epsilon echos A

8÷38 kW

High efficiency
air/water cooled chillers

A CLASS

R410A


BLUE BOX

TECHNICAL FEATURES

EPSILON ECHOS A

High efficiency air/water cooled chillers with axial fans.

STRUCTURE

Made in galvanised steel sheet and painted at 180 °C with RAL 7035 polyester powder, which provides high weather resistance. The panels can easily be removed to provide full access to internal parts.

COMPRESSOR

Hermetic scroll type compressor, complete with thermal protection inside the electric engine, crankcase heater and rubber anti-vibration mounts.

SOURCE SIDE HEAT EXCHANGER

Composed of an aluminium-finned copper-tube multi-row coil with increased heat transfer surface and fin spacing sized to maximize the heat exchange and reduce the noise impact. The finned coil pack is protected by a metal mesh.

FANS

Helical fans coupled directly to the 6-pole electric motor with external rotor, IP 54 degree of protection. Each fan is fitted in shaped nozzles and equipped with protection grille in compliance with UNI EN 294.

USER SIDE HEAT EXCHANGER

Plate type heat exchanger in AISI 316 stainless steel covered with closed-cell foam which reduces the thermal loss and prevent condensation.
The heat exchanger is fitted with a temperature probe for antifreeze protection, a probe for detecting the ingoing and outgoing water temperature and a vane operated flow switch supplied as standard.

COOLING CIRCUIT

Comprises: feeding plug on fluid and suction line, fluid sight glass, dehydrating filter, thermostatic expansion valve with pressure external equilizer, pressure transducer, high and low pressure switches and safety valve (except for sizes 6, 8, 10).

ELECTRICAL PANEL

With main disconnect switch, breakers for auxiliary and main power circuit protection, remote disconnect switch for compressors. The unit is controlled via microprocessor with display of the main functions.
The electrical panel consists of:

- Automatic disconnect switch for the main and auxiliary power circuits (sizes 6.8 and 10);
- Main disconnect switch and fuses for main and auxiliary power circuit protection (sizes from 14 to 37)
- Compressor remote switch
- Fan speed regulator for condensate control
- Pump relay and remote disconnect switch (sizes from 14 to 37, versions ST1P or ST1PS)
- General alarm dry contacts
- Microprocessor to control the following functions:
  - Control of ingoing water temperature
  - Anti-freeze protection
  - Compressor timer
  - Control of high pressure pre-alarm (to avoid in many cases the unit blockage)
  - Alarm signals
  - Alarm reset
  - Self-adjusting control to provide proper operation when the plant water content is low
  - External ON-OFF digital input
- Display of:
  - Outgoing water temperature
  - Condensation temperature
  - Set temperature and differential pressure

- Alarm description
- Hour counter for compressor and pump operation

Electric power supply 230V/1~/50Hz for sizes 6 and 8, 400V/3N~/50Hz for sizes from 10 to 37.

CONTROL AND SAFETY DEVICES
- User water temperature control probe (on evaporator inlet)
- Anti-freeze probe which activates the anti-freeze alarm (with limited trip automatic reset)
- Manual reset high pressure controller
- Low pressure controller (with limited trip automatic reset)
- Vane operated mechanical flow switch (supplied as standard)
- Condensing pressure controlled by operation speed regulator with low external temperatures
- High pressure safety valve (except for sizes 6, 8, 10)
- Compressor overtemperature protection

TESTING
The units are factory-tested and supplied complete with oil and refrigerant.

HYDRAULIC SYSTEM OPTIONS

EPSILON ECHOS A /ST 1P
unit with pump
The unit consists of one circulator (sizes from 6 to 18) or a circulation pump (sizes from 21 to 37), expansion vessel, hydraulic circuit water discharge valve, safety valve calibrated at 6 bar, value corresponding to the maximum allowed operation pressure.

EPSILON ECHOS A /ST 1PS
unit with pump and tank
In addition to components of the /ST 1P version, the unit has an insulated storage tank.

