GROUNDING CLAMPS - THERMOSTATS - SOCKETS & PLUGS

This section contains devices of different nature and purpose but all designed to observe the most stringent security criteria enabling anyone to operate in hazardous areas classified for the danger of explosion.
The most significant example is represented by the COELBO explosionproof Grounding Clamps, designed, despite their apparent simplicity and practicality, to discharge to ground any static electricity from all types of metal structures, but, more often, from vehicles used for the transport of goods, gas and hazardous liquids.
Hence the need to protect people and equipment by connecting these structures and vehicles with COELBO explosionproof clamps, prior any operations of loading/unloading of those substances which could result in explosive mixtures, even in areas not classified (remember, surprisingly for someone, that grain and food powders are included).
The series of explosionproof thermostats described in this section is particularly suitable for permanent installations in the field as part of systems to control, supervising and alarming temperatures either ambient (perhaps associated with air conditioning systems) and/or process. In principle, COELBO Thermostats are made of two essential components: the first ensures the temperature detection through conventional probes (obviously certified according to ATEX Directive) and the latter, typically electric - based on the change of state of electrical contacts - well known and appreciated by the international market in its standard execution ("General Purpose"), depending on the functions to be implemented within the automation or safety strategies.
Although designed for a virtually unlimited duration, to guarantee the operational safety and certified compatibility, purchasing any spare parts directly from COELBO is reccommended.

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NOTES:

GROUNDING CLAMPS

series
PTA 10

Protection		Zone			
Gas		1-2	II2G	Ex db IIC T6÷T5 Gb
Dusts		21-22	II2D	Ex tb IIIC T85°C÷T100°C Db

Degree of Protection: IP66/67

Amb. Temp.: Standard -20°C +40° / Extended -50°C +80°C

Material: Sleeve in Polyamide. Anchor hook in Stainless Steel AISI 304. Contact Spring in Brass.

Standards and Certificates

- Directive 2014/34/EU (ATEX)
- EN 60079-0 • EN 60079-1 EN 60079-31
- CE BVI 14 ATEX 0011
- IECEx: IEC 60079-0 • IEC 60079-1 IEC 60079-31
- IECEx EPS 14.0030X

- Indispensable whenever it is required the temporary grounding of tank trucks or tankers during transfer either of liquids or hazardous substances.
- The fastening is secured by two brass springs of great strength.

Options

- Stainless steel AISI 316L cable gland.
- Cable gland with female bushing 1/2" NPT (N).

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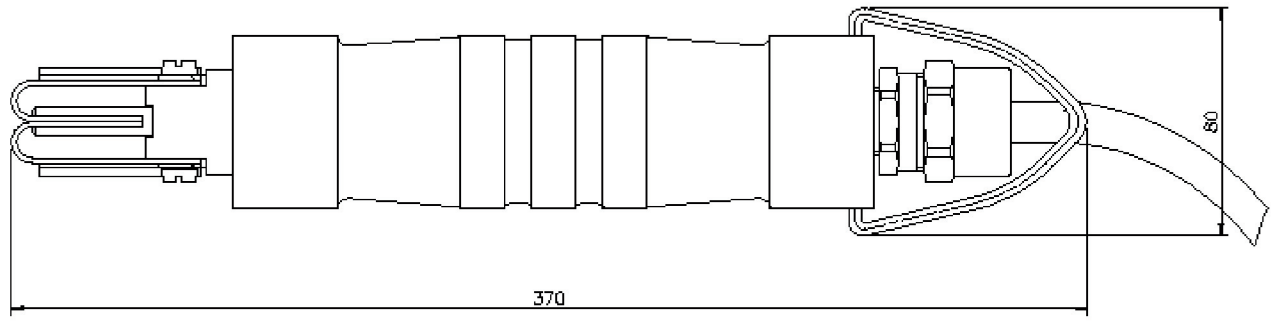

Insulation Voltage	Gripping capacity	Max Current	Cable Section	Weight (kg)
3000 V	0.5 mm ÷ 3 mm	10 A	6 - 10 - 16 mm²	1

NOTES

To read the installation and maintenance instructions is reccommended.

