



...no limits
of application!

EN

TRANSMITTING UNIT

M550 WAVE S

The pushbutton radio type M550 **WAVE S** range is available with 4, 6 or 8 double-step pushbuttons for the movement commands. In addition, and always present is a Start/Klaxon button and a STOP mushroom-head button. The radio remote also has space for one optional command which can be a multi-position rotary switch, a single-step button or an analogue potentiometer.

IMET have paid special attention to the ergonomic design of the **WAVE** transmitter bearing in mind the practical aspects of compact overall size, large pushbuttons suitable for operations with gloves, easy access and protected STOP button. This make the **WAVE S** an ideal tool for the control of hoists, overhead cranes and small tower cranes. The possibility of customisation extends the possible uses of this type of transmitter to a large variety of machines equipped with on/off control boxes whether AC or DC powered.



Dimensions
75 x 43 x 180 mm

Weight
375 g



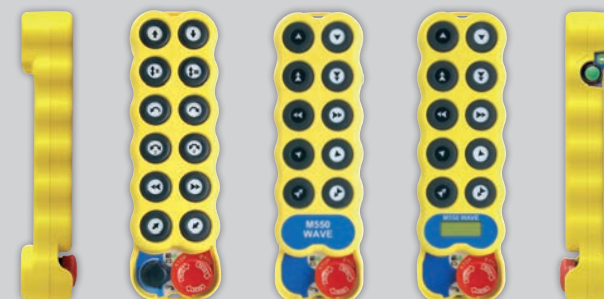
M550 WAVE L

The pushbutton radio M550 **WAVE L** range is available with either 10 or 12 double-step pushbuttons for the movement commands in addition to the standard Start/Klaxon button and STOP mushroom-head button. The model M550D **WAVE L10** can be equipped with a 8+8 digit LCD screen for the displaying of machine status information (using data feedback option). As with the **WAVE S**, the transmitter has space for an optional command which can be a multi-position rotary switch, a single-step button or an analogue potentiometer. This makes the **WAVE L** a natural choice for the control of overhead cranes equipped with additional functions such as auxiliary hoist, grabs, magnets, etc. and medium size tower cranes. The possibility of customisation again extends the possible uses of this type of transmitter to a large variety of machines equipped with on/off control boxes whether AC or DC powered.



Dimensions
75 x 43 x 245 mm

Weight
445 g



TRANSMITTING UNIT

M550 ARES C

The **ARES C** is an extremely compact transmitter designed for applications requiring a limited amount of digital and analogue functions operated by toggle switches, pushbuttons, rotary switches and potentiometers such as forestry winches, pumps and many other machinery. **ARES C** puts great attention to the easiness of use, including the situations in which the operator wears gloves, thanks to the well dimensioned command actuators and their rational spacing. For the carrying, the housing is equipped with a robust belt-clip. **ARES C** features a **STOP** command in category PLc/CAT2 (ISO 13849:1), SIL1 (IEC 62061) and it can be combined with any of **IMET** receivers, for delivering on/off, proportional or **CAN** outputs according to the machine specifications. **ARES** housing have been designed to operate in the most demanding sectors as indicates the **IP65** protection degree.



8

Dimensions
75 x 180 x 43 mm

Weight
375 g



M550 ARES E

The **ARES E** is an extremely compact transmitter designed for applications requiring a limited amount of digital and analogue functions operated by toggle switches, pushbuttons, rotary switches and potentiometers such as forestry winches, concrete pumps, lifting and material handling machines and many others. **ARES E** puts great attention to the easiness of use, including the situations in which the operator wears gloves, thanks to the well dimensioned commands and their rational spacing. For the carrying, the housing is equipped with a robust belt-clip. **ARES E** features a **STOP** command in category PLc/CAT4 (ISO 13849:1), SIL3 (IEC 62061) and it can be combined with any of **IMET** receivers, for delivering on/off, proportional or **CAN** outputs according to the machine specifications. **ARES** housing has been designed to operate in the most demanding sectors as indicates the **IP65** protection degree.



