Multipole connectors
Railway Applications

ENGLISH

The Company and the Product

I.L.M.E. SpA - INDUSTRIA LOMBARDA MATERIALE ELETTRICO - 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.

ISO 9001 certification: 2015
Design, manufacture and distribution of industrial electrical equipment (IAF 19)
Certificate N° 50 100 11133

Multipole connectors

Railway Applications

Table of contents

Fire protection standards for railway applications

The new European standard **EN 45545** governing fire protection on railway vehicles was published in 2013. In Italy, the various parts are:

- **UNI CEI EN 45545-1**:2013-05 Railway Applications – Fire protection on railway vehicles – Part 1: General;
- **UNI CEI EN 45545-2**:2013-05 Railway Applications – Fire protection on railway vehicles – Part 2: Requirements for fire behaviour of materials and components;
- **UNI CEI EN 45545-3**:2013-05 Railway Applications – Fire protection on railway vehicles – Part 3: Fire resistance requirements for fire barriers;
- **UNI CEI EN 45545-4**:2013-05 Railway Applications – Fire protection on railway vehicles – Part 4: Fire safety requirements for rolling stock design;
- **UNI CEI EN 45545-5**:2013-05 Railway Applications – Fire protection on railway vehicles – Part 5: Fire safety requirements for electrical equipment, including that of trolley buses, track guided buses and magnetic levitation vehicles;
- **UNI CEI EN 45545-6**:2013-05 Railway Applications – Fire protection on railway vehicles – Part 6: Fire control and management systems;
- **UNI CEI EN 45545-7**:2013-05 Railway Applications – Fire protection on railway vehicles – Part 7: Fire safety requirements for flammable liquid and flammable gas installations.

The standard replaces the previous voluntary Technical Specification CEN/TS 45545:2009 and has formalised the withdrawal of all conflicting national standards as of 1st April 2016, the date on which the following parallel standards cease to be effective: in Italy **UNI CEI 11170-1**:2005, **UNI CEI 11170-2**:2005 and **UNI CEI 11170-3**:2005, in France, **NF F 16-101**:1988 and **NF F 16-102**:1992, in Germany, **DIN 5510-2**:2009, in Great Britain, **BS 6853**:1999. These, however, will remain applicable until 31st march 2016. All certificates covering materials issued in line with national standards will remain valid in Europe up until this date. As of 1st April 2016, the only reference standard will be EN 45545:2013.

EN 45545-2 specifies the requirements for the fire behaviour of materials and components of railway vehicles according to the different hazard levels defined by EN 45545-1:2013 (HL = Hazard Level). See Table 1 - Classification of hazard levels (EN 45545-2:2013).

Each hazard level provides for its own specific test procedures, test conditions, fire-fighting requirements and severity (min or max threshold), ranging from **R1** to **R26**. Small electrical and earthing components, such as electrical connectors, must have a nominal fire behaviour rating (self-extinguishing).

94V-0 (standard UL 94)

The thermoplastic insulating material used in ILME connectors complies with the requirements of UL 94V-0. There are no requirements applicable to products with a combustible mass < 10 g not in contact with other unclassified products, if they are installed adjacent to components for which no certificates are available. In this case, the requirements depend on the so-called grouping rules.

The connectors are products not listed in Table 2 of EN 45545-2:2013. As non-listed products, they must satisfy the requirements of Table 3, and as their exposed surface area is ≤ 0.2 m^2, the requirement set for interior installation in railway vehicles is **R22** while for exterior installation it is **R23** (Table 5 of EN 45545-2:2013). The materials making up the connectors constitute the maximum applicable requirement sets. These sets specify parameters, procedures and limit thresholds (min or max) for the tests. In particular, R22 and R23 specify tests and limit values for oxygen content (oxygen index OI), smoke density (D_S max) and toxicity (conventional toxicity index CIT_{NLP}). The polycarbonate used by ILME in its connectors satisfies the limit values specified in EN 45545-2.
See Table 2 - Requirements for unlisted products (including electrical connectors) - at following page.

Up until the publication of the previously mentioned new European standard, the most advanced fire safety standards for the railway industry were French:
– **NF F 16-101** Matériel roulant ferroviaire – Comportement au feu – Choix des matériaux;
– **NF F 16-102** Matériel roulant ferroviaire – Comportement au feu – Choix des équipements électriques;
which in turn referred to the test methods described in standards:
– **NF X 70 100** Analyse de gaz de pyrolyse et de combustion;
– **NF X 10 702** Détermination de l'opacité des fumées en atmosphère non renouvelée.

