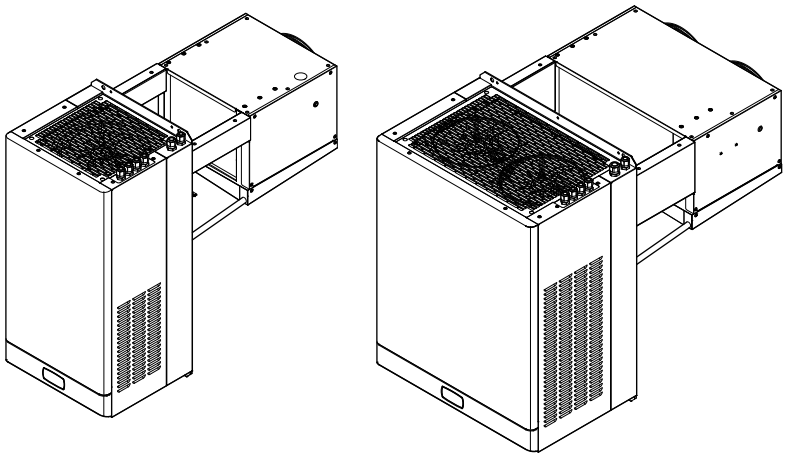
Operation manual

Daikin LMS



LMSEY1A09AVM01
LMSEY1A13AVM01

LMSEY2A19AYE01
LMSEY2A25AYE01

Operation manual
Daikin LMS

English

Table of contents

1 About this document

Thank you for purchasing this product. Please:

- Keep the documentation for future reference.

Target audience

End users

Documentation set

This document is part of a documentation set. The complete set consists of:

- **Installation manual:**
  - Installation instructions
  - Format: Paper (in the box of the unit)
- **Operation manual:**
  - Quick guide for basic usage
  - Format: Paper (in the box of the unit)

Latest revisions of the supplied documentation may be available on the regional Daikin website or via your installer.

The original instructions are written in English. All other languages are translations of the original instructions.

2 General safety precautions

2.1 About the documentation

- The original instructions are written in English. All other languages are translations of the original instructions.
- The precautions described in this document cover very important topics, follow them carefully.
- The installation of the system, and all activities described in the installation manual must be performed by an authorised installer.

2.1.1 Meaning of warnings and symbols

The action-related warnings are there to warn you against residual risks and precede a dangerous action step.

DANGER

Indicates a situation that results in death or serious injury.

WARNING

Indicates a situation that could result in death or serious injury.

CAUTION

Indicates a situation that could result in minor or moderate injury.

NOTICE

Indicates a situation that could result in equipment or property damage.

INFORMATION

Indicates useful tips or additional information.

2.2 For the user

General

If you are NOT sure how to install or operate the unit, contact your dealer.

WARNING

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have

been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.

Children SHALL NOT play with the appliance.

Cleaning and user maintenance SHALL NOT be made by children without supervision.

WARNING

Before operating the unit, be sure the installation has been carried out correctly by an installer.

WARNING

This unit uses R290 as refrigerant. This is a flammable gas. Inhaling vapors can cause asphyxiation and affect the central nervous system. Direct contact with skin or eyes can lead to serious injuries and burns. Before handling and installing this unit, read the service manual "Systems using R290 refrigerant" ("Systems using R290 refrigerant") available on the regional Daikin website.

WARNING: FLAMMABLE MATERIAL

Fire hazard from flammable refrigerant. Take measures to prevent a dangerous, explosive atmosphere and keep ignition sources away.

WARNING

This unit contains electrical and hot parts.

WARNING

Stop operation and shut OFF the power if anything unusual occurs (burning smells etc.).

Leaving the unit running under such circumstances may cause breakage, electrical shock or fire. Contact your dealer.

WARNING

To prevent electrical shocks or fire:

- Do NOT rinse the unit.
- Do NOT operate the unit with wet hands.
- Do NOT place any objects containing water on the unit.

WARNING

Do NOT modify, disassemble, remove, reinstall or repair the unit yourself as incorrect dismantling or installation may cause an electrical shock or fire. Contact your dealer.

WARNING

Do NOT install operating ignition sources (example: open flames, an operating gas appliance or an operating electric heater) in the duct work.

WARNING

Make sure that no people are left in the cold room before you close the doors:

- Risk of suffocation. 12 m^3 must be left empty inside the cold room.
- Risk of frostbite.

- Risk of freezing to death.

CAUTION

Do NOT insert fingers, rods or other objects into the air inlet or outlet. Do NOT remove the fan guard. When the fan is rotating at high speed, it will cause injury.

CAUTION


Do NOT touch the heat exchanger fins. These fins are sharp and could result in cutting injuries. Wear safety gloves if you have to work on or around the heat exchanger fins.

CAUTION

- NEVER touch the internal parts of the controller.
- Do NOT open up the controller. Some parts inside are dangerous to touch and appliance problems may happen.

CAUTION

- Do NOT place any objects or equipment on top of the unit.
- Do NOT sit, climb or stand on the unit.

CAUTION

In case there is ice formation on the unit, do not use hot water or any mechanical tools or objects to remove the ice. This could cause damage and a potential leak.

Refrigerant

The unit is factory charged with refrigerant, no additional charging of refrigerant is required.

DANGER



This unit uses R290 as refrigerant. Do NOT discharge refrigerant in the atmosphere, it must be recovered by specialised technicians using suitable equipment.

DANGER



Take sufficient precautions in case of refrigerant leakage. If refrigerant gas leaks, immediately switch off the power supply (for each unit) and ventilate the area. Possible risks:

- Carbon dioxide poisoning.
- Asphyxiation.
- Fire.

WARNING


- NEVER directly touch any accidental leaking refrigerant. This could result in severe wounds caused by frostbite.
- Do NOT touch the refrigerant pipes during and immediately after operation as the refrigerant pipes may be hot or cold, depending on the condition of the refrigerant flowing through the refrigerant piping, compressor, and other refrigerant cycle parts. Your hands may suffer burns or frostbite if you touch the refrigerant pipes. To avoid injury, give the pipes time to return to normal temperature or, if you must touch them, be sure to wear proper gloves.

WARNING

- Do NOT pierce or burn refrigerant cycle parts.

- Do NOT use cleaning materials or means to accelerate the defrosting process other than those recommended by the manufacturer.
- Be aware that the refrigerant inside the system is odourless.

INFORMATION

R290

R290 is denser than air, so in open air it sinks to floor level.

Electrical

DANGER: RISK OF ELECTROCUTION

- Turn OFF all power supply before removing the switch box cover, connecting electrical wiring or touching electrical parts.
- Disconnect the power supply for more than 10 minutes, and measure the voltage at the terminals of main circuit capacitors or electrical components before servicing. The voltage MUST be less than 50 V DC before you can touch electrical components. For the location of the terminals, see the wiring diagram.
- Do NOT touch electrical components with wet hands.
- Do NOT leave the unit unattended when the service cover is removed.

WARNING

NEVER replace a fuse with a fuse of a wrong ampere rating or other wires when a fuse blows out. Use of wire or copper wire may cause the unit to break down or cause a fire.

WARNING

- After finishing the electrical work, confirm that each electrical component and terminal inside the electrical components box is connected securely.
- Make sure all covers are closed before starting up the unit.

WARNING

Never touch a person receiving an electrical shock, or you could suffer one too. Do not touch the person until you are sure power is turned off.

Electrical shocks always need emergency medical attention, even if the victim seems to be fine afterwards.

WARNING

A magneto thermal circuit breaker, having a contact separation in all poles providing full disconnection under overvoltage category III condition, MUST be installed in the fixed wiring. In case of multiple units each unit must have its own circuit breaker.

Note that this magneto thermal circuit breaker should not be used to turn the unit on and off under normal operating conditions. For that, one should use the controller.

