

Diagnostic Hub, with Heating, Ventilation and Air Conditioning Module



- On-board ambient temperature sensor
- Interface for additional external sensors
- Optional Integrated LCD temperature display ($\pm 0.1^{\circ}\text{C}$)
- On-board processing with real-time LED indication of tolerances
- Programmable acceptable temperature range (e.g. $21 - 23^{\circ}\text{C}$)
- Interfaces to Diagnostic Hub for temperature logging and connection to Ethernet or other network
- Configuration options to suit customer needs
- Reconfiguration via Windows based API

Introduction

The Instrumentel Diagnostic Hub integrates the functionality of a data logger with that of a communications bridge and embedded processor to provide a compact, rugged and cost effective solution to industrial monitoring activities. As such it can not only sample data from a variety of sources but can also store and process data; thus enabling users to more effectively control and manage data distribution. As would be expected, the Diagnostic Hub is capable of acquiring and analysing, on-board, typical parameters such as stress, strain, displacement, temperature and humidity. Other application specific, analogue or digital signals can be sampled or controlled via general purpose inputs and outputs (GPIO) respectively.

The Diagnostic Hub has been deployed systematically in the Automotive, Nuclear and Defence industries; which use the Diagnostic Hub not only to sample data, but to control and process the transmission of data over various network infrastructures. A recent addition to the portfolio is the Rail industry where the Diagnostic Hub has been used to acquire data pertaining to the condition of automated doors, as well as data associated with passenger comfort, i.e. HVAC system monitoring.

The Diagnostic Hub is a versatile electronic system allowing access to a range of customer specific modules and devices designed by Instrumentel. Importantly the Diagnostic Hub also provides a cost effective means of networking third party products and instrumentation. The Diagnostic hub is offered as an expandable system, which the user can configure, with or without Instrumentel's help, to achieve the desired functionality.

The HVACunit is an external module, which connects to the Diagnostic Hub. The purpose of the HVAC module is to sample HVAC parameters and present them to the user via the integrated LCD screen, or relay the data onwards via a networked Diagnostic Hub. In addition the user can remotely configure the HVAC module to indicate when parameter is within a desired range; once again the module can visually inform the user of range compliance by means of on-board LED indicators; alternatively the user can relay compliance indicators over a network in a manner defined by the user.

In addition, HVAC data originating from a HVACunit may be stored in or processed by the associated Diagnostic Hub, once again allowing the user total control of data management. Details of the HVAC module are now provided

Specification

LAN

Ethernet: 1 x 10/100 Mbps, RJ45

Protection: magnetic isolation

Protocols: TCP/IP, Telnet, HTTP, DHCP, UDP, TFTP

Processing Capability

Processing: Embedded 32bit ARM processor, FPGA for parallel processing and DSP

Program Memory: 256kb Programmable Flash, 64kb Program RAM

Data Storage: Solid state Memory, μ SD card 1Gb as standard, fully expandable

Firmware: Upgradeable via Ethernet Boot-loader

Interfacing: Serial, SPI, Analogue to Digital converters, Event Triggered IO and Programmable Hardware counters.

Expandability: Expansion header for extended capability available via personality boards

Additional Capability: Real Time Clock (RTC) with backup battery

Sensors

On-board: Ambient temperature sensor

Sensor type: Ambient

Accuracy: 0.5 °C

Additional Sensor Interface: I²C, analogue

Optional Features

Programmable acceptable temperature range, LED indicators, LCD display of current temperature, Interface for additional temperature sensors

Power Requirements

Power: DC Power Connection or ISO 802.11afPOE (Power over Ethernet), via Diagnostic Hub.

Power Input: 24 VDC nominal, 12-80 VDC

Environmental Limits

Operating Temperature: -25 to + 65 °C

Storage Temperature: -40 to +85 °C

Ambient Relative Humidity: 5 -95% (non-condensing)

Product Family

