CYM-PG-04310-V02

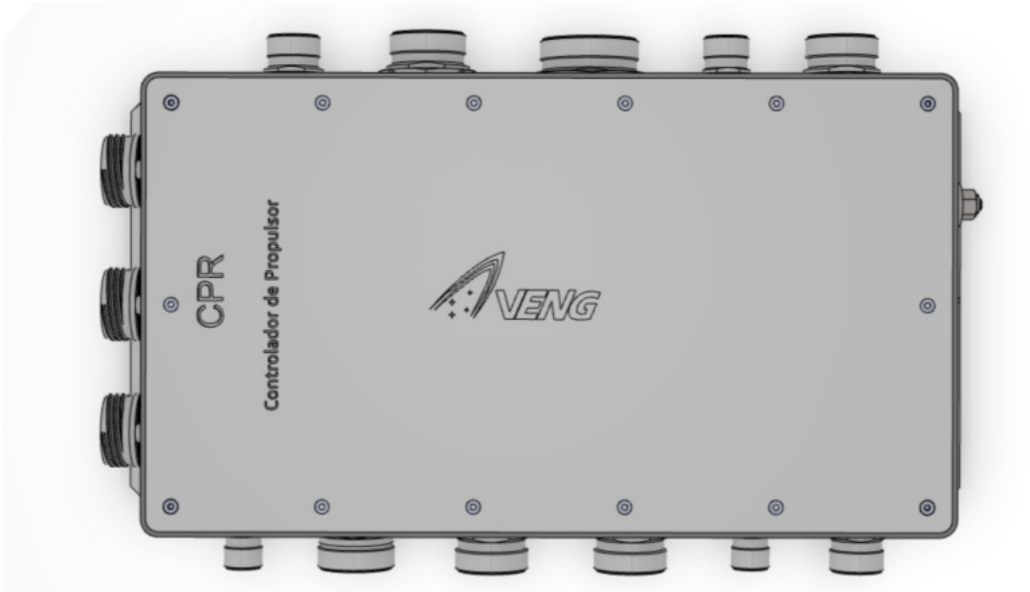
AVIONICS

ENGINE CONTROLER

Test bench version

Overview

The Engine Controller is a cutting-edge solution engineered for the precise management of propulsion systems, including turbopump-fed engines. Designed for reliability, it ensures continuous monitoring and instant response to critical events. Its robust, autonomous architecture enables high-precision valve actuation, real-time sensor data acquisition, and seamless system status oversight, optimizing performance and safety.



The turbopump is a highly intricate engine component that demands precise control, and this system delivers accurate management of valves and actuators. In the event of an anomaly, it ensures a rapid transition to a safe state, protecting both the engine and test bench infrastructure.

Commands are received via CAN BUS, while the user interface serves two key functions: configuring sequences, conditions, and sensor parameters in permanent memory, and providing real-time telemetry data. Once set up, the system awaits a PLC trigger to execute programmed instructions, with the ability to be aborted instantly by the operator. Additionally, a manual mode facilitates pre-test preparations for enhanced operational flexibility.

Main features

- 14 Channels of precise valves, 24VDC ±10%
- Digital indicator 24VDC / 10 samples per second (SWITCH, PNP, and NPN)
- 3 Channels, 11VDC / 5A ceramic ignition control
- Real-time system status monitoring
- 16 Channels for sensor data acquisition (pressure, temperature, flow)
- 7 Channels (4-20mA) for low-speed acquisition (100 samples/s rate)
- 9 Channels (4-20mA) for medium-speed acquisition (1k samples/s rate)
- Permanent configuration storage
- Analog output: 3 channels (0-10V / 4-20mA) for valve control
- Analog input: 3 channels (0-10V) for valve position feedback
- Supports CAN bus communication interface for commands
- Supports Ethernet communication interface for telemetry
- Supports CAN bus communication for user interface configuration

Specifications

Electrical features

Input Voltage
+24 VDC +-10%

Power consumption
(TBD)