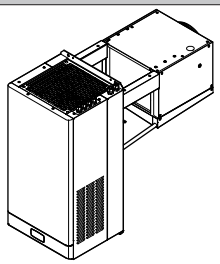
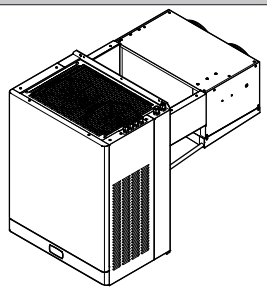
3 About the unit and options

3.1 About the system

The LMSEY unit is a refrigeration unit which produces coldness by vaporising a liquid refrigerant (Hydrocarbon R290 type) at low pressure in a heat exchanger (evaporator). The resulting vapour is brought back to liquid state by mechanical compression at a higher pressure, followed by cooling in another heat exchanger (condenser).

Defrosting takes place automatically in pre-set cycles, by injecting hot gas; manual defrosting is also possible.

3.2 About the different models

LMSEY1A09+13AVM01	LMSEY2A19+25AYE01
	

Model	Capacity[a]	Number of cooling circuits
LMSEY1A09AVM01	950 W	1
LMSEY1A13AVM01	1.28 kW	1
LMSEY2A19AYE01	1.9 kW	2
LMSEY2A25AYE01	2.58 kW	2

[a] Cooling capacity at a rated empty condition according to EN 17432 (indoor temperature of 0°C, outdoor temperature of 32°C).

In this document, LMSEY1A13AVM01 is shown in the instructions, unless there is a need to treat both models separately.

3.3 Safety systems

WARNING

Removal of protections during machine operation is absolutely forbidden. They have been developed to safeguard the operator's safety.

In this document LMSEY1A13AVM01 is shown, unless there is a need to show both models separately.

Mechanical safety devices:

- Fixed upper and side protections for evaporator and condensing unit, secured by locking screws.
- External fan protections placed on the evaporating and condensing units, secured with screws.

Electrical safety devices:

- Fan motor protection (against high power absorption) with automatic reset.
- High pressure switch to protect against excessive pressure with automatic reset.
- Alarm:

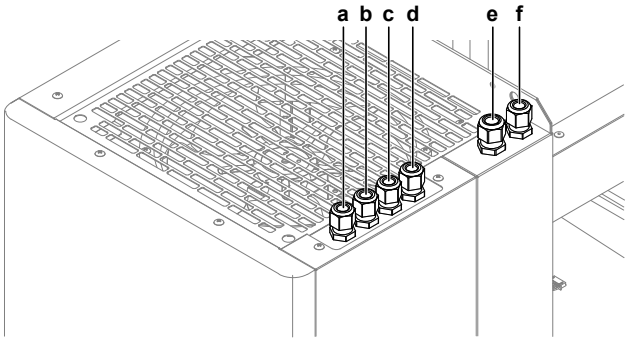
  A buzzer or alarm lamp (if option is installed) goes on when an alarm occurs (see "4 User interface" [▶ 7]).
- Fuses, located in the electrical box.

3.4 Possible options for the unit

INFORMATION

Certain options may NOT be available in your country.

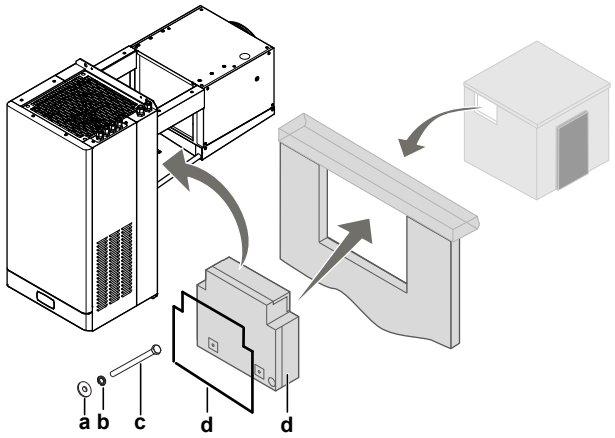
Three cable glands (a, b and c) are provided to bring the option cables into the unit.



a Option
b Option
c Option
d Door heater, pre-wired (5 m)
e Power supply, pre-wired (5 m)
f Door micro switch, pre-wired (5 m)

Insulation pad

The insulation pad is mandatory for wall installation.



a Flat washer (×2)
b Spring washer (×2)
c Metric bolt M8 (×2)
d self-adhesive gasket
e Insulation pad assembly

Door microswitch

To reduce frost on the evaporator, the door microswitch interrupts the unit operation when the cold room door is open. It also controls the cold room lamp. The door microswitch is an accessory.

Door heater

For low temperature applications it is suggested to install a door heater. It prevents the door from freezing. The choice for the most appropriate door heater is left to the installer or cold room manufacturer. Sometimes the door heater is already included in the pre-fabricated door kit.

INFORMATION

The door heater accessory is only necessary for low temperature applications.

Cold room lamp

The lamp is ON when the cold room door is open. It is controlled by the user interface. The cold room lamp is an accessory.

INFORMATION

As there are only 3 free cable glands, only 3 more options can be installed.

Alarm

An alarm feature can be installed (light or sound).

Router

The unit (or multiple units) can be connected to the internet through a router, available as an option.

Combining multiple units

To interconnect multiple units, a communication cable must be used.

4 User interface

CAUTION

- NEVER touch the internal parts of the controller.
- Do NOT open up the controller. Some parts inside are dangerous to touch and appliance problems may happen.

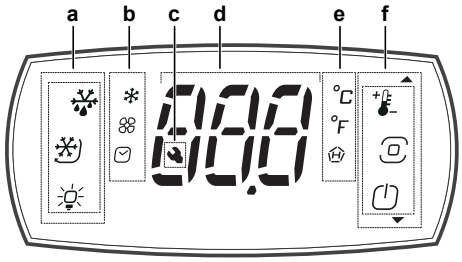
This operation manual offers a non-exhaustive overview of the main functions of the system.

4.1 Overview

The user interface display features three digits, with a sign for below-zero temperatures and a decimal point. It has a built-in alarm buzzer and nine icons/buttons.

INFORMATION

If there is an active alarm the buzzer will sound. Press any button to mute the buzzer.



a Buttons
b Icons
c Alarm icon
d Display
e Icons
f Buttons

Meaning of icons that appear on the display

Icon	Description
	Setpoint/Up arrow
	Program
	On-Off/Down arrow
	Defrost
	Continuous cycle
	Light
	HACCP
	Alarm log
	Auxiliary output
	Compressor
	Evaporator fan
	Clock
	° Celcius
	° Fahrenheit
	Service/Maintenance

Meaning of signals that appear on the display

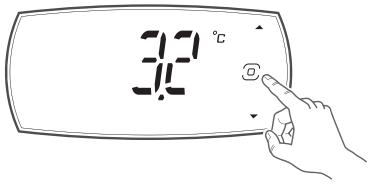
Signals are messages shown on the display to notify the user of the control procedures in progress (e.g. defrost) or to confirm keypad input.

Message	Meaning
BLE	Bluetooth™ connection in progress
dEF	Defrost running
Loc	Display locked
Off	Switch OFF
On	Switch ON

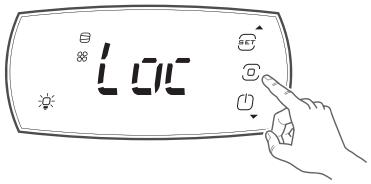
4.2 Basic functions

4.2.1 To unlock the user interface

To unlock the user interface

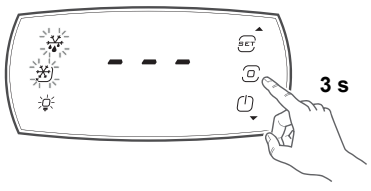


1 Press any button.



Result: The display shows the message “Loc”.

2 Press the PROGRAM button for three seconds to exit lock mode.



Result: The display shows three dashes in sequence.

