

UNITS FOR SIMULTANEOUS AND INDEPENDENT PRODUCTION OF HOT AND COLD WATER i-FX-Q2 0502 - 1102

**INTEGRA unit for 4-pipe systems, air source, VSD screw compressors and EC fans, for outdoor installation
443-1125 kW**



Full inverter multi-purpose outdoor unit for use in 4-pipe systems for the simultaneous production of chilled and hot water in two independent hydronic circuits. These units are able to simultaneously satisfy the demand for hot and cold water through a system that does not require seasonal switching and is therefore a valid alternative to traditional plants with chiller and boiler. Each circuit works with a variable speed drive semi-hermetic screw compressor using R134a, two shell and tubes heat exchangers and a source side coil heat exchanger shared by both circuits. The cold side shell and tube heat exchanger acts as an evaporator for the production of cold water, while the hot side shell and tube heat exchanger works as a condenser for the production of hot water. The source side auxiliary finned coil works as either condenser or evaporator as required by the loads.

Controls

W3000TE

The W3000TE controller offers advanced functions and algorithms.

KIPLink - Keyboard In Your Pocket - is the innovative user interface based on WiFi technology that allows one to operate on the unit directly from the smartphone or tablet. Using KIPLink, it is possible to turn the unit on and off, adjust the set-point, plot the main operating variables, monitor in detail the status of the refrigerant circuits, the compressors, the fans and the pumps (if present) and display and reset the possible alarms. In addition to or as an alternative, the Touch interface, with a 7" WVGA colour display and a front USB port, or the Large keyboard, with a wide LCD display and led icons, are available. The temperature control is characterized by the continuous capacity modulation, based on PID algorithms. The diagnostics comprises a complete alarm management system, with the "black-box" (via PC) and the alarm history display (via user interface or also PC) for enhanced analysis of the unit operation. Optional proprietary devices can perform the adjustment of the resources in systems made of several units. Consumption metering and performance measurement are possible as well. Supervision can be easily developed via proprietary devices or the integration in third party systems by means of the most common protocols as ModBus, Bacnet, Bacnet-over-IP, LonWorks. Compatibility with the remote keyboard (up to 8 units). The programmable timer manages a weekly schedule organised into time bands to optimise unit performance by minimising power consumption during periods of inactivity. Up to 10 daily time bands can be associated with different operating set points.

Version

CA	Class A of efficiency
SL-CA	Super Low noise version, Class A of efficiency
XL-CA	eXtra Low noise version, Class A of efficiency

Features

UNIQUE PROPOSAL

Unit designed to satisfy the cold and the hot side requirements simultaneously, for 4-pipe systems without any particular operation mode setting

ENERGY SAVING

Energy saving guaranteed by the advanced operation's logic. The best operation mode is set completely automatically and independently by the unit's controller, in order to minimize the absorbed energy whatever the cooling and/or heating demand might be

VERY HIGH EFFICIENCY

High full load and partial load efficiency in both heating and cooling mode, using inverter technology to continuously modulate compressors operation and EC fans as standard, in order to deliver the exact amount of energy based on the actual needs of the plant. High efficiency means reduced energy consumption throughout the entire year, for any operation mode and any outdoor condition.

ErP READY

The highest level of efficiency at part load, thanks to the inverter technology, can meet and exceed the minimum seasonal efficiency for heating, SCOP (only for reversible units) and for cooling, SEER, according with the eco-sustainable design requirements for all products using energy. The units already comply with the minimum seasonal energy efficiency requirements that will start from 2021.

WIDE OPERATING RANGE

Unit's operation guaranteed with external air temperature down to -12°C during winter and up to 46°C during summer. Production of hot water up to 60°C without accessories and chilled water from -8°C to +18°C in order to suit any possible application.

HARMONY BETWEEN UNIT AND PLANT

Low inrush current and power factor higher than similar fixed speed units, permit an easy electrical installation which is not stressed during start-up and with no need of extra devices for power factor correction. The use of VSD technology allows the unit to privatize in a stepless way, with consequent lower fluctuations of leaving water temperature.

TRUE SILENCE

At partial loads (ie for most of the year), thanks to the use of EC fans and VSD screw compressors, i-FX-Q2 units are characterized by lower noise emissions compared to fixed speed units.

FLEXIBLE SELECTION

The units can be selected beyond the nominal point, giving the possibility to contain the initial investment (boost selection) or to emphasize even more the efficiencies (derating selection).

