EXPLOSION PROOF ELECTRICAL EQUIPMENT

AD VIGANO

Explosion Proof Electrical Equipment

QUALITY AND EX CERTIFICATION

The products are built according to the European laws and according to
ATEX
IECEx
TR-CU.

Since 1998 our Quality System is certified from CSQ according to UNI EN ISO 9001.

OUR COMPANY

A.D. VIGANÒ designs, manufactures and trades explosion proof electrical equipments for hazardous areas with danger of explosion. They are used for plants in chemical and petrochemical industries and in general for places where the presence of gas or inflammable dusts can create highly explosive atmospheres like: gas, methane grisou, hydrocarbons, solvents, paints and resins, alcohol, fragrances and perfumes, distillates, plastic materials and rubbers etc, and dusts created during the manufacture of agricultural products, metals, chemical products, wood etc.

The products are classified according to their degree of protection:

Ex-d (both surface group II and mine group I) flameproof enclosures
Ex-e increased safety materials
Ex-i intrinsic safety
Ex-p pressurized apparatus
Waterproof materials.

Our company also provides a series of consulting services and engineering, from the guide to the choice of the products, to the classification of the areas, from design of personalized solution to after-sales assistance.

AD-VIGANÒ is present on the **NATIONAL MARKET** and in the **INTERNATIONAL MARKET**.

SAFETY NEEDS EXPERIENCE

OUR HISTORY

The activity of Viganò group started in Inverigo (near Como lake) in 1950.

In 1954 Viganò increased its facilities in order to develop the production of "Explosion Proof" Electrical material with the aim of gradual development and quality improvement of their products. In 1995 AD acquired the Viganò Electrical.

At the present, all activities have been rationalized and the new modern manufacturing plant is concentrated with the name of "A.D. VIGANÒ S.r.l." located in Concorezzo - Milano.

PRODUCT RANGE

AD VIGANO' has a complete range of explosion proof electro-mechanical products:

- Accessories and conduit mounting fittings: rigid and flexible conduit, armoured cable, cable glands, pulling cable fitting, three pieces connection fittings, sealing fittings and sealing compound, elbows, reducers and fixing components.

- Enclosures, junction box, control station: different kind of enclosures Ex e, Ex ed, Ex d (IIB+H2 and IIC) in alluminium, cast iron, stainless steel; junction and pulling boxes, enclosure for electric equipments, motor starter boards, control system panel boards, measuring instruments housing, control station, push-buttons, switches and selector switches.

- Sockets, Plugs, Acustic Signals and others: power sockets and plugs, sirens and acustic signal, thermostat, limit switch, grounding equipment, solenoid valves, Ex fan, Ex telephone set

- Lighting fixtures: incandescent lamps, discharge lamps, fluorescent lamp, led lamp, emergency lighting fixtures, gauge lighting fixtures, signaling obstacles, portable lamp, lighting fixtures for pole mounting and accessories

- Ex d equipments for group I (mines): junction and fitting boxes type S, equipment containers type MU and GUB, cable-glands, fluorescent lighting fixtures type EVFT/I, foodlight RLEQ/I, junction box for high voltage up to 1kV and up to 6,6 kV.

- Ex p pressurized switchboard

EJB SERIES – ALUMINIUM ENCLOSURES

These enclosures are suitable for the installation of terminals and standard electrical equipment such as switches, fuses, contactors, etc. They can be equipped with intrinsically safety barrier. The enclosures can be fitted with windows to visualize electronics and electrical apparatus and instruments installed inside. Different dimension from EJB1 to EJB9A
Material: aluminium copper free (or cast iron on request). Painting: standard grey epoxy RAL7037, internal orange anticondensation RAL2004.

II 2G Ex d IIB +H2 T5 Gb
II 2D Ex tb IIIC T100°C Db
II 2G Ex d [ia Ga] IIB+H2 T5 Gb
II 2D Ex tb [ia Da] IIIC T100°C
IP66
Tamb -60° +65°

EJB/X SERIES – ST.STEEL AISI 316L ENCLOSURES

These enclosures are suitable for the installation of terminals and standard electrical equipment such as switches, fuses, contactors, etc. They can be equipped with intrinsically safety barrier. The enclosures are fitted with flanged covers and can be fitted with windows to visualize electronics and electrical apparatus and instruments installed inside. Different dimension from EJB1 to EJB9A. Material: body, cover, bolt and screws in stainless steel AISI 316L.

II 2G Ex d IIB +H2 T5 Gb
II 2D Ex tb IIIC T100°C Db
II 2G Ex d [ia Ga] IIB+H2 T5 Gb
II 2D Ex tb [ia Da] IIIC T100°C
IP66

GUB SERIES – ALUMINIUM ENCLOSURES WITH OR WITHOUT EXTENSION

These enclosures are used for terminal box and for electrical equipments for command, connection of electric conductors, switch. Different dimension from GUB to GUB07, can be equipped with different cylindrical extension to increase internal depth.
Material: body and cover in light alloy casting (cast iron on request). Painting: standard grey epoxy RAL7037, internal orange anticondensation RAL2004.

II 2G Ex d IIC T5/T6 Gb
II 2D Ex tb IIIC T100°/T85°C Db
II 2G Ex d [ia Ga] IIC T5/T6 Gb
II 2D Ex tb [ia Da] IIIC T100°/T85°C Db
IP66

GUB/H SERIES – ALUMINIUM ENCLOSURES WITH WINDOW

Enclosure in light alloy copper free with transparent inspection window in thermo resistant toughened glass suitable for containing the command, control, measure and regulation electrical apparatus.
Material: body and cover in light alloy casting (cast iron on request).
Painting: standard grey epoxy RAL7037, internal orange anticondensation RAL2004.

