

## Features

- 91% efficiency including series output diode
- High power density 7.8W/in<sup>3</sup>, 475mW/cm<sup>3</sup>
- Variable speed fan cooling, dependent upon load and temperature
- Hot-pluggable power factor corrected rectifiers
- Field replaceable dust filter option
- Comprehensive flexible alarm signals package
- Compatible with APC microprocessor control systems
- 54V and 27V versions available
- -40°C to 65°C operation

## Typical Applications

- PSTN, central office
- Network datacom
- Distributed power systems
- N+1 redundant power systems
- Mobile base stations
- PABX

## Industry Approvals

- Safety to EN60950, UL 1950 and CSA 22.2

## Warranty

The MS28C is under warranty against faulty manufacture and faulty components for a period of two years from the date of delivery. Please refer to conditions of sale for full details.

We reserve the right to amend specifications without prior notification.

# DC Series MS28C

Modular, rack mountable DC power shelf for low power wireless/cellular customer premises, and distributed network applications



The modular DC Series MS28C is a flexible power subsystem ideally suited for a broad range of telecom and industrial applications.

Utilizing the MRF2800 Series of fan cooled rectifiers, the DC Series MS28C is easily configured for single phase, three phase or dual redundant feeds.

Features of the DC Series MS28C include a 3U high 19" chassis that accommodates up to three MRF2800 rectifiers, providing up to 150A of current for 54V systems or 300A for 27V systems.

Hot-pluggable, the MRF2800 Series delivers up to 2800W of output power in a 65°C ambient temperature. Input current harmonic distortion is minimized by the rectifier's active input power correction.

APC's MRF2800 Series rectifiers offer the latest in high power density technology for critical fault-tolerant applications. A wide range of MRF2800 compatible systems and accessories are available from APC, providing for complete DC power solutions.

**APC**  
Legendary Reliability™

# Specifications MS28CT

This section refers to the complete system.  
For individual rectifier details see page 3.

## MS28CT Series Input Specifications

Input Specifications	The input is user configurable to suit single phase, 3ø 4 wire (Wye), 3ø 3 wire (Delta), and dual redundant feeds	Minimum	Typical	Maximum
Single Phase	AC 50/60Hz	176Vac		264Vac

## Output Voltage Specifications

Output Voltage Specifications	Minimum	Typical	Maximum
Output voltage 54.5V (factory preset)	46.0V	54.5V	58.0V
Output voltage 27.25V (factory preset)	23.9V	27.25V	29V
Single preset accessible through rear of shelf can adjust the output voltage of all rectifiers simultaneously over the specified range. Alternatively the voltage trim port can be used to allow an external module to adjust the system voltage.			

## Output Current Specifications

Output Current Specifications	Minimum	Typical	Maximum
Max 3 rectifiers, 50A per rectifier 54V			150A
Max 3 rectifiers, 100A per rectifier 27V			300A

## Output Noise

Output Noise	Minimum	Typical	Maximum
Broadband	10Hz to 100MHz		
Psophometric	Weighted to C.C.I.T.T. No 1 C message weighted		32dBrc 2mV rms
Acoustic	At 1m		50dBA

## System Options

System Options	
Cable entry/exit to left, right or rear	
MS28CT:	Fitted with terminal block for easy wiring
MS28CR:	Adapter to allow +ve and -ve output cables to both exit via one side

## Approvals & Safety Standards

Approvals & Safety Standards	
EN60950	CE marked to the low voltage directive
UL1950	CSA NRTL/C approved, file number LR5866
CS22.2 #950	CSA NRTL/C approved, file number LR5866

## Mechanical Specifications

Mechanical Specifications	
Size	Shelf: 19" fixing x 3U (h), 18.11in (460mm) (d)
Weight	Shelf: 21.5lb (9.75Kg) excluding rectifiers

# Rectifier Specifications (MRF2800)



Input Specifications			Minimum	Typical	Maximum
Input Voltage	Single phase TN-S (as defined by IEC364)	Operating Absolute maximum	176Vac	230Vac	264Vac 300Vac
Input Current	Maximum output power	230Vac input 176Vac input			13.9A 16.3A
Apparent Power Factor			98%	99%	
Efficiency	VIN=230Vac, POUT=2800W	54V	90%	91%	
	Includes integral series output diode	27V	88%	89%	

Output Voltage Specifications 54V			Minimum	Typical	Maximum
Output Voltage (factory preset)			54.4V	54.5V	54.6V
Output Current	<65°C ambient, VOUT = 54.5V, VIN >198Vac		50A		
Oversvoltage			59.0V	59.5V	59.9V
Output Voltage Specifications 27V			Minimum	Typical	Maximum
Output Voltage (factory preset)			27.2V	27.25V	27.3V
Output Current			100A		
Oversvoltage			31.0V	31.5V	32.0V

Output Noise			Minimum	Typical	Maximum
Broadband	Frequency range 10Hz – 100MHz Individual harmonics Complies with requirements of ETS300386-2-3 and BTR2511				15mV rms 2mV peak
Psophometric	Weighted to C.C.I.T.T. No. 1 C message weighted				0.7mV rms 29dBnC

Signals					
LED Indicator	Standard signals package includes: Post mate enable Auxiliary output Remote boost	Current share Output healthy Open collector	Voltage trim Overtemperature	Margin low Program down	Current monitor Remote on/off

