

# TECHNICAL DATA MATRIXCUBE



TURNKEY, COST-EFFICIENT, PROFESSIONAL  
IT INFRASTRUCTURE FOR SERVER ROOM  
APPLICATIONS

# TURNKEY, COST-EFFICIENT, professional IT infrastructure for server room applications

**A reliable IT environment is an increasingly important and critical part of a company, essential for continued operation and successful business. In order to help companies create that reliable IT environment, Minkels and Legrand have developed the MatrixCube. A simple, turnkey, cost-efficient solution for small and medium-sized companies. The MatrixCube will relieve IT managers of their IT infrastructure concerns.**

Minkels and Legrand have combined power distribution, cooling, housing and mechanical infrastructure to create an all-in-one solution. This makes the MatrixCube a complete and compact server

room. The MatrixCube does not depend on the room where it is located and can be implemented in almost any room in a company. No drastic alterations are needed to the building. Your exact needs are determined through consultation, after which the MatrixCube is assembled into the solution that meets your needs.

## **How does it work?**

The MatrixCube has been developed with simplicity, reliability and efficiency in mind. The solution is so easy that you can order the basic configuration with just one item number. Of course, there are a number of options and accessories available to expand the basic configuration. In all cases, simplicity of configuration and ordering come first.

## **ADVANTAGES**

- Reliable and cost-efficient server room solution
- Building independent, thus easy to deploy.
- Energy-efficient housing for your IT infrastructure.
- Use of proven technologies.
- Turnkey solution, including installation and putting into operation.
- Customer-specific modifications are possible

## MatrixCube: basic configuration & expansion modules

### Basic configuration - front view



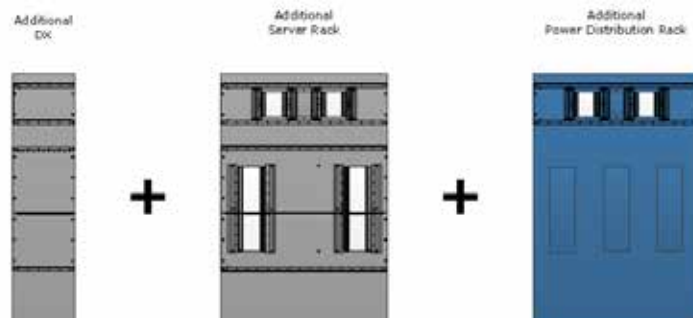
### Expansion modules - front view



### Basic configuration - top view



### Expansion modules - top view



## MatrixCube: basic configuration & expansion modules

### Basic configuration

MatrixCube - basic configuration	<b>MXC1600**</b>	<b>MXC3200**</b>
	<b>MatrixCube 16 Ampere – basic configuration</b>	<b>MatrixCube 32 Ampere – basic configuration</b>
Power distribution rack	1	1
Server rack	2	2
VariCondition-DX cooler	1	1
Width in mm	2700	2700
Depth in mm	1200	1200
Height in mm	2350	2350
Overall weight in kg <sup>1</sup>	± 770	± 770
Colour	RAL 9011	RAL 9011
Certification	CE	CE
Use & Conditions	Only for interior use. Ambient conditions: 10 - 40°C Min 6,5°C DP, max 60% RH/ 15°C DP	Only for interior use. Ambient conditions: 10 - 40°C Min 6,5°C DP, max 60% RH/ 15°C DP

1) The weight is based on the basic set-up with two UPS systems and one battery per UPS in the power distribution rack.

\*\* in the item number is replaced by the country code (e.g. NL, CH, BE, FR)

### Expansion modules / options

Server rack	
Server rack 16A (+ UPS)	MXC1610**
Server rack 32A (+ UPS)	MXC3210**

Power distribution rack	
Power distribution rack 16A (without monitoring)	MXC1620**
Power distribution rack 32A (without monitoring)	MXC3220**

