

Remote Radio Control

M880 Radio Control for Drilling, Mining & Quarrying Machines

Application

Radio Remote Controls are becoming increasingly popular for controlling a wide range of complex machines in the drilling, mining and quarrying industries. The use of a remote control system allows the operator to move around the workspace and therefore find the safest and most convenient position from which to carry out the operation resulting in improved productivity in addition to greater operator safety.



M880 Advantages

Compact transmitters – All M880 transmitters are compact and lightweight making life more comfortable for the operator and allowing greater freedom of movement.

Extreme Environments – Transmitters and Receivers are constructed from high impact resistant materials and are suitable for operating temperatures from -25 up to +70 deg C.

Automatic Frequency change – New 'AFA' technology effectively kills off the problem of interference as the M880 system continuously searches for, and logs on to the 'cleanest' channel within the operating frequency band.

Contactless optical joysticks – Designed and manufactured in house, our joysticks guarantee precise handling throughout the life of the radio system, available in both stepless and stepped format.

Certified Safety – The STOP circuit on all M880 units (with exception of ARES 2C) complies with the highest European and International standards (ISO13849-1 PLe / SIL3 / Cat 4).

Joystick Style Transmitters

M880 KRON M2

The M880 KRON M2 is the latest addition to our range of joystick style transmitters and is the ideal solution for driving crawler machines guaranteeing maximum levels of safety when loading and unloading heavy machinery from trailers.



M880 ZEUS2 M2/NJ

The M880 ZEUS2 features a slightly larger panel than the KRON making it possible to accommodate additional commands in the form of joysticks, toggle switches, push buttons, key switches or potentiometers. This flexibility makes it the perfect solution for the control of small rigs (crawler movement, mast positioning, drilling etc.) and for other machines such as crushers and screeners.



M880 THOR2

The M880 THOR2 is a larger version of the ZEUS2 transmitter and can accommodate as many as 9 single axis joysticks together with up to 10 auxiliary commands. It is also available with a double battery compartment making it suitable for long, non-stop working. THOR2 is aimed at large, high complexity machines with multiple functions.



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M880 G4S BJ

The M880 G4S BJ Joystick transmitter has been specifically designed for the operator who prefers to maintain the feel of the large joysticks associated with traditional machine control. Supplied with a custom designed carrying harness the control station has the familiar look and feel of a cabin mounted control station coupled with the convenience and added safety features of a wireless control.



M880 G4 L

The M880 G4 L is a custom built range of radio transmitters for the most complex machines, with practically no limits of commands / controls possible the G4-L can be designed and produced to suit your specific requirements.



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M880 KRON / ZEUS2 / THOR2 – Standard Features



Rechargeable NiMh Batteries

Extractable, rechargeable NiMh batteries for extra long operating duration up to 22 hours continuous use between charges.



Status LED's

Coloured LED's report the status of the radio link, battery charge level and error diagnostics



PIN Code

Access PIN code can be programmed in to the transmitter to restrict use to authorised personnel



Legends

Standard arrow legends or fully customised legends with symbols or text



Emergency STOP

Mushroom Head E-Stop button featuring functional safety level PLe/SIL3/Cat4



Carrying Strap

Waist belts or shoulder straps are available for all joystick transmitters

M880 KRON / ZEUS2 / THOR2 – Options



Auxilliary commands

All KRON, ZEUS2, THOR2 & G4 joystick transmitters have space available to accommodate additional commands in the form of rotary switches, toggle switches, key switch, pushbutton or potentiometers. The number of commands which can be fitted depends on the transmitter type selected.



Load indication LED's

A standard requirement for many crane applications, particularly tower cranes, load indication LED's are a popular option, normally set to indicate 90% & 100% load status.



Add Box display

The add box display is available with all ZEUS2 & THOR2 transmitters and can be used to house additional commands or as a display screen to show load & status data received through a digital feedback link from the radio receiver.

