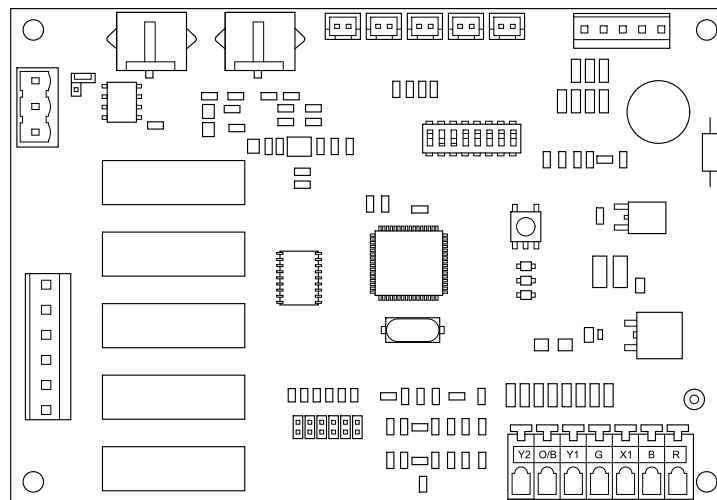




BY JOHNSON CONTROLS

YKN2Open board



Technical Information

Ref.: N-27730_EN 1113



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1

Components

1.1 Description of the components

The list of sensors and actuators of the unit is divided into several categories. The following components make up part of the unit assembly.

Actuators	Compressors	<ul style="list-style-type: none"> In cold only units they are responsible for generating cold. In pump units they are responsible for generating cold and heat. According to the setup of the SW4 it is possible to choose from between 1 compressor - 1 circuit or 2 compressors (tandem) - 1 circuit.
	Indoor fan	It is used to circulate the air through the indoor coil and conduct it to the supply.
	Outdoor fans	<ul style="list-style-type: none"> They are used to circulate the air through the outdoor coil. According to the setup of the SW the operation of the outdoor fan varies in cool mode in accordance with the outside temperature.
	4-way valve (pump)	It is used to switch the operating cycle of the unit (cool - heat).
Temperature probes	Suction	The temperature probe is placed on the suction of the compressor.
	Outdoors	The temperature probe is placed outdoors.
	Liquid	The temperature probe is placed on the outdoor coil liquid tube.
	Discharge	The temperature probe is placed on the compressor discharge.
	Supply	The temperature probe is placed on the air supply.
	Return	The temperature probe is placed on the air return with the economiser accessory.
Enthalpy probes	Outdoors	Enthalpy probes are placed on the outside of the economiser accessory (only on Roof top).
	Return	Enthalpy probes are placed on the return of the economiser accessory (only on Roof top).
Protections	Fan thermal switch	It indicates that the indoor fan protection has come into operation.
	High-pressure switch	It indicates that the unit high pressure is outside the limits or the protection of the outdoor fan or the compressor module has been activated.
	Low-pressure switch	It indicates that the unit low pressure is outside the limits.
Accessories	Compressor 2 and presence sensor	It adds a presence input and an extra compressor stage to the unit.
	Compressor 3	It adds an extra compressor stage to the unit.
	Electric resistors (*)	They are used to support the heat generation (up to 4 stages).
	Gas burners (*)	Heat generation using gas (up to 4 stages).
	Hot water coil (*)	It is used to support the heat generation (up to 4 stages).
	Economiser, return fan and air quality probe	<ul style="list-style-type: none"> It allows for cold to be generated by modulating the outdoor air inlet damper and the renewal of indoor air. The fan increases the capacity of air exhaust from the room. It enables air renewal in accordance with the values of the air quality probe.
	Motorised damper	It enables air renewal to be fixed.
	Smoke and high temperature detector	It detects the presence of smoke in the room or high supply temperature.
	Dirty filter detector	It detects whether the filters must be changed.

(*) Together they are incompatible. It is only possible to have one type of support heat generator.

2

Buttons and LEDs

2.1 Buttons and LEDs

2.1.1 Test button

Situated on the main electronic board, it carries out different operations depending on how it is pressed:

- If it is kept pressed until the yellow LED is activated, certain timings are shortened and any fault detected is reset.
- If it is kept pressed down until the red LED is activated, the optional accessories and probes connected to the board are identified.

2.1.2 LEDs

There are three LED signalling diodes.

- The green LED indicates whether the unit is working properly or if there are incidents. If the unit is working properly, this LED will flash at a constant frequency.
- The red LED indicates faults. If there are no faults, the LED remains switched off. It also lights up when accessory configuration is being scanned.
- The yellow LED functions as a fault reset LED, and also indicates that a compressor timer is running when it flashes.

In all the accessories:

- The green LED indicates whether there is communication and if it is correctly identified.
 - If the LED remains lit, it indicates that the accessory is electrically powered but it has not been correctly identified or it is not receiving the communications.
- The yellow LED:
 - In the economiser accessory, it indicates that the outdoor air is favourable (LED lit up). The button and the potentiometer store the renewal minimum.
 - In the hot water coil accessory, it indicates that the water temperature is favourable (LED lit up) or if the antifreeze function is being performed in the coil (LED flashing).

3

Configuration

3.1 Configuration

When the 24 V_{AC} power supply is connected to the electronic board, the system configuration is verified. In order to do this, the following checks are carried out:

1. Microswitch reading.
2. Communication with the thermostat.
3. Verification and enabling of the recorded accessories.

The 'Microswitch reading' is carried out only at the time of supplying power to the electronic board. 'Communication with the thermostat' is attempted once per minute in the event that communication is not made and the 'Verification and enabling of the recorded accessories' is also carried out when resetting the faults and when the accessories are recorded.

3.1.1 Microswitches

The system verifies the position of the microswitches after supplying the electronic board with 24 V_{AC}. It is subsequently configured in relation to the positions of the microswitches.

The configurations in accordance with the position of the microswitches are:

Number	Status	Description
1 / 2	OFF/OFF	Defrosting time 0'
	ON/OFF	Defrosting time 30'
	OFF/ON	Defrosting time 60'
	ON/ON	Defrosting time 90'
3	ON	Crossed coils
	OFF	Independent coils
4	ON	Selection of 2 compressors (tandem) - 1 circuit
	OFF	Selection of 1 compressor - 1 circuit
5	ON	Cold only selection
	OFF	Heat pump selection
6	ON	4-way valve active in heat
	OFF	4-way valve active in cold
7	ON	Thermostat with signal B
	OFF	Thermostat with signal O
8	ON	Fan enabled during defrost
	OFF	Fan disabled during defrost

3.1.2 Accessories and Probes

Accessories are used to support extended operation of the unit.

These accessories can be factory-fitted or installed at the customer. The voltage should always be removed from the unit. Install the accessory, together with the necessary components and connect the power again.

In order to search for and configure the accessories, press the test button for more than two seconds until the red LED lights up. When the search and configuration process starts, the red LED on the board will light up and flash until the operation is completed. Once switched off, the board will use the accessories found.

The optional probes to be connected to the board are also chosen during this search. An incident will be generated if one of the optional probes, which was chosen in the configuration process, stops providing valid values.

In the case of the supply probe it is possible to install it in the J7 connector of the YKN2Open board, in the J6 of the board of the second compressor, in the J6 of the economiser board, or in the J6 of the hot water coil board. Firstly an attempt will be made to identify it in the YKN2Open board or in the second compressor, and if it is not found, a search will explore the economiser or the hot water coil.

The outside probe can be fitted in the J6 of the board of the first compressor, or in the J3 of the economiser board.

Whenever the economiser accessory is fitted, the system searches for the outside probe in the economiser as a first option.

A table with the configuration of probes is provided below.

Probe	Connector Colour	PUMP		COLD	
		Obligatory	Optional	Obligatory	Optional
Discharge	White	X		X	
Liquid	green	X		X	
Outdoor YKN2Open	Orange	X		X	
Suction	Black	X		X	
Supply YKN2Open	Red		X		X
Supply 2nd Compressor	Orange		X		X
Economiser Return	Black		X		X
Water entry	Black		X		X
Economiser Outdoor	White		X		X

The unit will be fitted with a Discharge, Liquid and Suction probe per cooling circuit.

3.1.3 Communications with the thermostat

The board program will attempt to operate with the thermostat via communications. If they are lost it will be able to operate with the thermostat relay signals. If there is no communication with the thermostat, a new communication is made every minute. If communication with the thermostat is restored, operation modes are switched to work with the thermostat using communications; failing this, acknowledgement of the relay signals is continued.

The board will be able to detect and communicate with a DPC-1 or DPC-1R thermostat.

4

Operation

The heat pump or cold unit is controlled using software located in the board.

The operation of the system is determined by the position of the microswitches in the main board.

The control algorithm also varies depending on the accessories that the board detects installed in the unit.

4.1 General considerations



NOTE

[See the operating parameters in the section [Rooms](#), see on page 25].

The start-up and stopping of any power device must not coincide with the start-up and stopping of other devices of the same unit.

The time between the two is fixed at 1 sec. (MAQTION_OFF).

After a reset or power failure, it is obligatory to wait a specifically determined time the first time that the electronic board activates a device. In this way, after a power failure, all the units of an installation are prevented from starting up at the same time.

All the entries are filtered to prevent signal transit states from being detected.

The following sequence is observed in the start-up of a compressor:

1. 4-way valve (if it is necessary to activate it).
2. Outdoor fan.
3. Indoor fan.
4. Compressor.

The following sequence is observed in the stopping of a compressor:

1. Compressor.
2. Outdoor fan.
3. 4-way valve (if it is necessary to activate it).
4. Indoor fan.

When the heat signals of the thermostat are activated in a cold only unit (**SW5ON**), if the unit has auxiliary heat stages, these are started.

