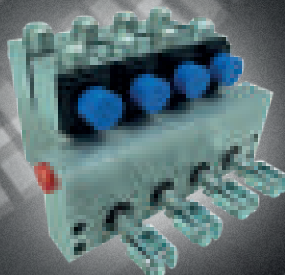




PRODUCT CATALOGUE

FABERCOM





FABER-COM...a growing family



"A Team.

A unique way of thinking.

A unique company vision.

Efficiency and earnestness are the base of our day-to-day work.

Continuing to improve ourselves is our challenge."

Marco Magnani
President - CEO

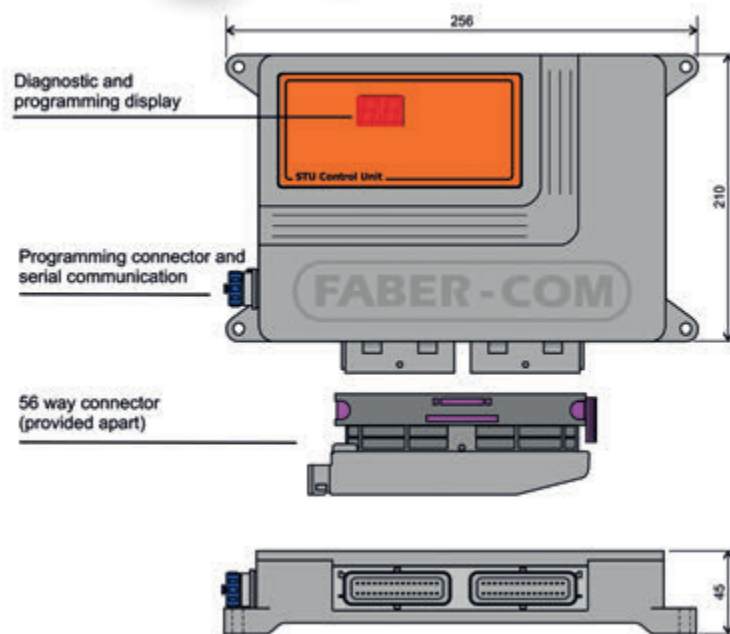
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PROPORTIONAL REGULATORS

FABER





Description

STU-PWMI 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 input analog signals are generated from potentiometric joysticks, the control card provides a stabilized 5V supply to power them.

Inputs

- n. 8 analog input 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+8 PWM outputs, to drive proportional solenoid valves (a pair of outputs for each analog input);
- 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);

Features

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

- programmable deadband, electrical stroke and adjustable signal threshold;
- an overall relay, feedback controlled, supplies all control unit's outputs;
- three input 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 signal errors on analog inputs.

Technical specifications

Supply voltage	10 ÷ 30 Vdc (inner 5x20 8A fuse type F8A)
Max current absorption	300 mA + loads on outputs (max 7.5A)
Supply for external potentiometers	+5V - max current 50 mA
Working temperature range	-40 ÷ +70 °C
PWM minimum current range	from 100 to 2500 mA
PWM maximum current range	from 100 to 2500 mA
PWM frequencies	50-60-70-85-100-125-150-200-250-300 Hz
ON/OFF output maximum current	2500 mA (700 mA for FAULT output)
Input signal impedance	11 kOhm towards 2.5V
Overall dimensions (+ connector)	256 x 210 x 45 mm
Drilling interaxis	242 x 142 mm (n. 4 holes of 6 mm diameter)



MAC2L CAN bus
finger joystick



STU-PWMi proportional regulator with 8+8
proportional PWM outputs

Description

With a series of MAC2L CAN bus finger joysticks it is possible to control all the functions of the forklift; each MAC2L controls one function: lift, tilt, sideshift, fork positioning, ...

STU-PWMi card collects all the CAN bus signals from MAC2Ls and provides proportional PWM outputs to drive the hydraulic directional control valve.

**Description**

MDE-PWM is an electronic regulator that can command three couples of proportional solenoids from three analog input signals centered to 2,5V with range from 0 to 5V.

Technical specifications

Supply voltage	10 ÷ 30 Vdc
Max current absorption	60 mA + loads on outputs
Supply for external potentiometers	+5V - 50 mA max current
Working temperature range	-40 ÷ +70 °C
PWM minimum current regulation range	100 to 2500 mA
PWM maximum current regulation range	100 to 2500 mA
Time ramp up/down independently adjustable	0,1s to 10s
PWM frequencies	50-60-70-85-100-125-150-200-250-300 Hz
Max DV output current	2,5 A
Input signal range	2,5V at center +/- 2.0V (0.5V ÷ 4.5V) or 0 ÷ 5V
Input signal range limitation selectable	Default = ON (thresholds: 0.25V and 4.75V)
Input signal impedance	11 kOhm towards 2.5V (or 22 kOhm towards GND)
Overall dimensions (+ connector)	130 x 128 (+19) x 38 mm
Drilling interaxis	119 x 99 mm (no. 4 M5 screws)
Ingress protection rating	IP68
Weight	about 490 g

Double electronic PWM A+B regulator for Sauer-Danfoss Series 90 pumps

**Description**

The electronic regulator MDE-V90 can control two Sauer-Danfoss pumps series 90 with option KA or KP. The input signals can come from two 1kOhm potentiometers supplied directly by a +5V regulator output (or from the supply voltage in ratiometric version).

Technical specifications

Supply voltage	10 ÷ 30 Vdc
Max current absorption	60 mA + loads on outputs
Supply for external potentiometers	+5V - 50 mA max current
Working temperature range	-40 ÷ +70 °C
PWM minimum current regulation range	9 to 103 mA
PWM maximum current regulation range	10 to 103 mA
Max current to the pump	limited to 250 mA
Max DV output current	2,5 A
Reference input signal (5V range/ratiometric)	0.5V ÷ 2.5V ÷ 4.5V / 25%÷50% ÷ 75% supply voltage
Dead band input signal (5V range/ratiometric)	0,4V / 5% supply voltage
Input signal limit range (5V range/ratiometric)	/ 0,1V ÷ 4.9V / 5% ÷ 95% Vsupply
Input signal impedance	11 kOhm towards 2.5V / 80 kOhm towards GND
Overall dimensions (+ connector)	130 x 128 (+19) x 38 mm
Drilling interaxis	119 x 99 mm (no. 4 M5 screws)
Ingress protection rating	IP68
Weight	490 g

Panel mount PWM proportional controller for single and double solenoid valves

**Description**

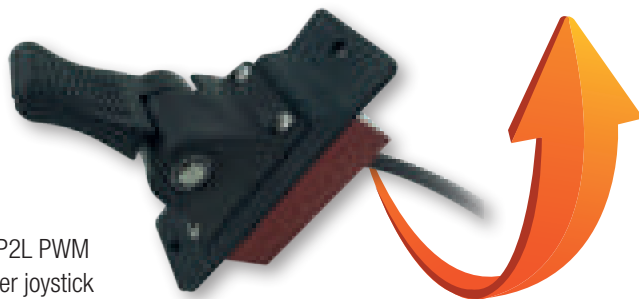
VPP3 is a family of panel mount PWM controllers for proportional solenoid valves. Just mount it on the operator panel, connect power supply and proportional solenoid, then adjust the current using the potentiometer on board. VPP3 is available for single solenoid and double solenoid valves.

Technical specifications

Supply voltage	10 ÷ 30 Vdc
Working Temperature Range	-40 ÷ +70 °C
PWM output min/max current range	50 ÷ 2500 mA
Digital input thresholds	V _{LOW} -V _{HIGH} : 3V _{HIGH} V -V _{LOW} : 2V
PWM frequencies	50, 60, 70, 85, 100, 125, 150, 200, 250, 300 Hz
Max output current	2000 mA each
Connections	Cable L=20 cm with Deutsch DT04-8 connector
Ingress Protection Rating	VPP3-S: IP64 (optional IP67) / VPP3-D: IP67
EMC compatibility	ISO EN 14982:2009



VPP3 proportional PWM,
panel mount controller



MAP2L PWM
finger joystick

Description

Thanks to a series of MAP2L finger joysticks, the operator can control all the functions of the wheel trencher: a couple of manipulators is used to command the tracks, while the remaining joysticks are used to control the movement of the hydraulic arm.

Our VPP3 proportional, panel mount controller instead, allows the operator to easily control the rotation speed of the cutting wheel.

Both VPP3 controller and MAP2L joysticks can directly control the machines control valve, without needing any additional interface unit.

**Description**

The VPUD-M electronic regulator is designed to command two proportional solenoids with one reference signal.

The working frequency (PWM) is set to 120 Hz, but it is adjustable from 50 Hz to 330 Hz.

Technical specifications

Supply voltage	10 ÷ 30 Vdc
Input signal range	-5V ÷ +5V or 0V ÷ 10V or ¼ ÷ ½ ÷ ¾V supply
Max output current	2,5 A
Supply for external potentiometers	-5V and +5V (max 10 mA)
Input signal impedance	11 kOhm
Indirect current measure (test point on panel)	1V / 1A
Working temperature range	-20 ÷ +70 °C
Independent regulations for each solenoid	Min current (offset), max current (gain) and rise/fall timeramp
Housing type for DIN guides mounting	Undecal
Overall dimensions	79 x 36 x 77 mm
Weight	200 g

PWM electronic regulator for single solenoid proportional valves

VPOL

**Description**

The VPOL is an electronic regulator for single solenoid proportional valves, to be mounted on Octal connector.

Technical specifications

Supply voltage	10 ÷ 30 Vdc
Input signal range	0÷10V max (optional 4÷20 mA)
Input signal impedance	20 kOhm
Supply for external potentiometers	4.6 V
Max output current	2,5 A
Ramp range regulation	0.1 - 10 sec (separate rise/fall)
PWM frequencies	50 ÷ 250 Hz (preset to 120 Hz)
Working temperature range	-20°C ÷ +70 °C
Indirect current measure (test point on panel)	1V read every 1A output current
Enable/Disable optional input	Vsupply commanded

Electronic regulator for proportional solenoid valves

VPC

**Description**

This electronic regulator is made to work in open loop control systems. It proportionally controls the current that flows to the analog input signal.

The electronic card is contained in a box that works as a connector, too.

Technical specifications

Supply voltage	10 ÷ 30 Vdc
Input signal range	0 - 10 Volt (0 - 5V)
Input signal impedance	100 kOhm
Max current adjustment range 1A (24Vdc) 2A (12Vdc)	20 - 100%
Bias adjustment range	0 - 30%
Rise time ramp adjustment	0 - 3 sec
Fall time ramp adjustment	0 - 3 sec
Ramps	Linear and independent
PWM frequency set at 120 Hz (adjustable)	50 ÷ 400 Hz
Working temperature range	-20°C ÷ +70°C
Ingress protection rating	IP65



BOX MOUNT VERSION

- two digital inputs IN1 / IN2 to command the two sides of the maneuver.

Multiple command stations can be created connecting in parallel the command signals of each location.



Description

The VRG ramp generator commands progressively a proportional actuator, both in acceleration and deceleration, from a digital command (on/off) or a push-button command.

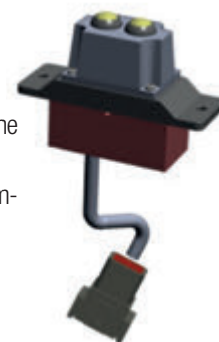
VRG is available with three types of output:

- PWM A+B (to command directly solenoid valves).
- analogue signal (eg: $0 \div 5V \div 10V$ or $0.5 \div 2.5V \div 4.5V$ or $0 \div 10V$ on both sides and directional on/off).
- ratiometric signal (for Danfoss modules).

PANEL MOUNT VERSION

- two push-buttons P1 / P2 to command locally the two sides A and B of the maneuver.

- two digital inputs IN1 / IN2 for the same commands from a remote location.



How it works

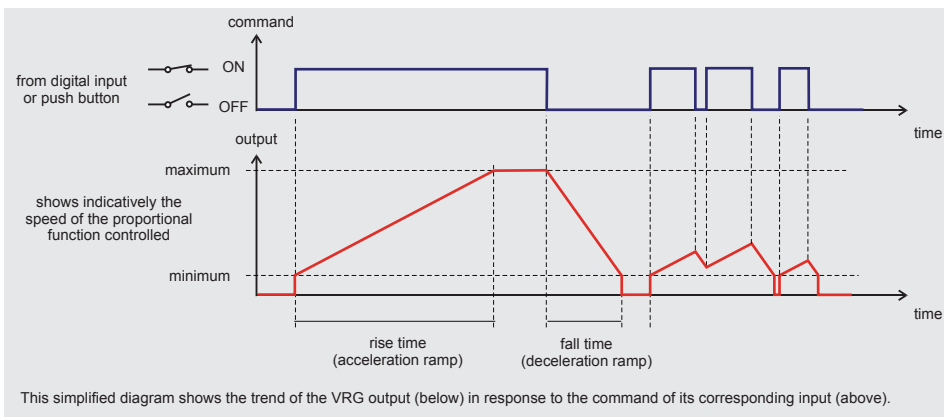
When "side A" is commanded (by IN1 input or by P1 button) starting from rest position, the output moves gradually to the max value set, following a linear acceleration ramp of the duration set, then remains fixed at the maximum value as long as the command is kept.

When the command is released the output descends towards the minimum value with the set deceleration ramp.

Commands for "side B" work in the same way, but using instead digital IN2 input and P2 push-button.

The output can command only one side at a time: one side can be activated only when the ramp of the other side has finished.

The output varies between minimum and maximum value, according to the set acceleration/deceleration ramps.



Incremental control features

The VRG can be configured to work in "incremental mode" (or "step mode"). With this operating mode the output can be adjusted and remain stable at any of the levels defined, between the minimum and maximum, that have been set.

The number of output levels can be set from 2 to 127, for each side of the maneuver.

When this operating mode is chosen, digital inputs and push-buttons change completely their function: they are no more used to activate side A and side B. They are now used to increase/decrease the output level, step by step.

Technical specifications

Supply voltage	10 ÷ 30 Vdc
Working temperature range	-40 ÷ +70 °C
Output current range (min/max)	PWM: 50 ÷ 2500 mA / signal: 0 ÷ 10V / ratiometric: 25 ÷ 50 ÷ 75 % of Vsupply
PWM frequencies	50, 60, 70, 85, 100, 125, 150, 200, 250, 300 Hz
Digital input thresholds	High > 3V / Low < 2V
Digital output max current	2000 mA
Connections	cable L=20 cm with Deutsch DT04-8 connector
Ingress protection rating	IP67

**Description**

G5 Rocket Flex transmitter can control up to 12 on/off functions of the machine, including the pressure and the flow of the concrete.

LEDs on the transmitter give a feedback to the operator when certain limits have been reached.

With a VRG ramp generator, the trailer pump PWM proportional valve can

be commanded directly in a progressive way, using a couple of buttons (“+” and “-”) on the Rocket Flex handheld transmitter to control each function.

Optionally, it is possible to save and recall the last proportional output set at each power-up.



Description

The CPD is a PWM controller for proportional solenoid valves. It commands a couple of solenoids starting from an analogue reference signal in the range 0.5V ÷ 2.5V ÷ 4.5V. A +5V stabilized output can be used to supply an external potentiometer for the reference signal

Features

- adjustable minimum/maximum current for each directions (A+B);
- adjustable rise/fall timeramp up to 25 seconds (step 0.1s);
- adjustable PWM frequency from 50 to 300 Hz;
- output curve shape: linear or parabolic (selectable);
- DV (Dump Valve) output.

Factory preset

- min/max current: 500/1700 mA [ver. 12V] - 250/850 mA [ver. 24V]
- PWM frequency: 100 Hz
- DV output active when a PWM output is commanded

All working parameters are adjustable via a serial port and the SepSim Windows® program using the special serial port adapter AISR.