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M880 KRON / ZEUS2 / THOR2 – Options (continued)



I-READY Infra Red Start up

An infra-red directional START operation, requires line of site between transmitter and receiver to start the system increasing safety by reducing the possibility of accidental operation.



MTRS Multi machine control

Communication between multiple transmitters and receivers allows classic tandem operations such as catch & release and pitch & catch plus many other configurations. Can be combined with our fixed radio to provide crane to crane or machine to machine communication.



Tilt Sensor

The Tilt Sensor device is a micro switch within the transmitter which is able to recognise emergency situations caused by dropping or seriously tilting the transmitter, the function of the Tilt Sensor can be customised according to customer requirements and the level of safety required. It can be set to perform a number of actions from the activation of a simple buzzer up to total cut out of the radio transmission.



Serial Cable

All of our joystick style transmitters can be equipped with a socket for serial cable connection to the receiver. The direct cable connection from transmitter to receiver overrides the radio transmission thus overcoming any issues of signal noise and allowing use in those areas where radiofrequency transmission is not permitted.



Diagnostic Tool

This tool allows you to connect the transmitter or receiver to a PC to undergo status diagnostics. The data can be viewed by means of an easy and intuitive graphical interface, and can be saved to your PC in editable format.

There are two versions of the tool :

Standard – The transmitter can be connected to the tool only via cable

Plus – In addition to cable connection, the device can be connected in wireless mode allowing diagnostics to be carried out without removing the receiver from the crane

Double Battery

This feature is available only on the THOR2 transmitter and consists of a twin battery compartment. Once the first battery reaches the 'low power' state the transmitter automatically switches to the second battery. This switch over takes place without interruption to the power supply making it the ideal solution for applications where the radio system has to operate continuously for long periods.

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M880 WAVE2 Push Button Radio Control

Technical Data

M880 Transmitting Units

Power supply	3,7VDC with Li-ion battery
Frequency band	433.05 - 434.79 MHz (69 channels)
	2,4GHz (16 channels)
Range	100 meters
Autonomy with fully charged battery (20°C ie 68°F)	≈ 25 hours with Li-ion battery
Safety performance STOP function (EN ISO 13849-1) ^a	PL e
Protection degree	IP65 (NEMA 4)
Operating and storage temperature	Operating -25°C ÷ +55°C
	Storage -40°C ÷ +85°C
Dimensions	S 72 x 42 x 190mm, L 72 x 42 x 255mm
Weight	≈ 0,235 Kg, ≈ 0,315Kg

^a depends on the configuration

M880 Battery Chargers

	CB3722
Supply Voltage (AC)	110 / 240v AC
Supply Voltage (DC)	11-30Vdc
Absorption	300mA max
Battery Type	Li-ion 3,7V
Charging Current	640mA
Max Charging Time	2 hrs 45 mins
Recommended Charging Temp	0- +35 deg C
Dimesions	130x70x25mm
Weight	110g
Degree of Protection	IP20

Compliance to Standard

IEC/EN 60950-1	EN 301 489-1	EN 301 489-1
EN 50371	EN 301 489-3	EN 301 489-3
EN 60204-32	EN 300 220-1	EN 300 220-1
EN 60529 1991+A1	EN 300 220-2	EN 300 220-2
ISO 13849-1	1999/5/CE (Directive R&TTE)	1999/5/CE (Directive R&TTE)
EN 13557/A2	2006/42/CE (Directive R&TTE)	2006/42/CE (Directive R&TTE)
EN 61000-6-2	RED Directive (2014/53/EU)	RED Directive (2014/53/EU)

