EWNext Optimized -HC

Electronic controllers compatible with flammable refrigerant gases

User Manual

06/2023





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As part of a group of responsible, inclusive companies, we are updating our communications that contain non-inclusive terminology. Until we complete this process, however, our content may still contain standardized industry terms that may be deemed inappropriate by our customers.

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Safety information



Important information

Read these instructions carefully and visually inspect the equipment to familiarize yourself with the controller before attempting to install it and/or put it into operation, or before servicing it. The following warning messages may appear anywhere in this documentation or on the equipment to warn of potential dangers or to call attention to information that can clarify or simplify a procedure.



The addition of this symbol to a "Danger" or "Warning" safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is the safety warning symbol. It is used to warn the user of the potential dangers of personal injury. Observe all the safety warnings that follow this symbol to avoid the risk of serious injury or death.

A DANGER

DANGER indicates a dangerous situation which, if not avoided, will result in death or serious injury.

A WARNING

WARNING indicates a dangerous situation which, if not avoided, could result in death or serious injury.

A CAUTION

CAUTION indicates a potentially dangerous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

NOTICE used in reference to procedures not associated with physical injuries.

Please Note

Electrical equipment must only be installed, used and repaired by qualified technicians. Schneider Electric and Eliwell do not accept any liability for any consequences arising from the use of this material.

An authorized person is someone in possession of the skills and knowledge applicable to the structure, to the operation of the electrical equipment and to its installation, and who has received safety training in order to recognize and avoid the risks involved.

Personnel qualification

Only personnel with suitable training and an in-depth knowledge and understanding of the contents of this manual and any other documentation relevant to the product are authorized to work on and with this product. Qualified personnel must be capable of identifying any dangers which may arise from the parameterization or changing of parameter values, and from the use of mechanical, electric and electronic equipment in general.

Plus, they must be familiar with the personal safety laws, provisions and regulations which must be observed during system planning and implementation.

Permitted use

This product is used to control refrigerated cabinets, display units and refrigerated units.

The controller must be installed and used in accordance with the provided instructions and in particular, in normal conditions, dangerous energized parts must not be accessible.

The controller should be suitably protected from water and dust. Access to the various product parts from the front should involve the use of a keyed or tooled locking mechanism.

The controller is suitable for integration into equipment for controlling refrigerated cabinets, display units and refrigerated units, and has been checked on the basis of the harmonized European standards of reference.

Only use the product with the specified cables and accessories. Only use genuine accessories and spare parts.

Prohibited use

Any use other than that indicated in the above paragraph "Permitted use" is strictly prohibited.

The relay contacts supplied are electromechanical and are subject to wear. The functional safety protection devices, specified by international or local laws, must be installed outside this device.

Liability and residual risks

The liability of Schneider Electric and Eliwell is limited to the correct and professional use of the product according to the directives referred to herein and in the other supporting documents, and does not cover any damage (including but not limited to) the following causes:

- unspecified installation/use and, in particular, in contravention of the safety requirements of the legislation in force in the country of installation and/or specified in this document;
- use on equipment which does not provide adequate protection against electrocution, water and dust in the actual installation conditions;
- use on devices which allow access to dangerous parts without the aid of tools and/or which do not have a keyed locking mechanism;
- product tampering and/or alteration;
- installation/use on equipment that does not comply with the regulations in force in the country of installation.

Disposal



The equipment (or product) must be subjected to separate waste collection in compliance with local legislation regarding waste disposal.

About the book

Document Scope

This document describes the **EWNext Optimized -HC** controllers and corresponding accessories, including information regarding installation and wiring.

Note: read this document and all related documents carefully before installing, operating or servicing the controller.

Validity Note

The technical characteristics of the devices described in this manual are also available online, through the Eliwell website (www.eliwell.com).

The characteristics illustrated in this manual should be identical to those which can be found online. In accordance with our policy of continuous improvement, the content of the documentation may be revised from time to time in order to improve its clarity and accuracy. If there are any discrepancies between the manual and the information available online, use the latter as your point of reference.

Related documents

Publication title	Reference document code
Instruction Sheet EWNext Optimized -HC	9IS54797 (7L)

All available technical documentation and other technical information is available to download from the website: www.eliwell.com

Product related information

A A DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, FIRE OR ARC FLASH

- Disconnect all power from all equipment including connected devices prior to removing any covers or doors, or installing or removing any accessories, hardware, cables or wires.
- · Always use a properly rated voltage sensing device to confirm the power is off where and when indicated.
- · Before restoring the power supply, replace and secure all covers, hardware components and cables.
- Use only the specified voltage when operating this device and any associated products.
- Use appropriate safety interlocks where personnel and/or equipment hazards exist.
- · Install and use this equipment in an enclosure appropriately rated for its intended environment.
- Do not use this equipment for safety-critical functions.
- · Do not disassemble, repair, or modify this equipment.

Failure to follow these instructions will result in death or serious injury.

A A DANGER

HAZARD OF ELECTRIC SHOCK AND/OR FIRE

- Do not expose the equipment to liquids.
- Do not exceed the temperature and humidity ranges specified in the technical data and keep the area surrounding the cooling slits aerated.
- Do not apply dangerous voltages to the SELV connection terminals (see "Connections" chapter).
- Only connect compatible accessories as specified in the section "Accessories" to the device.
- Only use cables with a suitable cross-section (see "Best wiring practices").
- Only use recommended disconnectable terminals (see "Best wiring practices")

Failure to follow these instructions will result in death or serious injury.

A A DANGER

LOOSE WIRING CAN RESULT IN ELECTRIC SHOCK AND/OR FIRE

Tighten the connections in compliance with the technical specifications for torque values and make sure the wiring is

Failure to follow these instructions will result in death or serious injury.

A WARNING

HAZARD OF OVERHEATING AND/OR FIRE

- Do not use with loads other than those indicated in the technical data.
- Do not exceed the maximum permitted current; in the case of higher loads, use a contactor with suitable power.
- Make sure the application has not been designed with the controller outputs connected directly to instruments that generate a frequently activated capacitive load (1).
- Power lines and output connections must be suitably wired and protected by means of fuses when required by national and local regulations.
- Connect the relay output, including the shared pole, using cables with a cross-section of 2.5 mm² (14 AWG) and a length of at least 200 mm (7.87 in.).

Failure to follow these instructions can result in death, serious injury, or equipment damage.

(1) Even if the application does not apply a frequently activated capacitive load to the relay, capacitive loads reduce the life of any electromechanical relay and the installation of a contactor or external relay, sized and maintained according to the ratings and characteristics of the capacitive load, helps to minimize the consequences of relay degradation.

When handling the equipment, take care to avoid damage caused by electrostatic discharge. In particular, the unshielded connectors are extremely vulnerable to electrostatic discharge.

A WARNING

UNINTENDED EQUIPMENT OPERATION DUE TO ELECTROSTATIC DISCHARGE

Before handling the equipment, always discharge the static electricity from the body by touching an earthed surface or type-approved antistatic mat.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

NOTICE

UNINTENDED EQUIPMENT OPERATION

- · Prevent subject devices from direct access or direct link by unauthorized parties or unauthenticated actions.
- You must have a complete understanding of the application and the machine before attempting to control the application remotely.
- Isolate your industrial network from other networks inside your company.
- Take the precautions necessary to assure that you are operating remotely on the intended machine by having clear, identifying documentation within the application and its remote connection.

Failure to follow these instructions can result in equipment damage.

NOTICE

INOPERABLE DEVICE

- For the connection of probes and the digital input, use cables shorter than 10 m (32.80 ft).
- For defrost synchronization line connection, use cables no longer than 10 m (32.80 ft).
- For TTL serial line connection, use cables no longer than 1 m (3.28 ft).

Failure to follow these instructions can result in equipment damage.

The controller can be upgraded only with authenticated Schneider Electric or Eliwell files. In case the authenticity check fails the controller stay idle, without any capacity for regulation.

NOTICE

UNINTENDED EQUIPMENT OPERATION

Use authenticated Schneider Electric or Eliwell files only.

Failure to follow these instructions can result in equipment damage.

To restore the normal operation of the controller, upload an authenticated file.

NOTICE

UNINTENDED EQUIPMENT OPERATION

The SELV wiring must be kept separate from all the other wiring (see "Connections" chapter).

Failure to follow these instructions can result in equipment damage.

The temperature (NTC) probes have no specified connection polarity; the connections can be extended using a normal bipolar cable. Extending the probe wiring influences the electromagnetic compatibility (EMC) of the controller.

California Proposition 65



WARNING: This product can expose you to chemicals including lead and lead compounds which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to:

www.P65Warnings.ca.gov.

Flammable refrigerant gases

The use of flammable gas refrigerants is dependent on may factors, including local, regional and/or national regulations.

The devices and corresponding accessories described in the documentation accompanying the product use components and, more specifically, electromechanical relays tested in accordance with IEC standard 60079-15 and classed as nC components (non-sparking 'n' electrical apparatus). This condition complies to Annex BB of EN/IEC 60335-2-89.

Conformance to Annex BB EN/IEC 60335-2-89 is considered sufficient, and thereby suitable, for commercial refrigeration applications applying flammable gas refrigerants, such as R290. However, other limitations, equipment, locations and/or type of machine (refrigerators, vending machines and dispensers, bottle coolers, ice machines, Reach-Ins, etc.) may also be implicated, restricted and/or required in so doing.

The use and application of the information contained herein require expertise in the design and parameterizing/programming of refrigeration control systems. Only you—the original equipment manufacturer, installer or user—can be aware of all the conditions and factors present, and the regulations applicable, during the design, installation and setup, operation, and maintenance of the machine or related processes. Therefore, only you can determine the suitability of automation and associated equipment, and the related safeties and interlocks, which can be effectively and properly used in the locations for which the equipment is to be put into service. When selecting automation and control equipment, and any other related equipment or software for an application, you must also consider any applicable local, regional or national standards and/or regulations.

You must verify, while incorporating this controller and related equipment, the final compliance of the machine to regulations and standards when using flammable gas refrigerants. Although all statements and information contained herein are believed to be accurate and reliable, they are presented without warranty of any kind. Information provided herein does not relieve you from the responsibility of carrying out your own tests and validations of conformance to any applicable regulations.



REGULATORY INCOMPATIBILITY

Be sure that all equipment applied and systems designed comply with all applicable local, regional and national regulations and standards.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Introduction

Contents

This section includes the following topics:

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Introduction

General Description

EWNext Optimized -HC is a family of electronic controllers for managing refrigerated cabinets, display units and refrigerated units.

Main regulators

The main regulators for the controller are as follows:

- heat/cool
- compressor
- · evaporator fans
- Modulating defrost
- · Standard defrost
- door switch
- · energy saving

In this manual, the photographs and diagrams are provided to illustrate the controller (and other Eliwell devices) and are purely illustrative. The corresponding dimensions and proportions may not correspond to actual dimensions in terms of life-size or scale. Furthermore, all the wiring or electrical diagrams should be considered as simplified representations which may not accurately represent the reality.

Models

The following is a list of EWNext Optimized -HC models:

Product	Description
	EWNext 961 O NTC 1Hp 115 Vac BUZ AIR -HC
EWNext 961 O/B	EWNext 961 O NTC 1Hp 115 Vac BUZ PH AIR -HC
EWINERT 961 O/B	EWNext 961 O NTC 2Hp 230 Vac BUZ AIR -HC
	EWNext 961 O NTC 2Hp 230 Vac BUZ PH AIR -HC
	EWNext 971 O NTC 1Hp/8 115 Vac BUZ AIR -HC
EWNext 971 O/B	EWNext 971 O NTC 1Hp/8 115 Vac BUZ PH AIR -HC
EWINERT 97 TO/B	EWNext 971 O NTC 2Hp/8 230 Vac BUZ AIR -HC
	EWNext 971 O NTC 2Hp/8 230 Vac BUZ PH AIR -HC
	EWNext 974 O NTC 1Hp/8/5 115 Vac BUZ AIR -HC
EWNext 974 O/B	EWNext 974 O NTC 1Hp/8/5 115 Vac BUZ PH AIR -HC
EWINER 974 O/B	EWNext 974 O NTC 2Hp/8/5 230 Vac BUZ AIR -HC
	EWNext 974 O NTC 2Hp/8/5 230 Vac BUZ PH AIR -HC
EWNext 974 O/Y	EWNext 974 O NTC 2Hp/8/5 230 Vac SYN AIR -HC

Abbreviations

The following is a list of abbreviations used in the descriptions:

- AIR = controller compatible with the BTLE Dongle
- **PH** = controller with disconnectable terminals
- BUZ (/B) = controller with Buzzer
- SYN (/Y) = controller with defrosts synchronized via digital input.

AIR - Applicazione mobile per Dongle BTLE



'Eliwell AIR' App, available on Google Play and Apple Store, is used to connect via Bluetooth to EWNext controllers compatible with Dongle Bluetooth. 'Eliwell AIR' App:

- a smart user interface to customize resources, read/write the configuration parameters, enable datalogging on specific resources and viewing in the form of table or chart the saved values
- · real time controller management
- simplified settings and maintenance

For further information, refer to controller and 'Eliwell AIR' App user manual on the Eliwell website: **www.eliwell.com**

Accessories

▲ A DANGER

RISK OF ELECTRIC SHOCK, FIRE OR ARC FLASH

Only connect compatible accessories to the instrument.

Failure to follow these instructions will result in death or serious injury.

Contact a Eliwell representative for further information regarding the accessories that can be used.

Accessory	Description
	BTLE Dongle: TTL/Bluetooth communication interface
	BusAdapter 150 Dongle : Non-opto-isolated TTL/RS485 communication interface
	ECNext 5 Vdc per EWNext: Display for remote display purposes
1.2 3 4 5 5 7 8 9 Buildington 13 11 12 13 14 15 16 17 18	BusAdapter: Opto-isolated TTL/RS485 communication interface
	UNICARD: Programming key
	DMI: Programming interface
	Probes: NTC
	Protection: Dripping protection for connections

Preliminary configurations

Contents

This section includes the following topics:

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Introduction

Overview

EWNext Optimized -HC is a family of electronic controllers for managing refrigerated cabinets, display units and refrigerated units.

Switching on for the first time

Once the electrical connections have been completed, simply power up the device for it to start working.

View Preset applications

Click on the controller model purchased to access the corresponding Preset application:

- EWNext 961 O/B
- EWNext 971 O/B
- EWNext 974 O/B
- EWNext 974 O/Y

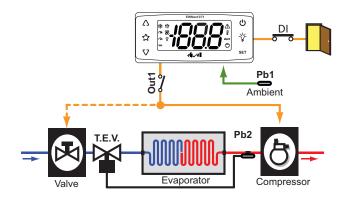
Note:

There is no automatic mechanism to restore controller parameters to default values.

If the user changes the values of the parameters associated with the preset application, the restore of the default values of each of the changed parameters is manual.

EWNext 961 O/B (115 Vac - 230 Vac)

Default application overview



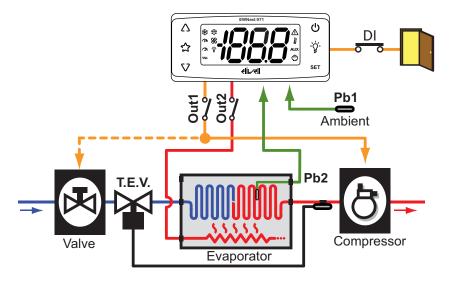
Legend: **Ambient** = Ambient; **Valve** = Valve; **T.E.V.** = Expansion valve; **Evaporator** = Evaporator; **Compressor** = Compressor.

Application details

Setpoint	3.5 °C (38.3 °F)
Analog inputs	1 NTC input (Pb1)
Digital inputs	1 digital input DI set for energy saving with port (H11 =11)
Digital outputs	Out1 relay (default: Compressor)
Buzzer	YES
SYN	NO
Type of defrost	Defrost due to compressor stop
End of defrost	Due to compressor stop
Active alarms	Pb1 maximum / minimum temperature (HAL and LAL)
Key configuration	∆: manual defrost (H31 = 1) ∇: not set (H32 = 0) ປ: stand-by (H33 = 4)

EWNext 971 O/B (115 Vac - 230 Vac)

Default application overview



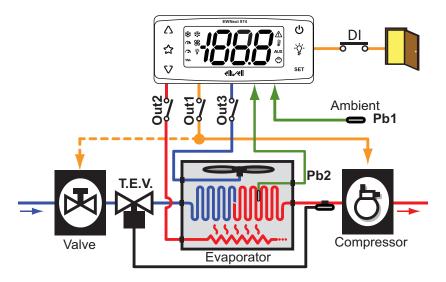
Legend: **Ambient** = Ambient; **Valve** = Valve; **T.E.V.** = Expansion valve; **Evaporator** = Evaporator; **Compressor** = Compressor.

Application details

Setpoint	3.5 °C (38.3 °F)
Analog inputs	2 NTC inputs (Pb1, Pb2)
Digital inputs	1 digital input DI set for energy saving with port (H11 =11)
Digital outputs	Out1 relay (default: Compressor) Out2 relay (default: Defrost)
Buzzer	YES
SYN	NO
Type of defrost	Electric heater defrost
End of defrost	Due to temperature dS1 = 8.0 °C (46.4 °F)
Active alarms	Pb1 maximum / minimum temperature (HAL and LAL)
Key configuration	∆: manual defrost (H31 = 1) ∇: not set (H32 = 0) ປ: stand-by (H33 = 4)

EWNext 974 O/B (115 Vac - 230 Vac)

Default application overview



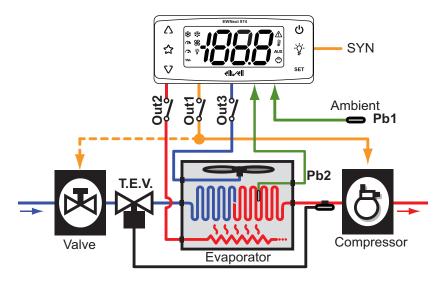
Legend: **Ambient** = Ambient; **Valve** = Valve; **T.E.V.** = Expansion valve; **Evaporator** = Evaporator; **Compressor** = Compressor.

Application details

Setpoint	3.5 °C (38.3 °F)
Analog inputs	2 NTC inputs (Pb1, Pb2)
Digital inputs	1 digital input DI set for energy saving with port (H11 = 11)
Digital outputs	Out1 relay (default: Compressor) Out2 relay (default: Defrost) Out3 relay (default: Evaporator fans)
Buzzer	YES
SYN	NO
Type of defrost	Electric heater defrost
End of defrost	Due to temperature dS1 = 8.0 °C (46.4 °F)
Active alarms	Pb1 maximum/minimum temperature (HAL and LAL)
Key configuration	∆: manual defrost (H31 = 1) ∇: not set (H32 = 0) ℧: stand-by (H33 = 4)

EWNext 974 O/Y (230 Vac)

Default application overview



Legend: **Ambient** = Ambient; **Valve** = Valve; **T.E.V.** = Expansion valve; **Evaporator** = Evaporator; **Compressor** = Compressor; **SYN** = Synchronism connection.

Application details

Setpoint	3.5 °C (38.3 °F)
Analog inputs	2 NTC inputs (Pb1, Pb2)
Digital inputs	No Digital Input
Digital outputs	Out1 relay (default: Compressor) Out2 relay (default: Defrost) Out3 relay (default: Evaporator fans)
Buzzer	NO
SYN	YES (11 = "+"; 10 = "-")
Type of defrost	Electric heater defrost
End of defrost	Due to temperature dS1 = 8.0 °C (46.4 °F)
Active alarms	Pb1 maximum/minimum temperature (HAL and LAL)
Key configuration	∆: manual defrost (H31 = 1) ∇: not set (H32 = 0) ປ: stand-by (H33 = 4)

Mechanical installation

Contents

This section includes the following topics:

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Before starting

Read this manual carefully before installing the controller and its accessories.

In particular, ensure conformity with all safety indications, electrical requirements and current legislation for the machine or the process used with this equipment.

The use and application of information contained herein requires experience in the design and programming of automated control systems. Only the machine user, integrator or manufacturer will be aware of all the conditions and factors affecting installation, configuration, operation and maintenance of the machine or process and can therefore identify the associated equipment and corresponding safety interlocks and systems that can be used appropriately and efficiently. When selecting automation and control equipment, other equipment and connected software for a particular application, all local, regional and national standards and/or legislation must be taken into account.

A WARNING

REGULATORY INCOMPATIBILITY

Be sure that all equipment applied and systems designed comply with all applicable local, regional and national regulations and standards.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Power supply disconnection

A A DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, FIRE OR ARC FLASH

- Disconnect all power from all equipment including connected devices prior to removing any covers or doors, or installing or removing any accessories, hardware, cables or wires.
- · Always use a properly rated voltage sensing device to confirm the power is off where and when indicated.
- · Before restoring the power supply, replace and secure all covers, hardware components and cables.
- Use only the specified voltage when operating this device and any associated products.
- · Use appropriate safety interlocks where personnel and/or equipment hazards exist.
- Install and use this equipment in an enclosure appropriately rated for its intended environment.
- Do not use this equipment for safety-critical functions.
- · Do not disassemble, repair, or modify this equipment.

Failure to follow these instructions will result in death or serious injury.

Operating environment

The use of flammable gas refrigerants is dependent on may factors, including local, regional and/or national regulations.

The devices and corresponding accessories described in the documentation accompanying the product use components and, more specifically, electromechanical relays tested in accordance with IEC standard 60079-15 and classed as nC components (non-sparking 'n' electrical apparatus). This condition complies to Annex BB of EN/IEC 60335-2-89.

Conformance to Annex BB EN/IEC 60335-2-89 is considered sufficient, and thereby suitable, for commercial refrigeration applications applying flammable gas refrigerants, such as R290. However, other limitations, equipment, locations and/or type of machine (refrigerators, vending machines and dispensers, bottle coolers, ice machines, Reach-Ins, etc.) may also be implicated, restricted and/or required in so doing.