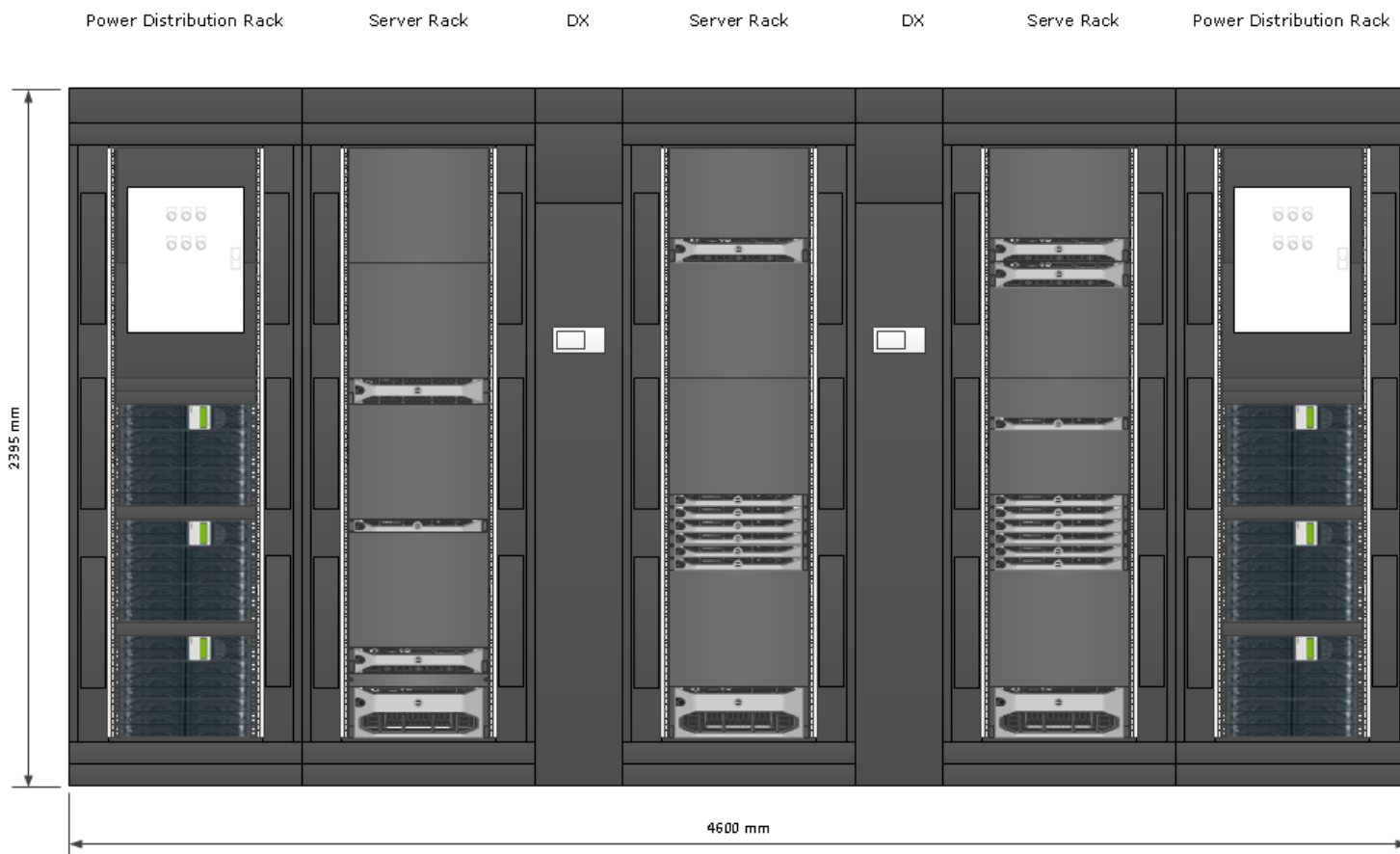
DX	
VariCondition-DX 11kW	MXC1001**
VariCondition-DX 22kW	MXC1002**
VariCondition-DX 11 kW end-of-row incl. side panel	MXC1003
VariCondition-DX 22 kW end-of-row incl. side panel	MXC1004

UPS	
Extended UPS set	MXC2001
Extended UPS Autonomy - Battery Tray (per UPS)	MXC2002

