# MITSUBISHI ELECTRIC HYDRONICS & IT COOLING SYSTEMS S.p.A.

HYDRONIC TERMINALS

COMFORT

# -CHD / a-CHD

i-CHD NEW GENERATION CASSETTE WITH EC HIGH EFFICIENCY MOTOR. CENTRIFUGAL FAN WITH CONTINUOUS AIR FLOW REGULATION AND SPEED MODULATION. ENERGY CONSUMPTION REDUCED BY MORE THAN 50%.

a-CHD NEW CASSETTE WITH TRADITIONAL 5 SPEED MOTOR.



Perfect comfort



**Reduced Consumption** 



Silent operation



# -CHD / a-CHD

# A NEW WAY TO LIVE COMFORT

The new i-CHD/a-CHD range has been specifically developed to be adapted to every ambient thanks to its modern and minimal design, which is a result of the full experience and know-how of the Climaveneta brand.

# PERFECT COMFORT

The new i-CHD cassette is synonym of real comfort and lowest operating costs. The brushless motor ensures the perfect adaptation to the thermal load in the ambient, and reduces the temperature fluctuations comparing to set point parameters.

Centrifugal fans operate through a continuous air flow modulation, with no speed steps or relay switching as traditional fan coil units.



# **REDUCED ENERGY CONSUMPTION**

The i-CHD unit features an electrical absorption 50% lower than traditional cassette of the same size.

The advantages of this increased efficiency are enhanced over the whole operating year, making available the saved energy for other components of the system, or improving the building energy efficiency ratio.



# **COMPLETE INTEGRATION**

The i-CHD cassette offers a wide versatility and easy installation. User-friendly interface of the controller with the LCD screen allows the full management of all operating conditions.

Furthermore, it is possible to integrate i-CHD units in Master / Slave networks and Building management system (e.g. Idrorelax). i-CHD interfaces guarantee a quick and simple installation thanks to only two wires connection.



02/03

# COMFORT, EFFICIENCY AND INTEGRATION WITHOUT COMPROMISE

Today comfort has a new name: i-CHD. The new generation cassette featured by high efficiency, low noise and integration capability.



# EASE OF INSTALLATION AND MAINTENANCE

From the moment of the installation, the management and the maintenance is made simple and intuitive. All the main parts can be easily accessed through the front grille:

- Easy removable air filters
- Manual air valve with outlet connected to the plastic condensate collecting tray
- Condensate drain pump with 500 mm working head, complete with float
- Set-up for fresh air intake
- Set-up for duct air distribution



### DESIGN

i-CHD/a-CHD are advanced solutions for the requirements of modern residential and commercial architecture, even more sensible to design and aesthetics. Featured with a simple and refined design that perfectly fits to any ambient, i-CHD/a-CHD only use high quality materials.

The units are now available in three sizes in order to meet any kind of installation requirement:

- ✓ 60x60 cm
- ✓ 80x80 cm
- ✓ 90x90 cm





# -CHD / a-CHD

# A NEW WAY TO LIVE COMFORT



#### FRAME

Frame in galvanised steel insulated with self-extinguishing closed-cell polyethylene blanket of suitable thickness, to limit heat loss and noise to a minimum. Front panel and grille are already assembled on the unit. Airflow grille in ABS. Manual and independent louvers adjustable for vertical airflow direction.

### **CONTROL BOX**

Plug In Control Box complete of switchboard with power and control terminal block.

Electrical power and control switchboard, complete with electronic air flow regulator and terminal board for connection to network and available remote controls.





# COILS

Coil with corrugated aluminum fins and copper pipes, tested with dried air at 14 bar.

A cutting-edge technology that contributes to a better energy efficiency of the product, improving the exchanging of thermal heat.

### **EC MOTOR**

AC Motor with 5 speed for traditional units. Low consumption EC electric motor that guarantees a precise and continuous control of speed rotation.

The unit results in a reduced power absorption of approximately 50% compared to the traditional ON/OFF motor.



04/05

# I C C C A NEW WAY TO LIVE COMFORT

**IK UNIVERSAL** 

# i-CHD CONTROLLERS







#### EKW WALL MOUNTED

Room thermostat, manual-and automatic regulation of fan, manual-and automatic mode, change-over, room-and minimum temperature probes, regulation of electric heater, valves (on/off or modulating), serial connection for mini-network and integration into BMS-or Idrorelax systems.

