

Good practices and incident resolution for AKO-16524A

Use this manual to:

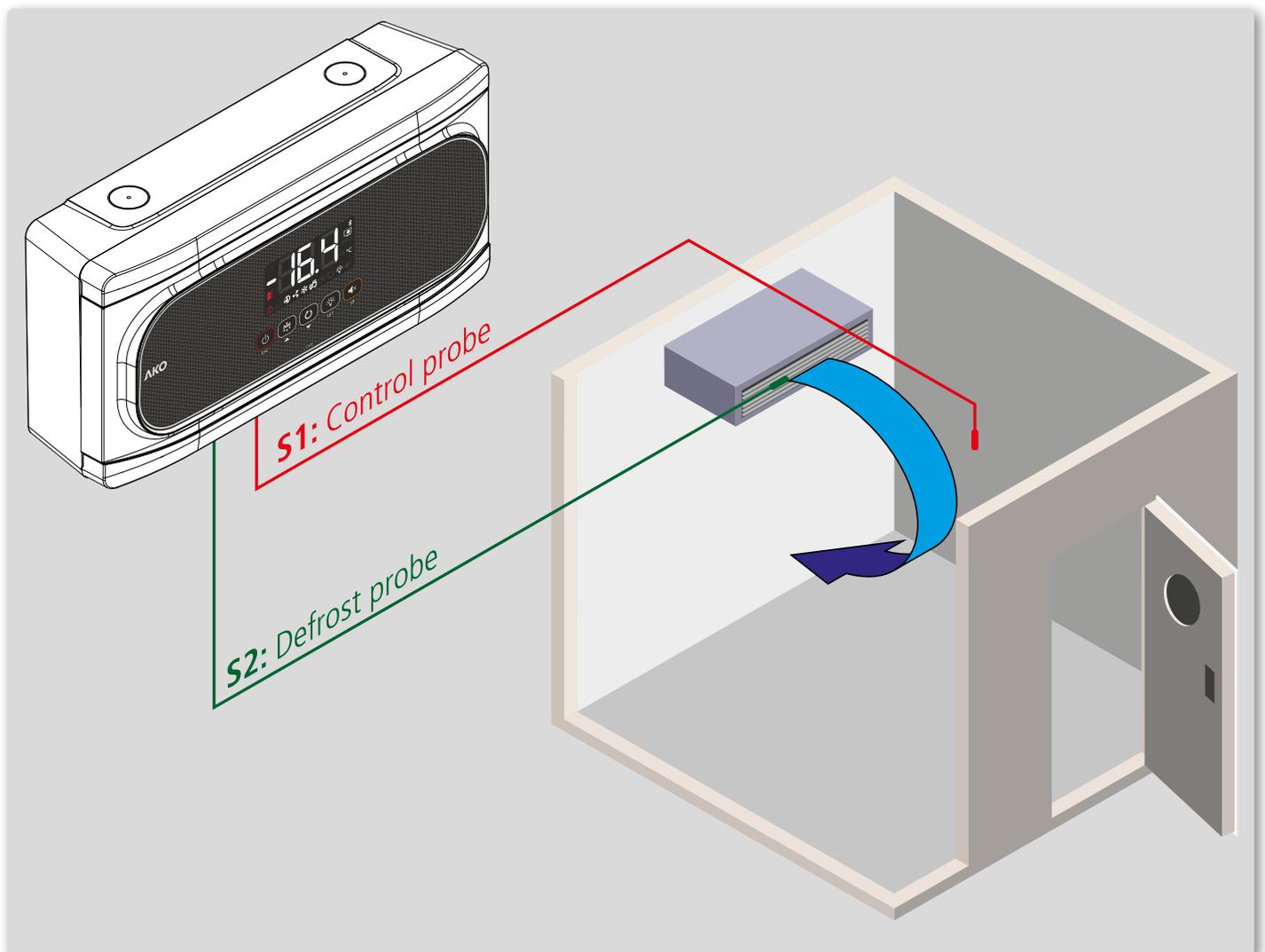
- Ensure correct start-up of each type of installation.
- Reduce installation and start-up times.
- Prevent possible incidents.