4.2 Demand control unit

It is responsible for deciding which stages start up in order to compensate the demand.

The order in which the stages are activated depends on a list of operating stages order of priority. Priority is established in the following manner:

- Compressors have more priority the fewer operating hours they have. A compressor can be inhibited if it starts a defrost, has an alarm generated or its start-up is timed.
- If tandem compressor is selected, the compressor to start up as the first compressor is that which has the least operating hours. If there are 2 circuits and 2 tandems with 2 demands, a compressor starts up on each circuit.



NOTE

Tandem compressor: SW4ON (2 compressors per circuit)

- The economiser always has more priority than the compressors (to generate cold) and it operates as long as the outside temperature is favourable (see information on accessories).
- In the hot water coil it is possible to select whether it has more or less priority than the compressors with a jumper (see handling the accessories). It activates only to generate heat when the water temperature is favourable.

4.3 Switching of the main components

- The electric resistors have less priority than the compressors (to generate heat) and they are arranged in order of operating hours. Those that have not activated the thermal switch protection activate to generate heat.
- The gas stages are not arranged in order. Stage 1 will always have the highest priority. In heat pump units, they have less priority than the compressors in accordance with the outside temperature.

4.2.1 With DPC1 thermostat

With thermostat operating by communication, if there is demand (Y1) and a stage in operation, the stage is activated and management of the other two stages is begun (be it cool or heat).

While there is demand (Y1), the error between the setpoint and the room temperature is calculated each minute.

- If the error is equal to or more than (unfavourable tendency) the previous minute, the number on a counter is increased.
- If the counter reaches 10 another stage is activated (as long as it is present and available) and the counter resets to 0, in order to calculate another demand.

When the thermostat demand disappears (Y1), all the stages that the demand control unit has activated are stopped.

4.2.2 With external control

A different thermostat to the DPC-1 can be used as long as it is 24 V_{AC} and has outputs with non-live contacts for the standard signals G, Y1, Y2 and O/B.

If an external control is used with an ambient temperature probe and non-live contacts, the following sequences must be generated in order to generate the different operation modes:

- R-G Indoor fan.
- R-G-Y1 Cool mode 1 stage.
- R-G-Y1-Y2 Cool mode 2 stages.
- R-G-O/B-Y1 Heat mode 1 stage.
- R-G-O/B-Y1-Y2 Heat mode 2 stages.

If more than 2 stages are available, the demand control unit activates stages every 10 minutes.

When the demand disappears (Y2), all the stages that the demand control unit has activated are stopped.

In order for correct operation in cool or heat mode, the position of microswitches **SW5**, **SW6** and **SW7** must be taken into account.

4.3 Switching of the main components

4.3.1 Indoor fan



NOTE

[See the operating parameters in the section [Rooms](#), see on page 25].

The operation can be continuous or automatic.

- Automatic operation only activates when there is demand for cold or heat.
- Continuous operation can be selected on the thermostat.

Its status is determined by the G signal on the thermostat, except if there is a fault in the thermal switch, which stops the fan.

In automatic fan mode:

- The indoor fan is in operation whenever any stage is in operation (heat, cool or auxiliary heat).

- The indoor fan times 60 seconds when any stage stops and there is no demand (RESTIEVAC_CAL).

i NOTE

This process removes residual heat or cold.

- In the event of there being an air quality sensor, the indoor fan could activate if it demands air renewal (see section *Economiser, return fan and air quality detector*, see on page 15).

In continuous fan mode, with demand for heat and economiser accessory:

- The economiser damper remains closed if the unit cannot produce heat with any of the heat stages.
- The indoor fan stops if the thermostat demands heat with the fan set to automatic and it is not possible to produce heat in any of the heat stages.
- The indoor fan activates during defrost if there is no alternative way of producing heat and with the **SW8** configuration set to ON. Otherwise, the fan deactivates.

4.3.2 Outdoor fan

i NOTE

[See the operating parameters in the section Rooms, see on page 25].

- The outdoor fan starts (MAQTIVXT_CMP) 4 seconds before the compressor starts and stops after the compressor has stopped.
 - In the event of a defrost, start-up (DFRTIVEX) is 10 seconds before finishing the defrost.

In units with a crossed coil (**SW3ON** and **SW5ON**):

1. Fan number 2 start-up as first fan.

i NOTE

Fan number 2 is located on the gas discharge side (electrical box).

2. Start-up of the following fan:
 - When the outdoor temperature is higher than 19 °C (VXTTPBATX_ON).
 - When the outdoor probe is open or short circuited.
3. In the event that it is not necessary to stop one of the fans, fan number 1 stops.

i NOTE

The fan is located on the side of the compressors.

- If the outdoor temperature is lower than 16 °C (VXTTPBATX_OFF) the second fan stops.

4.3.3 Four-way valve

i NOTE

[See the operating parameters in the section Rooms, see on page 25].

- With microswitch **SW6** of the control board ON, the 4-way valve activates when the thermostat demands heat.

i NOTE

When a defrost is carried out, the valve is deactivated.

- With microswitch **SW6OFF**, the valve reverses the operation and it is activated in cool mode.

i NOTE

When a defrost is carried out, the valve is activated.

- With the thermostat in OFF mode, the valve is deactivated independently of **SW6**. The 4-way valve only activates when its corresponding compressor is activated.
 - When the stage is deactivated, the compressor (V4VTICMP) is deactivated at the same time, as is also the 4-way valve 60 seconds later.
- In the event that a fault is caused in the high-pressure switch, first the compressor is stopped and then 60 seconds later the valve.

4.3.4 Compressor



NOTE

[See the operating parameters in the section [Rooms](#), see on page 25].

One, two or three stages (SW4OFF)

One, two or three stages can be controlled.

When the compressor is started, initially the outdoor fan is started and then the compressor starts. In order to prevent the compressor and the outdoor fan from starting up successively, a minimum of 4 minutes stoppage is timed (CMPTION) between start-ups.

In units with more than one stage, the compressor to start up as the first compressor is that which has the least operating hours. The following compressors start up in accordance with demand.

- There must be a delay of 5 seconds (MAQTICMP_CMP) between compressor start-ups.

When it is necessary to stop one of the compressors, the compressor with the most amount of operating hours is stopped.

In the heat cycle, if the outdoor temperature is lower than -10 °C (CMPTPEXT_OFF), the compressor is stopped and an incident is indicated. It starts up again when the outdoor temperature is higher than -8 °C (CMPTPEXT_ON).

Compressor in tandem (SW4ON)

Maximum of two circuits with tandem (2 compressors per circuit).

The compressor to start up as the first compressor is that which has the least operating hours. At the moment when it is necessary to stop one of the compressors, the compressor with the most amount of operating hours is stopped.

4.4 Defrost



NOTE

[See the operating parameters in the section [Rooms](#), see on page 25].

The defrost is only carried out in heat pump operation mode.

An incident is indicated.

4.4.1 Start-up

The following conditions must be met:

- Compressor operating.
- Liquid probe temperature lower than -3 °C (DFRTPINICIO) during 3 minutes (DFRTICONF) or during 5 minutes (DFRTICONF2) if the outside temperature is less than or equal to -5 °C (DFRTPEXT).
- Time since the last 30, 60 or 90 minute-defrost (TIDES) expired.



NOTE

The time can be selected by SW1 and SW2.

4.4.2 Switching

When a defrost is started the following operations are carried out:

1. The 4-way valve is set to cool mode.
2. The outdoor fan is stopped.
3. The stage is inhibited. The demand control unit decides whether to start or not.
4. The compressor that is carrying out the defrost does not stop while the defrost is in operation, even if the thermostat indicates to do so. If it is a tandem the two compressors start up.
5. The indoor fan stops if there is no stage that can generate heat and microswitch **SW8** is OFF.

4.4.3 Finish



NOTE

*[See the operating parameters in the section **Rooms**, see on page 25].*

The operation lasts until one of the following conditions are fulfilled:

- Liquid temperature higher than 13 °C (DFRTPFIN_HI) during 2 seconds (DFRTIFIN_HI).
- Liquid temperature higher than 5 °C (DFRTPFIN_ME) during 30 seconds (DFRTIFIN_ME).
- Liquid temperature higher than 2 °C (DFRTPFIN_LO) during 2 minutes (DFRTIFIN_LO).
- Time lapsed since the start of the defrost more than 10 minutes (DFRTIMAX).
- The high-pressure switch fault signal is generated.

Switching



ATTENTION

In units with more than one stage, the simultaneous defrost of two stages is not permitted; one waits until the operation of the other has finished.

When a defrost is completed the following operations are carried out:

1. The outdoor fan starts and 10 seconds are timed (DFRTIVEX).
2. The 4-way valve activates in the heat position.
3. The compressor sets to on. The demand control unit decides whether to continue to operate or not.

The outdoor fan continues to operate for 1 minute (DFRTISECADO), even if there is no demand, in order to remove drops of water from the coil.

If there is only demand to start a compressor, and this must perform a defrost, the following compressor will start.

When the defrost is complete, the compressor responsible for that defrost stops and the outdoor fan continues to operate in order to dry the coil. As long as there is demand, the compressor that was started (in order to replace that carrying out the defrost) continues to operate.

4.5 Switching of the accessories

4.5.1 Second and third compressors

These accessories enable the control of the second and third compressors. Their operation is described in the compressor section.

4.5.2 Presence detector

If no presence is detected the setpoints are established in Unoccupied only with the thermostat DPC-1.

If the thermostat is not DPC-1, operation is only permitted with the economiser in cool mode.

The presence detector input is pin 1 of connector J1 of the second compressor board.

- If it is open, i.e. unoccupied in this case, an incident indicates this.
- By default it is always closed.