The management and control of all functions is guaranteed by the Power Board Kit-HB. In combination with i-HB is supplied the kit RS485 as interface for centralized management systems.

#### Advanced electronic control with LCD display, room thermostat, manual and automatic regulation of fan, manual-and automatic mode change-over, room and minimum temperature probes,

mode change-over, room and minimum temperature probes, regulation of electric heater, valves (on/off or modulating), serial connection for mini-network and integration into BMS or Idrorelax systems. The management and control of all functions is guaranteed by the Power Board Kit-HB. In combination with i-HB is supplied the kit RS485 as interface for centralized management systems.

#### **MASTER / SLAVE INTEGRATION**

The controllers can be set as:

- GLOBAL user interface: the controller acts as the Master and manages operation of all the units. All the fan coils connected to the network will operate in the same mode.
- **PRIVATE** user interface: if one cassette needs to operate in different conditions from the MASTER, the respective controller can work autonomously through a different configuration of the dip switch.



# a-CHD / i-CHD CONTROLLERS\*



#### MTW WALL MOUNTED

Room thermostat, fan speed slider, mode slider, room-and minimum temperature probes and regulation of on/off valves.

#### ATW WALL MOUNTED

Room thermostat, manual-and automatic regulation of fan, manual-and automatic mode change-over, room-and minimum temperature probes and command of on/off valves. Malfunction digital contact. Configuration dip switch.

\* for 3 speed i-CHD unit only





# a-CHD **GENERAL TECHNICAL DATA**

a-CHD			0606	0706	1108	2209
ELECTRICAL DATA						
Power supply		V/ph/Hz	230/1/50	230/1/50	230/1/50	230/1/50
2 PIPES SYSTEM CONFIGURATION						
ENERGY EFFICIENCY						
COOLING (EN14511 VALUE)	( 1) ( <b>2</b> )					
FCEER	(1)(6)	kW/kW	57	73	65	49
FUEER CLASS			D	U	D	E
ECCOP	(2)(6)	L\N//L\N	70	86	78	62
ECCOP Class	(2)(0)	KWV/KWV	ло П	D	70 D	F
PERFORMANCE			5	5	5	_
MIN SPEED						
Fan Power Input	(1)	W	23,0	35,0	56,0	128
Air flow rate	(1)	m³/h	200	450	700	1380
Total capacity in cooling mode	(1)	kW	1,38	2,80	4,22	7,49
