



**RADIO REMOTE
CONTROLS**

PROPORTIONAL SOLENOID VALVE ELECTRONIC REGULATORS



SLOPE TRANSDUCERS



OUTRIGGERS CONTROL DEVICES



PROPORTIONAL RADIO REMOTE CONTROLS FOR SERVO CONTROLLED HYDRAULIC MACHINES



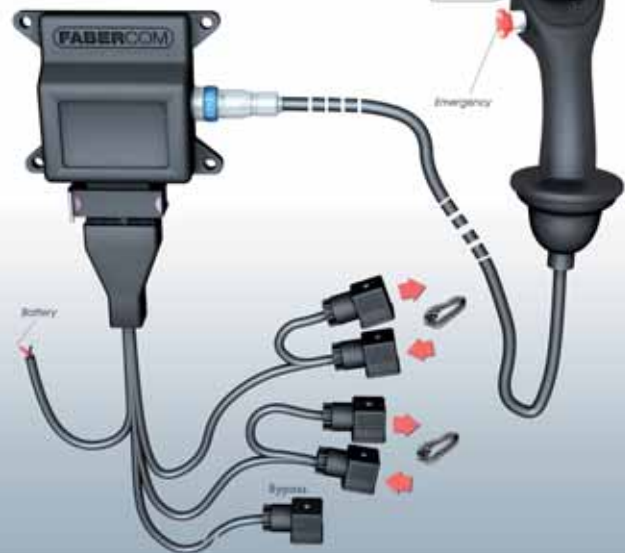
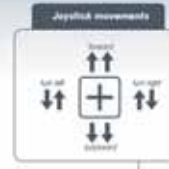
HandyDrive



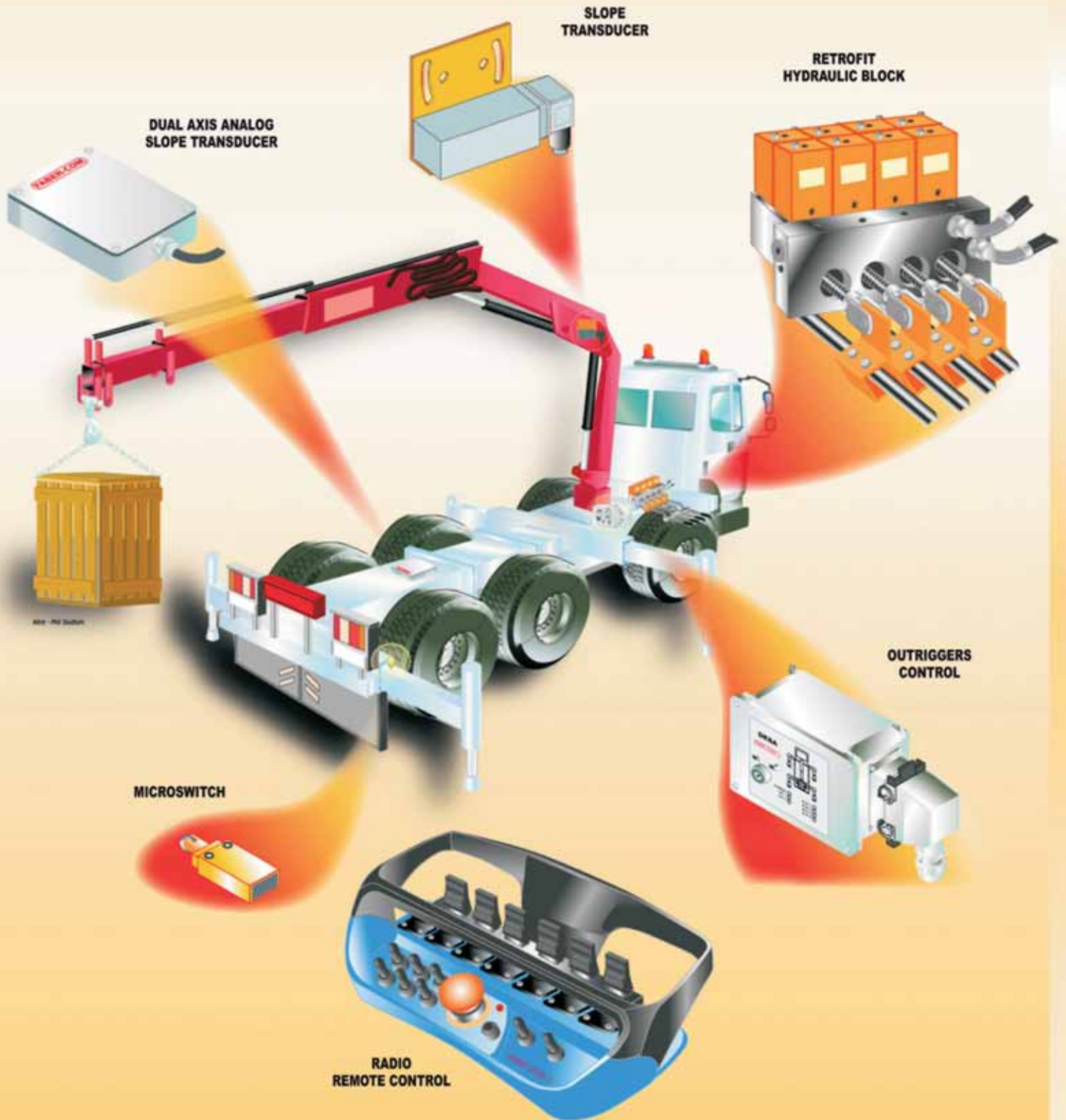
Radio Version



Handy joystick to drive tracked machines



ELECTRONICS IN YOUR HANDS



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YRC400 RADIO REMOTE CONTROL

YRC400 is a radio remote control system used to control hydraulic machines.

Extremely easy to use, safe, fast and precise; its electronic core, based on advanced microprocessor technology, is highly configurable.

All parts are protected against electro-magnetic and radio frequency radiation and can be used in the most demanding and roughest environments, for cranes, platforms, power stations, oil platforms and also specific applications.

SAFETY

Each radio remote control use an unique ID code (identity code). This means that only the correct portable unit can activate and control the matching receiver.

For maximum safety the receiver has double processors to enable comparison and checking of data signals. The receiver includes an automatic emergency stop system that deactivate all crane functions when received data signals are not verified.

MAIN FEATURES

- works with most of proportional solenoid valves of the market (Hawe, Danfoss, etc.);
- enable only the outputs selected by the operator (high reliability of service, less system wear and prevention of unwanted manoeuvres);
- outputs drove by power transistors;
- customized control box configuration;
- independent and distinguished programming of the speeds for CRANE mode and PLATFORM mode;
- available with linear or cross joysticks;
- available with display panel for additional informations.

INCLUDED PARTS

- Central unit (CU) with proportional outputs, dump valve, blinking light and pump unit cables;
- Receiver (RX);
- Portable control unit (PCU);
- Battery charger with 2 Ni-Cd batteries;
- Serial cable for no-radio use and programming;
- EX cable for ON/OFF outputs;
- Emergency stop button;
- Belt;
- User manual and certificates.



TECHNICAL SPECIFICATIONS

Power supply	12Vdc - 24Vdc	PCU dimensions	360x210x150 mm [14.2x8.25x5.9 in]
Available commands	Up to 8 functions	Protection class	IP65 (CU and RX), IP55 (PCU)
Outputs type	Transistor	Available blocks	MOD06, IT028

YRC400 HANDY RADIO REMOTE CONTROL

Developed for demanding environments

Young Powertech's system is built and designed for the toughest and most demanding of environments. Young Powertech can hereby offer the market of crane and machine operators an extremely easy to use radio remote control retaining speed, precision, and control with the maximum of safety. Behind the development of the radio remote control systems lies the idea of providing products with a high degree of reliability, user-friendliness, and possessing good ergonomic features. The product family includes different control units, hand transmitters, and receivers offering a variety of choice depending on the area of use. These products are based on a modular architecture, which makes them extremely flexible to customize and adapt according to the customer's needs. The products – which are in high demand - are mainly mounted on cranes and mobile machines. Our customers are some of the world's largest and most challenging crane and machinery manufacturers. Thousands of cranes and machines containing Young Powertech's radio remote control systems are in use worldwide.

SAFETY

Each radio remote control system functions in all manner of operational conditions equipped with their own unique identity code (ID-code). This means that only the correct control unit can activate and control its matching receiver (crane/machine). For maximum safety the receiver has double processors to enable comparison and checking of the data signals from the control unit. The receiver on the crane operates with a so-called automatic emergency stop, i.e., dump-valve and all of the crane movements are only activated as long as the verified data signals are received from the actual portable control unit. The stop function is in accordance with EN954-1 cat. 3.

MAIN FEATURES

- The hand-held-control (Handy-6, Handy-10 or Handy-10-LCD) can be supplied with one step, two step or with stepless infinitely variable (proportional) speed.
- The innovative push-buttons which operate with stepless infinitely variable (proportional) speed, and remains in direct proportion to the push-buttons displacement for maximum precision and performance of the crane/machine.
- This stepless infinitely variable speed is facilitated by an innovative unique pushbutton technology design principle.
- The hand-held series has large distinct push-buttons and can be used wearing working gloves, and the units are in are light-weight, innovative, user-friendly and functional in design.
- The hand-held units has stop-function for immediate halt the crane/machines movements and functions, are robust capsules capable of withstanding the elements and carrying out operations in the toughest and most demanding of environments.
- The radio transmitter and its antenna are built-in. A LED indicate functional and battery strength status as well as providing a simple, diagnostic, trouble-shooting option.
- A shift-function option duplicates a number of functional operations, and intelligent functions offering flexibility and a number of optional choices (PIN-code, programmed for "momentary" or "latched", automatic shut-off times, e.t.c.).
- 20 hours operational life is guaranteed following charging. Recommended charging time is approximately two hours. The battery (powered by two AA-batteries) are housed inside the hand-held unit and can be easily changed by the operator.
- The radio controls can be used with all of the hydraulic valves currently available on the market.
- Automatic frequency management, i.e. reliable radio transmission, highly resistant to Interference, thanks to frequency hopping technology to ensure interference free operation (in 433-434 MHz band). Other frequencies are available on request or to comply with the country's existing regulations.
- Chargeable via +12/24 VDC cigarette lighter outputs, or 110/220 VAC- transformer.
- Weight: incl. battery: approx. 500 gram (depending on equipment).
- Protection class : IP55

APPROVALS • Young Powertech's radio remote control system meets the EU's Machine- and EMC-directive (CE-mark) and is approved and complies with the special demands and standards for "Remote controlled lifting devices" in accordance with 89/336/EEC, EN954-1, EN301489, EN300 220-3, and R&TTE 1999/5/EC. The radio unit is also certified in several countries outside of Europe. Scanreco is additionally certified in accordance with EN ISO9001:2000.



YMOD09 PROPORTIONAL HYDRAULIC PWM MODULE

The servo control **MOD09** is a block of modular hydraulic pistons, electrically controlled by a couple of proportional valves, with mechanical feedback.

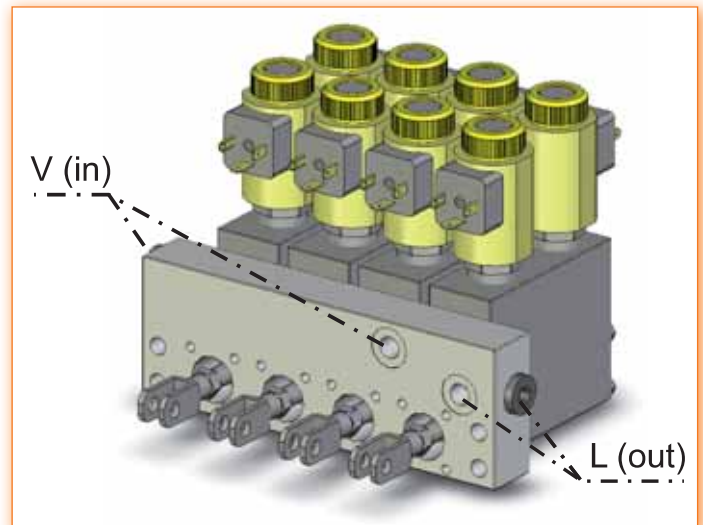
The product has a high reliability thanks to careful engineering and production process carried out with the most advanced technologies.

The installation of this block adds to a hydraulic valve the remote control, by cable or by radio. The specific design for the dual control rods allows its installation on any type of hydraulic mechanical valve.

TECHNICAL DATA SHEET (single module)

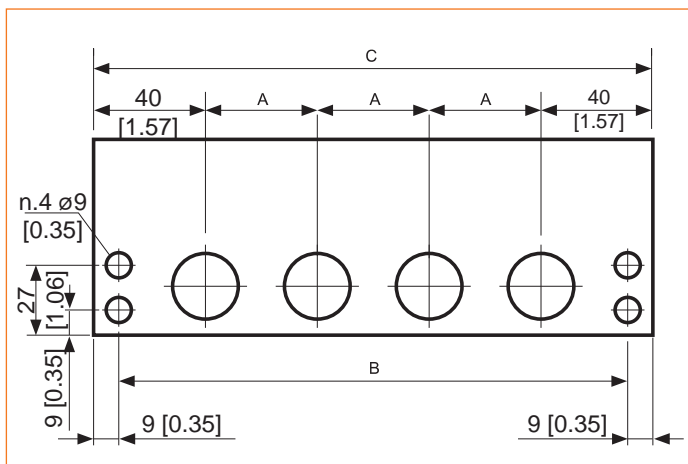
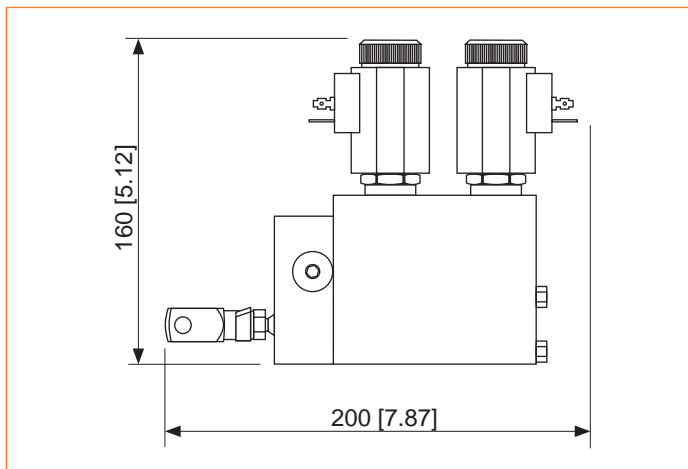
ELECTRICAL SPECIFICATIONS

Power supply voltage:	12 or 24Vdc
Working current range:	800 ÷ 1800 mA (12V)
	350 ÷ 1000 mA (24V)
Frequency:	120 Hz
Working room temperature:	-20 ÷ +60 °C
	-68 ÷ +140 °C



MECHANICAL AND HYDRAULIC SPECIFICATIONS

Mechanical stroke:	± 13 [0.51] standard
Feedback:	Mechanical
Fluid type:	Mineral oil 10 ÷ 200 cSt
Max blow-by:	100 cc/minute
Max working pressure:	30 bar [435 psi]
Max. thrust:	1300 N [290 lbs] (at 30 bar)
Weight:	1.6 kg [3,6 lbs] (approx.)
Connections:	G1/4" BSPP



Type	A		B		C	
	mm	in	mm	in	mm	in
4	40	1.57	182	7.16	200	7.87
	46	1.81	200	7.87	218	8.58
	50	1.97	212	8.35	230	9.05
6	40	1.57	262	10.31	280	11.02
	46	1.81	292	11.50	310	12.20
	50	1.97	312	12.28	330	12.99
8	40	1.57	342	13.46	360	14.17
	46	1.81	384	15.12	402	15.82

YIT028 PROPORTIONAL BLOCK FOR SERVO-CONTROLLED HYDRAULIC MACHINES

The proportional block can be used with a remote control to drive servo controlled hydraulic machines.

