MITSUBISHI ELECTRIC

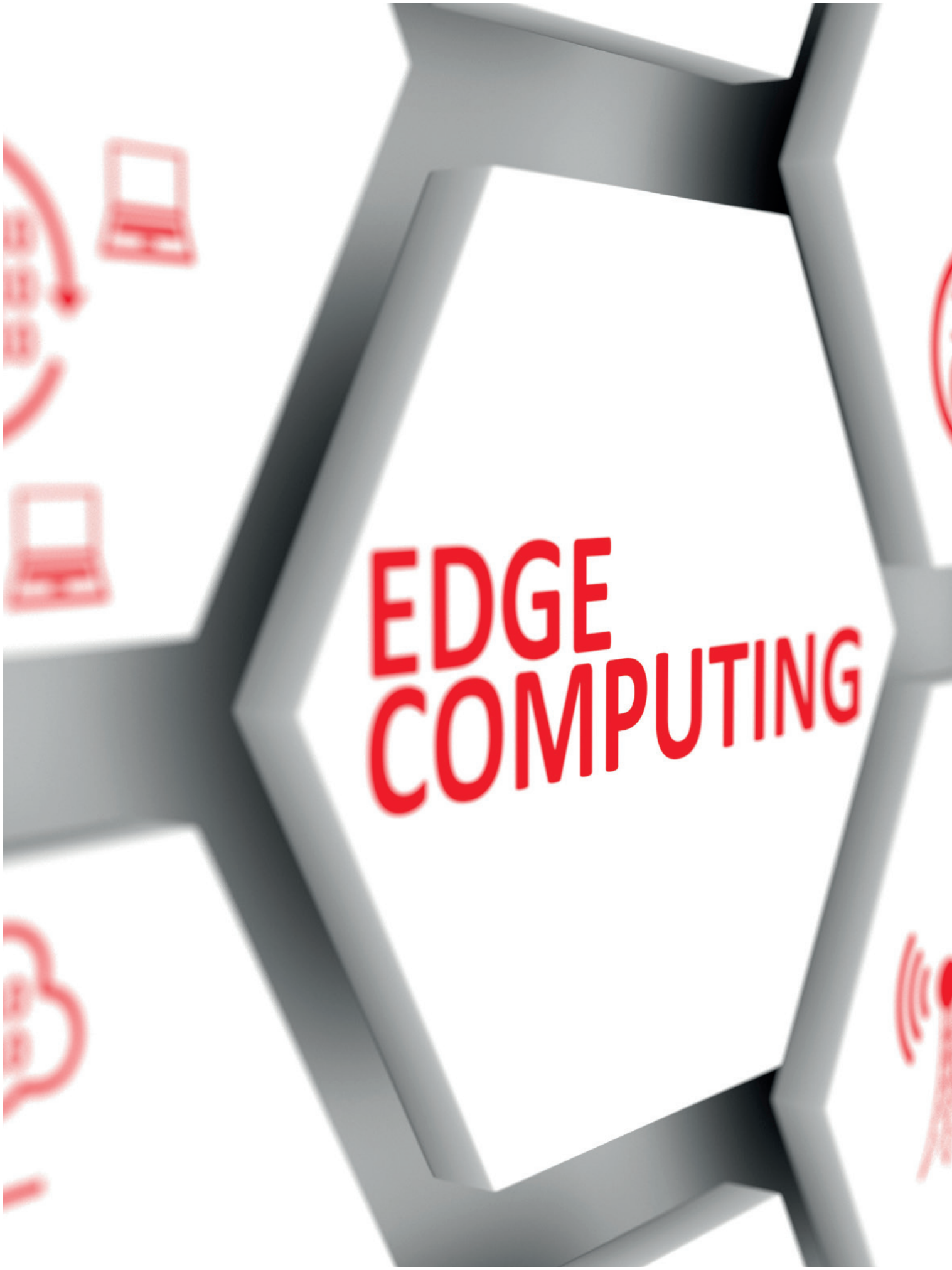
LIVING ENVIRONMENTAL SYSTEMS

Changes for the Better

s-MEXT System

Close Control Unit for IT Cooling applications. Direct expansion system, full inverter for Edge Data Center.

for a greener tomorrow eco Changes


EDGE
COMPUTING

EDGE COMPUTING: THE NEW TREND FOR CLOUD DECENTRALIZATION

A new concept that places it self side by side to cloud computing is appearing on the market, thanks to the unstoppable digital transformation we are experiencing. It's the Edge computing.

