

SIDE-POWER
Thruster Systems

PJC321, PJC322 **PJC321-L, PJC322-L** **PJC321-MCL2, PJC322-MCL2** **S-link** **Control Panel**

EN Installation and user's manual

**Keep this
manual onboard !**



SLEIPNER MOTOR AS

P.O. Box 519
N-1612 Fredrikstad
Norway
www.side-power.com

Document id:
Revision:

2921
5



© Sleipner Motor AS 2018

Made in Norway

Content

Declaration of Conformity	2
Product Features	3
Display in normal use	3
Technical specifications.....	4
Display warnings and alarms	5-6
Menu system	6-9
1.5 Language.....	7
2.5 Display settings.....	7
3.5 Automatic off time	7
4.5 Control setup	7-9
 Service menu.....	 10
Panel mounting	10
Panel dimensions.....	11
Panel dimensions PJC322	12
Panel dimensions PJC321	13
Panel dimensions PJC321-L/PJC322-L.....	14
Panel dimensions PJC321-MCL2/PJC322-MCL2	15
S-Link overview	16
Internal wiring diagram PJC321, PJC322.....	17
Internal wiring diagram PJC321-L, PJC322-L.....	18
Internal wiring diagram PJC321-MCL2, PJC322-MCL2.....	19

DECLARATION OF CONFORMITY



Sleipner Motor AS
P.O. Box 519, Arne Svendsensgt. 6-8
N-1612 Fredrikstad, Norway

Declare that this product with accompanying standard control systems complies with the essential health and safety requirements according to:

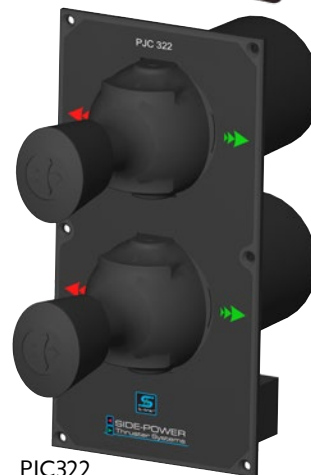
DIRECTIVE 2013/53/EU
DIRECTIVE 2014/30/EU
DIRECTIVE 2014/35/EU

PJC321, PJC322

Control panel with S-link™ CAN-bus connection

Product features

- For proportional thruster control with the S-Link controlled Hydraulic Thrusters
- Back-lit LCD display with instant feedback
 - System status
 - Amount of thrust & direction of thrust
 - Oil temperature & pressure
- Interactive multi-language menus
- CAN-Bus communication with thrusters and accessories
- Plug & play cables, waterproof and compact connectors
- Diagnostics via panel
- Connector for external "buzzer"/loud audible alarms
- Choose between:



PJC321-L/PJC322-L



PJC321-MCL2/PJC322-MCL2



PJC321

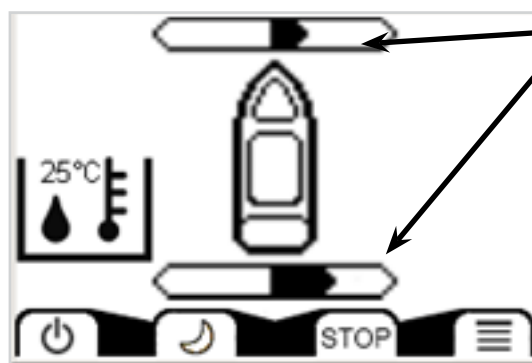
PJC322

DO NOT connect any other control equipment to the S-link controlled products except Side-Power original S-link products or via a Side-Power supplied interface product made for interfacing with other controls. Any attempt to directly control or at all connect into the S-link control system without the designated and approved interface, will render all warranties and responsibilities for the complete line of Side-Power products connected void and null. If you are interfacing by agreement with Sleipner and through a designated and approved interface, you are still required to also install an original Side-Power control panel to enable efficient troubleshooting if necessary

DISPLAY IN NORMAL USE:

1 hydraulic tank

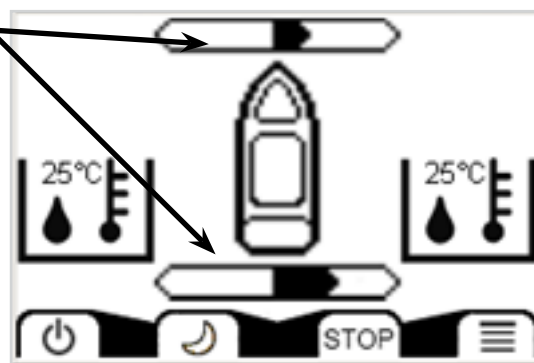
Oil Temperature



2 hydraulic tanks

Oil Temperature,
Port Tank

Oil Temperature,
Starboard Tank



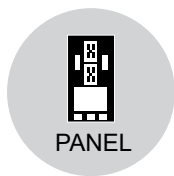
Buttons/Indications on screen - left to right:

ON/OFF - DAYTIME/NIGHT Backlight mode - EMERGENCY STOP - SETTINGS MENU

Technical specifications

Description	Value
Supply Voltage	9-63 Vdc/6.5 Watts
Operating temperature	-40°C to +70°C [-40°F to +158°F]
Storage temperature	-40°C to +85°C [-40°F to +176°F]
IP Rating	IP67 above panel
EMC tested	Acc. to EN 13309, ISO 14982, ISO 13766
ESD tested	Acc. to EN 61000-4-2, ISO 7637-2
Power	9-63 Vdc / 6.5 Watts
EMC/ESD	100V/m/15kV
Vibration/Shock	3g/50g
External Alarm Buzzer Current	0.5A Maximum
Weight	250 g [0.5 lb]

Display Warnings & Alarms



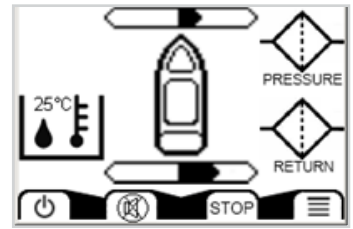
FILTER MONITORING WARNINGS (IF SENSORS ARE INSTALLED)

PRESSURE FILTER:

Pressure filter symbol (upper right) will blink when filter change is due. In addition red LEDs on both sides of the panel will blink and the external buzzer is activated.

RETURN FILTER:

Return filter symbol (lower right) will blink when the filter needs to be replaced. In addition red LEDs on both sides of the panel will blink and the external buzzer is activated.



The external buzzer can be muted by pressing the button under the loud-speaker symbol.

Warnings will be reset when the filter are replaced.

The thrusters can be run while the warnings is displayed.

(Filter warnings will not be shown on systems with two oil tanks)

ALARMS (Systems with one oil tank)

OIL LEVEL:

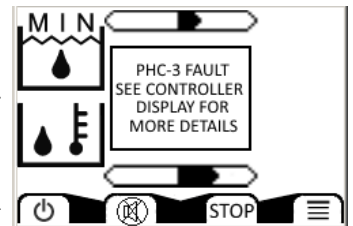
Oil level symbol (upper left) will blink when oil level is low. In addition red LEDs on both sides of the panel will blink and the external buzzer is activated. The alarm will be reset automatically when the oil level is OK

OIL TEMPERATURE:

Oil temperature symbol (lower left) will blink when temperature is above 75°C. In addition red LEDs on both sides of the panel will blink and the external buzzer is activated. The alarm will be reset automatically when temperature goes below 65°C

The text box in the center will only be shown when the hydraulic controller is a PHC-3. The PHC-3 FAULT is reset by pressing the button under the loud-speaker symbol.

