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nautical innovations

AYB frame

Technical documentation

22 januari 2019

Publisher	dotOcean NV Gistelse Steenweg 294, bus 205 8200 Sint-Andries BE 0807.246.767
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Revisions	Rev No.	Date	Description
	1	**01/06/2018**	**File creation**
	2	**04/06/2018**	**Small adaptations after review**
	3	**03/10/2018**	**Added eplan wiring scheme**
	4	**22/01/2019**	**Added connector pin layout**

Contents

Introduction

This document gives the reader wiring information about the AYB box.

Power distribution and interfacing

The AYB box has 2 power circuits called the internal and the external circuit.

Internal circuit

The internal circuit has a 12V power supply. This circuit is to power all internal devices. The internal devices may not be exposed to the threat of flooding. The color coding is RED (PWR) and BLACK (GND).

Note: the interfacing to the Embedded Computer can only be done in the internal circuit. Never, attach an external (outside the frame) device (usb or serial) to the embedded computer, doing so will cuse, in the case of flooding of a device, irreparable damage.

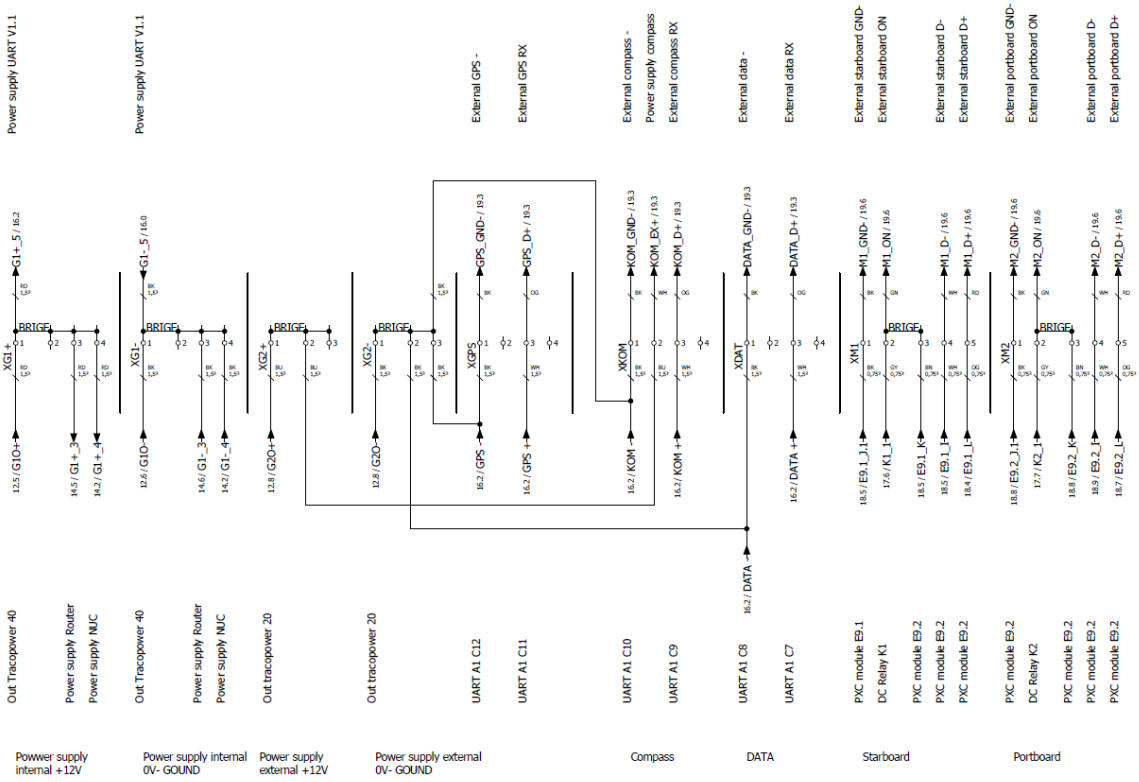
External circuit

The external circuit has a 12V power supply. This circuit is to power all external devices. The color coding is BLUE (PWR) and BLACK (GND)

Interface

In normal use, all interfacing can be done at the wire clamps:

AYB



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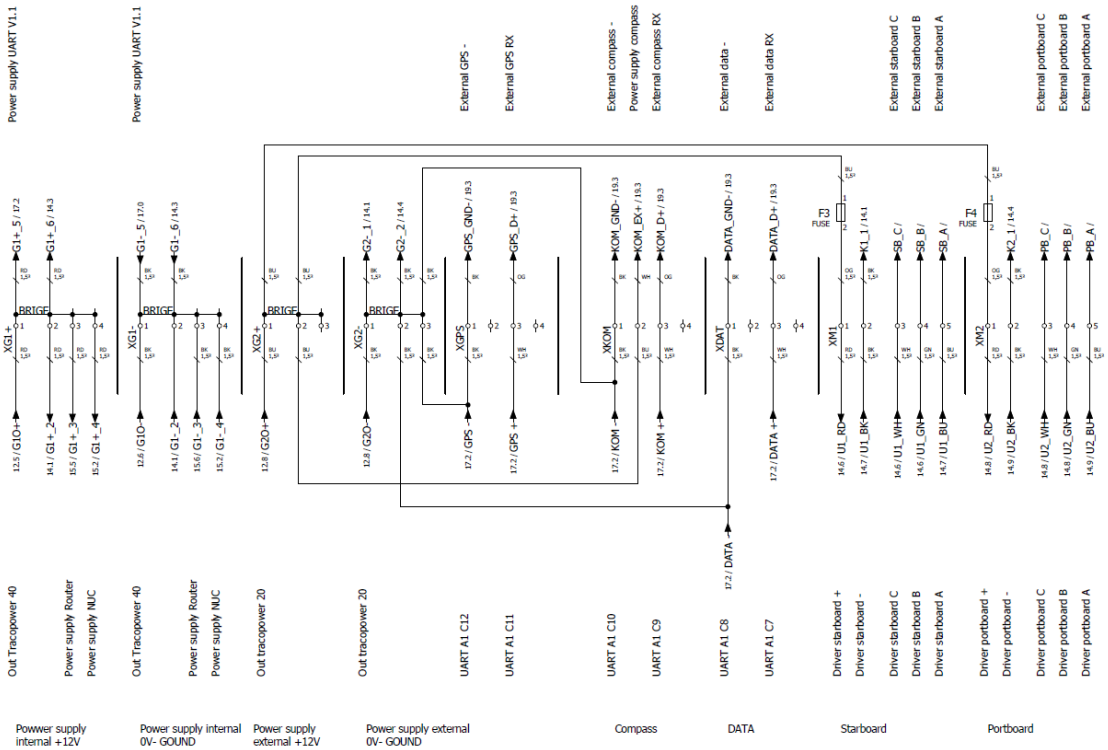
Calypso



AYB wiring color coding and pin assignments

APPLIED WIRE COLORS

INTERNAL THE FRAME	
GROUND-	BLACK
INTERNAL POWER SUPPLY	RED
EXTERNAL POWER SUPPLY	BLUE
3,3/5V DC	VIOLET
RS485 D+ (A)	ORANGE
RS485 D- (B)	WHITE
RS232 Tx	ORANGE
RS232 Rx	WHITE
SINGAL CABLE	GRAY
SPECIAL CABLE	BROWN

EXTERNAL THE FRAME GPS/KOM/DATA		CONECTOR CONNECTION
6P CONNECTOR	MC-IL	MC-BH
GROUND-	BLACK	1 BLACK
POWER SUPPLY+	WHITE	2 WHITE
RS485 D+	RED	3 RED
RS485 D-	GREEN	4 GREY
RS232 Tx (DATA OUT)	ORANGE	5 ORANGE
RS232 Rx (DATA IN)	BLUE	6 BLUE

HYDROBOOK (RS232)

HYDROBOOK	MC-IL-6M	MC-BH-6F	MEANING
PIN 6	1 BLACK	1 BLACK	GROUND-
PIN 1	2 WHITE	2 WHITE	SUPPLY +12V DC
PIN 1	4 GREEN	4 GREY	COM1 Tx (CONTROL)
PIN 3	3 RED	3 RED	COM1 Rx (CONTROL)
PIN 4	5 ORANGE	5 ORANGE	COM2 Tx (DATA)
PIN 5	6 BLUE	6 BLUE	COM2 Rx (DATA)

MINIMUM WIRE SECTIONS VOB-ST 0.75 mm²

EMERGENCY STOP

	MC-IL-4F	MC-BH-4F
1	1 BLACK	1 BLACK
2	2 WHITE	2 WHITE

TORQEEDO MOTOR

4P CONNECTOR	CONECTOR CONNECTION
GROUND-	1 BLACK
DATA -	2 WHITE
DATA +	3 RED
/ON	4 GREEN

BLUE ROBOTICS

COLOR	MC-IL-4M	MC-BH-4F	MEANING
WHITE	WHITE	WHITE	PHASE A
GREEN	GREEN	GRAY	PFASE B
BLUE	BLACK	BLACK	PHACE C

COMPAS (RS232)

