



iPAMM TECHNICAL DATASHEET



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1.0 Introduction

The Intelligent Plenum Air Management Module (iPAMM) is a 19" equipment cabinet with enhanced cooling features. The iPAMM was designed with maximum cooling and efficiency in mind. It provides exceptional cold air containment which eliminates hot and cold air mixing within the cabinet. This means the iPAMM provides more efficient cooling and improves overall cooling performance. By enhancing the cooling performance of the cabinet the iPAMM can create significant savings in operational expenditures of the cooling system.

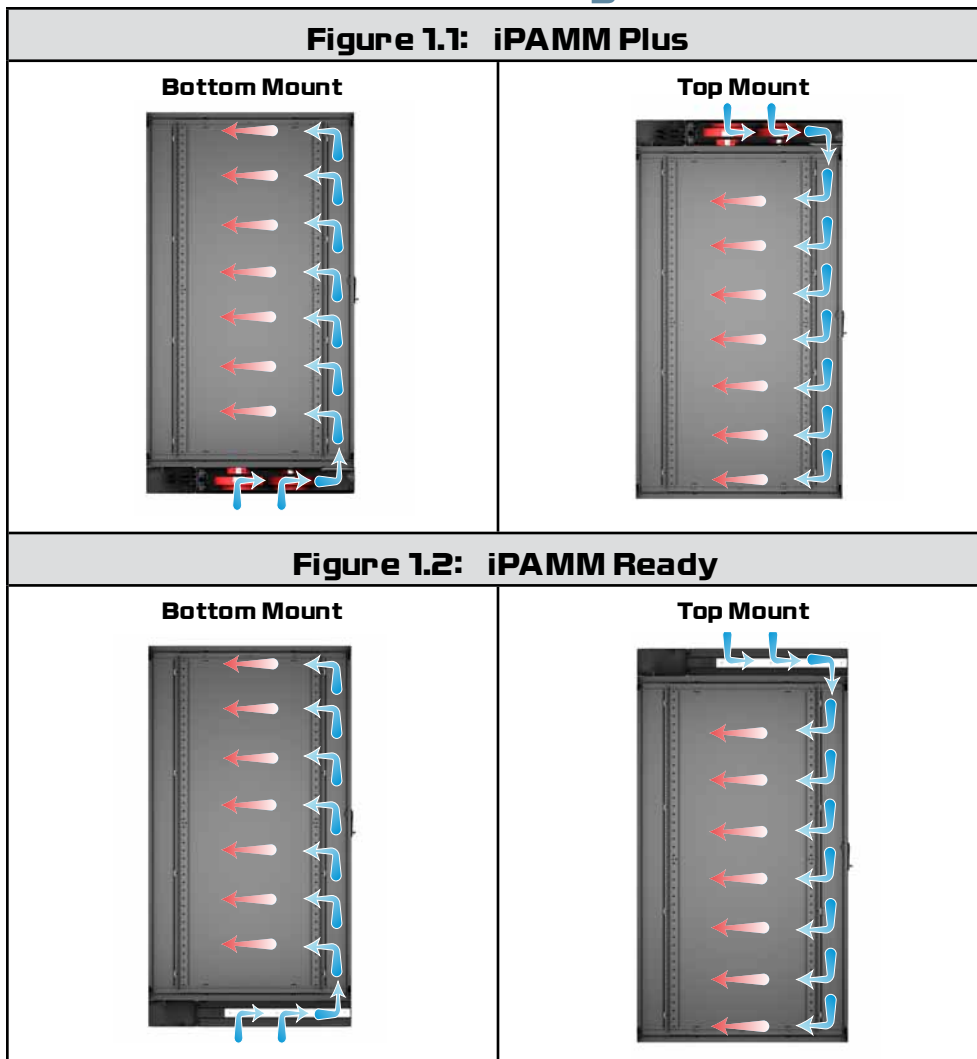
The iPAMM plus provides additional cooling via the 'cassette' that is fitted (iPAMM Plus)/inserted (iPAMM Ready) into the plenum. The iPAMM Plus has two thermostatically-controlled variable speed fans which draw cold air directly into the plenum and straight into the front of the rack.

