



## **M8 and M12 cabling** for food processing applications

# Reliable cabling in environments with demanding hygiene requirements

With respect to degree of protection, corrosion resistance and hygiene, the highest demands are made on components and materials and hygiene in machines and systems in the food processing industry.

Our product range for the food processing industry was specifically developed to provide a complete solution to meet these requirements.

The special hygienic design of the plug-in connectors prevents dirt pockets and is particularly easy to clean. The use of stainless steel ensures comprehensive protection against corrosion and the bright coating of the cables simplifies detection and removal of contamination.



*The corrosion-resistant 1.4404 stainless steel distributor boxes in Washdown design are customized for the special requirements of the food processing industry. They were tested for use in the spray zone.*

## **Complete product range**

In addition to cables and distributor boxes, pre-assembled plug-in connectors and device plug-in connectors for the food processing industry round off the range. Pure 1.4404 stainless steel shielded plug-in connectors are also available for particularly exposed areas.





### Features Hygienic Design

- Smooth surface impossible for residual food material to accumulate
- Corrosion-resistant
- Easy to clean
- IP69K
- No dirt pockets

#### Washdown design

The Washdown Design M8 and M12 plug-in connectors are equipped with a plastic knurl and have a particularly smooth and easy-to-clean surface. The plastic materials selected and the cables are optimally tailored to suit the special requirements in spray areas. 4- and 5-pos. variants are available in different versions.

#### Hygienic design

The 1.4404 stainless steel hygienic design M12 plug-in connectors have a very smooth surface and are intended for use in areas where contact is made with the product. They therefore make it impossible for residual food material to accumulate. Shielded versions are also available for areas subject to high levels of electromagnetic interference.

#### Technical data

|                                 | M8 cabling                         | M12 cabling                        | M12 cabling                        |
|---------------------------------|------------------------------------|------------------------------------|------------------------------------|
|                                 | Washdown design<br>(3-pos./4-pos.) | Hygienic design<br>(4-pos./5-pos.) | Washdown design<br>(4-pos./5-pos.) |
| Nominal current [A]             | 4                                  | 4                                  | 4                                  |
| Rated voltage [V]               | 60/30/24*                          | 250/60/24* <sup>2</sup>            | 250/60/24* <sup>3</sup>            |
| Contact material                | CuSn                               | CuSn                               | CuSn                               |
| Contact surface material        | Ni/Au                              | Ni/Au                              | Ni/Au                              |
| Grip body material              | PP                                 | PP                                 | PP                                 |
| Material, knurls                | PP                                 | 1.4404<br>stainless steel          | PP                                 |
| Circular connector according to | IEC 61076-2-104                    | IEC 61076-2-101                    | IEC 61076-2-101                    |
| Degree of protection            | IP65/IP68/IP69K                    | IP65/IP68/IP69K                    | IP65/IP68/IP69K                    |
| Temperature range [°C]          | -40 ... 105                        | -40 ... 105                        | -40 ... 105                        |

