



# CDSH - SQUICH® series

Spring connection contacts with actuator button



STANDARD 16A		CDSH - HIGH DENSITY 10A		
06 poles	→	09 poles	→	+50%
10 poles	→	18 poles	→	+80%
16 poles	→	27 poles	→	+70%
24 poles	→	42 poles	→	+75%
32 poles	→	54 poles	→	+70%
48 poles	→	84 poles	→	+75%

# CDSH - SQUICH® series

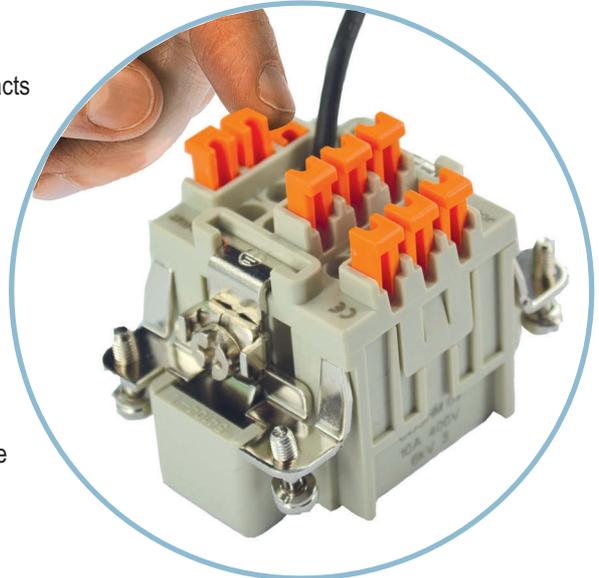
## Spring connection contacts with actuator button

### Inserts series: CDSH

In this layout the wires are connected to the socket and plug insert contacts by means of a **spring terminal with actuator button**.

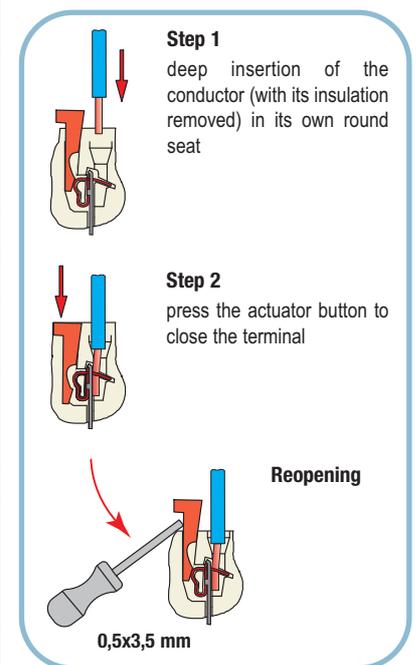
This type of connection offers the following advantages:

- › **no special wire preparation** (other than stripping);
- › it offers an excellent fastening solution and a **great resistance to strong vibrations**;
- › it allows the use of rigid and flexible wires with cross-sections between 0,14 and 2,5 mm<sup>2</sup> (AWG 26 - 14);
- › for wires with crimped ferrule, usable section: up to 1,5 mm<sup>2</sup> (AWG 16);
- › a screwdriver with a 0,5 x 3,5 mm blade is the only tool required to remove the wire from the contact;
- › the profile of the actuator button allows them section of a test probe.



Inserts series		CDSH
No. of poles <sup>1)</sup>	main contacts + ⊕	<b>9, 18, 27, 42, (54), (84)</b>
	auxiliary contacts	--
rated current <sup>2)</sup>		10A
EN 61984 pollution degree 3	rated voltage	400V
	rated impulse withstand voltage	6kV
	pollution degree	3
EN 61984 pollution degree 2	rated voltage	400V/690V
	rated impulse withstand voltage	6kV
	pollution degree	2
contact resistance		≤ 1 mΩ
insulation resistance		≥ 10 GΩ
ambient temperature limit (°C)	min	-40
	max	+125
degree of protection	with enclosures	IP65, IP66, IP67, IP68, IP69K (according to type)
	without enclosures	IP20
conductor connections		spring
conductor cross-section	mm <sup>2</sup>	0,14 - 2,5 (for wires with crimped ferrule, usable section: up to 1,5 mm <sup>2</sup> )
	AWG	26 - 14 (AWG 16 with crimped ferrule)
mechanical endurance (rating cycles)		≥ 500

- 1) Polarities shown in brackets may be achieved by using two inserts in their own double sized housings.
- 2) Please check the insert load curves to establish the actual maximum operating current according to the ambient temperature.



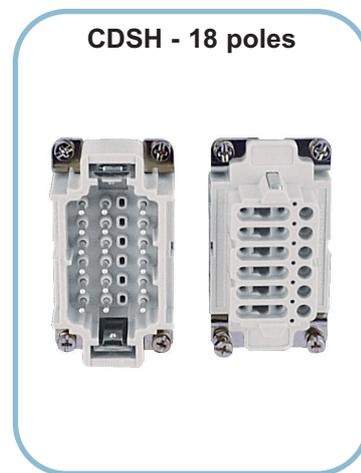
## CDSH - SQUICH® series

### Spring connection contacts with actuator button

The new **CDSH series “SQUICH®” (with spring and actuator button)**, the logical evolution of the CDS series, is characterized by the following advantages:

- ◆ Greater pole density as compared to existing connector with screw terminals.
- ◆ Reduced inserts preparation and cabling times.
- ◆ Cabling tool is not necessary.
- ◆ Quick identification of wired and non-wired terminals.
- ◆ Terminals already open and ready for conductor clamping.
- ◆ Option to use wires up to 2,5 mm<sup>2</sup>.

**The continuous demand for a greater number of poles** and of smaller dimensions has led to the design and manufacture of the new CDSH series, which offers single connectors with a maximum number of 84 poles that occupy the same space of standard connectors with screw/spring connection.



Each of the spring terminals has an actuator button, suitably shaped and incorporated in the cavity. When this button is pressed, it triggers the closure of the spring device of the corresponding terminal, safely and reliably connecting the conductor to its respective electric contact in the connector.

