Operation Manual

Flame proof control Box Type CCF

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1. **Product Description**

The Control Box Type CCF is built with an enclosure made of aluminium. For **category II 2G** the Control Box are assembled with Ex d cable glands and on demand signal and control units, terminals in industrial quality.

The construction and functionality of the control boxes for the use in the marked Ex zones is tested and documented by Exepd GmbH piece by piece. The passed quality test is shown by marking the box with the Ex type label.

2. **Normal Handling**

The Control Box Type CCF is built for local installation in Ex zone 1/2 gas category IIB ($+H_2$) and zone 21/22.
It is not allowed to install the product in zone 0 or zone 20 or gas category IIC.
Inside the control box there are electrical and mechanical equipment and their accessories installed. Wall fixing is to be done by the wall mounting brackets of the enclosures.
The individual Type label shows all the electrical and for the installation in hazardous area required data.
If there is no information about the ambient temperature on the type label, the boxes can be used in the temperature range of -20°C up to 40°C.
It is prohibited to make any changes on the Control and Terminal Boxes without contacting the manufacturer.

3. **Used Standards**

EN 60079-0 / General requirements
EN 60079-1 / flame proof enclosures “d”
EN 60079-31 / dust ignition protection by enclosure "t"

4. **Technical Data**

Enclosure material:
Aluminium outside paint gray, inside orange

Mechanical strength according to DIN EN 60079-0: 7 Nm

Protection according to 60529/IEC 60529: IP 65 / IP66

Ambient temperature range and gas group:

for all boxes excluding size CCF 16 / 16A / 16B:
-20 … +40°C (standard) / -50 … +40°C / +50°C / +60°C (extended)
for boxes CCF 16 / 16A / 16B at IIB or IIB + H2:
-20 … +40°C (standard) / -40 … +40°C / +50°C / +60°C (extended)
for boxes CCF 16 / 16A / 16B at II(H2):
-50 … +40°C / +50°C / +60°C (extended)
for all boxes with Ex i circuits:
-20 … +40°C / +50°C / +60°C (extended)

Explosion protection:
(for exact data, please refer to type label)

II 2G Ex d IIB (+H_2) T3 / T4 / T5 / T6 Gb
II 2D Ex tb IIIC T200°C / T135°C / T100°C / T85°C Db IP65 / IP66
II 2(1)G Ex d [ia IIC / IIB Ga] IIB (+H_2) T3 / T4 / T5 / T6 Gb
II 2(1)D Ex tb [ia Da] IIIC T200°C / T135°C / T100°C / T85°C Db IP65 / IP66

EC type examination certificate: **INERIS 14 ATEX 0008X**

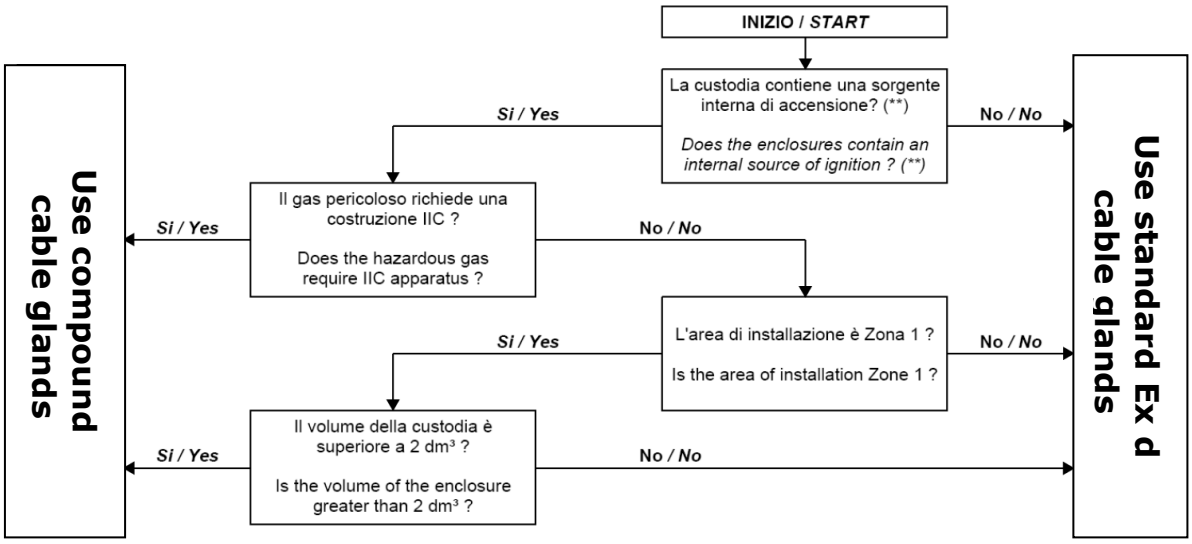
Certificate owner: **Coelbo srl. Italy**

