

# AKO

## COMMERCIAL CATALOGUE

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CONNECTED SOLUTIONS  
FOR PRODUCT CARE  
& ENERGY EFFICIENCY



# 1.

## **COLD ROOM CONTROLLERS**

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01\_ **ADVANCED COLD ROOM CONTROLLER**

02\_ **EFFICIENT COLD ROOM CONTROLLER**

03\_ **TEMPERATURE AND HUMIDITY CONTROLLER FOR  
CONSERVATION AND RIPENING CHAMBERS**

04\_ **MONITORING, DATA LOGGING AND MAINTENANCE TOOL**

05\_ **ELECTRONIC CONTROLS FOR THREE-PHASE COLD ROOMS**

06\_ **ELECTRONIC CONTROL PANELS FOR SINGLE AND THREE-PHASE  
CONDENSER UNITS**



# 01\_ ADVANCED COLD ROOM CONTROLLER

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## AKOCORE ADVANCE



# AKOCORE ADVANCE

## BENEFITS



### OPTIMAL START-UP AND REGULATION

- Ultra-fast installation and start-up with two-step guidance.
- Ability to save and load default parameters with the CAMM Module\*, through the CAMM Tool App.
- Acoustic and visual alarms built into the product.
- Optimum control of the system elements via SELF-DRIVE® mode, minimising defrosting, reducing the formation of ice inside the system and adapting to changing conditions of the room.



### MAXIMUM EFFICIENCY AND REDUCED CONSUMPTION

- AKOCORE ADVANCE manages temperature regulation and the key elements of electricity consumption in cold rooms.
- It improves product conservation thanks to the drastic reduction in the number of compressor activation and the amount of defrosting required, optimising the time at the Set Point.
- Product care and product loss reduction.



### ATTRACTIVE AND VERSATILE DESIGN

- IP65 across the whole range.
- Horizontal construction that allows its installation both to the side and above the door of the cold room.
- Large, clear and intuitive display with colour-coded icons.
- Quick access keys with the most common functions at the click of a button, for ease of use.



### INCREASED CONNECTIVITY

- Modbus included.
- With the CAMM Module it is possible to connect your mobile phone via Bluetooth and control all the facility's relevant information and record important events. In addition, the CAMM module provides remote connectivity without the need for a network or web server, through the "Share" mode.
- Digital inputs to silence the alarm, remote change of Set Point, remote defrost activation or deactivation using control systems.

\* CAMM module included in AKO-16524A (in AKO-16525A it can be installed optionally).

## APPLICATIONS

Cold rooms and freezer rooms.



**AKOCORE ADVANCE regulates itself using its SELF-DRIVE® algorithm and with only 2 probes:**



**It optimises the working time of the drain resistance,** significantly reducing electricity consumption.

**It detects the state of the refrigerant** in the evaporator.



**It regulates the fan to take advantage of the thermal inertia of the evaporator, achieving:**

- Reduced number of compressor activations.
- Reduced energy consumption.
- Less mechanical stress due to fewer compressor activations.



**It detects the formation of ice** in the evaporator.



**It determines the Heat Transfer Ratio** between the cold room and the evaporator.



**It minimises the number and duration of defrosts:**

- Reduced thermal stress.
- Increased time at the set-point.
- Reduced energy consumption.
- Reduced risk of gas leakage.

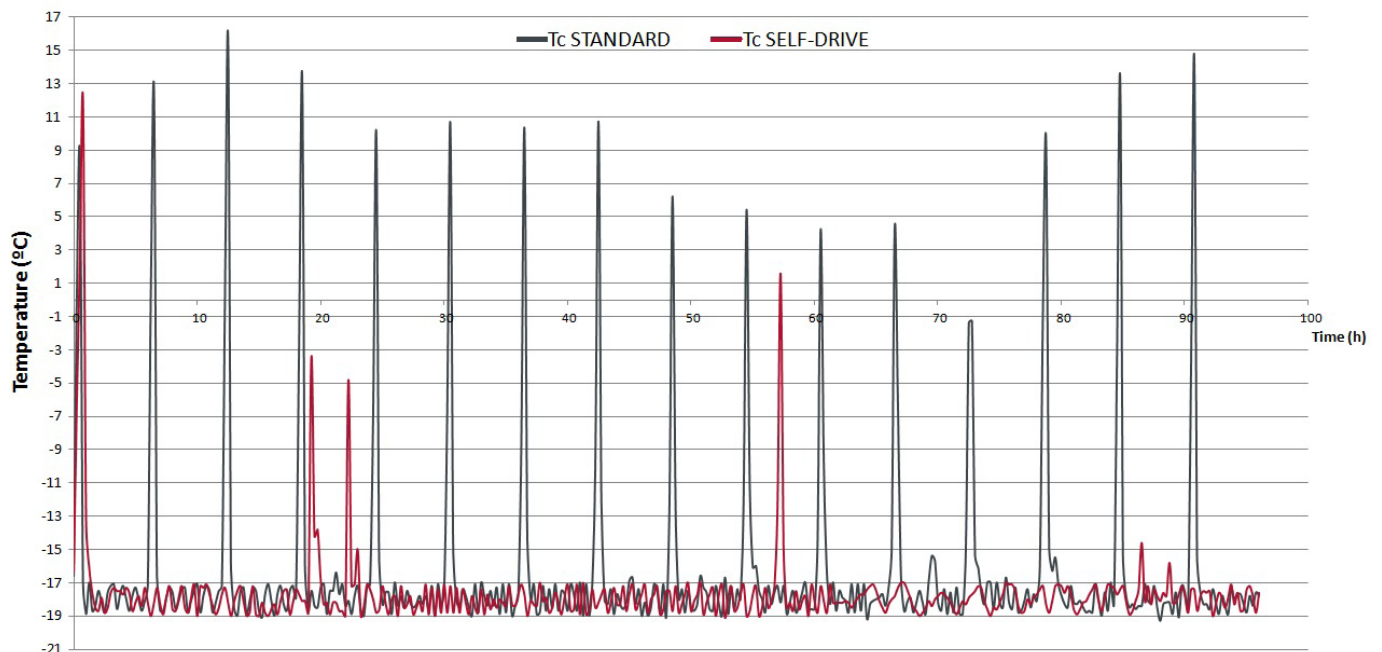


**It monitors door opening,** reducing ambient/room heat transfer and increasing temperature stability.

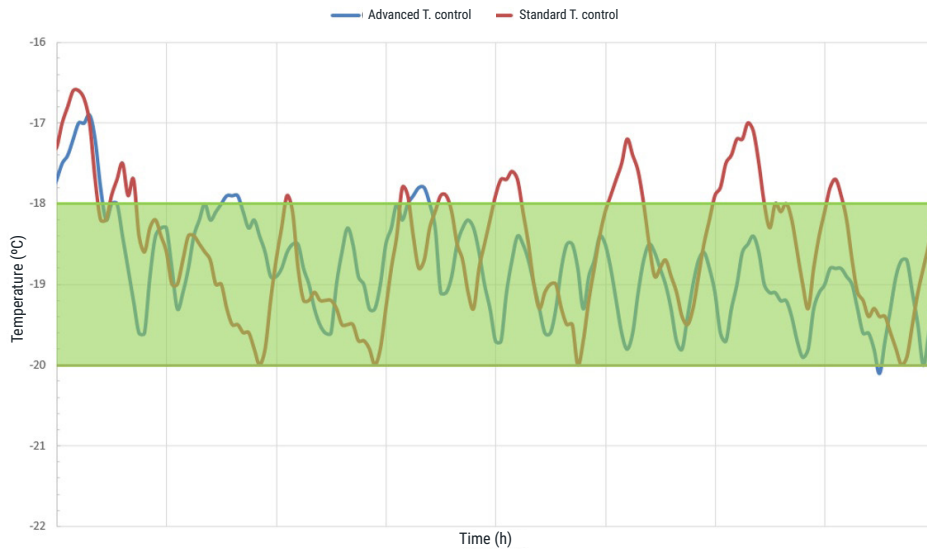


**COMPARISON OF OTHER TEMPERATURE CONTROLLERS VS. THE AKOCORE ADVANCE CONTROLLER**

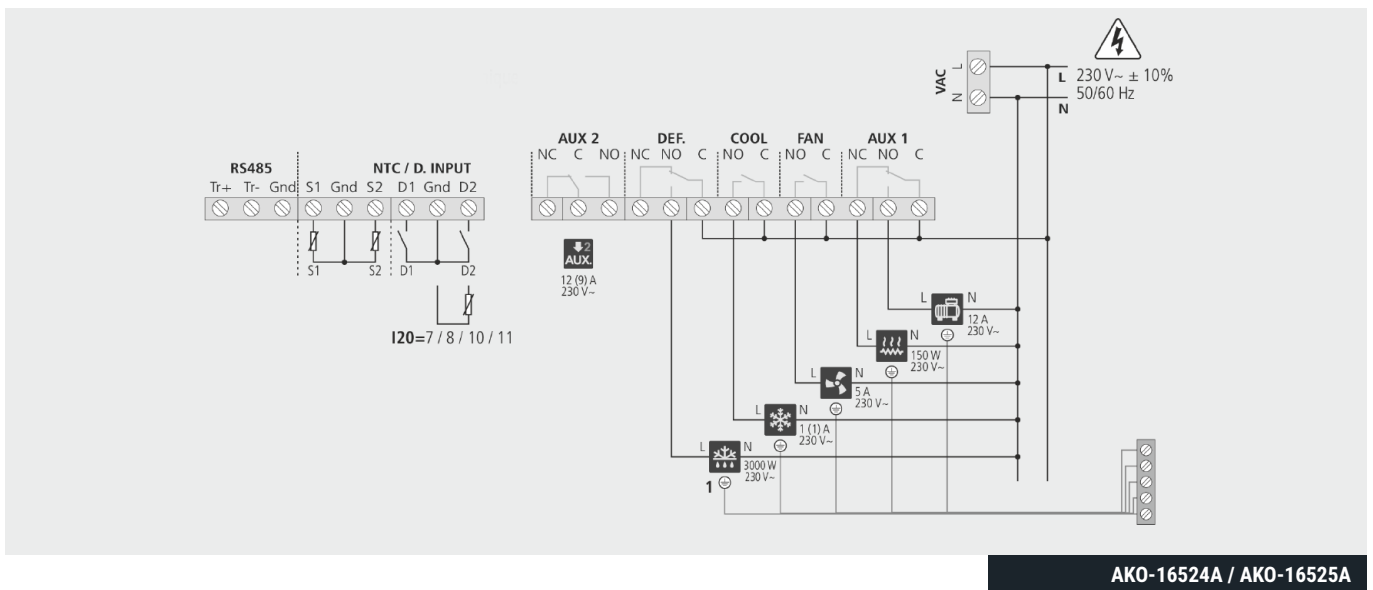
Drastic reduction in the number of defrosts and electricity consumption.



**IMPROVED TEMPERATURE CONTROL  
FOR OPTIMUM PRODUCT PRESERVATION**



**ELECTRICAL CONNECTIONS**



**AKO-16524A / AKO-16525A**



## TECHNICAL SPECIFICATIONS

Power supply AKO-16524A / AKO-16525A		230 V~ ± 10%, 50 ± 5%
Maximum power absorbed during use		6.3VA
Nominal maximum current		15A
A DEFROST relay - SPDT - 20 A	NO	(EN60730-1: 15 (15)A 250V~)
	NC	(EN60730-1: 15 (13) A 250 V~)
FAN Relay - SPST - 16 A		(EN60730-1: 12 (9) A 250V~)
COOL Relay - SPST - 16 A		(EN60730-1: 12 (9) A 250 V~)
AUX relay 1- SPDT - 20 A	NO	(EN60730-1:15 (15)A 250V~)
	NC	(EN60730-1: 15 (13)A 250 V~)
AUX relay 2 - SPDT - 16 A	NO	(EN60730-1: 12 (9) A 250 V~)
	NC	(EN60730-1: 10 (8) A 250 V~)
No. of relay operations		EN60730-1:100,000 operations
Dimensions		290 mm (W) x 141 mm (H) x 84.4 mm (D)
Probe temperature range		-50.0 °C to 99.9 °C
Resolution, set point and differential		0.1 °C
Thermometric accuracy		±1°C
NTC probe tolerance at 25°C		±0.4 °C
Input for NTC probe		AKO-14901
Ambient operating temperature		-10 °C to 50 °C
Ambient storage temperature		30 °C to 60 °C
Protection degree		IP65

## MODELS

Description	Model	CAMM Module*	Packaging
Temperature controller	AKO-16524A	Included	1 unit
	AKO-16525A	Optional	

\*See information about the CAMM Module on page 24

# 02\_ EFFICIENT COLD ROOM CONTROLLERS

## AKOCORE





# AKOCORE

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## BENEFITS

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### MAXIMUM EASE OF INSTALLATION

- Mounting to wall with only 3 screws and front side opening with hinges that allows fastening with only one hand.
- Terminals placed on screen-printed plate, and all connections performed on the bottom of the equipment with ample interior space.
- Upper and lower IP65 cable entry (using cable gland), and also at the rear for installations where you want to hide the wiring (Not IP65 in this case).



### EFFICIENT START-UP AND REGULATION

- Ultra-fast installation and start-up with two-step guidance.
- Possibility to save and load default parameters with the CAMM Module, through the CAMM Tool App.
- Acoustic and visual alarms built into the product.
- Possibility of managing the door heater and defrosts of a second evaporator or defrosting processes for three-phase compressors.



### ATTRACTIVE AND VERSATILE DESIGN

- IP65 across the whole range.
- Horizontal construction that allows its installation both to the side and above the door of the cold room.
- Large, clear and intuitive display with colour-coded icons.
- Quick access keys with the most common functions at the click of a button, for ease of use.



### INCREASED CONNECTIVITY

- Modbus as standard.
- With the CAMM Module it is possible to connect your mobile phone via Bluetooth and control all the facility's relevant information and record important events. In addition, the CAMM module provides remote connectivity without the need for a network or web server, through the "Share" mode.
- Digital inputs to silence the alarm, remote set point alteration, remote defrost activation or deactivation via load control systems.

## APPLICATIONS

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Cold rooms and freezer rooms.

