

# Remote Radio Control

## M880 Radio Control for Concrete Pumps

### Application

Radio Remote Controls are fast becoming the control method of choice for the vast majority of concrete pump applications. 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).

## Toggle Switch Style Transmitters

### M880 ARES2

The ARES Toggle switch style transmitter is available in two versions, the ARES2 C and ARES2 E, the only difference being the safety category of the STOP circuit. ARES2 C is a very competitive solution for all non safety critical applications whereas ARES2 E has a STOP circuit complying with the highest European and international standards.

### M880 ARES2 C

The ARES2 C has been designed to suit a wide range of applications requiring a limited number of digital and analogue functions operated by simple toggle switches, pushbuttons, rotary switches or potentiometers. Up to four switches can be accommodated and ease of use is guaranteed even when wearing heavy industrial gloves due to the attention paid to the transmitter panel layout. ARES2 C features a STOP circuit safety level of PLc / SIL1 / Cat2 for all NON-SAFETY critical applications.



### M880 ARES2 E

The M880 ARES2 E transmitter is identical to ARES2 C in all respects but with the addition of a mushroom head EMERGENCY STOP button which provides a STOP circuit level of PLe / SIL3 / Cat4 complying with the highest European and international standards.



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### 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

#### 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 tower 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.

Other standard features on WAVE2 transmitters include LEDs to report on status of radio link and battery conditions, these LEDs 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.

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### 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



**Large choice of Optional Auxiliary Commands**

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

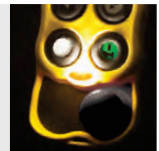


#### Options

**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 by means 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).

**Battery Charger Batteries**

Fast charger and high capacity Li-ion batteries



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### Joystick Style Transmitters

#### 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 concrete pumps, 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 machines. 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.

### 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

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### 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 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.



#### 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.



#### 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



#### 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.

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### M880 KRON / ZEUS2 / THOR2 - Options (continued)



#### 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.

#### 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.

### M880 Receiving Units



'L'  
Weight: 1700g  
Dimensions: 140 x 65 x 230 mm



'H'  
Weight: 3500g  
Dimensions: 205 x 130 x 280

The new range of M880 Radio systems includes a total of four new receiver units, the M880 Lac and Ldc are the most popular and cost effective units, housing a maximum of 20 relays or MOSFETS they are suitable for use with the full range of transmitters and flexible enough to cover a large percentage of tower crane applications.

Where the 20 relays of the type L receiver are not sufficient then the Hac and Hdc receivers come in to their own, configurable with a maximum of 73 relays or MOSFETS there are very few crane applications that can not be accommodated by a combination of the H receiver and one of our range of radio transmitters.

All receiving units in the M880 range are encased in solid and robust enclosures with a protection rating of IP66 making them suitable for indoor and outdoor use

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### Technical Data

#### M880 Transmitting Units

	ARES2	WAVE2-S	WAVE2-L	KRON	ZEUS2	THOR2
Dimensions	143x143x80mm	190x72x42mm	255x72x42mm	180x107x160mm	205x150x150mm	295x180x160mm
Dimensions with display		190x72x42mm	255x72x42mm		205x150x150mm	295x180x160mm
Weight (inc. battery)	667g	235g	315g	880g	1450g	2300g
Operating Range	100m					
Max number of On/Off commands	32	32	32	56	56	56
No of Service & Safety commands	3 (Start / Klaxon / Stop)					
Casing Material	Charged Nylon UL94 HB					
Supply Voltage	3.6 Vdc					
Absorption	95 "mA"					
Max supply power	0.35 W					
Battery	NiMh	3.7v Li-ion		3.6v Li-ion 2.2A/h accumulator		
Battery Life @ 20 deg C in cont. use	22 hours					
Warning notice for low battery	15 mins					
Stop command safety category	(ISO 13849-1 2006.6.2.7 architecture) Pie / SIL3 / Category 4 (except ARES2 C)					
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)	-	2 rows (16 char)	2 rows (16 char)	-	4 rows (20 char)	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 Receiving Units

	L-AC / L-DC	H-AC / H-DC
Supply Voltage (AC)	24 – 240Vac (50–60Hz) 30VA 1.2A max @ 24Vac	24Vac (50–60Hz) 68VA 2.8A max 24 – 240Vac (50–60Hz) 45VA 1.1A max @ 45Vac
Supply Voltage (DC)	11 – 30Vdc 2A max @ 11Vdc	
Safety Commands	Safety enable relay, 2 stop relays	
Max number of On/Off commands	up to 20 relays or MOSFETS	up to 73 relays or MOSFETS
Max number of Analogue commands	8	32
Service commands	3 (Start / Klaxon / Stop)	
Stop command safety category	(ISO 13849-1 2006.6.2.7 architecture) Pie / SIL3 / Category 4 (except ARES2 C)	
Input port	CANBUS / Serial	
Proportional commands	0–20mA, 4–20mA 0Vdc with veemax – 28Vdc 0- +/-10Vdc	
Communication protocol	CAN (ID 11–29 bit) CANOpen (ID 11–29 bit) RS232 / RS485	
Operating Temperature	-25 to +70 deg C	
Storage Temperature	-40 to +85 deg C	
Degree of Protection	IP66	

#### 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)