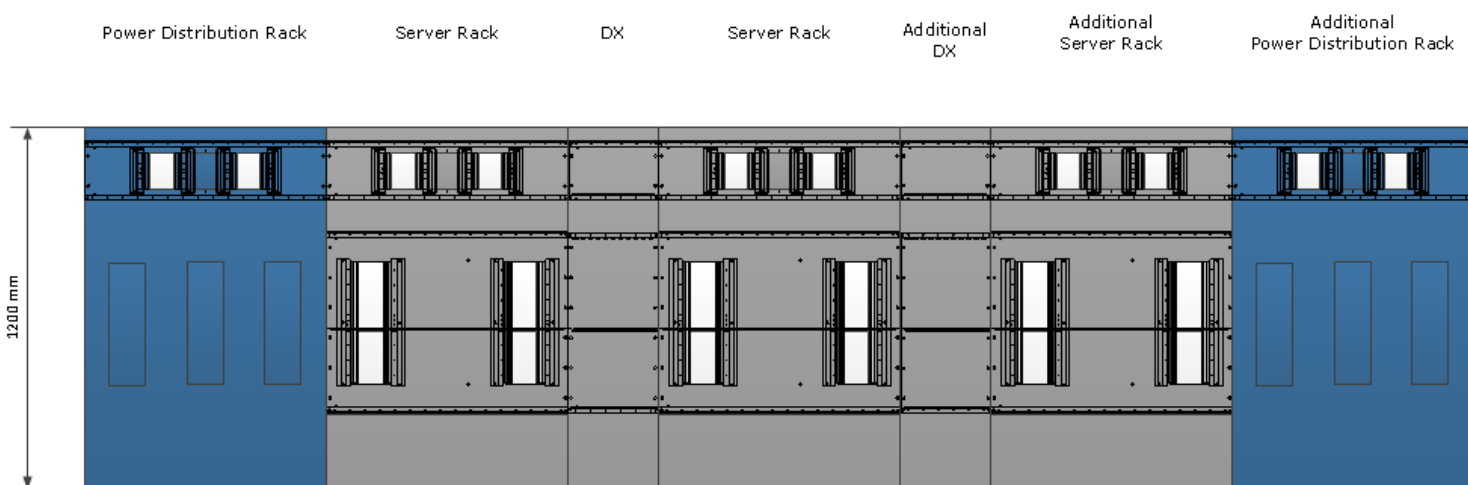
\*\* in the item number is replaced by the country code (e.g. NL, CH, BE, FR)

