

# PYTHIA-P&M Installation Guidelines

## 1. System installation

In Figure 1 is given a schematic representation of the basis system (i.e. without connection to flowmeters, cargo computer, DGs power management modules, etc).

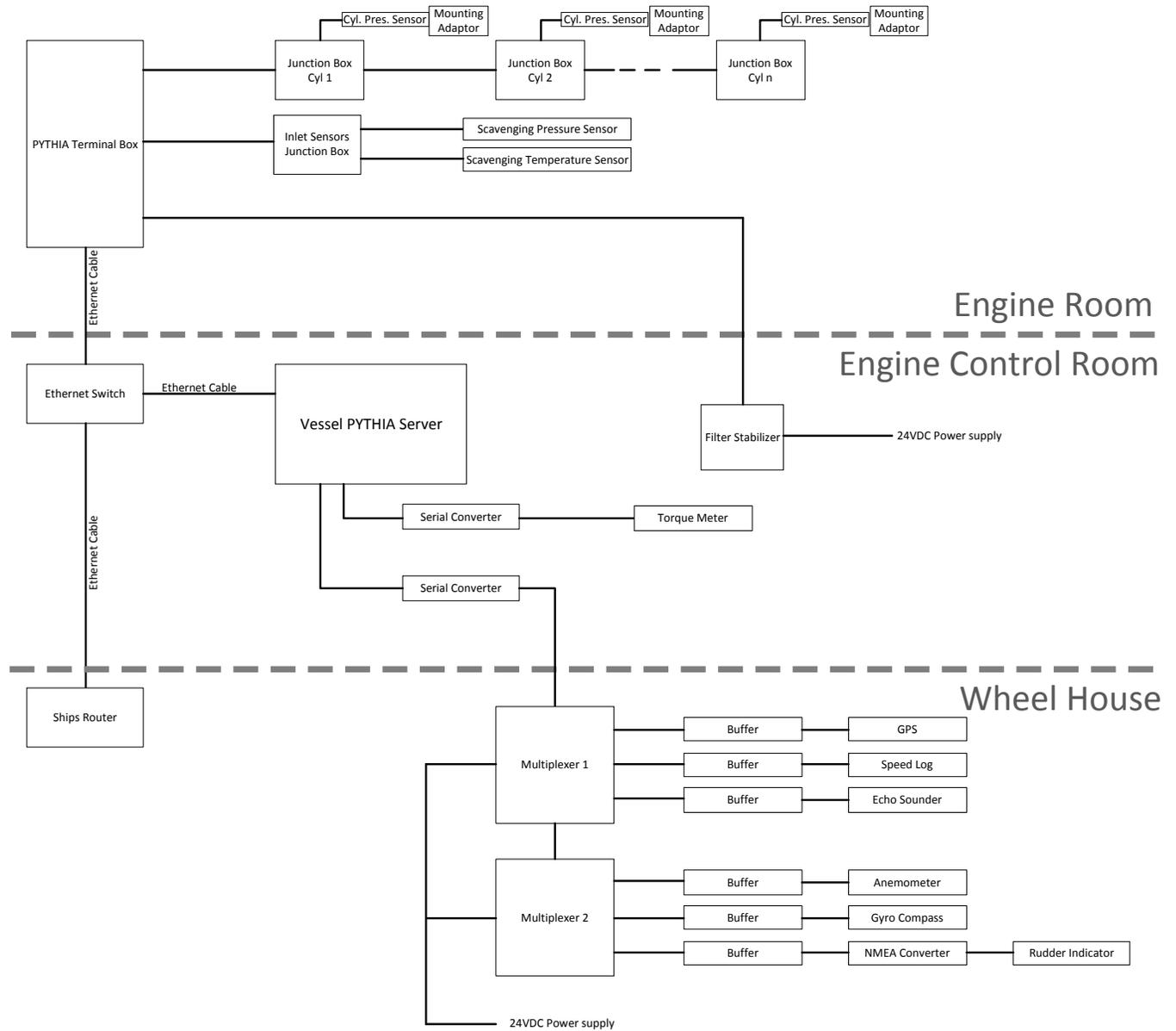


Figure 1. Schematic system overview

## 1.1 Engine Room

### 1.1.1 Cylinder Pressure Sensor Adaptor Mounting

A cylinder pressure sensor adaptor, on which the sensor will be fitted, will be mounted before indicator valve base. In Figure 2 can be seen this arrangement, which requires dismantling of the Indicators valve tube, positioning of the mounting adaptor and remounting of the indicators valve tube.