The temperture class T6/T85°C takes into account an extended Ambient Temperature (A.T.) from -50°C to +60°C; whereas the temperture class T5/T100°C of an extended A.T. from -50°C to +80°C.

GROUNDING CLAMPS

series
ISEO I

Protection		Zone			
Gas		1-2	II2G	Ex d IIC T6 Gb
Dusts		21-22	II2D	Ex tb IIIC T85°C Db

Degree of Protection: **IP65**

Amb. Temp. — Standard: **-20°C** / **+55°C**

Material: **Aluminum.** Contact tips in Carbo-nitrided steel.

Standards and CErtificates:
- Directive 2014/34/EU (ATEX)
- EN 60079-0 • EN 60079-1
  EN 61241-0 • EN 61241-1
- CE CESI 03 ATEX 101X

- Normally supplied with 11 m of special high flexibility and tenacity cable of 6 mm² section.
- Recommended for grounding of tanks, drums, etc..
- Equipped with tearingproof junction between the cable of the user and the one of the clamp.
- The electrical continuity is ensured by the carbonitrided steel contact tips which make a firm connection to any foothold having a thickness between 2 and 20 mm.

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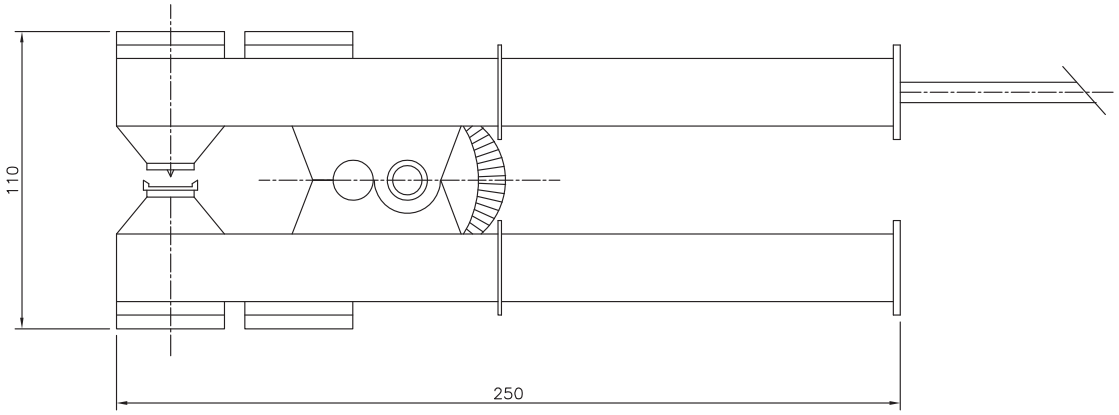
Options
- Cable length as per customer specification.
- Available ISEO 2 provided with 3x3 mm² cables of 11 m lenght.



Insulation Voltage	Gripping capacity	Max Current	Cable Section	Weight (kg)
3000 V	2 mm ÷ 20 mm	10 A	4.0 ÷ 6.0 mm²	0.7

NOTES

Check daily the sliding of the crimping rod within the body of the clamp. Keep the coupling clean and lubricated with silicone spray. This is necessary to ensure grounding while making sure that any disruptive discharges occur in the inner chamber, purposely isolated, and not in the external environment.

For correct operation of the clamp it is recommended a monthly check of the crimping plugs, subject to wear; this ensures a perfect contact with the terminal which are linked to.

Check the integrity of the electrical cable to the ground terminal in the vicinity of the clamp itself; verify the electrical continuity (at least once a month).

For use in potentially explosive atmospheres caused by dusts the user must provide a regular cleaning to limit the formation of layers of dust.