ACCESSORIES

REFRIGERANT CIRCUIT ACCESSORIES
- Fluid line valve
- Electronic thermostatic valve

HYDRAULIC CIRCUIT ACCESSORIES
- Filling unit with pressure gauge
- Anti-freeze heater

Standard version: Electric heater in the heat exchanger
ST1P version: Electric heater in the heat exchanger+ heating cable on the pipes
ST1PS version: Electric heater in the heat exchanger+ heating cable on the pipes+ heater at tank input

ELECTRICAL ACCESSORIES
- Power supply 230/1/50 (for sizes 10 and 14)
- Power supply 400/3/50+N (for sizes 6, 8)
- Phase monitor
- Serial interface RS485
- Remote user terminal (in addition to the one installed on the machine)
- User interface
- Set point offset depending on the external air temperature
- Electronic soft-starter

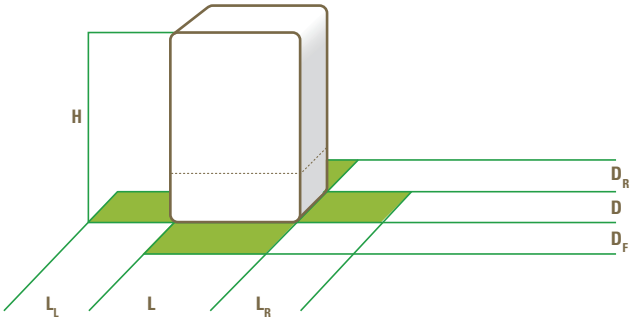
MISCELLANEOUS ACCESSORIES
- Rubber antivibration mounts
- Packaging in wooden crates

basic version general technical data

UNIT SIZE			6	8	10	14	16	18	21	25	28	31	37
Cooling													
Cooling capacity (W 18)	(3)	kW	8,5	10,3	13,4	18,0	19,8	23,3	26,5	28,8	33,7	40,2	44,8
Absorbed power	(3),(2)	kW	2,2	2,6	3,4	4,4	4,8	5,6	6,4	7,0	8,0	9,7	10,5
EER	(3)		3,86	3,90	3,91	4,07	4,16	4,13	4,12	4,11	4,23	4,15	4,25
Cooling capacity (W 7)	(5)	kW	6,2	7,5	10,0	13,4	14,4	17,3	19,4	21,2	25,1	29,8	33,4
Absorbed power	(5),(2)	kW	2,1	2,5	3,2	4,1	4,6	5,2	5,9	6,5	7,3	9,0	9,8
EER	(5)		2,92	2,95	3,15	3,24	3,12	3,33	3,28	3,25	3,46	3,30	3,41
Compressor													
Quantity/Cooling circuits		n°/ n°	1/1	1/2	1/3	1/4	1/5	1/6	1/7	1/8	1/9	1/10	1/11
Capacity steps		%	0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-100
Fans													
Quantity		n°	1	1	1	2	2	2	2	2	2	2	2
Air flow		m^3/s	1,08	1,08	1,00	2,17	2,17	2,00	3,89	3,89	3,61	5,00	4,72
User side heat exchanger													
Water flow	(1)	l/h	1.455	1.771	2.304	3.095	3.405	4.007	4.557	4.953	5.795	6.913	7.704
Pressure drop	(1)	kPa	5	5	7	51	47	45	50	44	48	50	50
Hydraulic module													
Pump head rating	(6)	kPa	60	58	53	54	55	52	100	96	62	130	110
Storage tank capacity	(6)	l	40	40	40	70	70	70	110	110	110	140	140
Noise levels													
Noise power level	(7)	dB(A)	63	65	66	68	70	70	72	73	73	74	75
Noise pressure level	(8)	dB(A)	32	34	35	37	39	39	41	42	42	42	43

(1) External air temperature 35°C; ingoing/outgoing water temperature 23/18 °C .
(2) The total capacity is represented by the sum of the power absorbed by compressors and that absorbed by fans
(3) External air temperature 7°C BS, 6°C BU; Ingoing/outgoing water temperature 30/35 °C .
(4) External air temperature 35°C; ingoing/outgoing water temperature 12/7 °C.
(5) External air temperature 7°C BS, 6°C BU; Ingoing/outgoing water temperature 40/45 °C.
(6) For ST 1PS version
(7) Noise power level measured according to ISO 3744
(8) Sound pressure levels measured at 10 metres from the unit in free field and directivity factor Q=2
This data sheet shows the data of the basic and standard series; for further details refer to the specific documentation.