## MatrixCube: maximum configuration

### Maximum configuration - front view

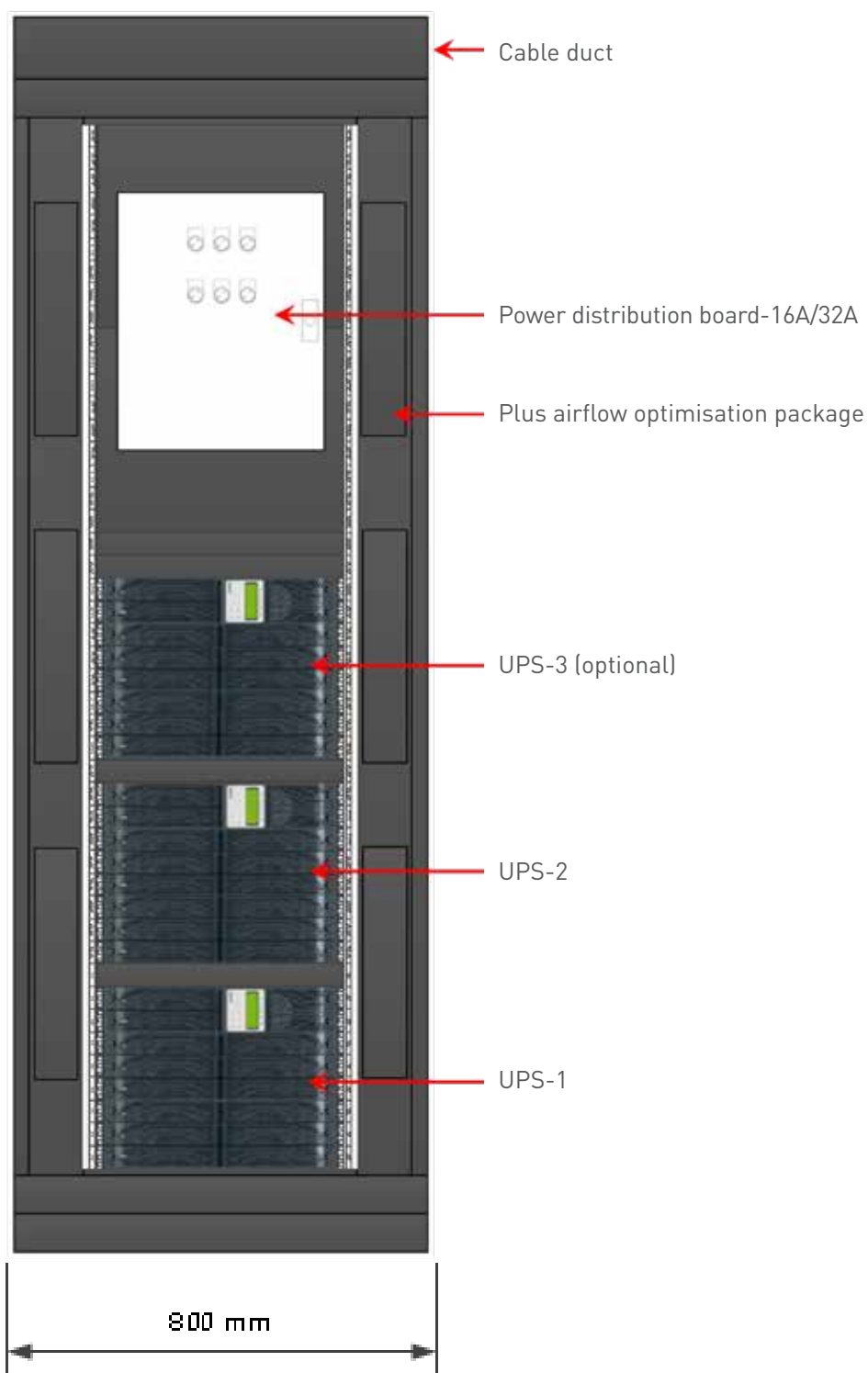


### Maximum configuration - top view



## MatrixCube: Power distribution rack

### Power distribution rack, 16A / 32A - front view



## MatrixCube: Power distribution rack

Power distribution rack		MatrixCube 16A	MatrixCube 32A
Dimensions (w x d x h)	mm	800 x 1200 x 2275 <sup>1</sup>	800 x 1200 x 2275 <sup>1</sup>
Weight (including the 'Basic Setup' with two UPS systems)	kg	± 350	± 350
Colour		RAL 9011	RAL 9011
Doors		Clear-glass doors at the front and the rear, open on the right. With Fix Easy handle	Clear-glass doors at the front and the rear, open on the right. With Fix Easy handle
Air flow optimisation		'Plus' package (metal, foam and foil)	'Plus' package (metal, foam and foil)
Cable management		Inside: 2x CF30-300 Cablofil 300 mm On top of the rack: 200 mm cable tray	Inside: 2x CF30-300 Cablofil 300 mm On top of the rack: 200 mm cable tray
Monitoring		1x MRM0020LS VariControl-S Pro controller 1x 'Basic' 16-port switch Cisco SF110-16 2x magnetic door contact	1x MRM0020LS VariControl-S Pro controller 1x 'Basic' 16-port switch Cisco SF110-16 2x magnetic door contact
PDU		1 x MPS5004 Inlet C14, Outlets 8 x C13 (Connected to the adjacent server rack)	1 x MPS5004 Inlet C14, Outlets 8 x C13 (Connected to the adjacent server rack)
Protection index		IP2X	IP2X
Certification		IEC 297 / IEC 60297 IEC 529 / IEC 60529 CE RoHS 2	IEC 297 / IEC 60297 IEC 529 / IEC 60529 CE RoHS 2

<sup>1</sup> The height of the rack excludes the 120 mm high cable tray at the top of the rack.