GROUNDING CLAMPS with ELECTRICAL CONTROL

series DMTB 20R

Protection		Zona			
Gas		1-2	II2G	Ex d[ia] IIB+H2 T6 Gb
Dust		21-22	II2GD	Ex tb IIIC T80°C÷T130°C Db

Degree of Protection: IP65/IP66

Amb. Temp.			
Standard	-20°C	+40°C
Extended	-50°C	+60°C

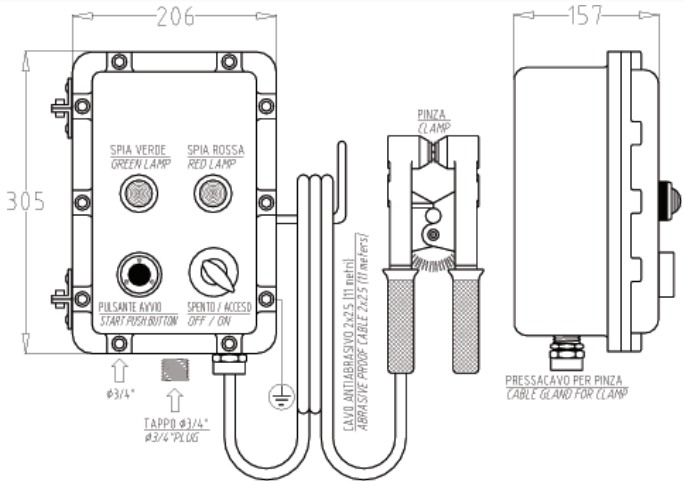
Material: Light Alloy Aluminium; Carbo-nitrided Steel Contact Tips.

Standards and Certificates: Directive 2014/34/EU; EN 60079-0 • EN 60079-1; CE CEC 10ATEX0036

- Normally supplied complete with 11m of special 2x2.5mm² non-abrasive electric cable with high flexibility and tenacity.
- Recommended for the grounding of tankers.
- Equipped with anti-tear system of the joint between the user's cable and the cable of the same clamp.
- The electrical continuity is ensured by the carbonitrided steel contact points which guarantee a firm connection to any support having a thickness between 2 and 20 mm.

Options

- Different cable gland lenght (to define)
- Screws in stainless steel AISI 316L and gaskets for degree IP66



Supply Voltage	Holding capacity	Nominal Current	Cable section	Weight (kg)
230 V - 50/60Hz	2 mm ÷ 20 mm	28 mA	2x2,5 mm²	14

NOTES

Check the sliding of the crimping rod daily in the clamp, keeping the coupling clean and lubricated with silicone spray. This operation is necessary to ensure grounding and to guarantee that any destructive discharges occur in the internal chamber, specifically isolated and not in the external environment.

For a good operation of the clamp we recommend a monthly check of the crimping pins subject to worn, which ensures perfect link with the terminal to which they are attached.

Check the integrity of the electric cable both at the ground terminal and near the clamp; check the electrical continuity (at least once a month).

For use in a potentially explosive atmosphere caused by combustible dusts, the user must ensure regular cleaning to limit the formation of dust layers.

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AMBIENT TEMPERATURE THERMOSTATS

series **TA**

Protection	Zone			
Gas	1-2	II2G	Ex db IIB+H_2 T6÷T5 Gb
Dusts	21-22	II2D	Ex tb IIIC T85°C÷T100°C Db

Degree of Protection	IP65
Entries Threading	NPT ANSI B1.20
Material	Aluminum light alloy
Painting	External Epoxy RAL 7000

