

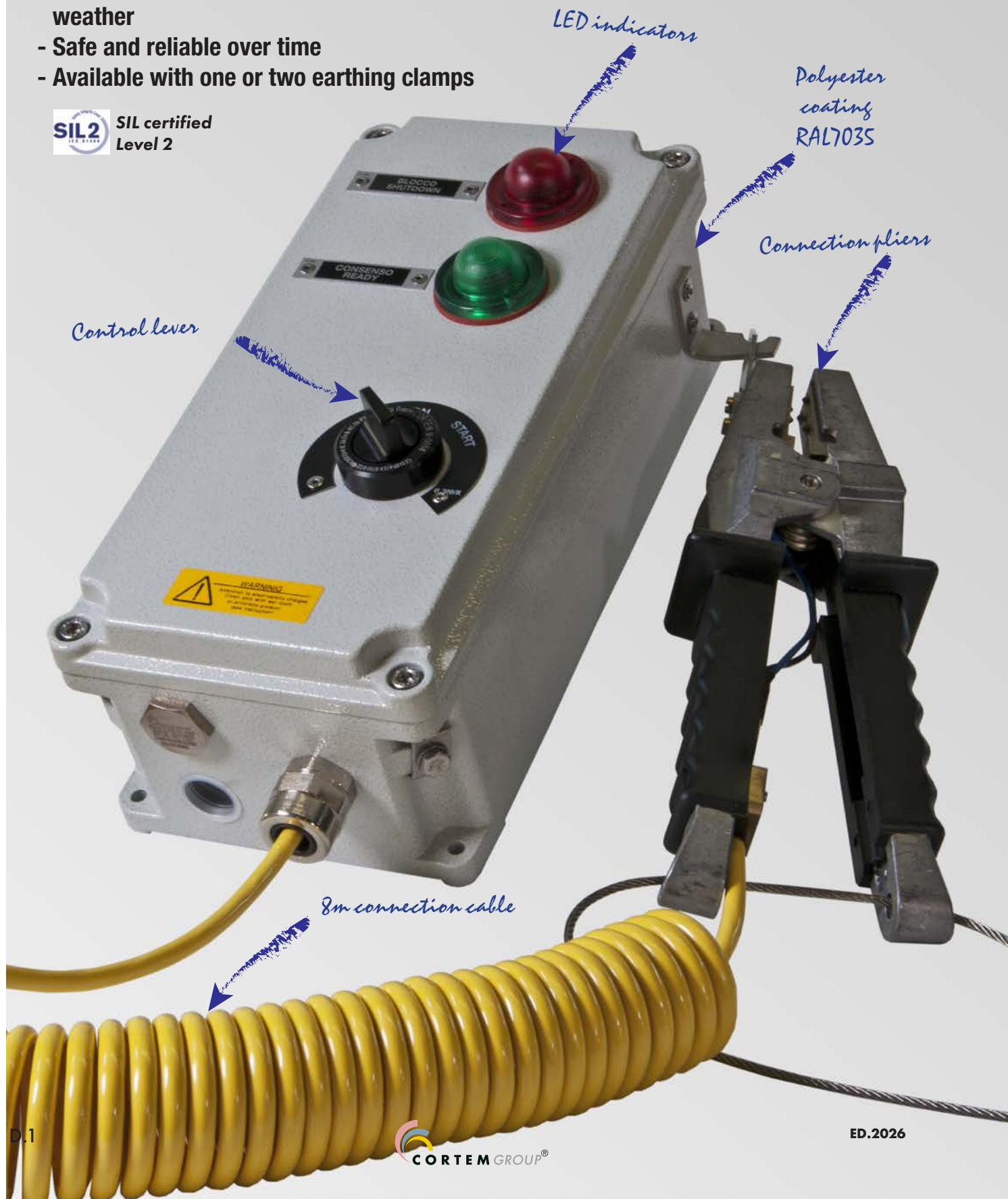
GRDE-4200

Electronic earthing system 'Ex eb / tb'

- Zone 1, 2, 21, 22
- High quality electronic components
- Aluminum or polyester junction box
- High resistance to corrosion and extreme weather
- Safe and reliable over time
- Available with one or two earthing clamps



SIL certified
Level 2



GRDE-4200 Electronic earthing system 'Ex eb / tb'

The GRDE-4200 electronic earthing system help to prevent fire and explosions in areas with hazardous levels of static electricity when trucks or trains load and unload liquids and dry materials.