The thrusters can be run when the oil alarms are active.

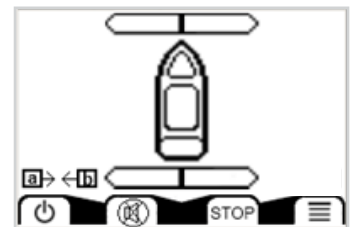


COMMUNICATION ERROR:

If there is a communication error between the panel and the system control unit located on the oil tank, the comm error symbol will be shown on the lower left side of the panel



The external buzzer can be muted by pressing the button under the loud-speaker symbol.



ALARMS (Systems with two oil tanks)

OIL LEVEL:

Oil level symbol (upper left/right) will blink when oil level is low. In addition red LEDs on both sides of the panel will blink and the external buzzer is activated.

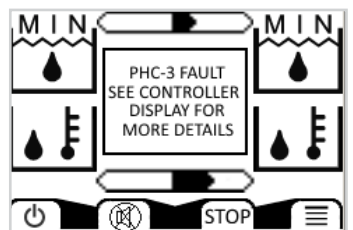
The alarm will be reset automatically when the oil level is OK

OIL TEMPERATURE:

Oil temperature symbol (lower left/right) will blink when temperature is above 75°C. In addition red LEDs on both sides of the panel will blink and the external buzzer is activated. The alarm will be reset automatically when temperature goes below 65°C.

The text box in the center will only be shown when the hydraulic controller is a PHC-3. The PHC-3 FAULT is reset by pressing the button under the loud-speaker symbol.

The thrusters can be run when the oil alarms are active.



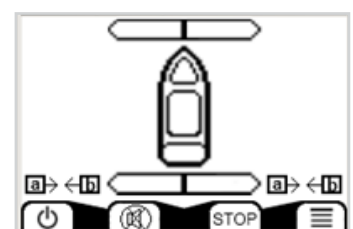
COMMUNICATION ERROR:

If there is a communication error between the panel and the system control unit located on the oil tank, the communication error symbol will be shown on the lower left/right side of the panel

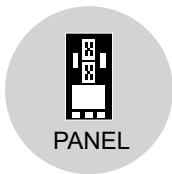
Symbols on left side indicates port tank, symbols on right indicates starboard tank.



The external buzzer can be muted by pressing the button under the loud-speaker symbol.



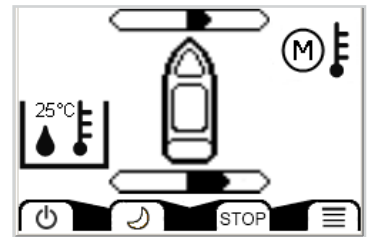
Display Warnings & Alarms



AC MOTOR ALARMS

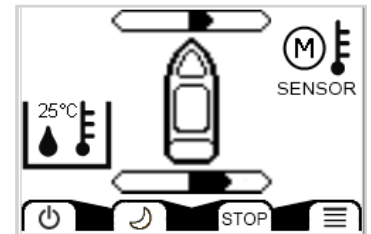
HYDRAULIC AC MOTOR POWER PACK OVERTEMP:

The overtemp symbol will show in the upper right corner of the display when the AC motor temperature is above 120°C and automatically reset when temperature goes below 110°C.



HYDRAULIC AC MOTOR POWER PACK TEMP SENSOR:

The AC motor temp sensor fail symbol will show in the upper right corner if the system is set up with an hydraulic AC motor power pack and the sensor has an open circuit.



EMERGENCY STOP

When the STOP button is pressed, the hydraulic dump valve will activate and the thrusters will stop. On systems with two oil tanks, dump valves on both tanks will activate and all thrusters will stop.

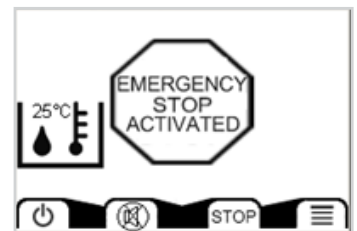
The EMERGENCY STOP ACTIVATED symbol will be shown on the display. In addition red LEDs on both sides of the panel will blink and the external buzzer is activated.

NB: FOR EMERGENCY STOP ONLY!

Press STOP again to reactivate the hydraulic system.



The external buzzer can be muted by pressing the button under the loudspeaker symbol.



Menu System

Access menu system by pressing menu button and hold it for 3 seconds

SETTINGS

The menu system contains of 5 settings:

- 1 - Language
- 2 - Display Settings
- 3 - Automatic OFF time
- 4 - Control Setup
- 5 - Panel Postition



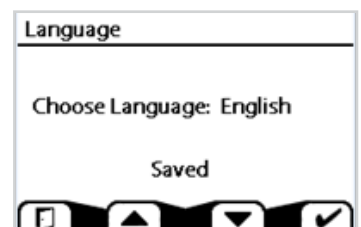
Select settings



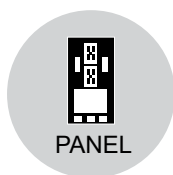
Exit settings



Choose function

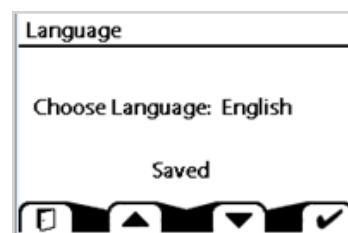


Menu System



1/5 Language

Choose between English or Norwegian.
The setting will not affect other panels in the system.



2/5 Display settings

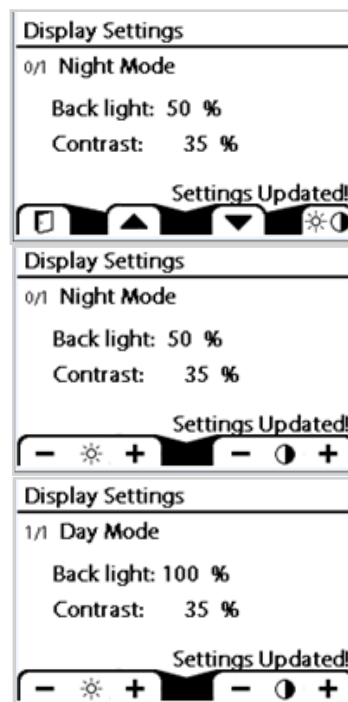
Set contrast and backlight level for Daytime/Night modes
Settings will not affect other panels in the system.

Press to start adjustment - Press + or - to adjust contrast or backlight.

Use to switch between daytime or night settings.

Exit setting by pressing

Adjustments will automatically end after 3 seconds of inactivity.



3/5 Automatic OFF time

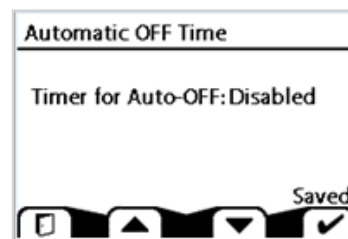
Set time from last activity to Panel automatically turns off.
The time can be set at 5 minutes interval, ranging from 5 to 60 minutes - or be disabled. When "Disabled" is selected, the panel will never be turned off automatically.