Total Net Cooling Capacity	(1)(6)(7)	kW	1,36	2,77	4,17	7,37
Sensible capacity in cooling mode	(1)	kW	0,98	1,93	3,08	5,65
Net letest server is cooling	(1)(6)(7)	KW	0,96	1,90	3,02	5,53
Max water flow	(1)(0)(7)	KVV I/e	0,40	0,07	0.20	0.36
Pressure Drop in cooling mode	(1)	kPa	4	16	16	19
Total capacity (heating mode)	(2)	kW	1.30	2.85	4,20	7.75
Total Net Heating Capacity	(2)(6)	kW	1,32	2,88	4,25	7,88
Water flow in heating mode	(2)	l/s	0,06	0,14	0,20	0,37
Pressure drop in heating mode	(2)	kPa	4	17	16	20
Sound Pressure	(3)	dB(A)	31	32	40	47
Sound Power	(4)(7)	dB(A)	40	41	49	56
MED SPEED	(4)		05.0	54.0	00.0	007
Fan Power Input	(1)	W m3/h	35,0	54,0	99,0	237
Air flow rate	(1)	111°/11	290	017	900 5.47	1970
Total Net Cooling Capacity	(1)(6)(7)	kW	1,30	3 55	5.37	9,34
Sensible capacity in cooling mode	(1)(0)(1)	kW	1.38	2,55	4.01	7.61
Net sensible cooling capacity	(1)(6)(7)	kW	1,34	2,50	3,91	7,37
Net latent power in cooling	(1)(6)(7)	kW	0,52	1,05	1,46	1,94
Max water flow	(1)	l/s	0,09	0,17	0,26	0,46
Pressure Drop in cooling mode	(1)	kPa	7	25	25	29
Total capacity (heating mode)	(2)	kW	1,87	3,71	5,45	10,3
Total Net Heating Capacity	(2)(6)	kW	1,90	3,76	5,55	10,5
Water flow in heating mode	(2)	I/S	0,09	0,18	0,26	0,50
Sound Proceuro	(2)	dP(A)	26	27	Z0 51	56
Sound Pressure	(4)(7)	dB(A)	45	43	51	50
MAX SPEED	(1)(1)	ub(ri)	0	52	00	00
Fan Power Input	(1)	W	63.0	80.0	133	298
Air flow rate	(1)	m³/h	575	810	1300	2250
Total capacity in cooling mode	(1)	kW	3,20	4,56	6,97	11,3
Total Net Cooling Capacity	(1)(6)(7)	kW	3,14	4,48	6,84	11,0
Sensible capacity in cooling mode	(1)	kW	2,44	3,28	5,15	8,51
Net sensible cooling capacity	(1)(6)(7)	kW	2,38	3,20	5,01	8,21
Net latent power in cooling	(1)(6)(7)	kW	0,76	1,28	1,83	2,79
Max water flow	(1)	I/S	0,15	0,22	0,33	0,54
Total capacity (boating mode)	(1)	KPa I/W	18	39	39	40
Total Net Heating Capacity	(2)(6)	kW	3,33	4,00	7,07	11.7
Water flow in heating mode	(2)	I/s	0,16	0,22	0,34	0,55
Pressure drop in heating mode	(2)	kPa	19	41	41	42
Sound Pressure	(3)	dB(A)	43	49	58	61
Sound Power	(4)(7)	dB(A)	52	58	67	70
SIZE AND WEIGHT						
A	(5)	mm	580	580	730	830
В	(5)	mm	580	580	730	830
H Operating unjet	(5)	mm	255	290	262	290
Operating weight	(5)	kg	28	30	36	50

