AEROCONNECT 1B

Control manual

CIAT

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Original text: French Version

1 - IMPORTANT RECOMMENDATIONS

Your machine is fitted with a microprocessor-controlled electronic board; it is essential to observe the regulations below to ensure correct operation.

1.1 Power supply

Remote control: Voltage 230 V VAC/50 Hz.

If the remote control of the machine has a separate feed (transformer not supplied), the following must be prepared:

1 - A feed line taken **directly** from a distribution point (this line must **only** go to the remote control of the machine).

2 - This feed line must be kept at least 1 metre away from all power lines (400 V).

1.2 Electronic board specifications

Power input of the boards: 35 Watts.

Maximum permissible voltage and current per input/output: 253 VAC -3.15 A.

The board feed is connected to a 3-point screw terminal with terminals marked for:

1 - Live,

2 - Neutral,

3 - Earth.

Board fuse specifications:

Schurter fuse in series, UMT 250 VAC 3.15 A. Time delayed 10 x 3, ref. 34031 0171.

Environmental conditions of use:

- Storage → Temperature -40/+80°C, humidity 5/85% without condensation.

- When operating → Temperature -20/+70°C, humidity 5/85% without condensation.

Pollution degree: 3.

1.3 Caution

Always read the instructions in the manual before performing any operation on the product.

Disconnect the power and ensure no voltage is present before carrying out any operation on the board.

The board must not be accessible when it is powered on, to avoid the risk of electric shocks.

Certain parts of the board (USB and Ethernet connections) may be hot. Depending on the ambient temperature, these may pose a burn risk. Therefore, avoid touching these connections when plugging into them.

Warning:

There is a danger of explosion if the battery is replaced with the wrong type.

Dispose of used batteries in accordance with the requirements for this type of product.

1.4 Earth

The unit must be earthed (using an official earthing system which complies with French standard C15.100).

1.5 Sensor connections

Do not pass connection cables near to a power line (400 V) or remote control line (230 V). If the distance is greater than 6 m, use shielded cable connected to the earth on the equipment side.

Maximum distance 25 m.

1.6 Communication BUS connections

1.6.1 Specifications of the connecting cable

- Flexible cable
- 2 shielded wires
- Cable capacitance and shielding: 120 pF/m
- Resistance: 56 Ω/km
- Example of cable: FILOTEX FMA - 2P

                FILOTEX IBM 7 362 211

1.6.2 Shielding connection

- Connect the shielding of the CMS or microcomputer to earth.

- Ensure continuity up to the last piece of equipment.

i.e. the communication cable shielding must be connected between each piece of equipment.

- Do not connect the shielding to the equipment's earth.

- On each piece of equipment, the length of wire protruding from the shielding should be as short as possible (2 cm).

1.6.3 Cable routing

- The cable routing must be at least 30 cm away from any 230 V or 400 V cable.

- If a 230 V or 400 V cable intersects with a computer connection cable, it must do so at a right angle.

1.7 "ON/OFF" input connections

- **Distance less than 30 metres**:

- Use a shielded cable and keep it at least 30 cm away cm from all lines that could generate interference; the shielding will be connected to the earth on the equipment side. If there are several shielded cables, each shielding must be connected separately. (If there is still a risk of interference, the various inputs will require relays).

- **Distance greater than 30 metres:**

- Prepare relays for the different inputs, 1 relay per input to be mounted close to the electronic board (cable size: 0.5 mm2)
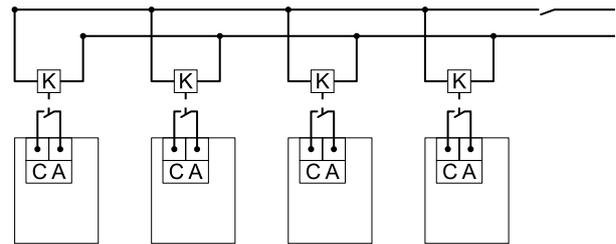
K: Auxiliary relay (to be fitted close to the electronic board)
CA: Automatic Operation Control (for each machine)

1.8 "ON/OFF" output connections

Potential-free dry contacts. Maximum current of 2 A (AC1 load), minimum of 5 mA. Voltage of 12 to 230 V AC. Maximum connection cross-section of 2.5 mm2.

2 - THE CONTROL CONSOLE

2.1 Board functions

Integrated in an electrics box, this board performs the following functions:
- Temperature or pressure control,
- Operating settings check,
- Communication with CIAT water chillers,
- Diagnostic and fault storage,
- Communication with the remote control console, ancillary boards and customer CMS (Modbus).

2.2 Board version

The version number is indicated on an adhesive label found on the board

2.3 Usage limitations

Room air: chap.1.2
Single-phase fluid → min./max. adjustment temperature = 5/90°C (up to 150°C optional)
Refrigerant fluid → min./max. set pressure: 5/45 bar

2.4 Electrical

Board supply voltage: 230 V +6%, -10%

2.5 Compatible equipment

The board is used to control the drycoolers and the air-cooled condensers. Possible unit configurations and identification conventions:

Flatbed coil	V coil
Unit with one or two fan lines	
 Line 1	 Line 1 Line 2
Unit with one or two coils	
 Coil 2 Coil 1	 Coil 1 Coil 2
Unit with one or two circuits	
 Circuit 1 Circuit 2	
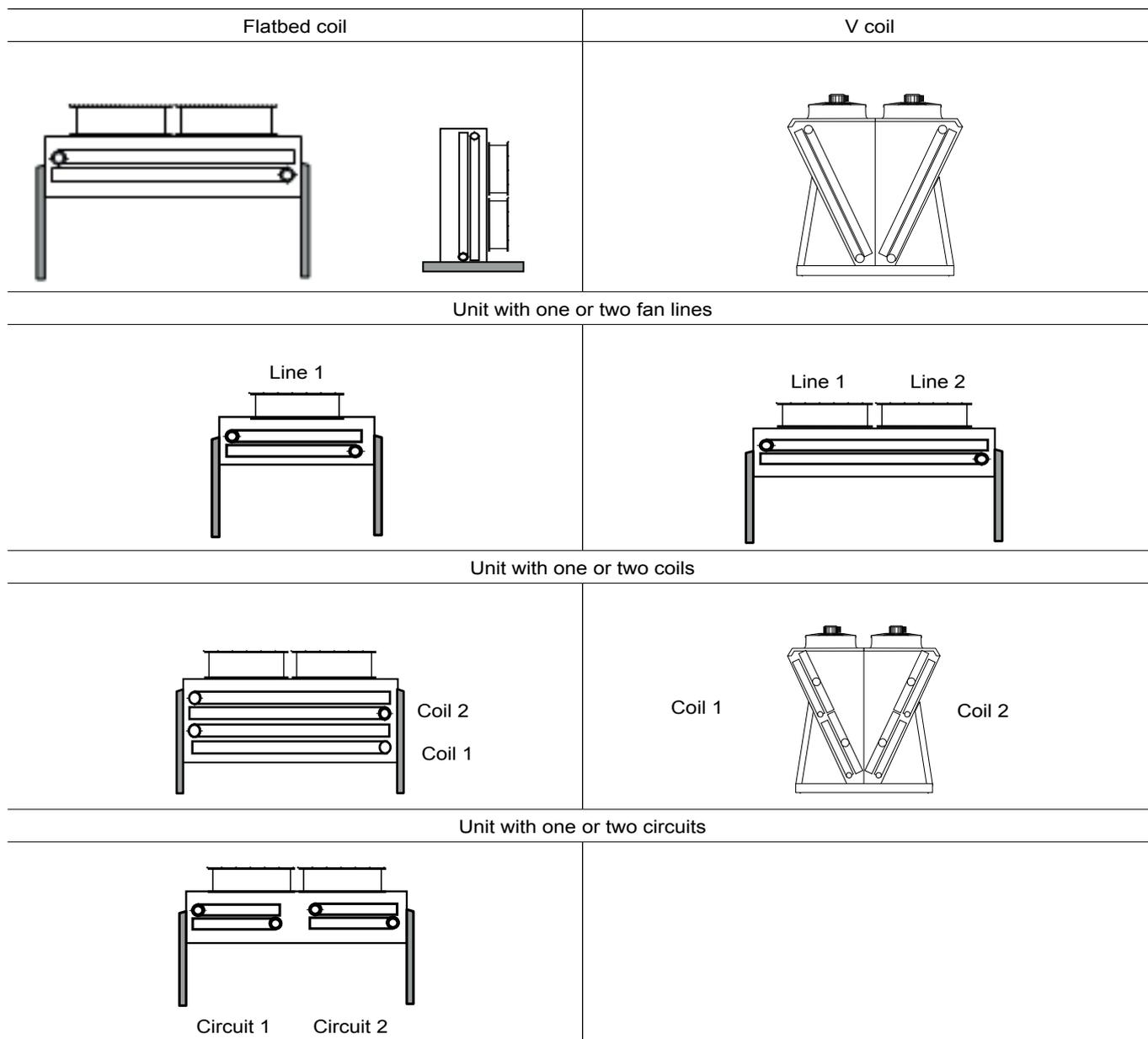
2.6 Description of the console (local and remote)
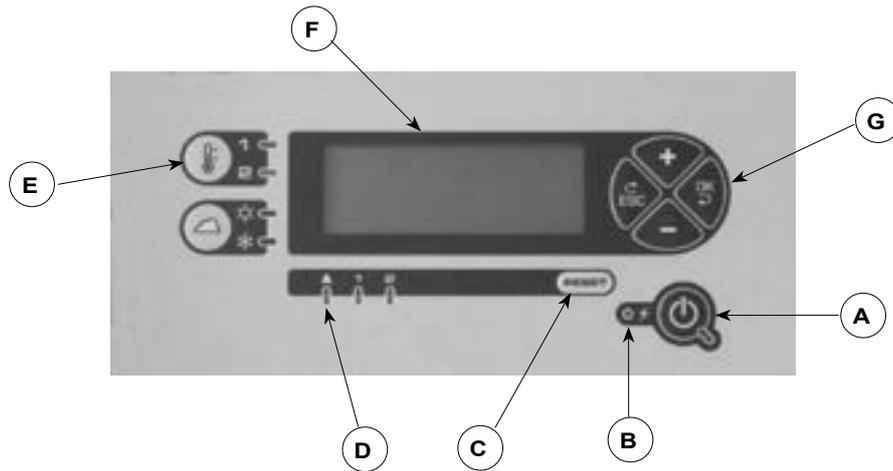
Identification	Visual	Function
A		**On/off** button | LED state	Meaning
Off	Machine stopped
On	Machine operating
Flashing	Machine stopped by automatic operation control	
B		LED on = system **powered on**
C		Fan fault acknowledgment
D		*LED on = **fault**
E		Press this button to select setpoint 1 or 2 The LEDs show the active setpoint.
F		Display screen
G		Menu navigation buttons: see section "3 - Navigating through the menus"

2.7 The display
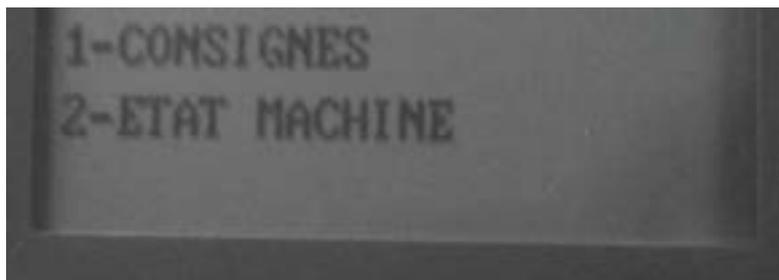
Three-line LCD display
Displays system readings and controls.

2.8 Menu tree

There are eight main menus for controlling the system.

Each menu contains different parameters.

2.8.1 Menu list

MENUS	DESCRIPTION
1 - Setpoints	Change setpoints - Menu not displayed if the unit is run with a CIAT water chiller.
2 - Machine state	Default menu. Read only - information on the operation of the machine.
3 - Measured values	Displays read-only temperature and pressure values.
4 - Machine configuration	Machine configuration parameters
5 - Settings parameters	Configuration of the control and various options
6 - Reading parameters	Displays the state of the inputs, outputs, meters, etc. (read-only).
7 - Fault memory	Shows the nine most recent faults (read-only).
11 - Communication	MODBUS and TCP protocol configuration (from V07)

2.8.2 Structure of the menus

All information in the menus is displayed in a tree structure.

This tree structure is split into three levels, as shown in the diagram below.
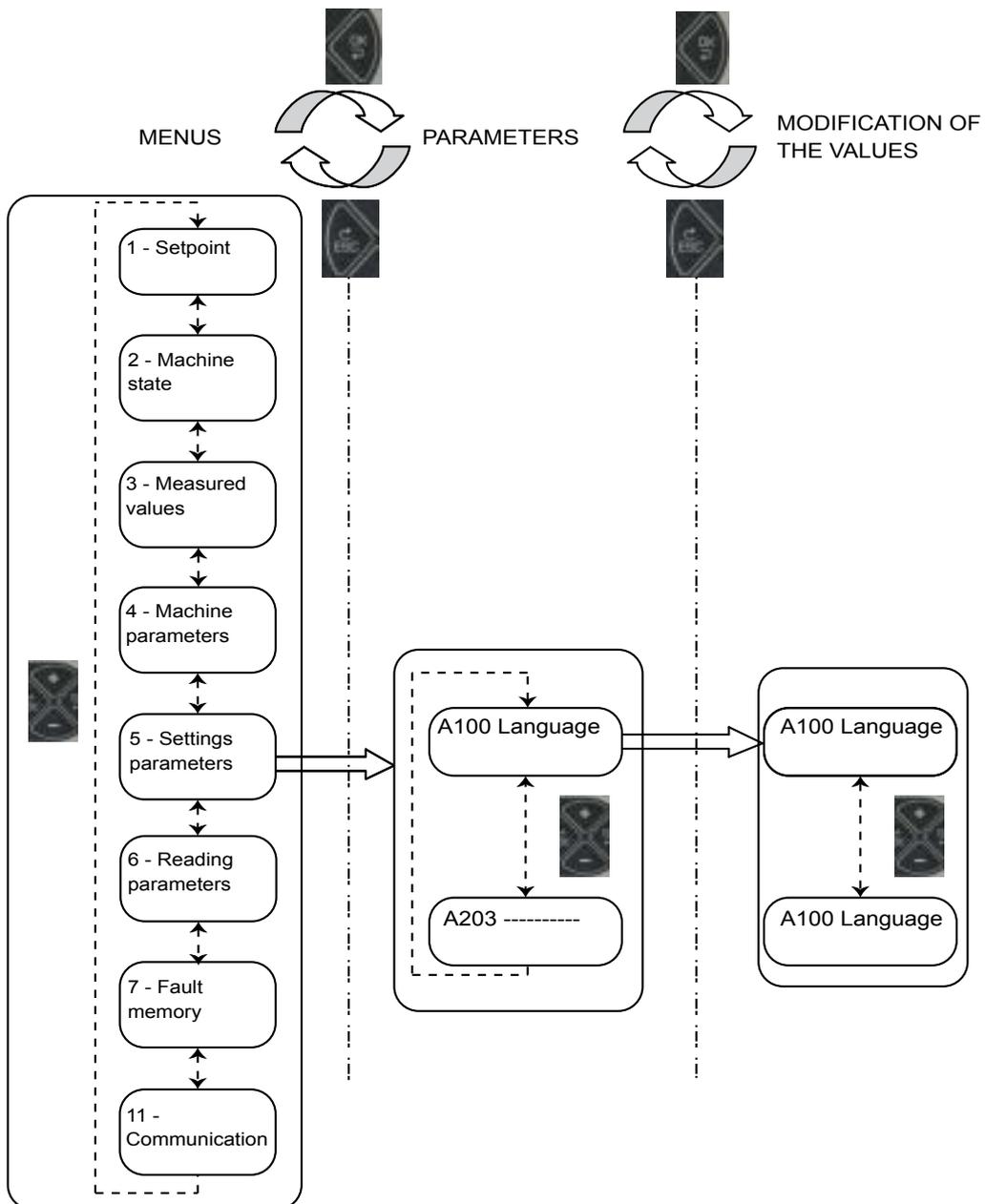
3 - NAVIGATING THROUGH THE MENUS

Four buttons are available for navigating through the menus

The use of each button is described in the table below:

➜   Press these buttons firmly!

Button	Menus level	Parameters level	Values level
		Back to Menus level	Back to Parameters level
	Select menu	Select parameter	Confirm value and go back to parameters
	Menu scroll buttons	Scroll through the parameters	Decrease the parameter value or scroll through the values
			Increase the parameter value or scroll through the values
		Pressing and holding the '+' or '-' button will cause the display to scroll faster	
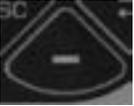
Powered on:
The "machine stopped - on/off" menu **[2-Machine state]** screen appears.

Press to go back to the menu list.

If the console is not used for one hour, the **[2-Machine state]** menu reappears.

Press to go back to the menu list.