II 2G Ex d IIC T5/T6 Gb
II 2D Ex tb IIIC T100°/T85°C Db
II 2G Ex d [ia Ga] IIC T5/T6 Gb
II 2D Ex tb [ia Da] IIIC T100°/T85°C Db
IP66

GUB/H SERIES - ALUMINIUM ENCLOSURES WITH WINDOW AND EXTENSION

Enclosure in light alloy copper free with transparent inspection window in thermo resistant toughened glass suitable for containing the command, control, measure and regulation electrical apparatus.
These enclosures are fitted with extension of different dimension to increase internal depth.
Material: body and cover in light alloy casting (cast iron on request). Painting: standard grey epoxy RAL7037, internal orange anticondensation RAL2004.

II 2G Ex d IIC T5/T6 Gb
II 2D Ex tb IIIC T100°/T85°C Db
II 2G Ex d [ia Ga] IIC T5/T6 Gb
II 2D Ex tb [ia Da] IIIC T100°/T85°C Db
IP66

GUB/X SERIES - ST.STEEL AISI 316L ENCLOSURES

These enclosures are used for terminal box and for electrical equipments for command, connection of electric conductors, switch.
Different dimension from GUB to GUB07.
Material: body and cover in stainless steel AISI316L.

II 2G Ex d IIC T5/T6 Gb
II 2D Ex tb IIIC T100°/T85°C Db
II 2G Ex d [ia Ga] IIC T5/T6 Gb
II 2D Ex tb [ia Da] IIIC T100°/T85°C Db
IP66

COMPLEX EJB+CSX EX-DE IIB+H2

These panels are composed by a Ex d enclosure in aluminium (or stainless steel) series EJB and a Ex e enclosures in stainless steel series CSX or aluminium series CSA connected through sealed nipples or sealing joint.
Different configuration according to different enclosures size, and possible customization for the customer solution.

II 2G Ex de IIB +H2 T5 Gb
II 2D Ex tb IIIC T100° Db
IP66

COMPLEX GUB+CSX EX DE IIC

These panels are composed by a Ex d enclosure in aluminium (or stainless steel) series GUB and a Ex e enclosures in stainless steel series CSX or aluminium series CSA connected through sealed nipples or sealing joint.
Different configuration according to different enclosures size, and possible customization for the customer solution.

II 2G Ex de IIC T5/T6 Gb
II 2D Ex tb IIIC T100°/T85°C Db
IP66

EXPLOSION PROOF ELECTRICAL EQUIPMENT

OPERATORS EX D - PUSHBUTTONS, SIGNAL LAMPS, SWITCHES, VALVES

Command, handles, drain valves are components certified to be installed on Ex d enclosures.
Pushbutton series RP complete with electrical contact NO or NC. **Signal lamp series RL** equipped with LED lamps and coloured lens. **Selector switches series RS** 2 or 3 position selector switches mounted behind the cover. **Handles series M** for the command of electric devices mounted on the boxes.
Drain/Breather valves series ECD1

II 2G Ex d IIC
II 2D Ex tb IIIC Db
IP66

OPERATORS EX DE - PUSHBUTTONS, SIGNAL LAMPS, SWITCHES, VALVES

Command, handles, drain valves are components certified to be installed on Ex e enclosures.
Pushbutton and selector switches series 0201 complete with electrical contact NO or NC
Signal lamp series 0202 equipped with LED lamps and coloured lens
Ammeter series 0205
Drain/Breather valves series ECD1

II 2G Ex de IIC
II 2D Ex tb IIIC Db
IP66

S SERIES - JUNCTION AND PULLING BOX

The boxes of this series are used for pulling and joining conductors. Boxes may be supplied complete with terminals or terminals strip.
Different configuration:
SC, SB, SL, ST, SD, SX, SM, SW.
Materials: anticorrosive light alloy or cast iron on request.
Painting: standard grey epoxy RAL7037on request specify type of RAL

II 2G Ex d IIC
T4/T5/T6 Gb
II 2D Ex tb IIIC
T135°/T100°/T85°C
Db
II 2G Ex d [ia Ga]
IIC T5/T6 Gb
II 2D Ex tb [ia Da]
IIIC
T135°/T100°/T85°C
Db
IP66

SSA SERIES - JUNCTION AND PULLING BOX

Boxes series SSA are used in increased safety location Ex-e. On request may be furnished complete with terminal block certified increased safety model.
EPDM gasket cemented in recess of cover. Cable glands used must have increased safety certification.
Materials: body in aluminium, bolt and screws in stainless steel.
Painting: standard grey epoxy RAL 7037

II 2G Ex e IIC
T5/T6 Gb
II 2D Ex tb IIIC
T100°/T85°C Db
II 2G Ex e ia
IIC T6 Gb
II 2D Ex tb e ia
IIIC T85°C Db
IP66

GRP JUNCTION BOXES - TERMINAL BOXES

This enclosures series is mainly used as marshalling and junction boxes, with the installation of terminals or bus-bars of different sizes.
Modular for flanged coupling with silicon gasket.
Black colour.
Material: body and cover in polyester reinforced with glass fibre, self extinguishing and non propagating.