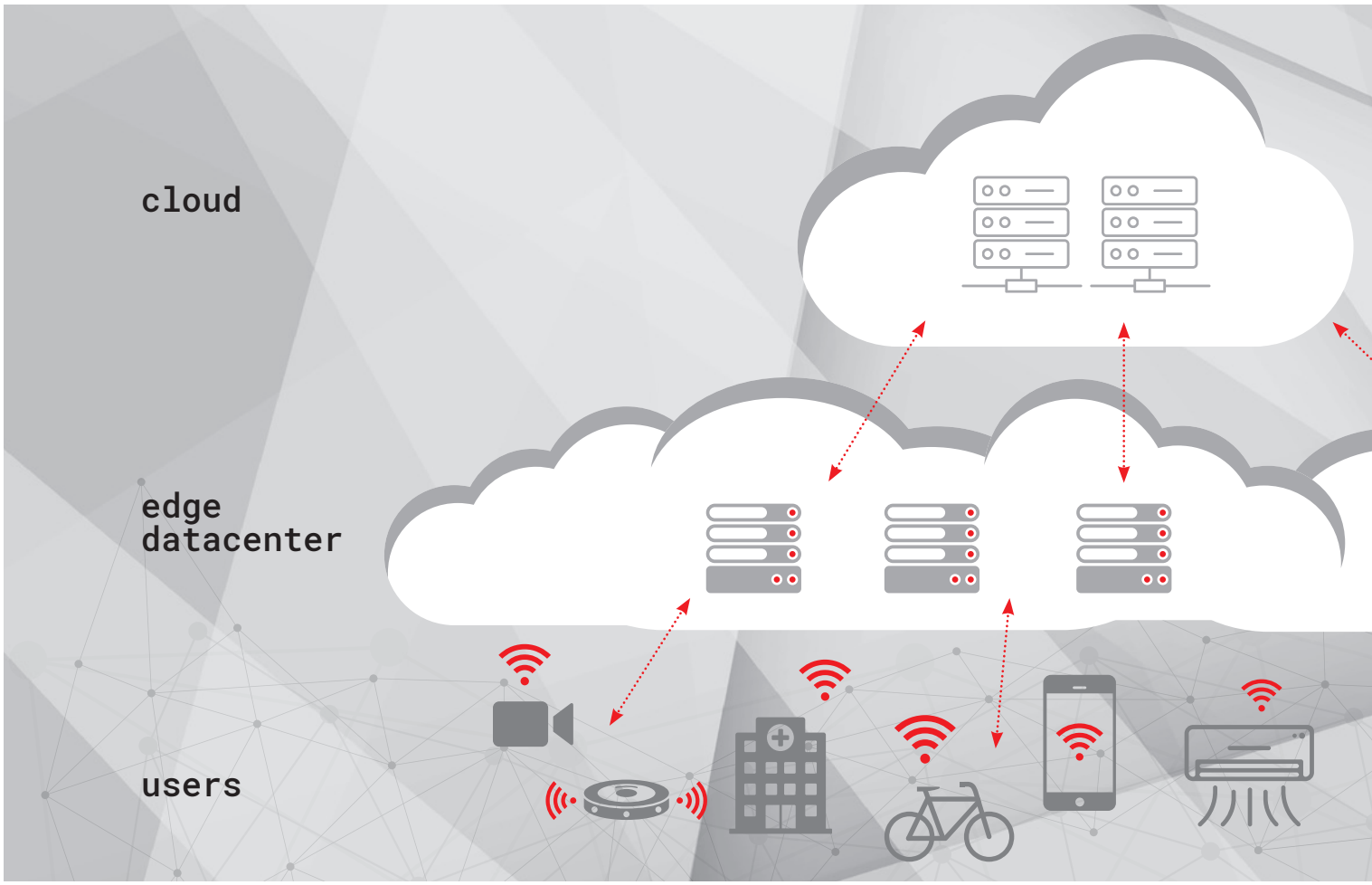
In 2018, into the top ten strategic technological trends for companies and organizations, Gartner, a leading company in research and consulting, reported the "Cloud to the Edge" trend in fifth position.

