wieland

Electrical
Connections

gesis®

IP66/IP68 - Installation with System

**For use in
harsh environments**

DRAFT

0160.8 H 04/04

gesis®

Installation with system

Winner of the DESIGN PLUS Award

IP66/IP68 - Installation with system

Whether in mechanical engineering, aboard ocean liners or in functional buildings:

Electrical installations with increased requirements as regards the level of safety can be found everywhere.

The expert implementation of the installation plays a decisive role, particularly in these areas.

But how does it work in practice?
Difficult installation conditions and time pressures often lead to errors, loss of protection and finally to the failure of the system.

The solution:
As a complete installation system *gesis* IP+ is extremely suited to these increased requirements. It is very flexible in its application and has proven technology at its disposal. These factors are the best prerequisite for a truly safe installation solution on the field level.

The selection of system components offers solutions for every type of installation.

Initial installations, extensions and additions can quickly be implemented according to the "Lego principle". This is an important point in reducing the operational downtime to a minimum.

The System:

Components:
→ Connector for self-assembly
→ Distribution with fixing options
→ Cable assemblies
→ Appliance couplers

Function:
= Incoming supply
= Distribution
= Routing
= Interface to terminal devices

Design:
→ IP 66/IP 68
→ 600 Volts, 20 A; prEN 61 535
→ Universal screw/spring technology
→ Only a few single components

Benefit:
= Application in harsh environments
= Can be used worldwide
= Simple and safe connection
= Very low installation costs

As a new product on the market, **Wieland** transfers the successful *gesis* installation philosophy into a new market segment and sets new standards.

See for yourself!

The *gesis* installation philosophy:
The idea is so simple, it's pure genius. A comprehensive network of prefabricated and carefully tested components of electrical connection technology enable a universal, connectable solution from the distribution board to each point of demand.
This saves both time and money! Numerous well-known manufacturers have recognised this positive trend and already offer their components as system partners with *gesis* plug-in connections.

The areas of the application for the system are as versatile as the system itself.
In short: wherever electrical energy or signals need to be distributed, *gesis* has set a standard.

Some areas of application

- Multi-storey car parks
- Underground car parks
- Airports
- Warehouses
- Stadiums
- Petrol stations
- Tunnels
- Greenhouses
- Escalators
- Building sites
- Industrial plants
- Car washes
- Lighting for temporary
- Fairground and amusement
- Parks
- Marquees
- Shipbuilding
- Traffic signals
- Railway stations
- Kiosks
- Street lighting
- Crane technology
- Outdoor advertising
- Decorative lighting

Moonlight®

1 Connectors

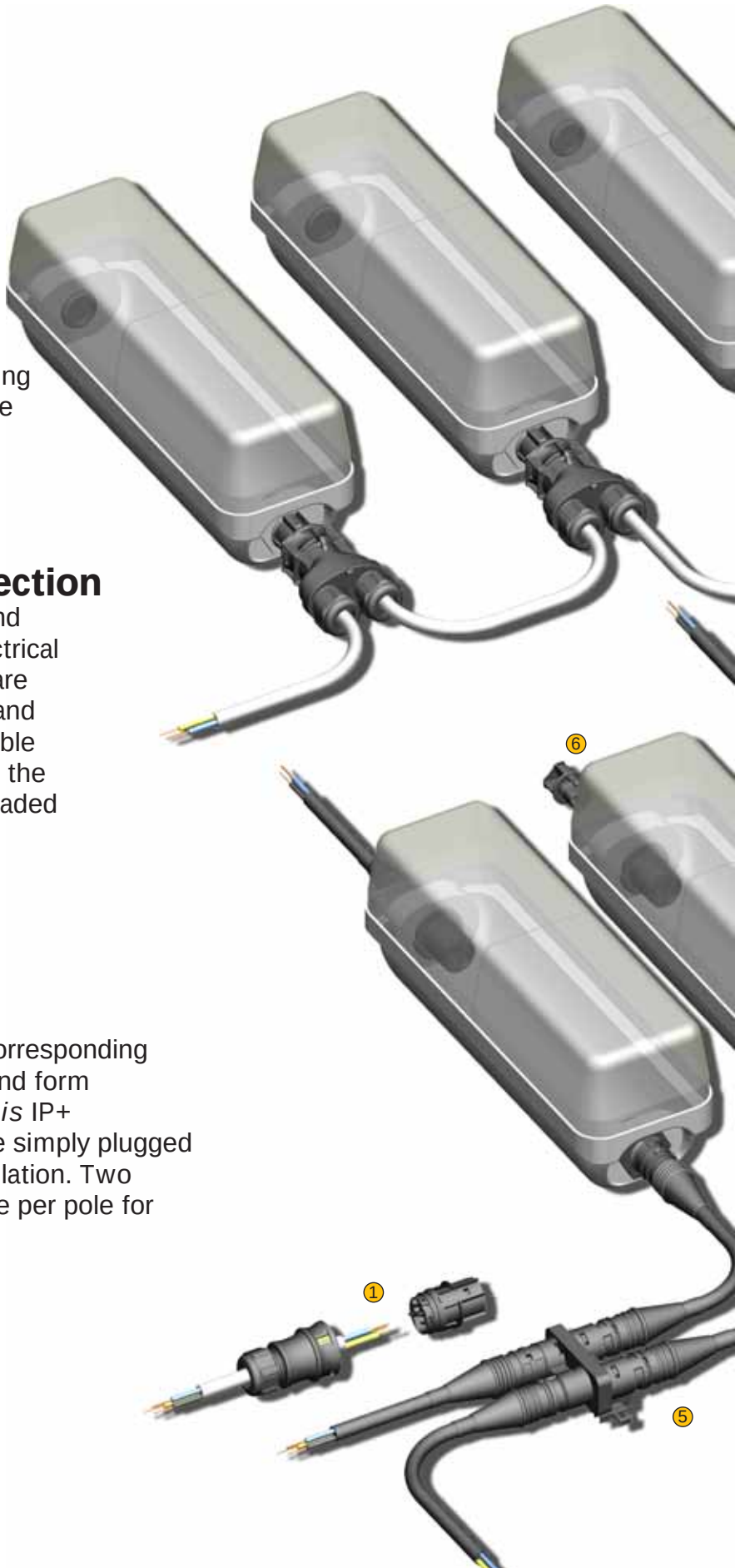
Connectors can be prepared on-site. Amongst other functions they serve as an incoming supply for the *gesis* IP+ system. Connectors with female and male components are supplied complete with strain relief and enable the connection of all current cable types. A special variant also enables the connection of illumination cables for decorative lighting. Depending on the requirement, the connectors are available with spring-loaded or screw technology.