9

Dimensions
75 x 180 x 43 mm

Weight
375 g



TRANSMITTING UNIT

M550 ZEUS B2

The **ZEUS B2** transmitter combines the advanced ergonomic design and functional features required in standard application fields such as tower cranes, factory cranes, small concrete pumps, high pressure and vacuum pump vehicles and any other kind of machine for which double-axis joysticks represent the ideal type of movement command.

The **ZEUS B2** console has a compact size but nevertheless it reserves ample space for on/off and proportional commands making it an easily customisable transmitter for special applications.



10



Dimensions

212 x 133 x 147 mm
212 x 169 x 147 mm

Weight
1090 g



M550 ZEUS M6

The **ZEUS M6** transmitter utilises the same transmitter body as the B2, combined with specially designed proportional joysticks for applications such as hydraulic proportional cranes, telescopic handlers, crawler vehicles and any other kind of machine for which single-axis joysticks represent the ideal type of movement command. The **ZEUS M6** console has a compact size but again, reserves plenty of space for additional on/off and proportional commands making it an easily customisable transmitter for special applications



11



Dimensions

296 X 152 X 147 mm
296 X 190 X 147 mm

Weight
1450 g



TRANSMITTING UNIT

M550 ZEUS NJ

The transmitter **ZEUS NJ** has been developed for use with high complexity machines where proportional potentiometers, push-buttons and selector switches represent the ideal types of movement commands. The spacious console has room for a large number of commands making **ZEUS NJ** flexible and customizable for complex AC and DC powered applications.



12



Dimensions

212 x 133 x 147 mm
212 x 169 x 147 mm

Weight
1090 g



M550 THOR B3

The **THOR B3** transmitter has been designed for use with a vast range of complex and high integrity machines, such as, 4-5 booms concrete pumps, full accessory equipped factory cranes, 6 functions hydraulic cranes, special tower cranes, drilling and tunnelling machines. In addition to the 3 double axis joysticks, the extra wide **THOR** console has capacity for several on/off and proportional commands making it an easily customisable transmitter for special applications whether AC or DC powered.



13



Dimensions

296 X 152 X 147 mm
296 X 190 X 147 mm

Weight
1450 g



M550 THOR B4

The **THOR B4** transmitter is similar to the B3, but with the addition of a fourth, double axis joystick. This makes it an ideal system for High Integrity factory cranes, 7-8 functions hydraulic cranes, crawler lifting machines and other special machines. In addition to the 4 double axis joysticks, the **THOR** console has space available for several on/off and proportional commands making it an easily customisable transmitter for special applications whether AC or DC powered.



14

Dimensions
296 X 152 X 147 mm
296 X 190 X 147 mm
Weight
1550 g



M550 THOR M8

The **THOR M8** transmitter is equipped with up to 8 single-axis joysticks and is specifically designed for machines moved by proportional electro-hydraulic valve banks such as, 7-8 functions hydraulic cranes, crawler lifting machines and other special machines. In addition to the 8 single axis joysticks, the very wide **THOR** console has room for several on/off and proportional commands making it an easy to customise the system for complex DC powered applications.



15

Dimensions
296 X 152 X 147 mm
296 X 190 X 147 mm
Weight
1450 g



M550 THOR NJ

The **THOR NJ** transmitter is intended for use on machines with high complexity where proportional potentiometers, push-buttons and selector switches represent the ideal types of movement commands. The very wide console has room for an incredible number of commands making **THOR NJ** very flexible and customisable for complex AC and DC powered applications.



Dimensions
296 X 152 X 147 mm
296 X 190 X 147 mm

Weight
1400 g

M550 M8

The **M8** transmitter is designed for mounting on a DIN rail, and is the ideal solution for applications requiring wireless transmission for on/off and/or proportional commands coming from sensors or RS485 port. The DIN rail mounted transmitter should be placed inside a control box for clean and trouble free installation, and is supplied complete with an external antenna for the radio communication. In addition to the 21 on/off + 4 proportional commands, Start, Stop and Frequency Change input are available as for traditional radio control commands. The double transmission version can manage the feedback information displaying it on a LCD screen or activating some transmitter built in relays.