Notes: 1 Room temperature 27°C d.b./18,9°C w.b., Chilled water (in/out) 7°C/12°C. 2 Room temperature 20°C d.b., hot water (in/out) 45°C/40°C. 3 Sound pressure level in free field on a reflective surface,1m from fan front and 1m from the ground. Non-binding value obtained fron sound power level. 4 Sound power on the basis of measurements made in compliance with ISO 3741 and Eurovent 8/2. 5 Unit in standard configuration/execution, without optional accessories. 6 Values in compliance with EN14511-3:2013. 7 Values in compliance with [REGULATION (EU) N. 2016/2281]

Certified data in EUROVENT







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a-CHD			0706	1108	2209
ELECTRICAL DATA					
Power supply		V/ph/Hz	230/1/50	230/1/50	230/1/50
4 PIPES SYSTEM CONFIGURATION					
ENERGY EFFICIENCY					
COOLING (EN14511 VALUE)					
FCEER	(1)(6)	kW/kW	61	55	34
FCEER Class			D	D	F
HEATING ONLY (EN14511 VALUE)	(0) (0)	134/036/	00	45	45
FUCUP	(2)(6)	KW/KW	82	45	45
PERFORMANCE			U	F	F
MIN SPEED					
Fan Power Input	(1)	W	35.0	56.0	128
Air flow rate	(1)	m³/h	450	700	1380
Total capacity in cooling mode	(1)	kW	2,42	3,59	5,14
Total Net Cooling Capacity	(1)(6)(7)	kW	2,39	3,54	5,01
Sensible capacity in cooling mode	(1)	kW	1,77	2,63	3,87
Net sensible cooling capacity	(1)(6)(7)	kW	1,74	2,58	3,74
Net latent power in cooling	(1)(6)(7)	kW	0,65	0,96	1,27
Max water flow	(1)	l/s	0,12	0,17	0,25
Tetal capacity (booting mode)	(1)	KPa	9	22	15
Total Nat Heating Canacity	(2)	KW	2,70	2,51	5,79
Water flow in heating mode	(2)(0)	KW I/e	2,79	0.06	0.14
Pressure drop in heating mode	(2)	kPa	5	8	11
Sound Pressure	(3)	dB(A)	32	40	47
Sound Power	(4)(7)	dB(A)	41	49	56
MED SPEED					
Fan Power Input	(1)	W	54,0	99,0	237
Air flow rate	(1)	m³/h	617	960	1970
Total capacity in cooling mode	(1)	kW	2,87	4,61	6,56
Total Net Cooling Capacity	(1)(6)(7)	kW	2,82	4,51	6,33
Sensible capacity in cooling mode	(1)	KW	2,12	3,43	5,04
Net latent newer in cooling	(1)(0)(7)	KW	2,07	3,33 1 19	4,80
Max water flow	(1)(0)(7)	1/e	0,75	0.22	0.31
Pressure Drop in cooling mode	(1)	kPa	12	34	23
Total capacity (heating mode)	(2)	kW	3,22	3,14	7,37
Total Net Heating Capacity	(2)(6)	kW	3,28	3,24	7,61
Water flow in heating mode	(2)	l/s	0,08	0,08	0,18
Pressure drop in heating mode	(2)	kPa	7	11	19
Sound Pressure	(3)	dB(A)	43	51	56
Sound Power	(4)(7)	dB(A)	52	60	65
MAX SPEED	(4)	14/	00.0	100	000
Fan Power Input	(1)	W	80,0	133	298
Total capacity in cooling mode	(1)	119/11 k/M	3.85	5.83	7.64
Total Net Cooling Canacity	(1)(6)(7)	kW	3,00	5,00	7,35
Sensible capacity in cooling mode	(1)	kW	2.87	4.36	5.91
Net sensible cooling capacity	(1)(6)(7)	kW	2,79	4,23	5,62
Net latent power in cooling	(1)(6)(7)	kW	0,98	1,47	1,73
Max water flow	(1)	l/s	0,18	0,28	0,37
Pressure Drop in cooling mode	(1)	kPa	19	52	30
Total capacity (heating mode)	(2)	kW	3,67	3,93	8,21
Total Net Heating Capacity	(2)(6)	kW	3,75	4,06	8,51
Water flow in heating mode	(2)	I/S	0,09	0,10	0,20
Sound Pressure	(2)	KPa dP(A)	9	14	24
Sound Power	(3)	dB(A)	49 58	00 67	70
SIZE AND WEIGHT	(4)(7)	ub(h)	00	07	10
Α	(5)	mm	580	730	830
В	(5)	mm	580	730	830
Н	(5)	mm	290	262	290
Operating weight	(5)	kg	30	36	50

Notes:

 Notes:

 1 Room temperature 27°C d.b./18,9°C w.b., Chilled water (in/out) 7°C/12°C.

 2 Room temperature 20°C d.b.; Hot water (in/out) 65°C/55°C; Supplementary coil 1-row.

 3 Sound pressure level in free field on a reflective surface,1m from fan front and 1m from the ground. Non-binding value obtained fron sound power level.