Arrows on the right of the screen indicate that additional information is available. To see this information, press the + or - button.

example:

C O I L P R E S S U R E ↑	
2 0 . 7 B ↓	

The active line in a menu is shown by a flashing box to the left of the menu number.

example:

A 1 0 0 L A N G U A G E	
E N G L I S H	
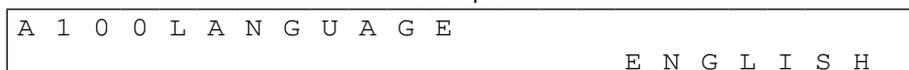
4 - BOARD FUNCTIONS: DESCRIPTION

4.1 Control selection

There are **4 types of control are possible** depending on the value of parameter A07.
- **On/Off**: In-series control by activation of fan stages.
- **Variable speed control**: Fan speed control by EC motor.
- **Mixed 1:** Variable speed control on one stage then activation of the other On/Off stages depending on the speed of the EC fan
- **Mixed 2:** Variable speed control on one stage then activation of the other On/Off stages when the EC fan is at 100%

4.1.1 On/Off control (stages)

This control is used to control the fan stages, its configuration is "IN SERIES".
Control can be for condensation pressure or temperature.
Each circuit has a control loop and can have different control setpoints but the number of stages is the same.
There are 2 types of On/Off control:

- For the condensers + drycooler before V07 on the board
  - The fan stages are engaged according to the stage hysteresis and stage Δ.
  - Each control loop has its own stage hysteresis and its own stage Δ

EXAMPLE FOR CIRCUIT 1
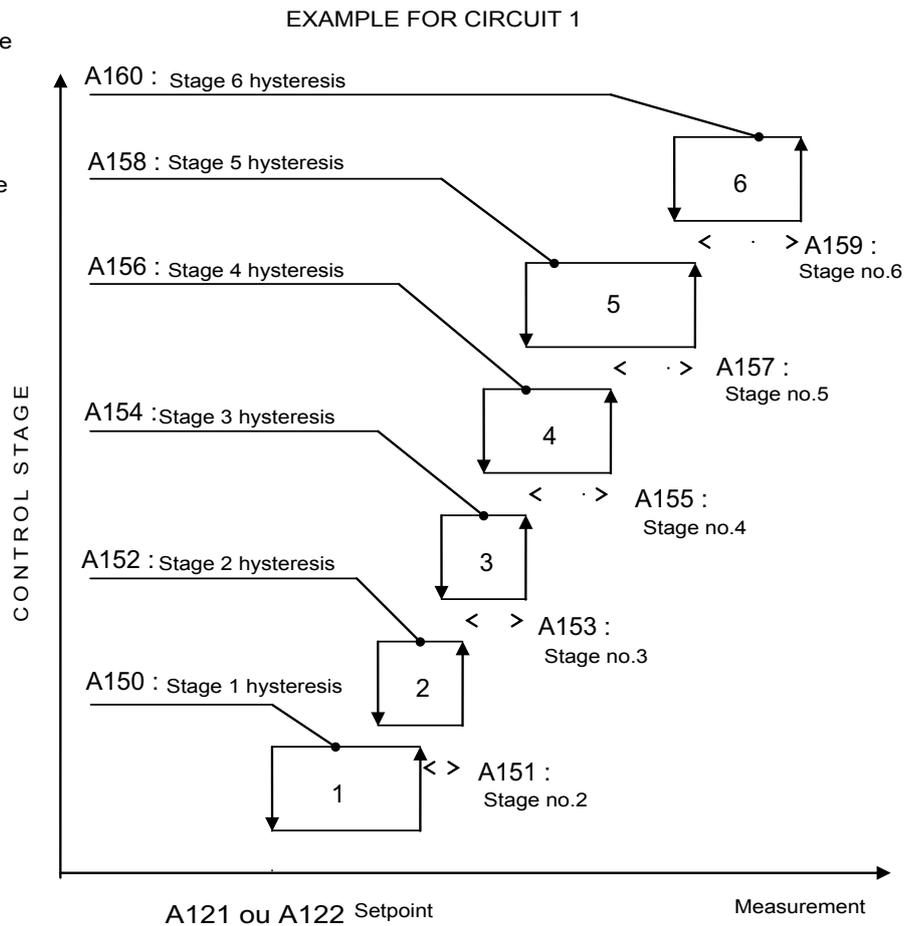
- For drycoolers from V07

The diagram below illustrates the operating principle:
  - When the fluid temperature (measured) is between A121-A106 and A121+A106, the fan stages are not active.
  - When the fluid temperature < A121-A106 and the temperature continues to drop for a duration < A108 the control system will shut off a control stage.
  - When the fluid temperature > A121+A106 and the temperature continues to rise for a duration > A107 the control system will activate an additional control stage.
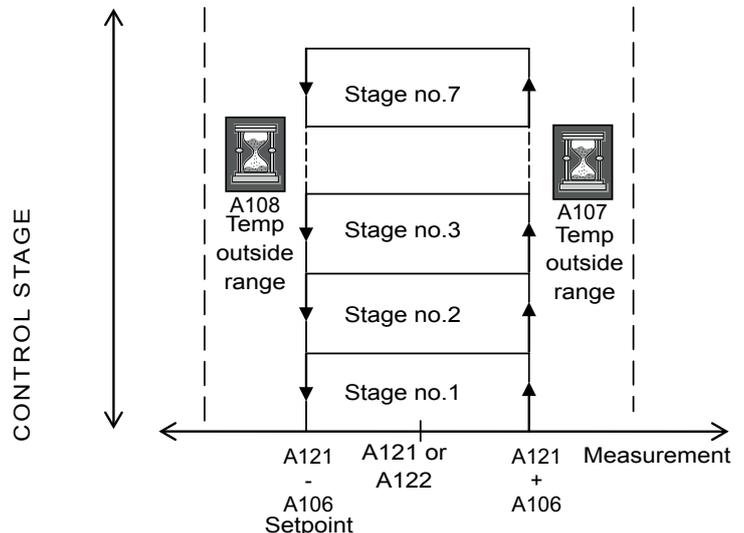
4.1.2 Speed control

Used to control the speed of all fans with EC motors.
- The board sends a 0-10V signal to control the EC.
- The following diagram illustrates the output signal according to the measurement taken on the fluid (temperature or pressure) and the setpoint.

1 0/10V output signal for 1 FMA line units and/or 1 circuit units.
2 0/10V output signal for 2 FMA line units and/or 2 circuit units.

EXAMPLE COIL 1 CIRCUIT 1
SETPOINT 1

Voltage

10V

0V

A121 + A150
(A150 = hysteresis)

Measurement
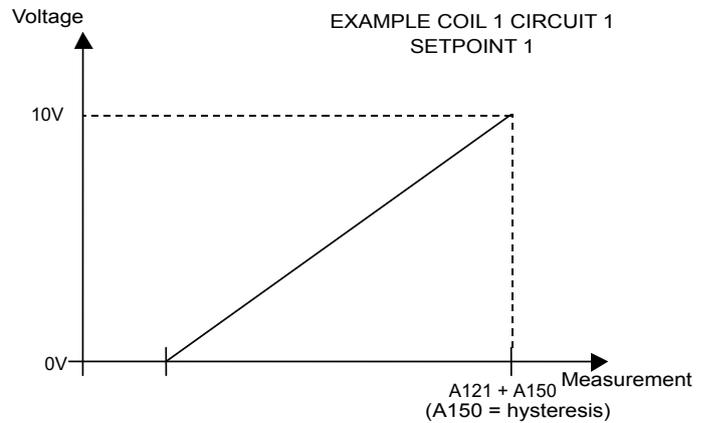
4.1.3 Mixed control 1

Used for **variable speed control on stage 1**. The other fan stages are controlled in series according to the stage 1 control signal (0/10 V) which corresponds to the fan speed (0/100%).
The diagram below illustrates this type of control:

Stage operation:
Stage control is defined according to a percentage of the operating range of the 1st stage.
7 stages: 5-15-25-30-40-45% and 50-55-65-75-85-95%
6 stages: 5-15-25-35-45% and 55-65-75-85-95% (see example)
5 stages: 10-20-30-40% and 60-70-80-90%
4 stages: 10-25-40% and 60-75-90% for stages 2-3-4
3 stages: 15-30% and 70-85% for stages 2-3
2 stages: 20 and 80% for stage 2
The diagram illustrates this operating mode for a system with 6 control stages.

EXAMPLE FOR CIRCUIT 1
COIL 1

2nd stage
3rd stage
4th stage
5th stage
6th stage

Fan control signal

0,5V 1,5V 2,5V 3,5V 4,5V   5,5V 6,5V 7,5V 8,5V 9,5V

A121
(Setpoint)

Measurement
A121 +A150
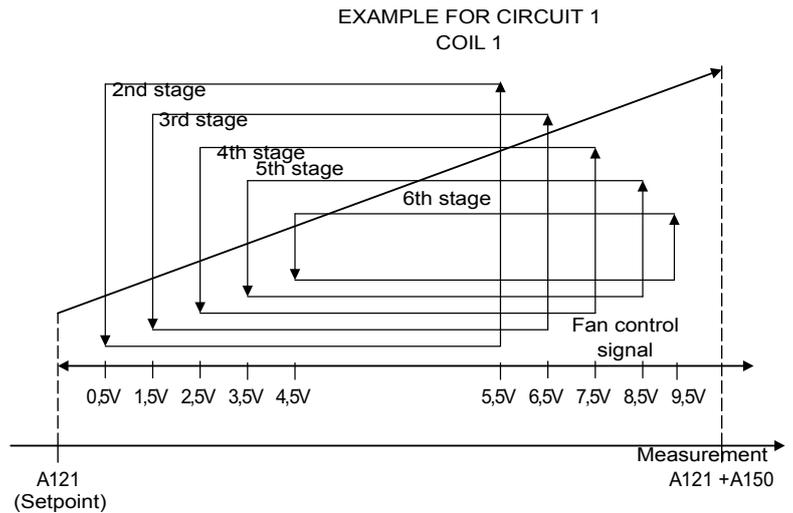
4.1.4 Mixed control 2

Used for **variable speed control on stage 1.**
The other fan stages are controlled in series when the 1st stage is at 100%.
The following diagram illustrates this operating mode for a system with 6 control stages.
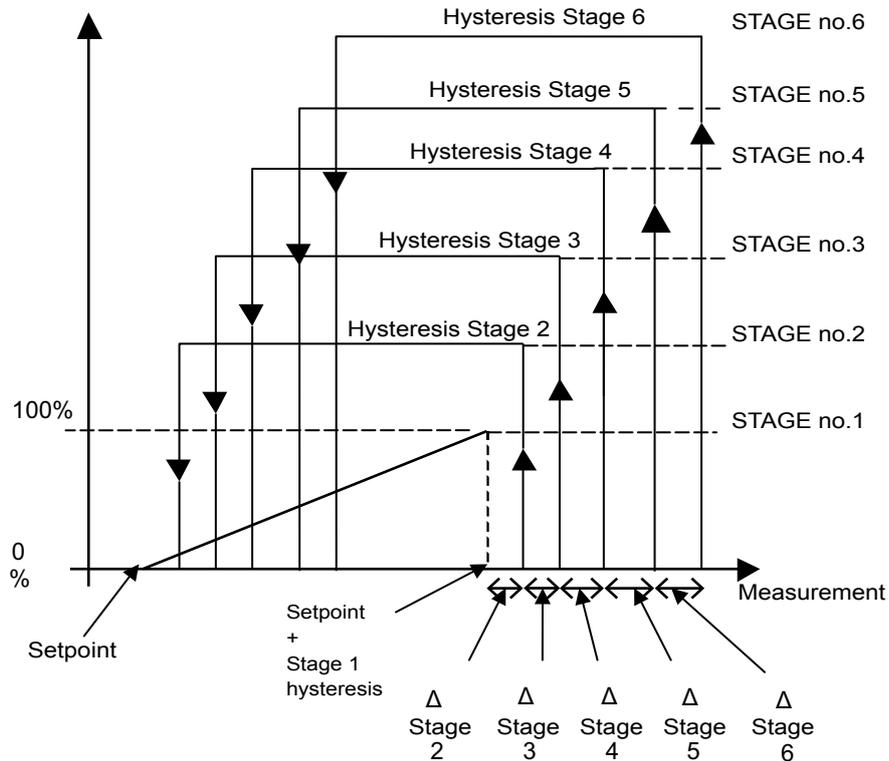
4.2 Machine automatic operation control

Used to remotely authorise or prohibit the operation of the machine.
The machine is on when the contact is closed (J6 terminals 2-3).

4.3 Override control

Used to turn on all the fans. The fans operate when the contact is closed (J6 terminals 1-3).

4.4 Two setpoints

Used, for example, for summer/winter or day/night operation. Each circuit can have up to two control setpoints. Setpoints 1 to 2 can be switched via the potential-free (dry) contact (J6 terminals 4-6), the console or over a CMS.

4.5 Stage runtime balancing

The running time of each fan stage is balanced by a time meter. The type of balancing of the fan running time can be configured with A110.

4.6 Misting (units with spray ducts).

Parameter A10 = YES

Used to increase the efficiency of the drycooler by misting tiny droplets of water into the ambient air to cool it through evaporation.
To activate this function, set parameter A10 = YES

```
 A 1 0    M I S T I N G

                              Y E S
```

2 possible options depending on the value of parameter A113:
- Optimised water consumption A113 = WATER: the water misting does not start until all the stages are on.
- Optimised electricity consumption A113 = ELEC: the water misting does not come on until the outdoor temperature reaches the defined value (parameter A199)

A 1 1 3 M I S T I N G	
W A T E R O P T I M I S A T I O N	Default value
E L E C O P T I M I S A T I O N	Other setting values

● **Optimised water consumption (A113 = WATER)**:

The water misting does not start until all the stages are on and the measurement is above the value of parameter A200.

With On/Off or Mixed control

In this case, misting is controlled as an additional control stage.
When the drycooler is at 100% power and the
fluid temperature continues to increase to the
value of parameter A200, misting is activated.

```
A 2 0 0   M I S T I N G   S T A G E
D I F F E R E N C E             2 °
```

During On/Off control, misting is stopped when the fluid
measurement is equal to the corresponding value at 50% of the
operating range of the last fan stage.
During mixed control 1, misting is stopped when the fan output
signal is equal to 6V.
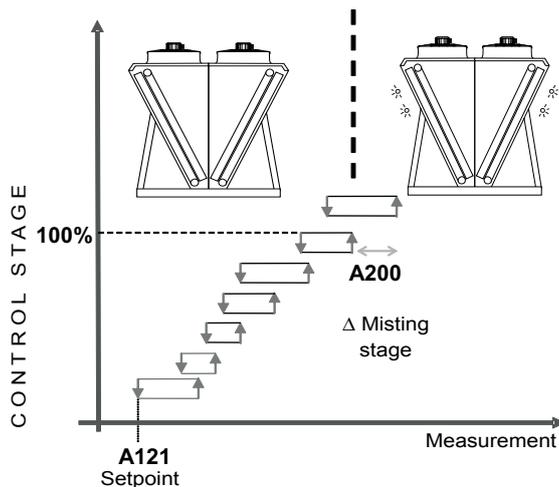
With variable speed control

From version V07 it is possible to activate misting before being
at 100% on the drycooler by modifying the value of parameter
A113.1.

```
A 1 1 3 . 1   V O L T A G E   T H R E S H O L D
M I S T I N G   C T R L       1 0   V
```
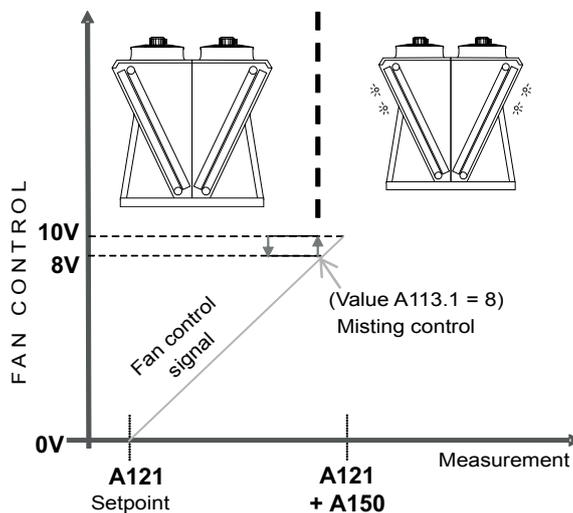

● **Electrical optimisation**

Water misting is activated when the outdoor temperature reaches
the value of parameter A199 and at least one control stage is
activated.

```
A 1 9 9   O U T .   T E M P E R A T U R E
D I F F E R E N C E           3 5 °
```

Misting is stopped in one of the following cases:

Outdoor temperature < A199 - 2°C
No control stages active
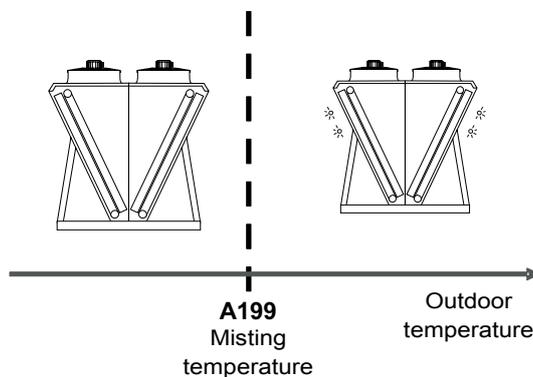
4.7 Free cooling

4.7.1 List of parameters

No.	PARAMETER NAME		PARAMETER ADJUSTMENT	
	Description	Display conditions	Adjustment possible	By default
A111	FREE COOLING OPERATION	A10 = NO A02 = (1 or Yes) and A03 = 1 LT water circuit	YES or NO	NO
A112	SELECTION EXT. TEMP.	A111 = Yes	5 to 20 in increments of 1	10
A117	MIN DIFFERENCE FOR FREECOOLING DEACTIVATION	A111 = YES	0.5°C to 15°C in increments of 0.5	2
A118	MAX DIFFERENCE FOR FREECOOLING ACTIVATION	A111 = YES	1°C to 10°C in increments of 0.5	4

4.7.2 Schematic diagram

Assembly with two 2-way valves

Assembly with two 3-way valves
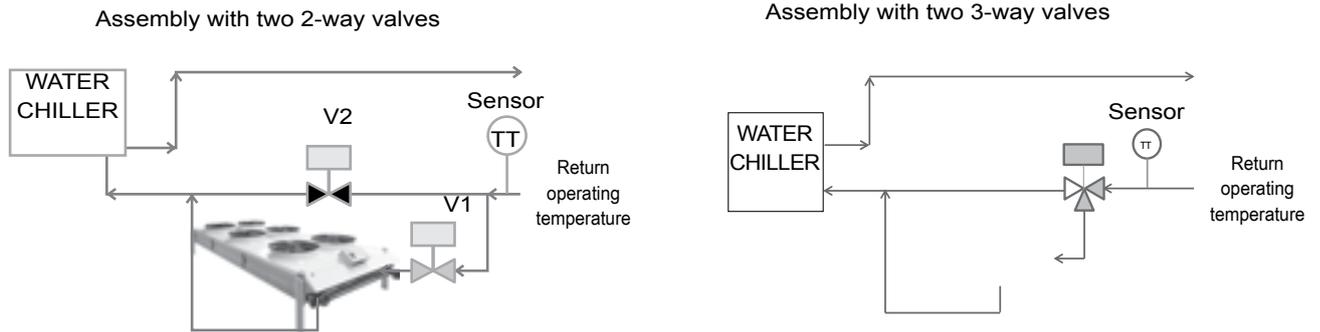
Depending on the difference between the return operating temperature and the outdoor air freecooling operation is authorised (or not). If the value of the difference is less than A117 freecooling operation is stopped and when the value is greater than A118 operation of the drycooler is authorised.

