

## Remote Radio Control

### M880 Radio Control for Sewage Cleaners and Vacuum Pumps

#### Application

Radio Remote Controls are increasingly becoming the control method of choice for the vast majority of sewage cleaner and vacuum 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 applications. 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 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.

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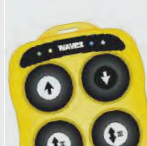
### Push Button Transmitters

#### Standard Features

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



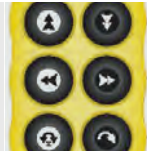
**STATUS LEDs**  
Coloured LEDs report the status of the radio link, the battery charge level and make the diagnosis of anomalies.



**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.

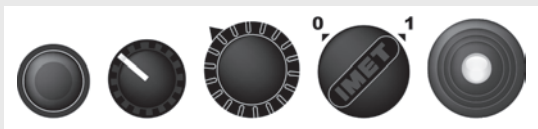


**CARRYING BELTS**  
Comfortable carrying belts



#### Large choice of Auxiliary Commands

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

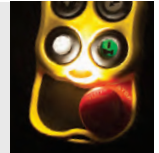


#### Options

**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



# Remote Radio Control

## M880 Radio Control for Sewage Cleaners and Vacuum Pumps

### Joystick Style Transmitters

#### M880 KRON NJ

The M880 KRON NJ is the latest addition to our range of joystick style transmitters and has been designed to provide a competitive solution for applications requiring a maximum of 6 toggle switches or push buttons in addition to standard start and E-Stop buttons.



#### M880 ZEUS2 NJ

The M880 ZEUS2 NJ features a larger panel which can accommodate up to 12 toggle switches, push buttons or potentiometers. It can also be fitted with a connector for a high pressure lance. This unit allows the operator to control vacuum pump activation, hose reel winding, water pressure and flow, high pressure / suction mode selection and a number of other functions.



#### M880 ZEUS2 B2

The M880 ZEUS2 B2 features all the advantages of ZEUS NJ but in a different format with two double axis joysticks offering greater control of functions such as control of a hose reel boom.



#### M880 THOR2 B2

The M880 THOR2 B2 is our largest transmitter for sewage cleaner and vacuum pump applications and is able to accommodate sufficient function controls to meet the requirements of any type of sewage vehicle regardless of its complexity. This unit allows the operator to control vacuum pump activation, hose reel winding, hose boom operation, water pressure and flow, high pressure / suction mode selection and any number of other functions.



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.

# Remote Radio Control

## M880 Radio Control for Sewage Cleaners and Vacuum Pumps



### 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.

# Remote Radio Control

## M880 Radio Control for Sewage Cleaners and Vacuum Pumps

### 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.

# Remote Radio Control

## M880 Radio Control for Sewage Cleaners and Vacuum Pumps

### M880 Receiving Units



Weight 1700g  
Dimensions 140 x 65 x 230mm



Weight 3500g  
Dimensions 205 x 130 x 280mm

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 applications.

Where the 20 relays of the type L receiver are not sufficient then the Hac & Hdc receivers come in to their own, configurable with a maximum of 73 relays or MOSFETS there are very few 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

# Remote Radio Control

## M880 HAC / M880 HDC / M880 LAC / M880 LDC Receivers

### Technical Data

#### M880 HAC / M880 HDC Receivers

Dimensions & weight	M880 HAC / HDC 205 x 130 x 280 (3500g)
Power supply (M880 AC type)	45 - 240 Vac (50-60 Hz)
Absorbed power	45 VA max
Power supply (M880 DC/AC type)	11 - 30 Vdc 24 Vac
Absorbed power	44 W max. 68 VA max
Operating temperature range	-25 to +70°C (-13 to 158° F)
Casing protection	IP66
Safety enable (N/O) relay(s)	8 (ISO 13849-1:2006 6.2.6 architecture)
STOP relays (N/C & N/O)	8 (ISO 13849-1:2006 6.2.7 architecture)
Timed relay	1
Horn output	1
Feedback	
Serial LCD data	> 100 Bytes/sec
Digital ON/OFF commands	128 max.
Diagnostics	By means of status LED/display or through interface to PC using specific IMET equipment
Analogue inputs	12 Voltage (0 - 10VDC) Current (4/20mA, 0/20 mA)
Digital inputs	8 0/24 VDC optoisolated
Outputs	
Max number of control relays	
Max number of control relays (N-O/N-C)	ON/OFF - 128 max relay (AC or DC) or MOSFET (DC) ANALOGUE 32 max
Serial communication interfaces	(Proportional PWM/Analogue current/Analogue voltage) RS232 or RS485 (max 115200 Baud) CAN_Bus (ID 11-29 Bit) {1 Mbit/s max} CANOpen (ID 11-29 Bit) {1 Mbit/s max} Other types on request

