Remote Radio Control

M880 Radio Control for Overhead Cranes & Electric Hoists

Application

Radio Remote Controls are fast becoming the control method of choice for the vast majority of overhead crane and electric hoist manufacturers and operators alike. 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.

Large push buttons – extra large push buttons on all WAVE2 transmitters for ease of use even when wearing industrial gloves.

Extreme Environments – Transmitters & 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 complies with the highest European and International standards (ISO13849–1 PLe / SIL3 / Cat 4).

Push Button Transmitters

M880 WAVE2

The WAVE2 Transmitter is available in two sizes, WAVE2 S with 4, 6 or 8 functions + start + E–Stop, and WAVE2 L which features 10 or 12 functions + start + E–Stop.

M880 WAVE2 S

The M880 WAVE2 S transmitter has been introduced to build on the huge success of its predecessor, the M550 WAVE S and is the ideal solution for the majority of standard hoists and overhead cranes. The function buttons (4,6 or 8) are all double pressure as standard, in addition a green start button and red, mushroom head E–Stop button are fitted as standard.

M880 WAVE2 L

The M880 WAVE2 L transmitter increases the possibilities of the smaller WAVE2 S with additional function buttons. WAVE2 L is available with either 10 or 12 double pressure buttons in addition to the standard start and E–Stop buttons.

In addition to the standard function buttons, all M880 WAVE2 transmitters have space for an additional auxiliary command (rotary switch, toggle switch, key switch, pushbutton or potentiometer). WAVE2 S transmitters with 4 or 6 buttons and WAVE2 L units with 10 function buttons can also be fitted with a digital display screen to display information via a digital feedback system from the radio receiver.

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Remote Radio Control
M880 Radio Control for Overhead Cranes & Electric Hoists

Other standard features on WAVE2 transmitters include LED's to report on status of radio link and battery condition, these LED's are also used to transmit error codes for fault diagnosis enabling us to help get you working again quickly in the unlikely event of a system failure.

Please see the following pages for more information on standard and optional features on M880 WAVE2 radio transmitters.

WAVE2 Transmitter Range

WAVE2 L
Weight: 445g
Dimensions: 75 x 43 x 245 mm

WAVE2 S
Weight: 375g
Dimensions: 75 x 43 x 180 mm

Push Button Transmitters

Standard Features

EXTRACTABLE LI–ION BATTERY
Extractable rechargeable Li–ion batteries for extra long duration.

STATUS LEDs
Coloured LEDs report the status of the radio link, the battery charge level and make the diagnosis of anomalies.

PIN CODE
Access PIN code can be programmed to restrict the use to authorised personnel.

LEGENDS
Clear and wide push button legends with the possibility of fully customized symbols.

STOP
Mushroom head STOP button featuring functional safety level PLe/SIL3/Cat4.

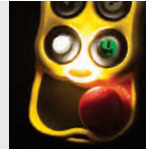**CARRYING BELTS**
Comfortable carrying belts

Options

DATA FEEDBACK
Data feedback on 64X102 pixels graphic display and 4 LEDs.

BEACON
Keypad illumination for operations in the darkness or torch. Can be combined with a light sensor.

I–READY
An infrared directional START operation guarantees the right machine has been picked up.

MTRS (Multi Transmitter Receiver System)
Allows the classic Tandem, Catch–Release, Master–Slave working modes and many other configurations demanding the logging in and out capability.

DIAGNOSIS TOOL
Produced by IMET, the tool lets you connect the transmitter or receiver to undergo diagnosis to a PC. The data may be visualised bymeans of an easy and intuitive graphic interface and then be saved on your PC in editable format.

There are 2 versions
• Standard: the transmitter can be connected to the tool only via cable.
• Plus: besides the cable connection, the device can be connected in wireless mode. This way the diagnosis and programming tasks can be performed without having access to the connector on the device (eg. the RX is positioned at the top of a tall crane).
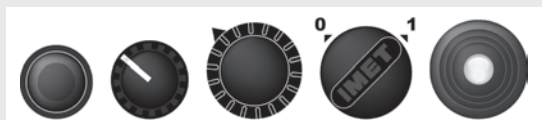
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Remote Radio Control
M880 Radio Control for Overhead Cranes & Electric Hoists

Large choice of Optional Auxiliary Commands

- Toggle switch
- Potentiometer
- Push button
- Key switch
- Rotary switch

Battery Charger Batteries

Fast charger and high capacity Li–ion batteries

Joystick Style Transmitters

M880 KRON B2

The M880 KRON B2 is the latest addition to our range of joystick style transmitters, designed to provide a competitive solution to the issue of true proportional control from frequency inverter drives on standard cranes, the KRON transmitter features two twin direction joysticks which can be either standard multi step, or 0–10v proportional in addition to standard start and E–Stop buttons. In addition a maximum of three auxiliary function commands can be accommodated.

M880 ZEUS2 B2

The M880 ZEUS2 B2 offers greater flexibility with additional space on the transmitter panel allowing for as many as 8 additional auxiliary commands in addition to the two twin direction joysticks and start and E–Stop buttons. Like the KRON, joysticks can be multi step or true proportional (0–10v) for accurate control of crane motions featuring frequency inverter drives.

M880 THOR2 B3 & B4

The M880 THOR2 is our largest and most flexible transmitter for overhead cranes, the B3 model has space for three twin direction joysticks (multi step or proportional) and up to ten additional auxiliary commands in addition to standard start and E–Stop buttons THOR2 B3 offers a control solution for most large, complex cranes. For those rare instances where three joysticks is not enough, THOR2 B4 offers all the advantages of the B3 but with four twin direction joysticks.

Other standard features on all of our joystick transmitters include LED's to report on status of radio link and battery condition, these LED's are also used to transmit error codes for fault diagnosis enabling us to help get you working again quickly in the unlikely event of a system failure.

Please see the following pages for more information on standard and optional features on M880 ZEUS2 & THOR2 radio transmitters.

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Remote Radio Control
M880 Radio Control for Overhead Cranes & Electric Hoists

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 off 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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Remote Radio Control
M880 Radio Control for Overhead Cranes & Electric Hoists

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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Remote Radio Control
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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Remote Radio Control
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		
Aiphanumeric 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)

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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 Conector 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)
	or	*or*	*or*
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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Remote Radio Control
M880 Radio Receivers

RECEIVING UNIT MODEL	M880 S AC	M880 S DC Harting Conector 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.
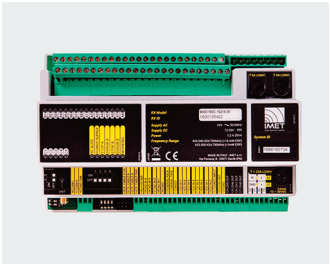
Technical Data

RECEIVING UNIT MODEL	M880 H AC	M880 H DC
Supply voltage	24Vac (50–60Hz), 68VA, max 2.8A	11÷30Vdc, max 4A @11Vdc, 44W
	45÷240Vac (50–60Hz), 45VA, max 1,1A @45Vac	
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	ISO 13849–1:2006 6.2.7 architecture
	(excluding ARES2 C)　　(excluding WAVE 2C)	(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)	CAN (ID 11–29 bit)
	CANOpen (ID 11–29 bit)	CANOpen (ID 11–29 bit)
	RS232/RS485	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

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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" IOS7/1RC and ¾" IOS7/1RC barrier for reinforced cables with specifications: ATEX Ex ll2GD Exd ll C IP 66;
Operating radious 70 m without obstacles.

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