In free cooling operation, priority of operation is given to the drycooler. The drycooler controls the control stages according to the control setpoint and the fluid temperature. When the drycooler is at 100% power it will send control authorisation to the water chiller. The water chiller controls according to its own parameters. This authorisation is timed for 15 minutes when the drycooler is started.

4.7.3 Electrical connections
ADD2 board
Rotary switch RC1 in position 2

CONNECTOR/ TERMINALS	DESIGNATION	DIRECTION OF ACTION
On/Off outputs		
J3 terminals 1-2	Water chiller in free cooling mode	The system start-up authorisation is sent to the water chiller when the contact closes
J3 terminals 4-5-6	Free cooling valve control Terminal 4: voltage 230V 50Hz Terminal 5: Fluid towards the chiller Terminal 6: Fluid towards the drycooler	See wiring diagram

Note:
For CIAT water chillers, do not connect J3 1-2; instead, use the bus connection (J10 water chiller board/J9 drycooler board)
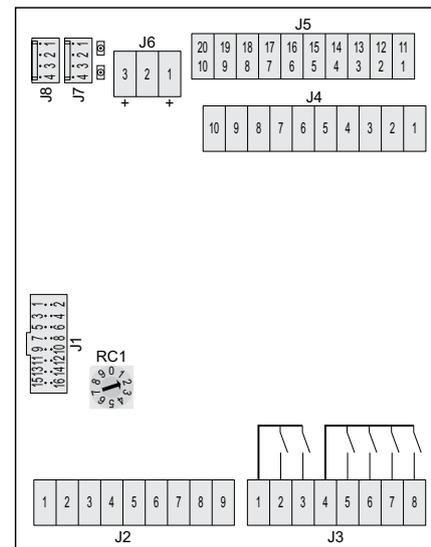
4.7.4 Operation

Tu: Return operating temperature

Ta = Free cooling off air temperature

Ta = Tu – A117

When the outdoor temperature exceeds the value Ta, free cooling will be stopped if the drycooler is already at 100%

Td = Air temperature value authorising the start of free cooling operation =

Td = Tu – A118

When the air temperature is below the value Td, free cooling operation is authorised

Valve position

The 2-way valves can be controlled by the motherboard if the following conditions are met: max current = 3A - max voltage = 230V. Refer to the water circuit pump curve for the valve sizing.
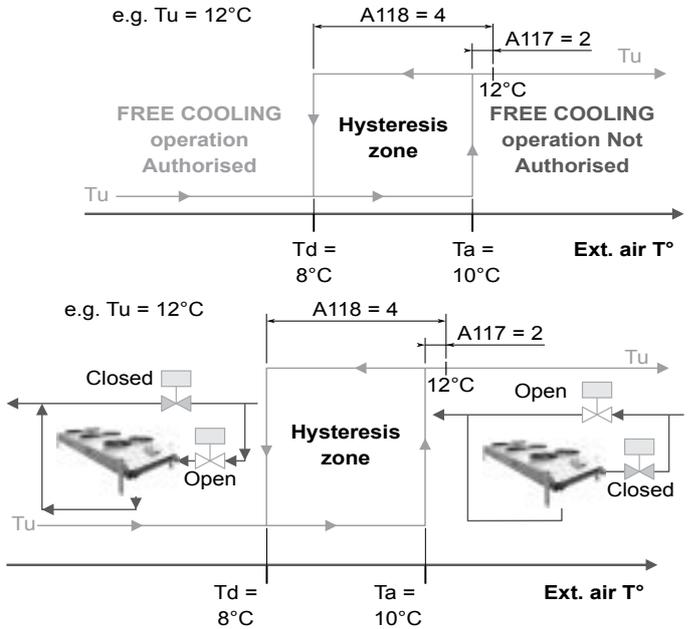
When the outdoor temperature is greater than the value Ta, the drycooler will stop, the valves will switch and the following message will appear.

```
         F R E E     C O O L I N G     O F F
```

4.7.5 Parameter A112

The value of A112 corresponds to the air temperature that allowed it to select the drycooler.

This parameter is not for free cooling operation, it is for detecting a fault.

If the air temperature is < (A112 - 5°C) and the drycooler is operating at 100% power, the drycooler will authorise operation of the water chiller and the fault message below will appear.

```
                    C H E C K
        T H E    I N S T A L L A T I O N
```

This fault is timed for 15 minutes from start-up. The fault is acknowledged by pressing the reset button.

If the temperature drops below that of value " 5" the parameter will be deactivated and control of this fault is inactive.

4.8 Warming function

This function is available for drycoolers with 1 coil and 1 circuit from version V07.

It is activated by selecting the parameter A109

A 1 0 9 O P E R A T I O N O F	
C O O L I N G	
W A R M I N G W I T H C O N T R O L	Default value
W A R M I N G W I T H O U T C O N T R O L	Other setting values

If A109 = COOLING (standard operation). The number of fan stages and/or the fan speed increases if the temperature of the fluid increases

If A109 = WARMING the drycooler will heat the fluid using outdoor air during a warm period. This function requires the installation of the outdoor sensor. When the outdoor air temperature is above the value of parameter A109.1, the warming function is active. Two types of operation are possible: with or without control.

A 1 0 9 . 1   O U T .   T E M P   W A R M I N G
O P E R A T I N G   O R D E R   **1 0** °

When the outdoor air is < A109.1 - (1°C) the warming operating order becomes inactive.

If the operating order is inactive the fans are not active.

If A109 = WARMING WITHOUT CONTROL:
If the water temperature < (Outdoor air temperature - 2°C all the fans will operate at 100%
If the water temperature >= (Outdoor air temperature - 1°C) the fans will stop

If A109 = WARMING WITH CONTROL
Control is at around setpoint A121 or A122.
This control is the opposite of the cooling function. The number of fan stages and/or the fan speed decreases if the temperature of the fluid increases.

Fans

100% -----------------------

A109.1 =
Selection
temperature

Outdoor
temperature –
Water temp ≤ 1

Outdoor
temperature –
Water temp ≥ 2
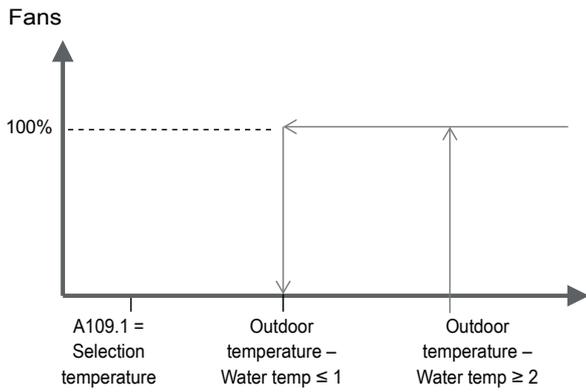
Switching to the cooling function (standard) from warming can be done via the BUS connection.
In the event of an outdoor temperature sensor fault the warming function is stopped.

4.9 CMS link (menu 11)

(from V07)

With the exception of the language, control type (local, remote) and communication parameters, all the parameters can be accessed in read and write modes.

2 communication interfaces are possible (RS 485 and TCP)

4.10 Link with a CIAT chiller

To establish communication between the water chiller and the drycooler, the following is required:

1) A BUS connection between the water chiller and the drycooler, using the following wiring:

    - Terminal block J10 of water chiller to J11 of the drycooler (for drycooler software versions <V09)

    - Terminal block J10 of water chiller to J9 of the drycooler (for drycooler software versions ≥V09)

2) Configure the following parameters:

    - P116 of water chiller = YES

    - A116 of drycooler = YES for software versions < V09

    - On software versions ≥ V09, drycooler parameter A116 is no longer visible, it automatically changes to YES upon connection.

For software versions ≥ V09, check that the connection has been established by parameter A316 visible in the reading parameters.

A	3	1	6		T	E	R	M	.	B	L	O	C	K		J	9		C	O	N	N	.
												Y	E	S									

⚠ **SOFTWARE VERSION UPGRADE**

When upgrading from a software version < V09 to a version ≥ V09, the BUS connection wiring on the dry-cooler board must be changed from J10 to J9.

The following information is exchanged between the drycooler or the condenser and the water chiller:

Drycooler case

Chiller to Drycooler	Drycooler to Chiller
Chiller on/off	Drycooler on/off
	Free cooling operation
	Fan stage fault
	Sensor fault

Air-cooled condenser case

Chiller to Air-cooled condenser	Air-cooled condenser to Chiller
Chiller on/off	DC or condenser on/off
Setpoint	Free cooling operation
Pressure value	Fan stage fault
	Sensor fault

Navigation in the drycooler board menus via the water chiller board.
The drycooler configuration can be accessed from menu 13 of the water chiller board.
All the drycooler board parameters are accessible in read and write mode.

```
1 3 -        A E R O - C O N N E C T
```

- Menu 13 displays all the drycooler data on the water chiller console.

- The drycooler parameters are prefixed with the letter "A" to differentiate them from the water chiller parameters.
- If a drycooler and console are connected to a water chiller with P116 set to Yes, no priority is given between the two consoles.
- If menu 13 is displayed for 1 hour with no button activated, the water chiller display is restored.
- Parameter A99 for locking parameters can be switched to No by the water chiller console.
- Parameter A250 is not accessible as the water chiller console lamps are tested using parameter P250.
- The console function to override fan operation is not accessible using the water chiller console.

Note: If the BUS connection is removed or the water chiller is off, a communication fault will appear on the drycooler. To remove this fault, press and hold the reset and OK buttons for 5 seconds to set parameter A116 to NO.

```
A 3 1 6    T E R M . B L O C K    J 9    C O N N .
                                            N O
```

When the water chiller restarts, parameter A116 will automatically switch to YES.

5 - OPTIONS

5.1 Energy meter (From V07)
The energy meter is installed in the cabinet of the unit. Various values can be viewed on the screen. (3 measured values menu)
  - A470 = Voltage
  - A471 = Input current
  - A472 = Power input
  - A473 = Energy consumed

5.2 Relay boards
The boards must be installed in a cabinet.
Motherboard
It has potential-free (dry) contacts for remote displaying the following parameters: unit running, sensor faults and fan stage faults.
ADD3 expansion boards
For a unit with 2 circuits, its potential-free (dry) contacts allow remote displaying of the following parameters: sensor faults, fan stage faults on circuit no.2.

5.3 Remote control console
Used to view and control the operation of the unit remotely. Maximum distance: 1000 m
Must be installed in the plant room
Console mounting dimensions (mm)

Height = 55
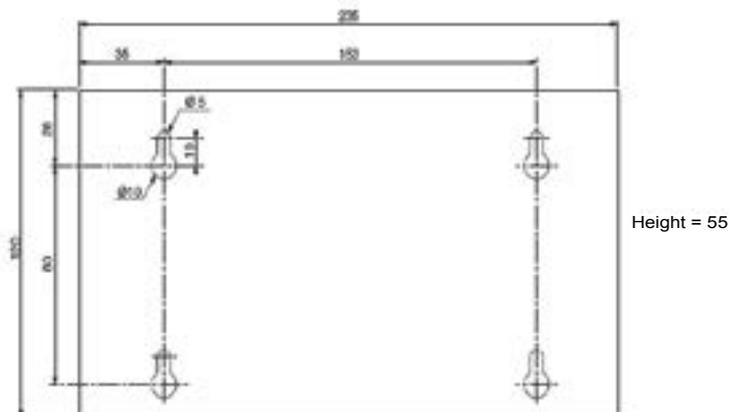
6 - ELECTRICAL CONNECTIONS

6.1 Connection diagram

6.1.1 CMS link

UNIT NO 1

Local console

board

J12

J11   W3

1 2 3

UNIT NO. 2
J11 borne 3
J11 borne 1
J11 borne 2

Controller or PC output RS485

B (-)
A (+)

RS485 2 wires
Max length
1000m

UNIT NO. (X-1)
J11 borne 3
J11 borne 1
J11 borne 2

UNIT NO X

Local console

board

J12

J11   W3

1 2 3

Position of line termination resistance resistance switch W3

off   on

Position W3 on the last unit

Position W3 on other units

6.1.2 Remote control console

UNIT

Local console

board

J12

J10

1 2 3

Remote control console (option)

J1

0V
B (-)
A (+)
T
N
Ph

Supply
230V 50Hz

6.1.3 Link with a CIAT chiller

6.2 Board connections

6.2.1 Motherboard
The structure of the motherboard is illustrated in the diagram below:
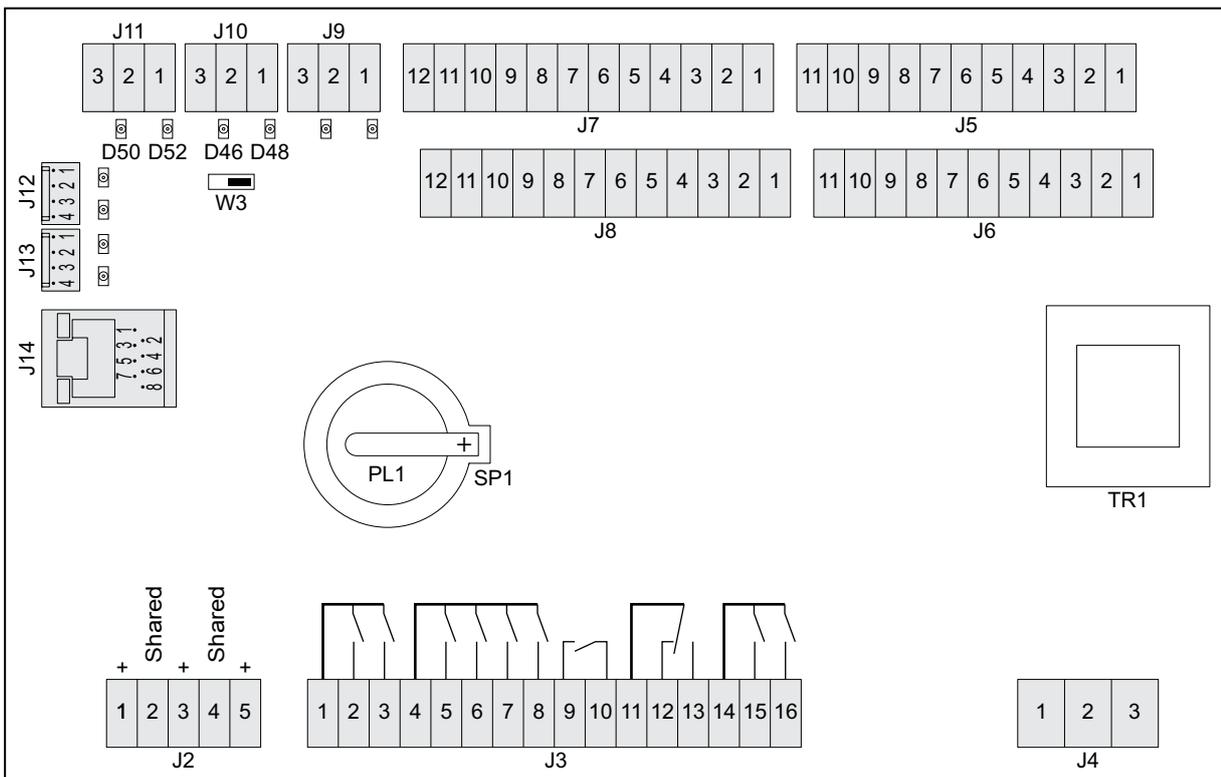
CONNECTOR/TERMINALS	DESIGNATION	DIRECTION OF ACTION
On/Off inputs		
J6 terminals 1-3	Fan manual override	The fans turn on when the contact closes
J6 terms. 2-3	Automatic operation control	The machine stops when the contact opens
J6 terminals 4-6	Setpoint 1/Setpoint 2 selection	Setpoint 2 is enabled when the contact is closed.
Analogue Inputs		
J7 terminals 1-2	Outdoor temperature sensor	
J9 terminals 1-2-3	BUS feed connection to J10 of the water chiller board	
J10 terminals 1-2-3	BUS power supply connected by shielded cable to J1 on relay board or J1 on remote control console. (terminal 1 to terminal 1, terminal 2 to terminal 2 and shielding to terminals 3).	
J11 terminals 1-2-3	BUS power supply connected by shielded cable to J9 on the CONNECT2 board or J12 on the CONNECT board or JA11 on the XTRACONNECT board. (terminal 1 to terminal 1, terminal 2 to terminal 2 and shielding to terminals 3) or customer CMS.	