Settings will not affect other panels in the system.

Press to adjust time in 5 minutes intervals.

Exit setting by pressing

Store settings by pressing



4/5 Control Setup

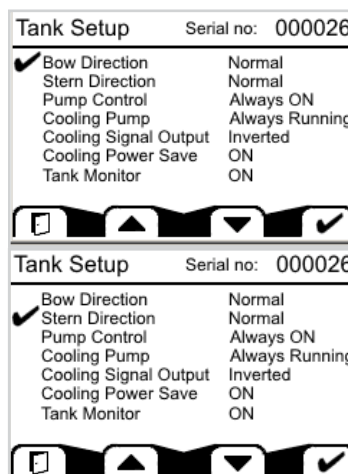
PHC024

1.1 Bow/Stern Direction:

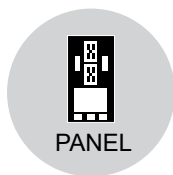
Values: Normal (default)/Inverted

Switches between Normal and Inverted
running direction for the thruster.

Direction need to be inverted if incorrect prop rotation.



Menu System



1.2 Pump Control (PTO Mounted Pump)

Values: Power Save(default)/Always ON

When «Pump Control» is set to «Power Save», the system will automatically control load sharing between two PTO pumps by deactivating the second PTO pump when not needed (two PTO pumps/control valves required) to reduce heat generation in the system and save fuel/energy. When any thruster is running, both PTO pumps will be active to ensure good performance. When an SPS stabilizer system is active, one PTO pump will be deactivated to save power. If stabilizers are active and the system pressure drops below 80bar, the system will activate the second PTO pump for 15 minutes to increase the flow capacity and maintain required pressure. After 15 minutes the second pump will be deactivated unless the pressure is still below 80 bar.

“Pump Control” settings has no effect when “Thruster Stern” is set to “W/Bypass Valve”.

NOTE: “Pump Control: Auto” must only be used on PHC 024 with firmware V.1.008 or higher!

Tank Setup		Serial no: 000026
Bow Direction	Normal	
Stern Direction	Normal	
☒ Pump Control	Always ON	
Cooling Pump	Always Running	
Cooling Signal Output	Inverted	
Cooling Power Save	ON	
Tank Monitor	ON	

1.3 Cooling Pump

Values: Temp Controlled(default) / Always Running

When the option “Temp Controlled” is selected, the cooling pump will start when oil temperature exceeds 50°C/122°F and stop when the oil temperature goes below 40°C/104°F. On systems with two oil tanks, this setting will apply to both tanks.

Tank Setup		Serial no: 000026
Bow Direction	Normal	
Stern Direction	Normal	
☒ Pump Control	Always ON	
Cooling Pump	Always Running	
Cooling Signal Output	Inverted	
Cooling Power Save	ON	
Tank Monitor	ON	

1.4 Cooling Signal Output

Values: Normal (default)/Inverted

Set to Normal when using a hydraulic cooling pump. Should be set to Inverted when using an electrical cooling pump with a 10 2380A-12/24V relay box.

Tank Setup		Serial no: 000026
Bow Direction	Normal	
Stern Direction	Normal	
☒ Pump Control	Always ON	
Cooling Pump	Always Running	
Cooling Signal Output	Inverted	
Cooling Power Save	ON	
Tank Monitor	ON	

1.5 Cooling Power Save

Values: ON (default)/OFF

ON sets the Cooling Pump into power save mode, which means the Cooling Pump output is dropping to 0 volt when the oil pressure is below 10 bar for more than 10 seconds (Cooling Pump is turned OFF).

Tank Setup		Serial no: 000026
Bow Direction	Normal	
Stern Direction	Normal	
☒ Pump Control	Always ON	
Cooling Pump	Always Running	
Cooling Signal Output	Inverted	
Cooling Power Save	ON	
Tank Monitor	ON	

1.6 Tank Monitor

Values: ON (default)/OFF

ON is when you have a tank monitor, oil level and Oil temp sensor. OFF is when you do not have a tank monitor and the display will show 0°C and no alarm for high temperature or low level will not be transmitted on the S-link.

Tank Setup		Serial no: 000026
Bow Direction	Normal	
Stern Direction	Normal	
☒ Pump Control	Always ON	
Cooling Pump	Always Running	
Cooling Signal Output	Inverted	
Cooling Power Save	ON	
Tank Monitor	ON	

1.7 Thruster Bow (only available for PHC024 FW with V1.105 or higher)

Values: WO/Bypass Valve (default)/ W/Bypass Valve

All 513mm (20inch) tunnel and 610mm (24inch) tunnel thrusters, are supplied with hydraulic bypass/crossover valve and must be set to “W/Bypass Valve”.

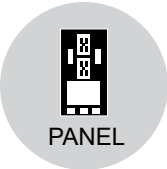
This bypass valve is normally open to protect the thruster during deceleration and will close while thruster is running.

By selecting “W/Bypass Valve” you activate this signal and addition change ramp parameters to match this setup.

All other thrusters must be set to “WO/Bypass Valve”.

Tank Setup		Serial no: 000026
☒ Thruster Bow	WO/Bypass Valve	
Thruster Stern	W/Bypass Valve	
Instance	--	
Thruster Valves	Bow-Stern	

Menu System



1.8 Thruster Stern (only available for PHC024 with FW V1.105 or higher)

Values: WO/Bypass Valve (default)/ W/Bypass Valve

All 513mm (20inch) tunnel and 610mm (24inch) tunnel thrusters, are supplied with hydraulic bypass/crossover valve and must be set to "W/Bypass Valve". This bypass valve is normally open to protect the thruster during deceleration and will close while thruster is running. By selecting "W/Bypass Valve" you activate this signal and addition change ramp parameters to match this setup. All other thrusters must be set to "WO/Bypass Valve".

Tank Setup		Serial no: 000026
☐ Thruster Bow	WO/Bypass Valve	
☒ Thruster Stern	W/Bypass Valve	
Instance	--	
Thruster Valves	Bow-Stern	

1.9 Instance

Values: --(default)/Port/Starboard

Setting the PHC024 tank controller instance. For a mono hull boat the instance should be "--". If you have a catamaran with two PHC024 controllers then the one in the port hull should be set as "Port" and the one in the starboard hull as "Starboard". This way the two controllers are shown in the panel display as two different oil tanks to monitor.

Tank Setup		Serial no: 000026
☐ Thruster Bow	WO/Bypass Valve	
☒ Thruster Stern	W/Bypass Valve	
Instance	--	
Thruster Valves	Bow-Stern	

1.10 Thruster Valves (only apply for PHC024 with FW V1.105 or higher)

Values: Bow-Stern (default)/ Bow-Bow / Stern-Stern

Thruster Valves is how the two thruster valves are set to work.
Bow-Stern: One thruster valve output runs on bow signal from control device, and the other thruster valve output runs on stern signal from control device.
Bow-Bow: Both thruster valve outputs runs on bow signal from control device.
Stern-Stern: Both thruster valve outputs runs on stern signal from control device.

Tank Setup		Serial no: 000026
☐ Thruster Bow	WO/Bypass Valve	
☐ Thruster Stern	W/Bypass Valve	
☒ Instance	--	
Thruster Valves	Bow-Stern	

PHC-3

1.1 Bow/Stern Direction:

Values: Normal (default)/Inverted

Switches between Normal and Inverted running direction for the thruster.