Look at it as a good alternative to add to the control system currently installed on the machine (ex. hydraulic joysticks on the driver's cab).

A variation of the command current (PWM) of the coils of the block changes proportionally its flow, moving the machine hydraulic distributor.

Since the driver's cab joysticks of the machine are no more, the driver can move himself near the machine working field (ex. to verify that the work is done correctly) or far from it increasing his safety.

It has been designed in modular form allowing the assembly of sections up to 8 functions.

On request it is available an exchange solenoid valve used to select the working mode of the machine (manual or remote controlled).

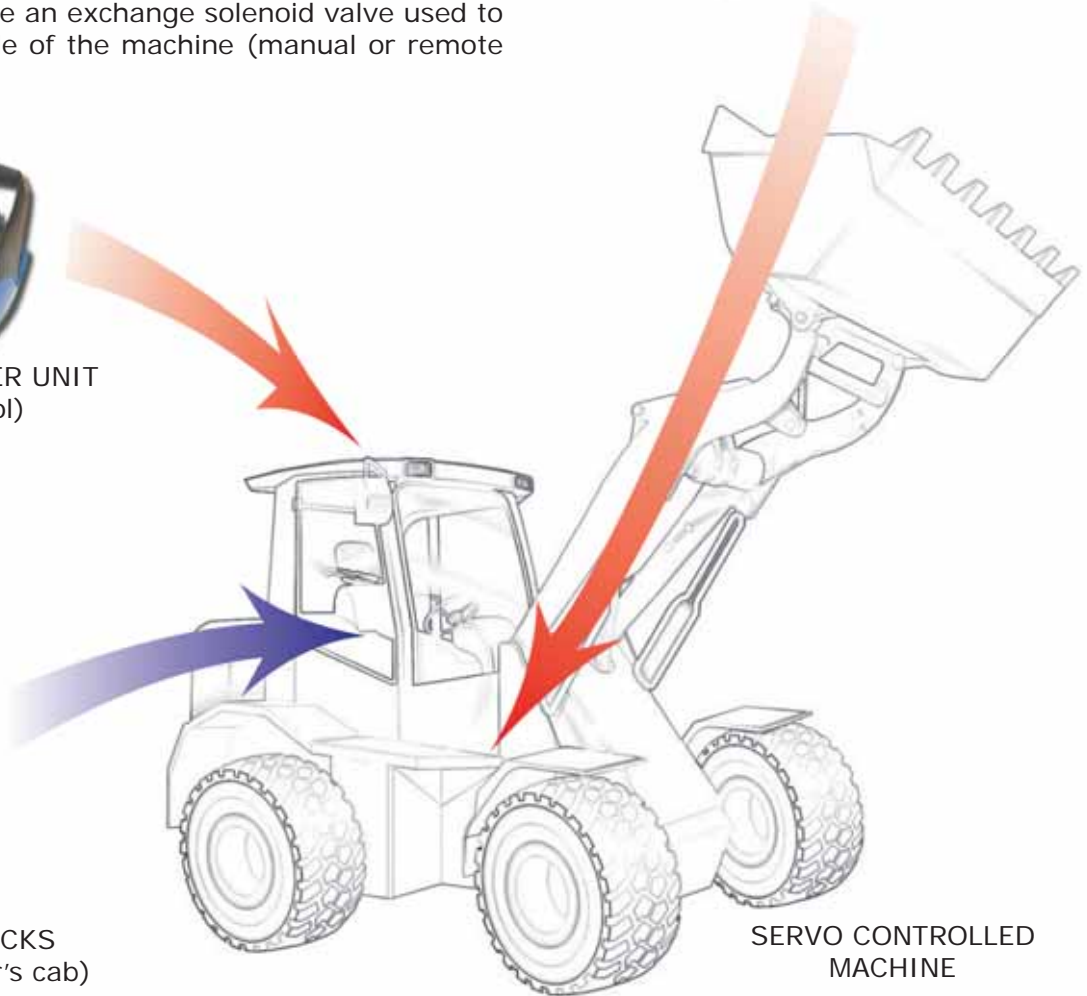
PORTABLE CONTROLLER UNIT
(to remote control)



PORTABLE CONTROLLER UNIT
(to remote control)



HYDRAULIC JOYSTICKS
(to control from driver's cab)



SERVO CONTROLLED
MACHINE

TECHNICAL SPECIFICATIONS

Power supply	12V or 24V DC (+/- 10%)	Coils resistance	12V=5.10hm 24V=20.40hm
Max pressure	38 bar [550 psi]	Hysteresis	5%
Max flow	2 L/min [0.52 gal/min]	Protection class	IP65
Max current	12V=1.4A 24V=0.7A	Weight	2,5 Kg [5,5 lbs] (single section)
Frequency	120 Hz	Dimensions	40x150x150 mm [1.57x5.91x5.91 in]

HANDY DRIVE HANDHELD CONTROL SYSTEM TO DRIVE THE CRAWLER TRACKS OF AN HYDRAULIC DRIVEN MACHINE

DESCRIPTION

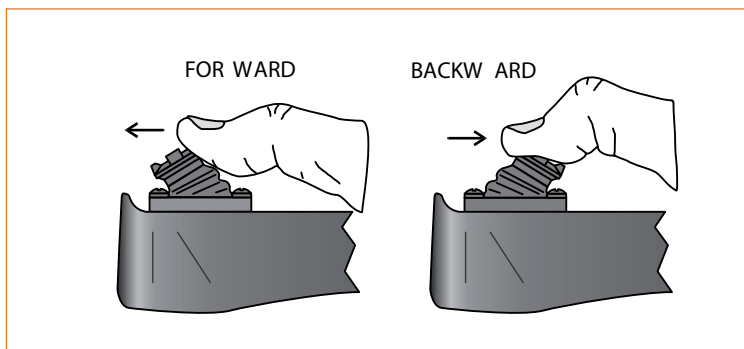
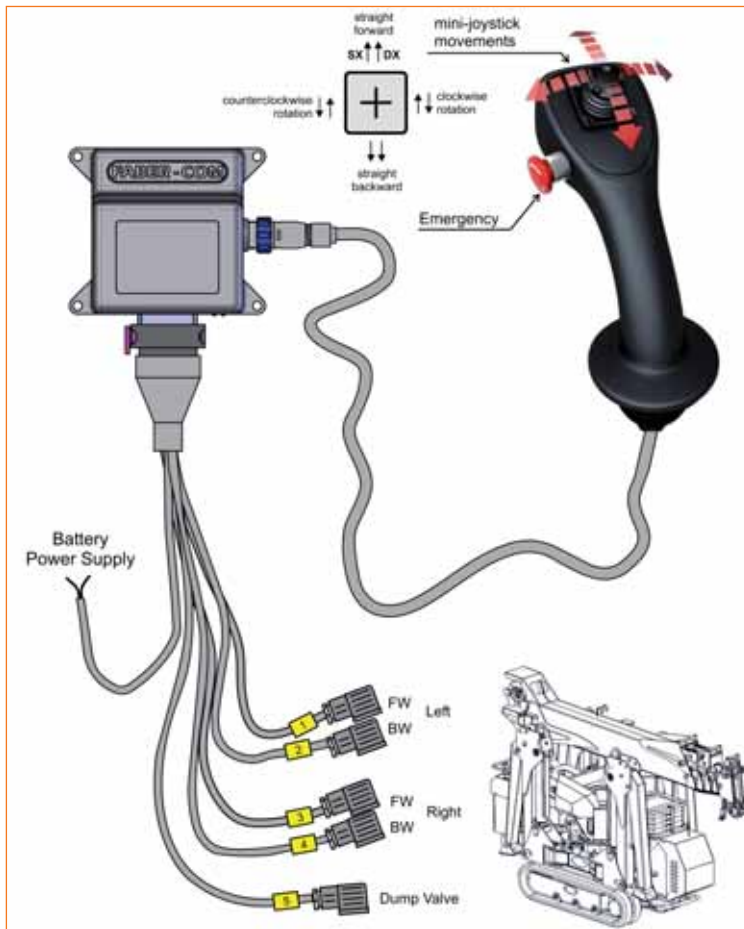
The HandyDrive handheld control system, composed of the handheld remote control and the electronic control unit, is designed to make simple and intuitive the control of an hydraulic driven machine.

Moving the mini/joystick on the handle the system controls directly the four PWM outputs for the crawler tracks: left forward/backward and right forward/backward.

A single or double Dump Valve is also commanded at every movement.

CHARACTERISTICS

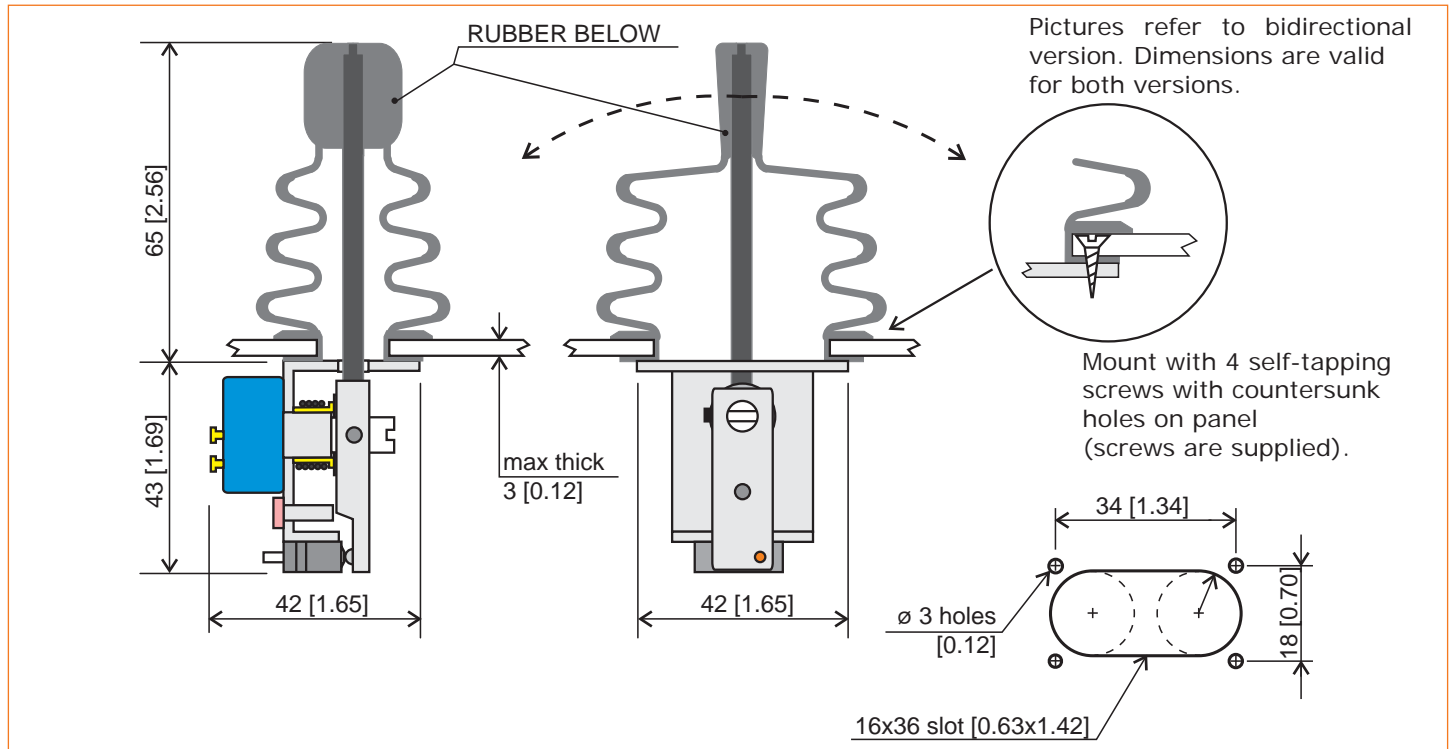
- proportional speed adjustment and proportional steering
- separate DV for each crawler track or single DV output, with delayed turn off.
- deadman trigger.
- emergency stop button.
- limited range for mini-joystick reference signals to survej every failure.
- Individual adjustments for each PWM output:
 - I min current
 - I max current
 - I raise ramp
 - I fall ramp
- adjustable output frequency (from 50 to 300 Hz)
- unique supply voltage from 10 to 30 Vdc;
- card resin-encapsulated against vibrations and humidity
- serial port to adjust calibration with PRG2 keyboard or PC (with specific adapter).