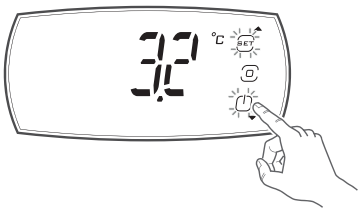
4.2.2 To start up

INFORMATION

A digital input (alarm) configured as remote ON/OFF has priority over the ON/OFF function on the user interface.

1 Unlock the user interface. See "4.2.1 To unlock the user interface" [▸ 7].

2 Turn the unit on by pushing the on-off/down arrow button on the user interface.



Result: The display switches on. It briefly shows the firmware version.

Result: The unit starts up.

Result: The compressor starts up after a pre-set delay (parameter). This function is useful to protect the compressor and the relay from power cycling in the event of repeating power outages. Defrosting (if required) also starts after this delay.

INFORMATION

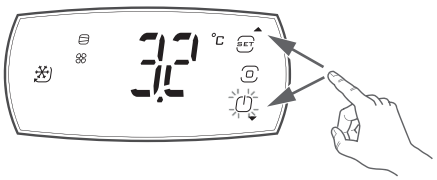
In the off status of the unit, the maximum interval between consecutive defrosts (dl; set in the parameters) is always updated, in order to maintain the cyclical nature of this interval. If a defrost interval expires while the unit is off , the event is recorded. When the unit is switched on again, a defrost request is then generated.

4.2.3 To set the temperature

1 Unlock the user interface. See "4.2.1 To unlock the user interface" [▸ 7].

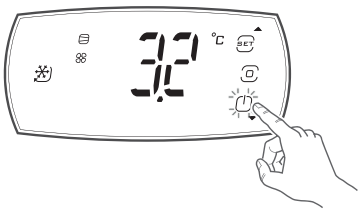
2 Press the Setpoint/Up arrow button:  .

3 Use the UP and DOWN buttons to change the temperature setpoint.



Result: The setpoint has changed.

4.2.4 To shut down



1 Unlock the user interface. See "4.2.1 To unlock the user interface" [▸ 7].

2 Turn the unit off by pushing the on-off/down arrow button on the user interface.

Result: The compressor protection times are observed.

Result: Pump down is performed (if enabled).

Result: Defrosting is forcibly terminated and will not resume when switching on.

Result: The continuous cycle is forcibly terminated and will not be resumed when switching on.

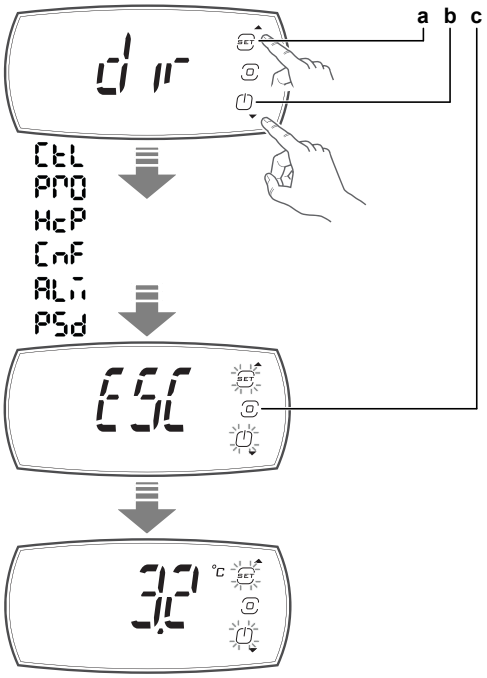
4.2.5 To navigate between screens

1 Unlock the user interface. See "4.2.1 To unlock the user interface" [▸ 7].

2 Press the PROGRAM button to enter “dir” mode.

Result: The display shows “dir”.

3 Use the UP (a) and DOWN (b) buttons to navigate towards the desired menu, then press the PROGRAM (c) button to enter the menu.



a	UP button
b	DOWN button
c	PROGRAM button
CtL	Control menu
Pro	Display probes menu
HcP	HACCP menu
CnF	Configuration menu
ALM	Alarms menu
PSd	Service menu
ESC	Exit the menu loop

Note: To return to the standard display, go to "ESC" and press the PROGRAM (c) button.

INFORMATION

If no button is pressed, the terminal will return to the standard display after 7 seconds.

4.2.6 To change the status of an actuator

INFORMATION

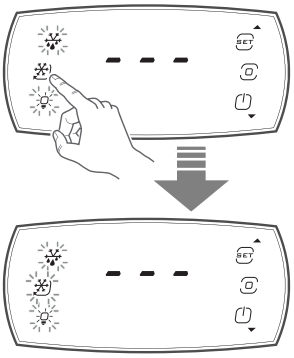
If no button is pressed, the terminal will return to the standard display after 7 seconds.

1 Unlock the user interface. See "4.2.1 To unlock the user interface" [▶ 7].

2 Press the PROGRAM button to enter “dir” mode.

Result: The display shows “dir”. The buttons that are on steady indicate that the corresponding actuator/function is active. The buttons that are flashing indicate that the actuator/function is not active.

3 Press a button (e.g. the continuous cycle button).



Result: The status changes (e.g. from active to not active).

4.2.7 To change the status of a direct function

INFORMATION

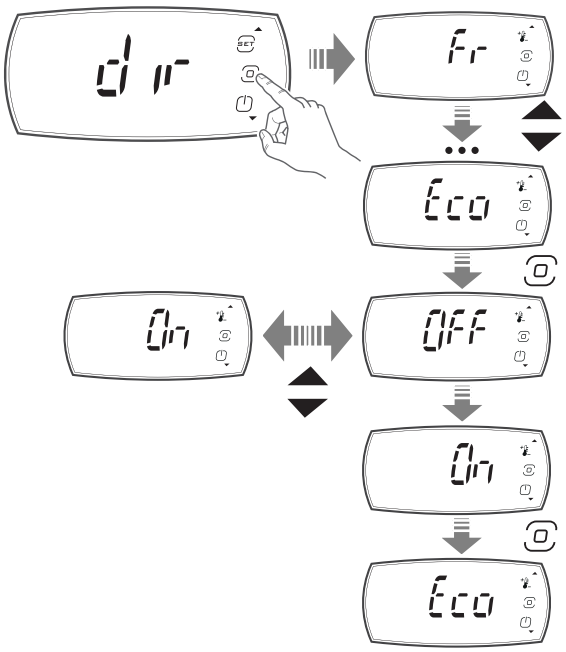
If no button is pressed, after 20 seconds the terminal will automatically return to the standard display.

1 Unlock the user interface. See "4.2.1 To unlock the user interface" [▶ 7].

2 Press the PROGRAM button to enter “dir” mode.

Result: The display shows “dir”.

Changing the direct function:



3 Press the PROGRAM button in the "dir" screen.

Result: The display shows the first direct function screen (e.g. "Fr").

4 Press the UP and DOWN buttons to navigate the menu.

5 Press the "PRG" button when arrived at the direct function screen you want to change (e.g. "Eco").

Result: You entered the direct function.

6 Press the UP and DOWN buttons to change the setting (e.g. change to "On").

7 Press the PROGRAM button to confirm the new setting.

Result: The display goes back to the direct function screen (e.g. "Eco").

8 Press the UP and DOWN buttons to navigate the menu. Scroll to the next direct function of which you want to change the status.

When finished changing direct functions status:

9 Scroll to the "ESC" screen.

10 Press the PROGRAM button.

Result: The display goes back to the actuator/function direct (“dir”) activation screen.

