varisco
solid pumping solutions

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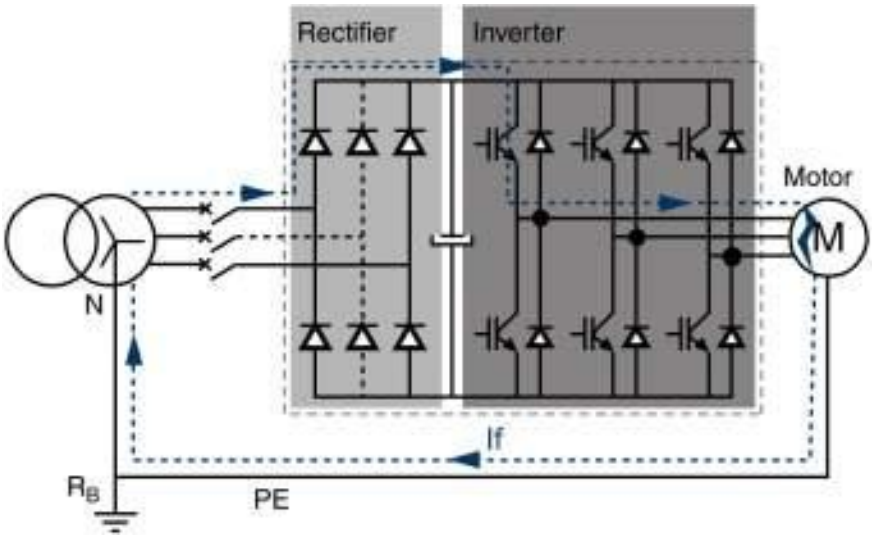

Machine electrical equipment

Instructions for the use and maintenance

Ed. 2011/01 - Rev. 01 - EN - Code M45960

Translation of the original instructions

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1. TECHNICAL DATA

1.1 PREMISE

The supplied equipment consists of the control panel for an electric pump in ATEX execution, compliant with Directive 94/9/EC, by direct-on-line starting in manual and automatic mode.

The scope of supply only consists of the controlgear, the wiring and relative components on the unit: it therefore does not include the connections to the mains.

The user instructions and warnings that accompany the supply consist of the following sections:

(1)	DESCRIPTION
☒	TECHNICAL AND IDENTIFICATION DATA OF THE SUPPLY
☒	TRANSPORT AND INSTALLATION
☒	OPERATION
☒	MAINTENANCE
☒	SAFETY, USE AND MAINTENANCE INSTRUCTIONS IN ACCORDANCE WITH DIRECTIVE 94/9/EC (CONTROL PANEL MANUFACTURER)
☒	DATASHEET OF THE COMPONENTS

The wiring diagrams are not included in this manual and are supplied as a separate document.

Note (1): the selected boxes indicate that the document is included with the supply.

The user instructions and warnings should be carefully read before using the equipment and prior to any intervention, for the system to be used in a rational and safe manner and perform appropriate interventions. In fact, the information within also covers improper procedures, actions and use that can represent a risk for the personnel involved.

Reference to the user instructions and warnings must be allowed in the area surrounding the equipment as they form an integral part of it. These must be stored adequately in a dry and protected place, away from agents that could make them become entirely or partially illegible.

The instructions must be used in such a way so as not to damage its contents. Under no circumstances must parts be removed or rewritten.

Should some sections of the user instructions and warnings be lost or damaged, a copy must be requested, specifying the document code and edition found at the bottom of the page. It is recommended to keep the user instructions updated with any additions or changes made by **Varisco SpA.**

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The identification data of the supply and equipment is also shown on the identification plates affixed to the equipment itself.

If the plates should deteriorate due to wear and not be clearly and entirely legible, it is recommended to request a copy from **Varisco SpA.**

Do not remove or destroy the plates in order for the equipment identification data to always be visible.

1.2 GENERAL TECHNICAL DATA

Below are the technical data and specifications **common** to all the different types of electrical equipment supplied:

EXTERNAL CONFIGURATION OF THE EQUIPMENT	CABINET
CONDITIONS OF INSTALLATION	FIXED EQUIPMENT
VENTILATION	NATURAL
TYPE OF CURRENT	ALTERNATING
POWER SUPPLY SYSTEM	3-PHASE (3F+PE), 3-PHASE MOTOR SINGLE-PHASE (F+N+PE), SINGLE-PHASE MOTOR
INSULATION RATED VOLTAGE	< 1000 V
AUXILIARY CIRCUITS RATED VOLTAGE	24 Vac
INPUT VOLTAGE RANGE OF VARIATION	RATED VOLTAGE +/- 10%
RATED FREQUENCY RANGE OF VARIATION	RATED FREQUENCY +/- 2%
IDENTIFICATION OF THE PROTECTIVE EARTH CONDUCTOR	YELLOW-GREEN
MARKING (ATEX 94/9/EC)	II 2GD Ex d[ia] IIB+H2 T6
DEGREE OF PROTECTION	IP66
DEGREE OF PROTECTION WITH THE DOOR OPEN	IP20
MEASURES FOR PROTECTION OF PERSONS AGAINST ELECTRIC SHOCK	☑ INSULATION OF LIVE PARTS ☑ PROTECTION BY BARRIERS OR ENCLOSURES ☑ USE OF PROTECTION CIRCUITS
OPERATING TEMPERATURE	≤ +40 °C, ≥ -5 °C
ATMOSPHERIC CONDITIONS CONSIDERED	CLEAN AIR, ≤ 50% RELATIVE HUMIDITY AT A MAX TEMPERATURE OF +40 °C WITH NO CONDENSATION
POLLUTION DEGREE[1]	POLLUTION DEGREE 3
INTENDED ALTITUDE OF THE PLACE OF INSTALLATION	LESS THAN 1000 m
EARTHING SYSTEM TO WHICH THE EQUIPMENT IS INTENDED TO BE CONNECTED	TN-S SYSTEM
TYPES OF ELECTRICAL CONNECTIONS OF THE FUNCTIONAL UNITS[2]	FFF
EMC ENVIRONMENT[3]	ENVIRONMENT A

[1] **Pollution degree 1** No pollution or only dry and non-conductive pollution occurs.
Pollution degree 2 Only non-conductive pollution occurs. Occasionally, condensation can cause temporary conductivity.
Pollution degree 3 Conductive pollution or dry non-conductive pollution that becomes conductive due to condensation.
Pollution degree 4 The pollution generates persistent conductivity caused by conductive dust, rain or snow.

[2] The types of electrical connections of the functional units inside the equipment are indicated by a 3-letter code: the first letter indicates the type of electrical connection of the main incoming circuit; the second letter indicates the type of electrical connection of the main outgoing circuit and the third letter indicates the type of electrical connection of the auxiliary circuits. The three letters have the following meanings:

- F refer to fixed connections (the connection is connected or disconnected by means of a tool);
- D refers to disconnected connections (the connection is connected or disconnected by intervening manually without using a tool);
- W refers to removable connections (the connection is connected or disconnected by setting the functional unit to service or disconnected mode).

[3] **Environment B** Low voltage public network for residential, commercial and light industrial systems.
Environment A Low voltage non-public network or industrial systems, including sources of high interference.

Below are the **specific** technical data and specifications for each coded type of electrical equipment supplied: this data is shown on the identification plate affixed to the external and internal side of the door of the control panel.

Three phase control panels

Control panel code	Rated voltage [V]	Rated frequency [Hz]	Full load current [A]	Rated short-circuit current [kA]	Fault loop maximum impedance [Ω]	Reference impedance test [Ω]
10045960	400	50	9	50	2	0.5
10047650	400	50	7,1	50	3	0,5
10047694	400	50	17,2	50	1,45	0,33

Single phase control panels

Control panel code	Rated voltage [V]	Rated frequency [Hz]	Full load current [A]	Rated short-circuit current [kA]	Fault loop maximum impedance [Ω]	Reference impedance test [Ω]
10047697	230	50	15,5	50	1	0,2

The impedance of the fault loop refers to the power source (including the impedance of the protection circuit) from the terminals of the disconnecting device of the electrical equipment: the user is advised to consider the increase in resistance of the supply line conductors due to the fault current, when evaluating the impedance of the power source.

If the impedance of the fault loop of the power source exceeds the “reference impedance test” value, it is recommended to verify the characteristics of the supply protection circuit, **once installation is complete and before commissioning takes place**, in accordance with "Test 2" testing method (refer to CEI EN 60204-1 para. 18.2).

If the prospective short-circuit current at insertion point of the equipment should exceed that indicated in the specific technical data, a device must be installed so as to limit the current below this value.

The user must comply with the technical specifications of the equipment so as not to damage it or put personnel at risk!

The equipment is protected with the required earthing system should the impedance of the fault loop of the power source be lower than the value indicated in the specific technical data. The user must adopt additional protection measures upstream the electrical equipment supplied if the earthing system differs from than prescribed or impedance of the fault loop exceeds that which is specified.

The values of the impedance of the fault loop indicated in the specific technical data only refer to electrical control panels supplied fully wired to the relative machine. If loose panels are supplied that are not wired to the machine, always contact Varisco SpA before installation.

1.3 INTENDED CONDITIONS OF USE

The control functions and use of the equipment must be implemented within the limits indicated in the previous paragraph, “GENERAL TECHNICAL DATA” - in well-ventilated and well-lit environments, with no hazardous reflections, so as to ensure the equipment is ventilated appropriately and each part is clearly visible, the control panel is clearly read and the actuators are identified, in particular that which stops the equipment in an emergency.

Any other use is to be considered unintended and prohibited as this can cause unforeseen personal risks of an electrical nature and/or other type and damage the equipment or production.

Only appropriate fire extinguishers (e.g. carbon dioxide) are to be used in case of fire or any other situation where open flames appear inside or outside the equipment. It is strictly prohibited to use water to put out the flames!

1.4 PROHIBITED CONDITIONS OF USE

The following are considered misuse and are therefore prohibited:

- using the equipment differently than that indicated in the previous point;
- using the equipment in potentially explosive environments subjected to Directive 94/9/EC and non compliant with the classification of the electrical equipment marked on the identification plates pertaining to the ATEX Directive;
- using the equipment in a harsh environment or in the presence of high concentration of dust or oily substances suspended in the air;
- using and/or installing the equipment in environmental conditions that differ from those indicated in the technical data;
- positioning/installing the equipment without adequate airflow;
- switching on and operating the equipment with the enclosures of the control panels open. This can only be implemented by Varisco SpA personnel;
- assign uneducated, uninformed and/or untrained personnel to use the equipment;
- apply signals to the equipment that differ from the allowed ones, which can alter the performance of the equipment protection;
- modify, add or remove parts of the equipment without written authorisation from Varisco SpA;
- switching on or operating the equipment with no earth connection or one that is not perfectly efficient;
- remove or hide in any way the danger signs (plates, labels, light signals) applied by Varisco SpA to the equipment.

	**The above-mentioned prohibited uses do not include all possible misconduct. If in doubt, please contact Varisco SpA for guidelines on how to carry out the operations correctly.**

1.5 GENERAL GUARANTEE RULES

The guarantee validity of the equipment installed by **Varisco SpA** varies according to the type of system and that is indicated in the quotation in the “guarantee terms and conditions”.

The guarantee covers all materials with manufacturing defects or anomalies that are objectively proven and acknowledged by the manufacturing company to be repaired/replaced, free of charge and ex works in our premises and in the shortest time possible. If an on site visit is requested, the costs of labour will be charged together with any travelling, meals and lodging expenses.

Generally, the guarantee is rendered null and void in the following circumstances:

- improper use of the equipment;
- serious flaws in the scheduled maintenance;
- changes or interventions not authorised by Varisco SpA (particularly on the safety devices);
- improper storage and/or installation.

	**The guarantee is automatically rendered null and void if repairs are carried out by unauthorised personnel or the equipment is stored or installed inappropriately or in an unsuitable environment.** **Varisco SpA cannot be held liable if unauthorised changes are implemented on the equipment or if it is tampered with.**

2. TRANSPORT AND INSTALLATION

2.1 TRANSPORT AND HANDLING

“Transport” refers to the phase when the equipment is transferred from the manufacturing site to that where it shall be used.

The electrical equipment is supplied mechanically fastened to the structure of its relative machine; refer to the specific Use and Maintenance Manual for the methods of transport and handling.

Any kind of impact and stress to the components must be avoided when the electrical equipment is transported and handled. Particular attention must be paid to:

- ensure the doors or access hatches are closed properly and secured;
- protect the equipment from all kinds of possible impact and stress according to the type of transport.

⇒ **Prevent particularly violent knocks during transport by paying attention to the overall dimensions of the goods and fastening the load so as to prevent it from tipping over.**

The following precautions must always be complied with when transporting and handling the goods:

- do not stand beneath suspended loads and keep at a safe distance from the area in which the load is handled;
- if the load must be guided while being raised, do not use your hands or feet. Suitable equipment must be used that allow the personnel to maintain a safe distance from the load being lifted.

2.2 STORAGE

If the electrical equipment supplied and/or the components shall not be used for quite a while before being installed or shall not be used for a long period of time, this must be stored according to the precautions pertaining to the storage place and duration as indicated below:

- store in a covered and dry place, protected against the elements, where the temperature ranges from -25 °C to +55 °C and the humidity does not exceed 50% (relative to a maximum temperature of +50 °C);
- the equipment must be particularly protected against humidity and significant changes in temperature;
- protect the equipment from impact and stress;
- prevent the equipment from coming in contact with corrosive or anyhow aggressive substances;
- set the equipment in a stable and secure position, away from heat sources, open flames and the storage of flammable or explosive substances.

	NOTE

The packaging and compliance with storage conditions are to be checked at regular intervals that do not exceed 2 months.

2.3 UNPACKING

The steps below must be followed before unpacking the equipment:

	• check the equipment supplied and ensure that it has not been damaged; • check that the supply is complete, verifying also that the technical documentation is present; • any damage must be reported immediately to the carrier, with a note countersigned by the driver; • immediately inform the manufacturer if the delivery is incomplete or parts are missing.

2.4 INSTALLATION

GENERAL INFORMATION

The Customer is responsible for the installation of the equipment's electrical connection to the supply line. The power supply cables are to be inserted from the upper side.

The installation must comply with the requirements of CEI EN 60079-14 "Explosive atmospheres: Design, selection and installation of electrical systems": furthermore, please refer to the attached "safety, use and maintenance instructions in accordance with Directive 94/9/EC" of the control panel manufacturer.

The equipment must be used in a well-lit environment so as to facilitate the operator's normal routine operations and the environmental conditions must be compatible with the technical specifications of the equipment indicated in Chapter 1. TECHNICAL DATA.

ATTENTION

The equipment is suitable to be operated in potentially explosive environments <u>provided</u> that ATEX classification of the environment is compatible with the specifications shown on the identification plates of the equipment!

WARNING

The connection of the equipment must only be set up by qualified and authorised personnel!

VERIFICATIONS PRIOR TO INSTALLATION

The following must be complied with in order to prevent any type of problem when commissioning the equipment.

WARNINGS

- **Before connecting the equipment ensure that power distribution network data corresponds with the data on the plates. The installation must be carried out in compliance with the applicable regulations in accordance with the manufacturer guidelines and by qualified electricians. Incorrect installation can cause damage to persons or objects for which the manufacturer cannot be held liable.**
- **The electrical safety of this equipment is only guaranteed when it is connected correctly to an effective earthing system, implemented according to the applicable electrical safety regulations. The manufacturer cannot be held liable for any damage caused due to no earthing system being installed and if the electrical equipment is installed in an electrical distribution system with an earthing system other than that described in Chapter 1.2 GENERAL TECHNICAL DATA.**
- **This basic safety requirement must be verified and if in doubt, ask professionally qualified personnel to perform an accurate inspection of the system.**

WARNING

Refer to the attached technical documentation: wiring diagrams

The equipment must not be installed:

- where paints or solvents are stored;
- near heat sources or flammable substances.

ELECTRICAL CONNECTION

The equipment must be connected to the electrical power supply line, considering the following:

- The Laws and technical regulations applicable in the place and at the time of the installation.
- The data shown on the technical documentation and on the plate.

The cross-sections of the cables are to be calculated considering the maximum current absorbed and the position of the electrical power supply line.