6.2.2 Relay motherboard

To be installed by the customer in its main electrical cabinet
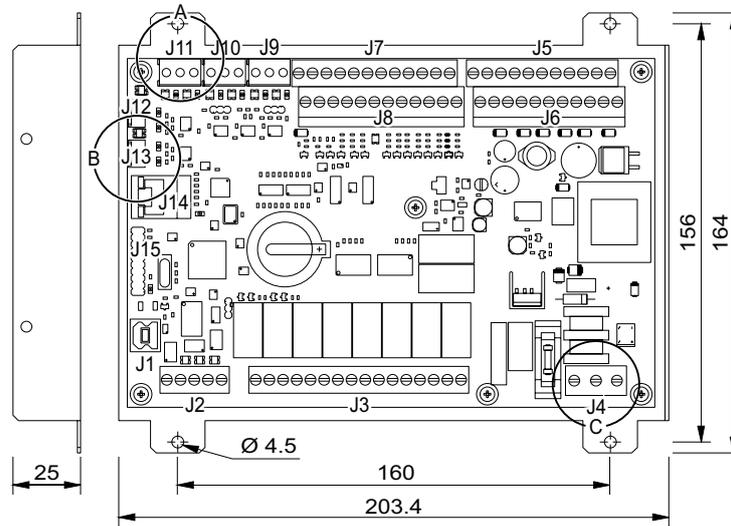
Its potential-free (dry) contacts allow the following information to be viewed remotely:

CONNECTOR/TERMINALS	DESIGNATION	DIRECTION OF ACTION
J11 terminals 1-2-3	BUS feed connected by shielded cable to the unit's control board. (Terminal 1 to terminal 1, terminal 2 to terminal 2 and shielding to terminals 3).	
J4 terminals 1-2-3	Single-phase 230 V power supply. (L - N T)	Terminal 1 Neutral Terminal 2 Phase Terminal 3 Earth
J13 terminals 1-2-3	If ADD3 board, terminal J1 connected to ADD3 board (30 cm of cable supplied with the ADD3 board)	
J3 terminals 1-2	Unit running	
J3 terminals 1-3	Sensor fault, coil 1, circuit 1	
J3 terminals 4-5	Sensor fault, coil 2, circuit 1	
J3 terminals 4-6	Fan fault, stage 1/fan fault, stage 1, line 1	
J3 terminals 4-7	Fan fault, stage 2/fan fault stage 2, line 1	The contacts are closed when the unit is running without any faults.
J3 terminals 4-8	Fan fault, stage 3/fan fault stage 3, line 1	
J3 terminals 9-10	Fan fault, stage 4/fan fault stage 4, line 1	
J3 terminals 11-13	Fan fault, stage 5/fan fault stage 5, line 1	
J3 terminals 14-15	Fan fault, stage 6/fan fault stage 6, line 1	
J3 terminals 14-16	Sensor fault, coil 1, circuit 2	

ADD3 additional relay board (2 refrig. circuits)

To be installed on the main board by the customer.
Board delivered with a 30 cm connecting cable
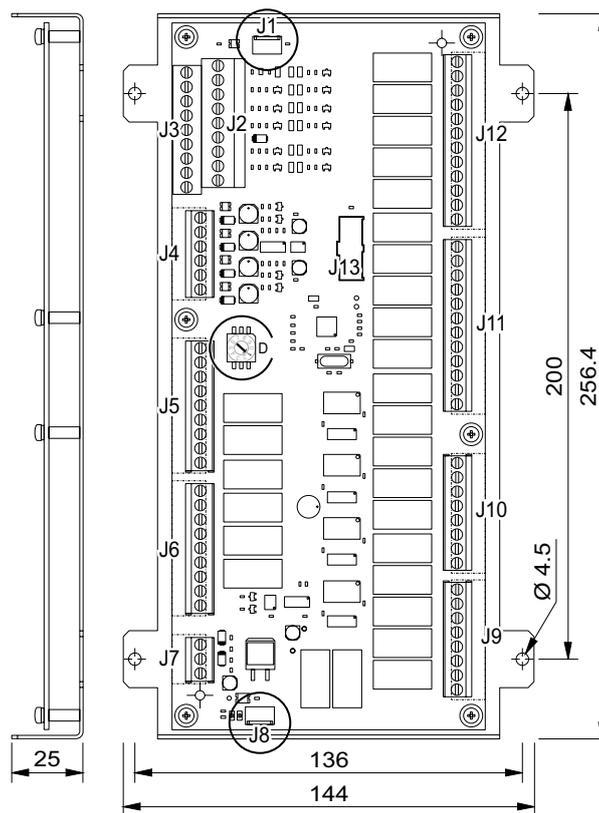
Its potential-free (dry) contacts allow the following information to be viewed remotely:

CONNECTOR/TERMINALS	DESIGNATION	DIRECTION OF ACTION
J1	Relay board block J13	
J9 terminals 1-2	Sensor fault, coil 2, circuit 2	
J9 terminals 1-3	Fan fault, stage 1, line 2	
J9 terms. 1-4	Fan fault, stage 2, line 2	
J9 terms. 5-6	Fan fault, stage 3, line 2	The contacts are closed when the unit is running without any faults.
J9 terms. 5-7	Fan fault, stage 4, line 2	
J9 terms. 5-8	Fan fault, stage 5, line 2	
J10 terminals 1-2	Fan fault, stage 6, line 2	

7.1 Configurations

Application: drycooler with one or two coils

Flatbed unit
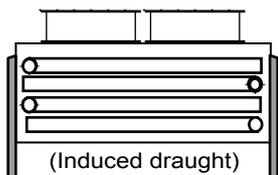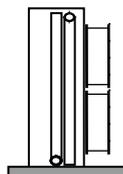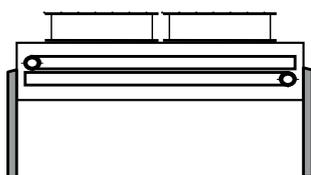
Coil 2
Coil 1
(Induced draught)
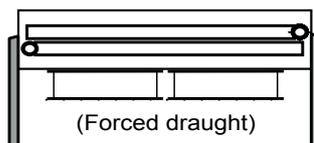
Coil 2
Coil 1
(Forced draught)

V-type unit

7.2 System start-up and configuration

● **Powering on the unit**:

The screen displays: "machine stopped on/off" in the **[2-Machine status]** menu

Press ESC to go back to the menu list.

● **Main parameters to be set**:

Select the **[5-Settings parameters]** menu.

For information on navigating, go to the "control console/navigation" section.

	Parameter No.	Description	Default values	Display conditions
	Menu 5: Settings parameters			
	A100	**Language**	EN	
	A103	**Console control type**	local	
	A104	**Communication mode (baud)**	9600	CMS
	A105	**Bus number**	1	CMS
From V07	A106	**Range without fan activation**	2	Control = On/Off
	A107	**Activation time between stages**	120	Control = On/Off
	A108	**Deactivation time between stages**	120	Control = On/Off
	A109	**Operation**	Cooling	
	A109.1	**Outdoor temperature warming operating order**	10	
	A110	**Stage runtime balancing**	yes	Control = On/Off (stages) or mixed
	A111	**Free cooling**	no	V-type or 1-coil unit/flatbed unit without misting

	Parameter No.	Description	Default value	Display conditions
	A112	**Selection air temperature** If the temperature drops below that of value "5" the parameter is deactivated. Press the button to re-enable the parameter.	10	Free cooling
	A113	**Optimisation of water or electricity consumption**	Water optimisation	Misting
From V07	A113.1	**Misting control voltage threshold**	10	Misting + EC FMA
	A114	**Max. speed threshold**	10	Control = Mixed or speed control
	A116	**Link with CIAT chiller**	yes	No longer visible from V09, see parameter A316
From V03	A117	**Minimum T difference to deactivate free cooling**	2	Free cooling
	A118	**Maximum T difference to activate free cooling**	4	Free cooling
From V07	A119.1	**Type of coil 1 fluid**	Water	
	A119.2	**Type of coil 2 fluid**	Water	
	A120	**No. of setpoints per coil**	1	
	A121	**Setpoint 1**	60	V-type or 1-coil unit/flatbed unit
		Setpoint 1, coil 1		2 coils + flatbed unit
	A122	**Setpoint 2**	50	2 setpoints + V-type or 1-coil unit/flatbed unit
		Setpoint 2, coil 1		2 setpoints + 2 coils/flatbed unit
	A125	**Setpoint 1, coil 2**	60°C	2 coils/flatbed unit
	A126	**Setpoint 2, coil 2**	50°C	2 setpoints + 2 coils/flatbed unit
From V07	A129	**Permanent fault**	5 in 1 hour	
More visible from V07 during On/Off control	A150	**Stage 1 hysteresis: 1 to 20°C**	5°C	V-type or 1-coil unit/flatbed unit
		Hysteresis stage 1 coil 1: 1 to 20°C		2 coils/flatbed unit
	A151	**Difference between stages 1 and 2: 1 to 5°C**	2°C	Control = On/Off + No. of stages ≥ 2 + V-type or 1-coil unit/flatbed unit
		Difference between stages 1 and 2 - coil 1: 1 to 5°C		Control = On/Off + No. of stages ≥ 2 + 2 coils/flatbed unit
	A152 to A160-2	**Hysteresis of stages 2, 3, 4, 5, 6 or 7: from 1 to 10°C** **Difference of stages 2, 3, 4, 5, 6 or 7: 1 to 5°C**	5°C	Control = On/Off + based on No. of stages + V-type or 1-coil unit/flatbed unit
		Hysteresis of stages 2, 3, 4, 5, 6 or 7 - coil 1: 1 from to 10°C **Difference of stages 2, 3, 4, 5, 6 or 7 - coil 1: from 1 to 5°C**		Control = On/Off + based on No. of stages +2 coils/flatbed unit
	A172	**Hysteresis stage 1 coil 2: 1 to 20°C**	5°C	2 coils/flatbed unit
	A173	**Difference between stages 1 and 2 - coil 2: 1 to 5°C**	2°C	Control = On/Off + No. of stages ≥ 2 + 2 coils/flatbed unit
	A174 to A182-2	**Hysteresis of stages 2, 3, 4, 5, 6 or 7 - coil 2: from 1 to 10°C** **Difference of stages 2, 3, 4, 5, 6 or 7 - coil 2: from 1 to 5°C**		Control = On/Off + based on No. of stages +2 coils/flatbed unit
	A199	**Outdoor misting temperature**	35°C	Misting/elec. optimisation
	A200	**Misting stage difference**	2°C	Misting/water optimisation + V-type or 1-coil unit/flatbed unit
		Misting stage difference, coil 1		Misting/water optimisation + 2 coils/flatbed unit
	A202	**Misting stage difference, coil 2**	2°C	Misting/water optimisation + 2 coils/flatbed unit

● **Commissioning the unit: Power button**

To rapidly change the setpoint values: go directly to the **[1 - Setpoints]** menu

7.3 Information available while the unit is running

In the [2-Machine status] menu: menu displayed on the screen if the control console is not used for one hour.

Default	Information
No faults	Setpoint and measurement values displayed.
Sensor fault	The fault LED flashes and a message indicates that the sensor has a fault
Fan fault	The stage fault LED flashes and a message indicates which stage has a fault

In the [3-Measured values] menu:

Parameter	Description	Display conditions
Outdoor temperature	Value displayed	Free cooling or misting or warming function
Coil temperature	Value displayed	V-type or 1-coil unit/flatbed unit
Coil 1 temperature	Value displayed	2 coils/flatbed unit
Coil 2 temperature	Value displayed	2 coils/flatbed unit

In the [6-Reading parameters] menu:

	Parameter No.	Description	Display conditions
	A250	LED test: press Enter to check the operation of the LEDs	
	A252	Outdoor air temperature	Free cooling or misting
	A253	Value of coil 1 setpoint	
	A255	Value of coil 2 setpoint	2 coils/flatbed unit
	A257	Value of coil 1 temperature	
	A261	Value of coil 2 temperature	2 coils/flatbed unit
	A270 to A276	Running time of each stage	
	A299	Misting time	Misting
	A300	Free cooling time	Free cooling
	A316	Terminal block J9 connection	From V09
	A400 to 421	Status (open or closed) of the logic inputs on the board	
	A430 to A451	Status (open or closed) of the logic outputs on the board	
	A460	Fan speed in%	Control = mixed or speed control
From V07	A470	Supply voltage	Energy meter
	A471	Machine input current	Energy meter
	A472	Machine power input	Energy meter
	A473	Electrical energy consumed	Energy meter
	A555	CPU board version No.	
	A556	Control console version No.	
	A557	Daughter board version No.	

In the [7 - Fault memory] menu:

Record of the nine most recent faults on the fan stages or temperature sensors. To scroll through the faults, press

7.4 Factory-set parameters

The [4 - Machine parameters] menu contains the parameters used to configure the machine. They are set in the factory and are

locked. The symbol ⠿ appears at the top left of the screen.

Menu

[4 - Machine parameters]

In certain rare cases (such as adding the misting function), it may be necessary to update a parameter. The parameters may be unlocked by changing parameter A99. However do not modify any parameter other than those that require changing and relock them.

	Parameter No.	Parameter description	Display condition
	A01	Unit type (flatbed or V-coil)	
	A02	Number of coils (1 or 2)	Flatbed unit
		Parallel coil (yes)	V-type unit
	A03	Coil type 1 (1 LT or HT water circuit)	
	A05	Coil type 2 (1 LT or HT water circuit)	2 coils/flatbed unit
	A07	Control type: (On/Off stages), speed control or mixed	
	A08	Number of stages (1 to 7)	Control = On/Off or mixed
	A10	Misting (yes or no)	
From V07	**A15.1**	Measurement of electrical quantities	
	A15.2	NET electrical network type	A15.1 = YES
	A16	Primary current transformer rating	A15.1 = YES
	A17	Secondary current transformer rating	A15.1 = YES
	A99	Lock parameters (yes)	

8 - CONDENSER CONFIGURATION

8.1 Configurations

Application: condenser with one or two refrigerating circuits

Flatbed unit

1 refrig. circuit

Line 1   Line 2

Circuit 1   Circuit 2

Circuit 1

Circuit 2

8.2 System start-up and configuration

● **Powering on the unit**:

The screen displays: "machine stopped on/off" in the **[2-Machine status]** menu

Press ESC to go back to the menu list.

● **Main parameters to be set**: select the **[5-Settings parameters]** menu.

For information on navigating, go to the "control console/navigation" section.