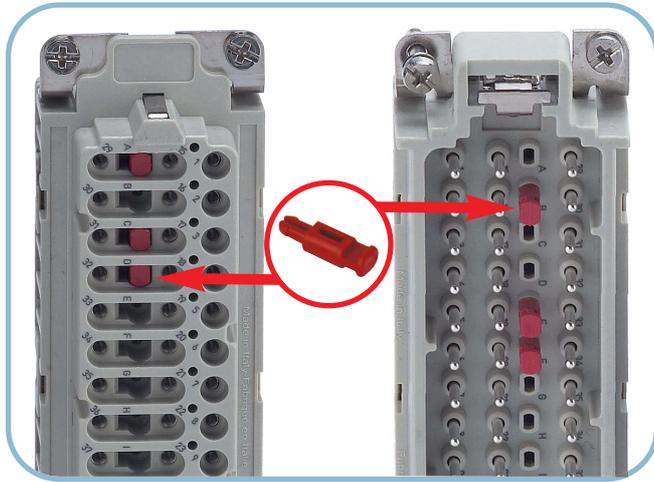
The actuator buttons are supplied lifted, in the “open terminal” position and are easily distinguishable by the **orange colour which makes them stand out from the insulating body of the connector**.

The advantage of such an **exclusive solution** is that the **actuators disappear completely within the body of the connector**, making it easy to identify terminals not yet closed and eliminating possible obstacles to the movement of the conductors during installation and maintenance.

In this manner during the cabling phase the **need for a tool to activate the terminal is completely eliminated** and a **simple operation is all you need to make the connection**.

# CDSH - SQUICH® series

## Spring connection contacts with actuator button



It is possible to insert in the front area the new CR CDS coding pin that enables the polarisation of inserts in a wide range of combinations.

This means that it is possible to install side by side identical connectors with different functions.

The new CR CDS coding pins can also be used in combination with other CR 20 / CRM / CRF / CR 72 metal pins instead of insert fixing screws in order to increase the number of possible combinations.

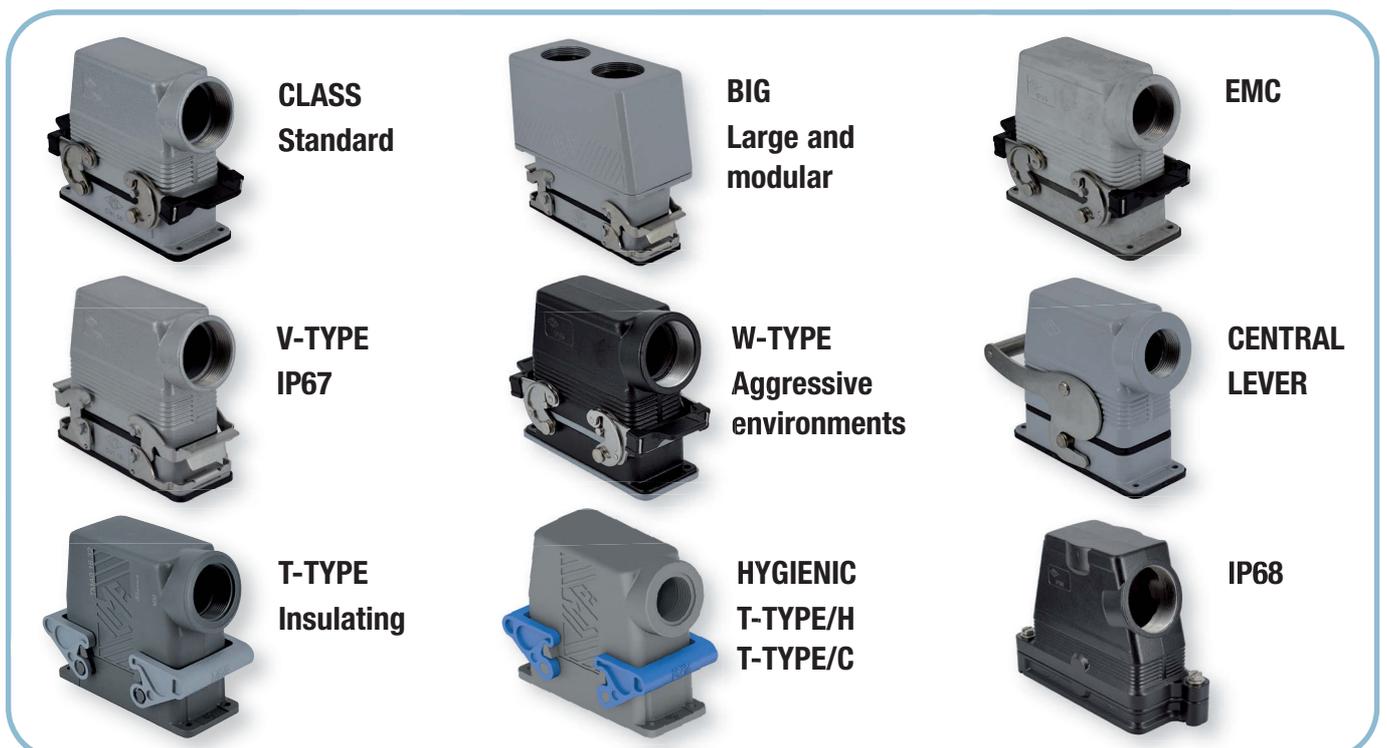
Each position of the coding pin used on the female insert must correspond to an unused position on the male insert.

The required number of coding pins, depending on the size of connectors, and the maximum number of possible codings is shown in the following table.

### CDSH series - Coding with CR CDS pins

Size of connectors	Slots for coding pins (M) = male insert (F) = female insert	Required coding pins for each coupling	Possible codings
9P+⊕	3 (M) + 3 (F)	3 2 (M) + 1 (F)	3
18P+⊕	6 (M) + 6 (F)	6 3 (M) + 3 (F)	20
27P+⊕	9 (M) + 9 (F)	9 5 (M) + 4 (F)	126
42P+⊕	14 (M) + 14 (F)	14 7 (M) + 7 (F)	3.432

### CDSH series can be used with the whole range of ILME enclosures



enclosures:  
size "44.27" page:

C-TYPE IP65/IP66 ..... 240 - 243  
 C7 IP67, single lever ..... 274  
 V-TYPE IP65/IP66, single lever 280/284 - 286  
 BIG hoods ..... 304 - 306  
 T-TYPE IP65 insulating ..... 326 - 327  
 T-TYPE / W IP66 insulating ..... 336 - 337  
 HYGIENIC T-TYPE / H IP66/IP69 ..... 350 - 351  
 HYGIENIC T-TYPE / C IP66/IP69, -50 °C 358 - 359  
 W-TYPE for aggressive environments ..... 373  
 EMC ..... 392  
 central lever ..... 404 - 405  
 IP68 ..... 420 - 423  
 LS-TYPE ..... 450 - 451

panel supports: page:  
COB ..... 462 - 463

refer to catalogue page CN.16

inserts,  
spring terminal connections

silver plated contacts



**AVAILABLE  
3<sup>rd</sup> QUARTER 2016**

description

part No.