\* for 3-pos./4-pos./3-pos. and 4-pos with LED

\*<sup>2</sup> for 4-pos./5-pos./4-pos. and 5-pos. with LED

\*<sup>3</sup> for 4-pos./5-pos./4-pos. and 5-pos. with LED

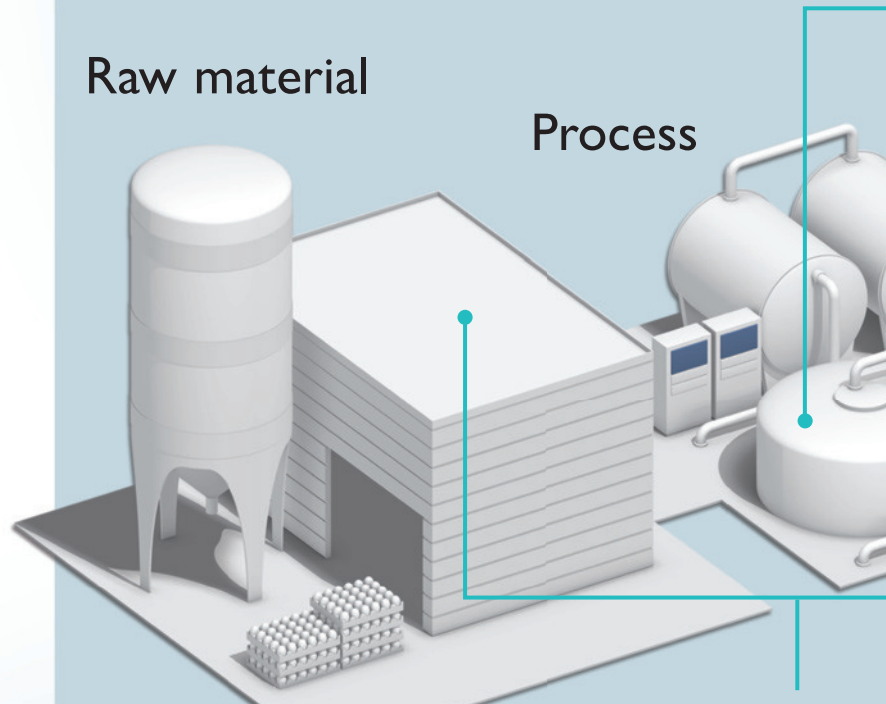
# Always a clean concept

In general, food and its packaging may not become contaminated by contact with system and machine parts. Three zones are differentiated in production: product contact zone, spray zone and product-free zone. Each zone imposes specific requirements on the sensors and actuators – and on the respective cables and plug-in connectors.

Use our extensive product portfolio and select the matching solution for your application.

Raw material

Process



**Spray zone**



*Conveyor belt in the spray zone*

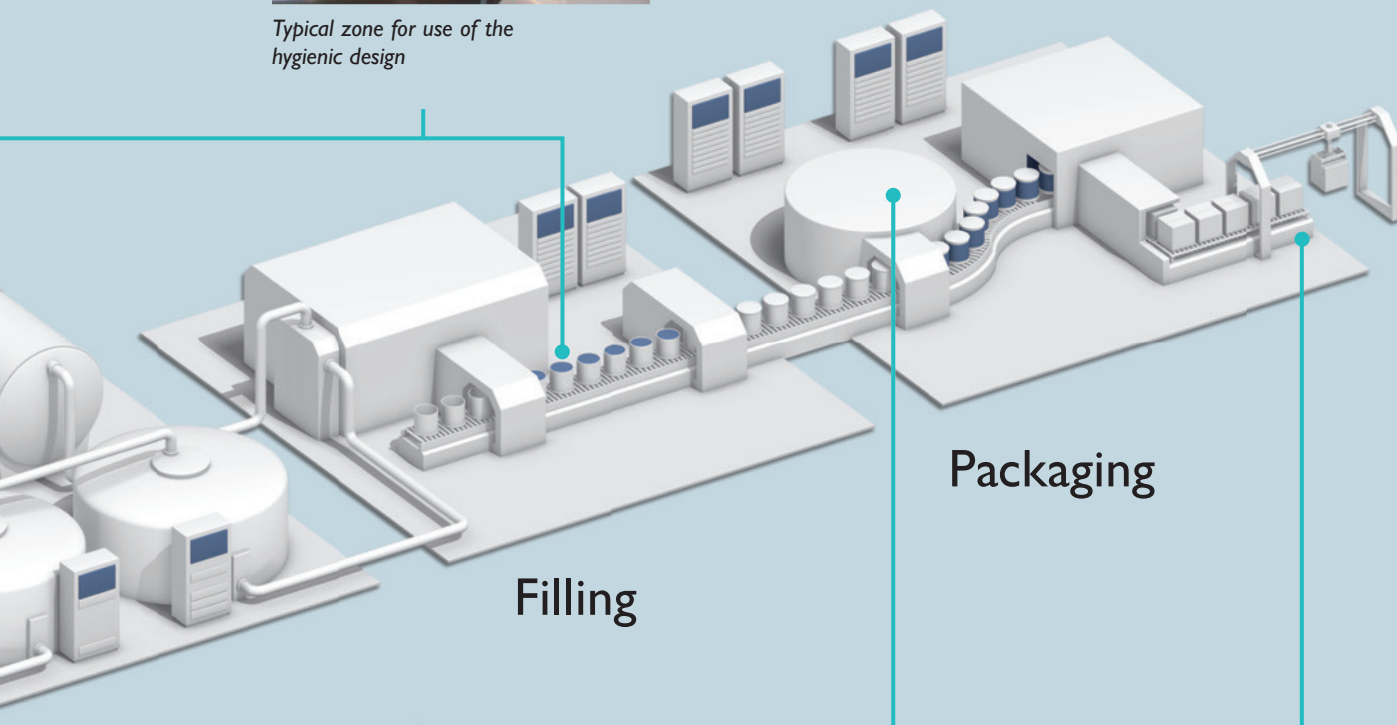
In the spray zone, components can come into contact with food. In contrast to the product contact zone, the food does not return back to the process after contact with the components. The plug-in connectors offered by Phoenix Contact in washdown design were specifically developed for the spray zone application. Smooth contours at the grip minimize the adhesion of food particles at the plug-in connector.