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### AUTONOMOUS INSTALLATION CONTROL

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Compressor



Fans



Solenoid



Defrosting



### DISTRIBUTED INSTALLATION CONTROL

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Fans



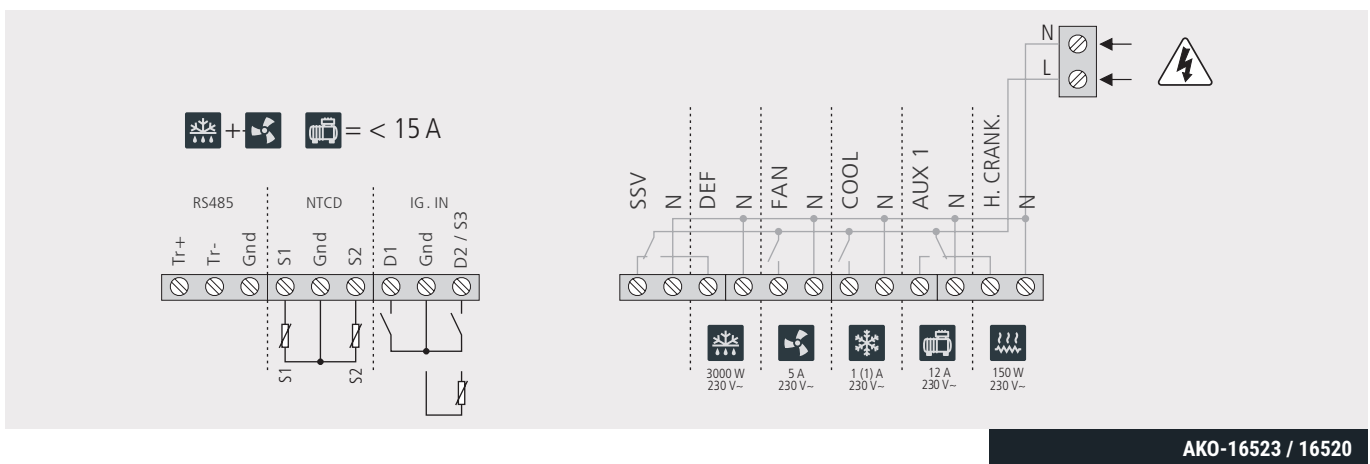
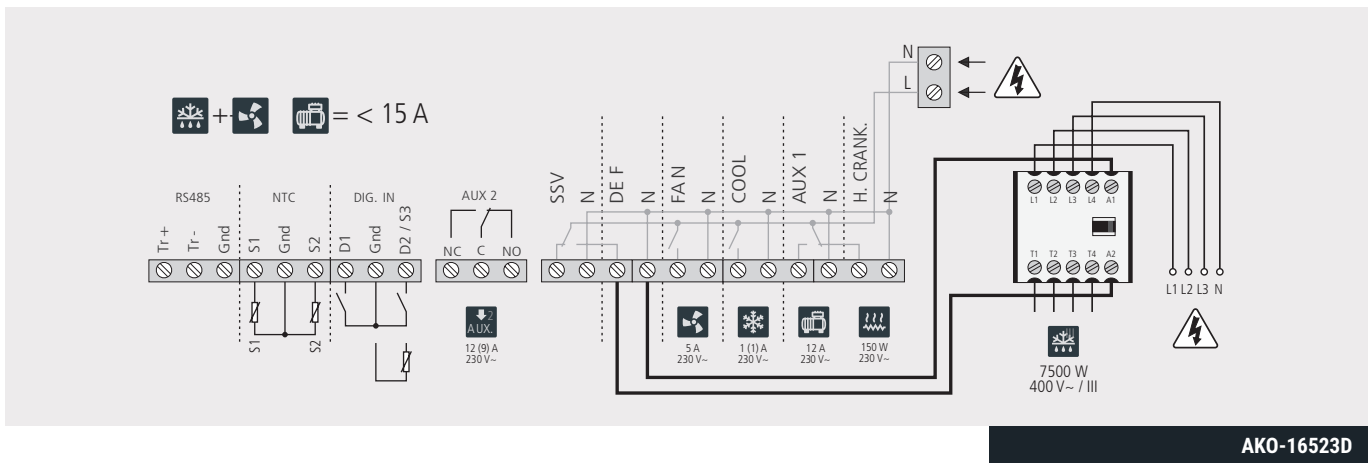
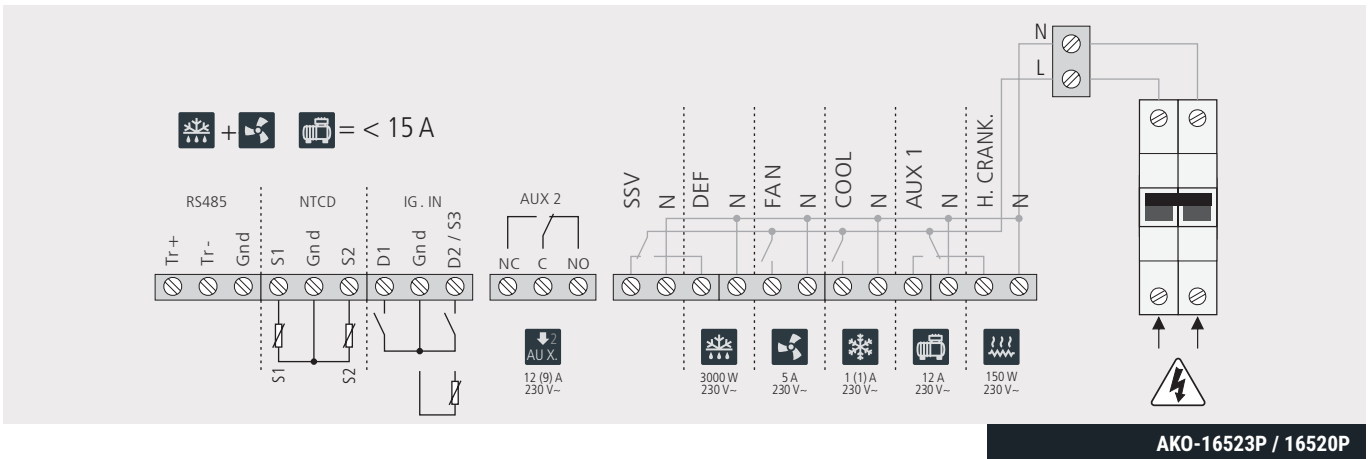
Solenoid



Defrosting



**ELECTRICAL CONNECTIONS**



COLD ROOM CONTROLLERS

## TECHNICAL SPECIFICATIONS

Power supply	AKO-16523 / AKO-16523P / AKO-16523D	230 V~ ± 10%, 50 ± 5%
	AKO-16520 / AKO-16520P	120 V ~ + 8% - 12%, 50 ± 5%
Maximum power absorbed during use		15 W
Nominal maximum current		15
A SSV Relay / DEFROST - SPDT - 20 A	NO	EN60730-1: 15 (15) A 250 V~)
	NC	EN60730-1: 15 (13) A 250 V~)
FAN Relay - SPST - 16 A		EN60730-1: 12 (9) A 250 V~)
COOL Relay - SPST - 16 A		EN60730-1: 12 (9) A 250 V~)
AUX relay 1 / H.CRANK. - SPDT - 20 A	NO	EN60730-1: 15 (15) A 250 V~)
	NC	EN60730-1: 15 (13) A 250 V~)
AUX 2 relay - SPDT - 16 A	NO	EN60730-1: 12 (9) A 250 V~)
	NC	EN60730-1: 10 (8) A 250 V~)
Contactor (AKO-16523D)	AC	20 to 400 V~ (III)
	AC3	9 to 400 V~ (III)
No. of relay operations		EN60730-1:100,000 operations
Probe temperature range		-50.0 °C to 99.9 °C
Resolution, set point and differential		0.1 °C
Thermometric accuracy		±1 °C
NTC probe tolerance at 25 °C		±0.4 °C
Input for NTC probe		AKO-14901
Maximum power absorbed in operation		10 VA
Ambient operating temperature		-5 °C to 40 °C
Protection degree		IP 65
Installation category		II s/ EN 61439-1
Pollution level		II s/ EN 61439-1
Double insulation between power supply, secondary circuit and relay output.		
Dimensions		290 mm (W) x 141 mm (H) x 84.4 mm (D)
Internal buzzer		

## MODELS

Description	Model	Power supply	Packaging
4 relays temperature controller	AKO-16523	230V	6 units
	AKO-16520	120V	
5 relays temperature controller with electrical protection	AKO-16523P	230V	
	AKO-16520P	120V	
5 relays temperature controller and Power contactor	AKO-16523D	230V	



# 03\_ TEMPERATURE AND HUMIDITY CONTROLLER FOR CONSERVATION AND RIPENING CHAMBERS

**AKOCORE**



# AKOCORE

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## BENEFITS

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### MAXIMUM EASE OF INSTALLATION

- Mounting to wall with only 3 screws and front side opening with hinges that allows fastening with only one hand.
- Terminals placed on screen-printed plate, and all connections performed on the bottom of the equipment with ample interior space.
- Upper and lower IP65 cable entry (using cable gland), and also at the rear for installations where you want to hide the wiring (Not IP65 in this case).



### EFFICIENT START-UP AND REGULATION

- Ultra-fast installation and start-up with two-step guidance.
- Possibility to save and load default parameters with the CAMM Module, through the CAMM Tool App.
- Acoustic and visual alarms built into the product.
- Possibility of managing the door heater or defrosts of a second evaporator.



### ATTRACTIVE AND VERSATILE DESIGN

- IP65 across the whole range.
- Horizontal construction that allows its installation both to the side and above the door of the cold room.
- Large, clear and intuitive double display with colour-coded icons.
- Quick access keys with the most common functions at the click of a button, for ease of use.



### INCREASED CONNECTIVITY

- Output relay for drying using hot gas or support resistance.
- 4-20mA output and analogic input to control humidifier.
- Modbus as standard
- Monitoring through AKONET or AKONET.Edge

## APPLICATIONS

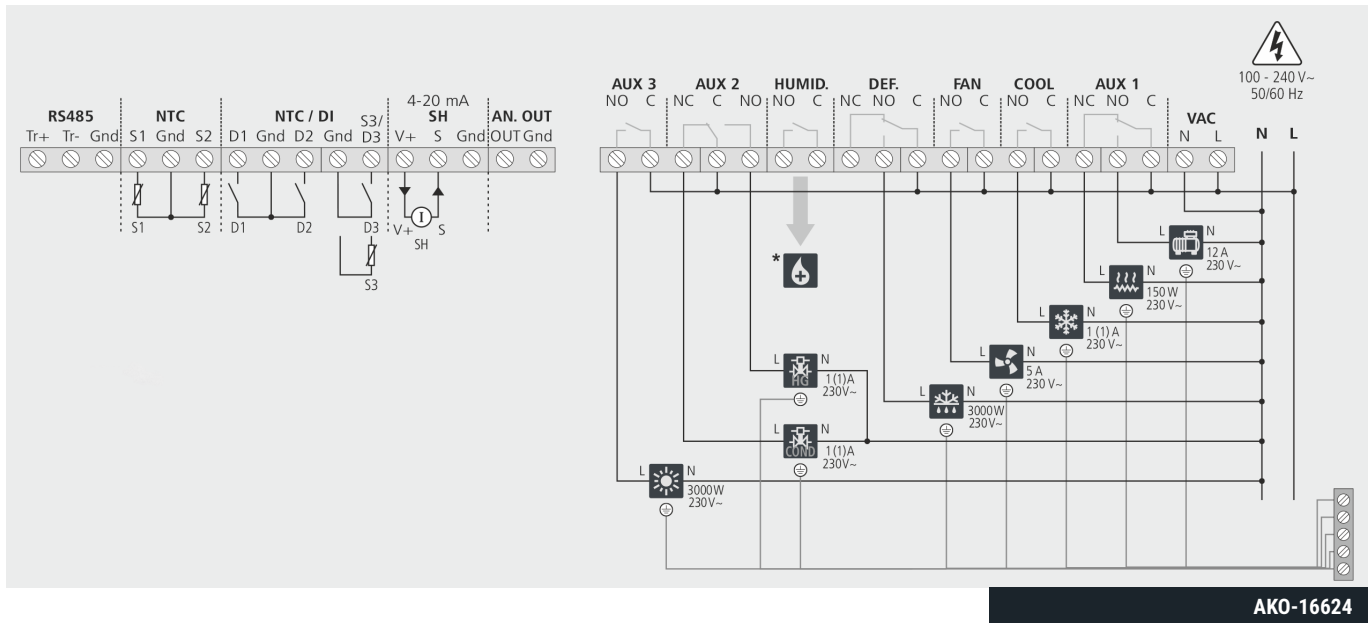
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Control temperature and humidity is a key factor in food industry to avoid water loss of the product (thereby, reducing its weight), preserve the quality and freshness and reducing product waste.

The controller AKO-16624 ensures an appropriate conditions of temperature and humidity thanks to its control algorithm, preserving the quality of the stored product and minimising product losses.

- Drying rooms.
- Cheese production and preservation.
- Greenhouses.
- Flowers storage and preservation.

**ELECTRICAL CONNECTIONS**



**AKO-16624**

**TECHNICAL SPECIFICATIONS**

Power supply		100 - 240 V~, 50 / 60 Hz
Nominal maximum current		15 A
DEF relay - SPDT - 20 A	NO	(EN60730-1: 15 (15) A 250 V~ )
	NC	EN60730-1: 15 (13) A 250 V~)
FAN Relay - SPST - 16 A		EN60730-1: 12 (9) A 250 V~)
COOL Relay - SPST - 16 A		EN60730-1: 12 (9) A 250 V~)
HUMID relay - SPST - 16 A		EN60730-1: 12 (9) A 250 V~)
AUX relay 1 / H.CRANK. - SPDT - 20 A	NO	EN60730-1: 15 (15) A 250 V~)
	NC	EN60730-1: 15 (13) A 250 V~)
AUX 2 relay - SPDT - 16 A	NO	EN60730-1: 12 (9) A 250 V~)
	NC	EN60730-1: 10 (8) A 250 V~)
AUX 3 Relay - SPST - 16 A		EN60730-1: 12 (9) A 250 V~)
No. of relay operations		EN60730-1:100,000 operations
Probe temperature range		-50.0 °C to 99.9 °C
Resolution, set point and differential		0.1 °C
Thermometric accuracy		±1 °C
NTC probe tolerance at 25 °C		±0.4 °C
Humidity probe input		Analogue, 4-20 mA
Humidity input range		4 mA: 0% HR - 20 mA: 100% HR
Ambient operating temperature		-10 °C to 50 °C
Protection degree		IP 65

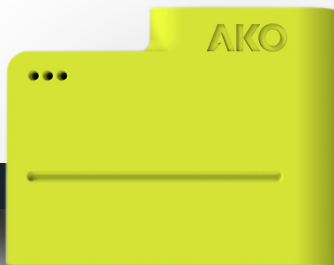
**MODELS**

Description	Model	Power supply	Packaging
Temperature and humidity controller for chambers	AKO-16624	90-240VAC	6 units



# 04\_ MONITORING, DATALOGGING AND MAINTENANCE TOOL

## CAMM MODULE



# CAMM MODULE

## BENEFITS



### INSTALLATION

- Reduces installation time, and makes it easier to set up equipment.
- The unit can be set up via a mobile phone. The device can also be used to create, save and share parameters and template configurations with other installers.