Incidents during installation

Incident 1: S1 and S2 probes are swapped over

Description: Probe S1, the control probe, must be installed inside the space for which it controls the temperature. Probe S2, the defrost probe, must be installed in the evaporator by following the instructions on page 3.

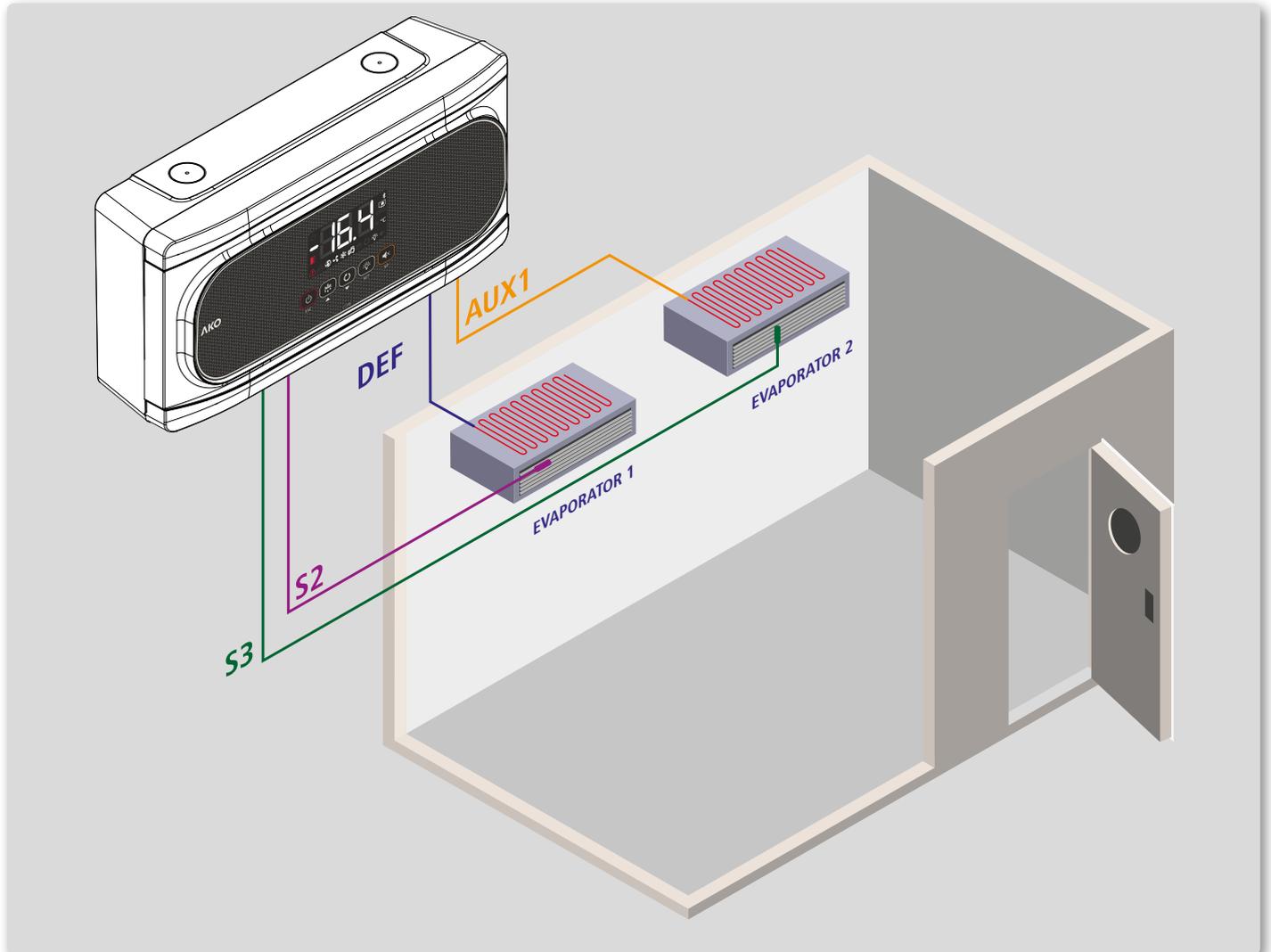
Solution: Make sure that they aren't used the other way round.