Accessory

- "LT" kit for working down to -12°C in heat pump mode
- Noise reducer (only on not silenced versions)
- Special fan diffusers
- Thicker soundproofing cladding
- Hydronic group
- VPF (Variable Primary Flow) system
- Set-up for remote connectivity with ModBus, Echelon, Bacnet, Bacnet over-IP.
- Touch Screen visual display
- Leak detector



i-FX-Q2 CA		0502	0532	0602	0652	0702	0802	0902	1002	1102	
Power supply	V/ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	
PERFORMANCE											
SELECTION RANGE											
Cooling capacity range	(1)	kW	403-520	432-536	454-570	517-671	599-712	620-787	795-982	901-1048	1049-1125
EER (up to)	(1)	kW/kW	3,33	3,29	3,36	3,24	3,24	3,33	3,24	3,21	3,06
Heating capacity range	(3)	kW	376-492	404-492	427-526	498-638	582-678	612-757	788-931	898-979	982-1060
COP (up to)	(3)	kW/kW	3,50	3,48	3,53	3,48	3,52	3,60	3,46	3,26	3,49
SELECTION RATED											
COOLING ONLY (GROSS VALUE)											
Cooling capacity	(1)(10)	kW	488	531	570	627	689	787	915	985	1083
Total power input	(1)(10)	kW	155	168	182	199	219	251	288	312	360
EER	(1)(10)	kW/kW	3,14	3,15	3,14	3,15	3,14	3,13	3,18	3,16	3,01
COOLING ONLY (EN14511 VALUE)											
Cooling capacity	(1)(2)(10)	kW	486	529	568	625	687	786	912	982	1079
EER	(1)(2)(10)	kW/kW	3,10	3,10	3,10	3,10	3,10	3,10	3,14	3,12	2,97
HEATING ONLY (GROSS VALUE)											
Total heating capacity	(3)(10)	kW	458	486	526	593	652	757	862	928	1018
Total power input	(3)(10)	kW	133	143	154	171	189	216	248	265	292
COP	(3)(10)	kW/kW	3,44	3,40	3,42	3,47	3,45	3,51	3,47	3,50	3,48
HEATING ONLY (EN14511 VALUE)											
Total heating capacity	(2)(3)(10)	kW	460	487	527	594	654	759	865	931	1020
COP	(2)(3)(10)	kW/kW	3,42	3,38	3,41	3,45	3,43	3,49	3,44	3,48	3,46
COOLING WITH TOTAL HEAT RECOVERY											
Cooling capacity	(4)(10)	kW	489	533	571	624	683	785	914	987	1102
Total power input	(4)(10)	kW	137	151	161	174	193	221	258	274	310
Recovery heat exchanger capacity	(4)(10)	kW	617	675	722	788	864	993	1157	1245	1393
TER	(4)(10)	kW/kW	8,08	8,01	8,04	8,11	8,02	8,03	8,02	8,13	8,06
ENERGY EFFICIENCY											
SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)											
Ambient refrigeration											
Prated,c	(12)	kW	-	-	-	625	687	786	912	982	1079
SEER	(12)(13)		-	-	-	4,93	4,95	4,95	4,57	4,52	4,45
Performance η_s	(12)(14)	%	-	-	-	194	195	195	180	178	175
SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)											
PDesign	(5)(10)	kW	340	364	390	-	-	-	-	-	-
SCOP	(5)(10)(15)		3,91	3,92	3,89	-	-	-	-	-	-
Performance η_s	(5)(10)(16)	%	153	154	153	-	-	-	-	-	-
Seasonal efficiency class	(5)(10)		-	-	-	-	-	-	-	-	-
EXCHANGERS											
HEAT EXCHANGER USER SIDE IN REFRIGERATION											
Water flow	(1)(10)	l/s	23,31	25,41	27,26	29,97	32,95	37,65	43,76	47,12	51,77
Pressure drop	(1)(10)	kPa	40,8	51,6	32,5	40,5	45,4	29,0	39,7	42,3	51,4
HEAT EXCHANGER USER SIDE IN HEATING											
Water flow	(3)(10)	l/s	22,13	23,47	25,38	28,61	31,49	36,55	41,61	44,81	49,14
Pressure drop	(3)(10)	kPa	22,5	25,4	21,4	27,0	32,0	32,2	41,7	34,9	30,0
REFRIGERANT CIRCUIT											
Compressors nr.	N°	2	2	2	2	2	2	2	2	2	
No. Circuits	N°	2	2	2	2	2	2	2	2	2	
Regulation			STEPLESS								
Refrigerant			R134a								
Refrigerant charge	kg	230	235	240	260	260	325	350	470	470	
NOISE LEVEL											
Sound Pressure	(6)(10)	dB(A)	66	66	68	68	68	68	69	69	69
Sound power level in cooling	(7)(8)(10)	dB(A)	99	99	101	101	101	101	102	102	102
Sound power level in heating	(7)(9)(10)	dB(A)	99	99	101	101	101	101	102	102	102
SIZE AND WEIGHT											
A	(11)	mm	8150	8150	8900	9650	10400	10400	10400	11900	11900
B	(11)	mm	2260	2260	2260	2260	2260	2260	2260	2260	2260
H	(11)	mm	2530	2530	2530	2530	2530	2530	2530	2530	2530
Operating weight	(11)	kg	8350	8380	9080	9590	10060	11010	12310	14110	14150