During the entire loading and unloading phase, the device checks that the equipotentiality of the earthing system is maintained by using the connection of an earthing clamp.

In fact, the electronic system is equipped with a protection circuit that checks the resistance value and compares it to the set parameter and, if this value falls within the pre-set range, closes the electrical circuit between the two systems that are equipotential. Viceversa, it removes the operating consent from the loading pump and closes the loading valve.

The GRDE-4200 is composed by 'Ex eb/tb' Cortem enclosure, which contain the ATEX/IECEX certified grounding control logic LCZ-4200, and by Cortem 'Ex eb/ tb' control and signal devices such as selectors and alert LED lights. It can be provided with one or two earthing clamps for the connection to tank trucks or other metallic parts.

Cortem Group applies a tamper-evident holographic security label to its products, complete with a unique authentication numeric code, to combat the illegal sale of imitations and counterfeits, as well as guarantee the authenticity of its products. Failure to observe international standards creates serious risks for the environment and, above all, for the personnel who work with the systems on a daily basis.



Sectors of application:



CERTIFICATION DATA

Classification:

Group II

Category 2GD

Installation: EN 60079.14

zone 1 - zone 2 (Gas)

zone 21 - zone 22 (Dust)

Marking:

CE 0722 Ex II 2GD - Ex db eb mb [ia Ga] IIC T.. Gb - Ex tb [ia Da] IIIC T..°C Da IP66

Certificate:

ATEX CML 20 ATEX 3235X

IEC Ex IECEX CML 20.0144X

UKEX AVAILABLE

For all IEC Ex, UKEX certification data, download the certificate from www.cortemgroup.com

Standards:

CENELEC EN 60079-0: 2018, EN 60079-1: 2014, EN 60079-7: 2015, EN 60079-11: 2012, EN 60079-18: 2015, EN 60079-31: 2014, EN 60529: 1991 and the European Directive 2014/34/UE.
IEC 60079-0: 2017, IEC 60079-1: 2014-06 IEC 60079-7: 2015, IEC 60079-11: 2011, IEC 60079-18: 2017, IEC 60079-31: 2013, IEC 60529: 2001. RoHS Directive 2002/95/EC.

Temperature class:

85°C (T6)

85°C (T5)

Ambient Temperature:

-40°C +50°C

-40°C +60°C

Degree of protection:

IP66

GRDE-4200..



GRDE-4200..P ..



MECHANICAL FEATURES

GRDE-4200..

Body and lid:	Low copper content aluminium alloy
Impact protection rating:	IK10
Gasket:	Acid, hydrocarbon and high temperature-resistant silicone, located between body and lid
Inputs:	Ø 20,5
Certification label:	Aluminium plate riveted onto lid
Bolts and screws:	Stainless steel captive variety
Earth screws:	Stainless steel. On inside and outside of body complete with anti-rotation brackets
Mounting:	Cast aluminium feet for M6 screw
Coating:	Polyester RAL 7035 (Light grey)

Corrosion Resistance:

The STANDARD of the aluminium alloy used by Cortem has passed the tests required by standards EN 60068-2-30 (hot/humid cycles) and EN 60068-2-11 (salt mist tests)

GRDE-4200..P..

Body and lid:	Made from polyester resin in black with antistatic properties
Impact protection rating:	IK10
Gasket:	Acid, hydrocarbon and high temperature-resistant silicone, located between body and lid
Mounting:	Polyester feet for M6 screws
Certification label:	Aluminium plate riveted into lid
Bolts and screws:	Stainless steel captive variety
Inputs:	Ø 20,5

Plier:	Bipolar, casting with aluminium with handles in neoprene, jaws with steel tips, auto-releasing. 16 mm opening.
Spiral cable:	Yellow with oil and chemical resistant rubber coating. Suitable for very high mechanical stresses. Length 8 meters (extended).
Bracket for plier:	In stainless steel.
Selector lever:	In aluminum with black anodic oxidation.
Indicator light:	In transparent colored polycarbonate.

