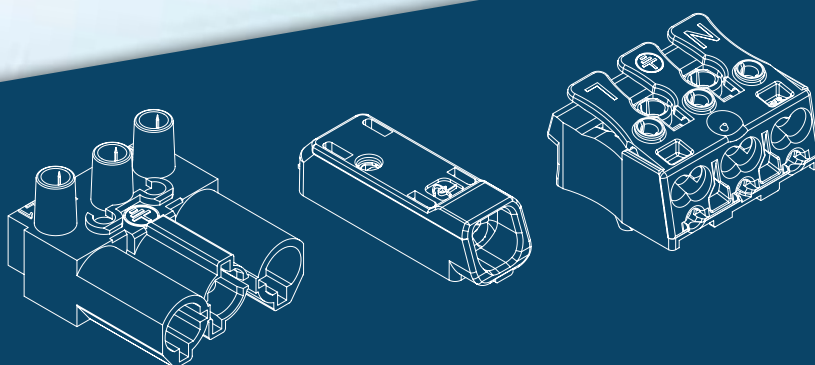


THE SAFE CONTACT WORLDWIDE

# OEM

## CATALOGUE 18/19



**ADELS**  
contact

## Ready for the Future



Since 1930, our guideline “The safe contact worldwide” has been a synonym both for high-quality and innovative connection technology for luminaires and electrical appliances as well as for a reliable, quick and individual customer care worldwide.

Also in the digital age, we will continue to follow our philosophy. One of the results are many product innovations with which you are well equipped for the future. The new printed catalogue you now hold in your hands is the ideal supplement to all information that is now available in digital form. It provides an outline of our broad product range of connection solutions for our target industries, highlights the most important advantages for customers and navigates with pictures and headlines to more than 2,000 articles which you can find on our homepage.

Bergisch Gladbach, March 2018

J. Hans Hochköppler

Andre Rumpff

PRODUCT GROUPS

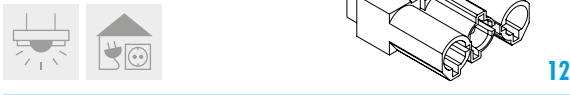
SMD Connectors

The product range for the safe connection of LED modules



Plug and Socket System AC 166®

Flexibility, safety and cost effectiveness in installation



Plug and Socket System AC 164

The compact plug and socket system for installations with little space



Connecting System AC 162

The system for LED and low-voltage applications



Plug and Socket Connectors 160/163

The alternative connection solution for appliances, drives and luminaires



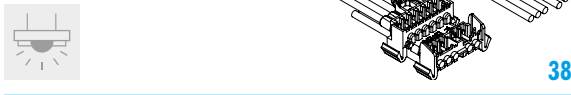
Luminaire Connection IP65/66

Simple, safe and cost effective



Continuous Row Lighting System LEDtrack

The complete system for all functions on lighting strip systems



Screwless Connectors

Push – press – play  
The easy and quick connection



Screw-Screwless Connectors

The “hybrid solution”  
in the connectors world



Screw Connectors

Proven connection of electrical appliances and luminaires



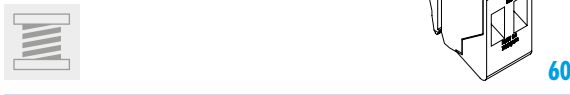
Fused Connectors

Protection of sensitive luminaires and appliances



Transformer Connectors

Safe connection of small and control transformers



(Pluggable) PCB Connectors

Pinpoint accuracy in spacing and special solutions – our strength



FURTHER INFORMATION

Codings AC 166®/AC 164 68

Characteristics of the Insulating Materials 70

IP Codes 71

Relevant Standards 72

Configuration and Dimensions of Connecting Cables 73



## WHY PRODUCTS MADE BY ADELS CONTACT?

Because we are the way we are! Some people call it culture or philosophy. We just call it being close to the customer.

Our particular competence is the rapid development of customised solutions of superior connection technology. Experience and expert knowledge help to find alternatives for you and to put the smartest solution into practice. Here, we are true to our guiding principle of "fit-for-purpose", considering that the most expensive product is not always the better one.

Close contact to our customers is an essential part of our success. People in the business take immediate, personal and reliable care of your questions and concerns.

**0.5 Mio** Finished Parts/  
Day

**130** Approvals

**60** Countries

**100** Employees

**1930** Founded

**100%** Independent



# The Product Range for the Safe Connection of LED Modules

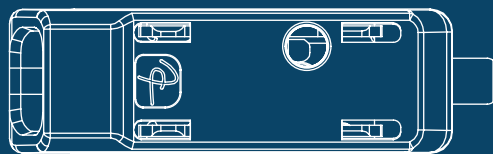
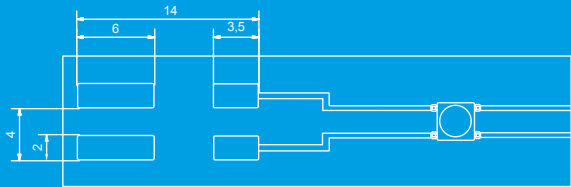
testing aperture and conductor release

pick & place area Ø 3 mm<sup>2</sup>

extremely reduced total height of 3.45 mm

connection of solid or flexible conductors up to 0.75 mm<sup>2</sup>

## FOOTPRINT SMDflat 345



## APPLICATIONS

- LED modules
- printed circuit boards
- power supply

Lighting



## ADVANTAGES

- minimal shadow effect due to reduced total height
- minimal discolouring due to the reflow soldering process
- safe processing on automatic luminaire assembly machines



|                                     |  |  |                                |                             |
|-------------------------------------|--|--|--------------------------------|-----------------------------|
|                                     |  |  | <b>6 - 16 A</b><br>250 - 600 V | <b>PPA-GF</b><br>UL 94: V-0 |
| <b>0.2 - 2.5</b><br>mm <sup>2</sup> |  |  |                                |                             |

PRODUCT RANGE

# SMD Connectors

More information online

TO THE WEBSITE

## SMD CONNECTORS WITHOUT MOULDING

SMDblank/ 1  
horizontally pluggable 0.2 - 0.5 mm<sup>2</sup>  
solid and flexible  
vertically pluggable 0.5 mm<sup>2</sup>  
solid



## SMD CONNECTORS PIN SPACING 6.0 mm

SMDflat 545/ ..  
1 to 3 pole  
0.5 - 2.5 mm<sup>2</sup>  
solid and flexible



## SMD CONNECTORS PIN SPACING 4.0 mm

SMDflat 345/ ..  
1 and 2 pole  
0.2 - 0.75 mm<sup>2</sup>  
solid and flexible



## VARIANT

2 pole, bridged



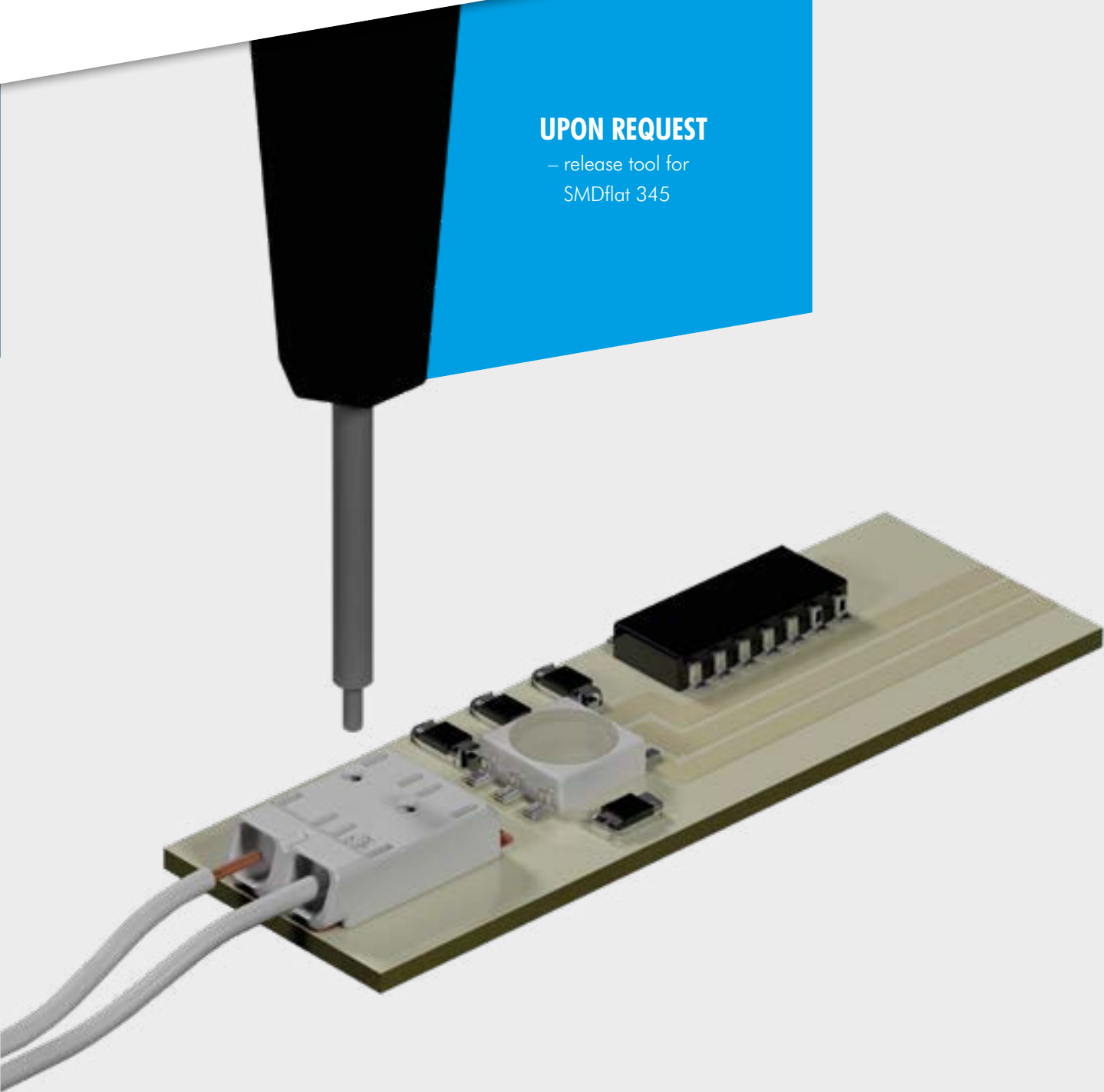
## CONNECTING LINKS

SMDflat 345 KU/ ..  
1 and 2 pole

## SMD CONNECTORS

## UPON REQUEST

– release tool for  
SMDflat 345



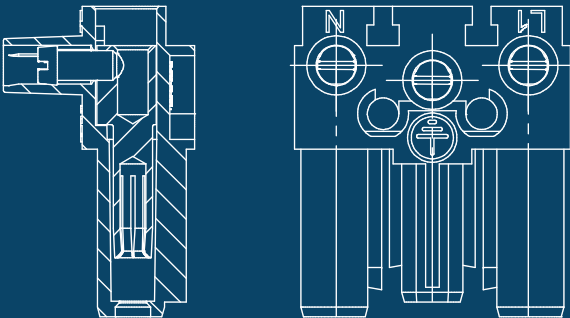
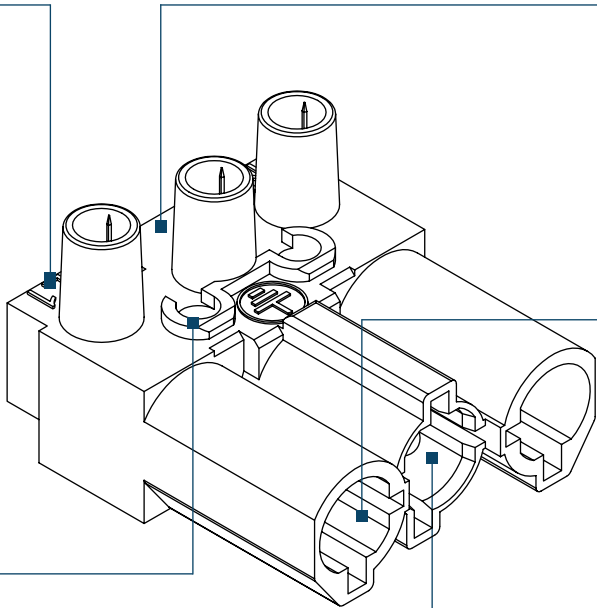
# PLUG AND SOCKET SYSTEM AC 166® Flexibility, Safety and Cost Effectiveness in Installation

suitable strain relief with  
different cable outlets

screw, screwless or solder terminal

mechanical coding for  
different applications

fixing by  
screw or rivet



## 100 % PROTECTION AGAINST INCORRECT PLUGGING

- = no plugging when rotated by 180 °
- = no one pole plugging
- = no plugging of different numbers of poles
- = no plugging when shifted aside

## APPLICATIONS

- furniture
- displays
- luminaires
- booth construction
- retail lighting
- building installation