1.1 iPAMM Models

This document covers the technical data and capabilities of the iPAMM in its four available configurations for both 600 and 800 wide.

The iPAMM comes in either a bottom mount or top mount configuration. The bottom mount is suited to server rooms which have under floor cooling. The top mount is suited to server rooms which have overhead cooling. The whole room can be cooled or cool air can be ducted directly into the top of the iPAMM. iPAMM is also available in an iPAMM Ready and iPAMM Plus configuration. The iPAMM Plus includes a fan cassette to force air into the front plenum of the rack while the iPAMM Ready relies on existing air handling infrastructure to supply air to the front plenum. A summary of the four main variants of the iPAMM and the air flow characteristics are shown in Figure 1.1 and figure 1.2.

Air Flow Diagrams



1.2 iPAMM Plus

The iPAMM Plus includes a plinth, sealed plenum, fan controller and cassette which contains two variable speed fans which increase the cooling capacity of the cabinet. In the bottom mount configuration, when installed in a server room with under floor cooling, a tile can be removed allowing the bottom mount iPAMM Plus access to draw the cool air directly into the plenum at the front of the cabinet. The cool air is then drawn through the cabinet (Fig 1.1) maximising heat dissipation within the cabinet.

The iPAMM Plus in top mount configuration with ducted cooling operates in a similar manner to the bottom mount configuration described (F 1.1). The iPAMM Plus offers significant increased cooling capacity compared to a standard (non-iPAMM) cabinet. The plinth, controller docking station and cassette are not installed when shipped. The cassette includes a digital display showing the temperature within the cabinet and error codes. The iPAMM Plus is designed with N + 1 redundancy. The maximum and minimum temperature settings can be configured.

1.3 iPAMM Ready

The iPAMM Ready is very similar to the iPAMM Plus except that it doesn't include a fan cassette. The iPAMM Ready comes in either a top mount or bottom mount configuration. It is therefore important to have a pressurised air source to supply air to the rack. For a bottom mount iPAMM Ready, a raised floor configuration with perimeter cooling (Fig 1.2) would be an ideal solution. For a top mount iPAMM Ready, a ducted air supply would be required (Fig 1.2).

The iPAMM Ready can be upgraded to an iPAMM Plus simply by installing a fan cassette.

1.4 iPAMM RMS Capabilities

The iPAMM Plus is capable of being fitted at the time of manufacture or post manufacture with the Remote Monitoring System (RMS). The RMS allows the remote monitoring of the rack temperature and it allows the fan speed and fan duty cycle to be monitored. The maximum and minimum temperature settings can also be adjusted using the RMS.

Table 1.1: Data Available from RMS

Method	Description	Quantity
SNMP Get	Exhaust Temperature	2
SNMP Get	Inlet Temperature	1
SNMP Get	Fan Speed	2
SNMP Get	Fan Utilisation Percentage	2
SNMP Get	Door Status	1
SNMP Trap	Door Open / Close	1
SNMP Trap	Exhaust Over Temperature	1
SNMP Trap	Inlet Over Temperature	2
SNMP Trap	Temperature Sensor Failure	2
SNMP Trap	Fan Failure	2
SNMP Trap	Controller Failure	2

Detailed information on SNMP OIDs and number formats can be found in the RMS User Guide.