Dimensions
180 x 120 x 73 mm

Weight
910 g

...NO LIMITS...



18



SAFETY RING

IMET introduces an innovative “zone limiter” based on ultrasonic technology. The system creates a 3D ultrasonic zone around the machine by mean of sensors placed in appropriate positions. Colored status led's built-in the transmitter continuously indicate the operator's position in relation to that zone. The radio remote control working mode can then be conditioned to its position; for example some commands may be active outside the zone and inhibited inside the zone.

19



GREEN LED ON = the operator is inside the safety ring.

FLASHING GREEN LED = the operator is moving out of the safety ring.

RED LED ON = the operator is outside the safety zone.



ATEX certified Receiving Unit

Group II

Electrical apparatus for other places liable to be endangered by explosive atmospheres.

Category 2: High level of protection

Comprises products designed to be capable of remaining within their operational parameters in areas in which explosive atmospheres caused by mixtures of air and gases, vapours, mists or air/dust mixtures are likely to occur

Protection system against gas and dust

Equipment remains energised and functioning in Zones 1, 2 (G) and/or 21, 22 (D)

Temperature class 85°C

The receiver is completely protected against dust and water jets (IP66);

Housing ready for 1" cable guide IOS7/1RC et ¾" IOS7/1RC shield for shielded cable with specification: ATEX Ex II2GD Exd II C IP66; Range, without obstacles, 70m.



20



DATA FEEDBACK

This option enables the indication of crane or machine information, error messages and warnings on the control panel ensuring a higher level of safety and operating comfort.

Graphical display

Backlit, 128X64 pixel resolution, most feedback information available, texts, legends.



Cable control (radio by pass)

ZEUS and THOR units can be equipped with cable control. By plugging in the cable a direct data connection between transmitter and receiver is established. The radio transmission is disabled and the power supply of the transmitter is provided through the cable.

Dynamic Speed Control



Dynamic Speed Control introduces an extra control of the proportional functions when operating in "slow speed" mode. DSC+ and DSC- activations adjust the basic settings in order to adapt the machine response to the specific working conditions. DSC is useful especially for those machines equipped with an hydraulic distributor that is not pressure compensated.

21

Multi Transmitters Receivers configurations



This option is the answer for those applications demanding some machines to be shared by several operators through a safe procedure of "loggin-in" and "loggin-out". In an MTRS system, the receiving units can be logged-in and logged-out by up to 8 different transmitting units. On the other side, each transmitter can operate with up to 16 different receivers. MTRS and MTRS Easy options are available with the complete range of IMET transmitters and receivers.

RECEIVING UNIT

IMET transmitting units can be matched to 4 models of receivers. The **L** and **H** types have IP65 housings, for outdoor installation, while the **M** type features a housing ready for Din rail mounting inside the machine electric control box. The **M550 K** receiver, which also features a protection level of IP65, is dedicated to machines controlled by **CAN BUS** network. The available IP65 receiver output connections are: cable clamp, multipole connector fixed on the box, external wiring and multipole plug for connection to the machine. The **M** type receiver is equipped with a terminal block output connector. All **IMET** receivers have a Category 4/PL e STOP circuit, and the presence of the Safety-Stop relay adds one level to the category of the movement commands reaching CAT2 and 3/PL d (not valid for bus commands). LED Lights, visible from outside the receiver indicate the system status. The special composite material used for the housings provides a high level of shock resistance and thermo-mechanical stability.

The **M550 L** is the most common receiver for standard applications, its compact size and high versatility make it ideal for situations where space constraints are an issue. It is the natural receiver type for on/off application in VAC and VDC and for standard application requiring proportional outputs in VDC such as hydraulic cranes. The LAC receiver accepts a wide range of supply voltages (24÷230VAC) and it is equipped with 20 relays for the movement commands in addition to the Start, Stop and Safety Stop outputs. The LDC receiver can be supplied with 12÷28VDC. It is available in two versions: with 16 relays for the movement commands or with 20 solid state on/off + 8 proportional outputs for the movement commands in addition to the Start, Stop, Safety Stop and Timed Stop outputs.