# PLUG AND SOCKET SYSTEM AC 166®

Lighting



Installation



## ADVANTAGES

- error-free installation according to EN 61535
- “plug & play” without dismantling, stripping, manual connecting or extensive re-working
- 30 % lower costs, 70 % less time
- modular system for luminaires, appliances and socket outlets, pre-assembled cables and distributors



|                      |                     |                  |              |               |
|----------------------|---------------------|------------------|--------------|---------------|
|                      |                     |                  |              | 20 A<br>250 V |
| PA 6/6<br>UL 94: V-2 | T 70 °C<br>EN 61535 | 0.5 - 2.5<br>mm² | IP20<br>IP40 |               |



## FLAT PLUGS AND SOCKETS WITH STRAIN RELIEF

AC 166 GSTF/ .. and  
AC 166 GBUF/ ..  
3 to 5 pole  
cables 0.5 - 2.5 mm<sup>2</sup>

## CONNECTING CABLES WITH PLUG

AC 166 ALCGS/ ..  
3 to 5 pole  
cables 1.5 mm<sup>2</sup> and 2.5 mm<sup>2</sup> in  
PVC (H05VV-F) and halogen-free  
(H05Z1Z1-F)  
fire protection class Eca

## CONNECTING CABLES WITH SOCKET

AC 166 ALCGB/ ..  
3 to 5 pole  
cables 1.5 mm<sup>2</sup> and 2.5 mm<sup>2</sup> in  
PVC (H05VV-F) and halogen-free  
(H05Z1Z1-F)  
fire protection class Eca

## EXTENSION CABLES

AC 166 VLCG/ ..  
3 to 5 pole  
cables 1.5 mm<sup>2</sup> and 2.5 mm<sup>2</sup> in  
PVC (H05VV-F) and halogen-free  
(H05Z1Z1-F)  
fire protection class Eca

## MAINS CABLES

AC 166 NLCGB/3  
3 pole  
cables 1.5 mm<sup>2</sup> in PVC (H05VV-F)

## DESIGNS AND VARIANTS

- apart from the colour-coded plug and socket connectors, all products are available in black and white.
- pre-assembled strain reliefs, latches
- locking pins, protection caps
- printing
- special design for 4.0 mm<sup>2</sup> cables
- panel mount plugs/sockets for plastic mouldings (3 pole)
- plug-in adapters LINECT®
- fastening clips for distributing blocks
- plug and socket connectors series AC 166® Classic
- cables with customised stripping/ dismantling lengths
- fire protection classes Dca, Cca and B2ca

## LATCHES

AC 166 VSF

## DISTRIBUTORS

AC 166 GVT/ ..  
3 to 5 pole  
1 input, 2 output  
terminals

## DISTRIBUTING BLOCKS

AC 166 GVT .. / ..  
3 to 5 pole  
1 input, 3 to 5 output  
terminals



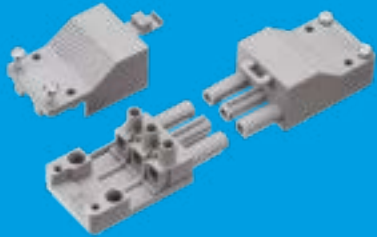
# Components AC 166®

More information online

TO THE  
WEBSITE

## PLUG AND SOCKET CONNECTORS PROTECTION CLASS II

AC 166 GST/ 3 SK II and  
AC 166 GBU/ 3 SK II  
with strain relief



## HIGH PLUG AND SOCKET CONNECTORS

AC 166 GST/ .. and  
AC 166 GBU/ ..  
3, 4 and 6 pole  
cables 0.5 - 2.5 mm<sup>2</sup>



## PANEL MOUNT CONNECTORS

AC 166 GEST/ .. and  
AC 166 GEBU/ ..  
3 to 5 pole  
cables 0.5 - 2.5 mm<sup>2</sup>  
2 terminals per pole  
for housings 0.5 - 1.2 mm



## SOLDER CONNECTORS

AC 166 GSTLH/ .. and AC 166 GBULH/ ..  
with horizontal solder terminals

AC 166 GSTLV/ .. and AC 166 GBULV/ ..  
with vertical solder terminals



## PANEL MOUNT CONNECTORS

RIAC ST/ 8 and BU/ 8  
8 pole  
cables 0.5 - 2.5 mm<sup>2</sup>  
2 terminals per pole  
for housings 0.5 - 1.0 mm



## STRAIN RELIEFS

AC 166-1/ .. ZEL  
3, 4 and 6 pole  
different cable outlets



## PANEL MOUNT CONNECTING LINKS

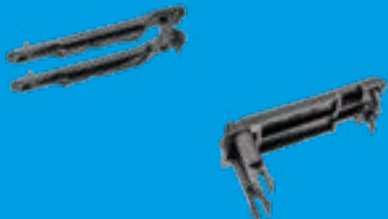
AC 166 GKU/ 3  
3 pole



## LATCHES

AC 166 VSE  
for panel mount connectors

AC 166 VSL  
for plug and socket connectors  
with solder terminals



# The Compact Plug and Socket System for Installations with Little Space

outlet for various cable types and diameters

countersunk head machine screws

compulsory locking with hook and eye

compact dimensions

various mechanical codings

2 to 5 pole

## APPLICATIONS

- retail lighting
- object lighting
- interior lighting
- advertising lighting
- switch cabinet lighting
- displays
- booth construction

Lighting

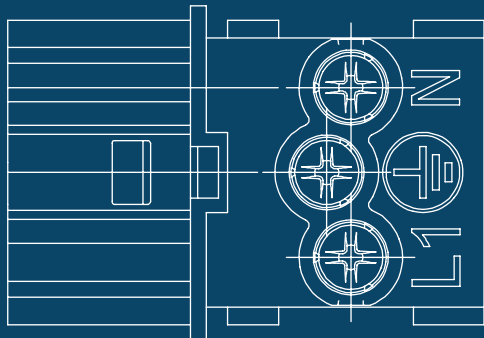


Installation



## ADVANTAGES

- little brother of the successful AC 166® series – about half the size
- ideal for applications with limited space such as for small luminaires and appliances
- “plug & play” allows error-free and extremely fast connection according to EN 61535
- modular system for flexible use



|                  |              |                   |                  |                     |
|------------------|--------------|-------------------|------------------|---------------------|
|                  |              | 16 A<br>250/400 V | PA<br>UL 94: V-2 | T 70 °C<br>EN 61535 |
| 1.0 - 1.5<br>mm² | IP20<br>IP40 |                   |                  |                     |



PRODUCT RANGE

# Plug and Socket System AC 164

More information online

TO THE  
WEBSITE

## FLAT PLUGS AND SOCKETS WITH STRAIN RELIEF

AC 164 STF/ .. and AC 164 BUF/ ..

2 to 5 pole  
cables 0.5 - 1.5 mm<sup>2</sup>  
variable cable outlets

## CONNECTING CABLES WITH PLUG

AC 164 ALSS/ ..

2 to 5 pole  
cables 1.5 mm<sup>2</sup> in PVC (H05VV-F)  
and halogen-free (H05Z1Z1-F)  
fire protection class Eca

## CONNECTING CABLES WITH SOCKET

AC 164 ALSB/ ..

2 to 5 pole  
cables 1.5 mm<sup>2</sup> in PVC (H05VV-F)  
and halogen-free (H05Z1Z1-F)  
fire protection class Eca

## CONNECTING CABLES

AC 164 VLS/ ..

2 to 5 pole  
cables 1.5 mm<sup>2</sup> in PVC (H05VV-F)  
and halogen-free (H05Z1Z1-F)  
fire protection class Eca

## HIGH PLUG AND SOCKET CONNECTORS

AC 164 ST/ .. and AC 164 BU/ ..

2 to 5 pole  
cables 0.5 - 1.5 mm<sup>2</sup>

## PANEL MOUNT CONNECTORS

AC 164 EST/ .. and AC 164 EBU/ ..

2 to 5 pole  
cables 0.5 - 1.5 mm<sup>2</sup>  
wall thickness 0.5 - 1.2 mm

## DESIGNS AND VARIANTS

- apart from the colour-coded plug and socket connectors, all products are available in black and white
- printings
- cables with customised stripping/ dismantling lengths
- fire protection classes Dca, Cca and B2ca

## DISTRIBUTORS (UNDER DEVELOPMENT)

AC 164 VT/ ..

2 to 5 pole  
1 input , 2 output terminals

## DISTRIBUTORS (UNDER DEVELOPMENT)

AC 164 VT .. / ..

2 to 5 pole  
1 input, 3 to 5 output terminals

## FASTENING CLIPS

AC 164 BC / ..

for high plug and socket  
connectors

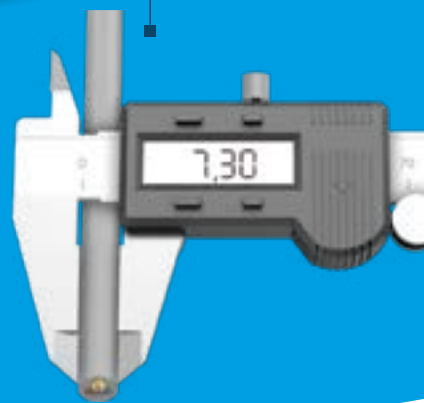
AC 164 ST/ .. and AC 164 BU/ ..

2 to 5 pole

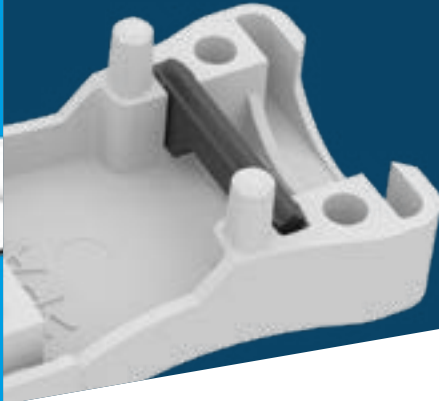


# AC 164 — The Correct Positioning of the Strain Relief Bridges shown on a 3 Pole Plug and Socket Connector

## DETERMINING THE CABLE DIAMETER



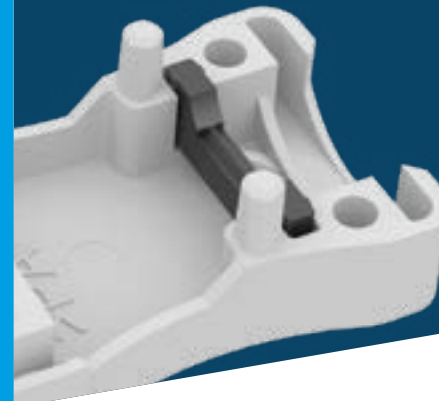
**Ø 5.5 - 5.7 mm**  
ZEL insert on pos. 2



**Ø 5.8 - 6.5 mm**  
ZEL insert on pos. 1



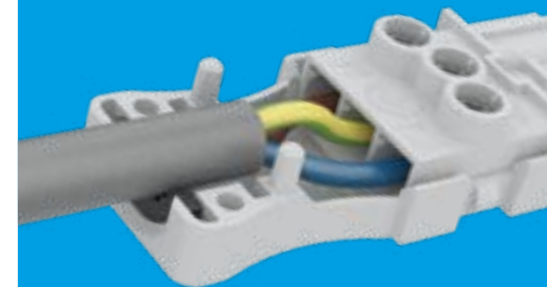
**Ø 6.6 - 6.9 mm**  
ZEL insert turned  
on pos. 2



**Ø 7.0 - 7.7 mm**  
ZEL insert turned  
on pos. 1



**Ø 7.8 - 9.0 mm**  
no ZEL insert



## NOTE

For positioning please follow the installation instructions included in the packaging.