Direction need to be inverted if incorrect prop rotation.

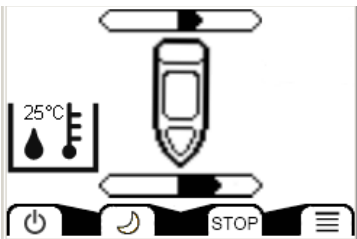
PHC-3 Setup		Serial no: 000333
☒ Bow Direction	Normal	
Stern Direction	Normal	

5/5 Control Setup

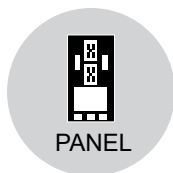
Values: Normal View (default) / Stern View

Normal View is when panel and joystick is facing the bow as normal. Stern View is when panel and joystick is turned 180° and facing the stern and you operate the joystick while facing stern. The boat in the display will face the same way as the boat.

Panel Position	
☒ Normal View	Stern View



Menu System



SERVICE MENU (Systems with one oil tank) Access SERVICE MENU by pressing MENU button

Shows oil pressure and temperature in the hydraulic tank as well as the serial number of the panel.

Thrusters can be operated while this display is shown.

Exit Service Menu by pressing

Service Menu	
Oil Pressure:	115 bar
Oil Temp Port:	24 °C
Serial Number: 0001234	

SERVICE MENU (Systems with two oil tanks)

Shows oil pressure and temperature in both hydraulic tanks as well as the serial number of the panel.

Thrusters can be operated while this display is shown.

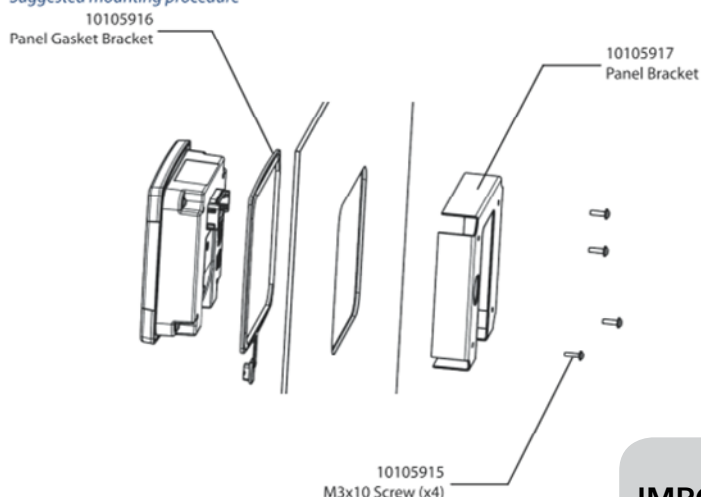
Exit Service Menu by pressing

Service Menu	
Oil Pressure Port:	115 bar
Oil Temp Port:	24 °C
Oil Pressure Starboard:	109 bar
Oil Temp Starboard:	23 °C
Serial Number: 0001234	

Panel mounting

Mounting Installation

Suggested mounting procedure

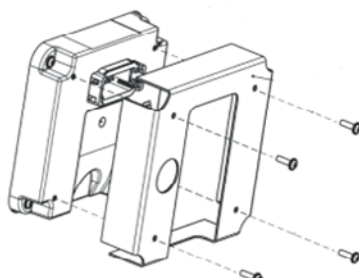


TECHNICAL SPECIFICATIONS, LCD DISPLAY:

IP 67
Low temp functionality (-40°C)
Mounting bracket
Alarm output max load 200mA
Input voltage 9 - 31V
Max current consumption 110mA

Fastening Installation

Mounting screw placement



Caution:
Excessive screw torque force may cause damage to housing.

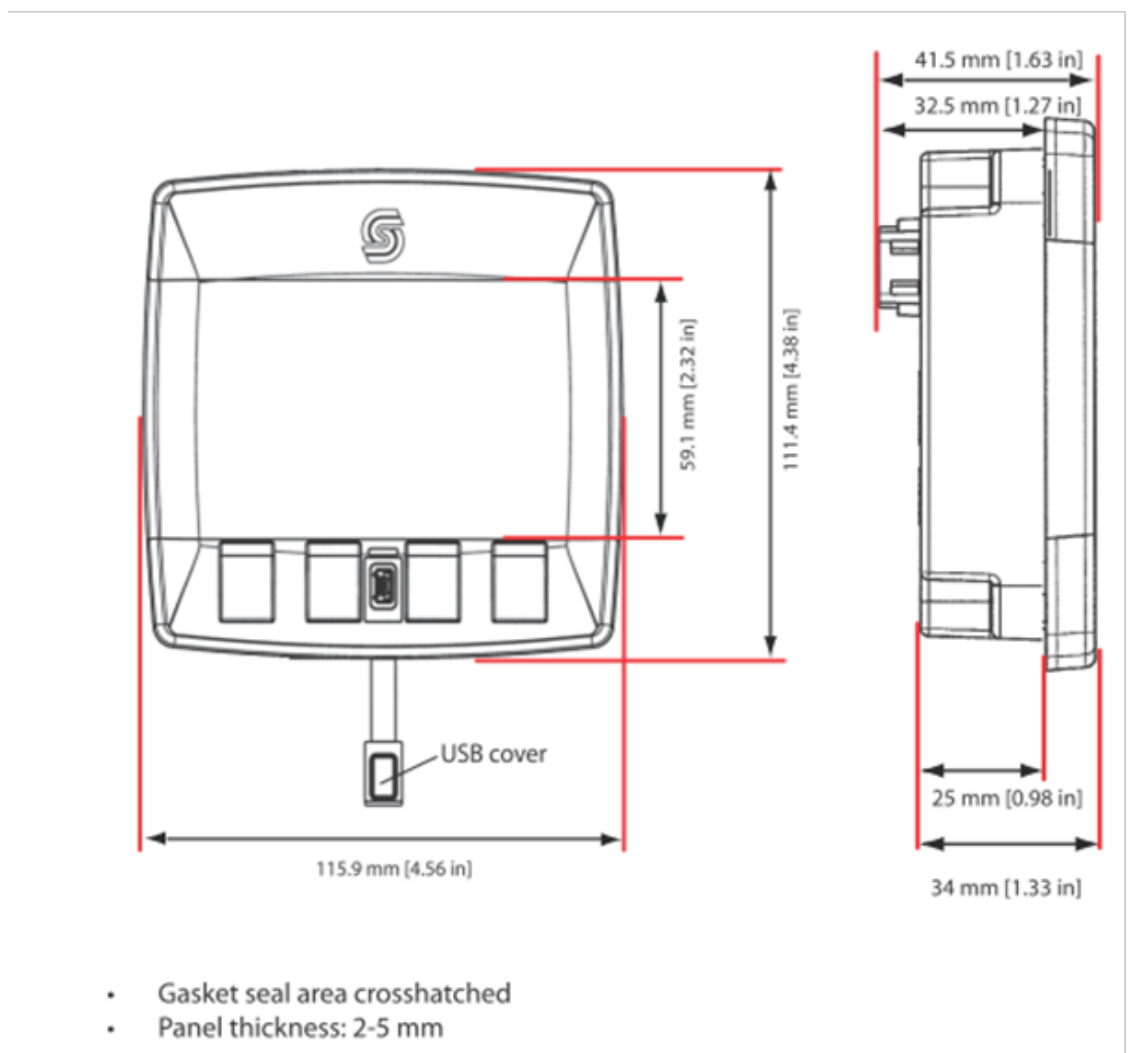
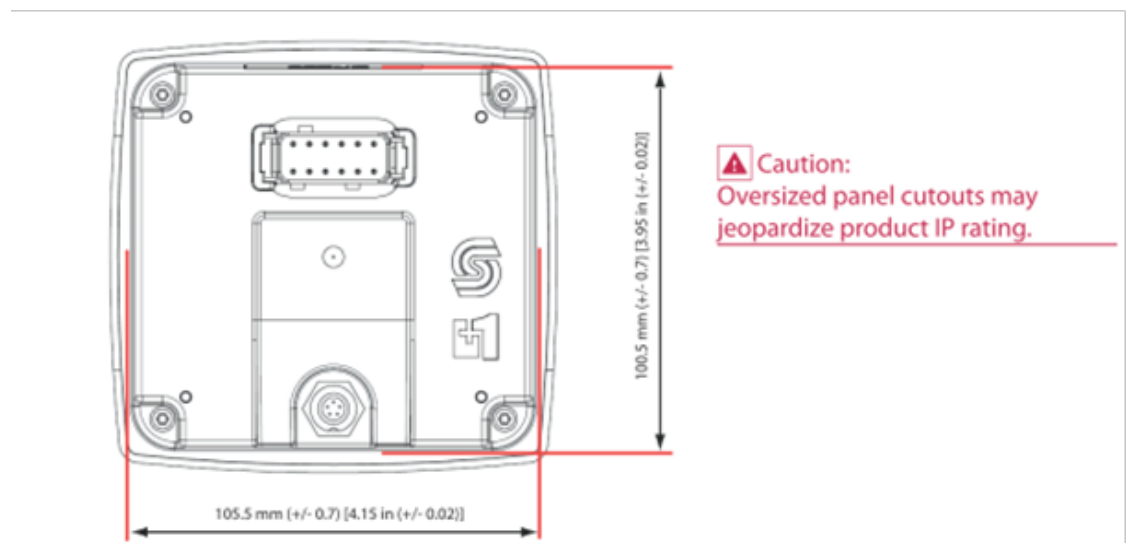
IMPORTANT! In case of mounting in rough and humid weather conditions, apply sealant under the panel mating surface to avoid water ingress.