II 2G Ex e IIC T6 Gb
II 2D Ex t IIIC
T85°C Db
IP66

CSX SERIES - ST.STEEL AISI 316L JUNCTION BOXES

Boxes series CSX are used in increased safety location Ex-e. They are used with terminals for distribution. They can be fitted with removable gland plates on each four side, on request can be supplied with hinges and adjustable fixing bracket. Cable glands and terminals must have increased safety certificate.
Material: body and cover in stainless steel. AISI316L, bolt and screws in st.steel, seals in rubber sponge inside the cover and on gland plates.

II 2G Ex
e IIC T5/T6 Gb
II 2D Ex tb IIIC
T100°/T85°C Db
II 2G Ex
e ia IIC T6 Gb
II 2D Ex tb e ia IIIC
T85°C Db
IP66

CSA SERIES - ALUMINIUM JUNCTION BOXES

Boxes series CSA are used in increased safety Ex-e. They are used with terminals for distribution. The walls have 7mm thickness to allow threaded holes. On request can be supplied with hinges. Cable glands and terminals must have increased safety certificate.
Materials: body and cover aluminium, bolt and screws in st.steel, silicon rubber-sponge gasket on cover. Painting: external grey epoxy RAL7037, internal anticondensation orange RAL2004.

II 2G Ex
e IIC T5/T6 Gb
II 2D Ex tb IIIC
T100°/T85°C Db
II 2G Ex e ia
IIC T6 Gb
II 2D Ex tb e ia IIIC
T85°C Db
IP66

GRP ENCLOSURES - CONTROL STATIONS

This enclosures series can be fitted with pusbuttons, signl lamps, selector switches, digital instruements.
Modular for flanged coupling with silicon gasket.
Black colour.
Material: body and cover in polyester reinforced with glass fibre, self extinguishing and non propagating

II 2G Ex e IIC T6 Gb
II 2D Ex t IIIC
T85°C Db
IP66

CSX SERIES - ST.STEEL AISI 316L CONTROL STATION

Boxes series CSX are used as signalling and command box with operators on cover (pushbutton, indicators light, selectors switches) in execution Ex de.
They are made with or without removable gland plates on each four side, on request can be supplied with hinges and adjustable fixing brackets. Materials: body and cover in stainless steel AISI 316L, bolt and screws in st.steel, seals in rubber sponge on the cover and gland plates.

II 2G Ex de
IIC T6 Gb
II 2D Ex tb IIIC
T85°C Db
II 2G Ex de ia
IIC T6 Gb
II 2D Ex tb e ia IIIC
T85°C Db
IP66

SD SERIES - ST.STEEL AISI 316L CONTROL STATION

Boxes series SD are used in classified area Ex-e, increased safety protection mode.
They can be equipped with command operators Ex-de as pushbutton, signal lamps, selectors switch, ammeter and potentiometer.
Materials: body and cover in stainless steel AISI 316L, bolt and screws in stainless steel, seals in rubber sponge fixed inside the cover.

II 2G Ex de
IIC T6 Gb
II 2D Ex tb IIIC
T85°C Db
II 2G Ex de ia
IIC T6 Gb
II 2D Ex tb e ia IIIC
T85°C Db
IP66

CSA SERIES - ALUMINIUM CONTROL STATION

Enclosures series CSA are used as signalling and command box with operators on cover (pushbutton, indicator lights, selectors switches).
Materials: body and cover in aluminium, bolt and screws in stainless steel.
Painting: external standard grey epoxy RAL 7037, internal anticondensation orange RAL2004.

II 2G Ex de
IIC T6 Gb
II 2D Ex tb IIIC
T85°C Db
II 2G Ex de ia
IIC T6 Gb
II 2D Ex tb e ia IIIC
T85°C Db
IP66

0240 SERIES - POLIAMIDE ENCLOSURES FOR CONTROL STATION

Five standard size enclosures: ADV0240-1 ADV0240-2 ADV0240-3, ADV0240-5, ADV0240-6. They are used as signalling and command box with operators on cover (pushbutton, indicator lights, selectors switches). Rated voltage: 250V - Rated current: max 16A. Mounting way: pendant mounted type , vertical mounted (mounting accessory) type.
Materials: alloy plastic of static resistance material, silicon rubber bar sealed between body and cover.

II 2G Ex de
IIC T6 Gb
II 2D Ex tb IIIC
T85°C Db
IP66

EFDCS SERIES - IIB ALUMINIUM ENCLOSURES FOR CONTROL STATION

EFDCS series are provided with mounting feet for installation on sheet steel support or wall. Single or double body for max six operators. Lamps led type Ba9s base not included, pushbutton, push buttons with protected keys, mushroom head pushbutton.
Materials: enclosure in aluminium, bolt and screws in stainless steel.
Painting: standard epoxy RAL 7037, for others colours specify RAL type.

II 2G Ex d
IIB T5/T6 Gb
II 2D Ex tb IIIC
T100°/T85°C Db
IP66

EFDCS SERIES - IIB ALUMINIUM ENCLOSURES FOR SWITCHES AND SELECTORS

EFDCS series are provided with mounting feet for installation on sheet steel support or wall.
Many combinations can be obtained for every need with selector switches, deviator, commutator and control switches and operators (pushbutton, indicator lights, etc). Materials: enclosure in aluminium, bolt and screws in stainless steel.
Painting: standard epoxy RAL7037, for others colours, specify RAL type.

