RADIO REMOTE CONTROLS FOR
APPLICATIONS IN POTENTIALLY
EXPLOSIVE ENVIRONMENTS

IMET
RADIO REMOTE CONTROL

ATEX

MADE IN IMET

The new line of ATEX products is designed and manufactured by IMET for use in potentially explosive atmospheres, according to state-of-the-art, top-ranking safety standards. As a result of its features, the line can be safely used in areas classified as gas 1 and 2 zones, combustible dust 21 and 22 zones, and mines. Customisation is a proven bonus for IMET: each application is tailored to the customer's needs, always in keeping with the relevant legislation.

The radio remote controls in the ATEX version are not only perfectly suited to a variety of applications but also render processes more efficient. Compact design, low weight, easy use and great battery life - offer exceptional freedom of action, precision operations and movements as well as greater productivity, without ever losing sight your operators' safety.

The transmitters suitable for use in potentially explosive environments - such as the petrochemical, off-shore, recycling, chemical, pulverised products, mining, painting system industries - are available in different models and configurations depending on the customer's requirements and can be coupled to various receiving unit models; in standard casing if the receiver is located outside an explosion risk area or, alternatively, in an explosion-proof case as appropriate.

Fully compliant with Explosion Proof Regulations!

KRON

STURDY AND COMPACT

Designed for top performance with extremely small footprint, it is the ideal solution when the application requires no more than four single-axis joysticks. Equipped with a practical clip for quick coupling to the belt, you will be surprised how easy and effortless it is to use KRON, thanks to the design of its handle, which will make any work situation comfortable.

Dimensions
180 x 107 x 160 mm
7.08 x 4.21 x 6.30 in

Weight
900 g
1,98 lb

ZEUS2

STURDY AND VERSATILE

A perfect mix of reliability and versatility combined in a single control station, ZEUS 2 boasts top features in terms of ergonomics and functionality. Thanks to the compact size of the panel, with a rational distribution of spaces, the transmitter can be easily customised according to specific needs. Suitable for applications requiring up to 6 single-axis or 2 dual-axis joysticks, it is a masterpiece of technology that will enable you to smoothly supervise any operations.

Dimensions
205 x 150 x 150 mm
8.07 x 5.90 x 5.90 in

Weight
1450 g
3,197 lb

THOR2

POWERFUL AND COMPREHENSIVE

THOR2 is the perfect combination of efficiency, ergonomics and a high degree of customisation. A supreme mix of design and functionality that make it rank at the top of its category even for explosion-proof uses. Up to 9 single-axis joysticks or 4 dual-axis ones on the main panel, with spacious side compartments. Numerous push buttons, toggle or rotary selector potentiometers make THOR2 a perfect choice for machines of any complexity.

Dimensions
295 x 180 x 165 mm
11.61 x 7.08 x 6.30 in

Weight
2300 g
5,07 lb

ATEX

A potentially explosive atmosphere is a mixture of flammable substances in a gaseous, vapour, mist state, or combustibles in powder form with air or in an oxidising state, under particular atmospheric conditions in which, as a result of ignition, combustion spreads to the flammable mixture.

***An explosion** can, therefore, occur only if an ignition source exists and when concentration is within the explosive range (mass or volume explosion hazard of a substance) between the LEL (Lower explosive limit) and the UEL (Upper explosive limit). The explosive limits depend on the ambient pressure and the percentage of oxidizer in the atmosphere.*

IECEX CERTIFICATION

(International Electrotechnical Commission Explosive Atmospheres)

The IECEX certification guarantees that all the safety requirements envisaged by IEC standards are met and that both the areas in potentially explosive atmospheres and the personnel working there are as safe as possible.

ATEX DIRECTIVE 2014/34/EU

Comprises equipment intended for use in the underground and surface areas of mines. The hazard, protective measures and test methods are similar for both environments; the first distinction is made through a division into two groups:

- **Group I:** equipment intended for use in the underground parts of mines;
- **Group II:** equipment intended for surface use.

Subsequently, products are classified into categories, in relation to the level of protection and according to the degree of hazard for the environment where they will be placed.

GROUP I PRODUCTS

Mining products are divided into 2 categories:

- **Category M1:** protective equipment or systems which guarantee a very high level of protection;
- **Category M2:** protective equipment or systems which guarantee a high level of protection; it must be possible to de-energise them in the presence of gas.