Caution:
: Reassembly with self-tapping screws may damage existing threads in housing.

Mounting and fastening Installation

- Fastening hole depth: 11 mm
- May be threaded M3 and used with standard screws.
- Maximum torque: 0.9 Nm. Excessive torque force may cause damage to housing.
- Use of non-recommended screws may cause damage to housing

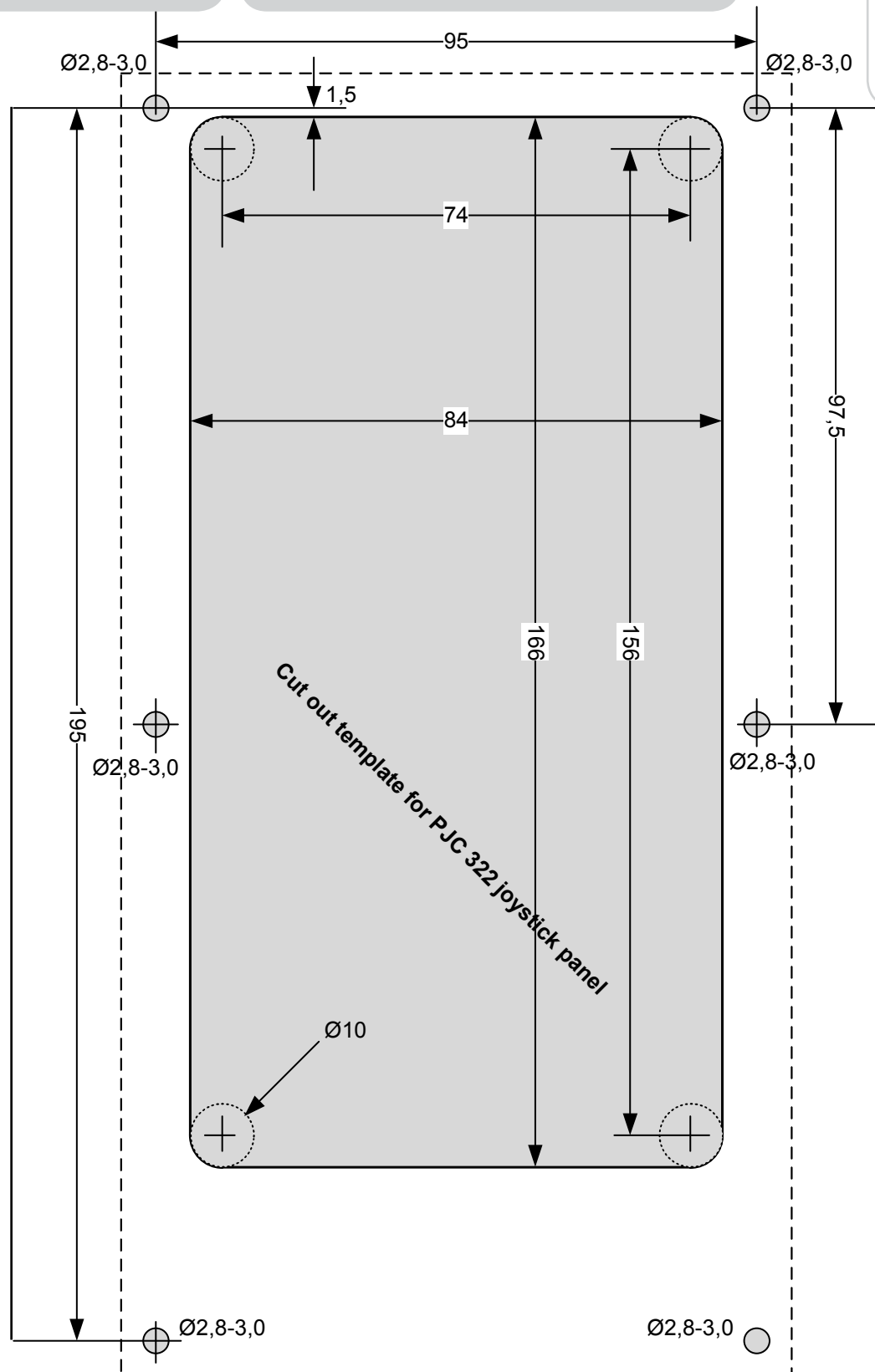
Panel Dimensions



Panel Dimensions, PJC322

This template is for measurements use only!
Use external template when mounting

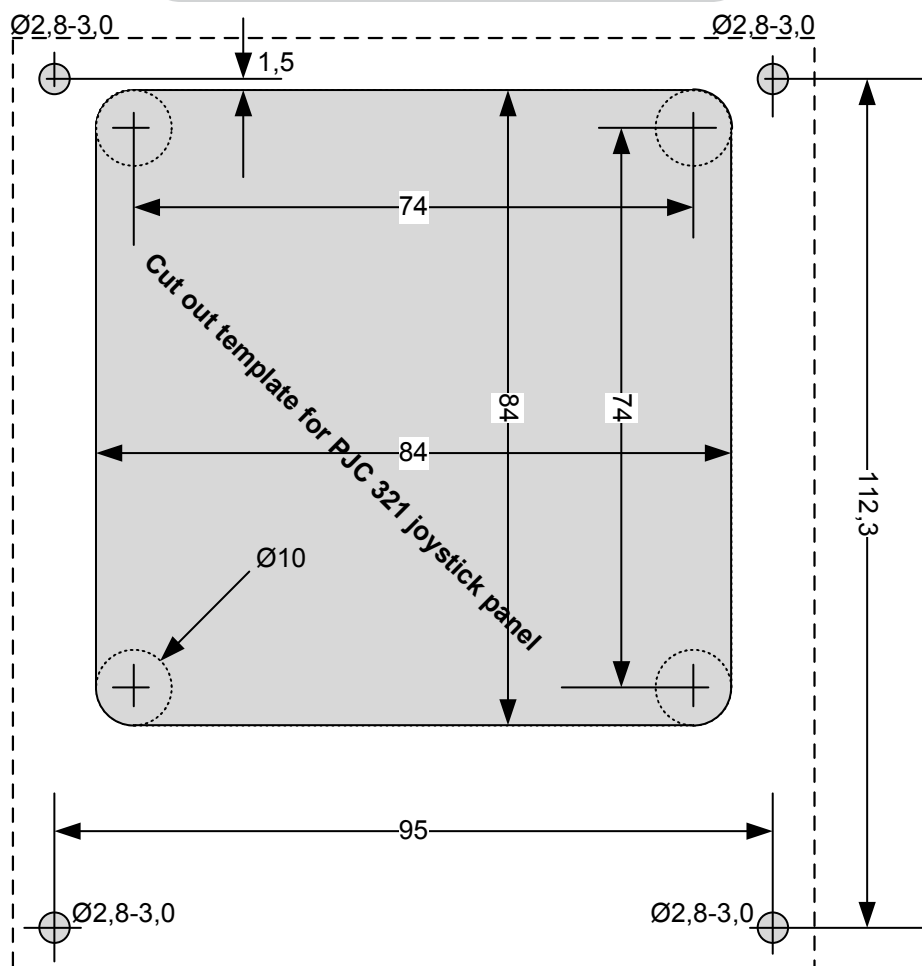
IMPORTANT! In case of mounting in rough and humid weather conditions, apply sealant under the panel mating surface to avoid water ingress.