Amb. Temp.			
Standard	-20°C	+40°C
Extended	-50°C	+60°C

Standards and Certificates

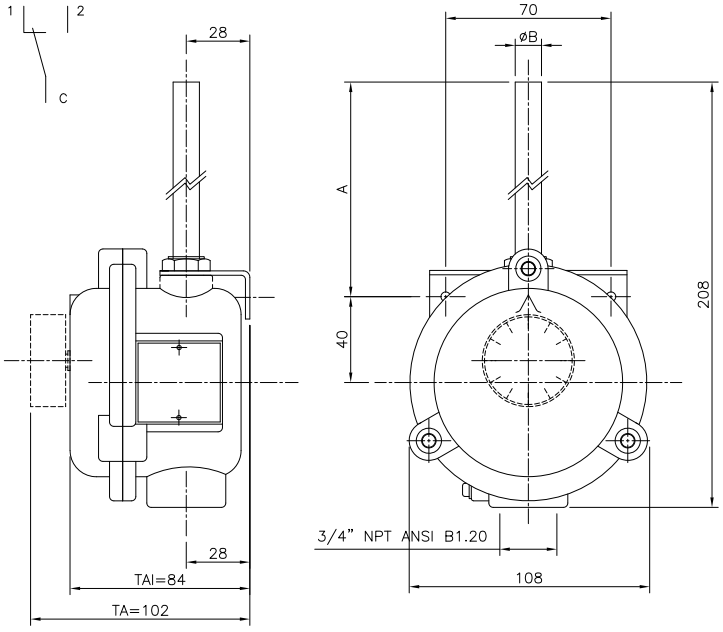
Directive 2014/34/EU (ATEX)
EN 60079-0 • EN 60079-1
EN 60079-31
CE INERIS 13 ATEX 0039X

IECEx
IEC 60079-0 • IEC 60079-1
IEC 60079-31
IECEx INE 13.0053X

- Thermostat with liquid expansion probe suitable for the automatic control of ambient temperature.
- Available either with external or internal temperature adjustment (type TA or type TAI respectively).
- The internal adjustment helps to prevent unauthorized manipulations.
- Bracket in galvanized steel, sheath in zinc plated brass.
- Plate and external screws in Stainless Steel.

Options

- Sheath and bracket in Stainless Steel AISI 316.
- Sheath of different lenght other than standard (L).
- Cable entry: cylindrical M25x1,5 (M).
- Control temperature range other than standard.



Code	Temperature Control Range (°C)	Max Bulb Temperature (°C)	Differential ΔT (°C)	A (mm)	ØB (mm)
TA 40/TAI 40	0°C÷40°C±2°C	50°C	3°C±1°C	112 ÷ 242	13
TA 90/TAI 90	0°C÷90°C±3°C	120°C	4°C±1°C	112 ÷ 242	10
TA 120/TAI 120	0°C÷120°C±3°C	150°C	4°C±1°C	112 ÷ 242	10

NOTES

It is reccommended to read the installation and maintenance instructions.

Temperature adjustment on TAI is allowed at open case only. This operation shall not be carried out with the thermostat powered and, in any case, far from hazardous atmosphere.

The Temperature class T6/T85°C takes into account an Ambient Temperature (A.T.) up to +40 °C, the Temperature class T5/T100°C an extened A.T. up to +60°C.

Order Coding

Example: TA 40N

Type	Temperature control range	Sheath	Threading
TA = thermostat with external adjustement	**40 =** 0°C ÷ +40°C	**.. =** std.	**N =** NPT (N)
TAI = thermostat with internal adjustement	**90 =** 0°C ÷ +90°C	**L =** long version	**M =** metric (M)
	120 = 0°C ÷ +120°C		

CONTROL THERMOSTATS

series **TR**

Protection		Zone			
Gas	1-2	II2G	Ex db IIB+H_2 T6÷T5 Gb
Dusts	21-22	II2D	Ex tb IIIC T85°C÷T100°C Db

Degree of Protection	IP65

Amb. Temp.				
Standard	-20°C		+40°C
Extended	-50°C		+60°C

Entries Threading	NPT ANSI B1.20
Materiale	Aluminum light alloy
Painting	External epoxy RAL 7000

