

COMFORT APPLICATIONS

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NEW REFRIGERANT TRENDS



Mitsubishi Electric Hydronics & IT Cooling Systems is fully committed to supporting the creation of a greener tomorrow by adopting forward-looking refrigerants able to combine both high efficiency standards with a sustainable approach.

THE CALL FOR CLIMATE ACTION

Based on the specific characteristics of each plant and segment, and according to performance levels, operational reliability and costs, Mitsubishi Electric Hydronics & IT Cooling Systems introduces the new G04 and G05 series optimized for the HFO 1234ze and R513a eco-friendly refrigerants.



G04 SERIES

PRODUCT RANGE WITH HFO 1234ze REFRIGERANT.

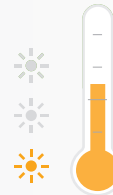
The G04 series with HFO 1234ze refrigerant is the greenest eco-friendly alternative to traditional refrigerants and the perfect solution for HVAC plants where environmental issue is a key priority. Featuring GWP values almost 0, the G04 series maintain very high efficiency values and operating performance similar to the R134a products.



Ozone Depletion Potential

NEGLIGIBLE GWP Global Warming Potential

GWP_{100 year} < 1



COMPATIBLE WITH COMMON CONSTRUCTION MATERIALS

- ✓ No special components
- ✓ No extra cost

IN-LINE WITH ENVIRONMENTAL REGULATION OBJECTIVES

- ✓ No future retrofit required

RAPID MOLECULE DISINTEGRATION IN THE ATMOSPHERE

- ✓ HFO 1234ze = 2 weeks (R134a = 14 years)

APPROVED BY INTERNATIONAL STANDARDS

- ✓ ASHRAE 34, ISO 817:
- ✓ A2L classification (non toxic, mildly flammable)

CHILLERS



R HFO1234ze

	0	500kW	1000kW	1500kW
FX HFO 1502-7823 Air cooled, screw compressor chiller	234,7 ▶			◀ 1463
i-FX-G04 2202-7823 Air cooled, inverter driven screw compressor chiller	382,7 ▶			◀ 1463
TECS2 HFO 0351-1053 Air cooled, inverter driven oil-free compressor chiller	339,2 ▶		◀ 1017	
FX-W-G04 0551-2002 Water cooled, screw compressor chiller	93,17 ▶		◀ 373,4	
TECS2-W HFO 0351-1414 Water cooled, inverter driven oil-free compressor chiller	339,3 ▶		◀ 1364	

G05 SERIES with R513a

The green alternative to R134a



Among the alternative refrigerants available on the market, the R513a of the G05 series features very low GWP values and 0 depletion potential.

**-56% GWP
COMPARED TO R134A**

**NON-FLAMMABLE
Safety Class A1**

REDUCED GWP

- ✓ R513a GWP_{100 year} =572
- ✓ R134a GWP_{100 year} =1300
- ✓ GWP values according to IPCC AR5

NON-TOXIC, NON-FLAMMABLE

- ✓ ASHRAE 34,
ISO817: A1 class

FAVORABLE PHYSICAL PROPERTIES

- ✓ Same cooling capacity delivered as R134a
- ✓ Same operating pressures as R134a

IN-LINE WITH STANDARD BUILDING CODES

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

COMPLIANT WITH ECO REGULATION OBJECTIVES

- ✓ No future retrofit required
- ✓ Reduced price volatility

CHILLERS



R HFC R513A

		0	500kW	1000kW	1500kW	2000kW	2500kW
FX-G05	0751-1801	140,1					395,7
Air cooled, screw compressor chiller							
FX-G05	1502-7223	288,5					1710
Air cooled, screw compressor chiller							
i-FX-G05	2202-7223	478,6					1697
Air cooled, inverter driven screw compressor chiller							
TECS2-G05	0211-1154	217,9					1313
Air cooled, oil-free compressor chiller							
FX-W-G05	0551-1752	124,3					400,6
Water cooled, screw compressor chiller							
FOCS2-W-G05	1301-9604	306					2416
Water cooled, screw compressor chiller							
FOCS3-W-G05	0551-4752	188,2					1693
Water cooled, screw compressor chiller							
i-FX-W (1+i)-G05	1402-4652	532,3					1784
Water cooled, inverter driven and fixed speed screw compressor chiller							
TX-W-G05	1A00-6D00	248					4466
Water cooled, oil-free compressor chiller							
TECS-FC-G05	0211-1204	299,2					1671
Air cooled, oil-free compressor chiller with free-cooling technology							