HOW IT WORKS

The CPD regulator is designed to command directly two proportional solenoid valves.

The input reference signal is converted into a low frequency power PWM command.

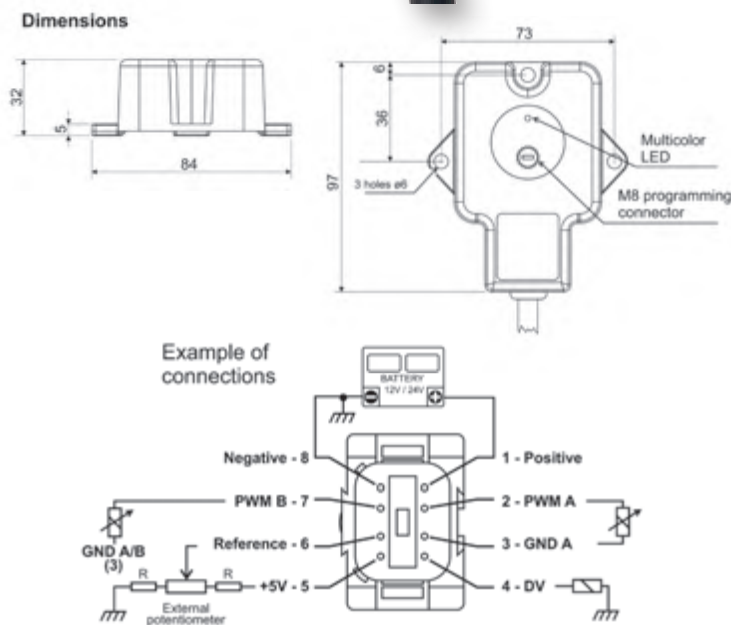
The current through the solenoid is read in feedback in order to keep it stable regardless of the temperature and supply voltage changes.

The frequency of the PWM outputs is adjustable. To get best performances it should be set accordingly with the specifications of the manufacturer of the hydraulic valves.

The electronic card is protected against short-circuits of the load. In case of supply reversal a power diode inside the device short circuits the power supply. This causes the intervention of the external fuse that must be installed.

Setting changes and advanced programming can be done using a PC with serial port, using the SepSim Windows® program and the special serial port adapter with M8 connector.

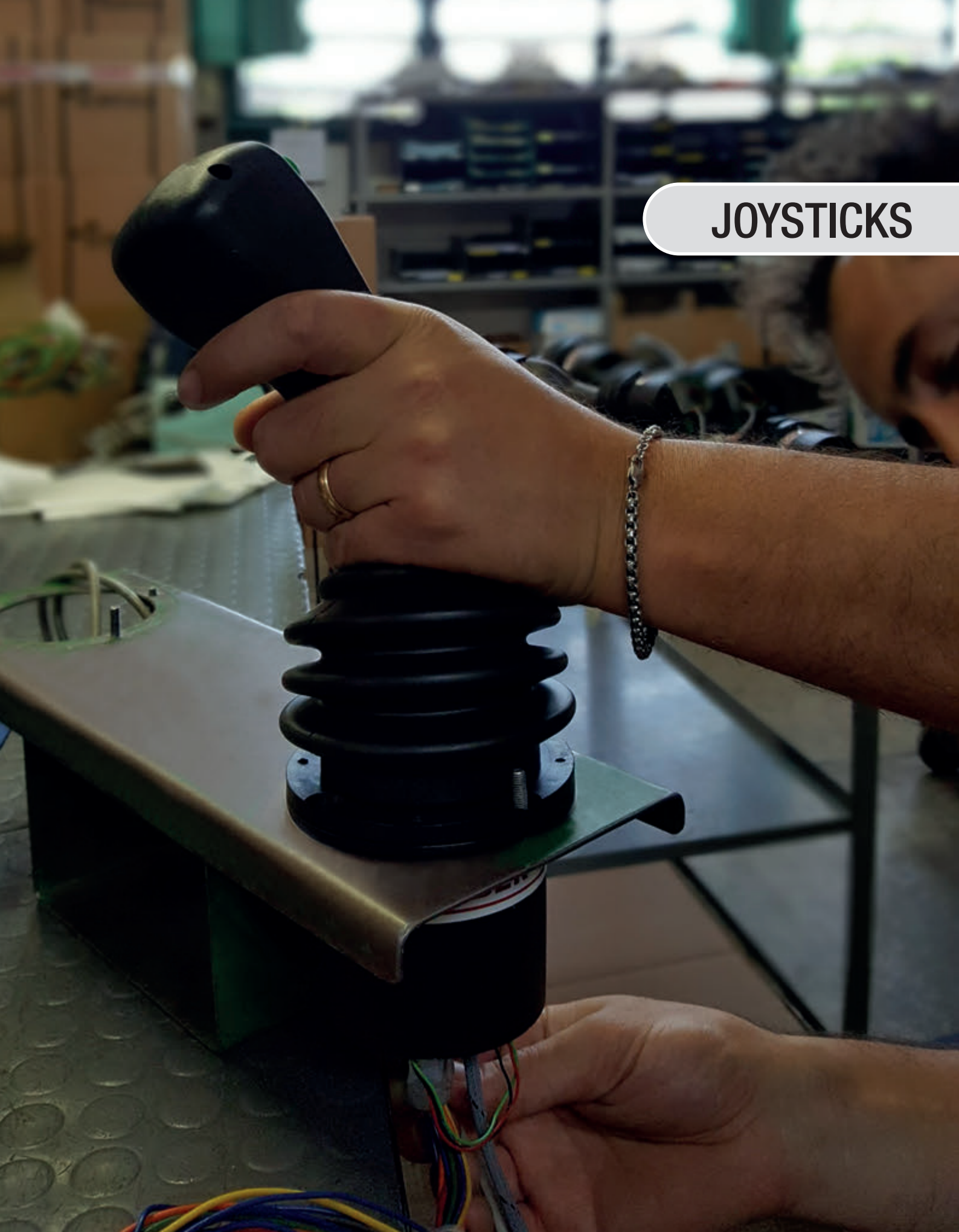
A multicolor LED on the device is lit green when joystick is supplied and gives information on the status of the device with a sequence of colored flashes.



Technical specifications

Power supply voltage	10 ÷ 30 Vdc
Working temperature range	-40 ÷ +70 °C
PWM outputs min/max current range	from 50 to 2500 mA
Stabilized output for external potentiometer	+5 V - max 50 mA
Reference signal input range	0.5 V ÷ 2.5 V ÷ 4.5 V
Analog input impedance	50 kOhm towards 2.5 V
PWM available frequencies	50, 60, 70, 85, 100, 125, 150, 200, 250, 300 Hz
DV maximum output current	2000 mA
External connections	Cable L=20 cm with Deutsch DT04-8 connector
Ingress Protection Rating	IP67
EMC compatibility	ISO EN 14982:2009

JOYSTICKS





Description

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

JS (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).

JP (with PWM outputs) can directly control hydraulic devices (pumps, control valves, dump valve) becoming often the only control unit of the whole machine.

JC thanks to its inputs, can collect a large number of control signals and transmit them through a CAN bus network.

Push button position and thumbwheel codification



L type push button (low profile)



H type push button (high profile)

Available colours: yellow, orange, red, purple, blue, green.

For each push button it is possible to choose the type (high or low) and the colour.

Thumbwheel can be mounted vertically (RV) or horizontally (RO).

Technical specifications

	JS	JP	JC
Supply voltage	10 ÷ 30 Vdc		
Max current absorption	60 mA + loads on outputs (max 2.5 A)	60 mA + loads on outputs (max 10 A)	60 mA + ON/OFF (max 1.4 A)
Working temperature range	-40 ÷ +70 °C		
Output signals	3 analog signals range 0 ÷ 2.5V ÷ 5V, 0 ÷ 5V ÷ 10V, 5V ÷ 0 ÷ 5V, 10V ÷ 0 ÷ 10V - or - 2 analog signals ratiometric (Danfoss) [only two axis available] I _{max} : 10 mA 6 directional outputs 1 DUMP VALVE output 1 FAULT output I _{max} : 300 mA (for each output)	8 - 2.5A power outputs usable as: 3 PWM pairs, 1 BYPASS output, 1 FAULT output - or - 1 PWM output, 6 ON/OFF directional outputs, 1 DUMP VALVE output PWM outputs: I _{min} : 100 ÷ 2500 mA I _{max} : 100 ÷ 2500 mA, Freq: 50 ÷ 300 Hz	CANH - CANL, CAN 2.0B, up to 1 Mbps 1 ON/OFF output controllable via CAN 700 mA max 1 output for push button power supply voltage (5 Vdc stabilized) I _{max} : 30 mA (usable also as 700 mA ON/OFF output)
Input signals	1 ON/OFF input usable as: - speed selection input - movement enable (dead man switch) - X or Y axis commutation to the Z axis If not used, FAULT and BYPASS outputs can be used as ON/OFF inputs (they are bidirectional signals).		Via CAN transmittable: - 2 ON/OFF inputs (one usable as pickup input) - 5 analog inputs, range: 0V ÷ 4.5V, 2.5V centered, usable to read 5 push buttons or 5 bilateral buttons (two usable as 4-20mA analog inputs)
Thumbwheel input signal	Range: 0.5V ÷ 4.5V		
Inputs signal impedance	-	-	11 kOhm towards 2.5V
Connections	Molex minifit Jr. 14 poles with 50 cm cable	Molex minifit Jr. 14 poles with 50 cm cable	Molex minifit Jr. 4 poles with 50 cm cable (CAN and power supply) Molex minifit Jr. 10 poles with 50 cm cable for optional inputs/outputs
Under panel size	diameter 80 mm - depth 90 mm		
Working angle	+/- 18°		
Max force on handle	800 N		
Force for handle at full stroke	14 N (optional 7 N)		
EMC compatibility	according to EN 13309 and EN ISO 14982 regulations		
Ingress protection rating	IP65		
Weight (approx.)	1150 g		



JC CAN bus joystick with LCD display



STU-PWMI proportional regulator with 8+8 proportional PWM outputs

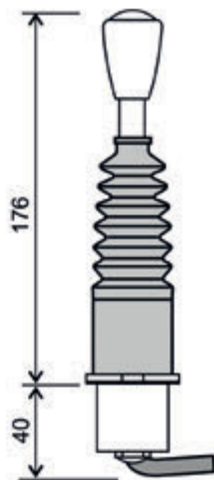
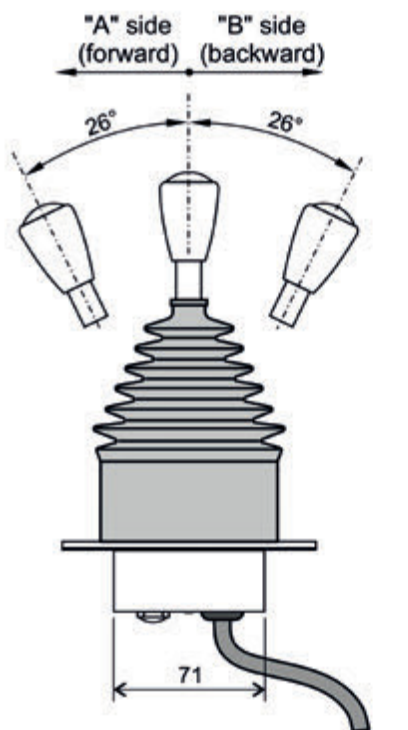
Description

JC CAN bus joystick and STU-PWMI card control all the movements of the hook loader arm, to load/unload the container on or off the chassis. The JC joystick sends control signals via the CAN bus network to the STU-PWMI card, which provides logic for automated functions and PWM outputs to the hydraulic directional control valve; the LCD display shows the user the working status and warning messages.

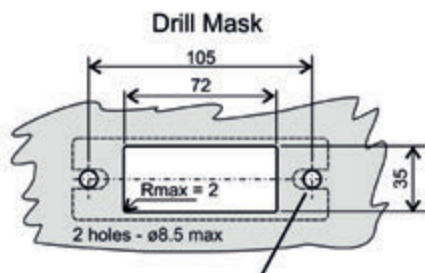
Now available
also in marine
version!



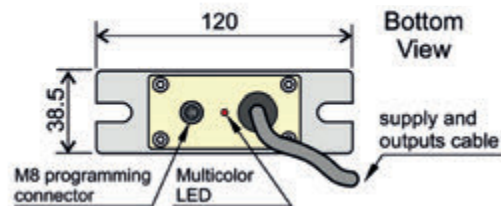
DIMENSIONS (in millimeters)



Top View



Mounting screws must be sealed apart
(rubber gasket does not seal them)



Description

MAP2, MAS2 and MAC2 are single axis electronic joysticks based on the measurement of magnetic field of a permanent magnet through redundant Hall effect probes, not subject to wear and tear.

Common technical specifications

Supply voltage	10 ÷ 30 Vdc
Working temperature range	-40 ÷ +70 °C
Connections	Cable L=20 cm with Deutsch DT04-8 connector (MAP2) / cable L=20 cm with Deutsch DT04-6 connector (MAS2) / L=25 cm cable w/ M12 male connector (MAC2)
Working Angle	± 26°
Force for lever at full stroke	20N
Ingress protection rating	IP65
EMC compatibility	ISO EN 14982:2009

MAP2

It has PWM output, capable of directly controlling a couple of PWM solenoid valves

PWM output minimum current	50 ÷ 2500 mA (250 mA preset)
PWM output maximum current	50 ÷ 2500 mA (850 mA preset)
PWM frequencies	50 ÷ 300 Hz (100 Hz preset)
DV and AUX output maximum current	2000 mA

MAS2

It has voltage signal output to interface with a PLC

Output signal range (programmable)	0÷5V, 0÷10V, (any value in 0÷10V), ratiometric (Danfoss® signal)
Max output current	10 mA
Digital outputs OUT1 and OUT2 maximum current	2000 mA
Input thresholds	Vt-(In1, In2, In3)~2V / Vt+(In1, In2)~3V / Vt+(In3)~80% Supply Voltage

MAC2

It has CAN bus output and all its fundamental operative parameters are programmable through CAN messages

Connectivity	CAN 2.0B
Available bus speeds	50 - 100 - 125 - 250 (default) - 500 - 1000 Kbps

Now available also in marine version!



Description

MAP2L, MAS2L and MAC2L are single axis, electronic finger joysticks based on the measurement of magnetic field of a permanent magnet through redundant Hall effect probes, not subject to wear and tear.

