

Vertiv™ NetSure™ M Series

Thermal Management Capabilities



Benefits

- Provide an environment suitable for 5G and IT equipment
- Future-proof access sites to support higher 5G radio and IT edge heat loads up to 5200W
- Use climate solutions with lithium-ion batteries to lower total cost of ownership
- Control equipment humidity levels
- Maintain approved noise levels to EN 300 753, Class 4.1E standard
- Quietly protect your equipment from dust and water ingress with IP65 rated fan filter technology

The Vertiv™ NetSure™ M Series is a robust, affordable, and corrosion-resistant outdoor enclosure that uses innovative thermal management technology to protect valuable IT equipment, meet regulatory requirements and adjust to environmental changes.

Using an Innovative Fan Filter

Vertiv's fan filter solutions are the most energy-efficient thermal management option in the M Series portfolio. Designed to optimally support up to 5200W heat load at +50°C with a much lower ΔT than a heat exchanger. Fans pull air through the enclosure solution support your 5G and IT edge network electronics, the new fan filter to supply optimal air flow to your equipment and operate on -48VDC with full performance even during grid/ mains failure.

An M5 intake filter and hood ensure IP55 protection from dust and rain, while a G2 exhaust filter secures IP55 during frigid conditions when fans might not be in operation. Service providers that need a higher protection level can choose the IP65 solution with a HEPA 11 intake filter and G4 exhaust filter. Fan speed and temperature levels are optimally balanced by the fan control unit, to keep noise levels in line with ETSI EN 300 753 Class 4.1E standards for Urban, Rural, or Protected environments.



Combined Fan and Filter Hood Solution Saves Space for Larger Battery Backup Needs

Offering Intelligent Climate Control (ICC)

Vertiv's Intelligent Climate Control (ICC) unit with patent-pending humidity control functionality is placed on the inside of the enclosure door. This innovative solution maintains a controlled operating indoor humidity condition during variable outdoor conditions, in line with ETSI 300 019-1-3 (indoor) equipment at ETSI 300 019-1-4 (outdoor) standards. Humidity control can also be customized to address desired equipment humidity levels based on local outdoor environmental conditions.

Together, with Vertiv™ NetSure™ Control Unit (NCU), the ICC supports remote monitoring capabilities. The ICC provides data on operating fan hours, fan alarms and fan functionality tests when selected, as well as optional clogged filter alarms. Service teams can use remote functionality to plan routine and avoid emergency maintenance for the Radio Access Network (RAN).



ICC Board

Protecting Equipment with an Air Conditioner, HEX or TEC

In addition to fan filters, Vertiv™ NetSure™ M Series enclosures support air conditioners, heat exchangers (HEX) and thermo electric coolers (TECs).

Air conditioners are ideal for applications requiring battery backup, including lithium-ion batteries, to ensure internal temperatures remain low even when outdoor temperatures are high. Capacity ranges from 500W up to 2000W units using VAC, and up to 2800W at -48VDC power with continued operation during grid failure. The air conditioner unit operates up to +55°C with IP55 level protection and works with high efficiency fans and compressor. An LCD display is available for local control. Environmentally friendly refrigerant R134A is used, and all units are Restriction of Hazardous Substances Directive (ROHS)-compliant.

The heat exchanger (HEX) unit secures internal conditions at IP55 protection levels. No external air enters the telecommunications enclosure minimizing dust ingress or humid air, and heat transfer is managed at the heat exchanger core with heat pipe technology. The capacity range is from 65-150W/K.

A thermal electrical cooler (TEC) operating on -48VDC is available for small battery backup needs in M35 enclosures. The TEC supports up to two strings of -48VDC lead-acid batteries in the battery compartment.

A combined fan filter unit provides 1700W cooling capacity at -48VDC power together with air conditioner or TEC unit for battery compartment. The combined unit uses the fan filter to cool equipment in the top compartment during normal environmental conditions. The air conditioner keeps batteries cool during high external temperatures. The fan filter functionality consumes less energy and will continue to operate when the grid is off to maximize availability for the telecom equipment.



