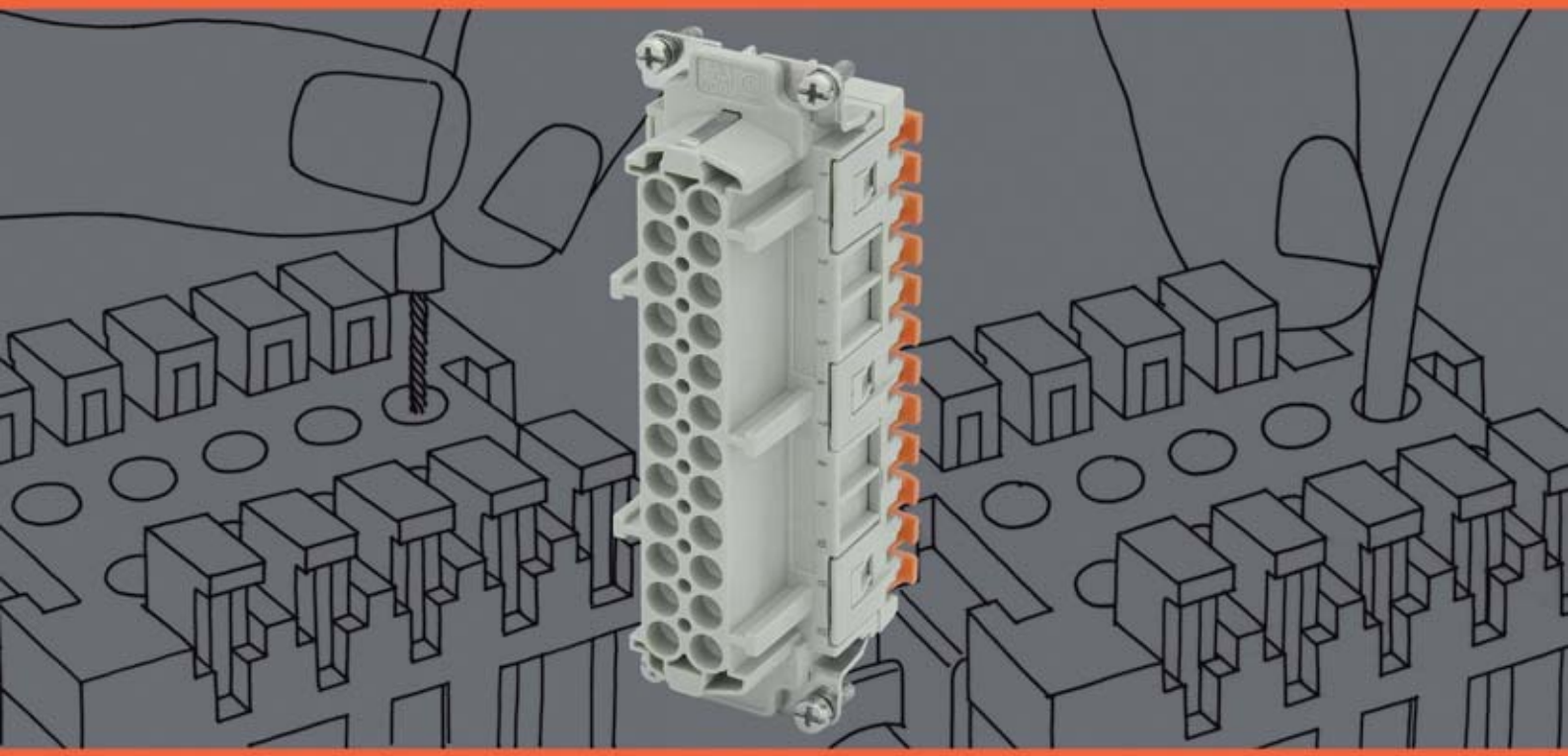


CSH SQUICH

Connections
without tools

ENGLISH

The Company and the Product

INDUSTRIA LOMBARDA MATERIALE ELETTRICO SpA has been operating **in Milan since 1938**, in particular in the electrotechnical sector for the manufacturing of equipment for industrial installations. ILME reflects the traditional **entrepreneurial spirit of Lombardy**, and has enjoyed continuous expansion for over half a century.
The company has carved an important role for itself in the main world markets, also operating directly in the countries that have assumed world leadership in the field of automation, including Germany and Japan.
In the **electrical connection** sector with applications in industrial automation, characterised by top performance and utmost **reliability** needs, ILME is today the acknowledged partner of many leading companies worldwide.