## ADVANTAGES

- one solution for different cable diameters
- versatile applications
- easy ordering and optimised stockkeeping



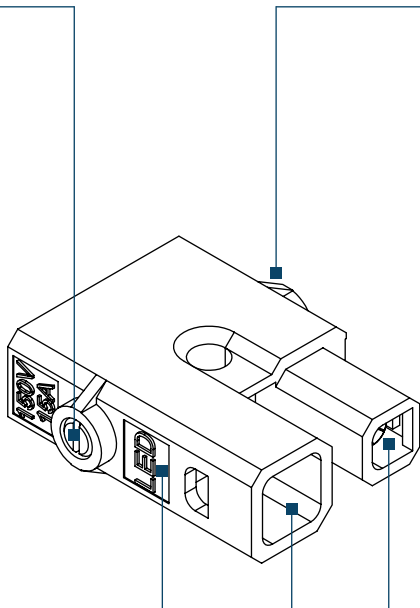
Step-by-step installation available under  
[www.adels-contact.de/link/PlaylistTutorials](http://www.adels-contact.de/link/PlaylistTutorials)

# CONNECTING SYSTEM AC 162

## The System for LED and Low-Voltage Applications

screw terminals for self assembly

compact dimensions



for LED and low-voltage applications

plugs and sockets in one item

### APPLICATIONS

- furniture
- displays
- advertising lighting
- booth construction
- retail lighting
- electrical installation up to 48 V
- connection of LED spots

# CONNECTING SYSTEM AC 162

Lighting

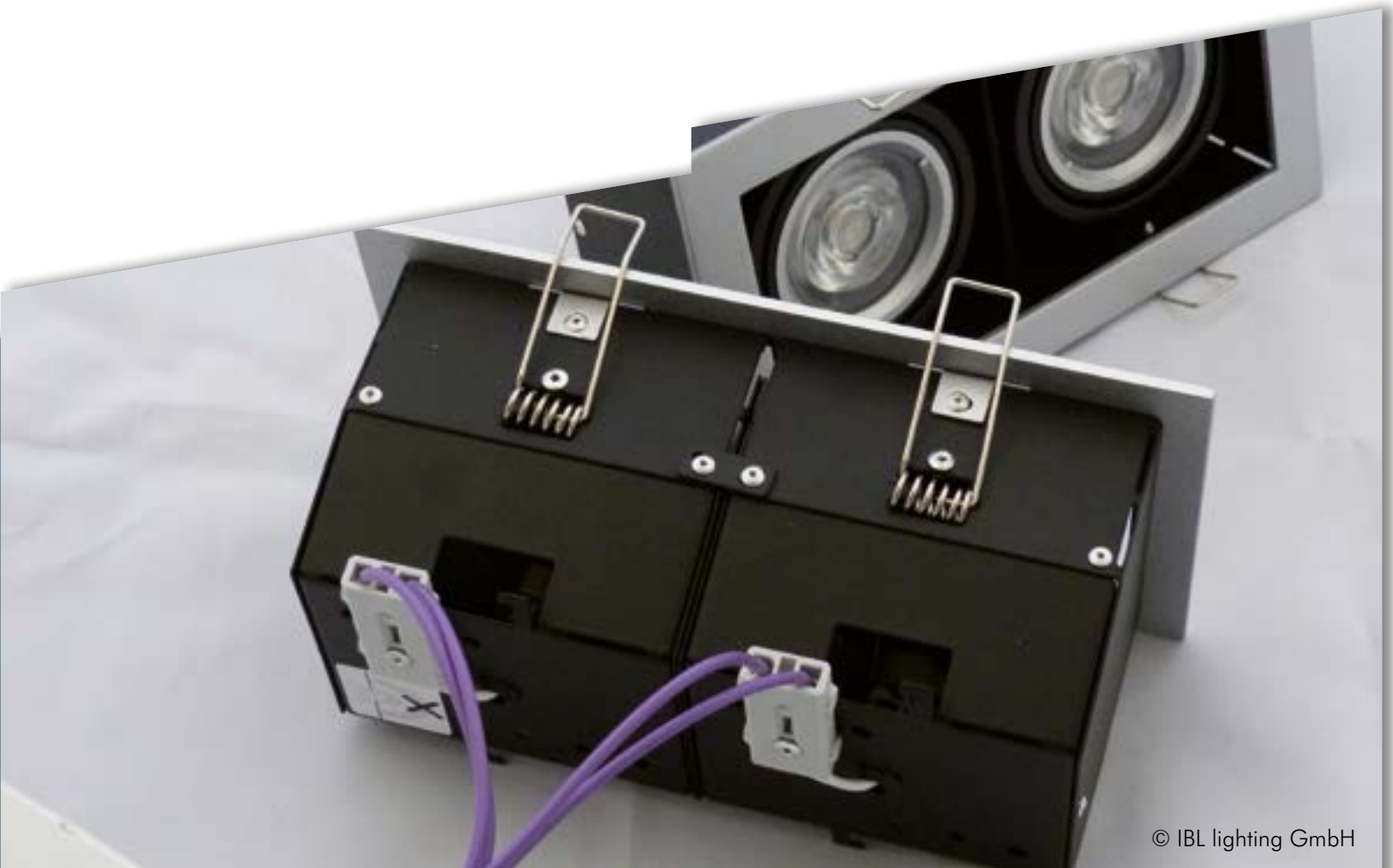
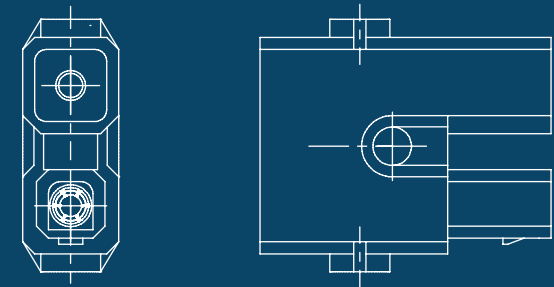



Installation



### ADVANTAGES

- full product range with connecting/extension cables and distributors
- robust and safe plug-in connections for LED and low voltage



|   |                                |                             |                            |                         |
|---|--------------------------------|-----------------------------|----------------------------|-------------------------|
|  | <b>16 - 25 A</b><br>48 - 150 V | <b>PA 6/6</b><br>UL 94: V-2 | <b>T 70 °C</b><br>EN 60598 | <b>0.5 - 2.5</b><br>mm² |
| <b>IP20</b>   |                                |                             |                            |                         |

## LED PLUG CONNECTORS

AC 162 STS/ 2 LED

2 pole connectors  
as plugs and sockets

## LED CONNECTING CABLES

AC 162 ALS LED

2 pole  
types I and II (polarity)

## LED EXTENSION CABLES

AC 162 VLS LED

2 pole

## LED DISTRIBUTORS

AC 162 VT/ 3-1 LED

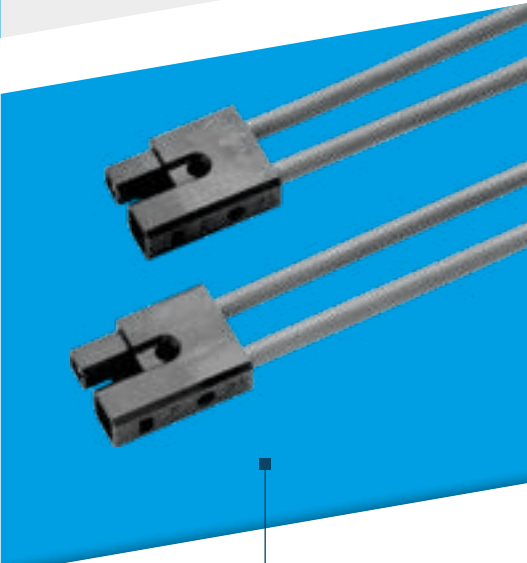
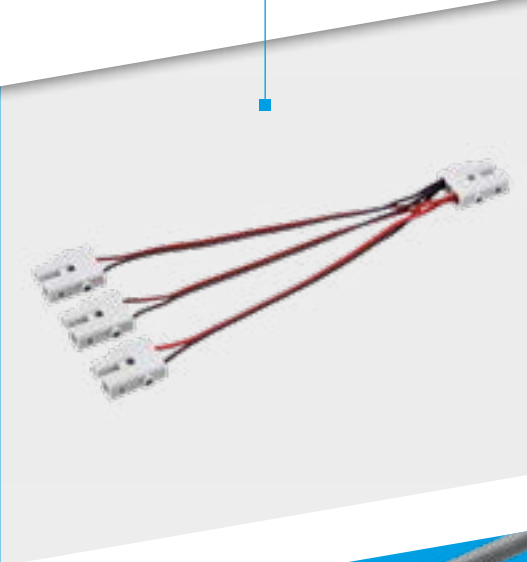
2 pole  
1 input, 3 output terminals



## LOW VOLTAGE CONNECTORS

AC 162 STS/ 2

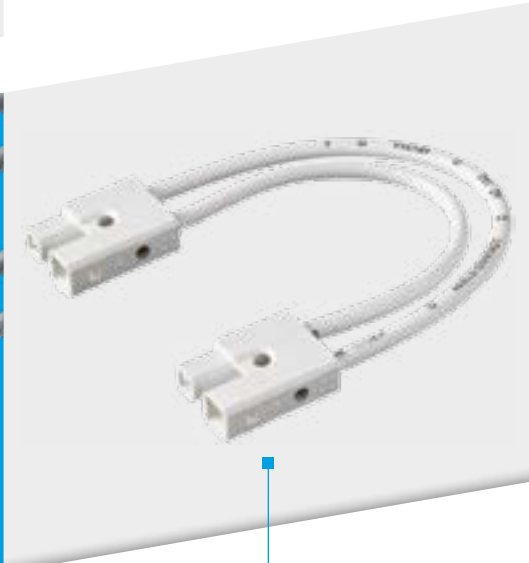
2 pole connectors  
as plugs and sockets



## LOW VOLTAGE CONNECTING CABLES

AC 162 ALC

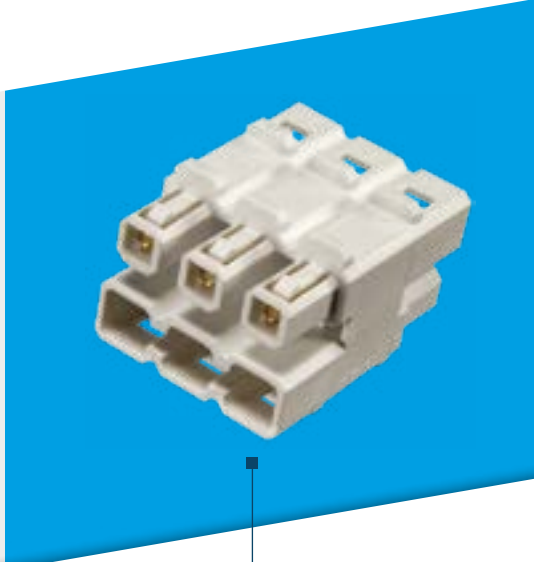
2 pole



## LOW VOLTAGE EXTENSION CABLES

AC 162 VLC

2 pole



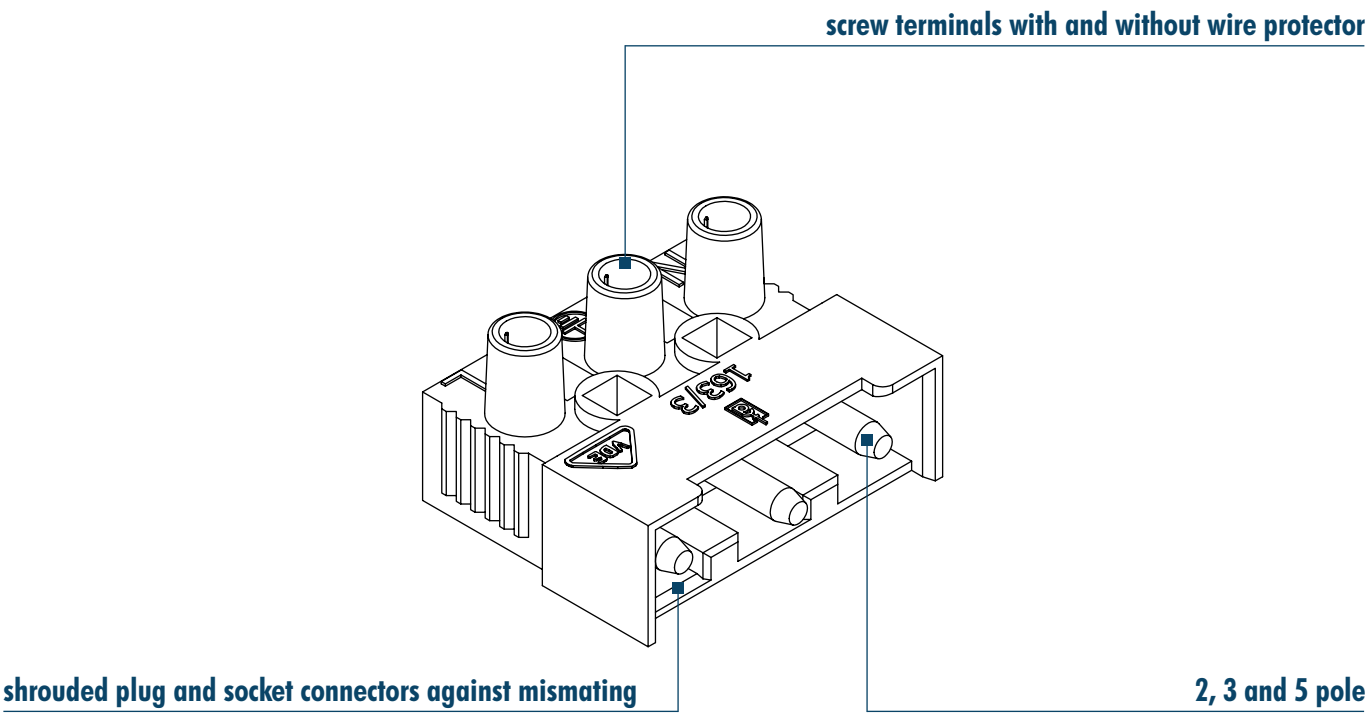
## LOW VOLTAGE COMPACT DISTRIBUTOR

AC 162 KV 6

2 pole  
1 input, 5 output terminals



# The Alternative Connection Solution for Appliances, Drives and Luminaires



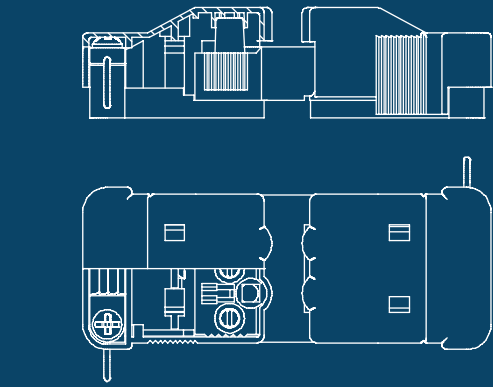
## APPLICATIONS

- roller shutters
- inside luminaire connection
- connecting base for wall lighting
- home appliances

|                       |  |
|-----------------------|--|
| Lighting              |  |
| Installation          |  |
| Electrical Appliances |  |