NASA-MARINE	MC-IL-4M	MC-BH-4F	MEANING
BLACK (SHIELD)	1 BLACK	1 BLACK	GROUND-
RED	2 WHITE	2 WHITE	POWER SUPPLY +
BLUE	5 ORANGE	5 ORANGE	Tx (OUT), Rx (IN)

AIRMAR P79S (RS485)

AIRMAR	MC-IL-6M	MC-BH-6F	MEANING
BLACK	1 BLACK	1 BLACK	GROUND-
RED	2 WHITE	2 WHITE	POWER SUPPLY+
WHITE	3 RED	3 RED	RS485 D+ (A)
BLUE	4 GREEN	4 GREEN	RS485 D- (B)
ORANGE	5 ORANGE	5 ORANGE	RS232 Tx

* Color abbreviations

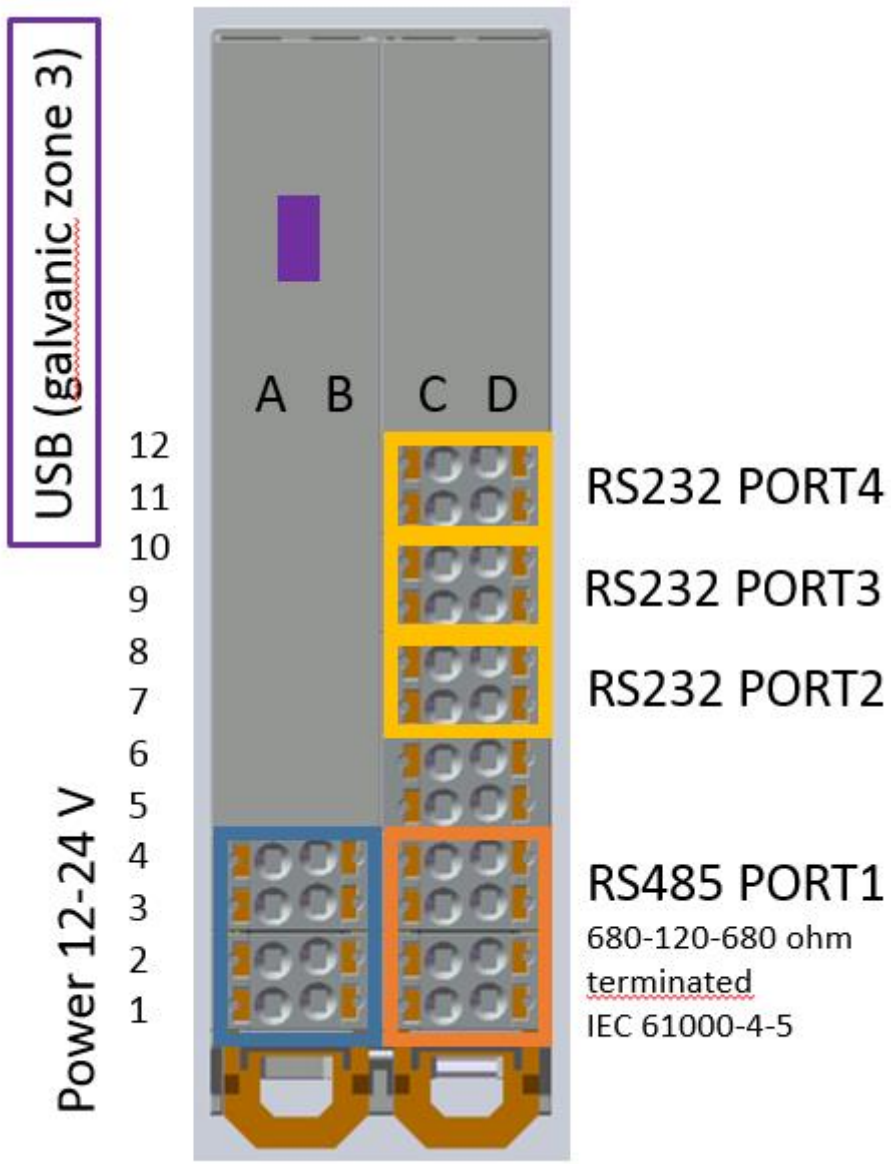
blue	BU
brown	
yellow	
gray	
green	
orange	
pink	
red	
black	BK
violet	
pink	TK
white	