The use and application of the information contained herein require expertise in the design and parameterizing/programming of refrigeration control systems. Only you—the original equipment manufacturer, installer or user—can be aware of all the conditions and factors present, and the regulations applicable, during the design, installation and setup, operation, and maintenance of the machine or related processes. Therefore, only you can determine the suitability of automation and associated equipment, and the related safeties and interlocks, which can be effectively and properly used in the locations for which the equipment is to be put into service. When selecting automation and control equipment, and any other related equipment or software for an application, you must also consider any applicable local, regional or national standards and/or regulations.

You must verify, while incorporating this controller and related equipment, the final compliance of the machine to regulations and standards when using flammable gas refrigerants. Although all statements and information contained herein are believed to be accurate and reliable, they are presented without warranty of any kind. Information provided herein does not relieve you from the responsibility of carrying out your own tests and validations of conformance to any applicable regulations.



REGULATORY INCOMPATIBILITY

Be sure that all equipment applied and systems designed comply with all applicable local, regional and national regulations and standards.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Comments concerning installation

Important information

A A DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, FIRE OR ARC FLASH

- Disconnect all power from all equipment including connected devices prior to removing any covers or doors, or installing or removing any accessories, hardware, cables or wires.
- · Always use a properly rated voltage sensing device to confirm the power is off where and when indicated.
- Before restoring the power supply, replace and secure all covers, hardware components and cables.
- Use only the specified voltage when operating this device and any associated products.
- Use appropriate safety interlocks where personnel and/or equipment hazards exist.
- · Install and use this equipment in an enclosure appropriately rated for its intended environment.
- · Do not use this equipment for safety-critical functions.
- · Do not disassemble, repair, or modify this equipment.

Failure to follow these instructions will result in death or serious injury.

When handling the equipment, take care to avoid damage caused by electrostatic discharge. In particular, the unshielded connectors are extremely vulnerable to electrostatic discharge.

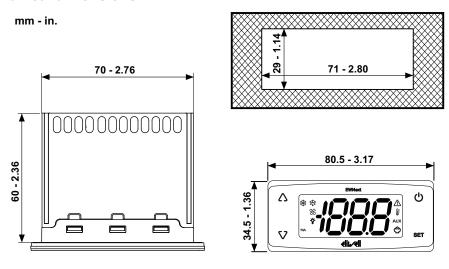
A WARNING

UNINTENDED EQUIPMENT OPERATION DUE TO ELECTROSTATIC DISCHARGE

Before handling the equipment, always discharge the static electricity from the body by touching an earthed surface or type-approved antistatic mat.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Mechanical dimensions



Installation

Installing/uninstalling the controller

Mount the controller horizontally. To install, proceed as follows:

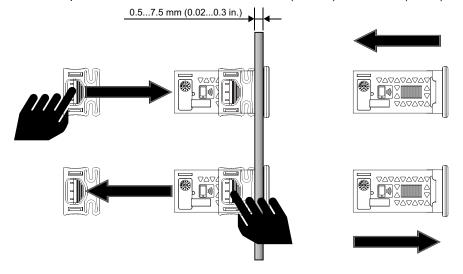
- 1. Make a hole measuring 71 x 29 mm (2.80 x 1.14 in.)
- 2. Introducing the controller
- 3. Secure it by inserting the brackets in the relevant rails at the 2 sides of the controller, until it clicks into place

To uninstall it, proceed as follows:

- 1. Press the brackets on the 2 sides of the device until you hear a click and take them out
- 2. Removing the controller

Note: Leave the area around the slits clear to allow air to circulate, keeping the controller cool.

Note: The panel thickness must be between 0.5 mm (0.02 in.) and 7.5 mm (0.3 in.) inclusive.



Electrical connections

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Best wiring practices

Warnings

A A DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, FIRE OR ARC FLASH

- Disconnect all power from all equipment including connected devices prior to removing any covers or doors, or installing or removing any accessories, hardware, cables or wires.
- Always use a properly rated voltage sensing device to confirm the power is off where and when indicated.
- Before restoring the power supply, replace and secure all covers, hardware components and cables.
- Use only the specified voltage when operating this device and any associated products.
- Use appropriate safety interlocks where personnel and/or equipment hazards exist.
- Install and use this equipment in an enclosure appropriately rated for its intended environment.
- · Do not use this equipment for safety-critical functions.
- Do not disassemble, repair, or modify this equipment.

Failure to follow these instructions will result in death or serious injury.

A A DANGER

HAZARD OF ELECTRIC SHOCK AND/OR FIRE

- · Do not expose the equipment to liquids.
- Do not exceed the temperature and humidity ranges specified in the technical data and keep the area surrounding the cooling slits aerated.
- Do not apply dangerous voltages to the SELV connection terminals (see "Connections" chapter).
- Only connect compatible accessories as specified in the section "Accessories" to the device.
- Only use cables with a suitable cross-section (see "Best wiring practices").
- Only use recommended disconnectable terminals (see "Best wiring practices")

Failure to follow these instructions will result in death or serious injury.

A WARNING

HAZARD OF OVERHEATING AND/OR FIRE

- Do not use with loads other than those indicated in the technical data.
- Do not exceed the maximum permitted current; in the case of higher loads, use a contactor with suitable power.
- Make sure the application has not been designed with the controller outputs connected directly to instruments that generate a frequently activated capacitive load (1).
- Power lines and output connections must be suitably wired and protected by means of fuses when required by national and local regulations.
- Connect the relay output, including the shared pole, using cables with a cross-section of 2.5 mm² (14 AWG) and a length of at least 200 mm (7.87 in.).

Failure to follow these instructions can result in death, serious injury, or equipment damage.

(1) Even if the application does not apply a frequently activated capacitive load to the relay, capacitive loads reduce the life of any electromechanical relay and the installation of a contactor or external relay, sized and maintained according to the ratings and characteristics of the capacitive load, helps to minimize the consequences of relay degradation.

A WARNING

REGULATORY INCOMPATIBILITY

Be sure that all equipment applied and systems designed comply with all applicable local, regional and national regulations and standards.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Wiring guidelines

A A DANGER

LOOSE WIRING CAN RESULT IN ELECTRIC SHOCK AND/OR FIRE

Tighten the connections in compliance with the technical specifications for torque values and make sure the wiring is correct

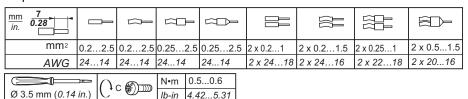
Failure to follow these instructions will result in death or serious injury.

Use copper wires (obligatory)

The table below shows the type and size of permitted cables for screw terminals and the torque values:

mm 6.5 in. 0.26	-							
mm ²	0.22.5	0.22.5	0.252.5	0.252.5	2 x 0.20.75	2 x 0.20.75	2 x 0.250.75	2 x 0.51.5
AWG	2414	2414	2414	2414	2 x 2418	2 x 2418	2 x 2418	2 x 2016
Ø 3.5 mm (0.14	in.)	c (S)	N•m 0.9	50.6 \$25.31				

The table below shows the type and size of permitted cables for MSTB 2.5/x-ST-5.00 disconnectable terminals and the torque values.



Only use the removable screw terminal blocks provided (in some models) or bought directly from Eliwell. Otherwise, make sure you are using suitable terminals to jointly operate with the Eliwell device in the condition of the specific application.

NOTICE

UNINTENDED EQUIPMENT OPERATION

The SELV wiring must be kept separate from all the other wiring (see "Connections" chapter).

Failure to follow these instructions can result in equipment damage.

NOTICE

INOPERABLE DEVICE

- For the connection of probes and the digital input, use cables shorter than 10 m (32.80 ft).
- For defrost synchronization line connection, use cables no longer than 10 m (32.80 ft).
- For TTL serial line connection, use cables no longer than 1 m (3.28 ft).

Failure to follow these instructions can result in equipment damage.

The temperature (NTC) probes have no specified connection polarity; the connections can be extended using a normal bipolar cable. Extending the probe wiring influences the electromagnetic compatibility (EMC) of the controller.

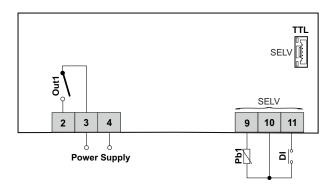
Connections

Wiring diagrams

Click on the controller model to access the corresponding wiring diagram:

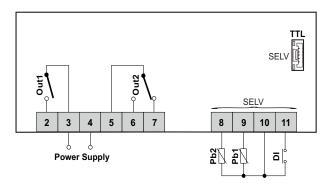
- EWNext 961 O/B
- EWNext 971 O/B
- EWNext 974 O/B
- EWNext 974 O/Y

EWNext 961 O/B (115 Vac - 230 Vac)



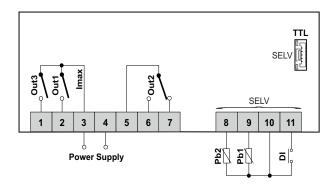
Terminals	Description
2-3	Compressor relay (Out1)
4-3	Power supply input 115 Vac or 230 Vac (depending on the model)
9-10	Probe Pb1
11-10	Digital input DI
SELV	SELV terminals
TTL	TTL serial port

EWNext 971 O/B (115 Vac - 230 Vac)



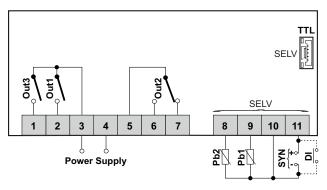
Terminals	Description
2-3	Compressor relay (Out1)
4-3	Power supply input 115 Vac or 230 Vac (depending on the model)
5-6-7	Defrost relay (Out2)
8-10	Probe Pb2
9-10	Probe Pb1
11-10	Digital input DI
SELV	SELV terminals
TTL	TTL serial port

EWNext 974 O/B (115 Vac - 230 Vac)



Terminals	Description
1-3	Evaporator fans relay (Out3)
2-3	Compressor relay (Out1)
4-3	Power supply input 115 Vac or 230 Vac (depending on the model)
5-6-7	Defrost relay (Out2)
8-10	Probe Pb2
9-10	Probe Pb1
11-10	Digital input DI
lmax	Screw terminals: 17 A maximum Disconnectable terminals: 12 A maximum
SELV	SELV terminals
TTL	TTL serial port

EWNext 974 O/Y (230 Vac)



Terminals	Description
1-3	Evaporator fans relay (Out3)
2-3	Compressor relay (Out1)
4-3	Power supply input 230 Vac
5-6-7	Defrost relay (Out2)
8-10	Probe Pb2
9-10	Probe Pb1
11-10	SYN (11 = "+"; 10 = "-") for synchronized defrosts (if H11 =±13) or DI (if H11 ≠±13)
SELV	SELV terminals
TTL	TTL serial port

Technical characteristics

Contents

This section includes the following topics:

Technical data	33
Power supply and power draw	33
Output characteristics	33
Input characteristics	34
Further Information	34

Technical data

The product complies with the following har	monized Standards: EN 60730-1 and EN 60730-2-9
Device construction:	Electronic automatic incorporated Control
Device purpos:	Operating control (non-safety related) device
Type of action:	1.C
Degree of protection by enclosure:	IP00 for models with removable screw terminal blocks IP20 for models with screw terminal blocks IP65 front panel only (Tested in accordance with EN 60529 with a steel sheet 2 mm (0.08 in.) thick ±10 %)
Pollution degree:	2
Overvoltage category:	II
Nominal pulse voltage:	2500 V
Power supply:	see table below
Power draw:	see table below
Environmental operating conditions:	Temperature: -555°C (23131°F) Humidity: 1090% RH (non-condensing)
Transportation and storage conditions:	Temperature: -3085°C (-22185°F) Humidity: 1090% RH (non-condensing)
Software class:	A
Front panel protection type:	Type 1
Temperature for the ball pressure test:	Front and Rear cover: 128 °C (262,4 °F) Terminal blocks: 107 °C (224,6 °F) PWB (Printed Wiring Board): 125 °C (257 °F)

Power supply and power draw

Model	Power supply	Power draw (maximum)
EWNext 961 O/B	115 Vac or 230 Vac (±10%) 50/60 Hz (depending on the model)	5.5 VA
EWNext 971 O/B	115 Vac or 230 Vac (±10%) 50/60 Hz (depending on the model)	5.5 VA
EWNext 974 O/B	115 Vac or 230 Vac (±10%) 50/60 Hz (depending on the model)	5.5 VA
EWNext 974 O/Y	230 Vac (±10%) 50/60 Hz	5.5 VA

Note: Verify the power supply specified on the controller label.

Output characteristics

230 Vac models	Output	EU (230 Vac)	USA (230 Vac)	
EWNext 961 O/B	Out1	12(8) A	12FLA 72LRA	
	Out1	12(8) A	12FLA 72LRA	
EWNext 971 O/B	Out2	NO 8(4) A - NC 6(3) A - CO 6 A resistive	NO 8 A - NC 6 A - CO 6 A resistive NO 3.6FLA 21.6LRA	
	Out1	12(8) A	12FLA 72LRA	
EWNext 974 O/B	Out2	NO 8(4) A - NC 6(3) A - CO 6 A resistive	NO 8 A - NC 6 A - CO 6 A resistive NO 3.6FLA 21.6LRA	
21111000011072	Out3	5(2) A	5 A resistive - 2FLA 12LRA	
	Imax = Maximum current on common pole (Out1 + Out3) - V*: Imax = 17 A - S**: Imax = 12 A.			
	Out1	12(8) A	12FLA 72LRA	
EWNext 974 O/Y	Out2	NO 8(4) A - NC 6(3) A - CO 6 A resistive	NO 8 A - NC 6 A - CO 6 A resistive NO 3.6FLA 21.6LRA	
	Out3	5(2) A	5 A resistive - 2FLA 12LRA	

115 Vac models	Output	EU (115 Vac)	USA (115 Vac)
EWNext 961 O/B	Out1	12(8) A	V*: 16FLA 96LRA - S**: 12FLA 72LRA
	Out1	12(8) A	V*: 16FLA 96LRA - S**: 12FLA 72LRA
EWNext 971 O/B	Out2	NO 8(4) A - NC 6(3) A - CO 6 A resistive	NO 8 A - NC 6 A - CO 6 A resistive NO 3.6FLA 21.6LRA
	Out1	12(8) A	V*: 16FLA 96LRA - S**: 12FLA 72LRA
EWNext 974 O/B	Out2	NO 8(4) A - NC 6(3) A - CO 6 A resistive	NO 8 A - NC 6 A - CO 6 A resistive NO 3.6FLA 21.6LRA
Ettitekt 014 0/B	Out3	5(2) A	5 A resistive - 2FLA 12LRA
	Imax = Max A.	ximum current on common pole (C	Dut1 + Out3) - V*: Imax = 17 A - S**: Imax = 12

V* = models with screw terminals - **S**** = models with disconnectable terminals.

Input characteristics

EWNext 961 O/B: 1 NTC input (Pb1)
EWNext 971 O/B: 2 NTC inputs (Pb1 and Pb2)
EWNext 974 O/B: 2 NTC inputs (Pb1 and Pb2)
EWNext 974 O/Y: 2 NTC inputs (Pb1 and Pb2)
EWNext 961 O/B: 1 voltage free digital input (DI).
EWNext 971 O/B: 1 voltage free digital input (DI).
EWNext 974 O/B: 1 voltage free digital input (DI).
EWNext 974 O/Y: 1 voltage free digital input (DI) or SYN connection for defrost synchronization.

Further Information

Probe values

Display ranges	-99.999.9 or -999999	
Measurement range	NTC: -50110°C (-58230°F) - on display with 3 digits + sign	
Accuracy	NTC: -5030 °C (-5822 °F): better than ±2.4 °C (±4.3 °F) ±1 digit. -30110 °C (-22230 °F): better than ±1.6 °C (±2.9 °F) ±1 digit.	
Resolution	1°C/°F or 0.1°C/°F (depending on the display range setting)	

Mechanical characteristics

Connectors	TTL serial port for connection of compatible accessories	
Dimensions	Front panel 80.5 x 34.5 mm (3.17 x 1.36 in.), depth 60 mm (2.36 in.)	
Mounting panel thickness	el thickness 0.57.5 mm (0.020.3 in.)	
Terminals	inals Screw terminal blocks / removable screw terminal blocks	

Note: the technical characteristics provided in this document concerning measurement (range, accuracy, resolution, etc.) refer only to the device itself and not to any accessories supplied, such as the probes.

User interface and operation

Contents

This section includes the following topics:

User interface	36
Using the controller	38
Setting the probes	41
Setting the displayed values	42

User interface

Interface



Keys

Keys	press and release	press for at least 5 seconds
Δ	Scroll through the menu options. Increase the values.	From outside the menus only. Can be configured by the user (parameter H31)
		Default: Activate manual defrost.
V	Scroll through the menu options. Decrease the values.	 From outside the menus only. Can be configured by the user (parameter H32) Unlock keypad (press and hold for at least 3 seconds)
Ů	Go back (up one level) in the menu. Confirm the parameter value.	From outside the menus only. Can be configured by the user (parameter H33)
		Default: Activate stand-by.
SET	Access the "Machine Status" menu.Display alarms (if present).	Access the "Programming" menu.Confirm commands.

Note: At device power-on or after 30 seconds since last action on the user interface, the device keypad locks automatically. If it is locked and any key is pressed, the text 'LoC' will appear. To unlock the keypad, press and hold ∇ for at least 3 seconds until the text "UnL" appears.

Icons

Icon	Function	Description
*	Compressor	On steadily: compressor active Flashing: delay, protection or activation inhibited Off: compressor off
**	Defrost	On steadily: defrost active Flashing: defrost activated manually or via digital input Off: defrost inactive
SS	Evaporator fans	On steadily: fans active Off: fans off
- `ģ '-	/	Reserved
₩-	Heating	On steadily: Heating regulator active Off: Heating regulator off
\triangle	Alarm	On steadily: alarm present Flashing: alarm silenced Off: No alarm active
	Temperature	On steadily: a temperature is displayed (°C or °F) Off: a value not relating to temperature or a label is displayed
AUX	1	Reserved
	Energy saving	On steadily: Energy saving active Flashing: reduced set active

Note: Some icons may be associated with unavailable functions, depending on the model.

Note: If the value of the parameter $\textbf{CuS} \neq 0$, when the instrument is switched on it shows the label CuS and the value of the parameter for approximately 2 seconds.

Using the controller

Switching on for the first time

Once the electrical connections have been completed, simply power up the device for it to start working.

Password

The passwords PA1 and PA2 are required to access the device parameters:

- PA1: access the User parameters (default: PA1 = 0 disabled)
- PA2: access the Installer parameters (default: PA2 = 15 enabled)

To change the password value:

- 1. To unlock the keypad, press and hold ♥ for at least 3 seconds, until the label "UnL" appears
- 2. Press and hold for at least 5 seconds SET
- 3. Scroll through the parameters with Δ and ∇ until you find the label "PA2"
- 4. Press and release SET
- 5. Set the value "15" using the keys △ and ▽
- 6. Confirm the value by pressing **SET** (the first folder will be displayed)
- 7. Scroll through the folders with △ and ∇ until you find the label "diS"
- 8. Press and release SET
- 9. Scroll through the parameters with △ and ▽ until you find the label "PS1" or "PS2", depending on whether you want to change access password **PA1** or **PA2**
- 10. To confirm the value press SET or υ , or let a timeout occur (15 seconds).

Note: If PA1=0, the User parameters will be not protected and displayed before PA2 label.

Note: If the value entered is incorrect, the label PA1/PA2 will be shown again. Repeat the procedure.

Machine Status Menu

To enter the Machine Status menu:

- 1. To unlock the keypad, press and hold ∇ for at least 3 seconds, until the label "UnL" appears
- 2. Press and release SET
- 3. Scroll through the folders with keys Δ and ∇ until you find the label for the desired folder
- 4. Press and release SET
- 5. View the value reading
- 6. To exit press SET or \circlearrowleft , or let a timeout occur (15 seconds).

List of folders:

The folders shown are as follows:

- SEt: setpoint setting folder
- ALr: alarms folder (only visible if there are active alarms)
- Pb1: Pb1 probe value folder
- Pb2: Pb2 probe value folder
- idF: firmware mask value folder
- · rEL: firmware release value folder
- · nAM: product name folder

Note: some folders may not be present, depending on the model

Programming Menu

To enter the Programming menu:

- a. To unlock the keypad, press and hold ∇ for at least 3 seconds, until the label "UnL" appears
- b. Press and hold for at least 5 seconds SET

If required, an access PASSWORD **PA1** will be requested for User parameters and **PA2** for Installer (Inst) parameters (see **Password** section).

User parameters (User):

Upon access the first parameter (SEt) will be shown.

- 1. Scroll through the parameters with keys △ and ▽ until you find the label for the parameter you want to change
- 2. Press and release SET
- 3. Set the desired value using the keys Δ and ∇
- 4. To confirm the value press **SET** or \mathfrak{O} , or let a timeout occur (15 seconds).

Installer parameters (Inst):

Upon access the first folder (CP) will be shown.

- 1. Scroll through the folders with keys Δ and ∇ until you find the label for the desired folder
- 2. Press and release **SET**
- 3. Scroll through the parameters with keys △ and ♥ until you find the label for the parameter you want to change
- 4. Press and release SET
- 5. Set the desired value using the keys △ and ▽
- 6. To confirm the value press **SET** or **o**, or let a timeout occur (15 seconds).

Note: Switch the device off and on again every time you change the parameter configuration.

Locking/unlocking the keypad

The keypad locks automatically in the following situations:

- · at device power-on
- · after 30 seconds of inactivity

To unlock the keypad, press and hold ♥ for at least 3 seconds, until the label 'UnL' appears.