 4 Sound power on the basis of measurements made in compliance with ISO 3741 and Eurovent 8/2.

 5 Unit in standard configuration/execution, without optional accessories.

 6 Values in compliance with EN14511-3:2013.

 7 Values in compliance with [REGULATION (EU) N. 2016/2281]

Certified data in EUROVENT



# -CHD **GENERAL TECHNICAL DATA**



i-CHD			0706	1108	2209
ELECTRICAL DATA					
Power supply		V/ph/Hz	230/1/50	230/1/50	230/1/50
2 PIPES SYSTEM CONFIGURATION					
ENERGY EFFICIENCY					
COOLING (EN14511 VALUE)					
FCEER	(1)(6)	kW/kW	134	135	130
FCEER Class			В	В	В
HEATING ONLY (EN14511 VALUE)					
FCCOP	(2)(6)	kW/kW	162	161	150
FCCOP Class			В	В	С
PERFORMANCE					
MIN SPEED					
Fan Power Input	(1)	W	13,0	16,0	25,0
Air flow rate	(1)	m³/h	200	360	820
Total capacity in cooling mode	(1)	kW	1,47	2,43	5,21
Total Net Cooling Capacity	(1)(6)(7)	kW	1,46	2,42	5,19
Sensible capacity in cooling mode	(1)	kW	1,01	1,73	4,30
Net sensible cooling capacity	(1)(6)(7)	kW	1,00	1,71	4,28
Net latent power in cooling	(1)(6)(7)	kW	0,46	0,70	0,91
Max water flow	(1)	l/s	0,07	0,12	0,25
Pressure Drop in cooling mode	(1)	kPa	5	6	9
Total capacity (heating mode)	(2)	kW	1,41	2,39	5,07
Total Net Heating Capacity	(2)(6)	kW	1,42	2,41	5,09
Water flow in heating mode	(2)	l/s	0,07	0,12	0,24
Pressure drop in heating mode	(2)	kPa	5	6	9
Sound Pressure	(3)	dB(A)	31	32	37
Sound Power	(4)(7)	dB(A)	40	41	46
MED SPEED					
Fan Power Input	(1)	W	18,0	37,0	70,0
Air flow rate	(1)	m³/h	520	820	1380
Total capacity in cooling mode	(1)	kW	3,10	4,81	7,66
Total Net Cooling Capacity	(1)(6)(7)	kW	3,08	4,78	7,59
Sensible capacity in cooling mode	(1)	kW	2,20	3,47	6,44
Net sensible cooling capacity	(1)(6)(7)	kW	2,18	3,43	6,37
Net latent power in cooling	(1)(6)(7)	kW	0,90	1,34	1,22
Max water flow	(1)	I/s	0,15	0,23	0,37
Pressure Drop in cooling mode	(1)	kPa	19	20	19
Total capacity (heating mode)	(2)	kW	3,18	4,83	7,79
Total Net Heating Capacity	(2)(6)	kW	3,20	4,87	7,86
Water flow in heating mode	(2)	I/s	0,15	0,23	0,38
Pressure drop in heating mode	(2)	KPa ID(A)	20	20	20
Sound Pressure	(3)	dB(A)	40	45	50
	(4)(7)	dB(A)	49	54	59
	(4)	14/	20.0	70.0	205
Fair Power Input	(1)	W ma3/h	38,0	72,U	205
All now rate	(1)	m°/n	810	1300	2100
Total Nat Cooling Capacity	(1)(6)(7)	KW	4,50	0,97	9,42
Consible conseits in cooling mode	(1)(0)(7)	KW	4,02	0,90	9,22
Net sensible cooling connects	(1)(6)(7)	KW	3,20	0,08 5,01	0,UŎ 7 07
Net latent newer in cooling	(1)(0)(7)	KW	3,10	0,01	1,0/
Max water flow	(1)(0)(7)	KW	1,00	1,89	1,30
Pressure Drop in cooling mode	(1)	I/S	30	0,00	0,40
Total canacity (heating mode)	(1)	KPa IAM	4.60	7.06	23
Total Net Heating Capacity	(2)(6)	KVV I/M	4,09	7,00	9,40
Water flow in heating mode	(2)(0)	1/0	4,73	0.34	0.46
Pressure drop in heating mode	(2)	I/S	0,23	40	20
Sound Pressure	(2)	dP(A)	42	40	29
Sound Dower	(3)		50	55	67
	(4)(7)	UD(A)	29	00	07
	(5)	mm	580	730	830
B	(5)	mm	580	730	830
Н	(5)	mm	200	262	200
Operating weight	(5)	ka	200	202	50
oporating weight	(3)	NY	50	00	50

2 PIPES C FAN CASSETTE

4 PIPES

Notes: 1 Room temperature 27°C d.b./18,9°C w.b., Chilled water (in/out) 7°C/12°C. 2 Room temperature 20°C d.b., hot water (in/out) 45°C/40°C. 3 Sound pressure level in free field on a reflective surface, 1m from fan front and 1m from the ground. Non-binding value obtained fron sound power level. 4 Sound power on the basis of measurements made in compliance with ISO 3741 and Eurovent 8/2. 5 Unit in standard configuration/execution, without optional accessories. 6 Values in compliance with EN14511-3:2013. 7 Values in compliance with [REGULATION (EU) N. 2016/2281]

