

BUS cable lengths:  
0.5m  
1m  
2m  
3m  
4m  
5m  
6m  
8m  
10m

(!) Sensor Bus Is Connected To Additional Control Station With T-Block

(!) With Additional Control Station One Terminal Resistor Must Be Relocated Close To Additional Control Station.

(!) GPS Heading Receiver Can Be Connected Also From Additional Control Station.

(!) Ethernet Socket for Service or Fleet Management System API Should not be connected without proper network configuration plan!

[illegible][illegible]

Diagram illustrating the Auxiliary Power Distribution (APD) system. The system is powered by the ENGINE, which feeds into the MAIN HELM. The MAIN HELM is connected to the AUX BUS, which in turn powers the 2<sup>ND</sup> HELM. The diagram shows the flow of power from the ENGINE through the MAIN HELM and AUX BUS to the 2<sup>ND</sup> HELM, and also indicates connections to the NEXT HELM STATION.

The diagram illustrates the CAN engine control system for Volvo Penta engines. It shows two main sections: CAN engine control and AMOC engine control.

**CAN engine control:**

- The JCU (Jensen Control Unit) is connected to XE1 and XE2 terminals on the HCU (Harmon Control Unit).
- XE1 is connected to the 25-904 CAN-ECU Adapter FPF67, 25-905 CAN-ECU Adapter IBC, 25-906 CAN-ECU Adapter Yanmar, and 25-907 CAN-ECU Adapter Steyr.
- XE2 is connected to the 25-901 CAN Engine Wiring Harness Without Gearbox, 25-902 CAN Engine Wiring Harness With Hirschman Gearbox connectors, and 25-903 CAN Engine Wiring Harness With JPT Gearbox connectors.
- The wiring harnesses are connected to the Engine Control unit via a 0.5 m cable and a 1 m cable.
- The Engine Control unit is connected to the Gear FW 12V/24V and Gear BW 12V/24V.

**AMOC engine control from HCU Volvo Penta:**

- The HCU (Harmon Control Unit) is connected to XE1 and XE2 terminals on the AMC (Analog Motor Controller).
- XE1 is connected to the 30-201 AMOC Analog Motor Controller.
- XE2 is connected to the 21-901 AMOC.
- The 21-901 AMOC is connected to the AMOC unit via a 1 m cable.
- The AMOC unit is connected to the Volvo Penta EVC (Electronic Valve Control) via a 1 m cable for Engine control and a 2 m cable for Gear control.
- The AMOC unit is also connected to the AUXILIARY BUS via a 1 m cable.

[illegible][illegible][illegible]

**PRIMARY BUS PORT**

**PRIMARY BUS STBD**

**AUXILIARY BUS**

**POWER SUPPLY CABLE CONNECTIONS**

**Power Supply Panel**

Circuit Breakers (Push to Reset)

1-0-2 Mode Switches

Battery Banks (DC - Busies)

BAT 1 12V/24V

BAT 2 12V/4V

(1) Vessel common ground (STAR)

(1) 11 and 12 can be connected together at sensor BUS power supply.

(1) Power supply cable, has separate inputs for both connectors.

(1) Separate Power supply for 11 and 12 is required.

(1) CAN Bus uses this power supply cable.

**Normal Operation**

## DOCKING STATIONS

The diagram illustrates the connection of docking stations to an auxiliary bus. It shows a 'Main Station 3XJ5' and 'Additional 3XJ5' (Max. 1 - 3). Each station is connected to a 3CU (3-core unit) via a 0.5 m cable. The 3CU is then connected to the auxiliary bus via a 0.5 m cable. The auxiliary bus is labeled 'AUXILIARY BUS' and includes a 'DC1' (Data Connector 1) and a 'DC2' (Data Connector 2). The diagram also shows a 'To next topology' connection point.

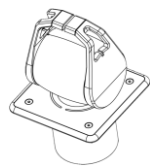
The figure illustrates three different wiring configurations for the 20-101 vehicle, which has five numbered connection points (1-5) at the rear.

- Nozzle control:** A steering wheel is connected to the vehicle. The wiring connects HCU-PORT to connection point 1 (0.5m), HCU-STBD to connection point 2 (0.5m), and a common ground (GND) to connection point 3 (0.5m).
- Combined throttle and deflector:** A single control unit is connected to the vehicle. The wiring connects HCU-PORT to connection point 1 (0.5m), HCU-STBD to connection point 2 (0.5m), and a common ground (GND) to connection point 3 (0.5m).
- Throttle and Deflector:** Two separate control units are connected to the vehicle. The wiring connects HCU-PORT to connection point 1 (0.5m), HCU-STBD to connection point 2 (0.5m), and a common ground (GND) to connection point 3 (0.5m).

