Chiller for indoor installation with indirect free cooling:

- chiller in cabinet design for the cooling of water circuits.
- outside temperature from -20°C to +40°C
- incorporated controller for autarc operation of the chiller
- entire maintenance accessibility
- the chiller meets the current technical regulations and standards, the European guidelines for machines and the German safety regulations
- CE certification
- manufacturing in a company certified according to DIN ISO 9001/ EN 29001
- protection of all ESD sensible elements by manufacturing according to DIN EN 61340-5-1 (Protection of electronic devices from electrostatic phenomena)

Version:

- cooling water and chilled water connection from below

Frame, housing:

- self-supporting construction
- frame and housing are made of galvanized steel
- high-quality powder coating

Panelwork:

- the unit is closed to all 4 sides and to the bottom, with open top
- panels and doors can be removed on all sides.
- back- and side panels are firmly screwed
- all parts of sheet steel are provided with a high-grade plastic powder coating for a persistent corrosion protection
- the panelwork is executed with doors at the unit front
- the doors are assembled to the unit frame with lockable security fasteners which prevent from unauthorized access to the units
- panelwork and door insulation with appropriate B1-insulation material
  - fire classification of the insulation is B1 according to DIN 4102, hardly inflammable, self-extinguishing
  - chemical-free
  - no mould fungus according to DIN IEC 68
  - resistent against house dust mites and vermins
  - non-provoking allergies
  - sound absorbent features > 5 kN/m$^4$ according DIN52213
  - toxicologically recognized as safe according Öko-Tex Standard 100
  - detergent-proof
  - thermal isolation characteristics until WLG 0,035 (035) DIN 52612
  - UV-proof

Unit colour:

- Panelwork and sheet steel parts in STULZ anthracite grey
- Plastic cover for controller in Stulz telegrey 4 (RAL 7047)

Cooling section:

- 2 hermetic scroll compressors
- Rotalock valves, suction and pressure side
- low pressure switch, adjustable with automatic reset
- 2 high pressure switches with manual reset
- pressure sensor in pressure line
- plate condenser
- liquid receiver with safety valve
- filter dryer
- sight glass with humidity indicator
- electronic expansion valve
- insulation of the expansion line
  - non-inflammable, self-extinguishing
  - no formation of condensate

- plate evaporator
- suction gas pressure sensor
- suction gas temperature sensor
- Schrader valves for simplified maintenance and a service-friendly operation

Primary circuit (cooling water):
- plate condenser (already listed under cooling section)
- 2 2-way control valve with electric drive
- 2 deventilation valves
- 1 filling and drain valve
- plate exchanger for free cooling
- temperature sensor water inlet
- tube connection in the shape of screw connection with a soldering connection

Secondary circuit (chilled water):
- plate evaporator (already listed under cooling section)
- 3-way control valve with electric drive
- plate exchanger for free cooling (already listed under primary circuit)
- membrane expansion tank with safety valve
- water temperature transmitter, water outlet
- water temperature transmitter, water inlet
- water pressure indication, water outlet
- water flow monitor
- high efficiency circulating pump 2 bar
- 2 filling and drain valves
- 6 deventilation valves
- tube connection in the shape of screw connection with a soldering connection
- entering water temperature: +8°C - +20°C
- leaving water temperature: +4°C - +15°C
- at maximum water flow: 4 K temperature difference
- at minimum water flow: 8 K temperature difference

Compressor:
- hermetic scroll compressor
- smooth and even compression
- little vibrations at operation
- low noise level
- suction gas cooling
- ester oil charge
- internal motor protection
- electrical type of protection according to VDE is IP 21
- mounted on rubber vibration absorbers
- non-return valve at connection piece, pressure side
- maintenance-free
- high efficiency
- indifferent to malfunctions
- sight glass for oil level indication in the immediate proximity of the compressor

Plate evaporator / plate condenser:
- high capacity plate evaporator made of soldered plates of stainless steel 1.4401
- separate circuits for water and refrigerant
- resistant against common anti-freezing compounds and anti-corrosive agents
- insulation by diffusion-tight material to prevent formation of condensate
- max. permissible operating pressure 30 bar

Refrigerant:
- R407C

Electric cabinet:

- design of the cabinet according to VDE and DIN standards
- accommodation of high voltage and control components
- accessible from the front
- installed main switch
- clear and space-saving structure of high voltage and control components
- complete wiring of motor circuit breakers, contactors and control components in wiring ducts
- top hat rail or bus bar system for high voltage components
- main power supply provided by customer

Feeding direction:

- Power supply from below

Voltage:

- 380 V - 415 V, 3ph, 50 Hz with N and PE protective conductor

C7000 Control System (CompTrol C7000):
System for control of A/C units consisting of C7000 - I/O-controller and, depending on functionality, further expansion boards.

