Control System

INSTALLATION MANUAL

RCU, CONTROL PANEL AND WIRING

LANGUAGE: ENGLISH
UPDATED: OCTOBER 2026
DOC NO: 024163-01

HUMPHREE®

CONTENTS

1. SAFETY INFORMATION 04

1.1 WARNINGS AND IMPORTANT NOTICES
1.2 SAFETY PRECAUTIONS

2. ABOUT THIS MANUAL 05

2.1 INTENDED PRODUCT USE
2.2 INTENDED AUDIENCE
2.3 CRITICAL REQUIREMENTS

3. SYSTEM OVERVIEW 06

3.1 COMPONENTS
3.2 REQUIRED TOOLS 07

4. PROCESS OVERVIEW 08

5. COMPONENT INSTALLATION 09

5.1 RCU INSTALLATION
5.2 CONTROL PANEL INSTALLATION 10
5.2.1 CP514 INSTALLATION 11
5.2.2 TCP INSTALLATION 12

COPYRIGHT

© HUMPHREE 2026. All rights reserved. No part of this document may be reproduced in any form without permission from the publisher.

DISCLAIMER

The contents of this document are subject to revision without notice due to continuous product improvement. Humphree shall have no liability for any inaccuracies or omissions contained in this document or any differences between the product and the document. Deviations from the installation manual will void your warranty.

18 6. SYSTEM WIRING

6.1 CABLE ROUTING
6.2 CONTROL PANEL TO RCU
19 6.3 SECONDARY CONTROL PANEL
20 6.4 SERVO CONNECTIONS
21 6.5 TERMINATION PLUGS
6.6 EXTERNAL SIGNALS
22 6.7 VOLVO PENTA INTEGRATION
23 6.8 MFD INTEGRATION (OPTIONAL)
24 6.9 KEY SWITCH (OPTIONAL)
6.10 TOGGLE SWITCH (OPTIONAL)

25 7. POWER SUPPLY

26 8. FINAL STARTUP CHECKLIST

27 9. APPENDIX

1. SAFETY INFORMATION

Please read the manual carefully before installing or operating the Humphree system. Pay extra attention to the safety notices listed under section 1.1 Warnings and Important Notices.

1.1 WARNINGS AND IMPORTANT NOTICES

Three types of warning or notification signs are used in this manual. The signs are listed as follows in order of severity:

WARNING!

WARNING!
Information shown with the WARNING! sign can lead to serious personal injuries or death if it is disregarded.

IMPORTANT!

IMPORTANT!
Information shown with the IMPORTANT! sign can lead to system or property malfunctions or damage if it is disregarded.

NOTE!

NOTE!
Notes contain important information regarding the Humphree system.

1.2 SAFETY PRECAUTIONS

WARNING!

WARNING!
While installing the system, make sure that all electrical power sources remain disconnected until installation is complete.

Disconnect shore power and isolate all electrical connections to the engine, battery charger, and engine-mounted accessories before installation.

2. ABOUT THIS MANUAL

The purpose of this manual is to provide instructions for the correct installation of the Humphree Control System. All Humphree systems are different, therefore the instructions and images in this manual are general examples.

This manual is available digitally as a PDF file, and can be downloaded in the following ways: Scan the QR code that is displayed on the product packaging and attached documentation. Use the following Humphree URL address: https://humphree.com/downloads

2.1 INTENDED PRODUCT USE

This manual describes the installation of the Humphree Control System, including control units, control panels, cable routing and power supply. The control system is compatible with the following Humphree products:

- HSC5 Interceptors
- HLS Interceptors
- Stabilization fins
- HIG5

The system must not be used for any purpose other than its intended use.

2.2 INTENDED AUDIENCE

This manual is intended for installers of Humphree Control Systems, including shipbuilders and authorized service workshops with qualified personnel. The following installation instructions are intended for professionals only.

IMPORTANT!

IMPORTANT!

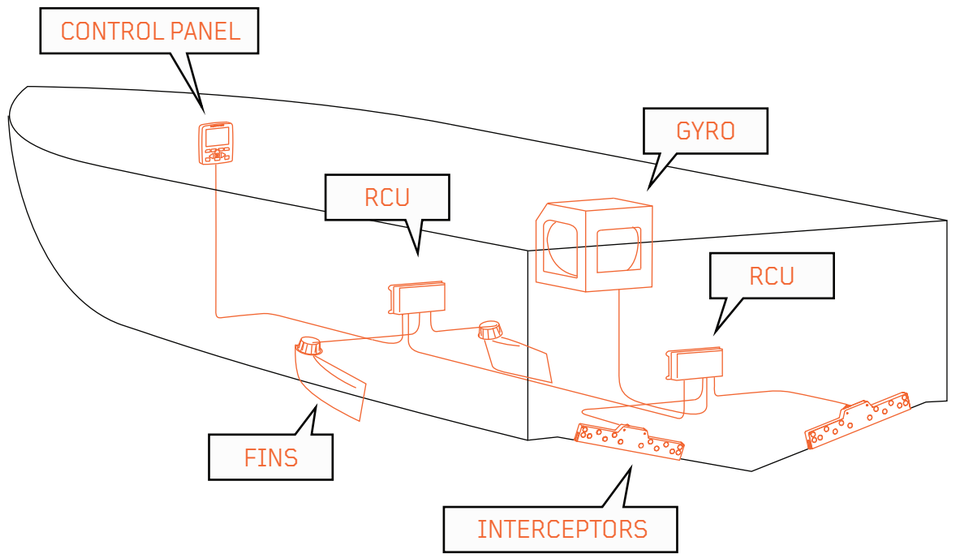
2.3 CRITICAL REQUIREMENTS

Before installation, ensure the following:

- A speed signal is required for automatic functions
- A valid rudder signal is required for fin systems. Failure to install and configure a rudder signal may void the warranty.
- Termination plugs must be installed on the control bus
- All cables must be routed above areas where water can collect
- Power supply must be correctly fused and dimensioned

Failure to comply with these requirements may result in system malfunction, reduced performance, or installation failure.

3. SYSTEM OVERVIEW



3.1 COMPONENTS

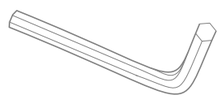
- RCU (RideControl Unit)
- Control Panel (CP514 or TCP)
- Termination plugs
- Cables – control bus, servo cables, external signal cables, power cables
- RCU adapter

RCU

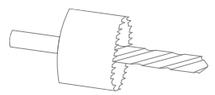
CP514

TCP

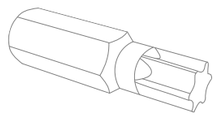
3.2 REQUIRED TOOLS



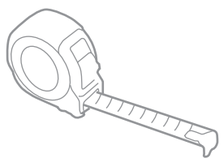
ALLEN KEY:
Ø 4, 5 and 6 mm



HOLE SAW:
Ø 70 and 80 mm



TORX:
T25
T30
T35

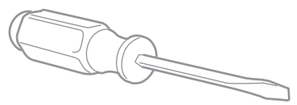


MEASURING TAPE

POWER DRILL

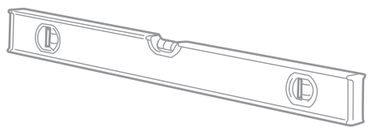
CABLE TIES/ CLAMPS

SCREWDRIVER
PZ2

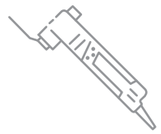


RULER

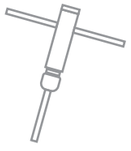
SPIRIT LEVEL



OSCILLATING MULTI-TOOL



M3 TAP TOOL



4. PROCESS OVERVIEW

The following installation sequence is recommended:

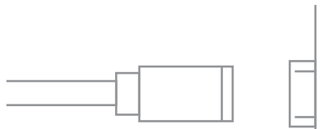
1 Plan component placement

2 Mount RCU(s)

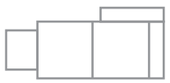
3 Install control panel(s)

4 Route all cables (before connecting)

5 Connect system cables (RCU, panels, servos)



6 Install termination plugs



7 Connect power supply

8 Perform final checks

IMPORTANT!

Do not power the system until all steps are completed.

5. COMPONENT INSTALLATION

5.1 RCU INSTALLATION

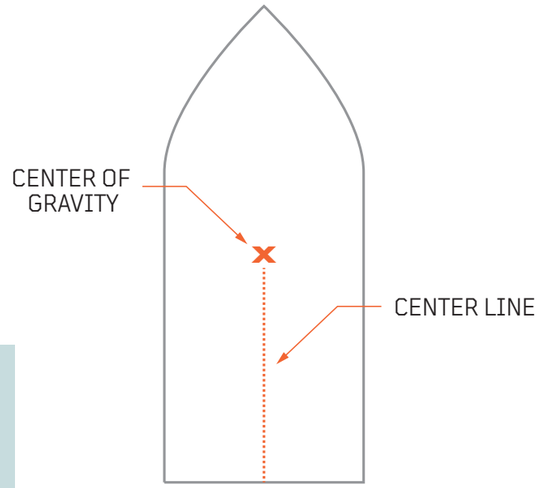
RCU PLACEMENT GUIDELINES

Place RCU-1 along the vessel center line, between center of gravity and transom. Additional RCUs (RCU-2, RCU-3, ...) can be placed anywhere suitable.

Mount in a location:

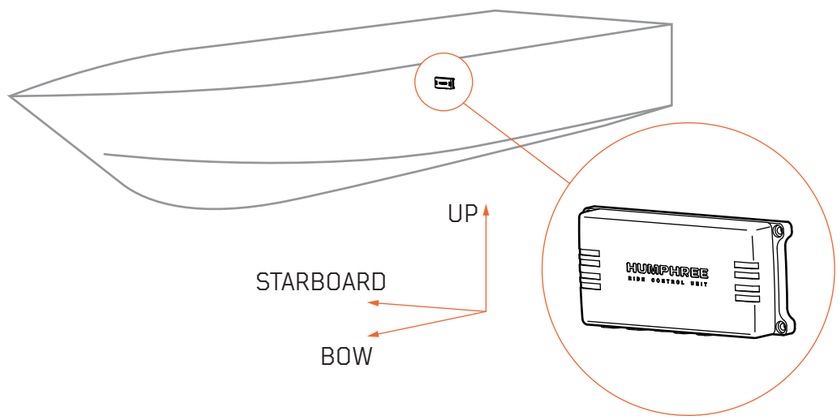
- Free from excessive vibration
- Protected from water exposure
- With sufficient space for cable routing
- Ensure a stable and flat mounting surface

Ensure the RCU is aligned with the vessel. Correct orientation is required for sensor accuracy



NOTE!