Meaning of direct function screens that appear on the display

Display	Description	Display alarms
Alr	Display alarms	
Auc	Activate auxiliary output	DOC > 0
BtE	Enable Bluetooth	If featured
CnC	Activate continuous cycle	cc > 0
dfM	Start defrost	
Ec1	Load embedded configuration 1	If featured
Ec2	Load embedded configuration 2	If featured
Eco	Activate ECO mode	
Fr	Firmware version	
HAC	Direct access to HACCP menu	
HL	Dim Light	/AF > 0
HU	Set humidity level	F2 = 3
Lht	Activate lights	DOE > 0

Display	Description	Display alarms
nFE	Enable NFC memory reading	
OnF	Unit On/Off	
Pd	Activate pull down	
rH	Maximum value of control probe	rM = 1
rL	Minimum value of control probe	rM = 1
rtL	Reset min/max control probe	rM = 1
SAh	Display alarm log	
Sc	Condenser probe	/Fo > 0
Sc1	Quick Set point 1	
Sc2	Quick Set point 2	
Sc3	Quick Set point 3	
Sd	Defrost probe	/Fb > 0
SHu	Humidity probe	/FP > 0
Sm	Outlet probe	/Fa > 0
SPr	Product probe	/FR > 0
SrG	Control probe	
St	Set control set point	
StH	Set humidity set point	/SP > 0

4.3 Configuration

4.3.1 To connect your device with Daikin User

INFORMATION

Setting parameters is best done via the app (Daikin User or Daikin Installer). However, some of the parameters can also be set via the user interface.

The Daikin User app is required to configure the controller, set up parameters or check trends and information.

From a mobile device (smartphone, tablet), via BLE (Bluetooth Low Energy), the Daikin User app can configure the commissioning parameters and set groups of preset parameters according to specific needs (configurations).

Use the "hamburger" menu at the top left of the screen to set the parameters on the controller and manage parameter configurations.

Procedure to install the app:

1 Download the “Daikin User” app.

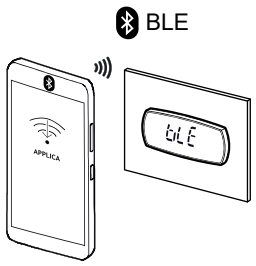
2 On the mobile device, start the app for commissioning the controller.

3 Turn on Bluetooth on your device. Open Daikin User and select the Bluetooth icon to show the available devices.

4 Select “BLUETOOTH SCAN” to view the controller devices available within a range of 10 m.

5 Select the device to connect to.

Result: “BLE” will blink on the user interface display to confirm that the connection is established.



INFORMATION

During the first connection, the app (Daikin User or Daikin Installer) synchronises with the controller software via a cloud connection. This means that an internet connection is required, at least for this first connection. If not, the required packet can also be retrieved from the cloud as soon as the connection is restored (via the “Packet Manager” section of the app).

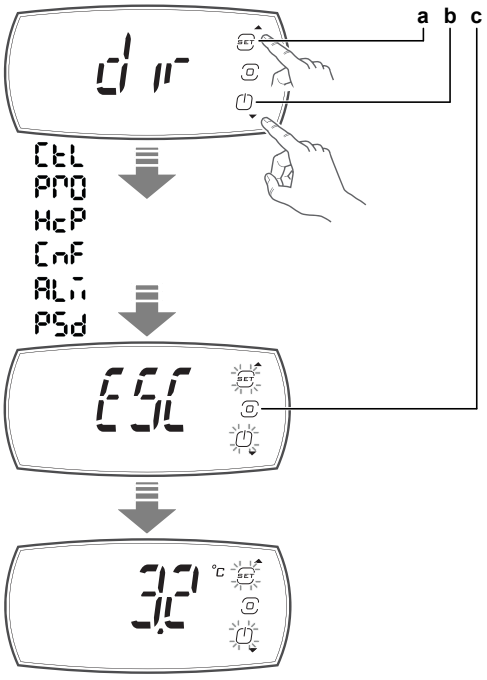
4.3.2 To change the parameters

1 Unlock the user interface. See "4.2.1 To unlock the user interface" [▶ 7].

2 Press the PROGRAM button to enter “dir” mode.

Result: The display shows “dir”.

3 Use the UP (a) and DOWN (b) buttons to navigate towards the desired menu, then press the PROGRAM (c) button to enter the menu.



a UP button
b DOWN button
c PROGRAM button
CtL Control menu
Pro Display probes menu
HcP HACCP menu
CnF Configuration menu
ALM Alarms menu
PSd Service menu
ESC Exit the menu loop

Note: To return to the standard display, go to "ESC" and press the PROGRAM (c) button.

INFORMATION

If no button is pressed, the terminal will return to the standard display after 7 seconds.

4.3.3 Parameters

Name	Description	Default	Min.	Max.	UoM	Menu[a]
/5	Unit of measure: ▪ 0: °C ▪ 1: °F	0	0	1		● Pro
/6	Display decimal point: ▪ 0: Yes ▪ 1: No	0	0	1		● Pro
/t1	Display on user terminal: ▪ 0: not configured ▪ 1: value of S1 ▪ 2: value of S2 ▪ 3: value of S3 ▪ 4: value of S4 ▪ 5: value of S1H ▪ 6 to 8: not available ▪ 9: control probe ▪ 10: virtual probe ▪ 11 to 14: not available ▪ 15: current control setpoint	9	0	15		● Pro
/t2	Display on remote display: ▪ 0 to 15, see /t1 (above)	0	0	15		● Pro
Ad	Delay time for high and low temp. alarms (AH, AL)	120	0	240	min	● ALM
Add	High temp. alarm bypass time for door open	5	1	240	min	● ALM
AH	Relative high temperature alarm threshold	0	0	555/ 999	Δ °C/°F	● ALM
AL	Relative low temperature alarm threshold	0	0	200/ 360	Δ °C/°F	● ALM
Eco	Eco mode status: ▪ 0 OFF ▪ 1 ON	1	0	1		● dir
Fr	SW version of the controller (read only)	r.04	0	0		dir
H11	BMS serial port configuration (stop bits and parity): ▪ 0: 1 stop bit, no parity ▪ 1: 2 stop bits, no parity ▪ 2: 1 stop bit, even parity ▪ 3: 2 stop bits, even parity ▪ 4: 1 stop bit, odd parity ▪ 5: 2 stop bits, odd parity					● CnF
HAn	Number of type HA alarms (read-only)	0	0	6		● PSd
Hb	Buzzer: ▪ 0: disabled ▪ 1: enabled	1	0	1		● CnF
HFn	Number of type HF alarms (read-only)	0	0	6		● PSd
HU	Humidity level: 0: low; 1: medium; 2: high	1	0	2		● PSd

Name	Description	Default	Min.	Max.	UoM	Menu[a]
rd	Temperature control differential	2/ 3.6	0.1/ 0.2	99.9/ 179.2	Δ°C/°F	● CtL
rSA	Reset alarms	0	0	1		● ALM
SAK	Alarm history visualisation (read only)	E6	0	0		● dir
SrG	Regulation sensor (read only)	0	0	0	°C/°F	● dir
St	Temperature control setpoint	50/ 122	r1	r2	°C/°F	● CtL
StH	Humidity control setpoint	90	0.0	100.0	%	● CtL

[a] The menu where the parameter is situated is indicated in this column.

4.4 To set up for multiple units

4.4.1 To set the shared functions for multiple units

Lights

Lights can be connected to all controllers in the network and the light status is always synchronised. Each controller will turn the lights on and off simultaneously.

The time during which the light stays on after opening and closing the door is set by parameter H14, and can be set from 0 to 240 minutes. See "4.3.2 To change the parameters" [▶ 10].

Door open

The door microswitch must be connected to the primary unit controller in the network. Door status is "open" if the switch is open.

As for the lights, also the door status is shared to all controllers. Every controller knows if the door(s) is/are open or not, and each controller can perform the actions that are set in parameters "DIE", "DIP", "rIE" and "rIP".