TECHNICAL SPECIFICATIONS

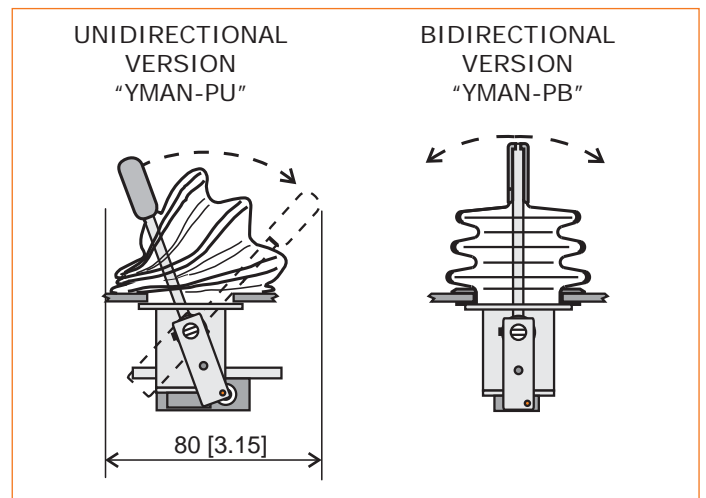
Power supply	10Vdc ÷ 30Vdc	DV outputs maximum current	2.5 A
Current absorption	60 mA+load on outputs	Overall dimensions (+ connector)	138 x 110 (+37) x 38 mm
Working temperature range	-20 ÷ +70 °C	Drilling interaxis	119 x 99 mm (no. 4 M5 screws)
PWM output minimum current	from 100 to 2500 mA	Protection degree	IP68
PWM output maximum current	from 100 to 2500 mA	Available PWM frequency	50-60-70-85-100-125-150-200-250-300 Hz
Time ramp up/down independently adjustable			from 0.1s to 10s

YMANP ONE AXIS POTENTIOMETRIC JOYSTICK



TECHNICAL SPECIFICATIONS

- Min. starting thrust: 9N [2 lbf]
- Max. applicable thrust: 80N [18 lbf]
- Max contact switch current (microswitch): 1A (28V DC)
- POTENTIOMETER
- Resistance: 10 Kohm
- Life: 10 million cycles
- Electrical angle (reduced): 100°
- Max output current (central terminal): 1mA
- Max. power: 1W
- Insulating resistance (500V DC): >1000 Mohm
- BIDIRECTIONAL VERSION
- Mechanical angle: 40° + 40° approx.
- $V_{out} = 80\% V_{in}$ (40% + 40%)
- UNIDIRECTIONAL VERSION
- Mechanical angle: 60° approx.
- $V_{out} = 60\% V_{in}$
- BELLOW:
- Protection level: IP54

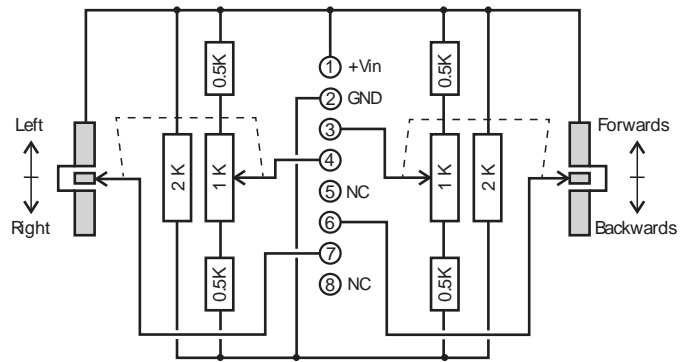
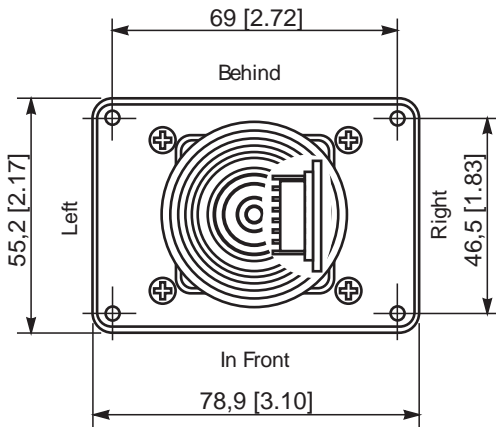
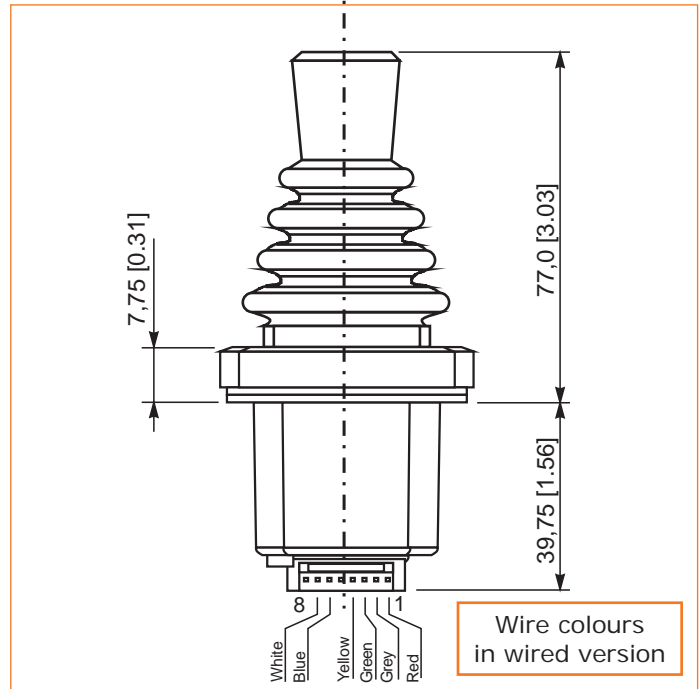


WIRED VERSION AVAILABLE

(12V or 24V power supply):

- with resistance and 10V Zener diode
- UNIDIRECTIONAL version: 1.8V - 7V standard output
- BIDIRECTIONAL version: 5V ± 3.5V output
- supplied with three wires 500 [19.7] length

YMANP2 TWO AXIS POTENTIOMETRIC JOYSTICK



Potentiometers electrical features

- Overall resistance: 0.5 kOhm (between pins 1 and 2)
 - Max power supply (V_{in}): 30 V_{DC}
 - Middle output voltage (V_{out}): 50% V_{in} ($\pm 1\%$)
 - Min output voltage (V_{out}) = 27% V_{in} ($\pm 1\%$)*
 - Max output voltage (V_{out}) = 73% V_{in} ($\pm 1\%$)*
- * Values achieved with a load of 7.5K towards $V_{in}/2$

NO contact electrical features

- Max current: 200mA (resistive load)
- ON/OFF contact activation angle: 2° (in each direction)
- Life: 10 cycles (with a 200 mA current)
5x10 cycles (with a 10 mA current)

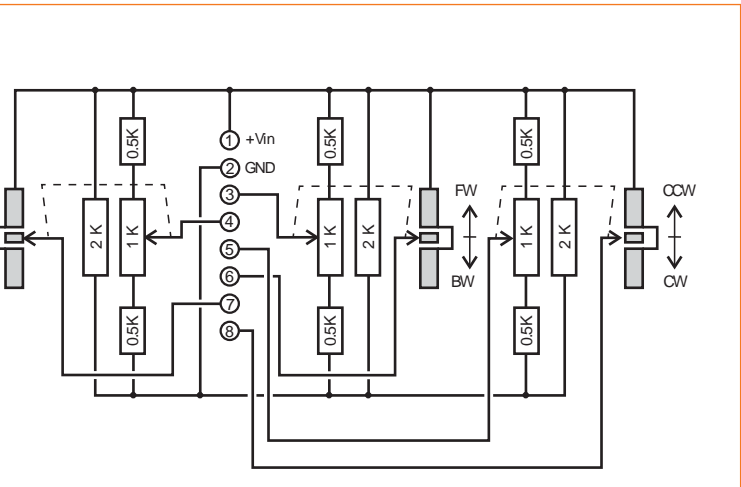
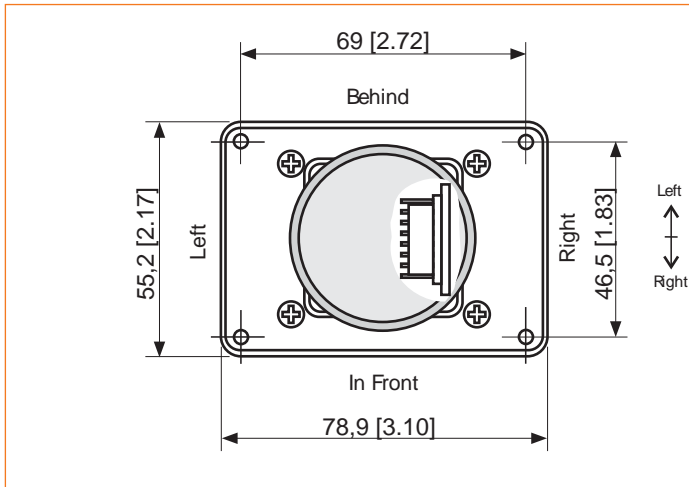
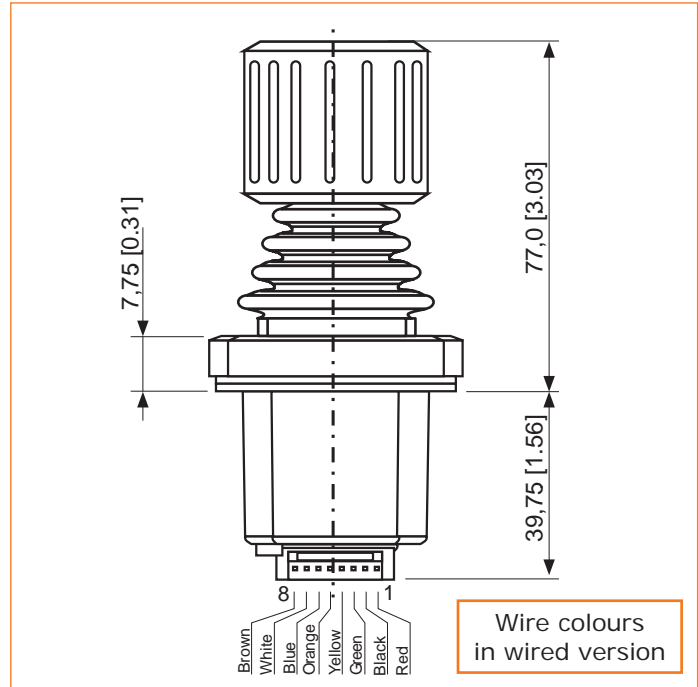
Physical features

- Breakout force: 2.3N [0.51 lbf]
- Maximum operating force: 6 N [1.35 lbf]
- Mechanical operating angle: $\pm 18^\circ$
- Insulation resistance at 50_{DC}: > 50 MOhm
- Weight: 120g [0.26 lbs]
- Operating temperature range: -40 °C \div +70 °C
-140°F \div 158°F
- Environmental rating: IP65
- Connector: Panduit Mascon 2.54mm 8p

Order code:

- A1000380401 without wires
- A1000380404 with 500 [19.6] wires

YMANP3 THREE AXIS POTENTIOMETRIC JOYSTICK



Potentiometers electrical features

- Overall resistance: 0.330 kOhm (between pins 1 and 2)
 - Max power supply (V_{in}): 30 V_{DC}
 - Middle output voltage (30vdc): 50% V_{in} ($\pm 1\%$)
 - Min output voltage (V_{out}) = 27% V_{in} ($\pm 1\%$)*
 - Max output voltage (V_{out}) = 73% V_{in} ($\pm 1\%$)*
- * Values achieved with a load of 7.5K towards $V_{in}/2$

NO contact electrical features

- Max current: 200mA (resistive load)
- ON/OFF contact activation angle: +/- 1° (X and Y axis)
- ON/OFF contact activation angle: +/- 2° (rotating handle)
- Life: 10⁶ cycles (with a 200 mA current)
5x10⁶ cycles (with a 10 mA current)

Physical features

- Breakout force: 2.3N [0.51 lbf]
- Maximum operating force: 6 N [1.35 lbf]
- Environmental rating: IP65
- Mechanical lever operating angle: $\pm 13^\circ$
- Mechanical handle operating angle: $\pm 27^\circ$
- Insulation resistance at 50 : > 50 MOhm
- Weight: 120g
- Operating temperature range: -40 °C ÷ +70 °C
-140°F ÷ 158°F
- Connector: Panduit Mascon 2.54mm 8p

Order code:

- A1000380402 without wires
- A1000380403 with 500 [19.6] wires

YMAS ONE AXIS JOYSTICK WITH SIGNAL OUTPUTS

DESCRIPTION

YMAS is a single axis electronic joystick with signal outputs

Joystick commands are derived from the measurement of the magnetic field produced by permanent magnets; the measurement is taken through Hall effect probes. This kind of probes are not subject to wear and tear.

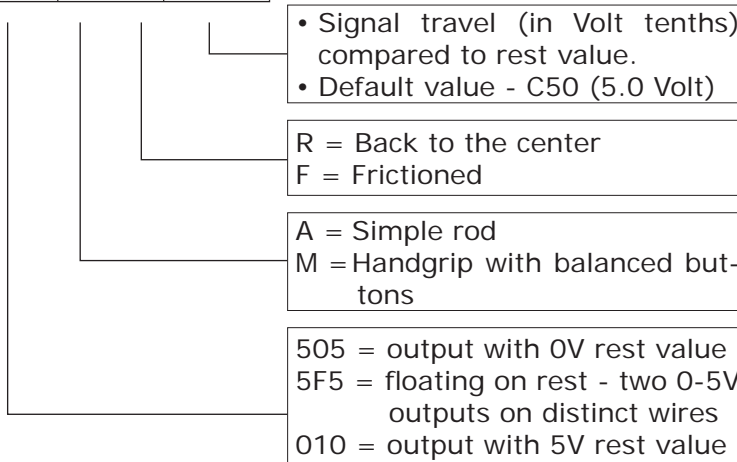
Main characteristics:

- sturdiness;
- parabolic output signal for a better sensitivity;
- output signal stroke customizable;
- available with uni directional output (5V-0-5V) or bidirectional output (0-5V-10V);
- "position hold" hand-grip available;
- rocker switch (unstable) on the hand-grip available;
- on/off directional outputs;
- supplied with extractable connector with screw;
- available version with two separate outputs 0-5V.