The company's fundamental values are:
product innovation, original solutions, excellent **price-quality ratio**, a customer-oriented sense of **service**, ethical behaviour and an environmentally-friendly approach.
To promote the continuing improvement of its **qualitative results**, ILME has always encouraged its collaborators to work with utmost **responsibility and participation**.
The company focuses on a series of benefits to the user, including research into the most suitable materials, high quality and safe cabling, a rapid turnaround and readily available services.

CE marking

As from 1 January 1997, in order to launch electrical products on the European market the manufacturer must ensure these bear the relevant CE marking, in line with the Low Voltage Directive 73/23/CEE (implemented in Italy as law 18-10-1977 no. 791) and its modification 93/68/CEE (implemented in Italy as L. D. 25-11-1996 no. 626/96, published in the supplement to the Gazzetta Ufficiale of 14-12-1996).
Said marking must be placed on the product - or, if this is not possible, on the packaging, the instructions for use or the warranty certificate - and acts as a declaration by the manufacturer that the product complies with all relevant EU directives.

All ILME products bear the CE marking on the product or packaging.

Indeed, all ILME products fall under the Low Voltage Directive.
A declaration of compliance is required before applying the CE marking.
This document, to which the market is not directly entitled, must be made available to the control authorities (in Italy the Ministry for Industry, Commerce and Handicraft) at all times.
In it, the manufacturer declares the technical safety standard(s) followed to manufacture the product.
These standards must be, in decreasing order of preference:

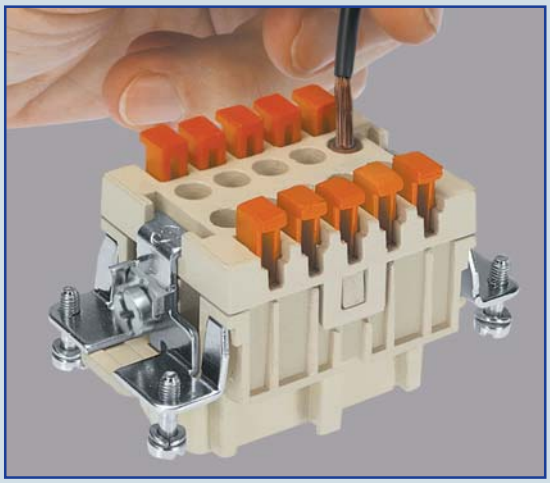
- a European standard (EN prefix)
- a European harmonisation document (HD prefix)
- an international IEC standard
- a national standard
- in the absence of reference standards, the manufacturer's internal specifications, guaranteeing compliance with the directive's basic safety requirements.

Compliance with harmonised technical standards (i.e. ratified by the CENELEC) constitutes presumed conformity to the directive's basic safety requirements.
The CE marking of ILME products results from said products' declaration of conformity to harmonised standards or international IEC standards.
Through the CE marking, ILME declares full compliance, not merely with the directive's basic safety requirements, but also with those international or national EU standards on which voluntary safety certification markings are based (e.g. IMQ and VDE).
In this way, ILME intends to award the CE marking the value of self-certification in terms of safety, given the loss in legal value of voluntary certifications issued by third parties, ratified by directive 93/68/CEE.
Notwithstanding the above, practically all ILME products still bear voluntary conformity markings and are in accordance with the RoHS European Directive.

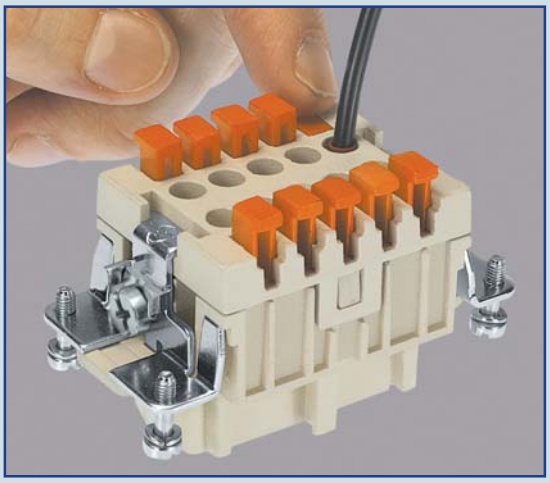
CSH series

Connections without tools

SQUICH



1) insert the wire



2) press

Cabling time: 50% quicker than the screw-type connection and 20% quicker than the conventional spring-type connection

introduction

As an improvement of high-performance industrial connections, ILME developed a new evolution of its own spring-clamp connectors, to meet the market needs and make the installation simpler.