Table 1 – Classification of hazard levels (EN 45545-2:2013)

	Design category			
Operation category (#)	A: Vehicles forming part of an automatic train having no emergency trained staff on board	D: Double decked vehicles	S: Sleeping and couchette vehicles	N: All other vehicles (standard vehicles)
OC 1	HL1	HL1	HL2	HL1
OC 2	HL2	HL2	HL2	HL2
OC 3	HL2	HL2	HL3	HL2
OC 4	HL3	HL3	HL3	HL3

(#) Relationship between service, infrastructure and evacuation conditions for passengers and staff

Table 2 - Requirements for unlisted products (including electrical connectors)

Test method	Standard	Parameter	Unit	Interior	Exterior	Threshold R22 (more severe than R23)	ILME (polycarbonate)
Oxygen index	EN ISO 4589-2	OI (min)	%	R22	R23	HL1: 28 HL2: 28 HL3: 32	better than R22-HL3
Smoke density	EN ISO 5659-2	D_S max (1)	---	R22	R23	HL1: 600 HL2: 300 HL3: 150	better than R22-HL3
Smoke toxicity	NF X70-100-1 NF X70-100-2	CIT_{NLP} (max)(2)	---	R22	R23	HL1: 1,2 HL2: 0,9 HL3: 0,75	better than R22-HL3

(1) D_S max = specific optical density of smoke

(2) CIT_{NLP} (max) = maximum conventional toxicity index of smoke

These latter were somewhat similar, in terms of methods, to the American standards:

– **ASTM E 662** Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials;
– **ASTM E 162** Standard Test Method for Surface Flammability of Materials Using a Radiant Heat Energy Source.

Test methods referred to in the American reference standard specifying the performance criteria:

– **NFPA 130** Standard for Fixed Guideway Transit and Passenger Rail Systems.

Also widely used are the Bombardier Transportation smoke toxicity specifications:

– **SMP 800-C** Toxic Gas Generation.

In Italy, from 2006 to 31st March 2016, for installation on board railway vehicles, a certificate of conformity to the following Italian railway standards is required:

– **UNI CEI 11170-1:2005** Trains and trams – Fire safety guidelines for trains, trams and track guided vehicles – General principles;
– **UNI CEI 11170-2:2005** Trains and trams – Fire safety guidelines for trains, trams and track guided vehicles – Design recommendations – Fire containment measures – Indication, monitoring and evacuation systems;
– **UNI CEI 11170-3:2005** Trains and trams – Fire safety guidelines for trains, trams and track guided vehicles – Material fire behaviour assessment – Acceptance limits;

published jointly by UNI and CEI on 30/11/2005 with parallel effectiveness until 31st March 2016. In these standards, the requirements for materials relating to electrical connectors are contained in the 2nd schedule "Acceptability criteria for electrical and electronic materials and components" at the application "All other applications including flammable materials" (all applications other than electric cables). For these applications, four material tests are required:

– Exposure to a small flame according to EN ISO 11925-2 with, depending on the level of risk, a resistance to fire of the material of 15 s for LR1 and LR2 and a resistance of 30 s for LR3 and LR4.
– Smokiness in compliance with French standard NF F 16-101 with IF better or equal to F2 for all risk levels. The material we use is classified as F1 (better than F2) according to the tests carried out.
– Smoke optical density measurement, in compliance with French standard NF X 10-702 (from NF F 16-101) with values ≤ 100 for all risk levels LR1…4.
– Toxicity measurement, in compliance with Italian standard CEI 20-37/7, with T ≤ 2 for all risk levels LR1…4.

Tests

EU - The material tested in accordance with the European Technical Specification **CEN/TS 45545-2**:2009 – equivalent in this case to the new standard EN 45545-2:2013 – showed an oxygen index (OI) of 38%, a Ds max (flaming) = 117 and a smoke toxicity index CITNLP = 0.16, **compliant with the requirements of EN 45545-2:2013 for all risk levels: HL1 – HL2 – HL3** and, consequently, for all the design categories (A, D, S, N) and operation categories (1, 2, 3, 4) defined in EN 45545-1:2013.