## Product contact zone



In this zone, every component of a system can come into contact with the food to be processed, and the food itself can then reach the processing again. The hygienic requirements are particularly high in this zone. Plug-in connectors and other components may not contain any dirt pockets here. We developed and implemented the hygienic design specifically for use in this zone following the EHEDG guidelines in design M12.

*Typical zone for use of the hygienic design*



## Product-free zone



In this zone, the products are generally already packaged and no longer exposed to direct contact with system components. In this case, the requirements are comparable with those in the classic industrial environment. Cleaning the packaging systems does not require any aggressive cleaning agents and is generally not done with high-pressure equipment. Our standard program for sensor/actuator cabling is suitable for use in this zone.

*No special hygienic requirements are placed on the components used in storage and packaging*

# Product program for the food industry

In addition to the assembled cables in hygienic and washdown design, the program also features preassembled plug-in connectors, panel feed-throughs and passive distributor boxes in washdown design.

The entire plug-in connector family was designed for the cleaning processes in these applications and is resistant to all commercially available cleaning agents.



Products, system solutions and services for adhering to high quality and hygiene standards of food, beverages and buildings for the safety of users and their customers.

All materials comply with the Diversey guidelines and have been tested in accordance with Diverfoam SMS HD, Divosan Hypochlorite, Divosan forte, Oxofoam, Acifoam.



European Hygienic Engineering & Design Group; design criteria for hygienic design of machines, apparatus and components.

All electrical components were developed following the EHEDG guidelines.

**IP69K**

Guaranteed sealing of the plug-in connectors and boxes for applications with steam jets, even after repeated temperature shocks.

All components are IP69K tested.



The Food and Drug Administration is a US regulatory authority for food and pharmaceuticals. It issues approvals for products and materials that are used in the food and pharmaceutical industries.




All materials of the electrical components meet the FDA guidelines.



Material resistance to aggressive cleaning agents and disinfectants.





All materials of the electrical components were tested against P3-topactive DES, P3-topax 19, 56, 66 and 91.

## Distributor box, washdown design

|  |   |         |
|--|---|---------|
|  | Stainless steel distributor box, with 5 m master cable  | 1555541 |
|  | Stainless steel distributor box, with 10 m master cable | 1555554 |
|  | M12 locking screw made of stainless steel               | 1555538 |
|  | Torque screwdriver                                      | 1208429 |
|  | SAC nut   | 1212513 |





| Front/screw mounting |                 |                 | Rear/screw mounting |                 |
|----------------------|-----------------|-----------------|---------------------|-----------------|
| 4-pos., A-coded      | 5-pos., A-coded | 8-pos., A-coded | 5-pos., A-coded     | 8-pos., A-coded |









## Flush-type plug-in connectors, washdown design

|  |  |        |         |         |         |         |         |
|--|--|--------|---------|---------|---------|---------|---------|
|    | with TPE litz wires                    | Socket | 1555448 | 1699863 | 1554607 | 1554717 | 1554720 |
|  |  | Pin    | 1554555 | 1554568 | 1554571 | 1554681 | 1554694 |
|    | with TPE litz wires, can be positioned | Socket | 1554649 | 1554652 | 1554665 |         |         |
|  |  | Pin    | 1554610 | 1554623 | 1554636 |         |         |
|   | with TPE litz wires, M20 x 1.5 thread  | Socket |         | 1452071 | 1452110 |         |         |
|  |  | Pin    |         | 1452068 | 1452107 |         |         |
|  | with straight solder connection        | Socket |         |         |         | 1554733 | 1529797 |
|  |  | Pin    |         |         |         | 1554746 | 1529807 |

| Unshielded      |                 | Shielded        |                 |
|-----------------|-----------------|-----------------|-----------------|
| 4-pos., A-coded | 5-pos., A-coded | 5-pos., A-coded | 5-pos., B-coded |