Standards and Certificates

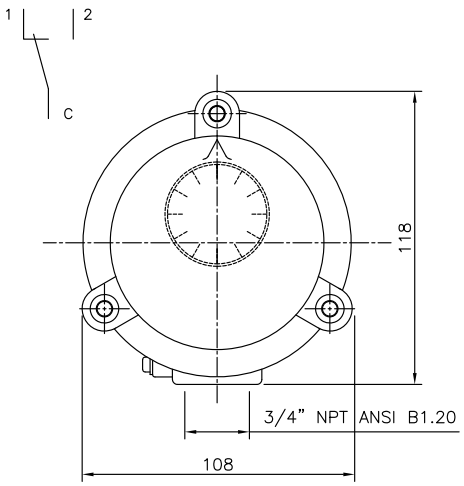
Directive 2014/34/EU (ATEX)
EN 60079-0 • EN 60079-1
EN 60079-31
CE INERIS 13 ATEX 0039X

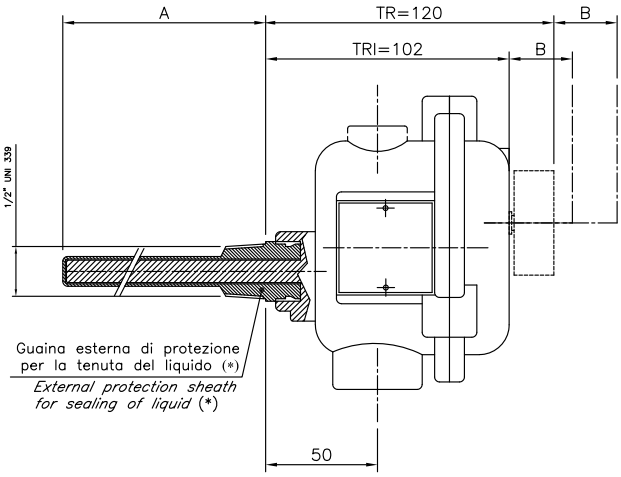
IECEx
IEC 60079-0 • IEC 60079-1
IEC 60079-31
IECEx INE 13.0053X

- Thermostat with liquid expansion probe.
- Recommended for the automatic control of liquids temperature and for industrial heating process.
- Its design allows the rapid replacement of the control unit without having to empty the process fluid containers.
- Available either with external or internal temperature adjustment (type TR or TRI respectively).
- The internal adjustment helps to prevent unauthorized manipulations.
- External sheath in AISI 316L Stainless Steel.
- Plate and external screws in Stainless Steel.

Options

- Sheath of different lenght other than standard (L).
- Cable entry: cylindrical M25x1,5 (M).
- Control temperature range other than standard.





Code\	Temperature Control Range (°C)	Max Bulb Temperature (°C)	Differential ΔT (°C)	A (mm)	B (mm)
TR 40 TRI 40	0°C÷40°C±2°C	50°C	3°C±1°C	95 ÷ 225	111
TR 90 TRI 90	0°C÷90°C±3°C	120°C	4°C±1°C	95 ÷ 225	111
TR 120 TRI 120	0°C÷120°C±3°C	150°C	4°C±1°C	95 ÷ 225	111

B = Minimum clearance in mm to remove the case without removing the sheath.

Order Coding

Exmple: TRI 120N

Type	Temperature control range	Sheath	Threading
TR = thermostats with external adjustement	**40 =** 0°C ÷ +40°C	**.. =** std.	**N =** NPT (N)
TRI = thermostats with internal adjustement	**90 =** 0°C ÷ +90°C	**L =** long version	**M =** metric (M)
	120 = 0°C ÷ +120°C		

NOTES

It is reccommended to read the installation and maintenance instructions.

(*) The temperature probe is protected by an internal explosion-proof sheath as well as by an external watertight sheath which induces a greater thermal inertia of the thermostat that raises the temperature reading of the controlled fluid. It's advisable to carry out tests on the adjustments to minimize this effect.

Temperature adjustment on TRI is allowed at open case only. This operation shall not be carried out-with the thermostat powered and, in any case, far from hazardous atmosphere.