basic version general technical data



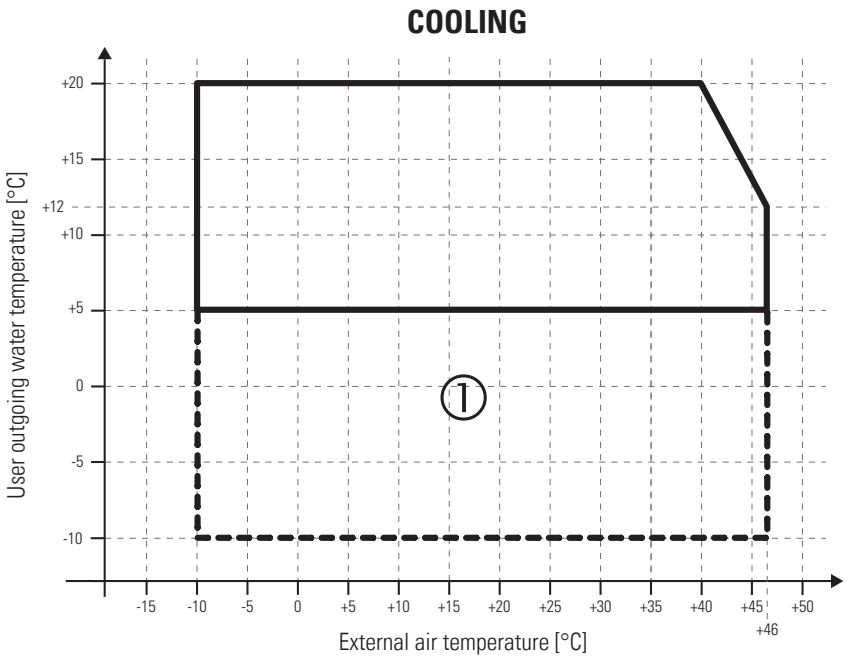
	STANDARD VERSION E/ST1P			6	8	10	14	16	18	21	25	28	31	37
L	Length		mm		925			925			1.105			1.305
D	Depth		mm		375			375			505			505
H	Height		mm		700			1.350			1.385			1.585
W	Operating weight	(1)	kg	88	93	102	135	151	166	212	233	233	367	367

	ST 1PS VERSION			6	8	10	14	16	18	21	25	28	31	37
L	Length		mm		925			925			1.105			1.305
D	Depth		mm		375			375			505			505
H	Height		mm		1.000			1.750			1.850			2.050
W	Operating weight	(1)	kg	172	177	186	269	285	300	410	431	589	598	598

	Clearance areas			6	8	10	14	16	18	21	25	28	31	37
L_L	Left side	(2)	mm		300			300			300			300
L_R	Right side	(2)	mm		600			600			600			600
D_F	Front	(2)	mm		900			900			900			900
D_R	Back	(2)	mm		300			300			300			300

(1) The reported weight is only indicative and may be different depending on unit outfit
(2) The clearance areas are reported considering as front side the side with the fans

basic version general technical data



The heat exchanger on the user side must have a thermal rise between 4 °C and 7 °C
①: the unit can operate within these values only with glycol/ water mixture on the evaporator side

BASIC VERSION			6	8	10	14	16	18	21	25	28	31	37
Maximum absorbed power	(1)	[kW]	3,1	3,9	4,5	6,3	6,4	7,6	8,9	9,6	10,7	12,9	14,6
Maximum absorbed current	(2)	[A]	16,7	19,7	8,7	11,5	13,3	16,5	18,4	19,4	24,4	27,0	30,0
Maximum input current	(3)	[A]	62	83	49	65	65	75	104	98	114	123	123
			(37)	(50)	(29)	(39)	(39)	(45)	(63)	(59)	(69)	(74)	(74)
Additional electric heater (optional)	(4)	[kW]	3,0	3,0	3,0	6,0	6,0	6,0	6,0	6,0	6,0	9,0	9,0

ST1P or ST1PS VERSION			6	8	10	14	16	18	21	25	28	31	37
Maximum absorbed power	(1)	[kW]	3,3	4,1	4,7	6,5	6,5	7,7	9,3	10,1	11,2	13,8	15,5
Maximum absorbed current	(2)	[A]	17,7	20,7	9,7	12,6	14,4	17,6	21,2	22,2	27,2	29,6	32,6
Maximum input current	(3)	[A]	63	84	50	67	67	77	107	101	117	126	126
			(38)	(50)	(30)	(40)	(40)	(46)	(64)	(61)	(70)	(75)	(75)
Additional electric heater (optional)	(4)	[kW]	3,0	3,0	3,0	6,0	6,0	6,0	6,0	6,0	6,0	9,0	9,0

POWER SUPPLY			6	8	10	14	16	18	21	25	28	31	37
Standard power supply		V/ph/Hz	230/1~/50		400/3N~/50								
Optional power supply	(4)	V/ph/Hz	400/3N~/50		230/1~/50								

All reported data refer to unit with standard power supply
(1) Electrical power that must be supplied by the mains to power the unit
(2) Tripping current of unit internal breakers. This value is never exceeded and must be used to size the line and its protections (refer to the electric diagram supplied with the unit).
(3) Maximum input current calculated considering the compressor start and the maximum current absorbed by all other devices. The value between brackets refers to the unit equipped with soft-starter (optional).
(4) To be requested when ordering