This technology imposes the cloud decentralization, which translate into a new reference model for designing data centers. Concepts like IoT, 5G will inevitably lead a resources fragmentation in data centers management. In fact, we speak of granularity, investments in smaller and widespread data centers, developed to respond to the growing demand for web connections with low latency and high performances.

As result, data processing times will have to be faster, and the only way to comply with both the connections' growing number and consumers' needs in terms of performances will have to be, according to the experts, to data processing closer to the users themselves.

Then we start to talk about Edge Data Centers, little data centers or server rooms, scattered on territory and used to host cloud services and local data processing.


cloud
users


cloud
edge
datacenter
users

CLOUD COMPUTING

Traditional cloud model

The traditional model is facing some latency problems, limited brandwidth, dependability that cause traffic congestions, not suitable for future IoT implementations.

Advantages: large data processing capacity for complex analysis.

Products and applications: chillers, precision conditioners, infrastructures, control systems and accessories with RC brand.

EDGE COMPUTING

Distributed intellingence model

Edge computing, by distributing intelligence, will bring down the reduction of the amount of datas to be processed, prioritizing management of critical datas, latency sensitive, next to the users, filtering and passing to the cloud less impacting datas. It will manage big data processing.

Advantages: low latency, high elaboration performances with less investments in infrastructures.

Products and applications: precision air conditioners, infrastructures, control systems and accesories branded Mitsubishi Electric an RC.

s-MEXT System

Under

Over

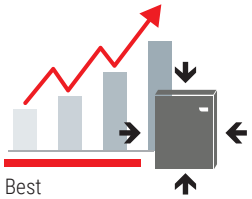
Mitsubishi Electric present s-MEXT, developed with the RC experience and notoriety in the IT Cooling market: the brand new combined system that combines all the experience of a specialized brand in precision air conditioning with the tecnological excellence and reliability of Mitsubishi Electric.

The innovative system dedicated to Edge Data Center combines a precision air conditioner (indoor unit) with the commercial outdoor unit of Mr.Slim series.

S-MEXT AND MR. SLIM PERFECT SYNERGY

s-MEXT combines more than 50 years of experience of RC brand in the IT Cooling market, with the Mitsubishi Electric excellence quality.

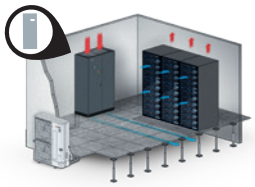
BEST KW/M² RATIO



Best
kW/m² Ratio

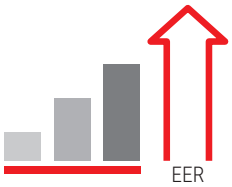
Thanks to the innovative system, s-MEXT guarantees high level performances while occupying very small floor space.
It's compact layout allows to easily integrate the unit in existing data centers, without sacrificing any kW per square meter.

BEYOND THE TRADITIONAL OPERATIONAL LIMITS



The continuous increase of the thermal load in the IT environments has led to an increasing temperature inside the server rooms (up to 27°C)
s-MEXT system has been developed to operate with return air temperature up to 35°C.

