Ethernet Control Unit

Features

- Ethernet connectivity for remote monitoring
- Battery backed real-time clock
- M-LINK master port
- Local non-volatile logging options
- Gathers system parameters
- Gathers detailed status data
- Non life safety critical path
- Compact DIN rail mounting design

Description

The ECU is a mandatory PCB module for M-Class PAGA systems. The ECU manages the internal process of data collection and presents data to the dedicated LAN on demand. The ECU is a compact DIN rail mounted module, powered from the local PAGA rack.

Battery backup

The ECU includes onboard battery backup. The health of the battery is monitored by the ECU management system and the M Class server is notified when batteries need to be changed (typically 5 year period).

The purpose of battery backup is to ensure the ECU is able to detect and log critical power events such as loss of system power and return of system power. The battery keeps the ECU core functions operating in the absence of normal power until logging activity is complete, then the ECU enters a low power sleep mode. The battery also maintains the real time clock on the ECU during power out so that subsequent logging at power up is accurately time-stamped.

Data logging

The ECU reports status to the server on a regular basis. However, the server is not considered as a critical path and may go off-line at any time. The ECU includes the option to log system events to an optional onboard SD card (2 GB of storage would allow in excess of 300,000 events to be recorded with a timestamp). Larger SD cards would extend event log capacity further. ECU logging only records changes in status (deltas) and does not record status or report status for every sample taken. This massively improves storage capacity and reduces network traffic.

Data collection and forwarding

The ECU is implemented as the master device on the internal M-LINK bus which interconnects between various modules of the PAGA rack. The ECU is able to monitor the M-LINK bus continuously. The ECU is the central monitoring coordinator in the PAGA rack. By default it is able to monitor up to 32 M-Class devices connected with an M-LINK bus.

The ECU polls each connected device on a regular basis (typically every second) to maintain a detailed view of status. The ECU is Ethernet enabled, and is designed to connect to an M-Class server located somewhere on the LAN. The ECU provides the current status of the PAGA System when requested by the server.

Monitoring functions

The ECU not only monitors M-Class devices in the same rack but also monitors system parameters such as:

- Temperature on the ECU PCB
- System voltage levels
- M-Class connectivity
- Battery health

Networking

The ECU follow the design philosophy of simple network installation and management. There is no requirement for complex manual network configuration. The M-Class network is designed to automatically configure and report to the server.

By design critical path PAGA functions cannot be modified by external interaction from the network.

Technical data

Dimensions
108 mm x 120 mm

LAN connectivity
requires DHCP enabled network 10/100 RJ45

Technology
battery backed (monitored)
32 bit microcontroller based
no operating system or 3rd party software

Power Supply options
DC 48 V nominal (rack supply)   <100 mA
DC 3.3 V expansion (port supply) <1 A

Temperature range
0 °C to +70 °C