#### M880 LAC / M880 LDC Receivers

Dimensions & weight	M880 LAC / LDC 140 x 65 x 230mm (1700g)
Power supply (M880 LAC type)	24-55 Vac / 100-240 Vac (50-60 Hz)
Absorbed power	30 VA max
Power supply (M880 LDC type)	11 - 30 Vdc
Absorbed power	22 W max
Operating temperature range	-25 to +60°C (-13 to 140° F)
Casing protection	IP66
Safety enable (N/O) relay(s)	1 (ISO 13849-1:2006 6.2.6 architecture)
STOP relays (N/C & N/O)	2 (ISO 13849-1:2006 6.2.7 architecture)
Timed relay	1
Horn output	1
Feedback	
Serial LCD data	> 100 Bytes/sec
Digital ON/OFF commands	128 max.
Diagnostics	By means of status LED/display or through interface to PC using specific IMET equipment
Analogue inputs	4 Voltage (0 - 10VDC) Current (4/20mA, 0/20 mA)
Digital inputs	8 0/24 VDC optoisolated
Outputs	
Max number of control relays	20
Max number of control relays (N-O/N-C)	4 (with relay board mods RLC) 14 (with relay board mods RDC)
Max number of service relays	3 (start, klaxon and t-relay)
Max number of DC command drivers	20 (MOSFET)
Number of analogue outputs	8 proportional (PWM) analogue current and/or voltage
Serial communication interfaces	RS232 (max 115200 Baud) CAN_Bus (ID 11-29 Bit) {1 Mbit/s max} CANOpen (ID11-29 Bit) {1 Mbit/s max}



# Remote Radio Control

## M880 Transmitters

### Technical Data

#### KRON, ZEUS2, THOR2, AREAS2, G4L & G4S Joystick Transmitters

	KRON	ZEUS2	THOR2	ARES2	G4L	G4S
Dimensions	180x107x160mm	205x150x150mm	295x180x160mm	143x80x143mm	430x225x180mm	265x185x165mm
Dimensions with LCD display		205x205x150mm	295x250x165mm			
Weight (inc. battery)	880g max	1450g max	2300g max	667g max	4000g max	1950g max
Power supply	3.6 VDC					
Battery	Ni - MH 3.6V					
Low battery notification time	15 minutes					
Operating temperature range	-25 to 55°C (-13 to +131° F)					
Casing protection	IP65					
Safety categories ISO 13849-1	STOP circuit PLc Cat4 ISO 13849-1:2006 6.2.7 architecture with 5A fuse Joysticks PLd Cat3 ISO 13849-1:2006 6.2.7 architecture with 5A fuse Push button and toggle switch commands PLc Cat2 ISO 13849-1:2006 6.2.7 architecture					
Status indicator/diagnostic LEDs	Green - power ON Yellow - diagnostic Blue - LINK status					
Commands/outputs	56 maximum					
Number of panel indicators	16 maximum					
Number of ON/OFF commands	56 maximum					
Number of analogue commands	16 (19) maximum					
Max UMFS commands up to PLd Cat3	16 (ISO 13849-1:2006 6.2.6 architecture)					
Display (optional extra)	Graphic backlight LCD 102x64 / 128x64 / 160x64 pixels monochrome QVGA 3.5" colour TFT					
Beeper in transmitter	Internal buzzer					
Backlit panel	Optional					
Serial lines	RS232 or RS485 CAN					
Optional extras	Wired control cable Dead man function IREADY infra red start up					

#### WAVE2 Push Button Transmitters

	M880 WAVE2 S6/S8	M880 WAVE2 L10/L12
Dimensions and weight (inc. battery)	72x42x190mm (235g)	72x42x255mm (315g)
Power supply	3.7 VDC	
Battery type	Li - ion 3.7V	
Low battery notification time	15 minutes	
Operating temperature range	-25 to 55°C (-13 to +131°F)	
Casing protection	IP65	
Safety categories ISO 13849-1	STOP circuit PLc Cat4 ISO 13849-1:2006 6.2.7 architecture with 5A fuse	Push button & toggle switch commands PLc Cat2 ISO 13849-1:2006 6.2.7 architecture
Status indicator/diagnostic LEDs	Green - Power ON Yellow - Diagnostic Blue - LINK status	
Commands/outputs	56 maximum	
Number of panel indicators	16 maximum	
Number of ON/OFF commands	56 maximum	
Number of analogue commands	16 (19) maximum	
Max UMFS commands up to PLd Cat3	16 (ISO 13849-1:2006 6.2.6 architecture)	
Display (optional extra)	Graphic backlight LCD 102x64 / 128x64 / 160x64 pixels monochrome QVGA 3.5" colour TFT	
Beeper in transmitter	Internal buzzer	
Backlit panel	Optional	
Serial lines	RS232 or RS485 CAN	
Optional extras	Wired control cable Dead man function IREADY Infra Red start up	