HEAT PUMPS



R HFC R513A

		0	500kW	1000kW	1500kW	2000kW	2500kW
FOCS-N-G05	2022-4822	440,7					1162
Air cooled, screw compressor heat pump							
FOCS2-W /H	1301-9604	306					2416
Water cooled, screw compressor heat pump							
i-FX-W (1+i)-G05 /H	1402-4652	532,3					1784
Water cooled, inverter driven and fixed speed screw compressor heat pump							

UNITS FOR SIMULTANEOUS AND INDEPENDENT PRODUCTION OF HOT AND COLD WATER



R HFC R513A

		0	500kW	1000kW	1500kW	2000kW	2500kW
ERACS2-Q-G05	1062-3222	199,5					825,6
Air cooled, screw compressor 4-pipe heat pump							
i-FX-Q2-G05	0502-1102	442,9					1125
Air cooled, full inverter screw compressor 4-pipe heat pump							
ERACS2-WQ-G05	0802-1502	189,4					363,4
Water cooled, screw compressor 4-pipe heat pump							

i-FX-W (1+i)

1402 - 4652 532,3-1784 kW

High efficiency water cooled chiller



Single circuit indoor unit for the production of chilled water, with fixed speed and variable speed (Inverter Driven) screw compressors optimized for R134a, electronic expansion valve, high performing shell and tube condenser and shell and tube flooded evaporator, both designed and produced by Mitsubishi Electric Hydronics & IT Cooling Systems S.p.A. These technological solutions enhance the EER values over 5,7 at Eurovent standard conditions. The resulting unit is extremely compact, thanks to the strategic layout, designed without base, frame and panels.

Control



W3000TE

W3000TE features a large keyboard and wide LCD display for an easy and safe access to the machine setup and a complete view of unit's status. The assessment and intervention on the unit is managed through a multi-level menu, with selectable user's language. An optional extra is the touch screen interface: 7.0" WVGA colour display with adjustable LED backlight and front USB port. The touch screen technology allows intuitive navigation between the various screens, safe access to the data with a three-level password protection as well as the graphic display of the performance of some monitored measurements. Complete alarm management system is available, with the "black-box" and the alarm history display functions. For the systems made of several units, the adjustment of the resources is performed by optional proprietary devices. Consumption metering and performance measurement are possible and supervision can be developed via proprietary devices or the integration in third party systems by means of the most common protocols ModBus, Bacnet, Bacnet-over-IP, LonWorks.

Compatibility with remote keyboard (up to 8 units). The programmable timer allows the creation of an operating profile up to 4 typical days and 10 time bands. Continuous modulation of the unit capacity, based on PID algorithms and referring to the water delivery temperature.

Refrigerant



Versions

CA High energy efficiency units

Features

HIGH EFFICIENCY

Unit with high efficiency and reduced energy consumption, thanks to the inverter technology, contributing to lower operating costs and therefore achieving a quick return on investment.

FLEXIBILITY

Unit featured by remarkable application flexibility thanks to the inverter technology which allows to obtain, taking in consideration the cooling capacity needed, the best result about costs/performances and maximum efficiency.

TOTAL VERSATILITY

Unit designed gathering in a single circuit a compressor with step regulation and one working with inverter, in order to guarantee the best answer to plant necessities both at full and at part loads.

MAXIMUM COMPACTNESS

Maximum compactness to achieve a very high flexibility in the design process and installation operations, offering a premium solution in case of reduced clearances or when retrofitting existing installations.

AHRI CERTIFICATION

Certified in accordance with the AHRI Water-Cooled Water-Chilling and Heat Pump Water-Heating Packages Certification Program, which is based on AHRI Standard 550/590 (I-P). Certified units may be found in the AHRI Directory at www.ahridirectory.org

Accessories

- Touch Screen visual display
- VPF (Variable Primary Flow) system
- Set-up for remote connectivity with ModBus/Echelon protocol cards
- Several devices for condensation's control