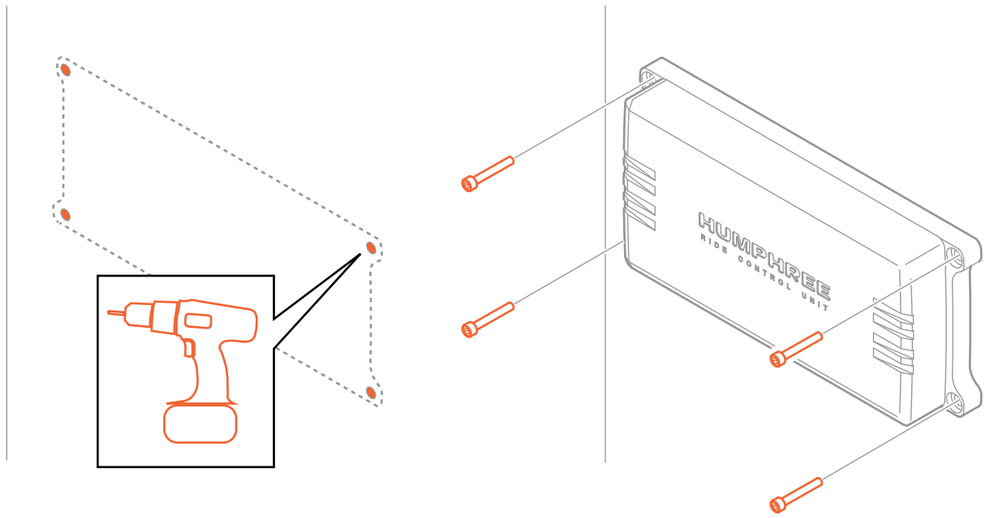
The orientation of the RCU can be customized, for instructions see *Setup Manual*.



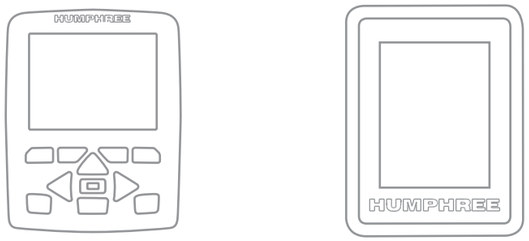
RCU MOUNTING

1 **DRILL** Four 9 mm mounting holes.

2 **FASTEN THE RCU** using four M8 bolts or equivalent.



5.2 CONTROL PANEL INSTALLATION



CP514 TCP

PLACEMENT GUIDELINES

Install the control panel where the operator has clear visibility and easy access.

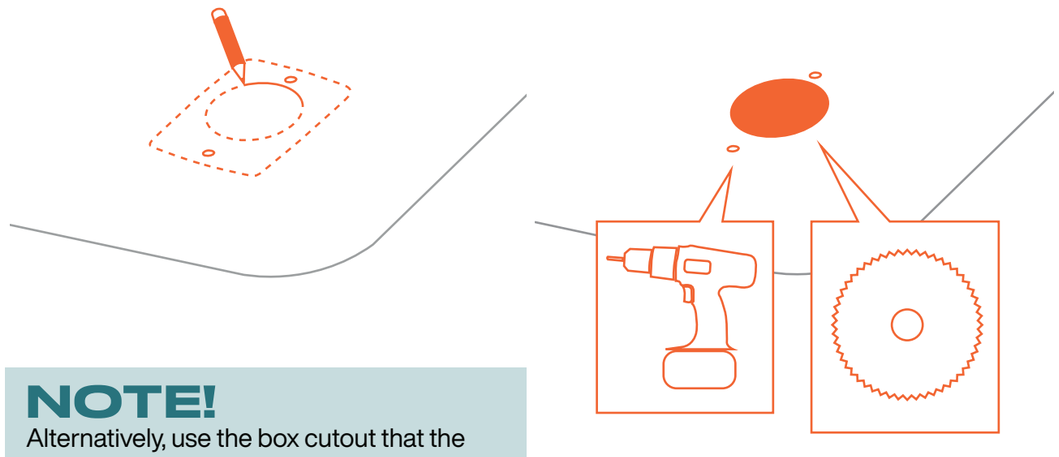
The control panel is typically installed at the Helm / bridge or at a secondary control station.

Make sure the placement is in line with the *Connection Diagram* provided with the system.

5.2.1 CP514 INSTALLATION

1 **MARK THE POSITION** using the cutout drawing for top mount (Appendix).

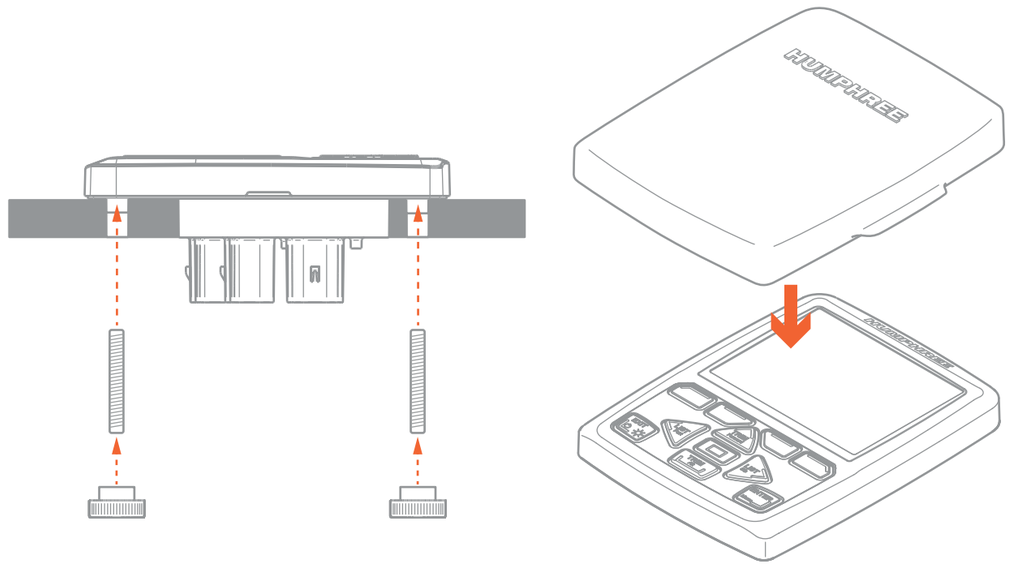
2 **DRILL** one Ø 80 mm hole using a hole saw and two Ø 6 mm mounting holes.



NOTE!
Alternatively, use the box cutout that the control panel was delivered in.

1 **MOUNT THE CONTROL PANEL** using:
- 2 x M5 bolts
- 2 x composite nuts

2 **PUT ON THE FRONT COVER.**



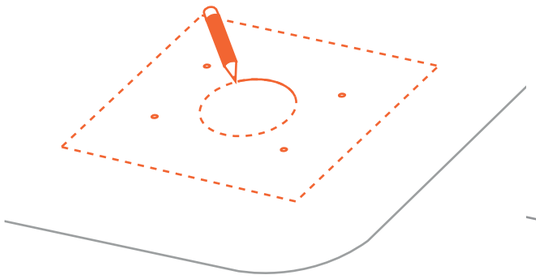
5.2.2 TCP INSTALLATION

The TCP can be mounted in two different ways:

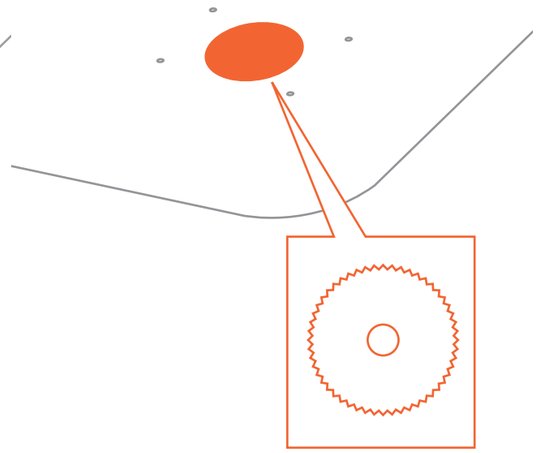
- **Top Mount**
- **Flush Mount**

MOUNTING OPTION 1: TOP MOUNT

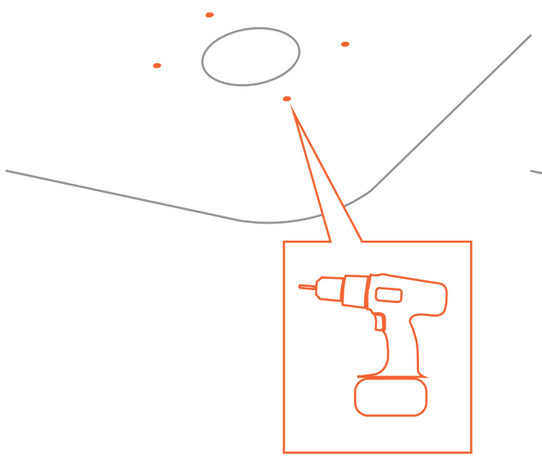
1 **MARK THE POSITION** of the TCP hole using the cutout drawing for top mount (Appendix).



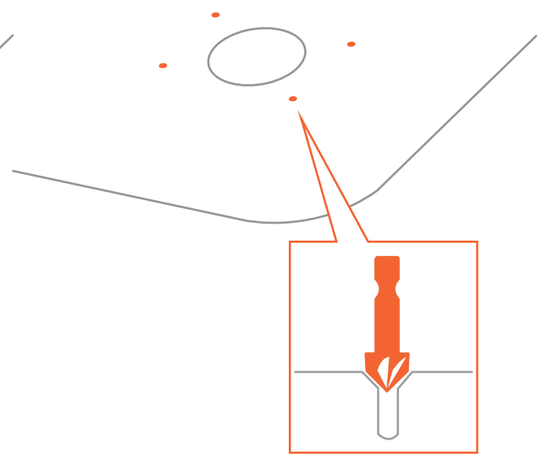
2 **DRILL** a Ø 70 mm hole using a hole saw.