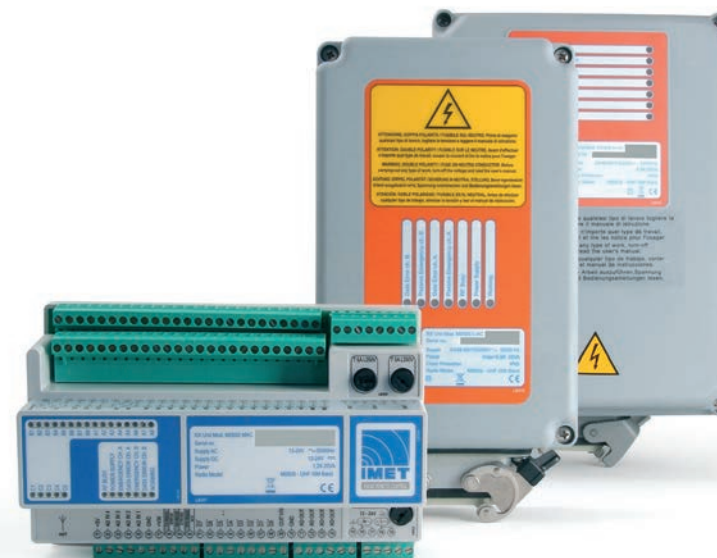
The **M550 H** receiver is ready for the most complex configurations. Its modular structure allows it to be equipped it with up to 48 relays or 38 relays + 8 proportional outputs in addition to the Start, Stop, Safety Stop and Timed Stop outputs. The data feedback option is guaranteed by mean of half-duplex radio modules.

This receiver is the common partner for transmitting units having a large number and variety of commands. The HAC receiver can be powered with 24 to 230VAC while the HDC accepts 12 to 28 VDC.

The **M550 M** receiver has been developed for Din rail mounting inside electrical control panels. The outputs are available on practical extractable terminal blocks. This kind of receiver has 21 relays + 4 proportional outputs. It can be equipped with half-duplex radio modules for the data feedback option. M550 M is supplied with an external antenna plugged on BNC connector. The power supply can range between 12 and 28 VAC/DC.

The **M550 K** receiver is equipped with a field bus output, CAN type, for the movement commands. The CAN bus output is directly coupled to the machine bus network and the communication is established through a specific protocol. Traditional relay outputs are present for Start, Stop, Safety-Stop and Timed-Stop functions.

The M550 K receiver can be DC powered (12÷28VDC).



M
Dimensions
180 x 120 x 73 mm

Weight
910 g

L / K
Dimensions
145 x 225 x 65 mm

Weight
1700 g

H
Dimensions
205 x 280 x 130 mm

Weight
3500 g

General data

Working frequency	I.S.M Band 434.050 ÷ 434.775 MHz
Reference norms	ETSI EN 300 220-3 V 1.1.1
Channel spacing	25 KHz Simplex, (25 KHz Half Duplex)*
Number of P.L.L. programmable radio channels	30
Range	≈ 100 m
Modulation	GMSK
Emission power of the R.F. system	10 mW ERP (Antenna Interna)
RF receiver type	Supertherodine IF 83.16 MHz - 455 KHz*
Receiver sensibility	0,22µV per 12 dB Sinad
Emission class	25K0F1D
Hamming distance	≥ 9
Error non-detection probability	< 7.34 x 10 ⁻¹²
Delay time on receiver start	< 3 s
Available pairing addresses	65536
Delay time on the start command	< 750 ms
Response time of commands	< 110 ms, < 120 ms*
Response time of active emergency	< 150 ms, < 220 ms
Response time of passive emergency	< 800 ms
Safety category of STOP command	PLc cat.4/SIL3 (ISO 13849-1/EN 62061) A-W-Z-T / PLd cat.3/SIL 2 (ISO 13849-1/EN 62061) M
Safety category of movement commands	PLd cat.3/SIL 2 (ISO 13849-1/EN 62061) T-Z / PLc cat.2 / SIL 1 (ISO 13849-1/EN 62061) A-W-M
Safety category of datafeedback commands	PLc cat.1 / SIL 1 (ISO 13849-1/EN 62061)
Datafeedback ready	YES
Operation and storage temperature	-20 ÷ +70°C, (-4 ÷ 158°F)