### START-UP

- Provides information on the performance and use of the facility after start-up.
- Identifies errors in the start-up of the equipment, thanks to amendment records in configuration and parametrisation.

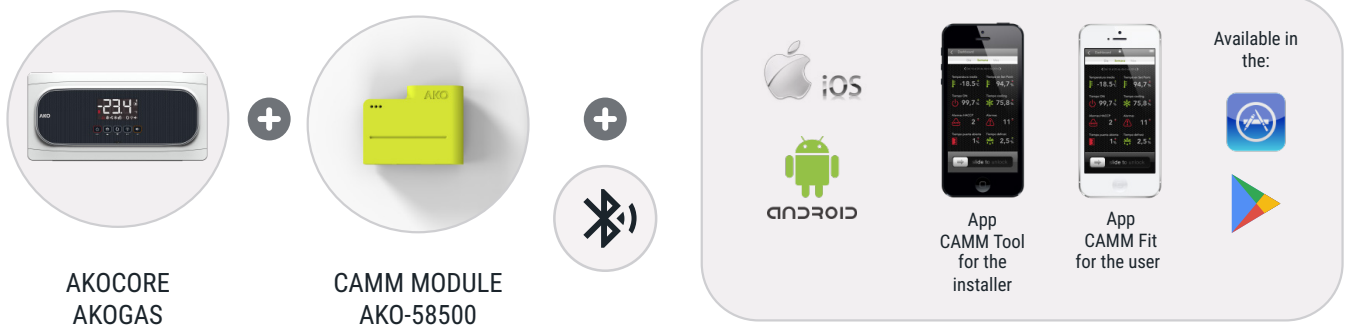


### AFTER SALES

- The room's activity is monitored and logged to optimise its regulation.
- Local and remote connectivity using the mobile without the need for a local network or web server, to access key maintenance information, avoiding costly trips to the facility.

## APPLICATIONS

Refrigeration and freezer rooms, compressor rooms, as bluetooth connectivity module and registration in AKOCORE and AKOGAS devices.



\* CAMM module included in AKO-16524A (in AKO-16525A it can be installed optionally).

## LOCAL AND REMOTE CONNECTIVITY WITH THE CAMM MODULE IN SHARE MODE



Share mode allows you to share all the information logged in the CAMM module in order to access it remotely, having all the data and events at your fingertips and in a very simple way without the need to travel.

## TECHNICAL SPECIFICATIONS

Internal power supply	Li-Ion battery 3.7 V 100 mAh	
Maximum power usage	50 mA	
Self-sufficiency	On stand-by	4 months
	Whilst connected	4 hours
Ambient operating temperature	-30 °C to 50 °C	
Ambient storage temperature	-20 °C to 60 °C	
Permissible humidity range	0 - 95 % RH (without condensation)	
Dimensions	46 mm x 36.5 mm x 12.2 mm	
Compatible with the apps	AKO CAMM Tool AKO CAMM Fit	

## MODELS

Description	Model	Packaging
CAMM module for Bluetooth connectivity and data logging	AKO-58500	1 unit



# 05\_ ELECTRONIC CONTROLS FOR THREE-PHASE COLD ROOMS

## PROPlus



# PROPlus

## BENEFITS



### QUICK AND EASY INSTALLATION

- Interior terminal board for a ease of connection.
- Quick programming menu, with the most common parameters (Set Point, Defrost).
- Easy access to the magneto-thermal protection, thanks to its frontal positioning.



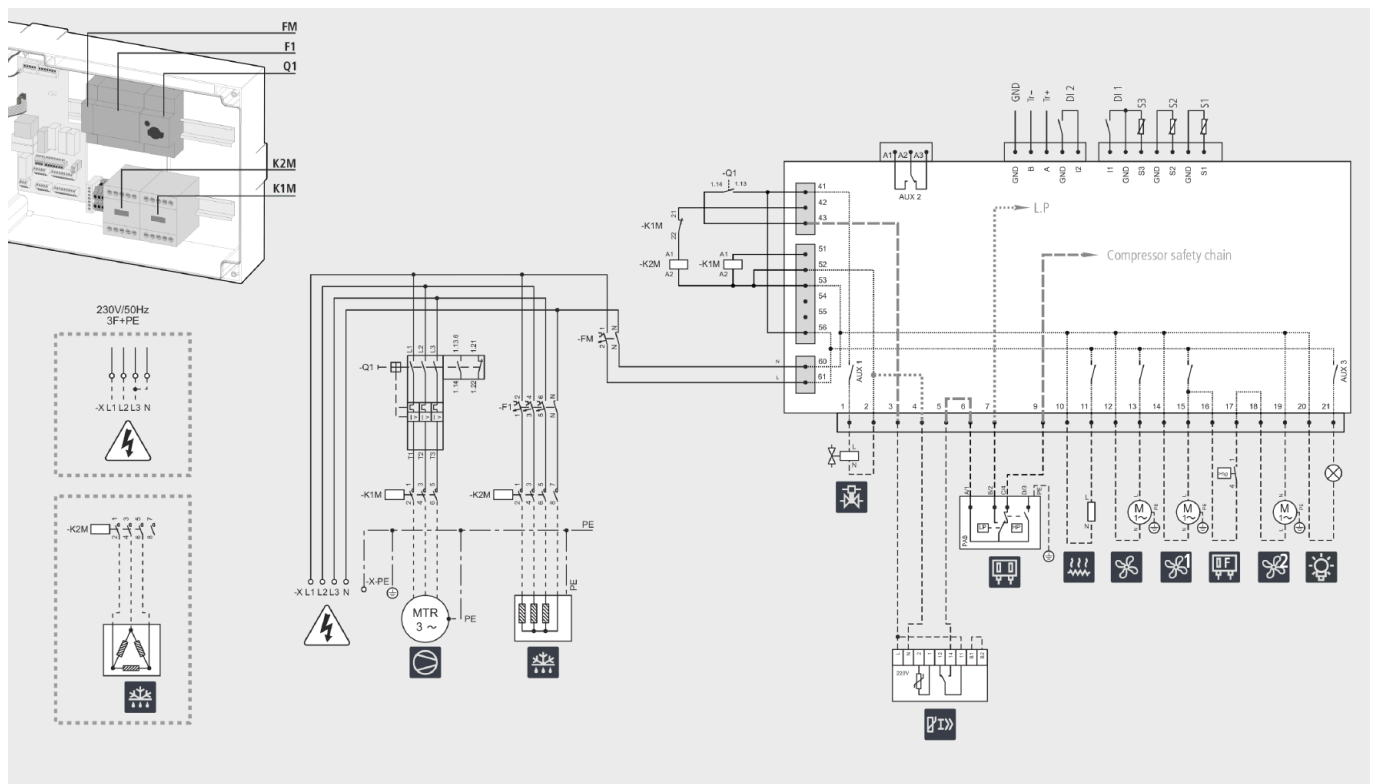
### ROBUST DESIGN

- IP65 protection degree for installation in humid environments.
- Electronic panels with magneto-thermal protection up to 25A, for the control of cold rooms and to cover a wide range of applications.

## APPLICATIONS

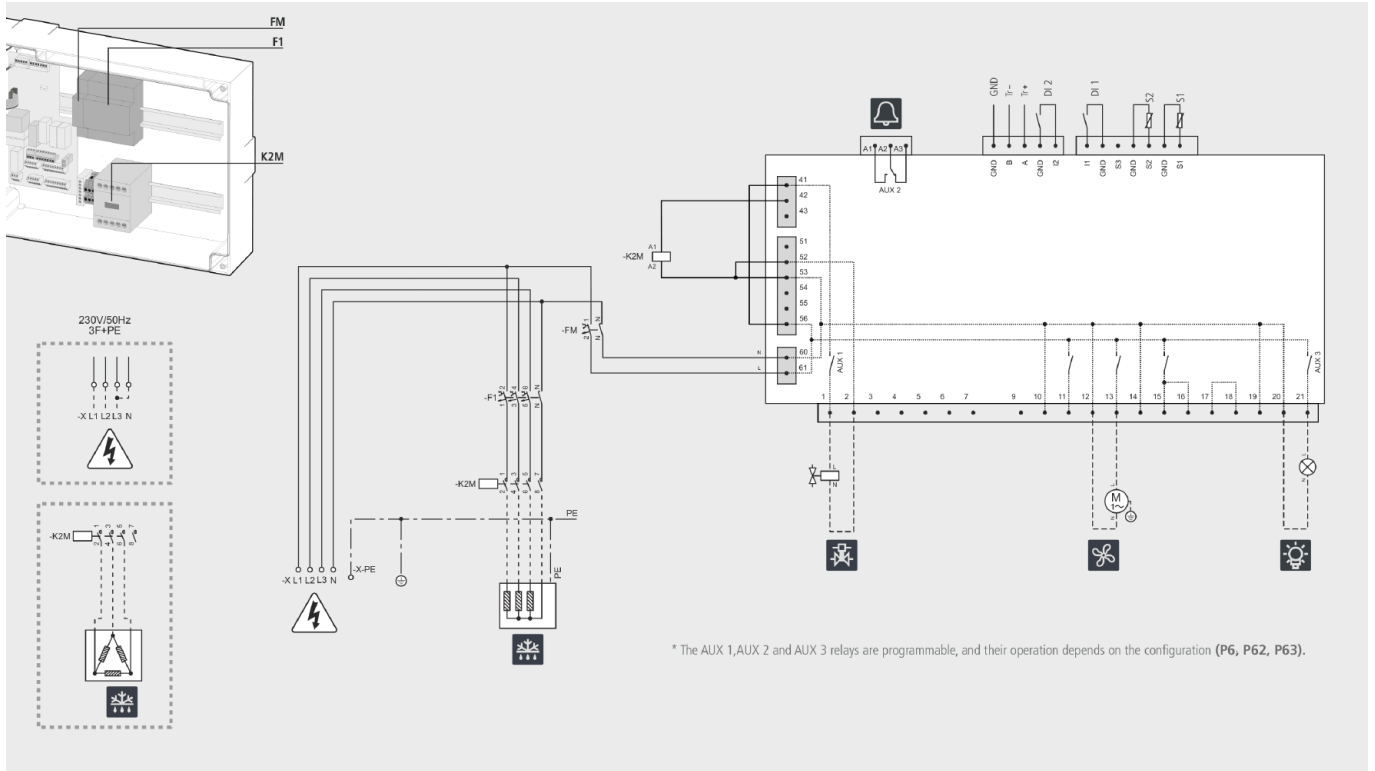
Three-phase refrigeration and three-phase cold rooms.