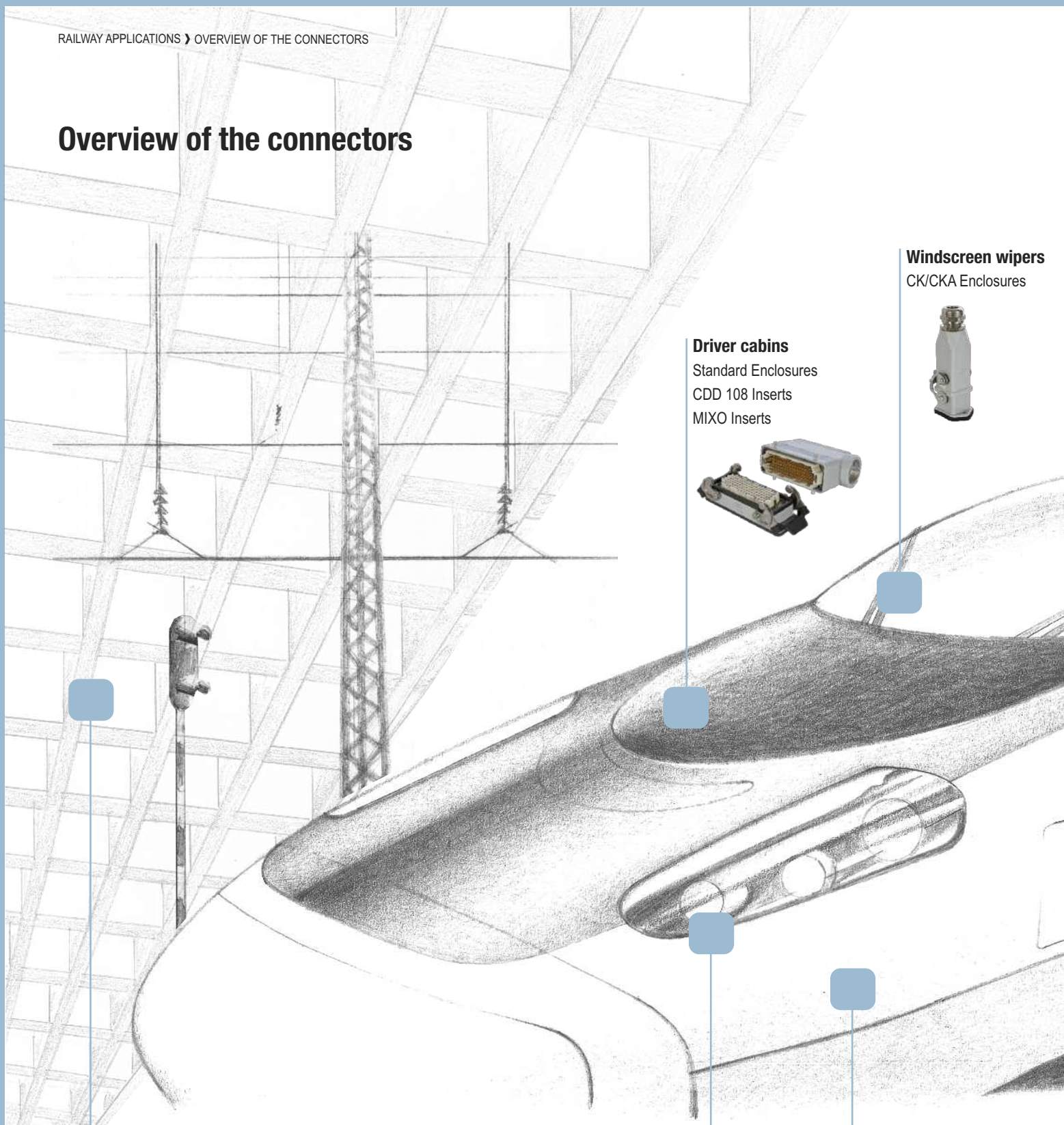
France - The material used in our connectors is certified by an accredited laboratory CERTIFER, according to the previously mentioned French standards **NF F 16-101** and **NF F 16-102,** and has a **classification F1** (Index Fumée I.F. = 15) and a smoke toxicity index (Index Toxicité Fumée) **I.T.C. = 18.** Both values meet the requirements set out by the French standards and by the Italian standard UNI CEI 11170-3 schedule 2, which relates to electrical connectors.

Germany - The material used in our connectors also complies with the German standard **DIN 5510-2**:2009 with a **flammability class = S4, smoke spreading class = SR2** and **drip class = ST2**.

UK - The material was also tested according to British Standard **BS 6853**:1999, with an **R (max) index = 0.6**, consequently within the limits of Tables 7 and 8 of the standard for vehicle categories Ia, Ib and II.

USA - Tests compliant with American standards have also been carried out at a qualified North American laboratory, confirming compliance with the requirements set out by the US Federal Transit Administration "Recommended Fire Safety Practices for Rail Transit Material Selection" for methods ASTM E 662 (NFPA 258) (specific optical smoke density), ASTM E 162 (ASTM D3635) (surface flammability⇒ flame propagation index) and Bombardier Transportation SMP 800-C (smoke and gas toxicity).

Overview of the connectors



Windscreen wipers
CK/CKA Enclosures

Driver cabins
Standard Enclosures
CDD 108 Inserts
MIXO Inserts

Railway infrastructures

Distribution panels
COB Enclosures
The complete Set of Inserts

Signalling
CQ 08/CK Enclosures
CQ/CK/CKS Inserts

Train-lifters
Railway tracks
Standard Connectors

Lights
CK/CKA Enclosures
CK/CKS Inserts

Electrical engines
Standard Enclosures
MIXO Inserts, 16A/40A/
70A/100A/200A

Security systems
EMC Enclosures

Driver control cabinets & others
BIG Enclosures

Pantographs
IP68 Enclosures
CQ 12 - CQ 05 Inserts

Roof installations
Distribution panels
Air conditioning systems
E-Xtreme® Enclosures for extreme heavy-duty environments
CW Enclosures for aggressive environments

NEW

Passenger information
CR...SP/FS/SS
Anchors
for panel installation

On board distribution panels
CR...SP/FS/SS
Anchors
for panel installation

Door controls
CK/CKA Enclosures
CQ 12 Inserts

Auxiliary controls
IP68 Enclosures
CX 1/2 Adaptors

Battery chargers
Auxiliary converters
Inverters
E-Xtreme® Enclosures
IP68 Enclosures
CQEE Inserts

NEW

NEW

Brake control systems
E-Xtreme® Enclosures
C7 IP67 Enclosures
CX MIXOBUS Inserts

NEW

Power installations
E-Xtreme® Enclosures
IP68 Enclosures
CX 6/6 Inserts, 100A/16A

Wagon connections
IP68 Enclosures
MIXO Inserts (up to 200A)
CDD/CQE Inserts

Inserts for multipole connectors

Inserts for multipole connectors are made of self-extinguishing thermoplastic resin UL 94 V-0, normally used for applications in a maximum ambience temperature of 125 °C. Different conductor connection techniques are available: screw, crimp or flexible spring. The contacts are in silver or gold plated brass. Inserts are numbered on both sides by laser printing or moulded.