The new **CSH series "SQUICH" (with spring and actuator button)**, the logical evolution of the CSE series, is characterized by the following advantages: reduced cabling time, no need for tools, quick identification of cabled and non cabled terminals, terminals already opened for conductor clamping, possibility to use wires with or without ferrule of up to 2.5 mm^2, thanks to the **"SQUICH"** connection.

Each of the spring terminals has an actuator button (pin), suitably shaped and incorporated in the cavity. When this button is pressed with a finger, 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 distinguisheable by the **orange colour which makes them stand out from the insulating body of the connector**.

The actuator buttons are arranged in their own cavities **aside the openings for the insertion of conductors in the terminals**, for easy access to the terminals themselves in case of re-opening.

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.

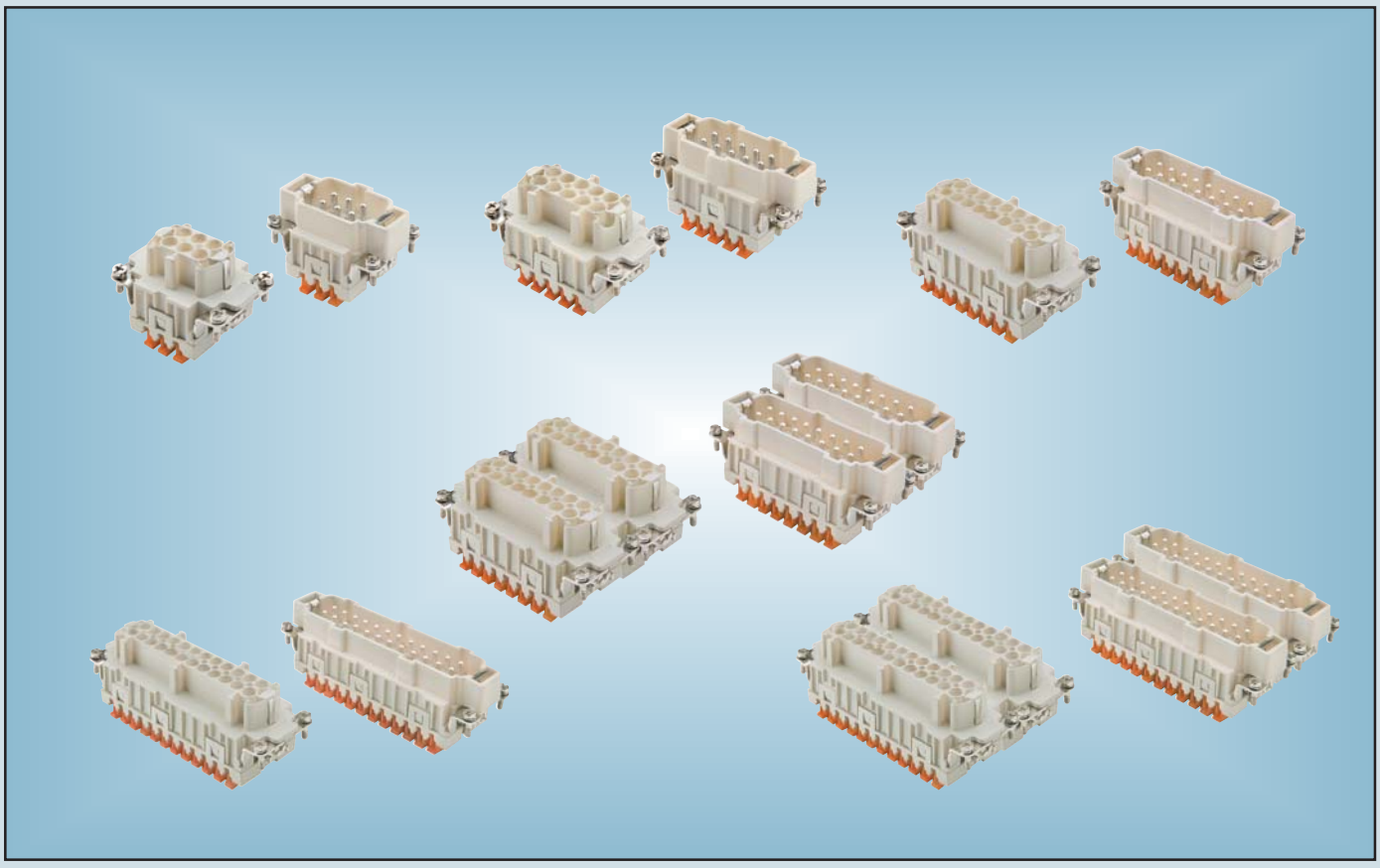
In this manner during the cabling phase the **need for a tool to activate the terminal is completely eliminated**, and **a simple operation is all you need to make the connection**.