1.5 iPAMM Physical Characteristics

Figure 1.3: Bottom mount iPAMM dimensions

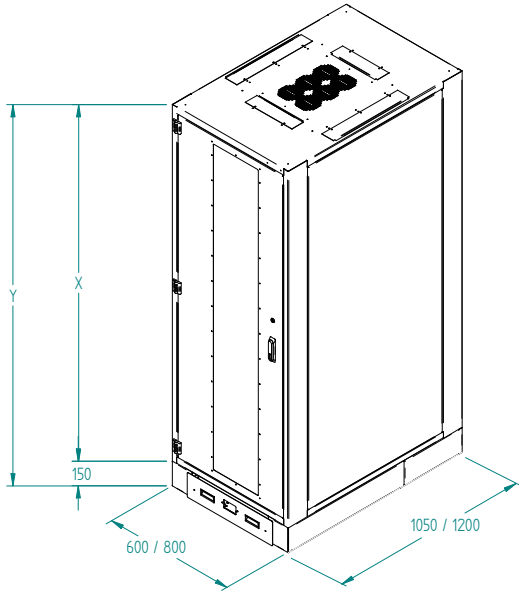


Figure 1.4: Top mount iPAMM dimensions

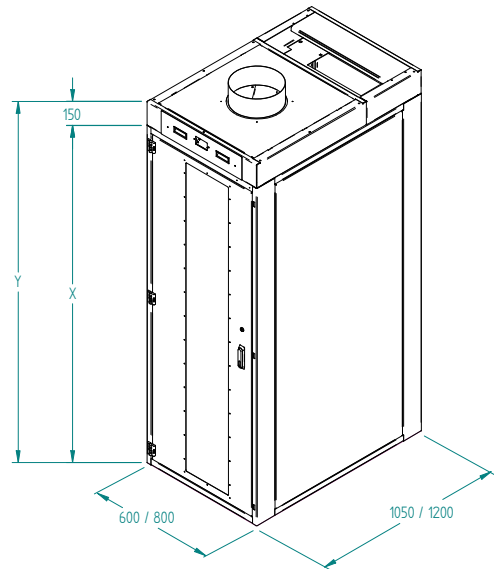


Table 1.2: Available rack dimensions

	Rack Units	X Rack Height (mm) including levelling feet for top mount	Y Rack + iPAMM Plinth Height (mm)
Top Mount	39U	1875	2025
	42U	2010	2160
	45Y	2140	2290
	48U	2275	2425
Bottom Mount	39U	1856	2006
	42U	1991	2141
	45Y	2121	2271
	48U	2256	2406

1.5.1 Cable Entry Requirements

Figure 1.5: Detail of cable access through the top of the rack for a Bottom mount iPAMM.

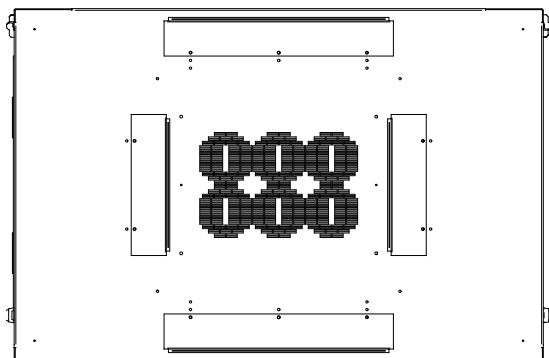
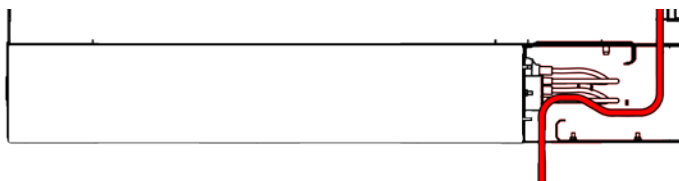


Figure 1.6: Cable baffling through the iPAMM plinth. (Red represents cables passing through)