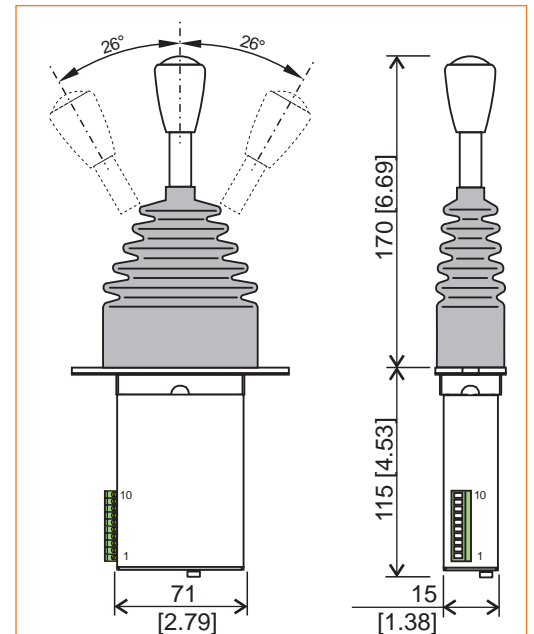


Available versions:

YMASH xxx x x [- Cxx]



Ex: YMAS-010-AR-C35, with simple rod, not frictioned, centered to 5V and 3.5V travel



TECHNICAL SPECIFICATIONS

Power supply voltage	10 ÷ 28 Vdc
Working temperature range	-20 ÷ 50 °C [-60 ÷ 122 °F]
Proportional output	+5 ÷ 0 ÷ +5 Vdc or 0 ÷ 5V ÷ 10 Vdc (max 10 mA)
Maximum output voltage	Power supply - 2.5V
ON-OFF directional signal	Positive outputs of 500 mA (max)
Connector type	Extractable conn. with screw (1.5 mm ² max section)
Mechanical stroke	± 26 degrees
Force on handle at stroke end	20 N [4.5 lbf]

YMAP ONE AXIS JOYSTICK WITH POWER OUTPUTS

DESCRIPTION



MAP is a single axis electronic joystick with PWM outputs, able to directly control a couple of solenoid valves with PWM outputs proportional to handle movements.

Joystick commands are derived from the measurement of the magnetic field produced by permanent magnets; the measurement is taken through Hall effect probes. This kind of probes are not subject to wear and tear.

Main characteristics:

- one proportional section (A+B) direct control (2 PWM outputs);
- adjustable minimum/maximum current for each directions (A+B);
- adjustable rise/fall ramp time from 0.1 to 5 seconds;
- adjustable PWM frequency to 70 to 350 Hz;
- "position hold" hand-grip available;
- rocker switch (unstable) on the hand-grip available;
- "in progress manoeuvre" on/off output;
- extractable connector with screw.

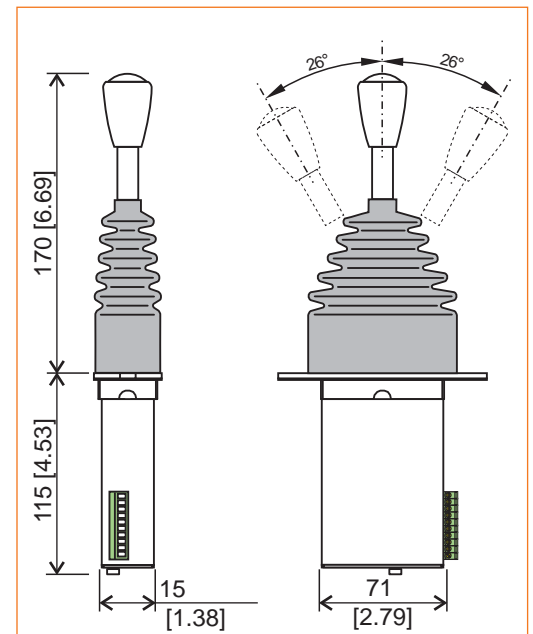
Available versions:

YMAPH | xx | x | x

R = With spring return
F = Position Hold

A = Simple knob
M = Hand-grip with rocker switch

SR = Coils OFF at neutral position	AR = Coils ON at neutral position	SA = Coils always ON



TECHNICAL SPECIFICATIONS

Power Supply Voltage	10 ÷ 28 Vdc
Working Temperature Range	-20 ÷ 50 °C [-60 ÷ 122 °F]
PWM Output Minimum Current	from 100 to 2500 mA (200 mA preset)
PWM Output Maximum Current	from 100 to 2500 mA (800 mA preset)
PWM Frequencies	from 70 to 350 (120 Hz preset)
ON/OFF Output Maximum Current	500 mA
Connections	Extractable conn. with screw (1.5 mm ² max section)
Working Angle	± 26 degrees
Force on handle at stroke end	20 N [4.5 lbf]

YJS/YJP/YJC TWO AND THREE AXIS JOYSTICK WITH SIGNAL, POWER OR CANBUS OUTPUTS

DESCRIPTION

Two and three axis proportional joysticks can be used in a large variety of applications where it is necessary to have a simple and reliable user interface to control construction machinery.

- **YJS** (with signal outputs, available also in ratiometric version) can only be used together with a logic control unit (PLC) or a power control device (PWM driver).
- **YJP** (with PWM outputs) can directly control hydraulic devices (pumps, distributors, dump valve) becoming often the only control unit of the whole machine.
- **YJC** thanks to its inputs, can collect a large number of control signals and transmit them through a CANbus network.

Designed and specifically conceived to reduce the amount of installation work, our joysticks are manufactured with top quality parts. The control electronics is located inside the housing and to assure extreme tightness.

Joystick movements are derived from the measurement of the magnetic field produced by permanent ferro magnets; the measurement is taken through redundant Hall effect probes. This kind of probes are not subject to deterioration.

The configuration and calibration easiness makes these joysticks suitable for different applications.

The push button panel is completely customizable.

Here are some of the **available options** for the three models:

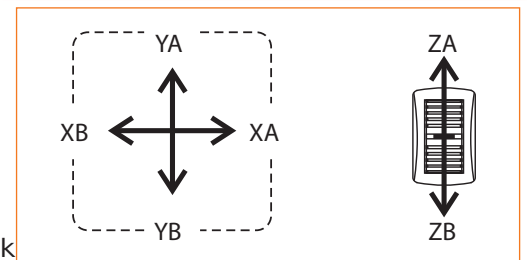
- "virtual cross" to forbid diagonal movements.
- linear or parabolic output curve.
- standard or capacitive dead man switch.
- adjustable dead band, independently for each semi axis.
- THUMBWHEEL, to have third proportional axis.
- Outputs lock if the hand-grip is not in neutral position at joystick turn on.
- Dump valve output with delayed turn off, to avoid high pressure spikes in the hydraulic circuit.
- Offset to compensate the hydraulic distributor dead band.
- Auxiliary output activated with logic and command levels user defined (software configurable).
- Two or three speed sets allow to regulate speed according to the machine configuration.
- Combination with only one proportional PWM output with many directional ON/OFF outputs
- Tracked machines driving function, to directly control two pumps of an hydraulic driven machine with the up/down and left/right joystick movements (virtual 45° axis rotation).
- Dead man switch functionality active only with joystick in neutral position.
- Auxiliary inputs/outputs can be active high or active low (software configurable).

All the joysticks have a FAULT output which is driven low if a failure occurs. The LEDs on the bottom side help the user to check the correct joystick functionality and connections.

Analog current outputs are feedback controlled. ON/OFF outputs are protected against short-circuits.

All the joysticks have a serial port to connect PRG2 serial programming keyboard (provided apart) to configure and calibrate the product.

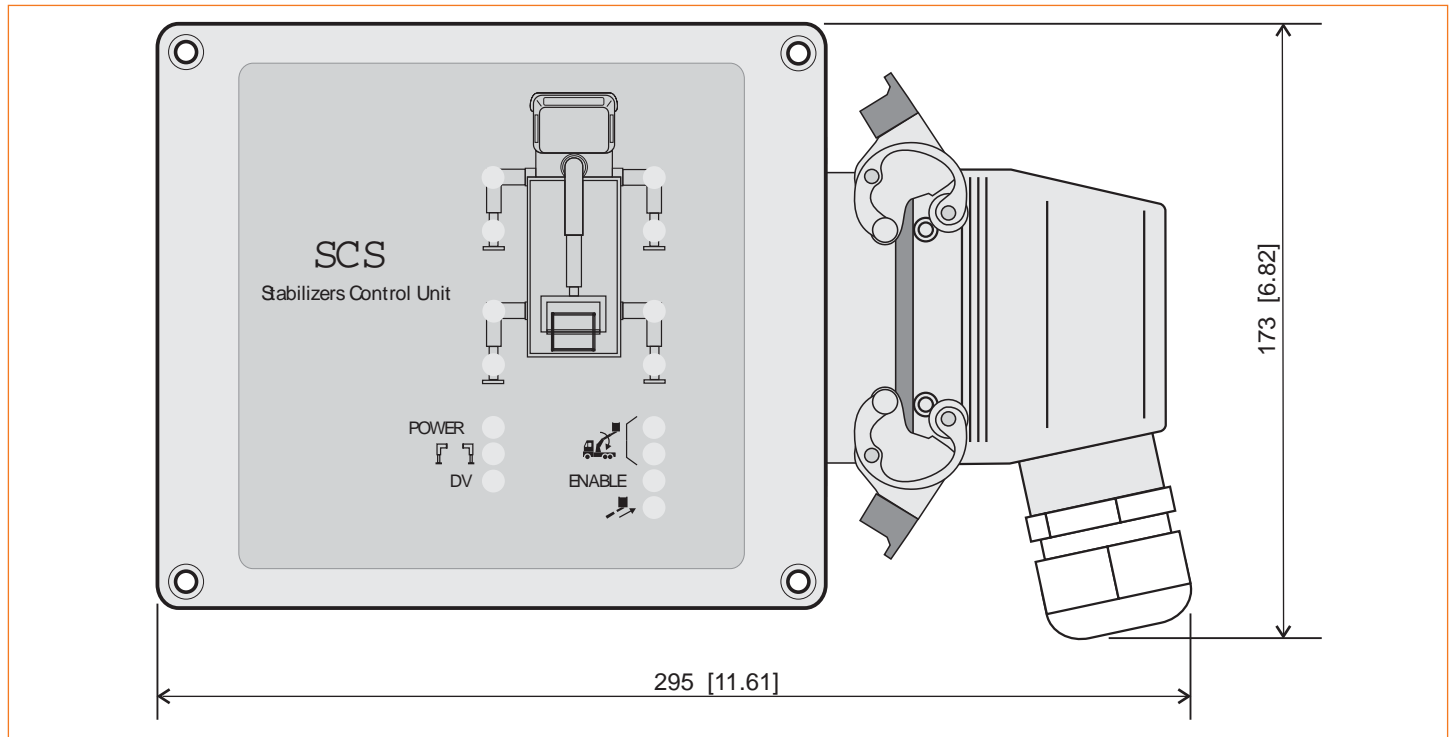
All the joysticks are provided by default with 50 cm unplugable cable but it is possible to require a customized wiring



YJS/YJP/YJC TWO AND THREE AXIS JOYSTICK WITH SIGNAL, POWER OR CANBUS OUTPUTS

TECHNICAL SPECIFICATIONS	YJS	YJP	YJC
Power Supply Voltage	<i>10Vdc ÷ 30Vdc</i>		
Max current absorption	<i>60 mA + output load (max 2.5 A)</i>	<i>60 mA + output load (max 10A)</i>	<i>60 mA + ON/OFF output load (max 1.4A)</i>
Working Temperature Range	<i>-20 ÷ +60 °C • -68° ÷ +140°F</i>		
Output Signals	<p style="text-align: center;"><i>3 analog signals range 0 ÷ 5V, 0 ÷ 10V, ratiometric (Danfoss) I_{max}: 10 mA</i></p> <p style="text-align: center;"><i>6 directional outputs 1 DUMP VALVE output</i></p> <p style="text-align: center;"><i>I_{max}: 300 mA (for each output)</i></p>	<p style="text-align: center;"><i>8 2.5A power outputs usable as:</i></p> <p style="text-align: center;"><i>3 PWM pairs 1 BYPASS output 1 FAULT output or 1 PWM output 6 ON/OFF directional outputs 1 DUMP VALVE output</i></p> <p style="text-align: center;"><i>PWM outputs: I_{min}: 100 ÷ 2500 mA I_{max}: 100 ÷ 2500 mA Freq: 50 ÷ 300 Hz</i></p>	<p style="text-align: center;"><i>CANH - CANL CAN 2.0B up to 1 Mbps</i></p> <p style="text-align: center;"><i>1 ON/OFF output controllable via CAN 700 mA max</i></p> <p style="text-align: center;"><i>1 output for push button power supply voltage (5 Vdc stabilized) I_{max}: 30 mA (usable also as 700 mA ON/OFF output)</i></p>
Input Signals	<p style="text-align: center;"><i>1 ON/OFF input usable as:</i></p> <ul style="list-style-type: none"> <i>• - speed selection input</i> <i>• - movement enable (dead man switch)</i> <i>• - X or Y axis commutation to the Z axis</i> <p style="text-align: center;"><i>If not used, FAULT and BYPASS outputs can be used as ON/OFF inputs (they are bidirectional signals).</i></p>		<p style="text-align: center;"><i>Via CAN transmittable: - 2 ON/OFF inputs (one usable as pickup input)</i></p> <p style="text-align: center;"><i>5 analog inputs, range: 0V ÷ 4.5V, 2.5V centered, usable to read 5 push button or 10 bilateral buttons (two usable as 4-20mA analog inputs)</i></p>
Thumbwheel Input Signal	<i>Range: 0.5V ÷ 4.5V</i>		
Analog Inputs Impedance	-	-	<i>11 kOhm towards 2.5V</i>
Connections	<i>Molex minifit Jr. 14 poles with 50 cm [19.6 in] cable</i>		<p style="text-align: center;"><i>Molex minifit Jr. 4 poles with 50 cm [19.6 in] cable (CAN and power supply)</i></p> <p style="text-align: center;"><i>Molex minifit Jr. 10 poles with 50 cm [19.6 in] cable for optional inputs/outputs</i></p>
Under Panel Size	<i>diameter 80 mm [3.15 in] - depth 90 mm [3.54 in]</i>		
Working Angle	<i>+/- 18°</i>		
Max force on handle	<i>800 N [180 lbf]</i>		
Electromagnetic Compatibility (EMC)	<i>according to EN 13309 and EN ISO 14982 regulations</i>		
Ingress Protection Rating	<i>IP65 (IP40 with Thumbwheel)</i>		

YSCS STABILIZERS CONTROL DEVICE



DESCRIPTION

The SCS device is a stabilizers control unit integrated with some auxiliary functions useful for the control of cranes installed on trucks. The core of the unit is a microprocessor based electronic card for the advanced control of the machine, which makes available in one device the following features:

BYPASS INTERFACE: control the NO dump valve with a signal compounded of the safety electric signal from the radio remote control and from the torque limiter, maintaining the origin safety characteristics. The NO valve can be commanded both from the remote control and from safety devices installed on the machine (ex. torque limiter).

STABILIZERS CONTROL: verify the correct position of the stabilizers and, if the platform is inserted, enable the crane to work only when they are all extended and correctly positioned.

STABILIZERS BLOCK: class 3 control that avoids the movements of the stabilizers when the main arm of the crane exceeds the horizontal slope. The stabilizers are blocked with a NO valve when their distributor is separated from the crane distributor, or with a NC valve when the stabilizers are commanded by the same distributor of the crane.