To reopen the terminals, simply introduce the tip of a common 0.5x3 mm flat blade screwdriver in the shaped pocket on the head of the actuator, and slightly rotate the screwdriver downwards: this will lift up the actuator in its "open terminal" position.

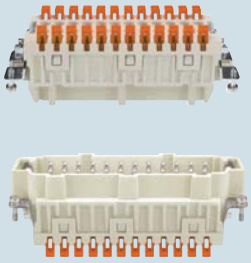
The new connector inserts are available in the **standard versions**, with operating range from -40° C to +125° C, in these sizes:

- "44.27": **CSHM / F 06**
- "57.27": **CSHM / F 10**
- "77.27": **CSHM / F 16** and **CSHM/ F 16 N** (special numbering 17-32)
- "104.27": **CSHM / F 24** and **CSHM/ F 24 N** (special numbering 25-48)

CSH connector inserts can be mated with the corresponding inserts of series CNE, CSE, CCE, CTE, CTSE, CN, CT and CSS.



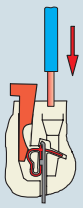
Spring connection contacts with actuator button



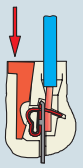
description

inserts series: CSH

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)**
- no cabling tool is necessary
- it offers an excellent fastening solution and a great resistance to strong vibrations
- allows rigid and flexible wires with cross-sections between 0,14 and 2,5 mm² to be used (26 - 14 AWG)
- greatly reduces insert preparation and cabling times
- a screwdriver with a 0,5 x 3 mm blade is the only tool required to remove the wire from the contact.

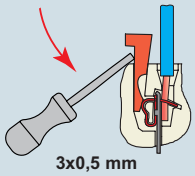


Step 1
deep insertion of the conductor (with its insulation removed) in its own round seat



Step 2
press the actuator button to close the terminal

Reopening



inserts series		**CSH**
No. of poles [1]	main contact + m	**6, 10, 16, 24, (32), (48)**
	auxiliary contacts	--
rated current [2]		16A
EN 61984 pollution degree 3	rated voltage	500V
	rated holding impulse withstand voltage	6kV
	pollution degree	3
EN 61984 pollution degree 2	rated voltage	400/690V
	rated holding impulse withstand voltage	6kV
	pollution degree	2
UL/CSA certification	rated voltage (a.c./d.c.)	600V
certifications [3]		(UL), (CSA), (CCC)
contact resistance		≤ 3 mΩ
insulation resistance		≥ 10 GΩ
ambient temperature limit (°C)	min	-40
	max	+125
degree of protection	with enclosures	IP65, IP66, IP68 (according to type)
	without enclosures	IP20
conductor connections		spring and clamp with actuator button
conductor cross-section	mm²	0,14 - 2,5
	AWG	26 - 14
mechanical endurance (mating cycles)		≥500