Notes:

1 Plant (side) cooling exchanger water (in/out) 12°C/7°C; Source (side) heat exchanger air (in) 35°C.

2 Values in compliance with EN14511-3:2013.

3 Plant (side) heat exchanger water (in/out) 40°C/45°C; Source (side) heat exchanger air (in) 7°C - 87% R.H.

4 Plant (side) cooling exchanger water (in/out) 12°C/7°C; Plant (side) heat exchanger water (in/out) 40°C/45°C.

5 Seasonal space heating energy efficiency class LOW TEMPERATURE in AVERAGE climate conditions [REGULATION (EU) N. 813/2013]

6 Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.

7 Sound power on the basis of measurements made in compliance with ISO 9614.

8 Sound power level in cooling, outdoors.

9 Sound power level in heating, outdoors.

10 Unit performance with inverter compressor at nominal speed.

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

12 Seasonal energy efficiency of the cooling environment [REGULATION (EU) N. 2016/2281]

13 Seasonal space heating energy index

14 Seasonal energy efficiency of the space cooling

15 Seasonal performance coefficient

16 Seasonal space heating energy efficiency

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

i-FX-Q2 SL-CA	0502	0532	0602	0652	0702	0802	0902	1002	1102		
Power supply	V/ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50		
PERFORMANCE											
SELECTION RANGE											
Cooling capacity range	(1)	kW	386-499	415-513	445-549	506-647	584-687	576-766	733-905	844-982	945-1049
EER (up to)	(1)	kW/kW	3,20	3,20	3,27	3,20	3,21	3,11	3,18	3,14	3,02
Heating capacity range	(3)	kW	389-487	400-487	438-521	504-631	595-672	610-749	783-873	885-939	968-1008
COP (up to)	(3)	kW/kW	3,55	3,55	3,65	3,54	3,30	3,63	3,46	3,42	3,51
SELECTION RATED											
COOLING ONLY (GROSS VALUE)											
Cooling capacity	(1)(10)	kW	468	508	549	604	665	766	881	952	1039
Total power input	(1)(10)	kW	155	169	181	196	215	251	293	316	370
EER	(1)(10)	kW/kW	3,01	3,00	3,03	3,08	3,10	3,05	3,00	3,02	2,81
COOLING ONLY (EN14511 VALUE)											
Cooling capacity	(1)(2)(10)	kW	466	507	548	602	663	764	879	949	1036
EER	(1)(2)(10)	kW/kW	2,98	2,96	3,00	3,04	3,06	3,03	2,97	2,98	2,77
HEATING ONLY (GROSS VALUE)											
Total heating capacity	(3)(10)	kW	454	482	521	587	647	749	852	919	1008
Total power input	(3)(10)	kW	131	141	151	168	186	212	245	262	289
COP	(3)(10)	kW/kW	3,46	3,41	3,44	3,49	3,48	3,53	3,47	3,52	3,49
HEATING ONLY (EN14511 VALUE)											
Total heating capacity	(2)(3)(10)	kW	455	483	522	588	648	751	854	922	1010
COP	(2)(3)(10)	kW/kW	3,44	3,39	3,42	3,47	3,45	3,50	3,45	3,49	3,47
COOLING WITH TOTAL HEAT RECOVERY											
Cooling capacity	(4)(10)	kW	489	533	571	624	683	785	914	987	1102
Total power input	(4)(10)	kW	137	151	161	174	193	221	258	274	310
Recovery heat exchanger capacity	(4)(10)	kW	617	675	722	788	864	993	1157	1245	1393
TER	(4)(10)	kW/kW	8,08	8,01	8,04	8,11	8,02	8,03	8,02	8,13	8,06
ENERGY EFFICIENCY											
SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)											
Ambient refrigeration											
Prated,c	(12)	kW	-	-	-	602	663	764	879	949	1036
SEER	(12)(13)		-	-	-	4,93	4,98	4,93	4,58	4,50	4,44
Performance η_s	(12)(14)	%	-	-	-	194	196	194	180	177	174
SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)											
PDesign	(5)(10)	kW	364	363	385	-	-	-	-	-	-
SCOP	(5)(10)(15)		4,01	3,92	4,00	-	-	-	-	-	-
Performance η_s	(5)(10)(16)	%	157	154	157	-	-	-	-	-	-
Seasonal efficiency class	(5)(10)		-	-	-	-	-	-	-	-	-
EXCHANGERS											
HEAT EXCHANGER USER SIDE IN REFRIGERATION											
Water flow	(1)(10)	l/s	22,36	24,32	26,26	28,89	31,80	36,61	42,14	45,52	49,69
Pressure drop	(1)(10)	kPa	37,5	47,3	30,2	37,6	42,3	27,4	36,8	39,5	47,4
HEAT EXCHANGER USER SIDE IN HEATING											
Water flow	(3)(10)	l/s	21,92	23,25	25,14	28,33	31,22	36,15	41,10	44,37	48,64
Pressure drop	(3)(10)	kPa	22,1	24,9	21,1	26,5	31,5	31,5	40,7	34,2	29,4
REFRIGERANT CIRCUIT											
Compressors nr.	N°	2	2	2	2	2	2	2	2	2	
No. Circuits	N°	2	2	2	2	2	2	2	2	2	
Regulation		STEPLESS									
Refrigerant	R134a	R134a	R134a	R134a	R134a	R134a	R134a	R134a	R134a	R134a	
Refrigerant charge	kg	230	235	240	260	260	325	350	470	470	
NOISE LEVEL											
Sound Pressure	(6)(10)	dB(A)	56	57	58	58	58	59	59	59	59
Sound power level in cooling	(7)(8)(10)	dB(A)	89	90	91	91	91	92	92	92	92
Sound power level in heating	(7)(9)(10)	dB(A)	89	90	91	91	92	92	92	92	92
SIZE AND WEIGHT											
A	(11)	mm	8150	8150	8900	9650	10400	10400	10400	11900	11900
B	(11)	mm	2260	2260	2260	2260	2260	2260	2260	2260	2260
H	(11)	mm	2530	2530	2530	2530	2530	2530	2530	2530	2530
Operating weight	(11)	kg	8800	8830	9530	10040	10510	11450	12750	14560	14600