## Plug-in connectors, washdown design









|  |                            |                  |         |         |         |         |
|--|----------------------------|------------------|---------|---------|---------|---------|
|  | Pg7 screw connection       | Socket, angled   | 1553284 | 1553297 |         |         |
|  |                            | Pin, angled      | 1553200 | 1553213 |         |         |
|  |                            | Socket, straight | 1553242 | 1553255 |         |         |
|  |                            | Pin, straight    | 1553161 | 1553187 |         |         |
|  | Pg9 screw connection       | Socket, angled   |         | 1553307 |         |         |
|  |                            | Pin, angled      | 1553226 | 1553239 |         |         |
|  |                            | Socket, straight | 1553268 | 1553271 |         |         |
|  |                            | Pin, straight    | 1553174 | 1553190 |         |         |
|  | Cable diameter 3 mm – 5 mm | Socket, straight |         |         | 1440038 |         |
|  |                            | Pin, straight    |         |         | 1440012 |         |
|  | Cable diameter 5 mm – 8 mm | Socket, straight |         |         | 1440041 | 1440135 |
|  |                            | Pin, straight    |         |         | 1440025 | 1440148 |

|  | Design   | 0.3 m   |         | 0.6 m   |         | 1.5 m   |         | 3 m     |         | 5 m     |         | 10 m    |         |
|--|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
|  |          | 3-pos.  | 4-pos.  | 3-pos.  | 4-pos.  | 3-pos.  | 4-pos.  | 3-pos.  | 4-pos.  | 3-pos.  | 4-pos.  | 3-pos.  | 4-pos.  |
| <b>Assembled cables, M8</b>  |          |         |         |         |         |         |         |         |         |         |         |         |         |
| <br>Pin, straight                               | Washdown |         |         |         |         | 1406469 | 1406835 | 1406470 | 1406837 | 1406471 | 1406839 | 1406472 | 1406840 |
| <br>Pin, angled                                 | Washdown |         |         |         |         | 1406473 | 1406841 | 1406474 | 1406843 | 1406475 | 1406844 | 1406476 | 1406845 |
| <br>Socket, straight                            | Washdown |         |         |         |         | 1406477 | 1406846 | 1406478 | 1406847 | 1406479 | 1406848 | 1406480 | 1406849 |
| <br>Socket, angled                              | Washdown |         |         |         |         | 1406481 | 1406850 | 1406482 | 1406851 | 1406484 | 1406852 | 1406485 | 1406853 |
| <br>Socket, angled with LEDs                  | Washdown |         |         |         |         | 1406486 | 1406854 | 1406487 | 1406854 | 1406488 | 1406856 | 1406489 | 1406857 |
| <br>Pin, straight, to straight socket         | Washdown | 1406490 | 1406858 | 1406491 | 1406859 | 1406492 | 1406860 | 1406493 | 1406861 |         |         |         |         |
| <br>Pin, straight, to angled socket           | Washdown | 1406494 | 1406862 | 1406495 | 1406863 | 1406496 | 1406864 | 1406497 | 1406865 |         |         |         |         |
| <br>Pin, straight, to angled socket with LEDs | Washdown | 1406498 | 1406866 | 1406499 | 1406867 | 1406500 | 1406868 | 1406524 | 1406869 |         |         |         |         |




| Design | 0.3 m  |        | 0.6 m  |        | 1.5 m  |        | 3 m    |        | 5 m    |        | 10 m   |        |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|        | 4-pos. | 5-pos. | 4-pos. | 5-pos. | 4-pos. | 5-pos. | 4-pos. | 5-pos. | 4-pos. | 5-pos. | 4-pos. | 5-pos. |