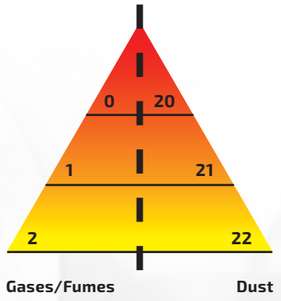
GROUP II PRODUCTS

For surface equipment (group II) there are 3 categories, according to the level of protection (area of use); the categories are identified with numbers 1, 2, 3 followed by letter G (Gas) or D (Dust, powder):

- **Category 1:** protective equipment or systems which guarantee a very high level of protection;
- **Category 2:** protective equipment or systems which guarantee a high level of protection;
- **Category 3:** protective equipment or systems which guarantee a normal level of protection.

TEMPERATURE CLASSIFICATION: GASES AND VAPOURS

Gas/air mixtures can be classified as explosive if they come into contact with hot surfaces. For this reason, electrical constructions in hazardous areas must be classified also based on the maximum surface temperature developed, both under normal operating conditions and in the event of any failure.



AREA/ZONE CLASSIFICATION

Hazardous areas are classified based on the recommendations in **EN 1127-1, EN IEC 60079-10-1** (gas-Ex) and **EN IEC 60079-10-2** (dust-Ex), which provide for the division of hazardous areas into three zones, depending on how often and how long an explosive substance is present.

Continuous hazard

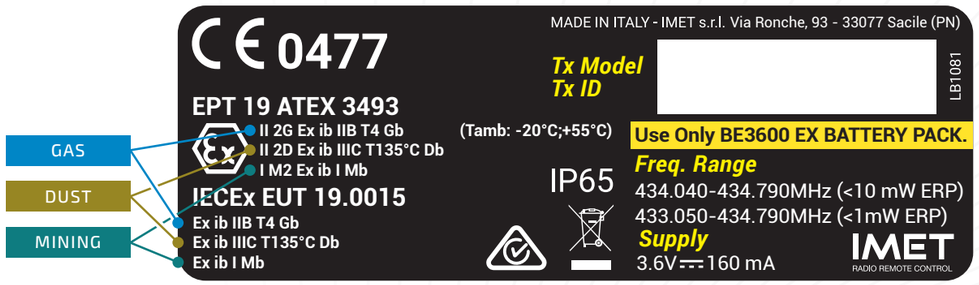
Hazard existing under normal operating conditions

Limited risk in case of malfunction or damage to a system/plant (limited in time)

GAS AND DUST ZONES

GAS		DUST	
Zone 0	A hazardous area in which an explosive atmosphere is present continuously or for long periods of time.	**Zone 20**	An area in which an explosive dust atmosphere, in the form of a cloud of dust in the air, is present continuously or for long periods of time.
Zone 1	A hazardous area in which an explosive atmosphere is likely to occur occasionally in normal operation.	**Zone 21**	An area in which an explosive dust atmosphere, in the form of a cloud of dust in the air, is likely to occur in normal operation.
Zone 2	A hazardous area in which an explosive atmosphere is not likely to occur in normal operation but, if it does occur, will persist for a short period only.	**Zone 22**	An area in which an explosive dust atmosphere, in the form of a cloud of dust in the air, is likely to occur for short periods of time only.

ATEX



EPT 19 ATEX 3493 CERTIFICATE: EU TYPE EXAMINATION CERTIFICATE

	II 2G Ex ib IIB T4 Gb		II 2D Ex ib IIIC T135 °C Db		I M2 Ex ib I Mb	
	GAS		DUST		MINING	
Gruop	II	Electrical device intended for use in all explosive atmospheres other than mines.	II	Electrical device intended for use in all explosive atmospheres other than mines.	I	Electrical device intended for use in mines.
Category	2G	Devices capable of operating in an atmosphere with a frequent explosion risk (zones 1, 2 and 21, 22).	2D	Devices capable of operating in an atmosphere with a frequent explosion risk (zones 1, 2 and 21, 22).	M2	Device that guarantees a high level of protection; it must be possible to de-energise it in the presence of gas.
Type of protection	ib	Intrinsically safe, energy is limited to input AND makes it impossible for arcs or sparks to develop. Suitable for zones 1 and 2.	ib	Intrinsically safe, energy is limited to input AND makes it impossible for arcs or sparks to develop. Suitable for zones 21 and 22 Conductive powders.	ib	Intrinsically safe, energy is limited to input AND makes it impossible for arcs or sparks to develop.
Substance	IIB	Ethylene, ethylene-based, ethyl ether, propene cycle, butadiene 1-3, propylene oxide, ethylene oxide, hydrogen sulphide, ethanol.	IIIC	Electrical resistance of combustible powder equal to or lower than 103 Ω Dimensions <500 µm.	I	Mining.
Temperature	gas T4	The use of the equipment requires knowledge of the group of gases in place and the self-ignition temperatures of the gas mixtures, compared to the marking temperature of the radio remote control The maximum surface temperature of the radio remote control must always be lower than the self-ignition temperature of the gas in the hazardous area: Max 135 °C.	T135°	The maximum surface temperature of the radio remote control must be always lower than the self-ignition temperature of the gas in the hazardous area: Max 135 °C.		
Protection level	Gb	Corresponding to 1 (and 2).	Db	Corresponding to 21 (and 22).	Mb	Equipment for installation in mines, with a "high" level of protection guaranteeing sufficient safety about the equipment being unable to become an ignition source in the time interval that elapses when a gas release occurs and when, as a result, the equipment is de-energised.
Temperature		-20 °C; +55 °C.		-20 °C; +55 °C.		-20 °C; +55 °C.