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M880 Joystick Radio Control

Technical Data

M880 Transmitting Units

	ARES2	KRON	ZEUS2	THOR2	G4
Dimensions	143x143x80mm	180x107x160mm	205x150x150mm	295x180x160mm	520x430x225mm
Dimensions with display			205x150x150mm	295x180x160mm	
Weight (inc. battery)	667g	880g	1450g	2300g	4000g
Operating Range	100m				
Max number of On/Off commands	32	56	56	56	96
No of Service & Safety commands	3 (Start / Klaxon / Stop)				
Casing Material	Charged Nylon UL94 HB				
Supply Voltage	3.6 Vdc				
Absorption	95 "mA"				160 "mA"
Max supply power	0.35 W				0.30 W
Battery	NiMh	NiMh 3.6v Li-ion 2.2A/h accumulator			
Battery Life @ 20 deg C in cont. use		22 hours			13 hours
Warning notice for low battery	15 mins				
Stop command safety category	(ISO 13849-1 2006.6.2.7 architecture) Pie / SIL3 / Category 4				
Operating Frequency 1	ISM band 433.050 - 434.790 MHz, 69 channels (max power 1mW e.r.p)				
Operating Frequency 2	ISM band 433.050 - 434.790 MHz, 30 channels (max power 10mW e.r.p)				
Operating Frequency 3	2.4 GHz 16ch				
Alphanumeric LCD display (Optional)				4 rows (20 char)	
Graphic Display (optional)				128 x 64 pixel	
Buzzer	Yes				
Operating Temperature	-25 to +70 deg C				
Storage Temperature	-40 to +85 deg C				
Power Supply	Single NiMh battery (option for double battery on THOR2 only)				
Radio Transmission	Double Transmission (Single on MTRS systems)				
LEDs	Link TX, Link RX. Error code				
Degree of Protection	IP65				

M880 Battery Chargers

	CB3622	CB3722
Supply Voltage (DC)	11-30Vdc	
Absorption	400mA max	300mA max
Battery Type	NiMh 3.6V	Li-ion 3.7V
Charging Current	900mA	640mA
Max Charging Time	2 hrs 45 mins	
Recommended Charging Temp	0- +35 deg C	
Dimesions	120x80x30mm	130x70x25mm
Weight	250g	110g
Degree of Protection	IP20	

Compliance to Standard

IEC/EN 60950-1	EN 301 489-1	EN 301 489-1
EN 50371	EN 301 489-3	EN 301 489-3
EN 60204-32	EN 300 220-1	EN 300 220-1
EN 60529 1991+A1	EN 300 220-2	EN 300 220-2
ISO 13849-1	1999/5/CE (Directive R&TTE)	1999/5/CE (Directive R&TTE)
EN 13557/A2	2006/42/CE (Directive R&TTE)	2006/42/CE (Directive R&TTE)
EN 61000-6-2	RED Directive (2014/53/EU)	RED Directive (2014/53/EU)

Remote Radio Control

M880 Radio Receivers

Receiver M880 S

The **Receiver S**, thanks to its minimum size (127 x 70 147mm), can be installed in small spaces.



Technical Data

	M880 S AC	M880 S DC Harting Connector PCB415	M880 S DC DEUSCH connector PCB410
Supply voltage	24Vac (50–60HZ) 11÷30 Vdc (24 – 240V optional)	11÷30 Vdc	11÷30 Vdc
Safety control	1 safety-enable relay, 2 Stop relays	1 safety-enable relay, 2 Stop relays	1 safety-enable relay, 2 Stop relays
Max. no. of ON/OFF controls	14 relays ISO 13849-1:2006 6.2.7 architecture (PLe Cat 4)	Up to 14 MOSFET ISO 13849-1:2006 6.2.7 architecture (PLe Cat 4)	8 MOSFET ISO 13849-1:2006 6.2.7 architecture (PLe Cat 4)
	<i>or</i>	<i>or</i>	<i>or</i>
2 STOP relays	ISO 13849-1:2006 6.2.6 architecture (PLC Cat 1) (excluding ARES2 C) (excluding WAVE2 C)	ISO 13849-1:2006 6.2.6 architecture (PLC Cat 1) (excluding ARES2 C) (excluding WAVE2 C)	ISO 13849-1:2006 6.2.6 architecture (PLC Cat 1) (excluding ARES2 C) (excluding WAVE2 C)
Max. no. of analog controls	N.D.	4	N.D.
Service commands	Start, Horn	Start, Horn	Start, Horn,
Serial ports	N.D.	CAN, RS232, RS485	CAN, RS232, RS485
Analog commands	N.D.	0÷20mA, 4÷20mA, 0Vdc – (Vdc–3) with N.D. Vccmax=28Vdc, 0 ÷ ±10Vdc PWM 0÷1,4A (F=40÷150Hz F=200÷600Hz; F=600÷1000Hz), 25%–50%–75% Vcc	