## ADVANTAGES

- economic solution for plug and socket connectors 16 A/400 V
- 2, 3 and 5 pole shrouded plug and socket connectors with strain relief
- 2 to 12 pole terminal blocks
- application-specific insulating materials



|                     |                  |                   |                            |
|---------------------|------------------|-------------------|----------------------------|
|                     |                  | 16 A<br>250/400 V | PA 6, PA 6/6<br>UL 94: V-2 |
| T 70 °C<br>EN 61984 | 0.5 - 4.0<br>mm² | IP20<br>IP40      |                            |

# Plug and Socket Connectors 160/163

More information online

TO THE  
WEBSITE

## SHROUDED PLUG AND SOCKET CONNECTORS

163 ST/ .. and 160 BU/ ..s  
2, 3 and 5 pole  
cables 0.5 - 2.5 mm<sup>2</sup>



## PLUGS AND SOCKETS

160 ST/ .. and 160 BU/ ..  
2 to 12 pole  
cables 0.5 - 2.5 mm<sup>2</sup>



## STRAIN RELIEFS FOR SHROUDED PLUG AND SOCKET CONNECTORS

163/ .. ZEL and 163/ .. ABK  
2 and 5 pole  
cable outlet Ø 6.0 - 9.8 mm



## DESIGNS

- screw terminals with and without wire protector (DS)
- application-specific insulating materials
- printing
- special screws





# LUMINAIRE CONNECTION IP65/66

## Easy, Safe and Cost-Effective

external connection of solid or flexible conductors up to 2.5 mm²

fixing nut M20

2K cable bushing with moulded gaskets

connecting cables Ø 7.5 - 12.5 mm

### APPLICATIONS

- moisture-proof luminaires
- industrial lighting
- parking garages
- warehouses

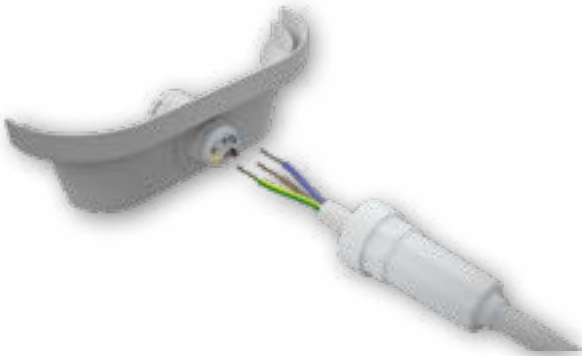
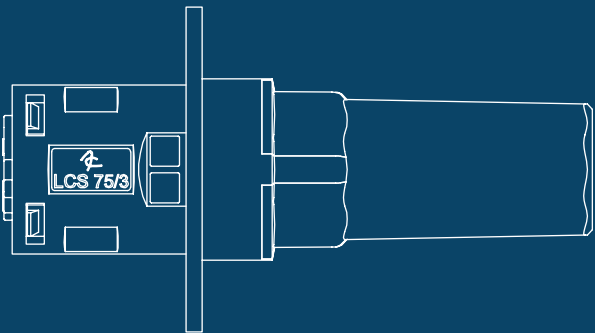
# LUMINAIRE CONNECTION IP65/66

Lighting



### ADVANTAGES

- extremely quick connection of moisture-proof and industrial luminaires
- no need to open the luminaire
- cost-effective by using fewer components



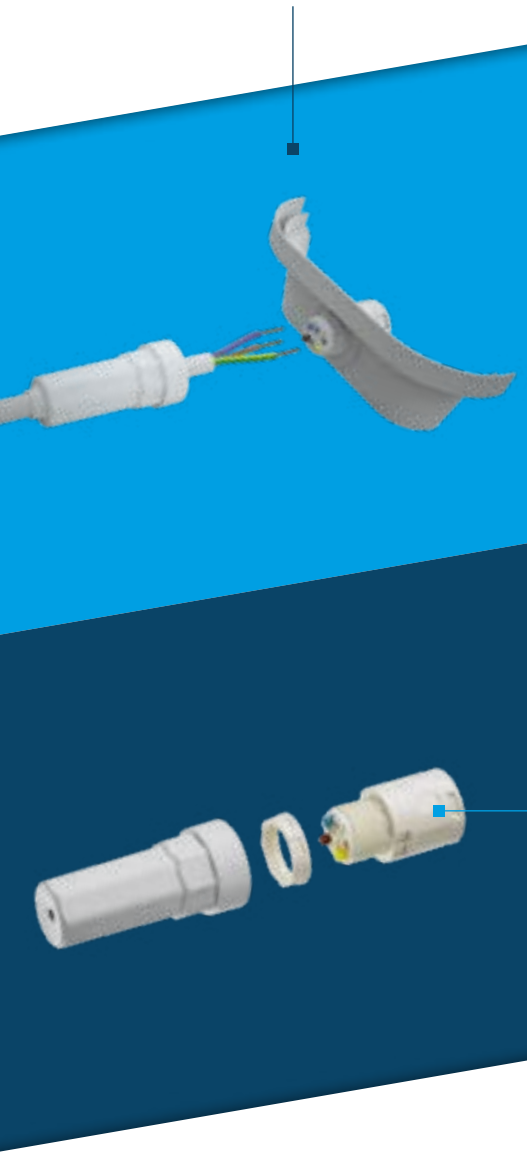
|                     |                  |               |                         |
|---------------------|------------------|---------------|-------------------------|
|                     |                  | 16 A<br>400 V | PA 6, TPE<br>UL 94: V-2 |
| T 85 °C<br>EN 60598 | 0.5 - 2.5<br>mm² | IP66          |                         |



LUMINAIRE CONNECTION  
IP66

LCS 75/ 3

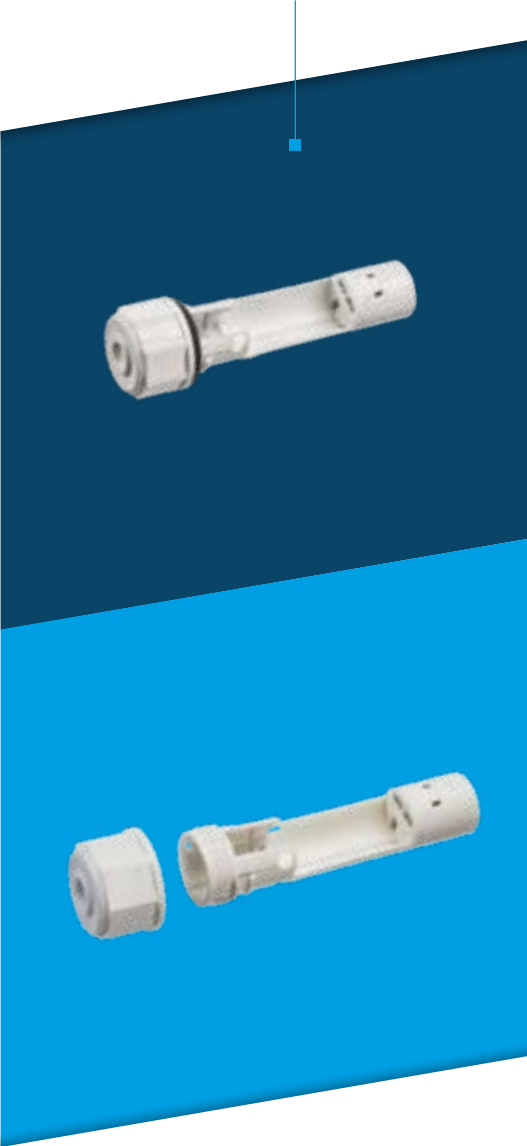
3 pole  
for diameter M20



LUMINAIRE CONNECTION  
IP65

LCS 45

3 pole  
for diameter Ø 21mm



UPON REQUEST

– assembly tool for OEM

# LCS 75 – Intelligent Connection Solution for IP66 Moisture-Proof Luminaires

**NO NEED TO OPEN  
THE LUMINAIRE**

## DISMANTLING AND CUTTING

69 mm (PE)  
60 mm (L+N)  
**STRIPPING**  
17 mm

## SOLID CONDUCTORS

easy pushing in

## FLEXIBLE CONDUCTORS

release key for easy handling

## CLOSING THE BUSHING

maximum torque: 0.7 Nm

**GROMMET**  
IP66

## ADVANTAGES

- the LCS 75 reduces time needed for electrical installation to a minimum
- IP66: high protection – ideally suited for moisture-proof and industrial luminaires
- the cost-effective alternative to plug and socket connectors



Step-by-step installation available under  
[www.adels-contact.de/link/PlaylistTutorials](http://www.adels-contact.de/link/PlaylistTutorials)

# The Complete System for All Functions on Line Lighting Systems

## APPLICATIONS

- production halls/warehouses
- industrial lighting
- super market illumination

Lighting



plug-in contact by pivoting

extremely reduced total height

conductor = plug contact  
1.5/2.5 mm<sup>2</sup> solid

tap to the luminaire  
by catch pin or floating

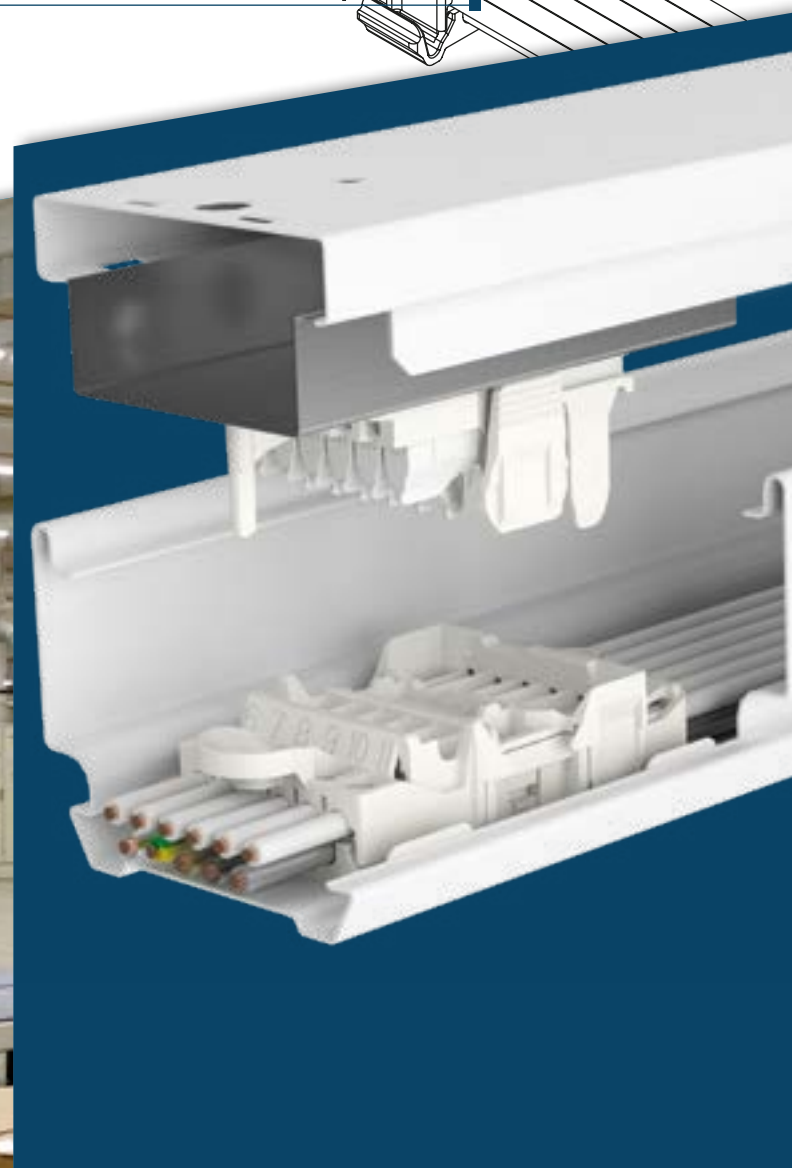
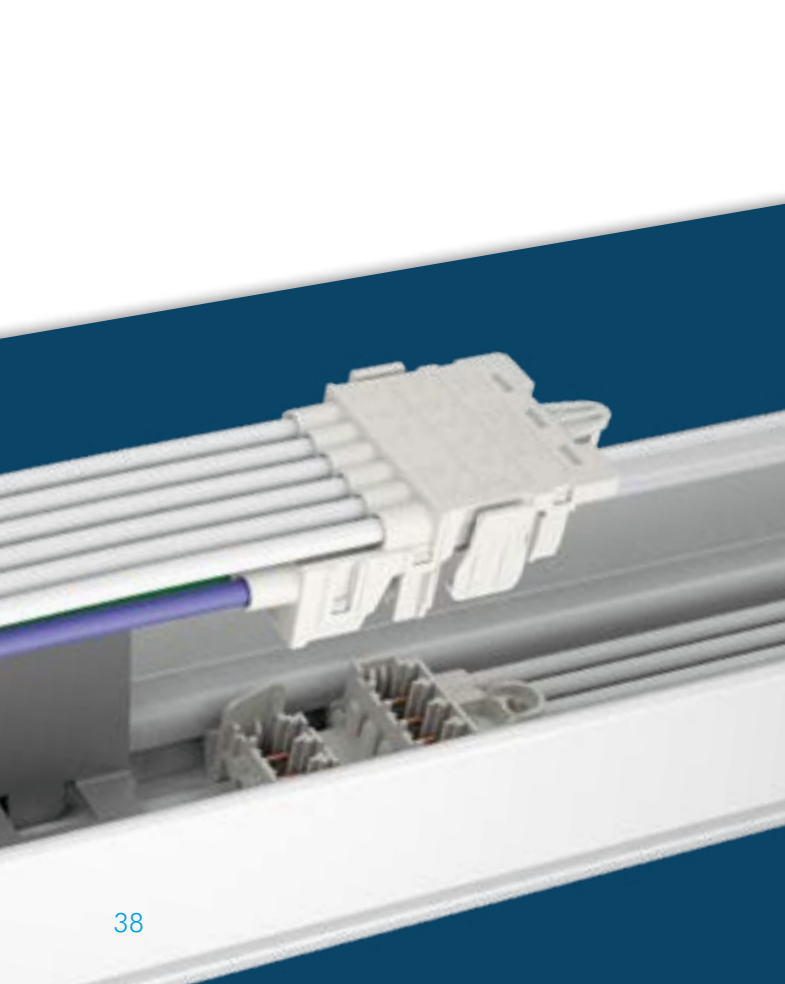
connection of  
solid conductors 0.5 mm<sup>2</sup>