SPECIAL REQUESTS

Cablegland
Model with body and lid in stainless steel AISI 316L



The use of the grounding system in Ex environments

Equipotential bonding of electrostatically charged metal masses

Everyone must have experienced an electrostatic shock at least once, on a cold, dry afternoon, when exiting a car and touching the door handle to close it. The static energy accumulated by being in a car isolated from the ground, discharges to the ground itself through our body when we come into contact with it if we are not isolated (wearing rubberised shoes).

Static electricity in the human body can reach 10-15 kV (kilovolts) and its discharge can reach 20-30 mJ (millijoules), which is well above the ignition limit of propane, gasoline vapours and fine dust particles.

In potentially explosive atmospheres, these phenomena occur while loading and/or unloading vehicles carrying flammable and explosive products. Hazardous environments that require an earthing system are, for example:

- loading/unloading tanker bays,
- jetties used for loading/unloading oil, methane or gas tankers
- silos used to transfer liquid or solid products.

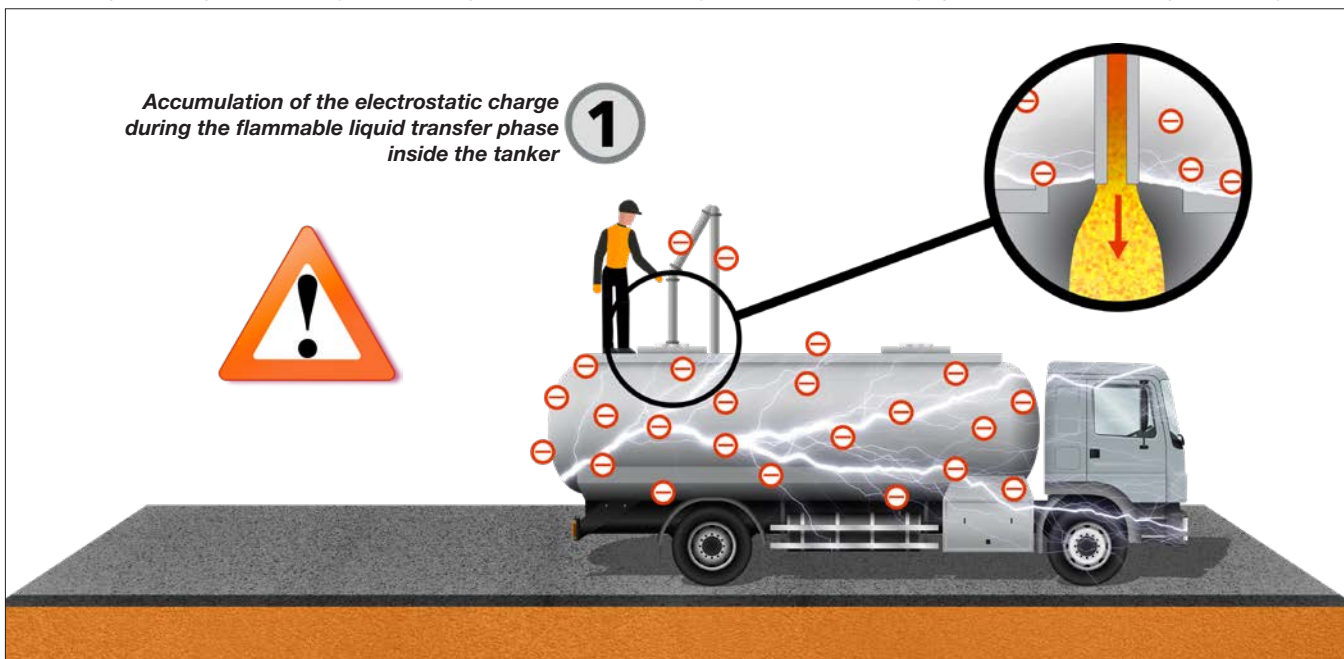
Filling, dispensing, transporting and tipping materials into vehicles or containers generates static electricity simply through the movement of the material being processed or handled.

The charge level is greater for poorly conductive solvents flowing through plastic pipes. Furthermore, a fast flow or large amounts of air bubbles flowing through the pipe can amplify the static electricity.

