

Introduction:

VCL-2457, Rack Management Unit is designed to convert and transform standard equipment racks into “Smart-Racks”.

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 “6” binary inputs for sensing dry contact relays (open loop / closed loop status). 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 “faulty fan rotor bearing” or a “choked” 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.
- 3 separate temperature sensors. Monitors up to three zone temperature zones
- Maintains ambient rack temperature. Extends equipment life
- Extends fan MTBF life
- Fan Performance Monitoring
- Fan Failure Alerts
- Monitors up to 6 dry-contact relay inputs which may be connected to:
 - Rack-door open alarm with time-stamp
 - Smoke alarm
 - Fire Alarm
 - Water level/Flooding alarm
 - Equipment failure alarm
- Compact size, DIN rail mount
- NTP / SNTP Time and Date Synchronization
- Real-time Alarm and Event Logging
- Daily Automatic Fan Test and Priming Routine
- User configurable fan speed (RPM) threshold
- LCD Display (External)
- USB Serial console configuration
- 10/100BaseT Ethernet Port for Remote Monitoring
- 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):

- < 10W at ambient (steady state 24°C)

Environmental (Equipment):

Operational:	-10°C to +65°C (Typical: +25°C)
Cold start	0°C
Storage	-40°C to +85C
Humidity	95% non-condensing
Cooling	Convention Cooled.

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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Revision – 2.5, June 19, 2022

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 <ul style="list-style-type: none"> - 1 x 15~60V DC (48V DC nominal) 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

Additional Power Supply Options (External Adaptor):

VCL-EMOD 0444-AC220	External Power Supply - DIN Rail Mount Power Supply (External) AC to DC Converter, DRL30-24-1, DIN Rail Mount <ul style="list-style-type: none"> - Input : 1 x AC Input [90~240V AC, 50-60Hz] - Output 1 x DC Output [24VDC~1.25A, 30W]
VCL-EMOD 0444-DC220	External Power Supply - DIN Rail Mount Power Supply (External) DC to DC Converter, DRL30-24-1, DIN Rail Mount <ul style="list-style-type: none"> - Input 1 x DC Input [110~250V DC] - Output 1 x DC Output [24VDC~1.25A, 30W]

Note: Fans or other sensors are not included with the VCL-2457-DIN and must be bought separately.

Sensors included:

- Temperature sensors
- Fan RPM Sensors.

U.K.

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