spring terminals with actuator button  
 female inserts with female contacts  
 male inserts with male contacts

CDSHF 09  
 CDSHM 09

- characteristics according to EN 61984:

**10A 400V 6kV 3**  
**10A 400V/690V 6kV 2**

- insulation resistance: ≥ 10 GΩ
- ambient temperature limit: -40 °C ... +125 °C
- made of self-extinguishing thermoplastic resin UL 94 V0
- mechanical life: ≥ 500 cycles
- contact resistance: ≤ 1 mΩ
- for maximum current load, see the following load curves inserts

dimensions in mm

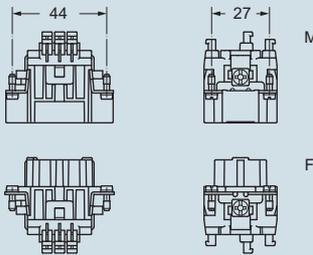
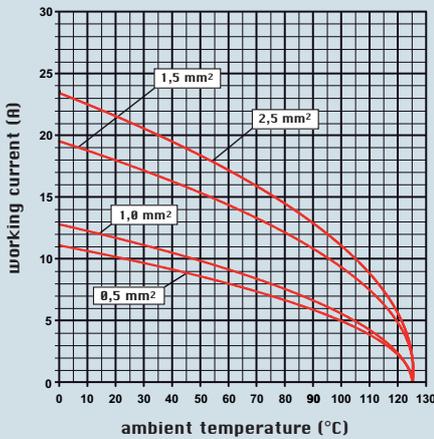
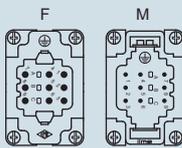


diagram CDSH 09 poles

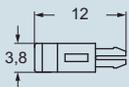


contacts side (front view)

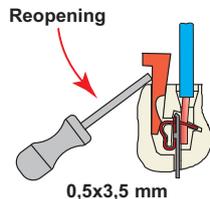
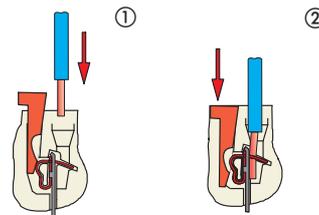


- inserts for conductors section: 0,14 - 2,5 mm² - AWG 26 - 14
- for wires with crimped ferrule, usable section: up to 1,5 mm² (AWG 16)
- conductors stripping length: 9...11 mm

CR CDS coding pin



SQUICH® connections



0,5x3,5 mm

dimensions shown are not binding  
 and may be changed without notice

enclosures:  
size "57.27" page:

C-TYPE IP65/IP66 ..... 244 - 249  
 C7 IP67, two levers ..... 275  
 V-TYPE IP65/IP66, single lever 281/288 - 291  
 BIG hoods ..... 308 - 311  
 T-TYPE IP65 insulating ..... 328 - 329  
 T-TYPE / W IP66 insulating ..... 338 - 339  
 HYGIENIC T-TYPE / H IP66/IP69 ..... 352 - 353  
 HYGIENIC T-TYPE / C IP66/IP69, -50 °C 360 - 361  
 W-TYPE for aggressive environments ..... 374  
 EMC ..... 393  
 central lever ..... 406 - 407  
 IP68 ..... 424 - 427  
 LS-TYPE ..... 452 - 453

panel supports: page:  
COB ..... 462 - 463

refer to catalogue page CN.16

description

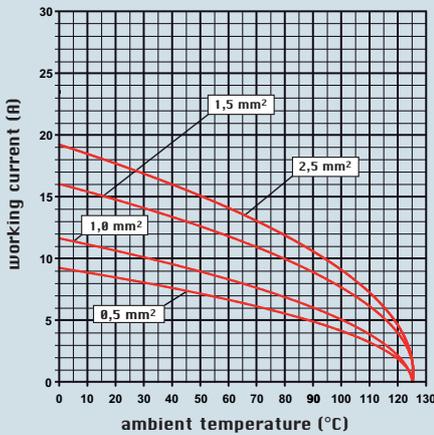
spring terminals with actuator button  
 female inserts with female contacts  
 male inserts with male contacts

- characteristics according to EN 61984:

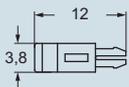
**10A 400V 6kV 3**  
**10A 400V/690V 6kV 2**

- insulation resistance: ≥ 10 GΩ
- ambient temperature limit: -40 °C ... +125 °C
- made of self-extinguishing thermoplastic resin UL 94 V0
- mechanical life: ≥ 500 cycles
- contact resistance: ≤ 1 mΩ
- for maximum current load, see the following load curves inserts

diagram CDSH 18 poles



CR CDS coding pin



dimensions shown are not binding  
 and may be changed without notice

inserts,  
 spring terminal connections

silver  
 plated  
 contacts

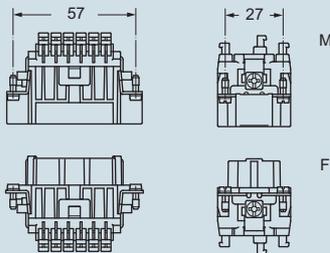


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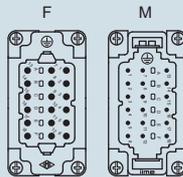
part No.

**CDSHF 18**  
**CDSHM 18**

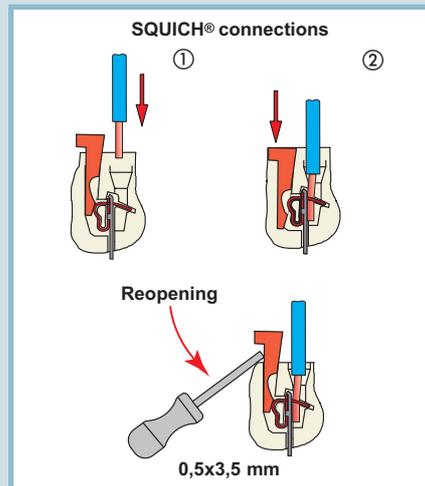
dimensions in mm



contacts side (front view)



- inserts for conductors section: 0,14 - 2,5 mm² - AWG 26 - 14
- for wires with crimped ferrule, usable section: up to 1,5 mm² (AWG 16)
- conductors stripping length: 9...11 mm



enclosures:  
size "77.27" page:

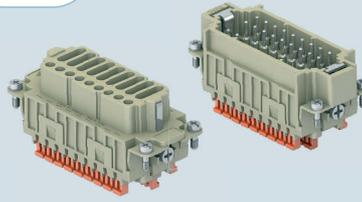
C-TYPE IP65/IP66 ..... 250 - 256  
 C7 IP67, two levers ..... 276  
 V-TYPE IP65/IP66, single lever 282/292 - 295  
 BIG hoods ..... 312 - 315  
 T-TYPE IP65 insulating ..... 330 - 331  
 T-TYPE / W IP66 insulating ..... 340 - 341  
 HYGIENIC T-TYPE / H IP66/IP69 ..... 354 - 355  
 HYGIENIC T-TYPE / C IP66/IP69, -50 °C 362 - 363  
 W-TYPE for aggressive environments ..... 375  
 EMC ..... 394  
 central lever ..... 408 - 409  
 IP68 ..... 428 - 431  
 LS-TYPE ..... 454 - 455

panel supports: page:  
COB ..... 462 - 463

refer to catalogue page CN.16

inserts,  
spring terminal connections

silver plated contacts



**AVAILABLE  
3<sup>rd</sup> QUARTER 2016**

description

part No.

spring terminals with actuator button  
 female inserts with female contacts  
 male inserts with male contacts

CDSHF 27  
 CDSHM 27

- characteristics according to EN 61984:

**10A 400V 6kV 3**  
**10A 400V/690V 6kV 2**

- insulation resistance: ≥ 10 GΩ
- ambient temperature limit: -40 °C ... +125 °C
- made of self-extinguishing thermoplastic resin UL 94 V0
- mechanical life: ≥ 500 cycles
- contact resistance: ≤ 1 mΩ
- for maximum current load, see the following load curves inserts

dimensions in mm

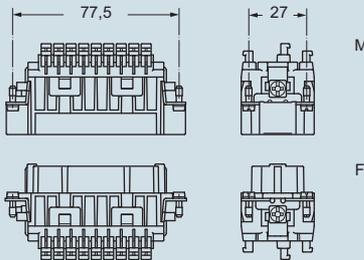
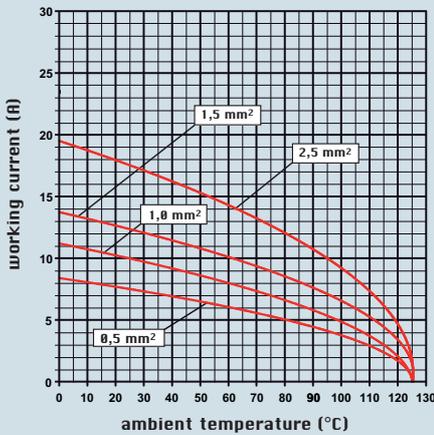
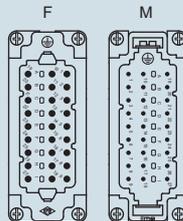


diagram CDSH 27 poles

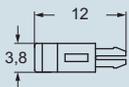


contacts side (front view)

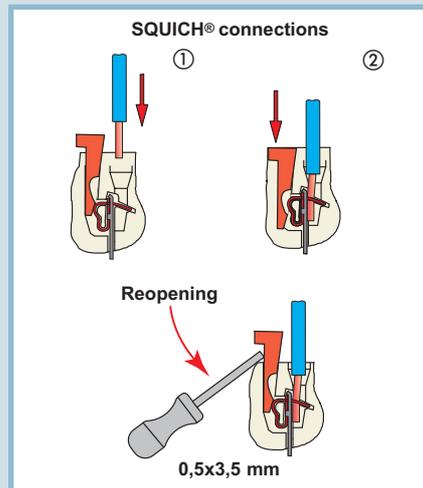


- inserts for conductors section: 0,14 - 2,5 mm² - AWG 26 - 14
- for wires with crimped ferrule, usable section: up to 1,5 mm² (AWG 16)
- conductors stripping length: 9...11 mm

CR CDS coding pin



dimensions shown are not binding  
 and may be changed without notice



enclosures:  
size "104.27" page:

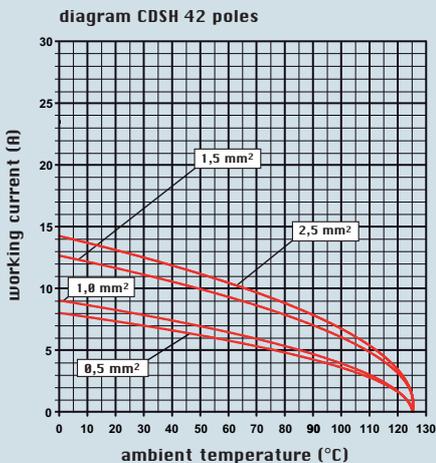
C-TYPE IP65/IP66 ..... 258 - 266  
 C7 IP67, two levers ..... 277  
 V-TYPE IP65/IP66, single lever 283/296 - 299  
 BIG hoods ..... 316 - 319  
 T-TYPE IP65 insulating ..... 332 - 333  
 T-TYPE / W IP66 insulating ..... 342 - 343  
 HYGIENIC T-TYPE / H IP66/IP69 ..... 356 - 357  
 HYGIENIC T-TYPE / C IP66/IP69, -50 °C 364 - 365  
 W-TYPE for aggressive environments ..... 376  
 EMC ..... 395  
 central lever ..... 410 - 412  
 IP68 ..... 432 - 435  
 LS-TYPE ..... 456 - 457

panel supports: page:  
COB ..... 462 - 463

refer to catalogue page CN.16

description  
spring terminals with actuator button  
female inserts with female contacts  
male inserts with male contacts

- characteristics according to EN 61984:  
**10A 400V 6kV 3**  
**10A 400V/690V 6kV 2**  
 - insulation resistance:  $\geq 10 \text{ G}\Omega$   
 - ambient temperature limit:  $-40 \text{ }^\circ\text{C} \dots +125 \text{ }^\circ\text{C}$   
 - made of self-extinguishing thermoplastic resin UL 94 V0  
 - mechanical life:  $\geq 500$  cycles  
 - contact resistance:  $\leq 1 \text{ m}\Omega$   
 - for maximum current load, see the following load curves inserts