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M880 Radio Receivers

RECEIVING UNIT MODEL	M880 S AC	M880 S DC Harting Connector PCB415	M880 S DC DEUSCH connector PCB410
Operating temperature	-25°C ÷ +70°C	-25°C ÷ +70°C	-25°C ÷ +70°C
Storage temperature	-40°C ÷ +85°C	-40°C ÷ +85°C	-40°C ÷ +85°C
Size (L x P x A)	127 x 70 x 147 mm	127 x 70 x 147 mm	127 x 70 x 147 mm
Weight	630 g	630 g	630 g
Serial cable between TX and RX	YES *	YES	YES *
Integrated blinklight	YES	NO	NO
External antenna	YES **	YES **	NO
Protection class	IP 66	IP 66	IP 66

* If DEUSCH no serial cable

** If Harting or DEUSCH no external antenna

Receiver M880 L

Thanks to its compact size and extreme versatility, the **M880 L receiver** is perfect for a wide range of on/off applications in AC and DC, as well as for standard proportional applications in DC, such as hydraulic cranes. It may be installed on the machine in an easy and non-invasive way.



Technical Data

RECEIVING UNIT MODEL	M880 L AC	M880 L DC
Supply voltage	24÷240Vac (50-60Hz), 30VA, max 1.2A @24Vac	11÷30Vdc, max 2A @11Vdc
Safety controls	Safety-enable relay, 2 Stop relays	Safety-enable relay, 2 Stop relays
Max. no. of ON/OFF controls	20 relays or MOSFET	20 relays or MOSFET
Mx. no. of analog controls	8	8
Service commands	Start, Horn, Timed-relay	Start, Horn, Timed-relay
2 STOP relays	ISO 13849-1:2006 6.2.7 architecture (excluding ARES2 C) (excluding WAVE2 C)	ISO 13849-1:2006 6.2.7 architecture C) (excluding WAVE2 C)
Input port	CAN, Serial	CAN, Serial
Proportional commands	N.A.	0÷20mA, 4÷20mA, 0Vdc - (Vdc-3) with Vccmax=28Vdc, 0 ÷ 310Vdc PWM 0÷1.4A (F=40÷150Hz; F=200÷600Hz; F=600÷1000Hz), 25%-50%-75% Vcc
Proportional commands	CAN (ID 11-29 bit) CANOpen (ID 11-29 bit) RS232/RS485	CAN (ID 11-29 bit) CANOpen (ID 11-29 bit) RS232/RS485
Operating temperature	-25°C ÷ +70°C	-25°C ÷ +70°C
Storage temperature	-40°C ÷ +85°C	-40°C ÷ +85°C
Size (L x P x A)	145 x 65 x 230 mm	145 x 65 x 230 mm
Protection class	IP66	IP66

Remote Radio Control

M880 Radio Receivers

Receiver M880 H

The **M880 H receiver** can be paired with transmitting units that require executing a significant number and variety of commands.