There is a large number of versions of inserts selected on the basis of the rated voltage (from 50V to 5000V), the rated current (from 5A to 200A max), the number of poles, the different load combinations required (power and signal poles within the same insert). Inserts are approved in accordance with the approval marks including UL, CSA, CQC, GL and EAC.

CQEE
16A CRIMP Contacts

CQE - CCE - CX
16A/40A CRIMP Contacts

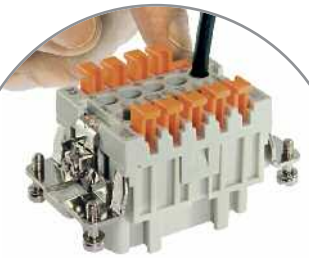
CD-CDD
10A CRIMP Contacts

CX 6/6
16A/100A CRIMP Contacts

CRIMP Contacts
silver - gold plated

CQ
10A/16A/40A
CRIMP Contacts

SQUICH® Series ❯



CSH SQUICH®
16A SPRING contacts with actuator

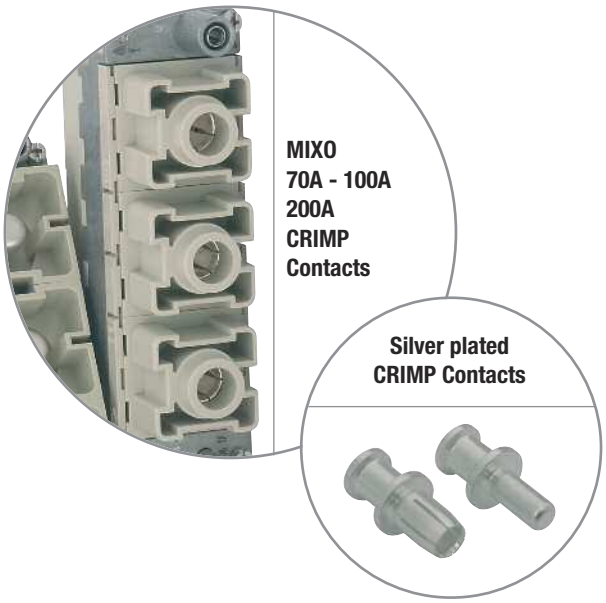
CDSH SQUICH®
10A High density SPRING contacts with actuator

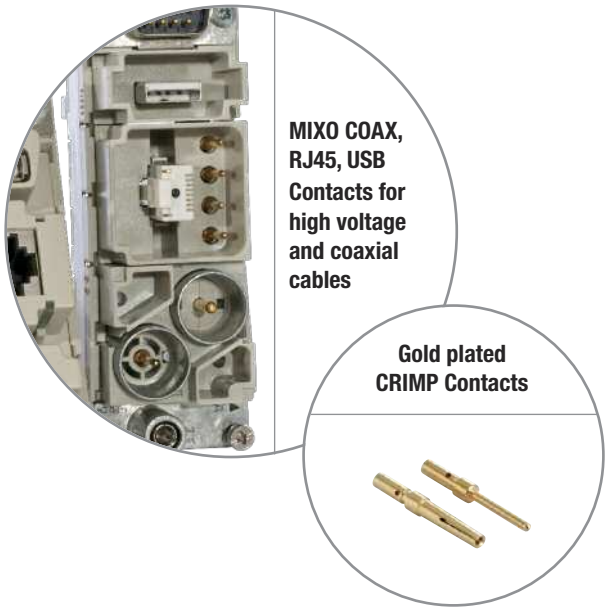
CKSH SQUICH®
10A SPRING contacts with actuator

MIXO Inserts for multipole connectors

The MIXO Series range is a system of modular units for special applications that uses traditional enclosures. Each enclosure can house different types of connections such as: electrical signals and contacts for the conduction of compressed air and liquids with pressure values up to 8 bars, fibre optic connectors, connectors for Ethernet networks, USB and coaxial connectors.

The insert compartments are made up by installing several modules next to one another in order to form a single compact block that is then mounted on metal frames with mandatory housings.Once the modules have been inserted and locked with the special tabs, the connector can be inserted into the enclosure.





Enclosures for multipole connectors

A large number of enclosure versions are available with different combinations of component materials, each one suitable for a specific installation: normal environmental conditions, high temperature environments, aggressive environments and environments that require electromagnetic compatibility.

The principal parts are made in die cast aluminium alloy with a coating of epoxy-polyester powder or in self-extinguishing thermoplastic insulating. They are resistant to impacts and strong mechanical stress.

Watertight ❯

Watertight in a limited space — **V-TYPE IP67**
- Metallic
- Lever in stainless steel
- IP66/IP67

Watertight — **CZ7**
- Metallic
- Rigid locking lever in stainless steel
- IP66/IP67

NEW

Watertight — **IP68**
- Mechanical robustness
- Resistant to chemical agents
- Screw or bayonet locking
- IP66/IP68

Infrastructures & Standard environments ❯

Insulating or Metallic — **CK-CKA**
- IP44, IP66/67

Insulating — **CQ**
- IP66/IP67
- Up to 40A inserts

Mounting inside control panel — **COB**
- Inspectable
- IP20

Classic, flexible — **C-TYPE**
- Metallic
- CLASS rotative lever
- IP65/IP66

Reduces the stress of closing lever — **IL-BRID**
- Metallic
- Stainless steel and thermoplasti material
- IP66

Standard connections — **T-TYPE**
- Insulating
- Robust
- Resistant to chemical agents
- IP65

Enclosures for multipole connectors

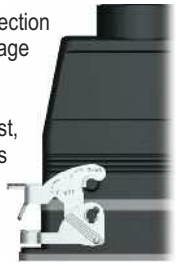
The coupling stability and protection against accidental opening are assured by single or double closing devices comprising levers, springs and pegs in stainless steel or entirely in plastic. Sealing is assured by special gaskets that protect the contact groups inside the enclosures against dust and aggressive agents.