	Parameter No.	Description	Default values	Display conditions
		Menu 5: Settings parameters		
	A100	Language	EN	
	A103	Console control type	local	
Before V07	A104	Communication mode (baud)	9600	CMS
	A105	Bus number	1	CMS
	A110	Stage runtime balancing	yes	Control = On/Off (stages) or mixed
	A113	Optimisation of water or electricity consumption	Water optimisation	Misting
From V07	A113.1	Misting control voltage threshold	10	Misting + EC FMA
	A114	Max. speed threshold	10	Control = Mixed or speed control
	A116	Link with CIAT master chiller	yes	No longer visible from V09, see parameter A316
Not available for CIAT master chillers	A120	No. of setpoints per circuit or coil	1	
	A121	Setpoint 1, circuit or coil 1	12 bar	
	A122	Setpoint 2, circuit or coil 1	12 bar	2 setpoints
or A123 A125	Setpoint 1, circuit 2	12 bar	2 refrig. circuits + flatbed unit
		Setpoint 1, coil 2		V-type unit
or A124 A126	Setpoint 2, circuit 2	12 bar	2 setpoints & 2 refrig. circ. + flatbed unit
		Setpoint 2, coil 2		2 setpoints + V-type unit
From V07	A129	Permanent fault	5 in 1 hour	
	A150	Stage 1 hysteresis, circuit or coil 1: 2 to 6 bar	3.5 bar	
	A151	Difference between stages 1 or 2, circuit or coil 1: from 0.5 to 3 bar	0.5 bar	Control = On/Off + no. of stages ≥ 2
	A152 to A160-2	Hysteresis and difference of stages 2, 3, 4, 5, 6 or 7, circuit or coil 1	3.5 bar	Control = On/Off + based on No. of stages
	A161	Hysteresis stage 1 circuit 2: from 2 to 6 bar	3.5 bar	2 refrig. circuits + flatbed unit
	A162	Difference between stages 1 and 2 - circuit 2: from 0.5 to 3 bar	0.5 bar	Control = On/Off + no. of stages ≥ 2 + 2 refrig. circuits + flatbed unit
	A163 to A171	Hysteresis and difference of stages 2, 3, 4, 5 or 6, circuit 2	3.5 bar	Control = On/Off + based on No. of stages + 2 refrig. circuits + flatbed unit
	A172	Stage 1 hysteresis, coil 2: 2 to 6 bar	3.5 bar	V-type unit
	A173	Difference between stages 1 and 2 - coil 2: from 0.5 to 3 bar	0.5 bar	Control = On/Off + No. of stages ≥ 2 + V-type
	A174 to A182-2	Hysteresis and difference of stages 2, 3, 4, 5, 6 or 7 - coil 2	3.5 bar	Control = On/Off + based on No. of stages + V-type unit
	A199	Outdoor misting temperature	35°C	Misting/elec. optimisation
	A200	Misting stage difference	0.5 bar	Misting/water optimisation & 1 refrig. circuit
		Misting stage difference, circuit or coil 1		Misting/water optimisation & 2 refrig. circuits
	A201	Misting stage difference, circuit or coil 2	0.5 bar	Misting/water optimisation & 2 refrig. circuit

Commissioning the unit: Power button

To rapidly change the setpoint values: go directly to the [1 - Setpoints] menu

8.3 Information available while the unit is running

In the [2 - Machine status] menu: menu displayed on the screen if the control console is not used for one hour.

Default	Information
No faults	Setpoint and measurement values displayed.
Sensor fault	The fault LED flashes and a message states which loop has a fault
Fan fault	The fault LED flashes and a message states which stage has a fault

In the [3 - Measured values] menu:

Parameter	Description	Display conditions
Outdoor temperature	Value displayed	Misting
Coil pressure	Value displayed	1 refrig. circuit
Pressure, circuit or coil 1	Value displayed	2 refrig. circuit
Pressure, circuit or coil 2	Value displayed	2 refrig. circuit

In the [6-Reading parameters] menu:

	Parameter No.	Description	Display conditions
	A250	LED test: press Enter to check the operation of the LEDs	
	A252	Outdoor air temperature	Misting
	A253	Value of circuit or coil 1 setpoint	
	A254	Value of circuit 2 setpoint	2 refrig. circuits + flatbed unit
	A255	Value of coil 2 setpoint	V-type unit
	A258	Value of circuit or coil 1 pressure	
	A260	Value of circuit 2 pressure	2 refrig. circuits + flatbed unit
	A262	Value of coil 2 pressure	V-type unit
	A270 to A276	Running time of each stage	1 refrig. circuit or 1 fan line
	A280 to A295	Running time of each stage on each line	2 refrigerant circuits + 2 fan lines
	A299	Misting time	Misting
	A316	Terminal block J9 connection	From V09
	A400 to A421	Status (open or closed) of the logic inputs on the board	
	A430 to A451	Status (open or closed) of the logic outputs on the board	
	A460	If 1 refrigerant circuit = Fan speed in % If 2 refrigerant circuits and 2 fan lines = Line 1 fan speeds	Control = mixed or speed control
	A461	Speed (in%) of fans on line 2	Control = mixed or speed control + 2 refrig. circuits + 2 fan lines
From V07	A470	Supply voltage	Energy meter
	A471	Machine input current	Energy meter
	A472	Machine power input	energy meter
	A473	Electrical energy consumed	Energy meter
	A555	CPU board version No.	
	A556	Control console version No.	
	A557	Daughter board version No.	

In the [7-Default memory] menu:
Record of the nine most recent faults on the fan stages or pressure sensors, or the outdoor temperature sensor.

To scroll through the faults, press

8.4 Factory-set parameters

Menu

[4-Machine parameters]

The parameters of the **[4-Machine parameters]** menu contains the parameters used to configure the machine. They were set in the factory and are locked. The symbol ⸬ appears at the top left of the screen.

In certain rare cases (such as adding the misting function), it may be necessary to update a parameter. The parameters may be unlocked by changing parameter A99. However, do not modify any parameters other than those that require changing.

	Parameter No.	Parameter description	Display condition
	A01	Unit type (flatbed or V-coil)	
	A02	Number of coils (1)	Flatbed unit
		Parallel coil (no)	V-type unit
	A03	Type of coil 1 (1 refrig. circuit, 2 refrig. circuits)	
	A04	Coil circuit type (balanced or unbalanced)	Flatbed unit & 2 refrigerant circuits
	A05	Coil 2 type (1 refrigerant circuit)	V-type unit
	A07	Control type: On/Off (stages), speed control or mixed	
	A08	Number of stages (1 to 6)	Control = On/Off or mixed
	A09	Number of fan lines (1 or 2)	Flatbed unit & 2 refrigerant circuits
	A10	Misting (yes or no)	
From V07	**A15.1**	Measurement of electrical quantities	
	A15.2	NET electrical network type	A15.1 = YES
	A16	Primary current transformer rating	A15.1 = YES
	A17	Secondary current transformer rating	A15.1 = YES
	A30	Top of sensor range - circuit or coil 1	
	A31	Bottom of sensor range - circuit or coil 1	
	A32	Top of sensor range - circuit 2	2 refrig. circuits
	A33	Bottom of sensor range - circuit 2	2 refrig. circuits
	A34	Top of sensor range - coil 2	2 refrig. circuits
	A35	Bottom of sensor range - coil 2	2 refrig. circuits
	A99	Lock parameters (yes)	

9 - CMS COMMUNICATION PROTOCOL

9.1 Communication interface

[11- Communication]

Parameter No.	Description	Default values
A700	RS485 communication protocol	MODBUS
A701	Communication speed	9600 baud
A702	Parity	None
A703	Number of Stop bits	1
A704	Real number format swapped for RS485	NO
A705	Bus number	1
A706	RS485 control type	Local
A710	TCP communication protocol	MODBUS
A711	IP address	192.168.10.2
A712	Subnet mask	255.255.255.000
A713	Port	502
A714	Real number format swapped for TCP	NO
A715	TCP control type	Local

9.2 RS485 transmission mode (From V07)

3-pin connector terminal block J11: terminal 1: A or +

terminal 2: B or –

terminal 3: for shielding

The line termination resistance can be configured with jumper W3:

Two LEDs assist in diagnosing communication:

D50: incoming light. Usually off; flashes when a message is received by the board. If this light remains on, the bus is reversed. In this case, swap terminals 1 and 2 on J11.

D52: outgoing light. It is normally off and comes on when the motherboard transmits a message on the bus.

Serial, asynchronous, half duplex

1 start bit,

8 data bits,

The parity can be configured with parameter A702,

The number of stop bits can be configured with parameter A703

The bit rate can be set in parameter A701 to 4800 baud, 9600 baud or 19,200 baud

The unit number on the BUS is configured by parameter A705

Analogue value encoding

Standard 32-bit IEEE format (2 registers).

Order of values:

- If A704 = NO   low order, high order
- If A704 = YES   high order, low order

Codes of functions used

1 or 2: read n bits

3 or 4: read multiple registers (16 bits)

5   : write one bit function

6   : write one register function

8   : read diagnostics counters

11   : read event counter

15   : write n bits

16   : write multiple registers (16 bits)

Note: functions 15 and 16 are possible if parameter A706 is set to "Remote, CMS…"

Error codes:

1   : unknown function code

2   : wrong address

3   : data error

Ethernet transmission mode (from V07)

Connector (RJ45) Terminal block J14

Very important:

Only 1 simultaneous Ethernet connection is supported. In all cases, the connection between the controller and the CMS is achieved with a crossover cable. The use of the straight-through cable depends on the equipment on the CMS side.

The IP address can be configured with parameter A711.

The subnet mask can be configured with parameter A712.

Analogue value encoding

Standard 32-bit IEEE format (2 registers).

Order of values:

- If A714 = NO   low order, high order
- If A714 = YES   high order, low order

Codes of functions used

1 or 2: read n bits

3 or 4: read multiple registers (16 bits)

5   : write one bit function

6   : write one register function

8   : read diagnostics counters

11   : read event counter

15   : write n bits

16   : write multiple registers (16 bits)

Note: functions 15 and 16 are possible if parameter A715 is set to "Remote"

9.3 Remote signalling register (read-only)

Register 1   : Type of board
Bit 0 to 7   : Type of board = 32
Bit 8 to 15   : 0

Register 2   : Operating status
Bit 0   : On/off (1 = on ⇒ on and AOC closed)
Bit 1   : Spray state 1 = on
Bit 2   : free cooling state 1 = on

9.4 Remote alarm register (read-only)

Register 10: FAN FAULTS (1 = active fault)

Bit		Bit	
0	Fan fault, stage 1, line 1	8	Fan fault, stage 1, line 2
1	Fan fault, stage 2, line 1	9	Fan fault, stage 2, line 2
2	Fan fault, stage 3, line 1	10	Fan fault, stage 3, line 2
3	Fan fault, stage 4, line 1	11	Fan fault, stage 4, line 2
4	Fan fault, stage 5, line 1	12	Fan fault, stage 5, line 2
5	Fan fault, stage 6, line 1	13	Fan fault, stage 6, line 2
6	Fan fault, stage 7, line 1	14	N.U.
7	N.U.	15	N.U.

Register 11: SENSOR FAULT (1 = active fault)

Bit		Bit	
0	Pressure or temperature sensor fault, coil 1, circuit 1	8	Pressure or temperature sensor fault, coil 2, circuit 1
1	Pressure or temperature sensor fault, coil 1, circuit 2	9	Pressure or temperature sensor fault, coil 2, circuit 2
2	N.U.	10	N.U.
3	N.U.	11	N.U.
4	N.U.	12	N.U.
5	N.U.	13	N.U.
6	N.U.	14	N.U.
7	N.U.	15	N.U.

9.5 Remote measurement register (read-only)

Register	Float type	Register	Float type
100 and 101	Setpoint and control coil 1, circuit 1	116 and 117	Outdoor temperature
102 and 103	Control setpoint, coil 1, circuit 2	118 and 119	Voltage between phase 1 and 2
104 and 105	Control setpoint, coil 2, circuit 1	120 and 121	Voltage between phase 2 and 3
106 and 107	Control setpoint, coil 2, circuit 2	122 and 123	Voltage between phase 1 and 3
108 and 109	Temperature or pressure, coil 1, circuit 1	124 and 125	A471 Input current
110 and 111	Temperature or pressure, coil 1, circuit 2	126 and 127	A472 Instantaneous power consumed
114 and 115	Temperature or pressure, coil 2, circuit 1	128 and 129	Total energy consumed kW/h (write 0 to reset the value)
116 and 117	Temperature or pressure, coil 2, circuit 2		

9.6 Fault memory

Register 200: Fault memory 9
Register 201: Fault memory 8
Register 202: Fault memory 7
Register 203: Fault memory 6
Register 204: Fault memory 5
Register 205: Fault memory 4
Register 206: Fault memory 3
Register 207: Fault memory 2
Register 208: Fault memory 1

0 :	Fault memory empty
0x010:	Fan fault, stage 1, line 1
0x011:	Fan fault, stage 2, line 1
0x012:	Fan fault, stage 3, line 1
0x013:	Fan fault, stage 4, line 1
0x014:	Fan fault, stage 5, line 1
0x015:	Fan fault, stage 6, line 1
0x016:	Fan fault, stage 1, line 2
0x017:	Fan fault, stage 2, line 2
0x018:	Fan fault, stage 3, line 2
0x019:	Fan fault, stage 4, line 2
0x01A:	Fan fault, stage 5, line 2
0x01B:	Fan fault, stage 6, line 2
0x01C:	Outdoor temperature sensor fault
0x01D:	Fan fault, stage 7, line 1
0x080:	Temperature sensor fault, coil 1, circuit 1
0x081:	Temperature sensor fault, coil 1, circuit 2
0x082:	Temperature sensor fault, coil 2, circuit 1
0x083:	Temperature sensor fault, coil 2, circuit 2
0x084:	Pressure sensor fault, coil 1, circuit 1
0x085:	Pressure sensor fault, coil 1, circuit 2
0x086:	Pressure sensor fault, coil 2, circuit 1
0x087:	Pressure sensor fault, coil 2, circuit 2

9.7 Counters (read-only)

Registers 300 and 301: Fan runtime, stage 1, line 1
Registers 302 and 303: Fan runtime, stage 2, line 1
Registers 304 and 305: Fan runtime, stage 3, line 1
Registers 306 and 307: Fan runtime, stage 4, line 1
Registers 308 and 309: Fan runtime, stage 5, line 1
Registers 310 and 311: Fan runtime, stage 6, line 1
Registers 312 and 313: Fan runtime, stage 1, line 2
Registers 314 and 315: Fan runtime, stage 2, line 2
Registers 316 and 317: Fan runtime, stage 3, line 2
Registers 318 and 317: Fan runtime, stage 4, line 2
Registers 320 and 321: Fan runtime, stage 5, line 2
Registers 322 and 323: Fan runtime, stage 6, line 2
Registers 324 to 398: Spare

9.8 Remote configuration register (read and write)

Register 399:	Unit type (A01) 0 ⇒ flat type, 1 ⇒ V type
Register 400:	If A01 = type V: A02 parallel coil 0 = NO, 1 = YES
	If A01 = flat A02 number of coils
Register 401:	Coil 1 type (A03)
	0 ⇒ 1 low-temperature water circuit
	1 ⇒ 2 low-temperature water circuits
	2 ⇒ 1 high-temperature water circuit
	3 ⇒ 2 high-temperature water circuits
	4 ⇒ 1 refrigerant circuit
	5 ⇒ 2 refrigerant circuits
Register 402:	A04: Circuit type, coil 1
	0 ⇒ balanced circuit
	1 ⇒ unbalanced circuit
Register 403:	A05: Coil 2 type
	0 ⇒ 1 low-temperature water circuit
	1 ⇒ 2 low-temperature water circuits
	2 ⇒ 1 high-temperature water circuit
	3 ⇒ 2 high-temperature water circuits
	4 ⇒ 1 refrigerant circuit
	5 ⇒ 2 refrigerant circuits

9.8 Remote configuration register (read and write)

Register 399:	Unit type (A01) 0 ⇒ flat type, 1 ⇒ V type
Register 400:	If A01 = type V: A02 parallel coil 0 = NO, 1 = YES
	If A01 = flat A02 number of coils
Register 401:	Coil 1 type (A03)
	0 ⇒ 1 low-temperature water circuit
	1 ⇒ 2 low-temperature water circuits
	2 ⇒ 1 high-temperature water circuit
	3 ⇒ 2 high-temperature water circuits
	4 ⇒ 1 refrigerant circuit
	5 ⇒ 2 refrigerant circuits
Register 402:	A04: Circuit type, coil 1
	0 ⇒ balanced circuit
	1 ⇒ unbalanced circuit
Register 403:	A05: Coil 2 type
	0 ⇒ 1 low-temperature water circuit
	1 ⇒ 2 low-temperature water circuits
	2 ⇒ 1 high-temperature water circuit
	3 ⇒ 2 high-temperature water circuits
	4 ⇒ 1 refrigerant circuit
	5 ⇒ 2 refrigerant circuits
Register 404:	A06: Circuit type, coil 2
	0 ⇒ Balanced circuit
	1 ⇒ Unbalanced circuit
Register 405:	A07: Control type
	0 ⇒ On/Off
	1 ⇒ Variable speed control
	2 ⇒ Mixed energy
Register 406:	A08: Number of fan stages
Register 407:	A09 :Number of fan lines
Register 408:	A10: Misting (0 = NO, 1 = YES)
Registers 409 and 410:	A30: HP sensor high value coil 1 circuit 1
Registers 411 and 412:	A31: HP sensor low value coil 1 circuit 1
Registers 413 and 414:	A32: HP sensor high value coil 1 circuit 2
Registers 415 and 416:	A33: HP sensor low value coil 1 circuit 2
Registers 417 and 418:	A34: HP sensor high value coil 2 circuit 1
Registers 419 and 420:	A35: HP sensor low value coil 2 circuit 1
Registers 421 and 422:	A36: HP sensor high value coil 2 circuit 2
Registers 423 and 424:	A37: HP sensor low value coil 2 circuit 2
Register 425:	A99: Locking
	0 ⇒: NO
	1 ⇒: YES
Register 426:	A15.1 Presence of energy management module
	0 ⇒ NO
	1 ⇒ YES
Register 427:	A15.2 Type of network
	0 ⇒ 1BL - 1 ⇒ 2BL - 2 ⇒ 3BL - 3 ⇒ 3NBL
	4 ⇒ 4BL - 5 ⇒ 4NBL
Register 428:	A16 Primary current transformer rating
Register 450:	A110: Optimised fan operation
	0 ⇒ NO
	1 ⇒ YES
Register 451:	A120: Number of setpoints
	0 ⇒ 1 setpoint
	1 ⇒ 2 setpoints via CMS system or console
	2 ⇒ 2 setpoints per On/Off input
Registers 452 and 453:	A121: Setpoint 1, coil 1, circuit 1
Registers 454 and 455:	A122: Setpoint 2, coil 1, circuit 1
Registers 456 and 457:	A123: Setpoint 1, coil 1, circuit 2
Registers 458 and 459:	A124: Setpoint 2, coil 1, circuit 2
Registers 460 and 461:	A125: Setpoint 1, coil 2, circuit 1
Registers 462 and 463:	A126: Setpoint 2, coil 2, circuit 1
Registers 464 and 465:	A127: Setpoint 1, coil 2, circuit 2
Registers 466 and 467:	A128: Setpoint 2, coil 2, circuit 2
Registers 468 and 469:	A150: Hysteresis stage 1 battery 1, circuit 1
Registers 470 and 471:	A151: Setpoint 2, coil 1, circuit 1
Registers 472 and 473:	A152: Hysteresis stage 2, coil 1, circuit 1
Registers 474 and 475:	A153: Setpoint difference stage 3, coil 1, circuit 1
Registers 476 and 477:	A154: Hysteresis, stage 3, coil 1, circuit 1