according to IEC 304/757

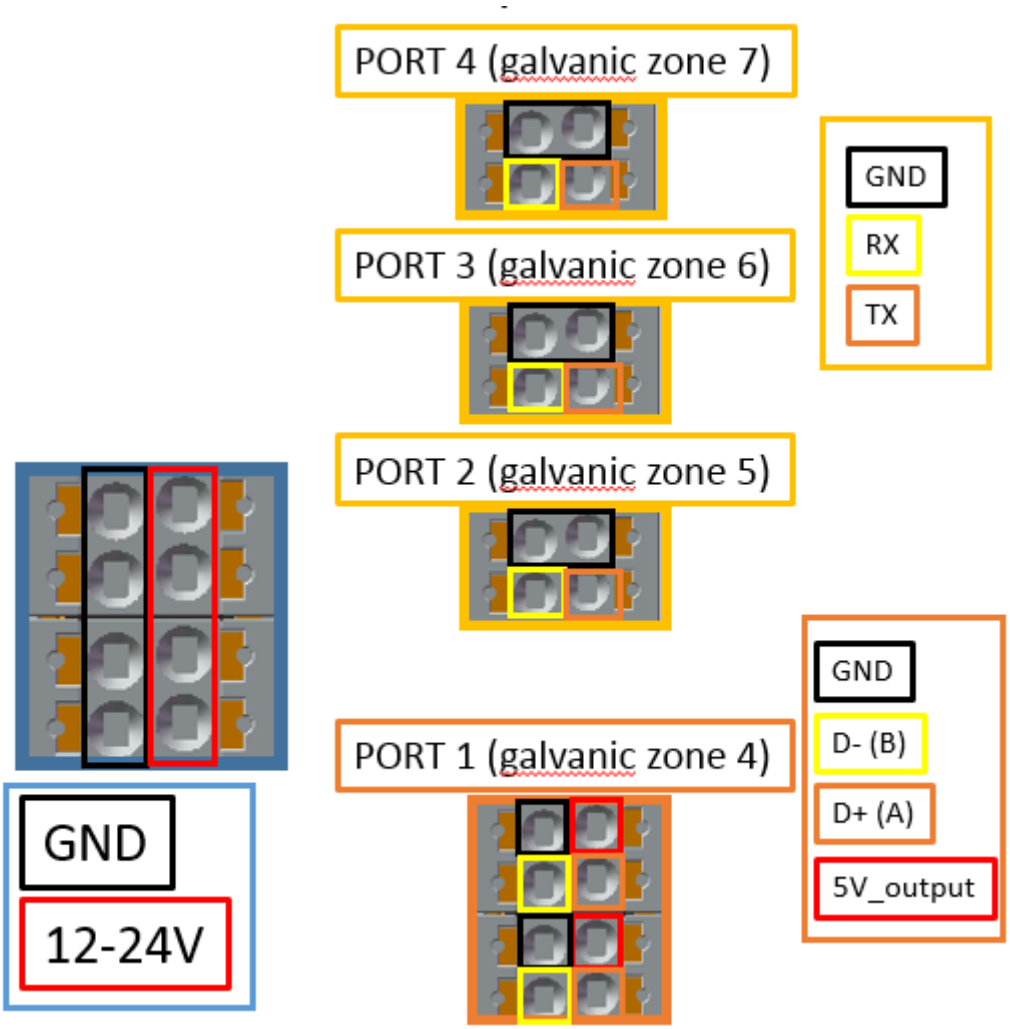
AYB electronics

USB-UART V1.1 (1x RS485, 3x RS232)