max. 11 poles

PE contact made  
automatically

## ADVANTAGES

- 11 poles on a minimum space  
(23.5 mm x 39.5 mm)
- further connection clips upon request
- useable with aluminium profiles



|              |                  |                      |                                       |                               |
|--------------|------------------|----------------------|---------------------------------------|-------------------------------|
|              | 16 A/2 A<br>400V | PA 6/6<br>UL 94: V-2 | ST/BU<br>1.5 - 2.5<br>mm <sup>2</sup> | TAP<br>0.5<br>mm <sup>2</sup> |
| IP20<br>IP40 |                  |                      |                                       |                               |



PRODUCT RANGE

# LEDtrack

More information online

TO THE  
WEBSITE

CONTINUOUS ROW LIGHTING SYSTEM LEDtrack

END COVERS

LEDtrack ABK

STRAIN RELIEFS

LEDtrack ZEL

TAP TO THE LUMINAIRE

LEDtrack TAP/11 ..

3/5/7/9 pole  
fix: with catch pin  
fly: for floating installation  
0.5 mm<sup>2</sup> solid

PLUGS

LEDtrack ST/11

11 pole  
with PE contact  
1.5 - 2.5 mm<sup>2</sup> solid

CABLE HOLDER

LEDtrack POD/11 ..

11 pole

SOCKETS

LEDtrack BU/ ..

5/7/9/11 pole

THROUGH-WIRING

LEDtrack REEL/ .. consisting of  
LEDtrack ST/11 plugs  
LEDtrack BU/ .. sockets  
LEDtrack POD/11 cable holders  
single conductors 1.5 or 2.5 mm<sup>2</sup>  
5/7/9/11 pole

EARTHING MOUNTING  
RAIL PLUGS



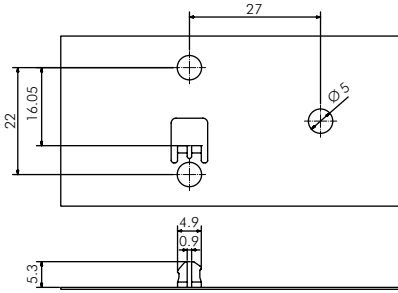
ASSEMBLY  
CABLE HOLDER



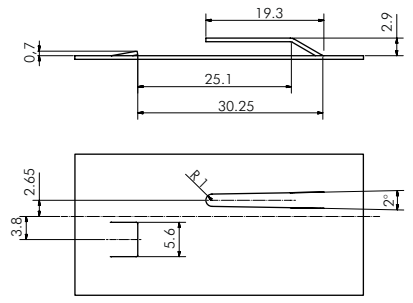
EARTHING  
LUMINAIRES INSERT



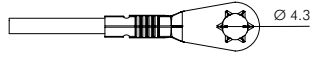
SHEET METAL PROFILES



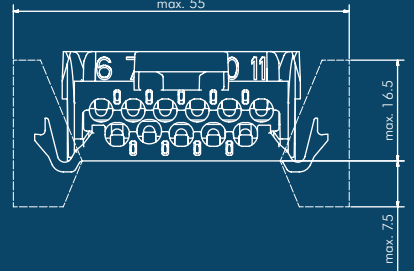
SHEET METAL PROFILES



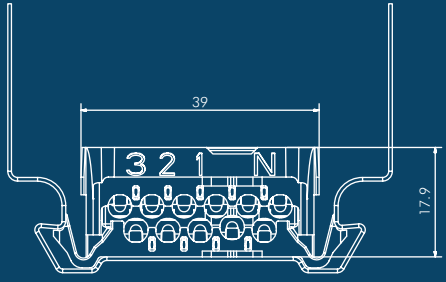
ALUMINIUM PROFILES



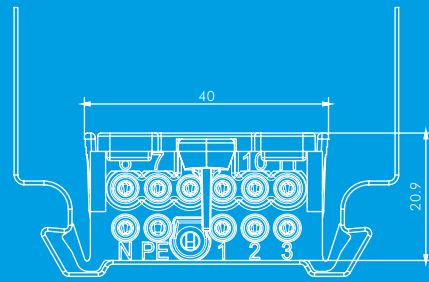
MAX. SPACE  
WING CONTOUR  
upon customer request



CABLE HOLDERS  
connection clips  
standard profile



PLUGS/SOCKETS  
connection clips  
standard profile



SCREWLESS CONNECTORS

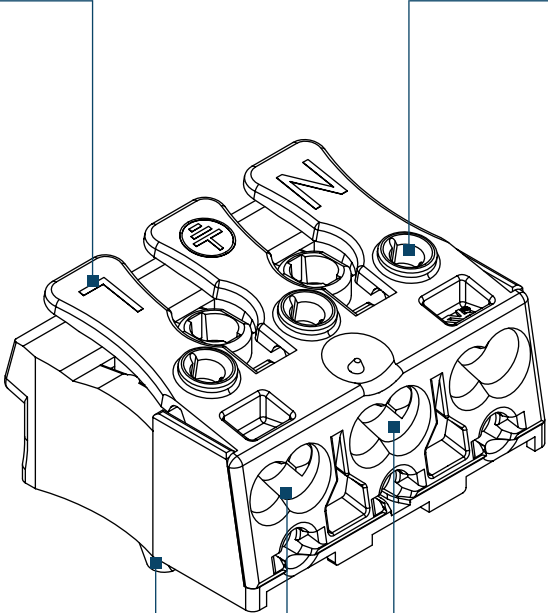
Push — Press — Play  
The Easy and Quick Connection

external release by release key

internal release by tool

fixing by catch pin,  
screw or rivet

conductor terminals in upper position



wide insertion openings

APPLICATIONS

- interior lighting
- advertising lighting
- switch cabinet heaters
- switch cabinet fans
- ballasts
- retail lighting
- industrial lighting
- object lighting

Lighting

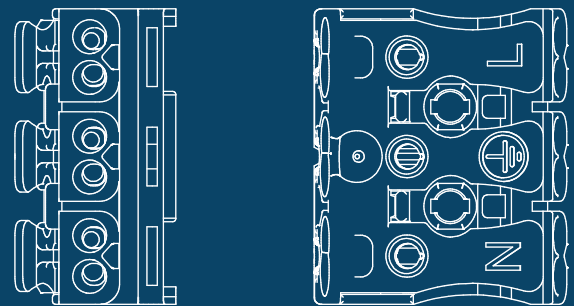







Electrical Appliances



ADVANTAGES

- quick, easy and safe assembly
- suitable for assembly by luminaire robots
- approved for elevated ambient temperatures by the use of polyamide (PA 6/6)
- further application-specified insulating materials: PA 6/6 GW (glow-wire) and PA 6/6 V-0



|   |   |   |   |   |
|---|---|---|---|---|
|  |  |  |  |  |
| 24 A<br>450 V   | PA 6/6<br>UL 94: V-2  | T 110 °C<br>EN 60598  | 0.5 - 2.5<br>mm²  |   |



PRODUCT RANGE

Screwless Connectors

More information online

TO THE WEBSITE

LUMINAIRE CONNECTORS

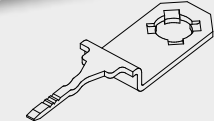
LK 980-01 RZ/ ..  
with catch pins  
2 to 5 pole



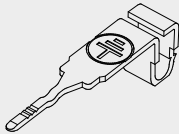
LUMINAIRE CONNECTORS

LK 980-01/ ..

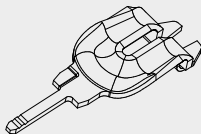
for fixing by screw or rivet  
2 to 5 pole



screw contact SK



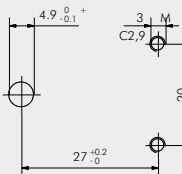
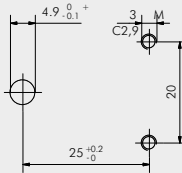
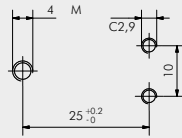
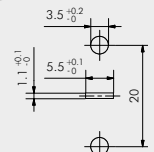
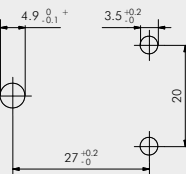
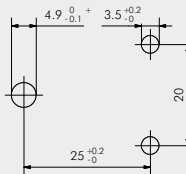
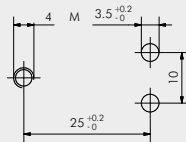
contact bow ST



contact bow STW



contact claw SU



HOLE PATTERN  
CATCH PIN FIXING

HOLE PATTERN  
FIXING BY SCREW

SCREWLESS CONNECTORS

BLOCK CONNECTORS

935 5 pole  
937 7 pole



BLOCK CONNECTORS

930-02/ ..

with 2 release keys  
1 to 12 poles



VARIANTS

- application-specific insulating materials PA
- special printing



BLOCK CONNECTORS

930-00/ ..

without release keys  
1 to 12 pole



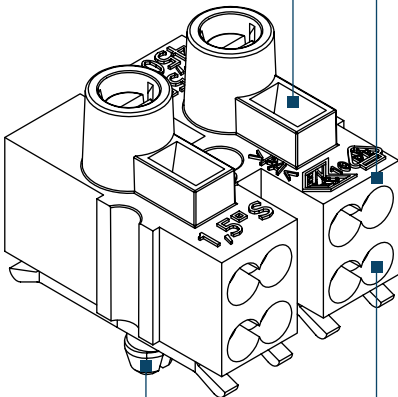
STRAIN RELIEFS

ZEL 900  
for connectors LK 980

# SCREW-SCREWLESS CONNECTORS The “Hybrid Solution” in the Connectors World

testing aperture

1 to 12 pole



fixing by catch pin, rivet or screw

two or four terminals per pole

## APPLICATIONS

- luminaires
- home appliances
- ballasts
- installation connection boxes
- mirror cabinets

# SCREW-SCREWLESS CONNECTORS

Lighting

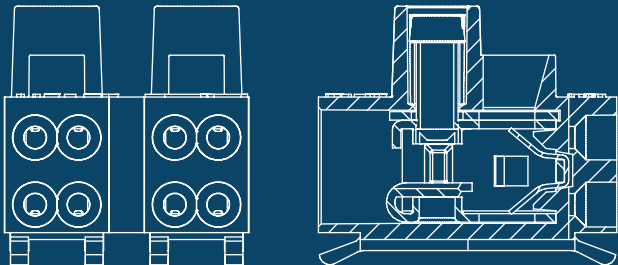


Electrical Appliances



## ADVANTAGES

- easy, internal connection by plug-in contact
- external connection by screw
- interlockable system with fused connectors



|                 |                      |                     |                             |                           |
|-----------------|----------------------|---------------------|-----------------------------|---------------------------|
|                 |                      |                     |                             |                           |
| 17.5 A<br>450 V | PA 6/6<br>UL 94: V-2 | T 85 °C<br>EN 60598 | push-in<br>0.5 - 1.5<br>mm² | screw<br>0.5 - 4.0<br>mm² |