II 2G Ex d
IIB T5/T6 Gb
II 2D Ex tb IIIC
T100°/T85°C Db
IP66

EFSCO SERIES - IIC ALUMINIUM ENCLOSURES FOR CONTROL STATION

EFSCO series bodies are provided with mounting feet for installation on sheet steel support or wall, cylindrical cover with max three operators.
Indicating lamps led type Ba9s base not included, pushbutton, push buttons with protected keys, mushroom head pushbutton. Material: enclosure in light alloy, bolt and screws in stainless steel.
Painting: standard epoxy RAL7037. For others colours, specify RAL type.

II 2G Ex d
IIC T6 Gb
II 2D Ex tb IIIC
T85°C Db
IP66

EFSCO SERIES - IIC ALUMINIUM ENCLOSURES FOR SWITCHES AND SELECTORS

EFSCO series are provided with mounting feet for installation on sheet steel support or wall, cylindrical cover with one selector (switch, deviator, commutator and control switches).
Materials: enclosure in aluminium, bolt and screws in stainless steel.
Painting: standard epoxy RAL7037, for others colours, specify RAL type.

II 2G Ex d
IIC T6 Gb
II 2D Ex tb IIIC
T85°C Db
IP66

EMHA100 SERIES - INSTRUMENT HOUSINGS

The EMHA100 have a body in copper free aluminium with a resistance glass in the screw cover and are suitable for housing digital, analogical and measuring apparatus type voltmeters, ammeters, wattmeter, etc.
Electrical data: max 32Amp - 660VAC
Painting: standard grey epoxy RAL7037, for other colours specify type of RAL

II 2G Ex d IIC T6 Gb
II 2D Ex tb
IIIC T85°C Db
IP66

VB SERIES - VIDEO CAMERA BOX

The video camera boxes series VB have a cylindrical body with two threaded covers at the ends, one for inspection and one with window. The external surface can be drilled for the mounting of external components like sun cover or fixing bracket. On request can be supplied with antifog resistance. On the body there are two plane surface for threaded holes for cable entries. The GUB series have a junction box (instead a threaded cover) that allow a bigger number of cable entries.

II 2G Ex d
IIC T5/T6 Gb
II 2D Ex tb IIIC
T100°/T85°C Db
II 2G Ex d [ia Ga]
IIC T5/T6 Gb
II 2D Ex tb [ia Da]
IIIC T100°/T85°C Db
IP66

0251 SERIES - SOCKETS AND PLUGS

The full plastic explosion proof plug and sockets can be used in the explosive gas atmospheres.
Exclusive interlock device, the switch is not turned on if it is not rotated and the plug can not be pulled out when the switch is turned on.
The protective covers are equipped on both plug and socket, which ensure the reliability of the protective degree. Rated current max 16/32/63/125A, Rated voltage: 3-pole: 415VAC, 4-pole: 690VAC, 5-pole: 500VAC, 50/60Hz

II 2G Ex de IIC
T5/T6 Gb
II 2D Ex tb IIIC
T100°/T85°C Db
IP66

FSCQ AND FPA SERIES - SOCKETS AND PLUGS

Explosion-proof receptacle with incorporated load switch. They are interlocked by the position of the plug in order that it can be inserted and taken off only when the circuit is open. Models: 2P+E 16/32A, 3P+E 16/32/63A. The plugs for ex receptacles are suitable only for use with the corresponding type of receptacles. Material: body in light alloy casting, bolt and screws in stainless steel.
Painting: standard grey epoxy RAL7037

II 2G Ex d
IIC T5/T6 Gb
II 2D Ex tb IIIC
T100°/T85°C Db
IP66

ETH SERIES - SIRENS

These sirens are mainly used for outdoor or noisy locations or to repeat a signal in different areas. They are supplied with 5 selectable rings for emergency signalling type: fire, evacuation and danger. Max voltage 220V. Acoustic frequency 440-1600Hz. Continuous working. Rings available: Bi-tone 440 Hz/0,4 sec; Alternate 554 Hz/0,1 sec; YELP fast 650 to 1600Hz; WAIL Slow increasing and decreasing tone from 650 to 1600Hz; Intermittent tone 554Hz 1sec. ON 1sec. OFF; Fixed Note 554Hz continuous.

II 2G Ex d IIC T6 Gb
IP65

ETS SERIES - SIRENS

ETS sirens are mainly used for outdoor or noisy locations or where it is desired to repeat a signal in various areas.
Maximum voltage 230V.
Acoustic frequency Hz650. Intermittent working: 10 min. (109Db), 15 min.(114Db) Sound level 114 Db

II 2G Ex d IIC T6 Gb
IP66
II 2D Ex tb IIIC
T85° C Db

EV SERIES - LIGHTING FIXTURES

These lighting fixtures are normally fitted with incandescent, halogen, fluorescent energy saving, or led lamps. They are equipped with a protection guard in stainless steel. The reflector in aluminium is supplied on request. EVA for pole or suspension mounting, EVC ceiling mounting, EVD ring suspension mounting, EVJ wall mounting with bracket. Materials: body in aluminium, globe in high resistant glass, bolts and screws in st.steel. Painting: standard grey epoxy RAL 7037.