4.5.3 Electrical auxiliary heat

The program can control up to four electrical heating stages.

The stages are started up in accordance with indications from the demand control unit.

Whenever the electrical heating is in operation, the indoor fan will always be in operation.

4.5.4 Gas auxiliary heat

The program can control up to four gas stages.

- They are started up in accordance with indications from the demand control unit.
- The second stage cannot be started up if the first is not in operation.
- This also applies to the third and fourth stages.
- Control of the gas stage is carried out with 1 or 2 accessories, depending on whether it is necessary to control 2 or 4 gas stages.
- Units with only two gas stages can have one or two burner controls. If it is necessary for the accessory to be able to activate 2 controls, this is indicated by a jumper put on the J1.
- Whenever the gas heating is in operation, the indoor fan will always be in operation.

Alarms:

- A fault in alarm 1 causes the entire gas heating to stop.
- A fault in alarm 2 would stop the second and fourth stages (if they exist).
- If a fault is produced during the start-up of a burner, the reset signal is activated for 1 second causing the alarm to reset. The number of alarm resets on start-up is limited to 5 times.
- From here, the control system generates an alarm in the thermostat display or the YKN2Open board, blocking the gas stages.
- The demand does not deactivate until the thermostat stops requesting heat.

In gas heat pump units:

- If the outside temperature is higher than 5 °C and there is a demand for heat, the compressors operate if available.
 - If the compressors are not available, the gas auxiliary heat operates.
- If the outside temperature is lower than 5 °C and there is a demand for heat, the gas auxiliary heat operates if available.
 - If the gas auxiliary heat is not available, the compressors operate.

4.5.5 Auxiliary heat via hot water coil



NOTE

[See the operating parameters in the section [Rooms](#), see on page 25].

Its function is to generate heat and it can control up to four hot water coil stages, which start up in accordance with indications from the demand control unit. They are limited by the supply temperature (30, 40, 45 and 50 °C).

If the conditions are favourable, the valve is modulated in accordance with the supply probe, whereby the objective is to achieve the maximum supply temperature without exceeding 50 °C (BACTPIMP_MAX).

- Favourable conditions are deemed when the water temperature is above 30 °C (BACTPH2O_MIN) 5 minutes (BACTIH2O_MIN) after opening the valve.
- Once the system is operating, a check is constantly made to ensure the conditions remain favourable.
- If the conditions are favourable, the yellow LED lights up permanently as an indication.

In the event that non-favourable conditions have been detected, and demand exists, 20 minutes are timed (BACTIRTR) and the conditions are checked again after this time.

Whenever the water heating is in operation, the indoor fan will always be in operation.

Whenever the hot water coil heating is running (circulation pump running and temperature favourable), the indoor fan will also be operating.

There is a 15 °C minimum air supply temperature trip switch when this accessory is fitted. Hence, it is possible to avoid the discomfort that may be created when there is a very high percentage at low outdoor temperatures and the indoor fan is running continuously. In the event of a demand for cold, the water coil valve closes.

- If the opening is more than 20% (BACPCPMP_ON), the pump relay is activated.
- If the opening is less than 5% (BACPCPMP_OFF), the relay is deactivated.

When the water temperature is lower than 3 °C (BACTPDFR_ON), the pump and the valve are activated until the water temperature rises above 6 °C (BACTPDFR_OFF) in order to protect the hot water accumulator and heating coil from the risk of freezing. This protection is activated while the fan is stopped, even if the unit is stopped or in lockout.

There is a potentiometer on the control board that allows for the valve to be modulated by hand to check its correct working order.

The valve returns to its operating position after 30 seconds (MAQTIMAN), which indicates the maximum time that the unit operates in manual mode, or when the test button is pressed.

The yellow LED on the electronic module lights up and switches off if the water temperature is less than 3 °C (BACTPDFR_ON).

Jumper S2 is present on the board, which has a higher priority than the compressors if the hot water coil is activated. This is recommended for installations where very cheap hot water is available.

The water temperature probe must be connected to the J13 connector.

4.5.6 Economiser, return fan and air quality detector



NOTE

[See the operating parameters in the section [Rooms](#), see on page 25].

Allows for cold to be generated by modulating the outdoor air inlet damper. If the conditions are favourable, the damper is modulated in order to achieve the lowest possible supply temperature, without dropping below 11.5 °C (BACTPIMP_MAX).

In temperature mode, favourable conditions are deemed as follows:

- The outdoor temperature is lower than 20 °C (ECOTPEXT_MAXLOW)
- The outdoor temperature is lower than the return temperature.

In order to operate in enthalpy mode, it is necessary for:

- A jumper to be put in S2.



NOTE

By default the jumper ENTALP S2 is open. Select the NTC probes.

- The outside probe to be disconnected, B17 (connector J3).
- The return probe not to be disconnected, B15 (connector J13).

In enthalpy mode, favourable conditions are deemed as follows:

- The outside enthalpy is below the return enthalpy by a minimum of 5% (ECOPCENT_OK).
- The outdoor temperature is lower than 20 °C

In order to manually modulate the damper and verify its operation, there is a potentiometer on the economiser board. The damper will return to its working position after 30 seconds have passed (MAQTIMAN), which indicates the maximum time that the unit operates in manual mode.

The damper is open by a certain percentage in order to renew the air in the room, provided that the indoor fan is activated.

- This minimum percentage can be set using the potentiometer or via the communications network.
- In order to set it using the potentiometer:
 1. Adjust the potentiometer until reaching the minimum required opening.
 2. Next, press the confirm button for 3 seconds in order to store the value.

The default value for the percentage is 10% (ECOPCAPE_DEF).

4.5 Switching of the accessories

If the thermostat demands heat (winter cycle) and it is not possible to activate any heat stage, the damper will remain closed with the indoor fan stopped (if it is in automatic operating mode). In the event that it is in continuous mode, the indoor fan is operating.

Where a fault is detected on the indoor fan, the damper is completely closed.

The yellow LED on the board lights up when conditions are favourable.

The function of the return exhaust is to increase the air exhaust capacity of the room. If the outdoor air damper is open by more than 30% (ERTPCON), this output is activated.

If the supply temperature is lower than 14 °C and the outdoor temperature is lower than 10 °C, more compressors do not start up to generate cold.

When operating in economiser mode, if the suction temperature is lower than 0 °C and there are compressors operating in cool mode, the damper is closed and opened again when the suction temperature is higher than 4 °C.

The air quality sensor operation is that described above whenever the thermostat is not in OFF mode (with communication) or 20 minutes after deactivating the last stage (without communication).

- The input J18 is used to connect an air quality detector.
 - If the signal is active (contact closed):
 1. The damper is opened to the minimum stored value.
 2. The indoor fan is started.
 3. The opening is increased with a min. slope of 5%. (CO2PCECO_UP) while the sensor activates the signal. The dampers open as long as the supply temperature limits are not exceeded (30 °C (CO2TPMAX) and 15 °C (CO2TPMIN)). In the case of starting a stage in order to produce heat or cold in the room, the economiser damper returns to the minimum.
 4. When the sensor stops activating the signal, the dampers return to their previous state.
 - If the signal is not active, the dampers return to their previous state.
- The jumper J19 is used for the economiser operation selection. By default it is open. If it closes, the motorised damper operation is selected. In this operating mode the damper opens to the minimum stored value, which in this case is the maximum opening. When this option is selected, the economiser is not considered a cold demand, therefore, if there is demand for cold, the compressors start.
- Jumper J20 is used for the outside damper closed with high temperature-smoke alarm selection. By default it is open. If the jumper is closed, outside damper open with high temperature-smoke alarm is selected. In both cases, everything is stopped, except in the second case where there is a signal for the exhaust fan.

4.5.7 Energy recovery system



NOTE

[See the operating parameters in the section [Rooms](#), see on page 25].

This accessory manages the switching outputs of the enthalpy wheel motor, the exhaust fan, the renewal fan and the motor trip switches of the fans and the wheel motor.

It always includes the economiser and indoor air quality probe options. The default minimum opening value of the damper is 10% (ECOPCAPE_DEF).



ATTENTION

Do not modify the minimum opening value of the damper with the energy recovery accessory.

- If the thermostat is OFF, continuous ventilation mode is selected and the air renewal selected is less than 30%, and only the indoor fan operates. If air renewal of over 30% is selected, the three fans (indoor, exhaust) will run and the enthalpy wheel will turn. In this situation if there is air quality demand, there is no variation.
- If the thermostat is OFF and auto fan mode is selected and there is air quality demand, no output is activated.

- If the thermostat is in HVAC mode (cool, heat or auto), there is no kind of demand and the air quality is correct, the unit is at a standstill.
 - If there is air quality demand:
 - ◆ The indoor fan is activated.
 - ◆ The outdoor air economiser damper opens to a maximum of 75%.
 - ◆ The exhaust fan, renewal fan and the wheel motor are activated.
- If the thermostat is in HVAC mode (cool, heat or auto), there is HVAC demand and the air quality is correct, the energy recovery unit is at a standstill and the heat and cool stages are activated.
 - If there is air quality demand:
 - ◆ The exhaust fan, renewal fan and the wheel motor are activated.
 - ◆ The outdoor air economiser damper opens to a maximum of 75%.
- If the thermostat is in cool HVAC mode with an outdoor temperature lower than 20 °C (economiser favourable), there is a demand for cold and the air quality is correct, the energy recovery unit is at a standstill and the outside damper is opened to cool the room.

When the outside damper is opened more than 30%, the exhaust and renewal fan outputs are activated up to a maximum of 75%, in accordance with the supply temperature.

- If there is air quality demand:
 - ◆ The exhaust fan, renewal fan and the wheel motor are activated.
 - ◆ The outdoor air economiser damper opens to a maximum of 75%.