## ELECTRICAL CONNECTIONS

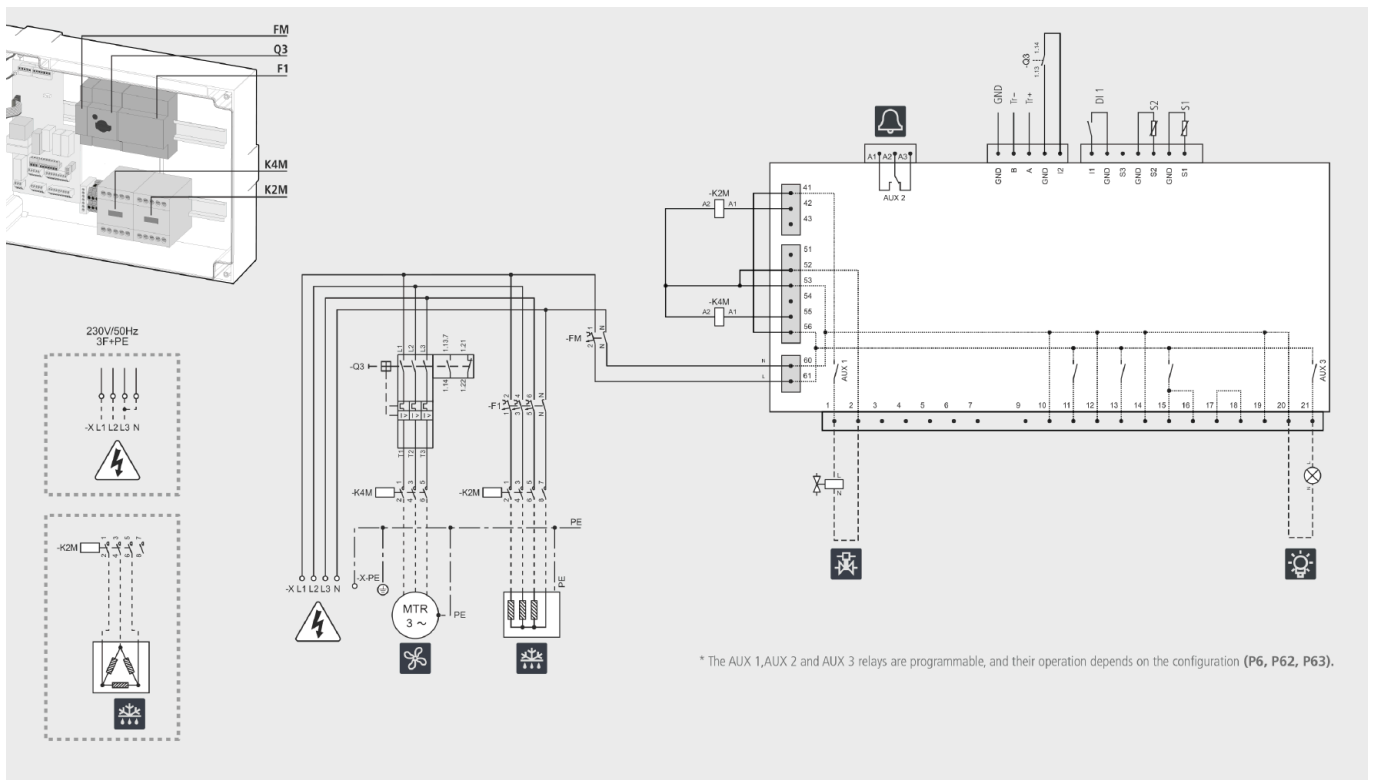


AKO-15690/1/2/3

**ELECTRICAL CONNECTIONS**



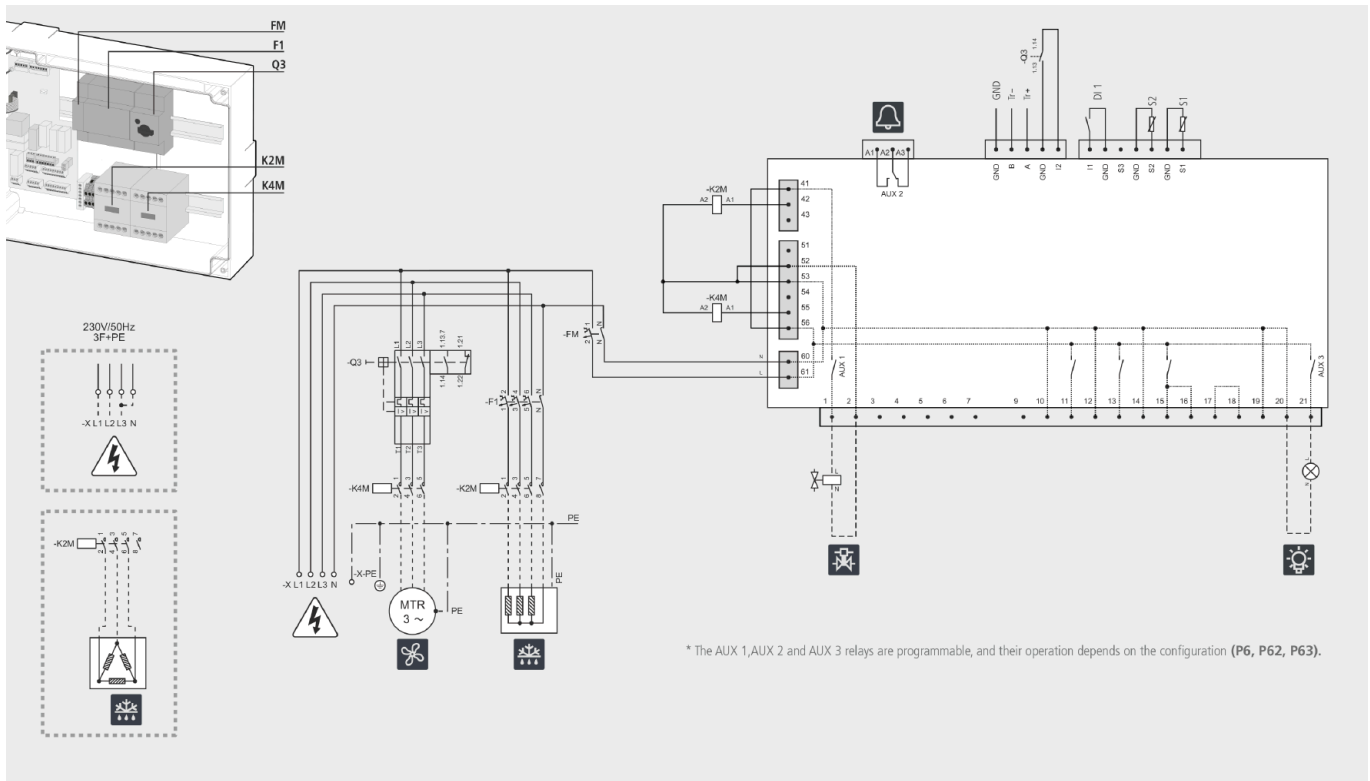
**AKO-15697**



**AKO-15699**



# ELECTRICAL CONNECTIONS



**AKO-15699-1**

# TECHNICAL SPECIFICATIONS

Rated voltage Un	400 V~ ±10 % 50 Hz ±5 %
Rated voltage Ue	230 V~ ±10 % 50 Hz ±5 %
ALARM relay	8A at 250V, cosj=1
Resolution	0.1 °C
Probe temperature range	-45.0 °C to 99.9 °C
Thermometric accuracy	±1 %
Ambient operating temperature	0°C to +50°C
Accuracy of the NTC probe at 25 °C	± 0.4 °C
Maximum power absorbed during use	30 VA
Ambient operating temperature	-5 °C to 40 °C
Ambient storage temperature	-30 °C to 70 °C
Protection degree	IP65
Dimensions	400 x 300 x 135 mm
Protection degree of the datalogger	IP65
Double insulation between power supply, secondary circuit and relay output.	
Internal buzzer	

**MODELS**

Condensing Unit			Evaporator			Light 230 V-I	Model	Packaging
Compressor 400 V-III	Condenser		Fans		Defrosting 400 V-III			
	230 V-I	400 V-III	230 V-I	400 V-III				
2.5 - 4 A	3A	-	4A	-	7,000 W	250 W	AKO-15690	1 unit
4 - 6.3 A	3A	-	4A	-	7,000 W	250 W	AKO-15691	
6.3 - 10 A	3A	-	4A	-	10,200 W	250 W	AKO-15692	
10 - 16 A	3A	-	4A	-	10,200 W	250 W	AKO-15693	
-	-	-	5A	-	10,200 W	250 W	AKO-15697	
-	-	-	-	1.6-2.5 A	10,200 W	250 W	AKO-15699	
-	-	-	-	6.3-10 A	20,000 W	250 W	AKO-15699-1	

06\_

# ELECTRONIC CONTROL PANELS FOR SINGLE AND THREE-PHASE CONDENSING UNITS

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## PROCOOL

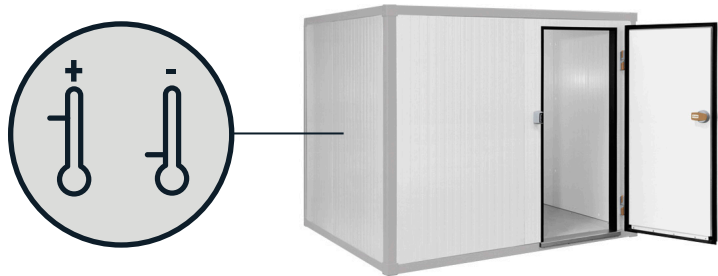


# ELECTRONIC CONTROL PANELS

## BENEFITS

Electronic Panels for Single and Three Phase Condensing Units, with adjustable Electrical Protection between 3 and 25A. Versions available for single and three-phase evaporator and/or condenser fans, with or without single and three-phase defrosting.

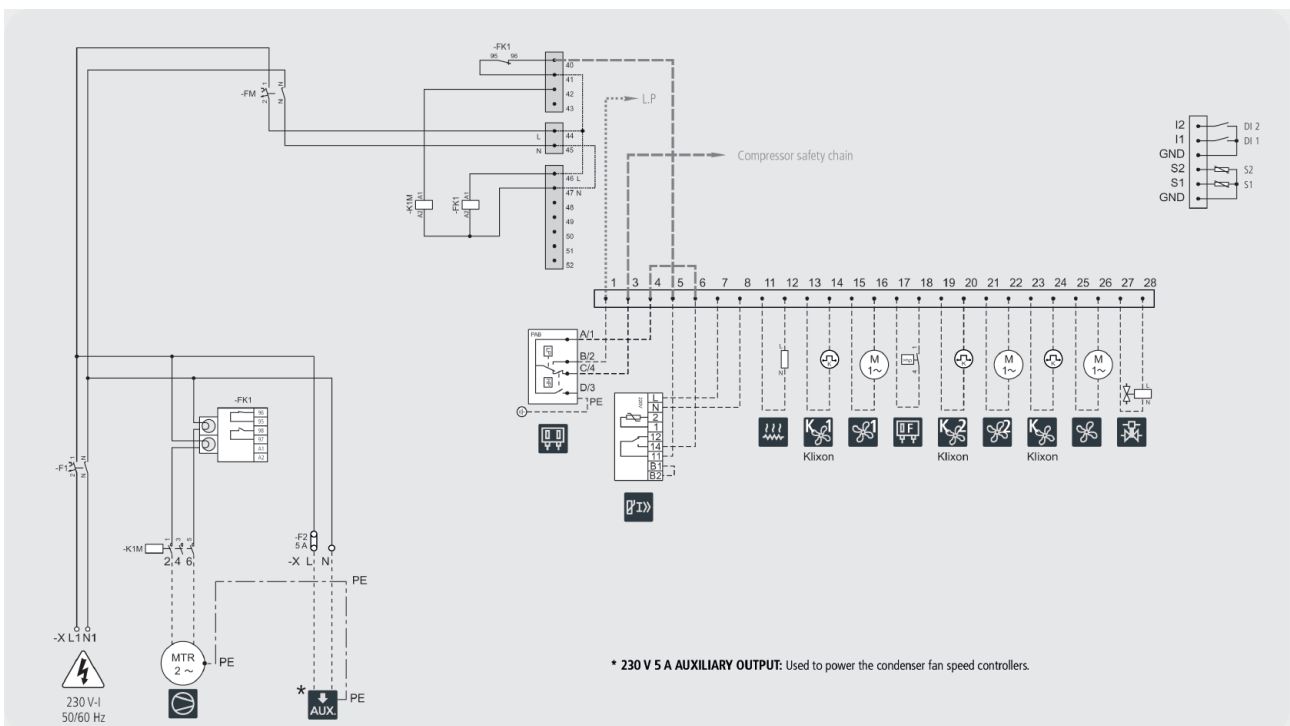
There are also two versions for the Control that are specifically for Three Phase Condensing Units only, with single and three-phase fans.



## APPLICATIONS

Refrigeration and freezer rooms up to 10CV.