WARNINGS

- The main power supply line must consist of wires with an adequate cross section, sized according to the data in the technical documentation. In particular, the section of the conductors must comply with the length of the supply line and the relative voltage drop. It must also comply with the derating of the cables if these are laid in bundle or in layers with other existing channelled wires. The Customer is responsible for these details that affect the sizing, conditions and types of installation.
- The customer must provide over current protection (overloads and short-circuits) of the electrical power line. Disconnecting devices lockable in open position must be installed upstream on the power line.
- The equipment must be connected to an effective earthing system.

The cable is to be entered into the electrical cabinet from the upper side and the connection via terminals L1-L2-L3 (three-phase voltage without neutral with control panel and motor three phase) and PE (earth conductor).

With control panel and motor single phase, the cable is to be entered into the electrical cabinet from the upper side and the connection via terminals L1-N and PE (earth conductor).

The supply conductors must be firmly and securely connected to the corresponding terminals of the equipment. The cables must pass through a suitable Ex-d cable gland or sealing fitting.

All the electrical connections, apart from the supply input, will have to be carried out through the lower side of the enclosure of the control panel, through the appropriate holes in correspondence to the connection terminal blocks in the control panel. The cables must pass through suitable Ex-d sealing fittings or "barrier" type cable glands. Any unused holes on the casing must be closed with Ex-d certified sealing caps.

The tools used when fastening the cables to the terminal blocks and/or to the terminals of the disconnecting switch must be suitable for the shape and size of the fastening screws and the metal terminals and the relative housings must not be damaged while fastening.

After having completed the wiring, all metal or plastic residuals must be removed from inside the enclosure (e.g. screws, washers, lengths of wire or sheath, drilling chips, dust, pieces of paper, etc.) with a suction system.

The electricity must meet the following requisites:

- Three-phase voltage — **refer to Chapter 1.2 GENERAL TECHNICAL DATA**
- Single phase voltage — **refer to Chapter 1.2 GENERAL TECHNICAL DATA**
- Rated frequency — **refer to Chapter 1.2 GENERAL TECHNICAL DATA**
- An efficient earthing system.

ATTENTION

- **The supply line of the equipment must be protected upstream against over voltage (e.g. atmospheric discharge) and overcurrent (overloads or short-circuits) by installing suitable automatic circuit breakers that are appropriately coordinated according to the electrical specifications and parameters of the supply line. Particular consideration must be made to the short-circuit current where the equipment is installed and to the short-circuit capacity of the equipment itself, indicated in the wiring diagram and in Chapter 1 TECHNICAL DATA.**
- **The equipment must not be live during the electrical connection. Therefore, the power supply line must be disconnected upstream and the main switch must be locked in the open position with a padlock in order to prevent the equipment from be started up unexpectedly. Before starting the connections operations ensure that all the cables to be connected to the terminals of the equipment are not live.**

3. OPERATION

3.1 CONTROL EQUIPMENT

The controls of the supplied equipment, on the front panel of the control panel, are an integral part of the equipment. The functions of each push button or selector are clearly identified by a specific text label near the device itself.

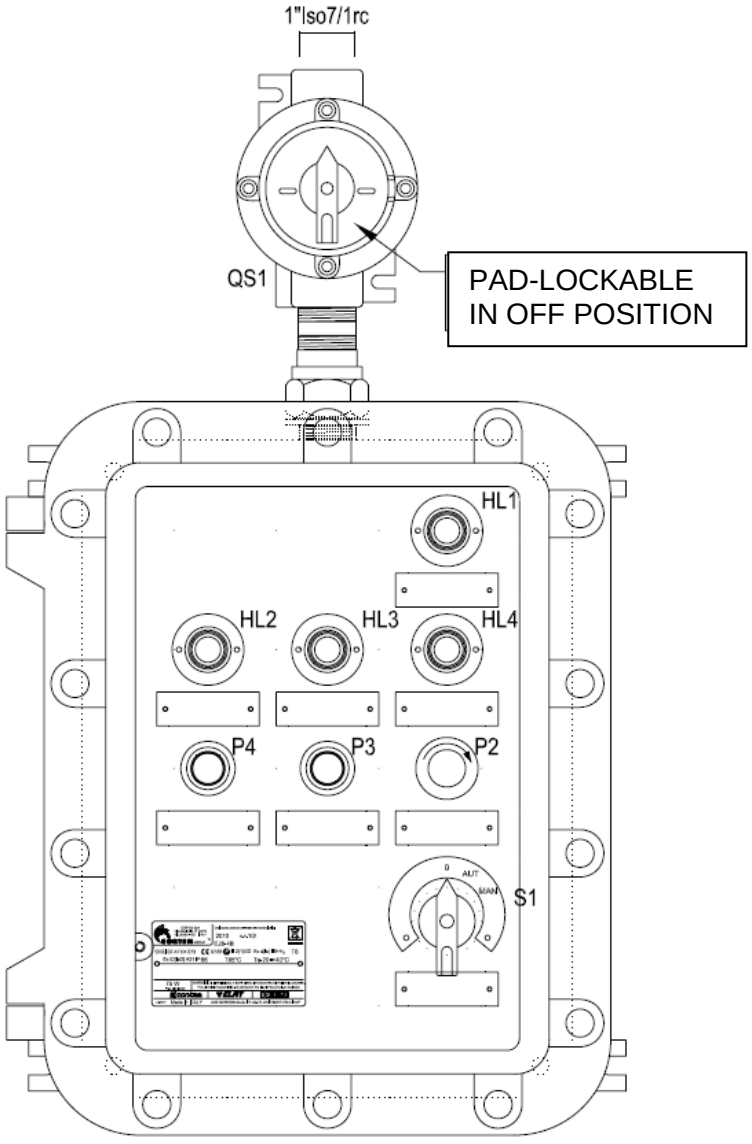


Fig. 1 Control panel

KEY FOR FIGURE 1

QS1	main disconnect switch
P2	emergency stop push button
S1	AUT - 0 - MAN mode selector
P4	start push button
P3	stop push button
HL1	"POWER ON " indicator
HL2	"PUMP OVERLOAD" indicator
HL3	"PUMP HIGH TEMPERATURE ALARM" indicator
HL4	"PUMP RUNNING" indicator

Fig. 1.1 View of control panel

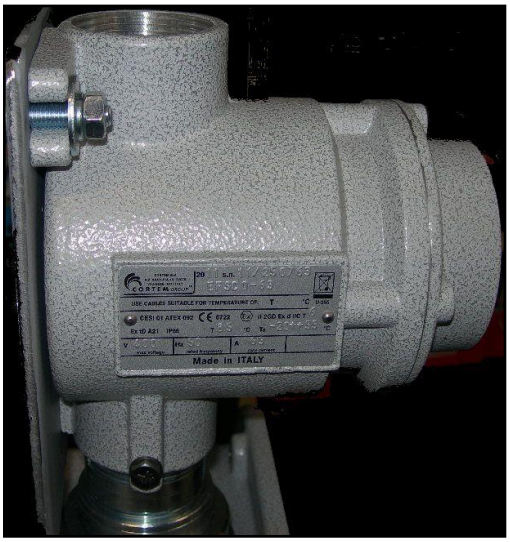


Fig.1.2 View of switch disconnector

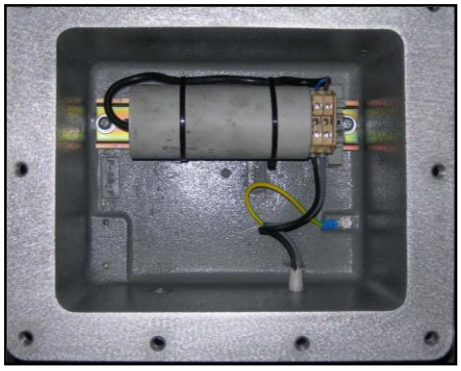


Fig. 1.3 View of capacitor fitted in dedicated box (single phase voltage)

The actuators and the man-machine interface devices on the various controlgears are divided in the following functional categories:

I. Monostable push buttons - activated if pulse pressed.

II. Monostable push buttons with indicator lamp - activated if pulse pressed.

III. Mushroom push button with manual reset - activated if pulse pressed; the push-button must be turned clockwise or pulled in order to reset.

IV. 2 or 3-position selectors/switches - activated if turned to coincide with the signalled positions.

V. 2 or 3-position selectors with key lock - activated if turned to coincide with the signalled positions and can be blocked in position.

VI. Indicator lights.

VII. Instruments.

In the case of key-activated controls, the key must be entrusted to a person who has been trained on the risks correlated with the use of the implemented control. The key must be removed from its seating during operations related to the function of the selector, which pose a risk for the safety of personnel, so as to prevent accidental activation of mobile parts.

REF.	COMPONENT	FUNC. CAT.	EFFECTS
CONTROL PANEL: DESCRIPTION OF THE CONTROL ACTUATORS			
QS1	SWITCH DISCONNECTOR	IV	MAIN DISCONNECT SWITCH: disconnecting switch of the main power supply line and control auxiliaries.
P2	EMERGENCY PUSH BUTTON	III	EMERGENCY STOP: press this button on the control panel to immediately stop the electric motor. **The machine must be inspected after an emergency stop and before resetting it so as to detect the cause that made necessary the stop command. The cause must be resolved before resetting the emergency. If maintenance must be performed, the machine must be disconnected from the sources of energy!**
S1	ROTARY SELECTOR	IV	MODE SELECTOR: three position selector: “MAN” “0” “AUT”; with no emergency activated and in the “AUT” position, the system is set to start and stop, controlled by external voltage free contacts (e.g. from float switches). Set to the “MAN” position, the system is set to be driven only in manual mode, therefore excluding external control.
P4	WHITE PUSH BUTTON	I	START: if pressed, the pump motor starts. If the following conditions are verified, the system will be ready to be started when the start button is pressed: the main switch is in the "I" position, the operating mode selector is in “MAN” position and the emergency button has not been activated.
P3	BLACK PUSH BUTTON	I	STOP: if pressed, the pump motor stops. When the operating mode selector is in “MAN” position and the stop button is pressed, the system will be stopped.
HL1	WHITE INDICATOR LIGHT	VI	POWER ON: line voltage indicator. The indicator goes on if the main switch is in the "I" position.
HL2	YELLOW INDICATOR LIGHT	VI	PUMP OVERLOAD: an indicator that signals the thermal overload relay of the electric pump has triggered.
HL3	YELLOW INDICATOR LIGHT	VI	PUMP HIGH TEMPERATURE ALARM: with the controls engaged, this indicator signals the electric pump has been switched off, when an excessive temperature, (incompatible with the temperature class indicated for the electric pump), is detected by the temperature sensor mounted on the pump.
HL4	GREEN INDICATOR LIGHT	VI	PUMP RUNNING: with the controls engaged, this indicator signals that the electric pump is running.

If the rotary selector S1 is in “AUT” position, the electric motor is started and stopped via two remote Ex-i intrinsic safety “voltage free contacts”, positioned in a hazardous area, which must be connected via Ex-d barrier cable glands to the B2 galvanically isolated barrier (refer to the wiring diagram) within the control panel. The interface characteristics of the Ex-i devices must be compatible with those of the B2 barrier (refer to the attached datasheet).

The B1 galvanically isolated barrier (refer to the wiring diagram) allows the connection of a temperature sensor (thermocouple/RTD) positioned in a hazardous area. A threshold value can be set on the B1 barrier for the detected temperature and this value must be less than that of the temperature class declared for the pump.

If the temperature element detects a temperature above the threshold set on B1, the pump is stopped automatically. The pump can only be restarted if the detected temperature drops below the threshold value.

ATTENTION!

The pump switch-off temperature threshold value is factory preset on the B1 barrier and must not be changed for any reason whatsoever.

Varisco Spa declines all responsibility for any damage caused to persons, equipment, system or production, if this temperature value is changed!

ATTENTION!

Do not activate the controls by accident!

The operator must be aware of the action given by each actuator after having read this operation manual!

ATTENTION!

Varisco SpA declines all responsibility for any damage caused to persons, equipment, system or production, if the control actuators are activated by personnel who has not been adequately educated or informed!

3.2 SAFETY DEVICES

EMERGENCY STOP BUTTON	
Activation:	**Press the EMERGENCY STOP push button** The emergency control component is blocked. Once the push button is activated the pump motor stops.
Release:	Turn the push button clockwise or pull it outwards.

The emergency stop is a safety precaution for the personnel operating the machine/system. An emergency stop can be caused by two possible reasons: the operating personnel activate the emergency stop as he detected by the presence of a hazard or an operating situation occurs beyond the acceptable work parameters. THE CAUSE MUST BE RESOLVED before resuming the work irrespective of the reason that caused the emergency stop.

ATTENTION!

Disabling the machine via an emergency control component is only allowed in a hazardous situation.

It must not be used for a general shutdown!

The emergency stop does not guarantee the safety conditions required for repairs or maintenance to be performed. In this case, use the personal padlock located on the main disconnecting switch.

With reference to the stop functions:

The applicable stop functions are as follows:

- Main disconnect switch of the control panel (Category 0)
- Manual/stop/automatic selector (Category 0)
- Stop push button (Category 0)
- Emergency push button (Category 0)

CATEGORY 0 STOP:
achieved by disconnecting the power to the actuators of the Machine (uncontrolled stop).

CATEGORY 1 STOP:
a controlled stop by the power to the actuators of the Machine being removed after allowing enough time for them to be stopped.

CATEGORY 2 STOP:
a controlled stop with the power to the actuators being maintained.

ATTENTION!

Only when the main disconnect switch of the control panel is blocked in the open position does the machine stop in safe mode for maintenance and repairs to be performed!

3.3 COMMISSIONING

This operation must be performed by personnel who has been adequately trained on the risks arising from the control equipment and the machine it is connected to. The personnel must be informed regarding the additional risks coming from particular mechanical or electrical calibration procedures to be performed during this phase.

WARNING

Only once COMMISSIONING is completed the operators are allowed to operate the machine/system.

The equipment is supplied complete with all the components, closed and tested. Therefore, the user is generally only required to implement the wiring to the power supply line in accordance to the requirements of the technical documentation and Chapter 2 TRANSPORT AND INSTALLATION.

Even though the single tests prescribed by law have been performed in the Varisco SpA factory, the equipment installer is not exempt from the obligation to inspect it following transport and installation!

The following verifications are required before starting-up the machine/system so as to prevent errors or accidents due to the wiring phase of the components on board the machine:

VERIFICATIONS

- the control panel, control push buttons, electrical wires and the protective sheaths must be intact;
- the connections of all the external sources of energy, in particular the electrical connections, must be correct and the power supply corresponds with the specified limits such as voltage, frequency, etc.;
- the operational tests of the normal and emergency stop devices must have been performed.

STARTING-UP

The equipment is tested within the Manufacturer's premises before being shipped.

The following must be performed before the first start-up of the Machine/system controlled by the equipment:

- check the sense of rotation of the motors (only for three phase motors), as follows:
  1. Activate the main switch control lever of the control panel, bringing it to the "I" position.
  2. Set the MAN - 0 - AUT rotary selector to MAN.
  3. Press the START button and then the STOP button as soon as the pump is activated.
  4. Check that the sense of rotation of the pump motor is correct.

Should the sense of rotation of the motor not be correct, proceed as follows:

a) Activate the main switch control lever of the control panel, bringing it to the "0" position.
b) Disconnect the power supply to the control panel via the switch upstream the power supply line.
c) Invert any two of the three phases in the control panel line junction box (L1 - L2 - L3).
d) Close the electric cabinet.

4. MAINTENANCE

4.1 PREMISE

The employer is legally obliged to keep the systems and safety devices in a good maintenance state so as to guarantee safety.

Regular maintenance involves periodic verifications so as to guarantee the efficiency of the electrical equipment and components.

The above is based on the assumption that maintenance is performed by qualified personnel who is very familiar with the electrical equipment and knows how to intervene in routine operations as well as in the case of faults or anomalies.

Please remember that the verifications and maintenance of the electrical systems in potentially explosive areas must be performed in compliance with the requirements of CEI EN 60079-19 “Explosive atmospheres: verification and maintenance of the electrical systems”.

4.2 SAFETY DURING ELECTRICAL MAINTENANCE

ATTENTION!

The machines must be secured against unintentional start-up while maintenance and repairs are performed!