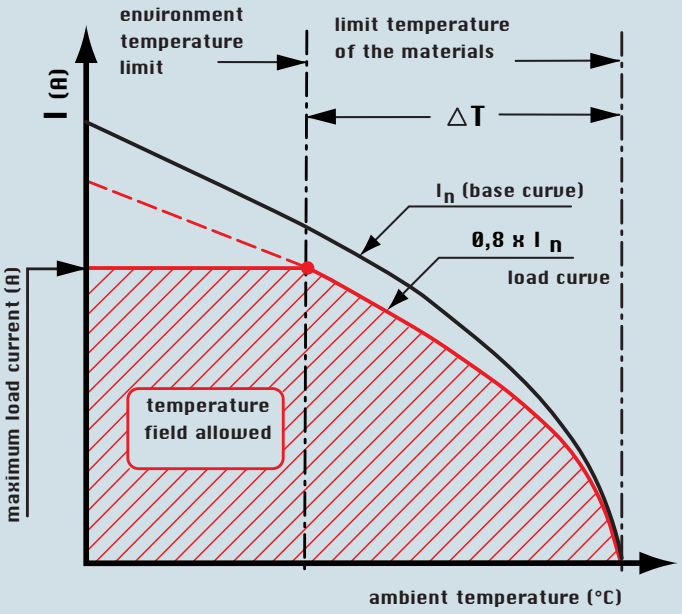
1) Polarities shown in brackets may be achieved by using two inserts in their own double housings.
2) Please check the insert load curves to establish the actual maximum operating current according to the ambient temperature.
3) Certifications shown in brackets are currently being applied for.

series CSH

general

load curves

The permitted current carrying capacity for connectors is variable: it becomes lower with the increase of the number of poles and of the ambient temperature in which the connector is installed and it depends upon the thermal properties of the material used for the contacts and the insulating parts including those of the type of conductor used.
The current carrying capacity is obtained from the load curves which are constructed according to standard IEC 60512-5-2 for currents circulating simultaneously in all poles.
The limit current curves express current values that determine the achievement of the upper limit temperature of the materials. The choice of the permanent load applicable on the contacts must be made within the field of operation possible delimited by the above mentioned curves.
Since use of connectors at the limit values of their characteristics is not recommended, **the base curve** is de-rated. The reduction of the load currents to 80% defines the correction curve where both the maximum permissible contact resistances and the inaccuracy of the temperature measurements are sufficiently taken into consideration.
The correction curve represents the final **limit current curve (load curve)** as defined by standard IEC 60512-5-2. It therefore bears in consideration the differences between the various connector inserts, as well as errors in the temperature measurements.
All the load curves presented here below include the correction.



Legend:

Maximum load current (A): value for which the connector reaches the upper limit temperature of the material at the corresponding ambient temperature intersected on the load curve.
Upper limit temperature of the materials: value determined by the characteristics of the material used. The sum of the environmental temperature and the increase of the ¢t (temperature rise) caused by the current flow must not exceed the limit temperature of the materials.
Environment temperature limit: the environmental conditions must not exceed this value. It may be known and determines the maximum load current, or it may be directly obtained from the load curve.
Base curve: set of current and temperature values obtained from laboratory tests and influenced by the connector's characteristics (number of poles, construction shape, thermal conductivity of the materials, etc.) and the cross-section of the conductor used.
Load curve (limit current curve): obtained from the load curve via the safety coefficient.
ΔT (temperature rise): temperature rise produced by a permanent current circulating through all the poles of a connector coupling; difference between the upper limit temperature of the material and the ambient temperature obtained on the limit current curve.