Viewing the probe values

- 1. Unlock the keypad by pressing and holding ♥ for at least 3 seconds, until the label "UnL" appears
- 2. Press and release SET to access the 'Machine status' menu
- 3. Scroll through the folders with \triangle and ∇ until you find the folder **Pb1** or **Pb2**
- 4. Press **SET** to view the value measured by the corresponding probe.

Notes:

- · the displayed value cannot be changed.
- folder Pb2 can only be viewed on models that manage probe Pb2.

Setting the setpoint

- 1. To unlock the keypad, press and hold ♥ for at least 3 seconds, until the label "UnL" appears
- 2. Press and release **SET** to access the "Machine status" menu
- 3. Scroll through the folders with △ and ♥ until you find the folder SEt
- 4. Press SET to view the current setpoint value.
- 5. Change the setpoint value using \triangle and ∇ within 15 seconds.
- 6. To confirm the value press **SET** or \circlearrowleft , or let a timeout occur (15 seconds).

Setting frequently used functions

Some frequently used functions may be paired with the keys by suitably configuring the corresponding parameters; they can then be activated by pressing and holding the paired key.

Key	Parameter
Δ	H31
∇	H32
Ů	H33

Value H31/H32/H33	Description
0	Disabled
1	Defrost
2	Reserved
3	Reduced set
4	Stand-by
5	Reserved
6	Reserved
7	Reserved
8	Reserved
9	Energy saving
10	Reserved

Setting the main parameters

See "User" menu in the parameters table for the various models.

Setting the probes

Introduction

Only connect probes of the same type to the device (all NTC).

Probe inputs

Depending on the model, the controller has the following inputs:

• one or two analog inputs (Pb1 and Pb2)

Probe calibration

The **diS** folder, within the "Installer" menu, contains the parameters:

- CA1 (probe Pb1)
- **CA2** (probe Pb2)

to force an additional value (with sign) on reading the corresponding probe (if managed by the specific model).

Setting the displayed values

Introduction

The following settings refer to the parameters in folder diS.

Display with decimal point

You need to set parameter ndt:

ndt value	Description
у	Display with decimal point and resolution to tenths of a degree
n	Display with no decimal point

Note: this setting only influences the displaying of data, not the resolution of the measurement or the accuracy of the controller's calculations.

Default display

You need to set parameter **ddd**:

ddd value	Description
0	Display setpoint
1	Display the value read by Pb1
2	Display the value read by Pb2
3	Reserved

Note: If the selected probe is not present, the displayed value cannot be considered reliable.

Default ECNext module display (via Modbus)

The controller can manage a **ECNext** module (via Modbus) connected to the TTL serial port. **Note**: the controller always acts as a Master.

To enable viewing, set parameter ddE:

ddE value	Description
0	ECNext module not connected
1	View the value read by Pb1. If Pb1 is in error, "E1 " will appear.
2	View the value read by Pb2. If Pb2 is in error, "E2 " will appear.
3	Reserved
4	View the setpoint value.

Note: If the selected probe is not present, the displayed value cannot be considered reliable.

Display during defrost

You need to set parameter **ddL**:

ddL value	Description
0	Display the values read by Pb1
1	Display the value read by Pb1 at the start of defrost
2	Display the label dEF

Set the unit of measure for the temperatures

You need to set parameter dro:

dro value	Description
0	Display the temperature in °C
1	Display the temperature in °F

Note: this setting only influences how the temperatures read by the probes are displayed. After changing the unit of measure from $^{\circ}$ C to $^{\circ}$ F, the value of parameters **SEt**, **diF**, etc, remains the same and they will take on a different meaning, since they are expressed in a new unit of measure (**SEt** = 10° C becomes **SEt** = 10° F).

Defrost

Contents

This section includes the following topics:

Introduction	. 45
Display and alarm operation	46
Manual defrost	. 47
Modulating Defrost	. 49
Standard defrost	. 59
Synchronized Defrost from Digital Input	. 67

Introduction

In addition to Standard defrosts, a Modulating defrost has been developed with the aim of activating the defrost function "when necessary", on the basis of conditions defined previously.

List of defrost types

Click on the desired defrost type to access the relevant section:

- Modulating Defrost
- · Standard defrost
- · Synchronized Defrost

Functioning conditions

Defrosting removes ice from the surface of the evaporator.

If $dt \neq 0$, once defrost is complete, a dripping cycle takes place to prevent the water left on the evaporator from freezing again.

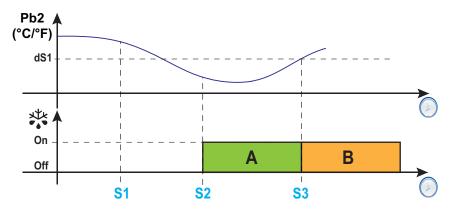
Defrost is triggered automatically if:

- the temperature of the evaporator is lower than the defrost end setpoint dS1*.
- the defrost activation timer has elapsed and the temperature of the evaporator 1 is lower than the defrost end setpoint dS1*.

Defrost is NOT triggered automatically if:

- · a manual defrost is already underway.
- the defrost activation timer has elapsed and the temperature of the evaporator 1 is higher than the defrost end setpoint dS1*, in which case a new timer count will begin.

(*) models that manage probe Pb2.



Legend: **A** = Defrost; **B** = Dripping; **S1** = Defrost not performed; **S2** = Defrost start; **S3** = End of defrost and start of dripping cycle.

Setting the dripping interval

To activate dripping at the end of the defrost cycle, set parameter $dt \neq 0$. During dripping, the fans are switched off even if Fdt < dt.

Note: parameter dt is only present in models that manage probe Pb2 and that can control the evaporator fans.

Parameter	Description
dS1	Temperature value set for the end of defrost on evaporator 1.
Fdt	Fan activation delay after a defrost.
dt	Dripping duration.

Display and alarm operation

Alarm operation during defrost

You can activate an alarm for defrost ending due to timeout, by setting parameter **dAt** = y (see alarm **Ad2** in the section "Alarms and indications" on page 88).

Note: this function can only be activated on models that manage probe Pb2.

In the event of a regulation probe (Pb1) error, defrosts will still take place and during defrost the temperature alarm associated with the probe error will be excluded.

Displayed values

By setting parameter ddL, you can choose the values displayed during the defrost phase until the end of dripping time.

The value shown on the display may be configured in one of the following ways:

- ddL = 0: display the temperature read by the regulation probe (Pb1)
- ddL = 1: display the temperature read by the regulation probe (Pb1) at the start of defrost
- ddL = 2: display (steadily) the label dEF (defrost)

Restore standard displaying

The standard displaying is restored on the display:

- · on reaching the setpoint and after dripping
- on reaching the timeout value, defined by parameter Ldd

Parameter	Description
dAt	Defrost ended due to timeout alarm indication.
ddL	Display mode during defrosting.
Ldd	Display unlock timeout value - label dEF .

Manual defrost

Introduction

The Manual Defrost function can be activated in one of the following ways:

- press and hold a key (configured with H3x = 1)
- via digital input (configured with H11 = ±1)
- using a Supervisor, via Modbus command (serial)
- via APP (if the BTLE Dongle is present. See accessories section)

Note: if the **odo** count is in progress, the defrost cycle does not begin, the request is not carried out and the display will flash three times to indicate that defrosting is not possible.

Functioning conditions

If manual defrost is activated, depending on the value of parameter dMr, the defrost interval count (dit time):

- if dMr (0) = n the count is not reset.
- if dMr (1) = y the count is reset

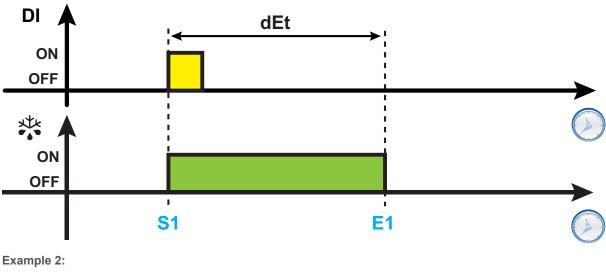
If the **odo** count is in progress and the evaporator temperature is greater than the value of parameter **dS1*** (evaporator 1), the defrost will not be activated and the display will flash three times.

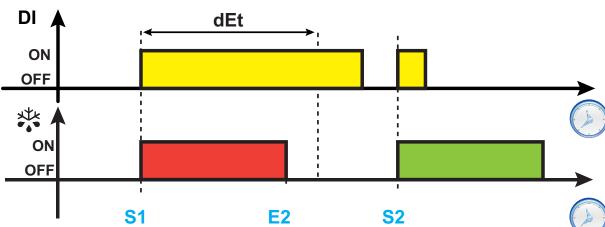
(*): only models that manage probe Pb2.

Note: defrost activation takes place upon closure (**H11**=1) or opening (**H11**=-1) of the digital input DI (if activated). You can only activate a defrost, not end an active one. Any defrost or dripping cycle in progress and the defrost or dripping time cannot be suspended.

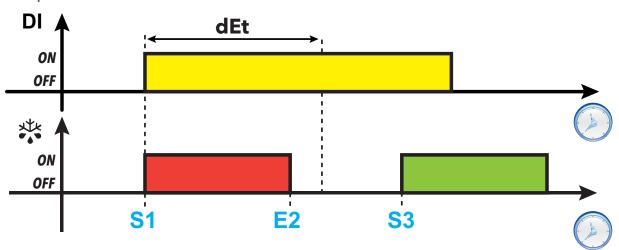
Regulation examples

Example 1:





Example 3:



Legend: **S1** = Defrost 1 start; **S2** = Defrost 2 start; **S3** = Regular defrost start with fixed expiration; **E1** = End of defrost due to timeout; **E2** = End of defrost due to temperature.

Parameter	Description
dit	Time interval between one defrost and the next.
odo	Output activation delay time from switching on the controller or after a power outage.
dEt	Defrost timeout. Determines the maximum duration of the defrost.
dS1	Evaporator 1 defrost end temperature.
H11	DI digital input/polarity configuration.
H31	Δ key configuration.
H32	∇ key configuration.
H33	ტ key configuration.

Modulating Defrost

The Modulating defrost methods that can be activated simultaneously are as follows:

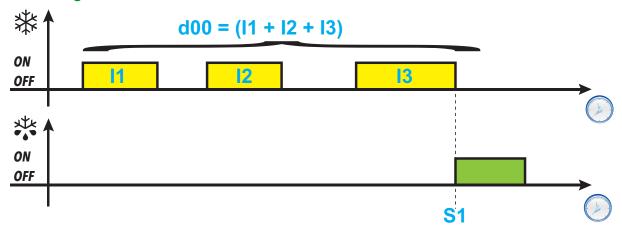
Activation method	Parameters
Compressor running time	d00/d01
The defrost is activated when the sum of compressor operating period durations reaches the value d00.	
Instrument running time	dit/d11
The defrost is activated when the instrument operating period duration reaches the value dit.	
Compressor stop	d20
The defrost is activated when the compressor switches off (only if d20 = 1).	
Evaporator temperature	d40d44
The defrost is activated when the Evaporator temperature drops below the set threshold d41 .	
Temperature differential	d50d55
The defrost is activated on the basis of the value (Pb2-Pb1), considered in absolute or relative mode, and on the basis of the defrost activation threshold d52 .	

Compressor running time

This defrost can be configured via the following parameters:

Parameter	Description
d00	Compressor running time before defrost is activated.
	When the compressor on time is equal to d00 , defrost is active. The value of d00 is calculated as the sum of all the compressor on times.
d01	d00 unit of measure:
	 0 = hours 1 = minutes 2 = seconds

Regulation diagram



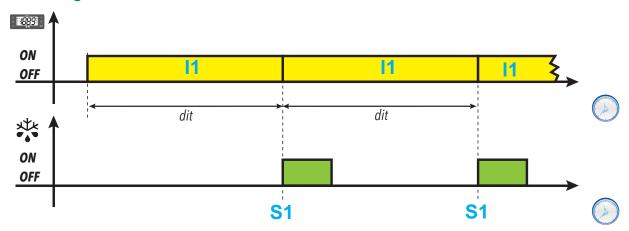
Legend: **I1**, **I2**, **I3** = Compressor on times; **S1** = Defrost start.

Instrument running time

This defrost can be configured via the following parameters:

Parameter	Description	
dit	Time interval between one defrost and the next.	
	After the instrument is switched on, a meter is activated and remains on, regardless of the compressor status. When the time period dit has elapsed, defrost will be activated and the meter will start a new count until the next defrost is activated.	
d11	 dit unit of measure: 0 = hours 1 = minutes 2 = seconds 	

Regulation diagram



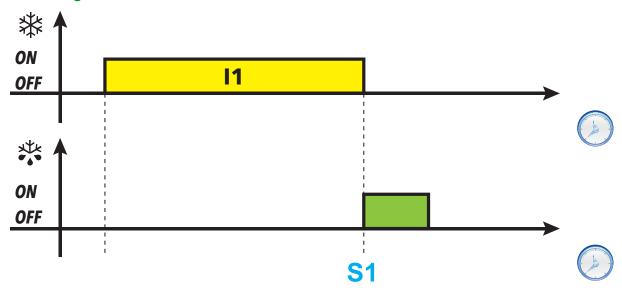
Legend: **I1** = Controller on time (equal to **dit**); **S1** = Defrost start.

Compressor stop

This defrost can be configured via the following parameters:

Parameter	Description
d20 Can be used to activate the defrost when the compressor switches off.	
	 0 = mode disabled. 1 = enabled. Defrost is activated when the compressor switches off.

Regulation diagram



Legend: **I1** = Compressor on time; **S1** = Defrost start

Evaporator temperature

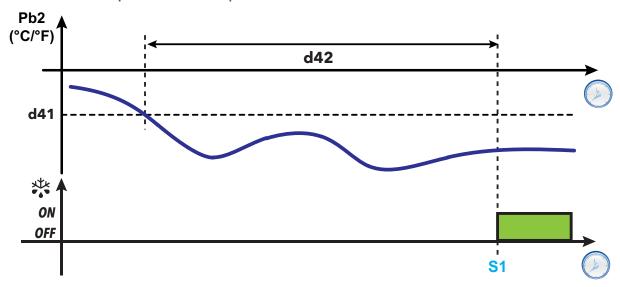
This defrost can be configured via the following parameters:

Parameter	Description
d40	Enables/disables use of probe Pb2.
	 0 = mode disabled 1 = enabled. Defrost runs according to the value read by Pb2 (only refers to defrost with threshold)
d41	Sets the defrost activation threshold (on the value read by probe Pb2)
d42	Sets the maximum time for which the evaporator can remain under the threshold d41
d43	Sets the type of incremental time count in which the evaporator temperature remains under the threshold value.
	 0 = incremental count independent of the compressor status 1 = incremental count with compressor on (when the compressor is off the incremental count is reset) 2 = incremental count independent of the compressor status. The incremental count stops when the temperature rises above the threshold d41 3 = incremental count with compressor on and until the temperature rises above the threshold d41
d44	 O = absolute value (for example: d41 = -25°C means that the threshold temperature is exactly -25°C) 1 = relative value (negative offset, relative to the value measured by the defrost probe Pb2 (if d40 = 1) at the end of the first cooling cycle or on startup). Set the threshold to a value equal to the value measured by probe Pb2 at the end of the first cooling cycle or at startup (if d40 = 1) reduced by the amount set in parameter d41.

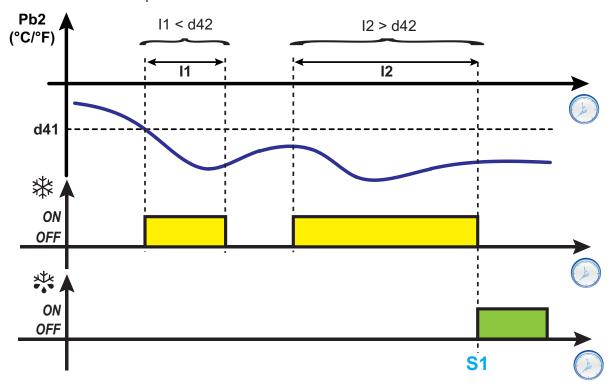
Note: this function can only be activated in models which manage probe Pb2 (as long as the conditions are correct to do so).

Regulation diagrams

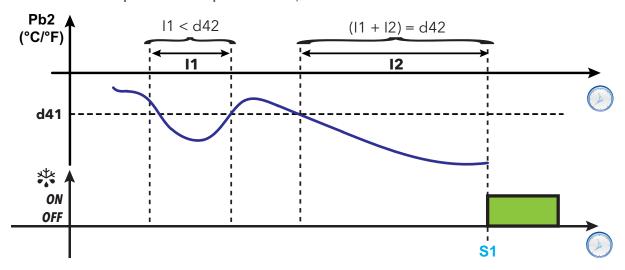
d43 = 0: count independent of the compressor status



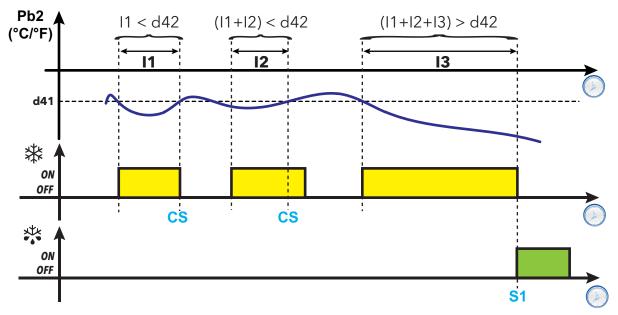
d43 = 1: count with compressor on



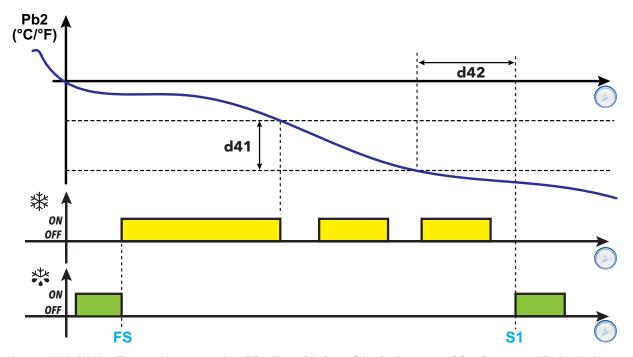
d43 = 2 : count independent of compressor status, count active for Pb2 values below threshold d41







d44 = 1: Threshold in relative value



Legend: I1, I2, I3 = Times with count active; **FS** = End of defrost; **S1** = Defrost start; **CS** = Count stop (Pb2 > **d41**).

Temperature differential

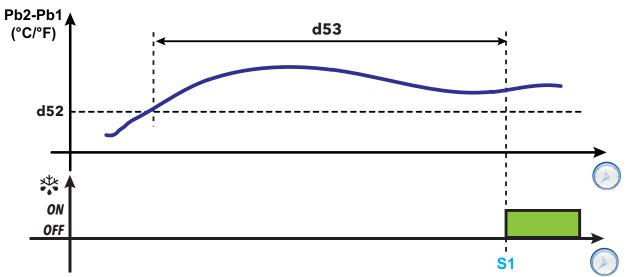
This defrost can be configured via the following parameters:

Parameter	Description	
d50	Enables/disables use of probe Pb2.	
	 0 = disabled 1 = enabled. Defrost runs according to the value read by Pb2 (only refers to defrost with threshold) 	
d51	Enables/disables use of probe Pb1.	
doi	 0 = disabled 1 = enabled. Defrost runs according to the value read by Pb1 (only refers to defrost with threshold) 	
d52	Sets the defrost activation threshold (absolute differential Pb2-Pb1)	
d53	Sets the maximum time for which the temperature difference (Pb2-Pb1) can remain above the threshold d52	
d54	Sets the type of incremental time count in which the evaporator temperature remains above the threshold value d52 .	
	 0 = incremental count independent of the compressor status 1 = incremental count with compressor on (when the compressor is off the incremental count is reset) 2 = incremental count independent of the compressor status. The incremental count stops when the temperature difference (Pb2-Pb1) falls below the threshold d52 3 = incremental count with compressor on and until the temperature drops below the threshold d52 	
d55	Sets the threshold management mode.	
	 0 = absolute value 1 = relative value (negative offset, relative to the differential of the temperatures measured by probes Pb1 and Pb2 (Pb2-Pb1) at the end of the first cooling cycle or on startup). 	

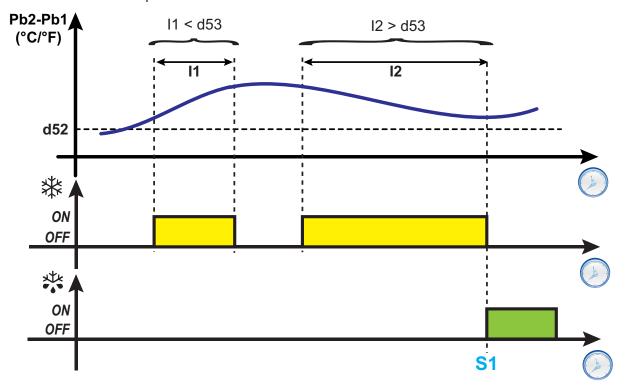
Note: this function can only be activated in models which manage probe Pb2 (as long as the conditions are correct to do so).