2 Connectors, twin connection

Connectors can be prepared on-site and are used for the through wiring of electrical loads (luminaries). All the connectors are supplied complete with a strain relief and enable the connection of all current cable types. Depending on the requirement, the connectors are available with spring-loaded or screw technology.

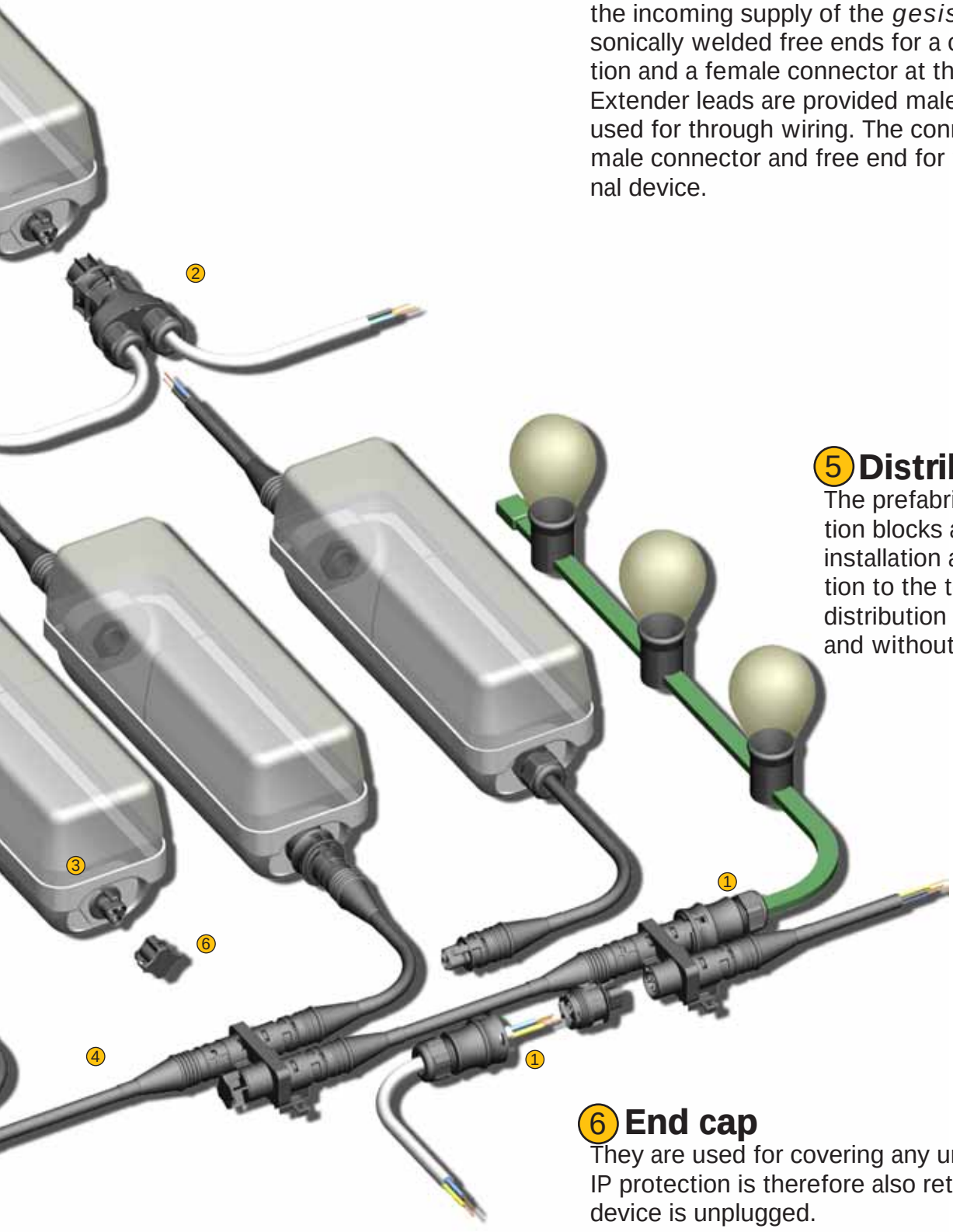
3 Appliance couplers

Appliance couplers are integrated in corresponding bore holes in the housing of devices and form the interface of the device to the *gesis* IP+ system. The couplers can therefore be simply plugged in on-site and integrated into the installation. Two spring-loaded connections are available per pole for internal wiring.



4 Cable assemblies

The supply of electrical energy is implemented using prefabricated cable assemblies. There is a distinction between three basic versions: starter leads provide the incoming supply of the *gesis* IP+ system. Ultrasonically welded free ends for a conventional connection and a female connector at the outgoing end. Extender leads are provided male to female and are used for through wiring. The connection lead has a male connector and free end for wiring to the terminal device.