Certified data in EUROVENT

## ACCESSORIES

# WALL CONTROLLERS





# 2 WAY AND 3 WAY VALVES FOR MAIN AND ADDITIONAL COIL

# **BRUNCH DUCT CONNECTION KIT**



# **BRUNCH DUCT CONNECTION KIT**



**KIT VALVES 4FOR2** 







Operation in cooling mode: room temperature 27°C d.b./19°C w.b., chilled water at inlet 7°C and at outlet 12°C
 Operation in heating mode: room temperature 20°C d.b., hot water at inlet 50°C, with identical flow rate that in the cooling mode
 Sound power on the basis of measurements made in compliance with Eurovent 8/2



# "EXPERIENCE IS BY FAR THE BEST PROOF"

**Sir Francis Bacon** British Philosopher (1561-1626)

# Habita.79 Pompeii, Naples - Italy

2016 - 2018

**Application:** Hotel and resorts Plant type: Hydronic System **Cooling capacity:** 450 kW Heating capacity: 478 kW Air flow: 3390 M<sup>3</sup>/h **Installed machines:** 94x i-LIFE2, 24x i-CHD, 2x a-HWD, 7x HRD2, 3x WZ, 2x ERACS-WQ/S 1002, ClimaPRO

# PROJECT

Habita.79 is a modern 4-star superior hotel with over 300 beds, will be soon able to accommodate the numerous tourists who visit the adjacent city of Pompeii every day. The building consists of 4 above ground floors of approximately 1,200 m<sup>2</sup> each and a basement floor. In addition to the rooms, the building is comprised of: a lobby, a conference area with two conference rooms of 100 seats each, a spa and fitness area, a 200-seat multifunctional lounge with its own kitchen, and a 150-seat bistro restaurant.

## CHALLENGE

As rich ground water passes through Pompeii with a constant temperature of 15°, the HVAC plant designer decided to use it as a thermal buffer for the heat pumps.

# SOLUTION

2 ERACS2-WQ/S 1002 multi-purpose units, Climaveneta branded. ClimaPRO by Climaveneta is the managing system able to control multi-purpose units modifying their set point according to the system needs.

As a matter of fact, it is able to control the operating parameters of the units at any time, EER and COP included, optimizing them and measuring the whole system's efficiency to always ensure the best performances both in cooling and heating mode.

At Habita.79 the estimated energy savings will be about 30% and the use of renewable resources will exceed 48%.

10/11

## MONTESSORI INSTITUTE IN FERMO FERMO - ITALY

Period: 2016 - 2017 Application: School / University Plant type: Hydronic System Cooling capacity: 90 kW Heating capacity: 80 kW Installed machines: 53x a-CHD U 2T 0706, 4x a-LIFE2, 1x NX-LN K 0352P, 1x IDRORELAX



# HOTEL LA TORRE BARI SARDO, OGLIASTRA - ITALY

#### Period: 2016

Application: Hotel and resorts Plant type: Hydronic System Cooling capacity: 58 kW Heating capacity: 46 kW Installed machines: 2x AWR DHW2 XE 0101T SL, 1x IDRORELAX, 16x a-LIFE2 DLIV, 4x a-CHD



## OSTEOPATHY ITALIAN ACADEMY PESCARA - ITALY

Period: 2016 Application: School / University Plant type: Hydronic System Cooling capacity: 140 kW Heating capacity: 160 kW Installed machines: 10x a-HWD2 DLIO, 22x MHD2, 10x a-CHD, 2x NX-N LN K 0302P



## NEUROMED CLINIC ISERNIA - ITALY

Period: 2016 - 2018 Application: Healthcare / Hospitals Plant type: Hydronic System Cooling capacity: 772 kW Heating capacity: 816 kW Air flow: 197000 M<sup>3</sup>/h Installed machines: 1x ERACS2-Q/XL-CA 3222, 22x WIZARD, 108x a-CHD U 2T 0606, 66x a-CHD U 2T 0706, 21x a-LIFE2 HP DLIO 0302









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.

# MITSUBISHI ELECTRIC HYDRONICS & IT COOLING SYSTEMS S.p.A.

Head Office: Via Sarson 57/c - 36061 Bassano del Grappa (VI) - Italy Tel (+39) 0424 509 500 - Fax (+39) 0424 509 509 www.climaveneta.com

www.melcohit.com