5. **Electrical Data**

Please refer to type label on the individual box

6. **Build-in parts / cable glands**

Inside the box electrical devices are installed. The maximum allowed dissipated power of them will be observed by Exepd. All unused holes must be plugged with Ex d plugs. Cable glans and plugs with metric thread must be secured. The holes on the boxes are marked aith the letter “M” for metric threads and “N” for NPT threads. For installation of cable glands to Ex d enclosures, please refer to IEC / EN 60079-14 /diagram below:



7. **Safety references**

Devices in hazardous area must be installed, supervised, maintained and kept in good conditions by the owner of the plant. Part of this is an inspection after the transport to identify possible damages caused during the transport.
Only qualified workers are allowed to install and dismount as well as doing maintenance work on the control and terminal boxes. All universally valid rules and laws and other binding directives for the safety of people and environment must be kept.

WARNING	**DO NOT OPEN WHEN ENERGIZED!** **AFTER DE-ENERGIZED WAIT 15 MINUTES BEFORE OPENING!** **DO NOT OPEN UNDER LOAD!** **DO NOT OPEN WHEN EXPLOSIVE ATMOSPHERE MAY BE PRESENT!** **DO NOT USE DEFECT EQUIPMENT!** **ACCUMILATION OF DUST LAYERS MUST BE AVOIDED! (NEVER OVER 5mm)**

8. **Mounting and Installation**

Mounting
The control and terminal boxes must be protected against aggressive and unusual environmental conditions which could cause damages on the equipment. This could be e.g. acids or high and low temperatures.
For installation, please refer to IEC / EN 60079-14 and other valid standards and directivities on the place of erection.
Information on the type label must be kept!

Joint surfaces must not have been further on worked and/or covered by paint or dust.
Wall fixing is to be done by the wall mounting brackets of the enclosures.
Cable and gable glands have to be suitable for the use in the relevant temperature range on site in accordance to the following table.

Temperature class			
T6 or T85°C	T5 or T100°C	T4 or T135°C	T3 or T200°C
80°C	95°C	130°C	175°C

Installation

On the plain joint of the box there must be a grease layer before closing the box. All lid screws must be in their seats and fully tightened. In lack the safety of the enclosure is compromised and it shall be immediately taken "off service". Plugs and cable glands with metric thread (holes marked on box with the letter "M") must be blocked by using a lock nut or Loctite or a similar resin on at least one thread.
Anzugsdrehmomente der Deckelschrauben abhängig von der Deckelschraubengröße:

Screw size	Enclosure size	Torque
M6	**CCF 0, CCF 1, CCF 2**	**11 Nm**
M8	**CCF 3, CCF 4, CCF 5, CCF 6, CCF 13, CCF 14**	**25 Nm**
M10	**CCF 7, CCF 8, CCF 9, CCF 10, CCF 20**	**48 Nm**
M12	**CCF 11, CCF 12**	**85 Nm**
M14	**CCF 16**	**130 Nm**

All lid screws must be in their seats and fully tightened. In lack the safety of the enclosure is compromised and it shall be immediately taken "off service".

The wire connection must be made in such a manner, that the insulation material and the cores itself will not be damaged. Regarding the maximum possible cross connection and electrical data, please refer to the information written on the type label.
Metal enclosures, installed in hazardous area, must be connected to the general earth system via a cable with minimum 4 mm² cross section.