curves

diagram CSH 06 poles

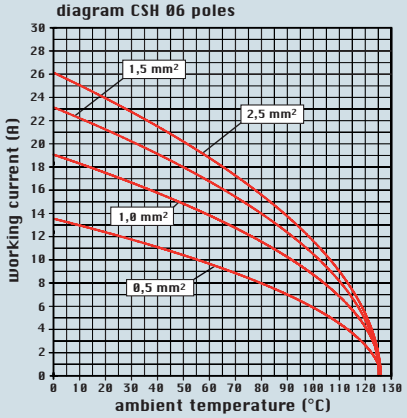


diagram CSH 10 poles

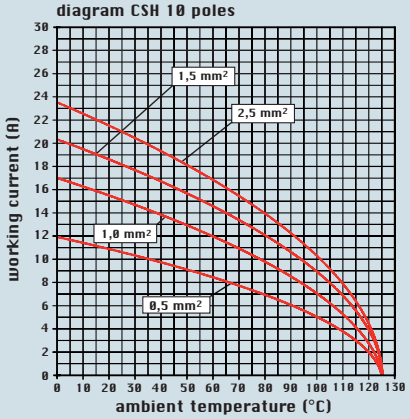


diagram CSH 16 and 32 poles

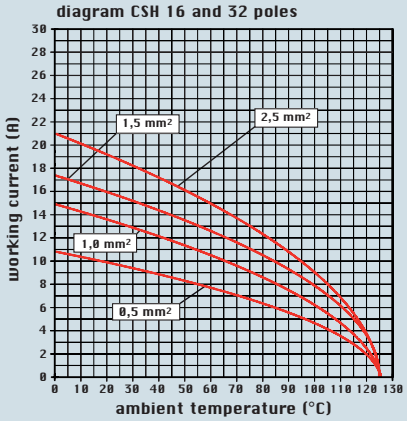
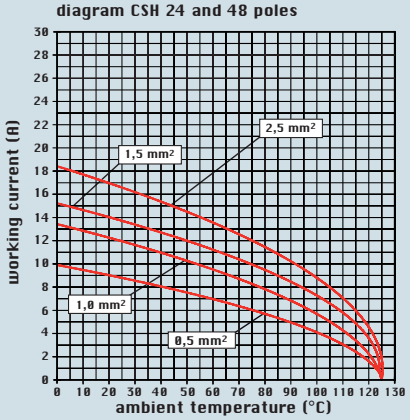


diagram CSH 24 and 48 poles



CSH 6 poles + ⏚ 16A - 500V

enclosures **size “44.27”**

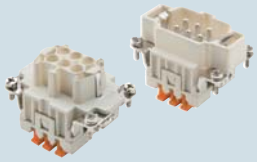
standard ..... page: 176 ÷ 179*
aggressive environments page: 181*
EMC ..... page: 182*

panel supports:
COB ..... page: 258 ÷ 259*

- characteristics according to EN 61984:
  16A 500V 6kV 3
- for maximum current load, see the insert load curve section on page 4

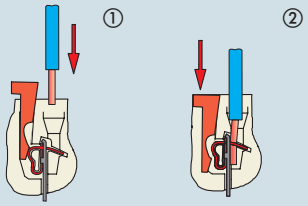
*refer to catalogue page CN.07

inserts,
spring terminal connections

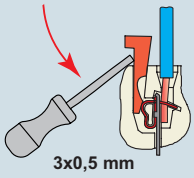


description	part No.
spring terminals with actuator button female inserts with female contacts male inserts with male contacts	**CSHF 06** **CSHM 06**

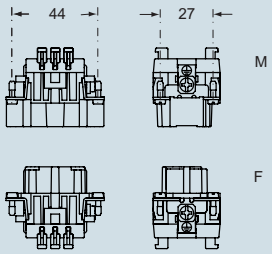
SQUICH connections



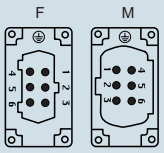
Reopening



dimensions in mm



contacts side (front view)



- connector inserts for conductor cross-sections:
  0,14 - 2,5 mm² - AWG 26 - 14
- stripping length 9 - 11 mm

dimensions shown are not binding
and may be changed without notice

CSH 10 poles + ⏚ 16A - 500V

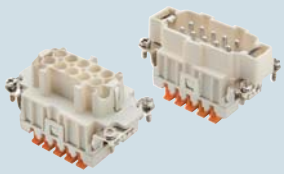
enclosures: **size “57.27”**

panel supports:

- characteristics according to EN 61984:
  16A 500V 6kV 3
- for maximum current load, see the insert load curve section on page 4

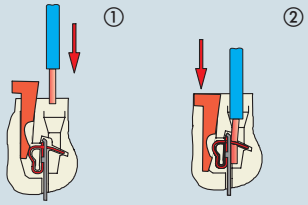
*refer to catalogue page CN.07

inserts,
spring terminal connections

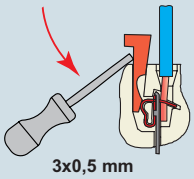


description	part No.
spring terminals with actuator button female inserts with female contacts male inserts with male contacts	**CSHF 10** **CSHM 10**

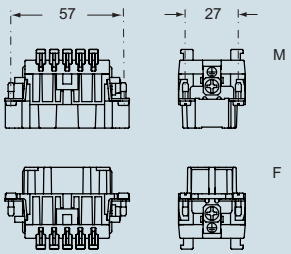
SQUICH connections



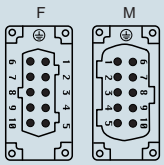
Reopening



dimensions in mm



contacts side (front view)