The flammable charge can ignite if the vehicle is not adequately earthed.

An earth connection between the tanker and the earth network of the plant is not enough to prevent sparks from being generated a number of safety measures must be adopted, which connect the two systems safely, guaranteeing the safety of people and the property. These systems are commonly referred to as "earthing systems" and function based on the principle of equipotential bonding of conductive and semi-conductive metal objects while loading or unloading potentially explosive products.

For this reason, the "earthing" systems must be implemented in such a way as to guarantee full plant functionality while protecting the safety of the operators assigned, in compliance with current regulations. The earthing system connects the object to the ground

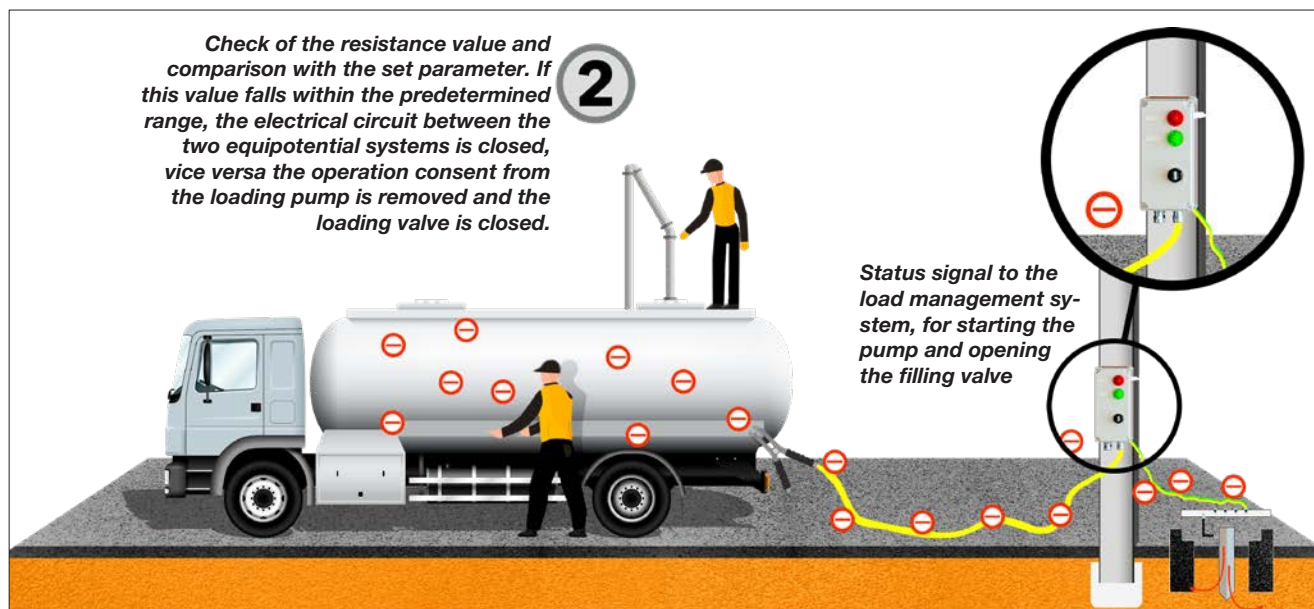


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and discharges any accumulated voltage, which is absorbed by the ground and neutralised.