Transmitting Unit

	M8	Wave S-L	Zeus-Thor	Ares C / E
Max. quantity of ON/OFF direct commands	32	16S-24L-20L*	32	16
Max. quantity of ON/OFF undirect commands	48	48	48	48
Max. quantity on analogue commands	8	1	8	3
Service and Safety commands	4 (Start, Klaxon, Gyroph., Stop)			1 (Klaxon)
Housing protection degree	/	IP65	IP65	IP65
Housing material	ABS	charged Nylon	charged Nylon	charged Nylon
Supply tension	12 min - 28 max Vac/Vdc	2,4 Vdc	3,6 Vdc	3,6 Vdc
Current demand	240mA-260mA*	100mA-120mA*	160mA - 180mA*	0,80mA
Power demand	1,4 W - 1,5 W*	0,3 W	0,58 W - 0,65 W*	0,25W
Battery	/	NiMh 2,4V-1,5A/h	NiMh 3,6V-1,7A/h	NiMh 3,6V-1,8A/h
Autonomy at 20 °C with charged battery continuous operation	/	≈ 18 ore, ≈ 15 ore*	≈ 12 ore, ≈ 10 ore*	≈ 22 ore
Advice time "battery down"	/	≈ 15 min	≈ 15 min	≈ 15 min
LCD Display (optional)	2 lines 16 ch. /	2 lines 8 ch. /	2 lines 16 ch. 4 lines 20 ch.	/
Visualisation speed for the ch. on the display*	100 char/s	100 char/s	100 char/s	/
Max. quantity of command relays (NO)	16*	/	/	/
Max. carrying capacity of command relays	6A / 110V AC1 6A / 28V DC1	/	/	/

Receiving Unit

	M550 H	M550 L / K	M550 M
Service commands	Start, T-Stop, Horn, Blink	Start, (Horn, T-Stop)***	Start, Horn, Blink
Safety commands	Safety-stop, Stop	Safety-stop, Stop	Safety-stop, Stop
Max. quantity of ON/OFF command (NO)	48	20	21
Max. quantity of analogue command	8	8	4
PWM analogue output	0 ÷ 1,4 A max	0 ÷ 1,4 A max	/
Analogue output with loop of current	0 ÷ 20 mA 4 ÷ 20 mA	0 ÷ 20 mA 4 ÷ 20 mA	0 ÷ 20 mA 4 ÷ 20 mA
Analogue output in tension	min 25% Vcc med 50% Vcc max 75% Vcc	min 25% Vcc med 50% Vcc max 75% Vcc	min 25% Vcc med 50% Vcc max 75% Vcc
Analogue output in tension	0 ÷ (Vcc-3) reg.	0 ÷ (Vcc-3) reg.	0 ÷ (Vcc-3) reg.
Housing protection degree	IP65	IP65	/
Housing material	charged Nylon	charged Nylon	ABS
Datafeedback ready	YES	YES	YES
Input ports*	Serial, parallel	CAN, Serial, parallel	Serial, parallel
Max quantity of digital inputs*	8	8	11
Max. quantity of analogue inputs*	4	4	4
Supply tension Vac	24, 48, 55, 110, 230	24, 48÷55, 110, 230	12 min - 28 max
Supply tension Vdc	12 min - 28 max	12 min - 28 max	12 min - 28 max
Power demand	20 W max	15 W max	15 W max

Battery charger

	CB5000 Wave	CB3600 Zeus / Thor
Supply tension	12 min - 32 max Vdc (optional 230 Vac)	12 min - 32 max Vdc (optional 230 Vac)
Power demand	250mA DC, 35mA AC, (while charging)	250mA DC, 35mA AC, (while charging)
Charging current	≈ 550mA	≈ 600mA
Max. charging time	3 hours	3 hours
Charge type	PVD	PVD
Housing protection degree	IP30	IP30
Storage temperature with loaded battery	+5 ÷ + 45°C (+41 ÷ +113°F)	+5 ÷ + 45°C (+41 ÷ +113°F)
Storage temperature off and without battery	-20 ÷ +70°C (-4 ÷ +158°F)	-20 ÷ +70°C (-4 ÷ +158°F)
Dimensions (L.P.H.)	75x49x142 mm	75x49x156 mm
Weight	250g	251g
Weight with 230Vac transformer (optional)	490g	491g