EFFICIENCY BEYOND EXPECTATIONS



EER

A data center's air conditioning system accounts for over 40% of total data center energy consumption. An efficient approach to air conditioning can generate an enormous advantage in efficiency and reduction of operating costs.
s-MEXT system is characterized by high quality components and control logics aimed at managing the system in the most efficiency mode.
• DC inverter scroll for linear and continuous modulation of cooling capacity based on the load.
• DC fans for best modulation of the air flow.

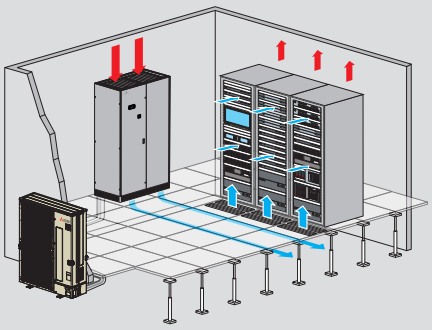
FLEXIBILITY IN THE AIR FLOWS' CHOICE

Flexible installation of the unit, thanks to the possibility of choosing between two air requirements: Under and Over.

UNDER

With air delivery down, and air intake on the top.

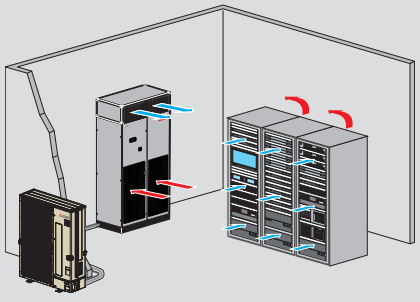
Ideal for environments with raised floor.



OVER

With air delivery from the top and fron air intake.

Ideal for environments with standard floors.



s-MEXT

PRECISION CONDITIONER (INDOOR UNIT)

Able to manage temperature and humidity variables, with extreme precision, even in the events of large loads variations. Designed to perfect combine efficiency and reliability in all operationg conditions, these indoor unit uses only certified and high quality components: EC fan, DX coil with hydrolysis treatment and advanced control system. A wide range of accesories completes the serie and makes s-MEXT suitable for the most critical environmental's conditions.

QUICK AND EASY INSTALLATION

The construction features and the unit layout have been designed to ensure quick installation and facilitate front access for easy maintenance activity.

NEW EC INVERTER FAN

High performance EC fan ensures a perfect modulation of air flow for partial loads. Made of ultra-light polymeric material, this fan is distinguished by:

- Sound level reduction by 4-5 dB(A);
- Reduction of 25% of power consumption, compared to traditional solutions.

ADVANCED CONTROL SYSTEM

Control System is the heart of the unit. Designed for monitoring and to operate the fuctional and environmetnal single unit's parameters. The Control System allows:

- Automatic reset after power failures;
- Serial interconnection with most modern BMS systems;
- up to 100 events recording;
- "Non-volatile" data storage for saving files;

Via simple and intuitive graphic display.