ATTENTION

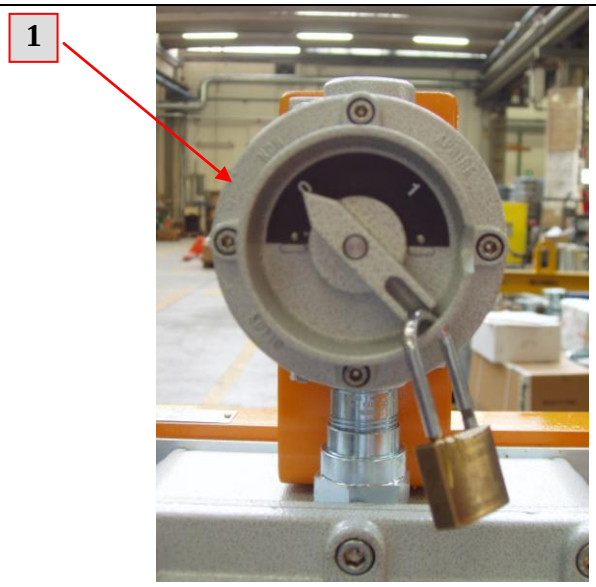
One of the most important conditions for the machine to be used safely is for the machine to be secured in safe mode while there are persons in the hazardous areas.

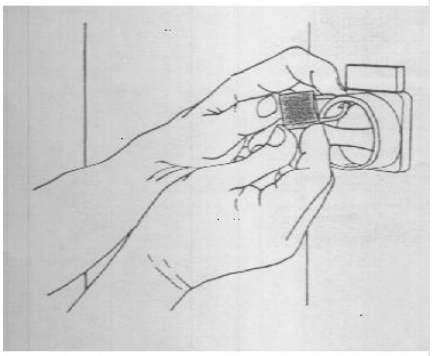
Start-up, even unexpected, is not usually due to the machine/system's power supply being suddenly or inadvertently connected but is also linked to the presence of other sources of energy, such as pneumatic energy, hydraulic energy and gravity. Before performing any type of Maintenance or repairs, the machine/system must be insulated from the external sources of supply.

ATTENTION

The operator must verify the following for the machine/system to be set in safe mode, with regards to insulation from the electrical source of energy.

	THE MAIN DISCONNECT SWITCH **1** placed on the top of the control panel is in the disconnected (0) (OFF) position. The blocking device is set (padlocked and the key safeguarded).
	No transmission or processing component can be activated.





Electrical disconnection

1. Main disconnect switch

PARTICULAR PRECAUTIONS

ATTENTION

All work, such as commissioning, maintenance and repairs, must be carried out by qualified personnel.

The operator is prohibited from making changes to the control, switch and safety devices. Such changes can only be carried out by qualified personnel.

ATTENTION!

Unauthorised personnel must not control the machine/system or perform any kind of work on it!

The following recommendations must be complied with when performing maintenance or repairs:

- routine and extraordinary maintenance must only be assigned to technically qualified personnel;
- electrical maintenance must be performed by a person who has appropriate knowledge/experience/information to work safely. The word 'trained' is an attribute relative to:
  - the type of operation;
  - the type of system on or near which the work must be carried out;
  - the environmental, contingent and monitoring conditions by the best trained personnel;
- the risks associated with electrical work vary according to the type and degree of danger of the work itself. The risks associated with each type of job must be evaluated, also in accordance with Legislative Decree 81/2008;
- the maintenance technicians must:

  ⇒ respect the limits of their skills;
  ⇒ comply with the procedures and warnings described in this manual;
  ⇒ respect the times and frequencies defined for scheduled maintenance;
- use the safety devices and comply with the specific procedures prescribed by law for the implementation of electrical work (live or not, depending on the case);
- use specific equipment for electrical work, verifying their state before doing so;
- verify the suitability of the environmental conditions (e.g. visibility in the intervention area);
- do not use solvents and flammable materials;
- do not climb on to the parts of the machine as they are not designed to carry people;
- once the work is complete, correctly set and fasten all the protections and guards that were removed or opened.

ATTENTION

Use the indicated personal protective equipment (PPE) when cleaning the machine (e.g. suitable gloves, dust masks, earplugs, etc.)

The indicated system start-up procedure must be followed, which must also include the following verifications, when performing the system commissioning and testing operations after maintenance, repairs or changes are carried out:

1. start-up, shutdown and any control devices must work as indicated;
2. the emergency stop devices works properly;
3. the external power supply sources can be disconnected and isolated.

ATTENTION

The operator is only authorised to use the controls and buttons mounted on the various control panels.

The operator is therefore prohibited from:

⇒ opening control panels and accessing the internal equipment;

⇒ removing the protections of live parts, such as covers of motor terminal boards, junction boxes, etc.

These operations are to be carried out by the qualified technician. He is responsible for the keys and/or tools that allow the live parts to be accessed.

Typical interventions of the qualified technician are: replacing the fuses, resetting the faulty signal devices (lamps, indicators, etc.) and replacing faulty components.

All new components must have the same technical characteristics and provide the same efficiency as the faulty ones, especially those relative to safety functions.

The new components must be set to the same values applied for the components being replaced, e.g. thermal overload relays, timers, etc.

ATTENTION

Before performing any type of maintenance the machine must be insulated from the power sources.

The routine maintenance technician is prohibited from modifying the electrical connections in the control panels. Any changes made to the system, wiring and complex repairs are to be solely carried out by the Manufacturer.

For maintenance to be performed correctly, always refer to the documents and diagrams provided, including the attachments (functional diagrams, parts lists, terminal blocks, user manuals, etc.).

When replacing plastic or metal parts (e.g. motors, conductors, covers, electrical system ducts, etc.), the disassembled parts must be sent to suitable collection facilities for them to be recycled (metal or plastic) or treated and disposed of according with the applicable law in the country where the equipment is installed. **Particular attention must be paid to the electronic components and printed circuits that must be sent to authorised dumping grounds (aluminium electrolytic capacitors, etc.).**

4.3 PREVENTIVE AND SERVICE CHECKS

The applicable law that sets the general measures to protect the health and safety of workers, prescribes that regular maintenance is to be performed in the environment, on equipment and machines/systems, with particular attention paid to the safety devices, in compliance with the manufacturer's instructions.

Varisco SpA plans the installation according to the service to be provided, in accordance with the requirements imposed by the equipment and identified together with the Customer. Functionality, efficiency and safety must be maintained over time by complying with a process whereby the prescribed verifications, continuous monitoring and predictive maintenance are to be implemented. For correct and punctual maintenance to be performed, **Varisco SpA** provides the Customer with the tables below that define the methods to be applied and the details of maintenance types and frequency.

WARNING!

Preventive and service checks must only be performed by qualified personnel, authorised to carry out electrical work!

Description of operation	Machine status / precautions	Daily	Weekly	Fortnightly	Monthly	3-monthly	6-monthly	Annually	As necessary
ELECTRIC CABINET / COMMAND DESK									
Visual inspection of the **control panel** and the **devices within** (cleaning, no obstructions that reduce ventilation efficiency, no damage, foreign bodies or material, mould or insects)	Isolation for maintenance						■		
Check of the **input voltage**	Controls engaged						■		
Check the **current absorption of the main loads**	Controls engaged						■		
Check of the **triggered circuit breakers**	Isolation for maintenance						■		
Verification of the terminal blocks and general **tightening** of the **connections**	Isolation for maintenance						■		
Signal lamps: verification of their integrity	Main switch in the "I" position						■		
Measuring devices and displays: verification of correct operation	Controls engaged						■		
Fuses: verification of their size, integrity and wear (change in colour) in the contact points	Isolation for maintenance						■		
Electrical protections: verification of the calibration and operating status	Controls engaged						■		
Contactors: check for vibrations	Controls engaged	■							
Contactors: verification of the operating status and efficiency of the fixed and mobile contacts	Isolation for maintenance						■		
Auxiliary transformers: check of the voltage	Main switch in the "I" position						■		
Auxiliary transformers: verification of the terminal block and tightening of the connections	Isolation for maintenance						■		
Control panel enclosure: verification that the torque of the cover's fastening screws is correct	Controls engaged					■			

Description of operation	Machine status / precautions	Daily	Weekly	Fortnightly	Monthly	3-monthly	6-monthly	Annually	As necessary
Control panel: verification of the earthing system's efficiency and tightening of the various connections	Isolation for maintenance						■		
Enclosures for capacitor (single phase motor): verification that the torque of the cover's fastening screws is correct	Controls engaged					■			
Control panel: inspection of the identification plates and marking, verification of the presence and updates of wiring diagrams and documentation								■	
Power supply conductors and lines: verification of the integrity and efficiency; visual inspection of the status of the end parts of the wires and lines	Isolation for maintenance							■	
Conductors and lines: verification of the phase-phase insulation resistance and that between the power circuit conductors and the equipotential protection circuit (measured with a suitable instrument)	Reference CEI EN 60204-1 point 18.3. Repeat the test when a machine part and its relative equipment is replaced or modified.							■	
Conductors and lines: verification of the continuity of the equipotential protection circuit (measured with a suitable instrument)	Reference CEI EN 60204-1 point 18.2. Repeat the test when a machine part and its relative equipment is replaced or modified.							■	
Conductors and lines: verification of the tightening of the terminals, the connections of the terminal block and the numbering/identification of the conductors	Isolation for maintenance						■		

ATTENTION

The operations described above must be performed according to the indicated schedules. **Failure to comply with the indications shall exempt the Manufacturer from all responsibility with regards to the Guarantee**.

Verify that the safety devices function properly after any maintenance, repairs or changes are made.

Refer to the attached technical documentation (circuit diagrams) to check the calibration of the components.

NOTE

It is recommended to keep proof of the inspections carried out, thereby reporting the relative information and results on a special register, including the date when the inspection is performed, the type of inspection, the machine/system in question, the person performing the inspection and its result, specifying the corrective action to be implemented.

4.4 TROUBLESHOOTING

Troubleshooting in the electric sector is a particular maintenance activity that requires practical experience, since interventions in the presence of voltage may have to be performed, as well as theoretical technical knowledge of the systems. The difficulties regarding troubleshooting in the electric system are due to the fact that they are difficult to identify with respect to mechanical problems. The faults are only visible in particular cases, such as bonding switch contacts or disconnection of cables from clamps. In most cases the faults must be searched for by performing tests with the aid of suitable instruments, starting from the detection of the presence of power supply voltage and searching for the breakpoint in the functional sequence.

WARNING!

The repairs/inspection of the electrical equipment must only be performed by qualified personnel, authorised to carry out electrical work.

The operator must not perform maintenance, repairs or troubleshooting interventions on the machine/system!

Refer to the technical documentation (wiring diagrams, manuals of the individual components, etc.) for troubleshooting interventions, in order to correctly identify the system elements and the relative functions.

ATTENTION

Do not use makeshift solutions such as "jumpers" on terminal boards, which by-pass the functional or safety sequences!

At the end of the intervention, before using the machine/system again, check that any pieces replaced and/or the tools used for the intervention have been removed from the machines. The machine/system can then be switched back on.

ATTENTION

In the event of faults or malfunctioning of the equipment supplied, **Varisco SpA** must be informed. The latter will provide specialised personnel and/or all information necessary for eliminating the problem.

In the event of the intervention of a thermal overload protection, duly trained and authorised personnel can access the electric control panel, identify the switch in question and reset it by pressing the button or activating the switch reset lever (according to the type of switch).

All power supply sources must always be disabled before performing any reset or replacement intervention.

If, after having reset the thermomagnetic-circuit breaker or having replaced the fuse, the thermal relay should intervene or the fuse be damaged again, **do not repeat the operation and contact Varisco SpA directly** for all necessary indications to be provided.

Actuator functions are described in Chapter 3.

NOTE

Anomalous situations, faults and emergencies are signalled on the control panel.

The operator must take note of the signals and request the intervention of qualified personnel for the necessary inspections of the machine.

Below is a list of the main possible problems. This list does not cover all possible causes that lead to functioning anomalies. Remember that the operations to be performed during troubleshooting must be established by a trained technician who is authorised to work on live parts.

PROBLEM	POSSIBLE CAUSE	VERIFICATIONS AND SOLUTIONS
THE CONTROL PANEL IS COMPLETELY OFF	**a)** No electric power supply **b)** No voltage at the control circuits	**a)** Restore the power supply and check the position of the main switch and the presence of voltage on the main power supply line. **b)** Check and, if necessary, replace the control circuit protection fuses.
THE MACHINE DOES NOT START WITH CONTROLS ENGAGED	**a)** No electric power supply **b)** No voltage at the control circuits **c)** Triggered emergencies **d)** Triggered motor protections	**a)** Restore the power supply and check the position of the main switch and the presence of voltage on the main power supply line. **b)** Check and, if necessary, replace the control circuit protection fuses. **c)** Verify the emergency stop button is not pressed. **d)** Verify whether the electric motors thermal protection has been triggered and capacitor status (single phase motor).
THE MOTOR DOES NOT WORK	**a)** Electric power supply not available **b)** Triggered emergencies **c)** Incorrect operating mode selected **d)** Triggered motor protections **e)** Damaged motor	**a)** Verify the presence of voltage on the electric power line: check the position of the main switch. **b)** Verify the emergency stop button is not pressed. **c)** Verify the controls are engaged; check that the operating mode selector is not at “0” or in automatic and call contacts control is missing. **d)** Verify whether the motor thermal protection or the pump high temperature protection device has been triggered. Verify the capacitor status (single phase motor). **e)** Stop the motor and check the type of damage.
MOTOR OPERATION IS NOT SMOOTH	**a)** Damaged motor	**a)** Stop the motor and check the type of damage.
THE STARTING MOTOR CONTACTORS VIBRATE AND DO NOT REMAIN STABLY EXCITED	**a)** Power supply voltage at control panel too low **b)** Control panel power supply cable section is insufficient in relation to cable length	**a)** Check the power supply voltage at control panel line input. **b)** Use power supply cables with a section that is suitable for the length of the tract.
THE THERMAL PROTECTIONS INTERVENE INADVERTENTLY	**a)** Power supply voltage at control panel too low **b)** Phase missing on power supply voltage (three phase voltage) **c)** Incorrect regulation of the thermal protection relay **d)** Motor power overload	**a)** Check the power supply voltage at control panel line input. **b)** Check the presence of all three power supply phases at the control panel (three phase voltage). **c)** Check thermal protection regulation in relation to the electric motor rated current. **d)** Check that the flow rate supplied by the pump during operation is within the limits indicated in the pump performance curve.

	Below is a list of the main inspections and common operations to be performed if a fault occurs. This list does not cover all possible operations to be performed during troubleshooting, which must be looked out for by a trained technician who is authorised to work on live parts.

- Check the integrity of the fuses of the circuit sections affected by the anomaly. If they are faulty it is good practice to search for the cause of the fault before replacing them.
- Check for the presence of auxiliary circuit power supply voltage.
- Verify that all power contacts are excited upon start-up and vice versa, they are not excited following a stop command.
- Make sure that no metal dust or other material has gone into the equipment, which may have caused a reduction in isolation or any conduction.

REQUEST FOR ASSISTANCE

The customer may ask for any type of information relative to use, maintenance, installation, etc. from the Manufacturer.

The customer must make clear requests, with reference to this manual and specify the identification data of the supply stated on the control panel or command desk plates.

	**Refer to the control panel plates in Chapter 1 TECHNICAL DATA**

In order to request the assistance of specialised technical personnel, the customer can contact the after-sales service directly. The intervention request should be forwarded to:

Varisco S.p.A.
Terza Strada, 9 - Zona Industriale Nord - 35129 PADOVA - Italy
Tel. +39 049 8294111 - Fax +39 049 8076762

4.5 DEMOLITION OF THE EQUIPMENT

The electric control panel mainly consists of a metal framework and normal electric and electronic components. If the equipment must be demolished, these materials must be disposed of via normal channels established by the Standards in force where the equipment is installed.

For some potentially dangerous components and parts, such as batteries, electrolytic capacitors and circuit boards in general, etc, it is mandatory to contact specialised centres for the disposal of harmful and pollutant waste, in compliance with the relative Laws in force where the equipment is installed.