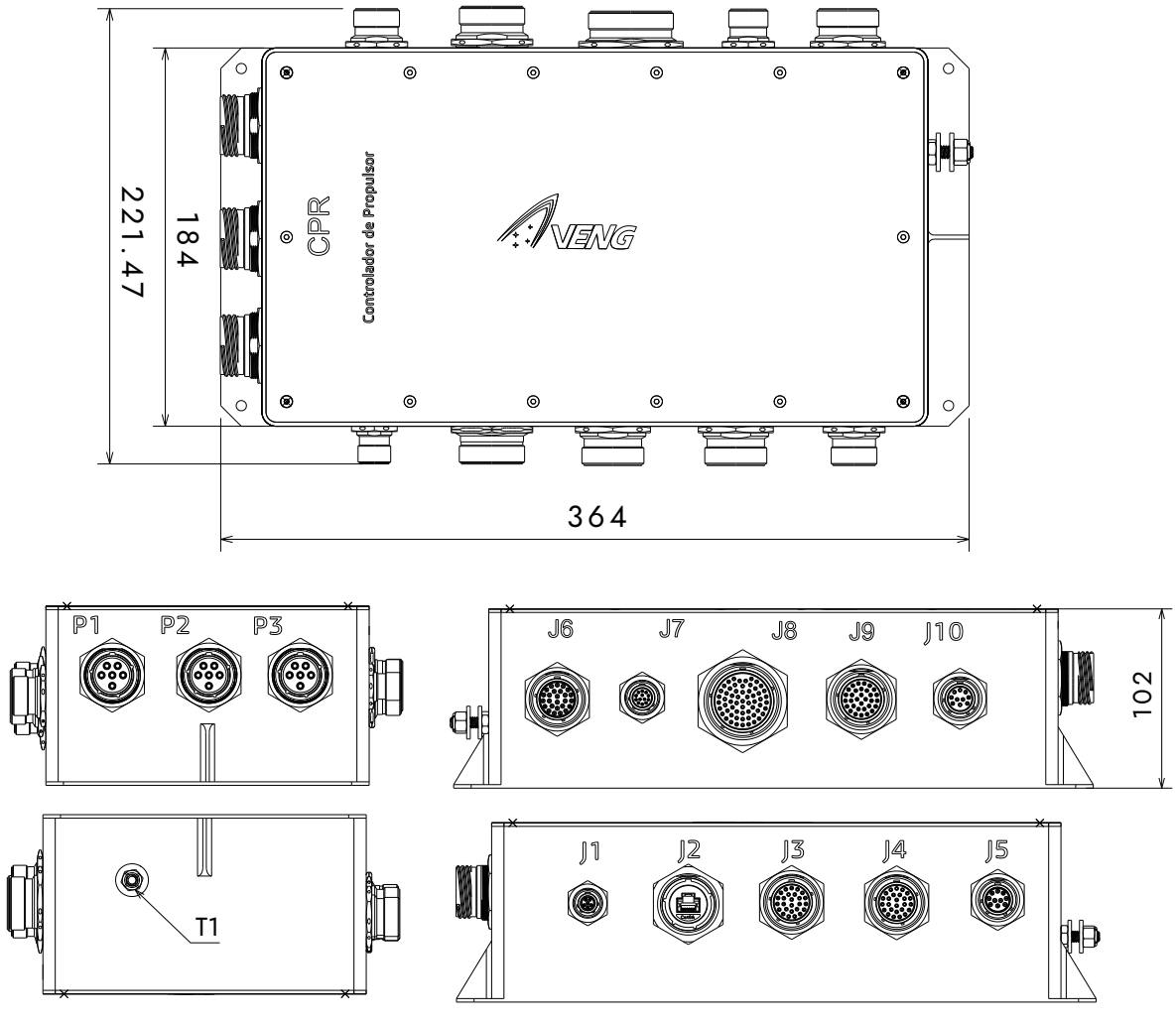
Interfaces
- Valve and ignition control
- Communication interfaces
- Power interface
- Supervision of sensors

Mechanical and Thermal Features

Dimensions
364mm x 222mm x 102mm

Mass
3.5 kg

Temperature range
- *Operating temperature range*
  -40°C a 85°C
- *Storage temperature tange*
  -55°C a 125°C



Specifications are subject to change without prior notice. For detailed technical information, please contact our technical team at scostamagna@veng.com.ar.

Typical Application

An engine controller in a test bench manages and supervises operations of the engine during ground tests.

User and Configuration Interface

This interface allows engineers to configure test parameters such as the ignition sequence, abort sequence, and sensor settings.

Commands and Telemetry

Commands and telemetry data are sent to and received from the Engine Controller (CPR).

Programmable Logic Controller (PLC)

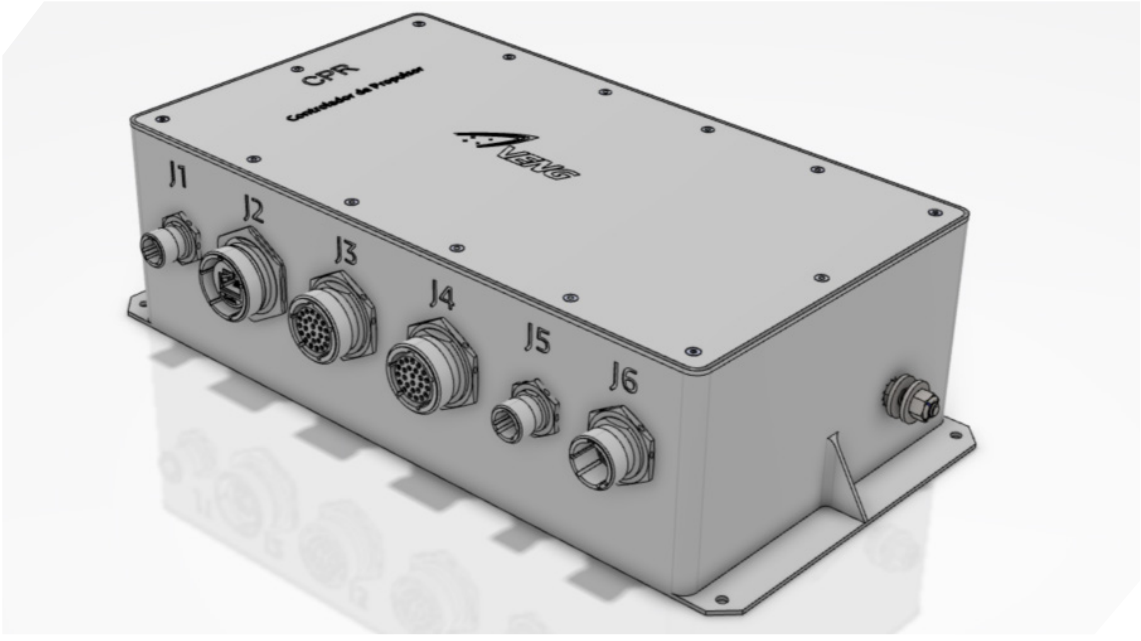
The PLC manages the start/stop sequence, ensuring safe ignition by controlling valves and igniters.

