# NAVpilot-711C with Volvo Penta IPS

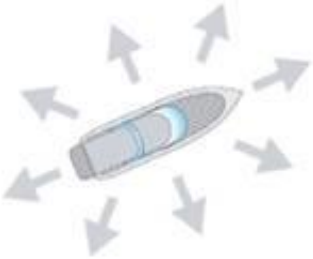


## INDEX

# 1. Volvo Penta IPS

## 1.1. What is Volvo Penta IPS

**Volvo Penta IPS** (Inboard Performance System) is a modern inboard steering and throttle control system with multiple pod drive units, which can rotate 360 degrees. IPS provides easy maneuverability, better fuel efficiency, less CO2 emissions, higher efficiency, speed etc. The IPS Joystick Controller allows simple lateral or rotational boat movement. For more details, visit http://www.volvopenta.com.



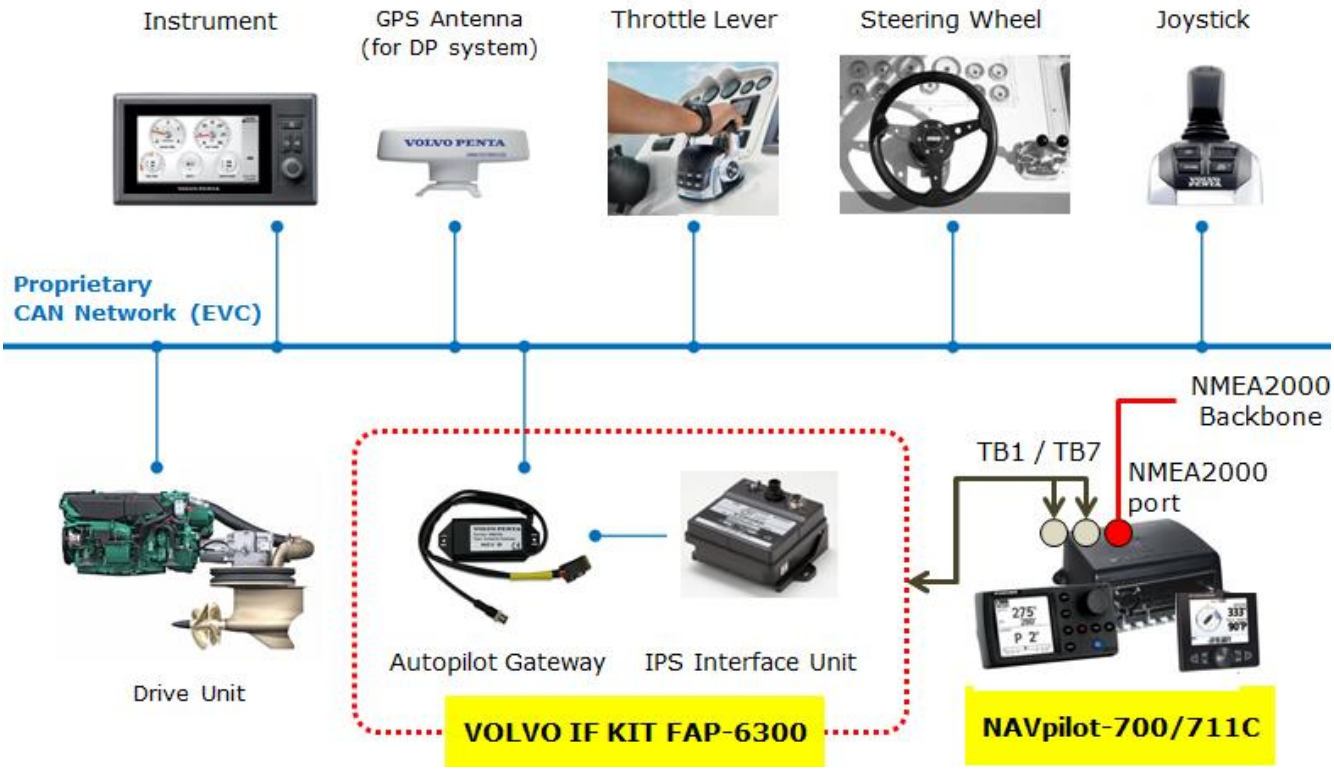
The Navpilot-711C and Volvo IF Kit, FAP6300 are compatible with the Volvo Penta IPS drive versions C, D. or E type. To confirm if the IPS drive is a C, D, or E version. If the boat has the same Throttle and Joystick controllers as pictured below, then the system is compatible with the NAVpilot-711C and FAP6300 IF Kit.


