

1 GLAC4141CD2.HE 1 Pcs

Chiller

Air cooled for outdoor installation

Unit configuration

- Robust, compact, weather-proof, especially energy-efficient industrial version
- With optimized design
- Self-supporting base frame from sectional steel
- Galvanized steel
- Powder coated RAL 7035

Condensers

- "Micro-Channel" condenser with increased surface for achieving energy-efficient operation with optimal air flow. Pipes and fins performed in aluminium for achieving high capacity density and energy efficiency through good heat exchange properties. Using pure aluminium increase resistance characteristics of the heat exchanger against galvanic corrosion and significantly decreases its weight as compared to a Cu/Al model. Refrigerant pipes in condenser are used with small cross-section which makes it possible to reduce the required volume of refrigerant.
- Upright position

Evaporator

- Tube bundle version, PED-tested
- Patented asymmetrical construction for dry evaporation
- Sheath performed in steel
- Heating medium flows around pipes and the refrigerant into pipes
- Tubes made of seamless copper pipes and rolled in pipe base using gas-tight method
- Water bypasses made of plastic to ensure turbulent flow
- Internally finned copper pipes for improved heat transfer
- Receiver and bend cover are performed in steel and can be removed on both sides
- 10 mm thick and vapour-sealed insulation with heat transfer of 0.033 W/mK at 0 °C
- Draining, air venting arranged for easy access
- Required water filter for protection against dirt to be supplied by others
- Easy-to-access frost protection as internal heating rod
- Water connections performed as Victaulic groove lock coupling

Fan

- Direct-driven and low-noise axial fans
- 6-pole motor with internal winding shield
- With intake on the air side due to heat exchanger
- Statically and dynamically balanced
- Protection class IP54
- Fan protection grille

Refrigeration circuit

- Two separate refrigeration circuits
- Per circuit:
 - Two smooth-operating, low-vibration, fully hermetic scroll compressors
 - As twin unit
 - Suction gas cooled
 - Mounted on anti-vibration isolators
 - Oil heater for safe start up
 - With internal winding protection
 - Cleaned, dried, evacuated and charged with refrigerant
 - Factory pressure and leak tested with test run performed
 - Performed as copper piping
 - Necessary refrigeration oil charge
 - Filter dryer with a replaceable filter cartridge
 - Electronic expansion valve
 - Sight glass with humidity indicator
 - Service / Schrader valve
 - Shut off valve in liquid line
 - Solenoid valve for liquid line
- Safety and control devices:
 - High-pressure sensor

- Electronic high-pressure and low-pressure sensors
- Frost protection
- PED-certified safety valves on the suction and pressure side

Water circuit

- Prepared for connection to the pipework by others
- Factory leak tested
- Differential pressure monitoring installed for evaporator by the factory
- Additional paddle-type flow switch and water filter and not included in the scope of supply and must be installed by others

Control cabinet

- Design of switch cabinet and control system according to EN 60204-1 and EC204-1
- Electromagnetic compatibility as of 89/336/EEC + 2004/108/EC, 2014/30/EC Low Voltage Directive as of 2006/95/EC, 2014/35/EC
- Made of stable steel panels
- Mounted on the unit machine frame
- Microprocessor control
- Switch and control components with automatic functions
- Motor contactor with controls for time-delayed direct start of both compressors
- Mains isolator for all pole isolation of the unit, installed with a door locking version
- Protection class IP43
- Automatic circuit breakers for compressor motor(s) with phase-breakdown protection using all-pole fuse and integrated motor protection
- Automatic circuit breakers for grouped fan motors
- Regulating system with automatic circuit breakers
- Phase sequence control

The following types of floating status signals are available:

- Collective fault signal
- Operation message per compressor (available as option)

Following floating control contacts are possible:

- Pump relay/contact for external chilled water pump with pump lead and run-on time
- Remote ON/OFF

Following floating control contacts are required:

- Flow switch

Microprocessor controls

Microprocessor control with a separate control panel with LCD-display on the unit for figures and numbers. Selection of 7 different languages is possible. Control panel with 6 durable keys for easy menu guidance mounted on the unit.