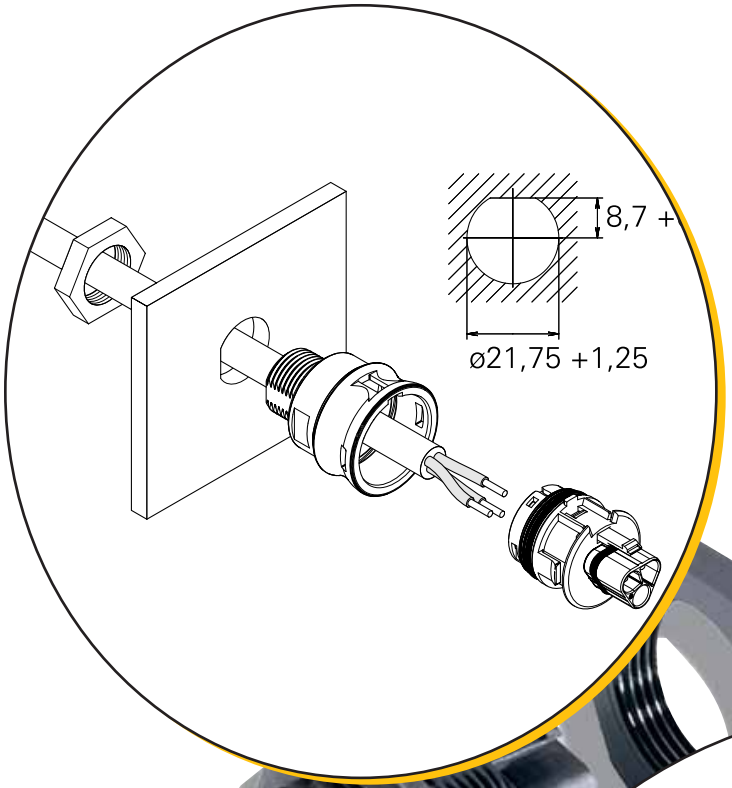
5 Distribution block

The prefabricated, plug-in distribution blocks are integrated in the installation and thus enable a junction to the terminal devices. The distribution block is available with and without fixing options.

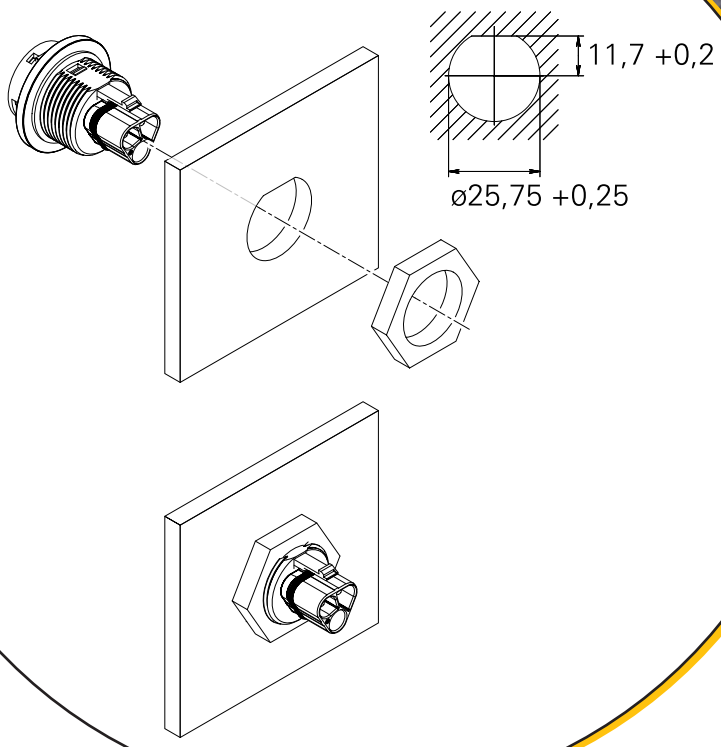
6 End cap

They are used for covering any unused contacts. The IP protection is therefore also retained when the device is unplugged.

Simple installation: insertion in device
Installation of a modular system, for M20 grommets