Lay-out

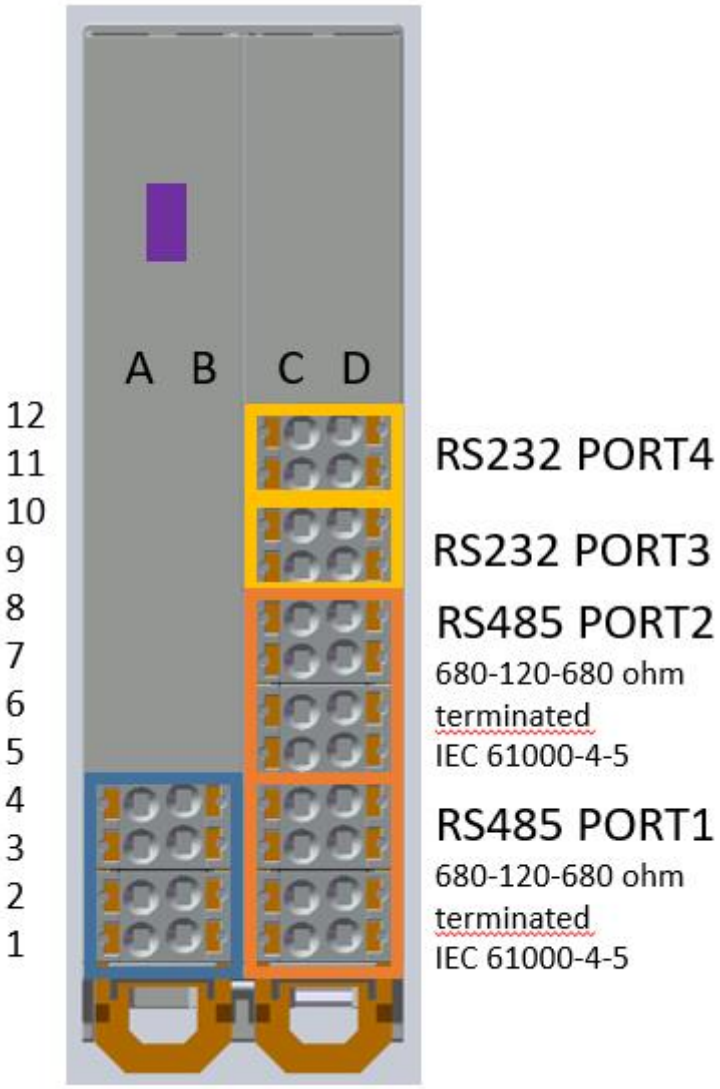


Component description



USB-UART V1.2 (2x RS485, 2x RS232)