Common technical specifications

Supply voltage	10 ÷ 30 Vdc
Working temperature range	-40 ÷ +70 °C
Connections	Cable L=20 cm with Deutsch DT04-8 connector (MAP2L) / cable L=20 cm with Deutsch DT04-6 connector (MAS2L) / L=25 cm cable w/ M12 male connector (MAC2L)
Working angle	± 30°
Force for lever at full stroke	Approx. 3.5N ±10% (measured on the top of paddle)
Ingress protection rating	IP66
EMC compatibility	ISO EN 14982:2009

MAP2L

It has PWM output, capable of directly controlling a couple of PWM solenoid valves

PWM output minimum current	50 ÷ 2500 mA (250 mA preset)
PWM output maximum current	50 ÷ 2500 mA (850 mA preset)
PWM Frequencies	50 ÷ 300 Hz (100 Hz preset)
DV and AUX max output current	2000 mA

MAS2L

It has voltage signal output to interface with a PLC

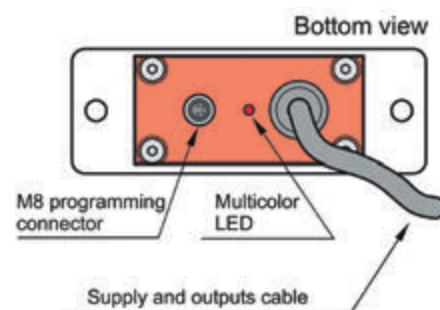
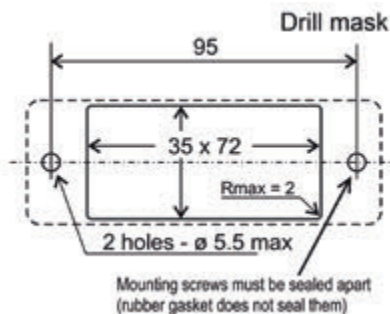
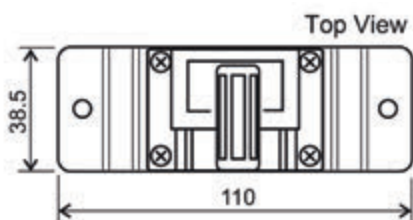
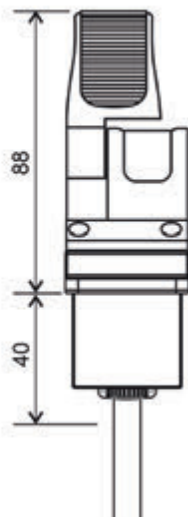
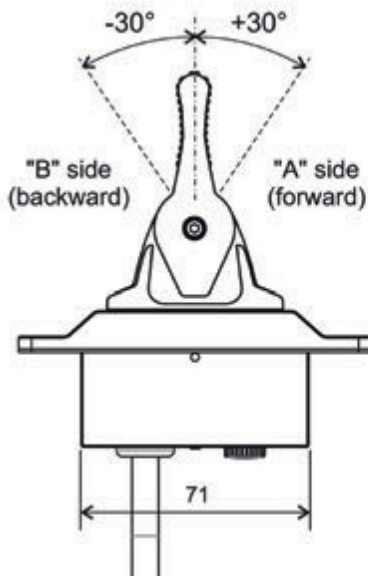
Output signal range (programmable)	0÷5V, 0÷10V, (any value in 0÷10V), ratiometric (Danfoss® signal)
Max output current	10 mA
Digital outputs OUT1 and OUT2 maximum current	2000 mA
Input thresholds	Vt-(In1, In2, In3)~2V / Vt+(In1, In2)~3V / Vt+(In3)~80% Supply Voltage

MAC2L

It has CAN bus output and all its fundamental operative parameters are programmable through CAN messages

Connectivity	CAN 2.0B
Available bus speeds	50 - 100 - 125 - 250 (default) - 500 - 1000 Kbps

DIMENSIONS (in millimeters)





MAC2 CAN bus,
single axis joystick



MAC2L CAN bus, single
axis finger joystick



STU-PWMI proportional regulator
with 8+8 proportional PWM outputs

Description

Our MAC2 and MAC2L joysticks allow to control all the functions of the solar panel cleaning machine: a couple of MAC2 joysticks controls the track movement, while our MAC2L are used to change the position of the sweeper arm.

All CAN bus signals coming from those joysticks are collected by our STU-PWMI proportional regulator, which provides the PWM outputs necessary to control the hydraulic directional control valve.



Description

PCG is an hand grip with an integrated electronic card with two PWM outputs to directly control a couple of PWM solenoid valves. The proportional thumbwheel can be horizontal or vertical on request. A couple of pushbutton can command digital outputs (max 3A). Optional: capacitive deadman.

Signaling

A multicolor LED on the grip front panel provides work status information. In case of errors makes troubleshooting easier thanks to a coded series of colored flashes.

Other versions

- Two other versions are available:
- PCG with signal output (fixed range or ratiometric);
- PCG with CAN output.

Working mode

Main characteristics:

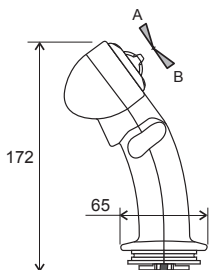
- one proportional section (A+B) direct control (2 PWM outputs max 2.5A);
- adjustable minimum/maximum current for each directions (A+B);
- adjustable rise/fall timeramp up to 25 seconds (step 0.1s);
- adjustable PWM frequency from 50 to 300 Hz;
- digital input for:
 - speed reduction (calibration adjustable for each side);
 - block one or both output sides;
 - deadman feature (to be activated before moving the thumbwheel).
- digital output for:

- "fault" output;
- DV digital output (active when PWM output is on).
- output curve shape: linear or parabolic (selectable);
- all working parameters are adjustable through a serial port and the Windows® SepSim program using a special serial port adapter (AISR);
- the simple adjustment of the current range can be done using the simple 4-keys programmer PRG2R.

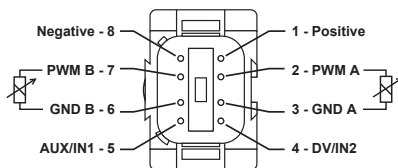
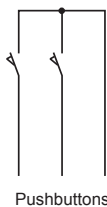
The inner electronic card is protected against short-circuits of the load.

The PWM command of the coils is feedback controlled, in order to guarantee the current stability independently to external factors (power supply voltage, coil temperature, ...).

DIMENSIONS (in millimeters)



Connections



Mounting: M10 thread - L=15 mm

Cable for buttons: sheath with free wires L=20 cm

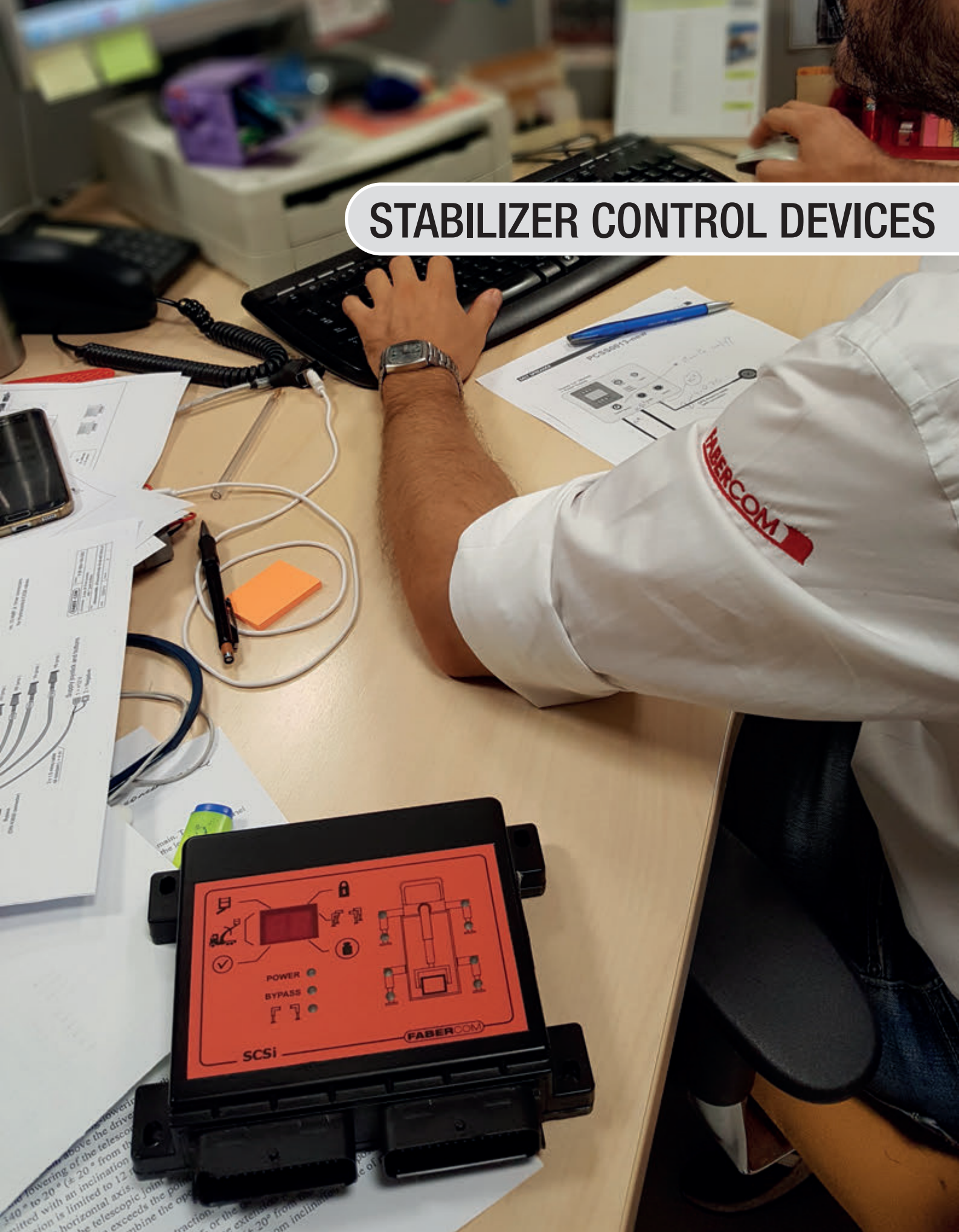
PWM cable: cable with Deutsch connector DT6-8 L=20 cm



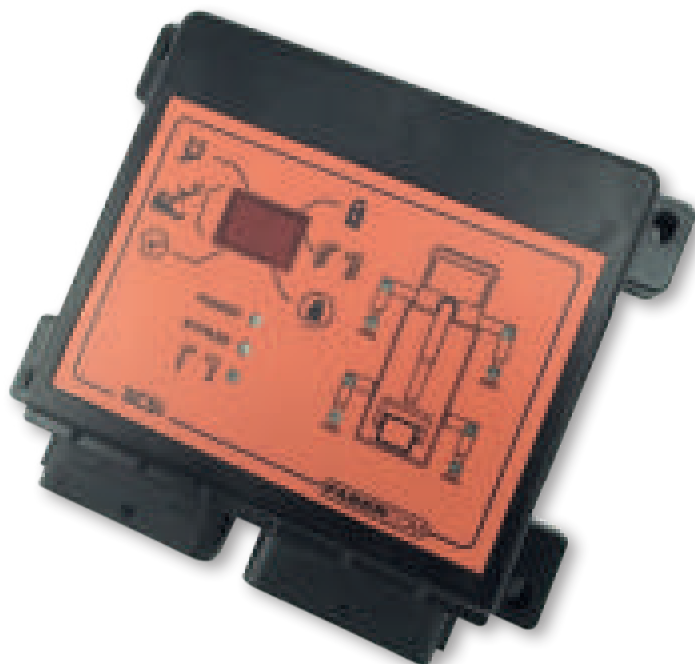
Technical specifications

Power supply voltage	10 ÷ 30 Vdc
Working temperature range	-40 ÷ +70 °C
PWM output minimum current	100 ÷ 2500 mA
PWM output maximum current	100 ÷ 2500 mA
PWM frequencies	50 ÷ 300 Hz
DV and AUX output maximum current	2000 mA
Ingress protection rating	IP2x (indoor use only)
EMC compatibility	ISO EN 14982:2009

STABILIZER CONTROL DEVICES



powering of the drive
above the telescopic
is limited to 12 m
horizontal axis.
the telescopic joint
exceeds the op
traction.
or the extension
+20° from the
om inclination



Description

SCSi is an enhanced safety control unit that has been designed to oversee the working operations of cranes and platform machines.

The control unit is based on a double microprocessor electronic board and it has been designed to implement the safety functionalities of many different devices, in a unique tool.

SCSi fulfils UNI EN ISO 13849-1 requirements about platform machine safety control systems.

The control unit is highly safe and reliable due to the particular redundant electronic architecture: there are up to five outputs in safety category 3 (according to UNI EN ISO 13849-1). Moreover, the electronic board implements a continuous input auto test to increase reliability.

Main features

- Enhanced diagnostics display to show the machine status.
- FCI 56 ways IP65 automotive connector.
- Safety category 3 outputs (UNI EN ISO 13849-1) for: stabilizer movement enable, truck movement disable, main dump valve and working area limitation (only on -R version).
- Outrigger extension and support status independently read and shown.
- GRU / WMB operational modes.
- Speed reduction command in WMB operational mode.
- Ready for radio remote control connection.
- Stabilizer closure check to enable truck movement.
- CAN 2.0B communications.
- Many other analogue inputs and digital inputs/outputs are available to customize the product for special uses.

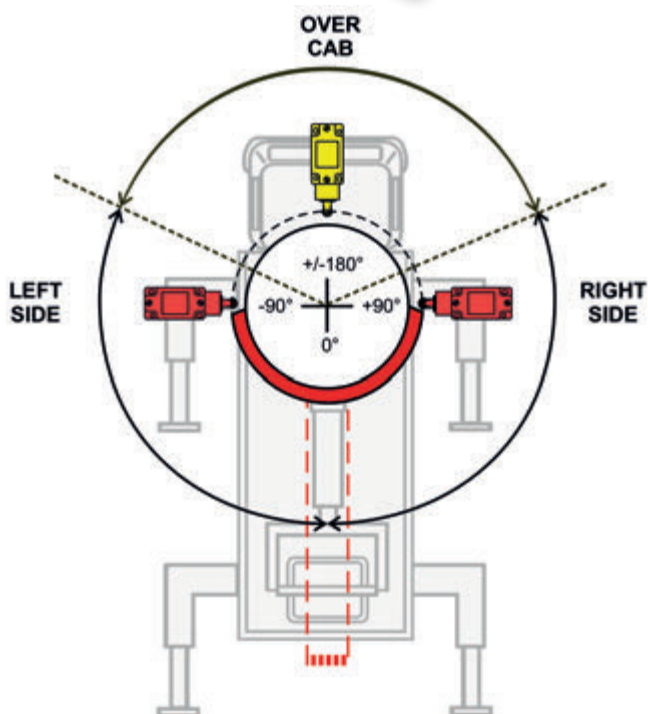
Working area limitation (only on -R version)

The working area limitation module blocks the boom rotation when it goes out of the allowed working sectors.

The working sector is bounded by redundant micro switches.

SCSi checks the stabilizer extension in order to define the allowed working side.

When the boom rotation exceeds the allowed working sector, the control unit inhibits only the dangerous rotation direction.



Technical specifications

Supply voltage	12 or 24 Vdc +/-20%
Max current absorption	300mA + loads on output (7.5A protection fuse)
Max output current	2.5A for each output (maximum total current 7.0A)
Working temperature range	-40 ÷ +70 °C
Overall dimensions	160 x 190 x 40 mm
EMC compatibility	EN 13309 - EN ISO 14982
Ingress protection rating	IP65
Max current in the bypass valve circuit	8A (it's mandatory to protect this circuit with an appropriate protection fuse)

LOAD LIMITER DEVICES



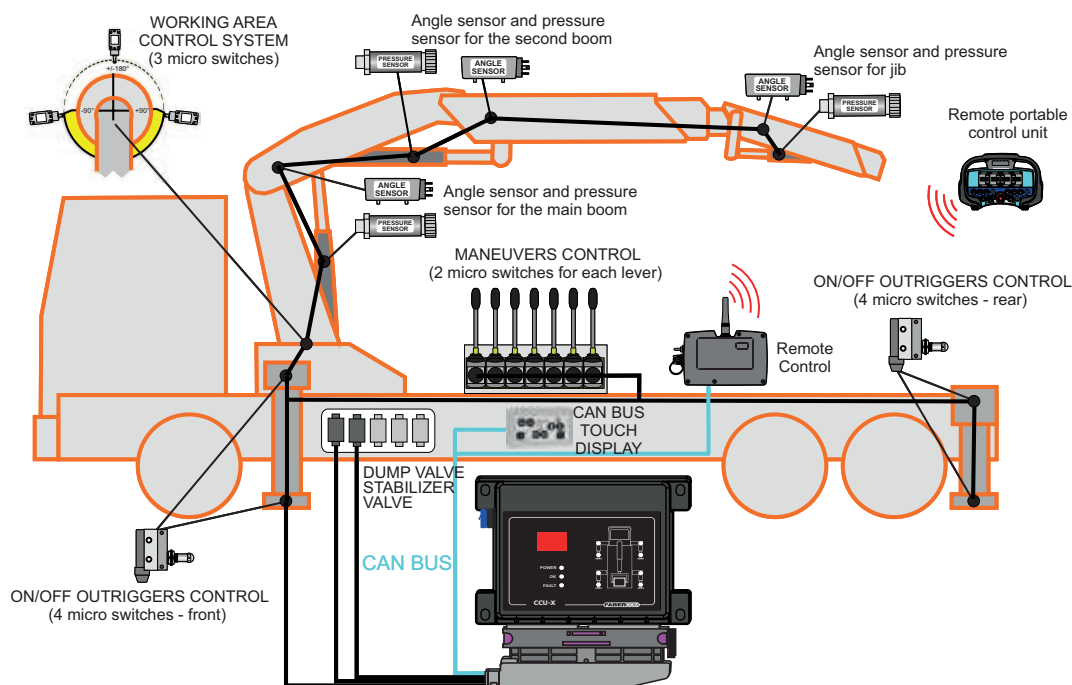


Description

The CCU-X system is a load limiter device for truck mounted cranes based on the reading of pressures inside the lifting jacks. Pressures are compared in real time with the limit thresholds settable by the configurator. The system includes a series of functions and controls listed below:

- management of allowed movements in case of activation of the moment limiting device in relation to the positions measured by angle sensors of main boom, second boom, jib, winch;
- stabilizer and outrigger management using digital or analogic sensors;
- working area management;
- failure and malfunctioning self-diagnostics;
- management of the spool sensors of hydraulic control valve;
- CAN bus direct interface with Scanreco remote control;
- parameter configuration by special display or by PC.