## 1.2. Volvo Penta IPS with NAVpilot-711C

Volvo Penta IPS consists of a proprietary CAN network called **EVC** (Electronic Vessel Control). The system is electronically controlled. The **NAVpilot-711C** is interfaced with Volvo-Penta IPS EVC system through a dedicated autopilot gateway and IPS interface unit. The Autopilot gateway and IPS Interface unit, along with associated cables, are supplied as part of the Volvo IF KIT, Furuno part # FAP6300.

# NAVpilot-711C

## 2.1 Interconnection




**The following gateway unit is necessary to network with Helm Master.**

| Name | Type | Remarks |
|---|---|---|
| VOLVO IF KIT | FAP-6300 | Consisting of interface and gateway units |

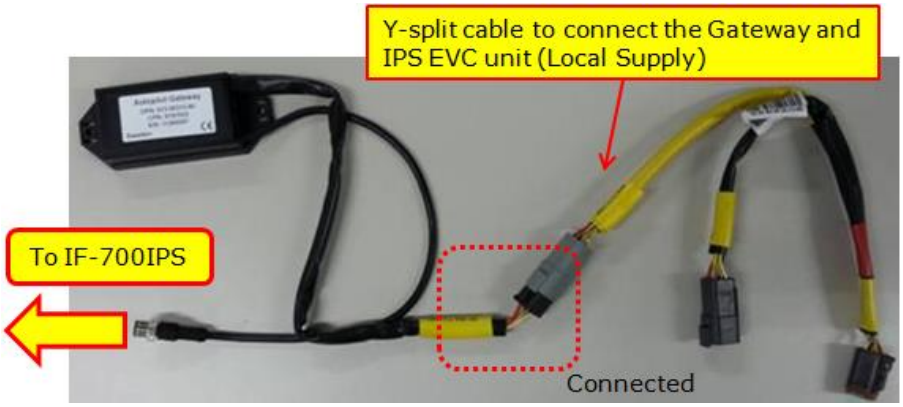
**Components:**

| No | Item | Type | Qty | Remarks |
|---|---|---|---|---|
| 1 | Interface Unit | IF-700IPS | 1 | - |
| 2 | Volvo IPS gateway | AUTOPILOT-GATEWAY for FURUNO Autopilot to IPS | 1 | Fit with 1 x cable to EVC (Y-cable) and cable for IF-700IPS |
| 3 | Cable Assembly | MJ-A7SPF0005-020C | 1 | 2m, IF-700IPS – FAP-7002 |
| 4 | Self-tapping Screw | 4X16 SUS304 | 4 | - |
| 5 | Cable Assembly | Y-Cable | 1 | Y-cable to connect Gateway and IPS EVC unit |
| 6 | Fuse | FGMB 125V 1A PBF | 1 | For spare |

The IF kit **FAP-6300** consists of **interface** and **gateway** units, and **Y-cable**. The **NAVpilot-711C requires an external interface**. The **FAP-6300 is used to network with Volvo Penta IPS**. The gateway is fitted with two (2) cables with connectors: **CAN** (same connector as NMEA2000 Micro-C, male) and **unique connector** for the Volvo Penta IPS bus (multi link bus cable). While the CAN connector is connected to the interface IF-700IPS of FAP-6300, the unique connector is connected to the Volvo Penta IPS network through a **Y-split cable**.

| IF-700IPS | VOLVO IPS GATEWAY | Y-split cable to connect Gateway and IPS EVC unit |
|---|---|---|
|  |  |  |

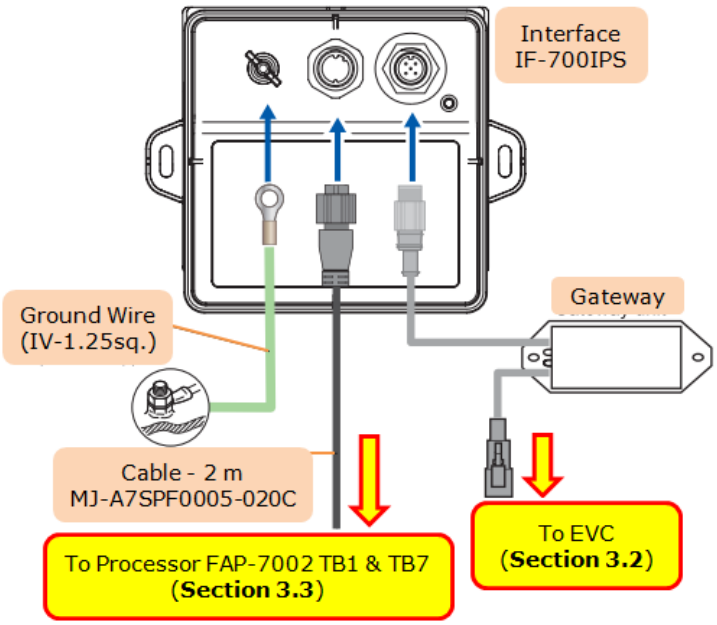
**Y-split cable to be connected to Gateway at installation (See Section 3.2)**




## Wiring Overview

The gateway is connected to the Volvo Penta IPS EVC, the interface **IF-700IPS unit** is connected to the **processor unit FAP-7002** of NAVpilot-711C as shown in the illustration at right.