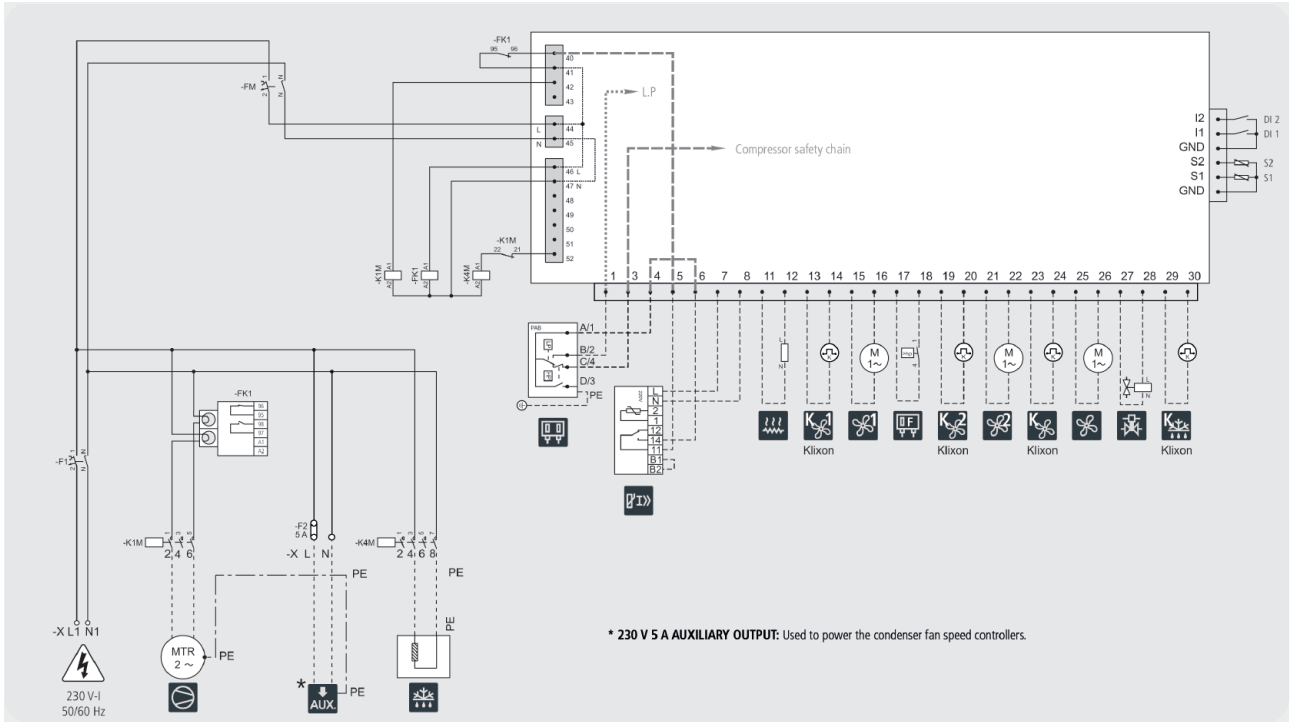
## ELECTRICAL CONNECTIONS



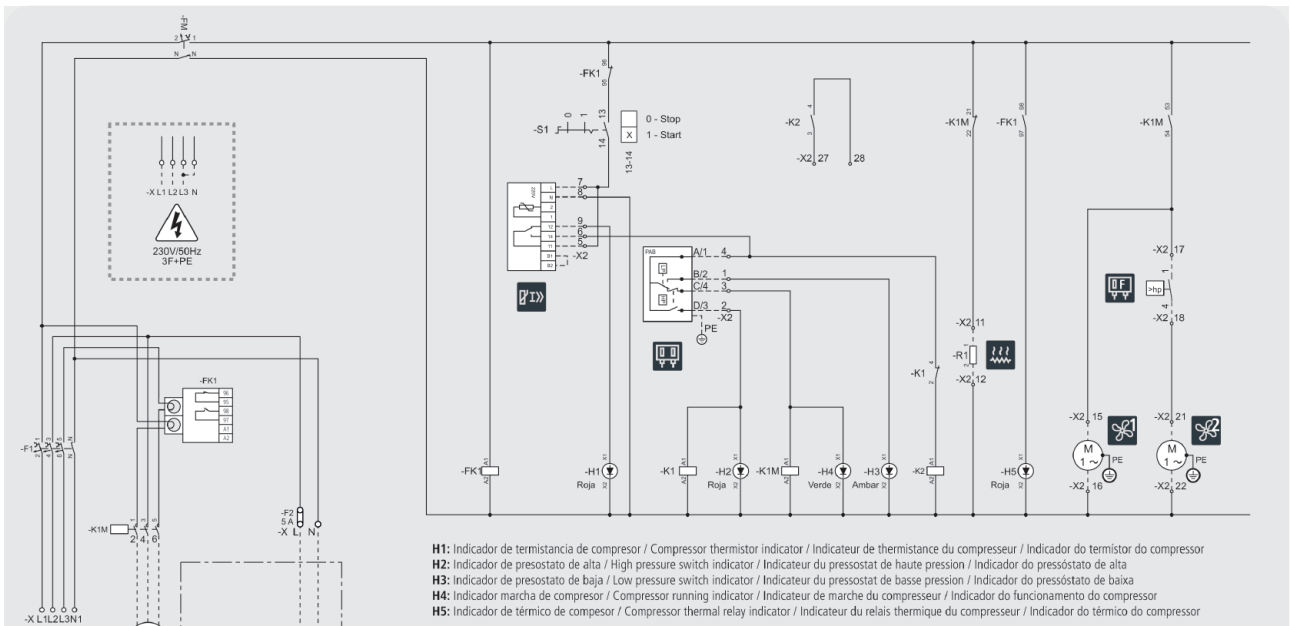
**AKO-17520**



# ELECTRICAL CONNECTIONS

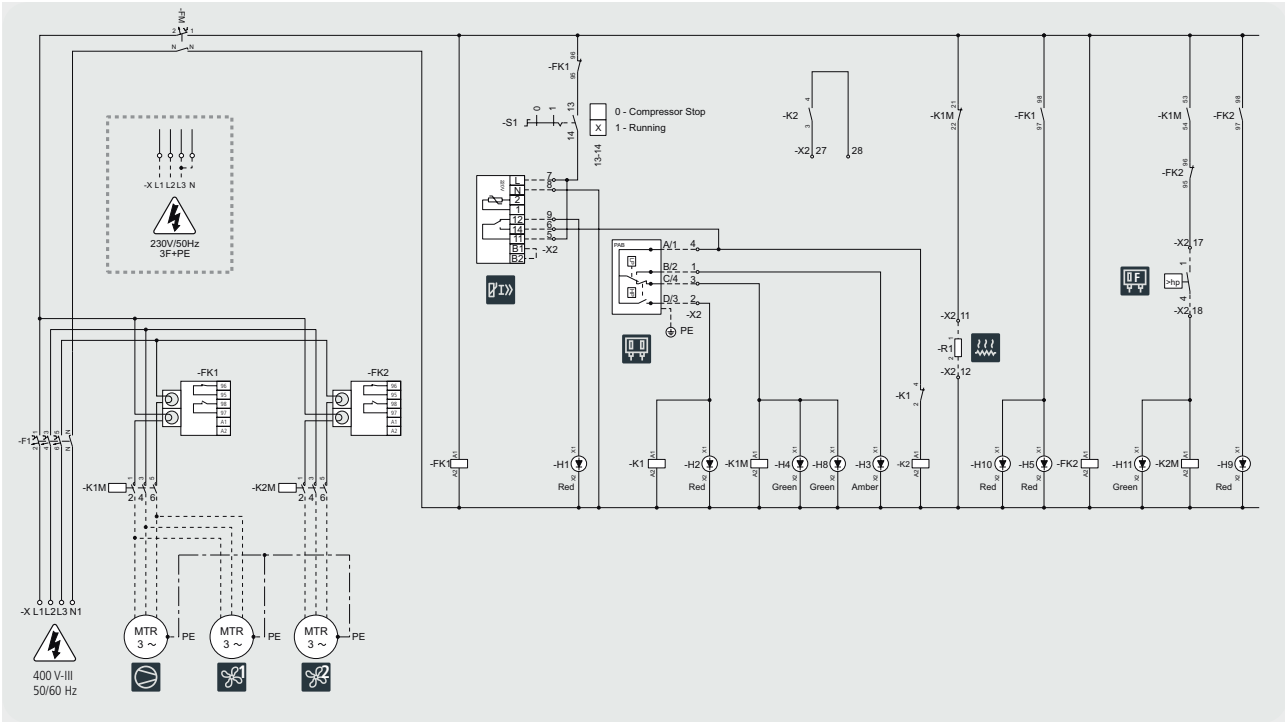


**AKO-17521**

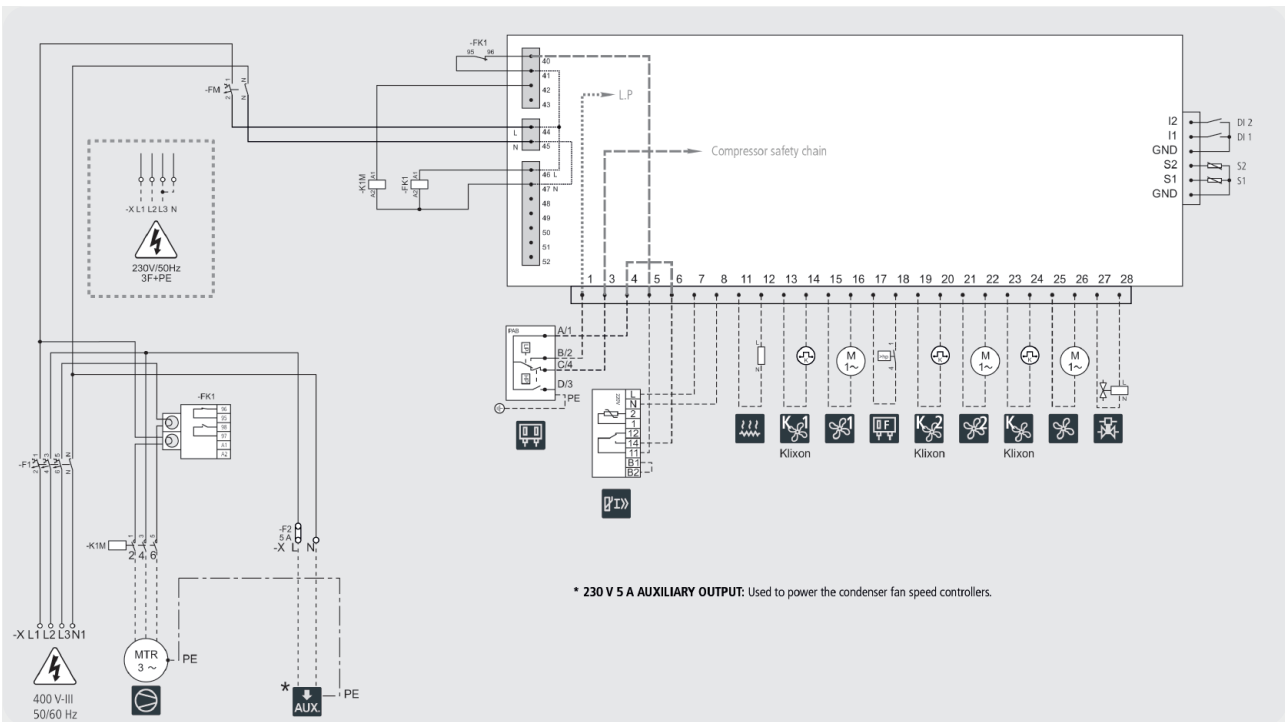


**AKO-17630**

**ELECTRICAL CONNECTIONS**



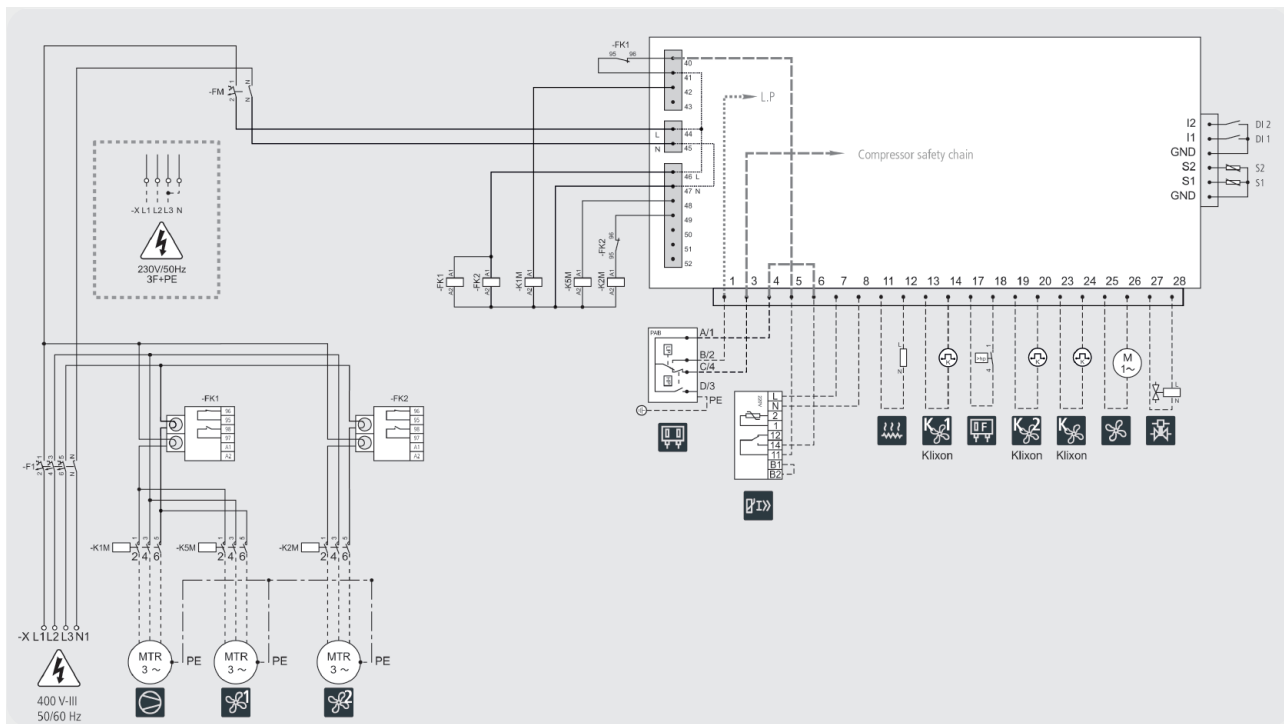
**AKO-17631**



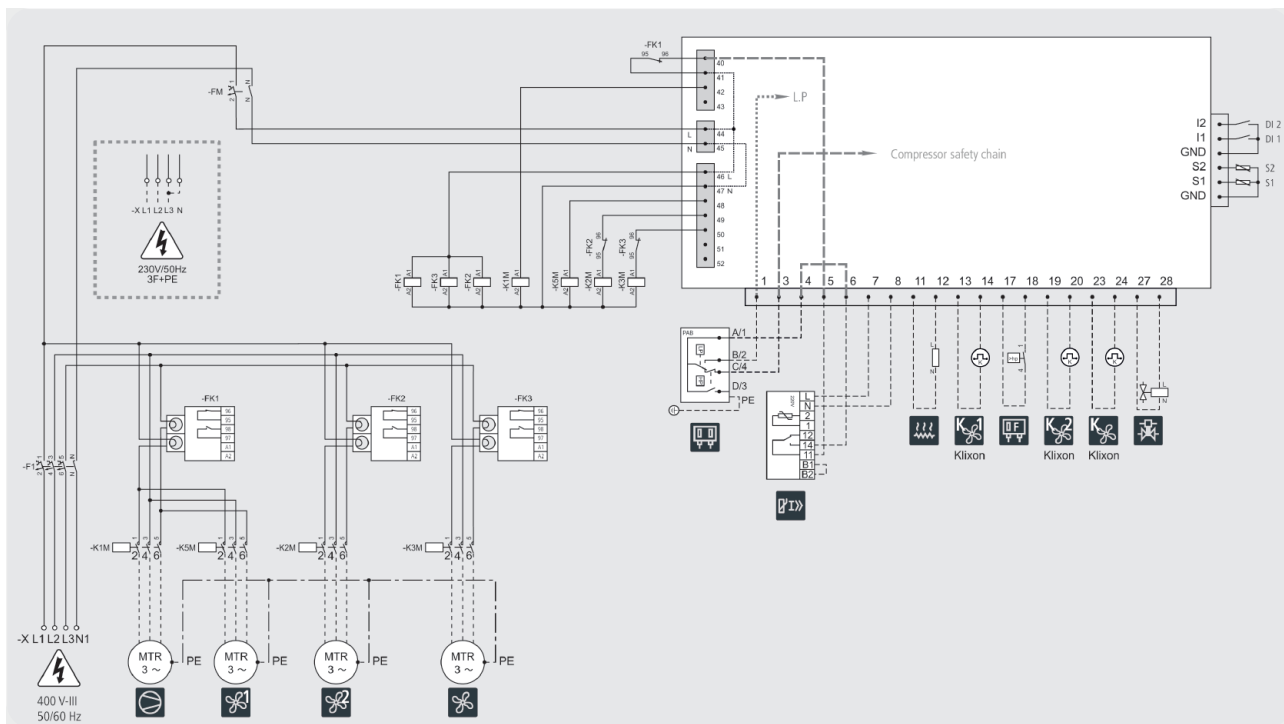
\* 230 V 5 A AUXILIARY OUTPUT: Used to power the condenser fan speed controllers.

