

# BRAC - BRAT



## Air-cooled water chillers with axial fans for outdoor installation

### Range:

**BRAC** - Cooling only series

**BRAT** - Cooling only series for high external temperatures

Cooling capacity: 298 ÷ 746 kW

### Available versions:

#### BRAC

- basic
- low noise

#### BRAT

- basic
- low noise
- ultra-low noise

### Refrigerant R407C/R134a\* Scroll Screw Compressors

## STANDARD FEATURES

- Self-supporting frame in galvanised steel with panels finished in epoxy powders (RAL 7037 colour)
- Six hermetic Scroll compressors with internal thermal protection and anti-vibration supports (1206A ÷ 1506A models)
- Two semi-hermetic Screw compressors with internal thermal protection, oil heaters and anti-vibration supports (1802A ÷ 3002A models)
- Two refrigerant circuits conforming to EC norms (PED 97/23/CE) in copper tubes mainly including: filter dryer, flow indicator, thermostatic valves with external equalisation (E.E.V. optional), discharge shut-off valve, high and low pressure switches and high and low pressure transducer
- Shell & tube evaporator with two independent cooling side circuits and one hydraulic circuit: the heat exchanger is insulated with closed-cell expanded neoprene
- Condensing coil with aluminium fins and internally grooved copper tubes
- Water flow pressure switch
- Sickle-blade axial fans, statically and dynamically balanced with safety protection grilles, protection grade IP54
- Modulating condensation control by fan speed regulation of one line
- Electric panel conforming to EC (Directive 73/23/EC and Directive EMC 89/336/EC, protection grade IP54) with anti-condensation heater (with low external temperature option), maximum internal temperature control, general cut-off switch, magneto-thermal protection for fans and auxiliaries, magneto-thermal protection for Scroll compressors and fuses for screw compressors, cut-off switches
- Sequence phase monitor
- Microprocessor control system UPC1m including:
  - local user terminal mP20 II visible on unit with panel
  - outlet chilled water temperature regulation
  - advanced management of compressors (units equipped with Scroll compressors) or of 8 steps (units equipped with screw compressors) through automatic set-point sensitivity regulation; compressor rotation with FIFO system (run time, protection and function)
- monitoring of refrigerant charge (with E.E.V.)
- rotation of pump group setting functioning and start of pump in stand-by (alarm display) in the event of pump breakdown
- advanced anti-freeze protection on evaporator
- integrated LAN card for local network connection of a group of chillers
- Integrated clock card
- Microprocessor control system with:
  - set-point adjustment from external signal 0-10V
  - management of double set-point and selection
  - free-contact for general alarm and 2 addressable alarm management
  - remote ON-OFF switch
  - ability to interface with Modbus protocol directly on RS485 serial card
  - ability to interface with main external communication protocols: Bacnet, Lonworks, Metasys, TCP/IP and SNMP

## OPTIONS

Units can be supplied with the following construction options:

- Remote user terminal mP20 II (up to 200 metres) for:
  - entering of commands
  - display unit status and alarms
- Spring anti-vibration kit