5. SAFETY, USE AND MAINTENANCE INSTRUCTIONS IN ACCORDANCE WITH DIRECTIVE 94/9/EC (CONTROL PANEL MANUFACTURER)

CORTEM GROUP™

CUSTODIA SERIE EJB...
ESECUZIONE Ex d IIB + H2 T...
Ex d I
ISTRUZIONI DI SICUREZZA,
USO E MANUTENZIONE

Enclosures series EJB...
execution Ex d IIB + H2 T...
Ex d I
safety, maintenance and mounting
instructions

IN ACCORDO ALLA DIRETTIVA 94/9/CE
according to directive 94/9/EC

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fax +39 02 73 83 402
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EXPORT SALES
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fax +39 02 70 00 54 71
export@cortemgroupmi.com

web site: www.cortemgroup.com

WORKS and HEADQUARTER
Via Aquileia 10, 34070 Villesse (Gorizia), Italia
Tel. 0481-964911 fax. 0481-964999

ELFIT | cortem | FONDISONZO

mod.F-276/C Rev.3 dtd 13.09.10 Pag.1

CORTEM GROUP

CUSTODIE SERIE EJB...
ISTRUZIONI DI SICUREZZA, USO E MANUTENZIONE

ENCLOSURES SERIES EJB…
SAFETY, MAINTENANCE AND MOUNTING INSTRUCTIONS

1 INFORMAZIONI GENERALI
CONFORMITA' ALLE NORMATIVE STANDARD
CUSTODIE EJB... COSTRUITE IN ACCORDO ALLE NORMATIVE EN 60079-0, EN 60079-1, EN 61241-1, EN 61241-0 ED IN ACCORDO ALLA DIRETTIVA 94/9/EC DEL 23 MARZO 1994

1 GENERAL INFORMATION
COMPLIANCE WITH THE STANDARD RULES
TERMINAL BOXES EJB... MANUFACTURED IN COMPLIANCE WITH THE STANDARDS EN 60079-0, EN 60079-1, EN 61241-1, EN 61241-0 AND WITH THE DIRECTIVE 94/9/EC OF 23rd MARCH 1994

ISTRUZIONI DI SICUREZZA

RIVOLTE A PERSONALE QUALIFICATO IN ACCORDO CON LE LEGGI NAZIONALI ,INCLUSE LE RELATIVE NORME E, DOVE APPLICABILE, IN ACCORDO CON IEC 79.17 RIGUARDANTE LE APPARECCHIATURE ELETTRICHE PER ATMOSFERE POTENZIALMENTE ESPLOSIVE
- LE CUSTODIE NON DEVONO ESSERE INSTALLATE IN AREA PERICOLOSA ZONA 0
- DEVONO ESSERE RISPETTATI I DATI TECNICI INDICATI SULLE CUSTODIE
- NON SONO AMMESSE MODIFICHE AL PRODOTTO
- LE CUSTODIE POSSONO ESSERE INSTALLATE SOLO SE COMPLETAMENTE INTEGRE
- DEVONO ESSERE UTILIZZATE ESCLUSIVAMENTE PARTI DI RICAMBIO CORTEM GROUP
- LE OPERAZIONI DI MANUTENZIONE ORDINARIE E STRAORDINARIE DEVO ESSERE EFFETTUATE SOLO DA ELETTRICISTI QUALIFICATI CON L'APPROVAZIONE DI PERSONALE "ESPERTO"
- DEVONO ESSERE STRETTAMENTE OSSERVATE LE NORME NAZIONALI DI SICUREZZA E PREVENZIONE INFORTUNI, E LE PRESCRIZIONI INDICATE CON " ⚠ " NEL PRESENTE FASCICOLO TECNICO

SAFETY INSTRUCTIONS

THESE INSTRUCTIONS ARE ADDRESSED TO QUALIFIED PERSONNEL IN COMPLIANCE WITH THE NATIONAL LAWS, INCLUDING THE RELEVANT RULES, AND WITH IEC 79.17 (WHEN APPLICABLE) CONCERNING THE ELECTRICAL EQUIPMENT FOR POTENTIALLY EXPLOSIVE ATMOSPHERES.
- THE TERMINAL BOXES WILL NOT BE INSTALLED IN ANY DANGEROUS AREA (ZONE 0)
- THE TECHNICAL DATA INDICATED ON THE TERMINAL BOXES WILL BE COMPLIED WITH
- THE TERMINAL BOXES WILL BE INSTALLED ONLY IF THEY ARE WHOLLY INTACT
- USE EXCLUSIVELY SPARE PARTS CORTEM GROUP
- ROUTINE AND EXTRAORDINARY SERVICING OPERATIONS WILL BE CARRIED OUT EXCLUSIVELY BY QUALIFIED ELECTRICIANS WITH THE SUPERVISION OF "EXPERT" PERSONNEL
- THE NATIONAL SAFETY RULES AND THE INSTRUCTIONS MARKED BY " ⚠ " IN THIS TECHNICAL HANDBOOK WILL STRICTLY BE COMPLIED WITH.

MATERIALI STANDARD:
CORPO E COPERCHIO IN LEGA DI ALLUMINIO CON CONTENUTO DI MAGNESIO MAX.6% IN PESO, O IN ACCIAIO INOX AISI 303/304/316. VITI DI FISSAGGIO COPERCHIO E DI COLLEGAMENTO DELLA TERRA INTERNA / ESTERNA IN ACCIAIO INOX.

STANDARD MATERIALS:
BODY AND TOP OF ALUMINIUM ALLOY (MAX. WEIGHT CONTENT OF MAGNESIUM: 6%) OR OF STAINLESS STEEL AISI 303/304/316. SCREWS OF STAINLESS STEEL FOR FIXING THE TOP AND FOR THE CONNECTION WITH THE INTERNAL/EXTERNAL EARTHING SYSTEM.

USO E CONFORMITA':
LE CUSTODIE VENGONO USATE IN ZONE PERICOLOSE, DOVE ESISTE PERICOLO DI ESPLOSIONI O COMBUSTIONI DI GAS E/O POLVERI COMBUSTIBILI..
SONO PRINCIPALMENTE USATE PER IMPIANTI IN TUBO CONDUIT O CON PRESSACAVI , E POSSONO AVERE DELLE APPLICAZIONI SULLE PARETI COME QUADRI DI CONTROLLO E SEGNALAZIONE.
SONO COSTRUITE IN ACCORDO ALLE NORMATIVE EUROPEE.

USE AND COMPLIANCE:
THE TERMINAL BOXES ARE USED IN DANGEROUS AREAS WITH RISKS OF EXPLOSIONS OR FIRES OF GASES AND/OR EXPOLISIVE DUST.
THEY ARE MAINLY USED FOR SYSTEMS IN CONDUITS OR WITH CABLE GLANDS; THEY CAN ALSO BE APPLIED ONTO WALLS AS SIGNALLING AND CONTROL BOARDS. THEY HAVE BEEN MANUFACTURED IN COMPLIANCE WITH THE EUROPEAN STANDARDS.

COR.TEM GROUP è da sempre impegnata nella salvaguardia dell'ambiente ed in tal senso raccomanda di smaltire i contenitori e gli imballaggi usati secondo le prescrizioni e le normative vigenti nel Paese di destinazione, evitando di disperderli nell'ambiente dopo l'utilizzo.

COR.TEM GROUP cares for the environmental protection and recommends therefore to dispose properly of the packing and wrapping of its goods, according to the prescriptions and regulations in force in the destination country. The differentiated waste disposal is strongly recommended.

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CUSTODIE SERIE EJB...
ISTRUZIONI DI SICUREZZA, USO E MANUTENZIONE

ENCLOSURES SERIES EJB…
SAFETY, MAINTENANCE AND MOUNTING INSTRUCTIONS

INFORMAZIONE AGLI UTENTI DI APPARECCHIATURE DOMESTICHE O PROFESSIONALI

Ai sensi dell'art. 13 del Decreto Legislativo 25 luglio 2005, n. 151 "Attuazione delle Direttive 2002/95/CE, 2002/96/CE e 2003/108/CE, relative alla riduzione dell'uso di sostanze pericolose nelle apparecchiature elettriche ed elettroniche, nonché allo smaltimento dei rifiuti"

Il simbolo del cassonetto barrato riportato sull'apparecchiatura o sulla sua confezione indica che il prodotto alla fine della propria vita utile deve essere raccolto separatamente dagli altri rifiuti. L'utente dovrà, pertanto, conferire l'apparecchiatura giunta a fine vita agli idonei centri di raccolta differenziata dei rifiuti elettronici ed elettrotecnici, oppure riconsegnarla al rivenditore al momento dell'acquisto di una nuova apparecchiatura di tipo equivalente, in ragione di uno a uno.

Nel caso di utenti professionali (aziende o enti), ai sensi della normativa sopra citata, la raccolta differenziata della presente apparecchiatura giunta a fine vita è organizzata e gestita:

a) direttamente dall'utente, nel caso in cui questo decida di disfarsi dell'apparecchiatura senza sostituirla con una apparecchiatura nuova equivalente ed adibita alle stesse funzioni;
b) dal produttore, inteso come il soggetto che ha per primo introdotto e commercializzato in Italia o rivende in Italia col proprio marchio l'apparecchiatura nuova che ha sostituito la precedente, nel caso in cui, contestualmente alla decisione di disfarsi dell'apparecchiatura a fine vita, l'utente effettui un acquisto di un prodotto di tipo equivalente ed adibito alle stesse funzioni. In tale ultimo caso, l'utente potrà richiedere al produttore il ritiro della presente apparecchiatura entro e non oltre 15 giorni naturali consecutivi dalla consegna della suddetta apparecchiatura nuova.

L'adeguata raccolta differenziata per l'avvio successivo dell'apparecchiatura dismessa al riciclaggio, al trattamento e allo smaltimento ambientalmente compatibile contribuisce ad evitare possibili effetti negativi sull'ambiente e sulla salute e favorisce il reimpiego e/o riciclo dei materiali di cui è composta l'apparecchiatura.

Lo smaltimento abusivo del prodotto da parte dell'utente comporta l'applicazione delle sanzioni di cui alla corrente normativa di legge.

INFORMATION TO USERS OF DOMESTIC AND PROFESSIONAL EQUIPMENT

According to art. 13 of Legislative Decree dated 25 July 2005 No. 151 "Putting into effect Directives 2002/95/CE, 2002/96/CE and 2003/108/CE, aimed to limit the use of dangerous substances in electronic and electrical equipment, and related to waste disposal".

The symbol of the crossed dustbin shown on the equipment or on its package indicates that the product must be collected separately from other waste, at the end of its lifetime. The user shall bring the equipment at the end of its lifetime in places dedicated to collect electrical and electronic waste, or he shall return it to a dealer, buying equivalent equipment (one back, one in).

In the case of professional users (companies or organizations), the subject equipment collection at the end of its lifetime is managed as following indicated:

a) Directly by the user, if he decides to throw the equipment away and not to replace it with a new equivalent one with the same functions;
b) By the manufacturer (i.e. he who first introduced and put on the Italian market, or he who resells in Italy with his brand the new equipment that replaced the previous one), in case the user decides to throw away the old equipment and to replace it with a new equivalent one with the same functions. In this last case, the user can ask the manufacturer to pick up the subject equipment within and not later than 15 days, natural and consecutive, after the new equipment has been delivered.

Separating waste and recycling is aimed to environmentally compatible waste treatment and disposal, in order to limit negative effects on environment and health and to promote recycling the old equipment construction materials and its remake into new products.

Illegal disposal of the product by the user is subject to fines, as per the current applicable law.

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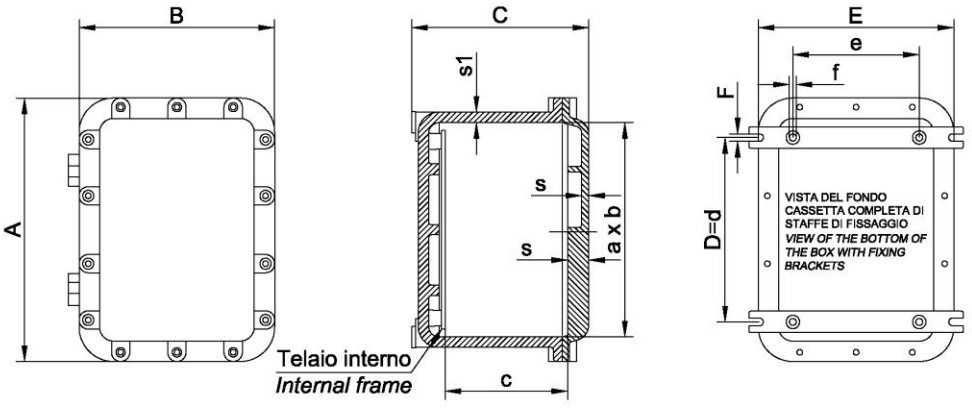
ISTRUZIONI DI SICUREZZA, USO E MANUTENZIONE

ENCLOSURES SERIES EJB...
SAFETY, MAINTENANCE AND MOUNTING INSTRUCTIONS

DIMENSIONI CUSTODIE FLANGIA ESTERNA EJB....
DIMENSIONS OF TERMINAL BOXES WITH EXTERNAL FLANGE EJB...

TIPO CUSTODIA *TYPE OF TERMINAL BOX*	DIMENSIONI *DIMENSIONS*														VITI COPERCHIO *SCREWS ON COVER*
	ESTERNE *OUTSIDE*			INTERNE *INSIDE*					FISSAGGIO STD. *STD. FIXING*			FISSAGGIO CON STAFFE *FIXING WITH BRACKETS*			
	A	B	C	a	b	c	s	s1	d	e	f	D	E	F	
EJB-01	282	182	105	214	213	58	13	13	160	154	Ø8				M8x25
EJB-1	304	204	218	240	140	160	9	14	230	130	M8	230	210	9	
EJB-1A	304	204	218	240	140	153	24	14	230	130	M8	230	210	9	
EJB-2	424	224	218	360	160	159	10	14	350	150	M8	350	230	9	
EJB-2A	424	224	218	360	160	153	24	14	350	150	M8	350	230	9	
EJB-3B	364	284	218	300	220	154	10	14	290	210	M8	290	290	9	
EJB-3			278			214									
EJB-3BA	364	284	218	300	220	153	24	14	290	210	M8	290	290	9	
EJB-3A			278			213									
EJB-4B	432	332	229	360	260	148	10	14	350	250	M10	350	330	11	M10x35
EJB-4			299			218									
EJB-4BA	432	332	229	360	260	163	24	14	350	250	M10	350	330	11	
EJB-4A			299			233									
EJB-45B	560	380	253	490	305	160	13	14	360	236	M10	360	356	11	
EJB-45			298			210									
EJB-45BA	560	380	253	490	305	179	24	14	360	236	M10	360	356	11	
EJB-45A			298			229									
EJB-5B	632	432	271	560	360	186	15	16	550	350	M10	550	430	11	
EJB-5			341			256									
EJB-5BA	632	432	271	560	360	205	24	16	550	350	M10	550	430	11	
EJB-5A			341			275									
EJB-503	632	432	397	560	360	331	24	16	550	350	M10	550	430	11	
EJB-55B	710	510	350	630	430	282	25	20	606	406	M10	606	496	11	M10x40
EJB-55			455			387									
EJB-6B	870	650	380	760	540	253	24	25	680	460	M16	680	580	14	M12x50
EJB-6			480			353									
EJB-7B	1000	700	400	890	590	240	30	30	810	510	M16	810	655	18	M16x70
EJB-7	1000	700	500	890	590	340	30	30	810	510	M16	810	655	18	
AQS-1	500	450	195	430	380	127	12	15	420	300	M12				M10x30



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CORTEM GROUP

CUSTODIE SERIE EJB...
ISTRUZIONI DI SICUREZZA, USO E MANUTENZIONE

ENCLOSURES SERIES EJB...
SAFETY, MAINTENANCE AND MOUNTING INSTRUCTIONS

CUSTODIE VUOTE
EMPTY BOXES

ESECUZIONE: Ex d IIB o IIB+H2 ⟨Ex⟩ II2G IP65 (con grasso al silicone sulle flange)
EXECUTION: *or*
Ex d IIB o IIB+H2 ⟨Ex⟩ II2GD Ex tD A21 IP65 (con o senza operatori serie M-0... montati)
or *(with silicone grease on the flanges)*
(with or without operators of series M-0... installed)

Ex d IIB o IIB+H2 ⟨Ex⟩ II2GD Ex tD A21 IP66/67 (con guarnizione senza operatori serie M-0... montati)
or *(with seal without operators of series M-0… installed)*

Ex d IIB o IIB+H2 ⟨Ex⟩ II2GD Ex tD A21 IP66 (con guarnizione con operatori serie M-0.. montati)
or *(with seal with operators of series M-0… installed)*

Ex d IIB o IIB+H2 ⟨Ex⟩ II2G IP54 (con guarnizione o grasso al silicone e con operatori serie Fondisonzo montati)
or *(with seal or silicone grease and with operators of series "Fondisonzo" installed)*