Fully automatic regulation with the following functions:

- Display of processed analog inputs as pressure and temperature values:
- Water-inlet temperature
- Water outlet temperature
- Current high pressure
- Current low pressure

To prevent loss of refrigerant as early as possible, the low pressure of the plant is monitored in two stages while in operation. Two-stage low-pressure monitoring ensures early detection of refrigerant losses.

- Display of status of all analog and digital inputs and outputs
- Automatic self-diagnostics of electronic components
- Integration of all safety devices in the automatic control system
- Display of error messages per compressor and refrigeration circuit
- Display of general unit errors
- Automatic restart after breakdown of power supply
- Operating hours counter for each compressor
- Automatic operating hours compensation for compressor
- Compressor cycle protection with minimum shut-down period and maximum compressor start-ups per hour
- Regulation of water inlet temperature configured as proportional control or per selection
- Regulation of water outlet temperature with self-adjusting neutral range depending on system content and maximum number of compressor starts per hour
- Pump lead and run-on time for safe unit activation and deactivation
- Operating hours counter for chilled water pump
- Setpoint shift using field-provided 4-20 mA signal

- Timer programme for up to 4 different control variants per week
- 10 different switching times for each variant
- Different operating modes and setpoints per switch time
- Retrieving last 200 alarms via unit display
- Continuously variable fan speed control using condensing pressure in cooling mode down to -10 °C outside temperature in wind-sheltered conditions

Optional functions, to be ordered separately:

- Demand limit using normally closed contact by others
- 2nd setpoint via normally open contact by others
- Optional connection of a 2nd control panel for remote monitoring
- Up to max. 500 m cable run; up to 10 units of the same controller family in a network can be connected to one remote control panel
- Optional master/slave control using sequencer
- Up to 5 different units within one hydraulic system and of the same controller family can be interconnected in one network for optimized capacity regulation with balanced compressor operating time
- Optional connection and service via PC and system software
- Retrieval and documenting the following data:
 - Uploading and downloading parameters
 - Storage of parameters and system information
 - Software update
 - Display of all analog input values
 - Display of load conditions
 - General system information
 - Download of Black Box; saving last 200 alarms and unit parameters up to 10 minutes before each recorded alarm
- Optional connection to building management system (BMS)
- Following interfaces are available:
 - Modbus RTU (RS485)
 - LonWorks
 - BACnet MS/TP RS485
 - BACnet over IP
 - Trend (serial card by others)
 - Optional retrieval of system information via Internet or LAN

Manufacturing standard in accordance with MS-, LV-, EMC and PED directive, CE label on the unit

Technical Data

Refrigeration cap.	kW	393.0
Power consumption	kW	118.0
Air in temperature	°C	32.0

Evaporator

Chilled water inlet/outlet	°C	12.0	7.0
Volume flow evaporator	m³/h	76.6	
Medium type		Ethylene glycol	
Glycol content	%	35.0	
Press. drop evaporator	kPa	73.8	
Connection diam. of evap.		4"	

Fans

No. of fans		8
Air volume flow	m³/h	163620

Refrigerating circuit

No. of compressors		4
Compressor speed	Upm	2950
Refrigerating circuits		2
Capacity steps		4
Minimum part load speed		
Refrigerant		R410A
Refrigerant charge tot.	kg	54

Electrical Data

Operation voltage	400/3/50
Starting current comp.	2x310+2x394

Operating current comp.		2x58,9+2x73,6
El. power consump. comp.		2x35,8+2x46,5
max. operating current fans	A	32.0
El. power consump. fan	kW	16.0
Max. power consumption of fan	kW	16.0
Starting current	A	616.0
Max. operating current	A	295.0
Max. power consumption	kW	181.0

Energy Indices

EER	3.33
ESEER	4.48

Sound Data

Total sound power	dB(A)	97			
Sound Power Level		63	125	250	500
	dB(A)	100	99	96	94
		1000	2000	4000	8000
	dB(A)	93	88	82	76

Sound pressure level at distance	m	10.0
Total sound pressure level	dB(A)	65

Sound pressure level		63	125	250	500
	dB(A)	68	67	64	62
		1000	2000	4000	8000
	dB(A)	61	56	50	44

Dimensions and weight

Width	mm	2260
Height	mm	2450
Depth	mm	5080
Weight	kg	3100

Sound power level is determined according to ISO 3744 standard.