# TECHNICAL DATA

BRAC/BRAT MODEL		1206A	1306A	1506A	1802A	2002A	2202A	2502A	2802A	3002A	
Power supply	V/ph/Hz	400 / 3 + N / 50				400 / 3 + N / 50					
Compressors	n <sub>o</sub> x mod	6 x Scroll				2 x Screw					
Evaporator	n <sub>o</sub> x mod	1 x Shell & Tube				1 x Shell & Tube					
<b>Cooling only (BRAC) - basic version (ambient temperature max 45°C*)</b>											
Cooling capacity (1)	kW	298	338	371	410	455	511	557	627	697	
Cooling capacity ECO (2)	kW	--	--	--	438	490	545	593	668	746	
Absorbed power (1)	kW	118,7	122,5	138,3	157,6	149,4	182,1	219,5	250,4	247,1	
Absorbed power ECO (2)	kW	--	--	--	160,5	151,6	184,9	223,1	255,3	251,9	
Noise pressure level (3)	dB(A)	61,5	62,5	62,5	63	64	64,5	64,5	67	67,5	
N <sub>o</sub> of fans / N <sub>o</sub> of poles		4 / 6	6 / 6	6 / 6	6 / 6	8 / 6	8 / 6	8 / 6	8 / 6	10 / 6	
<b>Cooling only (BRAC) - Low noise version (ambient temperature max 43°C*)</b>											
Cooling capacity (1)	kW	274	315	350	382	424	470	512	566	633	
Cooling capacity ECO (2)	kW	--	--	--	406	455	499	542	600	674	
Absorbed power (1)	kW	132,3	135,7	151,1	174,8	160,4	198,2	239,0	294,9	272,9	
Absorbed power ECO (2)	kW	--	--	--	179,0	163,5	202,2	243,3	303,3	279,5	
Noise pressure level (3)	dB(A)	55	56	56	56	56,5	57	57	57	57,5	
N <sub>o</sub> of fans / N <sub>o</sub> of poles		4 / 6	6 / 6	6 / 6	6 / 6	8 / 6	8 / 6	8 / 6	8 / 6	10 / 6	
<b>Dimensions (BRAC)</b>											
Height	mm	2525	2525	2525	2525	2525	2525	2525	2525	2525	
Length	mm	3500	4930	4930	4930	6360	6360	6360	6360	7785	
Width	mm	2200	2200	2200	2200	2200	2200	2200	2200	2200	
<b>Cooling only for high temperature (BRAT) - Basic version (ambient temperature max 50°C*)</b>											
Cooling capacity (1)	kW	317	351	378	415	455	511	577	638	696	
Cooling capacity ECO (2)	kW	--	--	--	445	489	545	614	679	746	
Absorbed power (1)	kW	108,3	123,1	136,5	146,5	147,7	182,5	205,9	240,3	241,9	
Absorbed power ECO (2)	kW	--	--	--	148,3	149,8	185,4	208,2	244,1	246,4	
Noise pressure level (3)	dB(A)	62,5	62,5	62,5	64	64	64,5	66,5	67,5	67,5	
N <sub>o</sub> of fans / N <sub>o</sub> of poles		6 / 6	6 / 6	6 / 6	8 / 6	8 / 6	8 / 6	10 / 6	10 / 6	10 / 6	
<b>Cooling only for high temperature (BRAT) - Low noise version (ambient temperature max 46°C*)</b>											
Cooling capacity (1)	kW	298	328	353	389	434	480	539	584	644	
Cooling capacity ECO (2)	kW	--	--	--	415	465	509	572	619	687	
Absorbed power (1)	kW	116,1	133,0	151,7	156,5	160,0	201,7	223,4	268,7	268,6	
Absorbed power ECO (2)	kW	--	--	--	159,1	162,9	205,8	226,8	274,5	275,1	
Noise pressure level (3)	dB(A)	56	56	56	56,5	56,5	57	57,5	57,5	57,5	
N <sub>o</sub> of fans / N <sub>o</sub> of poles		6 / 6	6 / 6	6 / 6	8 / 6	8 / 6	8 / 6	10 / 6	10 / 6	10 / 6	
<b>Cooling only for high temperature (BRAT) - Ultra low noise version (ambient temperature max 43°C*)</b>											
Cooling capacity (1)	kW	284	313	339	371	403	457	504	552	601	
Cooling capacity ECO (2)	kW	--	--	--	395	431	484	534	584	638	
Absorbed power (1)	kW	123,1	142,0	160,3	166,1	169,6	209,1	234,5	285,1	290,1	
Absorbed power ECO (2)	kW	--	--	--	169,3	173,4	213,6	238,4	291,7	297,9	
Noise pressure level (3)	dB(A)	52	52	52	52,5	52,5	52,5	53,5	53,5	53,5	
N <sub>o</sub> of fans / N <sub>o</sub> of poles		6 / 6	6 / 6	6 / 6	8 / 6	8 / 6	8 / 6	10 / 6	10 / 6	10 / 6	
<b>Dimensions (BRAT)</b>											
Height	mm	2525	2525	2525	2525	2525	2525	2525	2525	2525	
Length	mm	4930	4930	4930	6360	6360	6360	7785	7785	7785	
Width	mm	2200	2200	2200	2200	2200	2200	2200	2200	2200	

(1) Data refer to nominal conditions: water temperature 12/7°C; external temperature 35°C; refrigerant R407C

(2) Unit equipped with compressors with economiser, data refer to nominal conditions: water temperature 12/7°C; external temperature 35°C; refrigerant R407C

(3) Measured in free field conditions, coil side, direction factor Q=2, at 10 mt. from the unit (at nominal conditions)

(\*) For units with economiser max ambient temperature decreases of 2°C

## CONSTRUCTION OPTIONS

- Economiser option: available only for models equipped with screw compressors increases cooling capacity and COP
- Low external temperature option: unit works down to - 20°C
- Low noise version: with sound-proofing of Scroll compressors or sound-proofed casing and vibration absorbers for screw compressors and low fan speed
- Ultra-low noise version (BRAT): with sound-proofing of Scroll compressors or sound-proofed casing and vibration absorbers for screw compressors and ultra-low fan speed (control on each row)
- Production of glycol water mixture at low temperatures option, (down to - 10 °C)
- Electronic expansion valve (E.E.V.)

- Partial / total condensation heat recovery
- Integrated hydronic system with 1 or 2 pumps
- High and low pressure gauges
- Anti-freeze protection on evaporator, and pump group
- Evaporator / pumps protection grilles
- Condensing coils equipped with safety grilles and filter
- Suction shut-off valves on compressor
- RS485 serial adaptor used to communicate with Uniflair supervisory system or to interface with external BMS
- LON FTT10 serial adaptor used to communicate with external BMS managed with LON protocol
- Condensing coil cataphoresis treatment (\*)
- R134a refrigerant (\*)

(\*) on request