More information online

TO THE  
WEBSITE

CONNECTORS

900-07/ ..  
900-07 RZ/ .. with catch pins



CONNECTORS

900 ED



CONNECTORS

900 Q/ ..  
900 Q RZ/ .. with catch pins



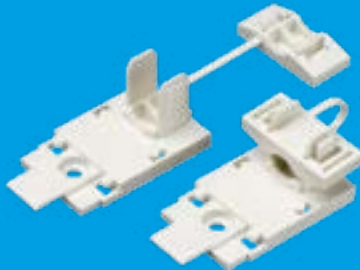
CONNECTORS

900 EQ



VARIANTS

- pre-assembled PE contact
- printing



STRAIN RELIEFS

900 EQ ZEL  
for 900 ED and EQ



INTERLOCKABLE  
CONNECTORS

900 Q/ 1A  
to interlock fused  
connectors



SCREW CONNECTORS

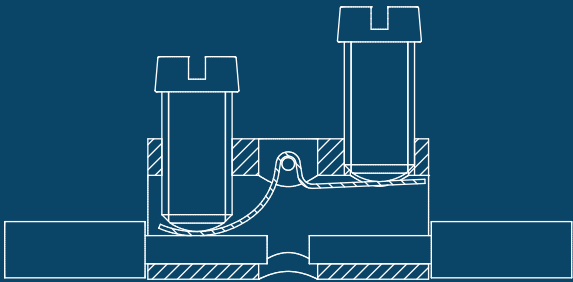
Proven Connection of Electrical Appliances and Luminaires

fixing by screw, rivet or catch pin

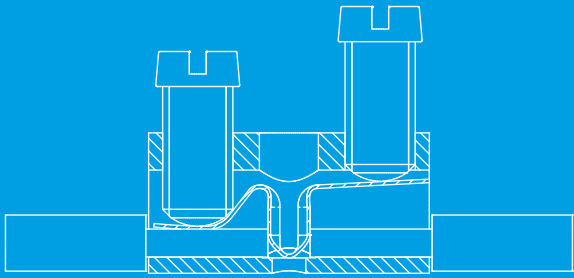
1 to 12 pole

nominal cross section from 2.5 to 16 mm<sup>2</sup>

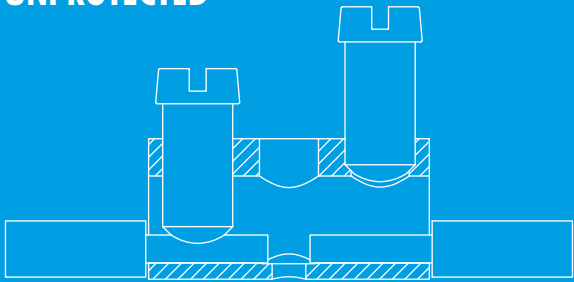
WIRE PROTECTOR (DS)  
FOR FLEXIBLE CONDUCTORS



CENTER STOP (MDS)



UNPROTECTED



APPLICATIONS

- retail lighting
- street lighting protection class II
- industrial lighting
- object lighting with high ambient temperatures
- interior lighting
- advertising lighting
- switch cabinet lighting
- ballasts
- small home appliances
- large appliances, white goods
- fans
- heating and air conditioning devices
- pumps
- vending machines
- electric tools

SCREW CONNECTORS

Lighting



Electrical Appliances



ADVANTAGES

- robust connection and easy handling
- connection of conductors from 0.5 - 16 mm<sup>2</sup>
- application-specific insulating materials:
  - PA 6, PA 6/6, PA 6/6 HT (high temperature), PA 6/6 GW (glow-wire),
- porcelain C 111, steatite C 220
- special versions for protection class II (SK II) and with raised base (8 mm distance when connected to mains)



|                       |                      |                          |                             |      |
|-----------------------|----------------------|--------------------------|-----------------------------|------|
|                       |                      | 16 - 40 A<br>150 - 750 V | 2.5 - 16<br>mm <sup>2</sup> | IP20 |
| PA<br>UL 94: V-2      | T 85 °C<br>EN 60998  |                          |                             |      |
| Porcelain<br>Steatite | T 350 °C<br>EN 60998 |                          |                             |      |

PRODUCT RANGE

# Screw Connectors

More information online

TO THE WEBSITE

CONNECTORS

- 230/ .. 2.5 mm<sup>2</sup> small
- 500/ .. 2.5 mm<sup>2</sup>
- 1000/ .. 6.0 mm<sup>2</sup>
- 1500/ .. 10.0 mm<sup>2</sup>
- 2000/ .. 16.0 mm<sup>2</sup>



CONNECTORS  
RAISED BASE

- 230 K/ .. 2.5 mm<sup>2</sup> small
- 500 K/ .. 2.5 mm<sup>2</sup>
- 1000 K/ .. 6.0 mm<sup>2</sup>
- 2000 K/ .. 16.0 mm<sup>2</sup>



CONNECTORS  
CATCH PIN FIXING

- 500 RZ/ .. 2.5 mm<sup>2</sup>
- 500 LRZ/ .. 2.5 mm<sup>2</sup> elongated catch pins



CONNECTORS  
PROTECTION CLASS II

- 500 SK II/ .. 2.5 mm<sup>2</sup>
- 500 SKT II/ .. 2.5 mm<sup>2</sup> with bushes



STEATITE  
CONNECTORS

- 131/ 2 6.0 mm<sup>2</sup>



SCREW CONNECTORS

PORCELAIN  
CONNECTORS

- 157/ .. 2.5 mm<sup>2</sup>
- 153/ 2 2.5 mm<sup>2</sup>
- PM/ .. 6.0 mm<sup>2</sup>



VARIANTS

- application-specific insulating materials PA
- printing
- special screws
- partly fitted

MARKING LABELS

- 230 BZ/ .. for connectors 230/ ..
- 500 BZ/ .. for connectors 500/ ..
- 1000 BZ/ .. for connectors 1000/ ..



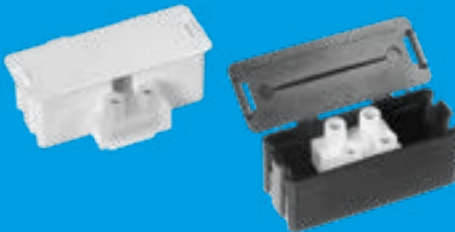
STRAIN RELIEFS

- ZEL 110 for all connector types



CONNECTING BOX

- LCB 50/ .. for connectors 500/ ..

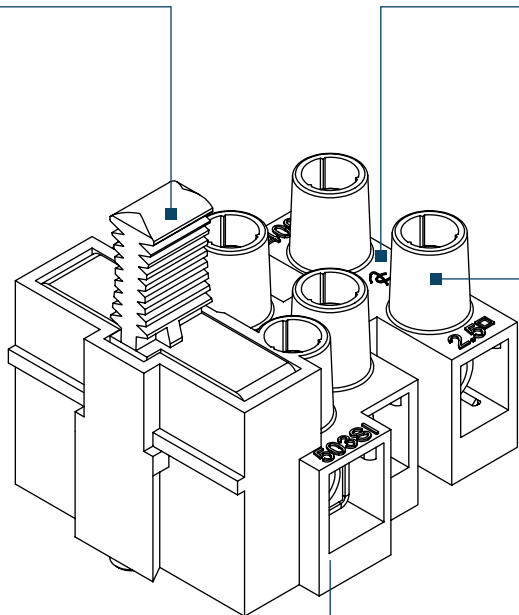


# Protection of Sensitive Luminaires and Appliances

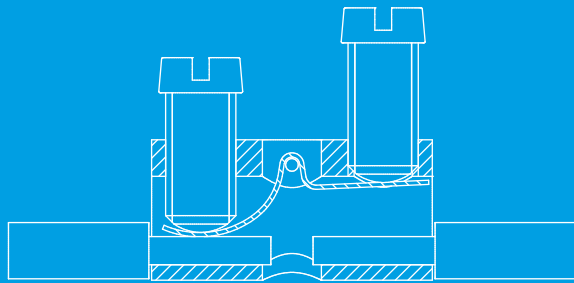
fuse holder

fixing by screw or rivet

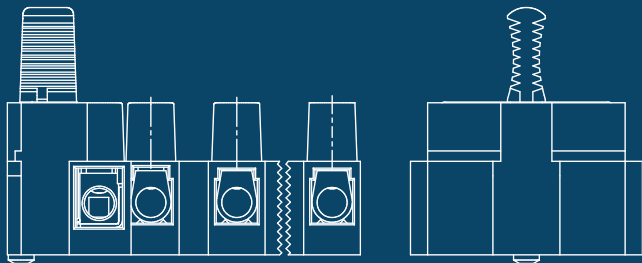
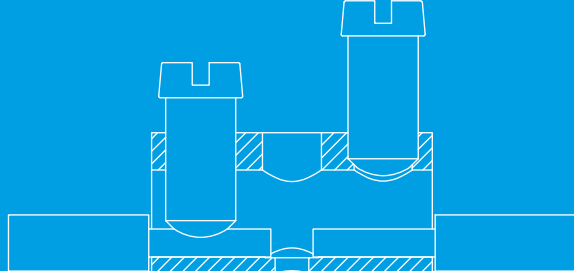
1 to 5 pole



## WIRE PROTECTOR (DS) FOR FLEXIBLE CONDUCTORS



## UNPROTECTED



## APPLICATIONS

- valuable luminaires
- fully-automatic coffee machines
- control systems for storage water heaters

Lighting



Electrical Appliances



## ADVANTAGES

- protection via live conductors
- for 3 dimensions of standard glass fuses
- connection of conductors from 0.5 to 10.0 mm<sup>2</sup>
- special versions for PE contact to the base plate



|                                 |                     |                              |                          |
|---------------------------------|---------------------|------------------------------|--------------------------|
|                                 |                     |                              | 16 - 41 A<br>400 - 500 V |
| PA 6/6, PA 6/6 GW<br>UL 94: V-2 | T 85 °C<br>EN 60598 | 0.5 - 4.0<br>mm <sup>2</sup> |                          |



More information online

TO THE WEBSITE

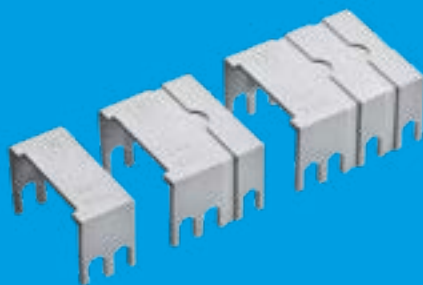
SCREW CONNECTORS

503 Si/ .. 2.5 mm<sup>2</sup>  
1003 Si/ .. 4 mm<sup>2</sup>  
1 to 5 pole



SCREW SCREWLESS CONNECTORS

900 Si/ 1  
1 pole  
interlockable



COVERS

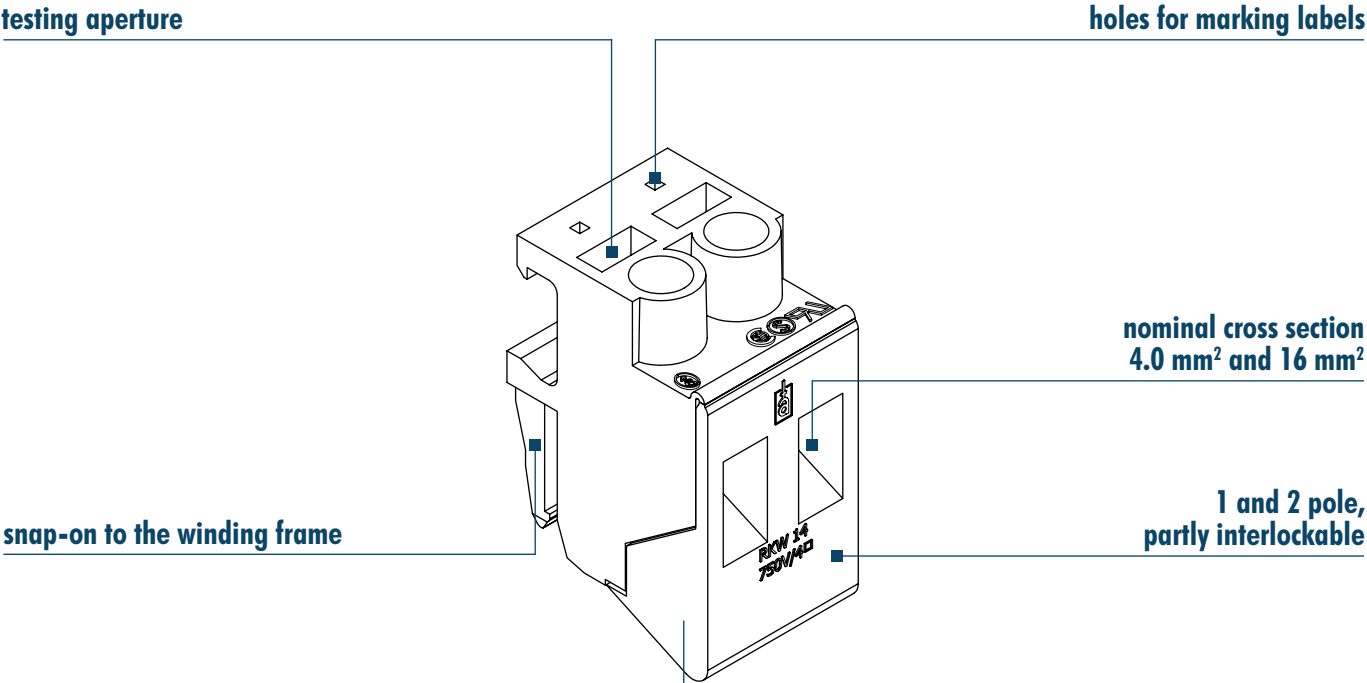
ABK 503/ ..  
for connectors 503 Si

VARIANTS

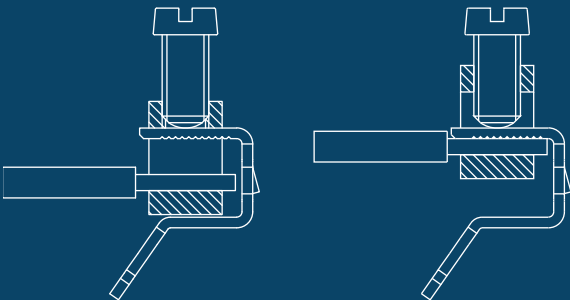
- further insulating materials PA
- pre-assembled fuses
- raised bases allowing longer creepage distances
- printing
- center stop (MDS)