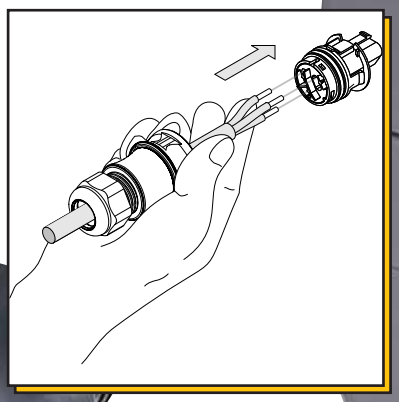


Installation of a standard system,
for M25 grommets

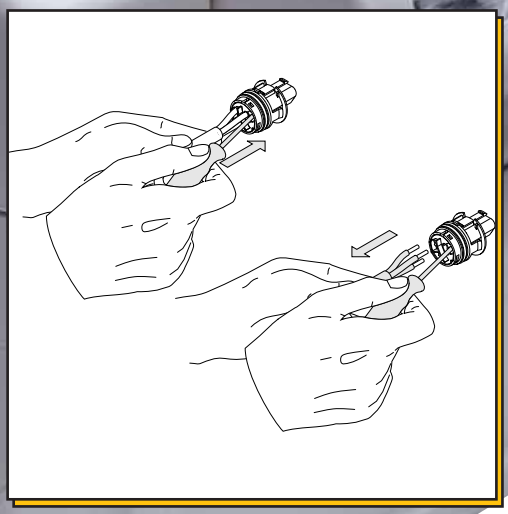


Simple handling

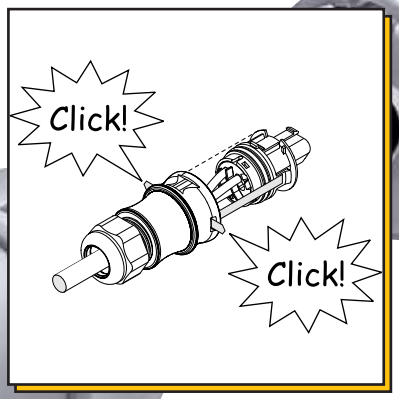
Connect the conductor



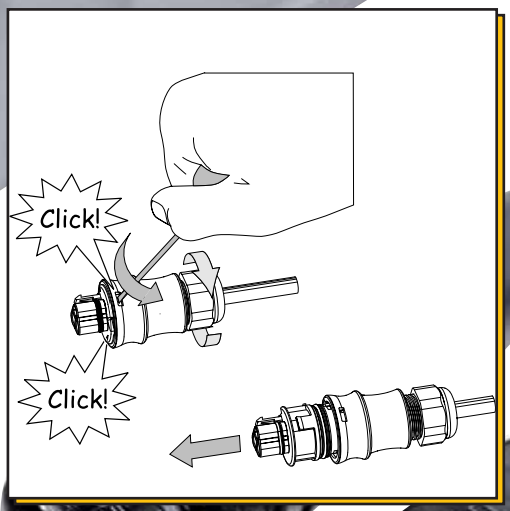
...and disconnect



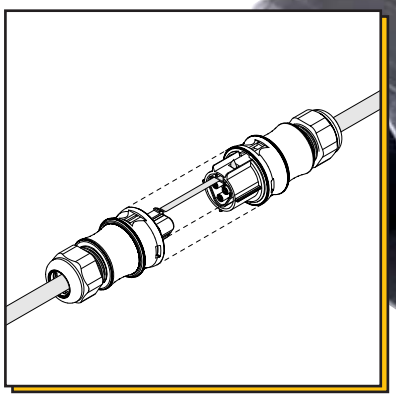
Close



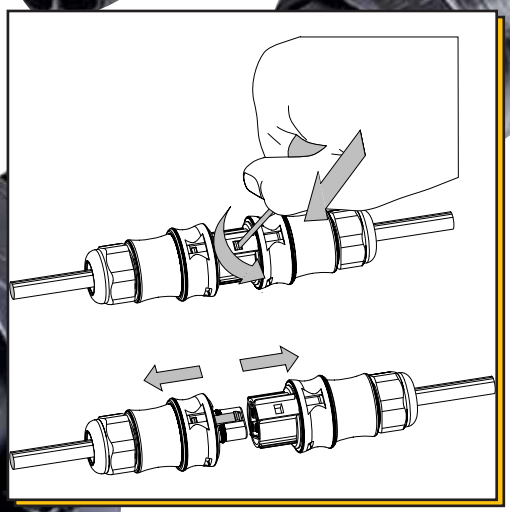
...and open



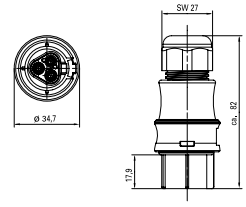
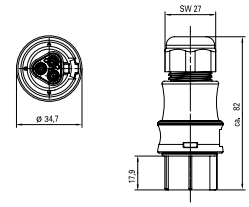
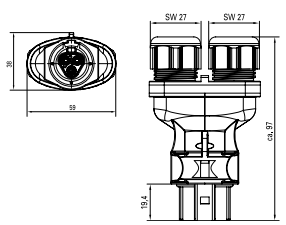
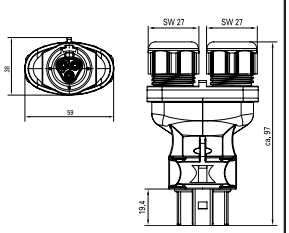
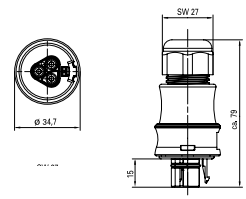
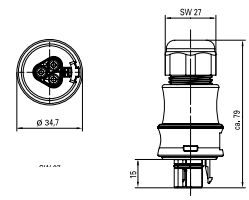
Lock



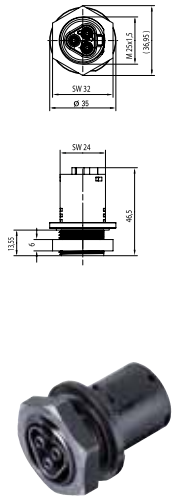
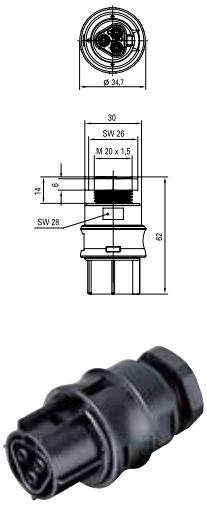
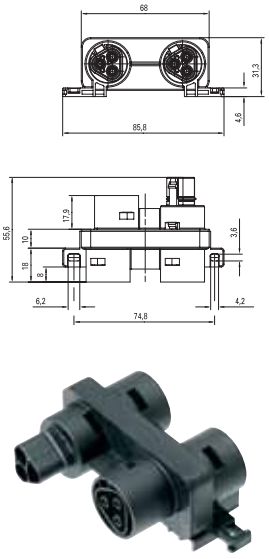
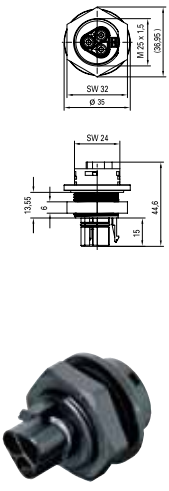
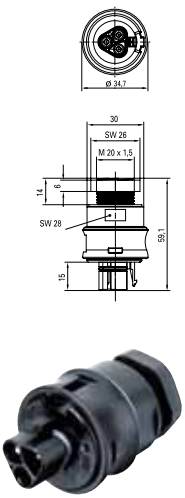
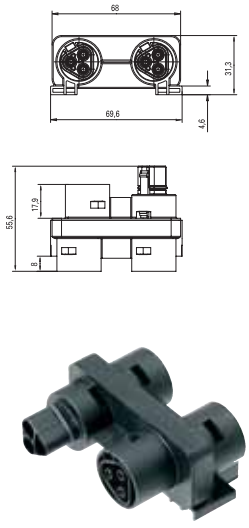
... and unlock