4.5.8 Smoke and high temperature detector

The smoke detector and high temperature accessories use the same accessory board.

In the case of fitting the two accessories, only one control board must be used and the two closed contacts for smoke and temperature control must be placed in series in the accessory board input.

When a contact opens, the unit stops and an alarm is triggered. The accessory board output relay closes.

4.5.9 Dirty filter detector

Its function is to indicate whether the filters should be changed.

When entry is detected (closed contact) the output is activated and it is indicated in the thermostat with communication, until the faults / incidents are reset.

5

Malfunctions

5.1 Malfunctions

There are two different types of malfunction. Incidents do not cause the unit to stop and faults or lockouts cause the unit to stop.

5.2 Causes

5.2.1 Switching



NOTE

[See the operating parameters in the section [Rooms](#), see on page 25].

Indoor fan thermal switch

Activation of this causes the stoppage of the entire unit and a fault in the indoor fan thermal switch is signalled.

High-pressure switch (either the outdoor fan thermal switch or compressor thermal switch)

Activation of this causes the compressor and the outdoor fan to stop. A high-pressure switch fault is signalled.

In units with a crossed coil, outdoor fan number 2 must start up (on the electrical box side). In the event that two fans must start up, both start up even if one has the high-pressure switch activated.

A fault is not caused if it starts during defrost, even if this is considered completed and the fault is inhibited for 30 seconds (PHITIINH).

Low-pressure switch

Activation of this causes the compressor and the outdoor fan to stop. A low-pressure switch fault is signalled.

When the compressor starts, the pressure switch is inhibited for 2 minutes (PLOTIINH). Its activation is not taken into account when a defrost is being carried out. 30 seconds are timed before the fault is signalled upon the completion of the defrost.

Electrical heating thermal switch (accessory)

Activation of this causes the electrical heating to stop and an incident to be signalled. If the error is produced more than 3 times in one hour (RESNOTERMIC):

1. A fault is signalled in the electric resistor thermal switch.
2. The electric resistor is inhibited and switched off.
3. The Lockout relay is activated.
4. This is added to the fault history.

Gas fault (accessory)

Activation of this causes the gas heating to stop and a fault to be signalled. It is not permitted to start up the gas heating again until the signal disappears.

The number of alarm resets on start-up is limited to 5 times.

Fault in the economiser, return fan and air quality sensor

If the air quality sensor signal is activated, a demand incident in the air quality is indicated.

If the enthalpy probes are active (jumper in S2) and there is a fault in one of the probes, as we work between the two probes, a switch must be made to the conventional working mode and the incident must be signalled.

If there is a fault in the return probe, the incident is signalled.

Hot water coil (accessory)

In the event that non-favourable conditions are detected, the incident is signalled and, when conditions are favourable, the incident is deleted.

5.2 Causes

When the water temperature is below 3 °C (BACTPDFR_ON), an incident is signalled, and deleted when the condition disappears.

If a short circuit or an open circuit is detected in one of the coil probes, and provided that there is no other stage:

1. An incident is signalled
2. The stage is inhibited
3. There is a change to the antifreeze function to protect the circuit from water

Dirty filters

Their activation causes a signal to be produced for an incident in the dirty filters.

DPC-1 thermostat

Errors in the thermostat with relays (no communication)

If the Y signal is activated without the G signal, or if the Y1 or Y2 signals are activated without the G signal, it acts as if the G signal were active.

An incident is signalled in the Y1 or Y2 signal without the G signal.

Protections

Protections for defrosting

If 3 defrosts (DFRNOMAX) are produced successively and finish after the time of 10 minutes (DFRTIMAX) and incident is signalled for repeated defrosting.



NOTE

The incident is deleted when the defrost is finalised by completing a different condition to that of the maximum time.

Protections due to temperature

- If the outdoor temperature is lower than -10 °C (CMPTPEXT_OFF) the compressor stops and an incident is signalled for excessively low outdoor temperature (only in heat mode).
 - The incident disappears when the outdoor temperature is higher than -8 °C (CMPTPEXT_ON).
- If the discharge temperature is higher than 130 °C (DISTPAVR) the compressor and the outdoor fan are stopped. An exceeded discharge temperature fault is signalled.
- If the discharge temperature does not rise above 35 °C (DISTPREC_HEAT) in heat mode, or 50 °C (DISTPREC_COOL) in cool mode, an incident is signalled for temperature not recovered.
 - The compressor must be running for 10 minutes (DISTIREC) or 5 minutes (DISTIREC_DFR) if the previously switched operation is defrost.
- If the suction probe temperature is lower than -4 °C (CMPTPASP_LO_3) and the compressor has been in operation for 10 minutes (CMPTIASP_LO), the compressor and the outdoor fan are stopped. It is also possible to reach this condition if the suction probe temperature is lower than -25 °C (CMPTPASP_LO_1).
 - When the time has passed (CMPTION), the compressor starts again. If this condition is repeated 3 times (CMPNOTP_ASP_LO) in 60 minutes (CMPTIASP_LO_NO) a fault is signalled for repeated cold start-ups, and the compressor is prohibited from starting up.
- If there is a water coil and the water temperature does not exceed 30 °C (BACTPH2O_MIN) after 5 minutes (BACTIH2O_MIN) the valve closes and the coil is inhibited until the subsequent start-up. Further attempts are made every 20 minutes (BACTIRTR) and an incident is signalled for water coil temperature not recovered.
- If the supply temperature is higher than 55 °C (TEMP_MAX_IMP) an incident is indicated for high supply temperature and the heat stages are stopped until the problem is resolved every 5 minutes until the temperature drops below 55 °C.
- If the supply temperature is higher than 80 °C (TEMP_IMP_AVR) the unit is stopped and a fault is signalled for 'Smoke or high temperature detection'.
- If there is demand for heat generation using gas and there is no fault, the supply temperature is lower than 25 °C (TEMP_MIN_IMP) and an incident is signalled for low supply temperature with demand for gas.

Probes

Opening or short circuit in the liquid probe, outdoor or indoor

An incident is signalled in the corresponding probe if the value read is lower than $-33.5\text{ }^{\circ}\text{C}$ (NTCTPABIERTA), or higher than $93.5\text{ }^{\circ}\text{C}$ (NTCTPCORTO).

If this incident is produced in the liquid probe in heat mode, repeated defrosts are carried out with a maximum duration of 10 minutes or entry detection of the high-pressure switch signal.

In the case of crossed coils, if an error is detected in the outdoor probe, both fans are started up.

Opening or short circuit in the discharge probe

An incident is signalled in the discharge probe if its value is lower than $-20\text{ }^{\circ}\text{C}$ (DISTPABIERTA) or higher than $150\text{ }^{\circ}\text{C}$ (DISTPCORTO).

Opening or short circuit in the accessories probe

An incident is signalled in the discharge probe if its value is lower than $-33.5\text{ }^{\circ}\text{C}$ (NTCTPABIERTA) or higher than $93.5\text{ }^{\circ}\text{C}$ (NTCTPCORTO).

Accessories

The accessories can be in three states:

- Connected without being set.
- Connected, set and functional.
- Set but not functional (inhibited).

In this last case an incident is signalled for inhibited accessory, this implies the detection of faults in the communication, therefore inhibiting the accessory and its outputs are deactivated.

5.2.2 Signalling

Signalling faults is carried out on two levels. One for incidents and another for faults.

Incidents

Incidents do not stop the unit and are indicated by a green LED on the electronic board.



NOTE

If there is no fault, the this LED will flash at a constant frequency.

When an incident is produced, the LED passes through three flashing sequences.

1. The first indicates the affected compressor:
 - One flash for stage 1.
 - Two flashes for stage 2.
 - Three flashes for stage 3.
 - Four flashes for others.
2. There is a short pause.
3. The LED indicates the type of incident.
4. There is a short pause.
5. The LED indicates the detected incident.
6. There is a longer pause.
7. The sequence is repeated throughout the duration of the incident.

The incidents are restored when the condition that generates them ceases.

5.2 Causes

In the event that more than one incident is produced, only the incident detected with the highest priority is signalled, provided that it has not yet been restored. Inasmuch as they are restored, the other existing incidents that have not yet been restored are displayed.

Flashes		Type	Incident	
1, 2 or 3	1	Probes	1	Discharge probe open or short circuited
			2	Liquid probe open or short circuited
			3	Suction probe open or short circuited
	2	Temperature	1	Repeated defrosting
			2	The discharge temperature is not recovered
	4	1	Probes	1
2				Return probe open or short circuited
3				Outdoor probe open or short circuited
4				Water probe open or short circuited
5				Fault in the enthalpy probes
2		1	Thermostat	Signal Y1 without signal G
3		Auxiliary heat	1	Heating element thermal switch 1
			2	Heating element thermal switch 2
			3	Heating element thermal switch 3
			4	Heating element thermal switch 4
4		Temperature	1	The water coil temperature is not recovered
			2	Outdoor temperature too low
			3	Water coil performing antifreeze operation
			4	Supply temperature above 55 °C
			5	Supply temperature below 25 °C with gas
5		Others	1	Defrost cycle
			2	There is at least one accessory not found
			3	Air quality demand
			4	Dirty filters
			5	Presence sensor is unoccupied
			6	Suction temperatures < 0 °C with economiser
6		Recovery system	1	Energy recovery wheel motor trip switch
			2	Energy recovery fan motor trip switch

Faults

Faults or lockouts stop the unit.

They are signalled by a red LED on the board using a thermostat and a relay is activated on the board.



NOTE

If there are no faults, the LED is switched off.

When a fault is produced, the LED passes through two flashing sequences.