The equipment is fitted with a graphic touch screen panel to show pressures, usage percentages and alarm messages.



Main features

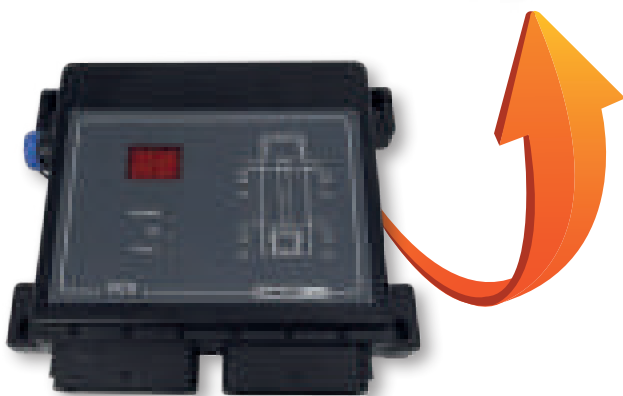
By connecting the spool sensors of the control valve to the CCU-X card, the control unit activates or not the bypass valve according to the load status of the crane. The thresholds are set depending on the position of the stabilizers and outriggers. The angle sensors in the second boom and in the jib are used to monitor the boom position depending on the load and to block the machine in case of overload, allowing only the activation of the maneuvers that bring the system in safety conditions.

Technical specifications

Supply voltage	12 or 24 Vdc +/-20%
Max current absorption	300mA + output load (7.5A protection fuse)
Working temperature range	-40 ÷ +70 °C
Ingress protection rating	IP65
Max output current	2.5A for each output (maximum total current 7.0A)
Dimensions	180 x 154 x 39 mm
Overall dimensions (+ connector)	180 x 190 x 39 mm
Max current in the bypass valve circuit	8A (it's mandatory to protect this circuit with an appropriate protection fuse)



FIP-C dual-axis angle sensor



CCU-X load limiter

Description

A roller crane is mounted on a truck that allows the shifting movement of the crane parallel to the length of the chassis. This kind of crane is used to put long objects on the truck, with the ability to move the base of the crane along the truck. The FIP-C dual-axis, CAN bus angle sensor measures the alignment of the chassis with respect to the ground, ensuring the stability of the vehicle. The CCU-X task is to detect the overload of the booms, avoiding the overturn of the machine.



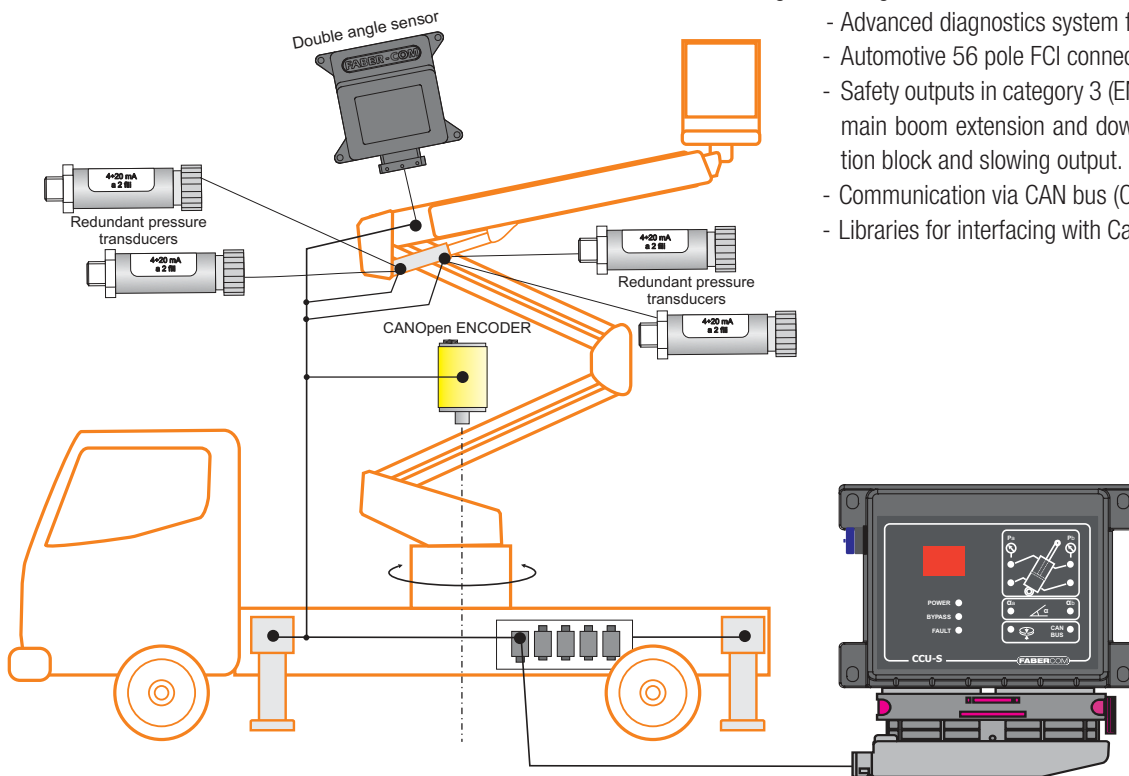
Description

The CCU-S is an integrated control unit, which has the functions of different devices necessary to control an aerial platform installed on a vehicle. A circuit board with a twin microprocessor inside the control board allows an advanced control of the machine, offering the following functions in a unique device:

- dump valve interface
- working area limitation
- load limitation
- outrigger control
- rotation control

Main features

- Check of the machine outriggers by redundant micro switches.
- Check of the platform column rotation by means of a CAN encoder.
- Double differential pressure reading of the jack on the main boom.
- Double reading of the inclination of the main boom.
- Overturning control with intervention limit that is set dynamically depending on the angle of rotation of the column and the status of the outriggers.
 - Advanced diagnostics system for displaying machine status.
 - Automotive 56 pole FCI connector, protection rating IP 68.
 - Safety outputs in category 3 (EN 13849) for: dump valve driving; main boom extension and down movement valve driving; rotation block and slowing output.
 - Communication via CAN bus (CAN 2.0B).
 - Libraries for interfacing with CanOpen Safety encoder (DS-304).



Technical specifications

Supply voltage	12 or 24 Vdc +/-20%
Max current absorption	300mA + output load (7.5A fuse)
Working temperature range	-40 ÷ +70 °C
Ingress protection rating	IP65
Max output current	Max 2.5A for each output (total max output current 7.0A)
Dimensions	180 x 154 x 39 mm
Overall dimensions (+ connector)	180 x 190 x 39 mm
Max current in the bypass valve circuit	8A (it's mandatory to protect this circuit with an appropriate protection fuse)

TERA7 display



JC CAN bus joystick



CCU-S load limiter

Description

Our JC CAN bus joystick and TERA7 color display are installed on the basket cockpit. Through our JC joystick you control all the movements of the platform, which are simultaneously processed by the control unit that commands the hydraulic directional control valve. The TERA7 display shows all the possible information of the platform, including status of the stabilizers, current working area, arm inclination/position, warning and

error messages; it is also possible to show PDF documents and manuals. Our CCU-S is an integrated control unit with a twin microprocessor inside (according to the current regulation), that enables an advanced and redundant control of the machine, managing all the safety functions, such as dump valve interface, working area limitation, load limitation, outrigger control and rotation control.



Technical specifications

Supply voltage	10 ÷ 30 Vdc
Connections	FCI, 24 ways, IP68, mechanical polarization, easy locking cam
Max output current	3A
Working temperature range	-40 ÷ +70°C
Overall dimensions	138 x 110 (147 with connector) x 38 mm
Drilling interaxis	119 x 99 mm (n° 4 screw M5)

Description

CLG-SL load limiter is an electronic device able to control the load of the crane (or another machine) through a pressure transducer, and limits the operations that would cause an overloading and/or an overload of the machine, acting on the bypass valve.

Features

- Two different working areas with two different load limits.
- Fast and easy programming sequence.
- In the respect of EN 954-1, the safety features belong to category 2

Human machine interface

The green led on the board, in normal operation mode, is lighten to show the power supply.

When faults are detected, the green led blinks following a particular sequence related to the fault causes.

A LED bargraph shows in real time the load percentage, compared to the maximum load. When the load exceeds the 100% of the limit, the red LED of the bargraph blinks.

Differential load limiter for cranes

CLG-D



Technical specifications

Supply voltage	10 ÷ 30 Vdc
Connections	FCI, 24 ways, IP68, mechanical polarization, easy locking cam
Max output current	3A
Working temperature range	-40 ÷ +70°C
Overall dimensions	138 x 110 (147 with connector) x 38 mm
Drilling interaxis	119 x 99 mm (n° 4 screw M5)

Description

CLG-D load limiter has been designed to measure the differential pressure of the first boom hydraulic cylinder.

Features

- Two different working areas with two different load limits.
- Fast and easy programming sequence.
- In the respect of EN 954-1, the safety features belong to category 2

Human machine interface

The green led on the board, in normal operation mode, is lighten to show the power supply.

When faults are detected, the green led blinks following a particular sequence related to the fault causes.

A LED bargraph shows in real time the load percentage, compared to the maximum load. When the load exceeds the 100% of the limit, the red LED of the bargraph blinks.



Pressure transducer



G2B-G3 radio remote control

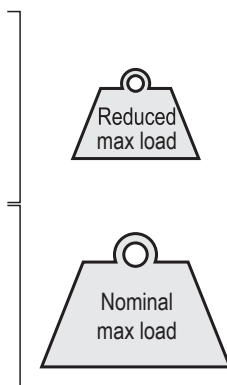
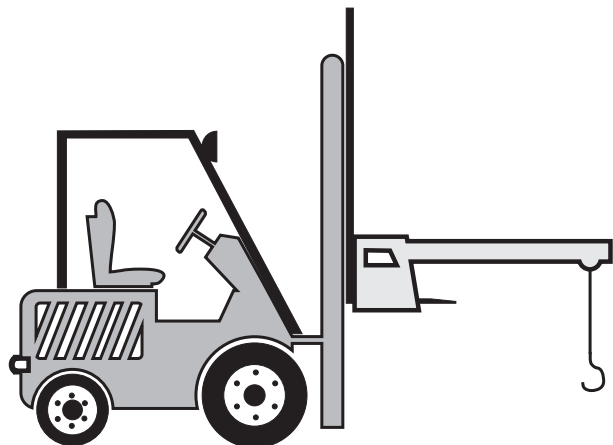


CLG-SL load limiter

Description

Our Scanreco radio remote commands all the movements of the crane (main boom, second boom, jib, rotation, ...), directly controlling the hydraulic directional control valve.

CLG-SL load limiter controls the load of the crane through one pressure transducer (which measures the piston side pressure of the main boom) and limits the operations that would cause an overload and/or an overturning of the machine, acting on the bypass valve. With the LED bar directly mounted on the card, the user can verify the actual load in real time.



Description

Our CLG-F load limiter is an electronic device that, thanks to one or two pressure transducers, measures the load carried by the lifting arm of a forklift. By controlling the bypass valve, this load limiter device is able to avoid the overload and the overturning of the forklift.

Working features

Every time the CLG-F is switched on, the device runs an auto-test of the complete system before entering in working mode. If any faults are detected, the device blocks the bypass valve in order to guarantee the maximum safety of the driver.

After the self-diagnostics, the CLG-F load limiter constantly checks the load lifted by the forklift during the working operations:

- in the version with 1 pressure transducer, the device directly measures the pressure on the lifting cylinder
- in the version with 2 pressure transducers, the device assesses the differential pressure between the bottom side chamber and the piston rod side chamber of the lifting cylinder

When the pressure exceeds the 100% of the set thresholds for the required time, the CLG-F immediately turns the bypass valve off, preventing the dangerous operation: then, the operator simply has to push the reset button and restore the machine to a safety condition.

Our CLG-F load limiter can manage two different height levels with two different maximum allowed loads: in this way, the device automatically adjusts its settings according to the position (low or high) of the lifting arm.

Human machine interface

The green LED on board, in normal operation mode, is lightened up to show the power supply.

When faults are present, the green LED blinks following a particular sequence related to the fault causes. A LED bargraph shows the load percentage in real time, compared to the maximum load. When the load exceeds the 100% of the limit, the red LED of the bargraph blinks.

Technical specifications

Supply voltage	10 ÷ 30 Vdc
Max current absorption	200 mA + loads on outputs
Max output current	3A
Working temperature range	-40 ÷ +70°C
Ingress protection rating	IP68
Connections	24-pole, IP68 connector
Overall dimensions	130 x 128 (+19) x 38 mm
Drilling interaxis	119 x 99 mm (n°4 M5 screws)
EMC compatibility	EN954-1: Category 2

TOWER LIGHTS AND LED INDICATORS





- TL50BL Tower Light**
3 colors: red / yellow / green
- 50 mm diameter
 - visible LEDs
 - continuous light
 - IP67
 - 12 ÷ 30 Vdc supply
 - M12, 5-pin connector
 - also available with omni-directional acoustic alarm



- TL50PBL Tower Light**
1 RGB section
- 50 mm diameter
 - visible LEDs
 - PROgrammable
 - IP67
 - 12 ÷ 30 Vdc supply
 - M12, 5-pin connector
 - also available with omni-directional acoustic alarm



- TL50PBL Tower Light**
2 RGB sections
- 50 mm diameter
 - visible LEDs
 - PROgrammable
 - IP67
 - 12 ÷ 30 Vdc supply
 - M12, 5-pin connector



- K50BL LED indicator**
- 50 mm diameter
 - visible LEDs
 - continuous light
 - IP69K
 - 12 ÷ 30 Vdc supply
 - M12 connector
 - available colours: red, yellow, blue, green



- TL50 Tower Light**
3 colors: red / yellow / green
- 50 mm diameter
 - continuous light
 - IP67
 - 18 ÷ 30 Vdc supply
 - M12, 5-pin connector
 - also available with omni-directional acoustic alarm



- TL30 Tower Light**
3 colors: red / yellow / green
- 30 mm diameter
 - continuous light
 - continuous, omni-directional acoustic alarm
 - IP65
 - 12 ÷ 30 Vdc supply
 - M12, 5-pin connector
 - also available with omni-directional acoustic alarm



- K50 LED indicator**
Programmable RGB version
- 50 mm diameter
 - PROgrammable
 - IP69K
 - 10 ÷ 30 Vdc supply
 - M12, 5-pin connector



- MOUNTING BRACKET**
 - stainless steel



- WIRING**
 - 5m long
 - M12 female connector



TL50PBL programmable tower light with omni-directional acoustic alarm.