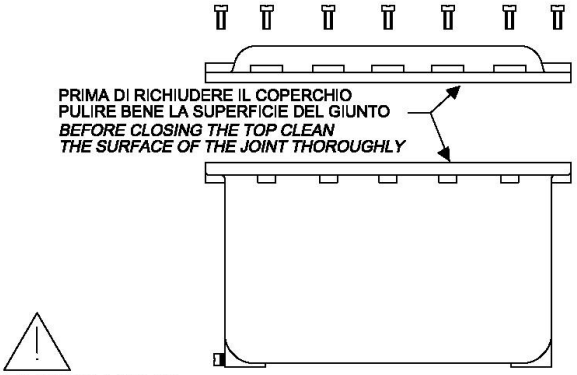
SOLO PER CUSTODIE ACCIAIO INOX:
ONLY FOR STAINLESS STEEL ENCLOSURES:

⟨Ex⟩ I M2 Ex d I IP.... (AMMESSE SOLO OPERATORI ACCIAIO INOX MARCATI M-0... Ex d I IP66)
(ADMITTED ONLY STAINLESS STEEL OPERATORS MARKED M-0... Ex d I IP66)

CERTIFICATO: CESI 00 ATEX 036U
CERTIFICATE: CESI 00 ATEX 036U

ZONE DI INSTALLAZIONE: ZONA 1, ZONA 2, ZONA 21, ZONA 22
INSTALLATION ZONES: ZONE 1, ZONE 2, ZONE 21, ZONE 22

PROVE INDIVIDUALI: LA PROVA INDIVIDUALE E' STATA EFFETTUATA A 11,9 bar PER LE GRANDEZZE DA 1 A 5 E A 11,5 bar PER LA GRANDEZZA 6
INDIVIDUAL TESTS: THE INDIVIDUAL TEST HAS BEEN CARRIED OUT AT 11,9 bars FOR THE TYPES FROM 1 TO 5, AND AT 11.5 bars FOR THE TYPE 6



COPPIA DI SERRAGGIO RACCOMANDATA
RECOMMENDED TIGHTENING TORQUES

Filetto Nominal size thread	Classe di resistenza 70 Steel Grade Property Class 70	
	Precarico (N) Preload (N)	Serraggio (Nm) Tightening (Nm)
M8	12.200	16
M10	16.300	32
M12	24.200	56
M16	45.000	135

USO E MANUTENZIONE:
TUTTE LE OPERAZIONI DI INSTALLAZIONE E MANUTENZIONE DEVONO ESSERE FATTE QUANDO IL CIRCUITO NON E' IN TENSIONE. BISOGNA RISPETTARE I DATI TECNICI DELLE CUSTODIE CHE SONO INDICATI SULLA TARGHETTA. FARE MOLTA ATTENZIONE A NON DANNEGGIARE I GIUNTI DI ACCOPPIAMENTO, PULENDOLI ACCURATAMENTE PRIMA DI MONTARLI. NEL CASO DI CUSTODIE CON GRASSO AL SILICONE SULLE FLANGE, DOPO L'APERTURA, PRIMA DI RICHIUDERE LA CUSTODIA, BISOGNA RIPRISTINARE IL GRASSO. NEL CASO DI CUSTODIE CON GUARNIZIONE, DOPO L'APERTURA , PRIMA DI RICHIUDERE LA CUSTODIA, VERIFICARE L'ESATTA POSIZIONE DELLA GUARNIZIONE NELLA PROPRIA SEDE, VERIFICARE CHE LA GUARNIZIONE NON SIA DANNEGGIATA, VERIFICARE CHE SOTTO OGNI VITE DI CHIUSURA DEL COPERCHIO, SIA POSTA UNA RONDELLA.
EVENTUALI FORI FILETTATI POSTI SUL COPERCHIO O SUL CORPO, CHE NON SIANO USATI DEVONO ESSERE CHIUSI CON TAPPI CERTIFICATI.
LE VITI DI CHIUSURA DEL COPERCHIO SONO IN ACCIAIO INOX DI QUALITA' A2-70 SECONDO UNI 7323 CON UN CARICO UNITARIO DI ROTTURA DI 700 N/mm2.

USE AND SERVICE:
ALL THE OPERATIONS OF INSTALLATION AND SERVICE WILL BE CARRIED OUT WHEN THE CIRCUIT IS NOT POWERED. THE TECHNICAL DATA INDICATED IN THE RATING PLATE OF THE TERMINAL BOX WILL BE COMPLIED WITH. TAKE EXTREME CARE IN NOT DAMAGING THE COUPLING JOINTS. CLEAN THE JOINTS THOROUGHLY BEFORE APPLYING THEM. IN THE CASE OF TERMINAL BOXES WITH SILICONE GREASE ON FLANGES, AFTER OPENING THEM APPLY THE GREASE AGAIN BEFORE CLOSING.
IF THE TERMINAL BOXES HAVE A SEAL, AFTER OPENING THEM CHECK THE EXACT POSITION OF THE SEAL IN ITS SEAT. CHECK THAT THE SEAL IS NOT DAMAGED. DON'T FORGET TO PLACE A WASHER IS PLACED UNDER EACH CLOSING SCREW.
ANY THREADED HOLE OF THE TOP OR OF THE BODY BEING NOT USED WILL BE CLOSED WITH CERTIFIED PLUGS.
THE CLOSING SCREWS OF THE TOP ARE OF STAINLESS STEEL A2-70 ACCORDING TO UNI 7223, WITH A UNIT BREAKING LOAD OF 700 N/mm².

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CORTEM GROUP

CUSTODIE SERIE EJB...
ISTRUZIONI DI SICUREZZA, USO E MANUTENZIONE

ENCLOSURES SERIES EJB...
SAFETY, MAINTENANCE AND MOUNTING INSTRUCTIONS

CUSTODIE PORTAMORSETTI
BOXES FOR TERMINAL CONNECTIONS

ESECUZIONI: *EXECUTIONS:*

- II 2G Ex d IIB T6/T5
- II 2GD Ex d IIB T6/T5 Ex tD A21 IP65 T85°C/T100°C — con grasso al silicone sulle flange / *with silicone grease on the flanges*
- II 2GD Ex d IIB+H2 T6/T5 Ex tD A21 IP65 T85°C/T100°C — con grasso al silicone sulle flange / *with silicone grease on the flanges*
- II 2GD Ex d IIB T6/T5 Ex tD A21 IP66/67 T85°C/T100°C — con guarnizione sul coperchio / *with seal gasket on the cover*
- II 2GD Ex d IIB+H2 T6/T5 Ex tD A21 IP66/67 T85°C/T100°C — con guarnizione sul coperchio / *with seal gasket on the cover*

CERTIFICATO: CESI 01 ATEX 026
CERTIFICATE: CESI 01 ATEX 026

ZONE DI INSTALLAZIONE: ZONA 1, ZONA 2, ZONA 21, ZONA 22
INSTALLATION ZONES: ZONE 1, ZONE 2, ZONE 21, ZONE 22

TEMPERATURA AMBIENTE: -20°C +40°C o -20°C +55°C
AMBIENT TEMPERATURE: -20°C +40°C or -20°C +55°C

CLASSI DI TEMPERATURA: T6 per temp.amb. -20°C +40°C o T5 per temp. amb.-20°C +55°C
CLASSES OF TEMPERATURE: T6 for amb. temp. of -20°C +40°C, or T5 for amb. temp. of -20°C +55°C

TEMPERATURA MASSIMA SUPERFICIALE PER PROTEZIONE CONTRO LE POLVERI COMBUSTIBILI "D" o "GD" : T85°C per classe temp. T6 T100°C per classe temp. T5
MAXIMUM SURFACE TEMPERATURE FOR PROTECTION AGAINST EXPLOSIVE DUST "D" or "GD": T 85°C for class of temp. T6 T 100°C for class of temp. T5

CARATTERISTICHE ELETTRICHE GENERALI:
GENERAL ELECTRICAL CHARACTERISTICS:

TENSIONE NOMINALE: 24 ÷ 800 V
RATED VOLTAGE: 24 to 800 V

FREQUENZA NOMINALE: 50/60 Hz
RATED FREQUENCY: 50/60 Hz

SEZIONE MORSETTI COMPONIBILI: 2,5 ÷ 240 mm2
SECTION OF ASSEMBLABLE TERMINALS: 2.5 to 240 mm²

CORRENTE NOMINALE: 12,5 ÷ 400 A
RATED CURRENT: 12.5 to 400 A

MAX. DENSITA' DI CORRENTE: 0,8 ÷ 7 A/mm2
MAX. CURRENT DENSITY: 0.8 to 7 A/mm²

SEZIONE MORSETTIERE : 3X16 ÷ 3X315 mm2
SECTION OF TERMINAL CONNECTIONS: 3X16 to 3X315 mm²

CORRENTE NOMINALE: 48 ÷ 252 A
RATED CURRENT: 48 to 252 A

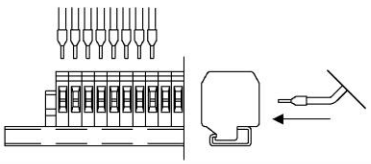
MAX. DENSITA' DI CORRENTE: 0,8 ÷ 3 A/mm2
MAX. CURRENT DENSITY: 0.8 to 3 A/mm²

USO E MANUTENZIONE:
LE CARATTERISTICHE DEI MORSETTI SONO INDICATE SULLA TARGHETTA DELLA CUSTODIA.
TUTTI I CABLAGGI ALL'INTERNO DELLE CUSTODIE DEVONO ESSERE FATTI RISPETTANDO LE CARATTERISTICHE DEI COMPONENTI.
I CAVI DEVONO ESSERE COMPLETI DI PUNTALINO/CAPOCORDA, E BLOCCATI LUNGO IL LORO PERCORSO.
LE DISTANZE TRA LE MORSETTIERE DEVONO ESSERE TALI DA CONSENTIRE COMODAMENTE IL COLLEGAMENTO DEI CONDUTTORI.
SE SULLA TARGHETTA DELLA CUSTODIA E' INDICATA LA CLASSE DI TEMPERATURA "T5" USARE CAVI DI COLLEGAMENTO ADATTI A TEMPERATURE DI 90°C.
COLLEGARE I CAVI DI MESSA A TERRA SULLE APPOSITE VITI PREVISTE ALL'INTERNO - ESTERNO DELLA CUSTODIA CONTRASSEGNATE CON IL SIMBOLO DI TERRA.

USE AND SERVICE:
THE CHARACTERISTICS OF THE TERMINALS ARE INDICATED ON THE RATING PLATE OF THE TERMINAL BOX. ANY WIRING INSIDE THE BOXES WILL BE CARRIED OUT IN COMPLIANCE WITH THE CHARACTERISTICS OF THE COMPONENTS.
LEADS WILL BE PROVIDED WITH WIRE TERMINALS AND FASTENED ALONG THEIR PATH.
THE DISTANCES BETWEEN THE TERMINAL CONNECTIONS WILL ENABLE TO CONNECT THE LEADS EASILY.
IF THE CLASS OF TEMPERATURE "T5" IS INDICATED ON THE RATING PLATE, USE CONENCTING CABLES BEARING TEMPERATURES OF 90°C.
CONNECT THE EARTHING CABLES WITH THE PROPER SCREWS INSIDE AND OUTSIDE THE TERMINAL BOX MARKED WITH THE EARTH SYMBOL.

GLI ELEMENTI DI CONNESSIONE PER I CONDUTTORI DI PROTEZIONE (MESSA A TERRA) DEVONO PERMETTERE IL COLLEGAMENTO ALMENO DELLE SEGUENTI SEZIONI DI CAVO (S):
THE CONNECTING ELEMENTS FOR THE PROTECTION (EARTHING) CABLES WILL ENABLE THE CONNECTION OF AT LEAST THE FOLLOWING SECTIONS (S) OF CABLE:

PER CONDUTTORI DI FASE	S < 16mm2	TERRA = S FASI
PER CONDUTTORI DI FASE	16 < S < 35	TERRA S = 16mm2
PER CONDUTTORI DI FASE	S > 35	TERRA 0,5 S FASI
FOR PHASE CONDUCTORS	*S < 16 mm²*	*EARTH = PHASE - S*
FOR PHASE CONDUCTORS	*16 < S < 35*	*EARTH - S = 16 mm²*
FOR PHASE CONDUCTORS	*S > 35*	*EARTH = 0.5 PHASE - S*



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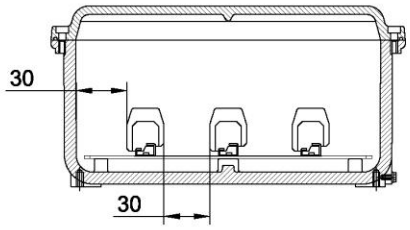
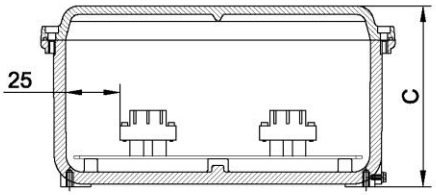
CUSTODIE SERIE EJB...
ISTRUZIONI DI SICUREZZA, USO E MANUTENZIONE

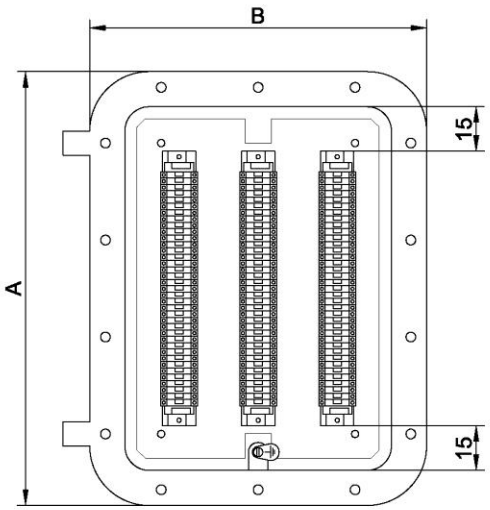
ENCLOSURES SERIES EJB...
SAFETY, MAINTENANCE AND MOUNTING INSTRUCTIONS

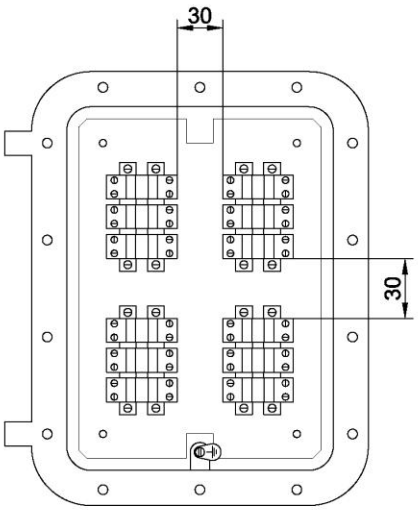
ESEMPIO DI TIPICA DISPOSIZIONE DI MORSETTI/MORSETTIERE NELLE CUSTODIE. NELLO SVILUPPO PER CUSTODIE PORTAMORSETTI CORTEM HA TENUTO CONTO DEI LIMITI DI SPAZIO E DISSIPAZIONE DI CALORE INTERNI.

EXAMPLE OF TYPICAL ARRANGEMENT OF TERMINALS/TERMINAL CONNECTIONS IN THE BOXES. WHEN DESIGNING THESE BOXES FOR TERMINAL CONNECTIONS, COR.TEM HAS CONSIDERED THE INTERNAL LIMITS OF SPACE AND HEAT DISSIPATION.