- The first indicates the affected compressor:
 - One flash for stage 1.
 - Two flashes for stage 2.
 - Three flashes for stage 3.
 - Four flashes if an accessory is concerned.
- The second sequence is produced after a brief pause and indicates the fault detected.
- There is a long pause and the sequence is produced again.

In the event that more than one alarm is produced, the incident detected with the highest priority that has not yet been restored is signalled.

In the non-volatile memory the previous 9 faults to occur must be saved. Before saving the fault in the memory, a check is made to verify whether the previously saved fault is different to the present fault to be saved. In the event that they are the same, nothing is saved.

The following table shows possible faults:

Flashes		Meaning
1, 2 or 3	1	Discharge temperature exceeded
	2	High-pressure switch, outdoor fan thermal switch or compressor module thermal switch
	3	Low-pressure switch
	4	Indoor fan thermal switch
	5	Repeated cold start-up or suction temperature -25 °C
4	1	Gas control 1 or heating element 1 fault
	2	Gas control 2 or heating element 2 fault
	3	Heating element 3 stage fault
	4	Heating element 4 stage fault
	5	Fault in economiser or HW coil (supply, exterior, return and water probe)
	6	Smoke or high temperature detection, accessories. Supply temperature above 80 °C

5.2.3 Reset



NOTE

[See the operating parameters in the section [Rooms](#), see on page 25].

Incidents, with some exceptions, do not require a reset. They are restored when the condition that generates them ceases.

A reset is required for the following incidents and this is done in the same way as the alarms:

- Inhibited accessory.
- Repeated defrosting (a reset is also carried out if a defrost is completed normally).
- Electrical heating thermal switch.

Alarms can be reset in the following ways:

- Setting the thermostat to OFF mode, if the communications have been implemented with the thermostat.
- Pressing the test button on the electronic board.
- Removing and reinstating the power supply to the electronic board.
- Using the communication bus.

It should be noted that a reset of the board by setting the thermostat to OFF cannot be carried out more than 3 times in one day (AVRNOREARMES).

6

Operating parameters

6.1 Rooms

Parameter	Description	Value
AVRNOEARMES	Number of resets per thermostat OFF in one day	3
BACPCPMP_OFF	Opening for the water pump	5%
BACPCPMP_ON	Opening to start the water pump	20%
BACTIH2O_MIN	Time lapse for water minimum temperature	5 min.
BACTIRTR	Time to reattempt the condition check	20 min.
BACTPDFR_OFF	Deactivation temperature of the antifreeze protection	6 °C
BACTPDFR_ON	Activation temperature of the antifreeze protection	3 °C
BACTPH2O_MIN	Minimum water temperature	30 °C
BACTPIMP_MAX	Maximum supply temperature for hot water coil	50 °C
CMNOTP_ASP_LO	Instances that the compressor must be stopped due to error	3
CMPTIASP_LO	Suction probe timing	10 min.
CMPTIASP_LO_NO	Time during which the instances are counted	60 min.
CMPTION	Compressor delay	4 min.
CMPTPASP_LO_1	Cold suction temperature in order to stop the compressor	-25 °C
CMPTPASP_LO_3	Repeated cold start-up suction temperature	-4 °C
CMPTPEXT_OFF	Outdoor temperature at which the compressor is stopped	-10 °C
CMPTPEXT_ON	Outdoor temperature at which the compressor is started again	-8 °C
CO2PCECO_UP	Opening slope per air quality	5% / min.
CO2TPMAX	Maximum supply temperature	30 °C
CO2TPMIN	Minimum supply temperature	15 °C
DFRNOMAX	Maximum number of successive defrosts	3
DFRTICONF	Defrost confirmation time	3 min.
DFRTICONF2	Defrost confirmation time in outdoor cold	5 min
DFRTIDEF	Table of default times between defrosts	30 min.
DFRTIFIN_HI	Time for defrost to complete	2 sec.
DFRTIFIN_ME	Time for defrost to complete	30 sec.
DFRTIFIN_LO	Time for defrost to complete	2 min.
DFRTIMAX	Defrost maximum time	10 min.
DFRTISECADO	Coil drying time	1 min.
DFRTPEXT	Outdoor temperature to apply DFRCONF2	-5 °C
DFRTIVEX	Time before completion of the defrost to activate the outdoor fan	10 sec.
DFRTPFIN_HI	Defrost end temperature	13 °C
DFRTPFIN_ME	Defrost end temperature	5 °C
DFRTPFIN_LO	Defrost end temperature	2 °C
DFRTPINICIO	Defrost start temperature	-3 °C
DISTIREC	Maximum temperature recovery time	10 min.
DISTIREC_DFR	Temperature recovery time after a defrost	5 min.
DISTPABIERTA	Discharge time to be considered for open probe	-20 °C
DISTPAVR	Discharge temperature fault	130 °C
DISTPCORTO	Discharge time to be considered for short circuit	150 °C
DISTPREC_HEAT	Recovery time in winter (heat)	35 °C
DISTPREC_COOL	Recovery time in summer (cold)	50 °C
ECOPCAPE_DEF	Default minimum opening value of the damper	10%
ECOPCDELTA	Incremental minimum of the economiser	1,25%
ECOPCENT_OK	Enthalpy percent for favourable conditions	5%
ECOTPEXT_MAXLOW	Below this temperature the economiser operates	20 °C
ECOTPEXT_MAXHIGH	Above this temperature the economiser does not operate	22 °C
ECOTPHIST	Hysteresis for ECOTPIMP_MIN	0,5

6.1 Rooms

Parameter	Description	Value
ECOTPIMP_MIN	Minimum supply temperature for economiser	11,5 °C
ERTPCON	Opening percentage to start up the air exhaust	30%
GASTION_OFF	Gas stage delay	0 min.
GOODINPUTCNT	Number of identical readings to achieve the correct entry of DS2406	5
MAQTICMP_CMP	Delay between start-ups of compressors	5 sec.
MAQTIMAN	Manual operation time, economiser and water valve	30 sec.
MAQTION_OFF	Time between start ups and stops	1 sec.
MAQTIVXT_CMP	Start-up time of the outdoor fan and the compressor	4 sec.
MAX_LOG_AVERIAS	Number of faults saved	9
NTCTPABIERTA	Probe time to be considered for short circuit	-33.5 °C
NTCTPCORTO	Temperature to be considered for open or non-existent probe	93.5 °C
PHITIINH	Time lapse for high-pressure switch	30 sec.
PLOTIINH	Time lapse for low-pressure switch	2 min.
POTPCSENSE	Minimum movement of the potentiometer for a change to be considered	4 LSB
RESNOTERMIC	Number of times that the thermal switch can trip in one hour	3
RESTIEVAC_CAL	Residual heat and cold evacuation time	60 sec.
RESTION_OFF	Electrical resistor delay	0 min.
T_INIGAS	Times that the gas burner automatically resets	5
T_REC_TEMP	Time for the supply temperature to rise above 25 °C in gas stages	10 min.
TASP_ECOOFF	Suction temperature below that at which the economiser is closed	0 °C
TASP_ECOON	Suction temperature in order for the economiser to reopen	4 °C
TEMP_IMP_AVR	Supply temperature in order for the unit to stop and indicate a fault	80 °C
TEMP_MAX_IMP	Supply temperature in order for stages to begin to be stopped	55 °C
TEMP_MIN_IMP	Minimum gas supply temperature	25 °C
TEXTHABILCOMP1	If the supply temperature is < 14 °C and the outdoor temperature > 10 °C compressors disabled	10 °C
TEXTHABILCOMP2	If the supply temperature is < 14 °C and the outdoor temperature > 12 °C let compressors operate	12 °C
TIDES	The time between defrosts in accordance with SW1 and SW2 .	0', 30', 60', 90'
TIMPHABILCOMP	If the supply temperature is < 14 °C and the outdoor temperature < 10 °C only the economiser operates	14 °C
TMP_ACT_ECO	Time until economiser operates	1 sec.
TMP_PAS_A_OFF	Minutes to switch to OFF after the stages stop, during which the air quality demand can actuate	20 min.
TRMTIDEMANDA	Sampling time of the demand calculation	10 min.
TRMTPHIST	Hysteresis of the Set-Point	0,25 °C
V4VTICMP	Change delay time of the 4-way valve after the compressor is stopped	60 sec.
VXTPBATX_OFF	Stopping of the 2nd fan with a crossed coil. Fan no. 1 compressor side	16 °C
VXTPBATX_ON	Start-up of the 2nd fan with a crossed coil. Fan no. 1 compressor side	19 °C

When the service button is briefly pressed, the parameters indicated below are momentarily changed to the value in the test column.

Parameter	Description	Value	Battery
CMPTION	Compressor delay	4 min	10 sec.
DFRTICONF	Defrost confirmation time	3 min.	10 sec.
DFRTIMAX	Defrost maximum time	10 min.	30 sec.
DFRTISECADO	Coil drying time	1 min.	1 sec.
MAQTIMAN	Manual operating time	30 s.	2 sec.

7

Temperature tables

7.1 Tables

The following tables indicate the relationship between the temperature, resistance and voltage of the following probes: discharge, liquid, suction, outdoor, water, supply and return.