Sound pressure level is determined according to enveloping surface method enveloping surface method with a reflecting plane of (Q=2). The above-mentioned distance refers to external dimensions of the unit.

Because of increased air suction temperature the unit can not be operated in quiet mode.

The above-mentioned sound levels increase.

Product of FläktGroup

Type **GLAC4141CD2.HE**

2 GLHM210I-14 1 pcs

hydraulic module

Unit Type

- Completely mounted in air cooled

Chiller / heat pump of series GLAC 4131-8321 CD2(.SL/.HE) / GLAH 4131-8321 CD2(.LT)

Hydraulic circuit

- Steel piping
- Primed and water-vapour sealed and insulated
- Single-circuit tank, horizontal
- 2 pieces, Pumps with automatic switch over depending on operating hours and in case of pump fault.
- Integrated non-return valve with a pump sheath
- Expansion tank (dimensioned for internal buffer tank)
- Safety valve
- Inlet, air vent and drain valve
- Pressure gauge

Following components are integrated in the switch box of chiller:

- Pump contactor with overcurrent relay
- Pump control with pump lead and run-on time
- Automatic switch-over between pumps:
- According to operating hours
- In case of pump fault

- Avoiding pump blockage by regular activation
- Terminal block
- Manufacturing standard in accordance with MS-, LV-, EMC- und PED directive, CE label on the unit.
- Technical data with consideration of unit pressure drops with following rated volume flow and possible glycol concentration

Technical Data

nominal volume flow	m³/h	76.6
Remaining head	kPa	144.4
Remaining head with DH filter	kPa	144.4
Glycol content	%	35.0
volume buffer tank	l	1000
volume exp. tank		40
default pressure exp. tank	bar	15.0
safety valve	bar	6.0
Operation voltage		400/3/50
Max. connection power	kW	7.5
nominal current	A	13.7

Dimensions and weight

Length	mm	0
Height	mm	0
Width	mm	0
unit weight	kg	635
operating weight	kg	1635

Product of FläktGroup

Type GLHM210I-14

3 GLZAC4141CD.I01 1 set

Spring anti-vibration mounts

Anti-vibration isolators with spring elements to minimize vibration transmission (supplied separately).

Product of FläktGroup

Type GLZAC4141CD.I01

4 GLZAC4141CD.I04 1 pcs

Protection grille for air-cooled heat exchanger

Protection grille on external sides of the air-cooled heat exchanger for protecting fins against damage due to shipping and weather

Depending on unit model, the water connections to the simplified connection by others is led to the outer edge of the protection grille.

Product of FläktGroup

Type GLZAC4141CD.I04

5 GLZAC4141CD.I10 1 pcs

Flow switch

Flow switches with paddle for monitoring water volume flow across heat exchanger for installation in hydraulic circuit at unit outlet (supplied separately).

Product of FläktGroup

Type GLZAC4141CD.I10

6 GLZAC4141CD.I58 1 pcs

Protective panel for unit display

Unit display (IP65) is additionally protected by a special panel against UV radiation, hail, sand storms and dirt. The guard plate is installed on the outside at the switch cabinet and permits locked access to the unit display.

Product of FläktGroup

Type GLZAC4141CD.I58

7 GLZAC4141CD.R13 1 set

LP and HP Pressure Gauges

- Refrigerant gauges for high and low-pressure sides for each refrigeration circuit

Product of FläktGroup

Type GLZAC4141CD.R13

8 GLZLANGUAGE.LEN 1 pcs

Controller language English

The controller is delivered in English by the factory.

Language can be changed at any time.

Product of FläktGroup

Type GLZLANGUAGE.LEN