Air Conditioner



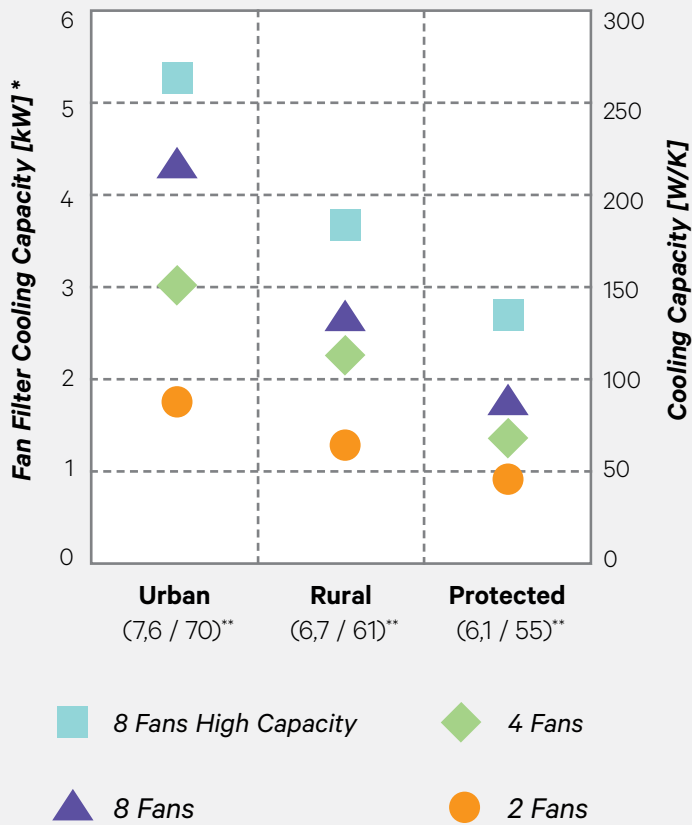
Heat Exchanger



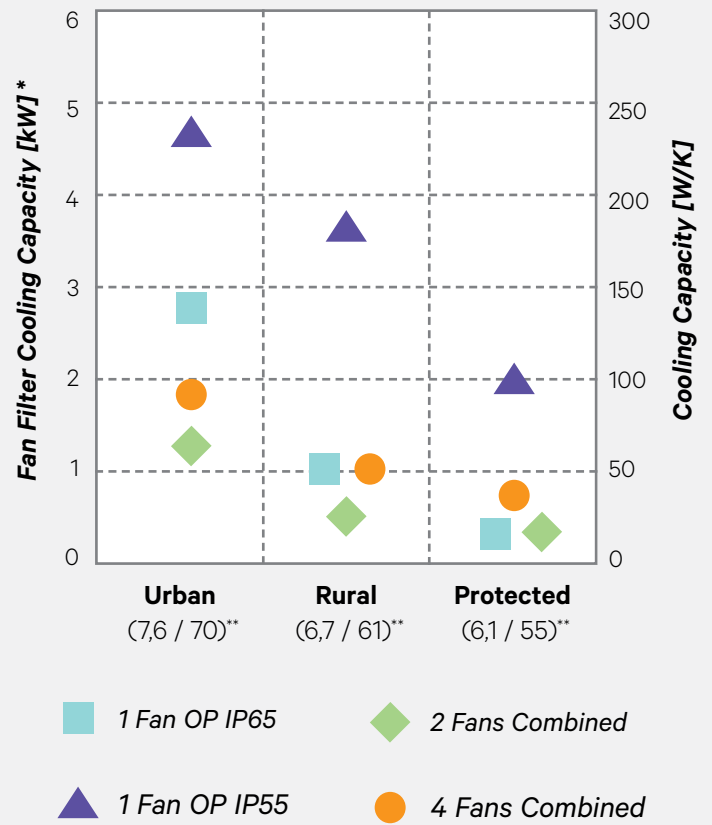
Combined Fan Filter Solution

Fan Filter Cooling Capacities

Under-Pressure Standard Solution



Overpressure IP55/65 and Combined Solution



NOTES

* Cooling capacity @ overall $\Delta T = 20K$ (T_{exhaust} - T_{ambient}) in kilowatts

** Noise power [bels] / noise pressure dB(A) 1m per ETSI EN 300 753 Class 4.1E standard

Fan Filter Accessories

Heater VAC [W]

250 / 800

Clogged filter alarm (fan filter)

Alarm level indicating 50% clogged filter

Technical Specifications

	M20	M35	M44
DC Air Conditioner			
Capacity [W] (L35/L35) * Operating up to +55°C	520 (500*) / 600 / 1250 / 2000 / 2800		
Noise pressure dB(A) (1m)	60 / 60 / 65 / 65		
AC Air Conditioner			
Capacity [W] (L35/L35) * Operating up to +55°C	520 (400*) / 1100 (800*) / 2000 (1000*)		
Noise pressure dB(A) (1m)	50 / 65 / 65		
Heat Exchanger (HEX)			
Capacity [W/K]	65 / 105 / 120 / 150		
Noise pressure dB(A) (1m)	65 / 70 / 72 / 65		
Combined Air Conditioner with Fan Filter Solution			
Capacity [W]	-	2000	-
Noise pressure dB(A) (2m)	-	60	-
Thermal Electric Cooler (TEC)			
Capacity [W]	-	200	-
Noise pressure dB(A) (1m)	-	61	-
Environmental			
Certificate	CE		
Protection	IEC 60529 IP55, IP65 (fan filter only)		
Electrical & Safety	EN 62368-1, EN 60950-22		
Operational (fan filter option only)	ETSI EN 300 019-1-3, Class 3.1		
Operational (extended up to +50°C)	ETSI EN 300 019-1-4, Class 4.1 / 4.1E		
Transport	ETSI EN 300 019-1-2		
Storage	ETSI EN 300 019-1-1		
Vibration	ETSI EN 300 019-1-4, 4M5		
Noise	ETSI EN 300 753, Class 4.1E		
Seismic	Zone 2		
Impact	Impact IK 10 (EN 50102)		
EMC	ETSI EN 300386, Class B (TEC), Class A (air conditioner and HEX)		

* Figures in parentheses () represent integrated heater capacity in watts