Mains 3 pole, IP66/IP68

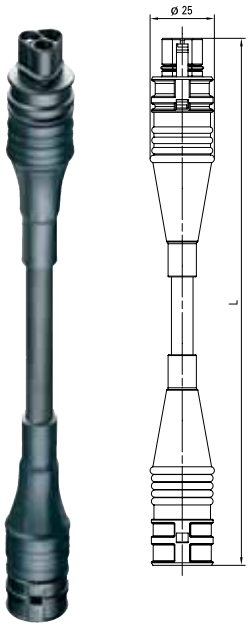
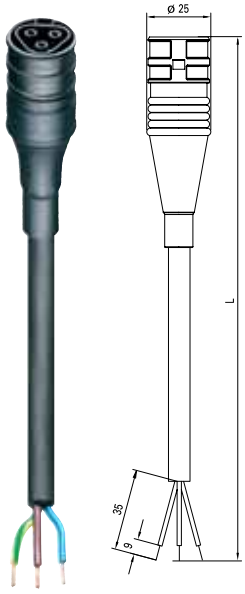
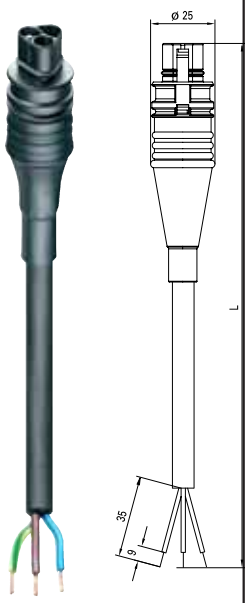
		Connector		Connector		Connector, twin connection		Connector, twin connection	
		With spring loaded connection for rigid cables of 0,5 - 2,5 mm², finely stranded cables from 0,5 - 1,5 mm² with ferrules, stranded cables from 0,75 - 1,5 mm² with ferrules, unassembled with cable screwed joint[1] and locking device. See "Technical data" for insulation and sheath strip lengths as well as the ferrules that should be used.		**With screw connection** for rigid, finely stranded and stranded cables from 1,5 mm² - 4,0 mm². Unassembled with cable screwed joint[1] and locking device. See "Technical data" for insulation and sheath strip lengths.		**With spring loaded connection** for rigid cables 0,5 - 2,5 mm², finely stranded cables 0,5 - 1,5 mm² with ferrules, stranded cables 0,75 - 1,5 mm² with ferrules. Unassembled with cable screwed joint[1] and locking device. See "Accessories" for mounting plate for fixing the twin connection. See "Technical data" for insulation and sheath strip lengths as well as the ferrules that should be used.		**With screw connection** for rigid, finely stranded and stranded cables 1,5 mm² - 2,5 mm². Unassembled with cable screwed joint[1] and locking device. See "Accessories" for mounting plate for fixing the twin connection. See "Technical data" for insulation and sheath strip lengths.	
Cable	Colour	Part no.	Box Qty	Part no.	Box Qty	Part no.	Box Qty	Part no.	Box Qty
Female connector									
									
Diameter 6 - 10 mm	grey		96.031.0053.0		96.031.4053.0		96.031.0253.0		96.031.4253.0
	black		96.031.0053.1		96.031.4053.1		96.031.0253.1		96.031.4253.1
Diameter 10 - 14 mm	grey		96.031.0153.0		96.031.4153.0		96.031.0353.0		96.031.4353.0
	black		96.031.0153.1		96.031.4153.1		96.031.0353.1		96.031.4353.1
Cable	Colour	Part no.	Box Qty	Part no.	Box Qty	Part no.	Box Qty	Part no.	Box Qty
Male connector									
									
Diameter 6 - 10 mm	grey		96.032.0053.0		96.032.4053.0				
	black		96.032.0053.1		96.032.4053.1				
Diameter 10 - 14 mm	grey		96.032.0153.0		96.032.4153.0				
	black		96.032.0153.1		96.032.4153.1				
for illumination cable H05RNH2-F 2 x 1,5 mm²	grey		96.032.0453.0		96.032.4453.0				
	black		96.032.0453.1		96.032.4453.1				

[1] Cable screwed joint with bend protection on request

	Appliance coupler standard, M25	Appliance coupler modular, M20	Distribution block 1I/3O	Distribution box
	With thread M25x1,5, external screwed joint. With spring-loaded technology for rigid cables of 0,5 - 2,5 mm², finely stranded cables from 0,5 - 1,5 mm² with ferrules, stranded cables 0,75 - 1,5 mm² with ferrules. 2 connections per pole. With locking device. Fixing in position guaranteed by flattening out the thread. See "Technical data" for insulation strip lengths as well as the ferrules that should be used.	With thread M20x1,5, internal screwed joint. With spring-loaded connection for rigid cables of 0,5 - 2,5 mm², finely stranded cables from 0,5 - 1,5 mm² with ferrules, stranded cables 0,75 - 1,5 mm² with ferrules. 2 connections per pole. With locking device. Fixing in position guaranteed by flattening out the thread. See "Technical data" for insulation strip lengths as well as the ferrules that should be used.	With locking device 1 input, 3 pole male component 3 outputs, 3 pole female component - with fixing options - without fixing options	The individual distribution boxes offer optimum solutions for your specific application. The distribution boxes are available in different dimensions and can accept DIN rail mounted devices and terminals in any combination. Further connection to the terminal device is carried out via the *gesis* IP+ connector system. Distribution boxes are manufactured and tested to specific customer requirements can be delivered to the installation site as preassembled units. Locking devices are already integrated.
Colour	Part no. Box Qty	Part no. Box Qty	Colour	Part no. Box Qty
Female connector				
grey black	96.031.1053.0 96.031.1053.1	96.031.2053.0 96.031.2053.1	96.030.0153.0 96.030.0153.1	on request on request
Colour	Part no. Box Qty	Part no. Box Qty	Colour	Part no. Box Qty
Male connector				
grey black	96.032.1053.0 96.032.1053.1	96.032.2053.0 96.032.2053.1	96.030.0253.0 96.030.0253.1	

Not for North American market place at this time.