Incident 2: Crossed defrost probes in installations with 2 evaporators

Description: Probe S2 is installed in the evaporator with defrost controlled by AUX1, and probe S3 is installed in the evaporator controlled by DEF. **INCORRECT**

Solution: Probe S2 must be installed in the evaporator with defrost controlled by DEF, and probe S3 in the evaporator with defrost controlled by AUX1. **CORRECT**

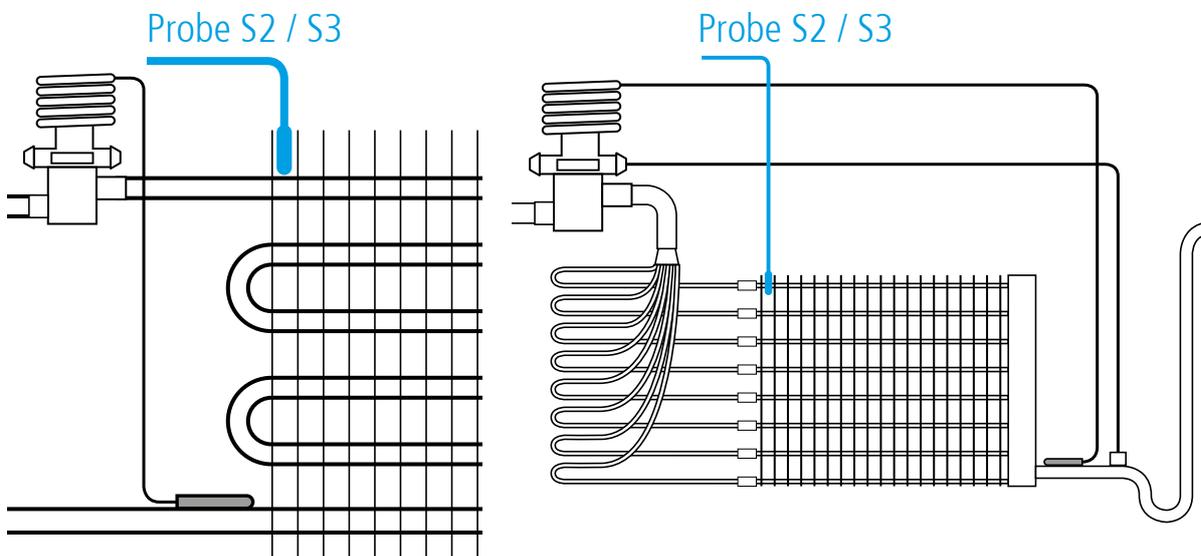


Incident 3: Probe S2 or S3 installed in the incorrect place in the evaporator

Description: The defrost probe (S2/S3) is installed in a hot part of the evaporator (without Delta T, S1-S2) or far from the last part that defrosts (the defrosting finishes before the ice completely disappears).

Solution: The defrost probe must be placed in the last area of the evaporator to defrost, close to the expansion valve.

Recommended areas to install the defrost valve (S2/S3).



Incident 4: Defrost by air with too low a set point

Description: Defrost by air doesn't activate if the set point is below 2 °C. **In cold rooms with defrost by air, the minimum set point temperature is 2 °C.** If the set point temperature is below 4 °C, the use of electric defrost is recommended, while it is compulsory if it is below 2 °C in order for the AKOCORE ADVANCE controller to work correctly.

Solution: Increase the set point temperature to above 2 °C. If it isn't possible, install an electric defrost system.



The defrost will not finish if the set point temperature is below 1 °C and defrost is by air. In these cases, SELFDRIVE mode doesn't activate and the controller will operate in standard mode.