INVERTER EEV EC FAN R HFC R410A

Technical specifications

MODEL			006	009	013	022	038	044
	Outdoor unit	n°	1	1	1	1	2	2
	Model	PUHZ-ZRP	60 VHA2	100 VKA3	125 YKA3	250 YKA3	200 YKA3	250 YKA3
Cooling (1)	Cooling capacity	kW	6,79	10,1	11,9	22,5	38,8	42,4
	Sensible	kW	6,28	9,0	10,3	19,5	34,0	37,5
	SHR (2)		0,92	0,89	0,87	0,87	0,88	0,88
	System EER (nominal) 27°C - 47% RH		3,92	3,98	2,97	2,87	3,15	2,59
	"EC" SUPPLY FAN	n°	1	1	1	2	1	1
	Air flow	m³/h	2000	2500	2800	5000	8800	10000
	Nominal external static pressure	Pa	20	20	20	20	20	20
	Maximum external static pressure	Pa	200	25	45	25	125	25
	Power input (3)	kW	0,21	0,37	0,52	0,74	1,43	2,10
	Absorbed current (3)	A	0,93	1,64	3,23	3,28	2,20	3,22
	Starting current	A	0,5	0,5	0,5	0,5	0,5	0,5
	Plate current	A	2,3	2,3	3,15	4,6	4,2	4,2
Electrical panel	Power input	kW	0,14	0,14	0,14	0,14	0,14	0,14
Sound level (ISO 3744) (4)	Pressure level	dB(A)	53	57	61	60	63	67
	Power level	dB(A)	69	73	77	76	79	83
	FILTRI ARIA	n°	1	1	1	2	4	4
	Extended filtering surface	m²	0,68	0,68	0,68	1,05	1,76	1,76
	Efficiency (ISO EN 16890)	COARSE	60%	60%	60%	60%	60%	60%
	REFRIGERANT CIRCUITS	n°	1	1	1	1	2	2
	POWER SUPPLY	V/Ph/Hz	230/1/50	230/1/50	230/1/50	230/1/50	400/3+N/50	400/3+N/50
Dimensions	Length	mm	600	600	600	1000	1000	1000
	Depth	mm	500	500	500	500	890	890
	Height	mm	1980	1980	1980	1980	1980	1980
	NET WEIGHT Over	kg	103	115	115	185	297	297
	NET WEIGHT Under	kg	103	115	115	185	297	297
Connections	Refrigerant pipes: Gas - Liquid	Ø Inch	5/8" - 3/8"	5/8" - 3/8"	5/8" - 3/8"	1" - 1/2"	1" - 3/8"	1" - 1/2"
	Condensate (5)	Ø mm	19	19	19	19	19	19
	Power supply wiring cable (6)	n° x mm²	3G1.5	3G1.5	3G1.5	3G1.5	4G1.5	4G1.5

Notes:
THE COOLINC CAPACITY DOES NOT CONSIDER THE SUPPLY FAN MOTOR THERMAL LOAD
(1) Gross value. Characteristics referred to entering air at 27°C-47% RH; Ambient temperature 35°C; ESP=20Pa; Connection pipes length 5m;
(2) SHR= Sensible cooling capacity / Total cooling capacity.
(3) Corresponding to the nominal ESP=20Pa.
(4) Sound pressure level on air return at 1m .
(5) Rubber pipe-referred to internal diameter.
(6) Minimum section.
These units contain <HFC R410A [GWP_{100} 2088]> fluorinated greenhouse gas.

Mr. SLIM

OUTDOOR UNIT

Outdoor unit equipped with DC scroll inverter compressor and axial fans with DC electric motor.
Outdoor unit that benefit from scroll compressor, is also equipped with a device called "Power Receiver", a refrigerant accumulator accompained by a pair of LEV valves, with the dual function (subcooling/overheating the refrigerant). The heat exchanger is thus exploited entirely in its exchange surface.

TECHNOLOGIES AND FUNCTIONS

Mr.Slim presents excellent performances in all loading conditions thanks to the sophisticated power inverter technology with advanced features:

- "Rotation and Backup" function for automatic switching on a second unit in case of first unit block.
- "Easy and fast maintenance" function and authomatic monitoring of the refrigerant status.

LINEAR EXPANSION VALVE (LEV)

The Mr.Slim linear expansion valve (LEV) allows precise regulation of the refrigerant flow, optimizing the compressor's performances.

- Fast achievement of system stability.
- Quick adaptation to load fluctuations.

SCROLL INVERTER COMPRESSOR

Full inverter technology applied to the compressor allows continuous modulation of the cooling capacity according to the real needs of the servers.

In this way the rotation speed is continuously modulated helping to significantly increase the efficiency for partial loads.

- Elimination of inrush currents;
- Energy consumption reduction for 25%, compared to traditional ON/OFF technology;
- Maximum reliability thanks to continuous modulation without annoying ON/OFF cycles.