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CUSTODIE SERIE EJB...
ISTRUZIONI DI SICUREZZA, USO E MANUTENZIONE

ENCLOSURES SERIES EJB...
SAFETY, MAINTENANCE AND MOUNTING INSTRUCTIONS

UNITA' DI COMANDO, CONTROLLO E SEGNALAZIONE
CONTROL, CHECK AND SIGNALLING UNITS

ESECUZIONI:
EXECUTIONS:

II 2G Ex d IIB T6/T5/T4

II 2GD Ex d IIB T6/T5/T4 Ex tD A21 IP66/67 T85°C/T100°C/T135°C
II 2GD Ex d IIB+H2 T6/T5/T4 Ex tD A21 IP66/67 T85°C/T100°C/T135°C
— con guarnizione ma senza operatori serie M-0... montati / *with seal gasket but without operators series M-0... installed*

II 2GD Ex d IIB T6/T5/T4 Ex tD A21 IP66 T85°C/T100°C/T135°C
II 2GD Ex d IIB+H2 T6/T5/T4 Ex tD A21 IP66 T85°C/T100°C/T135°C
— con guarnizione e con operatori serie M-0... montati / *with seal gasket and with operators series M-0... installed*

I M2 Ex d I
— valido solo per custodie inox EJBX... / *valid for stainless steel boxes EJBX... only*

CERTIFICATO: CESI 01 ATEX 027
CERTIFICATE: CESI 01 ATEX 027

ZONE DI INSTALLAZIONE: ZONA 1, ZONA 2, ZONA 21, ZONA 22
INSTALLATION ZONES: ZONE 1, ZONE 2, ZONE 21, ZONE 22

TEMPERATURA AMBIENTE: -20°C +40°C, -20°C +55°C, -55°C +40°C, -55°C +55°C
AMBIENT TEMPERATURE: -20°C +40°C, -20°C +55°C, -55°C +40°C, -55°C +55°C

CLASSI DI TEMPERATURA:T6,T5,T4
IN FUNZIONE DELLE DIMENSIONI DELLA CUSTODIA, DELLA TEMPERATURA AMBIENTE E DELLA POTENZA DISSIPATA ALL'INTERNO DELLA CUSTODIA
CLASSES OF TEMPERATURE: T6, T5, T4
ACCORDING TO THE DIMENSIONS OF THE BOX, TO THE AMBIENT TEMPERATURE AND TO THE POWER DISSIPATED INSIDE THE BOX

TEMPERATURA MASSIMA SUPERFICIALE PER PROTEZIONE CONTRO LE POLVERI COMBUSTIBILI "D" o "GD": T85°C per classe temp.T6 T100°C per classe temp.T5 T135°C per classe temp.T4
MAXIMUM SURFACE TEMPERATURE FOR PROTECTION AGAINST EXPLOSIVE DUST "D" or "GD": T85°C for class of temp. T6 T100°C for class of temp. T5 T135°C for class of temp. T4

CARATTERISTICHE ELETTRICHE GENERALI:
GENERAL ELECTRICAL CHARACTERISTICS

TENSIONE NOMINALE: 24 ÷ 1000 V ac/dc
RATED VOLTAGE: 24 to 1000 V ac/dc

FREQUENZA NOMINALE: 50/60 Hz
RATED FREQUENCY: 50/60 Hz

CORRENTE MAX. NEI CONTATTI E FUSIBILI: 650 A
MAX. CURRENT ACROSS CONTACTS AND FUSES: 650 A

POTENZA MASSIMA PER LE LAMPADE: 5W per T amb. max. +40°C; 3W per T amb. max. +55°C
MAXIMUM POWER FOR LAMPS: 5 W for max. amb. temp. of +40°C; 3 W for max. amb. temp. of +55°C

IN ACCORDO ALLA EN/IEC 60079.1
L'apparecchiatura contenuta all'interno della custodia può essere posizionata in qualsiasi modo, a condizione che una superficie di almeno il 20% di ogni sezione rimanfa libera.

ACCORDING TO EN/IEC 60079.1
The content of the enclosure equipment may be placed in any arrangement, provided than an area of at least 20% of each cross-sectional area remains free.

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CUSTODIE SERIE EJB...
ISTRUZIONI DI SICUREZZA, USO E MANUTENZIONE

ENCLOSURES SERIES EJB...
SAFETY, MAINTENANCE AND MOUNTING INSTRUCTIONS

TABELLA DELLE CARATTERISTICHE ELETTRICHE STANDARD DI COMPONENTI INSTALLABILI NELLE CUSTODIE, NELLO SVILUPPO PER UNITA' DI CONTROLLO, COMANDO E SEGNALAZIONE, CORTEM HA TENUTO CONTO DEI SEGUENTI LIMITI. (I valori si riferiscono ai cataloghi dei principali costruttori di componenti elettrici/elettronici in commercio)

TABLE OF STANDARD ELECTRICAL CHARACTERISTICS OF COMPONENTS THAT CAN BE INSTALLED IN THE TERMINAL BOXES. WHEN DESIGNING BOXES FOR CONTROL AND SIGNALLING UNITS, COR.TEM HAS CONSIDERED THE FOLLOWING LIMITS. (These values have been extracted from the catalogues of the main manufacturers of electric/electronic components available on the market).

TIPO DI COMPONENTE *TYPE OF COMPONENT*	V MAX (VOLT)	I MAX (AMPER)	MAX POTENZA DISSIPATA *MAX. DISSIPATED POWER* (WATT)
STRUMENTI ANALOGICI E DIGITALI *ANALOG AND DIGITAL INSTRUMENTS*	660	5	10
REATTORI/INVERTER ELETTRONICI *ELECTRONIC REACTORS/INVERTERS*	400	-	10
PLC, MULTIPLEXER E AMPLIFICATORI *PLC, MULTIPLEXERS AND AMPLIFIERS*	240	-	80
DISPOSITIVI DI CONTROLLO E MISURA *MEASURING AND CONTROL DEVICES*	240	-	100
INTERRUTTORI AUTOMATICI *AUTOMATIC SWITCHES*	660	650	-
FUSIBILI *FUSES*	660	400	-
RELE' *RELAYS*	500	10	12
DISPOSITIVI DI CONTROLLO ELETTRONICI *ELECTRONIC CONTROL DEVICES*	660	-	100
CONTATTORI *CONTACTORS*	660	650	30
TEMPORIZZATORI *TIMERS*	240	10	5
RELE' CREPUSCOLARI *TWILIGHT RELAYS*	240	-	2
CONDENSATORI *CAPACITORS*	660	-	-
TRAFORMATORI *TRANSFORMERS*	660	-	200
RESISTORI *RESISTORS*	240	-	300
MORSETTI *TERMINALS*	660	-	-
REATTORI *REACTORS*	277	7.5	40

MINIMA DISTANZA IN ARIA TRA I COMPONENTI

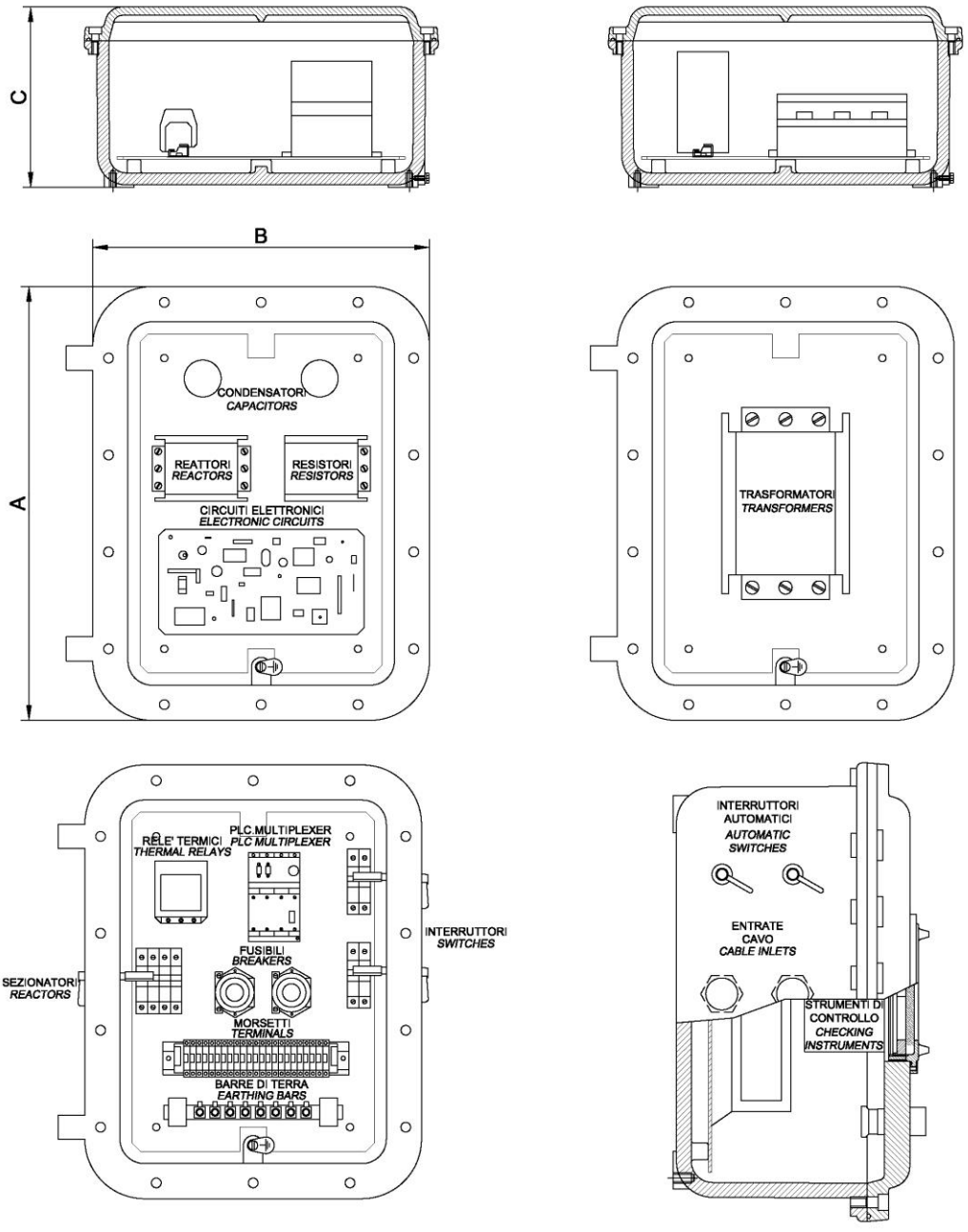
MINIMUM DISTANCE BETWEEN THE COMPONENTS

VOLTAGGIO COMPONENTI (V a.c.) *VOLTAGE OF COMPONENTS (V a.c.)*	MIN. DISTANZA IN ARIA (mm) *MINIMUM DISTANCE (mm)*
60-250	6
250-380	8
380-500	10
500-660	12
660-1000	20
VOLTAGGIO COMPONENTI (V c.c.) *VOLTAGE OF COMPONENTS (V d.c.)*	MIN. DISTANZA IN ARIA (mm) *MINIMUM DISTANCE (mm)*
12-250	6

CUSTODIE SERIE EJB...
ISTRUZIONI DI SICUREZZA, USO E MANUTENZIONE

ENCLOSURES SERIES EJB...
SAFETY, MAINTENANCE AND MOUNTING INSTRUCTIONS

ESEMPIO DI TIPICA DISPOSIZIONE DI ACCESSORI INTERNI/ESTERNI NELLE CUSTODIE
EXAMPLE OF TYPICAL ARRANGEMENT OF INTERNAL/EXTERNAL COMPONENTS IN THE TERMINAL BOXES



- NEL CASO IN CUI IL PRODOTTO VENGA FORNITO SENZA PRESSACAVI SARÀ CURA DEL CLIENTE ADOTTARE TAPPI O PRESSACAVI IN ACCORDO ALLE NORME IMPIANTISTICHE

- in case the product is supplied without cable glands, it is up to the customer to adopt plugs or cable glands in accordance with the plant engineering rules.

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CUSTODIE SERIE EJB...
ISTRUZIONI DI SICUREZZA, USO E MANUTENZIONE

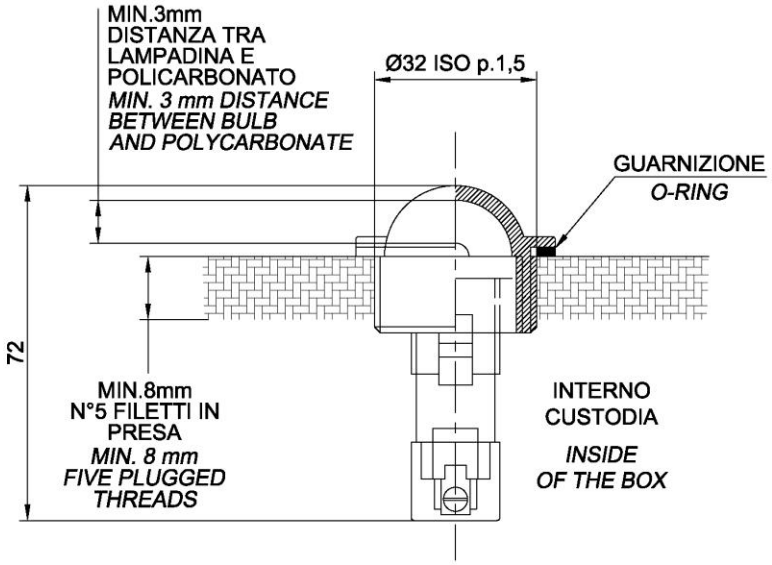
ENCLOSURES SERIES EJB...
SAFETY, MAINTENANCE AND MOUNTING INSTRUCTIONS

ESEMPIO DI OPERATORI DI COMANDO E SEGNALAZIONE SERIE M-0...
INSTALLABILI SUI CORPI O SUI COPERCHI DELLE CUSTODIE EJB...
EXAMPLE OF CONTROL AND SIGNALLING OPERATORS OF SERIES M-0...
THAT CAN BE INSTALLED ON THE BODIES OR TOPS OF THE TERMINAL BOXES EJB...

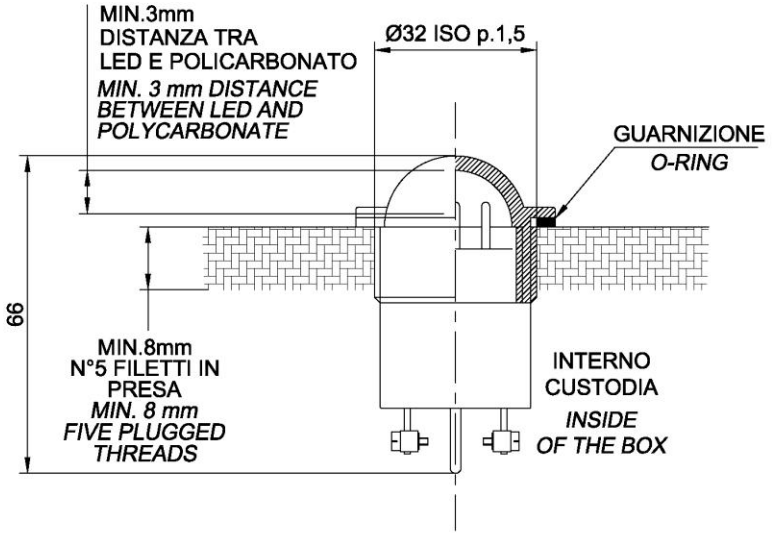
ESECUZIONE Ex d IIC Ex II2GD Ex tD A21 IP66
EXECUTION

CERTIFICATO CESI 01 ATEX 025U
CERTIFICATE CESI 01 ATEX 025U

LAMPADE DI SEGNALAZIONE
SIGNALLING LAMPS



LED DI SEGNALAZIONE
SIGNALLING LED



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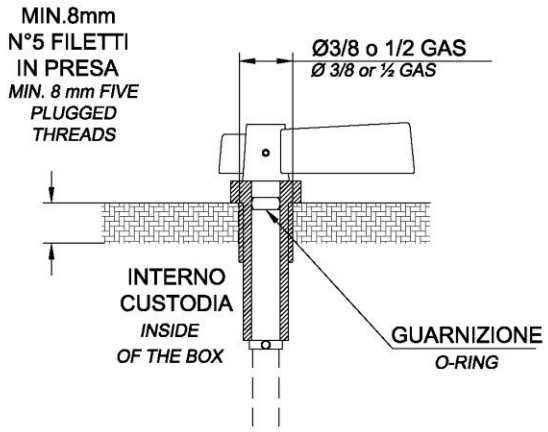
CUSTODIE SERIE EJB...
ISTRUZIONI DI SICUREZZA, USO E MANUTENZIONE

ENCLOSURES SERIES EJB...
SAFETY, MAINTENANCE AND MOUNTING INSTRUCTIONS

MANOVRE PER INTERRUTTORI ROTATIVI
OPERATIONS FOR ROTARY SWITCHES



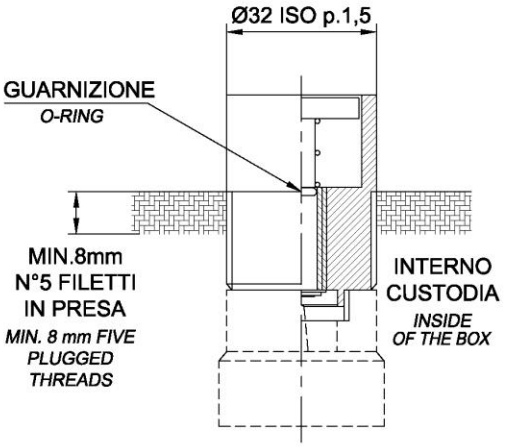
PULSANTI - OPERATORI CON MOVIMENTO ASSIALE
PUSHBUTTONS - OPERATORS WITH AXIAL MOVEMENT

SOSTITUZIONE DEGLI OPERATORI:
ESSENDO BLOCCATI AI COPERCHI DELLE CUSTODIE, GLI OPERATORI COMPLETI NON POSSONO ESSERE SOSTITUITI. SOLO IN CASI PARTICOLARI SOTTO LA SORVEGLIANZA DI CORTEM, ALCUNI OPERATORI POSSONO ESSERE SOSTITUITI. USARE SOLO PARTI ORIGINALI CORTEM.
TUTTI GLI OPERATORI SONO FORNITI DI CONTATTI A MORSETTO PER IL COLLEGAMENTO DEI CAVI.