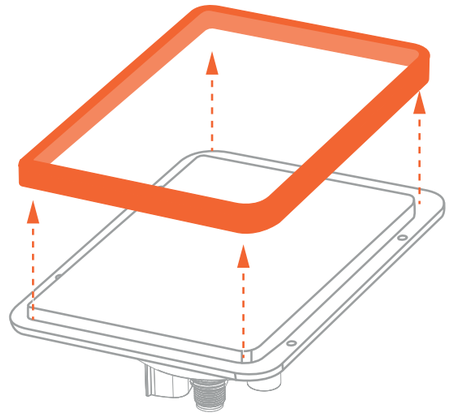
3 **DRILL** four 2.5 mm mounting holes.



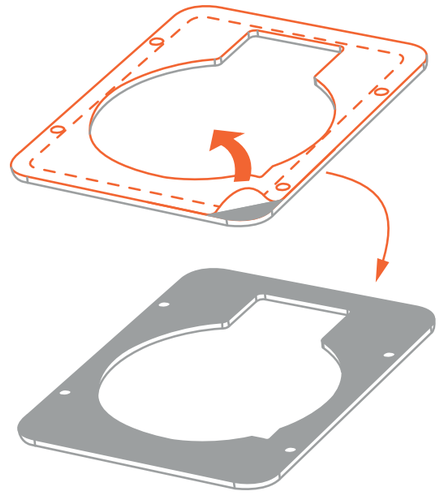
4 **USE A COUNTERSINK** on the mounting holes.



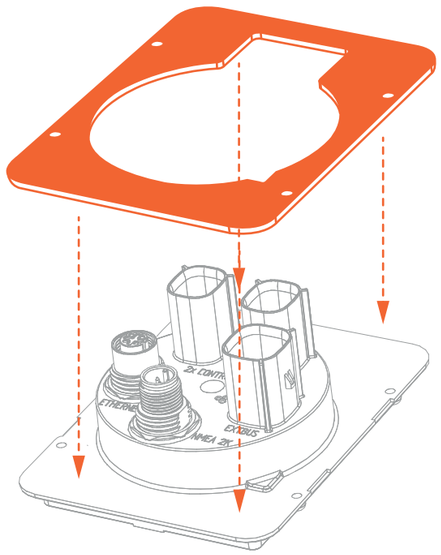
5 **REMOVE THE FRAME** from the TCP.



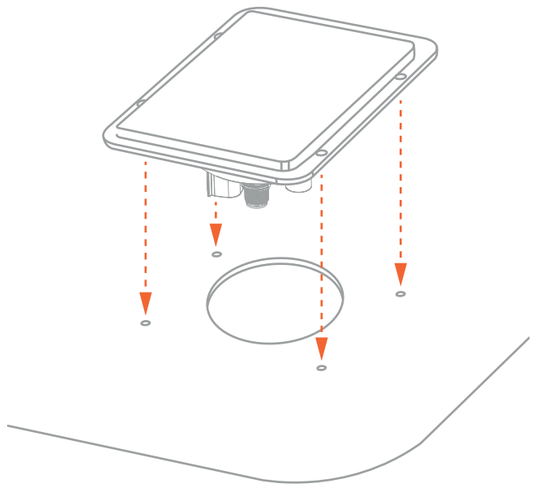
6 **REMOVE THE PLASTIC COVER** from the foam seal.



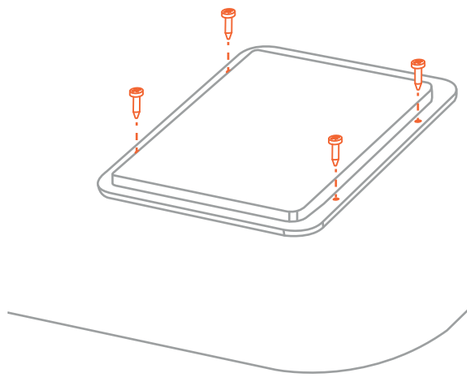
7 **PLACE THE FOAM SEAL** on the back of the TCP.



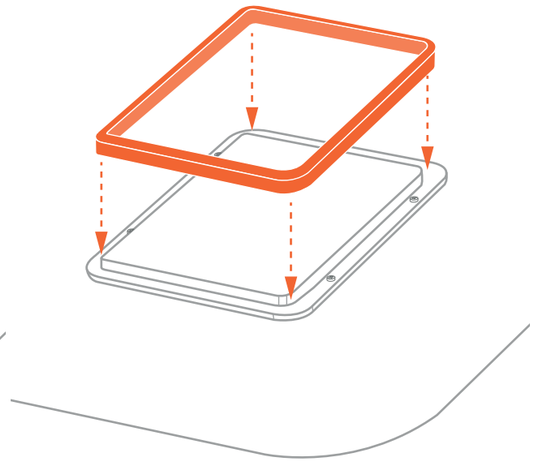
8 **INSERT THE TCP** into the Ø 70 hole.



9 **SECURE THE TCP** with four 2.9 x 13 mm screws.

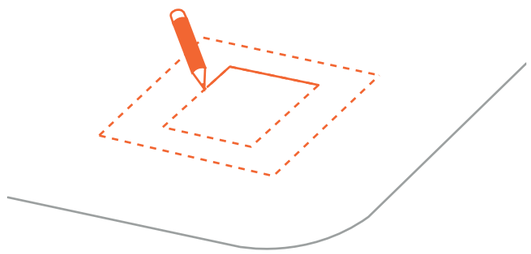


10 **PLACE THE FRAME** on the TCP.

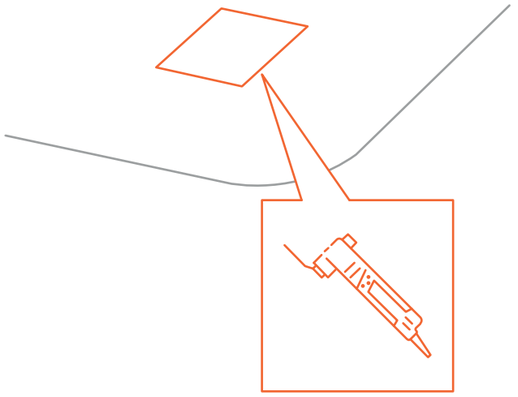


MOUNTING OPTION 2: FLUSH MOUNT

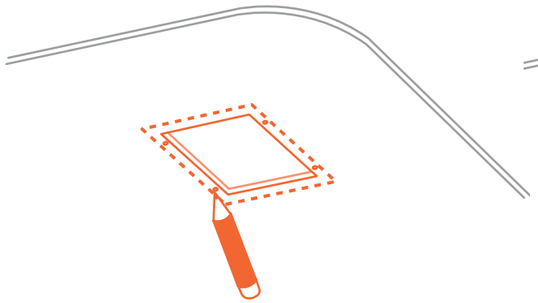
1 **MARK THE POSITION** of the TCP hole using the cutout drawing for flush mount (Appendix).



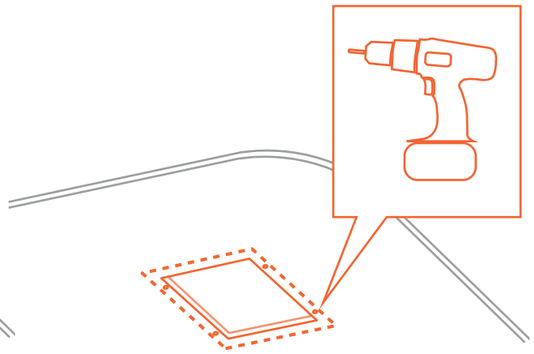
2 **CUT THE HOLE** using an oscillating multi-tool.



3 **MARK THE DRILL HOLES** on the underside of the surface. Use the cut hole and the TCP Drill Template as guides.



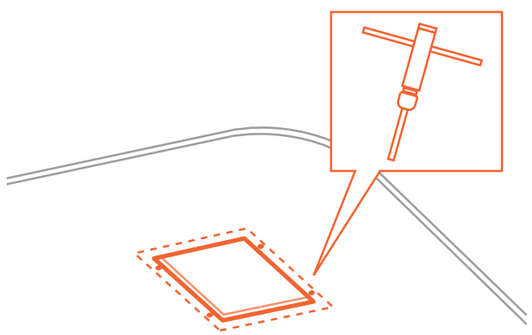
4 **DRILL** four 2.5 mm mounting holes.



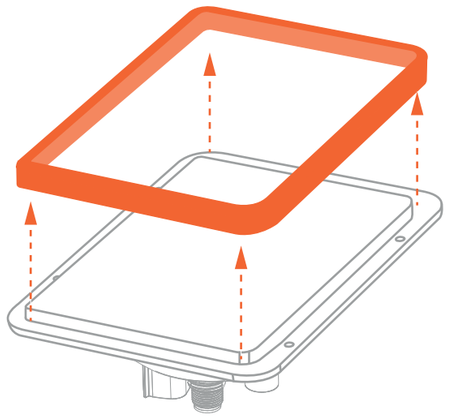
IMPORTANT!

Do not drill all the way through the surface. Measure the thickness of the surface. Drill enough to secure the TCP in place

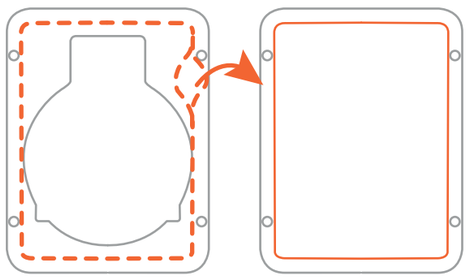
5 **USE AN M3 TAP** to cut threads in all four drill holes.



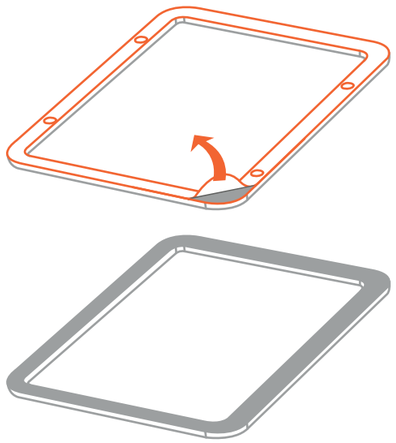
6 **REMOVE THE FRAME** from the TCP.



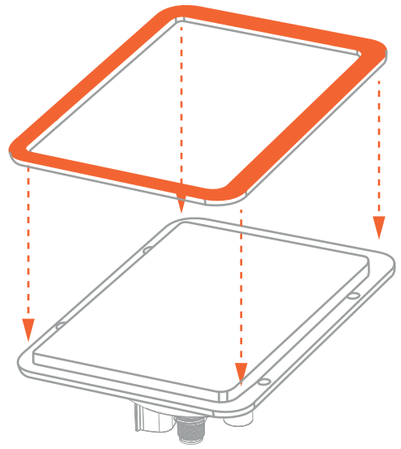
7 **SEPARATE** the frame part of the foam seal.



