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

UNITS FOR SIMULTANEOUS AND INDEPENDENT PRODUCTION OF HOT AND COLD WATER

i-FX-WQ G01 G05

WATER SOURCE UNITS FOR 4-PIPE SYSTEMS, WITH VARIABLE SPEED DRIVEN SCREW COMPRESSORS, FROM 408 TO 872 kW

R134a

R513A

CLIMAVENETA®

i-FX-WQ G01 G05

MAXIMUM COMFORT FOR A GREENER FUTURE

Water source units for 4-pipe systems, with 2 VSD screw compressors in 2 independant refrigerant circuits and low GWP refrigerant. From 408 to 872 kW.

i-FX-WQ-G05 and i-FX-WQ-G01 muti-function units are able to satisfy simultaneous heating and cooling needs in buildings while recovering energy at the highest efficiency possible.

The new G05 range offers an ecofriendly approach:

R513A low GWP refrigerant ensures the lowest CO_2 eq tons in the market.

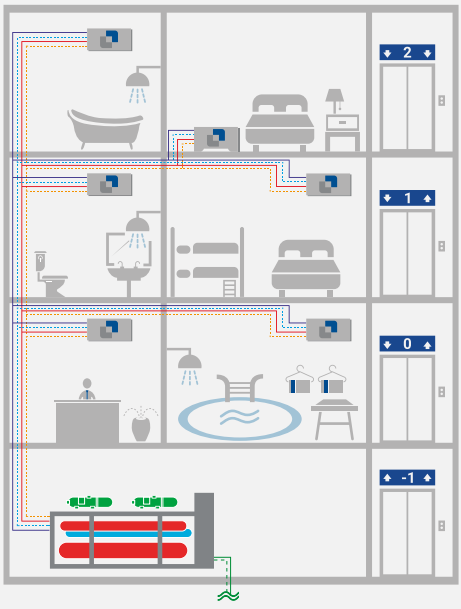
The advanced control logic, developed by Mitsubishi Electric Hydronics & IT Cooling Systems ensures that heating and cooling loads are perfectly met.

THE INTEGRA 4-PIPE SYSTEM

This type of system is suitable for air-conditioning in buildings that require separate areas to be heated and cooled at the same time.

Assuring maximum comfort in every room of the building, independently and at any time of the year.

A single intelligent unit is sufficient for the management of these complex systems: **INTEGRA.**



TOP-LEVEL PERFORMANCE IN HEATING AND COOLING

HEATING
COOLING

	UP TO EER	SEER	COP	SCOP	TER
i-FX-WQ-G01	5,38	6,67	4,52	6,33	8,06

COOLING CAPACITY + HEATING CAPACITY
POWER CONSUMPTION

EER conditions: evap. 12/7°C, cond. 14/30°C – NET values [EN14511 – EN14825]
COP conditions: cond. 40/45°C, evap. 14/7°C – NET values [EN14511 – EN14825]
SCOP - Regulation (EU) N.813/2013
SEER - Regulation (EU) N.2281/2016

SELF-ADAPTABILITY WITH SIMULTANEOUS LOADS

The unit can independently produce hot and cold water at the same time, according to the actual building needs.

SYSTEM SIMPLIFICATION

The use of a unit that independently produces both heating and cooling eliminates the need for separate heating and cooling resources.

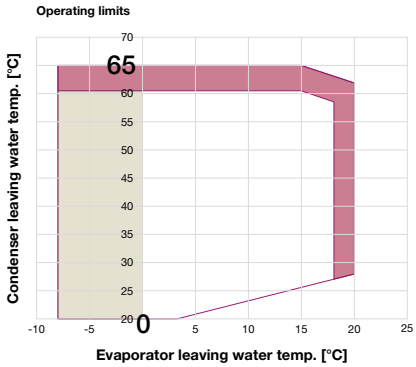
REDUCTION OF ON-SITE OPERATIONS

PLUG & PLAY

A simplified system results in a significant reduction in the operations to be carried out on site. This means substantial savings in terms of time and costs for the client.