Technical specifications

OUTDOOR UNIT			PUHZ-ZRP 60 VHA2	PUHZ-ZRP 100 VKA3	PUHZ-ZRP 125 YKA3	PUHZ-ZRP 250 YKA3	PUHZ-ZRP 200 YKA3	PUHZ-ZRP 250 YKA3
	Indoor unit Model		006	009	013	022	038	044
	Outdoor units to be coupled to the indoor	n°	1	1	1	1	2	2
	BLDC COMPRESSOR	n°	1	1	1	1	1	1
	Power input	kW	1,47	2,05	3,37	6,71	5,04	6,71
	CONDENSER FAN	n°	1	2	2	2	2	2
	Air flow	m³/h	3300	6600	7200	8400	8400	8400
	Power input	kW	0,06	0,12	0,12	0,40	0,40	0,40
Unit electrical data	Power input (1)	kW	1,53	2,17	3,49	7,11	5,44	7,11
	Max absorbed current	A	19	26,5	9,5	21	19	21
	Starting current	A	5	12	4	5	5	5
	Fuse rating	A	25	32	16	32	32	32
Sound level ISO 3744	Pressure level (2)	dB(A)	47	49	50	59	59	59
	Power level	dB(A)	67	69	70	77	77	77
	GAS CIRCUITS	n°	1	1	1	1	1	1
	POWER SUPPLY	V/Ph/Hz	230/1/50	230/1/50	400/3/50	400/3/50	400/3/50	400/3/50
Dimensions	Length	mm	950	1050	1050	1050	1050	1050
	Depth	mm	330+30	330+40	330+40	330+40	330+40	330+40
	Height	mm	943	1338	1338	1338	1338	1338
	NET WEIGHT	kg	67	116	125	135	135	135
Connections	Refrigerant pipes: Gas - Liquid	Ø Inch	5/8" - 3/8"	5/8" - 3/8"	5/8" - 3/8"	1" - 1/2"	1" - 3/8"	1" - 1/2"
	Power supply wiring cable (3)	n° x mm²	3G4	3G6	4G1.5	4G6	4G6	4G6
	REFRIGERANT CHARGE	kg	3,5	5,0	5,0	7,7	7,1	7,7
	F GAS HFC R410A - CO_2 equivalent	t	7,31	10,44	10,44	16,08	14,82	16,08
Piping (4)	Maximum length	m	20	20	30	30	30	30
	Maximum difference in height	m	20	20	30	30	30	30
For longer piping lengths (5)	Maximum length	m	40	65	75	100 (+)	100 (+)	100 (+)
	Additional charge for max length	kg	1,2	2,4	2,4	4,8	3,6	4,8
	Additional charge	kg/10m	0,6	0,6	0,6	1,2	0,9	1,2
	Refrigerant charge (standard+additional)	kg	4,7	7,4	7,4	12.5 (+)	21.4 (+)	25.0 (+)

Notes:
(1) Characteristics referred to ambient temperature 35°C – indoor air condition 27°C-47% UR - Connection pipes length 5m;
(2) Sound pressure level on unit front at 1m.
(3) Minimum section.
(4) For standard refrigerent charge.
(5) With additional refrigerant charge.
(*) Data are referred to single outdoor unit.
(+) from 71 to 100 m please refer to Mr Slim O&M Manual.
These units contain <HFC R410A [GWP_{100} 2088]> fluorinated greenhouse gas.

MITSUBISHI ELECTRIC

LIVING ENVIRONMENTAL SYSTEMS

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eco Changes **for a greener tomorrow**

Eco Changes is the Mitsubishi Electric Group's environmental statement, and expresses the Group's stance on environmental management. Through a wide range of businesses, we are helping contribute to the realization of a sustainable society.

The equipment described in this catalogue contain fluorinated gasses such as HFC-410A (GWP 2088), HFC-134A (GWP 1430) e HFC-407C (GWP 1774). Installation of those equipment must be executed by professional installer based on EU reg. 303/2008 and 517/2014

ENVIRONMENTAL VISION 2021

Brochure s-MEXT – IT Cooling Export
E-1912236(16273)

Specifications are subject to change without notice

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