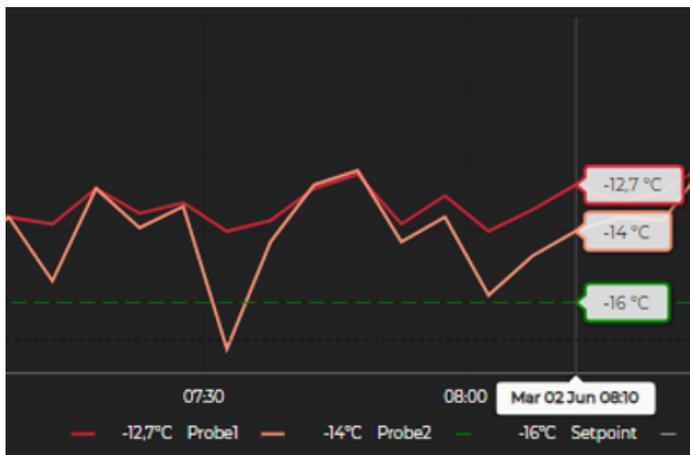
Incident 5: There isn't enough cooling power

Description: If the cold room is unable to easily reach the set point, before installing the AKOCORE ADVANCE controller, first repair the installation (insufficient refrigerant, faulty expansion valve, faulty solenoid valve, broken evaporator, etc.).

The cold room must function correctly before installing the AKOCORE ADVANCE controller so that it can calibrate correctly. For this, the cold room must easily be able to reach the set point, otherwise the SELFDRIVE algorithm will not calibrate correctly and energy saving will be less than optimal.

Solution: Ensure that the cold room works correctly before installing the controller.

 System that doesn't reach the SP (-16 °C)



 System that correctly reaches the SP (-18 °C)

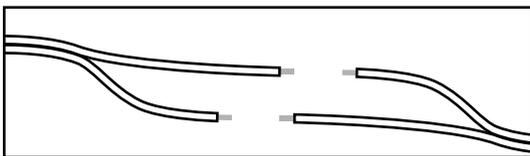


Incident 6: Probe extension

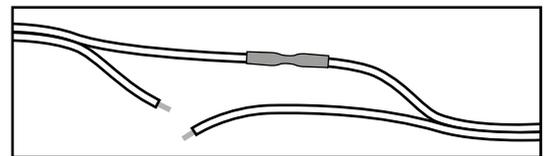
Description: When extending a probe, the splice isn't correctly insulated and humidity enters it, falsifying the reading of the probe and causing a short-circuit.

Solution: Follow the steps given below to optimally isolate it against humidity. It is recommended to store the splice in an IP65 box.

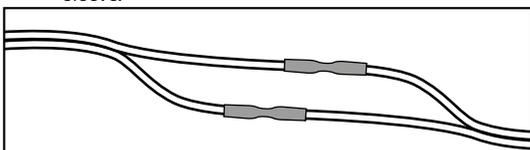
1 Cut and strip the wires, leaving one shorter than the other.



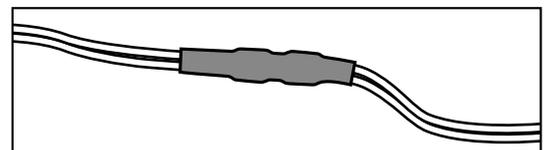
2 Repeat the process on the other pair of wires, leaving the splices staggered.



3 Weld the short end of the probe to the long end of the cable and protect the join with a thermo-retractable sleeve.



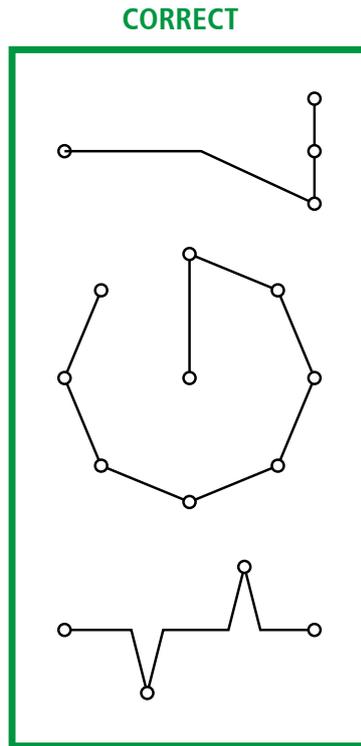
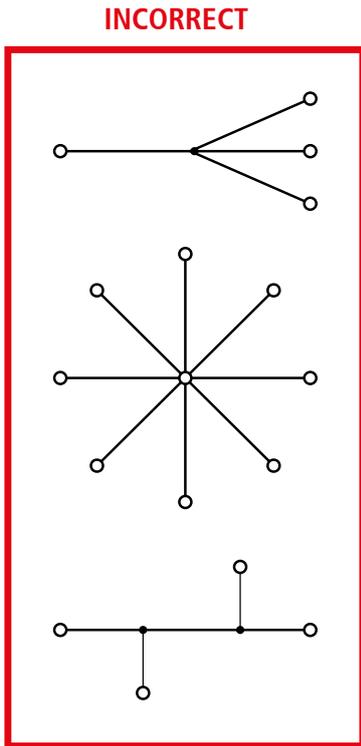
4 Cover both splices with another thermo-retractable sleeve.