SPEED REDUCTION: if this function is not executed by the radio remote control, reduce the speeds of the manoeuvres when the platform is inserted on the crane; the speed reduction is realized through a flow reduction valve.

TECHNICAL SPECIFICATIONS

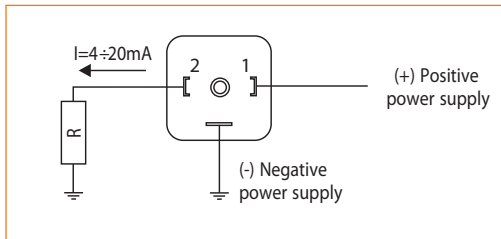
Power supply voltage	10Vdc ÷ 28Vdc
Working temperature range	-20 ÷ +70 °C • -68 ÷ +158 °F
Protection class	IP65
Control unit dimensions	191 x 167 x 75 mm [7.52x6.57x2.95 in] (aluminium box)
Overall dimensions	295 x 173 x 135 mm [11.61x6.82x5.32 in] (box with connector attached)
Output current	max 2.5A for each outp
Current absorption	500 mA + output loads (blade fuse of 7.5A)

YFSI-AN ANALOGIC SLOPE SENSOR

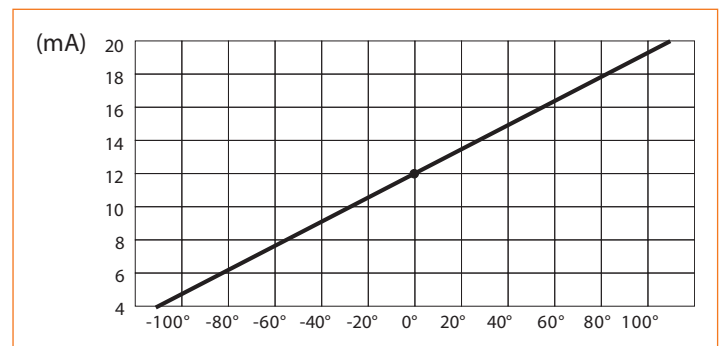
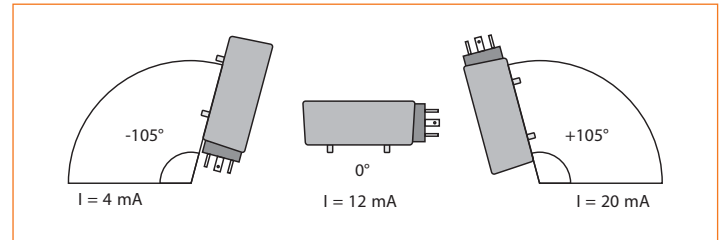
DESCRIPTION

The FSI-AN sensor is a slope analog transducer with $4 \div 20\text{mA}$ current output.

It is a transducer with 3 wires:



The output current is proportional to the inclination of the sensor compared to the horizontal position (see picture).



Working:

Supply the sensor and read the output current (directly with a milliamperometer or connecting it to a PLC with $4 \div 20\text{mA}$ current input).

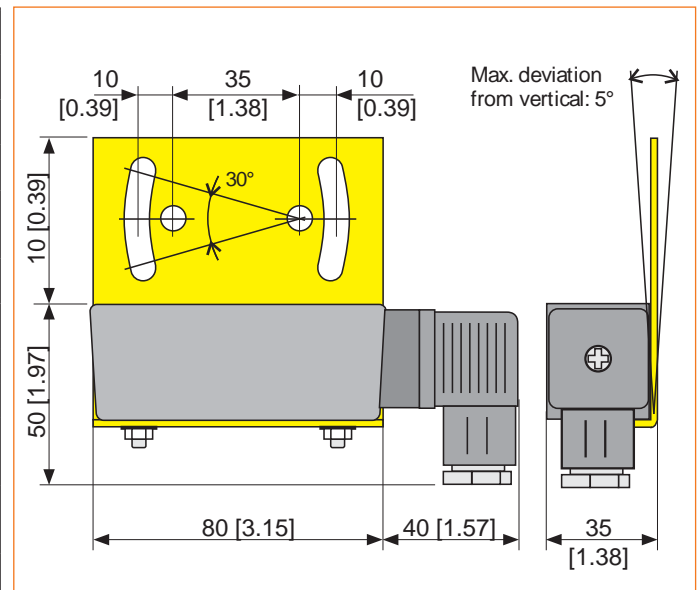
Attention: the input resistance of the used instrument (for the measurement) must have a value that allows to the sensor to supply the maximum current.

The maximum output tension of the sensor is "Vsupply - 5.5V".

Fitting

When you have positioned the sensor, with the long side perfectly in horizontal position, it has an output current value between 11.9mA and 12.1mA. During the fitting, it is necessary to verify that the output current, in horizontal position, is between the upon mentioned values. Otherwise, you have to act on the support slots to place the sensor in a correct way.

TECHNICAL SPECIFICATIONS	
Supply voltage	10 ÷ 32 VDC
Working range From	-105° to +105°
Resolution	1.16°
Current absorbed with output disconnected	18mA at 12VDC, 20mA at 24VDC
Max output voltage drop	5.5V
Answer time	164 ms
Working temperature	-10°C ÷ +70°C -40°F ÷ +158°F
Precision @ Tamb 0° ÷ 70°C • 32° ÷ 158°F	± 1.4°
Precision @ Tamb -10° ÷ 70°C • -50° ÷ 158°F	± 4.0°
Protection class	IP 67

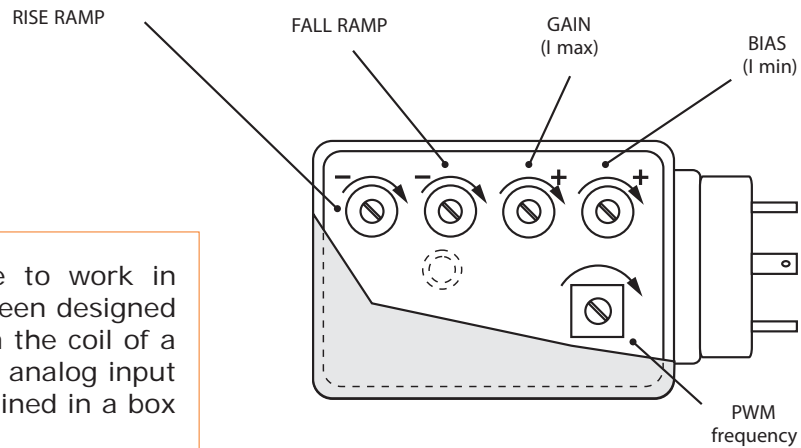
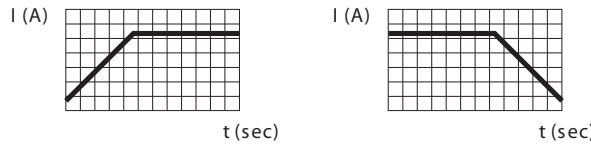
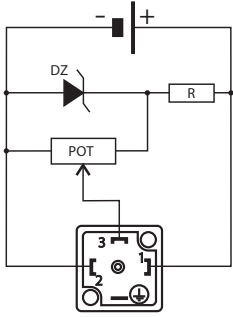
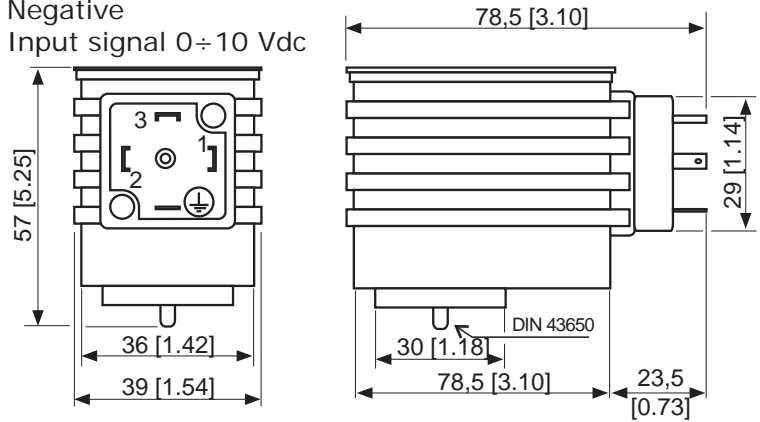


* Specifications and drawings for $\pm 105^\circ$ version

YVPC ELECTRONIC REGULATOR FOR PWM CONTROLLED SOLENOID



- 1 Positive 24 - 12 Vdc $\pm 10\%$
- 2 Negative
- 3 Input signal 0 ÷ 10 Vdc

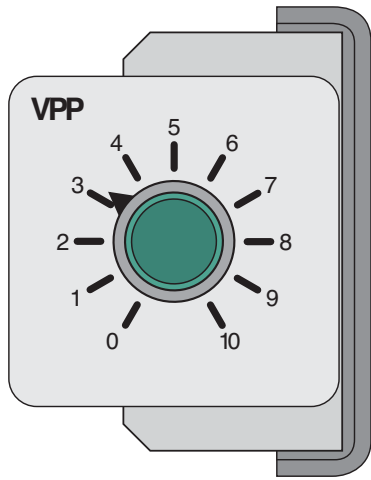


This electronic regulator is made to work in open loop control system. It has been designed to control the current that flows in the coil of a solenoid valve proportionally to an analog input signal. The electronic card is contained in a box that works as connector too.

TECHNICAL SPECIFICATIONS

Supply voltage	24 - 12 Vdc
Voltage input signal range	0 - 10 Volt (0 - 5V)
Input impedance	100 Kohm
Max current adjustment range 1A (24Vdc) 2A (12 Vdc)	20 - 100%
Bias adjustment range	0 - 30%
Rise time ramp adjustment	0 - 3 sec
Fall time ramp adjustment	0 - 3 sec
Ramps are linear and independent	
PWM frequency set at 120 Hz (adjustable)	50 ÷ 400 Hz
Working room temperature	-10 C ÷ +50 C • -50° ÷ 122°F

YVPP2 ELECTRONIC REGULATOR FOR PWM CONTROLLED SOLENOID



TECHNICAL SPECIFICATIONS

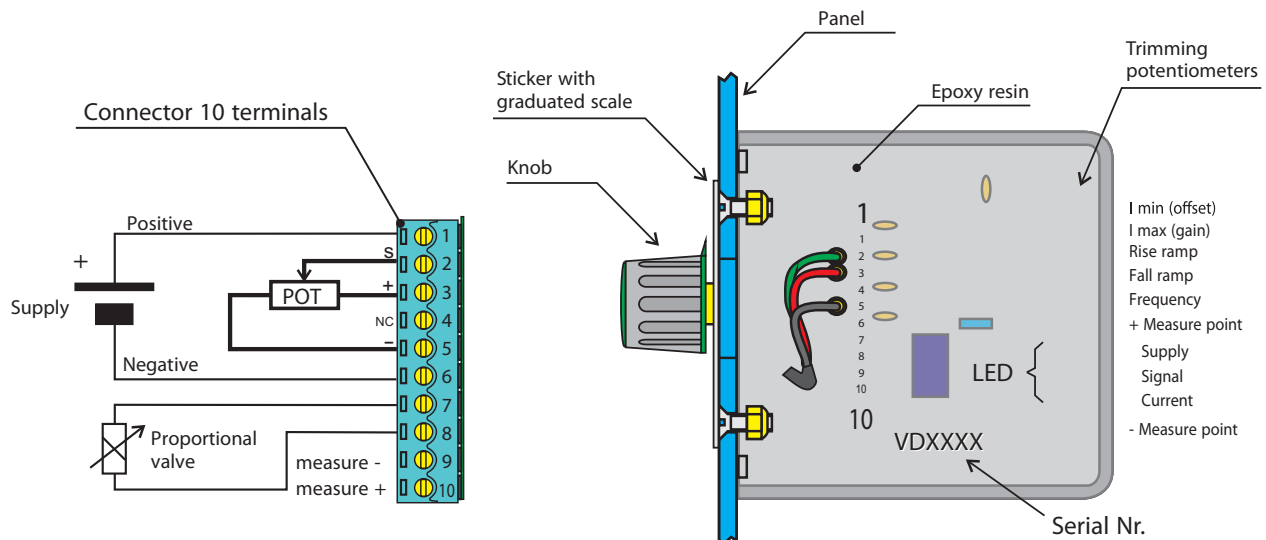
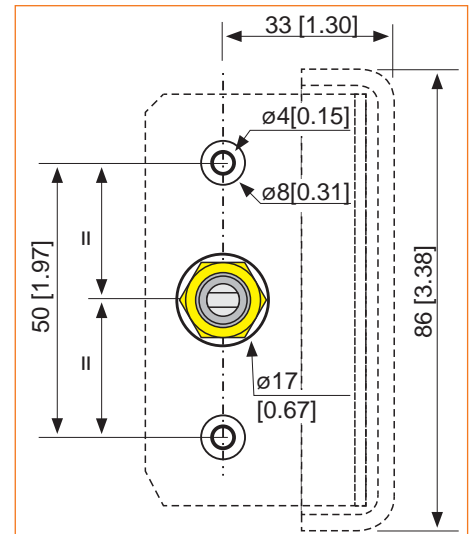
Supply voltage (Vsup)	10.5 ÷ 30 VDC
Panel potentiometer	5KOhm - 330°
Max output current	2.5A
Max current gap (Imax - Imin)	1.5A
Max power	75W
Ramp time adjustment	0.1 ÷ 5 sec
Indirect current measure	1V = 1A
PWM frequency	120 Hz (adjustable from 50 to 330 Hz)
Working temperature	-10 °C ÷ +60 °C • -50° ÷ 122°F
Weight	250 g [0.55 lbs]
Back panel dimensions	85x47x86 mm [3.35x1.85x3.39 in]
Max panel thickness	10 mm [0.39 in]
Special version available with IP67 potentiometer	