Real-Time Monitoring and Supervision

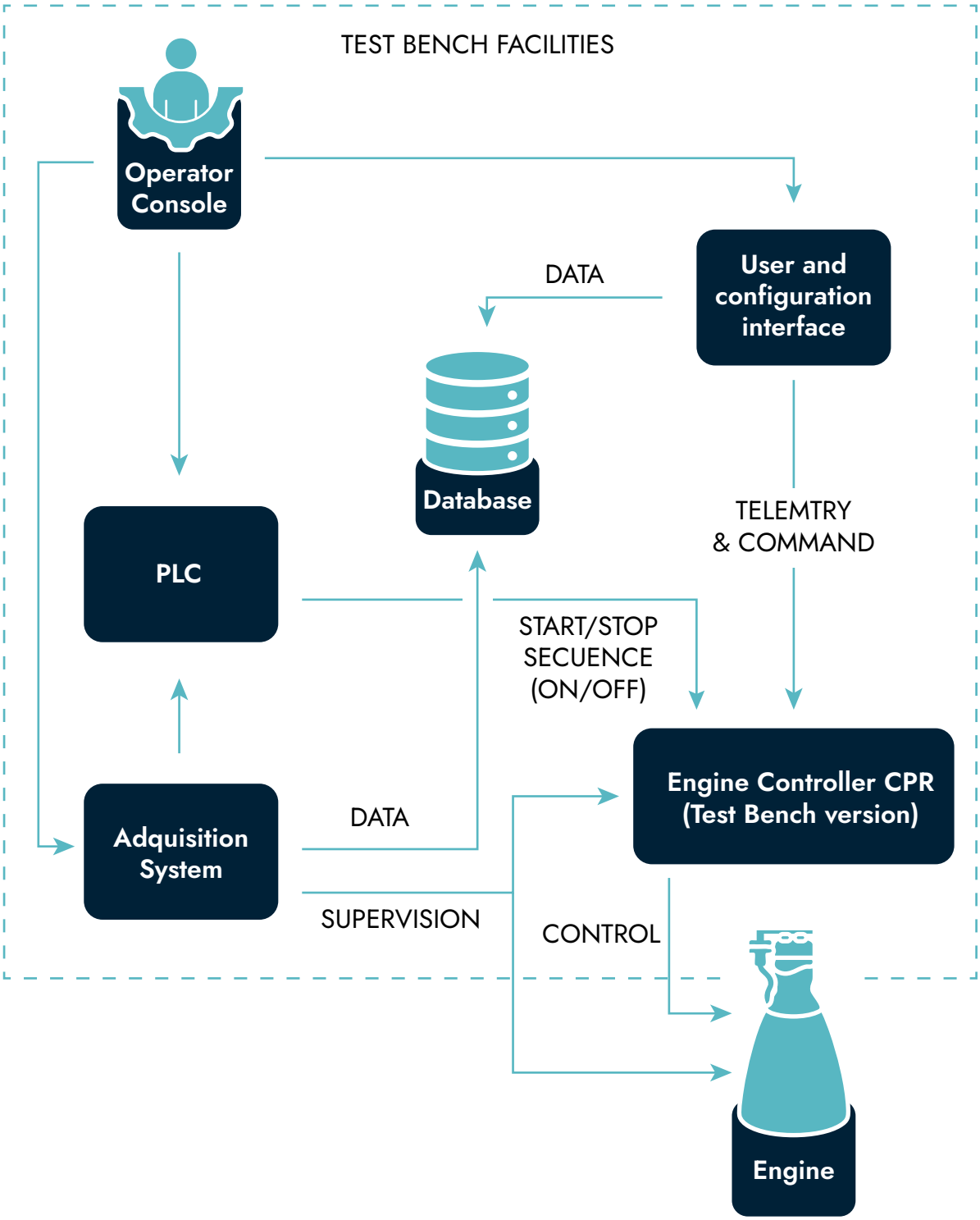
The data acquisition system collects real-time measurements, including thrust, pressure, temperature, and vibration levels.

Safety Supervision

The Engine Controller and PLC continuously monitor operations to ensure safe conditions. If an anomaly is detected, they can trigger an emergency shutdown.



Typical Application: System



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