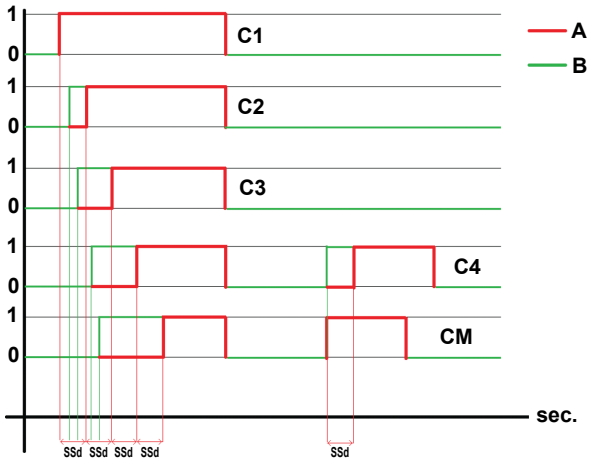
Network temperature regulation

The temperature regulation can be performed in two ways depending on the parameter "nrt" with the following values:

- 0: The relative controller regulates through the probe connected to itself.
- 1: The relative controller regulates through the probe connected to the primary unit controller.

The network logic allows avoiding simultaneous starts of compressors. Using the "SSd" parameter it is possible to set a delay between starts of different LMSEY units.

If it is necessary to start several units at the same time, the first unit to signal to start will be the first one to start. After "SSd" the next unit will also start and so on (See the example below).



1 On
0 Off
A Compressor status
B Request status
C1 Compressor secondary unit 1
C2 Compressor secondary unit 2
C3 Compressor secondary unit 3
C4 Compressor secondary unit 4
CM Compressor primary unit
SSd Delay between start up [s]

Note: LMSEY2A19+25AYE01 units have two compressors, but work in a similar way.

Network defrost

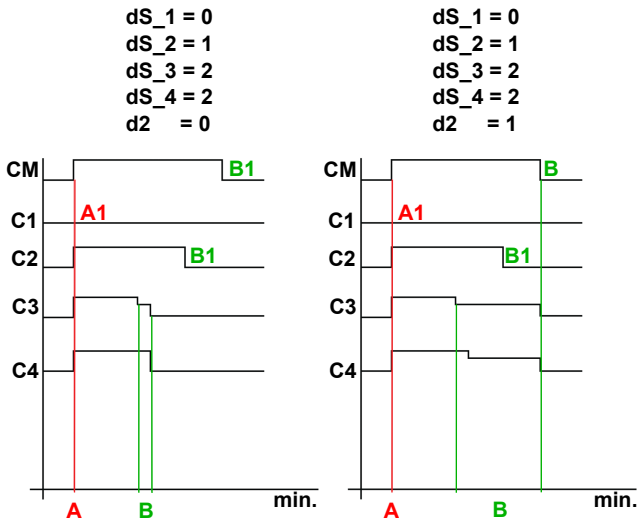
It is possible to enable/disable this functionality for each controller separately.

Defrost can be synchronised between the primary unit controller and secondary unit controllers using parameters dS_1, dS_2, dS_3, and dS_4 with the following values:

- 0: No synchronisation performed.
- 1: Only starting.

  Only starting: secondary unit controllers will start to defrost at the same time as the primary unit controller, and all controllers can finish in different moments.
- 2: Start & Stop.

  Start & Stop: secondary unit controllers will start to defrost at the same time as the primary unit controller. If one controller ends defrosting before the others, the corresponding defrost relay is de-energised and the dripping phase will only start when all other controllers have finished the defrosting phase.



A	Start
A1	Start not synchronised
B	End synchronised
B1	End not synchronised
C1	Controller secondary unit 1
C2	Controller secondary unit 2
C3	Controller secondary unit 3
C4	Controller secondary unit 4
CM	Primary unit controller
dS1~4	Defrost synchronisation parameters
d2	Network end defrost synchronised for primary unit

Local defrosting on a LMSEY unit is still possible in two ways:

- Manually (from app, supervisory system or user interface).
- With parameter “dI” (maximum interval between consecutive defrosts) taking control. This will happen when a network connection fault occurs that lasts longer than the "dI" parameter setting. Therefore the "dI" parameter must always be set.

4.4.2 Specific alarms with multiple units

INFORMATION

When several units work together in one cold room, an alarm on one of those units will only affect the operation of that one unit.

Sv probe error (air off)

The controller regulates through the evaporator inlet temperature probe with an adjustable offset from the setpoint (parameter r8). If this parameter is set to 0 or if the evaporator inlet temperature probe is broken, the controller will follow the duty setting operation (c4).

EEV temperature probe broken (TH5 / TH6)

If these temperature probes are broken, the corresponding valve will be kept at a fixed position (new parameter cP3) and the compressor can continue running. If the compressor stops, the valve will follow the standard regulation.

LOP, Low SH alarms, Low suction temperature alarm

If any of these alarms are triggered by the expansion valve controller, the whole unit will be stopped. These alarms reset automatically.

MOP alarm

A MOP alarm can be an alarm or warning based on the PM5 parameter.

Dirty condenser alarm:

There is only one dirty condenser alarm per each unit present, this alarm is triggered by the highest value of the 2 probes.

Discharge temperature alarm

If the discharge temperature probe is configured, the controller will generate an alarm in case of too high a discharge temperature. In this case, all compressors in the unit will be switched off. This alarm resets automatically. Parameter cHI is the high discharge threshold and parameter cHd is the differential.

Immediate external alarm delay

This digital input is used to manage HPS and LPS, the immediate external alarm (IA) will be reset after the IA7 minute. This alarm can be reset before IA7 time by resetting all alarms (rSA = 1).

There are 2 cases of network errors:

- Expansion valve controller offline.
- Primary/Secondary unit controller offline.

Expansion valve controller offline (EdcB)

It is possible to preset which action the expansion valve controller will perform in case of an offline alarm. The reference is the parameter EDI (look at the chapter “EEV parameters” of the RS). In all cases, only when the “EdcB” alarm is triggered a CU controller will power off all compressors.

A new parameter “dEd” is added to insert a delay between the offline event and the “EdcB” alarm. The “EdcB” alarm will be triggered only if the offline condition lasts for the entire “dEd” time, if the offline condition disappears before the “dEd” time, the alarm will not be displayed and the “dEd” time will be reset.

Primary/Secondary unit controller offline

In case the secondary unit controller is offline, the primary unit controller will keep all functions working without taking care of the specific secondary unit controller that is no longer available (network regulation, network defrost, door,…).

From the secondary unit controller side, the controller will try to guarantee the cooling, so it will regulate on the Sv probe or evaporator temperature if no Sv is present.

4.5 About the alarms

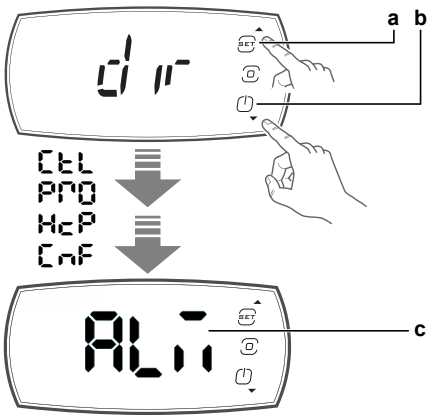
4.5.1 To enter the alarm screen

1 Unlock the user interface. See "4.2.1 To unlock the user interface" [▷ 7].

2 Press the PROGRAM button to enter “dir” mode.

Result: The display shows “dir”.

3 Use the UP (a) and DOWN (b) buttons to navigate towards the desired menu, then use the PROGRAM (c) button to enter the menu "ALM" (alarm).



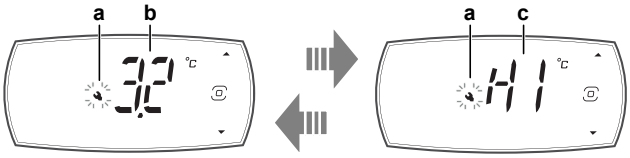
INFORMATION

If no button is pressed, the terminal will return to the standard display after 7 seconds.