A= Transmitting unit Ares E
M= Transmitting unit M8
W= Transmitting unit Wave
Z= Transmitting unit Zeus
T= Transmitting unit Thor

* Datafeedback version
** Only for data acquisition
*** DC

HYDRAULIC ACTUATOR

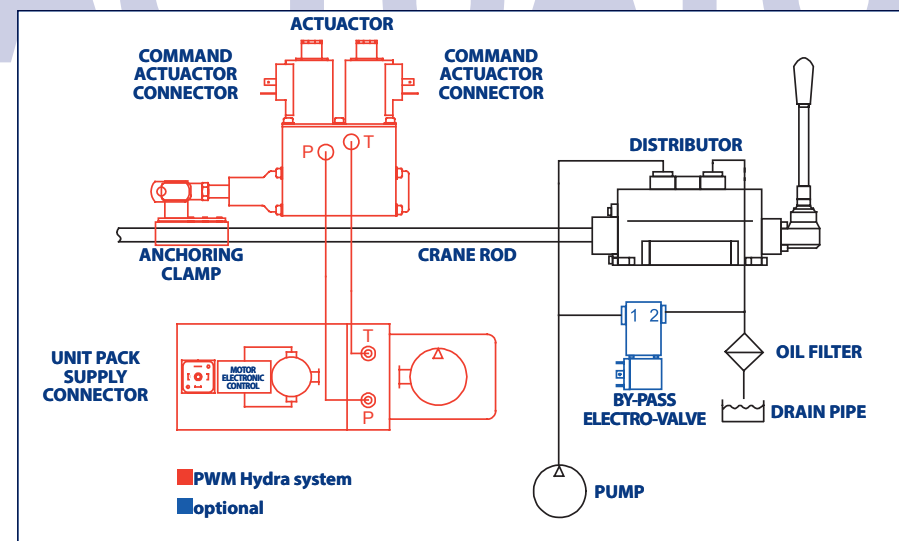
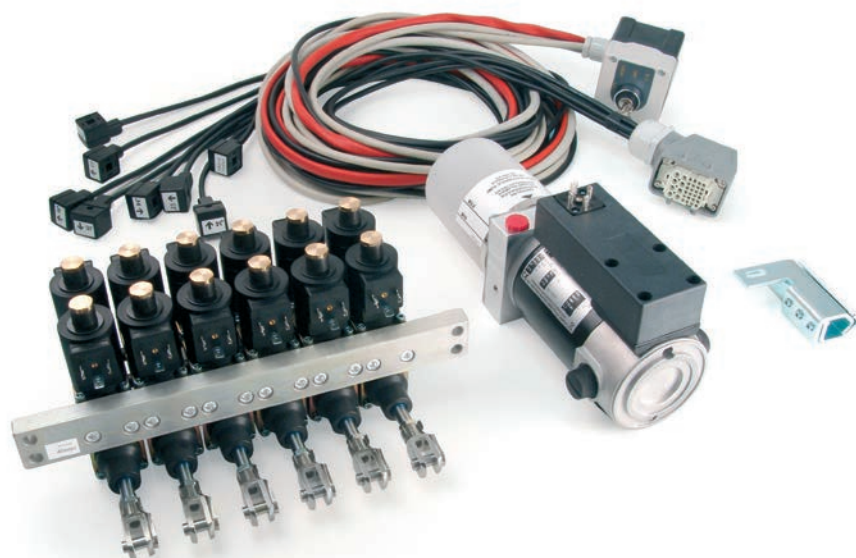
The “**PWM Hydra system**” combining electro hydraulic-actuators, with either ZEUS and THOR radio remote controls, allows the conversion of hydraulic manual cranes into radio controlled ones.