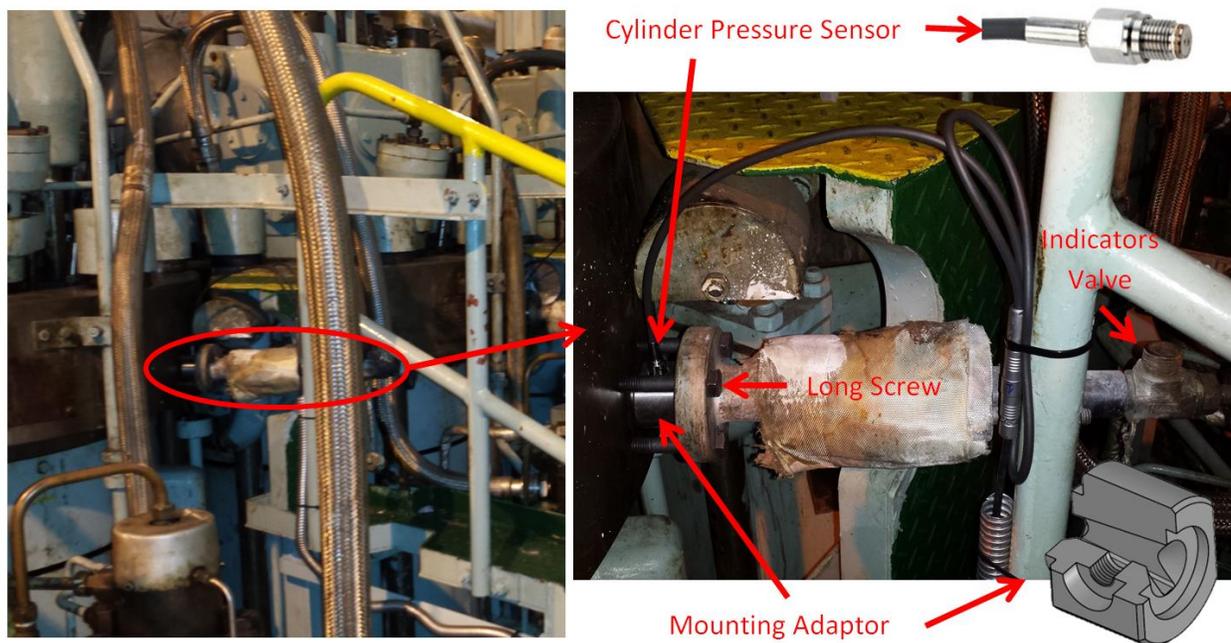


Figure 2. Cylinder Sensor Mounting Method

### 1.1.2 Junction boxes

A junction box will be installed near each cylinder. This requires the construction of a mounting base. The sensor cable (~ 1.0 m) will be plugged to the junction box (note that this is not the case in Figure 2, where the connector is connected to the junction box through an extension cable). A metal hose to protect sensors cable (length 1m) from sensor position to junction box position should be installed. Junction boxes are interconnected using a single shielded 4x2x0.75mm<sup>2</sup> cable. This cable terminates to “PYTHIA terminal box”.

Notes:

- Cable glands are used to pass the cable through the junction box.
- The cable inside the junction box must be coiled into a loop (i.e. spare length).

- *The cable inside the junction box must not be cut. Instead, it must be continuous through all junction boxes to the terminal box.*

### 1.1.3 Scavenging Air Sensors

On the inlet manifold will be mounted a pressure sensor (thread ½ inch) and a temperature sensor (thread ¼ inch), Figure 3. Near sensor, a junction box will be positioned. This requires constructing of a mounting base. From each sensor a 2x0.75mm<sup>2</sup> cable is directed to the junction box. A single 2x0.75mm<sup>2</sup> cable goes from the junction box to the “PYTHIA Terminal Box”.

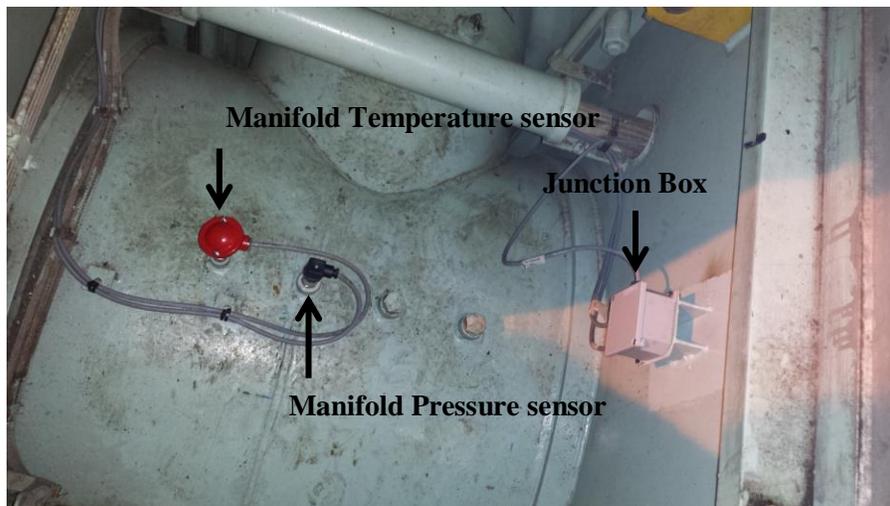


Figure 3. Inlet sensors

### 1.1.4 PYTHIA Terminal Box

Inside the Engine Room, in a convenient position (from wiring aspect) will be mounted the “PYTHIA Terminal Box”, Figure 4. This requires the construction of a mounting base. The following cables will terminate to this Terminal Box:

1. *Cylinder Pressure Sensor Junction boxes interconnecting cable*
2. *Inlet sensors cable*
3. *Power supply from ECR*
4. *Ethernet cable from ECR*

On the Terminal box will be an additional connector for the Diesel Generator(s) cylinder pressure measurement. Note that in Figure 4 there are more than four cables for other measuring tasks that do not apply to the current configuration.