TECHNICAL DATA

IMET
RADIO REMOTE CONTROL

Transmitting units	KRON	ZEUS2	THOR2
Dimensions (L.W.A.)	180 x 107 x 160 mm / 7.08 x 4.21 x 6.30 in	205 x 150 x 150 mm / 8.07 x 5.90 x 5.90 in	295 x 180 x 160 mm / 11.61 x 7.08 x 6.30 in
Weight (battery included)	900 g max / 1,98 lb	1450 g / 3,197 lb	2300 g / 5,07 lb
Range	100 m / 330 ft		
Max number of ON/OFF commands	88		
Max number of analog commands (optional)	16		
Joystick commands UMFS * = Unintended Movement From Standstill (ISO 13849-1: 6.2.6 architecture)	16		
Maximum LEDs on panel	8 for KRON, 35 for ZEUS2 and THOR2		
Casing material	Polycarbonate V0		
Supply voltage	3,6 VDC		
Battery	NiMH 3,6V-1,1Ah		
Autonomy at 20°C with charged battery in continuous service	≈ 11 hours		
Command — **STOP**	PL e Cat.4 (ISO 13849-1 6.2.7 architecture)		
Command — **JOYSTICK**	PL d Cat.3 (ISO 13849-1 6.2.6 architecture)		
Command — **LEVER - BUTTON**	PL c Cat.2 (ISO 13849-1 6.2.5 architecture)		
Operating frequency 1	I.S.M. Band 433.050-434.790 MHz Number of programmable channels: 69, AFA mode (Adaptive Frequency Agility) or on fixed channel. Max power: 1 mW e.r.p		
Operating frequency 2	I.S.M. 434.040-434.790 MHz Number of programmable channels: 30, AFA mode (Adaptive Frequency Agility) or on fixed channel. Max power: 10 mW e.r.p		
Operating frequency 3	2,4 GHz, 38 ch (only radio H B034)		
Operating frequency 4	I.S.M. Band 863.100-869.850 MHz Number of programmable channels: 32 AFA mode (Adaptive Frequency Agility) + LBT with automatic channel selection. Max power: 20 mW e.r.p		
Operating frequency 5	Band 915.200-927.800 MHz Number of programmable channels: 64 Frequency Hopping mode. Max power: 20 mW e.r.p		
Radio transmission	Half duplex		
Operating temperature	-20°C +55°C / -4°F +133°F		
Storage temperature	-40°C +85°C / -40°F +185°C		
Degree of protection	IP 65		

* : depends on the configuration

Compliance to the regulations

- EN IEC 60079-0
- EN IEC 60079-11
- EN 62479
- EN 60204-32
- EN 60529
- EN 62368-1
- ISO 13849-1
- EN 13557/A2
- EN 61000-6-2
- EN 61000-6-3
- EN 301 489-1
- EN 301 489-3
- EN 300 220-1
- EN 300 220-2
- EN 300 328
- EN 301 489-17
- 2006/42/CE (Directive Machines)
- RED Directive (2014/53/EU)