Panel Dimensions, PJC321

This template is for measurements use only!
Use external template when mounting

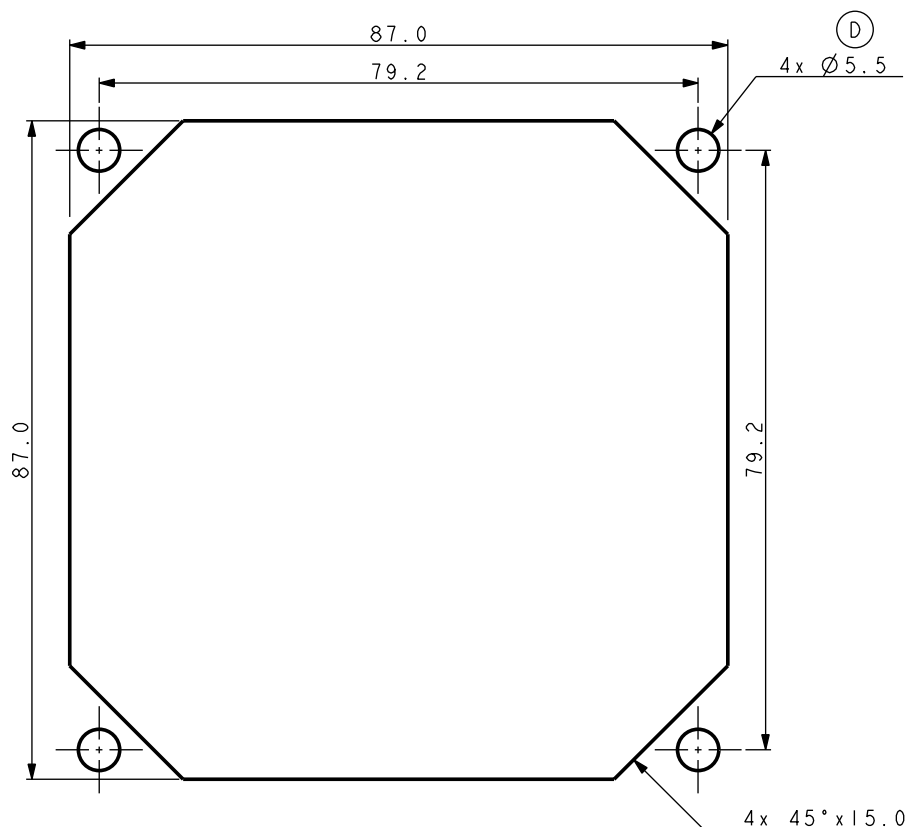
IMPORTANT! In case of mounting in rough and humid weather conditions, apply sealant under the panel mating surface to avoid water ingress.



Panel Dimensions, PJC321-L, PJC322-L

This template is for measurements use only!
Use external template when mounting

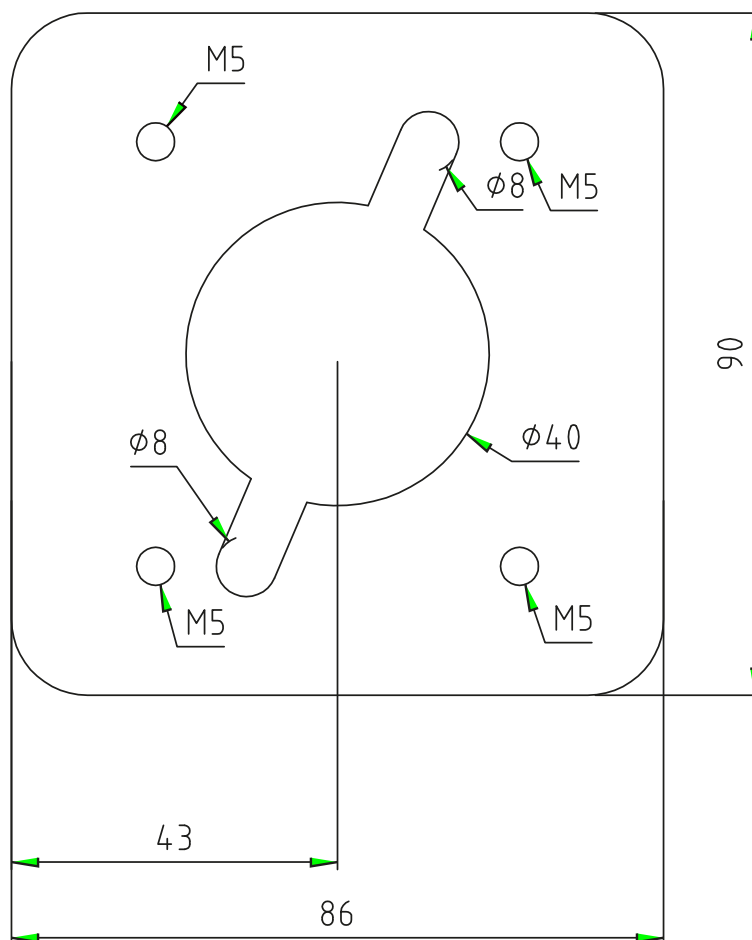
IMPORTANT! In case of mounting in rough and humid weather conditions, apply sealant under the panel mating surface to avoid water ingress.