Registers 478 and 479:	A155: Setpoint difference, stage 4, coil 1, circuit 1
Registers 480 and 481:	A156: Hysteresis stage 4, coil 1, circuit 1
Registers 482 and 483:	A157: Setpoint difference stage 5, coil 1, circuit 1
Registers 484 and 485:	A158: Hysteresis stage 5, coil 1, circuit 1
Registers 486 and 487:	A159: Setpoint difference stage 6, coil 1, circuit 1
Registers 488 and 489:	A160: Hysteresis stage 6, coil 1, circuit 1
Registers 490 and 491:	A161: Hysteresis stage 1, coil 1, circuit 2
Registers 492 and 493:	A162: Setpoint difference stage 2, coil 1, circuit 2
Registers 494 and 495:	A163: Hysteresis stage 2, coil 1, circuit 2
Registers 496 and 497:	A164: Setpoint difference, stage 3, coil 1, circuit 2
Registers 498 and 499:	A165: Hysteresis stage 3, coil 1, circuit 2
Registers 500 and 501:	A166: Setpoint difference stage 4, coil 1, circuit 2
Registers 502 and 503:	A167: Hysteresis stage 4, coil 1, circuit 2
Registers 504 and 505:	A168: Setpoint difference, stage 5, coil 1, circuit 2
Registers 506 and 507:	A169: Hysteresis stage 5, coil 1, circuit 2
Registers 508 and 509:	A170: Setpoint difference stage 6, coil 1, circuit 2
Registers 510 and 511:	A171: Hysteresis stage 6, coil 1, circuit 2
Registers 512 and 513:	A172: Hysteresis stage 1, coil 2, circuit 1
Registers 514 and 515:	A173: Setpoint difference stage 2, coil 2, circuit 1
Registers 516 and 517:	A174: Hysteresis, stage 2, coil 2, circuit 1
Registers 518 and 519:	A175: Setpoint difference stage 3, coil 2, circuit 1
Registers 520 and 521:	A176: Hysteresis stage 3, coil 2, circuit 1
Registers 522 and 523:	A177: Setpoint difference stage 4, coil 2, circuit 1
Registers 524 and 525:	A178: Hysteresis stage 4, coil 2, circuit 1
Registers 526 and 527:	A179: Setpoint difference stage 5, coil 2, circuit 1
Registers 528 and 529:	A180: Hysteresis stage 5, coil 2, circuit 1
Registers 530 and 531:	A181: Setpoint difference stage 6, coil 2, circuit 1
Registers 532 and 533:	A182: Hysteresis stage 6, coil 2, circuit 1
Registers 534 and 535:	A183: Hysteresis stage 1, coil 2, circuit 2
Registers 536 and 537:	A184: Setpoint difference, stage 2, coil 2, circuit 2
Registers 538 and 539:	A185: Hysteresis stage 2, coil 2, circuit 2
Registers 540 and 541:	A186: Setpoint 3 difference, coil 2, circuit 2
Registers 542 and 543:	A187: Hysteresis, stage 3, coil 2, circuit 2
Registers 544 and 545:	A188: Setpoint difference stage 4, coil 2, circuit 2
Registers 546 and 547:	A189: Hysteresis stage 4, coil 2, circuit 2
Registers 548 and 549:	A190: Setpoint difference stage 5, coil 2, circuit 2
Registers 550 and 551:	A191: Hysteresis stage 5, coil 2, circuit 2
Registers 552 and 553:	A192: Setpoint difference, stage 6, coil 2, circuit 2
Registers 554 and 555:	A193: Hysteresis stage 6, coil 2, circuit 2
Registers 556 and 557:	A197: Temperature value for 0% on the 3-way valve output
Registers 558 and 559:	A198: Temperature value for 10% on the 3-way valve output
Register 560:	A199: Outdoor temperature for start of misting
Registers 561 and 562:	A200: misting difference, coil 1, circuit 1
Registers 563 and 564:	A201: misting difference, coil 1, circuit 2
Registers 565 and 566:	A202: misting difference, coil 2, circuit 1
Registers 567 and 568:	A203: misting difference, coil 2, circuit 2
Register 569:	A113: Type of misting (0: water optimisation, 1: electricity optimisation)
Registers 570 and 571:	A114: Max. voltage at fan output 0-10 V
Registers 572 and 573:	A106: Range without activation
Register 574:	A107: Activation delay between each stage
Register 575:	A108: Deactivation delay between each stage
Register 576:	A119.1: Type of coil 1 fluid
	0 ⇒ Water - 1 ⇒ Glycol 10% - 2 ⇒ Glycol 20%
	3 ⇒ Glycol 30% - 4 ⇒ Glycol 40%
Register 577:	A119.2: Type of fluid, coil 2
	0 ⇒ Water - 1 ⇒ Glycol 10% - 2 ⇒ Glycol 20%
	3 ⇒ Glycol 30% - 4 ⇒ Glycol 40%
Registers 578 and 579:	A113: Misting control voltage threshold
Register 580:	A129 Permanent fan fault
	0 ⇒ 5 faults in 1 hour
	1 ⇒ After first fault
Register 581:	A109 Operation
	0 ⇒ Cooling
	1 ⇒ Warming without control
	2 ⇒ Warming with control
Register 582 and 583:	A109.1: Outdoor temperature warming operating order

9.9 Function 1, 2: read N bits

9.9.1 Remote alarm and operating state
(1 = Fault)

Bit 1: Fan fault, stage 1, line 1
Bit 2: Fan fault, stage 2, line 1
Bit 3: Fan fault, stage 3, line 1
Bit 4: Fan fault, stage 4, line 1
Bit 5: Fan fault, stage 5, line 1
Bit 6: Fan fault, stage 6, line 1 or fan fault stage 7, line 1
Bit 7: Fan fault, stage 1, line 2
Bit 8: Fan fault, stage 2, line 2
Bit 9: Fan fault, stage 3, line 2
Bit 10: Fan fault, stage 4, line 2
Bit 11: Fan fault, stage 5, line 2
Bit 12: Fan fault, stage 6, line 2
Bit 13: Pressure or temperature sensor fault, coil 1, circuit

(from V07)
Bit 14: Temperature sensor or pressure fault, coil 1, circuit 2
Bit 15: Temperature sensor or pressure fault, coil 2, circuit 1
Bit 16: Temperature sensor or pressure fault, coil 2, circuit 2
Bit 17: On/off (1 = on ⇒ on and AOC closed)
Bit 18: Spray state 1 = on
Bit 19: Free cooling state 1 = on
Bit 20: General fault summary
Bit 21: Connection fault with the Diris module

9.9.2 Remote control
Read and write
Bit 31: On/off (0 = off, 1 = on)
Bit 32: Setpoint 1/setpoint 2 control (0 = Setpoint 1, 1 = Setpoint 2)

9.9.3 Status of the fan outputs
Read-only
Bit 40: Fan state, stage 1, line 1 (1 = on)
Bit 41: Fan state, stage 2, line 1 (1 = on)
Bit 42: Fan state, stage 3, line 1 (1 = on)
Bit 43: Fan state, stage 4, line 1 (1 = on)

Bit 44: Fan state, stage 5, line 1 (1 = on)
Bit 45: Fan state, stage 6, line 1 (1 = on)
Bit 46: Fan state, stage 1, line 2 (1 = on)
Bit 47: Fan state, stage 2, line 2 (1 = on)
Bit 48: Fan state, stage 3, line 2 (1 = on)
Bit 49: Fan state, stage 4, line 2 (1 = on)
Bit 50: Fan state, stage 5, line 2 (1 = on)
Bit 51: Fan state, stage 6, line 2 (1 = on)

9.9.4 Remote diagnostic Function 8
Read-only
Sub-function 0A: Reset counters (No reply)
Sub-function 0B: Frame received without CRC errors
Sub-function 0C: Frame received with CRC errors
Sub-function 0D: Number of exception replies
Sub-function 0E: Frames sent excluding broadcast
Sub-function 0F: Broadcast request received
Sub-function 10: N.U.
Sub-function 12: Unprocessed character

9.9.5 Function 11 Event counters
Read-only

TYPE OF MACHINE CONFIGURATION

A01 Unit type	FLATBED COILS																		V COIL					
A02 number of coils	1						2												YES		NO			
A03 Coil 1 type	1 LT water circuit	1 HT water circuit	1 Refrig. circuit	2 LT water circuits	2 HT water circuits	2 refrig. circuits	1 LT water circuit	1 HT water circuit	1 Refrig. circuit	1 LT water circuit	1 HT water circuit	1 Refrig. circuit	2 LT water circuits	2 HT water circuits	2 refrig. circuits	2 LT water circuits	2 HT water circuits	2 refrig. circuits	1 LT water circuit	1 HT water circuit	1 LT water circuit	1 HT water circuit	2 LT water circuits	2 HT water circuits
A04 Coil Circuit 1				Balanced or Non Balanced									Balanced or Non Balanced			Balanced or Non Balanced								
A05 Coil 2 type							1 LT water circuit	1 HT water circuit	1 Refrig. circuit	2 LT water circuits	2 HT water circuits	2 refrig. circuits	1 LT water circuit	1 HT water circuit	1 Refrig. circuit	2 LT water circuits	2 HT water circuits	2 refrig. circuits			1 LT water circuit	1 HT water circuit	2 LT water circuits	2 HT water circuits
A06 Coil Circuit 2										Balanced or Non Balanced						Balanced or Non Balanced								
A07 Control type	On/Off or Speed Control or Mixed 1 or 2			On/Off or Speed Control or Mixed			On/Off or Speed Control or Mixed			On/Off or Speed Control or Mixed			On/Off or Speed Control or Mixed			On/Off or Speed Control or Mixed			On/Off or Speed Control or Mixed		On/Off or Speed Control or Mixed			
A08 Number of stages	1 to 7			1 to 6			1 to 7			1 to 6			1 to 6			1 to 6			1 to 7		1 to 6			
A09 Number of fan lines				1 / OR / 2						1 / OR / 2			1 / OR / 2			1 / OR / 2								
Figures	Fig 1 or 2			Fig. 3 / Fig 4			Fig 5 or 6			Fig 7 / Fig 8			Fig 9 / Fig 10			Fig 11 / Fig 12								
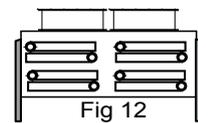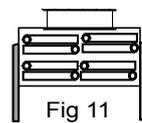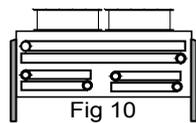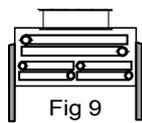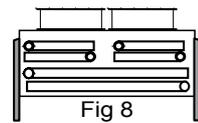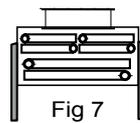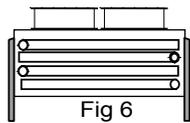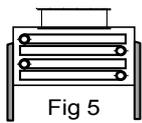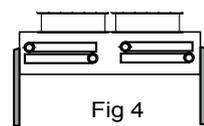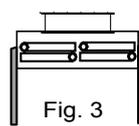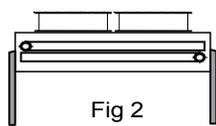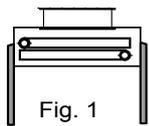
Fig. 1

Fig 2

Fig. 3

Fig 4

Fig 5

Fig 6

Fig 7

Fig 8

Fig 9

Fig 10

Fig 11

Fig 12

No.	Description	Adjustment possible	By default	Display conditions	Notes
A01	UNIT TYPE	FLATBED COILS V COIL	FLATBED COILS		
A02	NUMBER OF COILS	1 or 2	1	If A01 = Flat	
	PARALLEL COILS	YES (if 1 circuit) NO (if 2 circuit)	YES	If A01 = V	Parallel (on Vextra) = Same fluid as in the 2 coils
A03	COIL TYPE	1 LT water circuit 1 HT water circuit 1 refrig. circuit	1 LT water circuit	If A02 = 1 or A02 = YES	LT: Low temperature < = 95°C HT: High temperature > 95
	COIL 1 TYPE	1 LT water circuit 2 LT water circuits 1 HT water circuit 2 HT water circuits 1 refrig. circuit 2 refrig. circuits	1 LT water circuit	If A01 = Flat or A02 = NO	
A04	COIL 1 CIRCUIT	BALANCED NON BALANCED	BALANCED	If A01 = Flat and A03 = 2 circuits	
A05	COIL 2 TYPE	1 LT water circuit 2 LT water circuits 1 HT water circuit 2 HT water circuits 1 refrig. circuit 2 refrig. circuits	1 LT water circuit	If A02 = 2 or A02 = NO	
A6	COIL 2 CIRCUIT	BALANCED NON BALANCED	BALANCED	If A01 = Flat and A05 = 2 circuits	
A07	CONTROL TYPE	ON/OFF Variable speed Mixed 1 Mixed 2	ON/OFF		See section 4.1
A08	NUMBER OF FAN STAGES	1-2-3-4-5-6-7	2		If 2 refrig. circuits max 6 stages and 2 lines
A09	NUMBER OF FAN LINES	1 or 2	1	If A01 = Flat and A03 = 2 or A05 = 2	
		No display and adjustment possible A09 = 1		If A01 Flat and A03 = 1 and A05 = 1	
		No display and adjustment possible A09 = 1		If A02 = YES	
		No display and adjustment possible A09 = 2		If A02 = NO	
A10	MISTING	Yes and No	No		
A15.1	ELECTRICAL QUANTITY MEASUREMENT	Yes and No	No		
A15.2	TYPE OF NET ELECTRICAL GRID	1BL-2BL-3BL-4BL-3NBL-4NBL	3BL		Visible if energy meter option
A16	PRIMARY CT RATING	5 to 1000 (resolution: 1)	5A	If A15.1 = YES	
A17	SECONDARY CT RATING	None	5A	If A15.1 = YES	
A30	TOP OF SENSOR RANGE	10 to 50 b (increments of 0.1)	34	If A02 = 1 and A03 = 1 refrig. circuit	For condensers only
	TOP OF COIL1 SENSOR RANGE			If A02 = 2 and A033 = 1 refrig. circuit	
	TOP OF CIRCUIT 1 SENSOR RANGE			If A02 = 1 and A03 = 2 refrig. circuit	
	TOP OF CIRCUIT1 COIL1 SENSOR RANGE			If A02 = 2 and A03 = 2 refrig. circuit	
A31	BOTTOM OF SENSOR RANGE	-1 to 10 bar (increments of 0.1)	-0.5	If A02 = 1 and A03 = 1 refrig. circuit	
	BOTTOM OF COIL 1 SENSOR RANGE			If A02 = 2 and A03 = 1 refrig. circuit	
	BOTTOM OF CIRCUIT 1 SENSOR RANGE			If A02 = 1 and A03 = 2 refrig. circuit	
	BOTTOM OF CIRCUIT1 COIL1 SENSOR RANGE			If A02 = 2 and A03 = 2 refrig. circuit	
A32	TOP OF CIRCUIT 2 SENSOR RANGE	10 to 50 b (increments of 0.1)	34	If A02 = 1 and A03 = 2 refrig. circuit	
	TOP OF CIRCUIT.2 COIL.1 SENSOR RANGE			If A02 = 2 and A03 = 2 refrig. circuit	
A33	BOTTOM OF CIRCUIT 2 SENSOR RANGE	-1 to 10 bar (increments of 0.1)	-0.5	If A02 = 1 and A03 = 2 refrig. circuit	
	BOTTOM OF CIRCUIT.2 COIL.1 SENSOR RANGE			If A02 = 2 and A03 = 2 refrig. circuit	
A34	TOP OF COIL 2 SENSOR RANGE	10 to 50 b (increments of 0.1)	34	If A02 = 2 and A05 = 2 refrig. circuit	
	TOP OF CIRCUIT.1 COIL.2 SENSOR RANGE			If A02 = 2 and A05 = 2 refrig. circuit	
A35	BOTTOM OF COIL 2 SENSOR RANGE	-1 to 10 bar (increments of 0.1)	-0.5	If A02 = 2 and A05 = 1 refrig. circuit	
	BOTTOM OF CIRCUIT.1 COIL.2 SENSOR RANGE			If A02 = 2 and A05 = 2 refrig. circuit	