1.5.2 Under Floor Installation Requirements

Figure 1.7: 800 Wide

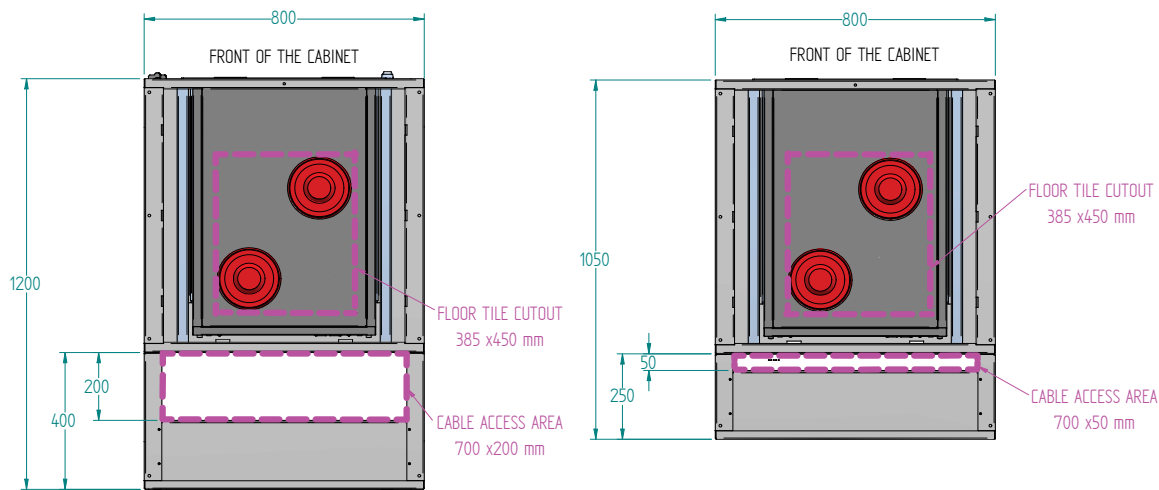
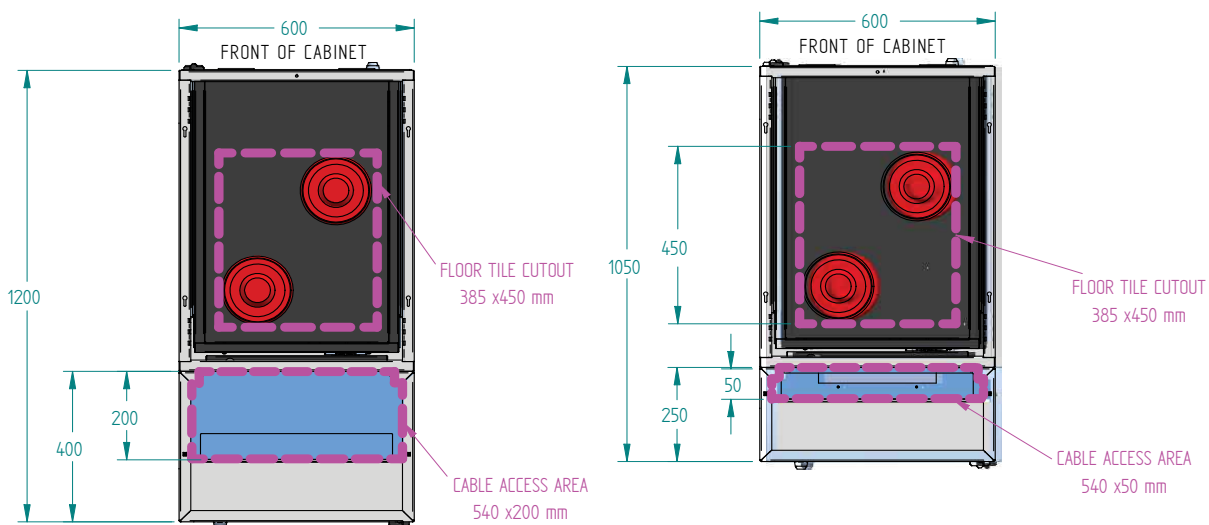