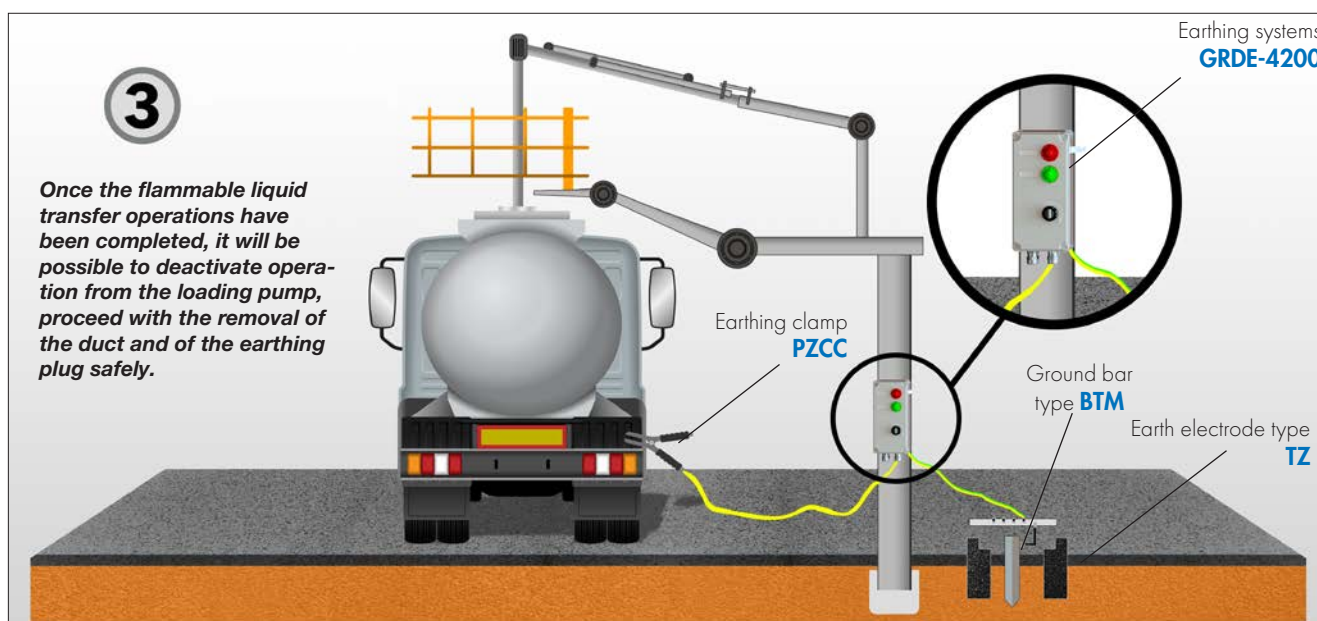
Cortem Group's GRDE series earthing device meets all the functionality and safety specifications set forth in the regulations for such operations and is designed to be installed in environments at risk of explosion due to the presence of flammable gas and/or dust.

In fact, this system consists of an earth control logic called LCZ-4200, which thanks to the 'Ex mb' protection, besides controlling the earth connection parameters, also has an 'Ex ia' intrinsic safety barrier that ensures the coupling of the clamp for the safe earth



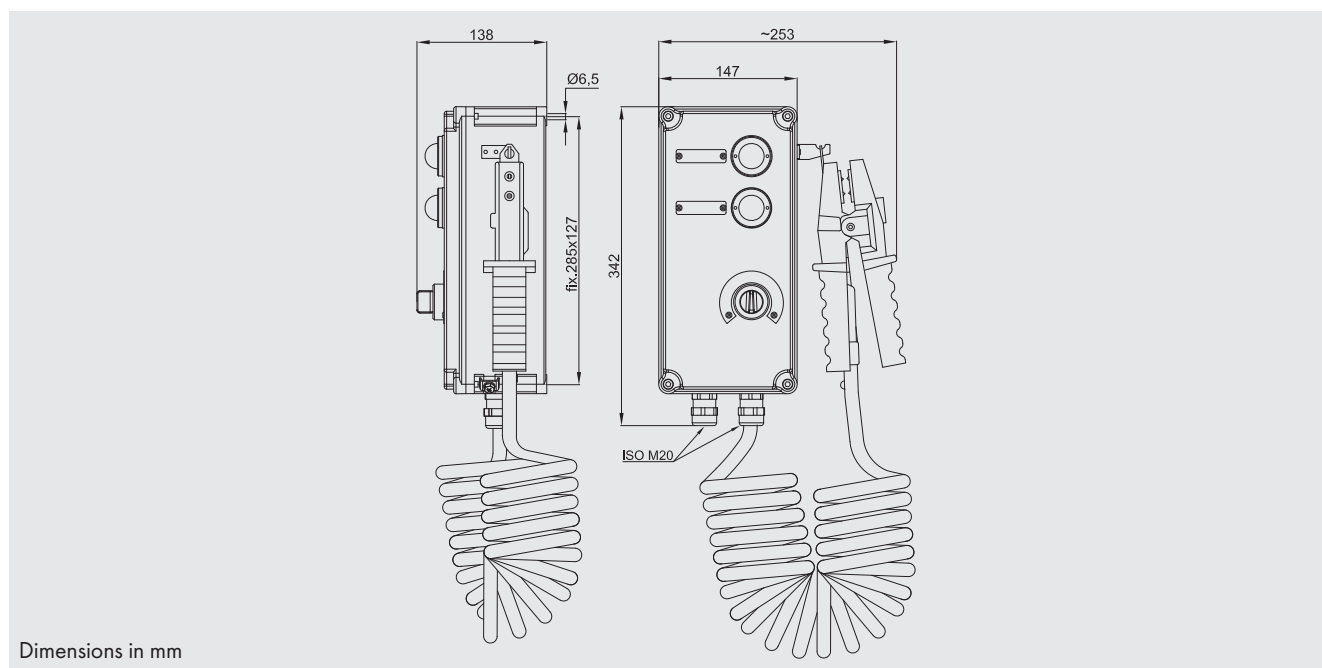
connection.