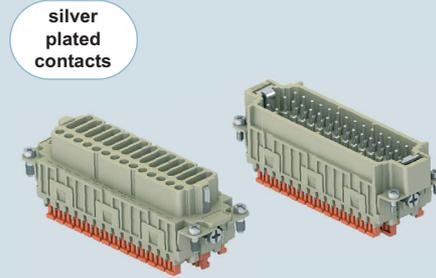


CR CDS coding pin



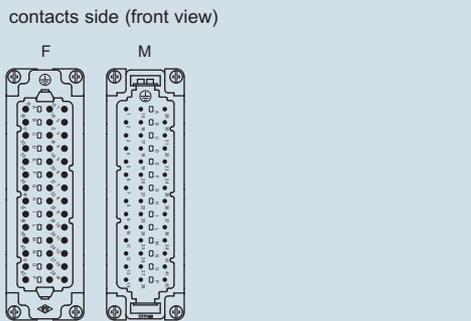
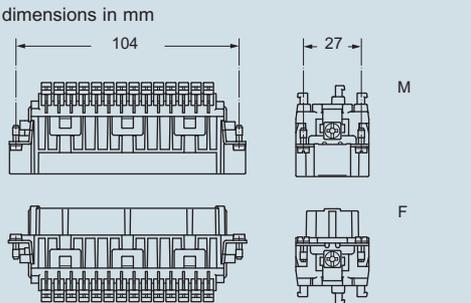
dimensions shown are not binding  
and may be changed without notice

inserts,  
spring terminal connections

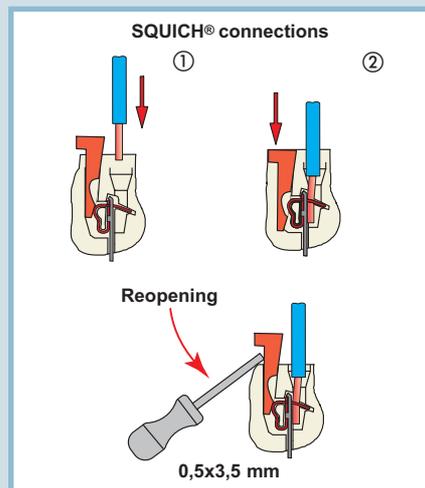


**AVAILABLE**  
**3<sup>rd</sup> QUARTER 2016**

part No.  
**CDSHF 42**  
**CDSHM 42**



- inserts for conductors section:  
0,14 - 2,5 mm<sup>2</sup> - AWG 26 - 14  
 - for wires with crimped ferrule, usable section:  
up to 1,5 mm<sup>2</sup> (AWG 16)  
 - conductors stripping length: 9...11 mm



enclosures:  
size "77.62"

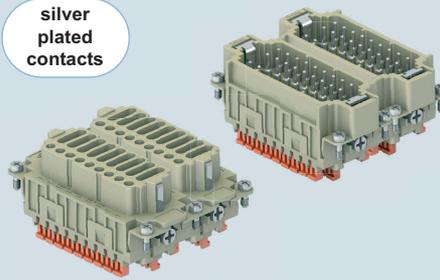
page:

C-TYPE IP65/IP66 ..... 267 - 270  
W-TYPE for aggressive environments ..... 377

refer to catalogue page CN.16

inserts,  
spring terminal connections

silver  
plated  
contacts

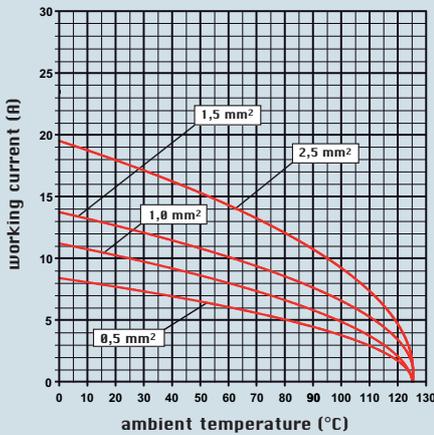


**AVAILABLE  
3<sup>rd</sup> QUARTER 2016**

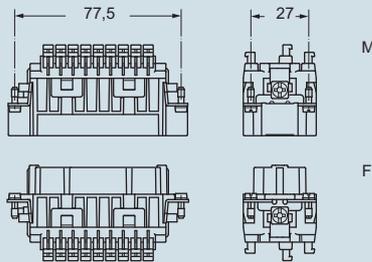
description	part No.	part No.
spring terminals with actuator button female inserts with female contacts, No. (1-27) and (28-54) male inserts with male contacts, No. (1+27) and (28-54)	<b>CDSHF 27</b> <b>CDSHM 27</b>	<b>CDSHF 27 N</b> <b>CDSHM 27 N</b>

- characteristics according to EN 61984:  
**10A 400V 6kV 3**  
**10A 400V/690V 6kV 2**
- insulation resistance:  $\geq 10 \text{ G}\Omega$
- ambient temperature limit:  $-40 \text{ }^\circ\text{C} \dots +125 \text{ }^\circ\text{C}$
- made of self-extinguishing thermoplastic resin UL 94 V0
- mechanical life:  $\geq 500$  cycles
- contact resistance:  $\leq 1 \text{ m}\Omega$
- for maximum current load, see the following load curves inserts

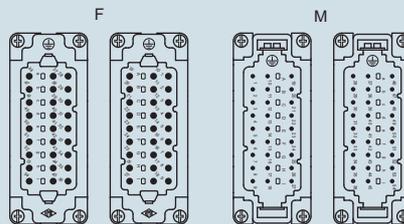
diagram CDSH 54 poles



dimensions in mm

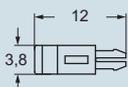


contacts side (front view)

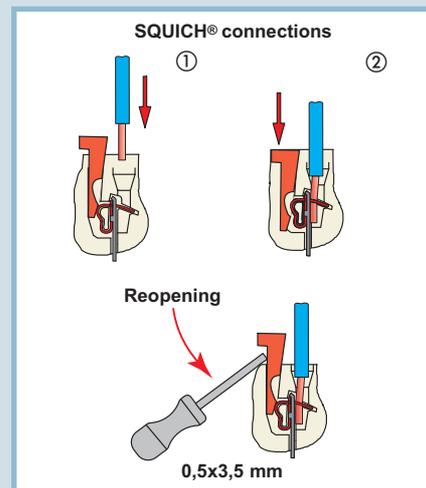


- inserts for conductors section:  
0,14 - 2,5 mm<sup>2</sup> - AWG 26 - 14
- for wires with crimped ferrule, usable section:  
up to 1,5 mm<sup>2</sup> (AWG 16)
- conductors stripping length: 9...11 mm

CR CDS coding pin



dimensions shown are not binding  
and may be changed without notice



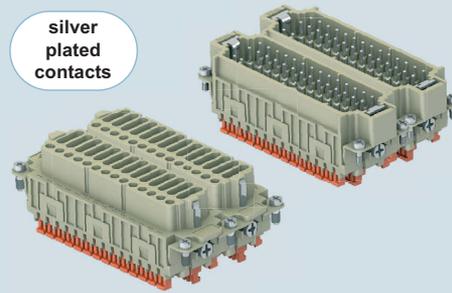
enclosures:  
size "104.62"

page:

C-TYPE IP65/IP66..... 271  
W-TYPE for aggressive environments 378

refer to catalogue page CN.16

inserts,  
spring terminal connections



silver plated contacts

**AVAILABLE  
3<sup>rd</sup> QUARTER 2016**

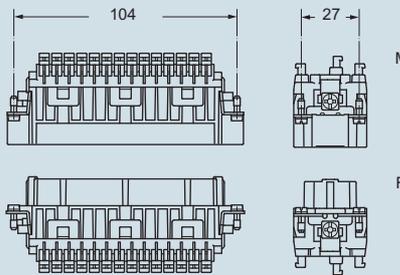
description	part No.	part No.
spring terminals with actuator button	<b>CDSHF 42</b>	<b>CDSHF 42 N</b>
female inserts with female contacts, No. (1-42) and (43-84)	<b>CDSHM 42</b>	<b>CDSHM 42 N</b>
male inserts with male contacts, No.(1-42) and (43-84)		

- characteristics according to EN 61984:

**10A 400V 6kV 3**  
**10A 400V/690V 6kV 2**

- insulation resistance: ≥ 10 GΩ
- ambient temperature limit: -40 °C ... +125 °C
- made of self-extinguishing thermoplastic resin UL 94 V0
- mechanical life: ≥ 500 cycles
- contact resistance: ≤ 1 mΩ
- for maximum current load, see the following load curves inserts

dimensions in mm



contacts side (front view)

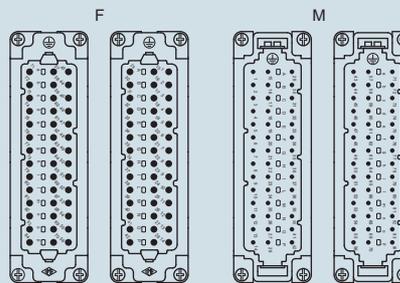
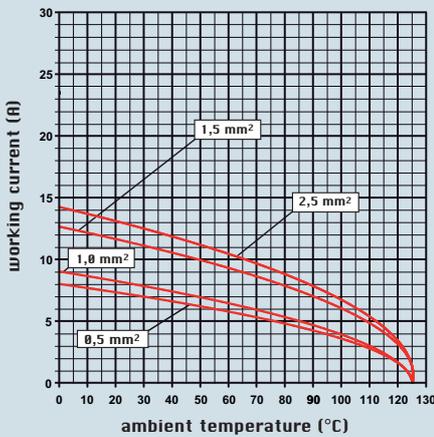
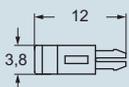


diagram CDSH 84 poles

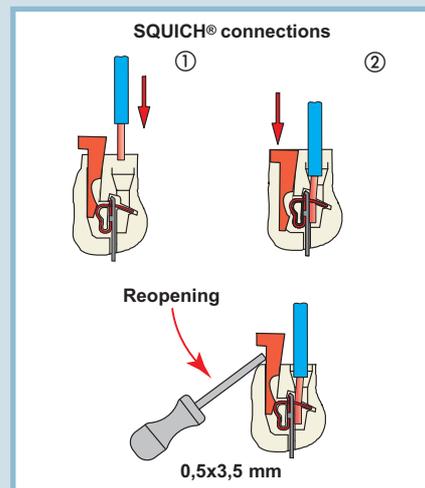


- inserts for conductors section: 0,14 - 2,5 mm² - AWG 26 - 14
- for wires with crimped ferrule, usable section: up to 1,5 mm² (AWG 16)
- conductors stripping length: 9...11 mm

CR CDS coding pin



dimensions shown are not binding  
and may be changed without notice

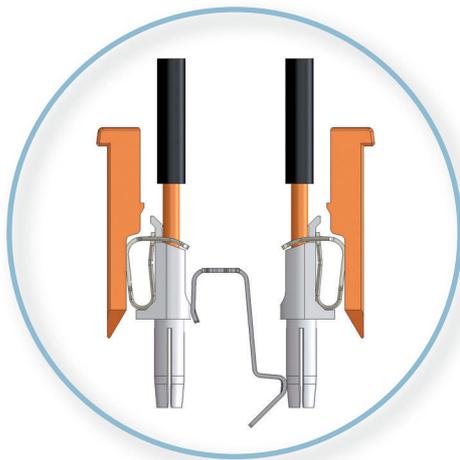


# AutoShort Connector

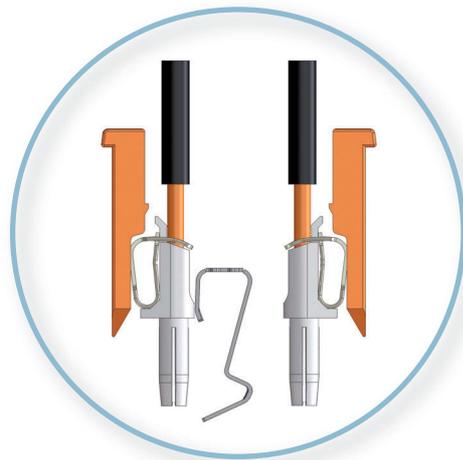
## for the interfacing of measuring current transformer



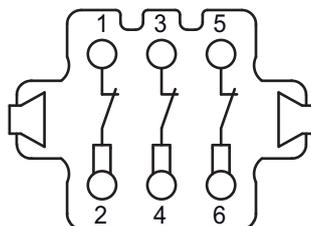
3 contact pairs with an AutoShort NC contact element



①



②



## CDSH NC - SQUICH® series

### AutoShort connector

ILME developed an innovative connector **suitable for interfacing measuring current transformers (CTs)** with the dedicated electronic measurement processing equipment. Use of such systems is increasing in transformer substations with the diffusion of smart grid concepts due to the growth of self-standing power generation plants (photovoltaic, wind).