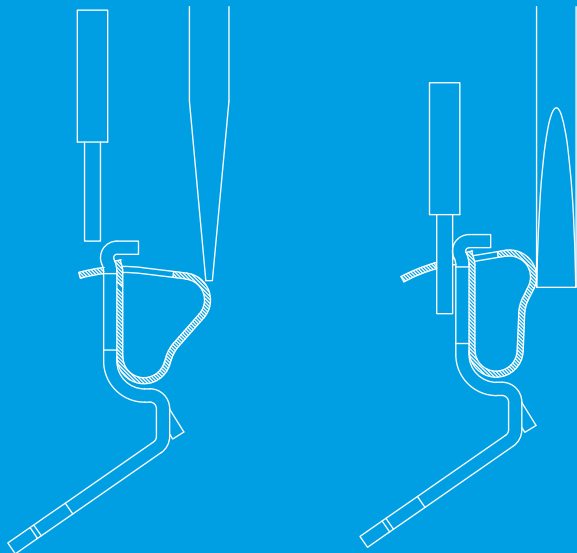
# TRANSFORMER CONNECTORS Safe Connection of Small and Control Transformers



### LIFT TERMINALS



### SPRING CAGE (SCREWLESS)



### APPLICATIONS

- transformers
- mains filter
- testing equipment



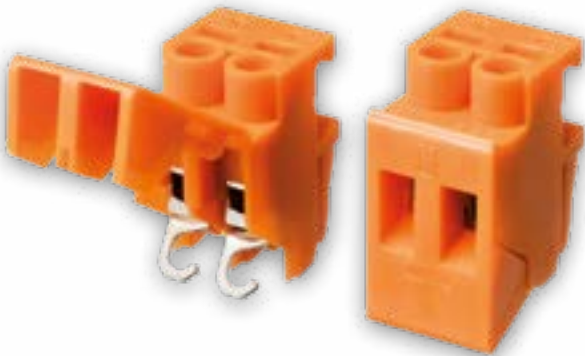
# TRANSFORMER CONNECTORS

Transformers



### ADVANTAGES

- external connection optionally with or without screws
- reliable fit on the winding frame
- connection of conductors from 0.5 to 16.0 mm<sup>2</sup>
- connection provided for blade terminals



|                     |                             |  |                          |                      |
|---------------------|-----------------------------|--|--------------------------|----------------------|
|                     |                             |  | 32 - 76 A<br>600 - 750 V | PA 6/6<br>UL 94: V-2 |
| T 85 °C<br>EN 61558 | 0.5 - 16<br>mm <sup>2</sup> |  |                          |                      |

PRODUCT RANGE

# Transformer Connectors

More information online [TO THE WEBSITE](#)

WITH LIFT TERMINALS

**CONNECTORS 4.0 mm<sup>2</sup>**  
RKW 14 mini O/ ..  
small design  
1 and 2 pole

**CONNECTORS 4.0 mm<sup>2</sup>**  
RKW 14 FO/ ..  
with tabs  
1 and 2 pole

**CONNECTORS 16.0 mm<sup>2</sup>**  
RKW 110/ 2  
2 pole

**FUSED CONNECTORS**  
RKW 14 Si O- ..  
1 pole

TRANSFORMER CONNECTORS

WITH SPRING CAGE

**CONNECTORS 4.0 mm<sup>2</sup>**  
TC 2523/ ..  
1 and 3 pole  
interlockable

**FUSED CONNECTORS**  
TC 2523 Si- ..  
1 pole  
interlockable



**MARKING LABELS**  
BZ 14 ..



**FEED-THROUGH CONNECTORS 4.0 mm<sup>2</sup>**  
DK 4 O  
1 pole  
interlockable



# Pinpoint Accuracy in Spacing and Special Solutions – our Strength

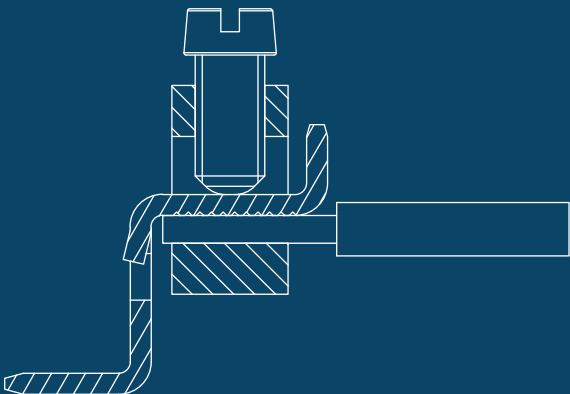
horizontal or vertical solder pins

dovetail for interlocking

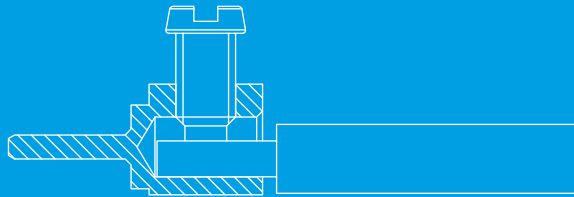
nominal cross section 1.0 to 2.5 mm<sup>2</sup>

2 to 24 pole

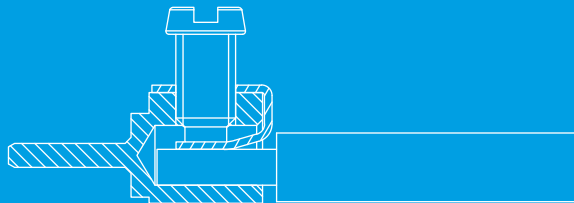
LIFT TERMINALS



UNPROTECTED



WIRE PROTECTOR (DS)



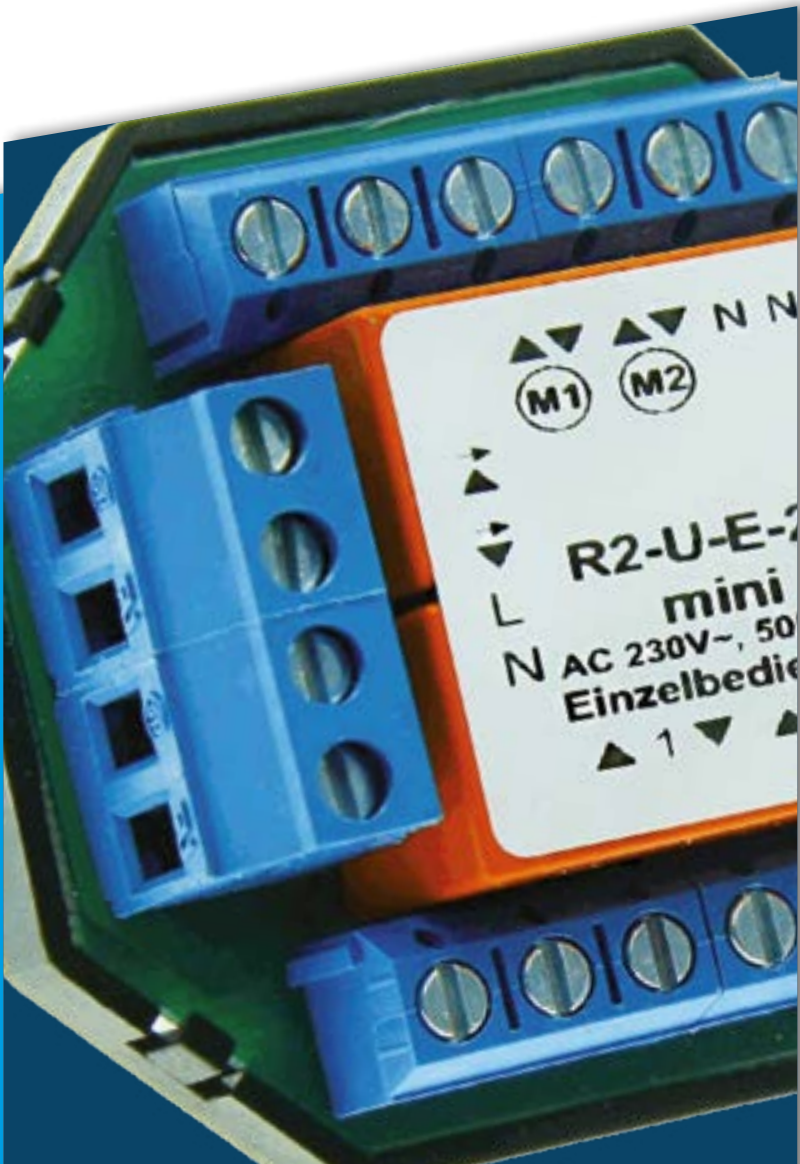
## APPLICATIONS

- printed circuit boards
- LED drivers
- automation technology
- measurement and control technology



## ADVANTAGES

- pinpoint accuracy in spacing and long life by PBT material
- numerous variants
- connection of conductors from 1.0 to 4.0 mm<sup>2</sup>
- safe and PCB-friendly connection by lift terminals



|                   |                     |                              |                            |
|-------------------|---------------------|------------------------------|----------------------------|
|                   |                     |                              | 13.5 - 24 A<br>130 - 250 V |
| PBT<br>UL 94: V-0 | T 60 °C<br>EN 61984 | 0.5 - 2.5<br>mm <sup>2</sup> |                            |

PRODUCT RANGE

# (Pluggable) PCB Connectors

More information online

TO THE  
WEBSITE

## PBT CONNECTORS

horizontal connection

GSK 720 H/ ..

pin spacing 3,5/7.0

GSK 820 H/ ..

GSK 830 H/ ..

GSK 840 H/ ..

pin spacing 5.0/10.0



## PBT CONNECTORS

GSK 845/ ..

pin spacing 5.0/10.0

conductors connected at 45°



## PBT CONNECTORS

GSK 852/ ..

pin spacing 5.0/10.0

2 terminals per pole



## PLUGGABLE PBT CONNECTORS PLUG-IN CONNECTORS

GSK 760/.. pin spacing 3.5/7.0

GSK 860/.. pin spacing 5.0/10.0

GSK 864/.. pin spacing 5.08/10.16

GSK 865/.. pin spacing 5.08/10.16



## VARIANTS

- further colours
- bridged poles
- irregular spacings
- different solder pin lengths

## PBT CONNECTORS

vertical connection

GSK 720 V/ ..

pin spacing 3.5/7.0

GSK 820 V/ ..

GSK 830 V/ ..

GSK 840 V/ ..

pin spacing 5.0/10.0



## PA CONNECTORS

GSK 805/ ..

pin spacing 10.0

connection by clamping piece  
or tab



## PA CONNECTORS

GSK 801/ ..

pin spacing 10.0



## VERTICAL HEADERS

GST 760 V/..

GST 860 V/..

GST 864 V/..

GST 865 V/..



## HORIZONTAL HEADERS

GST 760 H/..

GST 860 H/..

GST 864 H/..

GST 865 H/..



