002638 |
| ETIM 8.0 | EC002638 | ETIM 9.0 | 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 |
| ECLASS 12.0 | 27-46-02-02 | ECLASS 13.0 | 27-46-02-02 |

Environmental Product Compliance

| | |
|------------------------|-----------------------------|
| REACH SVHC | / |
| RoHS Compliance Status | Compliant without exemption |

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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"> • Additional variants on request • Gold-plated contact surfaces on request • Rated current related to rated cross-section & min. No. of poles. • Max. outer diameter of the conductor: 2.9 mm • Wire end ferrule without plastic collar to DIN 46228/1 • Wire end ferrule with plastic collar to DIN 46228/4 • P on drawing = pitch • 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. • 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 |

Approvals

Approvals



| | |
|-----------------------|------------|
| ROHS | Conform |
| UL File Number Search | UL Website |
| Certificate No. (UR) | E60693 |

Downloads

| | |
|---|--|
| Approval/Certificate/Document of Conformity | Declaration of the Manufacturer |
| Engineering Data | CAD data – STEP |
| Catalogues | Catalogues in PDF-format |
| Brochures | FL DRIVES EN MB DEVICE MANUF. EN FL DRIVES DE FL BUILDING SAFETY EN FL APPL LED LIGHTING EN FL INDUSTR.CONTROLS EN FL MACHINE SAFETY EN FL HEATING ELECTR EN FL APPL INVERTER EN FL BASE STATION EN FL ELEVATOR EN FL POWER SUPPLY EN FL 72H SAMPLE SER EN PO OMNIMATE EN PO OMNIMATE EN |

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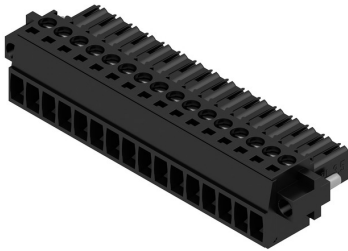
BL 3.50/16/180F SN BK BX

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Drawings

Product image



Dimensional drawing



Graph



Graph



Graph



Graph



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Accessories

Cover hoods

**Effective protection, optimised ergonomics and closed design:**

From the strain relief on the connected conductors and the visual/contact protection and the disconnection aid: the optional retrofit hoods perform mechanical, visual and haptic functions.

The two half shells clip together securely, enclose the plug completely and offer the following functions:

- Cable ties or integrated cable clips provide strain relief.
- Marked with dekafix labels or adhesive strips
- Mounting side by side without losing poles or displacing the pitch
- Compatible: suitable for plugs with or without a flange or mounting bracket
- Flexible: 1-3 cable outlets leading in different directions available depending on the size

Weidmüller hoods offer added stability, better identification, complete compatibility and versatility. The result: maximum reliability and user-friendliness in any application.

General ordering data

| Type | BL 3.50 AH16 BK BX | Version | Product data | Packaging |
|------------|----------------------------|--|--------------|-----------|
| Order No. | 1745710000 | PCB plug-in connector, Accessories, Hood, black, Number of poles: 16 | | Box |
| GTIN (EAN) | 4008190985134 | | | |
| Qty. | 10 pc(s). | | | |

Coding elements

**Only connects what is supposed to be connected: the right connection at the right place.**

Coding elements and locking devices clearly assign connecting elements during the manufacturing process and operation

The coding elements and locking devices are inserted prior to assembly or during the cable assembly phase.

The Weidmüller alternative: configure online using the variant configurator to precode prior to delivery.

Incorrect assembly on the circuit board and incorrect plugging of connecting elements is no longer possible.

The advantage: no troubleshooting during manufacture and no operational errors by the user.

General ordering data

| Type | BL SL 3.5 KO OR | Version | Product data | Packaging |
|------------|----------------------------|--|--------------|-----------|
| Order No. | 1693430000 | PCB plug-in connector, Accessories, Coding element, orange, Number of poles: 1 | | Box |
| GTIN (EAN) | 4008190867447 | | | |
| Qty. | 100 pc(s). | | | |

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Accessories

| Type | BL SL 3.5 KO SW | Version | Product data | Packaging |
|------------|----------------------------|---|--------------|-----------|
| Order No. | 1610100000 | PCB plug-in connector, Accessories, Coding element, black, Number | | Box |
| GTIN (EAN) | 4008190187637 | of poles: 1 | | |
| Qty. | 100 pc(s). | | | |

Strain reliefs**For frequent load changes: the "trailer coupling" for plug-in connectors.**

The strain relief can do more than just relieve the strain on conductors:

Simply clip onto the plug and

- bundle conductors
- guide cables
- use as a connection and disconnection aid

No damage to the connecting points, clear, tidy wiring and easy to handle.

User advantages: permanent heavy-duty connections for harsh industrial environments and convenient operation ensure improved system availability.