Power distribution board		MatrixCube 16A	MatrixCube 32A
Board		Type Legrand Atlantic (Metal) Load separator 10kA MCB's Indication lights	Type Legrand Atlantic (Metal) Load separator 10kA MCB's Indication lights
Input Power		16A CEE-form connector (male) – 400V/3ph/50Hz	32A CEE-form connector (male) – 400V/3ph/50Hz
Output Power		Max. 3 x 2 feeds 16A – 230V/1ph/50Hz (A & B)	Max. 3 x 2 feeds 32A – 230V/1ph/50Hz (A & B)
UPS Support		Supports up to 3 x UPS sets Including Bypass switch for each UPS UPS hardwired to UPS feeds	Supports up to 3 x UPS sets Including Bypass switch for each UPS UPS hardwired to UPS feeds
Certifications		NEN- EN-IEC 60204 IEC 61439-1/2 NEN 1010:2007+C1:2008 CE RoHS 2	NEN- EN-IEC 60204 IEC 61439-1/2 NEN 1010:2007+C1:2008 CE RoHS 2

Power distribution panel		MatrixCube 16A	MatrixCube 32A
Panel For Output Power		3x 2 CEE – 16 A/1 ph outlet to be connected to the server rack power distribution units (PDUs)	3x 2 CEE – 16 A/1 ph outlet to be connected to the server rack power distribution units (PDUs)

## MatrixCube: Power distribution rack

UPS		MatrixCube 16A	MatrixCube 32A
UPS Type		2 x Legrand Daker DK 6kVA	2 x Legrand Daker DK 6kVA
Battery tray		1 per UPS	1 per UPS
Additional battery set (max)		1 per UPS	1 per UPS
UPS Weight	kg	± 22,5	± 22,5
Battery set Weight	kg	± 62,5	± 62,5
Total UPS weight – standard set	kg	± 85 (1 x UPS + 1 x Battery tray)	± 85 (1 x UPS + 1 x Battery tray)
Standard autonomy time		19	7
Extended autonomy time		47	20
Certifications		EN 62040-1 EN 62040-2 EN 62040-3 CE RoHS 2	EN 62040-1 EN 62040-2 EN 62040-3 CE RoHS 2