PER LE ENTRATE CON CAVO FLESSIBILE O CON TUBO RIGIDO USARE SOLO ACCESSORI CERTIFICATI IN ACCORDO ALLE NORMATIVE EN 60079-0, EN 60079-1, EN 61241-0, EN 61241-1. LA SCELTA DEI TIPI DI ACCESSORI DA USARE PER GLI INGRESSI E' FATTA IN ACCORDO ALLA NORMA EN-60079-14. LA DISTANZA MINIMA TRA GLI INGRESSI E/O TRA GLI ACCESSORI DI COMANDO E SEGNALAZIONE E' STABILITA DA CORTEM IN ACCORDO AL CERTIFICATO CESI 00 ATEX 036U, SOLO CORTEM E' AUTORIZZATA ALLA FORATURA E LAVORAZIONE DELLE CUSTODIE, PERTANTO OGNI LAVORAZIONE FATTA AL DI FUORI DEL CONTROLLO CORTEM E' ILLEGALE.

REPLACING THE OPERATORS
SINCE THE OPERATORS ARE BLOCKED BY THE TOPS OF THE BOXES, IT IS NOT POSSIBLE TO REPLACE THEM AS A WHOLE UNIT. SOME OPERATORS CAN BE REPLACED ONLY IN PARTICULAR CASES UNDER THE SUPERVISION OF CORTEM. USE ONLY ORIGINAL SPARE PARTS CORTEM. ALL THE OPERATORS WILL INCLUDE TERMINAL CONTACTS FOR CONNECTING THE LEADS.

WHEN INSERTING FLEXIBLE LEADS OR STIFF PIPES USE ONLY ACCESSORIES CERTIFIED ACCORDING TO THE STANDARDS EN 60079-0, EN 60079-1, EN 61241-0, EN 61241-1. THE TYPES OF ACCESSORIES USED FOR THESE OPERATIONS ARE CHOSEN ACCORDING TO THE STANDARD EN-60079-14.
THE MINIMUM DISTANCE BETWEEN THE INLETS AND/OR BETWEEN THE CONTROL AND SIGNALLING PARTS IS SET BY CORTEM ACCORDING TO THE CERTIFICATE CESI 00 ATEX 036U, ONLY CORTEM IS AUTHORIZED TO ANY DRILLING OR WORKING ON THE TERMINAL BOXES, THEREFORE ANY WORKING NOT CONTROLLED BY CORTEM IS ILLEGAL.



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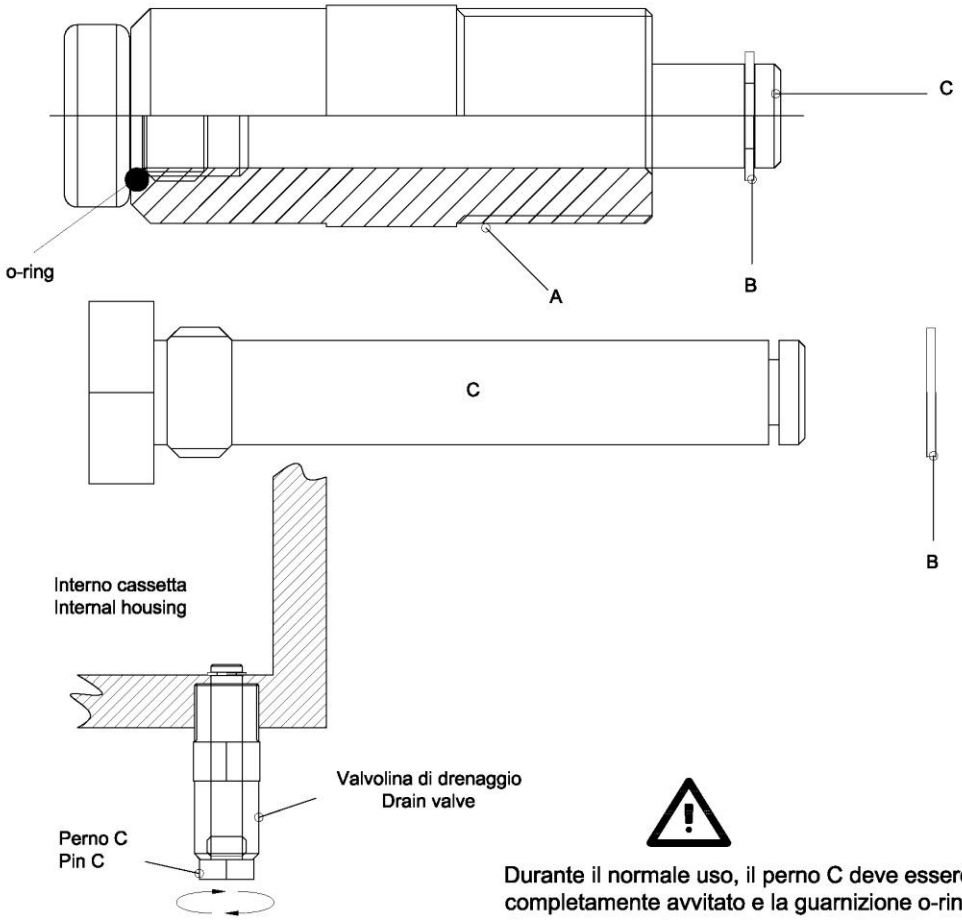
CUSTODIE SERIE EJB...
ISTRUZIONI DI SICUREZZA, USO E MANUTENZIONE

ENCLOSURES SERIES EJB...
SAFETY, MAINTENANCE AND MOUNTING INSTRUCTIONS

VALVOLA TIPO / Valve type:
ECD-2.. II 2GD Ex d IIC/Ex e II Ex tD A21 IP66



Per procedere con il drenaggio, svitare il perno C.
Terminata l'operazione di drenaggio avvitare il perno facendo attenzione che la guarnizione o-ring sia nella propria sede.
To proceed with drain operation, unscrew the pin C.
When drain operation is finished, screw the pin C, be careful to keep the o-ring gasket on its seat.

Durante il normale uso, il perno C deve essere completamente avvitato e la guarnizione o-ring deve essere nella propria sede, al fine di mantenere il grado di protezione IP.
During the normal use, the pin C must be completly screwed and the o-ring gasket must be on its seat, to mantain the degree of protection.

Per la pulizia della valvolina, si deve smontare la stessa dalla cassetta procedendo successivamente allo smontaggio di tutti i componenti come da schema
1-Smontare la valvolina A dalla cassetta
2-Togliere la rondella elastica B
3-Svitare e sfilare dalla valvolina A il perno C
4-Effettuare la pulizia del componente ECD
5-Rimontare la valvolina ECD procedendo in senso inverso a quanto indicato nei punti precedenti

For the cleaning of the valve you must strip down it from the junction box proceeding subsequently the dismantling of the components as in the scheme1-Strip down the valve A from the junction box
2-Remove the internal reatainig ring B
3-Unscrew and take out from the valve A the pin C
4-Make the cleaning of the component ECD
5-Reassemble the valve ECD proceeding in the opposite direction as indicated in the above mentioned points.

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CORTEM GROUP

CUSTODIE SERIE EJB...
ISTRUZIONI DI SICUREZZA, USO E MANUTENZIONE

ENCLOSURES SERIES EJB...
SAFETY, MAINTENANCE AND MOUNTING INSTRUCTIONS

TYPE OF ENCLOSURE		MAXIMUM OUTPUT DISSIPATED POWER (WATT) WITH AMBIENT TEMPERATURE OF 40°C				MAXIMUM OUTPUT DISSIPATED POWER (WATT) WITH AMBIENT TEMPERATURE OF 55°C			
		CLASS T6 WITHOUT SIGNALLING LAMPS, ONLY SIGNALLING LED ARE ALLOWED	CLASS T5 WITH SIGNALLING LAMPS AND/OR SIGNALLING LED	CLASS T5 WITHOUT SIGNALLING LAMPS, ONLY SIGNALLING LED ARE ALLOWED	CLASS T4 WITHOUT SIGNALLING LAMPS AND SIGNALLING LED	CLASS T6 WITHOUT SIGNALLING LAMPS, ONLY SIGNALLING LED ARE ALLOWED	CLASS T5 WITH SIGNALLING LAMPS AND/OR SIGNALLING LED	CLASS T5 WITHOUT SIGNALLING LAMPS, ONLY SIGNALLING LED ARE ALLOWED	CLASS T4 WITHOUT SIGNALLING LAMPS AND SIGNALLING LED
EJB-01		30	30	45	100	25	25	40	80
EJB-1	EJBX-1	45	45	65	140	34	34	50	105
EJB-2	EJBX-2	60	60	85	190	45	45	65	142
EJB-3	EJBX-3	75	75	110	245	56	56	82	184
EJB-3B	EJBX-3B	55	55	80	180	40	40	60	135
EJB-4	EJBX-4	100	100	175	350	75	75	130	262
EJB-4B	EJBX-4B	75	75	130	260	56	56	100	195
EJB-45	EJBX-45	140	140	240	480	105	105	180	360
EJB-45B	EJBX-45B	120	120	210	430	90	90	160	320
EJB-5	EJBX-5	210	210	315	600	160	160	235	450
EJB-5B	EJBX-5B	170	170	250	480	130	130	190	360
EJB-503		230	230	345	660	176	176	255	495
EJB-55		360	360	550	1050	270	270	400	765
EJB-55B		260	260	380	740	200	200	300	565
EJB-6	EJBX-6	600	600	910	1740	460	460	680	1300
EJB-6B	EJBX-6B	490	490	720	1390	370	370	550	1040
EJB-7	EJBX-7	770	770	1170	2270	590	590	890	2090
EJB-7B		600	600	910	1740	460	460	680	1300
	EJBX-7	610	610	930	1780	470	470	690	1310
AQS-1		100	100	150	280	75	75	110	205

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Cortem S.p.A.
cap.soc. € 1.578.000,00 int. vers.
R.E.A. C.C.I.A.A. GORIZIA U.32755
M. GO 000135
Reg.Imp.n.1226 Tribunale di Gorizia
Cod.Fisc.e Partita Iva IT 00652120318
Eco-contributo RAEE assolto ove dovuto
N° Registro A.E.E.: IT08020000001818
Sede e Stabilimento/Works:
34070 Villesse (GO) ITALY
Via Aquileia,10
Telefono: +39 0481 964911
Telefax +39 0481 964999
Email info@cortemgroup.com
Direzione commerciale/Sales:
20129 Milano (MI) ITALY
Piazzale Dateo,2
Telefono: +39 02 761 10329
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Email info@cortemgroupmi.com
Web site: www.cortemgroup.com

CORTEM GROUP™
To be sure to be safe.

ATTESTATO DI CONFORMITA' DEI COMPONENTI

ATTESTATION OF CONFORMITY FOR COMPONENTS

N° 0018

Il costruttore:
We:

CORTEM S.p.A.
Via Aquileia, 10
34070 VILLESSE (GO) - ITALY

Dichiara qui di seguito che il prodotto
Hereby declare that the product

Custodie vuote: *Empty boxes:*	**EJB…**
Modo di protezione: *Protection mode:*	**II 2GD Ex d IIB Ex tD A21 IP65(66/67)** **II 2GD Ex d IIB+H_2 Ex tD A21 IP65(66/67)** **I M2 Ex d I IP65(66/67)**
Certificato: *Certificate:*	**CESI 00 ATEX 036U**
Organismo notificato: *Notified body:*	**n. 0722 CESI via Rubattino, 54 (MI) ITALY**

Risulta in conformità con le seguenti direttive comunitarie:
Is in conformity with the following community directives:

94/9/EC

E che sono state applicate le seguenti norme armonizzate:
And that the following harmonized standards have been applied:

EN 60079-0 2006
EN 60079-1 2004
EN 61241-0 2006
EN 61241-1 2004
EN 60529 1991

Le custodie vuote sono state sottoposte alla prova di sovrapressione interna in accordo al par.15.1.3.1 della EN 60079-1 applicando i valori indicati sul certificato CESI 00 ATEX 036U.
The empty housings have been submitted to the overpressure test according to par.15.1.3.1 of EN 60079-1 with the values indicated on CESI 00 ATEX 036U certificate.

Villesse, 09.12.2009

Firma
Signature . . . . . .
Riccardo Gratton
Vice-president

Cortem S.p.A.
cap.soc. € 1.578.800,00 int. vers.
R.E.A. C.C.I.A.A. GORIZIA U.32755
M. GO 000139
Reg.Imp.n.1226 Tribunale di Gorizia
Cod.Fisc.e Partita Iva IT 00052120318
Eco-contributo RAEE assolto ove dovuto
N° Registro A.E.E.: IT080120000001818
Sede e Stabilimento/Works:
34070 Villesse (GO) ITALY
Via Aquileia,10
Telefono: +39 0481 964911
Telefax +39 0481 964999
Email info@cortemgroup.com
Direzione commerciale/Sales:
20129 Milano (MI) ITALY
Piazzale Dateo,2
Telefono: +39 02 7611 0329
Telefax +39 02 7383402
Email info@cortemgroupmi.com
Web site www.cortemgroup.com

CORTEM™ GROUP
To be sure to be safe.

DICHIARAZIONE DI CONFORMITA' *DECLARATION OF CONFORMITY*

CE **N° 0019**

Il costruttore:
We:

CORTEM S.p.A.
Via Aquileia, 10
34070 VILLESSE (GO) - ITALY

Dichiara qui di seguito che il prodotto
Hereby declare that the product

Custodie porta morsetti, unità di comando e controllo: *Terminal boxes, command and control units:*	**EJB...**
Modo di protezione: *Protection mode:*	**Ⓔx II 2G Ex d IIB T6/T5/T4** **Ⓔx II 2GD Ex d IIB T6/T5/T4** **Ex tD A21 IP65(66/67) T85°C/T100°C/T135°C** **Ⓔx II 2GD Ex d IIB+H_2 T6/T5/T4** **Ex tD A21 IP65(66/67) T85°C/T100°C/T135°C** **Ⓔx I M2 Ex d I IP65(66/67)** (T4 solo per unità comando e controllo) *(T4 for command and control units only)*
Certificato: *Certificate:*	**CESI 01 ATEX 026** **CESI 01 ATEX 027**
Organismo notificato: *Notified body:*	**n. 0722 CESI via Rubattino, 54 (MI) ITALY**

Risulta in conformità con le seguenti direttive comunitarie:
Is in conformity with the following community directives:

2004/108/EC
92/31
93/68
94/9/EC

E che sono state applicate le seguenti norme armonizzate:
And that the following harmonized standards have been applied:

EN 60439-1
EN 60079-0 2006
EN 60079-1 2004
EN 61241-0 2006
EN 61241-1 2004
EN 60529 1991

Villesse, 09.12.2009

Firma
Signature . . . . . .
Riccardo Gratton
Vice-President

6. DATASHEET OF THE COMPONENTS

6.1 Ex-i DIGITAL INPUT BARRIER

Switch Amplifier — **KFA6-SR2-Ex2.W**

Features

- 2-channel isolated barrier
- 230 V AC supply
- Dry contact or NAMUR inputs
- Relay contact output
- Line fault detection (LFD)
- Reversible mode of operation
- Up to SIL2 acc. to IEC 61508

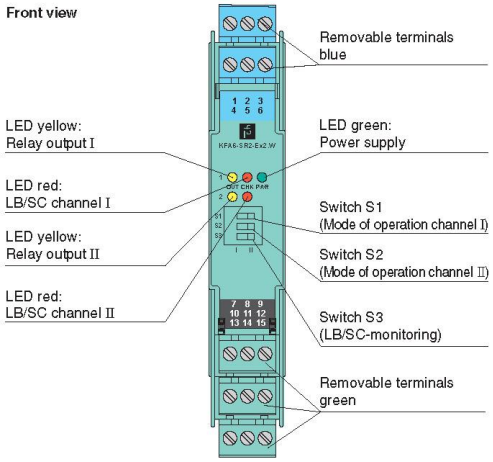
Function

This isolated barrier is used for intrinsic safety applications. It transfers digital signals (NAMUR sensors/mechanical contacts) from a hazardous area to a safe area.