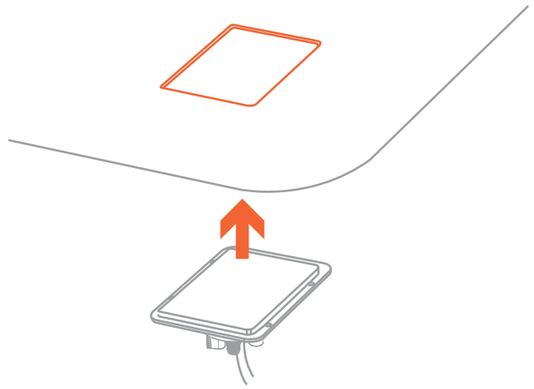
8 **REMOVE THE PLASTIC COVER** from the foam seal.



9 **PLACE THE FOAM SEAL** on the TCP.

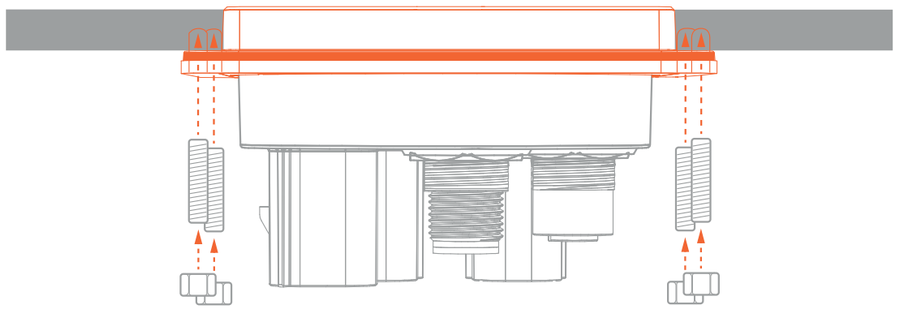


10 **INSERT THE TCP** into the hole from below.



11 **FASTEN THE TCP** using:

- 4 x M3 threaded rods
- 4 x M3 screw nuts



6. SYSTEM WIRING

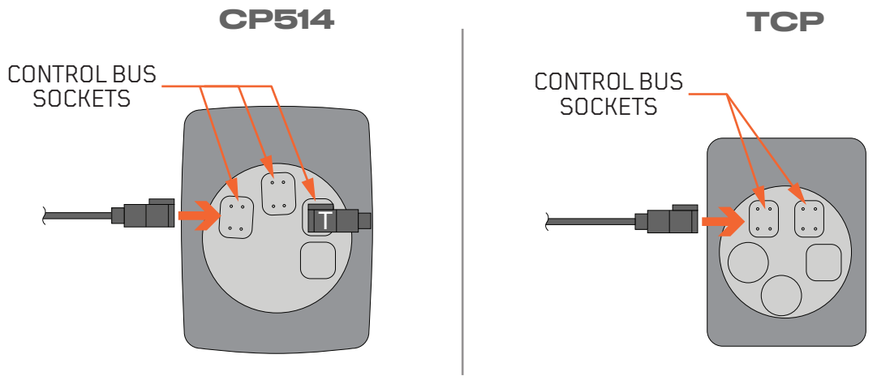
The following instructions and images are only examples of how to wire the cables. Follow the *Connection Diagram* delivered with your system for exact directions.

6.1 CABLE ROUTING

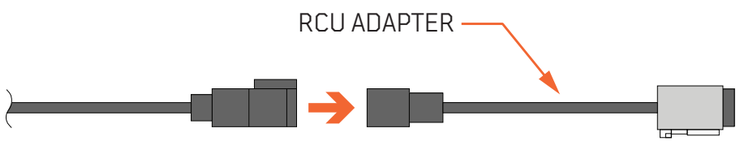
Before connecting anything, route all cables to their final positions. See the *Connection Diagram* and wire accordingly. Avoid sharp bends, moving parts and heat sources. Secure cables at regular intervals and leave some slack for service access. Route cables high up to avoid water exposure.

6.2 CONTROL PANEL TO RCU

1 **CONNECT THE CONTROL PANEL CABLE** to a control bus socket on the control panel.

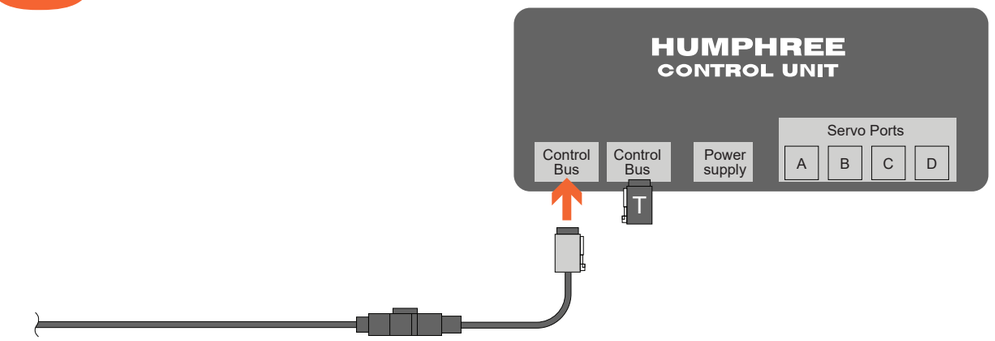


2 **CONNECT THE OTHER END** of the control panel cable to the RCU adapter.



NOTE!
A control panel cable extension of 7 meters is available.

3 **CONNECT THE RCU ADAPTER** to the RCU.



OPTIONAL

6.3 SECONDARY CONTROL PANEL

If a secondary control panel is installed, connect it to the main control panel with a control panel cable.

If the main control panel is a CP514, remove the termination plug to connect the secondary control panel. Connect the termination plug to the secondary control panel only if it is a CP514. **Do not connect the termination plug to an TCP.**

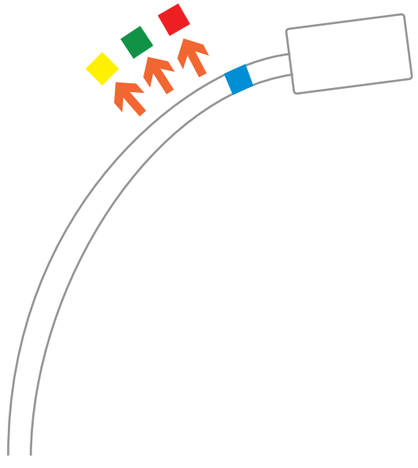
SECONDARY CP512 PANEL

SECONDARY LCP PANEL

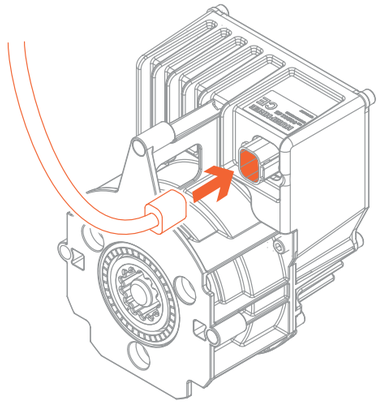
6.4 SERVO CONNECTIONS

RCUs are delivered with sealing plugs in the ports that are not used.

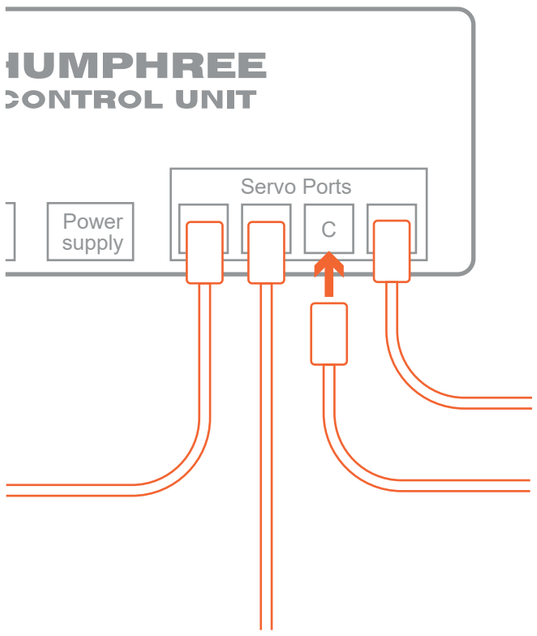
1 **ASSIGN A COLOR TO EACH CABLE** by removing and leaving only one unique color band.



2 **CONNECT A SERVO CABLE** to each servo.

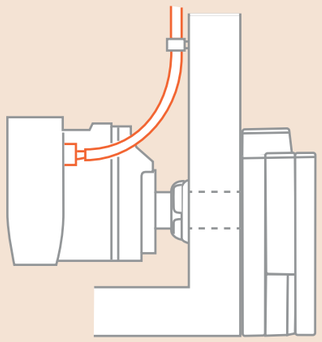


3 **CONNECT EACH SERVO** to RCU Ports A, B, C and D.



IMPORTANT!

- For a 12 V DC system, servo cables can be a maximum of 4 meters.
- Route the cables from the servo unit in a smooth arc up against the transom toward the control unit.

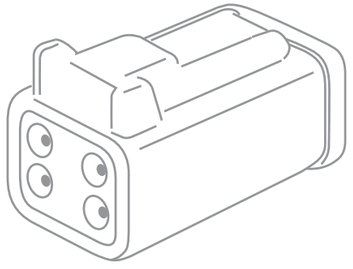


6.5 TERMINATION PLUGS

Termination plugs are required for correct communication.

Termination plugs are installed by default on delivery. If it has been removed, see *Connection Diagram* for positioning.

If RCU563 is installed no termination plug shall be installed to any RCU.



IMPORTANT!