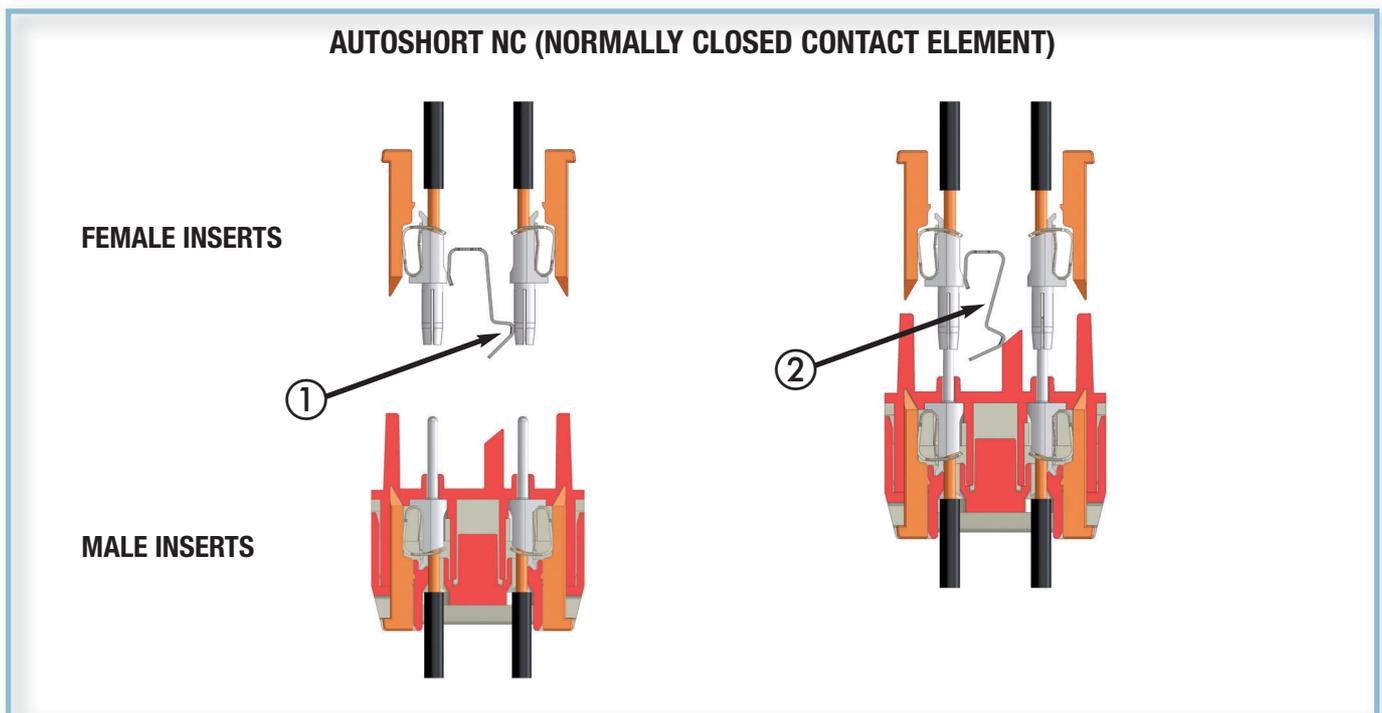
The new **CDSH...NC** connector has the same dimensions of a 6 poles size "44.27" CSH connector, and it is **easy to wire thanks to ILME proprietary SQUICH® tool-less quick connection technology**.

Inside the female insert, for **each of the three contact pairs 1-2, 3-4 and 5-6**, a suitable spring element is foreseen, **providing a NC (normally closed) contact between the female contact pair**.

Said short-circuit element automatically **establishes a short-circuit between the female contact pair while the connector is being unmated**, before the complete withdrawal of the corresponding male connector.

**This protects the measuring current transformer's secondary windings** to which this connector is deemed to be wired, against the high voltage that would arise if the ends of each winding were left open while the primary winding (the power line busbars) are still under load.

During the mating of these specially designed connector inserts, **three corresponding actuator pins realized on the mating face of the male connector**, once the male contacts are already engaged with the corresponding female contacts, **push aside the facing end of the AutoShort NC contact element**, in order to release the short-circuit previously provided. In mated condition the proper termination of the secondary windings of the CT must be provided by the customer's downstream circuit, e.g. by suitable resistors.

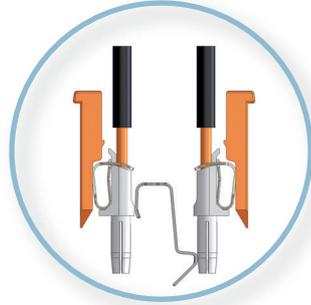


This new **CDSH...NC** connector can be used only for connecting up to three secondary (output) windings of measuring current transformers to specific measuring circuits; on the female side each contact pair is provided with said AutoShort NC contact element, to keep the secondary winding ends shorted while the female connector is not engaged with the male connector, thus avoiding damages to the insulation of the current transformer and consequent hazardous condition for the personnel operating the unmating of the connector while the power busbars are energized. When the female and male connectors are being mated, the short-circuit is released after proper electrical engagement of the two connector halves, thus allowing again current measurement by the dedicated electronic measurement processing equipment wired on the male connector side.

The new connector inserts can be used in size "44.27" connector enclosures, either metal (conductive) or thermoplastics (insulating), with up to IP68 degree of protection (IP66/IP68 with series CG/MG), within enclosures for aggressive environments (series "W") or with up to IP66/IP69 within series T-TYPE HYGIENIC enclosures for hygienic applications.

# CDSH NC - SQUICH® series

## AutoShort connector



### REQUIREMENTS

- › **Connections:** 3 pairs of contacts (with autoshunt on each pair of female connector), plus protective earth, size 44.27 housings
- › **Electrical contacts:** 6 spring clamp type contacts with actuator (SQUICH®) made by copper alloy, silver plated
- › **Wire gauge range:** 0,14 ÷ 2,5 mm<sup>2</sup> (AWG 26 ÷ 14) for solid or unprepared stranded copperwires,  
0,14 ÷ 1,5 mm<sup>2</sup> (AWG 26 ÷ 16) for stranded copper wires prepared with ferrules
- › **Temperature range:** -40 °C ÷ +125 °C
- › **Rating:** 6A 250V 4kV 3; 6A 500V 4kV 2 according EN 61984  
Fault condition (rated short time thermal current): 50A for 1 s
- › **Flammability:** 94V – 0 according to UL 94
- › **Mating cycles:** ≥ 50
- › **Contact resistance (connector mated):** ≤ 3 mΩ
- › **Insulation resistance:** ≥ 10 GΩ
- › **Degree of protection:** IP20 (connector without housing), IP65 or IP66 (connectors in T-TYPE housings), IP66 or more (connectors in ILME metal housings)

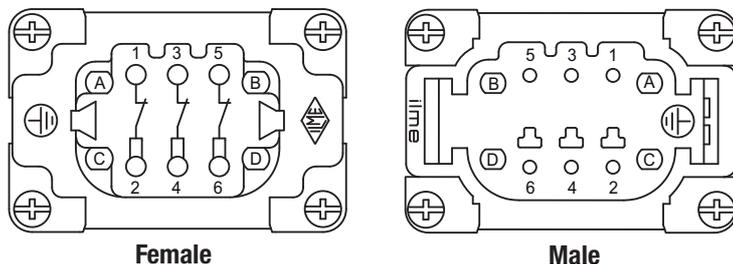
### PIN ASSIGNMENT

Female inserts with NC shorting contacts between contacts of pairs 1-2, 3-4, 5-6, opening upon with male inserts.

