

## KEY FEATURES

- Increases efficiency from 82% to >95%, reducing heat generation in confined spaces while shaving energy costs
- NetSure reliability improves mean time between failure (MTBF)
- Constant power limiting feature increases output power to 1000W per rectifier
- Retrofits plug directly into existing VMS series shelves without electrical or mechanical adjustments for true plug in upgrade ability
- NCU controller offers the most advanced control and monitoring features with an emphasis on security



High efficiency eSure™ rectifiers provide dramatic reductions in energy costs and advanced features for legacy Vortex Mini Series (VMS) DC power systems.

## Product Overview

The NetSure™ VMS DC Power Retrofit provides a unique solution for maintaining and upgrading legacy Vortex Mini Series (VMS) DC power systems based on the V15F50 rectifier. Specially designed frames mount directly into existing rectifier slots without the need for electrical or mechanical adjustments. These frames accommodate R48-1000E3 high efficiency eSure™ rectifiers and a NetSure NCU controller in the primary frame.

Two distinct frames are available. The primary V15 Retrofit module, model 564305, comes equipped with an NCU controller and is designed to accommodate a single rectifier and the controller. Expansion V15 Retrofit modules, model 563854, house a single rectifier only. Up to thirty modules total can be connected in a single system.

Since the legacy systems utilized analog control schemes, each primary V15 Retrofit module is equipped with a cover and alarm interface assembly. This assembly connects to existing wiring and alarm outputs at the system level, simplifying site transition and installation.

The system's original distribution (if equipped) and ring generator modules can be maintained as positioned and installed with continuous operation. If desired, the NetSure controller can be used to provide significant enhancements over existing electronics including programmable alarming, customer I/O and local/remote access over Ethernet.

## Application

The NetSure VMS DC Power Retrofit is designed for use in existing Lorain Vortex Mini Series (VMS) systems containing V75CAB or V60CAB rectifier shelves designed initially to accommodate V15F50 rectifiers. The NetSure VMS Retrofit can be used in conjunction with VMS distribution and ringing products already deployed in the field.

## Additional information

Additional specification, engineering and installation information may be obtained by requesting SAG563853 (system application guide) and UM563853 (User Manual).



## Technical Specifications

AC INPUT	
Voltage	85 VAC to 300 VAC operating range
Frequency	45 Hz to 65 Hz
Power Factor	>0.98 from 50% to 100% load
Total Harmonic Distortion	≤5% from 50% to 100% load
Current	4.28 A typical 6.18 A maximum
Inrush Current	Does not exceed 150% of the rated input steady state peak value.
Protection	If the input voltage decreases or increases beyond a non-adjustable predetermined value, the rectifier circuitry shuts down, disabling the output. The rectifier will recover automatically when the AC input is re-established and exceeds 95VAC (low voltage restart point) or when it decreases to 285VAC (high voltage restart point). Overcurrent is protected by an internal fuse
Peak Efficiency	95.08%
DC OUTPUT	
Voltage	-42.0 VDC to -58.0 VDC
Power	1000 W maximum from 176 VAC to 290 VAC at >48 VDC output. Derated output from 176 VAC down to 85 VAC
Current	20.8A maximum
Regulation	Steady state output voltage remains within +/- 0.60% for any combination of input voltage from 5% to 100% load
Voice Band Noise	The voice-frequency noise generated by a rectifier does not exceed 38dBrc typical from 30% to 70% of normal operating range
Wide Band Noise	Does not exceed 250 mV peak-to-peak, or 50 mV rms per Telcordia GR-947-CORE
Protection	Current limit adjustable from 4 A to 21 A; over current internal fuse
High Voltage Shutdown	If rectifier detects over voltage it will turn off. After 5 seconds it will restart; if it encounters an over voltage within 5 minutes it will turn off and remain off until reset.
ENVIRONMENTAL	
Operating	-40°F to 113°F (-40°C to 45°C) at full rated output; -40°F to +167°F (-40°C to +70°C) with derating
Altitude	Up to 6562 ft (2000 m) at full rated output
Relative Humidity	0 to 93%
Ventilation	Front to back with speed-controlled fan (field replaceable)
Audible Noise	The rectifier does not produce sound levels above 50dB(A), measured 0.6m in front of the rectifier, at the same horizontal line as the middle of the rectifier at 25°C
STATUS / ALARM INDICATORS AND MONITORING	
Visual Indicators	Normal operation = Green LED; Alarm = Yellow LED; Rectifier failure alarm = Red LED; Fan failure alarm = Flashing red LED
Status Settings	The controller establishes all rectifier settings. Reported via CAN bus to system controller.
MECHANICS	
Mounting	Plug-in installation
Dimensions (H x W x D)	9.8 x 3.4 x 10.9 (inches) / 226 x 86 x 277 (mm)
Weight	6 lbs each (2.7 kg)
Safety Compliance	60950 (EN, IEC, UL for USA & Canada); CE marked, EN300 386:2001 class B, FCC part 15 class B

## Ordering Information

MODEL NUMBER	DESCRIPTION
564305	Primary V15 retrofit module with NCU controller
563854	Expansion V15 retrofit module
1R481000E3*	High-efficiency eSure™ rectifier, -48V, 1000 watt

\* Rectifiers are ordered separately.

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