Cable assemblies 1,5 mm²

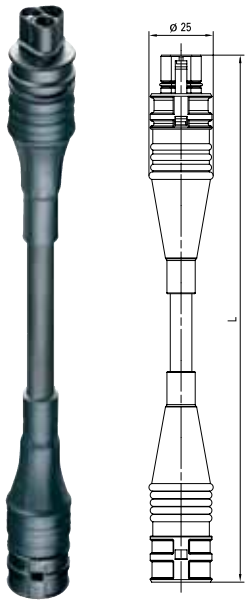
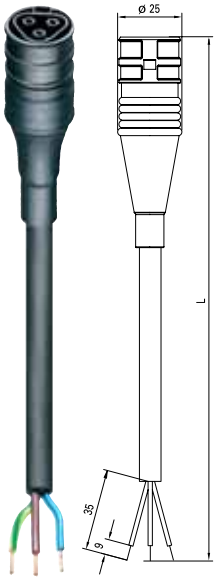
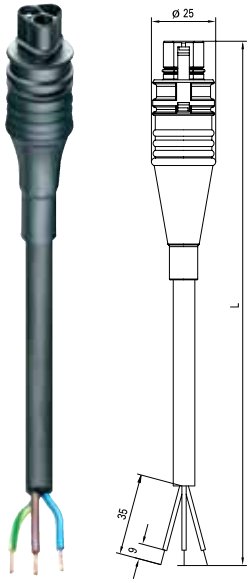
			Extender lead		Starter lead		Connection lead	
			3 x 1,5 mm² **Female - male** with locking device		**3 x 1,5 mm²** **Female – free end** with ultasonically welded conductor ends Sheath strip length: 35 mm Insulation strip length: 9 mm		**3 x 1,5 mm²** **Male – free end** with ultasonically welded conductor ends and locking device Sheath strip length: 35 mm Insulation strip length: 9 mm	
Cable assemblies								
Cable [1]	Colour	Length[2]	Part no.	Box Qty	Part no.	Box Qty	Part no.	Box Qty
H05VV	grey	1,0 m	96.232.1000.0		96.232.1003.0		96.232.1004.0	
		2,0 m	96.232.2000.0		96.232.2003.0		96.232.2004.0	
		3,0 m	96.232.3000.0		96.232.3003.0		96.232.3004.0	
		4,0 m	96.232.4000.0		96.232.4003.0		96.232.4004.0	
		5,0 m	96.232.5000.0		96.232.5003.0		96.232.5004.0	
		6,0 m	96.232.6000.0		96.232.6003.0		96.232.6004.0	
		7,0 m	96.232.7000.0		96.232.7003.0		96.232.7004.0	
	Cable: black	8,0 m	96.232.8000.0		96.232.8003.0		96.232.8004.0	
	black	1,0 m	96.232.1000.1		96.232.1003.1		96.232.1004.1	
		2,0 m	96.232.2000.1		96.232.2003.1		96.232.2004.1	
		3,0 m	96.232.3000.1		96.232.3003.1		96.232.3004.1	
		4,0 m	96.232.4000.1		96.232.4003.1		96.232.4004.1	
		5,0 m	96.232.5000.1		96.232.5003.1		96.232.5004.1	
		6,0 m	96.232.6000.1		96.232.6003.1		96.232.6004.1	
		7,0 m	96.232.7000.1		96.232.7003.1		96.232.7004.1	
	Cable: black	8,0 m	96.232.8000.1		96.232.8003.1		96.232.8004.1	
H07RNF	grey	1,0 m	96.232.1030.0		96.232.1033.0		96.232.1034.0	
		2,0 m	96.232.2030.0		96.232.2033.0		96.232.2034.0	
		3,0 m	96.232.3030.0		96.232.3033.0		96.232.3034.0	
		4,0 m	96.232.4030.0		96.232.4033.0		96.232.4034.0	
		5,0 m	96.232.5030.0		96.232.5033.0		96.232.5034.0	
		6,0 m	96.232.6030.0		96.232.6033.0		96.232.6034.0	
		7,0 m	96.232.7030.0		96.232.7033.0		96.232.7034.0	
	Cable: black	8,0 m	96.232.8030.0		96.232.8033.0		96.232.8034.0	
	black	1,0 m	96.232.1030.1		96.232.1033.1		96.232.1034.1	
		2,0 m	96.232.2030.1		96.232.2033.1		96.232.2034.1	
		3,0 m	96.232.3030.1		96.232.3033.1		96.232.3034.1	
		4,0 m	96.232.4030.1		96.232.4033.1		96.232.4034.1	
		5,0 m	96.232.5030.1		96.232.5033.1		96.232.5034.1	
		6,0 m	96.232.6030.1		96.232.6033.1		96.232.6034.1	
		7,0 m	96.232.7030.1		96.232.7033.1		96.232.7034.1	
	Cable: black	8,0 m	96.232.8030.1		96.232.8033.1		96.232.8034.1	

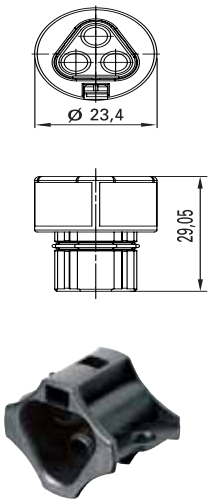
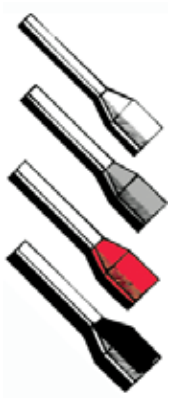
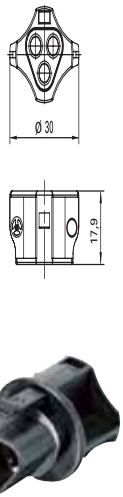
[1] Other cable types on request
[2] Other lengths on request

Not for North American market place at this time.

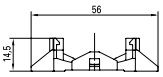
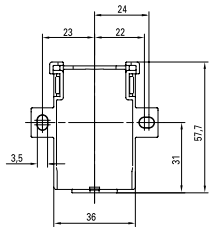
Cable assemblies 2,5 mm²

RST 20i3

	Extender lead		Starter lead		Connection lead	
	3 x 2,5 mm² **Female - male** with locking device		**3 x 2,5 mm²** **Female – free end** with ultrasonically welded conductor ends Sheath strip length: 35 mm Insulation strip length: 9 mm		**3 x 2,5 mm²** **Male - free end** with ultrasonically welded conductor ends and locking devices Sheath strip length: 35 mm Insulation strip length: 9 mm	
						
