VCL-2457
SMart-Rack Management Unit

ORION TELECOM NETWORKS

Introduction:

The VCL-2457, Smart Rack Management and Control unit shall convert and transform standard equipment racks into “Smart-Racks” and allow the users to monitor the parameters and status of multiples of rack units, remotely, from an NMS.

The VCL-2457, Smart-Rack Management Unit provides the following options:

a) Designed to monitor and control the ambient temperature of an equipment rack by automatically “switching on” / “switching off” racks ventilation fans / cooling unit according to the user desired thermal environment in the equipment rack
b) Monitors up to 3 temperature zones
c) Provides “4” binary inputs for sensing dry contact relays (open loop / closed loop status) and “2" potential inputs with timestamping. These binary inputs may be used to connect to rack door-open alarm, smoke alarm, fire alarm, water-level alarm, or used to connect to dry-contact relays that are normally provided on other electronic equipment that is installed in the racks to provide alarms that indicate equipment failure.

This unit not only assists in conserving power by selectively switching off the rack's cooling fans according to the prevailing temperature conditions in the equipment rack but also greatly increases the life span (MTBF) of the fans, because fans are switched off when they are not required to operate, while always maintaining the rack ambient temperature at the user desired levels.

As a rule, all fan units have a “life cycle” that is specified by its manufacturer and stated in “number of operating hours” after which the fans become increasingly susceptible to failure. The VCL-2457, Smart-Rack Management and Fan Control Unit monitors the user set RPM thresholds of each fan unit to track their RPM and forewarns the users of a fan failure, or even its impending failure. In the event of a fan failure, or if its RPM falls below a user set threshold (which could occur due to a due to a “faulty fan rotor bearing” or a “chocked” air filter), the VCL-2457 triggers its alarm relay (which may be connected to an external Logic, Audio or Visual alarm) to alert the administrator. The VCL-2457 also generates an “alarm” message which is transmitted to the administrator as an Ethernet string containing all the vital information of the rack to a remote PC over IP link through its Ethernet interface. All events and alarms are accurately time-stamped since the VCL-2457, Smart-Rack Management and Fan Control Unit can be synchronized to an external (remote) NTP / SNTP Server for accurate time and date synchronization.

Even when the fans are not in use, the VCL-2457, Smart-Rack Management and Fan Control Unit is designed to “test and prime” the fans, once in every 24 hours, by switching them “on” for a short duration to ensure that the fans always remain operational at their optimum speeds. Such a feature ensures that all fans are exercised periodically and shall function normally, without fail, whenever required by the rack's changing ambient conditions. The VCL-2457, Smart-Rack Management and Fan Control Unit not only becomes an important tool to improve the operating efficiency of an electronic equipment rack but also to assist in providing preventive maintenance and enhancing the operating life of the equipment that is installed in the rack by maintaining an optimum operating environment.

Features:

- Saves Power. Designed to monitor and control the ambient temperature of an equipment rack by “switching on” / “switching off” racks cooling fans according to the user desired thermal environment in the equipment rack
- Provides 3 separate temperature sensors to monitor up to three temperature zones within the rack
- Maintains ambient rack temperature. Extends equipment life
- Extends fan MTBF life
- Fan Performance Monitoring
- Fan Failure Alerts
- Supports user configurable fan speed (RPM) thresholds
- Monitors up to 4 dry-contact relay inputs, with timestamping, which may be connected to:
  - Rack-door open alarm
  - High Water level/Flooding alarm
  - Multiple equipment failure alarm(s)
- Monitors up to 2 potential inputs, with timestamping, which may be connected to:
  - Smoke Alarm
  - Fire Alarm
  - High Humidity Alarm
- Compact size, DIN rail mount
- Provides NTP / SNTP Time and Date Synchronization
- Provides Real-time Alarm and Event Logging
- Daily Automatic Fan Test and Priming Routine
- LCD Display (External)
- Provides Serial Management (USB) port to manage the unit locally
- Provides remote (10/100BaseT Ethernet) management port to enable the user to manage multiple units remotely from an NMS over the IP network
- Transport protocol supported MQTT/TCP-IP/UDP
- Certificate based “Unified Management System”. Allows the user to securely monitor '000s of racks from a central management server.

Technical Specifications:

Local / Remote Communication and Control Ports:

- Serial Management Port - USB Port
- 10/100 BaseT for remote management

Local / Remote Management and Monitoring Options:

- Telnet
- CLI Control Interface (HyperTerminal or VT100)
- MQTT Communication with NMS allows scaling of the management system to monitor '000s of racks from a single location.

Security and Protection:

- Crypto Authenticated Hardware and Firmware protects the hardware and firmware from being cloned.

Power Supply Specifications:

Input DC voltage	48V DC (nominal)
Range of input voltage for equipment operation	15V to 60V DC Input
Reverse DC Voltage polarity protection	Provided
Short circuit protection	Provided

Fan Power Supply Options:

- 12V to 48V DC (support for 12V/24V/48V DC FAN's)

Equipment Power Consumption (excluding fans):

- < 15W

Environmental (Equipment):

Operational	0°C to 50°C (Typical: +25°C)
Storage	-10°C to +60°C
Humidity	95% non-condensing
Cooling	Convention Cooled.
Altitude	5000 mtrs.

Command Language:

- English text commands
- Graphical User Interface (GUI) - English

Mechanical Specifications:

Height	72 mm
Width	190 mm
Depth	176 mm
Weight	1.4 Kg.

Technical specifications are subject to changes without notice.
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Compliance:

- CE
- RoHS
- EMC - FCC Part 15 Class 2
- Operation ETS 300 019 Class 3.2
- Storage ETS 300 019 Class 1.2
- Transportation ETS 300 019 Class

Ordering Information:

Part Number	Product Description
VCL-2457-DIN-DC015060	**VCL-2457, *Smart*-Rack Management and Fan Control Unit** DIN Rail Mounting Version - 1 x 15~60V DC Power Supply Input - Management: Telnet (RJ45 (F) Port), Serial Port (USB), EMS, Graphical User Interface (GUI) - Installation Kit: System Core Cables, Mounting Hardware, Documentation, User Manual

Optional: External Sensors & Alarms:

Part Number	Description	Max. Qty per Unit
VCL-ESEN 0001	Smart Rack Water Level / Flooding Sensor	01
VCL-ESEN 0003-0002	Smart Rack-Door Open Sensor	01
VCL-ESEN 0004	Smart Rack Smoke Alarm (12V DC Power Supply Input required)	01
VCL-ESEN 2458	Smart Rack Temperature Sensor	03
VCL-DISP 2461	Smart Rack Controller LCD Display	01
VCL-EFAN 0005	Smart Rack Ventilation FAN (120x120x32mm) with Pulse (Tach-RPM) Sensor, 48V DC, 3-wire	03
VCL-EMOD 0423-AC220	**(Please add Power Supply for VCL-ESEN 0004, Smoke Alarm)** **External Power Supply - DIN Rail Mount** Power Supply (External) AC to DC Converter, DIN Rail Mount: - Input: 1 x AC Input [90~240V AC, 50-60Hz] - Output: 1 x DC Output [12V DC~2.1A, 25.2W]	
VCL-EMOD 0423-DC220	**(Please add Power Supply for VCL-ESEN 0004, Smoke Alarm)** **External Power Supply - DIN Rail Mount** Power Supply (External) DC to DC Converter, DIN Rail Mount: - Input: 1 x DC Input [110~250V DC] - Output: 1 x DC Output [12V DC~2.1A, 25.2W]	

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