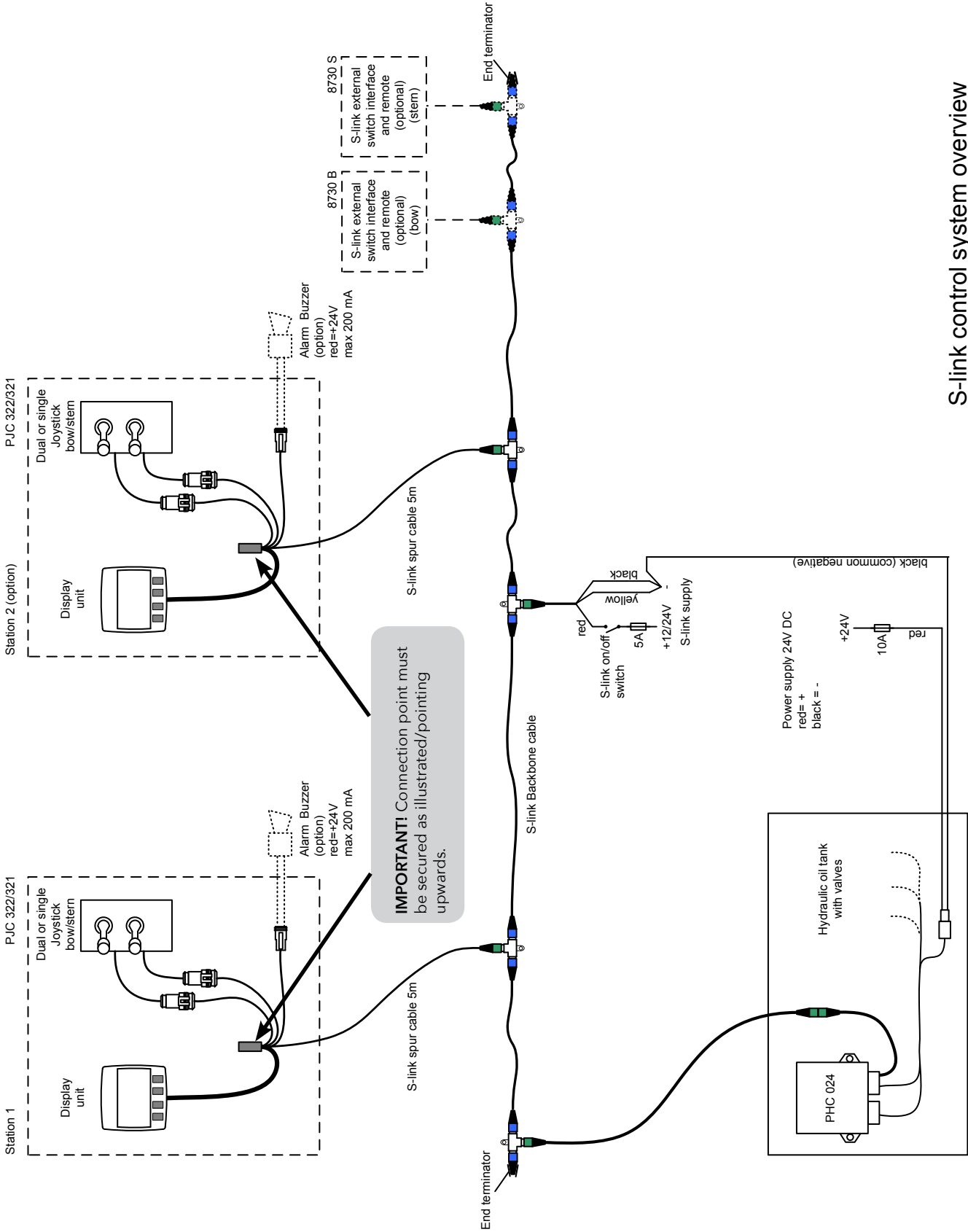


Panel Dimensions PJC321-MCL2, PJC322-MCL2

This template is for measurements use only!
Use external template when mounting

IMPORTANT! In case of mounting in rough and humid weather conditions, apply sealant under the panel mating surface to avoid water ingress.