Length[2]	Part no.	Box Qty	Part no.	Box Qty	Part no.	Box Qty
1,0 m	96.233.1000.0		96.233.1003.0		96.233.1004.0	
2,0 m	96.233.2000.0		96.233.2003.0		96.233.2004.0	
3,0 m	96.233.3000.0		96.233.3003.0		96.233.3004.0	
4,0 m	96.233.4000.0		96.233.4003.0		96.233.4004.0	
5,0 m	96.233.5000.0		96.233.5003.0		96.233.5004.0	
6,0 m	96.233.6000.0		96.233.6003.0		96.233.6004.0	
7,0 m	96.233.7000.0		96.233.7003.0		96.233.7004.0	
8,0 m	96.233.8000.0		96.233.8003.0		96.233.8004.0	
1,0 m	96.233.1000.1		96.233.1003.1		96.233.1004.1	
2,0 m	96.233.2000.1		96.233.2003.1		96.233.2004.1	
3,0 m	96.233.3000.1		96.233.3003.1		96.233.3004.1	
4,0 m	96.233.4000.1		96.233.4003.1		96.233.4004.1	
5,0 m	96.233.5000.1		96.233.5003.1		96.233.5004.1	
6,0 m	96.233.6000.1		96.233.6003.1		96.233.6004.1	
7,0 m	96.233.7000.1		96.233.7003.1		96.233.7004.1	
8,0 m	96.233.8000.1		96.233.8003.1		96.233.8004.1	
1,0 m	96.233.1030.0		96.233.1033.0		96.233.1034.0	
2,0 m	96.233.2030.0		96.233.2033.0		96.233.2034.0	
3,0 m	96.233.3030.0		96.233.3033.0		96.233.3034.0	
4,0 m	96.233.4030.0		96.233.4033.0		96.233.4034.0	
5,0 m	96.233.5030.0		96.233.5033.0		96.233.5034.0	
6,0 m	96.233.6030.0		96.233.6033.0		96.233.6034.0	
7,0 m	96.233.7030.0		96.233.7033.0		96.233.7034.0	
8,0 m	96.233.8030.0		96.233.8033.0		96.233.8034.0	
1,0 m	96.233.1030.1		96.233.1033.1		96.233.1034.1	
2,0 m	96.233.2030.1		96.233.2033.1		96.233.2034.1	
3,0 m	96.233.3030.1		96.233.3033.1		96.233.3034.1	
4,0 m	96.233.4030.1		96.233.4033.1		96.233.4034.1	
5,0 m	96.233.5030.1		96.233.5033.1		96.233.5034.1	
6,0 m	96.233.6030.1		96.233.6033.1		96.233.6034.1	
7,0 m	96.233.7030.1		96.233.7033.1		96.233.7034.1	
8,0 m	96.233.8030.1		96.233.8033.1		96.233.8034.1	

	End cap	Ferrules	Screwdriver	Crimping tool
	For covering unused male or female connectors.	Ferrules with insulating shrouds for conductors of 0,5 mm² in accord. with DIN 46228-E0,5-10 0,75 mm² in accord. with DIN 46228-E0,75-12 1,0 mm² in accord. with DIN 46228-E1,0-12 1,5 mm² in accord. with DIN 46228-E1,5-12 Materials: Shroud: polypropylene, thermal stability 105ºC, resistant to creepage Tubes: copper with galvanised tin coating	Screwdriver in accordance with DIN 5264 0,4 x 2,5 For opening the terminal compartment of spring-loaded contacts	**For clamping points in spring-loaded technology** for ferrules 0,08 - 6 mm², AWG 28 - 10 - square crimping - releasable positive lock-out device - adjustable crimping pressure Total length: 174 mm
Colour	Part no. Box Qty	Part no. Size	Part no.	Part no.
For covering unused male connectors				
white grey red black	Z5.564.4553.0 Z5.564.4553.1	06.600.3827.0 0,5 mm² 06.600.3727.0 0,75 mm² 06.600.3627.0 1,0 mm² 06.600.3927.0 1,5 mm²	06.502.4300.0	95.101.1300.0
Colour	Part no. Box Qty			
For covering unused female connectors				
white grey red black	Z5.564.4453.0 Z5.564.4453.1			

Sample set

	RST20i3 An ideal introduction to the system Contents: - Connector - Appliance couplers - Distribution box - Cable assemblies - End caps	
	Part no.	
	 	
	99.488.0000.0	
Colour	Part no. Box Qty	
Mounting plate for connector, twin connection	  	
white grey red black	01.006.1553.0 01.006.1553.1	

Protection types

Protection against contact	Protection against solid foreign bodies			
No protection	No protection	0	0	No protection
Large areas of the body (e.g. back of hand)	Large solid foreign bodies (Diameter > 50 mm)	1	1	Protection against dripping water falling vertically
Finger	Medium solid foreign bodies (Diameter > 12 mm)	2	2	Protection against dripping water falling at an angle (up to 15º)
Tools and wires (Diameter > 2,5 mm)	Small solid foreign bodies (Diameter > 2,5 mm)	3	3	Protection against water that is sprayed at an angle up to 60º towards the vertical
Tools and wires (Diameter > 1 mm)	Granular solid foreign bodies (Diameter > 1mm)	4	4	Protection against water that is splashed on all sides
Complete protection against accidental contact	Dust deposits	5	5	Protection against jet water
Complete protection against accidental contact	Penetration of dust	6	6	Protection against powerful jet water
			7	Protection against temporary submersion
			8	Protection against continuous submersion

In many applications, electrotechnical devices and systems must function reliably over many years under severe environmental conditions. The penetration of liquids or solid foreign bodies (e.g. dust, oil, rust etc.) in production plants, garages or outdoor installations must be prevented to ensure reliable operation. The requirements for IP protection vary from application to application.
In protection type IP68, the limit conditions must be listed explicitly by the manufacturer (at least 1.50m and 30 minutes).
The conditions must be agreed between the manufacturer and the user in this case.

Material resistance (for materials PA66 and NBR)

Please contact us in the event of differing influencing factors!