See **Section 3.2** for wiring of gateway **to EVC** and **Section 3.3** for wiring of IF-700IPS to the **TB1** and **TB7** terminals of NAVpilot-711C processor **FAP-7002**.



## 2.2 Wiring FAP-6300 (Gateway) to EVC

(1) Locate the EVC black box control unit and the associated EVC Bus wiring on the Volvo Penta IPS boat.
The number of EVC units is equivalent to the number of IPS engine units on the vessel. In this example, the vessel has twin IPS drives. The NAVpilot-711C is compatible with two (2), three (3), or four (4) drives.

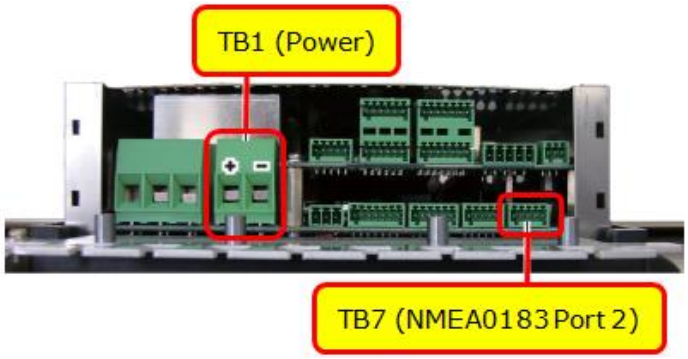
(2) Locate the multi-link bus cable or find an open port on an EVC bus connector to make the Volvo Penta IPS gateway connection. The bus cable connections and hub (if installed) will be located close to the EVC unit.

(3) Disconnect the multi link cable connector and install the Y-split cable for multi link cable installation or if there is a hub simply plug the Volvo Penta IPS gateway into the open port on the hub and disregard the Y-Split Cable. NOTE: There will be several similar style bus connectors but only the correct ones will fit properly.

(4) Check that all cables are re-connected.

## 2.3 Wiring FAP-6300 (Interface IF-700IPS) to NAVpilot-711C

The FAP-6300 includes a 2 m cable **MJ-A7SPF0005-020C** for the interface. Connect the MJ-A7SPF0005-020C to the processor FAP-7002: **TB1 (Power)** and **TB7 (NMEA0183 Port 2)** ports as shown at right.




**Procedure.**

(1) Open the processor case, remove the cable clamp/fan assembly from the shield cover, and disconnect the fan connector to access the TB1 and TB7 ports.

(2) Connect the 2 m cable MJ-A7SPF0005-020C to the connector blocks **TB1** and **TB7** as follows.

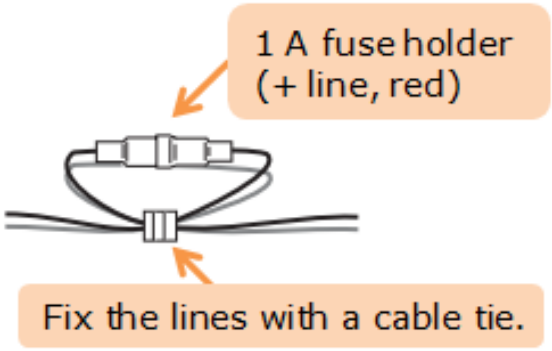
**Connection with TB1 (Power)**

Crimp the power lines of the cable assy. and power cable of processor unit using crimp connectors, and then connect the + line (red) and - line (black) to the TB1 of the processor unit.

Use the insulated section of the crimping tool to make the crimp, it will have rounded terminals.

**Notes:**

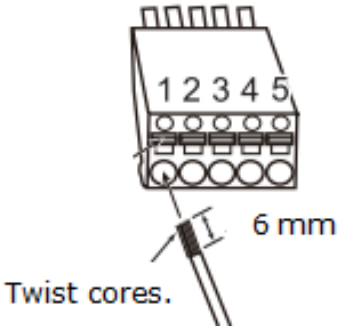
- Do not twist cores.
- The + line (red) has a fuse holder. To prevent the detachment of the fuse, make a loop in the cable and then cable tie the wiring as shown at right.