Technical Data

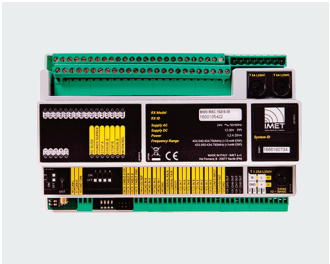
RECEIVING UNIT MODEL	M880 H AC	M880 H DC
Supply voltage	24Vac (50–60Hz), 68VA, max 2.8A 45÷240Vac (50–60Hz), 45VA, max 1,1A @45Vac	11÷30Vdc, max 4A @11Vdc, 44W
Safety control	Up to 6 safety-enable relays, 2 Stop relays	Up to 6 safety-enable relays, 2 Stop relays
Max. no. of ON/OFF controls	73 relays or MOSFET	73 relays or MOSFET
Max. no. of analog controls	32	32
Service commands	Start, Horn, Timed-relay	Start, Horn, Timed-relay
2 STOP relays	ISO 13849-1:2006 6.2.7 architecture (excluding ARES2 C) (excluding WAVE 2C)	ISO 13849-1:2006 6.2.7 architecture (excluding ARES2 C) (excluding WAVE 2C)
Input port	CAN, Serial	CAN, Serial
Proportional commands	N.A.	0÷20mA, 4÷20mA, 0Vdc - (Vdc-3) with Vccmax=28Vdc, 0 ÷ 310Vdc PWM 0÷1,4A (F=40÷150Hz; F=200÷600Hz; F=600÷1000Hz), 25%–50%–75% Vcc
Communication protocols	CAN (ID 11-29 bit) CANOpen (ID 11-29 bit) RS232/RS485	CAN (ID 11-29 bit) CANOpen (ID 11-29 bit) RS232/RS485
Operating temperature	-25°C ÷ +70°C	-25°C ÷ +70°C
Storage temperature	-40°C ÷ +85°C	-40°C ÷ +85°C
Size (L x P x A)	205 x 130 x 280 mm	205 x 130 x 280 mm
Protection class	IP66	IP66

Remote Radio Control

M880 Radio Receivers

Receiver M880 M AC

Thanks to its compact size and extreme versatility, the **M880 L receiver** is perfect for a wide range of on/off applications in AC and DC, as well as for standard proportional applications in DC, such as hydraulic cranes. It may be installed on the machine in an easy and non-invasive way.



Technical Data

RECEIVING UNIT MODEL	M880 M AC
Supply voltage	MAC:12–30 Vdc / 24 Vac (50–60 Hz)
Safety controls	2 STOP, 1 Safety-Enable
Max. no. of ON/OFF controls	24 relays (20 N.O: and 4 N.C. /N.O.)
Max. no. of analog controls	4
Service commands	Start, Lamp, (Between 24 relays)
2 STOP relays	ISO 13849-1:2006 6.2.7 architecture n(excluding ARES2 C) (excluding WAVE2 C)
Input port	CAN, Serial 232, 485
Proportional commands	0÷20mA, 4÷20mA, 0Vdc – (Vdc-3) with Vccmax=28Vdc, 0 ÷ 310Vdc 25%-50%-75% Vcc
Communication protocols	CAN (ID 11-29 bit) CANOpen (ID 11-29 bit) RS232/RS485
Operating temperature	-25°C ÷ +70°C
Storage temperature	-40°C ÷ +85°C
Size (L x P x A)	180 x 73 x 120 mm
Protection class	IP20

ATEX Certified Receiving Unit

Device of group II. Device designed for environments in which explosive atmospheres may occur;
High protection level: category 2. Intended for use in enviroments in which explosive atmospheres may occur due to gases, vapours, mists or ir and dust mixtures;
Protection system for potentially explosive gases and dusts. The device remains powered and keeps operating in zones 1, 2 (G) e 21, 22 (D);
Explosion-proof housing;
Temperature class 85°C;
 Fully protected against dust and powerful water jets (IP66);
 Case equipped with a 1" IOS7/IRC and ¾" IOS7/IRC barrier for reinforced cables with specifications: ATEX Ex II2GD Exd II C IP 66;
 Operating radius 70 m without obstacles.