In general, the coupled enclosures with the appropriate user-selected connections guarantee IP44, IP65, IP66, IP67, IP68 and IP69 (IEC/EN 60529) protection rating.

Aggressive Environments ›

E-Xtreme®

Corrosion-proof
- 3.000 hours in salt spray tests
- Durable protection against damage caused by: stone chip, icing, salt mist, UV radiations and harsh gases



NEW

W-TYPE

Aggressive external agents
- Metallic with chrome treatment
- IP66

T-TYPE/W

Aggressive external agents
- Insulating
- Robust
- Chemical resistant
- IP66

Special Enclosures ›

BIG

Large and modular hoods
- Multiple cable entries
- Simple and easy to inspect cabling
- Electronic card slots
- IP66

EMC

Electromagnetic compatibility
- Conductive gaskets
- IP66

CENTRAL LEVER

Limited mounting spaces
- Reduces insert uncoupling stress
- IP65/IP66

Variants ›

CLASS

V-TYPE

SIMPLEX

Enclosures for multipole connectors

IP68 ❯

The hoods with IP68 protection rating are particularly suitable for any application requiring high resistance to pressure, impact and corrosion. They also ensure a good screening for electromagnetic compatibility, resistance to vibrations in compliance with EN 61373 standard and to pressurised water.

Scan to watch the specific movie!

IP68 CGK

❯**Screw locking**

❯**Bayonet locking**

W-TYPE ❯

The Heavy Duty Series are specifically **designed for applications where aggressive external agents** are present. The series are available in 10 different sized enclosure ranges.

Scan to watch the specific movie!

Housings are available in bulkhead or surface mounting. Hoods are available with side or top entry and **easily identified because of their black finish.**

NEW

E-Xtreme® enclosures

E-Xtreme® ❯
Titanium plasma protected, 3.000 hours in salt spray tests

Scan to watch the specific movie!

The new metal enclosures E-Xtreme® Series are the best protection for **extreme** heavy-duty environments. Their **special patented protective coating** assures a high level of protection against the corrosion even in case of long term exposure to salt mist. **The protection is granted also in case of impact with stones and sand.** The materials are able to withstand UV radiations, a wide temperature range and harsh chemicals. The E-Xtreme® series are available in the full range of Ilme aluminum hoods and housings versions.

C-Type LEVER

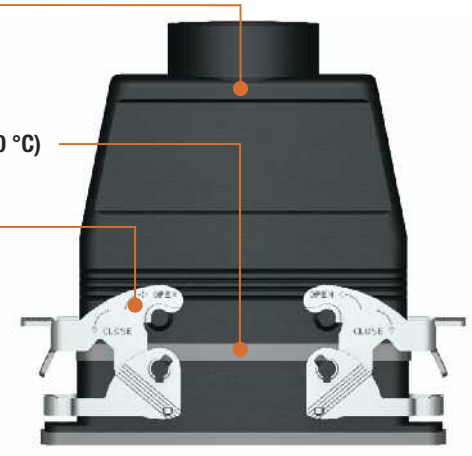
V-Type LEVER

environments

- icing
- very low temperatures
- salt mist
- impact resistant
- UV radiations
- chemical resistant
- high number of matings

advantages

- 3.000 hours in salt spray tests
- IP66 / IP67 / IP69 protection degree (EN 60529)
- corrosion-proof aluminium with a special coating under the powder painting colour RAL 7016 dark grey
- FKM gasket (-40 °C... +180 °C) or silicone gasket (-60 °C... +180 °C)
- V-Type lever or C-Type lever, hood with moulded pegs or riveted stainless steel bolts
- durable protection against damage caused by stone chip, icing, salt mist, UV radiations and harsh gases



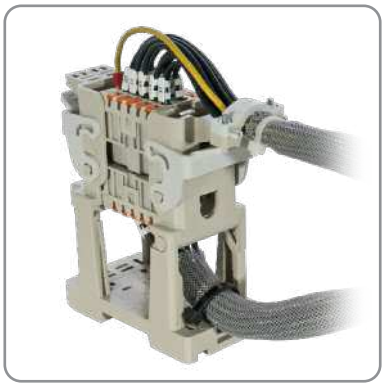
E-Xtreme® for railway applications

COB SYSTEMS ❯

The COB Systems allow to use multipole connectors within electric panels without the traditional metallic housing, as protection is assured by the electric panel itself or other boxes. COB Systems may be assembled in the three following ways:

- on panels by the window snap fastening device;
- on DIN EN 60715 rails, both lengthways and crossways to the support;
- on fixed panels by using screws.

Scan to watch the specific movie!