C7000-IO-Controller:

- supply voltage: 24 V (+15%/-15%) VAC
- I/O-board interface: RS485
- service, download- and printer interface: RS232
- 4 sensor inputs: signal current 0-20 mA or 4-20 mA or signal voltage 0-10 V
- 1 analog universal input, and passive sensor (0-10V, 0/4-20mA)
- 11 alarm inputs: 24 VAC/DC (+ 24V = no alarm) status display via LED's
- 4 analog outputs: 0-10 VDC; max. load 20 mA
- 7 digital outputs (relais with two way contact), 24 VAC, max. 6 A, status display via LED's

C7000-IO-Controller installed in electrical cabinet of a unit with following properties:

C7000-IO-Controller

- automatic or manual start after power loss, unit start time delay also selectable for individual components.
- free allocation of all digital/analoge inputs and outputs at respective terminals.
- service warning according to pre-set time intervals.
- manual operation of individual components.
- day and night operation
- recording of up to 200 alarms with time and date
- temperature recording up to 1440 data points, freely scalable within 1 to 60000 minutes
- variable alarm delay, selectable alarm priority, text input for auxiliary alarms.
- 1*common alarm
- winter start operation
- RS232 port on microprocessor board for servicing and software upload. Print out of alarm protocols, temperature values, diagnostics and parameter setting
- serial RS485 interface available for connection to user interface C7000AdvancedTerminal (C7000AT)
- sequencing of all connected C7000-IO-Controller
- sequencing can be divided in up to 20 zones
- turn over conditions: unit failure and selectable temperature for Std-By unit activation
- selectable sequencing time
- alarm priority configuration
- Modbus protocol preinstalled
- flow or return water control

Analogous Expansion-I/O-Board (EAIO)

- 4 analogous universal inputs, for passive sensors (0-10V, 0/4-20mA, 4-conductors: PT100, PT1000, PTC)

- 4 analogous outputs: 0-10 VDC; max load 20 mA

External temperature sensor
for the free cooling function

Documents:
The chiller units are dispatched with the following documents:
- operation instructions manual
- maintenance instructions manual
- wiring diagrams
- refrigeration diagram
- replacement part list
- CE - declaration of conformity
- Protocol: Unit running test on internal test device

The commissioning, the final function check and the instruction of the operator are not part of the delivery volume.

**WinPlan**

Unit

| | | |
|---|---|---|
| Unit type: | CSI 1001 GE | |
| Cooling capacity (total): | 100,1 | kW |
| Condensing temperature: | 50 | °C |
| Max. pump head press.: | 13,7 | m |
| Altitude above sea level: | 0 | m |
| Chilled water in: | 18,0 | °C |
| Chilled water out: | 13,0 | °C |
| Chilled water vol. flow: | 17,1 | mł/h |
| Perc. glycol (chilled water): | 0 | % |
| Height: | 1 980 | mm |
| Width: | 1 400 | mm |
| Depth: | 890 | mm |
| Weight: | 745 | kg |
| Refrigerant: | R407C i | |
| Frequency: | 50 | Hz |

Hydraulics (Data per unit)

| | | |
|---|---|---|
| Pressure drop condenser: | 59 | kPa |
| Pressure drop control valve: (option) | 23 | kPa |
| Total pressure drop: | 82 | kPa |
| Medium inlet temperature: | 39,4 | °C |
| Medium outlet temperature: | 46,2 | °C |
| Medium volume flow: | 18,5 | mł/h |
| Percentage of glycol: | 35 | % |
| Nominal size control valve: | 2 | " |

Compressor (Data per compressor)

| | | |
|---|---|---|
| Electrical power consumption: | 12,4 | kW |
| Heat rejection: | 62,5 | kW |
| Number: | 2 | |