II 2G Ex d
IIC T3/T6 Gb
II 2D Ex tb IIIC
T200°/T85°C Db
IP65

LP SERIES - SIGNALLING OBSTACLES LIGHTING FIXTURES

The lighting fixtures of this series are suitable for signalling obstacles or for mounting on towers, factories, etc., as a signal for air navigation.
They are provided with red coloured glass and Fresnel lens.
The lighting fixtures series “LP” are equipped with incandescent lamp.
Painting: external standard epoxy RAL7000

II 2G Ex d
IIC T3/T6 Gb
II 2D Ex tb IIIC
T200°/T85°C Db
IP65

EVA50FLASH - SIGNALLING OBSTACLES LIGHTING FIXTURES

These beacons can be used in alarm and signalling systems in both applications fixed or mobile.
The different colours of the lamp (red-orange-yellow-green-blue-white) are used to meet the various needs of the plant. Xenon lamps complete with electronic control circuit microprocessor which provides the cadence of the flashing.
Protective guard in stainless steel. Painting: standard external epoxy RAL7000

II 2G Ex d
IIC T6 Gb
II 2D Ex tb IIIC
T85°C Db
IP65

EVFT SERIES - ALUMINIUM FLUORESCENT LIGHTING FIXTURES

These lighting fixtures can be with single lamp or two lamps 18, 36 or 58W. Can be supplied with emergency group for activating one tube for 90 min. (EVFT…/E). Fixing: suspension mounting, ceiling mounting, pole mounting. Guard is in zincate steel and reflector in painted sheet of steel supplied on request. Materials: body in aluminium, protection tubes heat resistant glass, external bolts and screws in st.steel. Painting: standard grey epoxy RAL7037

II 2G Ex d IIC T6 Gb
II 2D Ex tb IIIC
T85°C Db
IP66

EVFT/L SERIES - ALUMINIUM LED LIGHTING FIXTURES

These lighting fixtures can be made with single lamp or two lamps jointed with terminal box. They can be supplied with led tube G13 holder with different lengths 600mm/1050Lm; 1200mm/2500Lm; 1500mm/3700Lm or compact version high efficiency with AD Viganò led 600mm/4600Lm

II 2G Ex d IIC T6 Gb
II 2D Ex tb IIIC
T85°C Db
IP66

RLEQ/L SERIES - ZINCATE STEEL LED FLOODLIGHT

Floodlight suitable for gas IIB+H2, body in zincate steel, window in high resistance glass, the circuit led powered with n° 60 leds Osram OSLON Square 120W/18000Lm, supplied with adjustable positioning bracket and power feeding unit type OSRAM OT150 with different dimming modes.

II 2G Ex d IIB
+H2 T6 Gb
II 2D Ex tb IIIC
T85°C Db
IP66

0866 SERIES - POLICARBONATED FLUORESCENT LIGHTING FIXTURES

Explosion proof fluorescent lighting fixtures 2x18W and 2x36W. This series can be supplied with emergency group.
Rated voltage: AC230V, AC110V~ 240V (10%) 50/60Hz Material: enclosures glass fiber reinforced polyester, transparent parts in anti ultraviolet polycarbonate, good protection from various chemical matters and from corrosion, high stability and mechanical strength.

II 2G Ex deq
IIC T4 Gb
II 2D IIIC T80°C Db
IP66

CONDUIT ACCESSORIES

Ex d/e accessories: reducers, plugs, nipples, couplings, locknuts, bushing, three pieces connection fittings, elbows, clamp for conduits, sealing fittings, pulling cables fittings, cables. In galvanized steel, aluminium, brass nickel plated, stainless steel.

II 2G Ex d IIC Gb
II 2G Ex e IIC Gb
II 2D Ex tb IIIC Db
IP66

CABLE GLANDS FOR ARMOURED AND NOT ARMOURED CABLES

Cable glands for armoured and not armoured cables for dangerous area, zones 1-2-21-22 indoor high humidity, dusts and oil and/or outdoor rain exposed. Seal on the internal cable insulation under armour. Threads: GK UNI 6125 or NPT or ISO Metric pitch 1,5 Material: standard zinc-plated steel. A = aluminium, OT = nickel-plated brass, X = stainless steel AISI 316

II 2G Ex d IIC Gb
II 2G Ex e IIC Gb
II 2D Ex tb IIIC Db
IP66

FLEXIBILE AND RIGID CONDUIT

Flexible conduits are used where rigid conduit is not permissible. The total length in millimetres (mm) include unions and threading. Material: st.steel, internal helicoidal corrugated AISI321;external jacket AISI304, terminals union AISI304.
The rigid conduits are in steel Fe 360, galvanized inside and outside UNI 5745.
These conduits are supplied in 6 meters length bars with two threaded end UNI6125 (or NPT), complete with couplings UNI7683.

Ex

NPS SERIES - SEALING NIPPLES

Sealed nipples are connection elements intended to use as components for cables entry in EX enclosures with type of protection d, e, or t. They can be employed between enclosures with the same type or protection or with different types of protection. The nipples can have one or two threaded ends with the same or different thread type. They can be used with single Radoz cable, Ethernet cable 5E, optical fibre type 62.5/125, coaxial cable type RG223.

II 2G Ex d IIC Gb
II 2G Ex e IIC Gb
II 2D Ex tb IIIC Db
IP66

MU-I SERIES - ENCLOSURES IN CAST IRON FOR GROUP I

The boxes of this series are suitable for housing electric apparatus and can be equipped on cover with external handles, push buttons, indicating lights. Suitable for mounting on racks for the assembling of lighting panel boards and motor starter switchgears. Can also be used as junction boxes with terminals. Material: body and cover in cast iron, bolt and screws st.steel. Painting: external grey epoxy RAL 7037, internal orange RAL 2004.

I M2 Ex d I Mb
I M2 Ex d (ia) I Mb
IP66

GUB-I SERIES - ENCLOSURES IN CAST IRON FOR GROUP I

This series are used for electrical equipments for command, connection of electric conductors, switches, etc. Series GUB/H-I: enclosure with transparent inspection window in thermo resistant toughened glass, suitable for containing command, control, measure and regulation electrical devices. Materials: body and cover in cast iron, external bolt and screws in st.steel. Painting: standard grey epoxy RAL7037, internal orange anticondensation RAL2004.