- connector inserts for conductor cross-sections:
  0,14 - 2,5 mm² - AWG 26 - 14
- stripping length 9 - 11 mm

dimensions shown are not binding
and may be changed without notice

CSH 16 poles + ⏚ 16A - 500V

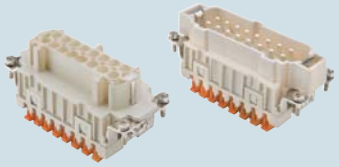
enclosures: **size “77.27”**

panel supports:

- characteristics according to EN 61984:
  16A 500V 6kV 3
- for maximum current load, see the insert load curve section on page 4

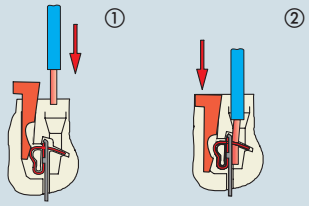
*refer to catalogue page CN.07

inserts,
spring terminal connections

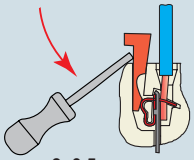


description	part No.
spring terminals with actuator button female inserts with female contacts male inserts with male contacts	**CSHF 16** **CSHM 16**

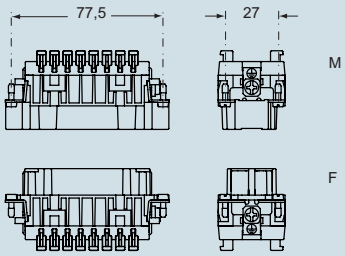
SQUICH connections



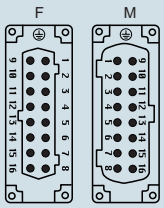
Reopening



dimensions in mm



contacts side (front view)



- connector inserts for conductor cross-sections:
  0,14 - 2,5 mm² - AWG 26 - 14
- stripping length 9 - 11 mm

dimensions shown are not binding
and may be changed without notice

CSH 24 poles + ⏚ 16A - 500V

enclosures: **size “104.27”**

standard ..... page: 212 ÷ 216*
aggressive environments page: 223*
EMC ..... page: 224*

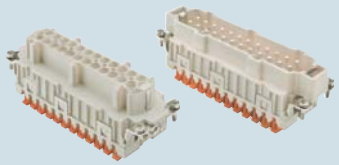
panel supports:

COB ..... page: 258 ÷ 259*

- characteristics according to EN 61984:
  16A 500V 6kV 3
- for maximum current load, see the insert load curve section on page 4

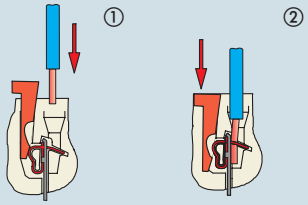
*refer to catalogue page CN.07

inserts,
spring terminal connections

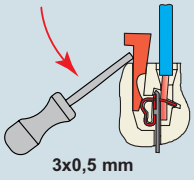


description	part No.
spring terminals with actuator button female inserts with female contacts male inserts with male contacts	**CSHF 24** **CSHM 24**

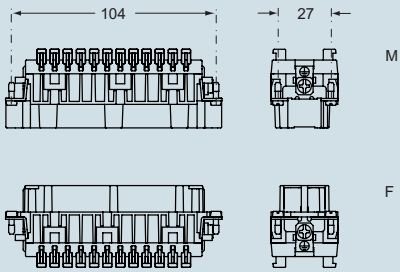
SQUICH connections



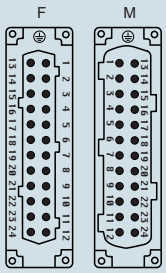
Reopening



dimensions in mm



contacts side (front view)