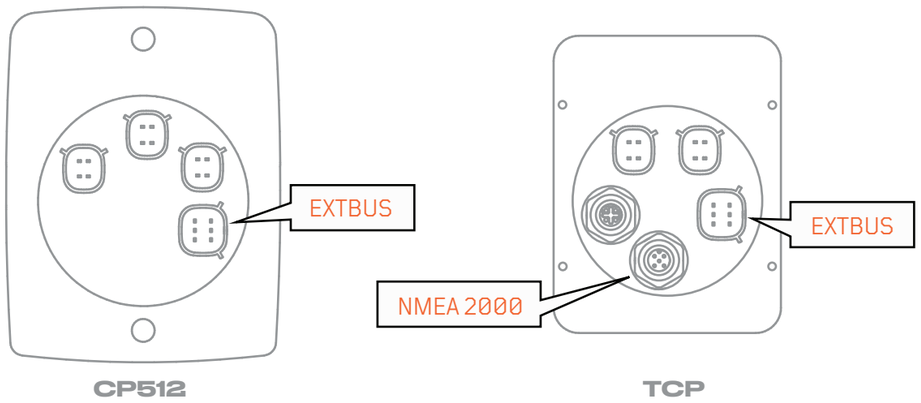
IMPORTANT!

- Make sure to install the termination plugs to avoid short circuit and/or control bus signal errors.
- If the termination plugs are not installed, the control panel may show an alarm for communication error.

6.6 EXTERNAL SIGNALS

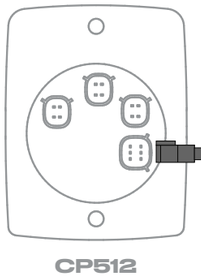
External signals can be connected to both the RCU and the control panel(s).
Typical signals used are:

- GPS
- Rudder angle
- Steering signal
- Monitoring systems



External signals can be connected via NMEA 2000 or EXTBUS interface. Choose the connector that is supported by the external signal you are connecting.

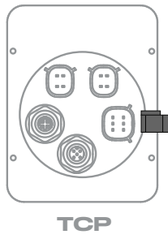
EXTBUS INTERFACE THROUGH THE CONTROL PANEL



CP512

EXTERNAL BUS INTERFACE CABLE (Optional)

RS232/422 Isolated
Extbus NMEA0183 protocol
4800 / 9600 / 19200 bps
Keyswitch

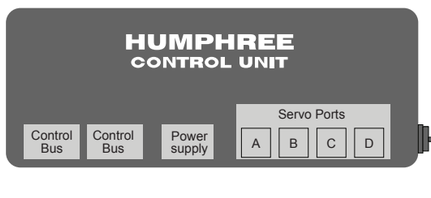


TCP

EXTERNAL BUS INTERFACE CABLE (Optional)

RS232/422 Isolated
Extbus NMEA0183 protocol
4800 / 9600 / 19200 bps
Keyswitch

EXTBUS AND ANALOG INTERFACE THROUGH THE RCU



EXTERNAL BUS

RS232 Isolated
Extbus NMEA0183 protocol
4800 / 9600 / 19200 bps

RUDDER POSITION SENSOR

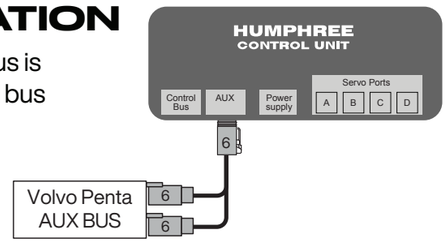
4-20 mA Isolated
0.5 V

ANALOG STEERING INTERFACE

In Service (2) Isolated
Steering Request (2) Isolated
Steering Ack (2) Isolated

6.7 VOLVO PENTA INTEGRATION

The Y-split cable for connecting to Volvo Penta AUX-bus is included in the delivery. For connections on the control bus refer to the connection diagram.



See Appendix: *External Interfaces: PIN-OUT* for more details.

NOTE!

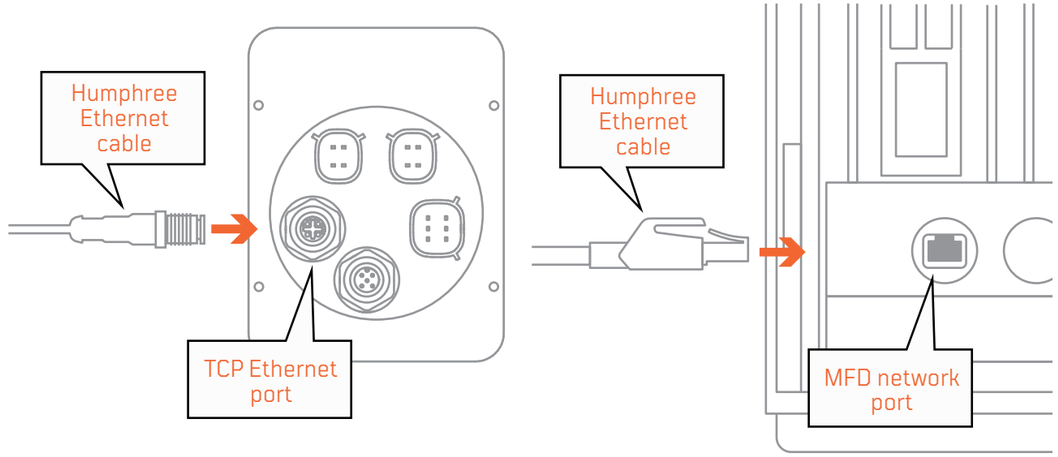
The same type of signal cannot be connected to both a control unit and to a control panel. However, several different signal types can be connected to different units.

6.8 MFD AND VOLVO PENTA GLASS COCKPIT INTEGRATION (OPTIONAL)

The Humphree system can be integrated with a Garmin, Simrad or Raymarine Multifunction Display (MFD), and Volvo Penta glass cockpit. **This integration requires a TCP.**

1 **CONNECT THE HUMPHREE ETHERNET CABLE** to the Ethernet port on the TCP.

2 **CONNECT THE HUMPHREE ETHERNET CABLE** to the network port on the MFD or glass cockpit.

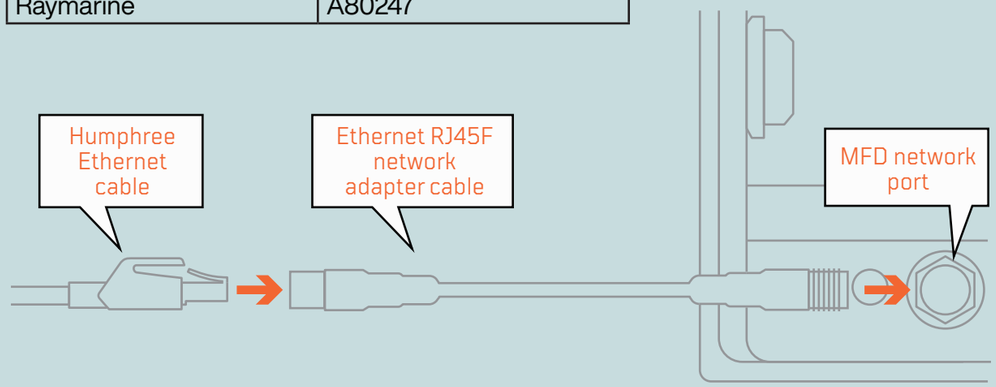


NOTE!

MFDs Simrad, Raymarine, Garmin series 9000 and below require an RJ45 Female Ethernet adapter to connect the Humphree Ethernet cable. Garmin series 8000 and below do not need an adapter.

SAMPLE ADAPTERS

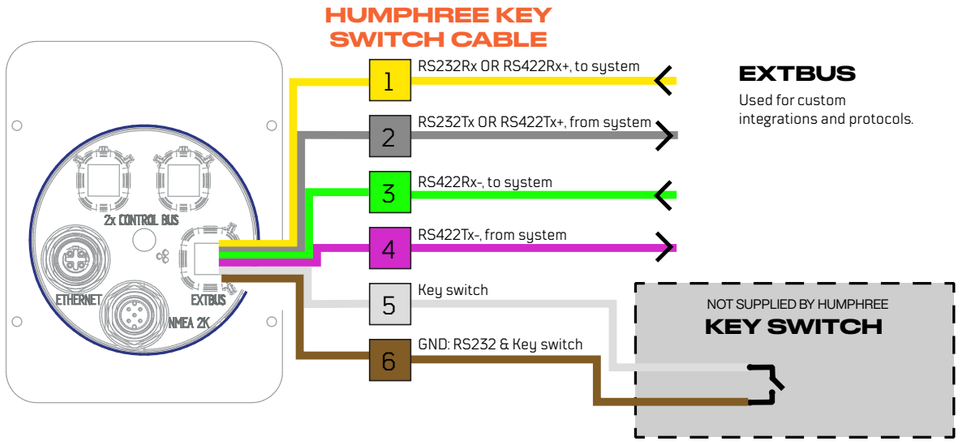
MFD Brand	Adapter Part Number
Garmin BlueNet	010-12528-20
Simrad	000-0127-56
Raymarine	A80247



6.9 KEY SWITCH (OPTIONAL)

The Key Switch Cable connects to the EXTBUS port on the TCP, as seen in the illustration. Connect the other end to a relay on the boats ignition key switch.

Closed relay = The system is turned on.
Open relay = The system enters standby mode.



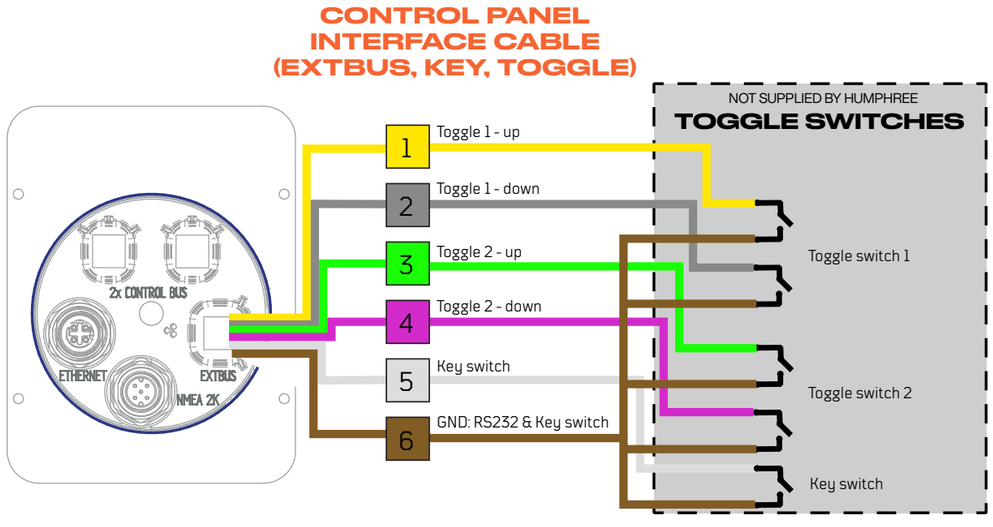
IMPORTANT!