I M2 Ex d I Mb
I M2 Ex d (ia) I Mb
IP66

S-I SERIES - JUNCTION AND PULLING BOX IN CAST IRON FOR GROUP I

The boxes of this series are used for pulling and joining conductors in zincate cast iron and furnished with flat cover. Boxes may be supplied complete with terminals or terminals strip.
Materials: zincate cast iron.
Painting: standard grey epoxy RAL7037, on request specify type of RAL

I M2 Ex d I Mb
IP66

EVFT-I SERIES - FLUORESCENT LIGHTING FIXTURES IN CAST IRON FOR GROUP I

These lighting fixtures can be with single lamp or two lamps 18W, 36W. Can be supplied with emergency group suitable for activating one tube for 90 min. (EVFT..-I/EM). Suspension mounting, ceiling mounting. Protection cage and reflector are included.
Materials: body in galvanized cast iron, protection tubes in heat resistant glass, bolts and screws in st.steel.
Painting: finishing zincate galvanized on request.

I M2 Ex d I Mb
IP66

EVFT-I LED SERIES - LED LIGHTINING FIXTURES IN CAST IRON FOR GROUP I

These lighting fixtures can be made with single lamp or two lamps jointed with terminal box, can be supplied with led tube G13 holder with different lengths 600mm/1050Lm; 1200mm/2500Lm; 1500mm/3700Lm or compact version high efficiency with AD Viganò led 600mm/4600Lm

I M2 Ex d I Mb
IP66

RLEQ-I SERIES - FLOODLIGHT FOR GROUP I

Floodlight suitable for group I body in zincate galvanized steel, window in high resistance glass, LED Osram OSLON Square 120W / 18000Lm.. It can be supplied with adjustable positioning bracket.
Material: steel, cover equipped with sealing glass and assembled to body by steel screws.
Painting: on request specify type of RAL.

I M2, Ex d I
I M2, Ex d I
IP66

SALDAMAX SERIES - WELDING UNIT FOR GROUP I

This welding unit is used to weld waterproof plastic sheets in tunnels/mines with risk of methane gas. It is composed by three different apparatus: unit with power/control enclosures; system with motorized welding machine Ex-e/ib with two motors, heating ends to fuse coupling plastic sheets to seal them. Another system is hand welding lance constituted by a cylindrical Ex e enclosure used as haft and one heating end used to seal plastic support ring to fix the sheet to the wall.

I M2 Ex d I 450°C
I M2 Ex d (ib)
I 450°C
I M2 Ex e I 450°C
I M2 Ex e (ib) I 450°C

EX SWITCHRACK AND PANEL BOARDS

We execute switchrack and panel boards in Ex applications (Ex d - Ex de, IIB+H2 - IIC, in aluminium or stainless steel AISI316L), tailor made and designed on customer specifications.

Type of complex system:
• Low voltage motor starters, DOL type or Star-Delta or reverse star or soft start or variable speed drive.
• Low voltage distribution boards for power and lighting system, tracing systems, MOV systems.

The equipments installed inside the enclosures are of primary brand. Other typologies of equipments, on specific client request, can be installed according to certificate.

The technical department will assist on design and technical definition, to select dimension of enclosure suitable for specific use, carrying out of drawings layout and single line diagrams, manufacturing, mechanical assembling, electrical wiring, arrangement of test and final inspection, commissioning, assistance on site.

EX-P PRESSURIZED SWITCHBOARD

The pressurized panels series EXP 25 50 100 are manufactured according to ATEX 94/9/CE rules and are fitted for category 2, ZONE 1 and ZONE 2 for gas group IIB e IIC, temperature class T3 (200°C) orT4 (135°C).

The operating principle of pressurized cabinets protection mode consist of preventing the formation of explosive atmosphere inside the panel, keeping it at higher pressure that outside atmosphere.

Mainly a pressurized panel serie EXP 25-50-100, consists of:

- a metallic panel, which contains all the electromechanical components, electronic device, and instrumental apparatus that must be protected.
- a pressurization control system

The pressurized panels series EXP 25-50-100 can incorporate electromechanical and instrumental components of any type, without functional limitation or forms, so as to realize different type of panels such as:

• LV and MV power system, as transformation cabinets, distribution panels, motor starter