The proximity sensor or switch controls a form C changeover relay contact for the safe area load. The normal output state can be reversed using switches S1 and S2. Switch S3 is used to enable or disable line fault detection of the field circuit.

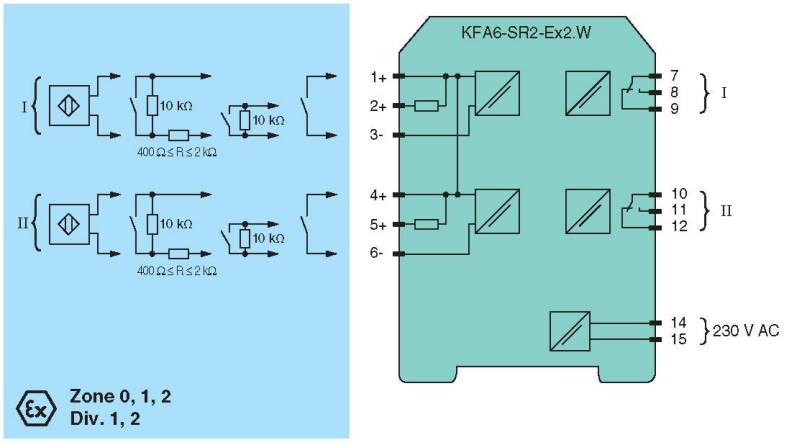
During an error condition, the relays revert to their de-energized state and the LEDs indicate the fault according to NAMUR NE44.

Assembly



CE (Ex) SIL2

Connection



Release date 2010-02-02 14:14 Date of issue 2010-04-13 103373_ENG.xml

Technical data — KFA6-SR2-Ex2.W

General specifications		
Signal type		Digital input
Supply		
Connection		terminals 14, 15
Rated voltage		207 ... 253 V AC, 45 ... 65 Hz
Power loss		1.2 W
Power consumption		≤ 1.3 W
Input		
Connection		terminals 1+, 2+, 3-; 4+, 5+, 6-
Rated values		acc. to EN 60947-5-6 (NAMUR)
Open circuit voltage/short-circuit current		approx. 8 V DC / approx. 8 mA
Switching point/switching hysteresis		1.2 ... 2.1 mA / approx. 0.2 mA
Line fault detection		breakage I ≤ 0.1 mA , short-circuit I > 6 mA
Pulse/Pause ratio		≥ 20 ms / ≥ 20 ms
Output		
Connection		output I: terminals 7, 8, 9 ; output II: terminals 10, 11, 12
Output I, II		signal ; relay
Contact loading		253 V AC/2 A/cos ϕ > 0.7; 126.5 V AC/4 A/cos ϕ > 0.7; 40 V DC/2 A resistive load
Energized/De-energized delay		approx. 20 ms / approx. 20 ms
Mechanical life		10^7 switching cycles
Transfer characteristics		
Switching frequency		≤ 10 Hz
Electrical isolation		
Output/power supply		reinforced insulation according to IEC 61140, rated insulation voltage 300 V_{eff}
Output/Output		basic insulation according to IEC 61140, rated insulation voltage 300 V_{eff}
Directive conformity		
Electromagnetic compatibility		
Directive 2004/108/EC		EN 61326-1:2006
Low voltage		
Directive 2006/95/EC		EN 50178:1997
Conformity		
Electromagnetic compatibility		NE 21
Protection degree		IEC 60529
Protection against electric shock		IEC 61140
Ambient conditions		
Ambient temperature		-20 ... 60 °C (-4 ... 140 °F)
Mechanical specifications		
Protection degree		IP20
Mass		approx. 150 g
Dimensions		20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in) , housing type B2
Data for application in connection with Ex-areas		
EC-Type Examination Certificate		PTB 00 ATEX 2081 , for additional certificates see www.pepperl-fuchs.com
Group, category, type of protection		⟨Ex⟩ II (1)GD [EEx ia] IIC [circuit(s) in zone 0/1/2]
Input		EEx ia IIC
Voltage	U_o	10.6 V
Current	I_o	19.1 mA
Power	P_o	51 mW (linear characteristic)
Supply		
Maximum safe voltage U_m		253 V AC / 126.5 V AC (Attention! U_m is no rated voltage.)
Output		
Contact loading		253 V AC/2 A/cos ϕ > 0.7; 126.5 V AC/4 A/cos ϕ > 0.7; 40 V DC/2 A resistive load
Maximum safe voltage U_m		253 V AC (Attention! The rated voltage can be lower.)
Electrical isolation		
Input/input		not available
Input/Output		safe galvanic isolation acc. to EN 50020, voltage peak value 375 V
Input/power supply		safe galvanic isolation acc. to EN 50020, voltage peak value 375 V
Directive conformity		
Directive 94/9/EC		EN 50014, EN 50020
International approvals		
FM approval		
Control drawing		116-0035
UL approval		
Control drawing		116-0145
CSA approval		

Release date 2010-02-02 14:14 Date of issue 2010-04-13 103373_ENG.xml

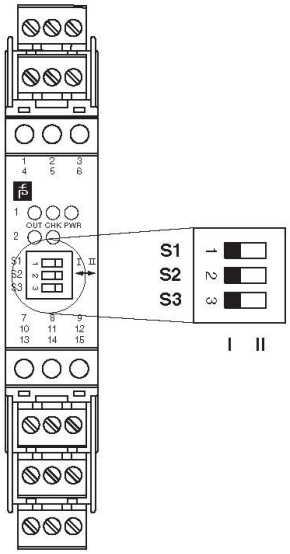
Technical data — KFA6-SR2-Ex2.W

Control drawing	116-0047
General information	
Supplementary information	EC-Type Examination Certificate, Statement of Conformity, Declaration of Conformity, Attestation of Conformity and instructions have to be observed where applicable. For information see www.pepperl-fuchs.com.

Release date 2010-02-02 14:14 Date of issue 2010-04-13 103373_ENG.xml

Technical data KFA6-SR2-Ex2.W

Configuration



Switch position

S	Function		Position
1	Mode of operation Output I (relay) energized	with high input current	I
		with low input current	II
2	Mode of operation Output II (relay) energized	with high input current	I
		with low input current	II
3	Line fault detection	ON	I
		OFF	II

Operating status

Control circuit	Input signal
Initiator high impedance/ contact opened	low input current
Initiator low impedance/ contact closed	high input current
Lead breakage, lead short-circuit	Line fault

Factory settings: switch 1, 2 and 3 in position I

Release date 2010-02-02 14:14 Date of issue 2010-04-13 103373_ENG.xml

6.2 Ex-i TEMPERATURE SENSOR INPUT BARRIER

Temperature Trip Value — **KFD2-GU-Ex1**

Features

- 1-channel isolated barrier
- 24 V DC supply (Power Rail)
- Thermocouple, RTD, voltage or current input
- 2 relay contact outputs
- Programmable high/low alarm
- Configurable by **PACT***ware*™
- Sensor burnout detection

Function

This isolated barrier is used for intrinsic safety applications. It accepts a variety of inputs including RTDs or thermocouples and provides a relay trip whenever it reaches a user-programmed set point.

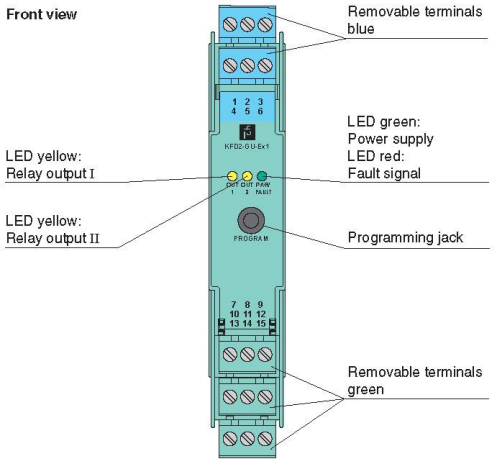
A removable terminal block K-CJC-** is available for thermocouples when internal cold junction compensation is desired.

A fault is indicated by a red flashing LED per NAMUR NE44 and user-configured fault outputs.

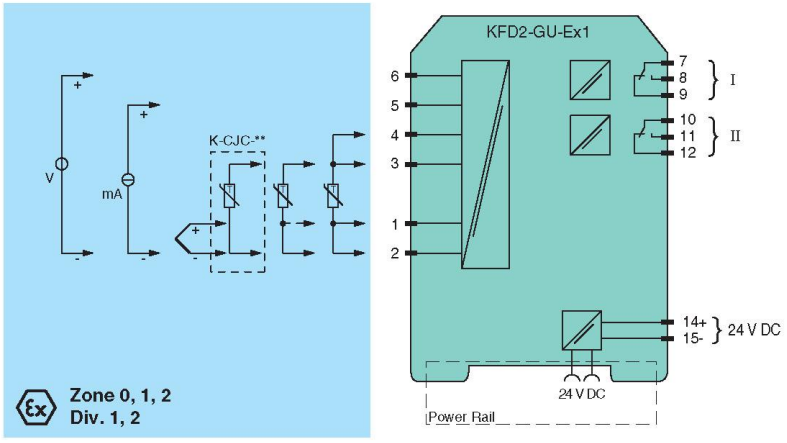
The unit is easily programmed with the **PACT***ware*™ configuration software.

For additional information, refer to the manual and www.pepperl-fuchs.com.

Assembly



Connection



Technical data — KFD2-GU-Ex1

General specifications	
Signal type	Analog input
Supply	
Connection	Power Rail or terminals 14+, 15-
Rated voltage	19 ... 35 V DC
Ripple	within the supply tolerance
Power loss	0.8 W
Power consumption	0.8 W
Input	
Connection	terminals 1, 2, 3, 4, 5, 6
RTD or resistance	type Pt100 (EN 60751: 1995) type Ni100 (DIN 43760) 0 ... 500 Ω (including lead resistance)
Measuring current	approx. 400 µA with RTD
Line resistance	≤ 50 Ω per lead
Thermocouples	type B, E, J, K, N, R, S, T (IEC 584-1: 1995) type L (DIN 43710: 1985)
Load	20 Ω for 20 mA; 200 kΩ for 10 V
Output	
Connection	output I: terminals 7, 8, 9; output II: terminals 10, 11, 12
Output I, II	
Contact loading	253 V AC/2 A/500 VA/cos ϕ min. 0.7; 40 V DC/2 A resistive load
Mechanical life	2 x 10^7 switching cycles
Transfer characteristics	
Resolution	temperature: 0.0625 °C, resistance: 62.5 mΩ, voltage: 62.5 µV, current: 625 nA
Deviation	
Voltage input	± 0.02 % of 10 V measuring range
Resistance input	± 0.025 % of measuring range (4-wire connection)
Current input	± 0.02 % of 20 mA measuring range
Pt100	± 0.01 % of abs. temperature value of switching point in K + 0.2 K (4-wire connection)
Thermocouple	± 0.05 % of abs. temperature value of switching point in K + 1.1 K (1.2 K for thermocouple types R and S) this includes ± 0.8 K error of the cold junction compensation (+0.9 K for thermocouple types R and S). Note! Because the sensitivity of thermocouples is, in general, lower at low temperatures than at high temperatures, the specified accuracy figures cannot be guaranteed when measuring temperatures below those listed here. -50 °C (type E and K thermocouples) -100 °C (type J, L and T thermocouples) +500 °C (type B thermocouple)
Influence of ambient temperature	
Pt100	± (0.0015 % of abs. temperature value of switching point in K + 0.01 K) / KΔT_{amb}*)
Thermocouple	± (0.004 % of abs. temperature value of switching point in K + 0.01 K) / KΔT_{amb}*)
Voltage input	± (0.007 % of the switching point voltage) / KΔT_{amb}*)
Current input	± (0.004 % of the switching point current)/KΔT_{amb}*) *) ΔT_{amb} = ambient temperature change referenced to 23 °C (296 K)
Influence of supply voltage	< 0.001 % of sensor input range
Input delay	≤ 370 ms (rise time and energizing delay of relay)
Electrical isolation	
Output I and II	basic insulation according to IEC 62103, rated insulation voltage 300 V_{rms}
Output/supply, programming input	basic insulation according to IEC 62103, rated insulation voltage 300 V_{rms} There is no electrical isolation between the programming input and the supply. The programming cable (see section accessories and installation) provides galvanic isolation so that ground loops are avoided.
Directive conformity	
Electromagnetic compatibility	
Directive 2004/108/EC	EN 61326-1:2006
Low voltage	
Directive 2006/95/EC	EN 50178:1997
Conformity	
Insulation coordination	EN 50178
Electrical isolation	EN 50178
Electromagnetic compatibility	NE 21
Protection degree	IEC 60529
Ambient conditions	
Ambient temperature	-20 ... 60 °C (253 ... 333 K)
Mechanical specifications	
Protection degree	IP20

Release date 2009-09-04 08:46 Date of issue 2009-09-04 126797_ENG.xml

Technical data — KFD2-GU-Ex1

Mass		approx. 150 g
Dimensions		20 x 119 x 115 mm (0.8 x 4.7 x 4.5 in) , housing type B2
Data for application in conjunction with hazardous areas		
EC-Type Examination Certificate		BAS 98 ATEX 7152 , for additional certificates see www.pepperl-fuchs.com
Group, category, type of protection		Ⓔx II (1)GD, I (M1) [Ex ia] IIC, [Ex iaD], [Ex ia] I (-20 °C ≤ T_{amb} ≤ 60 °C)
Input		Ex ia IIC
Voltage	U_o	10.5 V
Current	I_o	27 mA
Power	P_o	70 mW
Supply		
Safety maximum voltage U_m		40 V DC (Attention! The rated voltage can be lower.)
Statement of conformity		TÜV 99 ATEX 1493 X
Group, category, type of protection, temperature classification		Ⓔx II 3G Ex nA nC IIC T4
Electrical isolation		
Input/other circuits		safe electrical isolation acc. to IEC/EN 60079-11, voltage peak value 375 V
Directive conformity		
Directive 94/9/EC		EN 60079-0:2006, EN 60079-11:2007, EN 60079-15:2005, EN 61241-11:2006
International approvals		
UL approval		
Control drawing		116-0173 (cULus)
IECEx approval		IECEx BAS 06.0022
General information		
Supplementary information		EC-Type Examination Certificate, Statement of Conformity, Declaration of Conformity and instructions have to be observed where applicable. For information see www.pepperl-fuchs.com.

Accessories

Power feed modules KFD2-EB2...

The power feed module is used to supply the devices with 24 V DC via the Power Rail. The fuse-protected power feed module can supply up to 100 individual devices depending on the power consumption of the devices. A galvanically isolated mechanical contact uses the Power Rail to transmit collective error messages.

Power Rail UPR-03

The Power Rail UPR-03 is a complete unit consisting of the electrical inset and an aluminium profile rail 35 mm x 15 mm. To make electrical contact, the devices are simply engaged.

The Power Rail must not be fed via the device terminals of the individual devices!

K-CJC-**

This removable terminal block with integrated temperature measurement sensor is needed for internal cold junction compensation for thermocouples. One K-CJC-** is needed for each channel.

PACT*ware*™

Device-specific drivers (DTM)

Adapter K-ADP1

Programming adapter for parameterisation via the serial RS 232 interface of a PC/Notebook

For programming, please use the new version of adapter K-ADP1 (part no. 181953, connector length 14mm). When using the previous version K-ADP1 (connector length 18 mm) the plug is exposed by approx. 3 mm. The function is not affected.

Adapter K-ADP-USB

Programming adapter for parameterisation via the serial USB interface of a PC/Notebook

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