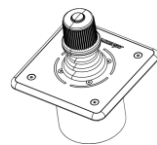
## SIGMA INSTALLATION PROCEDURE

29.4.2020  
HLa

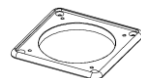
## CONTROLS



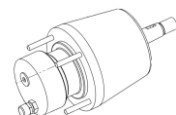
Twin levers  
Part number  
20-101



3-Axis joystick  
Part number  
20-201



Installation frame  
Part number  
11861



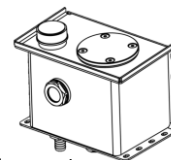
E-Helm  
Part number  
20-301

## COMPONENT AND CABLE CATALOGUE

### OPTIONS



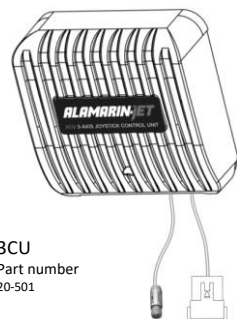
GPS Heading receiver  
Part number  
30-101



Oil reservoir  
Part number  
11808

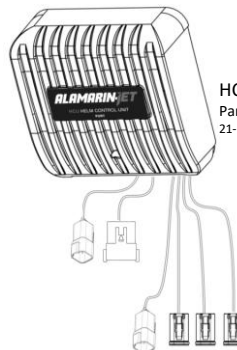
### CONTROL UNITS

#### 3-axis joystick Control Unit 3CU



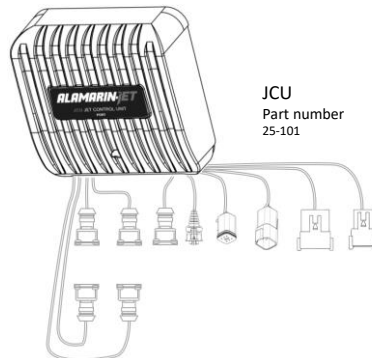
3CU  
Part number  
20-501

#### Helm Control Unit HCU



HCU  
Part number  
21-101

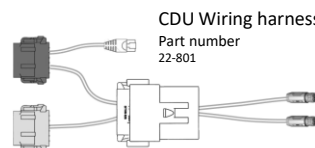
#### Jet Control Unit JCU



JCU  
Part number  
25-101



CDU  
Part number  
22-101



CDU Wiring harness  
Part number  
22-801

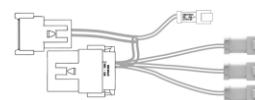
#### CAN-ECU Adapter

Part number  
25-904 FPT67  
25-905 Adapter JBC  
25-906 Yanmar  
25-907 Steyr SE



#### Auxiliary sensor wiring harness

Part number  
25-551



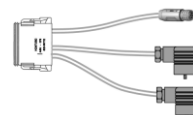
#### CAN Engine wiring harness no gears

Part number  
25-901



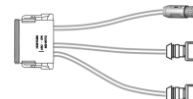
#### CAN Engine wiring Hirschmann gearbox connectors

Part number  
25-902



#### CAN Engine wiring JPT gearbox connectors

Part number  
25-903



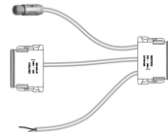
#### AUX BUS Adapter cable

Part number  
24-801



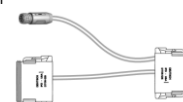
#### AMOC-ECU adapter Volvo Penta IF GB

Part number  
21-901



#### AMOC-ECU adapter Volvo Penta IF NGB

Part number  
21-902



## CABLES

### PRIMARY BUS CABLING



#### BUS cable

Meter	Part number
0.5	NM-NB1-NF-00.5
1	NM-NB1-NF-01.0
2	NM-NB1-NF-02.0
3	NM-NB1-NF-03.0
4	NM-NB1-NF-04.0
5	NM-NB1-NF-05.0
6	NM-NB1-NF-06.0
8	NM-NB1-NF-08.0
10	NM-NB1-NF-10.0



#### BUS T-connector

Part number  
NM-NF-NF



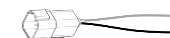
#### BUS adapter cable

Part number  
23-801



#### BUS termination resistors

Part numbers  
Female TR-NF  
Male TR-NM



#### Power adapter

Part number  
23-802

### AUXILIARY AND SENSOR BUS CABLING



#### AUX BUS cable

Meter	Part number
0.5	DM-DB1-DF-00.5
1	DM-DB1-DF-01.0
2	DM-DB1-DF-02.0
3	DM-DB1-DF-03.0
4	DM-DB1-DF-04.0
5	DM-DB1-DF-05.0
6	DM-DB1-DF-06.0
8	DM-DB1-DF-08.0
10	DM-DB1-DF-10.0



#### AUX BUS T-connector

Part number  
CM-CF-CF



#### Multiport box

Part number  
CM-CF-4



#### BUS power Tee

Part number  
CF-SPWR05-CF



#### AUX BUS termination resistors

Part numbers  
Male TR-CM  
Inline M-F IT-CM-CF

**ALAMARIN-JET**

### CABLE CATALOGUE

R1.04

20.4.2020  
SVi