### Assembled cables, M12


|   |                    |         |         |         |         |         |         |         |         |         |         |         |         |
|---|--------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
|  <p>Pin</p>   | Washdown           |         |         |         |         | 1404002 | 1404075 | 1404003 | 1404076 | 1404004 | 1404077 | 1404005 | 1404078 |
|   | Hygienic           |         |         |         |         | 1403947 | 1404039 | 1403948 | 1404041 | 1403949 | 1404042 | 1403951 | 1404043 |
|   | Hygienic, shielded |         |         |         |         | 1403981 |         | 1403982 |         | 1403983 |         | 1403984 |         |
|  <p>Pin, angled</p>                                | Washdown           |         |         |         |         | 1404006 | 1404079 | 1404007 | 1404080 | 1404008 | 1404081 | 1404009 | 1404082 |
|   | Hygienic           |         |         |         |         | 1403952 | 1404044 | 1403953 | 1404046 | 1403954 | 1404047 | 1403955 | 1404048 |
|  <p>Socket, straight</p>                            | Washdown           |         |         |         |         | 1404010 | 1404083 | 1404011 | 1404084 | 1404012 | 1404085 | 1404013 | 1404086 |
|   | Hygienic           |         |         |         |         | 1403956 | 1404049 | 1403957 | 1404050 | 1403958 | 1404051 | 1403959 | 1404052 |
|   | Hygienic, shielded |         |         |         |         | 1403985 |         | 1403986 |         | 1403987 |         | 1403988 |         |
|  <p>Socket, angled</p>                            | Washdown           |         |         |         |         | 1404014 | 1404088 | 1404015 | 1404089 | 1404017 | 1404091 | 1404018 | 1404092 |
|   | Hygienic           |         |         |         |         | 1403960 | 1404053 | 1403961 | 1404054 | 1403962 | 1404055 | 1403963 | 1404056 |
|  <p>Socket, angled with LEDs</p>                 | Washdown           |         |         |         |         | 1404019 | 1404093 | 1404020 | 1404094 | 1404021 | 1404095 | 1404022 | 1404096 |
|   | Hygienic           |         |         |         |         | 1403964 | 1404057 | 1403965 | 1404059 | 1403966 | 1404060 | 1403967 | 1404062 |
|  <p>Pin, straight, to straight socket</p>         | Washdown           | 1404023 | 1404097 | 1404023 | 1404098 | 1404025 | 1404099 | 1404026 | 1404101 |         |         |         |         |
|   | Hygienic           | 1403968 | 1404063 | 1403969 | 1404064 | 1403970 | 1404065 | 1403971 | 1404066 |         |         |         |         |
|   | Hygienic, shielded | 1403990 |         | 1403991 |         | 1403992 |         | 1403993 |         |         |         |         |         |
|  <p>Pin, straight, to angled socket</p>           | Washdown           | 1404027 | 1404102 | 1404028 | 1404103 | 1404030 | 1404104 | 1404031 | 1404105 |         |         |         |         |
|   | Hygienic           | 1403972 | 1404067 | 1403973 | 1404068 | 1403974 | 1404069 | 1403975 | 1404070 |         |         |         |         |
|  <p>Pin, straight, to angled socket with LEDs</p> | Washdown           | 1404033 | 1404106 | 1404034 | 1404107 | 1404035 | 1404108 | 1404036 | 1404109 |         |         |         |         |
|   | Hygienic           | 1403976 | 1404071 | 1403977 | 1404072 | 1403978 | 1404073 | 1403979 | 1404550 |         |         |         |         |

Durable O-ring for sealing free-hanging M12 connections according to the hygienic design concept.


1405608

|   |   | ROLL    | ROLL X-1 |
|---|---|---------|----------|
| <b>THERMOMARK, thermal transfer printer for material off the roll, 300 dpi</b>    |   |         |          |
|  | Incl. European power cable, US power cable, USB cable, DVD with CLIP PROJECT ADVANCED, CD with user manual in all languages/driver/firmware, printed DIN A5 user manual German/English, 1 EML label roll (20x8) with 1000 labels, 1 ink ribbon (50 m) | 5146477 | 5146723  |


| Conductor diameter [mm]   | Lettering field size [mm] | Markers per roll | Type | WH | YE |
|---|---------------------------|------------------|------|----|----|
| <b>Standard roll, multi-line version – marking with THERMOMARK ROLL and THERMOMARK ROLL X-1</b> |                           |                  |      |    |    |