Lay-out



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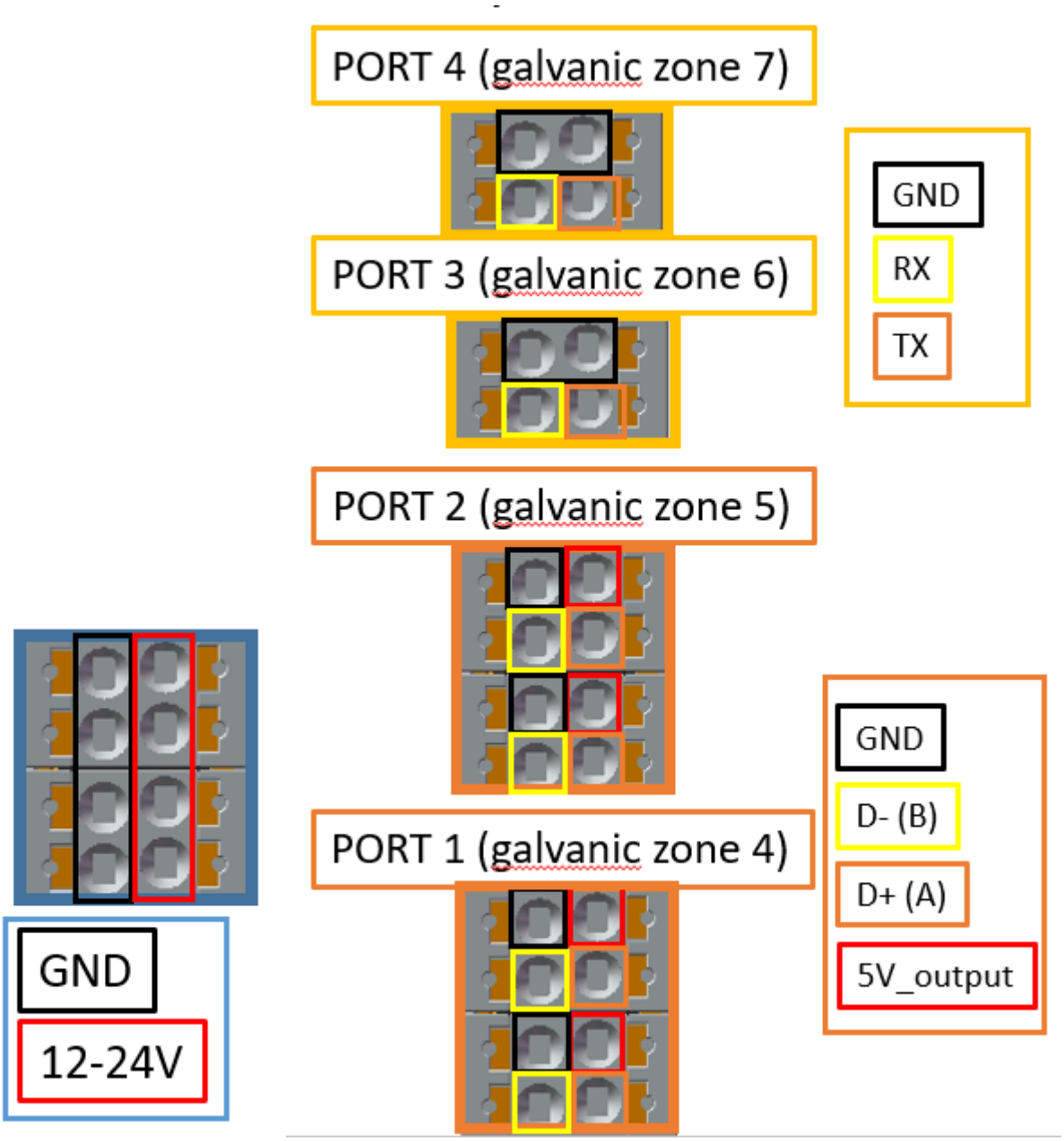
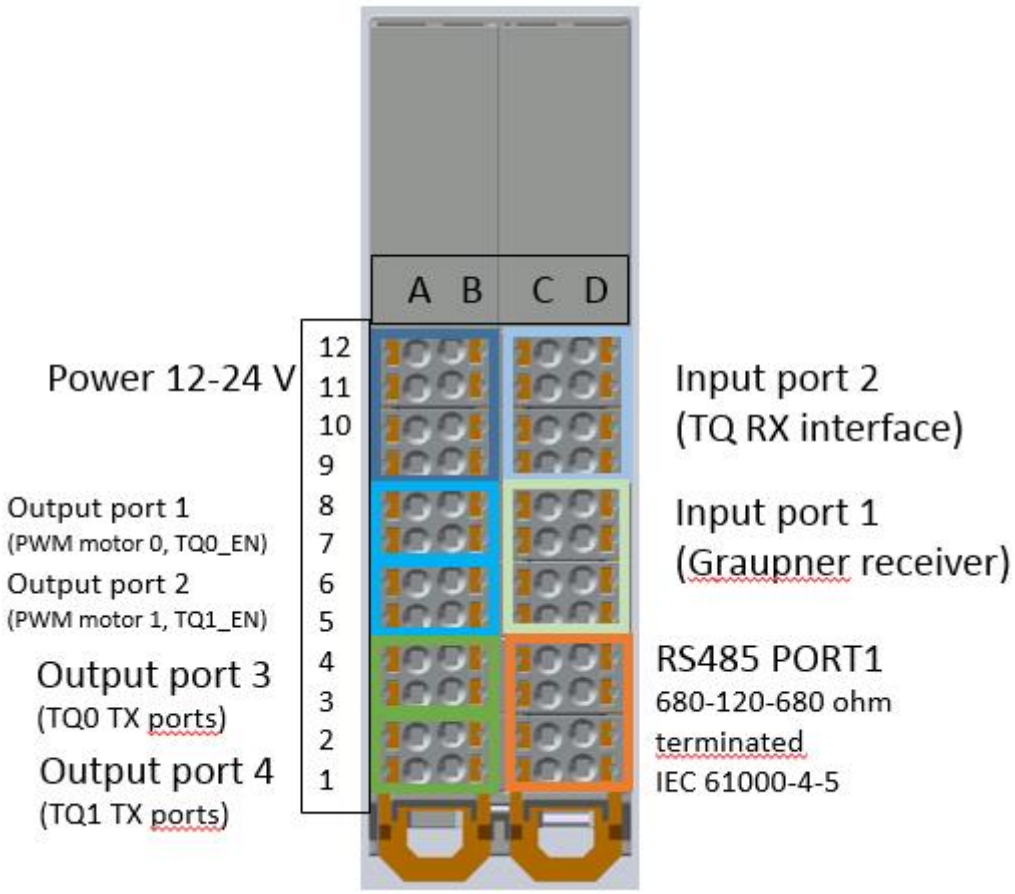
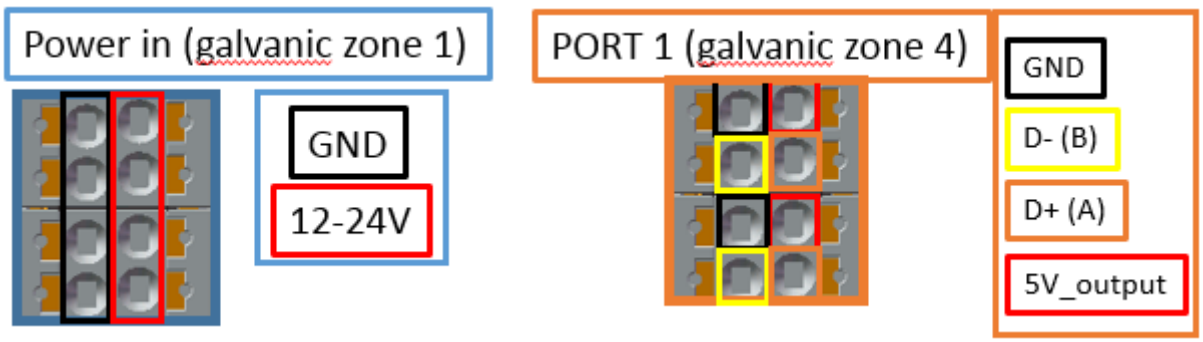