Regulation diagrams

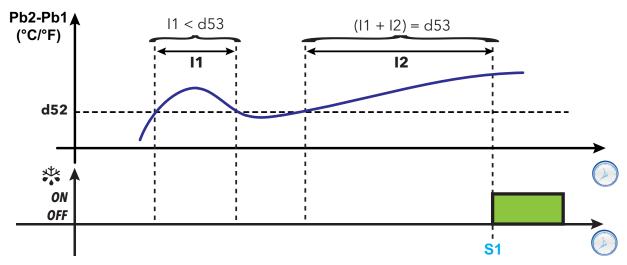
d54 = 0: count independent of the compressor status



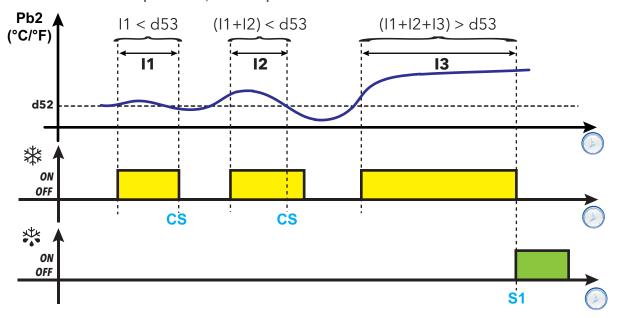
d54 = 1: count with compressor on



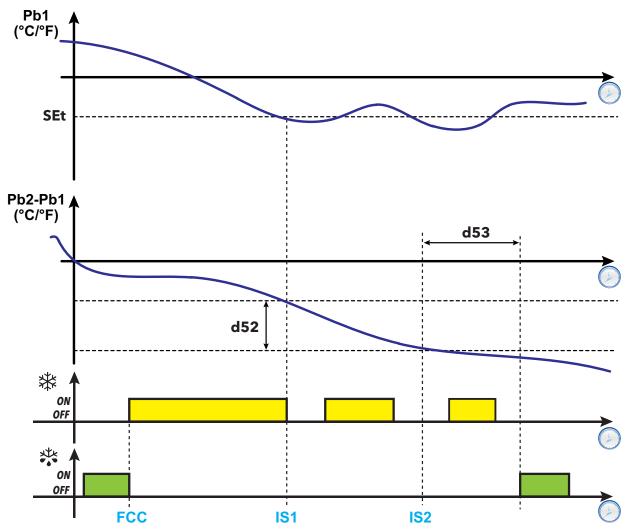
d54 = 2: count independent of the compressor status, count stop below the threshold



d54 = 3: count with compressor on, count stop below the threshold



d55 = 1: Threshold in relative value



Legend: **I1**, **I2**, **I3** = Times with count active; **S1** = Defrost request; **CS** = Count stop (Pb2 > **d52**); **FCC** = Start first cooling cycle; **IS1** = Moment in correspondence with the first cooling cycle in which the cut-in threshold is calculated (Threshold = Pb2-Pb1+Offset); **IS2** = Activation threshold crossing moment calculated at the **IS1** time.

Standard defrost

To select this defrost mode, set parameter dty (defrost type).

Defrost takes place due to the evaporator heating up, in one of the following ways:

dty value	Defrost mode
0	Electric heater defrost
0	Defrost due to compressor stoppage
1	Cycle inversion (hot gas) defrost*
2	Free defrost*

(*): only models that manage probe Pb2.

Electric heater defrost

When defrost is activated (dty = 0):

- The compressor stops
- · the relay to which the electric heaters are connected, configured as defrost regulator output, is activated

At the end of defrost, if dt≠0 the controller will move on to the dripping phase and the compressor, fans and heaters will remain inactive. At the end of the dripping cycle, regulation begins again as normal.

End of defrost

Defrost ends in the following conditions:

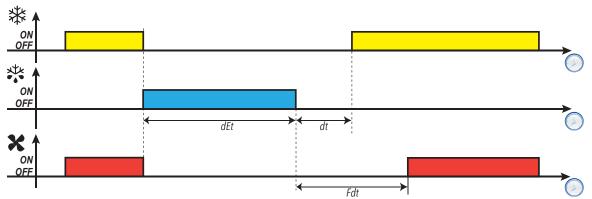
Condition	H42 value	Evaporator probe (Pb2)
End of timeout period set using parameter dEt .	0	Not managed
Defrost end setpoint set using parameter dS1 reached or due to timeout if the setpoint is not reached within the time period dEt .	1	Managed

Notes:

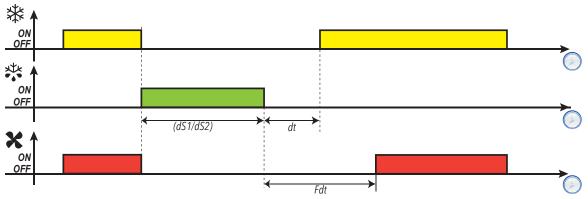
- To end defrost manually, switch the controller off and on again or use Stand-by function
- Temperature alarms are excluded during defrost
- If dS1 intervenes before dEt, dripping (managed by parameters dt and Fdt) is activated in correspondence with dS1 intervention
- If Fdt < dt Fdt = dt is set
- During the defrost the fans are off if **dFd** = y, otherwise they follow the other settings for the fan regulator
- The programmed defrost is carried out independently of the Pb1 status
- Defrost and dripping are carried out independently of the door switch activation or not

Regulation diagram

End of electric heater defrost due to timeout



End of electric heater defrost due to temperature



Parameter	Description
don	Compressor relay activation delay time from call.
doF	Delay time after compressor relay switch-off and the next switch-on.
dbi	Delay time between two compressor switch-ons.
dty	Type of defrost.
dEt	Defrost timeout. Determines the maximum duration of the defrost.
dS1	Evaporator 1 defrost end temperature.
d40	Enables/disables use of probe Pb2.
Fdt	Fan activation delay after a defrost.
dFd	Evaporator fan exclusion during defrost.
dt	Dripping duration.

Defrost due to compressor stoppage

When electric defrost is activated (dty=0),

- The compressor stops
- No relay is configured as defrost regulator output

End of defrost

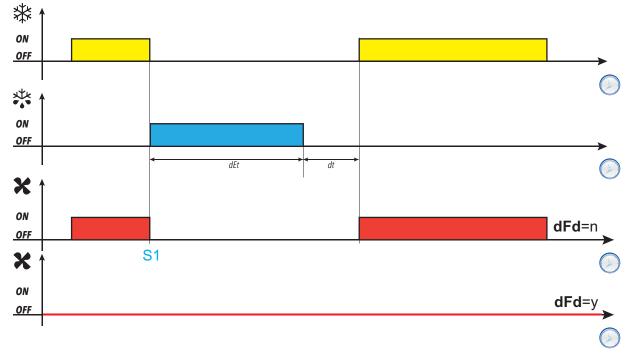
Defrost ends in the following conditions:

Condition	H42 value	Evaporator probe (Pb2)
End of timeout period set using parameter dEt .	0	Not managed
Defrost end setpoint set using parameter dS1 reached or due to timeout if the setpoint is not reached within the time period dEt .	1	Managed

Notes:

- To end defrost manually, switch the controller off and on again or use Stand-by function
- · Temperature alarms are excluded during defrost
- If dt ≠ 0, at the end of defrost the compressor and fans remain off for the time period dt (dripping time)
- During the defrost the fans are off if **dFd** = y, otherwise they follow the other settings for the fan regulator
- The programmed defrost is carried out independently of the Pb1 status
- Defrost and dripping are carried out independently of the door switch activation or not

Regulation diagram



Legend: S1 = Start of defrost

Parameter	Description
dty	Type of defrost.
dEt	Defrost timeout. Determines the maximum duration of the defrost.
dFd	Evaporator fan exclusion during defrost.
dt	Dripping duration.

Cycle inversion (hot gas) defrost

When defrost is activated (dty= 1):

- · The compressor remains active for the entire duration of the defrost
- · the relay to which the solenoid valve is connected, configured as defrost regulator output, is activated

At the end of defrost the valve relay and the compressor relay are deactivated. The compressor relay is stopped for the entire duration of the dripping cycle, set via parameter **dt** (if a value other than zero). At the end of the dripping cycle regulation begins again as normal.

End of defrost

Defrost ends in the following conditions:

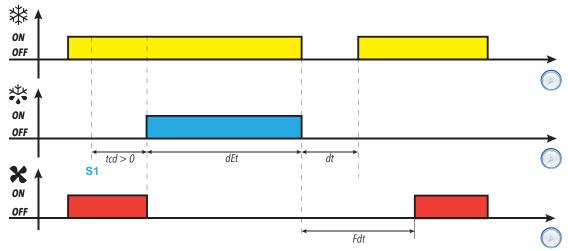
Condition	H42 value	Evaporator probe (Pb2)
End of timeout period set using parameter dEt	0	Not managed
Defrost end setpoint set using parameter dS1 reached or due to timeout if the setpoint is not reached within the time period dEt .	1	Managed

Notes:

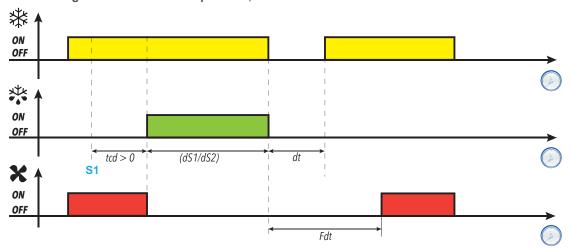
- . To end defrost manually, switch the controller off and on again or use Stand-by function
- · Temperature alarms are excluded during defrost
- · The compressor safety timings (managed by parameters don, doF and dbi) take priority over defrost
- If dS1 intervenes before dEt, dripping (managed by parameters dt and Fdt) is activated in correspondence with dS1 intervention
- If **Fdt** < **dt**, **Fdt** = **dt** is set
- During the defrost the fans are off if dFd = y, otherwise they follow the other settings for the fan regulator
- The programmed defrost is carried out independently of the Pb1 status
- Defrost and dripping are carried out independently of the door switch activation or not

Regulation diagrams

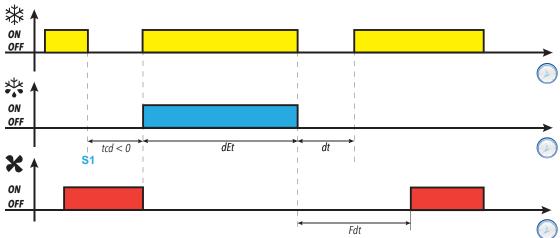
End of hot gas defrost due to timeout, with tcd > 0



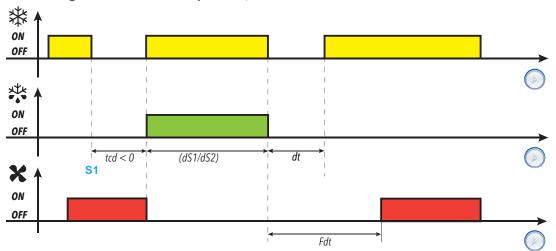
End of hot gas defrost due to temperature, with tcd > 0



End of hot gas defrost due to timeout, with tcd < 0



End of hot gas defrost due to temperature, with tcd < 0



Legend: **S1** = Defrost request

Parameter	Description
don	Compressor relay activation delay time from call.
doF	Delay time after compressor relay switch-off and the next switch-on.
dbi	Delay time between two compressor switch-ons.
tcd	Minimum compressor on or off time which must elapse before defrost is activated.
dty	Type of defrost.
dEt	Defrost timeout. Determines the maximum duration of the defrost.
dS1	Evaporator 1 defrost end temperature.
Fdt	Fan activation delay after a defrost.
dt	Dripping duration.

Free defrost

When defrost is activated (dty= 2):

- · The compressor remains under control of the compressor regulator for the duration of the defrost
- the relay to which the electric heaters are connected, configured as defrost regulator output, is activated

At the end of the defrost the heaters switch off.

During the dripping cycle the compressor continues to run.

End of defrost

Defrost ends in the following conditions:

Condition	H42 value	Evaporator probe (Pb2)
End of timeout period set using parameter dEt		Not managed
End of defrost temperature setpoint, set using parameter dS1, reached.		
Note : (only models that manage probe Pb2) If the setpoint is not reached within the time set using parameter dEt (defrost timeout), the defrost ends in any case due to timeout.		Managed

Notes:

- To end defrost manually, switch the controller off and on again or use Stand-by function
- Temperature alarms are excluded during defrost
- If dS1 intervenes before dEt, dripping (managed by parameters dt and Fdt) is nevertheless activated in correspondence with the end of interval dEt
- The programmed defrost is carried out independently of the Pb1 status
- Defrost and dripping are carried out independently of the door switch activation or not

Parameter	Description
dty	Type of defrost.
dEt	Defrost timeout. Determines the maximum duration of the defrost.
dS1	Evaporator 1 defrost end temperature.
Fdt	Fan activation delay after a defrost.
dt	Dripping duration.

Synchronized Defrost from Digital Input

Functioning conditions

The function can be activated by setting:

• H11 = ±13 (Synchronized defrost)

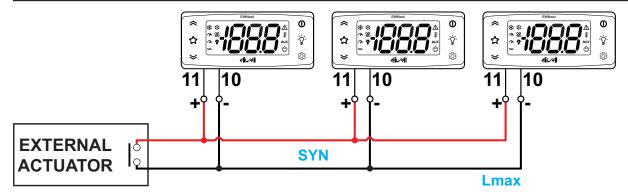
The start of a synchronized defrost can be enabled by means of an external actuator or via one of the EWNext devices that share the synchronism connection.

NOTICE

INOPERABLE DEVICE

- The external actuator should be voltage free.
- Use a maximum of 8 EWNext devices in the network.
- For defrost synchronization line connection, use cables no longer than 10 m (32.80 ft).

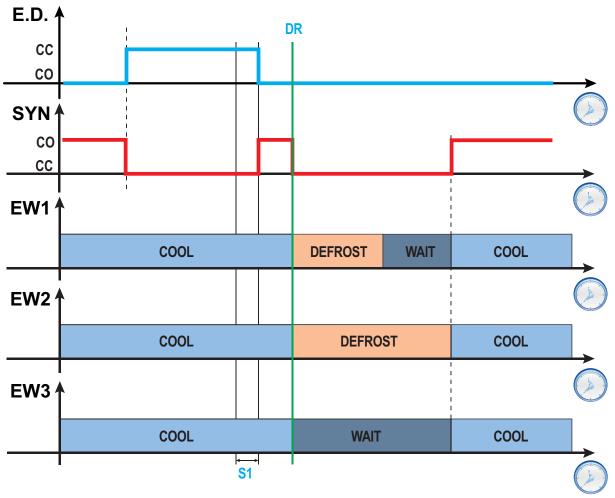
Failure to follow these instructions can result in equipment damage.



Legend: External Actuator = External actuator; **SYN** = Defrost synchronization line; **Lmax** = Maximum connection length (must be under 10 m - 32.8 ft).

CASE 1: at least one controller can start a defrost

If at least one controller is capable of starting a defrost, the other controllers - that do not possess the conditions for starting it - inhibit normal regulation. When all syncronized controllers have completed the defrost sequence, they will begin regulating normally again.



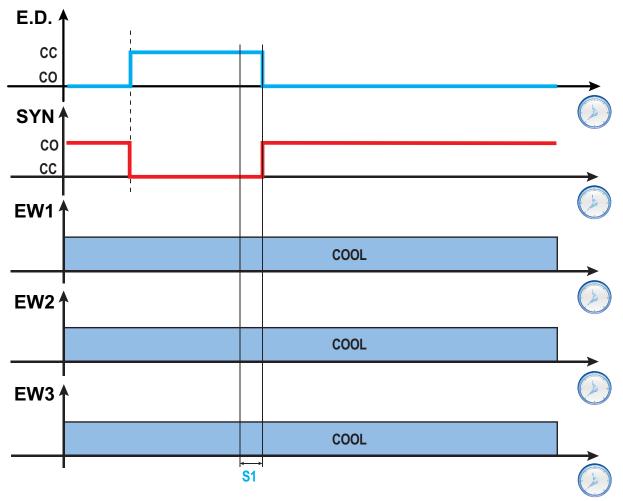
Legend: **E.D.** = External device; **SYN** = Synchronization line; **CC** = Closed contact; **CO** = Open contact; **EW1...EW3** = Synchronization network tools; **DR** = Defrost request; **S1** = Time period of 0.5 seconds; **COOL** = Normal regulation; **WAIT** = Command wait time; **DEFROST** = Defrost.

The defrost sequence will be:

- 1. The external device activates the synchronization line, closing the circuiti for a time period of at least 0.5 seconds (**S1**). During this period all the shared controllers continue to regulate normally.
- 2. The external device deactivates the synchronization line.
 The controllers that possess the conditions for starting a defrost start it activating the synchronization line.

If none of the controllers are in a condition to start a defrost, they will continue to regulate normally.





Legend: **E.D.** = External device; **SYN** = Synchronization line; **CC** = Contact closed; **CO** = Contact open; **EW1...EW3** = Synchronization network tools; **DR** = Defrost request; **S1** = Time period of 0.5 seconds; **COOL** = Normal regulation.

Functions

Contents

This section includes the following topics:

Door switch	. 71
Stand-by	.72
Copy parameters (UNICARD)	. 73
Boot loader firmware	.74
Reset TelevisAir diagnostic counters	.75

Door switch

Description

By setting **H11** = ± 4 it is possible to connect a door switch to the digital input. When it is activated, the compressor and/or fans are deactivated instantly or after a time period set with parameter **dCo**.

Operating mode

Controller operation on opening of the door switch depends on parameters dod, dAd and dCo:

dod		Fans	Compressor
0 = function disabled		On	On
1 = fans disabled	NA	Off	On
	0		Off
2 = compressor disabled	> 0	On	Off after dCo time
	0		Off
3 = compressor and fans disabled	> 0	Off	Off after dCo time

Note: If the door is opened during a defrost cycle, the defrost continues normally.

Parameter	Description
dod	Utilities switched off upon activation of the digital input set for the door switch.
dAd	Digital input activation delay.
dCo	Compressor switch-off delay from door switch.
oAo	Alarm signaling delay after deactivation of the digital input (door closure).
tdo	Delay time due to door open alarm.
H11	DI digital input/polarity configuration.
H21	Configuration of digital output Out1
H22	Configuration of digital output Out2
H23	Configuration of digital output Out3

Stand-by

Description

The stand-by function maintains the controller power supply and, depending on the value of parameter H08:

- · switches off the display or shows oFF
- · deactivates all regulators (or not)
- excludes alarms (or not)

Activation

The stand-by function can be activated in one of the following ways:

- press and hold a key (configured with H3x = 4)
- via digital input (configured with H11 = ±6)
- using a Supervisor, via Modbus command (serial)
- via APP (if the BTLE Dongle is present. See accessories section)

Note: the digital input takes priority over the key. If both are configured, the key command will be excluded.

Operation

When the stand-by function is activated, depending on the setting for H08, the following will occur:

- H08 = 0: display off, the regulators remain active and the instrument can activate the alarm icon △ when an alarm occurs
- H08 = 1: display off, all relays are de-energized and the alarms deactivated
- H08 = 2: the display shows the text oFF, all relays are de-energized and the alarms deactivated

On exiting stand-by function, the temperature alarm is excluded for the time period set with parameter **PAo**; the outputs are deactivated for the time period set with parameter **odo**. These timing are reset every time the controller is switched off.

If stand-by had been active when the controller was switched off (as the result of a blackout, to the opening of the general switch, etc.), it will also remain active the next time it is switched on.

Parameter	Description
PAo	Alarm exclusion time when switching on the controller, after a power failure
odo	Output activation delay after startup
H08	Stand-by operating mode
H11	DI digital input/polarity configuration.
H31	Δ key configuration.
H32	$oldsymbol{ abla}$ key configuration.
H33	ပံ key configuration.

Copy parameters (UNICARD)

Introduction

The UNICARD connects to the TTL serial port and allows uploading/downloading of a parameters map.

Note: Format the UNICARD the first time it is used.

The UNICARD:

- · Can be connected directly to a computer by means of a USB port.
- If powered by a USB power supply device, it can power EWNext Optimized -HC during the upload/download phases.

Formatting the UNICARD

- 1. Access the installer parameters, entering the PA2 password if enabled
- 2. Scroll through the folders with △ and ♥ until you find the folder FPr
- 3. Press SET to confirm
- 4. Scroll through the parameters using ∆ and ♥ until you see parameter Fr
- 5. Press **SET** to confirm.

This command is used to format the UNICARD (necessary when using the card for the first time).

Note: the Fr parameter deletes all data present. It's not possible to stop and/or undo this task.

Uploading parameters from the controller to the UNICARD

- 1. Access the installer parameters, entering the $\mbox{\bf PA2}$ password if enabled
- 2. Scroll through the folders with △ and ♥ until you find the folder FPr
- 3. Press SET to confirm
- 4. Scroll through the parameters using ∆ and ∇ until you see parameter UL
- 5. Press SET to confirm
- 6. If the operation is completed, the display will show **yES**, otherwise it will show **no**.

Downloading parameters from the UNICARD to the controller

Connect the UNICARD when the controller is switched off. When the controller is switched on, the data is downloaded automatically from the UNICARD to the controller. On the display shows **dLy** if the operation was successful, otherwise it will show **dLn**.

Note: after downloading the data, the instrument will work with the settings for the loaded map straight away.

Boot loader firmware

Description

The device comes with Boot Loader, which makes it possible to update the firmware directly on site. Updating takes place via UNICARD.

Operating mode

To carry out the update:

- 1. Connect the UNICARD with the authentic application loaded onto it
- 2. Restore the device power, if it is off; otherwise, switch it off and on again
- 3. Wait for the UNICARD LED to flash (operation in progress)
- 4. The operation is complete when the UNICARD LED is:
 - ON: operation completed successfully
 - OFF: operation not completed (application incompatible ...)
- 5. At the end of the download, if the operation was successful, firmware is started automatically with the new release. Otherwise, if the applicative is authentic, a feedback is given on display and the applicative does not start.

The controller can be upgraded only with authenticated Schneider Electric or Eliwell files. In case the authenticity check fails the controller stay idle, without any capacity for regulation.

NOTICE

UNINTENDED EQUIPMENT OPERATION

Use authenticated Schneider Electric or Eliwell files only.

Failure to follow these instructions can result in equipment damage.

To restore the normal operation of the controller, upload an authenticated file.