C-TYPE series

❮ C-Type CLASS

Scan to watch the specific movie!

A large number of enclosure versions are available with different combinations of component materials, each one suitable to a specific installation: normal environmental conditions, high temperature environments, aggressive environments and environments that require electromagnetic compatibility. The coupling stability and protection against accidental opening are assured by single or double closing devices comprising levers, springs and pegs in stainless steel or entirely in plastic (CK and CQ series). Sealing is assured by special gaskets that protect the contact groups inside the enclosures against dust and aggressive agents.

C-TYPE series

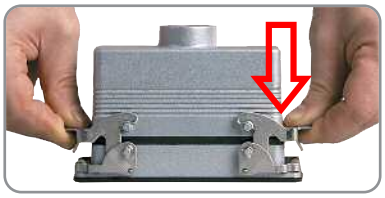
CK series

CQ 08 series

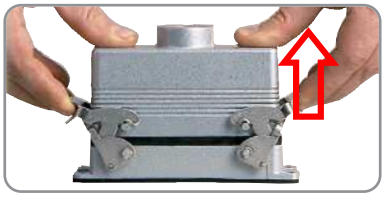
❮ EMC

Scan to watch the specific movie!

The EMC enclosure's surfaces are treated to make them extremely conductive while maintaining the necessary corrosion resistance. The bulkhead mounting housing has a special conductive gasket. For best results the surface underneath the gasket should be conductive. Since the use of this enclosure system presupposes the use of shielded cables, the hood should comprise a special cable gland with anchoring device for the cable shield. These metal cable glands ensure IP66 protection rating, are resistant to corrosion and equipped internally with a contact element with geometry that ensures uniform earthing of the cable conductor shield on the metal shell of the hood.



❯Closing phase



❯Opening phase

❮ V-TYPE IP67

Due to the vertical closing movement, the new lever offers an IP66/IP67 protection (according to EN 60529) when fitted with a complete and coupled connector and used **with ILME standard hoods in die cast aluminum with pegs (without adaptor).**

Scan to watch the specific movie!

The tight seal after closure and the simplicity of the movement are the key features that only ILME has managed to combine into a single lever.

The V-Type lever also has other interesting functional characteristics for several applications:
- **the friction on the pin is almost zero** because the lever exerts its pressure vertically, thus significantly reducing wear in case of frequent use;
- **the complete lever is manufactured in stainless steel** and is fitted with a catch that prevents it from being accidentally detached;
- **the absence of parts in plastic** offers a higher resistance to impacts and to contact with oils and aggressive chemical substances or high ambient temperatures;
- **the lever can be used for applications with vibrations** because it has no springs and is therefore more rigid;
- **the lever occupies a very small space during the closing phase;**
- **it is recommended in cases in which the weight of the cable tends to open elastic levers,** like those with vertically installed connectors and cable exits in the bottom.

BIG HOODS ❯
Large modular enclosures, more entries and space for cables

Scan to watch the specific movie!

The BIG Series, based on the wide-ranging experience achieved by ILME, **introduce a significant change in the design of hoods and have been specifically designed to meet the new requirements of the wiring market.**

The large dimensions of these innovative enclosures have been chosen to offer customers **an adequate space to store conductors.**

The cable compartment is now fully accessible during assembly (the connector insert is fully inserted in the lower half of the enclosure). **Offering three time the space compared to standard enclosures.** This means it is possible to bend cables and pipes with greater bending radiuses.

Due to this special feature, the new BIG enclosures are **particularly suitable for MIXO modular inserts,** being versatile and customizable, for multiple cable entries. **Each insert,** that is used to manage power and signal electrical connections, pneumatic, fibre optic or Ethernet connections, **has a dedicated entry so that it is now possible to use one BIG connector enclosure for installations that previously required two.**

❮ T-TYPE Series

The new T-TYPE Standard and T-TYPE/W Enclosures in **self-extinguishing thermoplastic material** can be particularly used in railway infrastructures.

Scan to watch the specific movie!

The following are the valuable characteristics of both these new enclosures:
- **pre-fastened built-in polyurethane gaskets** for easier installation;
- **external dimensions** of the bulkhead housing are similar to those of the corresponding metal enclosures; hole fixing centres are unchanged;
- **ample space** inside enclosures for cables, with mounted connectors, similar to the corresponding metal high construction versions;
- possibility of making **completely insulated constructions** (equivalent to Class II);
- **absence of powder paint** for environments in which these are not recommended;
- **non-electrostatic** thermoplastic material;
- manufactured from **insulating material,** do not require special reinforced insulation as the metal versions do, for use with series CME higher voltage connector inserts (screw-type terminals).

T-TYPE Standard ❯

- **Built-in polyurethane gaskets**;
- Enclosures in thermoplastic material, **dark grey RAL 7012 colour,** with high thicknesses providing structural solidity and durability.
- **Locking levers** in thermoplastic material colour grey RAL 7001.
- M25, M32 and M40 threaded **cable entries**.
- **IP65** degree of protection according to EN 60529.
- **UL TYPE 12** degree of protection according to ANSI/UL50.
- Each enclosure carries its own part number, thread/size, conformity **markings** and UL type rating.
- Ambient **temperature** range: -40 °C / +90 °C

❮ T-TYPE/W

- Enclosures in **thermoplastic material,** dark grey RAL 7012 colour, with high thicknesses providing structural solidity and durability.
- **Built-in FKM fluoroelastomer sealing gaskets.**
- **Locking levers** in thermoplastic material colour grey RAL 7001.
- M25, M32 and M40 threaded **cable entries.**
- **IP66** degree of protection according to EN 60529.
- Each enclosure carries its own part number, thread size and conformity **markings**.
- Ambient **temperature** range: -40 °C / +90 °C.