- connector inserts for conductor cross-sections:
  0,14 - 2,5 mm² - AWG 26 - 14
- stripping length 9 - 11 mm

dimensions shown are not binding
and may be changed without notice

CSH 32 poles + ⏚ 16A - 500V

enclosures: **size “77.62”**

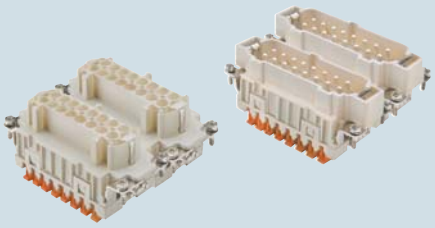
standard ..... page: 226 ÷ 229*
aggressive environments page: 230*

panel supports:
COB ..... page: 258 ÷ 259*

- characteristics according to EN 61984:
  16A 500V 6kV 3
- for maximum current load, see the insert load curve section on page 4

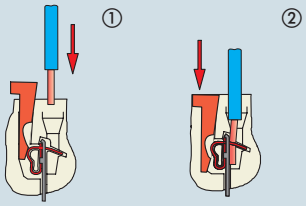
*refer to catalogue page CN.07

inserts,
spring terminal connections

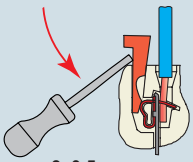


description	part No.	part No.
spring terminals with actuator button female inserts with female contacts, num. (1÷16) and (17÷32) male inserts with male contacts, num. (1÷16) and (17÷32)	**CSHF 16** **CSHM 16**	**CSHF 16 N** **CSHM 16 N**

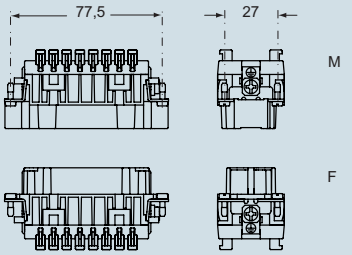
SQUICH connections



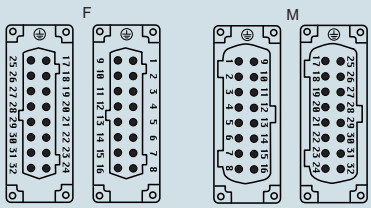
Reopening



dimensions in mm



contacts side (front view)



- connector inserts for conductor cross-sections:
  0,14 - 2,5 mm² - AWG 26 - 14
- stripping length 9 - 11 mm

dimensions shown are not binding
and may be changed without notice

CSH 48 poles + ⏚ 16A - 500V

enclosures: **size “104.62”**

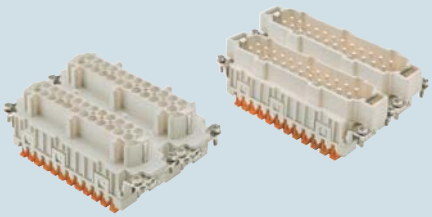
standard ..... page: 232*
aggressive environments page: 234*

panel supports:
COB ..... pag.: 258 ÷ 259*

- characteristics according to EN 61984:
  16A 500V 6kV 3
- for maximum current load, see the insert load curve section on page 4

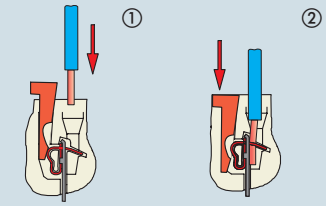
*refer to catalogue page CN.07

inserts,
spring terminal connections

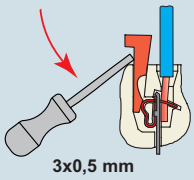


description	part No.	part No.
spring terminals with actuator button female inserts with female contacts, num. (1÷24) and (25÷48) male inserts with male contacts, num. (1÷24) and (25÷48)	**CSHF 24** **CSHM 24**	**CSHF 24 N** **CSHM 24 N**

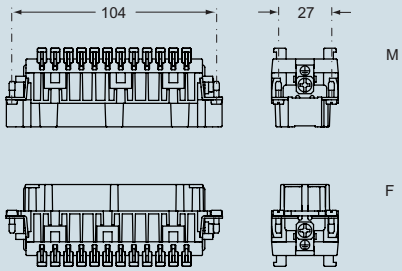
SQUICH connections



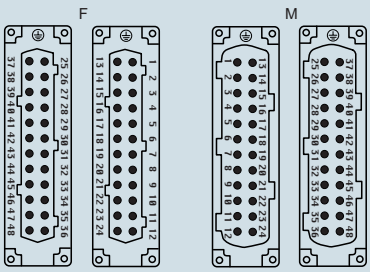
Reopening



dimensions in mm



contacts side (front view)



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