Diagnostics

During application update the display shows:

- Fans icon on (%): UNICARD connected
- Alarm icon on (): binaries file non authentic
- Alarm and reduced set icons on (⚠+🗇): error during firmware updating
- Temperature icon flashing (): firmware updating running

Reset TelevisAir diagnostic counters

Description

The controller provides via TelevisAir a set of counters that can be used for diagnostic or maintenance functions.

Counters list

Label	Counter	Counter presence	RS	RD
tC1	Compressor 1 working hours	Always	10 h	100 h
nC1	Compressor 1 activations	Always	1	10
td1	Defrost 1 working hours	If configured	1 m	1 h
nd1	Defrost 1 activations	If configured	1	10
tdo	Door opening time	If configured	1 m	1 h
ndo	Door opening count	If configured	1	10
nP0	Power ON counter	Always	1	1
rSt	Reset all the counters			

Legend:

- RS = Multiplier factor to be applied to the counter when the value is read via the serial port.
- RD = Multiplier factor to be applied to the counter when the value is read on display.

Operating mode

To reset one or more counters, proceed as follows:

- 1. Access the Installer parameters entering the PA2 password if enabled
- 2. Scroll through the folders with Δ and ∇ until you find the folder **FnC**
- 3. Press SET to confirm
- 4. Scroll through the menu options with △ and ∇ until you find the label Cnt and press SET
- 5. Scroll through the parameters with Δ and ∇ until you find the counter to reset
- 6. Press and hold SET for at least 5 seconds to confirm.

Note: Parameter **rSt** allows you to reset all the counters simultaneously.

Regulators

Contents

This section includes the following topics:

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Compressor	78
Managing the compressor with the probe in error	81
Evaporator fans	82
Energy saving (night mode) - Reduced set	85

Heat/Cool

Description

The regulator can work with an absolute or relative differential, both in Heat and Cool modes, and is controlled by the value of probe Pb1.

Functioning conditions

Before activating the compressor, the regulator makes sure of the following conditions:

- The controller is on or in stand-by (in the latter case, only applies if **H08** = 0)
- Regulation probe Pb1 is not in error (alarm **E1** is not present)
- From power-on the time set using parameter **odo** has elapsed (only if **odo**≠0)
- There are no active defrosts (depending on the defrost type)

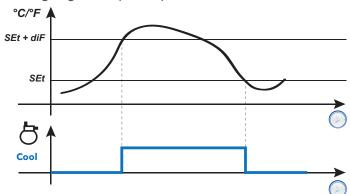
If an offset is activated on the setpoint (oSP) and on the differential (odF), then:

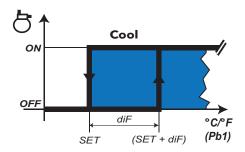
- SEt will be replaced by the value (SEt + oSP)
- **diF** will be replaced by the value (**diF+ odF**)

Note: oSP can assume both positive and negative values.

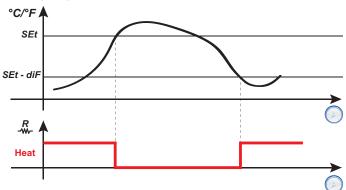
Regulation diagrams

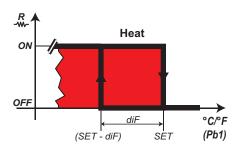
Cooling Regulation (HC = C)





Heating Regulation (HC = H)





Legend: **Heat** = Heating; **Cool** = Cooling.

Parameters

Parameter	Description
SEt	Regulation setpoint
diF Regulator activation differential	
HC	Select regulation mode (H = Heat / C = Cool)
oSP	Offset on setpoint
odF	Offset on differential in energy saving mode
odo	Output activation delay after startup

Compressor

Description

The compressor is controlled by a relay and switches on/off according to the following elements:

- the temperature value measured by probe Pb1
- the temperature control functions set
- · the defrost/dripping functions

For compressor-controller wiring diagrams, refer to the "Electrical Connections" section.

Note: digital output Out1 is set as "Compressor" by default.

Functioning conditions

The regulator is activated if the following conditions occur:

- The controller is on or in stand-by (in the latter case, only applies if **H08** = 0)
- Regulation probe Pb1 is not in error (alarm E1 is not present)
- From power-on the time set using parameter **odo** has elapsed (only if **odo**≠0)
- There are no active defrosts (depending on the defrost type)

The Compressor activation request at startup can be delayed by setting parameter odo.

During this period, the compressor remains off and, if an activation request is made, the compressor icon #flashes.

Regulator activations is possible also near a defrost cycle.

There is a fixed interval of one second between the request and the actuation of the linked relay.

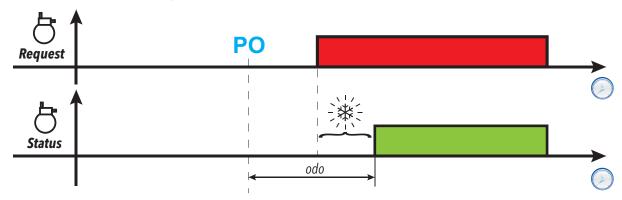
Compressor protections

To avoid damaging the compressor, the following protections can be set up:

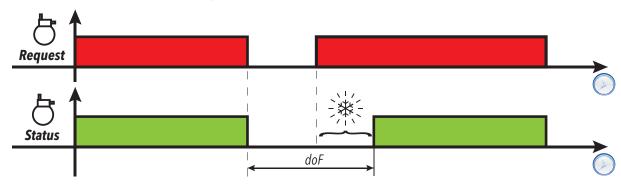
- a delay **doF** between compressor relay switch-off and the next switch-on. If a new activation request arises during the delay **doF**, the compressor icon will flash on the display.
- a delay dbi between one compressor startup and the next. The delay dbi is calculated from the previous compressor startup. If a request arises during the delay dbi, the compressor icon will flash on the display.
- a delay don for compressor startup after the request. During the delay don, the compressor icon will flash on the display.
- · Minimum compressor output activation time Cit.
- a maximum compressor running time CAt, even if the activation request has not ended and is normally
 associated with the delay doF. During the time period doF in which the compressor remains off, the
 compressor icon will flash on the display.

Regulation diagrams

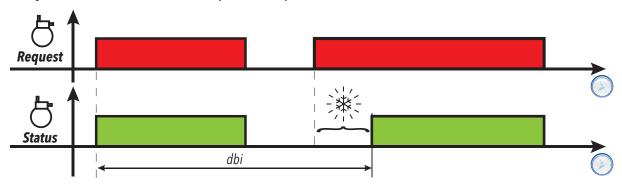
Compressor activation delay from controller power-on



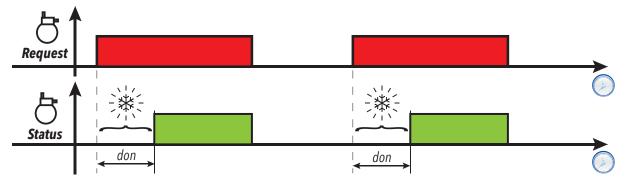
Compressor output activation delay from switch-off



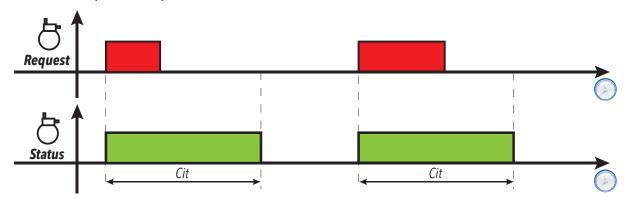
Delay between two consecutive compressor output activations



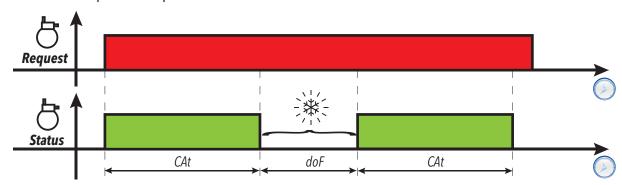
Compressor activation delay from request



Minimum compressor output activation time



Maximum compressor output activation time



Legend: **PO** = Controller switch-on; = Compressor icon flashing; **Request** = Compressor activation request; **Status** = Compressor status (ON/OFF).

Parameters

Parameter	Description
don	Compressor relay activation delay from call
doF Delay between compressor relay switch-off and the next switch	
dbi Delay between two subsequent compressor starts	
Cit	Minimum compressor activation time
CAt	Maximum compressor activation time
odo	Output activation delay from startup

Managing the compressor with the probe in error

Description

The compressor relay operates in Duty cycle mode (according to parameters ont and oft) if:

• probe Pb1 is in error and the display shows E1 (see alarms list)

The first time to consider is always **ont**. If **ont** >0 the compressor protections set using **don**, **doF**, **dbi**, **Cit** and **CAt** still apply.

Note: parameter **odo** inhibits activation of the relay outputs for its duration, with the exception of the alarm relay and the buzzer (if present).

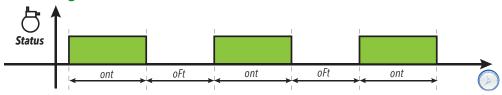
Functioning conditions

Ont	OFt	Compressor output
0	0	off
0	>0	off
>0	0	active
>0	>0	Duty cycle, regardless of the probe values (probe Pb1 not working) and requests from other utilities

Note: if probe Pb1 is functioning, Duty cycle mode is not active and conventional regulation is activated (see compressor section).

Note: when the probe is restored (connected/replaced), normal regulation starts up again.

Regulation diagram



Parameters

Parameter	Description
ont	Compressor output ON time if probe Pb1 is not functioning
oFt Compressor output OFF time if probe Pb1 is not functioning	
don Compressor relay activation delay from call	
doF	Delay between compressor relay switch-off and the next switch-on
dbi	Delay between two subsequent compressor starts
Cit	Minimum compressor activation time
CAt	Maximum compressor activation time
odo	Output activation delay after startup

Evaporator fans

Functioning conditions

The evaporator fan regulator is activated if the following conditions occur:

- From power-on the time set using parameter **OdO** has elapsed (only if **OdO**≠0).
- The temperature read by the evaporator probe (Pb2) is lower than the value of parameter FSt.
- The fans regulator is not deactivated from parameter **dFd** during the defrost (**dFd** = y).
- Dripping is not active (dt).
- Fan delay after defrost is not active (Fdt).

Regulator activation

The request for fan activation or deactivation can come:

- from the compressor regulator (temperature control mode)
- from the defrost regulator, to control and/or limit the circulation of warm air.

Fan operating modes

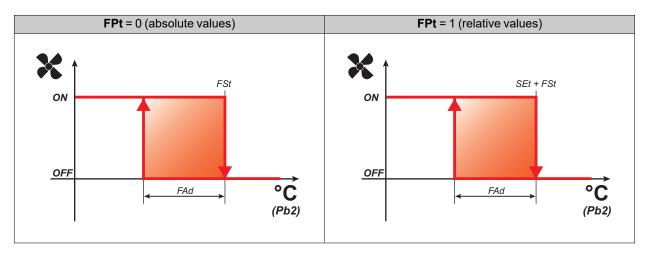
		Day (normal operation)		Night (energy saving)			
Probe Pb2	H42	FCo	Compressor ON	Compressor OFF	Compressor ON	Compressor OFF	
		0	Thermostat controlled	Off	Thermostat controlled	Off	
		1	Thermostat controlled	Thermostat controlled	Thermostat controlled	Thermostat controlled	
		2	Thermostat controlled	Day duty cycle	Thermostat controlled	Night duty cycle	
Present	у	3	Day duty cycle	Day duty cycle	Night duty cycle	Night duty cycle	
		4	Thermostat controlled	Off	Thermostat controlled	Off	
		5	Thermostat controlled	Thermostat controlled	Thermostat controlled	Thermostat controlled	
		6	Thermostat controlled	Thermostat controlled	Thermostat controlled	Thermostat controlled	
		0	Day duty cycle	Off	Night duty cycle	Off	
		1	Day duty cycle	Day duty cycle	Night duty cycle	Night duty cycle	
la aman		2	Day duty cycle	Day duty cycle	Night duty cycle	Night duty cycle	
In error E2	у	3	Day duty cycle	Day duty cycle	Night duty cycle	Night duty cycle	
		4	On	Off	On	Off	
			5	On	Off	On	Off
		6	Day duty cycle	Day duty cycle	Night duty cycle	Night duty cycle	
		0	On	Off	On	Off	
		1	On	Day duty cycle	On	Night duty cycle	
		2	On	Day duty cycle	On	Night duty cycle	
Absent	n	3	Day duty cycle	Day duty cycle	Night duty cycle	Night duty cycle	
		4	On	Off	On	Off	
		5	On	Off	On	Off	
		6	Day duty cycle	Day duty cycle	Night duty cycle	Night duty cycle	

Fan operation in regulation mode

During cooling, fan regulation is carried out based on values **FSt** (fan disabling temperature) and **FAd** (fan differential). Parameter **FPt** can be used to select whether the set temperature values are absolute or relative to the setpoint.

Note: around the fan start temperature Fot, the differential will always be specified by FAd but with the sign inverted.

Regulation diagrams based on whether the values are absolute or relative are shown below:



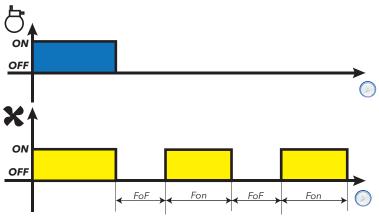
Fan operation in duty cycle

The fans run in duty cycle mode when the compressor is off and this mode is specified by parameter FCo.

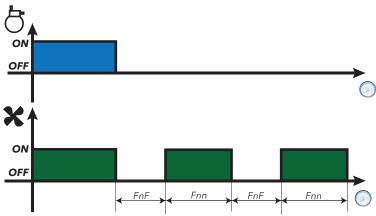
Depending on whether the controller is in day (normal operation) or night (energy saving) mode, fan operation is based on parameters **Fon** and **FoF** (day) or **Fnn** and **FnF** (night):

Fon / Fnn	FoF / FnF	Fans
0	0	Off
0	≠0	Off
≠0	0	On
≠0	≠0	Duty cycle

Regulation diagram for Day duty cycle with compressor off



Regulation diagram for Night duty cycle with compressor off



Fan operation in defrost mode

Operation depends on parameter dFd:

dFd	Fans
У	Off
n	Regulation or duty cycle

Note: to exclude the fans during a defrost, you must set **dFd** = y. Otherwise the compressor is stopped during defrost but the fans run normally.

Fan operation in dripping mode

During dripping the fans remain stopped for the time set using parameter $\mbox{\bf dt}.$

Note: if Fdt is greater than dt the fans remain off for the time set in Fdt.

Post-ventilation

Parameter FdC delays fan deactivation after the compressor has stopped. If FdC = 0 the function is excluded.

Parameters

Parameter	Description
odo	Output activation delay from startup
FPt	Sets whether parameter FSt is expressed as an absolute value or as a value relative to the Setpoint
FSt	Evaporator fan disabling temperature
Fot	Evaporator fan activation temperature
Fdt	Evaporator fan activation delay time after a defrosting cycle
dFd	Evaporator fan exclusion during a defrost cycle
FCo	Evaporator fan operating mode
FdC	Evaporator fan shutoff delay after compressor deactivation
FAd	Evaporator fan trigger differential
dt	Dripping time
Fon	Evaporator fan ON time in day duty cycle mode
FoF	Evaporator fan OFF time in day duty cycle mode
Fnn	Evaporator fan ON time in night duty cycle mode
FnF	Evaporator fan OFF time in night duty cycle mode
ESF	Night (energy saving) mode activation

Energy saving (night mode) - Reduced set

Reduced set operating conditions

The reduced set function can be activated:

- by pressing and holding a key (configured with H3x = 3)
- by activating the digital input (configured with H11 = ±2)
- · using a Supervisor, via Modbus command (serial)
- via APP (if the BTLE Dongle is present. See accessories section)
- via functions menu (label SP)

When the "reduced set" is activated:

- the icon comes on
- **SEt** will be replaced by the value (**SEt + oSP**)
- **diF** will be replaced by the value (**diF+ odF**)

Note: for further details, see: "Heat/Cool".

Energy Saving operating conditions

The energy saving function can be activated:

- by pressing and holding a key (configured with **H3x** = 9)
- by activating the digital input (configured with H11 = ±10 or ±11)
- using a Supervisor, via Modbus command (serial)
- · via APP (if the BTLE Dongle is present. See accessories section)

Parameter **ESt** manages device behavior during the energy saving phase. When energy saving is enabled, the cicon is on.

Parameter **ESt** sets the type of controller operation:

- ESt=0: function disabled
- ESt=1: An offset is applied to the setpoint (Setpoint = SEt + oSP)
- ESt=2: An offset is applied to the differential (Differential = diF+ odF)
- ESt=3: An offset is applied to the setpoint and differential
- ESt=4: Reserved
- ESt=5: Reserved

Regulators

Diagnostics

Contents

This section includes the following topics:

Alarms and indications	88
Minimum and maximum temperature alarm	90
Low refrigerant alarm	92

Alarms and indications

Introduction

All alarms are deactivated automatically when their cause is removed.

Detecting an alarm condition

If there is an alarm condition, the alarm icon \triangle comes on steadily. If present and enabled, the buzzer and the alarm relay are also activated.

Note: If alarm exclusion timings are in progress, the alarm is not signaled.

All active alarms, except those relating to probe error, are listed in the AL folder within the "Machine status" menu.

Silencing an alarm

Press any key or use the menu function: the buzzer is silenced, the alarm icon Δ flashes and the alarm relay is deenergized.

Alarms legend

Code	Description	Buzzer and alarm relay	Reset	Cause	Effects	Solutions
E1	Probe Pb1 error	Active	Automatic Reset	Reading of values outside the operating interval Probe or corresponding wiring in short-circuit or open circuit	 E1 shown Steady alarm icon Maximum/minimum alarm regulator disabled Compressor operation based on parameters Ont and OFt 	Verify the type of probe (default NTC) Verify the probe wiring Replace probe.
E2	Probe Pb2 error Note : only models that manage probe Pb2	Active	Automatic Reset	Reading of values outside the operating interval Probe or corresponding wiring in short-circuit or open circuit	• E2 shown • Steady alarm icon ⚠ • Defrost ends due to timeout (dEt) • The evaporator fans are: on (compressor ON), or run according to parameter FCo, (compressor OFF).	Verify the type of probe (default NTC) Verify the probe wiring Replace probe.
AH1	Alarm due to Pb1 HIGH Temperature	Active	Automatic Reset	Value read by Pb1 > HAL for longer than time tAo (see section "Minimum and maximum temperature alarm" on page 90)	Alarm AH1 added to folder AL No effect on regulation	Wait for the temperature read by Pb1 to drop below the alarm threshold (HAL-AFd)
AL1	Alarm due to Pb1 LOW Temperature	Active	Automatic Reset	Value read by Pb1 < LAL for longer than time tAo (see section "Minimum and maximum temperature alarm" on page 90)	Alarm AL1 added to folder AL No effect on regulation	Wait for the temperature read by Pb1 to rise above the alarm threshold (LAL+AFd)
EA	External alarm	Active	Automatic Reset	Activation of the digital input (H11 = ±5)	Alarm EA added to folder AL Steady alarm icon ⚠ Regulation inhibited if EAL = y	Verify and remove the external cause that caused the alarm on the digital input.
oPd	Open door alarm	Active	Automatic Reset	Digital input activation (H11 = ±4) for a time greater than tdo	 Alarm oPd added to folder AL Steady alarm icon A Regulator inhibited, on the basis of parameter dod 	Close the door Increase the value of parameter oAo

Code	Description	Buzzer and alarm relay	Reset	Cause	Effects	Solutions	
Ad2	Defrost due to timeout Note : only models that manage probe Pb2	Not active	Automatic Reset	End of defrost due to timeout, instead of the defrost end temperature being detected by Pb2	Alarm Ad2 added to folder AL Steady alarm icon	Wait for the next defrost for automatic deactivation.	
rFA	Low refrigerant alarm	Not active	Automatic Reset	Even with the compressor on, the temperature trend does not fall within the interval set by rFt .	Alarm rFA added to folder AL Steady alarm icon	Switch the instrument off and on again (alarm deactivated if rFt = 0)	

Minimum and maximum temperature alarm

Description

The alarms operate according to the temperature read by regulation probe Pb1. The accepted temperature interval limits are set using parameters **HAL** and **LAL**.

Alarm codes

Code	Description
AH1	High temperature alarm
AL1	Low temperature alarm

High and low temperature alarms are excluded during a defrost. The triggering of these alarms does not have any effect on the regulation in progress.

Absolute or relative temperature values

Depending on the value of parameter **Att**, the temperature is expressed as an absolute or relative value (differential in respect to the setpoint):

Att value	Label	Description
0	Ab	Absolute values. The HAL and LAL values must have a sign.
1	rE	Relative values. HAL > 0 and LAL < 0.

Alarm conditions

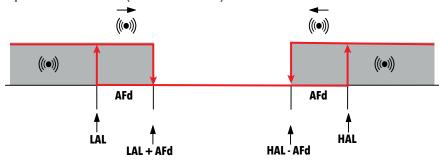
Att value	Temperature read by Pb1 Alarm generated				
0	≥HAL	Maximum temperature			
	≤LAL	Minimum temperature			
4	≥ (SEt + HAL)	Maximum temperature			
1	≤ (SEt + LAL)	Minimum temperature			

Conditions for alarm deactivation

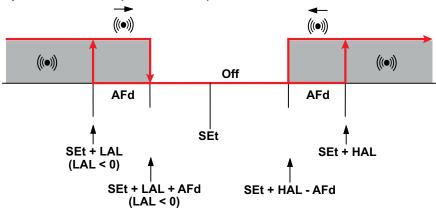
Att value	Temperature read by Pb1 Alarm generated			
0	≤ (HAL - AFd)	Maximum temperature		
0	≥ (LAL + AFd)	Minimum temperature		
1	≤ (SEt + HAL - AFd)	Maximum temperature		
	≥ (SEt + LAL + AFd)	Minimum temperature		

Operating diagrams

Operation with Att=0 (absolute values)



Operationwith Att=1 (relative values)



Parameters

Parameter	Description
Att	Expression mode for HAL and LAL values (absolute or relative)
AFd	Alarm activation differential
HAL	Maximum temperature limit
LAL	Minimum temperature limit
PAo	Alarm exclusion time when switching on the controller, after a power failure
dAo	Exclusion time for temperature alarms after a defrost cycle
oAo	Exclusion time for temperature alarms after closing the door
tAo	Temperature alarm signaling delay time

Low refrigerant alarm

Description

When the compressor is running, the trend of the regulation probe temperature is monitored.

f the trend of the temperature probe does not decrease within an interval given by \mathbf{rFt} , the alarm icon turns on steady and the alarm \mathbf{rFA} is added to folder \mathbf{AL} .