Receiving units

H AC / H DC

L AC / L DC

S AC / S DC

M AC

	H AC / H DC	L AC / L DC	S AC / S DC	M AC
Dimensions	205 x 130 x 280 mm / 8 x 5 x 11 in	140 x 65 x 230 mm / 5,5 x 2,5 x 9 in	127 x 147 x 70 mm / 5 x 5,78 x 2,7 in	180 x 73 x 120 mm / 7 x 2,8 x 4,7 in
Weight	3500 g / 7,7 lb	1700 g / 3,74 lb	600 g / 1,32 lb	900 g / 1,98 lb
Supply voltage	H AC: 45-240 VAC (50-60Hz); H DC: 11÷30 VDC e 24 VAC (50-60 Hz)	L AC: 24-240 VAC (50-60 Hz); L DC: 11÷30 VDC	S AC: 24 VAC (50-60 Hz) / 12÷30 VDC (Optional 24-440 VAC [50-60 Hz]) S DC: 12÷30 VDC	12÷30 VDC / 24 VAC (50-60 Hz)
Safety commands	STOP, Safety-Enable (up to 8)	STOP, Safety-Enable	STOP, Safety-Enable	STOP, Safety-Enable
Generic commands	73 * relays or MOS, 32 * Analog (PWM, current, voltage)	16 relays or 20 MOS, 8 Analog (PWM, current, voltage)	S AC: 14 relays (N.O.); S-DC: Max 14 MOSFET (N.O), 4 Analog, 2 Digital IN	22 relays (18 N.O. and 4 N.C./N.O.) 4 Analog (Current, voltage)
Service commands	Start, Horn, Timed-Relay	Start, Horn, Timed-Relay #	Start, Horn	Start, Horn
STOP relay category *	PLe Cat 4, ISO 13849-1	PLe Cat 4, ISO 13849-1	PLe Cat 4, ISO 13849-1	PLe Cat 4, ISO 13849-1
Field BUS	CANOpen (ID 11-29 bit) (1Mbit/s max) CAN_Bus (ID 11-29 bit) (1Mbit/s max) RS232 / RS485 (115200 Baud max)	CANOpen (ID 11-29 bit) (1Mbit/s max) CAN_Bus (ID 11-29 bit) (1Mbit/s max) RS232 / RS485 (115200 Baud max) Profinet, Ethernet IP	CANOpen (ID 11-29 bit) (1Mbit/s max) CAN_Bus (ID 11-29 bit) (1Mbit/s max) RS232 / RS485 (115200 Baud max)	CANOpen (ID 11-29 bit) (1Mbit/s max) CAN_Bus (ID 11-29 bit) (1Mbit/s max) RS232 / RS485 (115200 Baud max) Profinet, Ethernet IP
Integrated flashing light	/	/	Only AC version	/
Operating temperature	-25°C - +70°C / -13°F +158°F	-25°C - +60°C / -13°F +140°F	-25°C - +60°C / -13°F +140°F	-25°C - +70°C / -13°F +158°F
Degree of protection	IP 66	IP 66	IP 66	IP20

* = depends on the configuration / # = only for L DC

ATEX CERTIFIED RECEIVING UNIT

They are mainly used for systems in duct pipe or with barrier cable glands, and can have applications on the walls such as control panels and signalling. They are built according to European regulations.

Apparatus group II. Apparatus for use in environments where explosive atmospheres are likely to occur.

High protection level: Category 2. Intended use in environments where explosive atmospheres due to gases, vapours, mists or mixtures of air and dust are likely to occur.

Gas and potentially explosive dust protection system. The apparatus remains powered and in operation in zones 1, 2 (G) and 21, 22 (D).

M880 receiver enclosures are classified according to Directive ATEX 2014/34/EU:

II 2GD, Ex db IIB+H2 T6 Gb, Ex tb IIIC T6 Db - IP66
Body and cover in aluminum alloy with a magnesium content max. 6% by weight, or in stainless steel ASI 303/304/316.

Maximum surface temperature for protection against gas "g" and combustible dust "d":
+85 layer C for temperature class T6.

BATTERY CHARGER FOR SAFE ZONE

CR040EX

Supply voltage	11÷30 VDC / 100÷240 VAC (50-60 Hz)
charging current	900 mA
Maximum charging time	2h 20'
Recommended operating temperature with battery charging	0°C up to +35°C (+32°F up to +95 °F)
Storage temperature off without battery	-40°C - +85°C (-40°F - +185 °F)
Dimensions (L.P.A.)	80 x 30 x 120 mm
Weight	250 g
Degree of protection	IP 20

DPI80ING - 01-26 - Rev. 0.9

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RADIO REMOTE CONTROL

kiwa
CERTIFIED
ISO 9001

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