EN

No.	Description	Adjustment possible	By default	Display conditions	Notes
A36	TOP OF CIRCUIT.2 COIL.2 SENSOR RANGE	10 to 50 b (increments of 0.1)	34	If A02 = 2 and A05 = 2 refrig. circuit	
A37	BOTTOM OF CIRCUIT.2 COIL.2 SENSOR RANGE	-1 to 10 bar (increments of 0.1)	-0.5	If A02 = 2 and A05 = 2 refrig. circuit	
A99	LOCKING	No - Yes	No		

SETTINGS PARAMETERS

No.	PARAMETER NAME		PARAMETER ADJUSTMENT Adjustment conditions			Notes
	Description	Display conditions	Adjustment possible	By default	Adjustment conditions	
A100	LANGUAGE		French English German Spanish Dutch Italian	French		
A101	DATE					
A102	TIME					
A103	CONSOLE CONTROL TYPE		Local - Remote- (CMS ...)	Local		
A104	Communication mode	Up to V06	4800-9600-Jbus	9600		Visible up to version V06. Creation of communication menu from version V07.
A105	Bus number	Up to V06	1-255	1		
A106	RANGE WITHOUT ACTIVATION	From V07 A03 = water circuit A07 = On/Off	0.5 to 5°C in increments of 0.1	2		Control in place on V07, Drycooler in On/Off control only.
A107	ACTIVATION TIME BETWEEN STAGES		10s to 900s in increments of 1	180		
A108	DEACTIVATION TIME BETWEEN STAGES					
A109	OPERATION	A02 = 1 A03 = 1 LT water circuit	Cooling heating without control Heating with control	Cooling		From V07 on drycooler only. The heating mode allows water from the row to be heated during the summer.
A109.1	OUT. TEMP WARMING OPERATING ORDER	A109 = Heating	5°C to 30°C in increments of 1°C	10°C		
A110	FAN OPERATION BALANCING	A07 = On/Off or mixed	Yes - No	YES		
A111	FREE COOLING OPERATION	A10 = NO A2 = (1 or yes) and A3 = 1 LT water circuit	Yes - No	NO		
A112	OUT. SELECTION TEMP.	A111 = Yes	5 to 20 in increments of 1	10		No effect on the operation of free cooling. (Info for maintenance)
A113	MISTING	A10 = Yes	Elec.- Water	Water		
A113.1	MISTING CONTROL SIGNAL FAN	A113 = Water A10 = YES A07 = Speed control	4 to A114 in increments of 0.5V	10		From V07 Enables activation of misting before the fans are at 100% (acoustic advantage)
A114	FAN SPEED MAX THRESHOLD	A07 = Speed control	2 to 10V	10		Enables the fan control to be limited for noise reasons
A116	WATER CHILLER LINK		Yes - No	NO		
A117	MIN. T DIFFERENCE TO DEACTIVATE FREE COOLING	A111 = YES	0.5°C to 15°C in increments of 0.5	2		Fluid temp < Out. temp + A117➜ Free cooling off
A118	MAX DIFFERENCE TO ACTIVATE FREE COOLING	A111 = YES	1°C to 10°C in increments of 0.5	4		Fluid temp > Out. temp + A118➜ Free cooling on
A119.1	TYPE OF COIL 1 FLUID	A03 = Water	Water Glycol 10% Glycol 20% Glycol 30% Glycol 40%	Water		From V07. Allows the control setpoint to be lowered based on the glycol content. Water min 5°C
A119.2	TYPE OF COIL 2 FLUID	A05 = Water	Water Glycol 10% Glycol 20% Glycol 30% Glycol 40%	Water		10% glycol/water mix ⇨min 0°C 20% glycol/water mix ⇨min -5°C 30% glycol/water mix ⇨min -10°C 40% glycol/water mix ⇨min -15°C

No.	PARAMETER NAME		PARAMETER ADJUSTMENT			Notes
	Description	Display conditions	Adjustment possible	By default	Adjustment conditions	
A120	No. of SETPOINTS		1 setpoint 2 per console or CMS	1		
A121	SETPOINT 1	A02 = 1 and A03 = 1	5 to 90	60	A03 = 1 or 2 LT	
	SETPOINT 1, COIL 1	A02 = 2 and A03 = 1	5 to 150	120	A03 = 1 or 2 HT	
	SETPOINT 1, CIRCUIT 1	A02 = 1 and A03 = 2	5 to 45 b (increments of 0.5)	12	A03 = 1 or 2 refrig.	
	STP1 COIL 1 CIRCUIT 1	A02 = 2 and A03 = 2				
A122	SETPOINT 2	A02 = 1 and A03 = 1 and A120 = 2	5 to 90	50	A03 = 1 or 2 LT	
	SETPOINT 2, COIL 1	A02 = 2 and A03 = 1 and A120 = 2 or 3	5 to 150	100	A03 = 1 or 2 HT	
	SETPOINT 2, CIRCUIT 1	A02 = 1 and A03 = 2 and A120 = 2 or 3	5 to 45 b (increments of 0.5)	12	A03 = 1 or 2 refrig.	
	STP2 COIL 1 CIRCUIT 1	A02 = 2 and A03 = 2 and A120 = 2 or 3				
A123	SETPOINT 1, CIRCUIT 2	A02 = 1 and A03 = 2	5 to 90	60	A03 = 2 LT	
	STP1 COIL 1 CIRCUIT 2	A02 = 2 and A03 = 2	5 to 150	120	A03 = 2 HT	
			5 to 45 b (increments of 0.5)	12	A03 = 2 refrig	
A124	SETPOINT 2, CIRCUIT 2	A02 = 1 and A03 = 2 and A120 = 2 or 3	5 to 90	50	A03 = 2 LT	
	STP2 COIL 1 CIRCUIT 2	A02 = 2 and A03 = 2 and A120 = 2 or 3	5 to 150	100	A03 = 2 HT	
			5 to 45 b (increments of 0.5)	12	A03 = 2 refrig	
A125	SETPOINT 1, COIL 2	A02 = 2 and A05 = 1	5 to 90	60	A05 = 1 or 2 LT	
	STP1 COIL 2 CIRCUIT 1	A02 = 2 and A05 = 2	5 to 150	120	A05 = 1 or 2 HT	
			5 to 45 b (increments of 0.5)	12	A05 = 1 or 2 refrig.	
A126	SETPOINT 2, COIL 2	A02 = 2 and A05 = 1 and A120 = 2 or 3	5 to 90	50	A05 = 1 or 2 LT	
	STP2 COIL 2 CIRCUIT 1	A02 = 2 and A05 = 2 and A120 = 2 or 3	5 to 150	100	A05 = 1 or 2 HT	
			5 to 45 b (increments of 0.5)	12	A05 = 1 or 2 refrig.	
A127	STP1 COIL 2 CIRCUIT 2	A02 = 2 and A05 = 2	5 to 90	60	A05 = 2 LT	
			5 to 150	120	A05 = 2 HT	
			5 to 45 b (increments of 0.5)	12	A05 = 2 refrig	
A128	STP2 COIL 2 CIRCUIT 2	A02 = 2 and A05 = 2 and A120 = 2 or 3	5 to 90	50	A05 = 2 LT	
			5 to 150	100	A05 = 2 HT	
			5 to 45 b (increments of 0.5)	12	A05 = 2 refrig	
A129	PERMANENT FAULT		5 faults in 1 hour	5 Faults in 1 Hour		From version V07
A150	STAGE 1 HYSTERESIS	A02 = 1 and A03 = 1	1 to 20°C (increments of 0.5)	5	If A03 = 1 or 2 water circuits	
	HYST. STAGE 1 COIL 1	A02 = 2 and A03 = 1				
	HYST. STAGE 1 CIRCUIT 1	A02 = 1 and A03 = 2	2 to 6 bar (0.5 increments)	3.5	If A03 = 1 or 2 refrig. circuit	
	HYST. STAGE 1 COIL.1 CIR.1	A02 = 2 and A03 = 2				
A151	STAGE 2 DIFFERENCE	A02 = 1 and A03 = 1 and A08 ≥ 2	1 to 5°C (increments of 1)	2	If A03 = 1 or 2 water circuits	
	STAGE 2 COIL 1 DIFFERENCE	A02 = 2 and A03 = 1 and A08 ≥ 2				
	STAGE 2 CIRCUIT 1 DIFFERENCE	A02 = 1 and A03 = 2 and A08 ≥ 2	0.5 to 3 bar (increments of 0.5)	0.5	If A03 = 1 or 2 refrig. circuits	
	HYST. STAGE 2 COIL.1 CIR.1	A02 = 2 and A03 = 2 and A08 ≥ 2				
A152	STAGE 2 HYSTERESIS	A02 = 1 and A03 = 1 and A08 ≥ 2	1 to 10°C (increments of 0.5)	5	If A03 = 1 or 2 water circuits	
	HYST. STAGE 2 COIL 1	A02 = 2 and A03 = 1 and A08 ≥ 2				
	HYST. STAGE 2 CIRCUIT 1	A02 = 1 and A03 = 2 and A08 ≥ 2	2 to 6 bar (0.5 increments)	3.5	If A03 = 1 or 2 refrig. circuits	
	HYST. STAGE 2 COIL.1 CIR.1	A02 = 2 and A03 = 2 and A08 ≥ 2				
A153	STAGE 2 DIFFERENCE	A02 = 1 and A03 = 1 and A08 ≥ 3	1 to 5°C (increments of 1)	2	If A03 = 1 or 2 water circuits	
	STAGE 3 COIL 1 DIFFERENCE	A02 = 2 and A03 = 1 and A08 ≥ 3				
	STAGE 3 CIRCUIT 1 DIFFERENCE	A02 = 1 and A03 = 2 and A08 ≥ 3	0.5 to 3 bar (increments of 0.5)	0.5	If A03 = 1 or 2 refrig. circuits	
	STAGE 3 COIL.1 CIR.1 DIFFERENCE	A02 = 2 and A03 = 2 and A08 ≥ 3				

No.	PARAMETER NAME		PARAMETER ADJUSTMENT			Notes
	Description	Display conditions	Adjustment possible	By default	Adjustment conditions	
A154	STAGE 3 HYSTERESIS	A02 = 1 and A03 = 1 and A08 ≥ 3	1 to 10°C (increments of 0.5)	5	If A03 = 1 or 2 water circuits	CIAT
	HYST. STAGE 3 COIL 1	A02 = 2 and A03 = 1 and A08 ≥ 3				
	HYST. STAGE 3 CIRCUIT 1	A02 = 1 and A03 = 2 and A08 ≥ 3	2 to 6 bar (increments of 0.5)	3.5	If A03 = 1 or 2 refrig. circuits	
	HYST. STAGE 3 COIL.1 CIR.1	A02 = 2 and A03 = 2 and A08 ≥ 3				
A155	STAGE 3 DIFFERENCE	A02 = 1 and A03 = 1 and A08 ≥ 4	1 to 5°C (increments of 1)	2	If A03 = 1 or 2 water circuits	
	STAGE 4 COIL 1 DIFFERENCE	A02 = 2 and A03 = 1 and A08 ≥ 4				
	STAGE 4 CIRCUIT 1 DIFFERENCE	A02 = 1 and A03 = 2 and A08 ≥ 4	0.5 to 3 bar (increments of 0.5)	0.5	If A03 = 1 or 2 refrig. circuits	
	STAGE 4 COIL.1 CIR.1 DIFFERENCE	A02 = 2 and A03 = 2 and A08 ≥ 4				
A156	STAGE 4 HYSTERESIS	A02 = 1 and A03 = 1 and A08 ≥ 4	1 to 10°C (increments of 0.5)	5	If A03 = 1 or 2 water circuits	
	HYST. STAGE 4 COIL 1	A02 = 2 and A03 = 1 and A08 ≥ 4				
	HYST. STAGE 4 CIRCUIT 1	A02 = 1 and A03 = 2 and A08 ≥ 4	2 to 6 bar (increments of 0.5)	3.5	If A03 = 1 or 2 refrig. circuits	
	HYST. STAGE 4 COIL.1 CIR.1	A02 = 2 and A03 = 2 and A08 ≥ 4				
A157	STAGE 5 DIFFERENCE	A02 = 1 and A03 = 1 and A08 ≥ 5	1 to 5°C (increments of 1)	2	If A03 = 1 or 2 water circuits	
	STAGE 5 COIL 1 DIFFERENCE	A02 = 2 and A03 = 1 and A08 ≥ 5				
	STAGE 5 CIRCUIT 1 DIFFERENCE	A02 = 1 and A03 = 2 and A08 ≥ 5	0.5 to 3 bar (increments of 0.5)	0.5	If A03 = 1 or 2 refrig. circuits	
	STAGE 5 COIL.1 CIR.1 DIFFERENCE	A02 = 2 and A03 = 2 and A08 ≥ 5				
A158	STAGE 5 HYSTERESIS	A02 = 1 and A03 = 1 and A08 ≥ 5	1 to 10°C (increments of 0.5)	5	If A03 = 1 or 2 water circuits	
	HYST. STAGE 5 COIL 1	A02 = 2 and A03 = 1 and A08 ≥ 5				
	HYST. STAGE 5 CIRCUIT 1	A02 = 1 and A03 = 2 and A08 ≥ 5	2 to 6 bar (increments of 0.5)	3.5	If A03 = 1 or 2 refrig. circuits	
	HYST. STAGE 5 COIL.1 CIR.1	A02 = 2 and A03 = 2 and A08 ≥ 5				
A159	STAGE 6 DIFFERENCE	A02 = 1 and A03 = 1 and A08 ≥ 6	1 to 5°C (increments of 1)	2	If A03 = 1 or 2 water circuits	
	STAGE 6 COIL 1 DIFFERENCE	A02 = 2 and A03 = 1 and A08 ≥ 6				
	STAGE 6 CIRCUIT 1 DIFFERENCE	A02 = 1 and A03 = 2 and A08 ≥ 6	0.5 to 3 bar (0.5 increments)	0.5	If A03 = 1 or 2 refrig. circuits	
	STAGE 6 COIL.1 CIR.1 DIFFERENCE	A02 = 2 and A03 = 2 and A08 ≥ 6				
A160	STAGE 6 HYSTERESIS	A02 = 1 and A03 = 1 and A08 ≥ 6	1 to 10°C (increments of 0.5)	5	If A03 = 1 or 2 water circuits	
	HYST. STAGE 6 COIL 1	A02 = 2 and A03 = 1 and A08 ≥ 6				
	HYST. STAGE 6 CIRCUIT 1	A02 = 1 and A03 = 2 and A08 ≥ 6	2 to 6 bar (increments of 0.5)	3.5	If A03 = 1 or 2 refrig. circuits	
	HYST. STAGE 6 COIL.1 CIR.1	A02 = 2 and A03 = 2 and A08 ≥ 6				
A160.1	STAGE 7 DIFFERENCE	A02 = 1 and A03 = 1 and A08 ≥ 7	1 to 5°C (in increments of 1)	2	If A03 = 1 or 2 water circuits	
	STAGE 7 COIL 1 DIFFERENCE	A02 = 2 and A03 = 1 and A08 ≥ 7	0.5 to 3 bar (0.5 increments)	0.5	If A03 = 1 or 2 refrig. circuits	
A160.2	STAGE 7 HYSTERESIS	A02 = 1 and A03 = 1 and A08 ≥ 7	1 to 10°C (in increments of 0.5)	5	If A03 = 1 or 2 water circuits	
	HYST. STAGE 7 COIL 1	A02 = 2 and A03 = 1 and A08 ≥ 7	0.5 to 3 bar (0.5 increments)	0.5	If A03 = 1 or 2 refrig. circuits	
A161	HYST. STAGE 1 CIRCUIT 2	A02 = 1 and A03 = 2	1 to 20°C (in increments of 0.5)	5	If A03 = 1 or 2 water circuits	
	HYST. STAGE 1 COIL.1 CIR.2	A02 = 2 and A03 = 2	2 to 6 bar (0.5 increments)	3.5	If A03 = 1 or 2 refrig. circuits	
A162	STAGE 2 CIRCUIT 2 DIFFERENCE	A02 = 1 and A03 = 2 and A08 ≥ 2	0.5 to 3 bar (0.5 increments)	2	If A03 = 1 or 2 water circuits	
	STAGE 2 COIL.1 CIR.2 DIFFERENCE	A02 = 2 and A03 = 2 and A08 ≥ 2	0.5 to 3 bar (0.5 increments)	0.5	If A03 = 1 or 2 refrig. circuits	