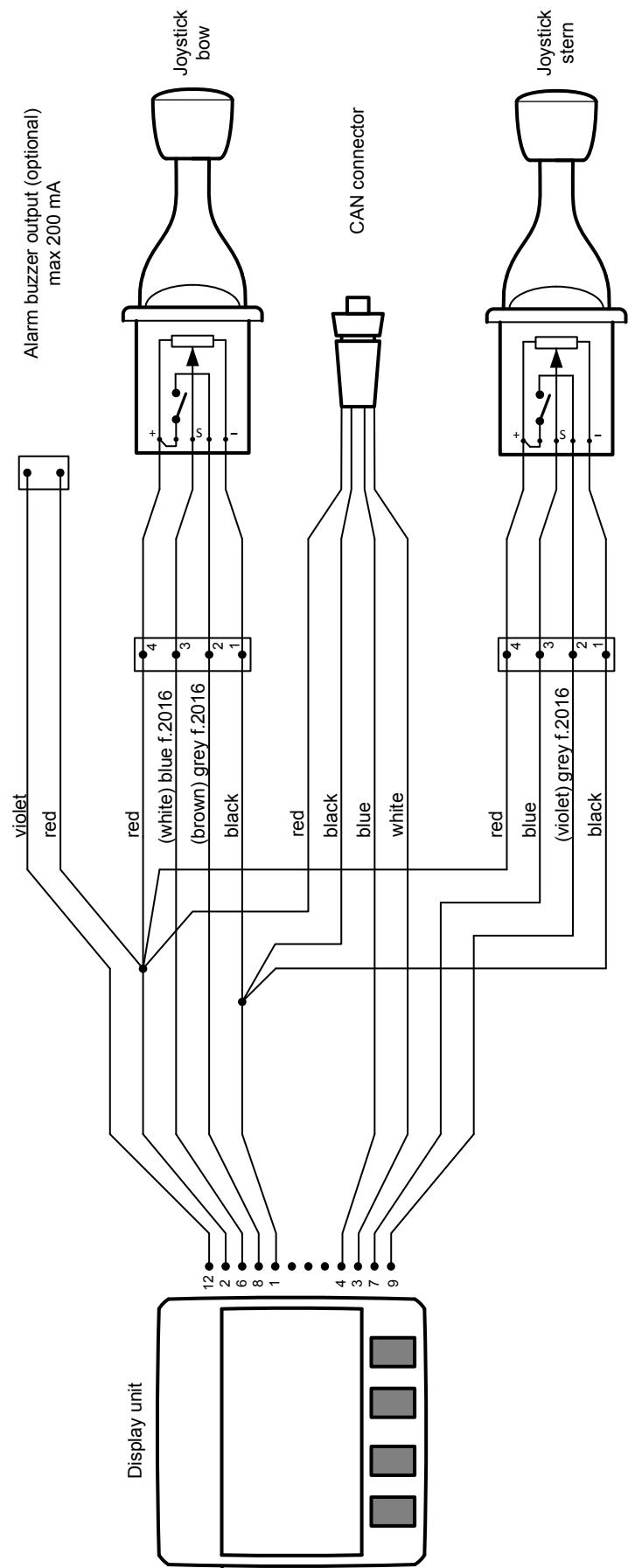




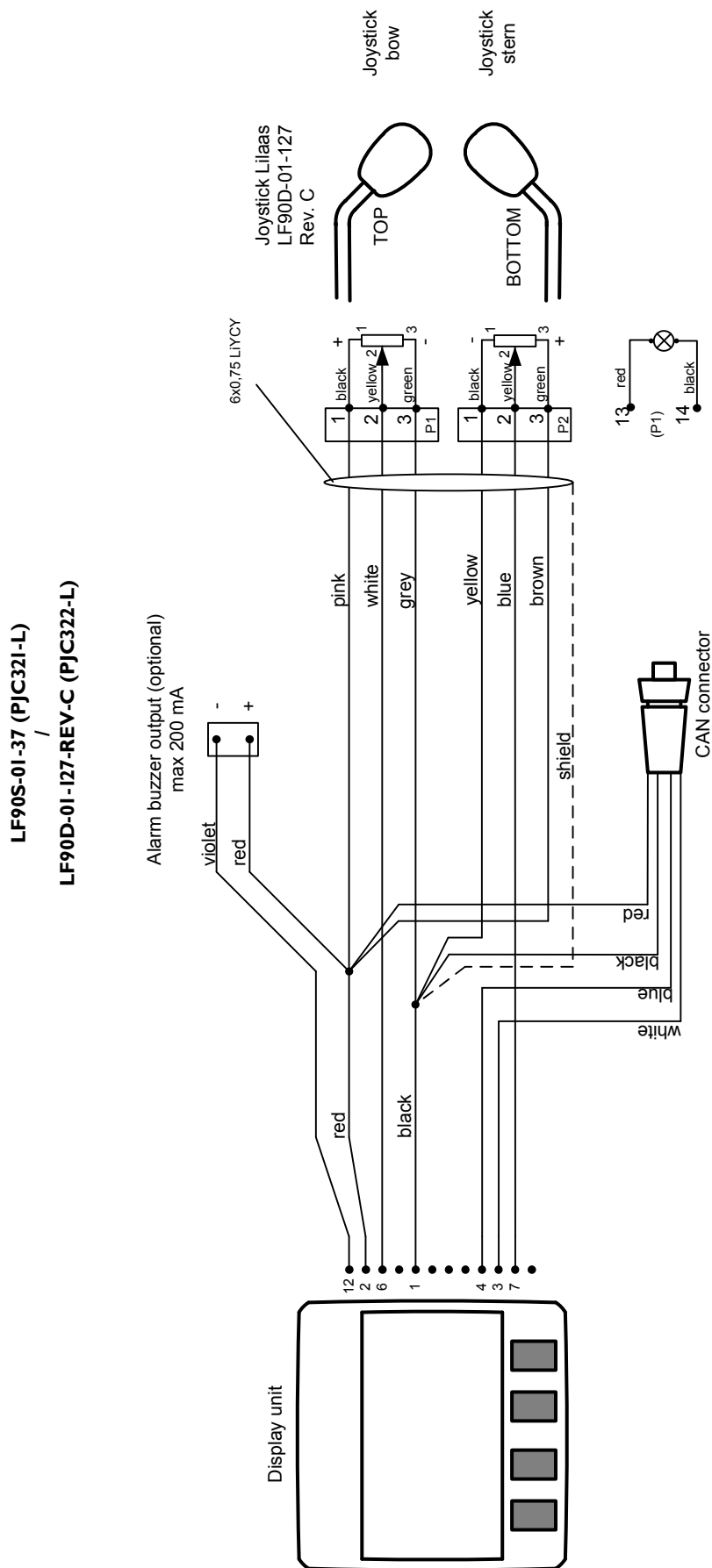
S-link control system overview

Internal Wiring Diagram PJC321, PJC322

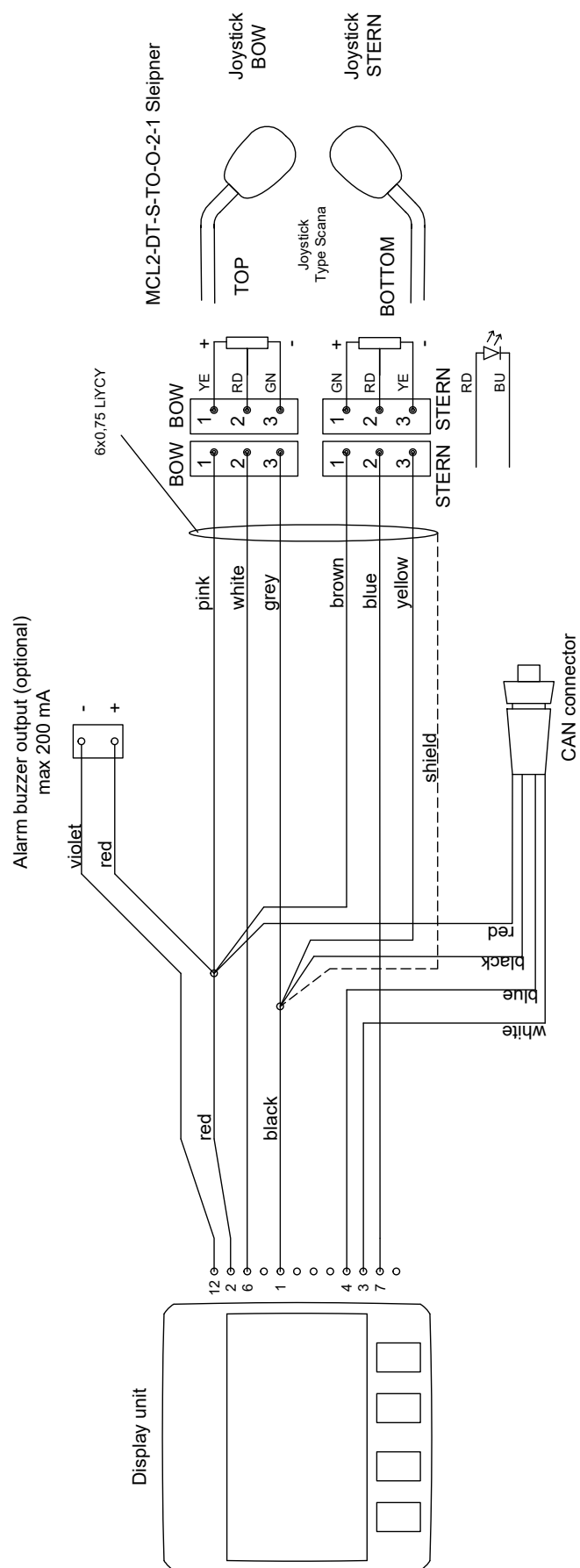
PJC 322 Internal wiring.
(PJC 321 has no joystick stern)



Internal Wiring Diagram PJC321-L, PJC322-L



Internal Wiring Diagram PJC321-MCL2, PJC322-MCL2



Worldwide sales and service



www.side-power.com



SLEIPNER MOTOR • AS P.O. Box 519 • N-1612 Fredrikstad • Norway