**Connections with TB7 (NMEA port 2)**

Connect the signal lines of the cable to TB7 with the color assignment shown at right.

| Pin No. | Signal | Color |
|---|---|---|
| 1 | TD_A | Yellow |
| 2 | TD_B | Green |
| 3 | RD_H | White |
| 4 | RD_C | Blue |
| 5 | Shielded | Drain |

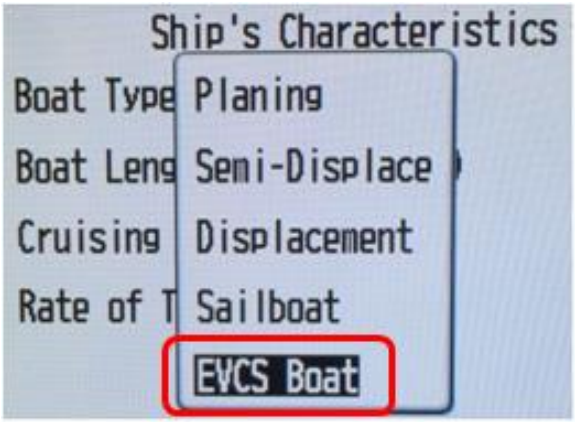



(3) Fix the cable to the cable clamp with a cable tie (supplied with processor unit).

(4) Reconnect the fan connector and re-attach the cable clamp/fan assembly and the processor case.

## 2.4 Initial Settings on NAVpilot-711C

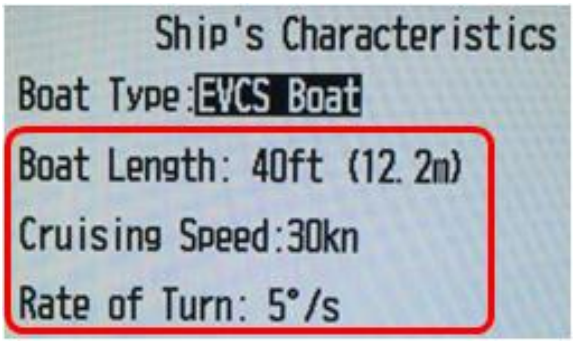
(1) In the Installation Menu, access [Installation] – [SHIP'S CHARACTERISTICS] – [BOAT TYPE] and select [**EVCS BOAT**].




Selecting the [EVCS BOAT] will allow the NAVpilot-711C system to communicate with the Helm Master gateway and IF-700IPS.

(2) Set the [Boat Length], [Cruising Speed], and [Rate of Turn] to fit the customer's boat characteristics.

(3) Check that no detection failure message appears to confirm that the connection with EVC is established.



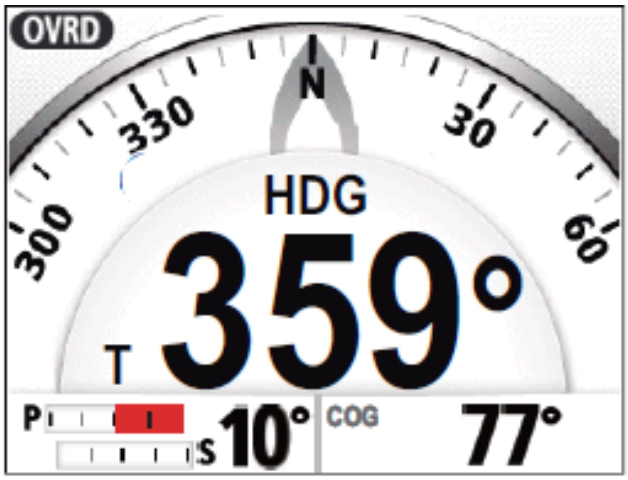
## 2.5 Compatible Software Versions

The NAVpilot-711C is compatible with Volvo Penta with the following software versions. Make sure to install the latest versions of both processor and control units in the correct combination.

| Items – Processor + Color CU | Versions |
|---|---|
| Processor Unit FAP-7002 | **01.18** or later |
| Control Unit FAP-7011C (Color) | **01.01** or later |

# 3 Tips on Operation

The Volvo Penta IPS system automatically incorporates a safety feature called "**Override**". When the helm is moved or a joystick is used, an override signal coming from the Volvo Penta IPS system automatically sets the autopilot to STBY (Standby). The NAVpilot-711C will then display the [**OVRD**] icon on the top of the screen.



EVC Override is active.

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