G3 CAN bus radio remote control



CAN bus electronic controller (main interface unit)

Description

The radio remote truck driving system is suitable for all trucks equipped with an external steering interface (e.g. Volvo Exster) and includes all the necessary components:

- A CAN bus controller, to be interfaced with the OEM's external steering input
- The complete wiring, making the system a "plug-and-play" solution that can be installed with minimum effort
- A dedicated tower light with omni-directional acoustic alarm, in order to warn whenever the system is active
- The Scanreco G3 CAN bus radio remote control, complete with all accessories. On option, the Scanreco transmitter can be equipped with a tilt sensor. This feature allows to automatically turn the system off if the operator drops its portable control unit

The system can command all functions of the vehicle, including traction, steering, start and stop of the engine, suspensions, service brake, lights and more.

SENSORS





Description

FIP-C is a device that uses CAN bus interface to give information about dual-axis inclination. The sensor measures the angular inclination with respect to the horizontal plane.

It can operate with a measurement range up to ± 45 degrees. The inclination measurement is based on a IC high accuracy accelerometer.

If the inclination exceeds ± 45 degrees, the value is trimmed and limited to this range.

Setting

The device is equipped with a bubble level and a metallic support which facilitates the zero procedure of the tilt sensor without using other parts.

Features

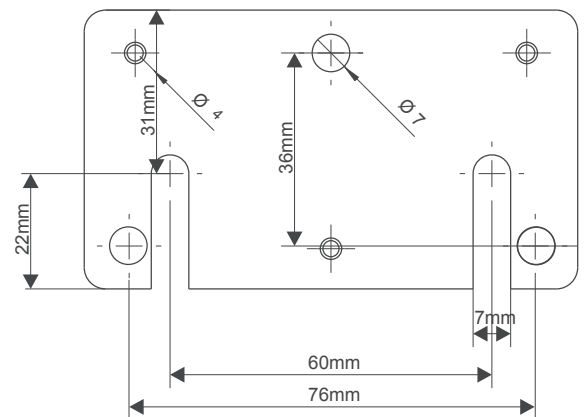
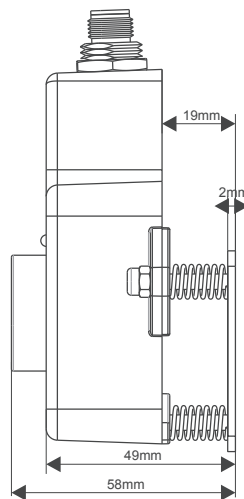
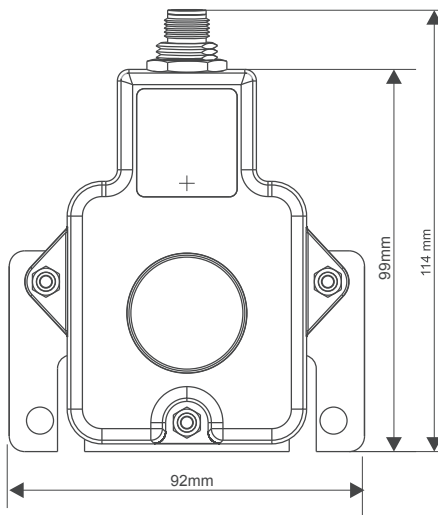
The CAN bus complies with CAN bus specification version 2.0b and the protocol is CANopen compatible.

The inclination value is sent cyclically to the bus.

Using configuration parameters which are stored permanently in the internal device memory, it is possible to make the inclination sensor suitable for different application solutions. In particular, using special CAN bus message, it is possible to configure:

- baud rate (up to 500kb/s)
- nodeID
- transmission interval and other parameters.

Dimensions



Technical specifications

Supply voltage	10 ÷ 32 Vdc
Max current absorption	20 mA
Working temperature range	-40 ÷ 70 °C
Ingress protection rating	IP67
Resolution	0.1 degrees
Accuracy	0.16 degrees
Measurement range for each axis	± 45 degrees
Temperature drift	0,01 degrees/°C
Digital output protection	short circuit, overvoltage



FIP-C dual axis angle sensor

CANVIEW3 display

STU-PWMi proportional regulator with 8+8 proportional PWM outputs

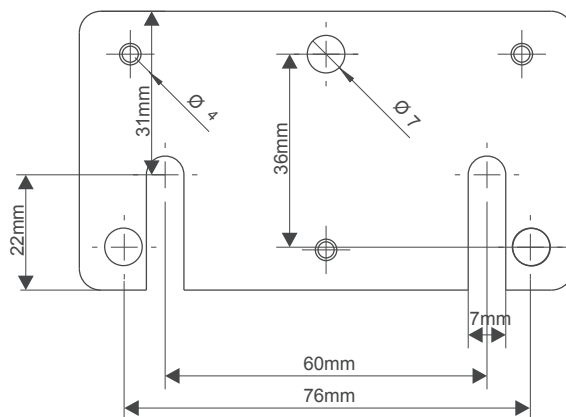
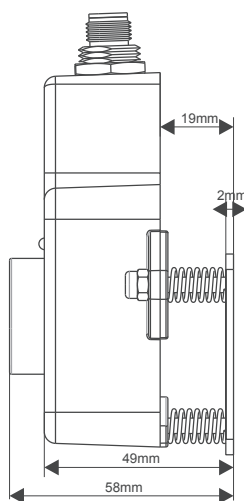
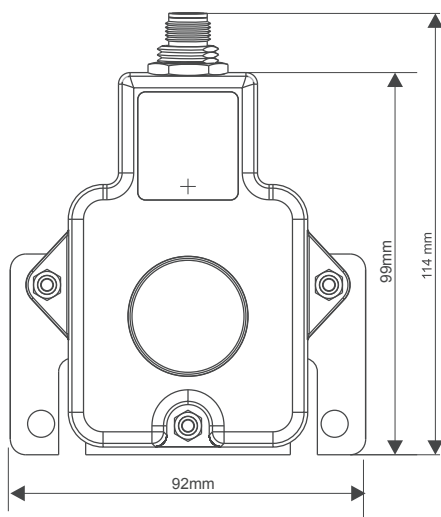
Description

The pile driver system is used to drive piles into the soil to provide foundation support for buildings or other structures; Faber-Com solution is composed by a dual-axis angle sensor (FIP-C), connected via CAN bus to the STU-PWMi card.

The angle sensor measures the pile inclination with respect to the horizontal plane and the STU-PWMi elaborates this information, providing the proportional outputs to place the pile perfectly perpendicularly; the Canview3 LCD display graphically shows the user all the operation steps.



Dimensions



Technical specifications

Supply voltage	10 ÷ 32 Vdc
Digital output voltage	Vsupply - 0,125 V
Max output current	0.5 A
Max current absorption	23 mA
Operating range	±45 degrees
Repeatability error	0.22 degrees
Intervention delay	Programmable
Digital output protection	short circuit, overvoltage
Working temperature range	-40 ÷ 70 °C
Temperature drift	0.01 degrees/°C
Ingress protection rating	IP67

Description

FIP-M digital tilting indicator is a device able to signal when the inclination exceeds one or more predefined thresholds, along two axes, respect to the horizontal plane. Our device is equipped with two independent digital outputs.

Each digital output gives information about horizontal inclination of the system, referring to its own thresholds. Exceeding one or more thresholds changes the output status.

Setting

The device is equipped with a bubble level and a metallic support which facilitates the zero procedure of the tilt sensor without using other parts.

Features

FIP-M tilting indicator is factory preconfigured according to the custom request.

It is possible to reconfigure the device characteristics using a special serial adaptor with PC program (sold separately).

In this way, the thresholds, the output delay, the hysteresis and other characteristics can be changed to suit the most different application requirements.

The applied changes are stored permanently in the internal device memory.

Description

FSI-AN is a single-axis inclination sensor, suitable for measuring inclinations. The sensor can be used for measuring the angular tilt with reference to the horizontal plane.

Technical specifications

Supply voltage	10 ÷ 32 Vdc
Max current absorption (Rload=0ohm)	26mA (to output 4mA), 42mA (to output 20mA)
Working temperature range	-40 ÷ 70 °C
Ingress protection rating	IP67
Resolution	0.021mA (0.27°)
Bandwidth	1Hz

It provides a 4-20mA output, which is proportional to the inclination. Inclination measurement is based on a IC high accuracy accelerometer and a microprocessor which processes the data.

Measurement range	Different ranges available
Temperature drift	<0,021 degrees/°C
Non linearity	<1%FS
Max output voltage drop	5.5V
Overall dimensions (without connector)	112 x 84 x 32 mm
Protection from	short circuit, overvoltage

Single-axis inclination sensor with CAN bus output

FSI-CAN

Description

FSI-CAN is a single-axis inclination sensor with CAN bus interface. The sensor can be used for measuring the angular tilt in reference to gravity. It can operate in the measurement range of 360°. Inclination measurement is based on the high accuracy accelerometer IC and a microprocessor which processes the data.

Technical specifications

Supply voltage	10 ÷ 32 Vdc
Max current absorption	18mA (12V), 20mA (24V)
Working temperature range	-40 ÷ 70 °C
Ingress protection rating	IP67
Resolution	0.01 degrees
Accuracy	0,16 degrees
Measurement range	0 ÷ 360 degrees
Temperature drift	<0,01 degrees/°C
Overall dimensions (without connector)	112 x 84 x 32 mm
Protection from	short circuit, overvoltage



Double, analogue inclination sensor

FSAR-AN

Description

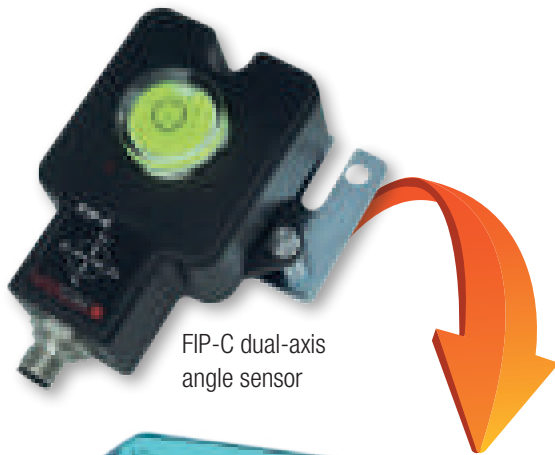
The FSAR-AN is a slope analog transducer with 4-20 mA current output. It is composed by two sensors that work separately. The output current is proportional to the inclination of the sensor compared to the horizontal position.

Technical specifications

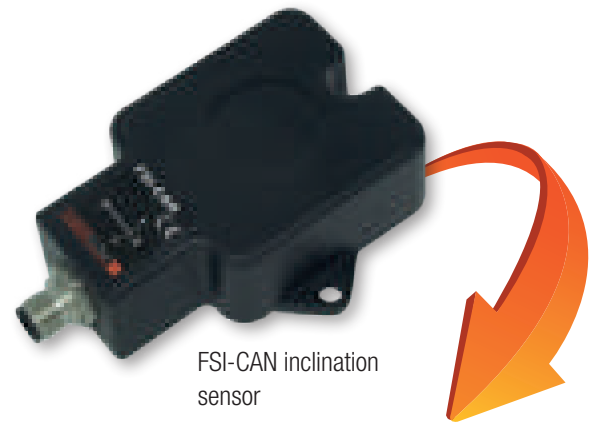
Supply voltage	10 ÷ 32 Vdc
Working temperature range	-40 ÷ 70 °C
Overall dimensions (+connector)	130 x 110 (+37) x 38 mm
Drilling interaxis	119 x 99 mm (no. 4 M5 screws)
Ingress protection rating	IP68
Weight	490 g

Measurement range	Different ranges available
Resolution	0.021mA / 0.16 degrees
Max Current absorbed with output short-circuited	42mA (at 20mA as output)/26mA (at 4mA as output)
Max output voltage drop	valim - 5,5V
Bandwidth	1Hz
Precision @ Tamb -20° + 65°C	±1.07 degrees
MTTF _D (*)	219
SFF(*)	99%
DC(*)	98%

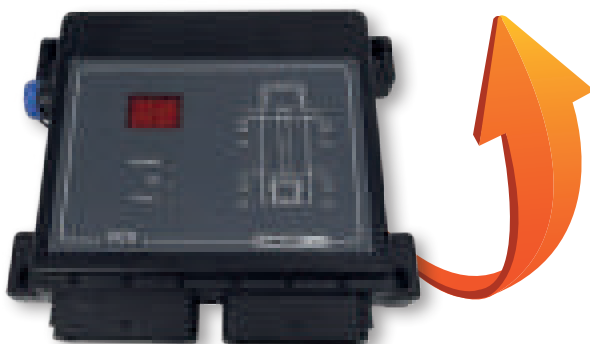
(*) In safety category 3



FIP-C dual-axis angle sensor



FSI-CAN inclination sensor



CCU-X load limiter



CANVIEW3 display

Description

A concrete pump needs a safety control to be maintained stable, with all stabilizers fixed to the ground and the machine aligned to the horizontal plane. Our CCU-X load limiter device reads the signals from the FIP-C dual-axis angle sensors and from the inclination sensors mounted on the boom in order to apply the safety rules adapted to the machine when it's

in working status. In this way, the CCU-X can control the rotation and the dump valve of the machine, preventing all movements that could cause the overturning of the concrete pump.

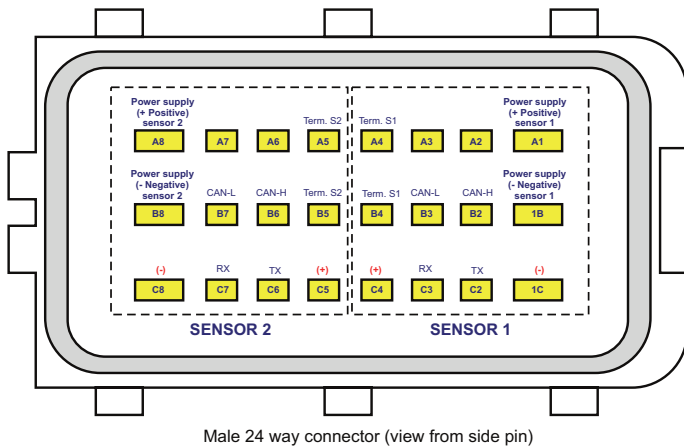
The Canview3 LCD display graphically shows the user all the information about the machine status.



Description

Our FIPR-C device is an angle sensor capable of measuring the bi-axial inclination with respect to the horizontal plane. The measurement is based on an integrated acceleration sensor.

Connections



Technical specifications

Power supply	10 ÷ 30 Vdc
Current absorption	max 20mA
Working Temperature Range	-40 ÷ +70 °C
Seal integrity	IP67
Resolution	0,1 degrees
Accuracy	0,16 degrees
Measurement range for each axis	±45 degrees
Temperature drift	0,01 degrees/°C
Digital output protection	short circuit, overvoltage
Dimensions	130 x 128 x 38 mm

The inclination value is sent cyclically to the CAN bus line, using two different messages with different NodeIDs.

Its CAN bus complies with version 2.0b of CAN bus specification and the protocol is CANopen-compatible.

Thanks to its redundancy, which reduces the probability of failure, this device can be used as a safety component.

FIPR-C can operate in the measurement range of up to ±45 degrees. Inclination measuring is based on a high accuracy IC accelerometer.