IMPORTANT!

The standby mode consumes power, so it is important to charge the batteries continuously to avoid draining the batteries.

6.10 TOGGLE SWITCH (OPTIONAL)

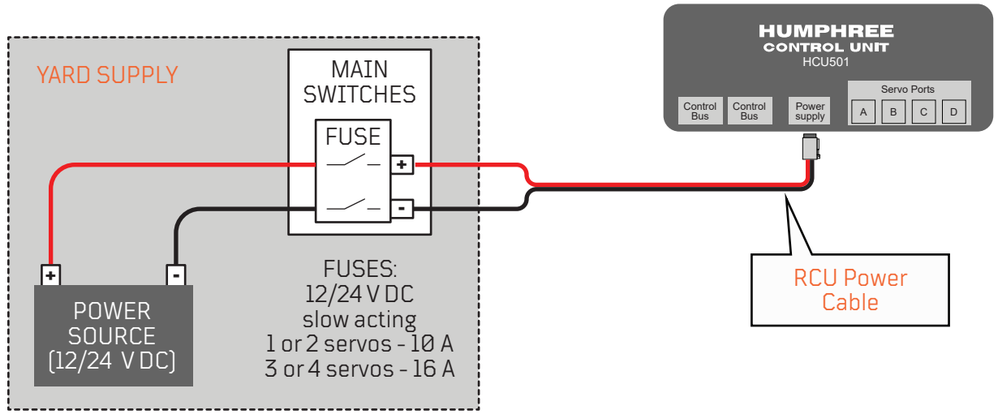
A toggle switches can be connected to allow for manual control with buttons. Use the wiring diagram to connect to any type of toggle switch. The system does not supply 12 V power for LEDs. Each button is mapped to a function during setup.



This is an example, any toggle switch can be mapped to specific actions in the control panel.

7. POWER SUPPLY

Power must be supplied to each RCU through separate fuses.



DIMENSIONS

The supplied power cable (8 m for 24 VDC systems) must be shortened to a maximum length of 3.5 m when used in a 12 VDC system.

The cable cross-sectional area to the main switches must be sized to support:

- Minimum 10 A for 1–2 servos on one control unit
- Minimum 16 A for 3–4 servos on one control unit

Use slow-acting fuses:

- 10 A for systems with 1–2 servos
- 16 A for systems with 3–4 servos

For fin systems, **only 24 VDC power supply is supported** when connecting to an RCU.

See the *Connection Diagram* for details.

IMPORTANT!

IMPORTANT!

If the vessel does not have continuous battery charging, it is recommended to install a circuit breaker and disconnect the system from the batteries when the vessel is moored for extended periods.

Disconnecting the system disables the automatic cleaning function. Before disconnecting power, ensure the interceptor blades are fully retracted into the interceptor housing.

8. FINAL STARTUP CHECKLIST

Before powering the system, verify:

- ✓ All components are securely mounted
- ✓ All cables are connected correctly
- ✓ Termination plugs are installed
- ✓ Power supply is correctly fused
- ✓ Cables are routed safely and secured
- ✓ Required signals are connected:
  - Speed signal
  - Rudder signal (if applicable)

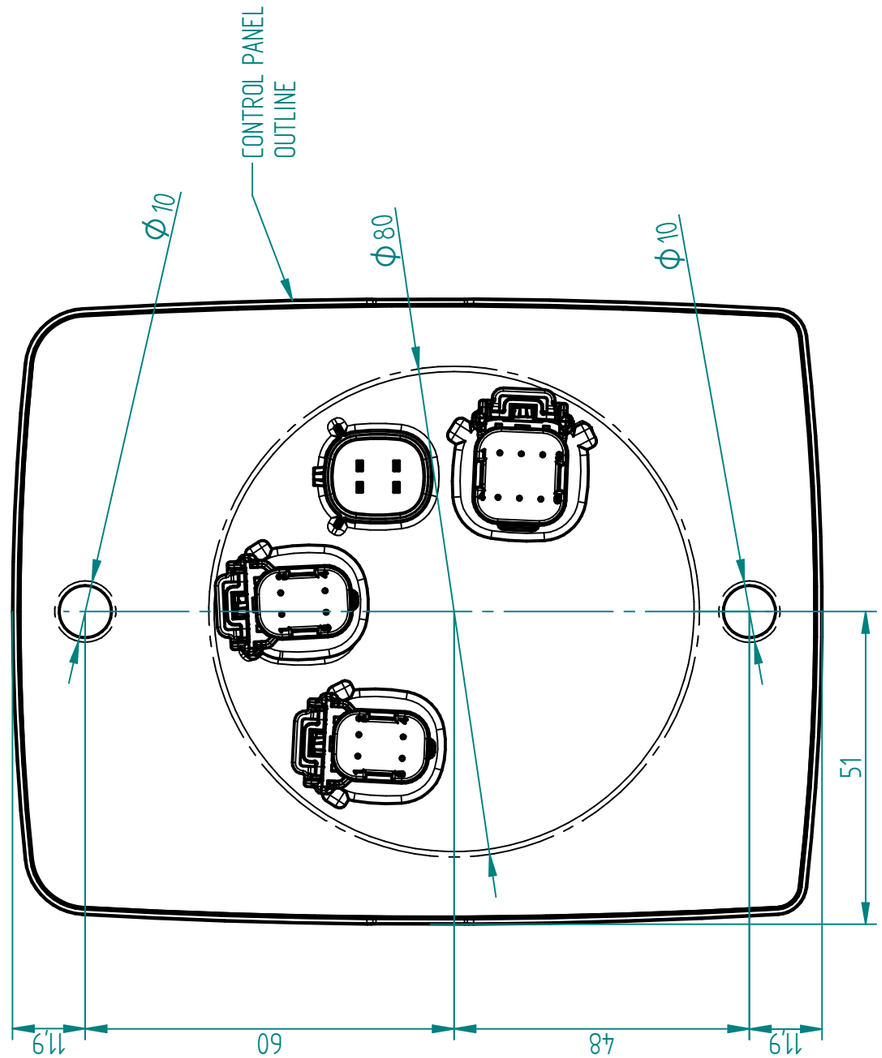
INSTALLATION DONE!

If you have completed all the steps it is time to start up the system → continue to the Setup Manual

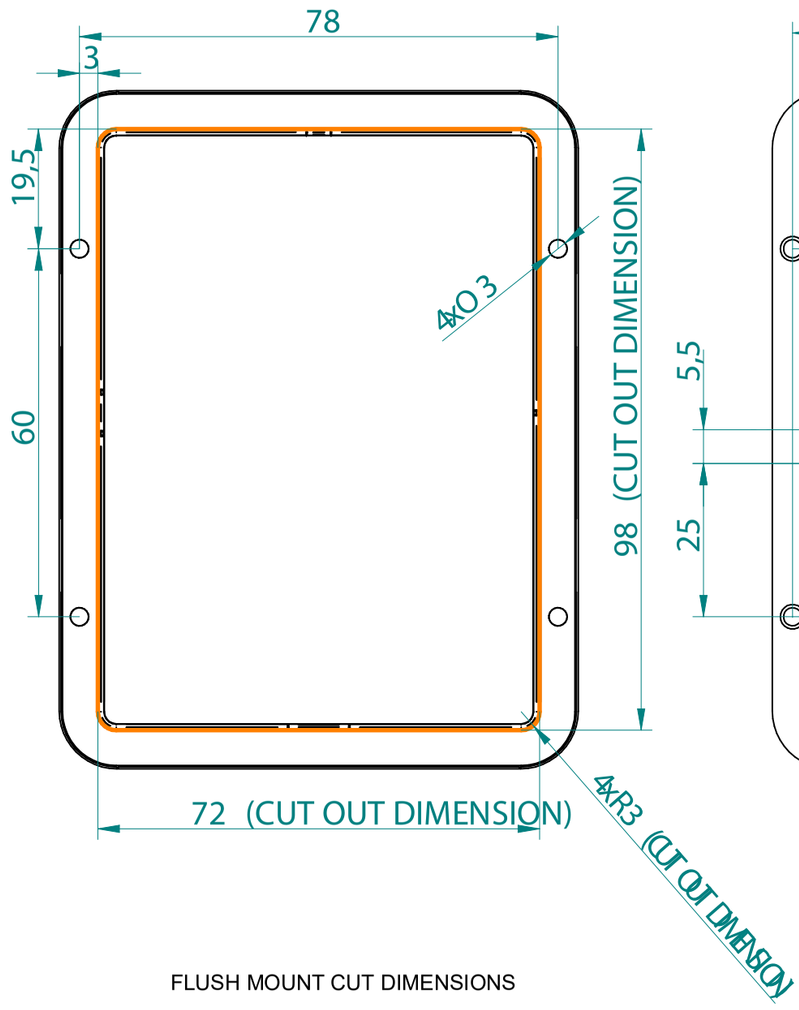
...