i-FX-W (1+i)			1402	1752	1902	2152	2602
Power supply		V/ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
PERFORMANCE							
COOLING ONLY (GROSS VALUE)							
Cooling capacity	(1)	kW	532,3	665,0	721,0	819,3	998,7
Total power input	(1)	kW	97,87	119,5	129,9	148,3	181,7
EER	(1)	kW/kW	5,437	5,565	5,550	5,525	5,496
ESEER	(1)	kW/kW	8,520	8,570	8,470	8,620	8,630
COOLING ONLY (EN14511 VALUE)							
Cooling capacity	(1)(2)	kW	486,7	608,1	659,4	750,0	914,3
EER	(1)(2)	kW/kW	5,370	5,490	5,480	5,470	5,470
ESEER	(1)(2)	kW/kW	7,460	7,510	7,400	7,530	7,530
Cooling energy class			A	A	A	A	A
ENERGY EFFICIENCY							
SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)							
Ambient refrigeration							
Prated,c	(7)	kW	487	608	659	750	914
SEER	(7)(8)		7,30	7,25	7,17	7,31	7,44
Performance ηs	(7)(9)	%	284	282	279	284	289
EXCHANGERS							
HEAT EXCHANGER USER SIDE IN REFRIGERATION							
Water flow	(1)	l/s	23,34	29,16	31,62	35,96	43,84
Pressure drop	(1)	kPa	30,5	34,7	33,8	33,2	37,1
HEAT EXCHANGER SOURCE SIDE IN REFRIGERATION							
Water flow	(1)	l/s	27,44	34,18	37,07	42,16	51,41
Pressure drop	(1)	kPa	37,4	35,4	41,7	41,5	38,7
REFRIGERANT CIRCUIT							
Compressors nr.		N°	2	2	2	2	2
No. Circuits		N°	1	1	1	1	1
Refrigerant charge		kg	118	160	164	177	258
NOISE LEVEL							
Sound Pressure	(3)	dB(A)	82	82	81	83	83
Sound power level in cooling	(4)(5)	dB(A)	100	100	100	102	102
SIZE AND WEIGHT							
A	(6)	mm	2950	3310	3310	3310	4475
B	(6)	mm	1320	1425	1445	1480	1410
H	(6)	mm	1805	1935	2000	2150	2250
Operating weight	(6)	kg	3350	4280	4410	4830	6630

Notes

- Plant (side) cooling exchanger water (in/out) 12°C/7°C; Source (side) heat exchanger water (in/out) 30°C/35°C.
- Values in compliance with EN14511
- Average sound pressure level at 1m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.
- Sound power on the basis of measurements made in compliance with ISO 9614.
- Sound power level in cooling, indoors.
- Unit in standard configuration/execution, without optional accessories.
- Parameter calculated according to [REGULATION (EU) N. 2016/2281]
- Seasonal energy efficiency ratio
- Seasonal space cooling energy efficiency

The units highlighted in this publication contain HFC R134a [GWP₁₀₀ 1430] fluorinated greenhouse gases.

Certified data in EUROVENT

i-FX-W (1+i)			3002	3402	3852	4252	4652
Power supply		V/ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
PERFORMANCE							
COOLING ONLY (GROSS VALUE)							
Cooling capacity	(1)	kW	1143	1296	1472	1607	1784
Total power input	(1)	kW	207,3	233,3	264,5	291,6	329,6
EER	(1)	kW/kW	5,514	5,555	5,565	5,511	5,413
ESEER	(1)	kW/kW	8,550	8,560	8,600	8,440	8,390
COOLING ONLY (EN14511 VALUE)							
Cooling capacity	(1)(2)	kW	1046	1186	1348	1482	1632
EER	(1)(2)	kW/kW	5,520	5,580	5,620	5,520	5,470
ESEER	(1)(2)	kW/kW	7,590	7,650	7,740	7,490	7,440
Cooling energy class			A	A	A	A	A
ENERGY EFFICIENCY							
SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)							
Ambient refrigeration							
Prated,c	(7)	kW	1046	1186	1348	1482	1632
SEER	(7)(8)		7,58	7,55	7,67	7,36	7,43
Performance ηs	(7)(9)	%	295	294	299	287	289
EXCHANGERS							
HEAT EXCHANGER USER SIDE IN REFRIGERATION							
Water flow	(1)	l/s	50,15	56,88	64,63	71,06	78,30
Pressure drop	(1)	kPa	37,5	31,9	30,9	37,3	45,3
HEAT EXCHANGER SOURCE SIDE IN REFRIGERATION							
Water flow	(1)	l/s	58,76	66,56	75,57	83,27	91,86
Pressure drop	(1)	kPa	30,0	33,3	29,6	35,9	29,5
REFRIGERANT CIRCUIT							
Compressors nr.		N°	2	2	2	2	2
No. Circuits		N°	1	1	1	1	1
Refrigerant charge		kg	295	315	323	338	338
NOISE LEVEL							
Sound Pressure	(3)	dB(A)	83	82	82	84	84
Sound power level in cooling	(4)(5)	dB(A)	102	102	102	104	104
SIZE AND WEIGHT							
A	(6)	mm	4475	4570	4650	4650	4850
B	(6)	mm	1405	1435	1495	1495	1495
H	(6)	mm	2250	2380	2500	2500	2500
Operating weight	(6)	kg	7470	8220	8800	8930	9340

Notes

- 1 Plant (side) cooling exchanger water (in/out) 12°C/7°C; Source (side) heat exchanger water (in/out) 30°C/35°C.
- 2 Values in compliance with EN14511
- 3 Average sound pressure level at 1m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.
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Dimensional drawing