Notes:

1 Plant (side) cooling exchanger water (in/out) 12°C/7°C; Source (side) heat exchanger air (in) 35°C.

2 Values in compliance with EN14511-3:2013.

3 Plant (side) heat exchanger water (in/out) 40°C/45°C; Source (side) heat exchanger air (in) 7°C - 87% R.H.

4 Plant (side) cooling exchanger water (in/out) 12°C/7°C; Plant (side) heat exchanger water (in/out) 40°C/45°C.

5 Seasonal space heating energy efficiency class LOW TEMPERATURE in AVERAGE climate conditions [REGULATION (EU) N. 813/2013]

6 Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.

7 Sound power on the basis of measurements made in compliance with ISO 9614.

8 Sound power level in cooling, outdoors.

9 Sound power level in heating, outdoors.

10 Unit performance with inverter compressor at nominal speed.

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

12 Seasonal energy efficiency of the cooling environment [REGULATION (EU) N. 2016/2281]

13 Seasonal space heating energy index

14 Seasonal energy efficiency of the space cooling

15 Seasonal performance coefficient

16 Seasonal space heating energy efficiency

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

i-FX-Q2 XL-CA		0502	0532	0602	0652	0702	0802	0902	1002	
Power supply	V/ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	
PERFORMANCE										
SELECTION RANGE										
Cooling capacity range	(1)	kW	341-443	382-484	415-526	458-572	525-633	593-732	687-848	785-912
EER (up to)	(1)	kW/kW	3,31	3,17	3,35	3,25	3,26	3,26	3,31	3,14
Heating capacity range	(3)	kW	334-434	365-462	397-502	448-560	515-621	584-721	668-825	765-889
COP (up to)	(3)	kW/kW	3,49	3,46	3,50	3,49	3,49	3,54	3,56	3,57
SELECTION RATED										
COOLING ONLY (GROSS VALUE)										
Cooling capacity	(1)(10)	kW	443	484	526	572	633	732	848	912
Total power input	(1)(10)	kW	146	162	172	185	204	239	282	302
EER	(1)(10)	kW/kW	3,02	2,98	3,05	3,09	3,11	3,06	3,01	3,02
COOLING ONLY (EN14511 VALUE)										
Cooling capacity	(1)(2)(10)	kW	442	482	524	570	631	730	845	910
EER	(1)(2)(10)	kW/kW	2,99	2,94	3,02	3,06	3,07	3,03	2,98	2,99
HEATING ONLY (GROSS VALUE)										
Total heating capacity	(3)(10)	kW	434	462	502	560	621	721	825	888
Total power input	(3)(10)	kW	125	134	144	160	178	204	235	250
COP	(3)(10)	kW/kW	3,48	3,44	3,47	3,50	3,50	3,54	3,51	3,55
HEATING ONLY (EN14511 VALUE)										
Total heating capacity	(2)(3)(10)	kW	435	463	503	562	622	723	828	891
COP	(2)(3)(10)	kW/kW	3,47	3,42	3,46	3,49	3,48	3,52	3,48	3,53
COOLING WITH TOTAL HEAT RECOVERY										
Cooling capacity	(4)(10)	kW	464	509	549	591	651	752	883	921
Total power input	(4)(10)	kW	129	142	151	165	182	212	247	262
Recovery heat exchanger capacity	(4)(10)	kW	586	643	690	746	822	951	1116	1167
TER	(4)(10)	kW/kW	8,11	8,08	8,22	8,11	8,07	8,02	8,09	7,98
ENERGY EFFICIENCY										
SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)										
Ambient refrigeration										
Prated,c	(12)	kW	-	-	-	570	631	730	845	910
SEER	(12)(13)		-	-	-	4,96	5,02	4,98	4,53	4,43
Performance η_s	(12)(14)	%	-	-	-	195	198	196	178	174
SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)										
PDesign	(5)(10)	kW	316	343	368	-	-	-	-	-
SCOP	(5)(10)(15)		4,23	4,20	4,26	-	-	-	-	-
Performance η_s	(5)(10)(16)	%	166	165	167	-	-	-	-	-
Seasonal efficiency class	(5)(10)		-	-	-	-	-	-	-	-
EXCHANGERS										
HEAT EXCHANGER USER SIDE IN REFRIGERATION										
Water flow	(1)(10)	l/s	21,18	23,12	25,14	27,34	30,25	35,00	40,54	43,63
Pressure drop	(1)(10)	kPa	33,7	42,7	27,7	33,7	38,3	25,1	34,1	36,3
HEAT EXCHANGER USER SIDE IN HEATING										
Water flow	(3)(10)	l/s	20,95	22,29	24,23	27,05	29,96	34,81	39,83	42,89
Pressure drop	(3)(10)	kPa	20,2	22,9	19,6	24,2	29,0	29,2	38,2	31,9
REFRIGERANT CIRCUIT										
Compressors nr.	N°	2	2	2	2	2	2	2	2	2
No. Circuits	N°	2	2	2	2	2	2	2	2	2
Regulation			STEPLESS							
Refrigerant	R134a	R134a	R134a	R134a	R134a	R134a	R134a	R134a	R134a	R134a
Refrigerant charge	kg	230	235	240	260	260	325	350	470	
NOISE LEVEL										
Sound Pressure	(6)(10)	dB(A)	53	54	55	55	55	56	55	56
Sound power level in cooling	(7)(8)(10)	dB(A)	86	87	88	88	88	89	88	89
Sound power level in heating	(7)(9)(10)	dB(A)	87	88	89	89	89	90	89	90
SIZE AND WEIGHT										
A	(11)	mm	8150	8150	8900	9650	10400	10400	10400	11900
B	(11)	mm	2260	2260	2260	2260	2260	2260	2260	2260
H	(11)	mm	2530	2530	2530	2530	2530	2530	2530	2530
Operating weight	(11)	kg	8800	8830	9530	10040	10510	11450	12750	14560

Notes:

1 Plant (side) cooling exchanger water (in/out) 12°C/7°C; Source (side) heat exchanger air (in) 35°C.

2 Values in compliance with EN14511-3:2013.

3 Plant (side) heat exchanger water (in/out) 40°C/45°C; Source (side) heat exchanger air (in) 7°C - 87% R.H.

4 Plant (side) cooling exchanger water (in/out) 12°C/7°C; Plant (side) heat exchanger water (in/out) 40°C/45°C.

5 Seasonal space heating energy efficiency class LOW TEMPERATURE in AVERAGE climate conditions [REGULATION (EU) N. 813/2013]

6 Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.

7 Sound power on the basis of measurements made in compliance with ISO 9614.

8 Sound power level in cooling, outdoors.

9 Sound power level in heating, outdoors.

10 Unit performance with inverter compressor at nominal speed.

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

12 Seasonal energy efficiency of the cooling environment [REGULATION (EU) N. 2016/2281]

13 Seasonal space heating energy index

14 Seasonal energy efficiency of the space cooling

15 Seasonal performance coefficient

16 Seasonal space heating energy efficiency

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