If the inclination exceeds ±45 degrees, the value is trimmed and limited to this range.

Each inclination sensor is factory calibrated at 25 °C to guarantee high accuracy.

The inclination sensor has hardware and software filters to reduce interference of vibrations.

Features

The device is equipped with a bubble level to verify immediately its inclination respect to the ground. The bubble level's zero coincides with the device's zero.

If necessary, it is possible to adjust the zero of the device at any time, sending a proper CAN bus command.

It is also possible to modify the sensor configuration in order to make it more suitable for the application where it is used, by means of dedicated CANbus messages.

Please see the documentation about its CAN bus protocol for more information.

Setting

FIPR-C is equipped with 2 red LEDs near the connector, used to show the sensor status:

- both LEDs ON: The device is powered up and works properly in its measurement range.
- one of the two LEDs FLASHING every two seconds: device is not in a correct "operational" status. Send again a NMT message
- both LEDs FLASHING twice per second: device is working in a not correct measurement range
- one of the two LEDs FLASHING twice per second: The device is in fault

ELECTRONIC DEVICES





Technical specifications

Supply voltage	10 ÷ 30Vdc
Max current absorption	28mA
Working temperature range	-20 ÷ +70 °C
Ingress protection rating	IP53
Overall dimensions (+connector)	50 x 75 x 17 mm

Description

The BCT (Box Consent Translation) is a signaling device for visible and acoustic warning. Fitted in the machine driving position, the BCT device indicates to the utilizer when the stabilizers are not locked in the transport position and/or when the boom height exceeds the maximum allowed value.

The audible warning (buzzer) may be silenced by a proper button placed in the device, or by an electrical signal that comes from the vehicle parking brake.

Features

The BCT device is equipped with:

- 1 digital input to acquire the stabilizer status
 - 1 digital input to acquire the boom status
 - 1 digital input to silence the audible warning
 - 3 positives suitable to supply the digital inputs and to facilitate the cabling
 - 1 button to disable the acoustic alarm
 - 2 red leds to signal the danger condition
 - 1 green led
- Digital inputs and power supply are protected against overvoltage and short circuit.

CAN bus acquisition card for analog and digital inputs



Technical specifications

Supply voltage	10 ÷ 30 Vdc
Working temperature range	-40 ÷ +70 °C
Drilling interaxis	119 x 99 mm (no. 4 screws M5)
Max current absorption	200 mA + ON/OFF outputs load
Analog input range	0 ÷ 5V (2,5V rest position)
Analog input resolution	920 levels

Description

The MDCi is an electronic card for the acquisition of multiple analog (up to 8) and 3 on/off inputs and the CAN bus transmission of the acquired data.

Features

- CAN V2.0B communication bus
- 120 Ohm inner terminator present
- 8 analog inputs from 0 to 5V centered at 2.5V (2 of them configurable as 0-20mA inputs)
- 3 ON/OFF inputs (one configurable as PNP/NPN pick up input)
- 2 ON/OFF outputs (0.7A current max supply)
- 5V stabilized output (50 mA max)
- 2 LEDs (red + green) for diagnostic purpose
- firmware updating available through the serial port
- IP68 24 poles connector

ON/OFF output max current	500 mA (each)
Analog signal input impedance	11 kOhm towards 2.5V
Supply output for potentiometers	5V stabilized - max 50 mA
Ingress protection rating	IP68
Overall dimensions (+ connector)	138 x 110 (+37) x 38 mm
Weight	490 g

Description

Our SSC-E salt spreader system is a digital control unit designed to suit any make of single-chamber salt spreader, used for winter road maintenance.

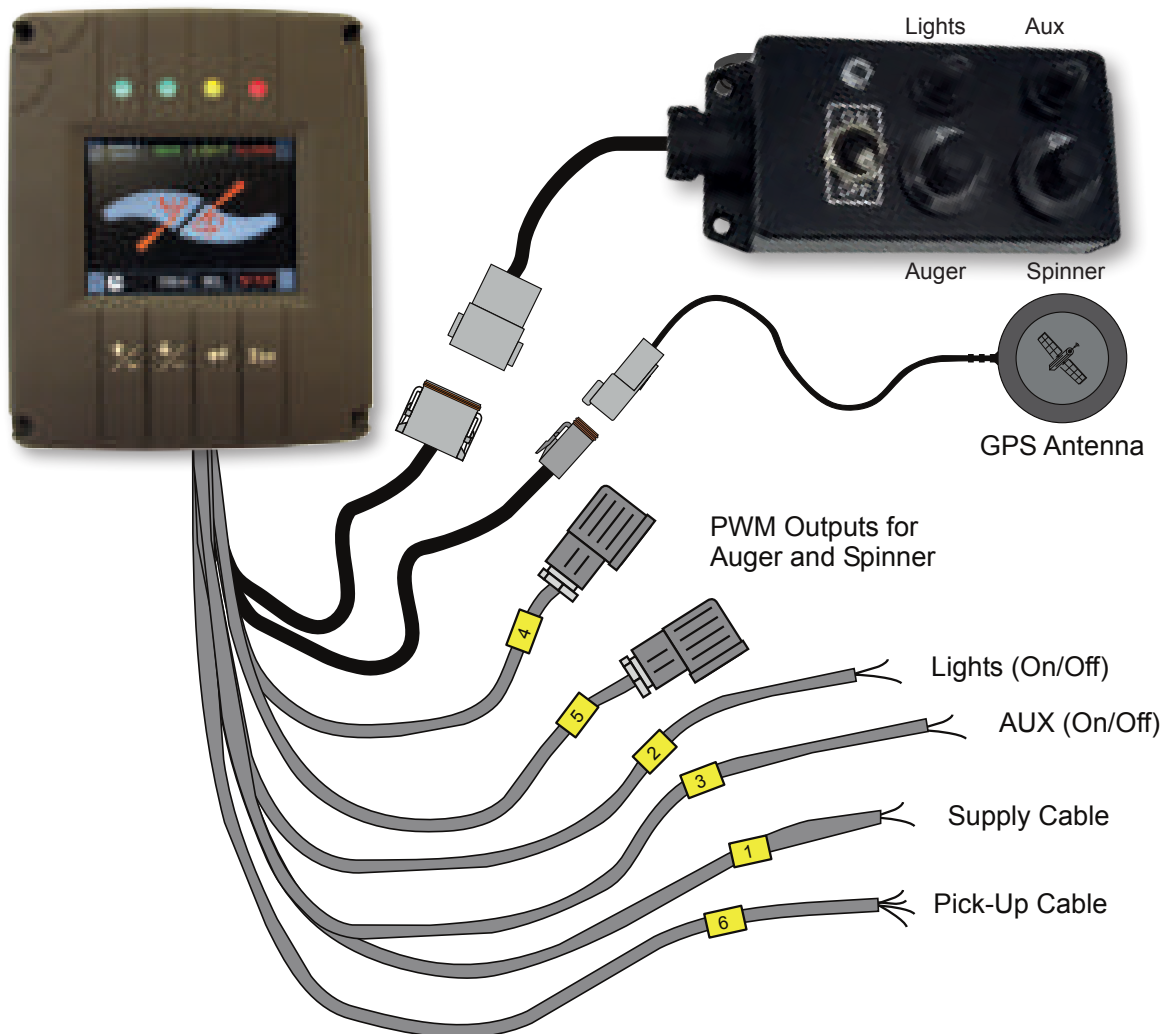
The SSC-E control unit can drive independently the auger and spinner speeds: the speed control system operates in open loop mode.

Salt spreading regulation

On request, it is possible to set the unload quantity as function of the traveling speed. The traveling speed can be determined either with an auxiliary GPS antenna or with a phonic wheel and frequency input.

Kit composition

- 1 controller with integrated color display 3.5" size, equipped with a Freescale 16 bit processor and FPGA graphic accelerator. The display allows to check the speed percentage of spinner (SPREAD) and auger (UNLOAD), as well as the total hours worked.
- 1 control panel with 2 potentiometers and 3 switches to easily control all the outputs
- Ready-to-mount wiring (optional).
- 1 GPS antenna (optional).

**Technical specifications**

Supply voltage	8 ÷ 32 Vdc	Display	Activ matrix TFT 256K colours - size 3.5"
Housing	ABS with silicon rubber	Connectivity	320x240 resolution - White Led backlight
Working temperature range	-40 ÷ +60 °C	Dashboard size	2 CAN bus lines - 1 RS232 serial port - 4 Led 4 keys with backlight - 1 Buzzer
PWM output min current	100 ÷ 2000 mA	Ingress protection rating	125 L x 70 P x 150 H mm
PWM output max current	100 ÷ 2000 mA	Connections	IP65
PWM frequencies	50 ÷ 300 Hz		Tyco Ampseal 35 pin
ON/OFF output maximum current	2A		

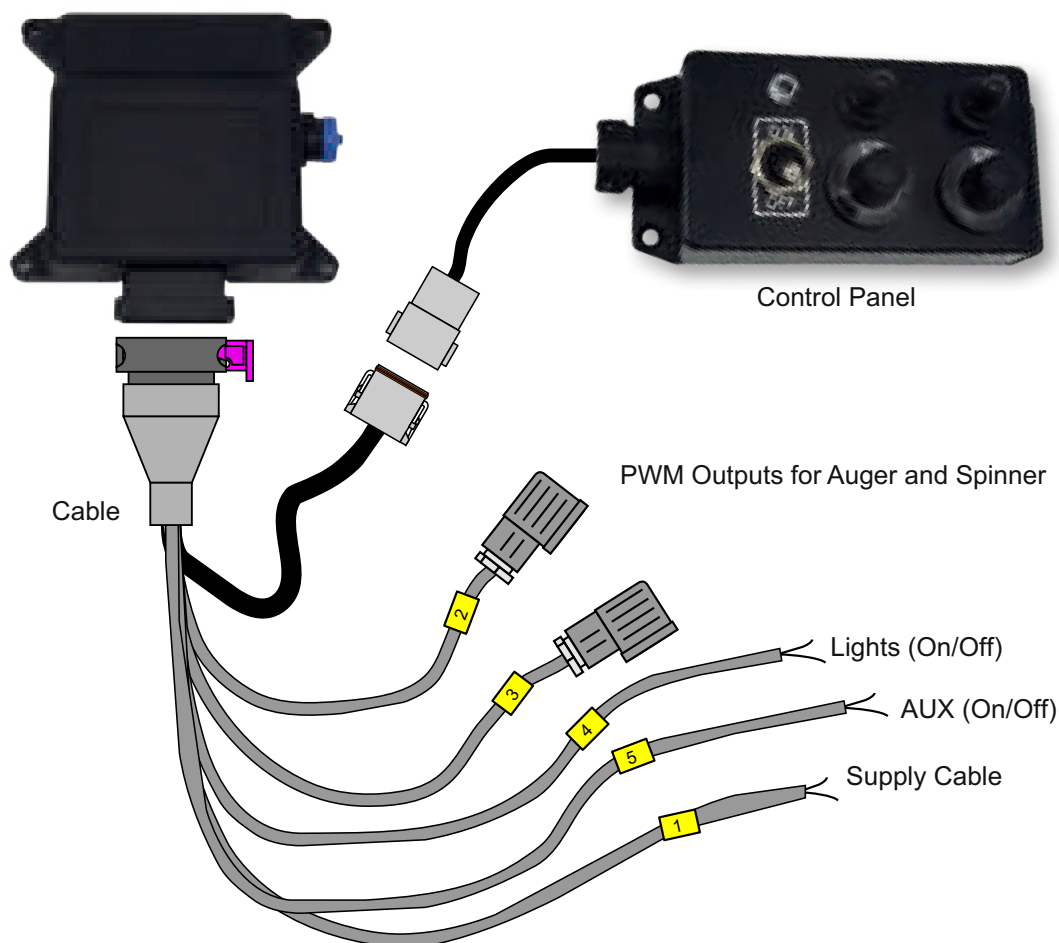
Description

Our SSC-L salt spreader system is a digital control unit designed to suit any make of single-chamber salt spreader, used for winter road maintenance.

The SSC-L control unit can drive independently the auger and spinner speeds: the speed control system operates in open loop mode.

Kit composition

- 1 MDE triple PWM A+B proportional solenoid valve regulator
- 1 control panel with 2 potentiometers and 3 switches to easily control all the outputs
- Ready-to-mount wiring (optional).

**Technical specifications**

Supply voltage	10 ÷ 30 Vdc
Max current absorption	60 mA + load on outputs
Supply for control panel	+5V (max current 50 mA)
Working temperature range	-40 ÷ +60°C
PWM output min current range	100 ÷ 2500 mA
PWM output max current range	100 ÷ 2500 mA
PWM frequencies	50-60-70-85-100-125-150-200-250-300 Hz
Overall dimensions (+connector)	130 x 128 (+19) x 38 mm
Drilling interaxis	119 x 99 mm (no.4 M5 screws)
Ingress protection rating	IP68
Weight	about 490 g

RADIO REMOTE CONTROLS





Description

The G2B is a versatile receiver equipped with proportional outputs, digital I/Os as well as CANopen communication. The numerous interface options and flexible software settings make the receiver suitable for all mobile hydraulic applications on the market.

The proportional output signals support both current-controlled and voltage-controlled hydraulic valve blocks. If more functions are needed than what can be supported by a single receiver, more receivers can be added in a master/slave configuration to increase the number of outputs.

The receiver can only be activated by its dedicated Scanreco transmitter: the MINI or the MAXI.

G2B Central unit

- Working temperature range: -25°C to +70°C / ~-15°F to +160°F
- Ingress protection rating: IP65
- Dimensions (W x H x D): 233 x 205 x 77 mm / ~9.17 x 8.07 x 3.03 in (height incl. antenna)
- Weight: 1.2 kg / ~2.6 lbs

Maxi PCU

- Available configurations: 1-8 linear levers or 1-4 joysticks
- Customizations: various models of toggle switches, pushbuttons, potentiometers and rotary switches available
- Working temperature range: -20°C to +70°C / ~-4°F to +160°F
- Ingress protection rating: IP 65
- Dimensions: (W x H x D): 350 x 160 x 190 mm / ~13.78 x 6.30 x 7.48 in (w/o color display)
- Weight: 1.9–2.6 kg / ~4.2–5.7 lbs. including battery

Mini PCU

- Available configurations: 1-6 linear levers or 1-3 joysticks
- Customizations: various models of toggle switches, pushbuttons, potentiometers and rotary switches available
- Working temperature range: -20°C to +70°C / ~-4°F to +160°F
- Ingress protection rating: IP 65
- Dimensions: (W x H x D): 290 x 160 x 190 mm / ~11.42 x 6.30 x 7.48 in (w/o color display)
- Weight: 1.4–2.2 kg / ~3.1–4.8 lbs (including battery)

Technical specifications

Supply voltage	12/24 Vdc
Outputs	8 bi-directional proportional outputs / 14 digital outputs (including dump valve)
Inputs	3 digital inputs + 1 configurable digital in or output
Communication protocol	CANopen
Stop function	EN ISO 13849-1 cat. 3, PL d
Frequency bands	433-434 or 902-928MHz (other frequencies available on request)
Communication type	Two-way
Cable control standard length	10 meters / ~33 ft.
Operating range	> 100m / > ~330 ft.
Operator feedback by	LEDs / Monochrome display 2.5" with 128 x 64 px / Color display 4.3" with 480 x 272 px



Description

The G3 receiver is designed for all applications that only require a CAN interface. A perfect solution if a master controller is already present on the machine.

The small size makes it convenient to be placed directly on the machine where the antenna normally would have been mounted.

As standard the receiver is delivered with the CANopen protocol. In addition to the CAN interface, the receiver is equipped with hardwired signals for the stop function.

The receiver is equipped with a two-digit LED display that provides detailed information regarding operational status and possible error codes. The receiver has an error log that records both internal system faults and external fieldbus faults.