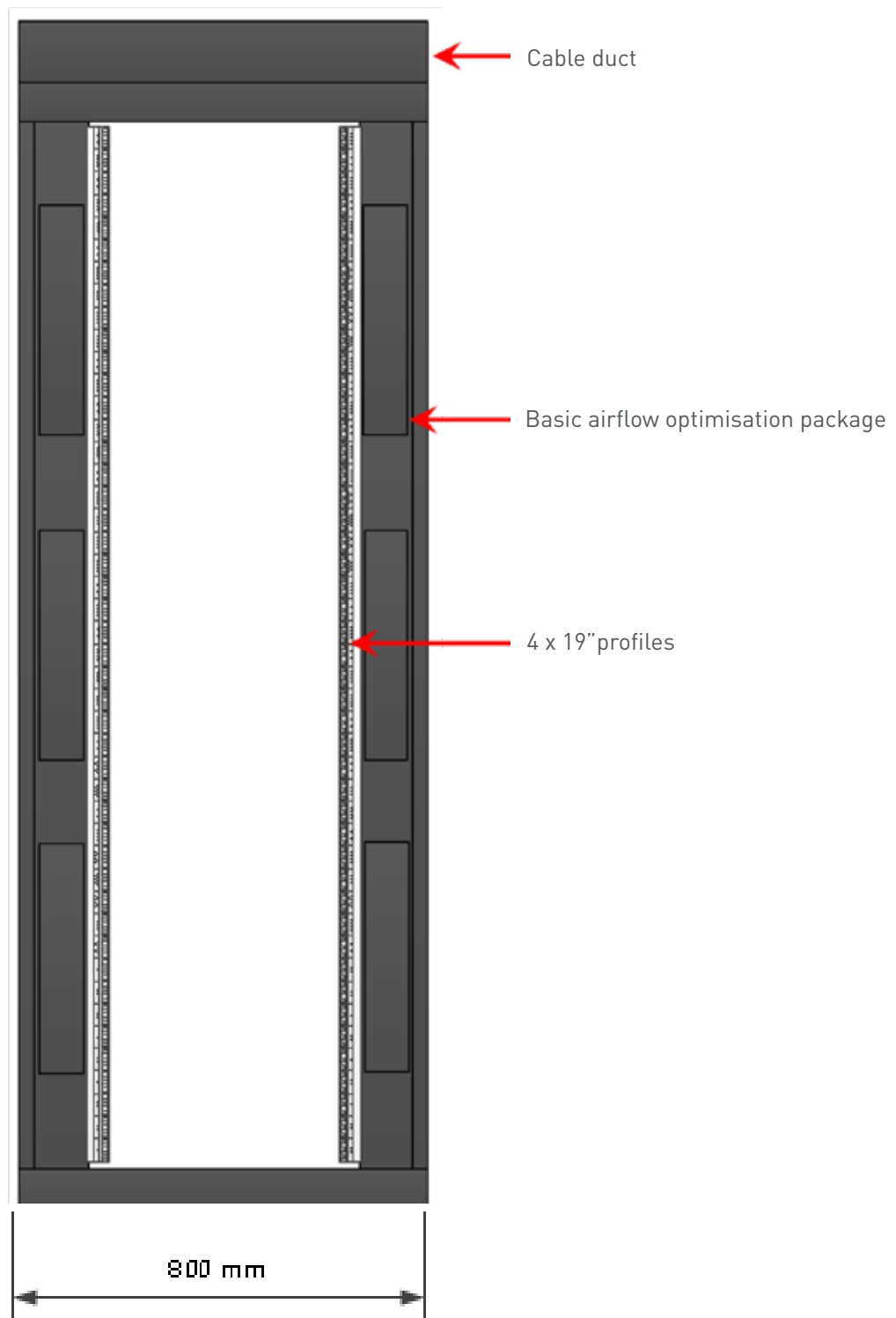
## MatrixCube: Power distribution rack

UPS details		
Nominal power	VA	6000
Active power	VA	5400
Technology		On-line double conversion VFI-SS-111
Waveform		Sinusoidal
UPS-architecture		19-inch rack
Operating temperature	°C	0 – 40°C
Protection index		IP21 (conform IEC60529)
Input characteristics		
Input voltage	V	230
Input frequency	Hz	50-60 ±5% autosensing
Input voltage range	V	160 - 288 Full load
THD of input current	%	< 3 (with linear load)
Input power factor		>0.99
Compatibility with gensets		Configurable for synchronism between the input and output frequencies, even for the highest frequency ranges, ± 14%
Output characteristics		
Output voltage	V	230 ±1%
Output frequency (nominal)	Hz	50/60 Hz (configurable via LCD panel) +/- 0.1%
Peak factor		1:3
THD of output power	%	< 3 (with linear load)
Output voltage tolerance	%	±1%
Bypass		Automatic bypass and External maintenance bypass (OPTIONAL)
Monitoring		SNMP



## MatrixCube: Server rack

### Server rack, 16A / 32A - front view



## MatrixCube: Server rack

Server rack		MatrixCube 16A	MatrixCube 32A
Available height	U	46	46
Dimensions (w x d x h)	mm	800 x 1200 x 2275 <sup>1</sup>	800 x 1200 x 2275 <sup>1</sup>
Total weight	kg	± 125	± 125
Total load capacity (static)	kg	1500	1500
Doors		Clear-glass doors at the front and the rear, open on the right. With Fix Easy handle	Clear-glass doors at the front and the rear, open on the right. With Fix Easy handle
Colour		RAL 9011	RAL 9011
Power Distribution		<p>1 x Raritan PXE1488T-A6 Monitored vertical Rack I-PDU 16A/ 1 Phase (Feed A). Outlets: 20 x C13 + 4 x C19. Color Housing: Black Dimensions: 52 x 43 x 1298 mm Power cable (2P/3W) with CEE plug, 5 meters. Top-Front feed.</p> <p>1 x Raritan PXE1488T-A6K1 Monitored vertical Rack I-PDU 16A/ 1 Phase (Feed B). Outlets: 20 x C13 + 4 x C19. Color Housing: Red Dimensions: 52 x 43 x 1298 mm Power cord (2P/3W) with CEE plug, 5 meter. Top-Front feed.</p>	<p>1 x Raritan PXE1493T-A6 Monitored vertical Rack I-PDU 32A/ 1 Phase (Feed A). Outlets: 20 x C13 + 4 x C19. Color Housing: Black Dimensions: 52 x 53 x 1539 mm Power cable (2P/3W) with CEE plug, 5 meters. Top-Front feed.</p> <p>1 x Raritan PXE1493T-A6K1 Monitored vertical Rack I-PDU 32A/ 1 Phase (Feed B). Outlets: 20 x C13 + 4 x C19. Color Housing: Red Dimensions: 52 x 53 x 1539 mm Power cord (2P/3W) with CEE plug, 5 meter. Top-Front feed.</p>
Maximum IT load per rack	kW	2,5	5
Interior		4 x 19-inch profiles Front distance: 200 mm, intermediate distance: 740 mm	4 x 19-inch profiles Front distance: 200 mm, intermediate distance: 740 mm
Air flow optimisation		'Basic' package (metal)	'Basic' package (metal)
Cable management		1x vertical cable trays internal (r), 1x 600 mm wide cable duct external (at the top) 1x 200 mm wide cable duct external (at the top)	1x vertical cable trays internal (r), 1x 600 mm wide cable duct external (at the top) 1x 200 mm wide cable duct external (at the top)
Monitoring		1x VariControl-S relative humidity and temperature sensor, installed at the rear 2x VariControl-S temperature sensors, installed at the front of the rack	1x VariControl-S relative humidity and temperature sensor, installed at the rear 2x VariControl-S temperature sensors, installed at the front of the rack
Certification		IEC 297 / IEC 60297 IEC 529 / IEC 60529 (IP waarde IP2X) CE RoHS 2	IEC 297 / IEC 60297 IEC 529 / IEC 60529 (IP waarde IP2X) CE RoHS 2