TECHNICAL INFORMATION

Codings AC 166®

|  | Coding No. | 3 POLE      |                 | 4 POLE      |             | 5 POLE      |             |
|--|------------|-------------|-----------------|-------------|-------------|-------------|-------------|
|  |            | Colour      | Application     | Colour      | Application | Colour      | Application |
| HIGH<br>PLUG AND SOCKET<br>CONNECTORS        | 1          | black/white | mains           | black/white | mains       |             |             |
|  | 2          | pebble grey | mains           |             |             |             |             |
|  | 4          | brown       | control         |             |             |             |             |
|  | 5          | pastel blue | DALI            |             |             |             |             |
|  | 7          | dark grey   | SK II           |             |             |             |             |
| PANEL MOUNT<br>PLUG AND SOCKET<br>CONNECTORS | 1          | black/white | mains           | black/white | mains       | black/white | mains       |
|  | 2          | pebble grey | mains           |             |             | pastel blue | DALI        |
|  | 3          | light red   | ignition cable  |             |             |             |             |
|  | 4          | brown       | control         |             |             |             |             |
|  | 5          | pastel blue | DALI            |             |             |             |             |
|  | 6          | green       | mains           |             |             |             |             |
|  | 7          | dark grey   | SK II           |             |             |             |             |
|  | 9          | yellow      | motion detector |             |             |             |             |
| SOLDER<br>CONNECTORS                         | 1          | black/white | mains           | black/white | mains       |             |             |
|  | 2          | pebble grey | mains           |             |             |             |             |
|  | 5          | pastel blue | DALI            |             |             |             |             |
| CABLES/FLAT<br>PLUG AND SOCKET<br>CONNECTORS | 1          | black/white | mains           | black/white | mains       | black/white | mains       |
|  | 2          | pebble grey | mains           |             |             | pastel blue | DALI        |
|  | 3          | light red   | ignition cable  |             |             |             |             |
|  | 4          | brown       | control         |             |             |             |             |
|  | 5          | pastel blue | DALI            |             |             |             |             |
|  | 6          | green       | mains           |             |             |             |             |
|  | 7          | dark grey   | SK II           |             |             |             |             |
|  | 9          | yellow      | motion detector |             |             |             |             |
| DISTRIBUTORS                                 | 1          | black/white | mains           | black/white | mains       | black/white | mains       |
|  | 2          |             |                 |             |             | pastel blue | DALI        |

TECHNICAL INFORMATION

Codings AC 164

|  | Coding No. | 2 POLE      |             | 3 AND 4 POLE |             | 5 POLE      |             |
|--|------------|-------------|-------------|--------------|-------------|-------------|-------------|
|  |            | Colour      | Application | Colour       | Application | Colour      | Application |
| HIGH<br>PLUG AND SOCKET<br>CONNECTORS        | 1          | black/white | mains       | black/white  | mains       | black/white | mains       |
|  | 2          | pastel blue | DALI        |              |             | pastel blue | DALI        |
| PANEL MOUNT<br>PLUG AND SOCKET<br>CONNECTORS | 1          | black/white | mains       | black/white  | mains       | black/white | mains       |
|  | 2          | pastel blue | DALI        |              |             | pastel blue | DALI        |
| CABLES/FLAT<br>PLUG AND SOCKET<br>CONNECTORS | 1          | black/white | mains       | black/white  | mains       | black/white | mains       |
|  | 2          | pastel blue | DALI        |              |             | pastel blue | DALI        |
| DISTRIBUTORS                                 | 1          | black/white | mains       | black/white  | mains       | black/white |             |
|  | 2          | pastel blue | DALI        |              |             | pastel blue | DALI        |



# Characteristics of the Insulating Materials

| Application       | Particular Properties  | Temperature Resistance |              |            | Lowest Operational Temperature | Melting Point | Flammability Class to UL 94 |
|-------------------|--|------------------------|--------------|------------|--------------------------------|---------------|-----------------------------|
|                   |  | contin-uous            | to DIN 60998 | short-time |                                |               |                             |
| PA 6              | connectors and connecting systems of the standard line   | 100 °C                 | 130 °C       | 160 °C     | -35 °C                         | 215 °C        | V-2                         |
| PA 6/6            |  | 100 °C                 | 130 °C       | 160 °C     | -35 °C                         | 255 °C        | V-2                         |
| PA 6/6 HT         | connectors and connecting systems for use in periodically high ambient temperatures                | 160 °C                 | -            | 200 °C     | -50 °C                         | 255 °C        | V-0                         |
| ACGW-8.7 (PA 6/6) | terminal blocks and connectors for use in household appliances and similar purposes to EN 60 335-1 | 100 °C                 | 130 °C       | 160 °C     | -35 °C                         | 260 °C        | V-2                         |
| PPA-GF            | SMD connectors   | 150 °C                 | 130 °C       | 180 °C     | -60 °C                         | 295 °C        | V-0                         |
| PBT               | (pluggable) printed circuit board connectors   | 120 °C                 | -            | 200 °C     | -30 °C                         | 225 °C        | V-0                         |
| PC                | ZEL 110 and ZEL 900  | 125 °C                 | -            | 165 °C     | -60 °C                         | 260 °C        | V-0                         |
| PORCELAIN         | connectors for use in periodically extremely high ambient temperatures                             | 1000 °C                | -            | -          | -200 °C                        | 1680 °C       | -                           |
| STEATITE          | connectors for use in periodically extremely high ambient temperature                              | 800 °C                 | -            | -          | -160 °C                        | 1450 °C       | -                           |
| TPE               | (plug and socket) connectors with gaskets against the ingress of dust and moisture                 | 100 °C                 | -            | 150 °C     | 30 °C                          | 280 °C        | -                           |

# IP Codes

| PROTECTION CODE | Against the Intrusion of Dust<br>First Digit IP_x       | Against the Intrusion of Water<br>Second Digit IPx_                          |
|-----------------|---|--|
| 0               | unprotected   | unprotected  |
| 1               | protected against solid objects<br>dia 50.0 mm and more | protected against dripping water   |
| 2               | protected against solid objects<br>dia 12.5 mm and more | protected against dripping water when<br>the enclosure is tilted up to 15°   |
| 3               | protected against solid objects<br>dia 2.5 mm and more  | protected against spraying water   |
| 4               | protected against solid objects<br>dia 1.0 mm and more  | protected against splashing water  |
| 5               | protected against dust                                  | protected against water jets   |
| 6               | dust tight  | protected against powerful water jets  |
| 7               | -   | protected against harmful effect when<br>being temporarily immersed in water |
| 8               | -   | protected against harmful effect when<br>being permanently immersed in water |
| 9K              | -   | protected against close-range high<br>pressure, high temperature spray downs |

TECHNICAL INFORMATION

# Regulations Applicable for the Use of Our Products

|                                       |                     |              |  |
|---------------------------------------|---------------------|--------------|--|
| POWER INSTALLATIONS IN GENERAL        |                     | VDE 0100/..  | erection of power installations with nominal voltages up to 1000 V   |
|                                       |                     | VDE 0110/..  | insulation co-ordination for equipment within low-voltage systems  |
|                                       | EN 50274            | VDE 0660/..  | protection against electric shock  |
|                                       | EN 60529            | VDE 0470/..  | degrees of protection provided by enclosures (IP Code)   |
|                                       | EN 60695/..         | VDE 0471/..  | fire hazard testing  |
| CONNECTORS IN GENERAL                 | EN 60998/..         | VDE 0613/..  | connecting devices for low voltage circuits  |
|                                       | EN 60999/..         | VDE 0609/..  | requirements for clamping units for electrical copper conductors   |
|                                       | EN 60947-7-4        | VDE 0611-7-4 | Low-voltage switchgear and controlgear – Part 7-4: Ancillary equipment – PCB terminal blocks for copper conductors |
| PLUG AND SOCKET CONNECTORS IN GENERAL | EN 60320/..         | VDE 0625/..  | appliance couples for household and similar purpose  |
|                                       | EN 61535            | VDE 0606-200 | Installation couplers intended for permanent connection in fixed installations                                     |
|                                       | EN 61984            | VDE 0627     | connectors - safety regulations and testing  |
| UTILITY DEVICES                       | EN 60335/..         | VDE 0700/..  | safety of household and similar electrical appliances  |
|                                       | EN 60598/..         | VDE 0711     | luminaires – requirements and testing  |
|                                       | EN 60921/..         | VDE 0712/..  | specification for accessories to hot- and cold cathode fluorescent lamps - ballasts                                |
|                                       | EN 61558/..         | VDE 0570/..  | safety of transformers, power supply units and the like  |
| TOLERANCES                            | DIN 7168            |              | general tolerances for linear and angular dimensions and geometrical tolerances (not to be used for new designs)   |
|                                       | DIN ISO 2768 part 1 |              | general tolerances; tolerances for linear and angular dimensions without individual tolerance indications          |
|                                       | DIN ISO 2768 part 2 |              | general tolerances; geometrical tolerances for features without individual tolerances indications                  |
|                                       | DIN 16742           |              | Plastics moulded parts - Tolerances and acceptance conditions  |
|                                       | DIN 40680 part 1    |              | ceramic components for electrical purposes; admissible tolerances  |
|                                       | DIN 40680 part 2    |              | ceramic components for electrical purposes; form tolerances  |

## RELEVANT GLOW WIRE TESTS

### to EN 60335-1:

- Standard for household and similar electrical appliances
- further glow wire tests for mouldings that are positioned 3 mm next to current carrying parts
  - test carried out on a component
    - › to EN 60695-2-11 “GWT 750 °C”
    - › temperature of glow wire 750 °C
    - › contact time of glow wire 30 seconds
    - › flame extinguishes within 2 seconds max.
  - (alternatively) test carried out on a test board
    - › EN 60695-2-13 “GWIT 775 °C”
    - › temperature of glow wire 775 °C
    - › contact time of glow wire 30 seconds
    - › flame extinguishes within 5 seconds max.

### to EN 60998-1:

- Connecting devices for low voltage circuit
- test on mouldings that keep current-carrying parts in their position
  - obligatory tests in order to obtain a VDE certificate for connecting devices
  - test carried out on a component
    - › temperature of glow wire 850 °C
    - › contact time of glow wire: 5 seconds
    - › flame extinguishes 30 seconds after removal of the glow wire

TECHNICAL INFORMATION

# Configuration and Dimensions of Connecting Cables: Extract from DIN VDE 0295

|  | SOLID  |                 | STRANDED |                 | FLEXIBLE |                 | American Wire Gauge (AWG) to EN 60204 Part 1 |       |           |                 |          |           |                 |
|--|--------|-----------------|----------|-----------------|----------|-----------------|--|-------|-----------|-----------------|----------|-----------|-----------------|
| Nominal<br>Cross<br>Section<br>mm <sup>2</sup> | Ø max. | No. of<br>Wires | Ø max.   | No. of<br>Wires | Ø max.   | No. of<br>Wires | AWG  | solid |           |                 | flexible |           |                 |
|  |        |                 |          |                 |          |                 |  | Ø mm  | circ mils | mm <sup>2</sup> | Ø mm     | circ mils | mm <sup>2</sup> |
| 0.5  | 0.9    | 1               | 1.1      | 7               | 1.1      | 16              | 20   | 0.81  | 1.022     | 0.52            | 0.97     | 1.111     | 0.56            |
| 0.75   | 1.0    | 1               | 1.2      | 7               | 1.3      | 24              | 18   | 1.02  | 1.520     | 0.82            | 1.15     | 1.600     | 0.82            |
| 1.0  | 1.2    | 1               | 1.4      | 7               | 1.5      | 32              | (17)   | 1.15  | 2.050     | 1.04            |          |           |                 |
| -  | -      | -               | -        | -               | -        | -               | 16   | 1.29  | 2.580     | 1.31            | 1.50     | 2.580     | 1.32            |
| 1.5  | 1.5    | 1               | 1.7      | 7               | 1.8      | 30              | (15)   | 1.45  | 3.260     | 1.65            |          |           |                 |
| -  | -      | -               | -        | -               | -        | -               | 14   | 1.63  | 4.110     | 2.03            | 1.85     | 4.100     | 2.09            |
| 2.5  | 1.9    | 1               | 2.2      | 7               | 2.6      | 50              | (13)   | 1.83  | 5.180     | 2.63            |          |           |                 |
| -  | -      | -               | -        | -               | -        | -               | 12   | 2.05  | 6.530     | 3.31            | 2.41     | 6.500     | 3.32            |
| 4.0  | 2.4    | 1               | 2.7      | 7               | 3.2      | 56              | (11)   | 2.30  | 8.230     | 4.17            |          |           |                 |
| -  | -      | -               | -        | -               | -        | -               | 10   | 2.59  | 10.380    | 5.25            | 2.95     | 10.530    | 5.37            |
| 6.0  | 2.9    | 1               | 3.3      | 7               | 3.9      | 84              | (9)  | 2.91  | 13.100    | 6.63            |          |           |                 |
| -  | -      | -               | -        | -               | -        | -               | 8  | 3.26  | 16.510    | 8.37            | 3.73     | 16.625    | 8.48            |
| 10.0   | 3.7    | 1               | 4.2      | 7               | 5.1      | 80              | (7)  | 3.67  | 20.800    | 10.58           | 4.15     | 20.820    | 10.55           |
| -  | -      | -               | -        | -               | -        | -               | 6  | 4.12  | 26.240    | 13.30           | 4.67     | 26.250    | 13.39           |
| 16.0   | 4.6    | 1               | 5.3      | 7               | 6.3      | 126             | (5)  | 4.62  | 33.100    | 16.77           | 5.24     | 33.100    | 16.77           |
| -  | -      | -               | -        | -               | -        | -               | 4  | 5.19  | 41.740    | 21.15           | 5.95     | 41.650    | 21.24           |
| 25.0   | -      | -               | 6.6      | 7               | 7.8      | 196             | (3)  | 5.83  | 52.600    | 26.67           | 6.61     | 52.630    | 26.67           |
| 35.0   | -      | -               | 7.9      | 7               | 9.2      | 276             | 2  | 6.54  | 66.360    | 33.62           | 7.42     | 66.150    | 33.74           |