**AKO-17632**

# ELECTRICAL CONNECTIONS

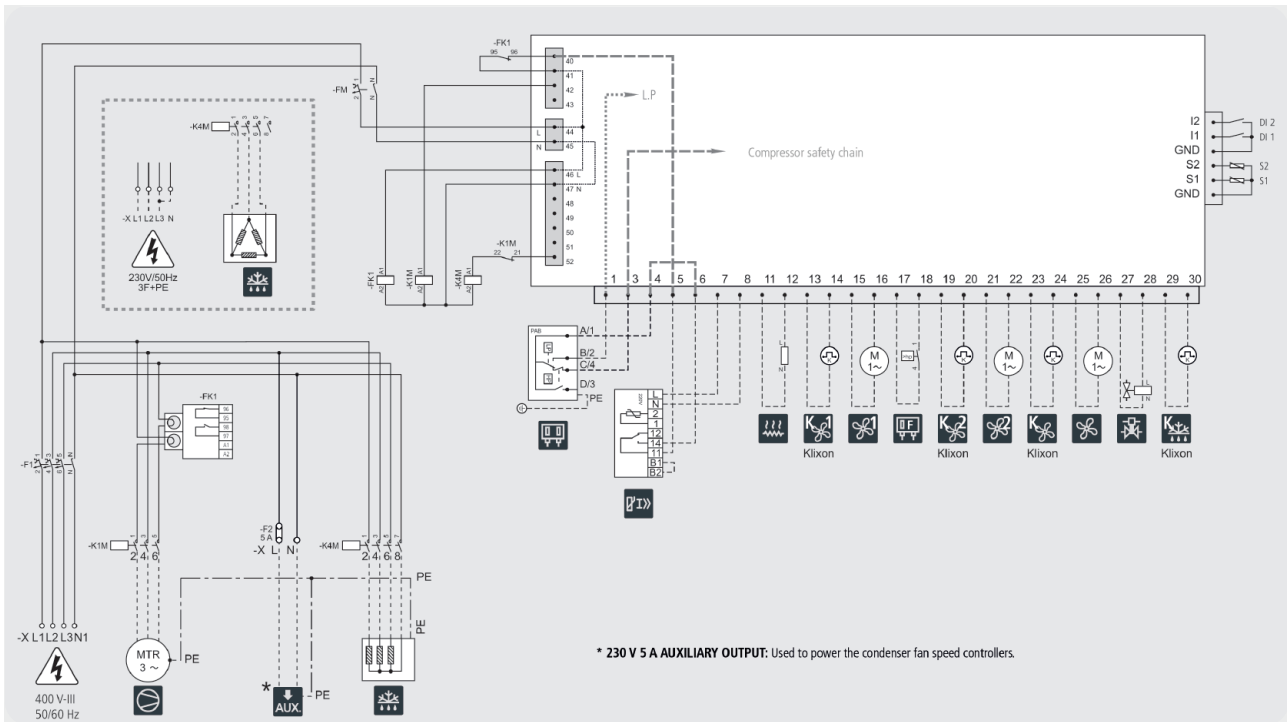


**AKO-17633**

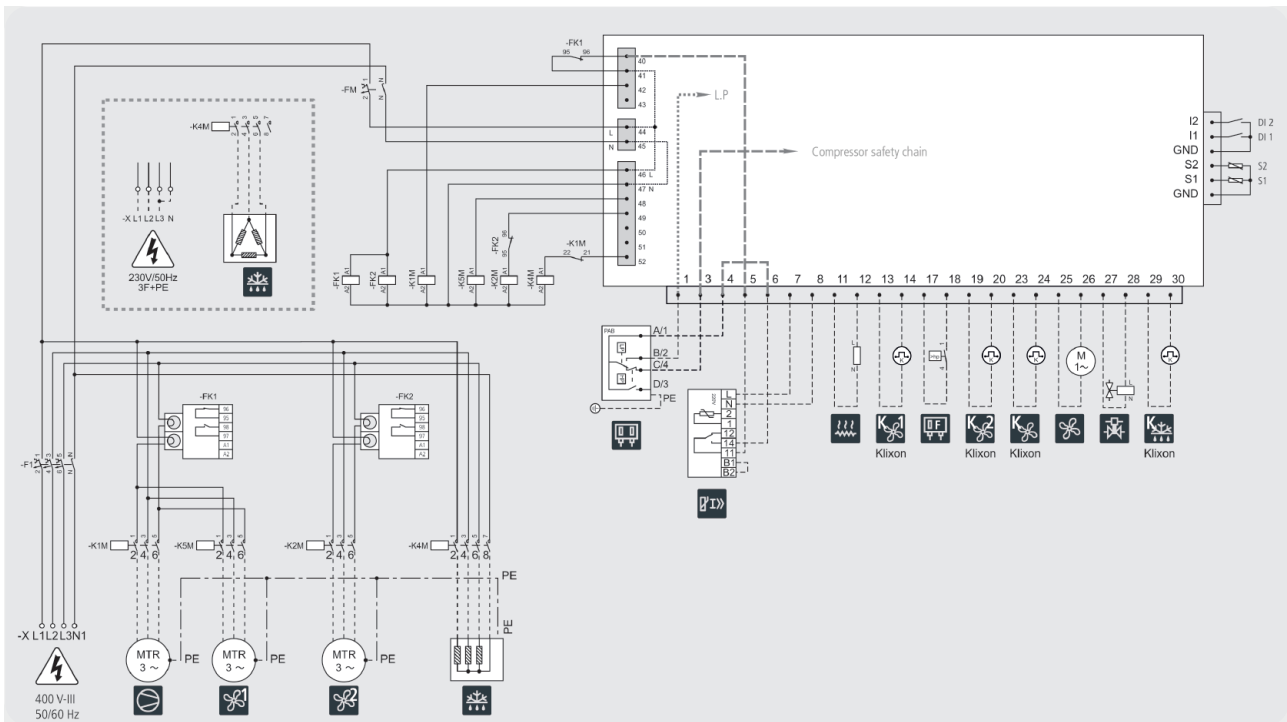


**AKO-17634**

**ELECTRICAL CONNECTIONS**



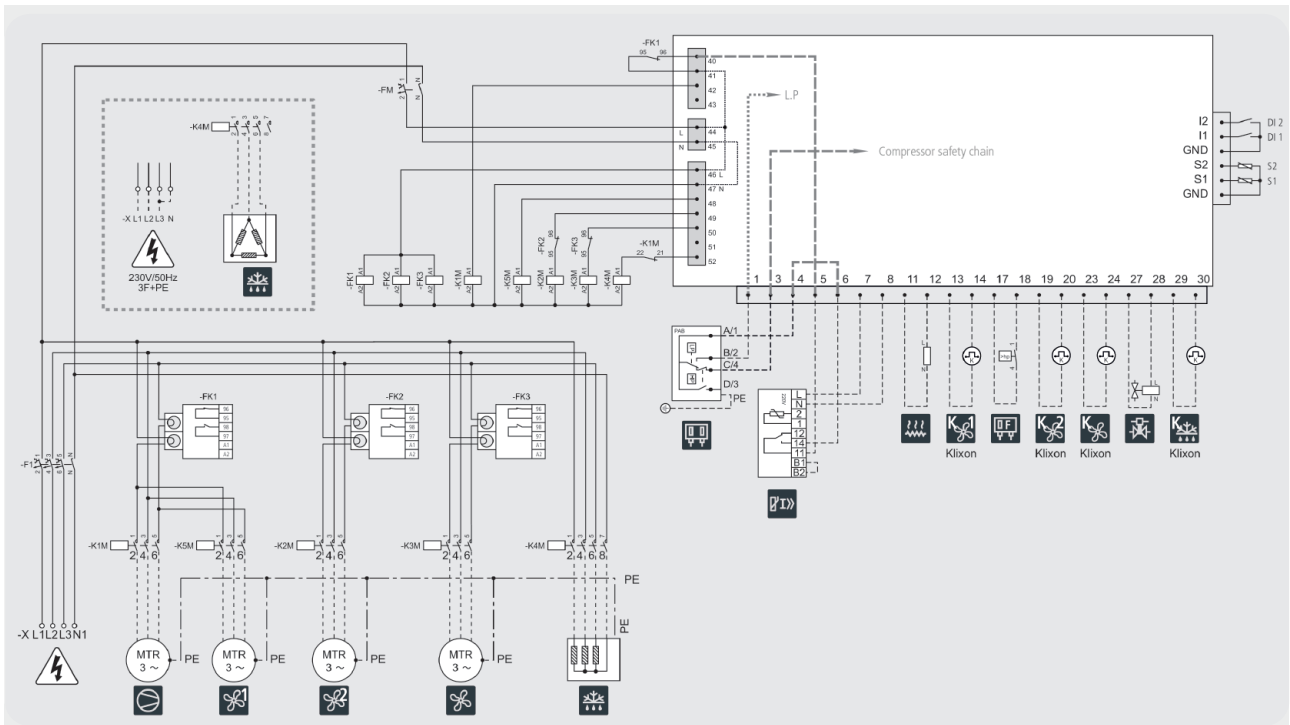
**AKO-17635**



**AKO-17636**



# ELECTRICAL CONNECTIONS



**AKO-17637**

# TECHNICAL SPECIFICATIONS

Rated voltage Un	400 V~ ±10 % 50 Hz ±5 %
Rated voltage Ue	230 V~ ±10 % 50 Hz ±5 %
Nominal maximum current	32 A input
Short-circuit current at connection point	6 kV
Resolution	0.1 °C
Probe temperature range	-45.0 °C to 99.9 °C
Thermometric accuracy	±1 °C
Ambient operating temperature	0°C to +50°C
Accuracy of the NTC probe at 25 °C	± 0.4 °C
Maximum power absorbed during use	30 VA
Ambient operating temperature	-5 °C to 40 °C
Ambient storage temperature	-30 °C to 70 °C
Protection degree	IP65
Double insulation between power supply, secondary circuit and relay output.	

**MODELS**

Condensing Unit				Evaporator				Model AKO	Packaging
Compressor		Condenser		Fans		Defrost			
230 V-I	400 V-III	230 V-I	400 V-III	230 V-I	400 V-III	230 V-I	400 V-III		
3 - 25 A	-	3 A	-	4 A	-	-	-	AKO-17520	1 unit
3 - 25 A	-	3 A	-	4 A	-	4,400 W	-	AKO-17521	
-	3 - 25 A	3 A	-	-	-	-	-	AKO-17630	
-	3 - 25 A	-	0.3 - 3 A	-	-	-	-	AKO-17631	
-	3 - 25 A	3 A	-	4 A	-	-	-	AKO-17632	
-	3 - 25 A	-	0.3 - 3 A	4 A	-	-	-	AKO-17633	
-	3 - 25 A	-	0.3 - 3 A	-	0.3 - 6 A	-	-	AKO-17634	
-	3 - 25 A	3 A	-	4 A	-	-	13,500 W	AKO-17635	
-	3 - 25 A	-	0.3 - 3 A	4 A	-	-	13,500 W	AKO-17636	
-	3 - 25 A	-	0.3 - 3 A	-	0.3 - 6 A	-	13,500 W	AKO-17637	







# 2.

## **THERMOMETERS, THERMOSTATS AND CONTROLLERS**

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- 01\_ THERMOMETERS, THERMOSTATS AND CONTROLLERS: PANEL MOUNTING
- 02\_ THERMOMETERS, THERMOSTATS AND CONTROLLERS: WALL MOUNTING
- 03\_ THERMOMETERS, THERMOSTATS AND CONTROLLERS: EXTENDED PANEL
- 04\_ THERMOMETERS, THERMOSTATS: REDUCED FORMAT
- 05\_ MODULAR CONTROLLERS FOR FOOD SAFETY
- 06\_ CONTROLLERS FOR CENTRAL COMPRESSOR AND CONDENSER UNITS
- 07\_ ELECTRONIC EXPANSION VALVE CONTROLLER
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## QUICK TABLE OF CONTROLLERS FOR INDUSTRIAL AND COMMERCIAL REFRIGERATION

	Relay outputs				Inputs					Options				Format					
	Compressor res. (induc.)	Defrosting	Fan res. (induc.)	Light/Aux/Alarm	Temperature control	Temp. after defrosting	Ambient temperature	Digital input 1	Digital input 2	Power supply	Buzzer	Real Time Clock	Integrated communication	Reduced panel	Standard panel	Big Display Panel	Long panel	DIN Rail	Wall-mounting
<b>Thermometers</b>																			
AKO-D14012	-	-	-	-	-	-	NTC/PTC	-	-	12/24V	-	-	-	-	•	-	-	-	-
AKO-D14023	-	-	-	-	-	-	NTC/PTC	-	-	230V	-	-	-	-	•	-	-	-	-
AKO-D14023-C	-	-	-	-	-	-	NTC/PTC	-	-	90-240V	-	-	•	-	•	-	-	-	-
AKO-13012	-	-	-	-	-	-	NTC	-	-	12V	-	-	-	•	-	-	-	-	-
AKO-13023	-	-	-	-	-	-	NTC	-	-	230V	-	-	-	•	-	-	-	-	-
AKO-D14602	-	-	-	-	-	-	NTC/PTC	-	-	230V	-	-	-	-	-	-	-	-	•
AKO-14605	-	-	-	-	-	-	NTC	-	-	230V	-	-	-	-	-	-	-	-	•
<b>Single relay thermostat</b>																			
AKO-D14112	12A(9)	-	-	-	NTC/PTC	NTC/PTC*	-	•	•*	12/24V	-	-	-	-	•	-	-	-	-
AKO-D14123	12A(9)	-	-	-	NTC/PTC	-	-	-	-	230V	-	-	-	-	•	-	-	-	-
AKO-D14123-2	16A(10)	-	-	-	NTC/PTC	NTC/PTC*	-	•	•*	230V	-	-	-	-	•	-	-	-	-
AKO-D14123-2-RC	16A(10)	-	-	-	NTC/PTC	NTC/PTC*	-	•	•*	90-240V	-	•	•	-	•	-	-	-	-
AKO-13112	12A(9)	-	-	-	NTC	-	-	-	-	12V	-	-	-	•	-	-	-	-	-
AKO-13123	12A(9)	-	-	-	NTC	-	-	-	-	230V	-	-	-	•	-	-	-	-	-
AKO-10123	12A(9)	-	-	8A(4)	NTC	-	-	•	-	230V	-	-	-	-	-	-	•	-	-
AKO-D10123	12A(9)	-	-	-	NTC/PTC	-	-	-	-	230V	-	-	-	-	-	-	-	•	-
AKO-D14615	12A(9)	-	-	-	NTC	-	-	-	-	230V	-	-	-	-	-	-	-	-	•
AKO-D14622	12A(9)	-	-	5A(4)	NTC/PTC	-	-	-	-	230V	-	-	-	-	-	-	-	-	•
AKO-D14622-C	12A(9)	-	-	5A(4)	NTC/PTC	-	-	-	-	90-240V	-	-	•	-	-	-	-	-	•
AKOTIM-11ARTEB	12A(9)	-	-	5A(4)	NTC	-	NTC	-	NTC	230V	•	•	-	-	•	-	-	-	-
AKOTIM-21ARTEB	12A(9)	-	-	5A(4)	NTC	-	NTC	-	NTC	230V	•	•	-	-	-	-	-	-	•
<b>Dual relay thermostat</b>																			
AKO-D14212	12A(9)	-	-	8A (4)	NTC/PTC	NTC*/PTC	-	•	•*	12V	-	-	-	-	•	-	-	-	-
AKO-D14223	12A(9)	-	-	8A (4)	NTC/PTC	NTC*/PTC	-	•	•*	230V	-	-	-	-	•	-	-	-	-
AKO-10223	12A(9)	8A(4)	-	8A (4)	NTC	NTC	-	•	•	230V	-	-	-	-	-	-	•	-	-
AKO-D10223	12A(9)	-	-	8A(4)	NTC/PTC	NTC*/PTC	-	•	•*	230V	-	-	-	-	-	-	-	•	-
AKOTIM-12ARTEB	12A(9)	8A(4)	-	5A (4)	NTC	NTC	NTC	•	-	230V	•	•	-	-	•	-	-	-	-
<b>3 relays thermostat</b>																			
AKO-D14312	12A(9)	-	5A(4)	8A(4)	NTC/PTC	NTC*/PTC	-	•	•*	12V	-	-	-	-	•	-	-	-	-
AKO-D14323	12A(9)	-	5A(4)	8A(4)	NTC/PTC	NTC*/PTC	-	•	•*	230V	-	-	-	-	•	-	-	-	-
AKO-D14323-C	12A(9)	-	5A(4)	8A(4)	NTC/PTC	NTC*/PTC	-	•	•*	90-240V	-	-	•	-	•	-	-	-	-
AKO-D16323	12A(9)	12A(9)	5A(4)	-	NTC/PTC	NTC/PTC	-	•	-	230V	-	-	-	-	-	•	-	-	-
AKO-10323	12A(9)	8A (4)	8A(4)	8A(4)	NTC	NTC	-	•	•	230V	-	-	-	-	-	-	•	-	-
AKO-D10323	12A(9)	-	5A(4)	8A(4)	NTC/PTC	NTC/PTC	-	•	•	230V	-	-	-	-	-	-	•	-	-
AKO-D14632	12A(9)	8A (4)	12A(9)	-	NTC	NTC	NTC*	•	•*	230V	-	-	-	-	-	-	-	-	•
AKO-D14632-C	12A(9)	8A (4)	12A(9)	-	NTC	NTC	NTC*	•	•*	90-240V	-	-	•	-	-	-	-	-	•
AKOTIM-23TE	12A(9)	8A (4)	5A(4)	-	NTC	NTC	NTC	•	-	230V	-	-	-	-	-	-	-	-	•
<b>4 relays thermostat</b>																			
AKO-D14412	5A(4)	5A(4)	5A(4)	5A(4)	NTC/PTC	NTC*/PTC	NTC*/PTC	•*	•*	12V	-	-	-	-	•	-	-	-	-
AKO-D14412-RC	5A(4)	5A(4)	5A(4)	5A(4)	NTC/PTC	NTC*/PTC	NTC*/PTC	•*	•*	12V	-	•	•	-	•	-	-	-	-
AKO-D14423	5A(4)	5A(4)	5A(4)	5A(4)	NTC/PTC	NTC*/PTC	NTC*/PTC	•*	•*	230V	-	-	-	-	•	-	-	-	-
AKO-D14423-RC	5A(4)	5A(4)	5A(4)	5A(4)	NTC/PTC	NTC*/PTC	NTC*/PTC	•*	•*	90-240V	-	•	•	-	•	-	-	-	-
AKO-D14423P	12A(9)	8A(4)	5A(4)	5A(4)	NTC/PTC	NTC/PTC	NTC/PTC*	•*	•*	90-240V	-	-	-	-	•	-	-	-	-
AKO-D14423P-RC	12A(9)	8A(4)	5A(4)	5A(4)	NTC/PTC	NTC/PTC	NTC/PTC*	•*	•*	90-240V	-	•	•	-	•	-	-	-	-
AKO-D14642	12A(9)	8A(4)	12A(9)	5A(4)	NTC	NTC	NTC*	•	•*	230V	-	-	-	-	-	-	-	-	•
AKO-D14642-C	12A(9)	8A(4)	12A(9)	5A(4)	NTC	NTC	NTC*	•	•*	90-240V	-	-	•	-	-	-	-	-	•
AKOTIM-23ATE	12A(9)	8A(4)	5A(4)	5A(4)	NTC	NTC	NTC	•	-	230V	-	-	-	-	-	-	-	-	•
AKOTIM-23ARTE	12A(9)	8A(4)	5A(4)	5A(4)	NTC	NTC	NTC	•	-	230V	-	•	-	-	-	-	-	-	•
AKOTIM-13ARTEB	12A(9)	8A(4)	5A(4)	5A(4)	NTC	NTC	NTC	•	-	230V	•	•	-	-	•	-	-	-	-