DESCRIPTION

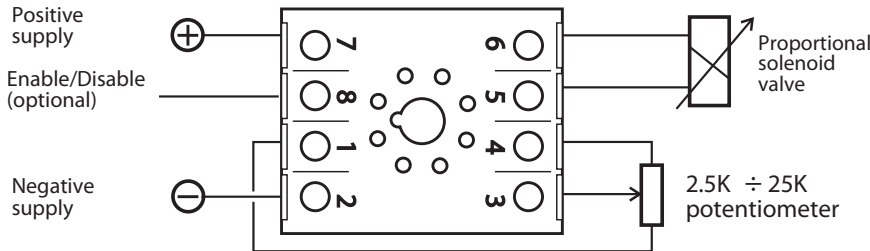
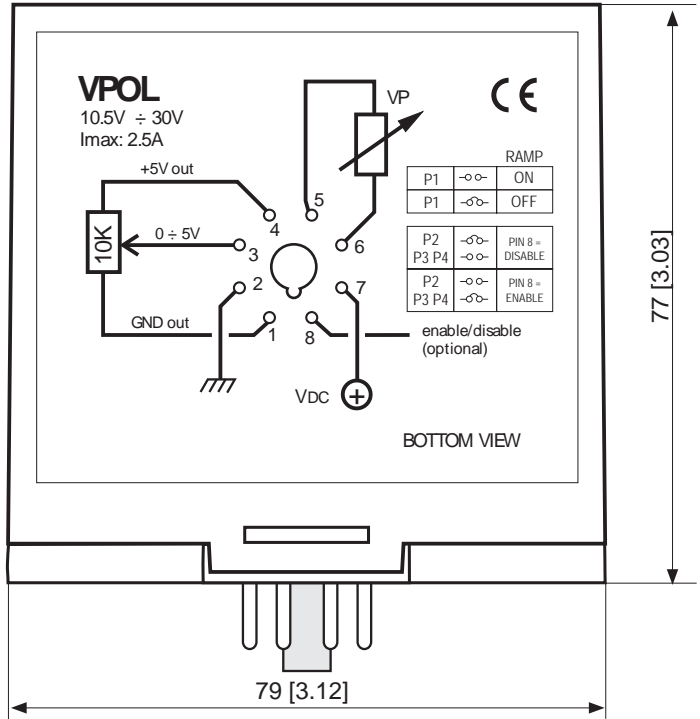
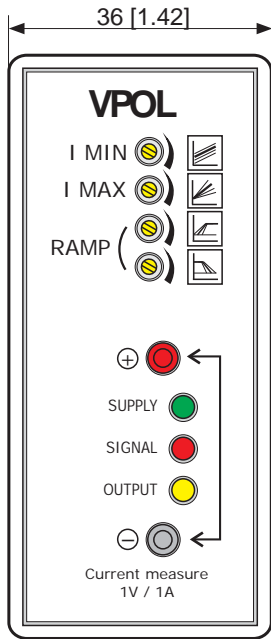
YVPP2 electronic regulator is designed for single solenoid proportional valve open loop control. Current regulation potentiometer is connected and assembled yet on electronic regulator. Current range (offset and gain), ramps times and PWM frequency can be modified through trimming potentiometer (placed on the back side of card) to meet different kind of valves specifications. YVPP2 is protected against supply overvoltage and polarity inversion. PWM output is protected against short-circuit. Electronic card is epoxy resin protected.

INSTALLATION

You can mount the regulator on panel through two countersunk screws M4x10 (included). In the picture on side is showed front panel dimensions and drills mask. With VPP2 regulator is also included a sticker with graduated scale from 0 to 10. You can use this sticker as reference scale for potentiometer adjustment.



YVPOL ELECTRONIC REGULATOR FOR PWM CONTROLLED SOLENOID



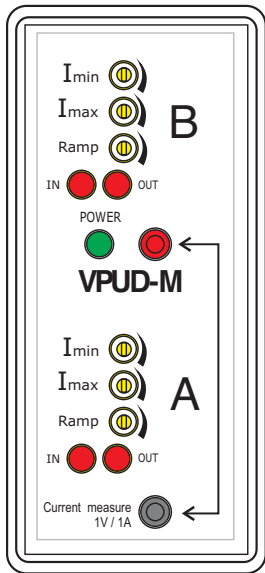
LED on panel for:

- Supply
 - Output current
 - Input signal
- Potentiometer for:**
- Offset current (Imin)
 - Gain (Imax)
 - Ramp rise
 - Ramp fall
 - Frequency (inside)

TECHNICAL SPECIFICATIONS

Power supply	from 10.5 to 30 Vdc
Reference signal	0 ÷ 10V max (optional 4 ÷ 20 mA)
Reference input impedance	20 kOhm
potentiometer supply	4.6 V
Max output current	2,5 A
Ramp range regulation	0 - 5 sec (separate rise/fall)
PWM frequency	50 ÷ 250 Hz (preset to 120 Hz)
Room working temperature	-10°C ÷ +60 °C • -50° ÷ 140°F
Indirect current measure (test point on panel)	1V read every 1A output current
Enable/Disable optional input	Vsupply commanded

YVPUD-M ELECTRONIC REGULATOR FOR TWO PWM CONTROLLED SOLENOIDS



TECHNICAL SPECIFICATIONS	
Power supply voltage:	10Vdc ÷ 30Vdc
Input signal range:	-5V ÷ +5V or 0V ÷ 10V or ¼ ¾Vsupply
Max output current:	2.5 A
External potentiometer supply:	-5V and +5V (max 10 mA)
Input signal impedance:	11 kOhm
Indirect current measure (test point on panel):	1V / 1A
Working temperature range:	-20 ÷ +50 °C • -68° ÷ 122°F
Independent regulations for each solenoid	min current (offset), max current (gain) and rise/fall timeramp.
Undecal type housing for DIN guides mounting	
Overall dimensions:	79 x 36 x 77 mm [3.11 x 1.41 x 3.03 in]
Weight:	200 g [0.44 lbs]

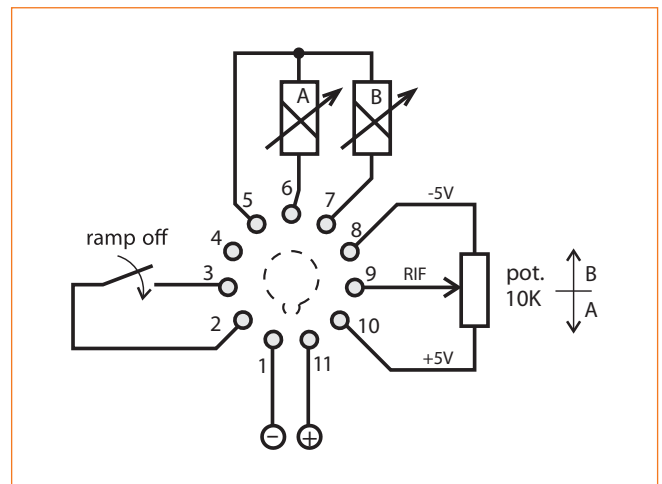
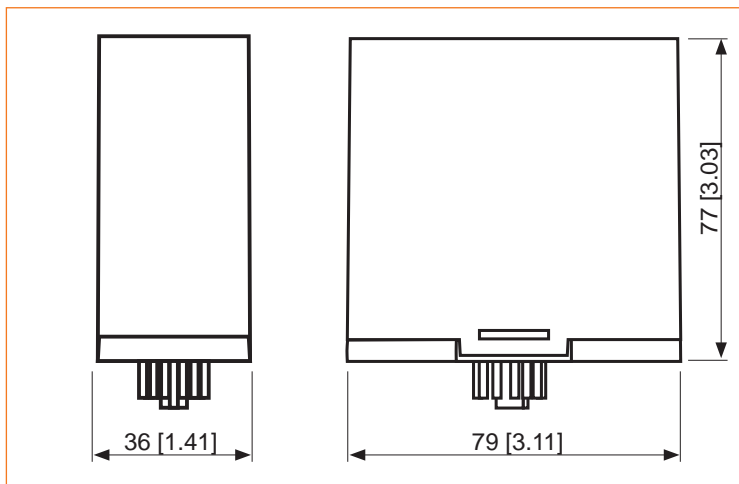
WORKING DESCRIPTION

The YVPUD-M electronic regulator is designed to command two proportional solenoids with one reference signal. Solenoids are controlled (PWM) with feedback signal so that linearity between output current and input signal is guaranteed and working is independent from external elements (supply voltage, temperature, etc.). The working frequency (PWM) is set to 120 Hz but it is adjustable from 50 Hz to 330 Hz).

The regulator can be commanded by a potentiometer (the supply voltage $\pm 5V$ are present) but 0 to 10V or ¼ ÷ ¾ Vsupply signals can be utilised (coupling with a PLC). Outputs cannot be active contemporaneously, interlocked by a control circuit.

Minimum (BIAS) and maximum (GAIN) currents and rise/fall ramps are independently adjustable. Ramps are adjustable (between 0.1 and 5 seconds) and disabled by a positive signal connected to the proper input terminal. Red LEDs on panel show input signals variation and current variation to the solenoids, signalling if the output circuit is interrupted.

The regulator is protected against voltage reversal and output short circuits.



YSTU-PWMI ELECTRONIC REGULATOR FOR MULTIPLE PWM CONTROLLED SOLENOIDS

DESCRIPTION

STU-PWM electronic card is a regulator for proportional solenoid valves, which can drive up to 8 modules (8+8 PWM outputs), starting from analog inputs (input signal range from 0 to 5V). If the inputs analog signals are generated from potentiometric joysticks, the control card provides a stabilized 5V supply to power them.

INPUTS

- n° 8 analog inputs signals (range from 0 to 5V);
- n° 1 enable input defined as CONTROL PANEL ON;
- n° 2 ENABLE inputs with different operating features;
- n° 1 input to select LOW/HIGH SPEED(optional);
- n° 3 ON/OFF inputs, directly carried to three power outputs;

OUTPUTS

- n° 8+8PWM outputs, to drive proportional solenoid valves (a pair outputs for each analog inputs);
- n° 1 DUMP VALVE output driven by all manoeuvres;
- n° 1 FAULT output;
- n. 3 ON/OFF outputs, directly driven by three ON/OFF inputs (max 2.5A);

OUTPUTS

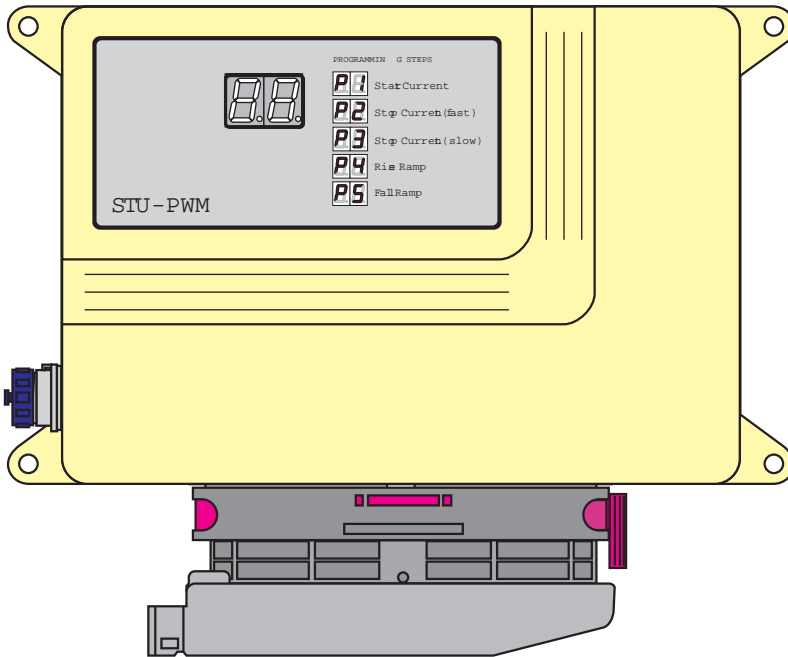
Adjustable PWM frequency, min/max output currents and rise/fall time ramps. As option, STU-PWM is available with two selectable maximum speed sets (LOW/HIGH SPEED), to operate a different maximum speed in different operating conditions.

It is also available a DUMPVALVE output that is turned on when a manoeuvre turns on. This output has a programmable delay on switch off, to avoid elevated pressure spikes in the hydraulic circuit.

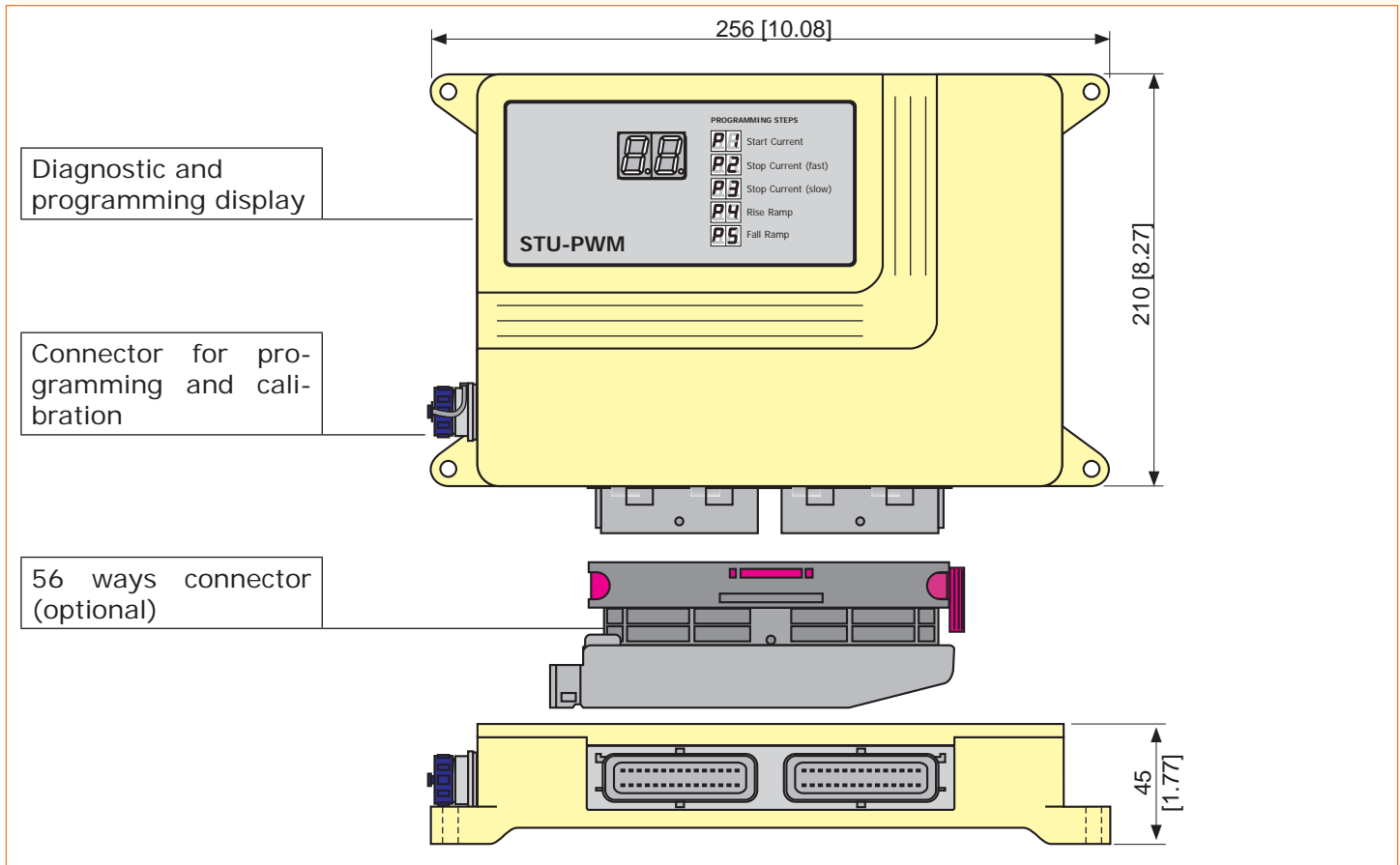
The control unit provides three ON/OFF input/output to drive directly solenoid valves, starting from low power command signal.