4.5.2 About types of malfunctions

When a malfunction is detected:

- The error code (c) is shown on the display, alternating with the main value (b). This allows immediate identification of the malfunction.
- The “service” icon (a) is shown on the display.



There are 2 types of malfunctions:

- Warning
  - The buzzer does not sound.
  - No relay is activated.

  Errors belonging to this category include defrost ended after maximum time, dirty condenser, HACCP alarms and configuration errors.
- Alarm
  - The buzzer sounds.
  - The concerning relay is activated.

  This category includes alarms for which with the relay is configured as an alarm, probe errors, temperature alarms, frost protection, communication errors with the VCC compressor, power supply over and under voltage, etc.

INFORMATION

If there is an active alarm the buzzer will sound. Press any button to mute the buzzer.

Take into account that:

Alarms and warnings are identified by error codes. For the error code table, see "8 Troubleshooting" [▶ 17].

If more than one warning/alarm occurs, they are displayed in sequence.

Digital outputs can be configured to signal the warning/alarm status, normally open or normally closed.

A warning/alarm can also be activated from an external contact, immediate or delayed.

The warning and alarm signals can be immediate or delayed by parameter.

4.5.3 To reset an alarm or warning

Both warnings and alarms can be reset automatically, manually, or semi-automatically (see alarm table):

- Automatic: when the cause is no longer present, the alarm also ceases.
- Semi-automatic: reset is automatic three times in an hour, after which a manual reset is required.
- Manual: when the cause is no longer present, the alarm remains active until manually reset by parameter.

  The alarms can be reset manually using parameter rSA , via the user terminal or configuration tool, or in Daikin User (Bluetooth connection only) using the specific command on the alarms page (“Service” or “Manufacturer” level access is required).

  If the condition that generated the alarm is still present, the alarm is reactivated after resetting.

4.5.4 About the alarm log

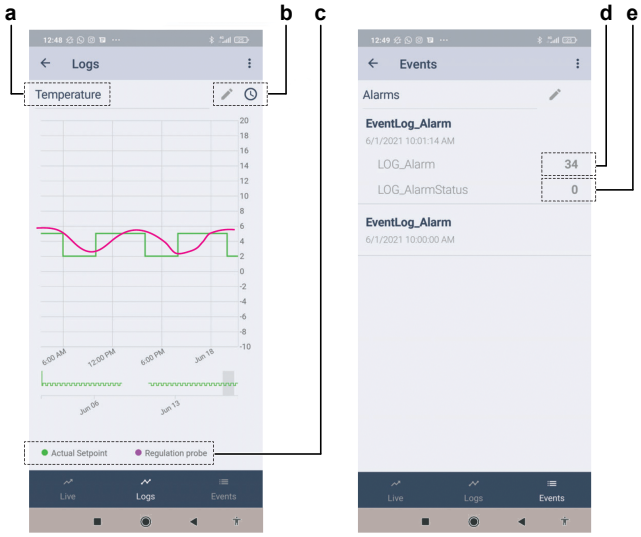
Alarm log

When an alarm is cleared, it is stored in the alarm log containing a maximum of 5 alarms, in a FIFO list (the 6th alarm overwrites the first alarm, and so on). The error log is accessible via the user terminal, via supervisor or the Daikin User app (Bluetooth connection only).

The controller can record both periodic and event logs, which can then be viewed and downloaded using the Daikin User app and commissioning tools.

1 To view the periodic logs in Daikin User: Select Service Area → Trend -> (tab) Logs.

2 To view the event logs in Daikin User: Select Service Area -> Trend → (tab) Events.



a Preset
b Periodically logged variables
c Tools to modify the display
d Alarm status (0: not active, 1: active)
e Alarm code (see the alarms table)

The log view is pre-set, however it can be changed using the editing tools (c). In addition, the pre-set views loaded on the device allow the main values to be filtered (temperature, HACCP alarms, blackouts, etc.). To download the logs, use the drop-down menu at the top right.

The periodic logs record the main values at regular intervals, as shown in the table below.

Logged value	UOM	Period
Control temperature	°C/°F	5 min

Logged value	UOM	Period
Current temperature set point.	°C/°F	1 h
Current humidity	% rh	1 h
Current humidity set point	% rh	1 h
Maximum temperature in the period	°C/°F	1 h
Minimum temperature in the period	°C/°F	1 h
Current evaporation temperature	°C/°F	1 h
Current condensing temperature	°C/°F	1 h
Compressor, minutes ON in the period	min	1 h
Compressor, starts in the period	-	1 h
Evaporator fan, minutes ON in the period	min	1 h

Event logs are recorded when specific conditions occur, and can be used to store certain related values, as shown in the table below.

The type of alarm recorded in the log can be identified using the alarm code (see "8.1 Error codes: Overview" [▸ 19]).

Logged value	Event	Other recorded values	Samples*	Limits
Alarm	Alarm activation	Number of the active alarm with highest priority. Alarm status (active/ ceased)	20	max 255 alarm
Blackout	Device ON	Power failure duration in minutes	20	1000 hours
HACCP alarms	HA or HF alarm	Type HA or HF alarm	10	-

* The samples are stored in a circular FIFO list (e.g. for the alarms, the 21st alarm overwrites the first alarm, and so on).

NOTICE

Changing the time set on the controller by more than 140 minutes will clear the stored logs.

The alarm log can be deleted using parameter rAL, accessible via the user terminal, configuration tool or in the Daikin User (Bluetooth connection only) using the specific command on the alarms page (“Service” or “Manufacturer” level access is required).

INFORMATION

Deleting the alarm log is irreversible.

For the alarm list with the codes and descriptions, see "8.1 Error codes: Overview" [▸ 19].

5 Operation

5.1 Operation range

Temperature type		Temperature range
Outdoor temperature		+5~+45°C
Cooling temperature	Low temperature setting (freezer)	From –25°C
	Medium temperature setting (cooler)	Up to +10°C

5.2 Operation procedure

- Read the documentation carefully before operating the unit to ensure the best possible performance.
- Turn ON the unit before storing the refrigerated goods. Varies from 15 to 30 minutes, depending on the ambient temperature.
- Choose the correct temperature setting for the product that is to be stored (see "4 User interface" [▸ 7]).

NOTICE

Check the evaporator condition 24 hours after starting. If ice has formed, the defrost frequency should be increased. In low temperature units the evaporator condition should be checked every week during the first month of operation.

- A door micro switch interrupts the unit operation and turns on and off the cold room when the cold room door is opened. The cold room lamp can also be switched on and off via the user interface.
- Bluetooth makes it possible to check and control the unit via the Daikin User app.
- Multiple units (up to 5) can be combined within one cold room. They will then operate according to the primary/secondary principle.

  Advantages:

  - Higher cooling capacity.
  - Redundancy should a unit break down.
  - Better airflow.

5.3 Storing the goods

NOTICE

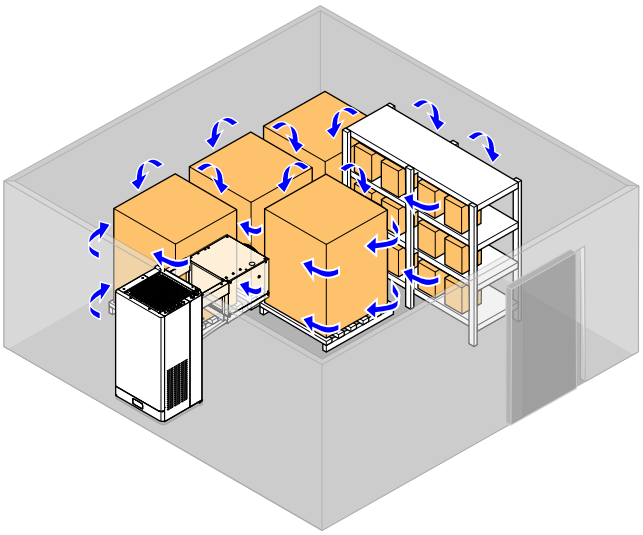
Do not cover the air intake and -outlet openings towards the condenser and evaporator of the unit.