The Temperature Class T6/T85°C takes into account an Ambient Temperature (A.T.) up to +40 °C, the Temperature class T5/T100°C an extended A.T. up to +60°C

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SAFETY THERMOSTATS

series **TS**

Protection	Zone			
Gas	1-2	II2G	Ex db IIB+H_2 T6÷T5 Gb
Dusts	21-22	II2D	Ex tb IIIC T85°C÷T100°C Db

Degree of Protection: IP65

Amb. Temp.: Standard -20°C +40°C; Extended -50°C +60°C

Entries Threading: NPT ANSI B1.20

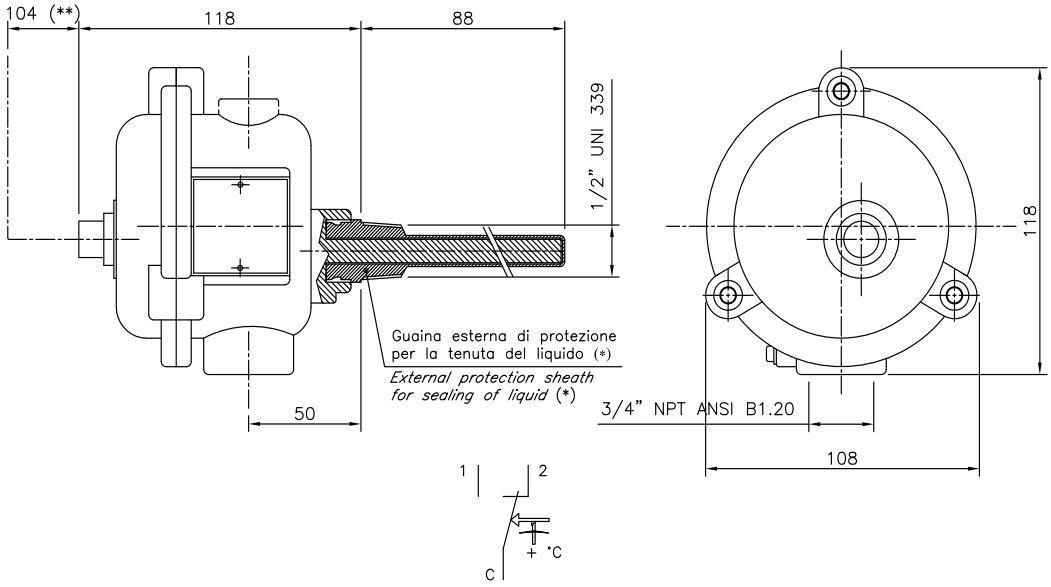
Material: Aluminum light alloy

Painting: External Epoxy RAL 7000

Standards and Certificates:
- Directive 2014/34/EU (ATEX)
- EN 60079-0 • EN 60079-1 EN 60079-31
- CE INERIS 13 ATEX 0039X
- IECEx IEC 60079-0 • IEC 60079-1 IEC 60079-31
- IECEx INE 13.0053X

- Thermostat with liquid expansion probe with manual reset and positive safety for capillary breakup.
- Especially suitable for boilers, heating systems and in all applications where it is necessary not to exceed the maximum temperature set.
- Its design allows the rapid replacement of the control unit without having to empty the process fluid containers.
- External sheath in AISI 316L Stainlees Steel.
- Plate and external screws in Stainless Steel.

Options
- Cable entry: cylindrical threading M25x1,5 (M).
- Thermostat with automatic reset.
- Control temperature range other than standard.



Code	Control Temperature (°C)	Max Bulb Temperature (°C)	Differential ΔT (°C)
TS 100	100°C $^{+0°C}_{-6°C}$	125°C	15°C±8°C

Example: TS 100N

Order Coding

Type	Control Temperature	Threading
TS = safety thermostat	**100 =** 100°C	**N =** NPT (N) **M =** metric (M)

NOTES

It is reccommended to read the installation and maintenance instructions .

The temperature probe is protected by an internal explosionproof sheath as well as by an external watertight sheath which induces a greater thermal inertia of the thermostat that raises the temperature reading of the controlled fluid. It's advisable to carry out tests on the adjustments to minimize this effect.