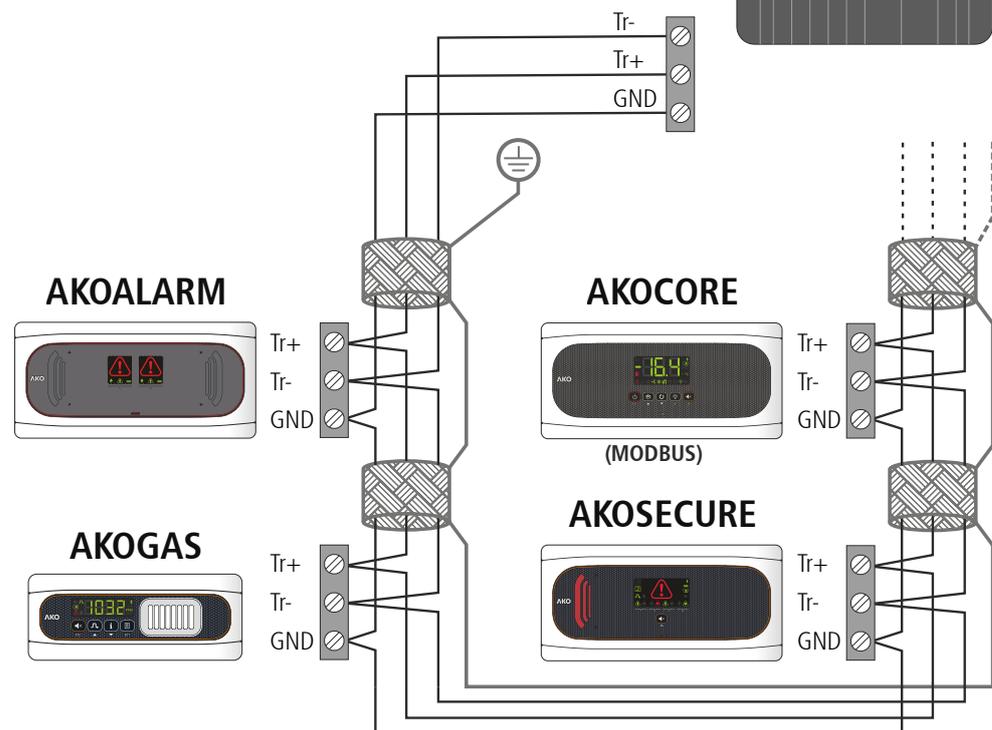
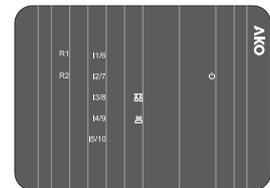
Incident 7: MODBUS connectivity

Description: When joining different devices together using a MODBUS, by-passes or star connections may cause noise or dimming in the communications, leading to communication failures.

Solution: Ensure that the installation has no by-passes or star connections. Follow the line exactly as shown in the following figure.



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Calibration

Perform a new calibration if:

- The value of parameters d4 or d30 changes.
- The position of either of the probes changes.
- New components are installed (evaporator, expansion valve, etc.).
- Any action in general is taken that affects the performance of the cold room.

In order to perform a new calibration (only possible in situ):

1. Access parameter b30 in the bcn menu.
2. A security code is requested, enter 63 and press SET.
3. Using the ▲ and ▼ keys, select option 1 and press SET.
4. The screen shows the message **CAL**, which indicates that the calibration has begun.