J5 (Discharge)

Temperature (°C)	Heater (Ohms)	Voltage (V)	Temperature (°C)	Heater (Ohms)	Voltage (V)
-40	328400	4,96973	7	22952	4,59923
-39	310260	4,96798	8	21865	4,58098
-38	292120	4,96600	9	20836	4,56209
-37	273980	4,96377	10	19860	4,54254
-36	255840	4,96122	11	18936	4,52235
-35	237700	4,95828	12	18060	4,50150
-34	224940	4,95594	13	17229	4,47995
-33	212180	4,95331	14	16441	4,45773
-32	199420	4,95035	15	15694	4,43484
-31	186660	4,94699	16	14984	4,41121
-30	173900	4,94315	17	14311	4,38692
-29	164820	4,94006	18	13671	4,36188
-28	155740	4,93660	19	13064	4,33617
-27	146660	4,93273	20	12487	4,30973
-26	137580	4,92836	21	11938	4,28254
-25	128500	4,92337	22	11417	4,25468
-24	121101	4,91877	23	10921	4,22607
-23	114172	4,91392	24	10449	4,19672
-22	107681	4,90883	25	10001	4,16674
-21	101597	4,90347	26	9574	4,13599
-20	95893	4,89785	27	9167	4,10450
-19	90543	4,89194	28	8780	4,07236
-18	85523	4,88574	29	8412	4,03957
-17	80811	4,87924	30	8060	4,00596
-16	76386	4,87243	31	7726	3,97183
-15	72229	4,86528	32	7407	3,93696
-14	68322	4,85780	33	7103	3,90146
-13	64650	4,84996	34	6813	3,86531
-12	61196	4,84176	35	6536	3,82849
-11	57947	4,83319	36	6272	3,79110
-10	54890	4,82422	37	6020	3,75312
-9	52011	4,81485	38	5780	3,71465
-8	49300	4,80507	39	5550	3,67550
-7	46746	4,79485	40	5331	3,63593
-6	44339	4,78420	41	5122	3,59590
-5	42069	4,77308	42	4921	3,55512
-4	39929	4,76150	43	4730	3,51412
-3	37910	4,74944	44	4547	3,47258
-2	36004	4,73687	45	4373	3,43088
-1	34205	4,72380	46	4205	3,38840
0	32506	4,71020	47	4046	3,34601
1	30902	4,69607	48	3893	3,30307
2	29385	4,68138	49	3746	3,25966
3	27952	4,66613	50	3606	3,21620
4	26596	4,65030	51	3472	3,17251
5	25314	4,63389	52	3343	3,12839
6	24101	4,61687	53	3220	3,08429
			54	3102	3,03998
			55	2989	2,99559
			56	2881	2,95124
			57	2777	2,90664
			58	2677	2,86188

J5 (Discharge)

Temperature (°C)	Heater (Ohms)	Voltage (V)	Temperature (°C)	Heater (Ohms)	Voltage (V)
59	2582	2,81755	105	586	1,13302
60	2490	2,77283	106	569	1,10743
61	2402	2,72831	107	553	1,08304
62	2318	2,68411	108	538	1,05989
63	2237	2,63984	109	523	1,03646
64	2159	2,59558	110	509	1,01435
65	2085	2,55202	111	495	0,99198
66	2013	2,50810	112	481	0,96937
67	1944	2,46450	113	468	0,94814
68	1878	2,42135	114	455	0,92668
69	1814	2,37808	115	443	0,90667
70	1753	2,33546	116	431	0,88647
71	1694	2,29291	117	419	0,86606
72	1638	2,25124	118	408	0,84718
73	1583	2,20904	119	397	0,82812
74	1531	2,16794	120	387	0,81064
75	1481	2,12726	121	377	0,79302
76	1433	2,08710	122	367	0,77524
77	1386	2,04666	123	357	0,75732
78	1341	2,00688	124	348	0,74106
79	1298	1,96786	125	339	0,72467
80	1256	1,92875	126	330	0,70815
81	1216	1,89055	127	322	0,69337
82	1178	1,85337	128	314	0,67848
83	1141	1,81630	129	306	0,66349
84	1105	1,77939	130	298	0,64839
85	1070	1,74267	131	291	0,63509
86	1037	1,70728	132	283	0,61980
87	1005	1,67221	133	276	0,60633
88	974	1,63753	134	270	0,59471
89	944	1,60326	135	263	0,58109
90	915	1,56947	136	256	0,56738
91	888	1,53740	137	250	0,55556
92	861	1,50472	138	244	0,54367
93	853	1,49492	139	238	0,53172
94	810	1,44128	140	232	0,51971
95	786	1,41062	141	226,8	0,50925
96	763	1,38075	142	221,6	0,49874
97	740	1,35036	143	216,4	0,48818
98	719	1,32218	144	211,2	0,47757
99	698	1,29355	145	206	0,46691
100	677	1,26448	146	201,4	0,45744
101	658	1,23777	147	196,8	0,44792
102	639	1,21069	148	192,2	0,43837
103	621	1,18466	149	187,6	0,42878
104	603	1,15828	150	183	0,41915



NOTE

Reading of the value:

- Resistance value in Ω , with the probe disconnected from the YKN2Open board.
- Voltage value in Ω , with the probe connected to the YKN2Open board between two terminals of the probe.

7.1 Tables

J2 (Supply), J3 (Suction), J4 (Liquid), J6 (Outdoor), J13 (Water and return)

Temperature	Heater	Voltage	Temperature	Heater	Voltage
(°C)	(Ohms)	(V)	(°C)	(Ohms)	(V)
-40	328400	4,83795	7	22952	3,38007
-39	310260	4,82880	8	21865	3,32649
-38	292120	4,81855	9	20836	3,27240
-37	273980	4,80700	10	19860	3,21776
-36	255840	4,79388	11	18936	3,16275
-35	237700	4,77885	12	18060	3,10736
-34	224940	4,76689	13	17229	3,05165
-33	212180	4,75356	14	16441	2,99570
-32	199420	4,73862	15	15694	2,93961
-31	186660	4,72174	16	14984	2,88331
-30	173900	4,70254	17	14311	2,82703
-29	164820	4,68718	18	13671	2,77066
-28	155740	4,67015	19	13064	2,71443
-27	146660	4,65115	20	12487	2,65828
-26	137580	4,62983	21	11938	2,60223
-25	128500	4,60573	22	11417	2,54650
-24	121101	4,58365	23	10921	2,49099
-23	114172	4,56060	24	10449	2,43578
-22	107681	4,53657	25	10001	2,38108
-21	101597	4,51153	26	9574	2,32672
-20	95893	4,48547	27	9167	2,27277
-19	90543	4,45836	28	8780	2,21941
-18	85523	4,43019	29	8412	2,16670
-17	80811	4,40094	30	8060	2,11438
-16	76386	4,37061	31	7726	2,06291
-15	72229	4,33917	32	7407	2,01201
-14	68322	4,30662	33	7103	1,96183
-13	64650	4,27297	34	6813	1,91237
-12	61196	4,23818	35	6536	1,86359
-11	57947	4,20229	36	6272	1,81566
-10	54890	4,16528	37	6020	1,76851
-9	52011	4,12714	38	5780	1,72229
-8	49300	4,08789	39	5550	1,67674
-7	46746	4,04755	40	5331	1,63217
-6	44339	4,00613	41	5122	1,58851
-5	42069	3,96361	42	4921	1,54544
-4	39929	3,92007	43	4730	1,50350
-3	37910	3,87549	44	4547	1,46234
-2	36004	3,82989	45	4373	1,42230
-1	34205	3,78332	46	4205	1,38277
0	32506	3,73581	47	4046	1,34454
1	30902	3,68741	48	3893	1,30699
2	29385	3,63811	49	3746	1,27017
3	27952	3,58801	50	3606	1,23442
4	26596	3,53708	51	3472	1,19956
5	25314	3,48543	52	3343	1,16538
6	24101	3,43309	53	3220	1,13221
			54	3102	1,09984
			55	2989	1,06834
			56	2881	1,03775
			57	2777	1,00784
			58	2677	0,97865

J2 (Supply), J3 (Suction), J4 (Liquid), J6 (Outdoor), J13 (Water and return)

Temperature (°C)	Heater (Ohms)	Voltage (V)	Temperature (°C)	Heater (Ohms)	Voltage (V)
59	2582	0,95052	105	586	0,25289
60	2490	0,92291	106	569	0,24592
61	2402	0,89613	107	553	0,23933
62	2318	0,87025	108	538	0,23314
63	2237	0,84498	109	523	0,22694
64	2159	0,82035	110	509	0,22113
65	2085	0,79671	111	495	0,21531
66	2013	0,77346	112	481	0,20948
67	1944	0,75093	113	468	0,20405
68	1878	0,72915	114	455	0,19860
69	1814	0,70782	115	443	0,19357
70	1753	0,68729	116	431	0,18852
71	1694	0,66724	117	419	0,18347
72	1638	0,64805	118	408	0,17882
73	1583	0,62902	119	397	0,17417
74	1531	0,61089	120	387	0,16993
75	1481	0,59330	121	377	0,16569
76	1433	0,57629	122	367	0,16143
77	1386	0,55950	123	357	0,15717
78	1341	0,54331	124	348	0,15333
79	1298	0,52773	125	339	0,14948
80	1256	0,51240	126	330	0,14563
81	1216	0,49771	127	322	0,14220
82	1178	0,48366	128	314	0,13877
83	1141	0,46990	129	306	0,13533
84	1105	0,45642	130	298	0,13188
85	1070	0,44325	131	291	0,12886
86	1037	0,43076	132	283	0,12541
87	1005	0,41858	133	276	0,12238
88	974	0,40671	134	270	0,11979
89	944	0,39518	135	263	0,11675
90	915	0,38397	136	256	0,11372
91	888	0,37349	137	250	0,11111
92	861	0,36295	138	244	0,10850
93	853	0,35982	139	238	0,10589
94	810	0,34293	140	232	0,10328
95	786	0,33345	141	226,8	0,10101
96	763	0,32432	142	221,6	0,09874
97	740	0,31516	143	216,4	0,09647
98	719	0,30677	144	211,2	0,09419
99	698	0,29834	145	206	0,09192
100	677	0,28989	146	201,4	0,08990
101	658	0,28221	147	196,8	0,08788
102	639	0,27451	148	192,2	0,08586
103	621	0,26719	149	187,6	0,08384
104	603	0,25985	150	183	0,08182



NOTE

Reading of the value:

- *Resistance value in Ω , with the probe disconnected from the YKN2Open board.*
- *Voltage value in Ω , with the probe connected to the YKN2Open board between two terminals of the probe.*

8

Communications

8.1 YKN2Open board

Based on the N2 Open protocol.