Pin assignment of contacts for the connector is the following:

Pin	Assignment
1	Winding 1 start
2	Winding 1 end
3	Winding 2 start
4	Winding 2 end
5	Winding 3 start
6	Winding 3 end
PE	Protective Earth

View from the contact side



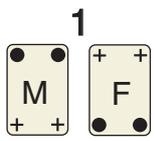
# CDSH NC - SQUICH® series

## AutoShort connector

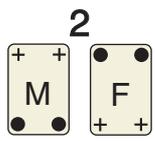
Optionally, it is possible to add the four special coding pins **CR CDS** that allow up to 6 different codings, by installing 2 coding pins on the male connector half and correspondingly 2 on the female connector half, according to the coding scheme provided in the following:

**CODING SCHEME**

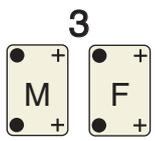
**1**



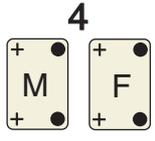
**2**



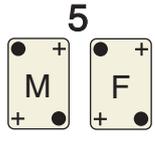
**3**



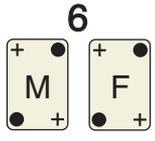
**4**

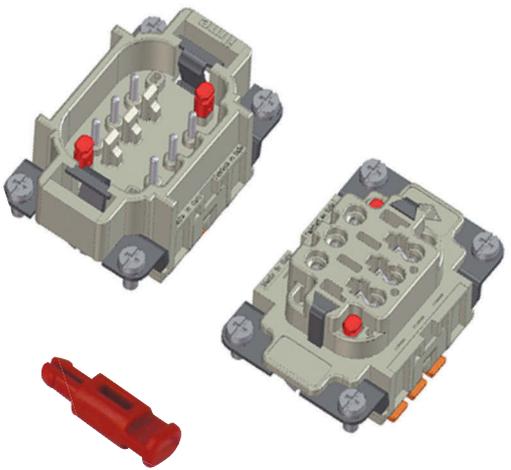


**5**



**6**





**Legend**

- = coding pin installed
- + = no coding pin

The CR CDS coding pins can also be used in combination with other CR 20 / CRM / CRF / CR 72 metal pins instead of insert fixing screws in order to increase the number of possible combinations.

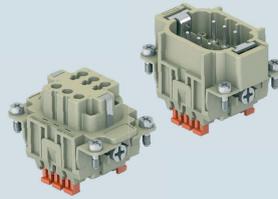
enclosures:  
size "44.27" page:

C-TYPE IP65/IP66 .....	240 - 243
C7 IP67, single lever .....	274
V-TYPE IP65/IP66, single lever .....	280/284 - 286
BIG hoods .....	304 - 306
T-TYPE IP65 insulating .....	326 - 327
T-TYPE / W IP66 insulating .....	336 - 337
HYGIENIC T-TYPE / H IP66/IP69 .....	350 - 351
HYGIENIC T-TYPE / C IP66/IP69, -50 °C .....	358 - 359
W-TYPE for aggressive environments .....	373
EMC .....	392
central lever .....	404 - 405
IP68 .....	420 - 423
LS-TYPE .....	450 - 451

panel supports: page:  
COB .....

refer to catalogue page CN.16

inserts,  
spring clamp connections with actuator pin,  
female inserts with NC shorting contacts



silver plated contacts

**NEW**

description

part No.

spring terminals with actuator button  
female inserts with female contacts  
male inserts with male contacts

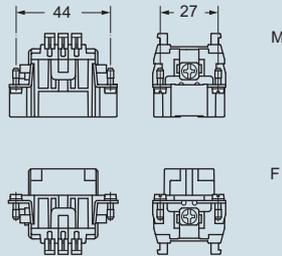
CDSHF 06 NC  
CDSHM 06 NC

- characteristics according to EN 61984:

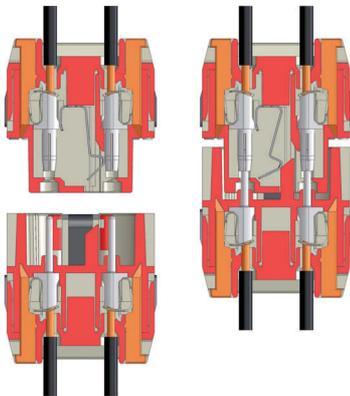
**6A 250V 4kV 3**  
**6A 500V 4kV 2**  
**10A with connector mated**

- insulation resistance:  $\geq 10 \text{ G}\Omega$
- ambient temperature limit:  $-40 \text{ }^\circ\text{C} \dots +125 \text{ }^\circ\text{C}$
- made of self-extinguishing thermoplastic resin 94V-0 according to UL 94
- mechanical life:  $\geq 50$  cycles
- contact resistance:  $\leq 3 \text{ m}\Omega$
- NC = Normally Closed

dimensions in mm

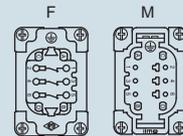


Female inserts with NC shorting contacts



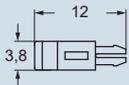
Male inserts

contacts side (front view)

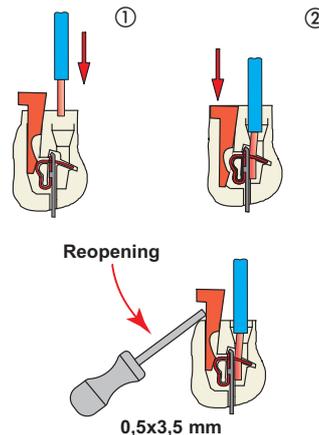


- inserts for conductors cross-section: 0,14 - 2,5 mm<sup>2</sup> - AWG 26 - 14
- for wires with crimped ferrule, useful cross-section: up to 1,5 mm<sup>2</sup> - AWG 16
- conductors stripping length: 9...11 mm

CR CDS coding pin



SQUICH® connections



dimensions shown are not binding  
and may be changed without notice