The receiver can only be activated by its dedicated Scanreco transmitter: the MINI and the MAXI.

G3 Central unit

- Working temperature range: -25°C to +70°C / ~-15°F to +160°F
- Ingress protection rating: IP67
- Dimensions (W x H x D): 110 x 140 x 157 mm / ~4.33 x 5.51 x 6.18 in (height incl. antenna)
- Weight: 1.2 kg / ~2.6 lbs.

Mini PCU

- Available configurations: 1-6 linear levers or 1-3 joysticks
- Customizations: various models of toggle switches, pushbuttons, potentiometers and rotary switches available
- Working temperature range: -20°C to +70°C / ~-4°F to +160°F
- Ingress protection rating: IP 65
- Dimensions: (W x H x D): 290 x 160 x 190 mm / ~11.42 x 6.30 x 7.48 in (w/o color display)
- Weight: 1.4–2.2 kg / ~3.1–4.8 lbs (including battery)

Maxi PCU

- Available configurations: 1-8 linear levers or 1-4 joysticks
- Customizations: various models of toggle switches, pushbuttons, potentiometers and rotary switches available
- Working temperature range: -20°C to +70°C / ~-4°F to +160°F
- Ingress protection rating: IP 65
- Dimensions: (W x H x D): 350 x 160 x 190 mm / ~13.78 x 6.30 x 7.48 in (w/o color display)
- Weight: 1.9–2.6 kg / ~4.2–5.7 lbs. including battery

Technical specifications

Supply voltage	12/24 Vdc
Communication protocol	CANopen (other on request)
Nr. of dump valve outputs	2
Nr. of safety loops	2
Stop function	EN ISO 13849-1 cat. 3, PL d
Frequency bands	433-434 or 902-928MHz (other frequencies available on request)
Communication type	two-ways
Cable control standard length	10 meters / ~33 ft.
Operating range	> 100m / > ~330 ft.
Connection	cables with M12 connectors 3 meters / ~ 10 ft.
Operator feedback by	LEDs / Monochrome display 2.5" with 128 x 64 px / Color display 4.3" with 480 x 272 px



Mini PCU
with linear levers
and color display



Mini PCU
with three 2-axis joysticks



Mini PCU
with two 3-axis joysticks



Mini PCU with linear
levers and B&W display



Maxi PCU with linear levers and color display



Maxi PCU
with three 2-axis
joysticks



Maxi PCU
with four 2-axis joysticks



Maxi PCU
with two 3-axis joysticks



G3 radio remote control with color display



JC CAN bus joystick



STU-PWMI proportional regulator with 8+8 proportional outputs

Description

Our Scanreco G3 CAN bus radio remote control allows the operator to safely control from the distance all crane's functions: rotation, main boom, second boom, grapple/rotator.

Whenever the worker wants to operate the forest crane from the cabin instead, it is simply possible to use a couple of JC CAN bus joysticks.

All signals coming from the G3 radio remote control and our JC joysticks are processed by our STU-PWMI proportional regulator, which directly commands the forest crane directional control valve. You can choose to work via joysticks or via radio by switching a simple selector.



Description

The G4 is our entry-level receiver with proportional outputs, digital I/Os as well as CAN bus communication. The standardized functions and features make the receiver suitable for various mobile hydraulic applications. The receiver is equipped with a two-digit LED display that provides detailed information regarding operational status and possible error codes. The receiver has an error log that records both internal system faults and external faults in the connected hydraulics and controllers. The receiver can only be activated by its dedicated Scanreco transmitter: the HANDY or the EXECUTIVE.

G4 Central unit

- Working temperature range: -25°C to +70°C / ~-15°F to +160°F
- Dimensions (W x H x D): 233 x 205 x 77 mm / ~9.17 x 8.07 x 3.03 in (height incl. antenna)
- Weight: 1.2 kg / ~2.6 lbs.

G4 Executive

- Configuration: 4 linear levers
- Operational time: approx. 10 hours on a single charge
- Stop function: EN ISO 13849-1 cat. 3, PL d
- Working temperature range: -25°C to +70°C / ~-15°F to +160°F
- Dimensions: (W x H x D): 290 x 160 x 190 mm / ~11.42 x 6.30 x 7.48 in
- Weight: 1.4–1.8 kg / ~3.1–3.9 lbs. including battery

G4 Handy

- Configuration: 10 pushbuttons with proportional and digital functionality. Dual operation modes duplicate the functionality of each button
- LEDs and LED display: Operational and battery status indication
- Stop function: EN ISO 13849-1 cat. 3, PL d
- Operational time: 20 hours on a single charge
- Working temperature range: -25°C to +70°C / ~-15°F to +160°F
- Dimensions (W x H x D): 76 x 253 x 50 mm / ~2.99 x 9.96 x 1.97 in
- Weight: 0.50 kg / 1.1 lbs. including batteries

Technical specifications

Supply voltage	12/24 VDC
Outputs	6 bi-directional proportional PWM outputs / 7 digital outputs (including dump valve)
Inputs	2 digital inputs for speed-setting management
Communication protocol	CANopen
Frequency bands	433-434 or 902-928MHz
Ingress protection rating	IP 65
Operating range	> 100m / > ~330 ft.



G4 Handy radio remote control

Description

The G4 Handy portable control unit has unique proportional push buttons. Thanks to its practical and comfortable design, the radio remote control can be easily held in the hand by the operator, who can precisely control the operations of load and unload of the skip loader.

The possibility to remotely control the vehicle also improves the safety of the work.

Description

The range of G5 radio remote controls includes ON-OFF systems, with Pocket transmitter (available with maximum 8 push buttons) or the 14-button Rocket Flex transmitter, with display panel manageable in CAN systems.

G5 receivers can be supplied in 3 different versions: relay-output (5 or 10 relays), Mosfet (19 positive outputs) or CAN bus.

G5 Transmitter technical specifications**Rocket-Flex**

Power supply	3 x AA rechargeable batteries
Ingress protection rating	IP65
LED for feedback	Green, Yellow, Yellow, Yellow, Red
Radio frequency	2.4 GHz using frequency jumping technology
Operating range	> 100m > ~330 ft
Current absorption	15-100mA (depending on the HCU configuration)
Operating time	Without display: up to 120 hours of operation With display: up to 40 hours of operation (depending on LED and display usage)
Approvals	TR05 Integrated duplex radio ISM-band, R&TTE, FCC and IC approved
Stop function	In accordance with EN ISO 13849-1 cat. 3, PL d (only if paired with Mosfet or CAN bus receivers)
Working temperature range	-25°C to +55°C ~ -15°F to +130°F
Dimensions WxHxD	69 x 213 x 48 mm ~ 2.7 x 8.4 x 1.9 in
Weight	400 g ~ 0.88 lbs (including batteries)

**Pocket**

Power supply	3 x AAA batteries
Ingress protection rating	IP67
LED for feedback	From left: Green, Yellow, Yellow, Yellow, Red
Radio frequency	2.4 GHz using frequency jumping technology
Operating range	> 100m > ~330 ft
Current absorption	10-60mA (depending on the number of LED used)
Operating time	Several months (depending on usage and application)
Approvals	TR05 Integrated duplex radio ISM-band, R&TTE, FCC and IC approved
Working temperature range	-25°C to +70°C ~ -15°F to +160°F
Dimensions WxHxD	67 x 115 x 38 mm ~ 2.6 x 4.5 x 1.5 in
Weight	160 g ~ 0.35 lbs (including batteries)

G5 Receiver technical specifications



Relay

Supply voltage	9-36 Vdc
Ingress protection rating	IP65
Cable Interface	Terminal Connectors (tool free assembly)
Programming interface	RS232
Overload protection	Yes, maximum 36 Vdc
Current absorption	<30 mA (idle) / 60 mA + External loads (in operation)
Digital outputs	5 or 10 digital outputs. Each output (relay) needs to be supplied with power through the terminal connector. External fuse is recommended. Not short circuit proof, not overload protected, max. 5 Ampere load/output. Each output is electrically isolated.
Number of cable glands	2
Dimension cable glands	8-13 mm (0,31-0,51 in.)
Housing screw torque	0.8 Nm
Radio module	TR05 Integrated duplex radio ISM-band, R&TTE, FCC and IC approved
Working temperature range	-25°C to +70°C ~ -15°F to +160°F
Dimensions WxHxD	127 x 186 x 57 mm ~ 5.5 x 7.3 x 2.2 in (including antenna)
Weight	0.35 kg ~ 0.77 lbs

Mosfet

Supply voltage	9-36 Vdc
Ingress protection rating	IP67
Connector interface	2 x 12 pin Deutsch connectors
Programming interface	RS232
Overload protection	Yes, maximum 36 Vdc
Current absorption	<30 mA (idle) / 60 mA + External loads in operation
Digital inputs	14 (can also be used as digital outputs) Do not exceed supply voltage.
Digital outputs	19 MOSFET driven outputs, short circuit proof, overload protected.
Housing screw torque	0.8 Nm
Radio module	TR05 Integrated duplex radio ISM-band, R&TTE, FCC and IC approved
Working temperature range	-25°C to +70°C ~ -15°F to +160°F
WxHxD	127 x 186 x 57 mm ~ 5.0 x 7.3 x 2.2 in (including antenna)
Weight	0.5 kg ~ 1.10 lbs

CAN bus

Supply voltage	9-36 Vdc
Ingress protection rating	IP67
Cable interface	M12 connectors
Current absorption	65 mA (at 24V) (Idle) / 100 mA + External loads (at 24V) (in operation)
Digital output	Short circuit proof, overload protected, max. 2.7 Ampere load DV2 is active when radio link is active. (DV1 is not used)
Safety loops	Feed Loop-In with power supply. Once radio link established, Loop-Out goes high. Short circuit proof. Max 2.7 Ampere load.
CAN bus	CANopen
Radio module	TR05 Integrated duplex radio ISM-band, R&TTE, FCC and IC approved
Working temperature range	-25°C to +70°C ~ -15°F to +160°F
WxHxD	110 x 140 x 157 mm ~ 4.33 x 5.51 x 6.18 in (incl. antenna)
Weight	1.2 kg ~ 2.6 lbs
Cable lengths (A, B, C)	3 meters ~ 10 ft



G5 Rocket Flex
radio remote control

Description

Our G5 Rocket Flex allows to remotely control all the machine's functions, including suction operations, translation of the machine, S/S engine, etc. Like for the G5 Pocket, the available receiver versions include relay, Mosfet and CAN central units.



Description

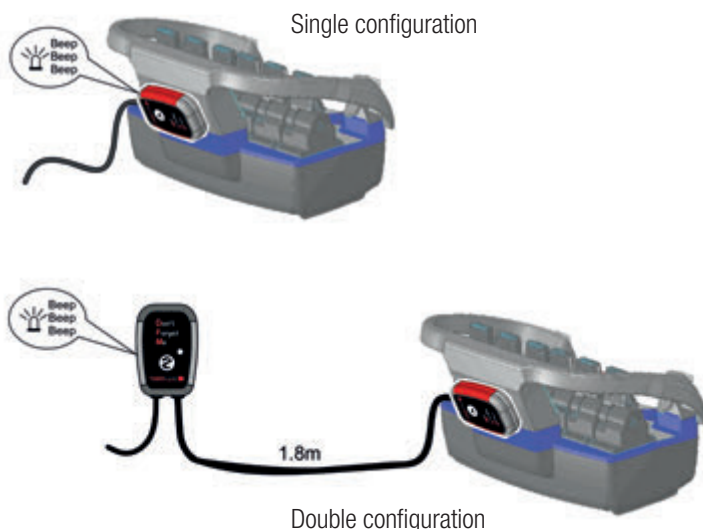
DFM (Don't Forget Me) is a device designed to avoid the losing of the transmitter with an acoustic and visible notification that alerts the operator whenever Scanreco radio transmitter is not in the truck cabin. There are two parts in this system: the first one must be fixed into the transmitter, the other one must be placed in cabin. Through a special magnet placed within these parts, an attraction force allows the device to remain attached to the outside of transmitter and detect its presence. You can install DFM device on both Maxi and Mini radio transmitters.

Working mode

We recommend to power on the DFM just when parking brake is released. When the truck is powered on and parking brake is released, the DFM verifies presence of the transmitter:
 - if it detects the transmitter, a green led lights up without acoustic alarm;
 - if it doesn't detect the transmitter a red led blinks with acoustic alarm. The buzzer can be silenced by a proper button: yellow led will indicate this status. Keep the button pressed for 3 seconds to enable it again (buzzer not silenced). If device is powered on when truck is powered on (and not when parking brake is released), do not silence the buzzer when you take the transmitter from the cabin to start working.

Available versions

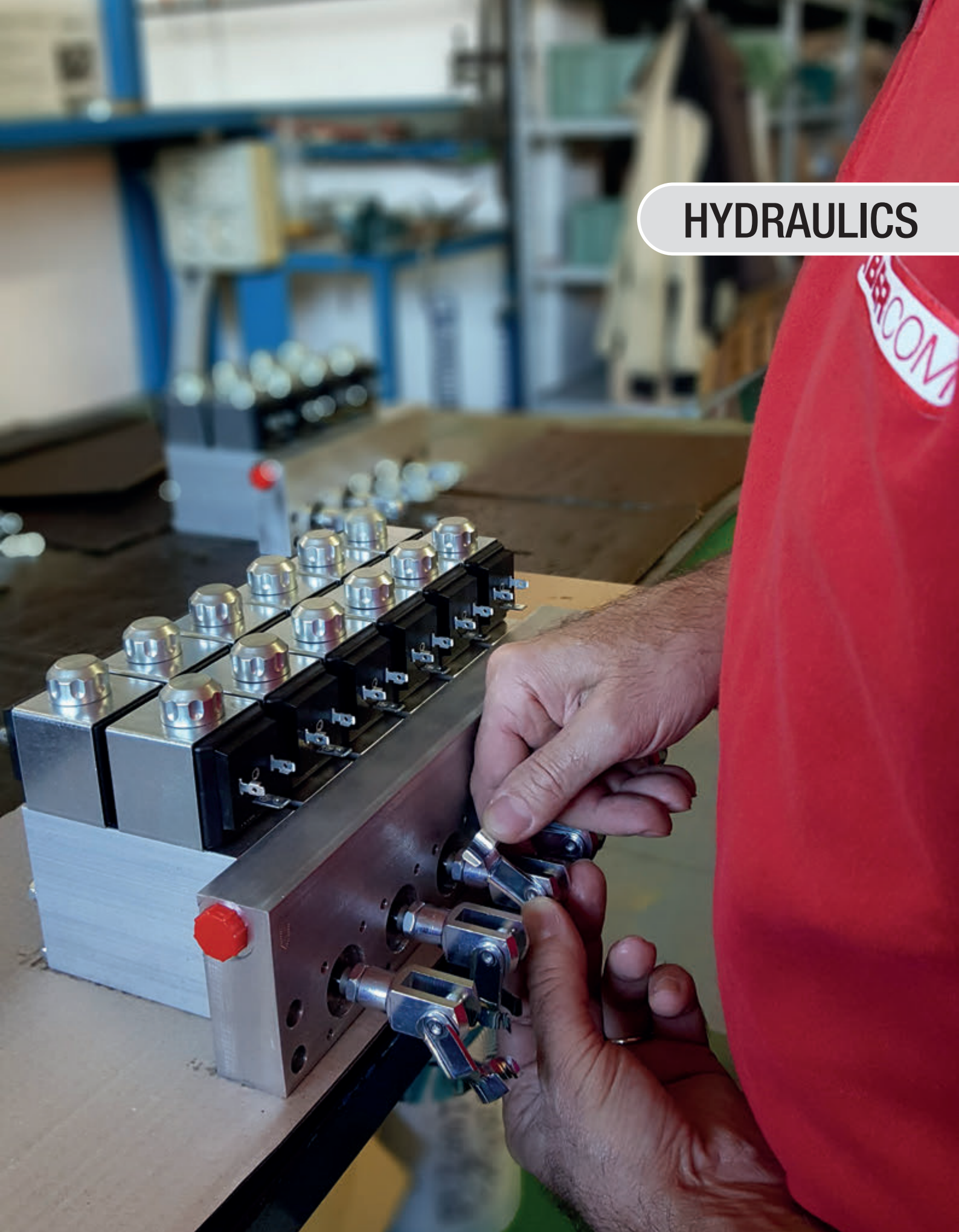
There are 2 different versions of DFM:
- Single configuration
 The same device detects trasmitter's presence and alerts the operator whenever the transmitter is not in the truck cabin
- Double configuration (with satellite)
 A fixed device must be installed in the cockpit and it alerts the operator whenever transmitter is not in the truck cabin. A satellite device detects the transmitter's presence. In both cases, you must install the magnet support (supplied with 5 magnets) inside the transmitter (Mini or Maxi):