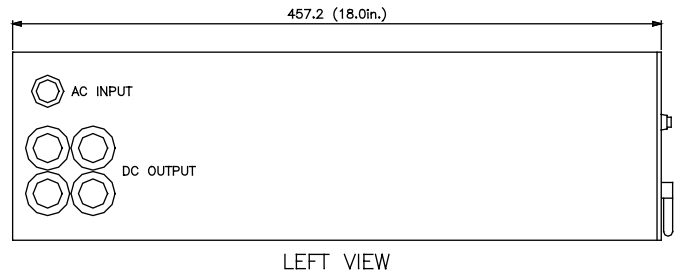
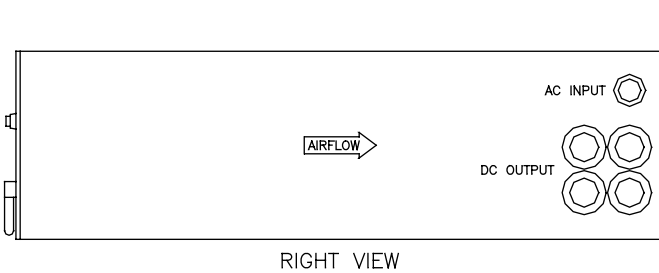
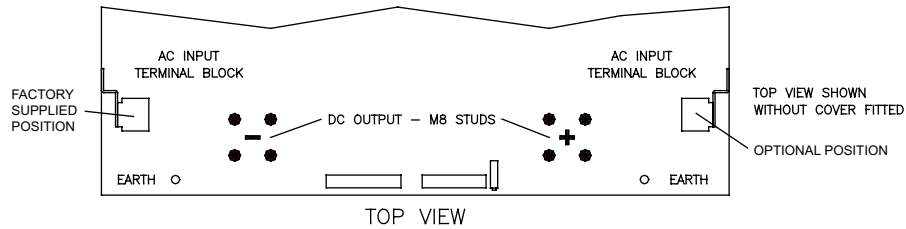
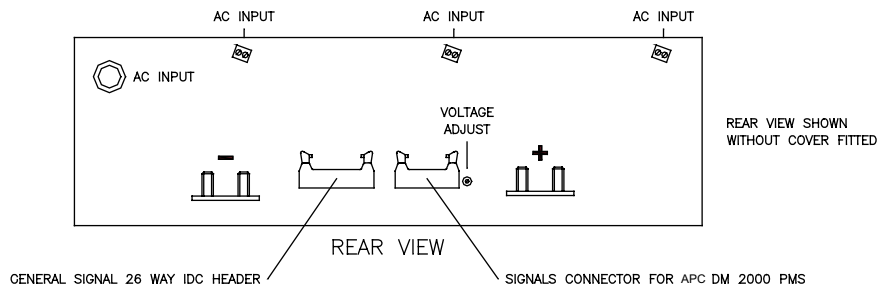
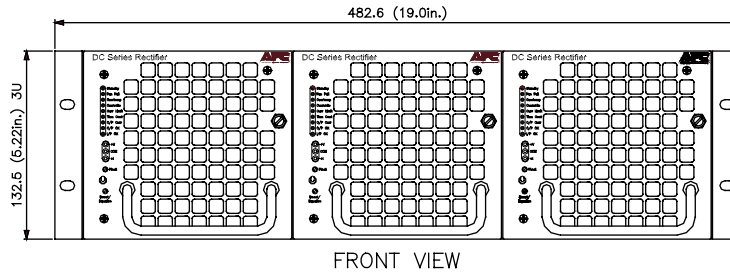
Mechanical Specifications	
Size	5.0 x 5.5 x 13.0 in (127.0 x 139.7 x 330.6mm)
Weight	11.0lb (5.0kg)
Cooling	Free air flow through the ventilation slots in the front and rear of the unit is required. Units are cooled by integral, customer replaceable fan. Typical full flow 100cfm.

Environmental Specifications			Minimum	Typical	Maximum
Temperature	Operational		-25°C		+65°C
	Starting		-40°C		+65°C

Approvals & Safety Standards	
EN60950	CE marked to the EC low voltage directive
UL1950	CSA NRTL/C approved, file number LR58666
C22.2 #950	CSA NRTL/C approved, file number LR58666
All versions are reliably SELV. For operation above 60V, a non-SELV version unit must be ordered. Contact APC for details.	

Electromagnetic Compatibility	
Emission	Compliant with EN50081-1(92) with compliance to the following specific conditions: Conducted input 0 – 2kHz EN61000-3-2 Radiated 0.03 – 1GHz EN55022-B at 10m Conducted input 0.15 – 30MHz EN55022-B Conducted output ETS300386-2-3
Immunity	Compliant with EN50082-1(92) with compliance to the following specific conditions: ESD – EN61000-4-2 failure criteria A. 4kV contact.RF Field – EN61000-4-3, 3Vm-1 80% amplitude modulation 0.08-1GHz Fast Transients – EN61000-4-4 failure criteria B. 1kV on ac line, 500V on dc lines Surge – EN61000-4-5. 2kV line to ground, 1kV line to line on ac input. 500V line to ground and line to line on dc output Conducted RF – EN61000-4-6, 3Vrms 80% amplitude modulation 0.15 – 80MHz

# Outline Drawing Model MS28CT



Ordering Information	
Part Number	Description
1MS28CT	3U 19" power shelf (terminal block option)
1MS28CPANEL	Blanking panel for unused rectifier positions
1MS28CR	Adapter to allow +ve and -ve output cables to both exit via one side
1MRF28H54BH	54V, 50A hot-plug 2800W rectifier with standard signals package
1MRF28H27BH	27V, 100A hot-plug 2800W rectifier with standard signals package

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