• Automation system for command, control, and analysis of industrial process

• Control panels for machinery

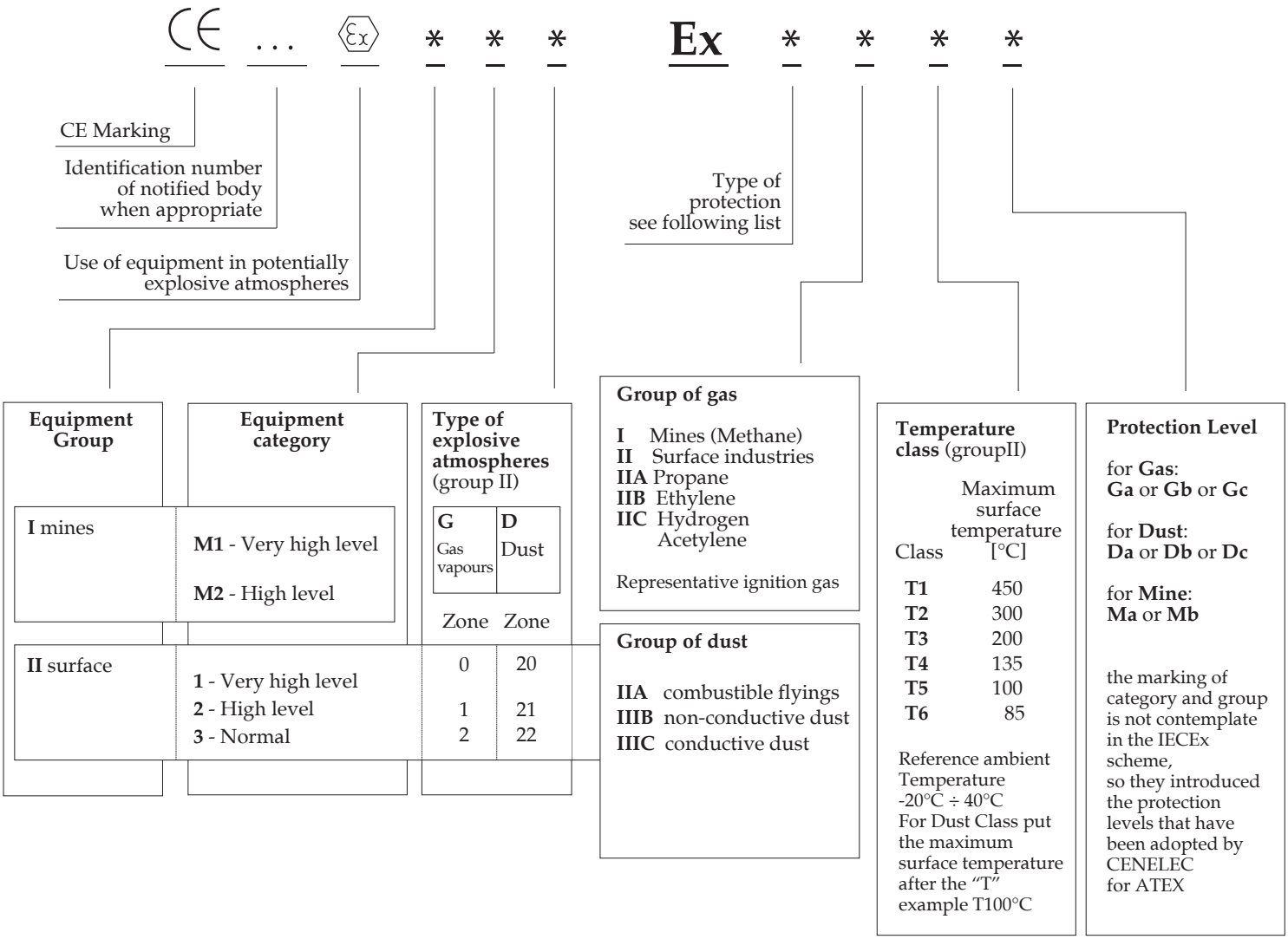
All electrical equipment meet the compliance to the "Electromagnetic compatibility standard 20004/108/EC" and to the "Low Voltage LVD standard 2006/95/EC".

The whole production cycle of each panel (design, manufacturing and commissioning) is executed according to a quality system certified by EN ISO 9001, which guarantee the safety requirement of the security level protection mode.

II 2G Ex px (ia/ib) ia IIC T4/T3 Gb
II 2G Ex px ia IIC T4/T3 Gb

ATEX GUIDE

European ATEX Directive 94/9/CE
Electrical and non-electrical equipment and protection systems



CATEGORY OF EQUIPMENT

Equipment of mines - Group I
Category M1
Level of protection: Very high level
2 types of protection or 2 indipendent faults
Category M2
Level of protection: High level
1 type of protection Normal operation

Equipment of surface - Group II
Category 1
Level of protection: Very high level
2 types of protection or 2 indipendent faults
Category 2
Level of protection: High level
Common frequent malfunction
Category 3
Level of protection: Normal
Required level of protection

STANDARDS AND TYPE OF PROTECTION

Electrical equipment for gas (G)

	Code	ENRule	Category
General requirements		60079-0	
Oil immersion	Ex o	60079-6	M2-2G
Pressurized apparatus	Ex p	60079-2	M2-2G
Powder filling	Ex q	60079-5	M2-2G
Flameproof enclosure	Ex d	60079-1	M2-2G
Increased safety	Ex e	60079-7	M2-2G
Intrinsic safety	Ex ia	60079-11	M1-1G
Intrinsic safety	Ex ib	60079-11	M2-2G
Encapsulation	Ex m	60079-18	M2-2G
Protection type "n"	Ex n	60079-15	3G
Category 1G		60079-26	1G
Category M		50303	M1

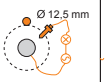
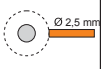
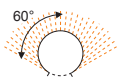
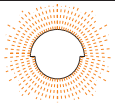
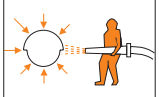
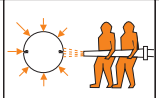
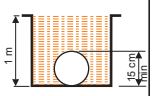
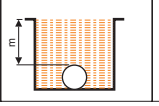
Electrical equipment for dust (D)