Moreover, thanks to this logic, besides enabling the earth connection so as to eliminate the electrostatic charges of the tanker, cistern, etc., the GRDE system can also be used to enable the loading/unloading pump to switch-on thanks to a double contact relay. In this way, in the unfortunate event that the earth connection fails, the loading/unloading of the flammable liquid is immediately blocked in complete safety until the earth connection is restored. The GRDE system can be supplied with one or two earthing clamps for the simultaneous connection of several tankers or other metal parts.



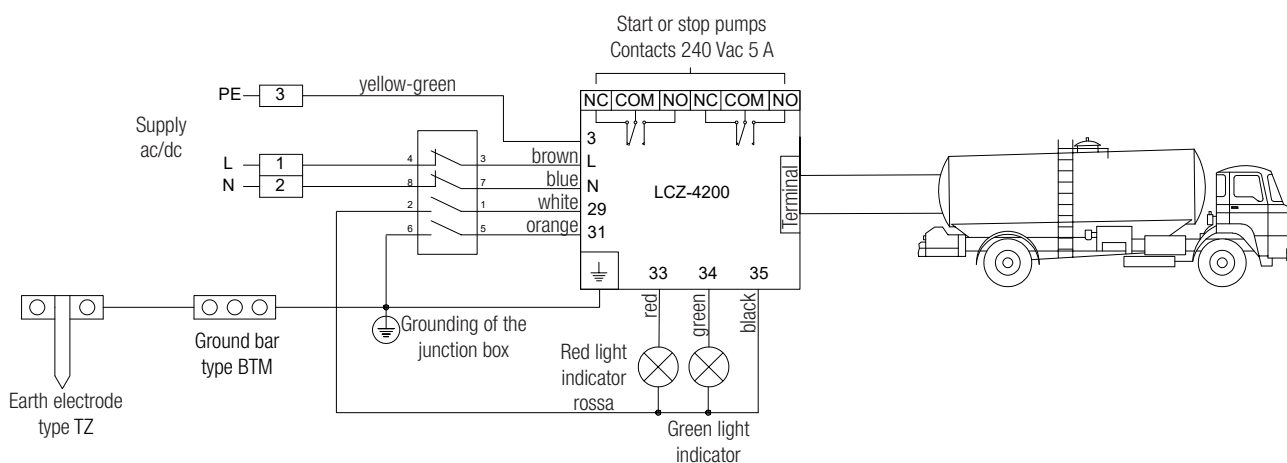
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DIMENSIONAL DRAWING