The Temperature Class T6/T85°C takes into account an Ambient Temperature (A.T.) up to +40 °C, the Temperature class T5/T100°C an extended A.T. up to +60°C.

(**) Minimum space in mm to remove the case without removing the sheath.

SOCKETS

series **FSQ**

Protection		Zone			
Gas		1-2	II2G	Ex d IIC T6 Gb
Dusts		21-22	II2D	Ex tb IIIC T80°C Db

Degree of Protection	IP66

Amb. Temp.			
Standard	-20°C	+40°C
Extended	-20°C	+60°C

Entries Threading	EN 10226 (Gk)
Material	Alluminum light alloy
Painting	External Epoxy RAL 9006

Standards and Certificates

Directive 2014/34/EU (ATEX)

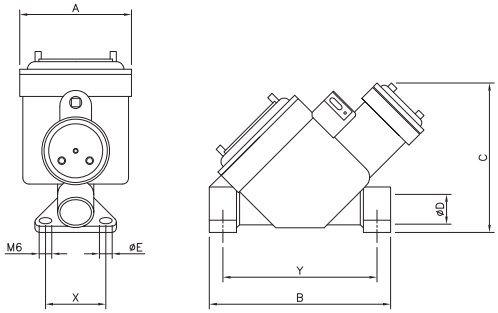
EN 60079-0 • EN 60079-1
EN 60079-31

CE CEC 13 ATEX 141

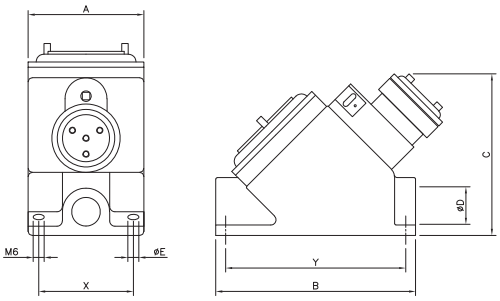
- The socket is complete with interlocked switch which can only be activated when the plug is inserted and viceversa.

Opt. - Automatic circuit breaker (add suffix "A" to Order Code).

FSQ 215 - 325 - 425



FSQ 360 - 460 / FSQA ...



Code	Poles No.	Current (A)	Voltage (V)	Dimensions (mm)						
				A	B	C	ØD	ØE	X	Y
SOCKETS with CAM ROTARY SWITCH										
FSQ 215	2 + E	25	500	110	180	145	1"	7	60	160
FSQ 325	3 + E	32	500	110	180	145	1"	7	60	160
FSQ 425	4 + E	32	500	110	180	145	1"	7	60	160
FSQ 360	3 + E	63	500	155	246	190	1.1/2"	11	160	222
FSQ 460	4 + E	63	500	155	246	190	1.1/2"	11	160	222
SOCKETS WITH AUTOMATIC CIRCUIT BREAKER										
FSQA 215	2 + E	25	500	155	246	190	1"	11	160	222
FSQA 325	3 + E	32	500	155	246	190	1"	11	160	222
FSQA 425(*)	4 + E	32	500	155	246	190	1"	11	160	222
FSQA 360	3 + E	63	500	155	246	190	1.1/2"	11	160	222
FSQA 460(*)	4 + E	63	500	155	246	190	1.1/2"	11	160	222

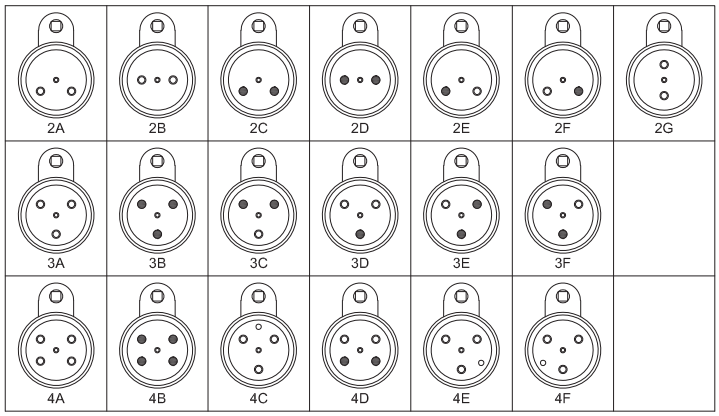
NOTES

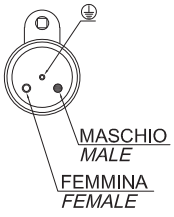
To read the installation and maintenance instructions is reccommended.