EXTENDED WORKING RANGE

- **Standard unit**
  Work as std with high CLWT, **up to 60°C**
- **HWT kit (Hot Water Temperature kit)**
  Hot water production **up to 65°C.**
- **Negative fluid temperature kit**
  Evaporator leaving water temperatures below **0°C.**



3 ACOUSTIC CONFIGURATIONS

Standard

Integral acoustic enclosure «BASE»:
-14 dB(A) compared to std unit

Integral acoustic enclosure «PLUS»:
-18 dB(A) compared to std unit

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i-FX-WQ G05

All-round sustainability

Fully committed to supporting the creation of a greener tomorrow, Mitsubishi Electric Hydronics & IT Cooling Systems presents i-FX-WQ-G05, a complete 4-pipe system range with reduced environmental impact, optimized for R513A refrigerant.

Combining brilliant annual efficiency with the use of a low GWP refrigerant, i-FX-WQ-G05 tackles both the indirect (due to primary energy consumption) and the direct global warming, thus resulting in the perfect choice for any new, forward-looking cooling system.

r R513A

LOW GWP
-56% GWP vs R134a

Non-flammable
Safety Class A1

New generation refrigerant with reduced greenhouse effect. Non-flammable.

Favorable physical properties

Same cooling capacity delivered as R134a
Same operating pressures as R134a

Compliant with eco regulation objectives

No future retrofit required
Reduced price volatility

In line with standard building codes

No special equipment
No need for flammable risk assesment
No extra costs

R513A

REFRIGERANT BENCHMARK

New regulations like the EU F-gas and the Kigali Amendment to the Montreal Protocol, are driving the industry towards new eco-friendly refrigerants, with reduced greenhouse effect.

Unfortunately, the majority of low GWP refrigerants raises another critical issue: flammability.

The new refrigerant R513A, chosen for i-FX-WQ-G05, is a brilliant exception: it offers a -56% GWP reduction compared to R134a's while ensuring complete non-toxicity and non-flammability (Class A1 of ASHRAE 34, ISO 817).

SCROLL

Refrigerant	GWP*	Flammability**
R410A	2088	NON flammable
R32	675	MILDLY flammable
R454B	467	MILDLY flammable
R452B	698	MILDLY flammable

SCREW

Refrigerant	GWP*	Flammability**
R134a	1430	NON flammable
R513A	631	NON flammable
1234ze	7	MILDLY flammable
1234yf	4	MILDLY flammable

*IPCC AR4 **ASHRAE 34 - ISO 817

TO LEARN MORE ABOUT GREEEN REFRIGERANTS
https://www.melcohit.com/en/stories/6/green-refrigerants

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i-FX-WQ G01 G05

TOTAL INVERTER TECHNOLOGY

HIGHER ENERGY EFFICIENCY

In Comfort applications units are usually working partialized.

In this condition the full inverter technology of i-FX-WQ makes the real difference in terms of efficiency, especially compared to traditional fixed speed units.

+ 20%

Over 20% higher than fixed speed solutions.

ABSENCE OF IN-RUSH CURRENTS

The inverter technology involves a start-up phase with very low in-rush current.

The frequency converters chosen by MEHITS are characterized by a Soft Start procedure that leads to the absence of high in-rush currents.

No electrical and mechanical stress

The unit never exceeds the nominal current, not even when starting up.

No additional equipment needed

Such as star/delta commuters or soft starters

The new i-FX-WQ range of 4-pipe units apply variable speed technology on both screw compressors, achieving top-level performances in any load condition.

REDUCED SOUND POWER LEVELS

LOWER SPEED, LOWER NOISE

The unit working in partial loads is far more silent than a fixed speed compressor unit.

i-FX-WQ range ensures extremely low noise operations compared to fixed speed units.

Ideal for sound sensitive environments

- Museums and Theatres
- Hospitals
- Institutions
- Hotels

CONTINOUS CAPACITY CONTROL

The smart design always has the ideal capacity and extreme modularity control in every load condition thanks to the two independent refrigerant circuits and the full inverter technology.

Technological Choices

Leading know-how in 4-pipe units since 1982.

W3000+ CONTROL

Management software developed completely in-house.

- Propriety settings for faster adaptive responses to different dynamics
- Enhanced diagnostics thanks to the black box function
- Connectivity with the most commonly used BMS protocols

KIPLINK USER INTERFACE

Based on Wi-Fi technology, Kiplink is an option that allows one to operate the unit directly from a mobile device (smartphone, tablet, or notebook) by simply scanning the QR code positioned on the unit.

INVERTER SCREW COMPRESSORS

Bitzer inverter screw compressors.

- External frequency converters, air cooled
- Optimized for High pressure ratio applications
- **Long life bearings** (lifetime > 150.000 h)

Maximum quality of every single component, attention to detail, dedicated components for R513A refrigerant: this is what makes i-FX-WQ-G05 the ideal solution for forward-looking heating and cooling systems.