The following table lists all the communication variables, which indicate:

- The type of variable.
- The ID number.
- The description.
- The range.
- The units.



NOTE

Configure the network address.

The indoor YKToolN2 tool is required to configure the network address of the different YKN2Open boards of an installation managed by communications.

N2OpenType	N2OpenId	Description	Value / Units	Range	Description
AI	1	Suction Temperature 1	°C	-50 min 160 max	Suction temperature 1
AI	2	Liquid Temperature 1	°C	-50 min 160 max	Liquid temperature 1
AI	3	Outdoor Temperature	°C	-50 min 160 max	Outdoor temperature
AI	4	Suction Temperature 2	°C	-50 min 160 max	Suction temperature 2
AI	5	Liquid Temperature 2	°C	-50 min 160 max	Liquid temperature 2
AI	6	Discharge Temperature 1	°C	-50 min 160 max	Discharge temperature 1
AI	7	Discharge Temperature 2	°C	-50 min 160 max	Discharge temperature 2
AI	8	Suction Temperature 3	°C	-50 min 160 max	Suction temperature 3
AI	9	Liquid Temperature 3	°C	-50 min 160 max	Liquid temperature 3
AI	10	Discharge Temperature 3	°C	-50 min 160 max	Discharge temperature 3
AI	11	Return Temperature	°C	-50 min 160 max	Return temperature
AI	12	Supply air Temperature	°C	-50 min 160 max	Supply air temperature
AI	13	Water HWC Temperature	°C	-50 min 160 max	Water temperature
AI	14	Outdoor Enthalpy	--	0 min 300 max	Outdoor enthalpy
AI	15	Return Enthalpy	--	0 min 300 max	Return enthalpy
AI	16	Indoor Temperature	°C	-30 min 70 max	Indoor temperature
AI	17	Economizer Door (out)	%	0-100	Economiser door (out)
AI	18	Water Coil (out)	%	0-100	Water coil valve (out)
AI	19	Compressor 1 Hours	Hours	0-50000	Compressor 1 hours
AI	20	Compressor 2 Hours	Hours	0-50000	Compressor 2 hours
AI	21	Compressor 3 Hours	Hours	0-50000	Compressor 3 hours
AI	22	Tandem Comp 1 Hours	Hours	0-50000	Tandem hours
AI	23	Tandem Comp 2 Hours	Hours	0-50000	Tandem hours 2
AI	24	Water Coil Hours	Hours	0-50000	Water coil hours
AI	25	Auxiliary Stage 1 Hours	Hours	0-50000	Auxiliary 1 Hours
AI	26	Auxiliary Stage 2 Hours	Hours	0-50000	Auxiliary 2 Hours
AI	27	Auxiliary Stage 3 Hours	Hours	0-50000	Auxiliary 3 Hours
AI	28	Auxiliary Stage 4 Hours	Hours	0-50000	Auxiliary 4 Hours
AI	29	Indoor Fan Hours	Hours	0-50000	Indoor Fan Hours
AI	30	Outdoor Fan 1 Hours	Hours	0-50000	Outdoor fan 1 hours
AI	31	Error Code	Integer	Alarm code (11 to 46)	Alarm code
AI	32	Outdoor Fan 2 Hours	Hours	0-50000	Outdoor fan 2 hours
AI	33	Outdoor Fan 3 Hours	Hours	0-50000	Outdoor fan 3 hours
AI	34	Exhaust fan Hours	Hours	0-50000	Exhaust fan Hours
AI	35	Water Pump Hours	Hours	0-50000	Water pump hours
AI	36	General Power Hours	Hours	0-100000	Total power supply hours
AO	1	Minimum air renewal (input)	%	0-100	Minimum air renewal (input)
AO	2	Setpoint occupied cool	°C	10 min 32 max	Setpoint occupied cool
AO	3	Setpoint occupied heat	°C	10 min 32 max	Setpoint temp. Heat
AO	8	Mode	Integer	0-off 1-cool 2-heat 3-auto 5-emerg heat	Operation mode
BI	1	Fan Request	Inactive / Active	Request	Indoor fan request
BI	2	Stage 1 Request	Inactive / Active	Request	Stage 1 request
BI	3	Stage 2 Request	Inactive / Active	Request	Stage 2 request
BI	4	Heat / Cool Request	Cool / Heat	Request	Heat / Cool Request
BI	5	Emergency Heat Request	Inactive / Active	Request	Emergency heat request
BI	6	High Pressure Sensor 1 (input)	Close / Open	Input	High-pressure sensor 1 fault input
BI	7	Low Pressure Sensor 1 (input)	Close / Open	Input	Low-pressure sensor 1 fault input
BI	8	Indoor Fan Protection (input)	Close / Open	Input	Indoor fan protection fault input

N2OpenType	N2OpenId	Description	Value / Units	Range	Description
BI	9	High Pressure Sensor 2 (input)	Close / Open	Input	High-pressure sensor 2 fault input
BI	10	Low Pressure Sensor 2 (input)	Close / Open	Input	Low-pressure sensor 2 fault input
BI	11	High Pressure Sensor 3 (input)	Close / Open	Input	High-pressure sensor 3 fault input
BI	12	Low Pressure Sensor 3 (input)	Close / Open	Input	Low-pressure sensor 3 fault input
BI	13	Aux Stage 1 Protection (input)	Inactive / Active	Input	Resistance stage 1 fault input
BI	14	Aux Stage 2 Protection (input)	Inactive / Active	Input	Resistance stage 2 fault input
BI	15	Aux Stage 3 Protection (input)	Inactive / Active	Input	Resistance stage 3 fault input
BI	16	Aux Stage 4 Protection (input)	Inactive / Active	Input	Resistance stage 4 fault input
BI	17	Occupancy Sensor (input)	Inactive / Active	Input	Presence sensor input
BI	18	Error Gas Control 1 (input)	Inactive / Active	Input	Gas input 1 fault
BI	19	Error Gas Control 2 (input)	Inactive / Active	Input	Gas input 2 fault
BI	20	Error Gas Control 1b (input)	Inactive / Active	Input	Gas input 1b fault
BI	21	Air Quality Sensor (input)	Inactive / Active	Input	Air quality request input
BI	22	Smoke probe (input)	Inactive / Active	Input	Smoke / high-temperature probe input
BI	23	Dirty Filters (input)	Inactive / Active	Input	Dirty filters input
BI	24	Water Coil Priority (config)	Inactive / Active	Config-board	Priority for water coil in heat pumps
BI	25	30 min Defrost (config)	Inactive / Active	Config-board	SW1 ON 0' / OFF 30' max. time defrost
BI	26	60 min Defrost (config)	Inactive / Active	Config-board	SW2 ON 60' / OFF 90' max. time defrost
BI	27	Crossed Outdoor Coils (config)	Inactive / Active	Config-board	SW3 ON Crossed outdoor coils / OFF Independent coils
BI	28	Tandem Enabled (config)	Inactive / Active	Config-board	SW4 ON tandem enabled 2 compressors / OFF 1 compressor
BI	29	Cool only (config)	Inactive / Active	Config-board	SW5 ON cool only / OFF Heat Pump
BI	30	4-way Valve Heat enabled (config)	Inactive / Active	Config-board	SW6 ON 4-way valve heat enabled / OFF cool enabled
BI	31	thermostat with B signal (config)	Inactive / Active	Config-board	SW7 ON thermostat with B signal heat enabled / OFF Signal O cool enabled
BI	32	Indoor Fan Active on Defrost (config)	Inactive / Active	Config-board	SW8 ON indoor fan active on defrost / OFF defrost deactivated
BI	33	Compressor 1 (out)	OFF/ON	Out	Compressor 1 ON output
BI	34	Indoor Fan (out)	OFF/ON	Out	Indoor fan ON output
BI	35	Valve 1 (out)	OFF/ON	Out	Valve 1 ON output
BI	36	Outdoor Fan 1 (out)	OFF/ON	Out	Outdoor fan 1 ON output
BI	37	Tandem Compressor 1 (out)	OFF/ON	Out	Tandem 1 ON output
BI	38	Compressor 2 (out)	OFF/ON	Out	Compressor 2 ON output
BI	39	Valve 2 (out)	OFF/ON	Out	Valve 2 ON output
BI	40	Outdoor Fan 2 (out)	OFF/ON	Out	Outdoor fan 2 ON output
BI	41	Tandem Compressor 2 (out)	OFF/ON	Out	Tandem 2 ON output
BI	42	Compressor 3 (out)	OFF/ON	Out	Compressor 3 ON output
BI	43	Valve 3 (out)	OFF/ON	Out	Valve 3 ON output
BI	44	Gas Stage 1 (out)	OFF/ON	Out	Gas 1 ON output