General ordering data

| Type | BL 3.50 ZE08 BK BX | Version | Product data | Packaging |
|------------|----------------------------|--|--------------|-----------|
| Order No. | 1627830000 | PCB plug-in connector, Accessories, Strain relief, black, Number of | | Box |
| GTIN (EAN) | 4008190202576 | poles: 8 | | |
| Qty. | 50 pc(s). | | | |
| Type | BL 3.50 ZE03 BK BX | Version | Product data | Packaging |
| Order No. | 1627820000 | PCB plug-in connector, Accessories, Strain relief, black, Number of | | Box |
| GTIN (EAN) | 4008190202552 | poles: 3 | | |
| Qty. | 50 pc(s). | | | |
| Type | BL 3.50 ZE03 OR BX | Version | Product data | Packaging |
| Order No. | 1629680000 | PCB plug-in connector, Accessories, Strain relief, orange, Number of | | Box |
| GTIN (EAN) | 4008190202569 | poles: 3 | | |
| Qty. | 50 pc(s). | | | |
| Type | BL 3.50 ZE08 OR BX | Version | Product data | Packaging |
| Order No. | 1629690000 | PCB plug-in connector, Accessories, Strain relief, orange, Number of | | Box |
| GTIN (EAN) | 4008190202583 | poles: 8 | | |
| Qty. | 50 pc(s). | | | |

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



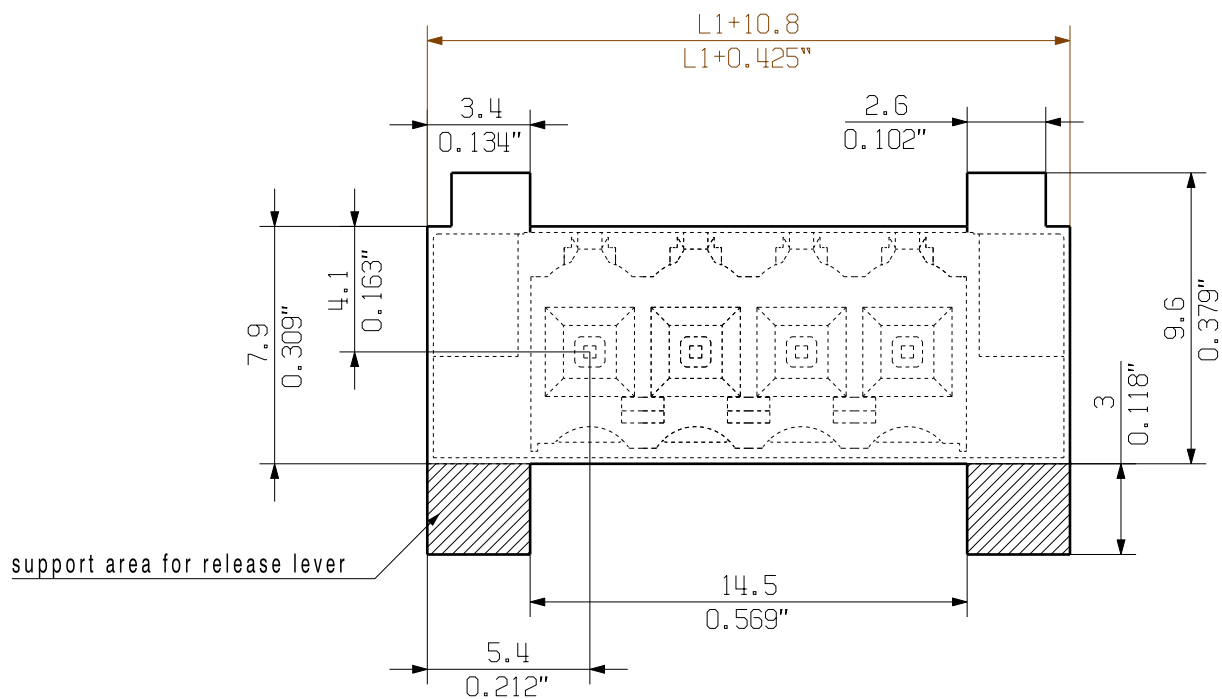
M 1/1



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 POLES | L1 [mm] L1 [inch] |

| | | | | |
|--------------------------------------|----------------------------------|-------------------------------|--------------|-----------------------|
| GENERAL TOLERANCE: DIN ISO 2768-m | 103300/5 17.05.18 HELIS_MA 01 | | Cat.no.: . | |
| | Modification | | 3 19675 (36) | |
| | Drawn | Date | Name | Sheet 00 of 00 sheets |
| | Responsible | 02.09.2008 | HELIS_MA | |
| | Checked | | AMANN_A | |
| | Approved | | LANG_T | |
| Scale: 5/1 | | BL 3.50/././180 | | |
| Supersedes: . | | BUCHSENSTECKER FEMALE PLUG | | |
| | | Product file: BL 3.50 | | |
| | | 7382 | | |

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

Prüfung /
Verification