Figure 1.8: 600 Wide



1.5.3 Overhead Ducting Installation Requirements

Figure 1.9: 800 Wide

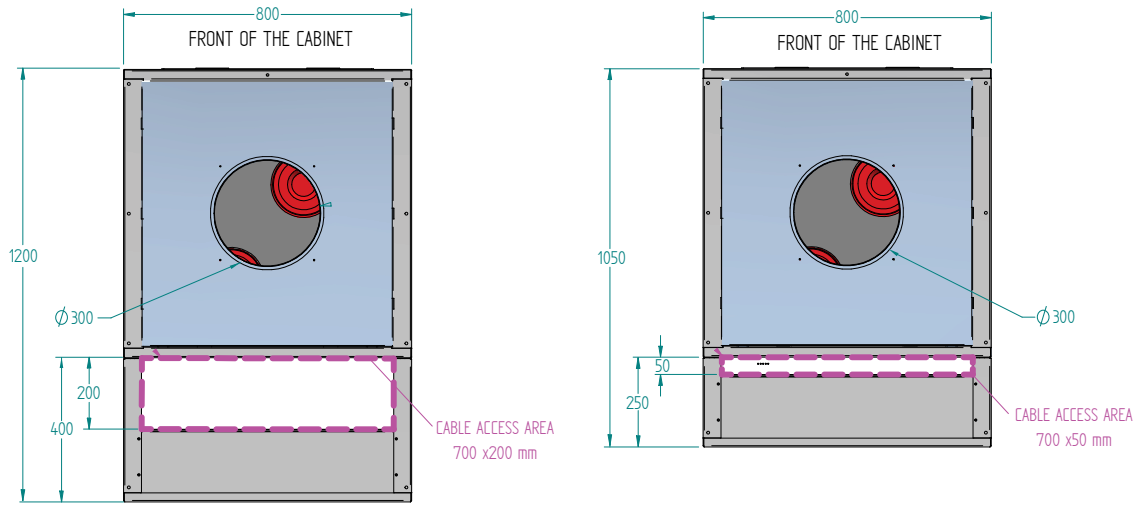
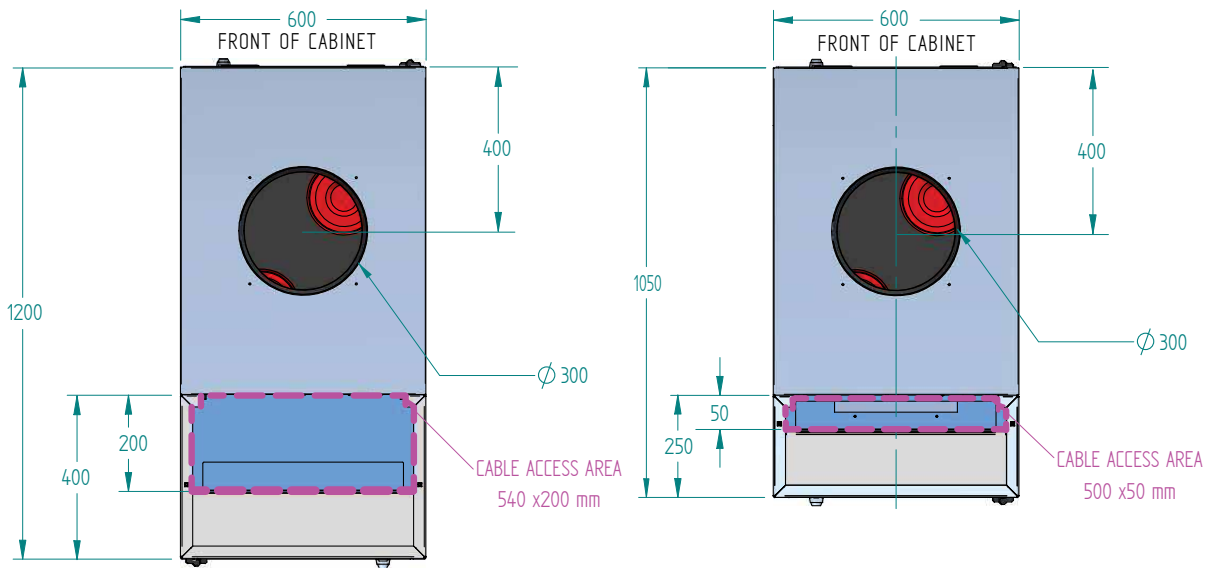