You can silence the alarm with the normal alarm silence procedure.

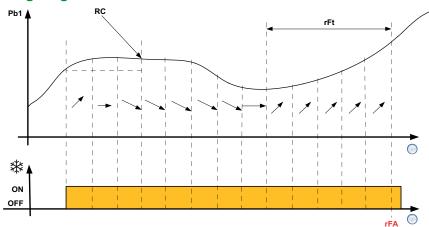
Once this alarm has been detected, the device have to be switched off and on again to cancel it.

The diagnostic is disabled if rFt = 0.

Alarm codes

Code	Description
rFA	Low refrigerant alarm

Operating diagrams



Legend: **RC** = reset counter; **rFt** = monitored time interval; **rFA** = alarm activation.

Parameters

Parameter	Description
rFT	Low refrigerant alarm signaling delay.

Parameters EWNext Optimized -HC

Contents

This section includes the following topics:

Parameters EWNext Optimized -HC 94

Parameters EWNext Optimized -HC

User parameters EWNext Optimized -HC

Parameter	Description	Range	MU	EWNext 961 O/B	EWNext 971 O/B	EWNext 974 O/B	EWNext 974 O/Y
SEt	Regulation setpoint with range between the minimum setpoint LSE and the maximum setpoint HSE . The setpoint value is set in the "Machine status" menu.	LSEHSE	°C/°F	3.5	3.5	3.5	3.5
diF	Compressor relay activation differential; the compressor stops when reaching the entered setpoint (upon indication of the regulation probe) and restarts at a temperature value equal to the setpoint plus the value of the differential.	0.130.0	°C/°F	2.0	2.0	2.0	2.0
LSE	Minimum setpoint value.	-67.0 HSE	°C/°F	-50.0	-50.0	-50.0	-50.0
HSE	Maximum setpoint value.	LSE302	°C/°F	99.0	99.0	99.0	99.0
dty	Type of defrost. • 0 = electric defrost or due to stoppage - compressor OFF during defrost • 1 = cycle inversion (hot gas) defrost; compressor on during defrost • 2 = defrost with "Free" mode; defrost independent of compressor.	0/1/2	num	-	0	0	0
dEt	Defrost timeout. Determines the maximum duration of the defrost	1250	min	30	30	30	30
dS1	Evaporator 1 defrost end temperature (measured by probe Pb2)	-67.0302	°C/°F	-	8.0	8.0	8.0
dit	Time interval between one defrost and the next	0250	hours	24	24	24	24
FSt	Fan disabling temperature; a value, read by the evaporator probe.	-67.0302	°C/°F	-	50.0	50.0	50.0
dt	Dripping time.	0250	min	-	0	0	0
dFd	Used to select or deselect the exclusion of the evaporator fans during defrosting. • no(0) = no • yES(1) = yes (fan excluded - off).	no/yES	flag	-	yES	yES	yES
HAL	Maximum temperature alarm. Temperature value (in an absolute or relative value - see Att) which, when exceeded, will lead to the activation of alarm signaling.	LAL 302	°C/°F	50.0	50.0	50.0	50.0
LAL	Minimum temperature alarm. Temperature value (in an absolute or relative value - see Att) which, when not reached, will lead to the activation of alarm signaling.	-67.0 HAL	°C/°F	-50.0	-50.0	-50.0	-50.0
tAo	Temperature alarm signaling delay time.	0250	min	0	0	0	0
oSP	Temperature value to be added to the setpoint in the case of an enabled reduced set (Economy function).	-30.030.0	°C/°F	0.5	0.5	0.5	0.5
odF	Differential offset during an energy saving cycle or reduced set.	0.130.0	°C/°F	4.0	4.0	4.0	4.0
CA1	Positive or negative temperature value to be added to the value of Pb1.	-30.030.0	°C/°F	0.0	0.0	0.0	0.0
CA2	Positive or negative temperature value to be added to the value of Pb2.	-30.030.0	°C/°F	-	0.0	0.0	0.0

Parameter	Description	Range	MU	EWNext 961 O/B	EWNext 971 O/B	EWNext 974 O/B	EWNext 974 O/Y
LoC	Keypad lock. no(0) = Keypad lock disabled yES(1) = Keypad lock enabled (on startup or when 30 seconds have passed since the last action carried out on the user interface)	no/yES	flag	yES	yES	yES	yES
ddL	Display mode during defrosting. 0 = display the temperature read by Pb1 1 = inhibits reading on the value of Pb1 at the start of defrost and until the setpoint is reached 2 = displays label dEF during defrost until the setpoint is reached.	0/1/2	num	1	1	1	1
Ldd	Display unlock timeout value - label dEF	0250	min	30	30	30	30
PS1	When enabled (PS1 ≠0) this is the access key for the user parameters.	0250	num	0	0	0	0
tAb	Reserved: read-only parameter.	/	1	1	1	1	/

Note: if one or more parameters in folder CnF are changed, the controller must be switched off and then on again to make sure it works properly.

Note: the "User" menu parameters also include PA2, which allows access to the "Installer" menu.

Note: for the full list of parameters, see the section "Installer parameters".

Installer parameters EWNext Optimized -HC

Parameter	Description	Range	MU	EWNext 961 O/B	EWNext 971 O/B	EWNext 974 O/B	EWNext 974 O/Y
SEt	Regulation setpoint with range between the minimum setpoint LSE and the maximum setpoint HSE. The setpoint value is set in the "Machine status" menu.	LSEHSE	°C/°F	3.5	3.5	3.5	3.5
CP (Compre	essor)						
diF	Compressor relay activation differential; the compressor stops when reaching the entered setpoint (upon indication of the regulation probe) and restarts at a temperature value equal to the setpoint plus the value of the differential.	0.130.0	°C/°F	2.0	2.0	2.0	2.0
LSE	Minimum setpoint value.	-67.0 HSE	°C/°F	-50.0	-50.0	-50.0	-50.0
HSE	Maximum setpoint value.	LSE 302	°C/°F	99.0	99.0	99.0	99.0
НС	The regulator will execute operation for cooling (set " $\mathbf{C}(0)$ ") or heating (set " $\mathbf{H}(1)$ ")	C/H	flag	С	-	-	-
ont	Regulator switch-on time for probe in error: • if Ont = 1 and OFt = 0 compressor always on • if Ont = 1 and OFt > 0 compressor in duty cycle	0250	min	0	0	0	0
oFt	Regulator switch-off time for probe in error: • if OFt = 1 and Ont = 0 compressor always off • if OFt = 1 and Ont > 0 compressor in duty cycle	0250	min	1	1	1	1
don	Compressor relay activation delay time from call	0250	s	0	0	0	0
doF	Delay time after switch-off; the indicated time must elapse between compressor relay switch-off and a subsequent switch-on.	0250	min	0	0	0	0
dbi	Delay time between switch-ons; the indicated time must elapse between two consecutive compressor switch-ons.	0250	min	0	0	0	0
Cit	Minimum compressor activation time before it can be deactivated. If Cit = 0 it is not active.	0250	min	0	0	0	0
CAt	Maximum compressor activation time before it can be deactivated. If CAt = 0 it is not active.	0250	min	0	0	0	0
odo	Output activation delay time from switching on the controller or after a power failure. 0 = not active	0250	min	0	0	0	0
dEF (Defros							
dty	Type of defrost. • 0 = electric defrost or due to stoppage - compressor OFF during defrost • 1 = cycle inversion (hot gas) defrost; compressor on during defrost • 2 = defrost with "Free" mode; defrost independent of compressor.	0/1/2	num	-	0	0	0
doH	Defrost cycle activation delay from the call	0250	min	0	0	0	0
dEt	Defrost timeout. Determines the maximum duration of the defrost	1250	min	30	30	30	30
dS1	Evaporator 1 defrost end temperature (measured by probe Pb2)	-67.0302	°C/°F	-	8.0	8.0	8.0
dPo	 Defrost activation request at power-on. no(0) = no yES(1) = yes. 	no/yES	flag	no	no	no	no
dMr	Enables the defrost count reset in the case of manual defrosting. • no (0) = count reset does not take place • yES (1) = count reset takes place	no/yES	flag	no	no	no	no
d00	Compressor running time before defrost is activated	0250	hours	0	0	0	0

Parameter	Description	Range	MU	EWNext 961 O/B	EWNext 971 O/B	EWNext 974 O/B	EWNext 974 O/Y
	d00 unit of measure.						
d01	 0 = hours 1 = minutes 2 = seconds. 	0/1/2	num	0	0	0	0
dit	Time interval between one defrost and the next	0250	hours	24	24	24	24
	dit unit of measure.						
d11	0 = hours1 = minutes2 = seconds.	0/1/2	num	0	0	0	0
d20	Can be used to activate the defrost when the compressor is off. • no (0) = disabled. Defrost is not activated. • yES (1) = enabled. Defrost is activated when	no/yES	flag	no	no	no	no
	the compressor is off.						
d40	 Enables/disables use of probe Pb2. 0 (0) = disabled. Defrost does not take Pb2 into account Pb2 (1) = enabled. Defrost runs according to the value read by Pb2 (only refers to defrost with threshold) 	0/Pb2	flag	-	0	0	0
d41	Sets the defrost activation threshold	-67.0302	°C/°F	-	0.0	0.0	0.0
d42	Sets the maximum time for which the evaporator can remain under the threshold d41	0250	min	-	0	0	0
d43	Sets the type of time count in which the evaporator temperature remains under the threshold value. • 0 = count independent of the compressor status • 1 = count with compressor on (when the compressor is off the count begins again) • 2 = count independent of the compressor status. The count stops when the temperature rises above the threshold d41 • 3 = count with compressor on and until the temperature rises above the threshold d41	03	num		0	0	0
d44	Sets the threshold management mode. • AbS (0) = absolute value (for example: d41 = -25°C means that the threshold temperature is exactly -25°C) • rEL (1) = relative value (negative offset, relative to the value measured by the defrost probe Pb2 (if d40 = 1) at the end of the first cooling cycle or on power-on)	AbS/rEL	flag	-	AbS	AbS	AbS
d50	Enables/disables use of probe Pb2 ('differential' mode). O (0) = disabled Pb2 (1) = enabled. Defrost runs according to the value read by Pb2 (only refers to defrost with threshold)	0/Pb2	flag	-	0	0	0
d51	Enables/disables use of probe Pb1. 0 (0) = disabled Pb1 (1) = enabled. Defrost runs according to the value read by Pb1 (only refers to defrost with threshold)	0/Pb1	flag		0	0	0
d52	Sets the defrost activation threshold (absolute differential d50-d51)	0.0302	°C/°F	-	0.0	0.0	0.0
d53	Sets the maximum time for which the evaporator can remain above the threshold d52	0999	min	-	0	0	0

Parameter	Description	Range	MU	EWNext 961 O/B	EWNext 971 O/B	EWNext 974 O/B	EWNext 974 O/Y
d54	Sets the type of incremental time count in which the evaporator temperature remains above the threshold value d52. • 0 = incremental count independent of the compressor status • 1 = incremental count with compressor on (when the compressor is off the incremental count is reset) • 2 = incremental count independent of the compressor status. The incremental count stops when the temperature drops below the threshold d52	03	num	-	0	0	0
	3 = incremental count with compressor on and until the temperature drops below the threshold d52						
d55	 Sets the threshold management mode. 0 = absolute value (for example: d52 = d50-d51) 1 = relative value (negative offset, relative to the differential of the temperatures measured by probes Pb1 and Pb2 (d50-d51) at the end of the first cooling cycle or on power-on). 	0/1	flag	-	0	0	0
Fan (Fans)							
FPt	Sets whether parameter FSt is expressed as an absolute temperature value or as a value relative to the Setpoint. • AbS (0) = absolute • rEL (1) = relative.	AbS/rEL	flag	-	AbS	AbS	AbS
FSt	Fan disabling temperature; a value, read by the evaporator probe.	-67.0302	°C/°F	-	50.0	50.0	50.0
Fot	Evaporator fan activation temperature.	-67.0302	°C/°F	-	-50.0	-50.0	-50.0
FAd	Evaporator fan trigger differential.	0.125.0	°C/°F	-	2.0	2.0	2.0
Fdt	Fan activation delay time after a defrost.	0250	min	-	0	0	0
dt	Dripping time.	0250	min	-	0	0	0
dFd	Used to select or deselect the exclusion of the evaporator fans during defrosting. • no(0) = no • yES(1) = yes (fan excluded - off).	no/yES	flag	-	yES	yES	yES

Parameter			De	escripti	ion			Range	MU	EWNext 961 O/B	EWNext 971 O/B	EWNext 974 O/B	EWNext 974 O/Y
	Evapor	ator far	n opera	ting mo	de.								
	Pb2	H42	FCo	da	av	nic	jht						
				Cn	Cf	Cn	Cf						
			0	T	Off	T	Off						
			1	T	T	T	T						
			2	_ ·	DCd		DCn						
	ok	y	3	DCd	DCd	DCn	DCn						
		,	4	T	Off	T	Off						
			5	, ' Т	T	, . Т	T						
			6		, , Т		' T						
							Off						
			0	DCd	Off	DCn	<u> </u>						
			1	DCd	DCd	DCn	DCn						
			2	DCd	DCd	DCn	DCn						
	ko	У	3	DCd	DCd	DCn	DCn						
			4	On	Off	On	Off				_	_	_
FCo			5	On	Off	On	Off	06	num	-	5	5	5
			6	DCd	DCd	DCn	DCn						
			0	On	Off	On	Off						
			1	On	DCd	On	DCn						
			2	On	DCd	On	DCn						
	no	n	3	DCd	DCd	DCn	DCn						
			4	On	Off	On	Off						
			5	On	Off	On	Off						
			6	DCd	DCd	DCn	DCn						
	Headings legend: Pb2 = probe Pb2 status (ok = present; ko = in E2 error and no = absent; day = day mode; night = night mode; Cn = compressor on; Cf = compressor off. Status legend: T = thermostat controlled fans; On = fans on; Off= fans off; DCd = Day duty cycle or DCn = Night duty cycle.						ht = pressor ; Off= ht duty						
FdC	Evapor deactiv	ator far ation.	n shutof	f delay	after co	mpress	or	0250	min	-	1	1	1
Fon	Day du							0250	min	-	12	12	12
FoF	Day du							0250	min	-	6	6	6
Fnn	Night d							0250	min	-	1	1	1
FnF	Night d				ns off.			0250	min	-	12	12	12
ESE	"Night"			on.				no/vFS	flc~		n-	n-	n
ESF		(0) = no S (1) = y						no/yES	flag	-	no	no	no
AL (Alarms))												
	Sets the			elative v	/alue fo	r param	eters						
Att		S (0) =		te value	:			AbS/rEL	flag	AbS	AbS	AbS	AbS
AFd				value				0.125.0	°C/°F	2.0	2.0	2.0	2.0
714	Alarm differential.							0.120.0	<i>Oi</i> F	2.0	2.0	۷.۰	2.0

Parameter	Description	Range	MU	EWNext 961 O/B	EWNext 971 O/B	EWNext 974 O/B	EWNext 974 O/Y
HAL	Maximum temperature alarm. Temperature value (in an absolute or relative value - see Att) which, when exceeded, will lead to the activation of alarm signaling.	LAL302	°C/°F	50.0	50.0	50.0	50.0
LAL	Minimum temperature alarm. Temperature value (in an absolute or relative value - see Att) which, when not reached, will lead to the activation of alarm signaling.	-67.0 HAL	°C/°F	-50.0	-50.0	-50.0	-50.0
PAo	Alarm exclusion time when switching on the controller, after a power failure.	010	min*10	0	0	0	0
dAo	Temperature alarm exclusion time after defrosting.	0999	min	0	0	0	0
оАо	Alarm signaling delay after deactivation of the digital input (door closure). Alarm refers to high and low temperature alarms.	010	hours	0	0	0	0
tdo	Door open alarm activation delay time.	0250	min	0	0	0	0
tAo	Temperature alarm signaling delay time.	0250	min	0	0	0	0
	Defrost ended due to timeout alarm indication.						
dAt	 no(0) = alarm not activated yES(1) = alarm activated. 	no/yES	flag	-	no	no	no
EAL	 An external alarm inhibits the regulators. 0 = does not inhibit the regulators 1 = compressor and defrost inhibited 2 = fans, compressor and defrost inhibited; 	0/1/2	num	0	0	0	0
АоР	 Alarm output polarity. nC (0) = NC (Normally closed) nO (1) = NO (Normally open). 	nC/nO	flag	-	nO	nO	nO
rFt	Low refrigerant alarm signaling delay.	0250	min	0	0	0	0
dOr (Door s	switch)						
dOd	Digital input shuts off utilities. • 0 = disabled • 1 = disables fans • 2 = disables compressor • 3 = disables fans and compressor.	03	num	1	1	1	1
dAd	Digital input activation delay	0250	min	0	0	0	0
dCo	Compressor switch-off delay from door opening.	0250	min	0	0	0	0
EnS (Energ			J.				
oSP	Temperature value to be added to the setpoint in the case of an enabled reduced set (Economy function).	-30.030.0	°C/°F	0.5	0.5	0.5	0.5
odF	Differential offset during an energy saving cycle or reduced set.	0.130.0	°C/°F	4.0	4.0	4.0	4.0
ESt	Energy Saving mode. • 0 = disabled • 1 = offset on setpoint • 2 = offset on differential • 3 = offset on setpoint and differential • 4 = reserved • 5 = reserved.	05	num	0	0	0	0
Add (Comm							
Adr	Modbus protocol controller address.	1247	num	1	1	1	1
bAU	Modbus Baudrate selection. • 96 (0) = 9600 baud • 192 (1) = 19200 baud • 384 (2) = 38400 baud	96/192/384	num	96	96	96	96