To ensure more safety during working mode, the electronic card provides:

- programmable deadband, electrical stroke and adjustable signal threshold;
- an overall relay, feedback controlled, supply all control unit's outputs;
- three inputs ENABLE signals (CONTROL PANEL ON, ENABLE1 and ENABLE2)
- an output to control the DUMP VALVE;
- an output (FAULT) to drive a warning light or a relay that report errors on analog inputs.



YSTU-PWMI ELECTRONIC REGULATOR FOR MULTIPLE PWM CONTROLLED SOLENOIDS



Order codes for STU-PWM control unit (without connector):
Code: PSCH45i

4	- 4 functions (4+4 PWM outputs)	<input type="checkbox"/> R with two speed sets
5	- 5 functions (5+5 PWM outputs)	
6	- 6 functions (6+6 PWM outputs)	
7	- 7 functions (7+7 PWM outputs)	
8	- 8 functions (8+8 PWM outputs)	

TECHNICAL SPECIFICATIONS	
Power supply voltage	10Vdc ÷ 30Vdc
Current absorption	300 mA + load outputs
External potentiometers power supply voltage	+5V short circuit protected, max current 10 mA
Working temperature range	-20 ÷ +70 °C • -68° ÷ 158°F
PWM minimum current range	from 100 to 2500 mA
PWM maximum current range	from 100 to 2500 mA
Available PWM frequencies	50-60-70-85-100-125-150-200-250-300 Hz
ON&OFF outputs maximum current	2500 mA (700 mA for FAULT output)
Analog inputs impedance	11 KOhm towards 2.5V
Overall dimensions with connector mounted	256 x 210 x 45 mm [10.08 x 8.21 x 1.11 in]
Drill interaxis	242x242 mm [9.52x9.52 in] n. 4 holes, max dia 6 mm [0.24 in]

YCIVP PROPORTIONAL SOLENOID INCREMENTAL CONTROL DEVICE

OPERATION

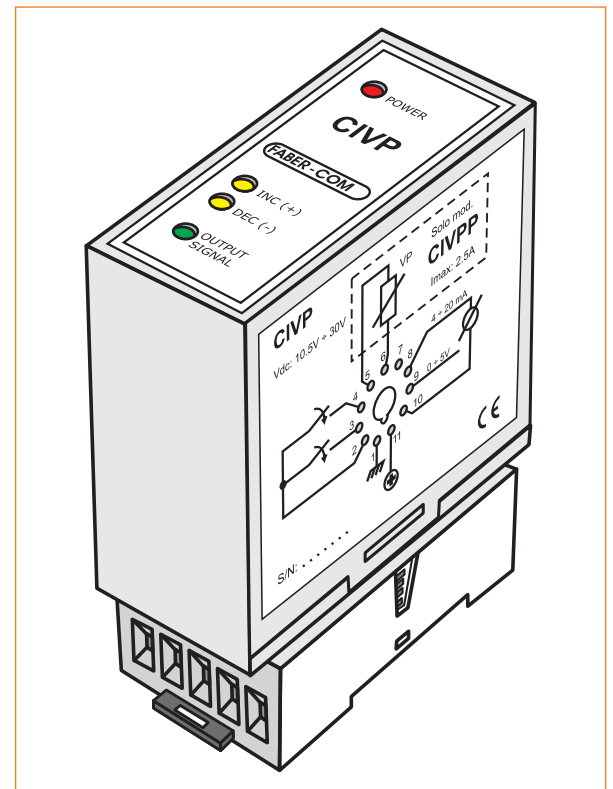
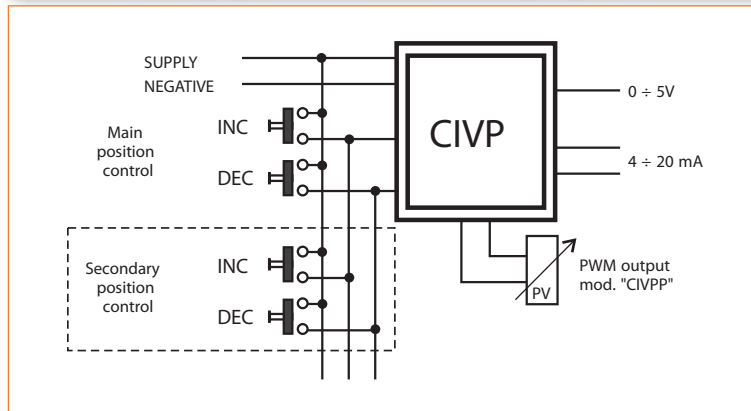
The CIVP card can be considered like an **ELECTRONIC POTENTIOMETER**

It can be used to replace a potentiometer with the further possibility to have several control working positions at the same time.

FEATURES

- Voltage output signal $0 \div 5V$, and current output signal $4 \div 20 mA$.
- Output regulation by a pair of push buttons.
- Easy to command from several control working positions at the same time (simply with the connection in parallel of the others push buttons pairs)
- At the start-up the output can take the last set value or zero.
- Automatic increase/decrease, if the regulation button is held pushed, with the possibility to choose between two different speed.
- On the frontal panel some leds show the output and the control push buttons state.
- Available with proportional solenoid valve direct PWM output (mod.CIVPP)

WIRE DIAGRAM



TECHNICAL SPECIFICATIONS

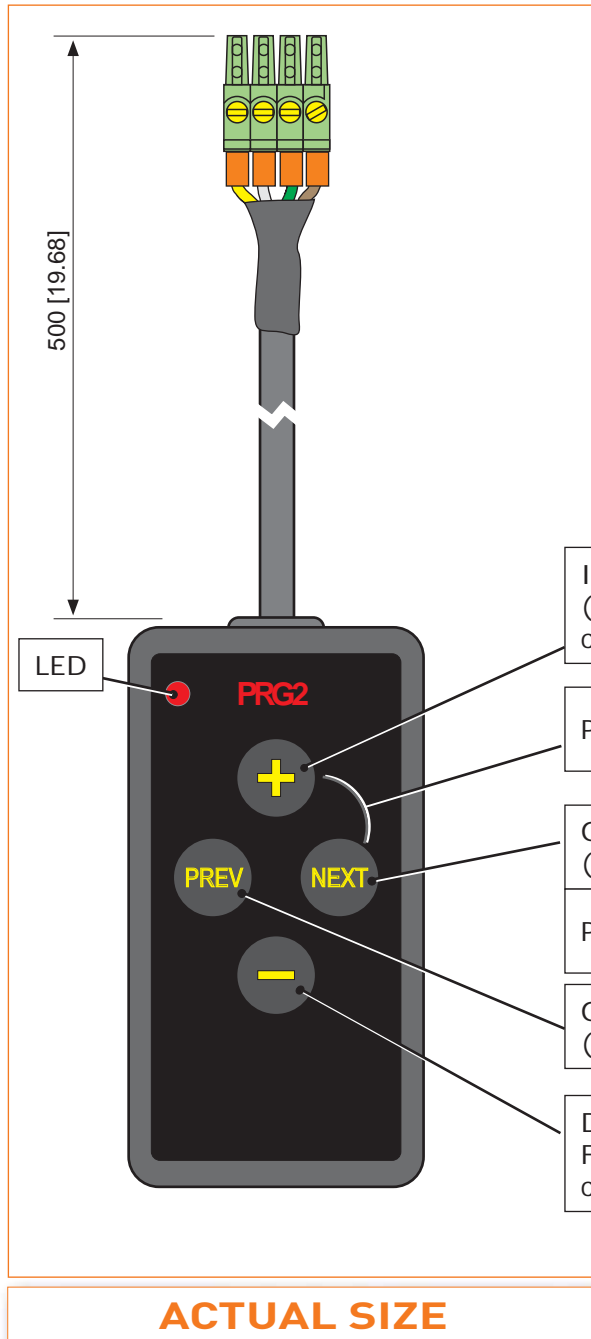
Power supply voltage	10 Vdc ÷ 30 Vdc
Voltage output signal	0 ÷ 5V - Max current: 5 mA
Current output signal	4 ÷ 20 mA
Output signal resolution	256 levels
Output signal stability	< 0.5%
Working room temperature	-20 ÷ +60 °C • -68° ÷ 140°F
Case	Plastic box with Undecal connector
Overall dimensions	79 x 36 x 77 mm [3.11 x 1.42 x 3.03]
Weight	200 g [0.44 lbs]

YPRG2 PROGRAMMING KEYBOARD

DESCRIPTION

The PRG2 keyboard is the simplest device that can be used to tune working parameters on the last-generation electronic cards developed by manufacturer.

With PRG2 keyboard and the help of the two-digit display mounted on the electronic card to be programmed, or the flashing LED on the PRG2, you will be able to scroll all the working parameters and the tune them at will.



ACTUAL SIZE

At the end of the programming phase, it is necessary to save parameters in memory by pushing contemporaneously the PREV and the NEXT buttons, otherwise all the modifications will be lost when the device will be turned off.

PRG2 keyboard connector can be plugged in and pulled out from his socket on the electronic card even with the system turned on.

The presence of the programming keyboard will be automatically detected and the device will go in programming mode.

The LED shows, with a series of flashes, the current programming step.

WORKING SPECIFICATIONS

Increase the value of the current parameter.
(For some of the parameters, to see the value displayed changing, you have to push the button 2 or more times.)

Push "+" and NEXT together to send a CALIBRATE command

Go to the next parameter.
(once reached the last parameter, restart from the first)

Push PREV and NEXT together to send a SAVE command

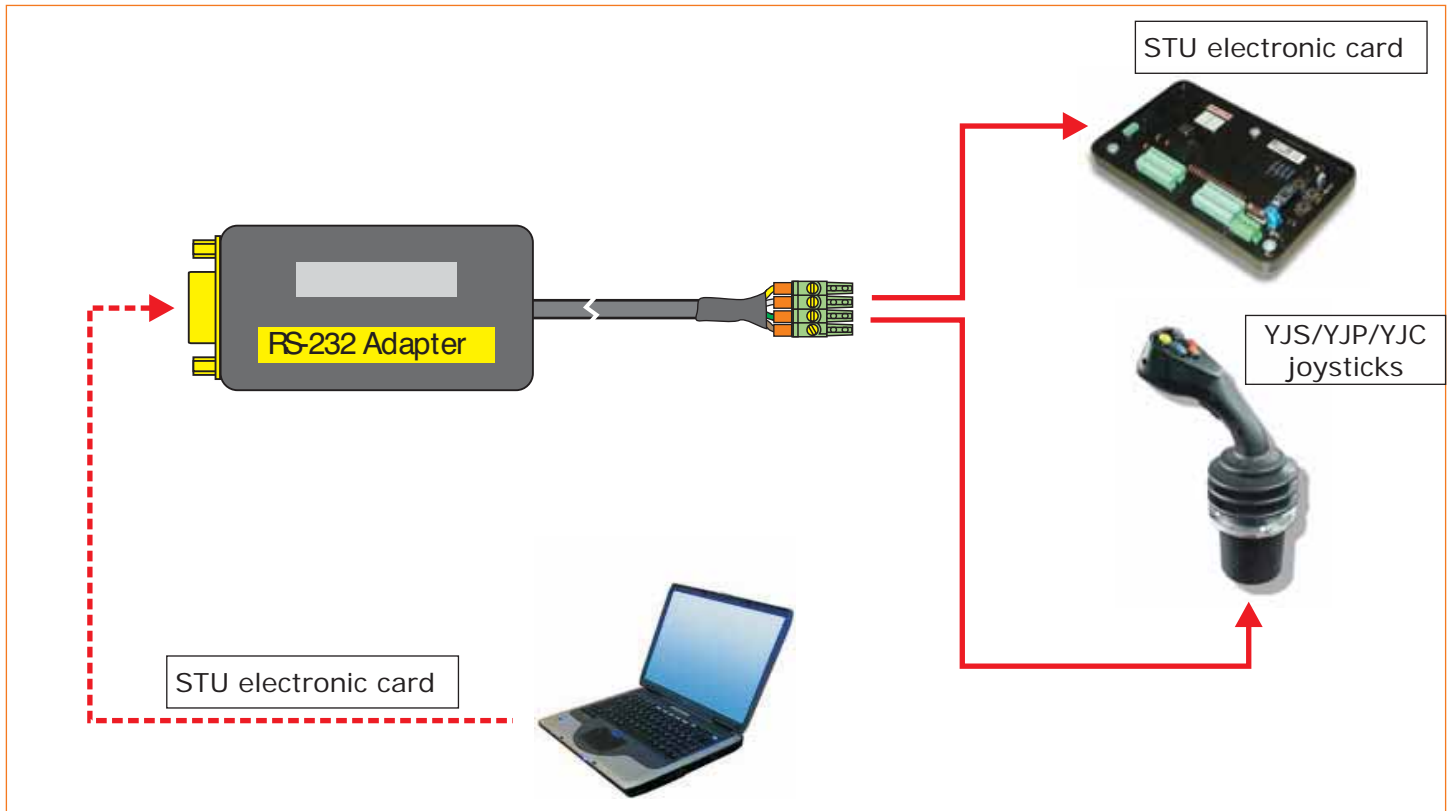
Go to the previous parameter.
(once reached the first parameter, stay there)

Decrease the value of the current parameter.
For some of the parameters, to see the value displayed changing, you have to push the button 2 or more times.)

"+", "-", "PREV" and "NEXT" keys have the autorepeat function that starts 1/2 sec. after they have been pressed.

For more complex needs (extended access mode to reserved parameters, uploading of the entire set of parameters to download to other cards, parameter's value direct introduction, 16x2 LCD display visualization, advanced diagnostics,...) it is available the PCPS serial programmer.

Y AIS SERIAL INTERFACE ADAPTER FOR ELECTRONIC CARDS



DESCRIPTION

The Y AIS Serial Interface Adapter is the only medium to connect our electronic devices (STU electronic card and YJS/YJP/YJC joysticks) to a PC for programming, calibration, firmware updating and working parameters monitoring.