Figure 1.10: 600 Wide



1.6 Technical Characteristics

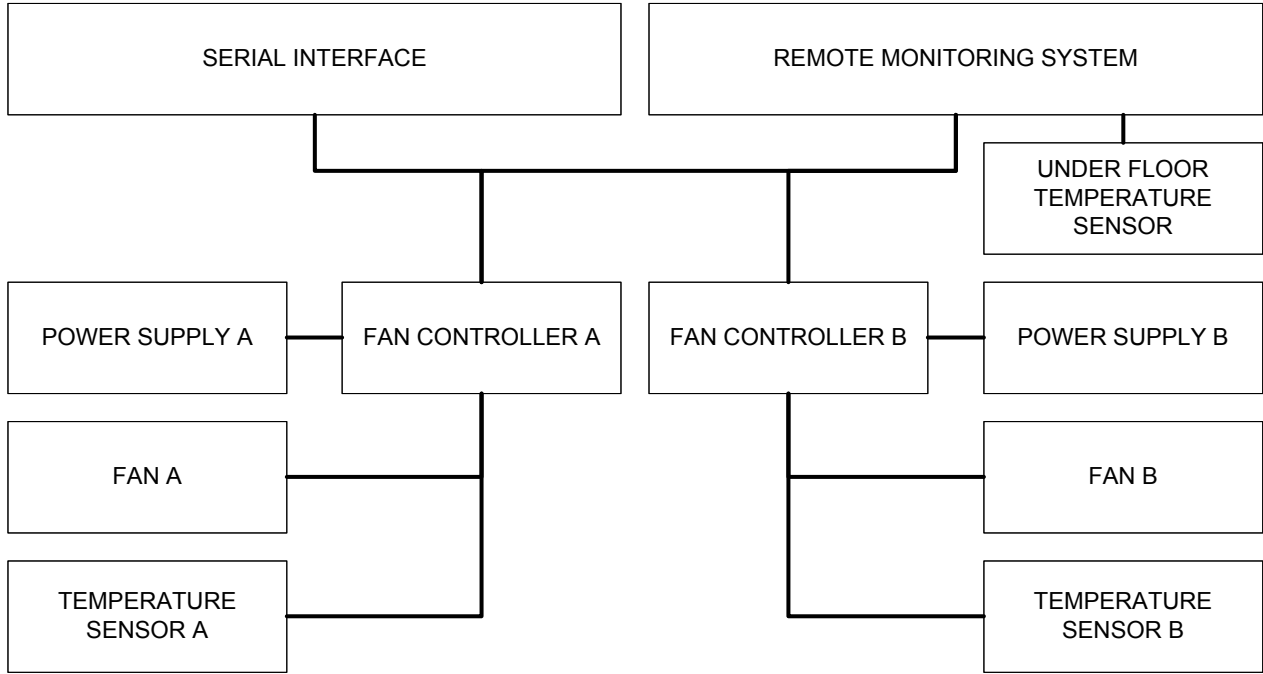
Table 1.3:

Electrical Characteristics	Nom Max Apparent Power	620 VA
	Nominal Voltage	230 VAC
	Nominal Maximum Current	2.7 A
Available Plug Types		IEC C14
		Australian 3-Pin Plug
Airflow	Volumetric Airflow	500l/s
Serial Console	Baud Rate	57600 bps
	Data Bits	8
	Parity Bits	N
	Stop Bits	1
RMS Interfaces	Ethernet	10baseT
	IP Version	IPv4
	SNMP Version	v1
	NMS Compatibility	APS ISX IBM Tivoli HP OpenView Groudworks Open Source Zenoss NetSNMP Environet
Fan Information	MTBF	55000 hrs
	Nom. Max RPM	2760rpm

1.7 iPAMM System Architecture

The iPAMM has an N + 1 redundant system architecture as seen in figure 1.10 where each fan, fan controller and temperature sensor can operate independently of the other.