Maintaining the right temperature guarantees the preservation of the quality of the stored goods.

Air circulation is of absolute importance to keep a uniform temperature throughout the entire cold room. Insufficient air circulation can cause heat pockets or ice formation.

For this reason:

- Use pallets or racks that facilitate air circulation under the goods.
- Place the goods away from the cold room walls. Use spacers if necessary.
- Leave a space of approximately 20 cm between the goods and the cold room ceiling.
- Stack heat generating products, such as fruit and vegetables, in a way to create sufficient space to remove the generated heat by cold air circulation.
- Stack products which do not generate heat, such as meat and frozen foods, close to each other toward the center of the cold room.



WARNING

Make sure that no people are left in the cold room before you close the doors:

- Risk of suffocation. 12 m^3 must be left empty inside the cold room.
- Risk of frostbite.
- Risk of freezing to death.

6 Energy saving and optimum operation

If circumstances allow:

- Do not place unfrozen liquids or foodstuffs in the cold room (when used as freezer).
- Reduce the opening frequency of the cold room doors.

Always:

- Reduce the opening time of the cold room doors.
- Make sure that cold room doors are perfectly tight.
- Make sure that a good airflow is possible between the stored goods.
- Check that the evaporator is ice-free. Ice forms on the evaporator preventing air from flowing regularly. If necessary increase defrost termination temperature by some degrees or increase frequency of defrosts.

7 Maintenance and service

INFORMATION

Suitable maintenance is crucial for obtaining longer life, perfect working conditions and high efficiency of the unit. It also ensures the proper functioning of the safety devices provided by the manufacturer.

7.1 Cleaning the unit

7.1.1 To clean the exterior

NOTICE

To clean the plate work:

- Do not use any cleaning agents or chemicals.
- Do not use pressurised water.

Clean with a soft cloth. If it is difficult to remove stains, use water or neutral detergent and wipe with a dry cloth.

7.1.2 To clean the interior

DANGER: RISK OF ELECTROCUTION

- Turn OFF all power supply before removing the switch box cover, connecting electrical wiring or touching electrical parts.
- Disconnect the power supply for more than 10 minutes, and measure the voltage at the terminals of main circuit capacitors or electrical components before servicing. The voltage MUST be less than 50 V DC before you can touch electrical components. For the location of the terminals, see the wiring diagram.
- Do NOT touch electrical components with wet hands.
- Do NOT leave the unit unattended when the service cover is removed.

CAUTION

Do NOT touch the heat exchanger fins. These fins are sharp and could result in cutting injuries. Wear safety gloves if you have to work on or around the heat exchanger fins.

Good operation of the unit requires the condenser to be clean. The frequency of cleaning depends on the environment where the unit is installed.

INFORMATION

Under normal working conditions the condenser, evaporator, and radiator coils should only be cleaned during scheduled maintenance inspections.

1 Turn off the unit.

2 Clean the interior with a long-haired brush or by blowing (low pressure) air from the inside outwards.

NOTICE

Do not use high-pressure water or air to clean the condenser and evaporator fins. It will damage them and prevent proper operation of the condenser and evaporator.

Should the fins nevertheless get bent:

3 Straighten them carefully using a fin comb for cleaning/ straightening.

7.2 Scheduled maintenance

Periodically check wear condition of electrical contacts and remote switches. If necessary have them replaced by a qualified technician.

NOTICE

NEVER service or repair the unit by yourself. Ask a qualified service person to perform this work.

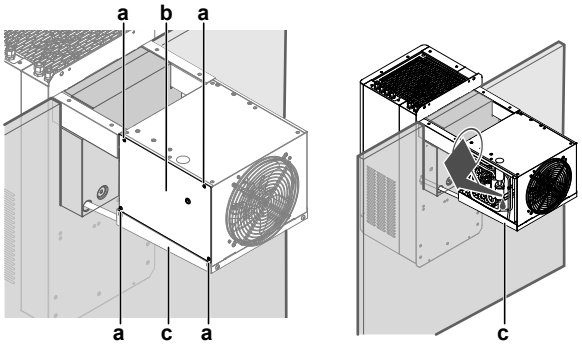
Under no circumstances the user is allowed to:

- Replace electrical components.
- Work on the electric equipment.
- Repair mechanical parts.
- Work on the refrigerating system.
- Work on the control panel, ON/OFF and emergency switches.
- Work on protection and safety devices.

Every 6 months	Inspection and maintenance programs
•	Check the alarm list.
•	Check the condenser and clean if necessary.
•	Check the evaporator and clean if necessary.
•	Check drain pipe, see "7.3 To check the drain pan pipe" [▶ 17].

7.3 To check the drain pan pipe

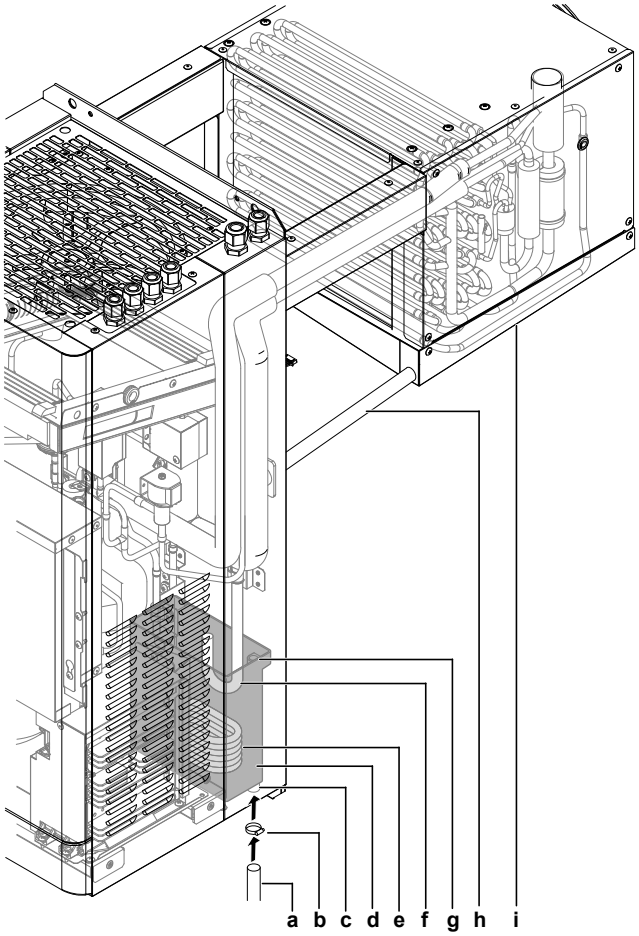
A clogged drain pan pipe will cause condensation water to flow over the edge of the drain pan.



a Screw
b Side plate
c Drain pan

1 Remove the 4 screws (a) and remove the side plate (b) of the evaporator.

2 Poor water into the drain pan (c).



a Drain pipe or hose (external)
b Pipe clamp
c External drain connection (Ø 14 mm)
d Overflow tank
e Hot refrigerant pipes
f Drain pipe (internal)
g Overflow opening
h Drain pan pipe
i Drain pan

3 Check that the water evacuates through the drain pan pipe (h), towards the overflow tank (d) in the condenser.

Result: If necessary; unclog the drain pan pipe.

4 Reinstall the side plate (b) with the 4 screws (a) on the evaporator. Tighten the screws to a torque of 2.17 N•m.

8 Troubleshooting

If one of the following malfunctions occur, take the measures shown below and contact your dealer.

WARNING

Stop operation and shut OFF the power if anything unusual occurs (burning smells etc.).

Leaving the unit running under such circumstances may cause breakage, electrical shock or fire. Contact your dealer.

WARNING

If the internal wiring or the supply cable is damaged, it has to be replaced by the manufacturer, its service agent or similarly qualified persons.