| No.	PARAMETER NAME		PARAMETER ADJUSTMENT			Notes
	Description	Display conditions	Adjustment possible	By default	Adjustment conditions	
A163	HYST. STAGE 2 CIRCUIT 2	A02 = 1 and A03 = 2 and A08 ≥ 2	1 to 10°C	5	If A03 = 1 or 2 water circuit	
	HYST. STAGE 2 COIL.1 CIR.2	A02 = 2 and A03 = 2 and A08 ≥ 2	2 to 6 bar (0.5 increments)	3.5	If A03 = 1 or 2 water circuits	
A164	STAGE 3 CIRCUIT 2 DIFFERENCE	A02 = 1 and A03 = 2 and A08 ≥ 3	1 to 5°C (in increments of 1)	2	If A03 = 1 or 2 water circuit	
	STAGE 3 COIL.1 CIR.2 DIFFERENCE	A02 = 2 and A03 = 2 and A08 ≥ 3	0.5 to 3 bar (increments of 0.5)	0.5	If A03 = 1 or 2 refrig. circuit	
A165	HYST. STAGE 3 CIRCUIT 2	A02 = 1 and A03 = 2 and A08 ≥ 3	1 to 10°C (increments of 0.5)	5	If A03 = 1 or 2 water circuits	
	HYST. STAGE 3 COIL.1 CIR.2	A02 = 2 and A03 = 2 and A08 ≥ 3	2 to 6 bar (0.5 increments)	3.5	If A03 = 1 or 2 refrig. circuit	
A166	STAGE 4 CIRCUIT 2 DIFFERENCE	A02 = 1 and A03 = 2 and A08 ≥ 4	1 to 5°C (in increments of 1)	2	If A03 = 1 or 2 water circuit	
	STAGE 4 COIL.1 CIR.2 DIFFERENCE	A02 = 2 and A03 = 2 and A08 ≥ 4	0.5 to 3 bar (increments of 0.5)	0.5	If A03 = 1 or 2 refrig. circuit	
A167	HYST. STAGE 4 CIRCUIT 2	A02 = 1 and A03 = 2 and A08 ≥ 4	1 to 10°C (increments of 0.5)	5	If A03 = 1 or 2 water circuit	
	HYST. STAGE 4 COIL.1 CIR.2	A02 = 2 and A03 = 2 and A08 ≥ 4	2 to 6 bar (0.5 increments)	3.5	If A03 = 1 or 2 refrig. circuit	
A168	STAGE 5 CIRCUIT 2 DIFFERENCE	A02 = 1 and A03 = 2 and A08 ≥ 5	1 to 10°C (increments of 1)	2	If A03 = 1 or 2 water circuit	
	STAGE 5 COIL.1 CIR.2 DIFFERENCE	A02 = 2 and A03 = 2 and A08 ≥ 5	0.5 to 3 bar (increments of 0.5)	0.5	If A03 = 1 or 2 refrig. circuit	
A169	HYST. STAGE 5 CIRCUIT 2	A02 = 1 and A03 = 2 and A08 ≥ 5	1 to 10°C (increments of 1)	5	If A03 = 1 or 2 water circuit	
	HYST. STAGE 5 COIL.1 CIR.2	A02 = 2 and A03 = 2 and A08 ≥ 5	2 to 6 bar (0.5 increments)	3.5	If A03 = 1 or 2 refrig. circuit	
A170	STAGE 6 CIRCUIT 2 DIFFERENCE	A02 = 1 and A03 = 2 and A08 ≥ 6	1 to 5°C (in increments of 1)	2	If A03 = 1 or 2 water circuit	
	STAGE 6 COIL.1 CIR.2 DIFFERENCE	A02 = 2 and A03 = 2 and A08 ≥ 6	0.5 to 3 bar (increments of 0.5)	0.5	If A03 = 1 or 2 refrig. circuit	On/Off control ONLY with CONDENSER and DRYCOOLER before version V07
A171	HYST. STAGE 6 CIRCUIT 2	A02 = 1 and A03 = 2 and A08 ≥ 6	1 to 10°C (increments of 1)	5	If A03 = 1 or 2 water circuit	
	HYST. STAGE 6 COIL.1 CIR.2	A02 = 1 and A03 = 2 and A08 ≥ 6	2 to 6 bar (0.5 increments)	3.5	If A03 = 1 or 2 refrig. circuit	
A172	HYST. STAGE 1 COIL 2	A02 = 2 and A05 = 1	1 to 20°C (increments of 0.5)	5	If A05 = 1 or 2 water circuit	
	HYST. STAGE 1 COIL.2 CIR.1	A02 = 2 and A05 = 2	2 to 6 bar (0.5 increments)	3.5	If A05 = 1 or 2 refrig. circuit	
A173	STAGE 2 COIL 2 DIFFERENCE	A02 = 2 and A05 = 1 and A08 ≥ 2	1 to 5°C (in increments of 1)	2	If A05 = 1 or 2 water circuit	
	STAGE 2 COIL.2 CIR.1 DIFFERENCE	A02 = 2 and A05 = 2 and A08 ≥ 2	0.5 to 3 bar (increments of 0.5)	0.5	If A05 = 1 or 2 refrig. circuit	
A174	HYST. STAGE 2 COIL 2	A02 = 2 and A05 = 1 and A08 ≥ 2	1 to 10°C (increments of 1)	5	If A05 = 1 or 2 water circuit	
	HYST. STAGE 2 COIL.2 CIR.1	A02 = 2 and A05 = 2 and A08 ≥ 2	2 to 6 bar (0.5 increments)	3.5	If A05 = 1 or 2 refrig. circuit	
A175	STAGE 3 COIL 2 DIFFERENCE	A02 = 2 and A05 = 1 and A08 ≥ 3	1 to 5°C (in increments of 1)	2	If A05 = 1 or 2 water circuit	
	STAGE 3 COIL.2 CIR.1 DIFFERENCE	A02 = 2 and A05 = 2 and A08 ≥ 3	0.5 to 3 bar (increments of 0.5)	0.5	If A05 = 1 or 2 refrig. circuit	
A176	HYST. STAGE 3 COIL 2	A02 = 2 and A05 = 1 and A08 ≥ 3	1 to 10°C (increments of 1)	5	If A05 = 1 or 2 water circuit	
	HYST. STAGE 3 COIL.2 CIR.1	A02 = 2 and A05 = 1 and A08 ≥ 3	2 to 6 bar (0.5 increments)	3.5	If A05 = 1 or 2 refrig. circuit	
A177	STAGE 4 COIL 2 DIFFERENCE	A02 = 2 and A05 = 1 and A08 ≥ 4	1 to 5°C (in increments of 1)	2	If A05 = 1 or 2 water circuit	
	STAGE 4 COIL.2 CIR.1 DIFFERENCE	A02 = 2 and A05 = 2 and A08 ≥ 4	0.5 to 3 bar (increments of 0.5)	0.5	If A05 = 1 or 2 refrig. circuit	
A178	HYST. STAGE 4 COIL 2	A02 = 2 and A05 = 1 and A08 ≥ 4	1 to 10°C (increments of 1)	5	If A05 = 1 or 2 water circuit	
	HYST. STAGE 4 COIL.2 CIR.1	A02 = 2 and A05 = 2 and A08 ≥ 4	2 to 6 bar (0.5 increments)	3.5	If A05 = 1 or 2 refrig. circuit	
A179	STAGE 5 COIL 2 DIFFERENCE	A02 = 2 and A05 = 1 and A08 ≥ 5	1 to 5°C (in increments of 1)	2	If A05 = 1 or 2 water circuit	

No.	PARAMETER NAME		PARAMETER ADJUSTMENT			Notes
	Description	Display conditions	Adjustment possible	By default	Adjustment conditions	
A180	HYST. STAGE 5 CIRCUIT 2	A02 = 2 and A05 = 1 and A08 ≥ 5	1 to 10°C (increments of 0.5)	5	If A05 = 1 or 2 water circuit	
	HYST. STAGE 5 COIL.2 CIR.1	A02 = 2 and A05 = 2 and A08 ≥ 5	2 to 6 bar (0.5 increments)	3.5	If A05 = 1 or 2 water circuits	
A181	STAGE 6 CIRCUIT 2 DIFFERENCE	A02 = 2 and A05 = 1 and A08 ≥ 6	1 to 5°C (in increments of 1)	2	If A05 = 1 or 2 water circuit	
	STAGE 6 COIL.2 CIR.1 DIFFERENCE	A02 = 2 and A05 = 2 and A08 ≥ 6	0.5 to 3 bar (increments of 0.5)	0.5	If A05 = 1 or 2 refrig. circuit	
A182	HYST. STAGE 6 COIL 2	A02 = 2 and A05 = 1 and A08 ≥ 6	1 to 10°C (increments of 0.5)	5	If A05 = 1 or 2 water circuits	
	HYST. STAGE 6 COIL.2 CIR.1	A02 = 2 and A05 = 2 and A08 ≥ 6	2 to 6 bar (0.5 increments)	3.5	If A05 = 1 or 2 refrig. circuit	
A182.1	STAGE 7 COIL 2 DIFFERENCE	A02 = 1 and A03 = 1 and A08 ≥ 7	1 to 10°C (increments of 0.5)	5	If A03 = 1 or 2 water circuit	
A182.2	HYST. STAGE 7 COIL 2	A02 = 1 and A03 = 1 and A08 ≥ 7	1 to 10°C (increments of 0.5)	5	If A03 = 1 or 2 water circuit	
A183	HYST. STAGE 1 COIL.2 CIR.2	A02 = 2 and A05 = 2	1 to 20°C (increments of 0.5)	5	If A05 = 2 water circuits	
			2 to 6 bar (0.5 increments)	3.5	If A05 = 2 refrig. circuit	
A184	STAGE 2 COIL.2 CIR.2 DIFFERENCE	A02 = 2 and A05 = 2 and A08 ≥ 2	1 to 5°C (in increments of 1)	2	If A05 = 2 water circuits	
			0.5 to 3 bar (increments of 0.5)	0.5	If A05 = 2 refrig. circuit	
A185	HYST. STAGE 2 COIL.2 CIR.2	A02 = 2 and A05 = 2 and A08 ≥ 2	1 to 10°C (increments of 1)	5	If A03 = 2 water circuit	
			2 to 6 bar (0.5 increments)	3.5	If A05 = 2 refrig. circuit	
A186	STAGE 3 COIL.2 CIR.2 DIFFERENCE	A02 = 2 and A05 = 2 and A08 ≥ 3	1 to 5°C (in increments of 1)	2	If A03 = 2 water circuit	On/Off control ONLY with CONDENSER and DRYCOOLER before version V07
			0.5 to 3 bar (increments of 0.5)	0.5	If A05 = 2 refrig. circuit	
A187	HYST. STAGE 3 COIL.2 CIR.2	A02 = 2 and A05 = 2 and A08 ≥ 3	1 to 10°C (increments of 1)	5	If A05 = 2 water circuit	
			2 to 6 bar (0.5 increments)	3.5	If A05 = 2 refrig. circuit	
A188	STAGE 4 COIL.2 CIR.2 DIFFERENCE	A02 = 2 and A05 = 2 and A08 ≥ 4	1 to 5°C (increments of 1)	2	If A05 = 2 water circuit	
			0.5 to 3 bar (increments of 0.5)	0.5	If A05 = 2 refrig. circuit	
A189	HYST. STAGE 4 COIL.2 CIR.2	A02 = 2 and A05 = 2 and A08 ≥ 4	1 to 10°C (increments of 0.5)	5	If A05 = 2 water circuit	
			2 to 6 bar (0.5 increments)	3.5	If A05 = 2 refrig. circuit	
A190	STAGE 5 COIL.2 CIR.2 DIFFERENCE	A02 = 2 and A05 = 2 and A08 ≥ 5	1 to 5°C (in increments of 1)	2	If A05 = 2 water circuit	
			0.5 to 3 bar (increments of 0.5)	0.5	If A05 = 2 refrig. circuit	
A191	HYST. STAGE 5 COIL.2 CIR.2	A02 = 2 and A05 = 2 and A08 ≥ 5	1 to 10°C (in increments of 0.5)	2	If A05 = 2 water circuit	
			2 to 6 bar (0.5 increments)	3.5	If A05 = 2 refrig. circuit	
A192	STAGE 6 COIL.2 CIR.2 DIFFERENCE	A02 = 2 and A05 = 2 and A08 ≥ 6	1 to 5°C (increments of 1)	2	If A05 = 2 water circuit	
			0.5 to 3 bar (increments of 0.5)	0.5	If A05 = 2 refrig. circuit	
A193	HYST. STAGE 6 COIL.2 CIR.2	A02 = 2 and A05 = 2 and A08 ≥ 6	1 to 10°C (in increments of 0.5)	5	If A05 = 2 water circuit	
			2 to 6 bar (0.5 increments)	3.5	If A05 = 2 refrig. circuit	

No.	PARAMETER NAME		PARAMETER ADJUSTMENT		
	Description	Display conditions	Adjustment possible	By default	Adjustment conditions
	MISTING PARAMETER IF P10 = YES and P113 = WATER				
A199	MISTING OUT. TEMPERATURE	A10 = YES A113 = elec	20 to 40°C (in increments of 1)	35	
A200	MISTING STAGE DIFFERENCE	A02 = (1 or yes) and A03 = 1	1 to 5°C (in increments of 1)	2	If A03 = 1 or 2 water circuits
	MIST STAGE CIRCUIT 1 DIFFERENCE	A02 = (2 or no) and A03 1			
	MIST STAGE COIL 1 DIFFERENCE	A02 = (1 or yes) and A03 = 2	0.5 to 3 bar (0.5 increments)	0.5	If A03 = 1 or 2 refrig. circuits
	MIST STAGE COIL1 CIR1 DIFFERENCE	A02 = (2 or no) and A03 = 2			
A201	MIST STAGE CIRCUIT 2 DIFFERENCE	A02 = (1 or yes) and A03 = 2	1 to 5°C (in increments of 1)	2	If A03 = 2 water circuits
	MIST STAGE COIL1 CIR 2 DIFFERENCE	A02 = (2 or no) and A03 = 2	0.5 to 3 bar (0.5 increments)	0.5	If A03 = 2 refrig. circuits
A202	MIST STAGE COIL 2 DIFFERENCE	A02 = (2 or no) and A05 = 1	1 to 5°C (in increments of 1)	2	If A05 = 1 or 2 water circuits
	MIST STAGE COIL2 CIR1 DIFFERENCE	A02 = (2 or no) and A05 = 2	0.5 to 3 bar (0.5 increments)	0.5	If A05 = 1 or 2 refrig. circuits
A203	MIST STAGE COIL2 CIR2 DIFFERENCE	A02 = (2 or no) and A05 = 2	1 to 5°C (in increments of 1)	2	If A05 = 2 water circuits
			0.5 to 3 bar (0.5 increments)	0.5	If A05 = 2 refrig. circuits

Notes
If temp > A199 the misting is operational whatever the number of FMA stages
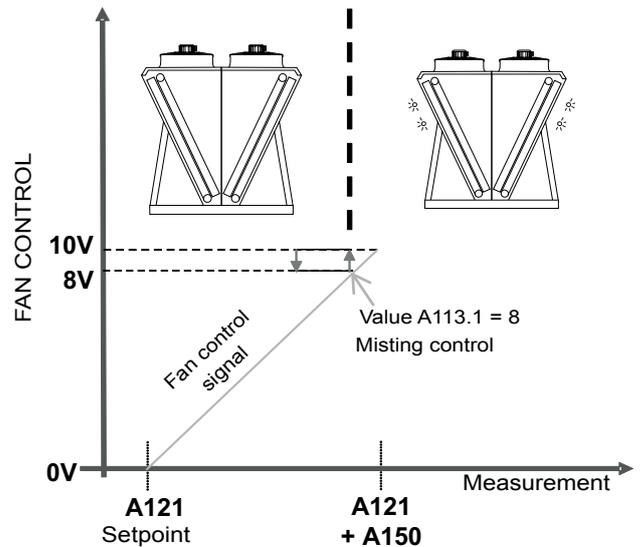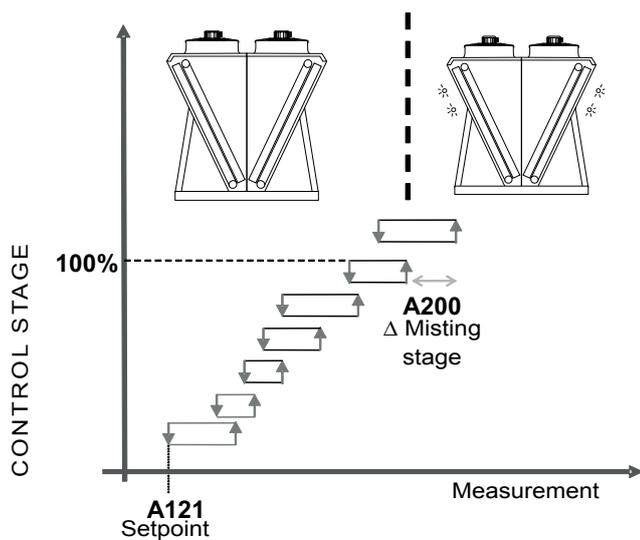
11 - GLOSSARY

Description	Meaning
STP	Setpoint
HYST	Hysteresis
N.U.	Not used
TOR	On/Off = stage cascade control
APP	Unit
GEG	Water chiller

CIAT

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