Figure 1.11: : iPAMM System



1.8 kW versus Delta T

Figure 1.12z: Theoretical Cooling Potential

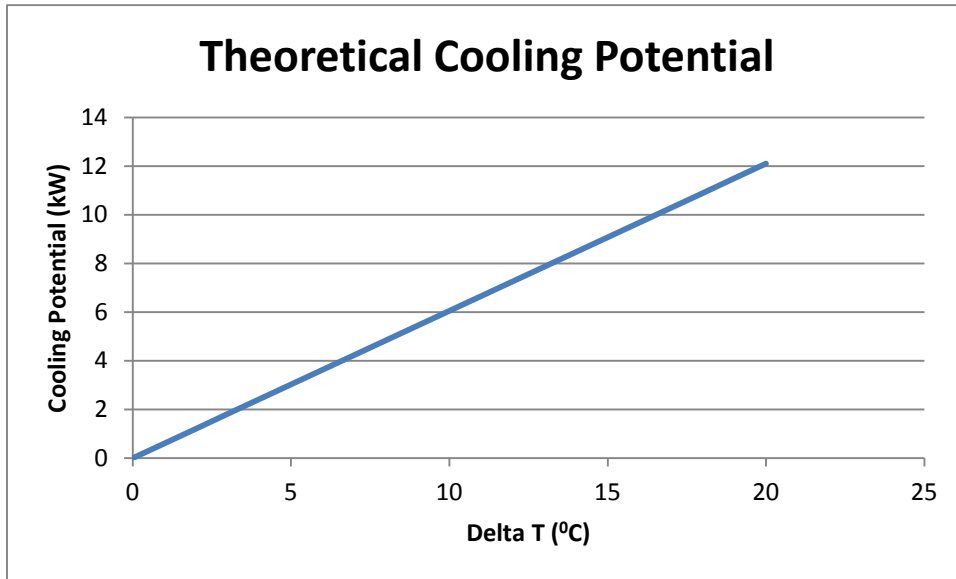


Table 1.4: kW versus Delta T figures

Delta T C°	Air flow m ³ /s	Heat Dissipation
0	0.5	0
1	0.5	0.605
2	0.5	1.21
3	0.5	1.815
4	0.5	2.42
5	0.5	3.025
6	0.5	3.63
7	0.5	4.235
8	0.5	4.84
9	0.5	5.445
10	0.5	6.05
11	0.5	6.655
12	0.5	7.26
13	0.5	7.865
14	0.5	8.47
15	0.5	9.075
16	0.5	9.68
17	0.5	10.285
18	0.5	10.89
19	0.5	11.495
20	0.5	12.1

1.9 Spare Parts List

Table 4: Available Parts

Part Number	Description
800-251607	Base Mount iPAMM Fan Cassette
800-251606	Top Mount iPAMM Fan Cassette
800-251674	Docking Station with Fan Controller and RMS (IEC)
800-251675	Docking Station with Fan Controller and RMS (AU)
800-251601	Fan Filter
800-251599	iPAMM Ready Front Cover

1.10 iPAMM Accessories

Table 5: Available Cable Management and Accessories

800-80720	Blanking Panels
800-80194	Brush Strip Blanking Panel
800-252195	600w vertical cable management
	800w vertical cable management
	10 Way PDU
	20 Way PDU
	PDU Trays
PPP-RCM-2	RCM
	Cable Trays
800-252054	Fixed Shelves
800-252055	Sliding Shelves

1.11 SCEC Compliance

The iPAMM is available in class B and class C SCEC (Security Construction and Equipment Committee) Endorsed models. Installation must be made in accordance with the SCEC requirements for the iPAMM to maintain its SCEC classification.

iPAMM Documentation Guide

Document Number	Description
1	iPAMM Technical Datasheet (this document)
2	iPAMM Specification Guide
3	Top Mount Installation Manual
4	Bottom Mount Installation Manual
5	iPAMM Controller Configuration
6	iPAMM User Manual
7	iPAMM Maintenance
8	Firmware Update Guide



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