# 01\_ THERMOMETERS, THERMOSTATS AND CONTROLLERS: PANEL MOUNTING

## BENEFITS



### EASE OF INSTALLATION

- Pre-loaded parameter sets for the most common uses.
- Flexibility in installation systems, with different types of connectors and a wide range of power supplies (12V, 24V, 120V, 230V and universal).



### EFFICIENT START-UP AND CONTROL

- Ultra-fast "plug and play" start-up with initial set-up wizard.
- Optimisation of energy usage via the ECO mode.



### VERSATILE DESIGN

- IP65 on the front side for the whole range.
- Highly intuitive design, making it easy to diagnose controller status and quick access keys to certain functions.



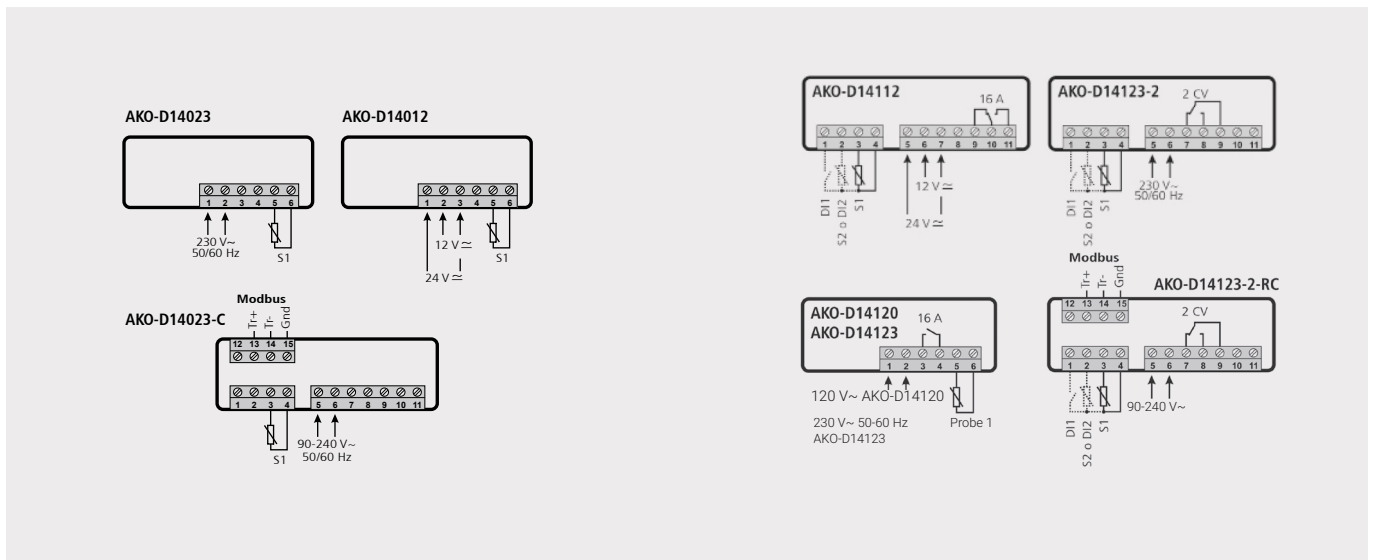
### CONNECTIVITY

- Available with Modbus communication.
- Digital inputs for remote activation, management and control.

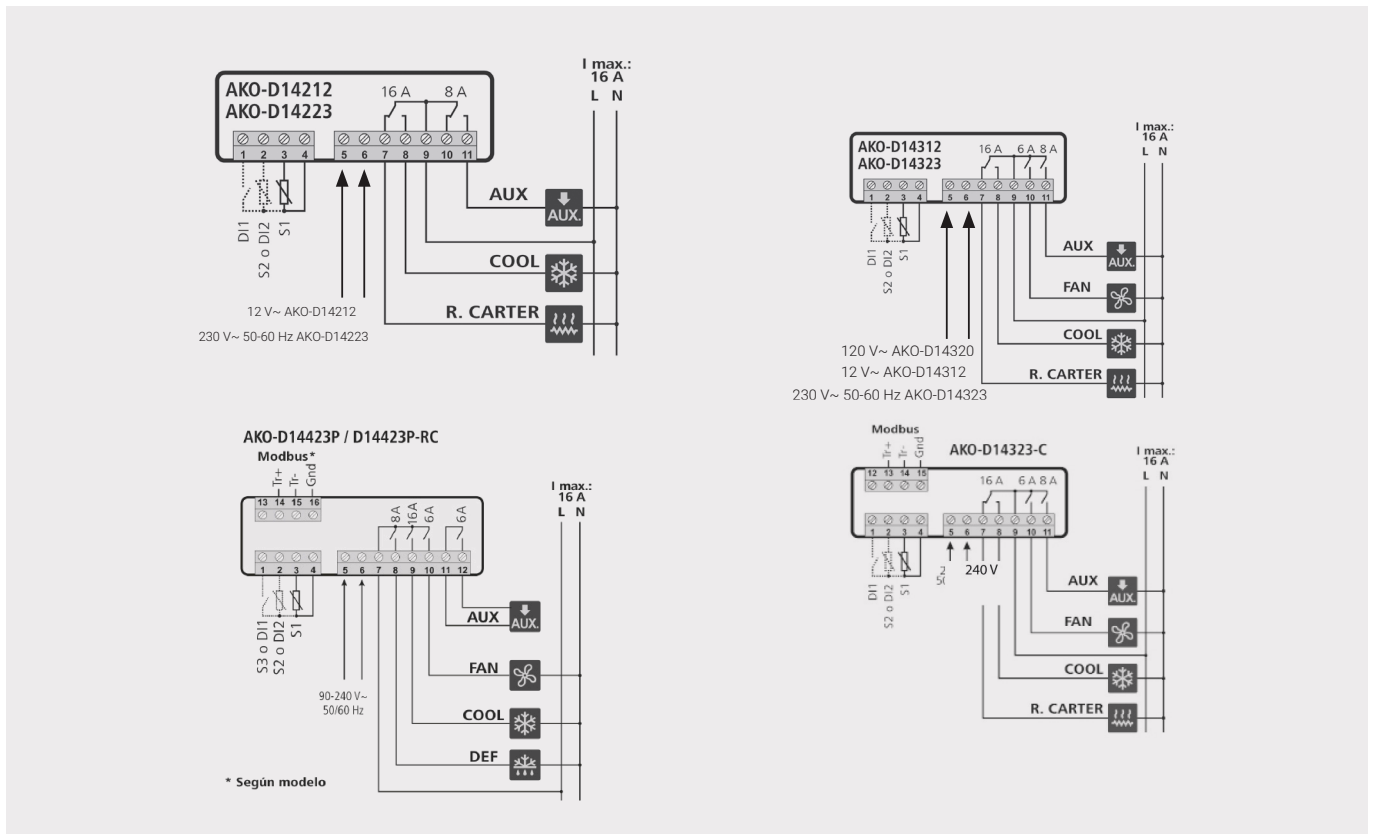
## APPLICATIONS

Industrial and commercial refrigeration, refrigeration and freezer units, display cabinets, electrical panels, etc.

## ELECTRICAL CONNECTIONS



## ELECTRICAL CONNECTIONS



## TECHNICAL SPECIFICATIONS

Power supply	12V, 24V, 120V, 230V, 90, 240V	
Nº of relay operations	EN60730-1: 100,000 operations	
Measurement range	NTC	-50.0 °C to +99.9 °C
	PTC	-50.0 °C to +150 °C
Resolution	0.1°C	
Working environment	-10 to 50 °C, humidity <90 %	
Storage environment	-30 to 70 °C, humidity <90 %	
Protection degree of front side	IP65	
Mounting	Panel assembly using fastenings	
Dimensions of panel cut-out	71 x 29 mm	
Depth	61 mm	
Front dimensions	79 x 38 mm	

## MODELS

	Relay outputs				Inputs					Options				Format					Packaging	
	Compressor res. (induc.)	Defrosting	Fan res. (induc.)	Light/Aux/Alarm	Temperature control	Temp. after defrosting	Ambient temperature	Digital input 1	Digital input 2	Power supply	Buzzer	Real Time Clock	Integrated communication	Reduced panel	Standard panel	Big Display Panel	Long panel	DIN Rail		Wall-mounting
<b>Thermometers</b>																				
AKO-D14012	-	-	-	-	-	-	NTC/PTC	-	-	12/24V	-	-	-	-	•	-	-	-	-	12 units
AKO-D14023	-	-	-	-	-	-	NTC/PTC	-	-	230V	-	-	-	-	•	-	-	-	-	12 units
AKO-D14023-C	-	-	-	-	-	-	NTC/PTC	-	-	90-240V	-	-	•	-	•	-	-	-	-	12 units
<b>Single relay thermostat</b>																				
AKO-D14112	12A(9)	-	-	-	NTC/PTC	NTC/PTC*	-	•	•*	12/24V	-	-	-	-	•	-	-	-	-	12 units
AKO-D14123	12A(9)	-	-	-	NTC/PTC	-	-	-	-	230V	-	-	-	-	•	-	-	-	-	12 units
AKO-D14123-2	16A(10)	-	-	-	NTC/PTC	NTC/PTC*	-	•	•*	230V	-	-	-	-	•	-	-	-	-	12 units
AKO-D14123-2-RC	16A(10)	-	-	-	NTC/PTC	NTC/PTC*	-	•	•*	90-240V	-	•	•	-	•	-	-	-	-	12 units
<b>2 relays thermostat</b>																				
AKO-D14212	12A(9)	-	-	8A (4)	NTC/PTC	NTC*/PTC	-	•	•*	12V	-	-	-	-	•	-	-	-	-	12 units
AKO-D14223	12A(9)	-	-	8A (4)	NTC/PTC	NTC*/PTC	-	•	•*	230V	-	-	-	-	•	-	-	-	-	12 units
<b>3 relays thermostat</b>																				
AKO-D14312	12A(9)	-	5A(4)	8A(4)	NTC/PTC	NTC*/PTC	-	•	•*	12V	-	-	-	-	•	-	-	-	-	12 units
AKO-D14323	12A(9)	-	5A(4)	8A(4)	NTC/PTC	NTC*/PTC	-	•	•*	230V	-	-	-	-	•	-	-	-	-	12 units
AKO-D14323-C	12A(9)	-	5A(4)	8A(4)	NTC/PTC	NTC*/PTC	-	•	•*	90-240V	-	-	•	-	•	-	-	-	-	12 units
<b>4 relays thermostat</b>																				
AKO-D14412	5A(4)	5A(4)	5A(4)	5A(4)	NTC/PTC	NTC*/PTC	NTC*/PTC	•*	•*	12V	-	-	-	-	•	-	-	-	-	12 units
AKO-D14412-RC	5A(4)	5A(4)	5A(4)	5A(4)	NTC/PTC	NTC*/PTC	NTC*/PTC	•*	•*	12V	-	•	•	-	•	-	-	-	-	12 units
AKO-D14423	5A(4)	5A(4)	5A(4)	5A(4)	NTC/PTC	NTC*/PTC	NTC*/PTC	•*	•*	230V	-	-	-	-	•	-	-	-	-	12 units
AKO-D14423-RC	5A(4)	5A(4)	5A(4)	5A(4)	NTC/PTC	NTC*/PTC	NTC*/PTC	•*	•*	90-240V	-	•	•	-	•	-	-	-	-	12 units
AKO-D14423P	12A(9)	8A(4)	5A(4)	5A(4)	NTC/PTC	NTC/PTC	NTC/PTC*	•*	•*	90-240V	-	-	-	-	•	-	-	-	-	12 units
AKO-D14423P-RC	12A(9)	8A(4)	5A(4)	5A(4)	NTC/PTC	NTC/PTC	NTC/PTC*	•*	•*	90-240V	-	•	•	-	•	-	-	-	-	12 units

\* Configurable probe/digital input.