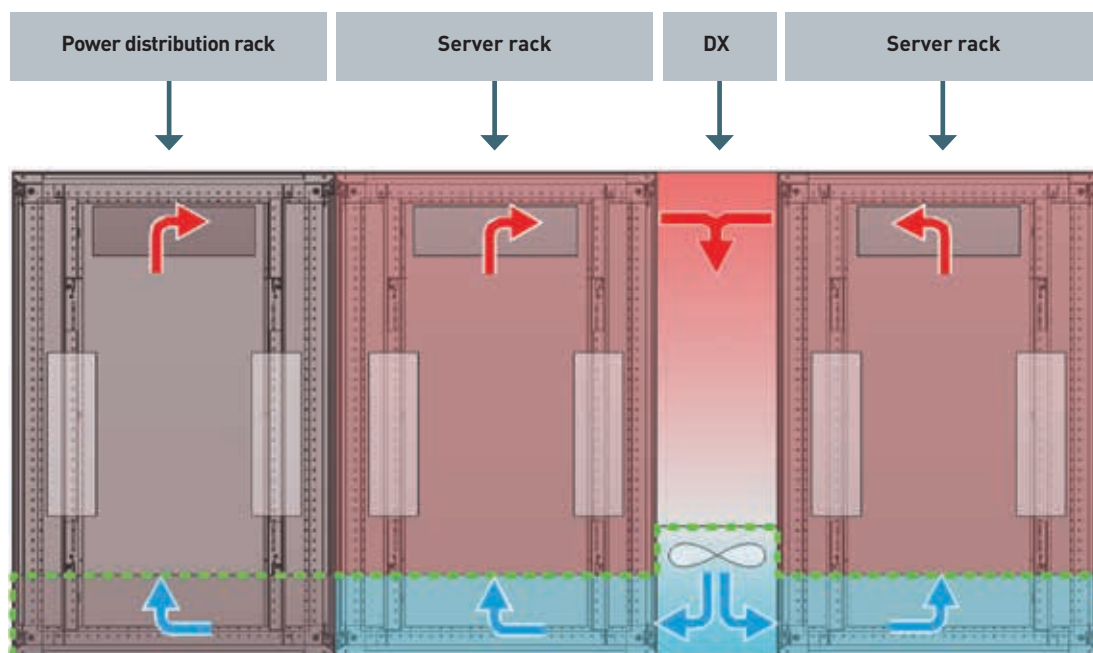
<sup>1</sup> The height of the rack excludes the 120 mm high cable tray at the top of the rack.