|  |       |       |      |                   |         |         |
|--|-------|-------|------|-------------------|---------|---------|
|  | < 3   | 13x10 | 5000 | WML 3 (13x10) R   | 0800073 |         |
|  | < 5   | 25x10 | 3000 | WML 5 (25x10) R   | 0817523 | 0830673 |
|  | < 6   | 13x13 | 7000 | WML 6 (13x13) R   | 0816252 | 0830674 |
|  | < 7.5 | 13x13 | 4000 | WML 7,5 (13x13) R | 0800074 |         |
|  | < 7.5 | 17x9  | 1500 | WML 7,5 (17x9) R  | 0828444 |         |
|  | < 7.5 | 25x13 | 2100 | WML 7,5 (25x13) R | 0800075 |         |
|  | < 12  | 25x19 | 1000 | WML 12 (25x19) R  | 0800076 |         |
|  | < 14  | 25x19 | 1500 | WML 14 (25x19) R  | 0817536 | 0817549 |
|  | < 14  | 38x19 | 1000 | WML 14 (38x19) R  | 0817552 | 0830675 |
|  | < 18  | 12x12 | 2500 | WML 18 (12x12) R  | 0817507 |         |
|  | < 20  | 31x25 | 500  | WML 20 (31x25) R  | 0828457 |         |
|  | < 22  | 25x25 | 900  | WML 22 (25x25) R  | 0800078 |         |
|  | < 36  | 25x38 | 500  | WML 36 (25x38) R  | 0817510 |         |
|  | < 46  | 25x38 | 250  | WML 46 (25x38) R  | 0800067 |         |


**Large roll, multi-line version – marking with THERMOMARK ROLL X-1 or THERMOMARK ROLL with external media hub**


|   |      |       |       |                   |         |  |
|---|------|-------|-------|-------------------|---------|--|
|  | < 5  | 25x10 | 10000 | WML 5 (25x10) RL  | 0830676 |  |
|   | < 6  | 13x13 | 15000 | WML 6 (13x13) RL  | 0830677 |  |
|   | < 14 | 25x19 | 5000  | WML 14 (25x19) RL | 0830678 |  |
|   | < 14 | 38x19 | 3000  | WML 14 (38x19) RL | 0830679 |  |


**Steel cable markers, rust-proof, anti-magnetic, label size: 89 x 19 mm, silver**


|   |       |  |  |         |         |  |
|---|-------|--|--|---------|---------|--|
|  | 65x19 |  |  | KMV     | 0806644 |  |
|   | 65x19 |  |  | KMV CUS | 0828493 |  |

**Steel cable markers, rust-proof, anti-magnetic, label size: 44 x 9.6 mm, silver**

|   |      |  |  |                |         |  |
|---|------|--|--|----------------|---------|--|
|  | 23x9 |  |  | KMV 44x9.6     | 0812007 |  |
|   | 23x9 |  |  | KMV 44x9.6 CUS | 0828494 |  |

|  | Dimensions [mm] | Bundle diameter [mm] | Minimum tensile strength [N] | Type                   | Order No. |
|--|-----------------|----------------------|------------------------------|------------------------|-----------|
| <b>Stainless steel cable binders, AISI 316, 1.4301 (V2A), -80... 538 °C</b>      |                 |                      |                              |                        |           |
|  | 4.6 x 150       | 30                   | 890                          | WTS-STEEL S 4,6 x 150  | 3240807   |
|  | 4.6 x 201       | 50                   | 890                          | WTS-STEEL S 4,6 x 201  | 3240808   |
|  | 4.6 x 259       | 69                   | 890                          | WTS-STEEL S 4,6 x 259  | 3240809   |
|  | 4.6 x 360       | 102                  | 890                          | WTS-STEEL S 4,6 x 360  | 3240810   |
|  | 4.6 x 520       | 152                  | 890                          | WTS-STEEL S 4,6 x 520  | 3240811   |
|  | 4.6 x 679       | 203                  | 890                          | WTS-STEEL S 4,6 x 679  | 3240812   |
|  | 4.6 x 838       | 254                  | 890                          | WTS-STEEL S 4,6 x 838  | 3240723   |
|  | 4.6 x 1067      | 305                  | 890                          | WTS-STEEL S 4,6 x 1067 | 3240805   |
|  | 7.9 x 259       | 69                   | 1335                         | WTS-STEEL S 7,9 x 259  | 3240814   |
|  | 7.9 x 360       | 102                  | 1335                         | WTS-STEEL S 7,9 x 360  | 3240815   |
|  | 7.9 x 520       | 152                  | 1335                         | WTS-STEEL S 7,9 x 520  | 3240816   |
|  | 7.9 x 679       | 203                  | 1335                         | WTS-STEEL S 7,9 x 679  | 3240817   |
|  | 7.9 x 838       | 254                  | 1335                         | WTS-STEEL S 7,9 x 838  | 3240725   |
|  | 7.9 x 1067      | 305                  | 1335                         | WTS-STEEL S 7,9 x 1067 | 3240813   |