9. APPENDIX

9.1 CP514 CUTOUT DRAWING



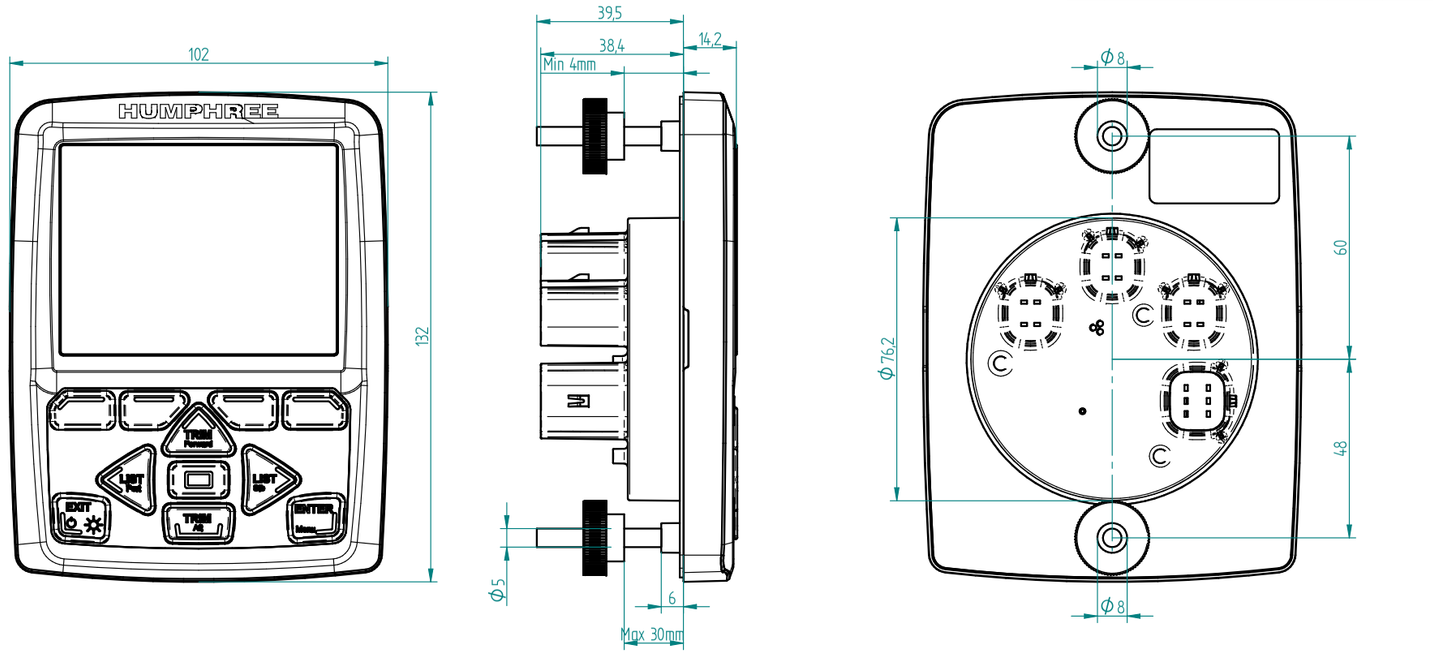
9.2 TCP CUTOUT DRAWING



FLUSH MOUNT CUT DIMENSIONS

TOP MOUNT HOLE DIMENSIONS

9.3 CP514 CONTROL PANEL DRAWING



REV	DESCRIPTION	DATE	APPVD

Specifications:
Power supply 12V ~ 24V DC
Front side waterproof IP66 when mounted
Operating temperature -20 to +70 degrees
Weight 0,3 kg

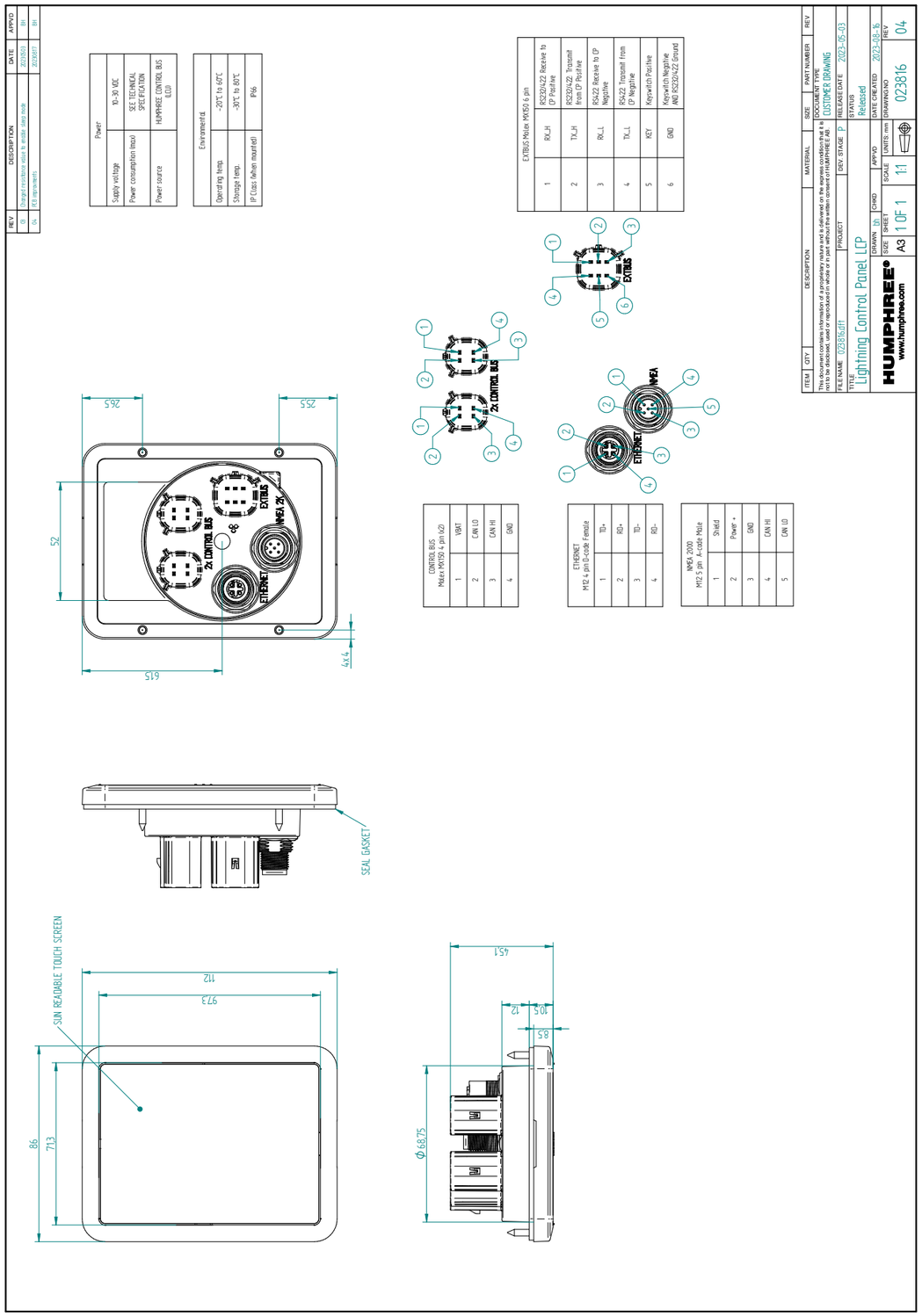
ITEM	QTY	DESCRIPTION	MATERIAL	SIZE	PART NUMBER	REV

This document contains information of a proprietary nature and is delivered on the express condition that it is not to be disclosed, used or reproduced in whole or in part without the written consent of HUMPHREE AB.

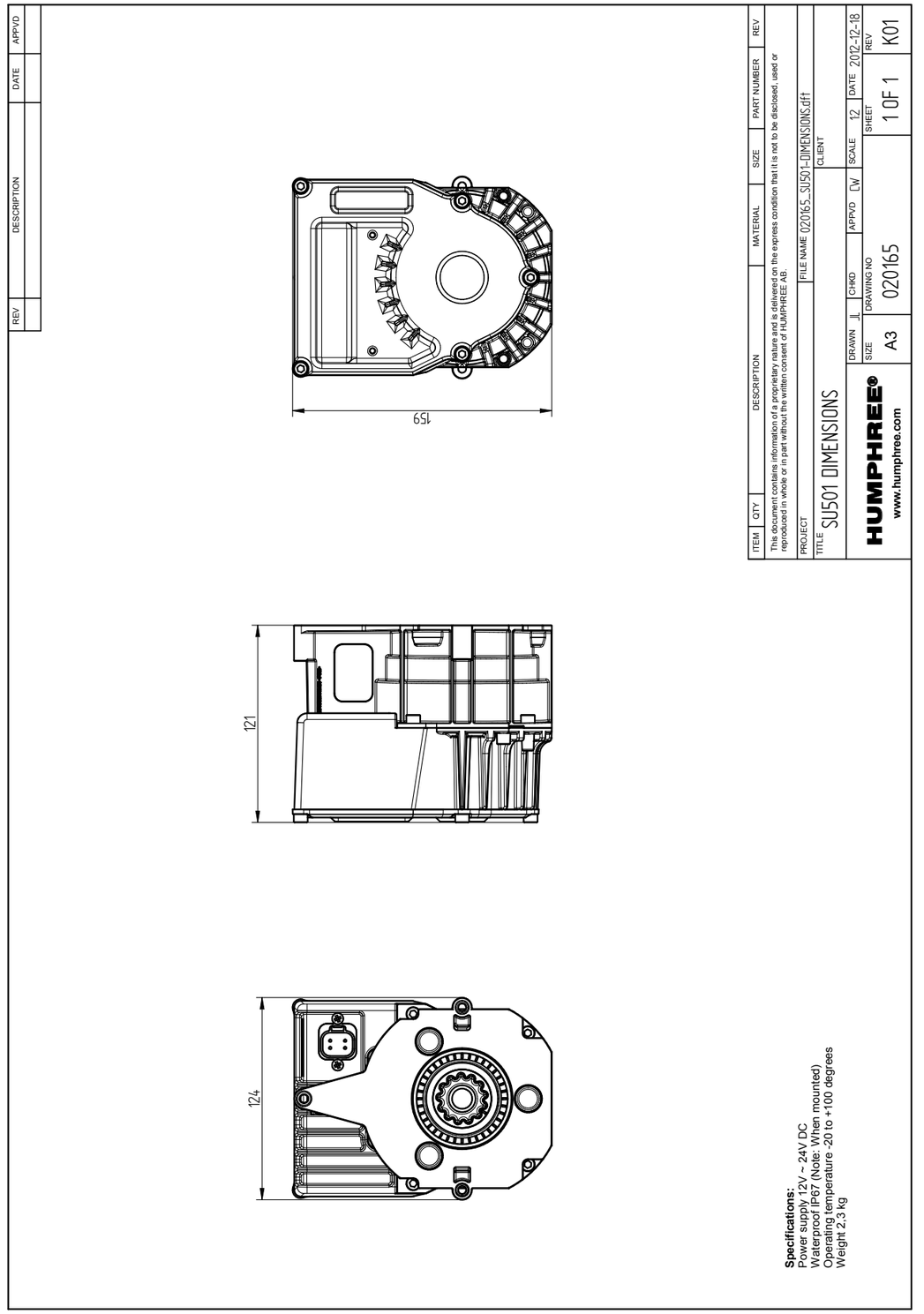
PROJECT Control Panel CP512			FILE NAME 023636.dft		
TITLE CP 512 DIMENSIONS			CLIENT		
	DRAWN JL	CHKD	APPVD BH	SCALE 1:1	DATE 2021-12-21
HUMPHREE® www.humphree.com	SIZE A3	DRAWING NO 023636		SHEET 1 OF 1	REV 01