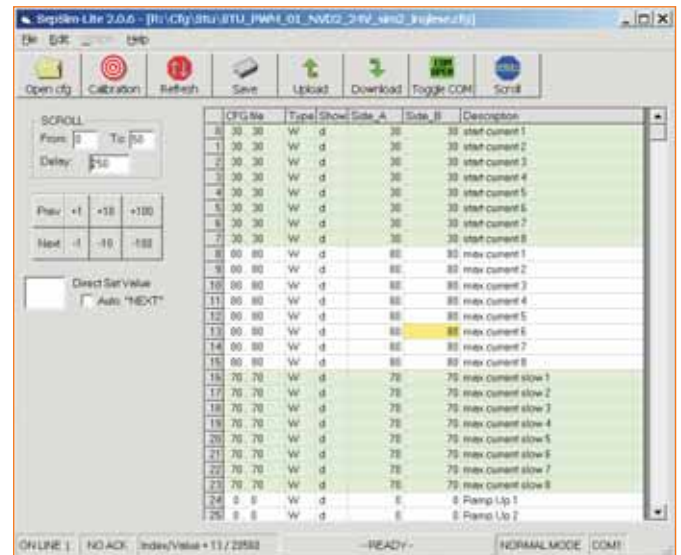
The communication between the device and PC is supported by SepSim, a Windows application (Win98/Win2K/XP tested). The "Lite" version of SepSim is provided freely when the device is purchased.

With this application a device configuration can be saved to a file and downloaded into another device. The application requires a serial port or a USB to RS232 converter.

The program file is self-installing and the application is extremely user friendly.

AIS is provided with a 1,80 m [5.9 ft] long serial cable (DB9 male/female).

On the right is showed the main page of SepSim.



YCCS SALT SPREADER DASHBOARD

DESCRIPTION



The SALT SPREADER dashboard is an electronic regulator that allows you to proportionately control and independently set spreading distance and salt quantity, through the regulation of two PWM outputs.

There are also 3 more switches for auxiliary functions:

- one to set proportional commands to their max value;
- one to control light system;
- one to control a bidirectional function (A-0-B).

The red led on the front panel provides informations during working mode.

The dashboard is provided with cables and DIN connectors for proportional solenoid valves.

On the rear side is placed a strong magnet to fix the dashboard into the cockpit.

FEATURES

Through the PRG2 serial programming keyboard (optional) you will be able to tune minimum and maximum current for each proportional solenoid valve; you can also choose the PWM outputs frequency (70 or 100 Hz).

On the start up the regulator controls the status of the analog signals in order to block PWM outputs if command signals are not at zero position; the system begins to work again when potentiometers are reset to zero.

To ensure more safety during working mode, the regulator provides a threshold for input signals (in case of a broken potentiometer); PWM output will be blocked if the corresponding command signal goes out of its allowed range.

TECHNICAL SPECIFICATIONS

Supply Voltage	10Vdc ÷ 30Vdc
Current absorption	200 mA + output load
Working temperature range	-20 ÷ +70 °C • -68° ÷ 158°F
PWM output minimum current	adjustable from 100 to 2250 mA
PWM output maximum current	adjustable from 100 to 2250 mA
PWM frequency	adjustable: 70 o 100 Hz
ON/OFF output maximum current	5A
Dashboard size	150 x 95 x 95 mm [5.91 x 3.741 x 3.74 in]
Cables lenght	3 m [9.8 ft]
Seal integrity	indoor use only
Cockpit fixing through the magnet on the rear side of the dashboard	

SERVICE CONDITIONS

Our company offers to the customers a **qualified, efficient and express support** by telephone or by direct visit to the customer.

The support service can be used only by installers.

The telephone support is active every working day in office timetable.

At the first contact you have to provide the following informations:

- Type of system;
- System serial number;
- System special characteristics;
- Accurate description of the problem and in which conditions the problem show itself.

Only a competent technician, after he tried to solve the problem by telephone and after he has estimated the type of the defect, can authorise the shipment for the repair or the eventual shipment of a replacement part.

We will accept rendered material only if it has been authorised in advance and it has been shipped "CARRIAGE FREE" (if not agreed in a different way).

In case of technician exit for a repair to the user, it will be always debited, beyond to a fixed right of call, expenses of travel based on the current kilometric rates and the time used for the repair.

MAIN WARRANTY CONDITIONS

The manufacturer guarantees the good working of the equipment of own production for a period of 12 (twelve) months from the date of purchase certified by the invoice at the specified conditions below.

1. The warranty includes, of course, the change or the free repair of the parts of the equipment that have production defects and not damages due to bad maintenance or improper use of the equipment.
2. The manufacturer can decide unquestionably on any issue about complaints and defects.
3. In the hypothesis of improper use or bad maintenance and/or in case of violation of the equipment from users not authorised by manufacturer, the customer will loose all rights of assistance under warranty.
4. The manufacturer has no responsibility for eventual damages that, directly or indirectly, could arrive from people or things for the missed observance of all instructions indicated on the "manual" and, especially, referring to the installation, safety, use and maintenance indications. Moreover this warranty does not include compensation for the equipment inefficiency or stop periods of the machines.
5. The equipment will be repaired in our service center or in the nearest after sale authorised centre. Costs and risks of transport from and to the assistance centre will be at customer charge. Please consider that all costs referring to equipment repair and/or change, as for instance (but not only this) our service center people travelling expenses, will be completely at customer charge.
6. Every defective piece replaced not under warranty will become ownership of the customer.
7. Every defective piece replaced under warranty will become ownership of the manufacturer.
8. For assistance or requests without a well precise fault and for installation or explanation of system use rules, already explained in the "manual", all costs are at buyer charge.
9. If demanded, for all repaired components, will be given a copy of the technical relation with problem description, and added or replaced materials. If the repair is not possible or could be more expensive than the sale price of the new component, the sales department will contact the customer for a new offer and the defective material will be sent back without repair it.



Young Powertech Inc
3060 Plaza Drive # 107
Garnet Valley PA 19061
Tel: (610) 558-0760
Fax: (610) 558-0762
e-mail: info@yptius.com

YDIM SOFT START ENGINE DEVICE

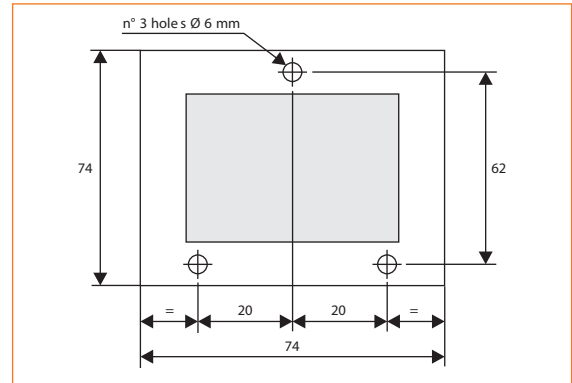
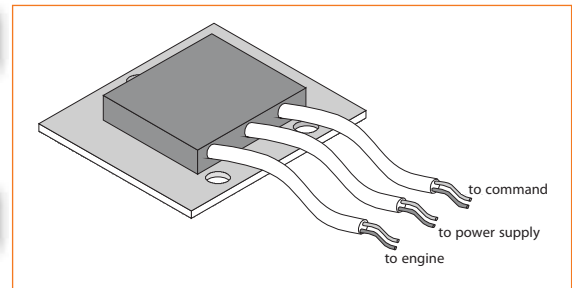
DESCRIPTION

The DIM device can be used to start a D.C. engine, limiting the start current.

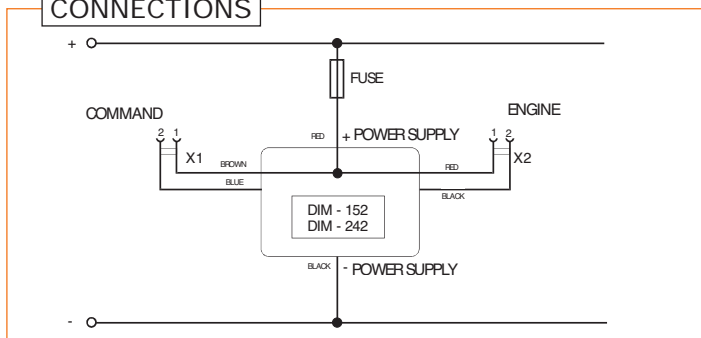
WORKING

The device starts the engine when a contact connected to its input is closed (or if you supply a +24Vdc to the blue wire). This phase of start engine is defined by pulses, at controlled current, of growing duty-cycle. So you will have a start at soft growing speed. At 75% of the start phase, if the charge is in short circuit, the starting will be stopped and the short circuit warning light will be turned on.

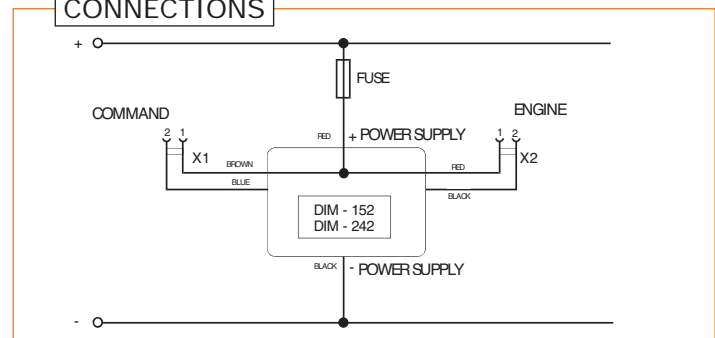
During the starting, the medium supply voltage on the engine allows to the battery to have a soft growing charge, cutting some overcharge and oversupply peaks, to give longer life to the battery, to the electric system and also to the engine. The electronic card is totally covered by synthetic resin.



CONNECTIONS



CONNECTIONS



ORDERCODES

PDAV-S : Standard version, with DIN43650 + FAST-ON connectors (DIM-151/241)

PDAV-C : Version without connectors (DIM-152/242)

TECHNICAL SPECIFICATIONS

Power supply voltage	from 11 to 28Vdc	
Stand-by consumption	0mA	
Current limit during the start phase	DIM-15x about 17A at 12V about 9A at 24V	DIM-24x about 25A at 12V about 15A at 24V
Max engine power	DIM-15x 150W	DIM-24x..... 240W
Start duration time	20s	
Working temperature range (starting cycles of minimum 2 min.)	-40°C ÷ 85°C (fixed on metal support) -40°C ÷ 60°C (fixed on plastic support)	
Power supply cable	DIM-152/242 ...4.0m x 2.5 mmq	DIM-151/241 ...3.0m x 2.5 mmq
Engine cable	DIM-152/242 ... 1.0m x 2.5 mmq	DIM-151/241 ...0.8m x 2.5 mmq
Command cable	DIM-152/242 ... 1.5m x 1.0 mmq	DIM-151/241 ...0.8m x 1.0 mmq
Protection level (only for the device)	IP67	
Overall dimensions	74 x 74 x 20 mm	

YLEV201 AUTOMATIC AERIAL PLATFORM CONTROLLER

LEV-201/2 reads continuously the slope of platform with an angle transducer and it proportionally regulates the oil flow into the two chambers of a levelling cylinder, keeping the platform in horizontal position during every conditions of work.

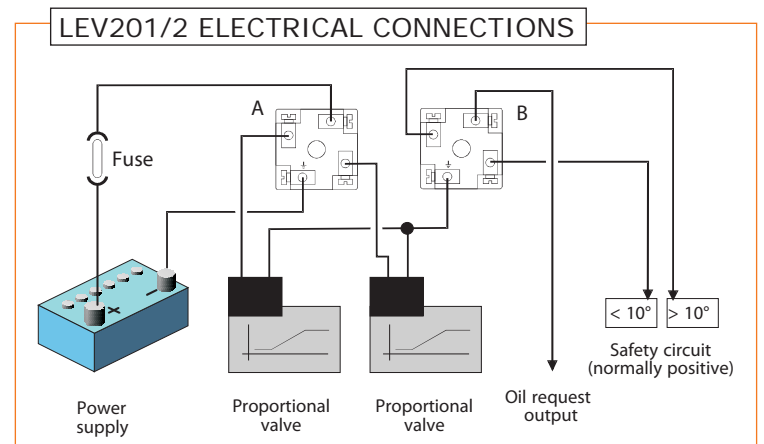
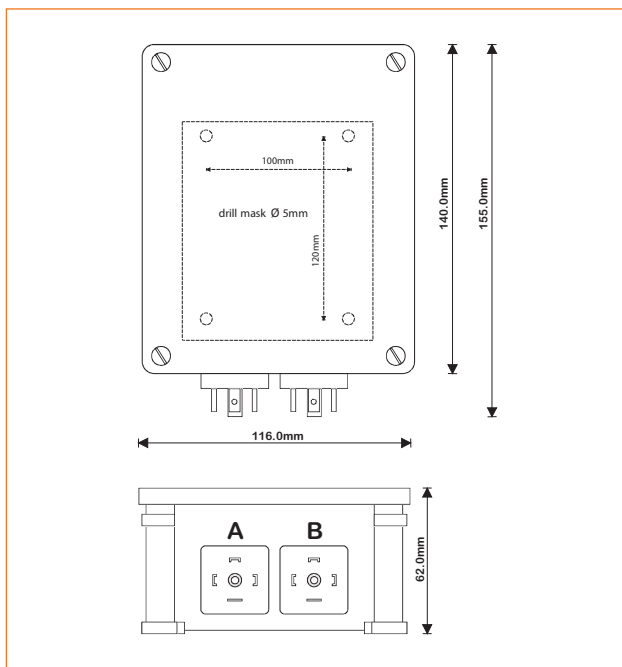
The control unit has two safety by-pass outputs, these positive (2A MAX) outputs are electronic card independent, the first one is active when platform slope is between from -90° to $+10^{\circ}$ and the second is active when platform slope is between from $+90^{\circ}$ to -10° .

Using by-pass outputs it is possible to obtain a safety circuit of class '1' in according to EN954-1 law.

Moreover this outputs protect against wrong handmade correction of platform slope.

An "Oil Request" output is activated when platform slope exceeds of 1° after reference position (in both directions).

All outputs are protected against short-circuit. Electronic card is moulded in resin; this protection defend control unit against water condense into the box.



TECHNICAL SPECIFICATIONS

Power supply voltage	10 Vdc÷32Vdc
Absorbed current (without loads)	18mA@ 12Vdc
Solenoid valves current range	from 0.3A to 1.7A
Maximum current on safety outputs	2A
Maximum current on "Oil Request" output	2A
Working temperature	$-15 \div +70^{\circ}\text{C}$
Connectors	DIN 43650/ISO-4400/6952
IP protection	IP 55