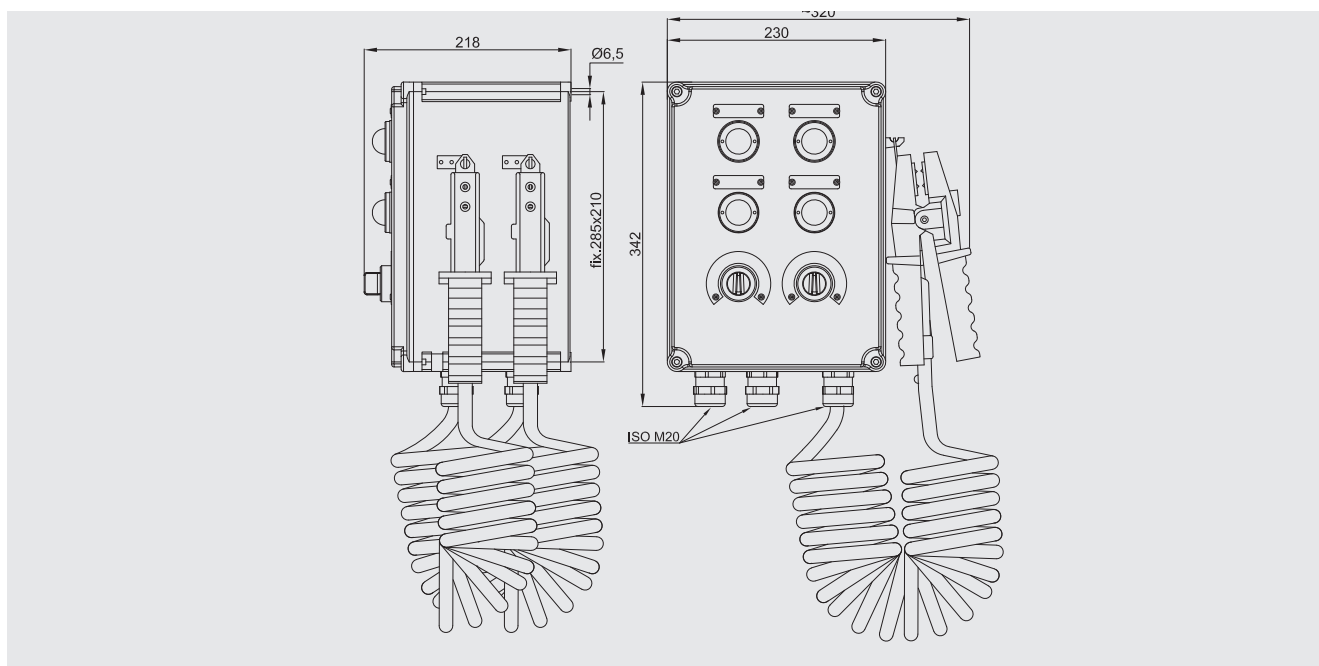
SELECTION TABLE

Code	Material of the junction box	Number of pliers	Power supply	Rated frequency	Power consumption	Weight
GRDE-4200	Aluminium	One plier	220-240 Vac	50 - 60 Hz	6 W	3,25 Kg
GRDE-4200-12			12 Vac/dc	0 - 50 - 60 Hz		3,25 Kg
GRDE-4200-24			24 Vac/dc	0 - 50 - 60 Hz		3,25 Kg
GRDE-4200-110			110 Vac	50 - 60 Hz		3,25 Kg
GRDE-4200-P	Polyester		220-240 Vac	50 - 60 Hz		2,80 Kg
GRDE-4200-P-12			12 Vac/dc	0 - 50 - 60 Hz		2,80 Kg
GRDE-4200-P-24			24 Vac/dc	0 - 50 - 60 Hz		2,80 Kg
GRDE-4200-P-110			110 Vac	50 - 60 Hz		2,80 Kg