As the characterizing element of the T-TYPE/W series is the different sealing gasket material, hoods and covers without sealing gaskets for these series are the same of T-TYPE Standard.

Accessories for multipole connectors

CR...SP/SS/FS ANCHORS ❯

The CR...FS Series of anchorages are designed for use with connector inserts (normal or MIXO modular) without enclosures and enable securing cables with clamps to prevent transmitting friction forces to contacts. CR...SS anchorages (with grip to facilitate detachment) are used for earth connecting several conductors and/or for the screen of shielded cables.

❮ CX 1/2 BD INSERT ADAPTORS

The new CX 1/2 BD Insert Adaptors allow to use round shielded connectors series MIXO BUS (multiaxial, for balanced cables with multiple pairs) or coaxial connectors (for coaxial cables) even in compact enclosures size “21.21” **CKA/MKA or CGK/MGK.** This insert can be used to assemble MIXO coaxial connectors **CX 01 BM/BF** for coaxial cables with a typical impedance of 75 Ω and **CX 01 BCM/BCF** for coaxial cables with a typical impedance of 50 Ω, or **MIXO BUS CX 04 BM/BF** multiaxial shielded connectors with 4 poles + shield and the new **CX 08 BM/BF** shielded connectors with 8 poles + shield, providing **seats for 2 additional optional contacts** series CD for the connection of a SELV (very low safety voltage) supply line.

CR SC / AT / ST SHIELDED CONNECTORS ❯

The CR SC / AT / ST Shielded Connectors have their shield insulated from the enclosure’s earthing point. If you wish to earth-connect the shield, install on the panel an anchorage for shielded cables CR...ST or the CR GND metal adaptor.
Anchorages CR...AT/ATD are designed for installation on the frames of the MIXO modular connectors for earth connecting several cables.

❮ RJ45 CONNECTORS

RJ45 connectors are available both in modular versions and for enclosures series CK-CKA in Ethernet Category 5 and Category 6_A.

ON-LINE CONFIGURATOR

www.ilme.com

VISIT OUR WEBSITE WITH NEW FUNCTIONALITIES!