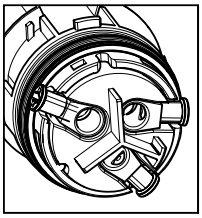
Ultraviolet light (use black for connectors)	+	Motor oil (SAE 20W/55)	+
Resistance to oil and grease	+	Nickel chloride	+
Aliphatic hydrocarbons	+	Paraffin and paraffin derivatives	+
Aromatic hydrocarbons	+	Phosphoric acid	+
Alcohol	+	Phthalic acid	+
Ammonia, water-free	+	Polyamide resin	+
Ammonium chloride (ammoniac)	+	Polyester-polyole	+
Ammonium sulphate	+	Polyether-polyole	+
Barium chloride	+	Polyglycol	+
Beer	+	Polymer softener	+
Butter	+	Polyurethane resin	+
Butyl alcohol	+	Mercury	+
Calcium chloride, aqueous, 10%	+	Castor oil	+
Citric acid, aqueous, 10%	+	Ammoniac	+
Iron III chloride	+	Oxygen, RT	+
Ethyl ether	+	Lubricating oil (O-149), (not bunker oil, tanker)	+
Dyes, paints, not strong in sulphuric acid	+	Sulphur, wet	+
Fruit juices, fruit acids	+	Sulphuric acid (verd, RT)	+
Tannic acid	+	Sulphur hexafluoride	+
Glycerine	+	Sweat	+
Glysantin, aqueous, 40%	+	Sebacin acid	+
Potassium chloride	+	Spirits	+
Globules of fat, aqueous, 10%	+	Nitric acid (10%)	+
Common salt, aqueous, 10%	+	Hydrochloric acid	+
Linseed oil	+	Water, RT, chlorine-free up to 80ºC	+
Milk	+	Water, resistant to seawater, artificial, 20ºC	+
Lactic acid, 20ºC	+	Tin IV chloride, 20ºC, saturated	+

Technical data

Rated voltage:	250V
Rated current:	20A
No. of poles:	3 poles (L, N, PE)
Protection type:	Connectors and device connections: IP65, IP66, IP67, IP68 (3m; 2 hours)
	Distribution block and cable assemblies in preparation
Approvals (in process):	VDE; UL; CSA; LR; GL; DNV
Regulations:	DINVDE 0606-200); draft IEC 23/337/FDIS; VDE 0110;
	VDE 0628; IEC60999; UL1977; CSA:C22.2 No.182.2-M1987;
	LR Type Approval System
Cable assemblies:	Crimp connection, H05VV-F or H07RN-F, 1,5mm² and 2,5mm².
Cables with free end:	Sheath strip length 35 mm
	Insulation strip length 9 mm
Locking device:	Open using a tool: Insert the Philips screwdriver into the opening of the locking device and rotate by 90°
Materials:	Contact components: Brass with silver finish
Housing:	Thermoplastic PA
Sealing material:	NBR
Continous temperature:	From -30°C to 100°C
Glow wire test 960°C:	For connectors and device connections
Coding:	Mechanical coding symbolised by colour coding. Grey and black colour coding with the same mechanical coding. Further coding is optional.
General:	Shock protection guaranteed in general, even when disconnected. Leading Earth conductor. Live component must be a socket component in accordance with the regulations. It is therefore no possible to install a ring circuit in the standardised design! Non-interchangeable with other connector systems; can only be connected with the correct polarity; 1 pole cannot make contact. Locking device in accordance with prEN 61 535.
Note:	Insertion and withdrawal under load is possible in accordance with DIN VDE 0625 Contacts secured against tensile load on the cable. All the components can be interlocked. A locking device must be provided following the approval in accordance with DIN VDE 0628.

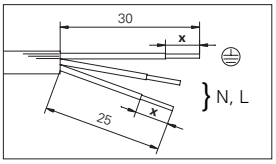
Insulation strip lengths and ferrules

Screw connection:

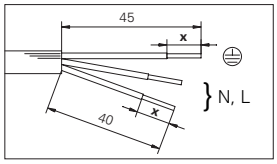


X=

Connector



Connector, twin connection

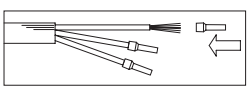


Conductor cross-section	1,5 mm²	2,5 mm²	4 mm²
Solid	8	8	8
Finely stranded	8	8	8
Stranded	8	8	8
Ultrasonically welded	8	8	8

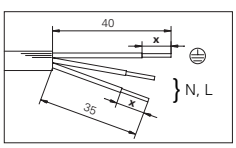
Spring-loaded connection:

X=

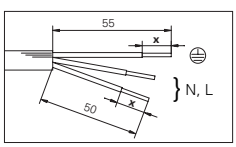
Finely stranded and stranded connectors



Connector and device connection



Connector, twin connection



Conductor cross-section	0,5 mm²	0,75 mm²	1 mm²	1,5 mm²	2,5 mm²
Solid	14,5 + 1	14,5 + 1	14,5 + 1	14.5 + 1	14,5 + 1
Finely stranded	12,0 + 1	13,0 + 1	13,0 + 1	13,0 + 1	
Ferrule in accordance with DIN	46228-E-10	46228-E-12	46228-E-12	46228-E-12	
Stranded		13,0 + 1	13,0 + 1	13,0 + 1	
Ferrule in accordance with DIN		46228-E-12	46228-E-12	46228-E-12	
Ultrasonically welded				14,5 + 1	14,5 + 1

wieland

Electrical
Connections

Head office:

Wieland Electric Inc.
2889 Brighton Road
Oakville, ON L6H 6C9

P905 829 8414
F905 829 8413

oakville@wielandinc.com

www.wielandelectric.ca

Product range

DIN rail terminal blocks
- with screw connection
- with spring connection
- with IDC connection

Terminal blocks for electrical installations
- with screw connection
- with spring connection

Lighting and appliance terminals
Terminal strips

PC board connectors
- modular/pluggable
- insulated headers
- rising cage clamp/ plug connectors
- TOP connection
- Spring connection
- electronics housings

Electronics components
- relay modules
- solid-state modules
- interface modules
- function modules
- Power Supplies

Fieldbus components
- motor starter
- power bus
- distributed I/Os

Systems for electrical installation
- Mains connectors
- Bus connectors
- Compact connectors
- Low voltage connectors
- Flat cable systems
- Distribution systems
- EIB switching devices

Multipole connectors
Multipole adapter
EExi
Data cablefeed-through
Connectors with mixed contacts