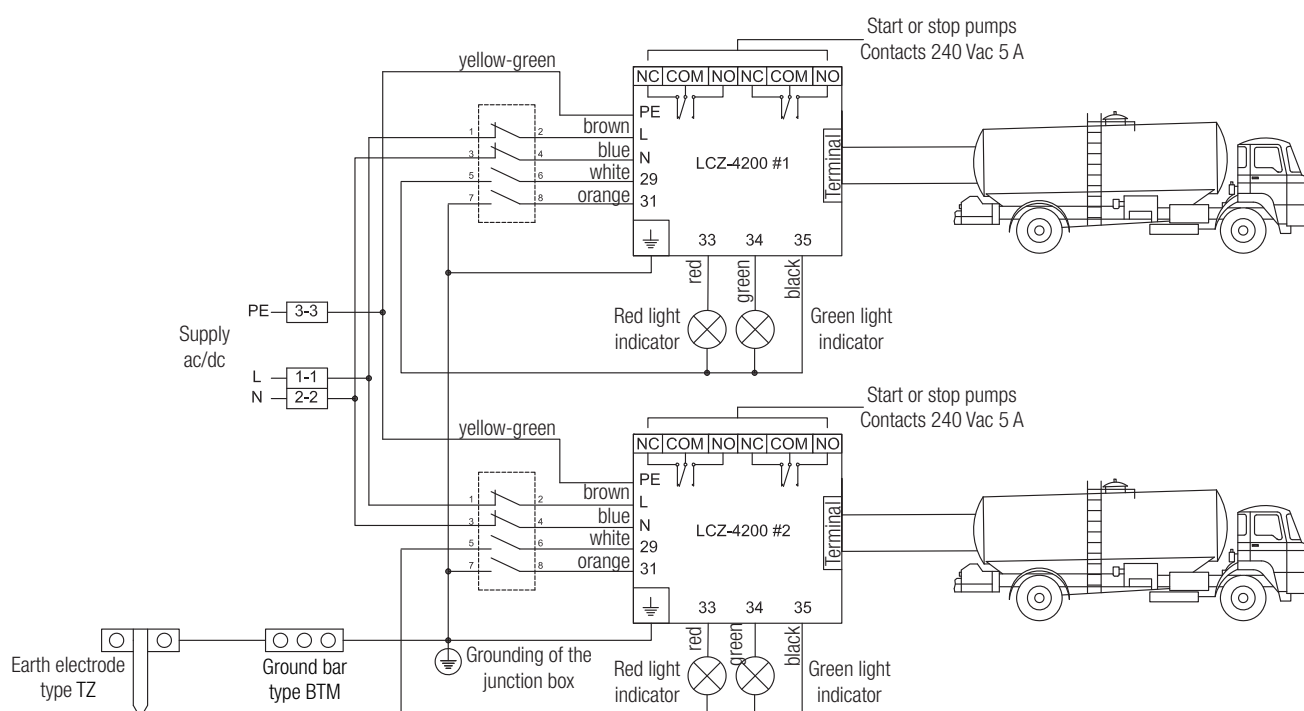
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DIMENSIONAL DRAWING

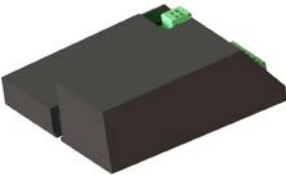


SELECTION TABLE

Code	Material of the junction box	Number of pliers	Power supply	Rated frequency	Power consumption	Weight
GRDE-4200-2	Aluminium	Two pliers	220-240 Vac	50 - 60 Hz	12 W	6,45 Kg
GRDE-4200-2-12			12 Vac/dc	0 - 50 - 60 Hz		6,45 Kg
GRDE-4200-2-24			24 Vac/dc	0 - 50 - 60 Hz		6,45 Kg
GRDE-4200-2-110			110 Vac	50 - 60 Hz		6,45 Kg
GRDE-4200-2P	Polyester		220-240 Vac	50 - 60 Hz		5,65 Kg
GRDE-4200-2P-12			12 Vac/dc	0 - 50 - 60 Hz		5,65 Kg
GRDE-4200-2P-24			24 Vac/dc	0 - 50 - 60 Hz		5,65 Kg
GRDE-4200-2P-110			110 Vac	50 - 60 Hz		5,65 Kg



GRDE-4200 Accessories upon request and spare parts

ILLUSTRATION	DESCRIPTION	MODEL	CODE	KEY
	Red multi-LED indicator 12 Vca/cc	GRDE-4200..	M-0612/3R12	
	Green multi-LED indicator 12 Vca/cc		M-0612/3V12	
	Special switch	GRDE...	M-0604/2R	
	Monitoring logic	GRDE-4200...	LCZ-4200	
		GRDE-4200...12	LCZ-4200/12	
		GRDE-4200...24	LCZ-4200/24	
		GRDE-4200...110	LCZ-4200/110	
	Earthing pliers	GRDE...	PZCC-4209	
	Yellow cable Length: 8 metres	GRDE...	20CE063	
	Cable gland range cable 6,5÷14	GRDE...	NAV20IB	