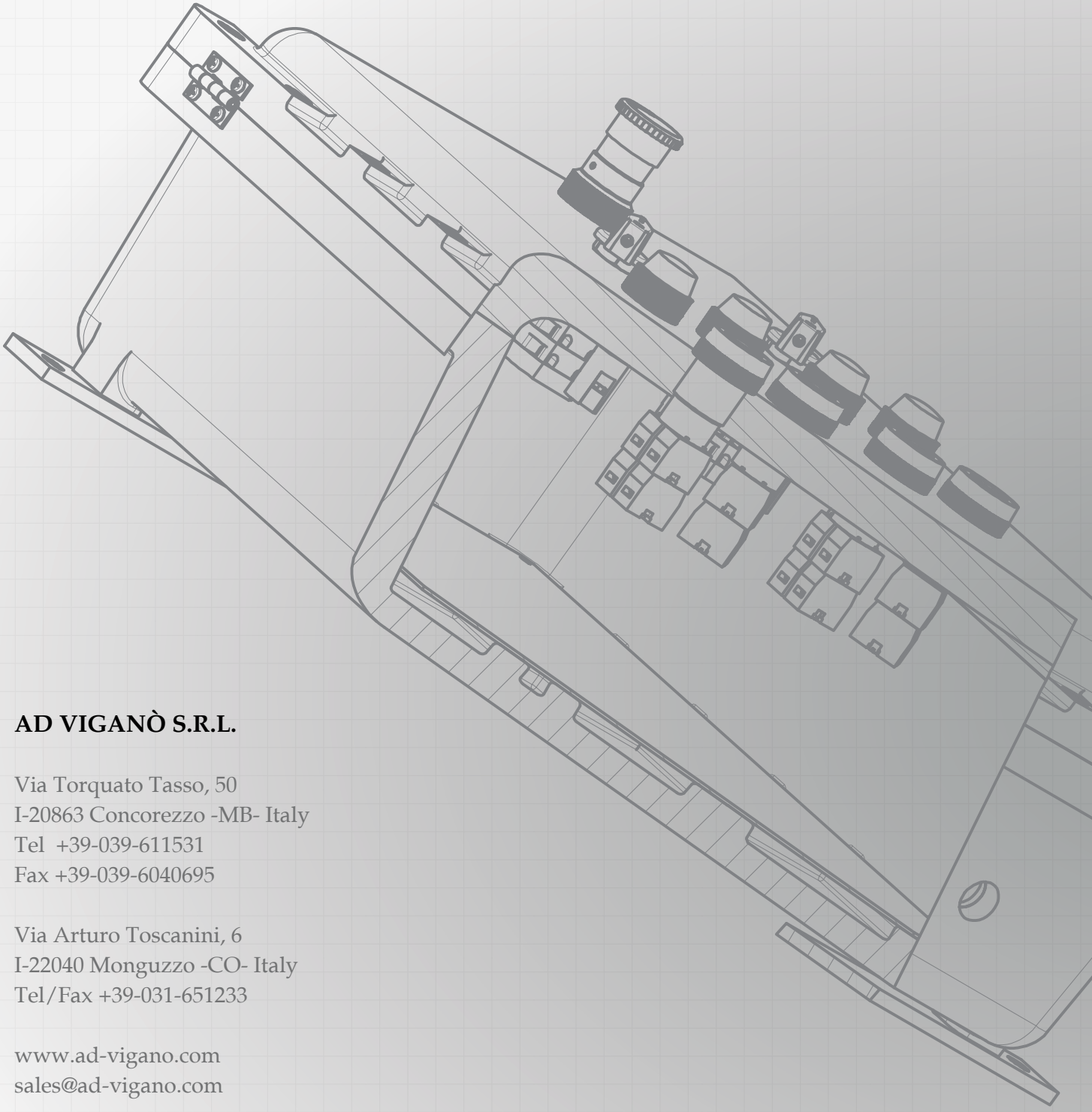
Protection by enclosures	Ex ta	60079-31	1D
Protection by enclosures	Ex tb	60079-31	2D
Protection by enclosures	Ex tc	60079-31	3D
Protection by pressure	Ex pD	61241-4	2D

INFLAMMABLE GASES AND VAPOURS CLASSIFICATION

group of container	I	IIA	IIB	IIC
gas or vapour	Methane (firedam p)	Ammonia Industrial methane Blas-furnace gas Carbon monoxide Propane Butane Pentane Esane Eptane Iso-octane Decane Benzene Xilene Cyclohexane Acetone Ethyl-methyl-ketone Methyl acetate Ethyl acetate Normal propyl acetate Normal butyl acetate Amyl acetate Cloroethylene Methanol Ethanol Iso Butanol Normal Butanol Amyl alcohol Ethyl nitrite	Buta 1:3-diene Ethylene Diethyl ether Ethylene oxide Town gas Coke-oven gas	Hydrogen Acetylene

INDEX OF PROTECTION

1 st figure: protection against solid bodies			2 st figure: protection against liquids		
IP	**tests**		**IP**	**tests**	
0		No protection	**0**		No protection
1		Protected against solid bodies larger than 50 mm (eg. : accidental contact with the hand)	**1**		Protected against vertically-falling drops of water (condensation)
2		Protected against solid bodies larger than 12,5 mm (eg. : accidental contact with the hand)	**2**		Protected against drops of water falling at up to 15° from the vertical
3		Protected against solid bodies larger than 2,5 mm (tools, wires)	**3**		Protected against drops of rainwater at up to 60° from the vertical
4		Protected against solid bodies larger than 1 mm (fine tools, small wires)	**4**		Protected against projections of water from all directions
5		Protected against dust (no harmful deposit)	**5**		Protected against jets of water from all directions
6		Completely protected against dust	**6**		Completely protected against jets of water or similar force to heavy seas
			7		Protected against the effects of immersion
			8		Protected against effects of prolonged immersion under specified conditions



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