9. APPENDIX

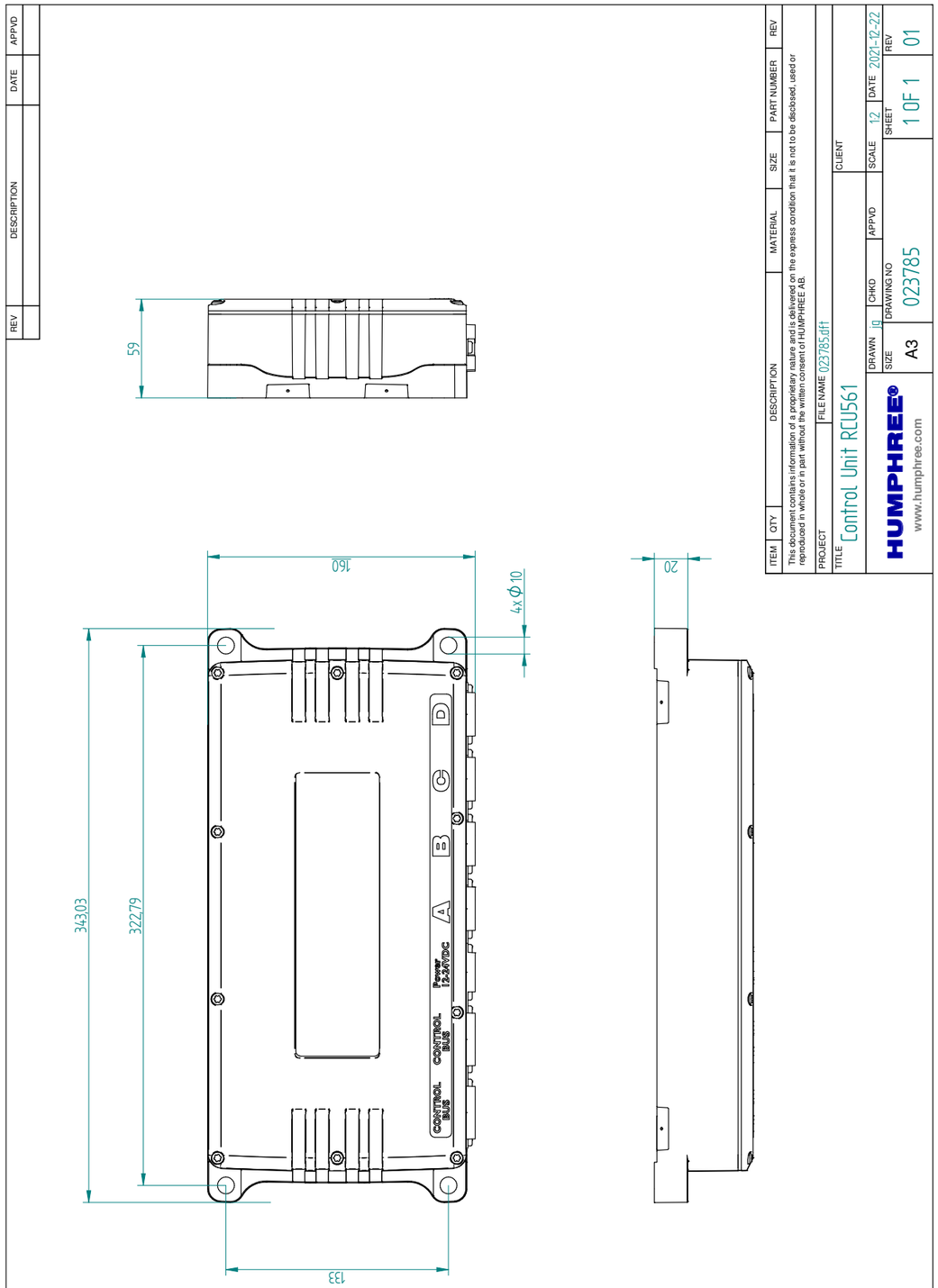
9.4 TCP CONTROL PANEL DRAWING



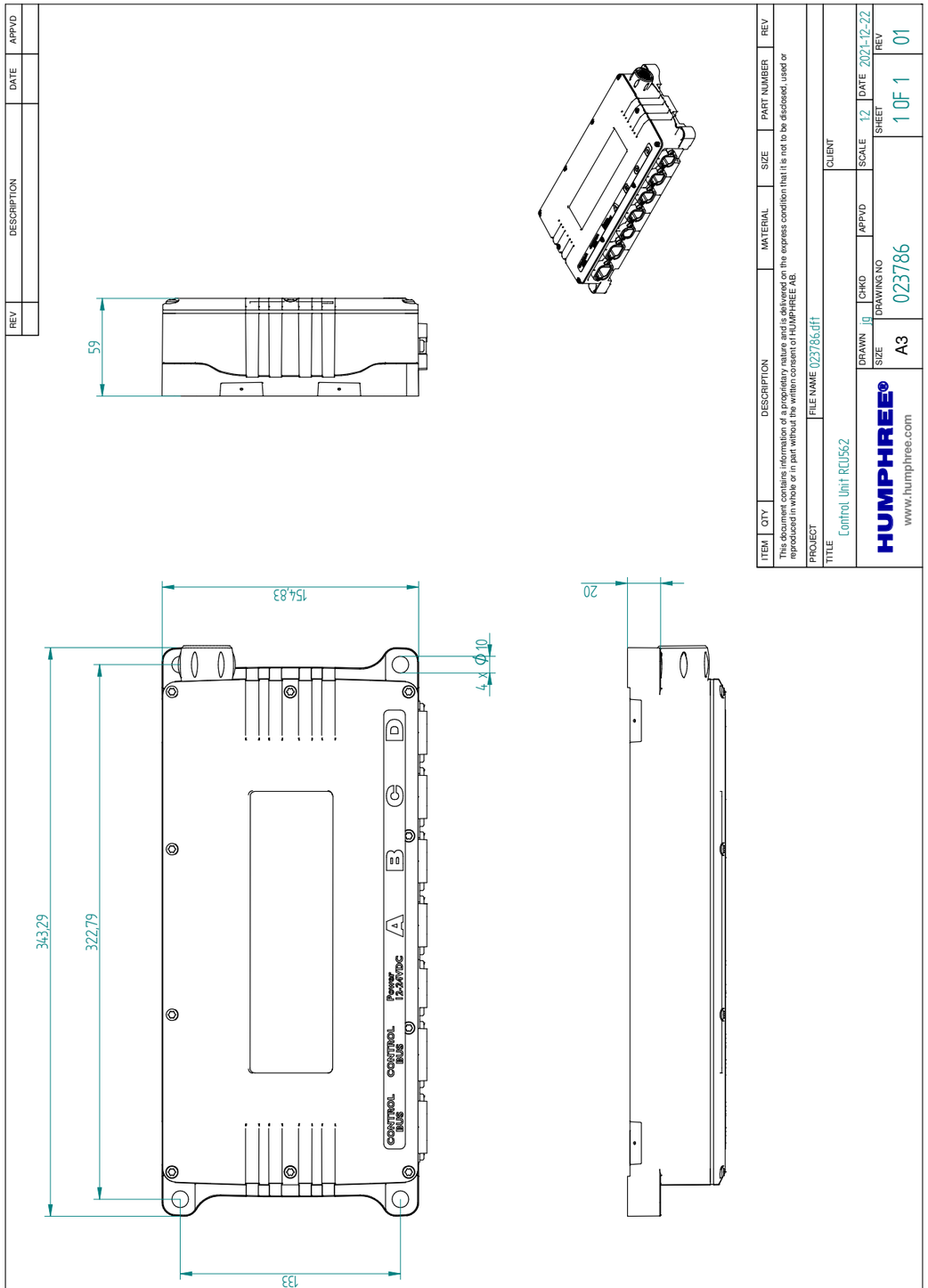
9.5 SERVO UNIT DRAWING



9.6 CONTROL UNIT RCU561



9.7 CONTROL UNIT RCU562



9.8 EXTERNAL INTERFACES: PIN-OUT

HUMPHREE®

Dept/Issued by **Sven Dahlberg** Issue **020554-K01** Last updated **2021-12-20** page **1(1)**

External Interfaces: PIN-OUT

1. RCU562

External Interfaces Cable (16 Wires)

COLOUR:	NAME:	DESCRIPTION:
RED	4TO20_P	4 to 20 mA Sender: Positive
LIGHT BLUE	4TO20_N	4 to 20 mA Sender: Negative
YELLOW	0TO5_IN	0 to 5V Sender: Sensor input to HCU
WHITE	5V_OUT	0 to 5V Sender: +5V supply
GREEN	GND	0 to 5V Sender: Ground
DEEP PURPLE TX_H		RS422: Transmit from HCU Positive
GREY	RX_H	RS422: Receive to HCU Positive
BLACK	TX_L	RS422: Transmit from HCU Negative
PINK	RX_L	RS422: Receive to HCU Negative
BROWN	ISO_GND	RS422: Isolated Ground
YELLOW/BROWN	RELAY_A1_P	System In Service: Relay Positive
YELLOW/WHITE	RELAY_A1_N	System In Service: Relay Negative
BLUE/RED	RELAY_A2_P	Steering Acknowledge: Relay Positive
GREY/PINK	RELAY_A2_N	Steering Acknowledge: Relay Negative
WHITE/GREEN	SWITCH_IN_P	Steering Request: Switch Positive
BROWN/GREEN	SWITCH_IN_N	Steering Request: Switch Negative

2. CP512 and LCP

Extbus Interface Cable including Key Switch

COLOUR:	NAME:	DESCRIPTION:
YELLOW	RX_H	RS232/422: Receive to CP Positive
GREY	TX_H	RS232/422: Transmit from CP Positive
GREEN	RX_L	RS422: Receive to CP Negative
PINK	TX_L	RS422: Transmit from CP Negative
WHITE	KEY	Keyswitch Positive
BROWN	GND	Keyswitch Negative AND RS232/422 Ground

Extbus Port 6-pin

PIN:	NAME:	DESCRIPTION:
1	RX_H	RS232/422: Receive to CP Positive
2	TX_H	RS232/422: Transmit from CP Positive
3	RX_L	RS422: Receive to CP Negative
4	TX_L	RS422: Transmit from CP Negative
5	KEY	Keyswitch Positive
6	GND	Keyswitch Negative AND RS232/422 Ground

NOTES

NOTES