CAD DRAWINGS

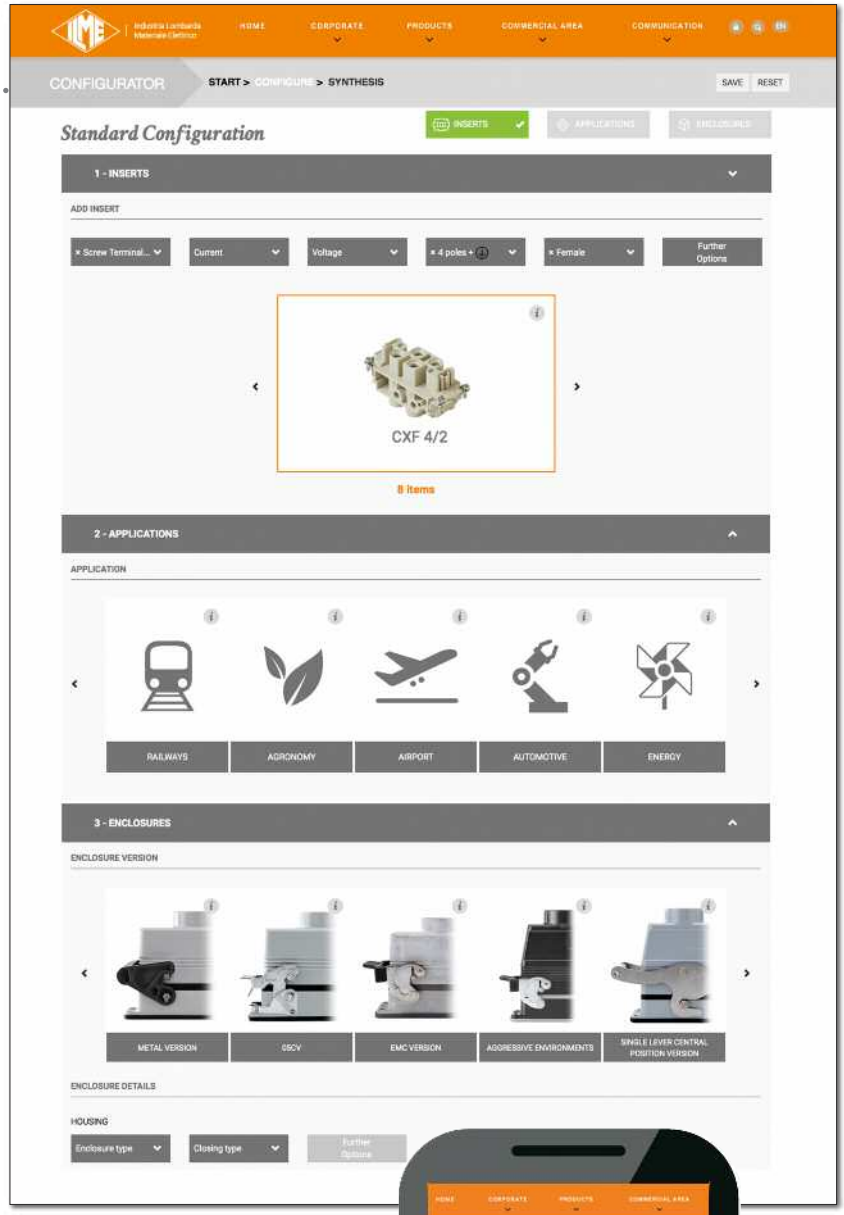
PARTNERSHIP WITH

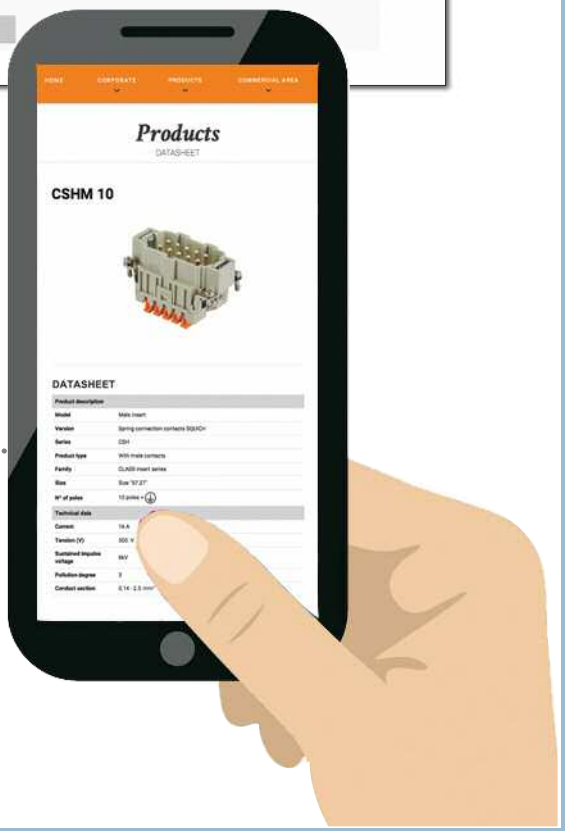
ePLAN data portal

SDProget INDUSTRIAL SOFTWARE

traceparts Product Content Everywhere

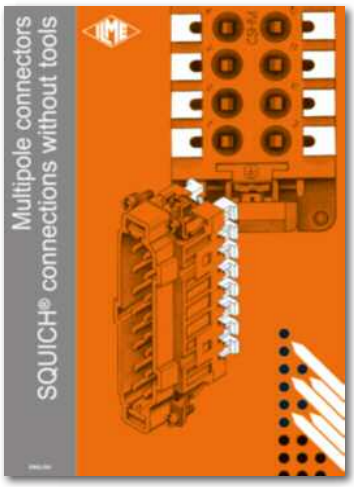
WEB RESPONSIVE





New products 2017
Multipole connectors
including **E-Xtreme®** Series

CN16
Multipole connectors



CSH-SQUICH®
Connection without tools

V-TYPE IP67 ENCLOSURES
V-Type locking enclosures

T-TYPE
THERMOPLASTIC ENCLOSURES
Including W version

BIG HOODS
The space you have
always wanted

I.L.M.E. SpA
Via Marco Antonio Colonna, 9
20149 Milano - Italy
☎ +39 02345605.22 - fax +39 02331058.13
www.ilme.com

ILME FRANCE S.A.R.L.
Rue Roland Garros - BP 125
Parc d'Activités de l'Aéroport
42160 Andrézieux-Bouthéon - France
☎ +33 (0) 4 77 36 23 36 - fax +33 (0) 4 77 36 97 97
ilme-france@ilme.fr
www.ilme.fr

ILME GmbH
Max-Planck-Straße 12
51674 Wiehl - Germany
☎ +49 (0)2261 - 7955-0 - fax +49 (0)2261 - 7955-5
technik@ilme.de
www.ilme.de

ILME UK LIMITED
50 Evans Road, Venture Point
Speke, Merseyside L24 9PB - United Kingdom
☎ +44 (0) 151 3369321 - fax +44 (0) 151 3369326
sales@ilmeuk.co.uk
www.ilmeuk.co.uk

ILME NORDIC AB
Transportvägen 18
24642 Löddeköpinge - Sweden
☎ +46 46 18 28 00 - fax +46 46 18 28 10
info@ilme.se
www.ilme.se

ILME JAPAN CO. LTD.
Kobe International Business Center - 650-0047, 5-2, 5 - Chome,
Minatojima Minami-Machi - Chuo-Ku, Kobe - Japan
☎ +81 7830 22005 - fax +81 7830 22060
info@ilmejapan.co.jp
www.ilme.jp

ILME CHINA CO. LTD.
Room 307, D area, No. 245,
Xin Jun Huan Road, MinHang Dis
201114 Shanghai - China
☎ +86 21 6248 9961 - fax +86 21 3478 8067
info@ilmechina.com
www.ilmechina.com

w w w . i l m e . c o m

XDG FERR 517
8 015747 244459

Catalogues