The degree of protection IP66 is guaranteed only when the plug is supplied with the relevant specific gasket. Maximum ambient temperature with EPDM O-ring is +40°C, whereas with SIlicone O-ring is +60°C.

(*) The automatic circuit breaker is mounted into exernal enclosure.

Plug-in Diagrams





Poles No.	Current	Diagram
2P-12V	25 A	2E
2P-24V	25 A	2C
2P-28V	25 A	2F
2P-48V	25 A	2D
2P-110V	25 A	2B
2P-230V	25 A	2A
3P-400V	32 A	3A
3P-24V	25 A	3D
3P-400V	63 A	3A
3P-500V	32 A	3B
4P-230V	32 A	4D
4P-400V	32 A	4A
4P-500V	32 A	4B
2P-230V	63 A	2G
4P-500V	63 A	4F
4P-400V	63 A	4C

PLUGS

series **BP**

Protection		Zone			
Gas		1-2	II2G	Ex d IIC T6 Gb
Dusts		21-22	II2D	Ex tb IIIC T80°C Db

Degree of Protection	IP66
Entries Threading	EN 10226 (Gk)
Material	Aluminum light alloy
Painting	External epoxy RAL 9006

Amb. Temp.			
Standard	-20°C		+40°C
Extended	-20°C		+60°C

Standards and Certificates

Directive 2014/34/EU (ATEX)

EN 60079-0 • EN 60079-1
EN 60079-31

CE CEC 13 ATEX 141

• Plug for socket series FSQ with interlocked switch.

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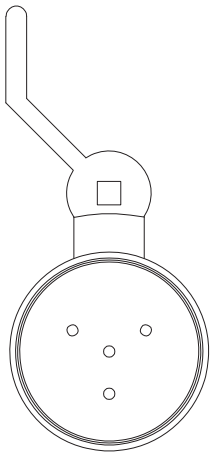

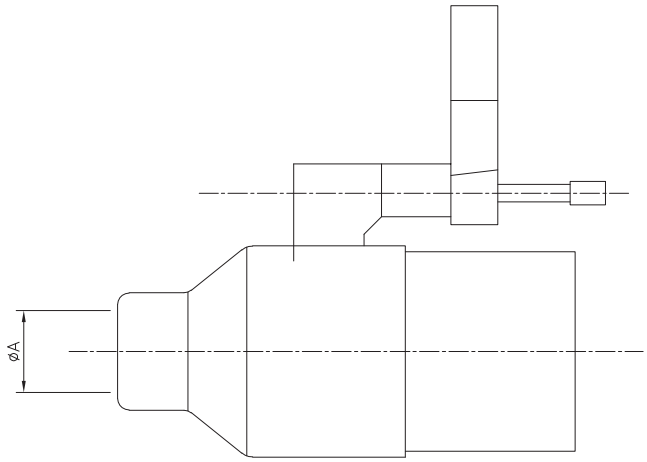

Code	Poles No.	Current (A)	Voltage (V)	ØA
BP 215	2 + E	25 A	500	3/4"
BP 325	3 + E	32 A	500	3/4"
BP 425	4 + E	32 A	500	3/4"
BP 360	3 + E	63 A	500	1"
BP 460	4 + E	63 A	500	1"

NOTES

- To read the installation and maintenance instructions is reccommended.
- The degree of protection IP66 is guaranteed only when the plug is supplied with the relevant specific gasket. Maximum ambient temperature with EPDM O-ring is +40°C, whereas with SIlicone O-ring is +60°C.