9. **Starting**

Before the Control Box is put into operation, the qualification for the use in the predominant hazardous area must be proofed according to the type label and the zone declaration.
It is not allowed to exceed the written data on the type label.
By using the equipment in hazardous area with combustible dust, dust layers > 5 mm must be removed. To protect the equipment from these circumstances also the installation of protection hoods are possible.
The functionality of the control box itself, as well as its combination with the plant or machine must be tested before the first use.
Only use the Control Box in clean and intact condition.

10. Operation, Maintenance and Elimination of Disturbances

Devices in hazardous area must be installed, supervised, maintained and kept in good conditions by the owner of the plant. For information, refer to IEC / EN 60079-17. Only skilled workers are allowed to do maintenance and the elimination of disturbance work. Before doing this work, the safety requirements must be kept!
For elimination of disturbances, all damages to the enclosure shall be fixed / repaired exclusively by the manufacturer. Before using the boxes again, the safety requirements must be kept!

11. Accessories and spare parts

Please refer to www.exepd.de / www.coelbo.it

12. Service address

*Ex*epd GmbH
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13. Coelbo EC declaration of conformity

See following

COELBO
www.coelbo.it info@coelbo.it
Via S.Margherita, 83
20861 BRUGHERIO (MB) – ITALY
TEL: +39 039 884618
FAX: +39 039 880341

UNI EN ISO 9001:2008 ATEX NOTIFIED IT/CES/QAR10.0009

CUSTODIE CON APPARECCHIATURE ELETTRICHE serie CCF-CCV

1. DESCRIZIONE

Le custodie serie CCF/CCV possono contenere morsettiere e/o apparecchiature elettriche di indicazione, comando, controllo, protezione e regolazione motori. Tutte le custodie sono realizzate in lega leggera d'Alluminio complete di vitteria inox, staffe di fissaggio, verniciatura esterna ad effetto goffrato RAL 7000 (altri colori a richiesta), interna anticondensa RAL 2004 e fori laterali per l'ingresso cavi. Le custodie, ove richiesto, sono completate con Unità di comando e segnalazione (coperte da certificato del componente INERIS 14 ATEX 9009U)e/o con Telai con parte trasparente in vetro temperato termoresistente sigillato con resina adatta a temperature -50°C ÷ +180°C.

ENCLOSURES WITH ELECTRICAL APPARATUS series CCF-CCV

1. DESCRIPTION

The enclosures series CCF/CCV may contain terminal strips and/or electrical apparatuses of indication, command, control, protection devices and motor regulators. All enclosures are made of Aluminium light alloy completed with stainless steel screws, fixing brackets, external paint RAL 7000 (other colours upon request) with embossed effect , internal anti-condense RAL 2004 and holes as cable entries.
Enclosures, when required, can be fitted with command and signaling Units (covered by component certificate INERIS 14 ATEX 9009U) and/or Frames with thermoresistant toughened glass sealed with resin that withstands temperatures -50°C ÷ +180°C.

2. ESEMPIO MARCATURA / 2. MARKING EXAMPLE

CE 0722 Ex II 2GD **INERIS 14 ATEX 0008X** - Ex d IIB+H_2 T6 Gb / Ex tb IIIC T85°C Db IP66

N° Organismo Notificato per la sorveglianza ATEX	**0722**	Reference of Notified Body for ATEX Surveillance
Gruppo II, Categoria 2 Protezione per Gas(G) e Polveri(D)	**II 2GD**	Group II, Category 2 for Gas(G) and Dust(D) Protection
Modo di Protezione, gruppo dei Gas Modo di Protezione presenza Polveri Combustibili	**Ex d IIB+H_2** **Ex tb IIIC**	Protection Mode, Gas Group Protection Mode for presence of Combustible Dusts
Grado di Protezione	**IP66**	Protection Degree
EPL per gas/EPL per polveri combustibili	**Gb/Db**	EPL for gas/EPL for combustible dust
Classe di Temperatura, Temperatura Max Superficiale	**T6 / T85°C**	Temperature Class, Max Surface Temperature
Temperatura Ambiente Standard Temperatura Ambiente Estesa	**-20°C÷+40°C** **-50°C÷+60°C**	Standard Ambient Temperature Extended Ambient Temperature