Figure 4. PYTHIA Terminal Box

## 1.2 Engine Control Room

In the ECR will be positioned the “Vessel PYTHIA Server” Computer. This will be connected to:

1. *An Ethernet switch or directly to ships router*
2. *“KYMA” terminal board through a Serial Converter*
3. *Navigation Equipment through a Serial Converter*
4. *Computers periphery equipment (Screen, mouse, keyboard)*
5. *Power*

In the ECR will also be positioned the “Filter Stabilizer” Power Supply for “PYTHIA Terminal Box”. The Ethernet cable from “PYTHIA Terminal Box” will be connected on the Ethernet switch or directly to the vessel router (if there is an available cable).

## 1.3 Wheelhouse

In W/H will be positioned two NMEA Multiplexers in a convenient position. ECDIS or VDR position is usually the most suitable because there are available all required signals. Buffered (isolated) outputs from navigation instruments will be connected to the multiplexers. If there are not available buffered (isolated) outputs for each navigation instrument, new buffers should be installed. If there a NMEA converter for Rudder Angle Indicator Signal is not available (which is usually analog 4-20mA or +-10V), and this signal is of interest, a new converter must be installed.

Multiplexer output has to be connected to the Serial converter in ECR through a single cable pair. Usually there are spare cables from ECR to WH which can be used. If this is not the case, other solutions can be proposed.

Multiplexers require a 24VDC power supply.

## 2. Network Configuration

In Figure 5 is given the overview for network configuration.

On the vessel, a computer (“Vessel PYTHIA Sever”) and the “PYTHIA terminal box” will be connected to vessels business network. “Vessel PYTHIA Sever” will be located in the ECR, while “PYTHIA terminal box” will be located in the E/R. Both components will be assigned a static IP. Ships router should be configured to allow incoming and outgoing traffic for specific ports.

On Office side, an existing server/ computer (“Office PYTHIA Sever”) will be used to receive/transmit data to Vessel and provide a Web Service to supply data to users PCs. Selected data will accessible to users through a shared folder, which may be physically located on “Office PYTHIA Server” or another Network Drive.

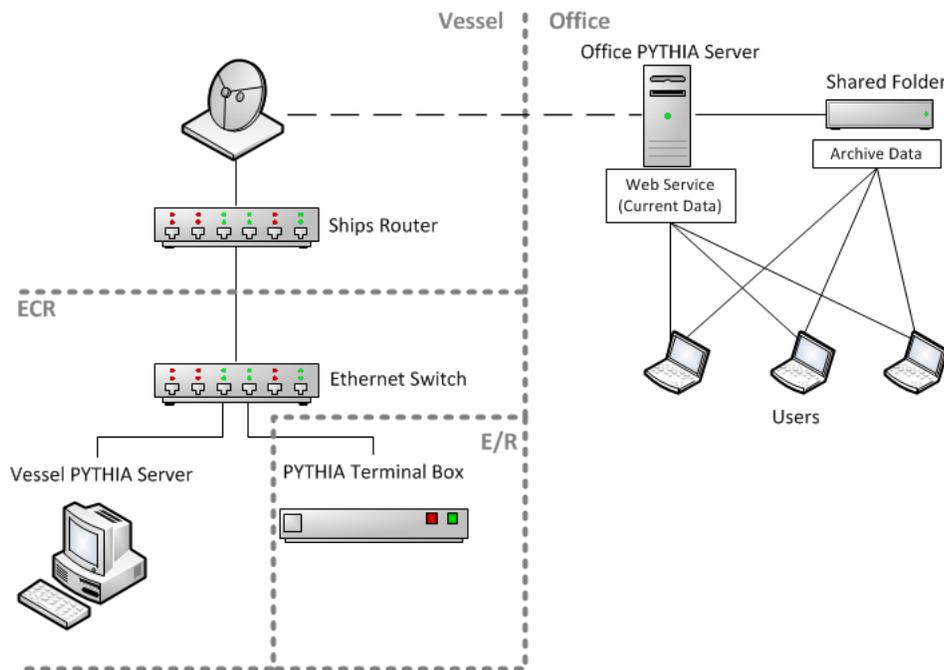


Figure 5. Network configuration overview