us parity bit. (0) = none (1) = even (2) = odd. Its the unit of measure used when displaying mperature read by the probes. (0) = °C (1) = °F changing from °C to °F or vice-versa does change the SEt , diF values, etc. (example: 10 °C becomes 10 °F). ve or negative temperature value to be added value of Pb1. ve or negative temperature value to be added value of Pb2. ad lock. o(0) = Keypad lock disabled ES(1) = Keypad lock enabled (on startup or when 30 seconds have passed since the last clion carried out on the user interface)	n/E/o C/F -30.030.0	num flag °C/°F °C/°F	C 0.0	E C	E	E C
mperature read by the probes. (0) = °C (1) = °F changing from °C to °F or vice-versa does change the SEt , diF values, etc. (example: 10 °C becomes 10 °F). ve or negative temperature value to be added value of Pb1. ve or negative temperature value to be added value of Pb2. ad lock. o(0) = Keypad lock disabled ES(1) = Keypad lock enabled (on startup or then 30 seconds have passed since the last	-30.030.0	°C/°F			С	С
mperature read by the probes. (0) = °C (1) = °F changing from °C to °F or vice-versa does change the SEt , diF values, etc. (example: 10 °C becomes 10 °F). ve or negative temperature value to be added value of Pb1. ve or negative temperature value to be added value of Pb2. ad lock. o(0) = Keypad lock disabled ES(1) = Keypad lock enabled (on startup or then 30 seconds have passed since the last	-30.030.0	°C/°F			С	С
value of Pb1. ve or negative temperature value to be added value of Pb2. ad lock. o(0) = Keypad lock disabled ES(1) = Keypad lock enabled (on startup or when 30 seconds have passed since the last			0.0	0.0		
value of Pb2. ad lock. o(0) = Keypad lock disabled ES(1) = Keypad lock enabled (on startup or when 30 seconds have passed since the last	-30.030.0	°C/°F		0.0	0.0	0.0
o(0) = Keypad lock disabled ES(1) = Keypad lock enabled (on startup or then 30 seconds have passed since the last		1	-	0.0	0.0	0.0
sasa samoa sat sii tiis assi iiitoriass)	no/yES	flag	yES	yES	yES	yES
ts the type of value to show on the display. = setpoint = Pb1 probe = Pb2 probe = reserved	03	num	1	1	1	1
Selects the type of value to show on the module ECNext. • 0 = module not connected • 1 = Pb1 probe • 2 = Pb2 probe • 3 = reserved		num	0	0	0	0
 4 = setpoint. Display mode during defrosting. 0 = display the temperature read by Pb1 1 = inhibits reading on the value of Pb1 at the start of defrost and until the setpoint is reached 2 = displays label dEF during defrost until the setpoint is reached 		num	1	1	1	1
ay unlock timeout value - label dEF	0250	min	30	30	30	30
ay with decimal point. o(0) = no ES(1) = yes.	no/yES	flag	yES	yES	yES	yES
enabled (PS1 ≠0) this is the access key for ser parameters.	0250	num	0	0	0	0
enabled (PS2 ≠0) this is the access key for staller parameters.	0250	num	15	15	15	15
on)						
l-by operating mode. = display off; the regulators are active and the evice signals possible alarms by reactivating ne display = display off; the regulators and the alarms replaced.	0/1/2	num	2	2	2	2
the second secon	stion carried out on the user interface) sthe type of value to show on the display. septoint Pb1 probe Pb2 probe reserved sthe type of value to show on the module st. module not connected Pb1 probe Pb2 probe reserved septoint. module not connected Pb1 probe Pb2 probe reserved septoint. mode during defrosting. display the temperature read by Pb1 inhibits reading on the value of Pb1 at the part of defrost and until the setpoint is reached displays label dEF during defrost until the topint is reached. multiply unlock timeout value - label dEF multiply with decimal point. multiply multipl	stion carried out on the user interface) st the type of value to show on the display. = setpoint = Pb1 probe = Pb2 probe = reserved st the type of value to show on the module xt. = module not connected = Pb1 probe = Pb2 probe = reserved = setpoint. y mode during defrosting. = display the temperature read by Pb1 = inhibits reading on the value of Pb1 at the art of defrost and until the setpoint is reached = displays label dEF during defrost until the tpoint is reached. y unlock timeout value - label dEF y with decimal point. b(0) = no iS(1) = yes. enabled (PS1≠0) this is the access key for er parameters. enabled (PS2≠0) this is the access key for taller parameters. enabled (PS2≠0) this is the access key for taller parameters. elisplay off; the regulators are active and the evice signals possible alarms by reactivating eldisplay = display off; the regulators and the alarms elblocked	stion carried out on the user interface) st the type of value to show on the display. = setpoint = Pb1 probe = Pb2 probe = reserved st the type of value to show on the module ct. = module not connected = Pb1 probe = Pb2 probe = reserved = Pb2 probe = reserved = setpoint. y mode during defrosting. = display the temperature read by Pb1 = inhibits reading on the value of Pb1 at the art of defrost and until the setpoint is reached = displays label dEF during defrost until the topoint is reached. y unlock timeout value - label dEF y with decimal point. by (0) = no sS(1) = yes. enabled (PS1≠0) this is the access key for a reparameters. enabled (PS2≠0) this is the access key for taller parameters. n) by operating mode. = display off; the regulators are active and the vice signals possible alarms by reactivating edisplay = display off; the regulators and the alarms enablocked	tion carried out on the user interface) s the type of value to show on the display. = setpoint = Pb1 probe = Pb2 probe = reserved s the type of value to show on the module ct. = module not connected = Pb1 probe = Pb2 probe = reserved = Pb2 probe = reserved = Pb2 probe = reserved = setpoint. y mode during defrosting. = display the temperature read by Pb1 = inhibits reading on the value of Pb1 at the art of defrost and until the setpoint is reached = displays label dEF during defrost until the tpoint is reached. y unlock timeout value - label dEF y with decimal point. p(0) = no = s(1) = yes. enabled (PS1≠0) this is the access key for er parameters. enabled (PS2≠0) this is the access key for taller parameters. enabled (PS2≠0) this is the access key for taller parameters. enabled (PS1≠0) this is the access key for taller parameters. enabled (PS1≠0) this is the access key for taller parameters. enabled (PS1≠0) this is the access key for taller parameters. enabled (PS1≠0) this is the access key for taller parameters. enabled (PS1≠0) this is the access key for taller parameters. enabled (PS1≠0) this is the access key for taller parameters. enabled (PS1≠0) this is the access key for taller parameters. enabled (PS1≠0) this is the access key for taller parameters. enabled (PS1≠0) this is the access key for taller parameters. enabled (PS1≠0) this is the access key for taller parameters. enabled (PS1≠0) this is the access key for taller parameters. enabled (PS1≠0) this is the access key for taller parameters. enabled (PS1≠0) this is the access key for taller parameters. enabled (PS1≠0) this is the access key for taller parameters. enabled (PS1≠0) this is the access key for taller parameters. enabled (PS1≠0) this is the access key for taller parameters. enabled (PS1≠0) this is the access key for taller parameters. enabled (PS1≠0) this is the access key for taller parameters.	tion carried out on the user interface) s the type of value to show on the display. = setpoint = Ph1 probe = Pb2 probe = reserved s the type of value to show on the module ct. = module not connected = Ph1 probe = Pb2 probe = reserved s the type of value to show on the module ct. = module not connected = Ph1 probe = Pb2 probe = reserved = setpoint. y mode during defrosting. = display the temperature read by Pb1 = inhibits reading on the value of Pb1 at the art of defrost and until the setpoint is reached = displays label dEF during defrost until the tpoint is reached. y unlock timeout value - label dEF y with decimal point. b(0) = no s(S(1) = yes. enabled (PS1≠0) this is the access key for are parameters. no/yES num 1 1 1 2 2 2 display off; the regulators are active and the vice signals possible alarms by reactivating e display = display off; the regulators and the alarms = blocked	tion carried out on the user interface) s the type of value to show on the display. = setpoint = Pb1 probe = Pb2 probe = reserved s the type of value to show on the module ct. = module not connected = Pb1 probe = Pb2 probe = reserved = Pb1 probe = Pb2 probe = Pb2 probe = reserved = Pb1 probe = Pb2 probe = reserved = Pb1 probe = reserved = setpoint. y mode during defrosting. = display the temperature read by Pb1 = inhibits reading on the value of Pb1 at the art of defrost and until the setpoint is reached displays label dEF during defrost until the tpoint is reached. y unlock timeout value - label dEF y with decimal point. y(0) = no siS(1) = yes. enabled (PS1≠0) this is the access key for ar parameters. enabled (PS2≠0) this is the access key for aller parameters. enabled (PS2≠0) this is the access key for aller parameters. enabled (PS2≠0) this is the access key for aller parameters. enabled (PS1≠0) this is the access key for aller parameters. enabled (PS2≠0) this is the access key for aller parameters. enabled (PS2≠0) this is the access key for aller parameters. enabled (PS2≠0) this is the access key for aller parameters. enabled (PS2≠0) this is the access key for aller parameters. enabled (PS2≠0) this is the access key for aller parameters. elisplay off, the regulators are active and the vice signals possible alarms by reactivating a display off, the regulators and the alarms a blocked

Parameter	Description	Range	MU	EWNext 961 O/B	EWNext 971 O/B	EWNext 974 O/B	EWNext 974 O/Y
Н11	Configuration of digital input 1 (DI)/ polarity. • 0 = disabled • ±1 = defrost • ±2 = reduced set • ±3 = reserved • ±4 = door switch • ±5 = external alarm • ±6 = stand-by • ±7 = reserved • ±8 = reserved • ±9 = reserved • ±10 = energy saving • ±11 = reserved • ±12 = reserved • ±13 = synchronized defrost ((only models with SYN input, reserved for the other models). Note: • the "+" sign indicates that the input is active if the contact is closed. • the "-" sign indicates that the input is active if the contact is open.	-13+13	num	0	0	0	13
H21	Configuration of digital output 1 (Out1). • 0 = disabled • 1 = compressor • 2 = defrost • 3 = evaporator fans • 4 = alarm • 5 = reserved • 6 = stand-by • 7 = reserved • 8 = buzzer • 9 = reserved • 10 = reserved • 11 = reserved • 12 = reserved • 13 = reserved	013	num	1	1	1	1
H22	Configuration of digital output 2 (Out2). • 0 = disabled • 1 = compressor • 2 = defrost • 3 = evaporator fans • 4 = alarm • 5 = reserved • 6 = stand-by • 7 = reserved • 8 = buzzer • 9 = reserved • 10 = reserved • 11 = reserved • 12 = reserved	012	num	-	2	2	2
H23	Configuration of digital output 3 (Out3). Same as H22 .	012	num	-	-	3	3
H25	 enables/disables the buzzer. no (0) = disabled yES (1) = enabled. 	no/yES	flag	yES	yES	yES	-

Parameter	Description	Range	MU	EWNext 961 O/B	EWNext 971 O/B	EWNext 974 O/B	EWNext 974 O/Y
H31	Configuration of ∆ key. • 0 = disabled • 1 = defrost • 2 = reserved • 3 = reduced set • 4 = stand-by • 5 = reserved • 6 = reserved • 7 = reserved • 8 = reserved • 9 = energy saving • 10 = reserved	010	num	1	1	1	1
H32	Configuration of ∇ key. Same as H31 .	010	num	0	0	0	0
H33	Configuration of ம் key. Same as H31 .	010	num	4	4	4	4
H42	Probe Pb2 present. • no(0) = not present • yES(1) = present.	no/yES	flag	-	yES	yES	yES
tAb	Reserved: read-only parameter.	1	1	1	1	1	1
CuS	Customer model reference.	0999	num	0	0	0	0
FPr (UNICA	RD)	l	1				
UL	Transfer of the programming parameters from the controller to the UNICARD.	1	/	1	1	/	1
Fr	UNICARD formatting. Deletes all data on the UNICARD. Note: the use of parameter Fr results in the loss of all data entered. This operation cannot be reversed.	1	1	1	1	1	1
FnC (Funct	ions)						
oSP	Reduced set activation. The labels displayed will be: • SP = Activates the reduced set • oSP = Deactivates the reduced set	/	/	1	1	/	/
dEF	Activate defrost	1	/	1	1	1	1
Cnt	Reset TelevisAir diagnostic counters (see Reset TelevisAir diagnostic counters)	1	/	1	1	1	1

Note: if one or more parameters in folder **CnF** are changed, the controller must be switched off and then on again to make sure it works properly.

Modbus MSK 791 functions and resources

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Setting parameters via Modbus

Introduction

Modbus is a client/server protocol for communication between devices connected in a network. Modbus devices communicate using a master-slave technique in which only one device (master) can send request messages. The other devices in the network (slave) respond, returning the data requested by the master or executing the action contained in the message sent by the master. A slave is a device connected to a network that processes information and sends the results to the master using the Modbus protocol.

The master device can send messages to individual slaves, or to all devices connected to the network (broadcast), whilst slave devices can only respond to messages individually and to the master device. The Modbus standard used by Eliwell employs the RTU code for data transmission.

Data format (RTU)

The coding type used defines the structure of messages transmitted on the network and the way in which this information is deciphered. The coding type is usually chosen according to specific parameters (baudrate, parity, stop), plus certain devices only support specific coding types. Use the same coding type for all devices connected to a Modbus network.

The protocol uses the RTU binary method with the serial frame configured as follows:

- 8 bits for data
- parity bits NONE (configurable)
- 2 stop BITS

Parameters can be changed via:

- · Device keypad
- UNICARD / DMI
- Send data via Modbus protocol directly to an individual device or in a broadcast using the address 0 (broadcast)

Modbus commands available and data areas

The following commands are implemented:

Modbus command	Description
03 (hex 0x03)	Read resources
16 (hex 0x10)	Write resources
43 (hex 0x2B)	Read device ID. The following 3 fields can be read: • 0 = Manufacturer ID • 1 = Model ID • 2 = Family ID (MSK 791) / device version

Note: Maximum length of transmitted/received messages equal to 50 bytes.

Configuration

The TTL serial port may be used to configure the device, parameters, statuses, variables using the Modbus protocol.

The address of a device within a Modbus message is set via parameter Adr.

The address **0** is used for broadcast messages that all slaves recognize. Slaves do not respond to a broadcast type request.

The device configuration parameters are as follows:

Parameter	Description
Adr	Modbus protocol controller address
bAU	Baudrate selection
Pty	Sets the Modbus protocol parity BIT and the number of stop BITs:
	 n = NONE parity bit + 2 stop BITS E = EVEN parity bit + 1 stop BIT o = ODD parity bit + 1 stop BIT

Note: Switch the controller off and on again after changing Pty.

Parameter values and visibility

Below are several notes relating to the value and visibility of the parameters.

Notes:

- Unless otherwise indicated, the parameter should be considered as visible and able to be changed unless the user applies custom settings via the serial port.
- . If the visibility of the folder is changed all the parameters in that folder will assume the new setting.

Modbus table content

Introduction

The tables below contain the information required to access the resources properly.

There are 3 tables:

- . Modbus Parameters Table: contains all the device configuration parameters including visibility
- Folder Visibility Table: contains the visibility of the folders containing the parameters
- Modbus Resource Table: contains all status (I/O) and alarm resources available in the volatile memory of the
 device.

Description of the columns

FOLDER

Indicates the name of the folder containing the parameter in question.

LABEL

Indicates the name with which the parameter appears in the menu.

DESCRIPTION

Description of the parameter's meaning.

PAR. ADDRESS VAL.

Represents the Modbus register address which contains the read or write value of the resource in the device.

FILTER VAL.

Represents the position of the most significant data bit inside the register. This information is always provided when the register contains more than one piece of information and it is necessary to distinguish which bits actually represent the data (the useful size of the data, indicated in the DATA SIZE column, should also be taken into account).

PAR. ADDRESS VIS.

Contains the Modbus register address which contains the visibility value of the resource to read or write in the device.

FILTER VIS

Mask representing the position of the data inside the register (it has BITs set to 1 in correspondence with the register BITs effectively associated with the resource). It assumes values from 0 to 65535.

Note: in binary representation the least significant is furthest to the right.

Note: the size of the piece of visibility data is 2 BIT.

Visibility values:

- Value 0 = parameter or folder NOT visible
- Value 1 = parameter or folder visible at 'User' level only
- Value 2 = parameter or folder visible at 'Installer' level only
- Value 3 = parameter or folder visible both 'User' and 'Installer' level

R/W

Indicates the option of reading or writing the resource:

- R = the resource is read-only
- W = the resource is write-only
- R/W = the resource can be both read and written

DATA SIZE

Indicates the size of the piece of data (in bit):

- WORD = 16 bit
- Byte = 8 bit
- "n" bit = 0...15 bit based on the value of "n"

CPL

When the field indicates **Y**, the value read by the register needs to be converted because the value represents a number with a sign. In the other cases the value is always positive or null.

To convert it, proceed as follows:

If the register value falls between	Then the result is					
0 and 32767	the same value (zero and positive values).					
32768 and 65535	the register value, from which to subtract 65536 (negative values).					

RANGE

Describes the interval of values that can be assigned to the parameter. This range can be correlated to the value of other parameters.

MU

Unit of measure for the values.

Table of Modbus Parameters

Label	Description	Folder	Val. Par. Address	Val. Filter	Vis. Par. Address	Vis. Filter	R/W	Data Size	CPL	Range	MU
SEt	Regulation setpoint	-	32769	0	32931	49152	R/W	Word	Υ	LSEHSE	°C/°F
diF	Setpoint differential	СР	32770	0	32928	768	R/W	Word	-	0,130,0	°C/°F
LSE	Minimum setpoint value that can be set	СР	32771	0	32928	3072	R/W	Word	Υ	-67,0 HSE	°C/°F
HSE	Maximum setpoint value that can be set	СР	32773	0	32928	12288	R/W	Word	Υ	LSE 302	°C/°F
нс	Operating mode (Heating/Cooling)	СР	32968	256	32928	49152	R/W	Byte	-	0/1	flag
ont	Compressor output ON time if regulation probe is faulty	СР	32768	0	32929	3	R/W	Byte	-	0250	min
oFt	Compressor output OFF time if regulation probe is faulty	СР	32772	0	32929	12	R/W	Byte	-	0250	min
don	Compressor output activation delay from call	СР	32776	0	32929	48	R/W	Byte	-	0250	s
doF	Compressor output activation delay from switch-off	СР	32780	0	32929	192	R/W	Byte	-	0250	min
dbi	Delay between two consecutive compressor output power-ons	СР	32784	0	32929	768	R/W	Byte	-	0250	min
Cit	Minimum compressor output activation time	СР	32800	0	32930	3	R/W	Byte	-	0250	min
CAt	Maximum compressor output activation time	СР	32804	0	32930	12	R/W	Byte	-	0250	min
odo	Output activation delay at startup	СР	32788	0	32929	3072	R/W	Byte	-	0250	min
dty	Compressor 2 activation delay.	dEF	32908	61440	32930	768	R/W	Byte	-	0/1/2	num
doH	Sets the type of regulation	dEF	32820	0	32931	3	R/W	Byte	-	0250	min
dEt	Ice sensor differential	dEF	32816	0	32930	12288	R/W	Byte	-	1250	min
dS1	Compressor 1 start-up mode	dEF	32774	0	32931	12	R/W	Word	Υ	-67,0302	°C/°F
dPo	Sets the type of regulation	dEF	32968	1024	32931	768	R/W	Byte	-	0/1	flag
dMr	Compressor 1 start-up mode	dEF	32969	2048	32961	12	R/W	Byte	-	0/1	flag
d00	Compressor 2 activation delay.	dEF	32889	0	32949	12	R/W	Byte	-	0250	hours
d01	Sets the type of regulation	dEF	32925	12	32951	12	R/W	Byte	-	0/1/2	num
dit	Threshold (Setpoint) for ice sensor	dEF	32812	0	32949	49152	R/W	Byte	-	0250	hours
d11	Ice sensor differential	dEF	32925	48	32951	48	R/W	Byte	-	0/1/2	num
d20	Compressor 1 start-up mode	dEF	32969	256	32951	768	R/W	Byte	-	0/1	flag
d40	Compressor 2 activation delay.	dEF	32913	240	32950	3	R/W	Byte	-	0/1	flag
d41	Sets the type of regulation	dEF	32837	0	32947	49152	R/W	Word	Υ	-67,0302	°C/°F
d42	Threshold (Setpoint) for ice sensor	dEF	32839	0	32947	12288	R/W	Byte	-	0250	min
d43	Ice sensor differential	dEF	32913	3840	32950	12	R/W	Byte	-	03	num
d44	Compressor 1 start-up mode	dEF	32913	61440	32950	48	R/W	Byte	-	0/1	flag
d50	Sets the type of regulation	dEF	32916	61440	32958	3	R/W	Byte	-	0/1	flag

Label	Description	Folder	Val. Par. Address	Val. Filter	Vis. Par. Address	Vis. Filter	R/W	Data Size	CPL	Range	MU
d51	Threshold (Setpoint) for ice sensor	dEF	32917	15	32958	12	R/W	Byte	-	0/1	flag
d52	Ice sensor differential	dEF	32849	0	32953	48	R/W	Byte	-	0,0302	°C/°F
d53	Compressor 1 start-up mode	dEF	32853	0	32953	12288	R/W	Byte	-	0999	min
d54	Compressor 2 activation delay.	dEF	32917	240	32958	48	R/W	Byte	-	03	num
d55	Sets the type of regulation	dEF	32917	3840	32958	192	R/W	Byte	-	0/1	flag
FPt	FSt parameter mode (absolute or relative)	FAn	32968	4096	32933	3	R/W	Byte	-	0/1	flag
FSt	Evaporator fan disabling temperature	FAn	32778	0	32933	12	R/W	Word	Y	-67,0302	°C/°F
Fot	Evaporator fan activation temperature	FAn	32838	0	32948	768	R/W	Word	Υ	-67,0302	°C/°F
FAd	Evaporator fan trigger differential	FAn	32869	0	32933	48	R/W	Word	-	0,125,0	°C/°F
Fdt	Evaporator fan activation delay time after a defrost cycle	FAn	32832	0	32947	48	R/W	Byte	-	0250	min
dt	Dripping time	FAn	32870	255	32933	192	R/W	Byte	-	0250	min
dFd	Evaporator fan cut-out during defrost	FAn	32968	8192	32933	768	R/W	Byte	-	0/1	flag
FCo	Evaporator fan status with compressor output Off	FAn	32909	15	32932	49152	R/W	Byte	-	03	num
FdC	Evaporator fan shutoff delay after compressor deactivation	FAn	32870	0	32933	3072	R/W	Byte	-	0250	min
Fon	Evaporator fan On time in cyclical regulator mode	FAn	32871	255	32933	12288	R/W	Byte	-	0250	min
FoF	Evaporator fan Off time in cyclical regulator mode	FAn	32871	0	32933	49152	R/W	Byte	-	0250	min
Fnn	Evaporator fan ON time in night mode (duty cycle)	FAn	32868	0	32932	3072	R/W	Byte	-	0250	num
FnF	Evaporator fan OFF time in night mode (duty cycle)	FAn	32869	255	32932	12288	R/W	Byte	-	0250	num
ESF	Night mode activation (Energy Saving)	FAn	32969	512	32951	3072	R/W	Byte	-	0/1	flag
Att	Alarm mode (absolute or relative)	AL	32968	32768	32934	12	R/W	Byte	-	0/1	flag
AFd	Alarm activation differential	AL	32872	0	32934	48	R/W	Word	-	0,125,0	°C/°F
HAL	Maximum alarm threshold	AL	32779	0	32934	192	R/W	Word	Υ	LAL302	°C/°F
LAL	Minimum alarm threshold	AL	32781	0	32934	768	R/W	Word	Y	-67,0 HAL	°C/°F
PAo	Temperature alarm exclusion time from power-on	AL	32873	255	32934	3072	R/W	Byte	-	010	min*10
dAo	Exclusion time for temperature alarms after a defrost cycle	AL	32841	0	32934	12288	R/W	Word	-	0250	min
oAo	High and low temperature alarms exclusion time after closing the door	AL	32874	255	32934	49152	R/W	Byte	-	010	hours
tdo	Door open alarm exclusion time	AL	32875	255	32935	49152	R/W	Byte	-	0250	min
tAo	Temperature alarm signaling delay time	AL	32874	0	32935	3	R/W	Byte	-	0250	min
dAt	Defrost ended due to timeout alarm signaling	AL	32782	0	32935	12	R/W	Byte	-	0/1	flag