The system MUST be repaired by a qualified service person.

Malfunction	Measure
If a safety device such as a fuse, a breaker or an earth leakage breaker frequently actuates.	Turn OFF the main power switch. Notify your installer and report the malfunction.
If water leaks from the condenser side of the unit (water leaks from the overflow tank).	Stop the operation. ▪ Check that the internal drain pipe is not clogged. ▪ Check that the overflow tank is not leaking.
If water leaks from the internal drain pipe when all conditions are normal (product, environment, door opening frequency, …).	Install an external drain pipe to evacuate the water towards a drain system.
If no circumstances have changed (product, environment, door opening frequency, …) and water suddenly starts to leak from the internal drain pipe.	Check the origin of the abundant water: ▪ Check for openings or cracks in the cold room walls, door seal or unit insulation. This would allow moist containing air to enter the cold room. ▪ Check that the cold room roof is not leaking.
If water leaks from the drain pan under the evaporator.	Check that the drain pan pipe is not clogged. See "7.3 To check the drain pan pipe" [▸ 17].
The operation switch does NOT work well.	Turn OFF the power supply.
If the user interface display indicates an alarm.	Notify your installer and report the error code.

If the system does NOT operate properly except for the above mentioned cases and none of the above mentioned malfunctions is evident, investigate the system in accordance with the following procedures.

Malfunction	Measure
If the system does not operate at all.	▪ Check if there is no power failure. Wait until power is restored. If power failure occurs during operation, the system automatically restarts immediately after power is restored. ▪ Check if no fuse has blown or breaker is activated. Change the fuse or reset the breaker if necessary. ▪ Check if the mains cable is still connected properly.
Unit does not start operating when pressing ON/OFF key, the display however is turned on.	▪ Check the door micro switch. The switch must be actuated and the NO contact must be closed when the door is closed.
Compressor stops. The unit is equipped with an overtemperature device which stops the compressor every time the max. allowable temperature of motor windings is exceeded. Possible causes are: ▪ Insufficient ventilation of the room where the unit is installed. ▪ Anomaly in mains voltage. ▪ Faulty operation of condenser fan. Device reset is automatic after temperature dropped to normal.	▪ Check if air inlet or outlet of the unit condenser is not blocked by obstacles. Remove any obstacles and make sure the air can flow freely. ▪ Check power supply (voltage). Correct if necessary. ▪ Check operation of the condenser fan. If it is not working, contact your dealer.
The system stops immediately after starting operation.	▪ Check if air inlet or outlet of outdoor or indoor unit is not blocked by obstacles. Remove any obstacles and make sure the air can flow freely.
The system operates but cooling is insufficient.	▪ Check if air inlet or outlet of the unit evaporator is not blocked by obstacles. Remove any obstacles and make sure the air can flow freely. ▪ Check if the evaporator inside the cold room is not frosted up. Defrost the unit manually, or shorten the defrost operation cycle. ▪ Check if there are not too many articles inside the cold room, see Loading the goods. Remove a couple of articles. ▪ Check if there is smooth air circulation inside the cold room. Reorganise the articles inside the cold room, see Loading the goods. ▪ Check if there is not too much dust on the condenser. Remove the dust, see To clean the interior. ▪ Check if there is cold air leaking out of the cold room. Stop the air from leaking outside. ▪ Check if you did not set the temperature too high. Set the setpoint appropriately, see To set the Set Point. ▪ Check if there are no high-temperature articles stored in the cold room. Always store articles after they have cooled down. ▪ Check if the door is not opened too long. Reduce the opening time of the door.

If after checking all above items, it is impossible to fix the problem yourself, contact your installer and state the symptoms, the complete model name of the unit (with manufacturing number if possible) and the installation date (possibly listed on the warranty card).

8.1 Error codes: Overview

In case a malfunction code appears on the indoor unit user interface display, contact your installer and inform the malfunction code, the unit type, and serial number (you can find this information on the nameplate of the unit).

For your reference, a list with malfunction codes is provided. You can, depending on the level of the malfunction code, reset the code by pushing the ON/OFF button. If not, ask your installer for advice.

The error codes are visible in the alarm menu.

To access the alarm menu and to reset an alarm or error code, see "4.5 About the alarms" [▶ 13].

Display code	Log code*	Description
Afr	29	Frost protection
AtS	30	Restart in pump down
CE	28	Configuration write error
cht	17	High condensing temperature warning
CHt	18	High condensing temperature alarm
COM	34	VCC communication error
dA	14	Delayed alarm from external contact
dor	15	Door open
E1	1	Probe 1 faulty or disconnected
E2	2	Probe 2 faulty or disconnected
E3	3	Probe 3 faulty or disconnected
E4	4	Probe 4 faulty or disconnected
E5	5	Probe 5 faulty or disconnected
E6	6	Probe S1H faulty or disconnected
E7	7	Probe S2H faulty or disconnected
Ed1	10	Defrost terminated after maximum time
Ed2	11	Defrost on second evaporator terminated after maximum time
EHI	36	High power supply voltage alarm
ELO	37	Low power supply voltage alarm
Etc	9	Clock error
GHI	19	Generic alarm high threshold
GLO	20	Generic alarm low threshold
HA	21	Type HA HACCP alarm (high temp. during operation)
HF	22	Type HF HACCP alarm (high temp. after blackout)
HI	24	High temperature
IA	13	Immediate alarm from external contact
LO	23	Low temperature Ad
LP	32	Low pressure
Man	38	Output status overridden in manual mode
Pd	26	Maximum pump down time
rE	12	Control probe faulty or disconnected
rSF	31	Refrigerant leak alarm
SF	27	Configuration not completed correctly
SrC	35	Maintenance request
UCF	33	VCC operation error

* This is the code used to record and display the alarm in Daikin User.

9 Disposal

During normal operation of the unit, no substances arise that need to be disposed of in a special way.

Wooden, plastic and polystyrene packing must be disposed of according to the regulations in force in the country where the unit is used.

NOTICE

Do NOT try to dismantle the system yourself: dismantling of the system, treatment of the refrigerant, oil and other parts MUST comply with applicable legislation.

Final disposal of the unit must be done by an authorised area technical assistance service, that has proper training, equipment and instructions for the dismantling. They are also responsible for reuse, recycling and recovery.

- Units are marked with the following symbol:

This means that electrical and electronic products may NOT be mixed with unsorted household waste. Do NOT try to dismantle the system yourself: dismantling the system, treatment of the refrigerant, of oil and of other parts MUST be done by an authorised installer and MUST comply with applicable legislation.

Units MUST be treated at a specialised treatment facility for reuse, recycling and recovery. By ensuring this product is disposed of correctly, you will help to prevent potential negative consequences for the environment and human health. For more information, contact your installer or local authority.

CAUTION

There are potential environmental hazards involved in dismantling the unit.

10 Glossary

Dealer
Sales distributor for the product.

Authorised installer
Technical skilled person who is qualified to install the product.

User
Person who is owner of the product and/or operates the product.

Applicable legislation
All international, European, national and local directives, laws, regulations and/or codes that are relevant and applicable for a certain product or domain.

Service company
Qualified company which can perform or coordinate the required service to the product.

Installation manual
Instruction manual specified for a certain product or application, explaining how to install, configure and maintain it.

Operation manual
Instruction manual specified for a certain product or application, explaining how to operate it.

10 Glossary

Maintenance instructions

Instruction manual specified for a certain product or application, which explains (if relevant) how to install, configure, operate and/or maintain the product or application.

Accessories

Labels, manuals, information sheets and equipment that are delivered with the product and that need to be installed according to the instructions in the accompanying documentation.

Optional equipment

Equipment made or approved by Daikin that can be combined with the product according to the instructions in the accompanying documentation.

Field supply

Equipment NOT made by Daikin that can be combined with the product according to the instructions in the accompanying documentation.

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DAIKIN EUROPE N.V.
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