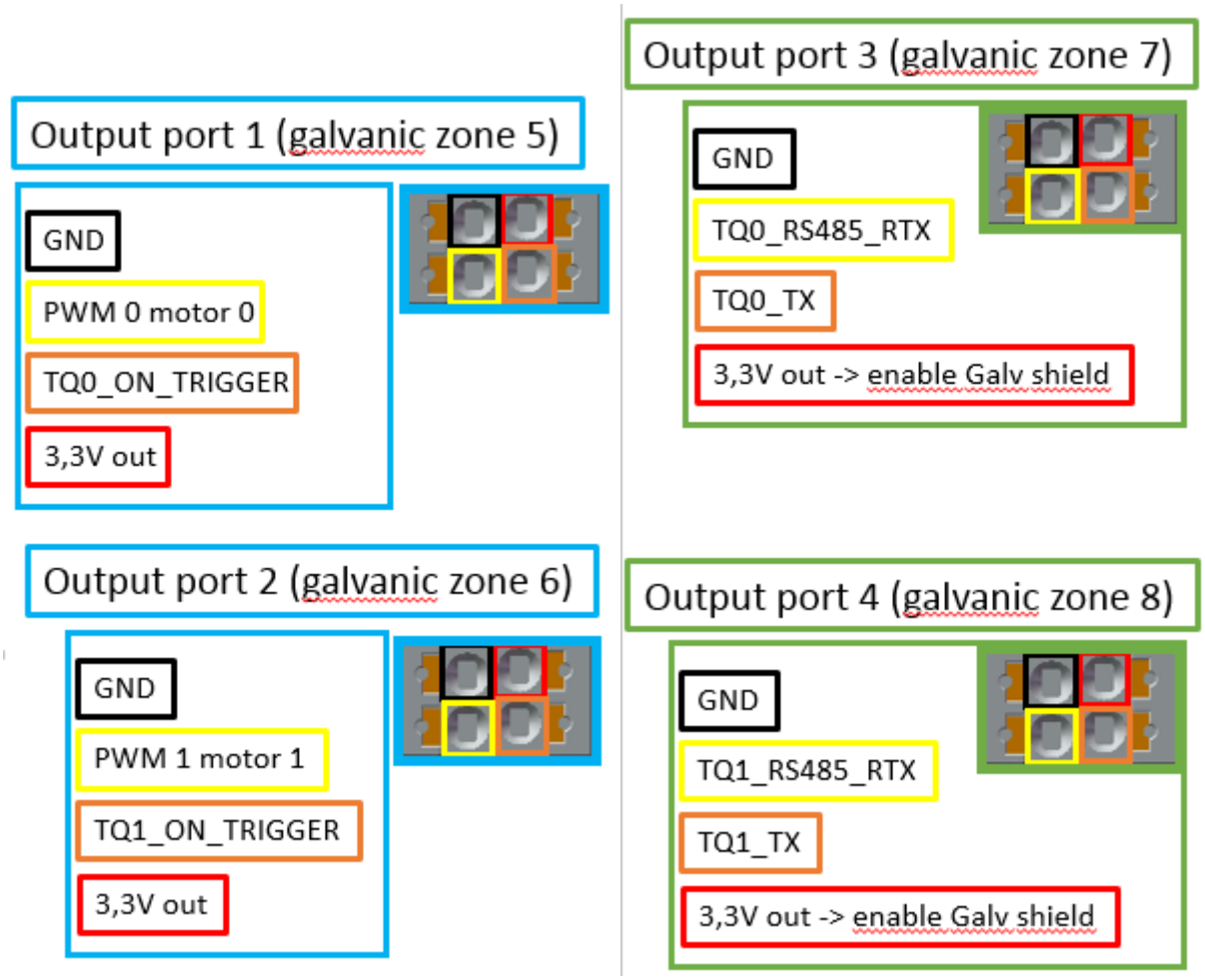
PWM IO Module (1x RS485)