|  | Dimensions [mm] | Bundle diameter [mm] | Minimum tensile strength [N] | Type                    | Order No. |
|--|-----------------|----------------------|------------------------------|-------------------------|-----------|
| <b>Stainless steel cable binders, AISI 316, 1.4401 (V4A), -80... 538 °C</b>        |                 |                      |                              |                         |           |
|  | 4.6 x 150       | 30                   | 890                          | WTS-STEEL SH 4,6 x 150  | 3240820   |
|  | 4.6 x 201       | 50                   | 890                          | WTS-STEEL SH 4,6 x 201  | 3240821   |
|  | 4.6 x 259       | 69                   | 890                          | WTS-STEEL SH 4,6 x 259  | 3240822   |
|  | 4.6 x 360       | 102                  | 890                          | WTS-STEEL SH 4,6 x 360  | 3240823   |
|  | 4.6 x 520       | 152                  | 890                          | WTS-STEEL SH 4,6 x 520  | 3240824   |
|  | 4.6 x 679       | 203                  | 890                          | WTS-STEEL SH 4,6 x 679  | 3240825   |
|  | 4.6 x 838       | 254                  | 890                          | WTS-STEEL SH 4,6 x 838  | 3240727   |
|  | 4.6 x 1067      | 305                  | 890                          | WTS-STEEL SH 4,6 x 1067 | 3240818   |
|  | 7.9 x 259       | 69                   | 1335                         | WTS-STEEL SH 7,9 x 259  | 3240827   |
|  | 7.9 x 360       | 102                  | 1335                         | WTS-STEEL SH 7,9 x 360  | 3240828   |
|  | 7.9 x 520       | 152                  | 1335                         | WTS-STEEL SH 7,9 x 520  | 3240829   |
|  | 7.9 x 679       | 203                  | 1335                         | WTS-STEEL SH 7,9 x 679  | 3240830   |
|  | 7.9 x 838       | 254                  | 1335                         | WTS-STEEL SH 7,9 x 838  | 3240766   |
|  | 7.9 x 1067      | 305                  | 1335                         | WTS-STEEL SH 7,9 x 1067 | 3240826   |

|  | Dimensions [mm] | Bundle diameter [mm] | Minimum tensile strength [N] | Type                | Order No. |
|--|-----------------|----------------------|------------------------------|---------------------|-----------|
| <b>Detectable cable binders, PA 6.6, silicon and halogen free, -40... 85 °C</b>    |                 |                      |                              |                     |           |
|  | 2.5 x 98        | 1 - 21               | 80                           | WT-ID HF 2,5x98 BU  | 3240794   |
|  | 3.5 x 140       | 2 - 35               | 130                          | WT-ID HF 3,5x140 BU | 3240795   |
|  | 3.5 x 200       | 3 - 50               | 130                          | WT-ID HF 3,5x200 BU | 3240796   |
|  | 4.5 x 200       | 3 - 50               | 220                          | WT-ID HF 4,5x200 BU | 3240797   |
|  | 4.5 x 290       | 3.5 - 79             | 220                          | WT-ID HF 4,5x290 BU | 3240798   |
|  | 7.5 x 365       | 8 - 100              | 540                          | WT-ID HF 7,5x365 BU | 3240800   |



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## Product range

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- Electronic reversing contactors and motor control
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- Fieldbus components and systems
- Functional safety
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- I/O systems
- Industrial communication technology
- Industrial lighting
- Installation and mounting material
- Marking and labeling
- Measurement and control technology
- Modular terminal blocks
- Monitoring and signaling
- PCB terminal blocks and PCB connectors
- Plug-in connectors
- Protective devices
- Relays
- Sensor cables and connectors
- Software
- Surge protection devices
- System cabling for DCS and PLC
- Tools
- Wireless data communication

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