Label	Description	Folder	Val. Par. Address	Val. Filter	Vis. Par. Address	Vis. Filter	R/W	Data Size	CPL	Range	MU
EAL	Regulators inhibited by external alarm	AL	32915	3840	32935	48	R/W	Byte	-	0/1/2	num
AoP	Alarm output polarity	AL	32969	1	32935	768	R/W	Byte	-	0/1	flag
rFt	Refrigerant level alarm bypass	AL	33051	0	32985	12288	R/W	Byte	-	0250	min
dod	Enable utility shutoff upon door switch activation	dOr	32909	3840	32935	12288	R/W	Byte	-	03	num
dAd	D.I. activation indication delay time 1/2	dOr	32882	255	32940	3072	R/W	Byte	-	0250	min
dCo	Compressor activation delay from acknowledgment	dOr	32840	0	32931	3072	R/W	Byte	-	0250	min
oSP	Offset on setpoint	EnS	32783	0	32936	49152	R/W	Word	Υ	-30,030,0	°C/°F
odF	Trigger differential correction	EnS	32785	0	32937	48	R/W	Word	-	0,130,0	°C/°F
ESt	Type of action for the Energy Saving function	EnS	32918	3840	32958	49152	R/W	Byte	-	05	num
Adr	Modbus protocol controller address	Add	33048	0	32984	768	R/W	Byte	-	0247	num
bAU	Baudrate selection	Add	33051	255	32984	3072	R/W	Byte	-	0/1/2	num
PtY	MODBUS parity bit	Add	33049	255	32984	12288	R/W	Byte	-	0/1/2	num
dro	Select °C / °F	diS	32969	8	32937	192	R/W	Byte	-	0/1	flag
CA1	Analog input 1 calibration	diS	32786	0	32937	768	R/W	Word	Υ	-30,030,0	°C/°F
CA2	Analog input 2 calibration	diS	32787	0	32937	3072	R/W	Word	Υ	-30,030,0	°C/°F
LoC	Disable keypad	diS	32969	16	32938	48	R/W	Byte	-	0/1	flag
ddd	Select main display value	diS	32909	61440	32938	192	R/W	Byte	-	03	num
ddE	Display on eco device	diS	32918	240	32958	12288	R/W	Byte	-	04	num
ddL	Display lock mode during a defrost	diS	32910	15	32938	768	R/W	Byte	-	0/1/2	num
Ldd	Display lock timeout from end of defrost	diS	32878	255	32938	3072	R/W	Byte	-	0250	min
ndt	Display with decimal point	diS	32969	32	32938	12288	R/W	Byte	-	0/1	flag
PS1	Password 1 value	diS	32879	0	32939	192	R/W	Byte	-	0250	num
PS2	Password 2 value	diS	32880	0	32939	768	R/W	Byte	-	0250	num
H08	Stand-by operating mode	CnF	32925	3	32939	12288	R/W	Byte	-	0/1/2	num
H11	Configurability of digital input 1	CnF	32881	255	32939	49152	R/W	Word	Y	-1313	num
H21	Configurability of digital output Out1	CnF	32884	0	32940	12288	R/W	Byte	-	013	num
H22	Configurability of digital output Out2	CnF	32885	255	32940	49152	R/W	Byte	-	012	num
H23	Configurability of digital output Out3	CnF	32885	0	32941	3	R/W	Byte	-	012	num
H25	Configurability of digital output 5 (buzzer)	CnF	32897	255	32931	12288	R/W	Byte	-	0/1	num
H31	Key configuration ⚠	CnF	32910	61440	32941	48	R/W	Byte	-	010	num
H32	Key configuration ∇	CnF	32911	15	32941	192	R/W	Byte	-	010	num
H33	Key configuration 🖰	CnF	32911	240	32941	768	R/W	Byte	-	010	num
H42	Configuration of analog input Pb2	CnF	32912	61440	32942	3	R/W	Byte	-	0/1	flag
tAb	Map code	CnF	32997	0	32985	12	R	Word	-	0999	num
CuS	Customer model reference	CnF	33689	0	32990	192	RW	Word	-	0999	num

Label	Description	Folder	Val. Par. Address	Val. Filter	Vis. Par. Address	Vis. Filter	R/W	Data Size	CPL	Range	MU
UL	Visibility of the function transferring the programming parameters from the controller to the UNICARD	FPr	-	-	32985	48	R/W	2 bit	-	03	num
Fr	UNICARD formatting function visibility	FPr	-	-	32985	768	R/W	2 bit	-	03	num
oSP	Reduced set activation	FnC	-	-	32988	768	R/W	2 bit	-	03	num
dEF	Activate defrost	FnC	-	-	32987	768	R/W	2 bit	-	03	num

Visibility table for folders relating to applications

Label	Description	Address	Filter	Data size	Range	MU			
Visibility of folders for loaded application									
СР	Visibility of folder CP (compressor)	32954	192	2 bit	03	num			
dEF	Visibility of folder dEF (defrost)	32954	768	2 bit	03	num			
FAn	Visibility of folder FAn (fans)	32954	3072	2 bit	03	num			
AL	Visibility of folder AL (alarms)	32954	12288	2 bit	03	num			
dor	Visibility of folder dor (door switch)	32962	3072	2 bit	03	num			
ENS	Visibility of folder EnS (energy saving)	32955	12	2 bit	03	num			
Add	Visibility of folder Add (communication)	32955	48	2 bit	03	num			
diS	Visibility of folder diS (display)	32955	192	2 bit	03	num			
CnF	Visibility of folder CnF (configuration)	32955	3072	2 bit	03	num			
FPr	Visibility of folder FPr (UNICARD)	32955	12288	2 bit	03	num			
FnC	Visibility of folder FnC (functions)	32955	49152	2 bit	03	num			

Table of Modbus Resources

Alt	Label	Description	Address	Filter	R/W	Data_Size	CPL	Range	MU	
SET Regulation setpoint 1 value 4114 0 R Word Y 67,0302 *C/F*F* DI Digital input 1 4118 1 R 1 bit - 01 flag E1 Analog input 2 fault 4121 1 R 1 bit - 01 flag OPd Dor oppen 4121 8 R 1 bit - 01 flag AL1 Analog input 1 lower limit exceeded 4121 16 R 1 bit - 01 flag AL1 Analog input 1 lower limit exceeded 4121 128 R 1 bit - 01 flag ALM Alam Alam 4121 128 R 1 bit - 01 flag RL1 Control output 1 4120 1 R 1 bit - 01 flag RL2 Control output 2 4120 2 R 1 bit - 01 fl	Al1	Regulation probe	4109	0	R	Word	Y	-67,0302	°C/°F	
Di	Al2	Defrost probe	4110	0	R	Word	Υ	-67,0302	°C/°F	
E1	SET	Regulation setpoint 1 value	4114	0	R	Word	Υ	-67,0302	°C/°F	
E2 Analog input 2 fault 4121 2 R 1 bit - 01 flag oPd Door open 4121 8 R 1 bit - 01 flag EA External 4121 15 R 1 bit - 01 flag AL1 Analog input 1 higher limit exceeded 4121 32 R 1 bit - 01 flag AH1 Analog input 1 higher limit exceeded 4121 32 R 1 bit - 01 flag AH2 Defrost end due to imeout 4121 128 R 1 bit - 01 flag rCA Low liquid refrigerant level 4121 1024 R 1 bit - 01 flag AL1 Control output 3 4120 1 R 1 bit - 01 flag RL2 Control output 3 4120 2 R 1 bit - 01 flag	DI	Digital input 1	4118	1	R	1 bit	-	01	flag	
OPd Door open 4121 8 R 1 bit - 01 flag EA External 4121 16 R 1 bit - 01 flag AL1 Analog input 1 lower limit exceeded 4121 32 R 1 bit - 01 flag AH1 Analog input 1 higher limit exceeded 4121 128 R 1 bit - 01 flag AC2 Defrost and use to timeout 4121 1024 R 1 bit - 01 flag ALM Alarm 4115 256 R 1 bit - 01 flag ALM Alarm 4115 256 R 1 bit - 01 flag ALM Alarm 4115 256 R 1 bit - 01 flag RL2 Control output 3 4120 256 R 1 bit - 01 flag BUZzer	E1	Analog input 1 fault	4121	1	R	1 bit	-	01	flag	
EAL	E2	Analog input 2 fault	4121	2	R	1 bit	-	01	flag	
AL1 Analog input 1 lower limit exceeded 4121 32 R 1 bit - 01 flag AH1 Analog input 1 higher limit exceeded 4121 64 R 1 bit - 01 flag ACA Defrost end due to inneout 4121 128 R 1 bit - 01 flag CCA Low liquid refrigerant level 4121 1024 R 1 bit - 01 flag ALM Alarm 4115 256 R 1 bit - 01 flag RL1 Control output 2 4120 2 R 1 bit - 01 flag RL2 Control output 3 4120 4 R 1 bit - 01 flag RL2 Control output 3 4120 4 R 1 bit - 01 flag BUZzer 4115 6 R 1 bit - 01 flag CP1 <td>oPd</td> <td>Door open</td> <td>4121</td> <td>8</td> <td>R</td> <td>1 bit</td> <td>-</td> <td>01</td> <td>flag</td>	oPd	Door open	4121	8	R	1 bit	-	01	flag	
AH1 Analog input 1 higher limit exceeded 4121 64 R 1 bit - 01 flag Ad2 Defrost eard due to timeout 4121 128 R 1 bit - 01 flag rCA Low liquid refrigerant level 4121 1024 R 1 bit - 01 flag ALM Alarm 4115 256 R 1 bit - 01 flag RL1 Control output 2 4120 1 R 1 bit - 01 flag RL2 Control output 3 4120 2 R 1 bit - 01 flag RL3 Control output 3 4120 2 R 1 bit - 01 flag RL2 Control output 3 4120 256 R 1 bit - 01 flag BUZ Buzer 4120 256 R 1 bit - 01 flag D	EA	External	4121	16	R	1 bit	-	01	flag	
Ad2 Defrost end due to timeout 4121 128 R 1 bit - 01 flag rCA Low liquid refrigerant level 4121 1024 R 1 bit - 01 flag ALM Alarm 4115 256 R 1 bit - 01 flag RL1 Control output 1 4120 1 R 1 bit - 01 flag RL2 Control output 3 4120 2 R 1 bit - 01 flag BUZ Buzzer 4120 256 R 1 bit - 01 flag CP1 Compressor 1 4115 2 R 1 bit - 01 flag FAN Evaporator fans 4115 16 R 1 bit - 01 flag STD-BY Stand-by 4115 16384 R 1 bit - 01 flag ECO Reduced	AL1	Analog input 1 lower limit exceeded	4121	32	R	1 bit	-	01	flag	
rCA Low liquid refrigerant level 4121 1024 R 1 bit - 01 flag ALM Alarm 4115 256 R 1 bit - 01 flag RL1 Control output 1 4120 2 R 1 bit - 01 flag RL2 Control output 3 4120 2 R 1 bit - 01 flag BUZ Buzzer 4120 24 R 1 bit - 01 flag DEF1 Defrost 1 4115 16 R 1 bit - 01 flag DEF1 Defrost 1 4115 16 R 1 bit - 01 flag STD-BY Stand-by 4115 16 R 1 bit - 01 flag END Cenergy saving 4115 18384 R 1 bit - 01 flag ECO Reduced set <th< td=""><td>AH1</td><td>Analog input 1 higher limit exceeded</td><td>4121</td><td>64</td><td>R</td><td>1 bit</td><td>-</td><td>01</td><td>flag</td></th<>	AH1	Analog input 1 higher limit exceeded	4121	64	R	1 bit	-	01	flag	
ALM Alarm 4115 256 R 1 bit - 01 flag R1 1 Control output 1 4120 1 R 1 bit - 01 flag R1 2 Control output 3 4120 2 R 1 bit - 01 flag R1 3 Control output 3 4120 4 R 1 bit - 01 flag BUZ Buzer 4120 256 R 1 bit - 01 flag CP1 Compressor 1 4115 16 R 1 bit - 01 flag FAN Evaporator fans 4115 16 R 1 bit - 01 flag FAN Evaporator fans 4115 1638 R 1 bit - 01 flag ENS Energy saving 4115 1638 R 1 bit - 01 flag ENS Benegy saving <t< td=""><td>Ad2</td><td>Defrost end due to timeout</td><td>4121</td><td>128</td><td>R</td><td>1 bit</td><td>-</td><td>01</td><td>flag</td></t<>	Ad2	Defrost end due to timeout	4121	128	R	1 bit	-	01	flag	
RL1 Control output 1 4120 1 R 1 bit - 01 flag RL2 Control output 2 4120 2 R 1 bit - 01 flag BUZ Buzzer 4120 256 R 1 bit - 01 flag CP1 Compressor 1 4115 2 R 1 bit - 01 flag CP1 Compressor 1 4115 16 R 1 bit - 01 flag FAN Evaporator fans 4115 16 R 1 bit - 01 flag STD-BY Stand-by 4115 168 R 1 bit - 01 flag ENS Energy saving 4115 16384 R 1 bit - 01 flag BCO Do Dor Status 4115 32768 R 1 bit - 01 flag <th co<="" td=""><td>rCA</td><td>Low liquid refrigerant level</td><td>4121</td><td>1024</td><td>R</td><td>1 bit</td><td>-</td><td>01</td><td>flag</td></th>	<td>rCA</td> <td>Low liquid refrigerant level</td> <td>4121</td> <td>1024</td> <td>R</td> <td>1 bit</td> <td>-</td> <td>01</td> <td>flag</td>	rCA	Low liquid refrigerant level	4121	1024	R	1 bit	-	01	flag
RL2 Control output 2 4120 2 R 1 bit - 01 flag RL3 Control output 3 4120 4 R 1 bit - 01 flag BUZ Buzzer 4120 256 R 1 bit - 01 flag CP1 Compressor 1 4115 2 R 1 bit - 01 flag DEF1 Defrost 1 4115 16 R 1 bit - 01 flag FAN Evaporator fans 4115 16 R 1 bit - 01 flag STD-BY Stand-by 4115 16 R 1 bit - 01 flag ECO Reduced set 4115 168 R 1 bit - 01 flag ECO Reduced set 4115 32768 R 1 bit - 01 flag BCO Dor status 4123 3 <td>ALM</td> <td>Alarm</td> <td>4115</td> <td>256</td> <td>R</td> <td>1 bit</td> <td>-</td> <td>01</td> <td>flag</td>	ALM	Alarm	4115	256	R	1 bit	-	01	flag	
RL3 Control output 3 4120 4 R 1 bit - 01 flag BUZ Buzzer 4120 256 R 1 bit - 01 flag CP1 Compressor 1 4115 2 R 1 bit - 01 flag DEF1 Defrost 1 4115 16 R 1 bit - 03 flag FAN Evaporator fans 4115 16 R 1 bit - 01 flag STD-BY Stand-by 4115 1 6 R 1 bit - 01 flag ENS Energy saving 4115 1 6384 R 1 bit - 01 flag ECO Reduced set 4115 32768 R 1 bit - 01 flag Do Door status 41123 32 R 1 bit - 01 flag RoFFED Device off 4123	RL1	Control output 1	4120	1	R	1 bit	-	01	flag	
BUZ Buzzer 4120 256 R 1 bit - 01 flag CP1 Compressor 1 4115 2 R 1 bit - 01 flag DEF1 Defrost 1 4115 16 R 1 bit - 03 flag FAN Evaporator fans 4115 16 R 1 bit - 03 flag STD-BY Stand-by 4115 16384 R 1 bit - 01 flag ENS Energy saving 4115 16384 R 1 bit - 01 flag ECO Reduced set 4115 8192 R 1 bit - 01 flag BCO Do Dos status 4115 8192 R 1 bit - 01 flag Ronnon Device off 4123 4 W 1 bit - 01 flag Attista Activates ener	RL2	Control output 2	4120	2	R	1 bit	-	01	flag	
CP1 Compressor 1 4115 2 R 1 bit - 01 flag DEF1 Defrost 1 4115 16 R 1 bit - 03 flag FAN Evaporator fans 4115 64 R 1 bit - 01 flag STD-BV Stand-by 4115 16384 R 1 bit - 01 flag ENS Energy saving 4115 16384 R 1 bit - 01 flag EO Reduced set 4115 32768 R 1 bit - 01 flag Do Door status 4115 32768 R 1 bit - 01 flag Ronn Device on 4123 4 W 1 bit - 01 flag RoFF0FF Device off 4123 4 W 1 bit - 01 flag RoF16FF Device off 41	RL3	Control output 3	4120	4	R	1 bit	-	01	flag	
DEF1	BUZ	Buzzer	4120	256	R	1 bit	-	01	flag	
FAN Evaporator fans 4115 64 R 1 bit - 01 flag STD-BY Stand-by 4115 1 R 1 bit - 01 flag ENS Energy saving 4115 16384 R 1 bit - 01 flag ECO Reduced set 4115 8192 R 1 bit - 01 flag Do Do Door status 4115 32768 R 1 bit - 01 flag Ronon Device off 4123 4 W 1 bit - 01 flag RoFFoFF Device off 4123 8 W 1 bit - 01 flag AttEstR Activates energy saving function 4123 16 W 1 bit - 01 flag DisatLenSav Deactivates economy mode 4123 328 W 1 bit - 01 flag Disat_	CP1	Compressor 1	4115	2	R	1 bit	-	01	flag	
STD-BY Stand-by 4115 1 R 1 bit - 01 flag ENS Energy saving 4115 16384 R 1 bit - 01 flag ECO Reduced set 4115 3192 R 1 bit - 01 flag Do Door status 4115 32768 R 1 bit - 01 flag Ronn Device on 4123 4 W 1 bit - 01 flag ROFFOFF Device off 4123 8 W 1 bit - 01 flag AttEnSav Activates energy saving function 4123 16 W 1 bit - 01 flag Disatt_SetR Activates economy mode 4123 32 W 1 bit - 01 flag Disatt_SetR Deactivates economy mode 4123 128 W 1 bit - 01 flag	DEF1	Defrost 1	4115	16	R	1 bit	-	03	flag	
ENS Energy saving 4115 16384 R 1 bit - 01 flag ECo Reduced set 4115 8192 R 1 bit - 01 flag Do Door status 4115 32768 R 1 bit - 01 flag Ronon Device off 4123 4 W 1 bit - 01 flag ROFFOFF Device off 4123 8 W 1 bit - 01 flag AttEnSav Activates energy saving function 4123 16 W 1 bit - 01 flag Att_SetR Activates economy mode 4123 32 W 1 bit - 01 flag Att_SetR Deactivates economy mode 4123 128 W 1 bit - 01 flag RoFLOC Keyboard lock 4123 1024 W 1 bit - 01 flag	FAN	Evaporator fans	4115	64	R	1 bit	-	01	flag	
BCO Reduced set 4115 8192 R 1 bit - 01 flag	STD-BY	Stand-by	4115	1	R	1 bit	-	01	flag	
Do Door status 4115 32768 R 1 bit - 01 flag Ronon Device on 4123 4 W 1 bit - 01 flag RoFFoFF Device off 4123 8 W 1 bit - 01 flag AttenSav Activates energy saving function 4123 16 W 1 bit - 01 flag DisattEnSav Deactivates economy mode 4123 32 W 1 bit - 01 flag Disatt_SetR Deactivates economy mode 4123 128 W 1 bit - 01 flag RonLoC Keyboard lock 4123 1024 W 1 bit - 01 flag RoFFLOC Keyboard unlock 4123 1024 W 1 bit - 01 flag RoFFLOC Keyboard unlock 4123 4096 W 1 bit - 01 flag	ENS	Energy saving	4115	16384	R	1 bit	-	01	flag	
Ronon Device on 4123 4 W 1 bit - 01 flag RoFFoFF Device off 4123 8 W 1 bit - 01 flag AttEnSav Activates energy saving function 4123 16 W 1 bit - 01 flag DisattEnSav Deactivates energy saving function 4123 32 W 1 bit - 01 flag Att_SetR Activates economy mode 4123 64 W 1 bit - 01 flag Disatt_SetR Deactivates economy mode 4123 128 W 1 bit - 01 flag Bost SetR Deactivates economy mode 4123 128 W 1 bit - 01 flag RonLoC Keyboard lock 4123 128 W 1 bit - 01 flag RoFLoC Keyboard unlock 4123 2048 W 1 bit - 0	ECo	Reduced set	4115	8192	R	1 bit	-	01	flag	
RoFFoFF Device off 4123 8 W 1 bit - 01 flag AttEnSav Activates energy saving function 4123 16 W 1 bit - 01 flag DisattEnSav Deactivates energy saving function 4123 32 W 1 bit - 01 flag Att_SetR Activates economy mode 4123 188 W 1 bit - 01 flag RonLoC Keyboard lock 4123 128 W 1 bit - 01 flag RonLoC Keyboard unlock 4123 128 W 1 bit - 01 flag RoFLoC Keyboard unlock 4123 2048 W 1 bit - 01 flag Att_Sbr Manual Defrost activation 4123 4096 W 1 bit - 01 flag Testorn Enables autotest 0 2 W 1 bit - 01	Do	Door status	4115	32768	R	1 bit	-	01	flag	
AttEnSav Activates energy saving function 4123 16 W 1 bit - 01 flag DisattEnSav Deactivates energy saving function 4123 32 W 1 bit - 01 flag Att_SetR Activates economy mode 4123 64 W 1 bit - 01 flag Disatt_SetR Deactivates economy mode 4123 128 W 1 bit - 01 flag RonLoC Keyboard lock 4123 1024 W 1 bit - 01 flag RoFFLOC Keyboard unlock 4123 2048 W 1 bit - 01 flag Att_Sbr Manual Defrost activation 4123 4096 W 1 bit - 01 flag Teston Enables autotest 0 2 W 1 bit - 01 flag TestoFF Resets test request 0 2 W 1 bit -	Ronon	Device on	4123	4	W	1 bit	-	01	flag	
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cnt_PoWEr Number of instrument power-ons 4181 0 R Word - 065535 num	cnt_Door	Door opening count	4177	0	R	Word	-	065535	num	
	cnt_PoWEr	Number of instrument power-ons	4181	0	R	Word	-	065535	num	

Modbus MSK 791 functions and resources

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