8 Communications
8.1 YKN2Open board

N2OpenType	N2OpenId	Description	Value / Units	Range	Description
BI	45	Gas Stage 2 (out)	OFF/ON	Out	Gas 2 ON output
BI	46	Gas Stage 3 (out)	OFF/ON	Out	Gas 3 ON output
BI	47	Gas Stage 4 (out)	OFF/ON	Out	Gas 4 ON output
BI	48	Aux Stage 1 (out)	OFF/ON	Out	Resistor accessory 1 ON output
BI	49	Aux Stage 2 (out)	OFF/ON	Out	Resistor accessory 2 ON output
BI	50	Aux Stage 3 (out)	OFF/ON	Out	Resistor accessory 3 ON output
BI	51	Aux Stage 4 (out)	OFF/ON	Out	Resistor accessory 4 ON output
BI	52	Exhaust fan (out)	OFF/ON	Out	Exhaust fan ON output
BI	53	Outdoor Temperature favourable	Inactive / Active	Favourable temperature < 20 °C	Outdoor air temperature indication favourable
BI	54	Water pump	OFF/ON	Out	Water pump ON output
BI	55	Water temperature favourable	Inactive / Active	Favourable temperature > 30 °C	Water temperature indication favourable
BI	56	Dirty Filters (out)	Clean / Dirty	Out	Dirty filters ON output
BI	57	Auxiliary Stage 1 Present	Absent / Present	Accessory	Resistor accessory 1 present
BI	58	Auxiliary Stage 2 Present	Absent / Present	Accessory	Resistor accessory 2 present
BI	59	Auxiliary Stage 3 Present	Absent / Present	Accessory	Resistor accessory 3 present
BI	60	Auxiliary Stage 4 Present	Absent / Present	Accessory	Resistor accessory 4 present
BI	61	Compressor 2 Present	Absent / Present	Accessory	Accessory compressor 2 present
BI	62	Compressor 3 Present	Absent / Present	Accessory	Accessory compressor 3 present
BI	63	Economiser Present	Absent / Present	Accessory	Economiser accessory present
BI	64	Water Heater Present	Absent / Present	Accessory	Water coil accessory present
BI	65	Smoke Detector Present	Absent / Present	Accessory	Smoke detector accessory present
BI	66	Dirty Filters Detector Present	Absent / Present	Accessory	Dirty filter accessory present
BI	67	YkTool Enabled	Absent / Present	Accessory	YkTool accessory present
BI	68	Gas Control 1 Present	Absent / Present	Accessory	Gas accessory 1 present
BI	69	Gas Control 2 Present	Absent / Present	Accessory	Gas accessory 2 present
BI	70	DCP-1 Thermostat Present	Absent / Present	Accessory	Thermostat DCP-1 Present
BI	71	Indoor Fan Protection	OK / Fault	Alarm	Indoor fan thermal switch (14) fault
BI	72	Discharge Temperature 1	OK / Fault	Alarm-Temperature >130 °C	Discharge temperature 1 (11) fault
BI	73	High Pressure 1	OK / Fault	Alarm	High-pressure switch 1 (12) fault
BI	74	Low Pressure 1	OK / Fault	Alarm	Low-pressure switch 1 (13) fault
BI	75	Cool Start 1 Repeated	OK / Fault	Alarm-Suction temperature < -4 °C or -25 °C	Repeat cold starts 1 (15) fault
BI	76	Liquid Temperature 1 Low	OK / Fault	Alarm-Null	Liquid temperature 1 low fault (CANCELLED)
BI	77	Discharge Temperature 2	OK / Fault	Alarm-Temperature >130 °C	Discharge temperature 2 (21) fault
BI	78	High Pressure 2	OK / Fault	Alarm	High-pressure switch 2 (22) fault
BI	79	Low Pressure 2	OK / Fault	Alarm	Low-pressure switch 2 (23) fault
BI	80	Cool Start 2 Repeated	OK / Fault	Alarm-Suction temperature < -4 °C or -25 °C	Repeat cold starts 2 (25) fault
BI	81	Liquid Temperature 2 Low	OK / Fault	Alarm-Null	Liquid temperature 2 low fault (CANCELLED)
BI	82	Smoke Detect	OK / Fault	Alarm-High temperature or Smoke	Smoke / high-temperature detector fault (46)
BI	83	Suction Probe 1 Error	OK / Fault	Incident-Probe error	Suction probe 1 incident
BI	84	Suction Probe 2 Error	OK / Fault	Incident-Probe error	Suction probe 2 incident
BI	85	Liquid Probe 1 Error	OK / Fault	Incident-Probe error	Liquid probe 1 incident

N2OpenType	N2OpenId	Description	Value / Units	Range	Description
Bl	86	Liquid Probe 2 Error	OK / Fault	Incident-Probe error	Liquid probe 2 incident
Bl	87	Discharge Probe 1 Error	OK / Fault	Incident-Probe error	Discharge probe 1 incident
Bl	88	Discharge Probe 2 Error	OK / Fault	Incident-Probe error	Discharge probe 2 incident
Bl	89	Outdoor probe Error	OK / Fault	Incident-Probe error	Outdoor probe incident
Bl	90	Outdoor Temperature Low	Normal / Low Limit	Incident-Temperature < -10 °C	Low outdoor temperature incident
Bl	91	Aux Stage 1 Protected	Inactive / Active	Incident-Input	Res1 thermal switch incident
Bl	92	Aux Stage 2 Protected	Inactive / Active	Incident-Input	Res2 thermal switch incident
Bl	93	Aux Stage 3 Protected	Inactive / Active	Incident-Input	Res3 thermal switch incident
Bl	94	Aux Stage 4 Protected	Inactive / Active	Incident-Input	Res4 thermal switch incident
Bl	95	Defrost Compressor 1 Repeated	Inactive / Active	Incident-3 Times Defrost of 10 Min.	Repeated defrost incident 1
Bl	96	Defrost Compressor 2 Repeated	Inactive / Active	Incident-3 Times Defrost of 10 Min.	Repeated defrost incident 2
Bl	97	Discharge Temperature 1 Low	Normal / Low Limit	Incident-Discharge < 35 °C H or 50 °C C	Low discharge temperature 1 incident
Bl	98	Discharge Temperature 2 Low	Normal / Low Limit	Incident-Discharge < 35 °C H or 50 °C C	Low discharge temperature 2 incident
Bl	99	Enthalpy probe Error	OK / Fault	Incident-Probe error	Enthalpy probe error incident
Bl	100	Supply air Temperature High	Inactive / Active	Incident-Temperature > 55 °C	High supply temperature incident
Bl	101	Lost accessories	Inactive / Active	Incident-Accessory	Lost accessories incident
Bl	102	Supply air Temperature Low	Inactive / Active	Incident-Temperature < 25 °C with gas heat	Low supply temperature incident
Bl	103	Economizer Door Closed for Suction Temperature	Inactive / Active	Incident-Suction temperature < -4 °C	Economiser door closed for low suction
Bl	104	Discharge Temperature 3 Error	Inactive / Active	Alarm-Temperature >130 °C	Discharge temperature 3 (31) fault
Bl	105	High Pressure 3	OK / Fault	Alarm	High-pressure switch 3 (32) fault
Bl	106	Low Pressure 3	OK / Fault	Alarm	Low-pressure switch 3 (33) fault
Bl	107	Cool Start 3 Repeated	OK / Fault	Alarm-Suction temperature < -4 °C or -25 °C	Repeat cold starts 3 (35) fault
Bl	108	Liquid Temperature 3 Error	OK / Fault	Alarm-Null	Liquid temperature 3 low fault (CANCELLED)
Bl	109	Economiser / Heater Error	OK / Fault	Alarm-Probe accessory	Economiser accessory / water coil fault (45)
Bl	110	No Presence	Inactive / Active	Incident	No presence incident
Bl	111	Suction Probe 3 Error	OK / Fault	Incident-Probe error	Suction probe 3 incident
Bl	112	Liquid Probe 3 Error	OK / Fault	Incident-Probe error	Liquid probe 3 incident
Bl	113	Discharge Probe 3 Error	OK / Fault	Incident-Probe error	Discharge probe 3 incident
Bl	114	Defrost Compressor 3 Repeated	Inactive / Active	Incident-3 Times Defrost of 10 Min.	Repeated defrost incident 3
Bl	115	Discharge Temperature 3 Low	Normal / Low Limit	Incident-Discharge < 35 °C H or 50 °C C	Low discharge temperature 3 incident
Bl	116	Air quality	Normal / Low Limit	Incident	Air quality demand incident
Bl	117	Dirty Filters	Clean / Dirty	Incident	Dirty filter incident
Bl	118	Heater Defrost	OK / Fault	Incident-Temperature water < 3 °C	Defrost incident in AC coil
Bl	119	Aux Stage 1 Error Repeated	OK / Fault	Alarm-Electric heater or gas	Resistor 1 or gas 1 fault (41)
Bl	120	Aux Stage 2 Error Repeated	OK / Fault	Alarm-Electric heater or gas	Resistor 2 or gas 2 fault (42)
Bl	121	Aux Stage 3 Error Repeated	OK / Fault	Alarm-Electric heater	Resistor 3 fault (43)
Bl	122	Aux Stage 4 Error Repeated	OK / Fault	Alarm-Electric heater	Resistor 4 fault (44)
Bl	123	Supply Air Probe Error	OK / Fault	Incident-Probe error	Supply probe incident
Bl	124	Return Probe Error	OK / Fault	Incident-Probe error	Return probe incident
Bl	125	Water Probe Error	OK / Fault	Incident-Probe error	Water probe incident
Bl	126	Water temperature low	Normal / Low Limit	Incident-Temperature water < 30 °C	Low water temperature incident
BO	1	Fan Mode	Auto / Manual	Set-Fan auto or manual continuous	FAN Auto / Manual Continuous
BO	2	ON/OFF	OFF/ON	Set- Off/On Reset	ON - OFF, Reset

9

YKtool

9.1 YKtool N2 INT

The YKtool device is a portable diagnostics and testing system for air conditioning units based on the YKN2Open system, which consists of the display of the main system variables and the possibility of activating different stages in the various operating modes.

It is also used to configure the network address of a YKN2Open board.

10

Specification history

10.1 History

Version	Description
1.0	Release version