HEAT EXCHANGERS

Shell&tube dry expansion heat exchangers, fully developed and produced by MEHITS, fully balanced for 4-pipe applications.

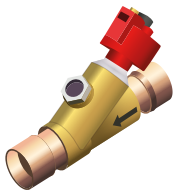
INDEPENDENT REFRIGERANT CIRCUITS

Two independent refrigerant circuits in all sizes, to grant:

- Reliability & easy maintenance
- A very low continuous minimum capacity ratio
- Double pressure relief valve as standard
- Maximum flexibility to the request of the plant

ELECTRONIC EXPANSION VALVE

Managed by proprietary dedicated logics, to guarantee an excellent flow control and a highly precise temperature control in every load condition.



TECHNICAL DATA
i-FX-WQ-G05

TECHNICAL DATA
i-FX-WQ-G01

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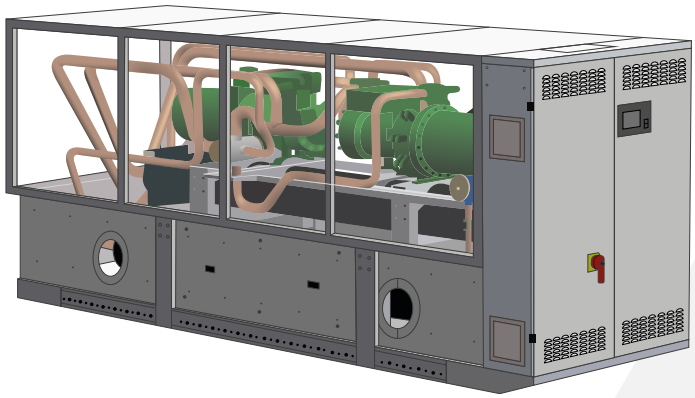
Further Options

ACOUSTIC OPTIONS

Integral acoustical enclosure - STANDARD (Opt. 2313): A complete acoustical enclosure is provided to enclose the entire unit, for **-14 dB(A)** sound power reduction compared to the std unit.

Integral acoustical enclosure - PLUS (Opt. 2314): A complete acoustical enclosure is provided to enclose the entire unit, for **-18 dB(A)** sound power reduction compared to the std unit. (BEST-IN-CLASS).



AUXILIARY INPUTS

4-20 mA (Opt. 6161): Enables remote set-point adjustments (analog input).

Double set-point (Opt. 6162): Enables the remote switch between 2 set-points (digital input). Maximum allowed difference between the two set points is 10 K.

Signal external capacity cap (opt. 6172): Limits the unit cooling capacity to a specific % value, by acting on active resources and their operating frequencies.

BMS CONNECTION

Serial card interface module to allow integration with BMS protocols: Modbus / BACnet MS/TP / BACnet over IP / Konnex / Modbus TCP/IP/ SNMP

LEAK DETECTION

Leak detector (Opt. 3431): Factory installed device. In case of a gas leak detection it raises an alarm

Leak detector + compressor off (Opt. 3433): Factory installed device. In case of a gas leak detection it raises an alarm and stops the units.

ENERGY METER

Energy meter for BMS (Opt. 5924): Acquires the electrical data and the power absorbed by the unit and sends them to the BMS for energy metering (Modbus RS485).

Energy meter for W3000+ (Opt. 5925) The electrical data acquired is available directely on the unit's control.

OPERATING MAP

HWT kit (Opt. 1953): Specific components are used to enlarge the operating limits of the unit.

Negative fluid temperatures (Opt. 871): Allows the operation of the unit with evaporator leaving water temperatures below 0°C.

HYDRAULIC

Water flow switches (Opt. 1811): Provided for evaporator and source side exchanger. Designed to protect the unit where the water flow is not sufficient and falls outside of the operating parameters.

2-way (Opt. 4924 to 4929) or 3-way modulating valves (Opt. 4934 to 4937): 2- or 3-way modulating valves able to control the water flow across the source side heat exchanger.

MECHANICAL

Rubber type anti-vibration mountings (supplied loose): Reduce vibrations, keeping noise transmission to a minimum.

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Head Office: Via Caduti di Cefalonia 1 - 36061 Bassano del Grappa (VI) - Italy
Tel (+39) 0424 509 500 - Fax (+39) 0424 509 509

www.melcohit.com