## MatrixCube: DX cooler

### DX cooler DX11 / DX22 unit - front view



### Closed loop arrangement - top view



## MatrixCube: DX cooler

VariCondition DX cooler DX11 / DX22 unit		Unit DX11	Unit DX22
Total cooling capacity <sup>1</sup>	kW	11	22
Net cooling capacity	kW	10,1	21,1
Capacity control		Stepless from approx. 30% to 100%	Stepless from approx. 30% to 100%
Air inlet temperature IT hardware <sup>2</sup>	°C	18-27	18-27
Max. permissible local humidity		13°C dew point (e.g., 35% at 30°C)	13°C dew point (e.g., 35% at 30°C)
Range outdoor temperature <sup>3</sup>		-15 until +43°C	-15 until +43°C
Refrigerant type		R410A	R410A
Monitoring			
Web / SNMP module		Yes	Yes
Water leak detection		Yes	Yes
Certifications		EN 61000:6-2:2006 EN 61000:6-3:2007 EN ISO 12100-1:2009 EN ISO 14121-1:2007 CE RoHS 2	

Specifications indoor unit		Unit DX11	Unit DX22
Number of fans	pcs	5	5
Max. airflow			
Open loop with air filter	m³/h	3800	3800
Closed loop	m³/h	4400	4400
Max. power consumption per fan			
AC fan	Watt	180	180
Max. current per fan			
AC fan	A	0,83	0,83
Electrical power supply indoor unit	V/ ph/ Hz	230/1/50-60, powered by outdoor unit	230/1/50-60, powered by outdoor unit
Power consumption	Watt	950	950
Filter class and quantity <sup>4</sup>		EU3, 3 pcs	EU3, 3 pcs
Dimensions indoor unit:			
Width	mm	300	300
Height	mm	2275 <sup>10</sup>	2275 <sup>10</sup>
Depth	mm	1200	1200
Weight indoor unit (empty)	kg	170	170
Noise level	dB (A)	71	71
Pipe connections indoor unit <sup>5</sup>			
Liquid pipe	Inch	½" SAE	½" SAE
Gas pipe	Inch	¾" SAE	¾" SAE
Condensation discharge <sup>6</sup>	mm	Ø16 (outer diameter)	Ø16 (outer diameter)
Certifications		CE RoHS 2	CE RoHS 2

## MatrixCube: DX cooler

Specifications outdoor unit		Unit DX11		Unit DX22
Dimensions outdoor unit:				
Width	mm	970		970
Height	mm	845		845
Depth	mm	370		370
Net weight outdoor unit	kg	74		122
Refrigerant content	kg	3,8		5,4
Refrigerant pre-charged to max. pipe length	m	30		30
Max. pipe length <sup>7</sup>	m	50		70
Max. height difference between outdoor and indoor unit <sup>8</sup>	m	30		30
Pipe connections outdoor unit <sup>9</sup>				
Liquid pipe	inch	3/8" SAE		3/8" SAE
Gas pipe	inch	5/8" SAE		7/8" SAE
Noise level	dB (A)	49		57
Power supply outdoor unit				
Current consumption	A	11,7	3,8	9,1
LRA / maximum current	A / A	5 / 24	5 / 15	5 / 19
Electrical feed outdoor unit	V/ph/Hz	230/1/50-60	400/3/50-60	400/3/50-60
Max. power consumption	kW	2,66	2,55	6,24
Certifications		EN378-2:2008+A1:2009+A2:2012 EN60335-1:2012 EN60335-2-40:2003+A11:2004+A12:2015+A1:2006+A2:2009+A13:2012 EN62233:2008 EN550014-1:2006+A1:2009+A2:2011 EN550014-2 :1997+A1:2001+A2:2008 EN55022:2010 EN61000-3-2:2006+A1:2009+A2:2009 EN61000-3-3:2008 EN61000-3-11:2000 EN61000-3-12:2011 EU No 206/2012 EN50581:2012 EN14825:2012 EU No327/2011 CE RoHS 2		

1 Under nominal conditions: Outdoor temp 35°C, Return air 35°C / 25% RH.

2 ASHRAE, 2012, Class A1 - A4.

3 Until outdoor temperature 35°C the maximum compressor speed is 100%. Between 35°C and 43°C this will be reduced.

See MHI-manual for information required.

4 Filters are optionally available for open-loop setups.

5 Both liquid and gas pipes insulated. Connection possible at either the top or bottom of the indoor unit. See instruction manual for further details.

6 Flexible plastic hose.

7 Pay attention to height differences between the indoor and outdoor unit. See MHI-manual for information required.

8 When outdoor unit above indoor unit.

9 Both liquid and gas pipes insulated. See instruction manual for information required.

10 The height of the rack excludes the 120 mm high cable tray at the top of the cooler.





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