3. CARATTERISTICHE ELETTRICHE / 3. ELECTRICAL RATINGS

Tensione Massima (V)	**Vedi targa di identificazione / See identification plate**			Maximum Voltage (V)
Corrente Nominale (A)	**Vedi targa di identificazione / See identification plate**			Nominal Current (A)
Minima Sezione Conduttori	**1,5 mm²**			Minimum Conductor Section
Per Conduttori fino a 10 mm² Per Conduttori oltre i 10 mm²	**3 A/mm²** **2 A/mm²**			For conductors up to 10 mm² For conductors exceeding 10 mm²
Sezione Conduttore Fase (mm²) = "S" Sezione Conduttore Terra (mm²) = "T"	**S≤16; T=S**	**S≤35; T=35**	**S>35; T=0,5 S**	Phase Conductor Section (mm²) ="S" Earth Conductor Section (mm²) ="T"

4. INGRESSI CAVI

Gli imbocchi hanno filettatura conica (NPT ANSI B1.20) oppure cilindrica (ISO 261). I dispositivi utilizzati per l'entrata di cavo devono rispettare le norme: EN 60079-0, EN 60079-1 ed EN 60079-31. Il loro grado di protezione deve essere almeno IP65 o IP66 (comunque compatibile al grado di protezione IP della custodia). Gli ingressi cavi con filettature metriche sono contrassegnati dalla lettera "M". In caso di filettature cilindriche l'installatore deve bloccare i filetti con Loctite o prodotto analogo.

4. CABLE ENTRIES

The cable entries may either have tapered (NPT ANSI B1.20) or cylindrical threading (ISO 261). The fittings used for cable entries shall conform to EN 60079-0, EN 60079-1 and EN 60079-31 Standards. Their protection degree shall at least be IP65 or IP66 (anyway suitable with the IP protection degree of the enclosure). The cable entries with metric threading are marked with an "M". In case of cylindrical threading the user shall block threads with Loctite or similar resin.

5. ISTRUZIONI DI SICUREZZA PER INSTALLAZIONE, USO E MANUTENZIONE IN AREA PERICOLOSA

- Prima della installazione leggere attentamente quanto riportato nelle specifiche tecniche.
- Non aprire la custodia sotto tensione ed attendere 15 minuti dalla messa fuori servizio.
- Le custodie serie CCF e CCV devono essere installate in accordo alle prescrizioni delle norme EN 60079-14 e EN 60079-17 (ultime edizioni vigenti) oppure altre norme nazionali e mantenuti in accordo con le norme di manutenzione per ambienti classificati contro il rischio di esplosione per presenza di gas/polveri.
- Le custodie devono essere collegata alla rete di Terra (minimum 4 mm²).
- Il grado di protezione IP65 è garantito dal ripristino dello strato di grasso sul giunto piano; dopo ogni apertura dell'involucro, è indispensabile ripristinare tale strato di grasso secondo le raccomandazioni del costruttore. Il grasso applicato deve essere di un tipo non indurente con l'invecchiamento e non deve contenere un solvente che evapori.
- Il grado di protezione IP66 è garantito solo se sul giunto piano è presente la specifica guarnizione.
- È obbligatorio che tutte le viti del coperchio siano presenti e serrate a fondo. In difetto la sicurezza della custodia è pregiudicata e se ne impone l'immediata messa "fuori servizio".
- Tutti i fori non utilizzati devono essere chiusi con appositi tappi: in caso di filettatura cilindrica, il tappo dovrà essere bloccato con frenafiletti su tutta la circonferenza e per almeno un filetto.
- Utilizzare viti in acciaio inox ISO 4762 A2-70 di uguale diametro, passo e lunghezza del filetto.
- Le batterie (capacità <1,5 Ah, volume <1% del volume libero della custodia), se presenti, devono rispondere ai requisiti indicati nel par. 23 della EN 60079-0 e nell'Allegato E della EN 60079-1.
- In presenza di polveri combustibili: l'utilizzatore deve pulire regolarmente la superficie esterna della custodia onde evitare la formazione ed il deposito di strati di polvere sulla superficie stessa (lo spessore di polvere massimo ammesso è 5 mm).
- Le parti danneggiate dovranno essere sostituite o ripristinate a cura del produttore salvo particolari autorizzazioni da parte dello stesso.
- Le entrate di cavo ed il relativo cavo utilizzato dovranno essere compatibili con le temperature riportate di seguito:

5. SAFETY INSTRUCTIONS FOR INSTALLATION, USE AND MAINTENANCE IN HAZARDOUS AREA

- Before installation read carefully all technical instructions.
- Disconnect power before opening the enclosure and wait 15 minutes, at least, prior actually doing it.
- Enclosures series CCF and CCV must be installed and maintained according to relevant Standards for electrical installations in hazardous areas classified for explosive gas and/or combustible dust atmospheres EN 60079-14 and EN 60079-17 Standards (in their latest editions), or equivalent local National Standards.
- The enclosures must be connected to the grounding system (minimum 4 mm²).
- Degree of protection IP65 is guaranteed by restoration of the grease layer on the plain joint; after each enclosure opening, the grease layer must be restored according to manufacturer's recommendations. The grease applied shall be of a type that does not harden because of ageing and does not contain an evaporating solvent.
- Degree of protection IP66 is guaranteed only if the appropriate gasket is correctly installed in its site on the cover.
- It is compulsory that all screws along the cover are in all their seats and fully tightened. In lack the safety of the enclosure is compromised and it shall be immediately taken "out of service".
- All unused holes shall be properly closed with suitable plugs: in case of cylindrical thread any plug shall be blocked using thread locking product along the entire circumference for at least one thread.
- Screws possibly lost shall be replaced with SS screws ISO 4762 A2-70 featuring same diameter, pitch and thread length.
- Batteries (with capacity <1,5 Ah and volume <1% of the free volume of enclosure), if any, have to be in accordance with paragraph 23 of EN 60079-0 and with Annex E of EN 60079-1 Standard.
- In presence of combustible dusts: user must regularly clean enclosure external surface due to avoid formation and deposition of dust layers on the surface itself (the maximum allowed thickness of dust is equal to 5 mm).
- All damaged parts must be changed or repaired exclusively by manufacturer (where not differently specified).
- Cable entries and used cable must be suitable with the temperatures reported in the following table:

Classe di temperatura / *Temperature Class*			
T6 o T85°C	***T5 o T100°C***	***T4 o T135°C***	***T3 o T200°C***
80°C	95°C	130°C	175°C

ED. 12/14 - rev.0

DICHIARAZIONE DI CONFORMITA' CE / EC DECLARATION OF CONFORMITY

Il costruttore / We,

COELBO S.r.l. - Via S.Margherita 83, 20861 Brugherio (MB) - ITALY

Dichiara sotto la propria responsabilità che le: ***CUSTODIE SERIE CCF-CCV*** *descritte in questa dichiarazione sono conformi alla seguente Direttiva CE:*

Herewith declares on its own responsibility that: ***ENCLOSURES SERIES CCF-CCV*** *related in this declaration suit following EC Directive:*

94/9/EC ATEX Directive

La conformità è assicurata dall'osservanza delle seguenti norme:

The conformity is ensured by the fulfillment of technical specification of following Standards:

EN 60079-0:2012
EN 60079-1:2007
EN 60079-31:2009

Gruppo / Categoria: **Ex II 2GD** *Group / Category:*

Tipo di Protezione:

Ex d IIB+H_2 T6 or T5 or T4 or T3 Gb
Ex tb IIIC T85°C or T100°C or T135°C or T200°C Db IP66
(with max A.T. range –50°C÷+60°C for enclosures from CCF 0... to CCF 12...)
(with max A.T. range –40°C÷+60°C for enclosures CCF 16...)

Type of Protection:

Temperatura Ambiente:

Standard: -20°C ÷ +40°C
Extended: -50°C ÷ +60°C

Ambient Temperature:

Certificato CE di tipo n°:

INERIS 14 ATEX 0008X

CE Type Certificate no.:

Organismo Notificato incaricato della sorveglianza:
CESI Milano - O.N. n° 0722

Notified Body encharged of surveillance:
CESI Milano - N.B. no. 0722

Brugherio (MB)- Italy, 18/12/2014
Firma / Signature:
Amministratore Delegato / Managing Director

COELBO S.r.l.
A.Borroni