The actuator hydraulic circuit is totally independent from the crane hydraulics, hence avoiding oil-sharing problems that can arise due to the presence of dirt in the crane oil compromising the regular working of the actuator pistons.

The power pack works only “on demand”, when movements are operated from the transmitter, granting low stress conditions and reducing all energy wastes.

The calibration of every single actuator can be performed via radio directly from the transmitter. The Hydra system kit is comprehensive, and consists of: block of actuators, power pack, wiring between receiver/actuators/power pack, rod clamps, hydraulic pipes.

28



Hydraulic Actuator

Pilot system	PWM a 80Hz
Coil resistance by 20°C (68°F)	5,5 Ohm
Absorption by 27 Vdc	170 ÷ 620 mA
Absorption by 13,5 Vdc	300 ÷ 1250 mA
Operating room temperature	-20°C ÷ +70°C (-4°F ÷ 158°F)
Max. stroke	26 mm (±13mm from the centre)
Max. stroke optional	40 mm (±20mm from the centre)
Thrust and traction force by 12 bar	600N
Optimum operation pressure	15 ÷ 20 bar
Max. available operation pressure	30 bar
Connectors of hydraulic circuit	1/4" Gas
Dimensions (L. P. H.)	210 x 38 x 138 mm
Weight (single module)	1500 g
Standard interaxe	38, 42, 44, 46, 48, 50 mm
Standard functions	4 ÷ 8

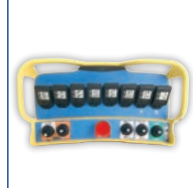
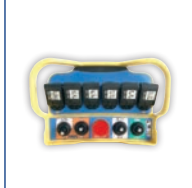
Electrohydraulic Power Pack

Absorption by 27 Vdc	4,5A
Absorption by 13,5 Vdc	9A
Supply tension	12 o 24 Vdc +20% -10%
Working pressure	18 bar 27 Vdc - 16 bar 13,5 Vdc
Working room temperature	-20°C ÷ +70°C (-4°F ÷ 158°F)
Tank capacity	0,5 litres
Connectors of the hydraulic circuit	1/4" Gas
Dimensions (L. P. H.)	305 x 120 x 160 mm
Dry weight	4850 g

29



HYDRA SYSTEM KIT



ACTUATOR BLOCK

The modular structure of a block of actuators allows customisation for specific applications. The actuator piston stroke is ± 13 mm making it suitable for use with the vast majority of the hydraulic distributors on the market. For those special cases demanding a larger rod stroke up to 20 mm, a stroke-extension kit is available. Thanks to dedicated mechanical adapters, it is possible to interface the actuators directly with one side of the manual valve bank (available for Walvoil SD6, SD8, Galtech and Parker). This configuration requires removal of the rods.



TRANSMITTERS FOR HYDRA SYSTEM

ZEUS M and THOR M transmitters, equipped with single axis joysticks, are particularly suitable for controlling Hydra system. The biaxial joystick versions can also be used.



ROD CLAMPS

The actuators transmit the mechanical movement to the rods through clamp on adaptors. No welding required.



RECEIVERS FOR HYDRA SYSTEM

LDC and HDC receivers are suitable as they feature VDC powering, PWM proportional outputs and IP65 protection for outdoor use.



HYDRAULIC TUBES AND PIPES

Tubes and pipes are supplied for all hydraulic connections between the actuator block and the power pack.



COMPREHENSIVE WIRING

A user friendly wiring kit comes ready with each system in order to facilitate all the electrical connections between receiver/actuators/power pack. A practical key-switch allows the operator to select the operation mode (RC, Off, manual).



POWER PACK

An electro-hydraulic pump that works only "on demand" supplies the oil to the actuators rendering the Hydra system totally independent from the machine oil circuit.



OPTIONALS AND ACCESSORIES

The serial cable option (15 m) is available for a wire-connection between transmitter and receiver. The radio modules are thus not active and the transmitter is powered directly from the serial cable. We can supply a by-pass valve when required.