Incidents during configuration

Incident 8: Parameter d4 too high (final defrost temperature)

Description: If parameter d4 is too high, the defrost ends due to reaching the time limit.

Solution: Configure d4 with a suitable value, depending on the defrost type:

- Electric defrost: d4 = 8 to 12 °C.
- Defrost by air: d4 = SP + C1 + 1 or 2 °C (e.g. SP = 3 °C, C1 = 2 °C, d4 = 6 or 7 °C).
- Hot gas defrost: 20 to 30 °C (depending on the temperature of the hot gas).
- In any case, set the d1 parameter to 30 min (maximum duration of defrost).

Incident 9: Defrost strategy too high (d30)

Description: If parameter d30 is too high, excess ice may accumulate in the evaporator, reducing the efficiency of the cold room.

Solution: Configure d30 with a suitable value, depending on the cold room type:

Recommended d30 values

Type of defrost	Positive temperature		Negative temperature	
	Small cold room	Large cold room	Small cold room	Large cold room
Electric	4 - 5	5 - 6	6 - 7	7 - 8
Air	5 - 6	6 - 7	7 - 8	7 - 8
Hot Gas	3 - 4	4 - 5	4 - 5	5 - 6

Small cold room: < 20 m³

Large cold room: > 20 m³

SELFDRIVE mode alert messages

Incident 10: SELFDRIVE mode doesn't activate due to the following errors (only shown by pressing the ▼ key)



Defrost end error in 1/2 evaporator during the calibration, defrost has not ended due to temperature.

Description: During calibration (necessary for activating SELFDRIVE mode), the defrost must finish by reaching the correct temperature (parameter d4). If the defrost finishes due to reaching the time limit (parameter d1), the controller shows this error, the calibration isn't completed and SELFDRIVE mode cannot be activated.

Solution: Reduce the value of d4, ensuring that it is enough to remove all the ice from the evaporator (check after defrost).



Error during calibration in 1/2 evaporator. There is not enough difference in temperature between the cold room probe and the evaporator probe.

Description: During calibration, if the difference between probes S1 and S2 is no greater than 3 °C, the controller shows this error, the calibration isn't completed and SELFDRIVE mode cannot be activated.

Solution: Place probe 2 in the coldest part of the evaporator (the last part to defrost).



It has not been possible to carry out the calibration due to a lack of stability in the system (Excessive door opening, excessive oscillations in the lower pressure, etc.).

Description: If there is a lack of stability in the cold room during calibration (doors opened for long periods, the set point isn't reached, external influences on probe S2, fluctuation in the lower pressure, external heat, etc.), the controller shows this error, the calibration isn't completed and SELFDRIVE mode cannot be activated.

Solution: Check that the cold room functions correctly and ensure that the doors aren't opened during calibration.

Incident 11: SELFDRIIVE mode activated, unstable operation (only shown by pressing the ▼ key)



Error during normal operation (SELFDRIIVE Mode active) in 1/2 evaporator. There is not enough difference in temperature between the cold room probe and the evaporator probe.

Description: With SELFDRIIVE mode activated, if the difference between probes S1 and S2 is no greater than 3 °C, the controller shows this error. SELFDRIIVE mode stays activated.

Solution: Place probe 2 in the coldest part of the evaporator (the last part to defrost).



A lack of stability has been detected in the system (Excessive door opening, excessive oscillations in the low pressure, etc.) during normal operation (SELFDRIIVE Mode active).

Description: With SELFDRIIVE mode activated, if there is a lack of stability in the cold room (doors opened for long periods, the set point isn't reached, external influences on probe S2, fluctuation in the lower pressure, external heat, etc.), the controller shows this error. SELFDRIIVE mode stays activated.

Solution: Check that the cold room functions correctly.



The persistent lack of stability has led to the deactivation of the SELFDRIIVE mode.

Description: If error E14 continues to be displayed for a long period of time, the controller shows this error and SELFDRIIVE mode is deactivated.

Solution: Check that the cold room functions correctly.

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We reserve the right to supply materials slightly different to those described in our Data Sheets. Updated information in our website.