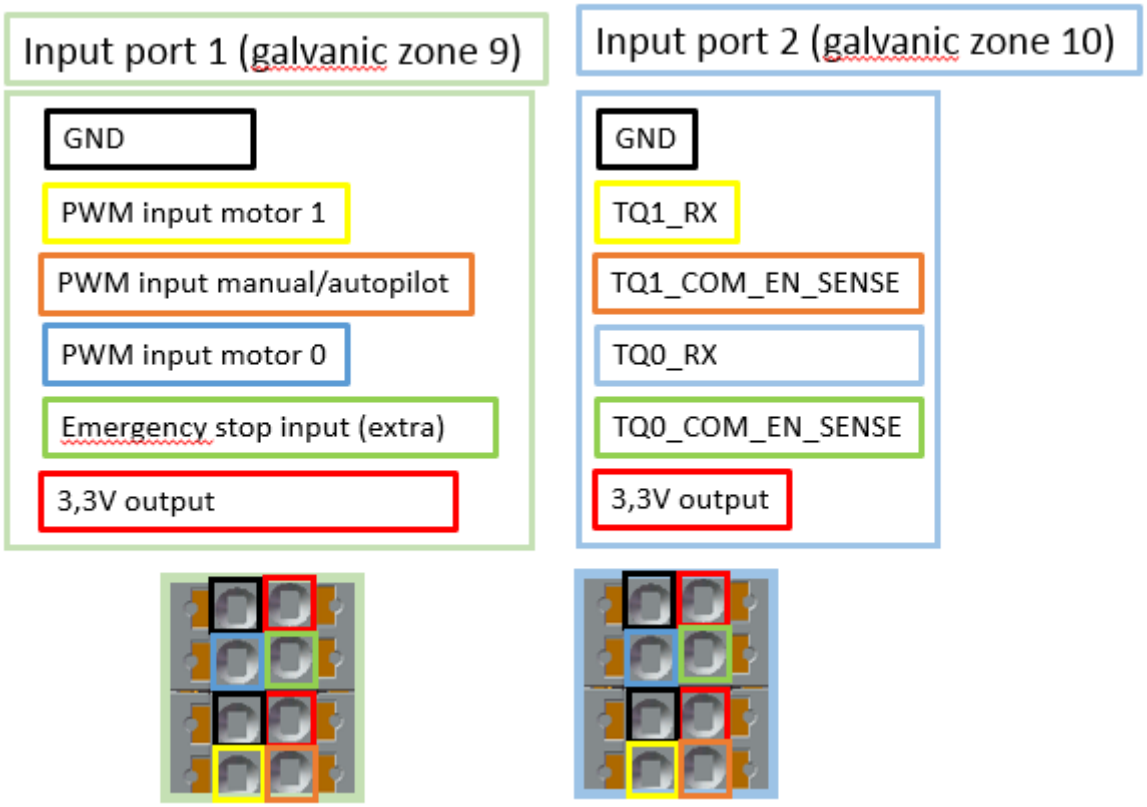
Lay-out



Component description




Output port 1 (galvanic zone 5)
GND
PWM 0 motor 0
TQ0_ON_TRIGGER
3,3V out
Output port 3 (galvanic zone 7)
GND
TQ0_RS485_RTX
TQ0_TX
3,3V out -> enable Galv shield
Output port 2 (galvanic zone 6)
GND
PWM 1 motor 1
TQ1_ON_TRIGGER
3,3V out
Output port 4 (galvanic zone 8)
GND
TQ1_RS485_RTX
TQ1_TX
3,3V out -> enable Galv shield


Input port 1 (galvanic zone 9)
GND
PWM input motor 1
PWM input manual/autopilot
PWM input motor 0
Emergency stop input (extra)
3,3V output
Input port 2 (galvanic zone 10)
GND
TQ1_RX
TQ1_COM_EN_SENSE
TQ0_RX
TQ0_COM_EN_SENSE
3,3V output