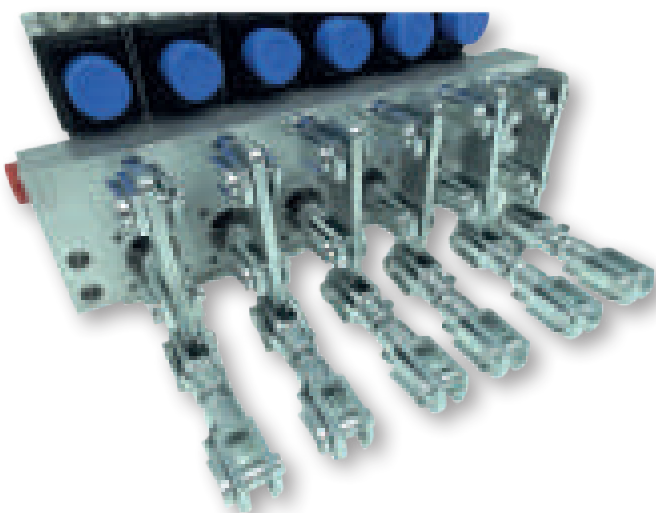


Technical specifications

Power Supply Voltage	10 ÷ 30 Vdc
Current absorption	max 30mA
Working Temperature Range	-40 ÷ +70 °C
Connections	Cable L=200 cm with Deutsch DT04-2 connector
Environmental Protection Degree	IP54
Dimensions	50 x 75 x 17 (mm)

HYDRAULICS





Description

Our MOD10 hydraulic banks are electrohydraulic systems that, coupled with a manual hydraulic distributor, allow to remotely control the machine. The bank is made up of a manifold composed by a section (module) for each movement to activate. All the modules are identical and fixed to the manifold with four screws. MOD10 hydraulic blocks are mounted directly on the dual control rods, allowing their installation on any kind of machine. Each module works independently from the others.

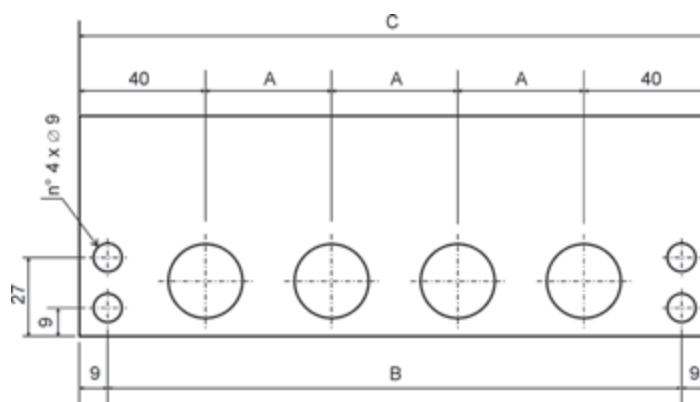
Stroke amplifier for MOD10 hydraulic blocks

The stroke of MOD10 hydraulic blocks is ± 13 mm. If a higher stroke is required, it is possible to use our stroke amplifiers to attain a stroke of ± 20 mm

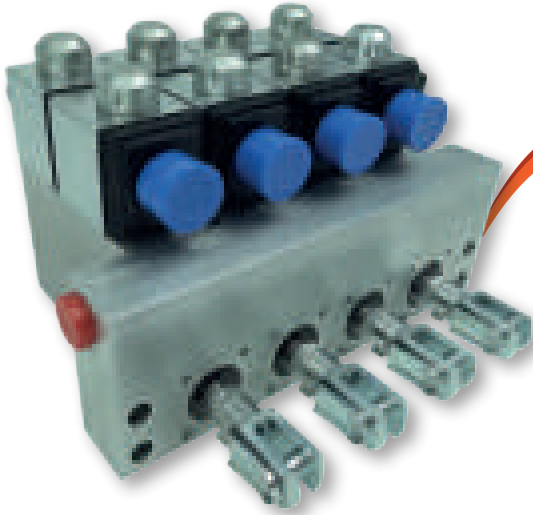
Technical specifications

Supply voltage	12Vdc or 24Vdc
PWM current range	600 ÷ 1400 mA (12V) 300 ÷ 700 mA (24V)
Working frequency	50 Hz
Feedback	Mechanical
Working temperature range	-20 ÷ +60 °C
Type of fluid	Mineral oil 10 ÷ 200 cSt
Max working pressure	30 bar
Max thrust	1300 N (at 30 bar)
Mechanical stroke	± 13 mm
Weight	1.6 kg approx.
Overall dimensions	200 (W) x 130 (H) x 35 (D) mm
Max flow rate	100 cc/minute
Connections	G1/4" BSPP

MANIFOLD TYPE	A (mm)	B (mm)	C (mm)
	40	182	200
4 functions	46	200	218
	50	212	230
6 functions	40	262	280
	46	292	310
8 functions	50	312	330
	40	342	360
	46	384	402



MOD10 proportional hydraulic block



G2B-G3 radio remote control



Low pressure oil filter



Counter-pressure block



Description

Installing this kit in retrofit on a manual crane allows you to command all the crane movements via the Scanreco radio remote control, including rotation, main boom, second boom, jib and so on. Our MOD10 hydraulic block is directly installed on the dual control rods of the crane and, according to the commands coming from the Scanreco

radio remote, controls the existing hydraulic valve with the same precision and sensitivity of your hand.

The counter-pressure valve allows instead to fetch a part of oil from the main circuit of the machine, making it available on the secondary circuit at reduced pressure.



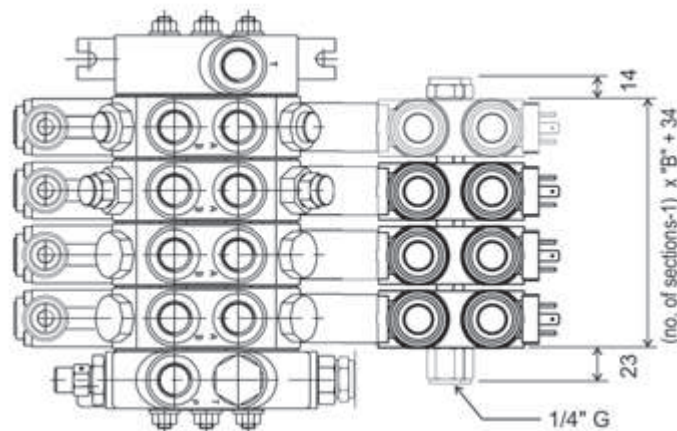
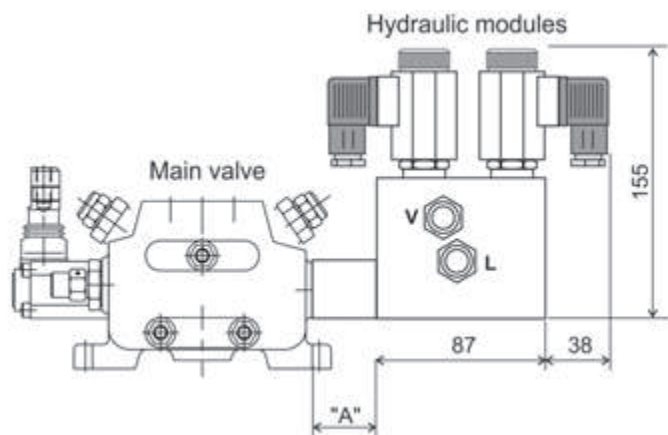
Description

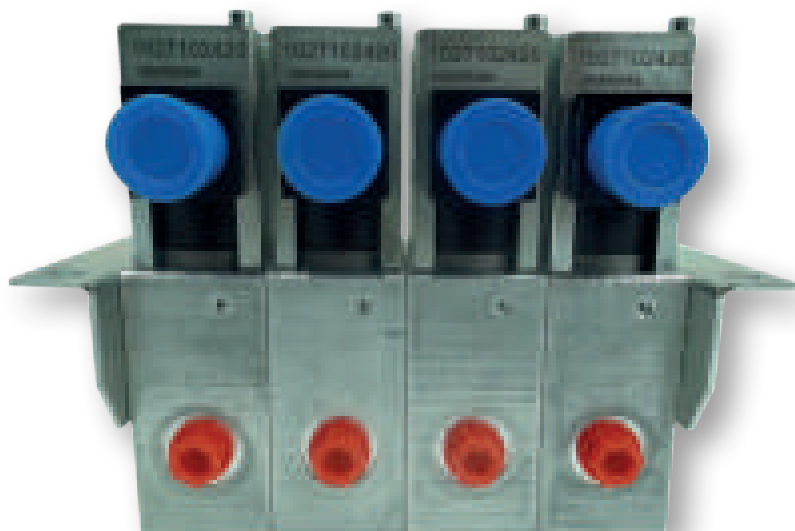
Proportional actuators blocks for direct connection on HCD (HYDROCONTROL) and SD (WALVOIL) hydraulic valves were born to allow the remote control of a machine, which has these kinds of manual hydraulic valves.

The direct installation on the back of the hydraulic valve guarantees the possibility to make a very “precise” mounting in a “limited” place. In this way, the risk of any possible future “mechanical plays” is excluded.

Dimensions

Type of valve	Dimension "A" (mm)	Interaxis "B" (mm)
HCD3/D3M	39	38
HCM 50	39	35
HCD4	40	40
HCD6	51	46
HCD12	57	56
SD5	37	37
SD6	37	38
SD8	50	41
BLB	39	35





Description

The proportional IT128 block can be used with a remote control to drive servo controlled hydraulic machines. Look at it as a good alternative to add an additional control to the system currently installed on the machine (e.g. 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 directional valve.

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

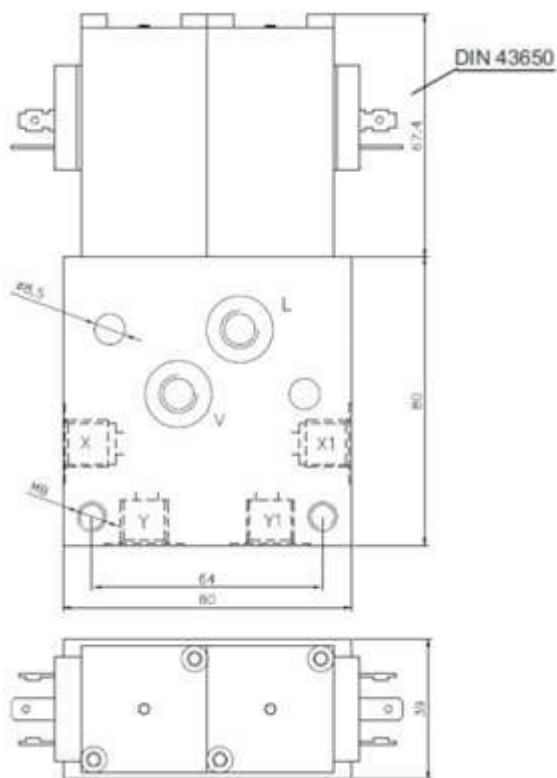
It has been designed in modular form, allowing the assembly of sections up to 8 functions.

On request, we can supply also an exchange solenoid valve to select the working mode of the machine (manual or remote controlled).

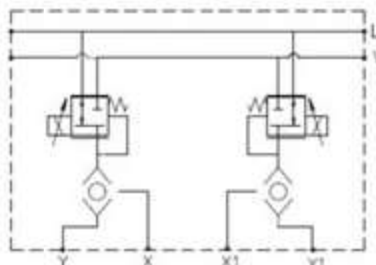
Available versions

Our IT128 is available in 2 different versions that can be chosen according to the application requirements:

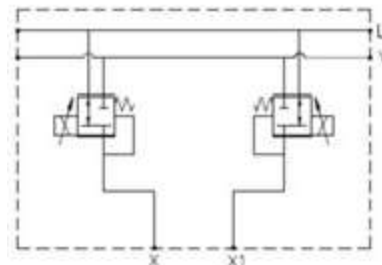
- Scheme 0 allows to keep the original control of the machine, by means of hydraulic joysticks, together with the remote control option
- Scheme 1 removes the original control of the machine, keeping active only the remote control option



Scheme 0



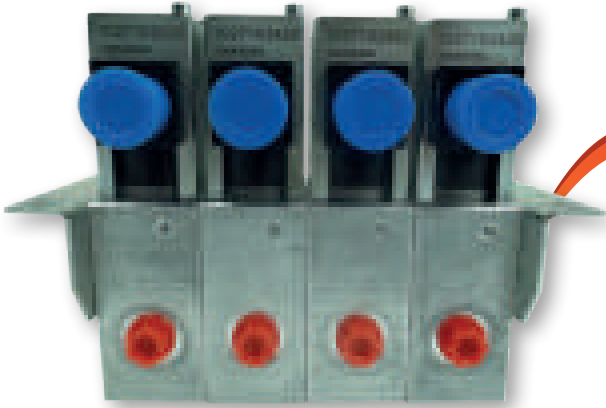
Scheme 1



Technical specifications

Supply voltage	12V or 24Vdc
Max pressure in V	50 bar
Max pressure in L	1 bar
Max flow	2 L/min
Max current	12V=1.6A 24V=0.8A
Frequency	120 Hz
Coils resistance	12V=3.70hm 24V=15.50hm
Max pressure in X	28 bar
Hysteresis	5%
Ingress protection rating	IP65
Weight	2,5 Kg (single section)
Filtration	10 micron

IT128 proportional reducer block



G2B-G3 radio remote control



Exchange valve

Description

This kit installed on machines with hydraulically piloted valves (that is to say, controlled via hydraulic joysticks) allows you to command all the movements of the excavator via your Scanreco radio remote control. By in this way the operator remains at a safe distance from the machine when operating in hazardous environments.

According to the customer's requirements, it is possible to choose between 2 versions of IT128 blocks: the former maintains available the original controls of the excavator inside the cabin, while the latter disables them, allowing only the control of the machine via radio remote control.



Faber-Com was born in 1989, from the will of the two founding partners and today, it can be considered a landmark in the field of electronics applied to mobile hydraulics.

Faber-Com works in the mobile machine field, starting from truck mounted cranes, arriving to aerial platforms, drilling machines, concrete pumps, marine cranes, forest machines, hook and skip loaders, agricultural machines...and much more.

Our main aim is, every day, the search of innovative and customized solutions for different applications. Today, our main activity is the design, production and sale of controls for hydraulic machines, mainly: electronic cards for machine management, joysticks, sensors, radio remote controls.

The company is directly targeting the main machine manufacturers (OEMs) on the domestic and international markets. Our sales network

includes also many dealers on the European and the world market. Our products are developed from a constant research of innovative solutions, the use of high technologies and long life reliable materials. Our products are manufactured following the most recent European safety regulations. Faber-Com offers its customers the availability of a qualified team, able to analyze and understand all different applications.

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