# THERMOMETERS, THERMOSTATS AND CONTROLLERS: WALL MOUNTING

## BENEFITS



### EASE OF INSTALLATION

- Pre-loaded parameter sets for the most common applications.
- Flexibility in installation and a wide range of applications.



### EFFICIENT START-UP AND CONTROL

- Ultra-fast "plug and play" start-up with initial set-up wizard.
- Optimisation of energy usage via the ECO mode.



### VERSATILE DESIGN

- IP65 across the whole range.
- Highly intuitive design, making it easy to diagnose controller status with quick access keys to certain functions.



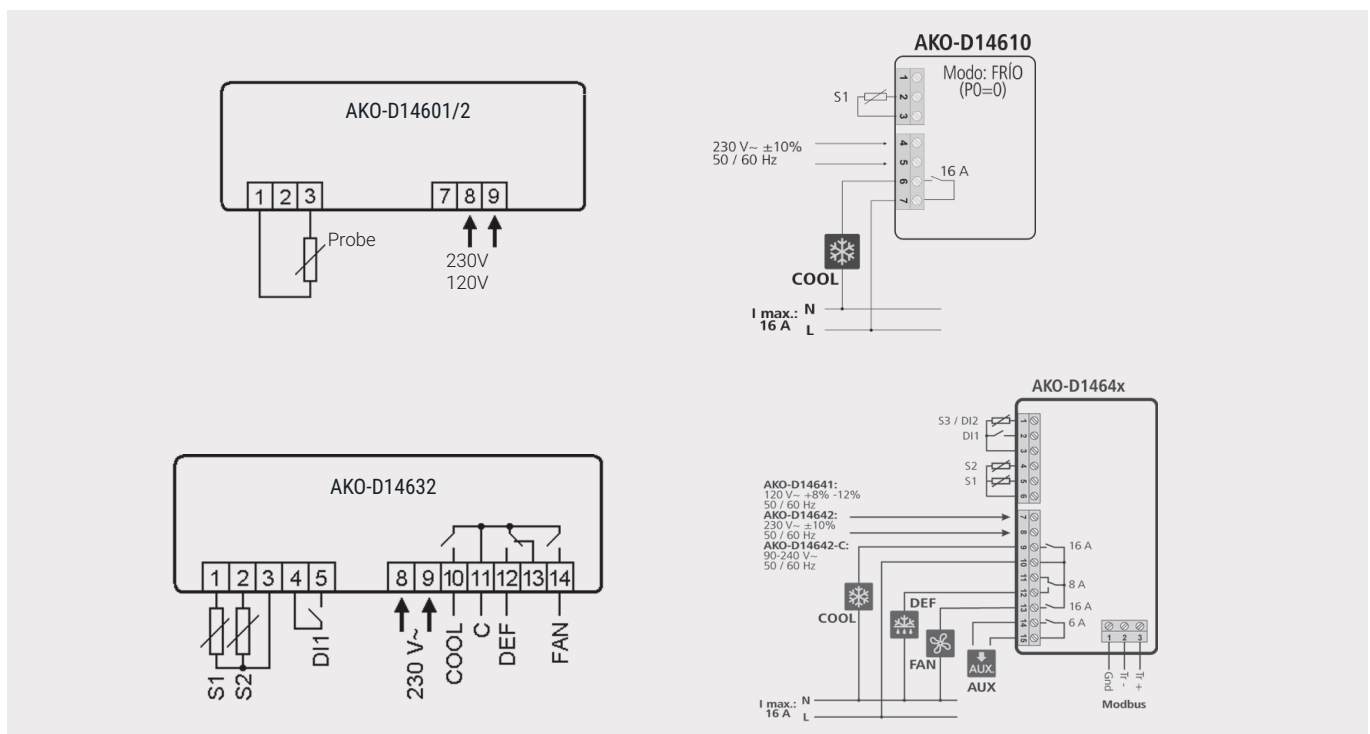
### CONNECTIVITY

- Available with Modbus communication.
- Digital inputs for remote activation, management and control.

## APPLICATIONS

Industrial and commercial refrigeration, cold rooms, refrigeration and freezer units, display cases, etc.

## ELECTRICAL CONNECTIONS



## TECHNICAL SPECIFICATIONS

Power supply	120V, 230V, 90-240V, depending on model	
N° of relay operations	EN60730-1: 100,000 operations	
Measurement range	NTC	-50.0 °C to +99.9 °C
	PTC	-50.0 °C to +150 °C
Resolution	-50 to 100 °C	0.1°C
	> 100 °C	1°C
Working environment	-10 to 50 °C, humidity <90 %	
Storage environment	-30 to 70 °C, humidity <90 %	
Degree of protection	IP40	
Mounting	Wall mounting	
Dimensions	171 x 94 x 42 mm	

## MODELS

	Relay outputs				Inputs					Options				Format				Packaging		
	Compressor res. (induc.)	Defrosting	Fan res. (induc.)	Light/Aux/Alarm	Temperature control	Temp. after defrosting	Ambient temperature	Digital input 1	Digital input 2	Power supply	Buzzer	Real Time Clock	Integrated communication	Reduced panel	Standard panel	Big Display Panel	Long panel		DIN Rail	Wall-mounting
<b>Thermometers</b>																				
AKO-D14602	-	-	-	-	-	-	NTC/PTC	-	-	230V	-	-	-	-	-	-	-	-	•	10 units
AKO-14605	-	-	-	-	-	-	NTC	-	-	230V	-	-	-	-	-	-	-	-	•	10 units
<b>Single relay thermostat</b>																				
AKO-14615	12A(9)	-	-	-	NTC	-	-	-	-	230V	-	-	-	-	-	-	-	-	•	10 units
AKO-D14610	12A(9)	-	-	-	NTC/PTC	-	-	-	-	230V	-	-	-	-	-	-	-	-	•	10 units
AKO-D14622	12A(9)	-	-	5A(4)	NTC/PTC	-	-	•	•	230V	-	-	-	-	-	-	-	-	•	10 units
AKO-D14622-C	12A(9)	-	-	5A(4)	NTC/PTC	-	-	•	•	90-240V	-	-	•	-	-	-	-	-	•	10 units
<b>3 relays thermostat</b>																				
AKO-D14632	12A(9)	8A(4)	12A(9)	-	NTC	NTC	NTC*	•	•*	230V	-	-	-	-	-	-	-	-	•	10 units
AKO-D14632-C	12A(9)	8A(4)	12A(9)	-	NTC	NTC	NTC*	•	•*	90-240V	-	-	•	-	-	-	-	-	•	10 units
<b>4 relays thermostat</b>																				
AKO-D14642	12A(9)	8A(4)	12A(9)	5A(4)	NTC	NTC	NTC*	•	•*	230V	-	-	-	-	-	-	-	-	•	10 units
AKO-D14642-C	12A(9)	8A(4)	12A(9)	5A(4)	NTC	NTC	NTC*	•	•*	90-240V	-	-	•	-	-	-	-	-	•	10 units

\* Configurable probe/digital input

# THERMOMETERS, THERMOSTATS AND CONTROLLERS: EXTENDED PANEL

## BENEFITS



### EASE OF INSTALLATION

- Easy installation and programming in 3 steps thanks to the initial configuration wizard available with the AKO-D10X23 range.
- Front panel designed for quick adjustment using screws.



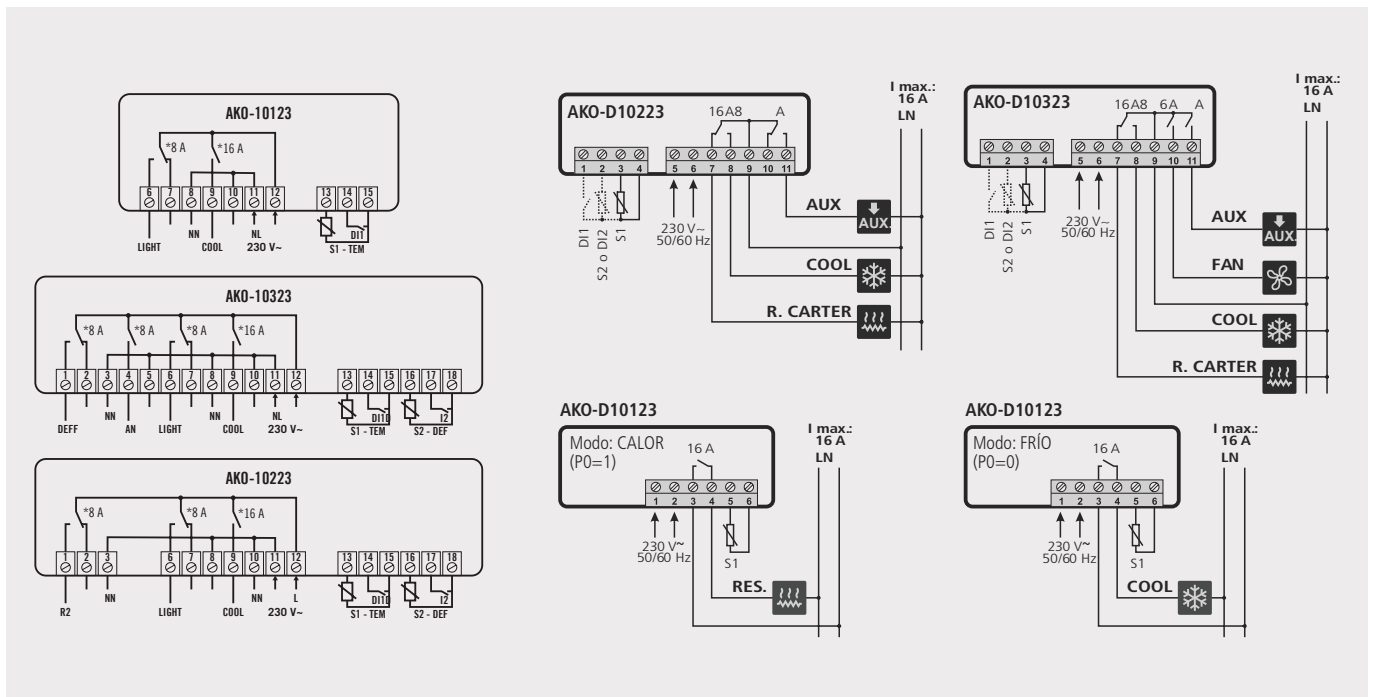
### VERSATILE DESIGN

- Highly intuitive design, making it easy to diagnose controller status with quick access keys to certain functions.
- Front panel with switches to control the facility's light settings.

## APPLICATIONS

Industrial and commercial refrigeration facilities, display cases, refrigeration and freezer units, electrical panels, etc.

## ELECTRICAL CONNECTIONS



## TECHNICAL SPECIFICATIONS

Power supply		230V
Measurement range	NTC	-50.0 °C to +99.9 °C
	PTC(AKO-D10XXX only)	-50.0 °C to +150 °C
Resolution		0.1°C
Working environment	AKO-10XXX	5 to 50 °C
	AKO-D10XXX	-10 to 50 °C, humidity <90 %
Storage environment	All	-30 to 70 °C, humidity <90 %
Protection degree of front side		IP50
Mounting		Panel assembly using fastenings
Dimensions of panel cut-out	AKO-10XXX	150 x 31 mm
	AKO-D10XXX	136 x 29 mm
Front dimensions	AKO-10XXX	176 x 34 mm
	AKO-D10XXX	181 x 38 mm

## MODELS

	Relay outputs				Inputs					Options				Format				Packaging		
	Compressor res. (induc.)	Defrosting	Fan res. (induc.)	Light/Aux/Alarm	Temperature control	Temp. after defrosting	Ambient temperature	Digital input 1	Digital input 2	Power supply	Buzzer	Real Time Clock	Integrated communication	Reduced panel	Standard panel	Big Display Panel	Long panel		DIN Rail	Wall-mounting
<b>Single relay thermostat</b>																				
AKO-10123	12A(9)	-	-	8A(4)	NTC	-	-	•	-	230V	-	-	-	-	-	-	•	-	-	10 units
AKO-D10123	12A(9)	-	-	-	NTC/PTC	-	-	-	-	230V	-	-	-	-	-	-	•	-	-	10 units
<b>2 relays thermostat</b>																				
AKO-10223	12A(9)	8A(4)	-	8A(4)	NTC	NTC	-	•	•	230V	-	-	-	-	-	-	•	-	-	10 units
AKO-D10223	12A(9)	-	-	8A(4)	NTC/PTC	NTC*/PTC	-	•	•*	230V	-	-	-	-	-	-	•	-	-	10 units
<b>3 relays thermostat</b>																				
AKO-10323	12A(9)	8A(4)	8A(4)	8A(4)	NTC	NTC	-	•	•	230V	-	-	-	-	-	-	•	-	-	10 units
AKO-D10323	12A(9)	-	5A(4)	8A(4)	NTC/PTC	NTC/PTC	-	•	•	230V	-	-	-	-	-	-	•	-	-	10 units

\* Configurable probe/digital input



# THERMOMETERS AND THERMOSTATS: REDUCED FORMAT

## BENEFITS



### EASE OF INSTALLATION

- Equipment for panel mounting in a reduced recess of 58 x 25.4 mm.
- Flexibility in installation systems, with different types of connectors and power supply range, 12 V and 230 V.



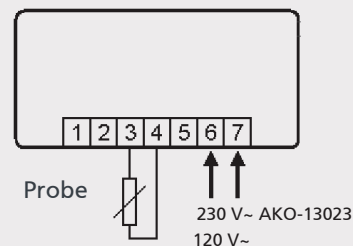
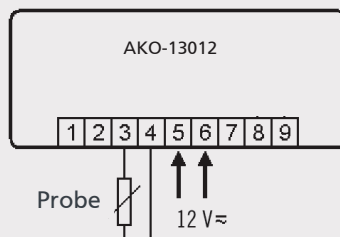
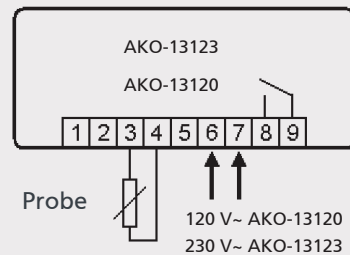
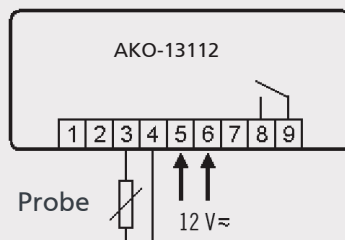
### VERSATILE DESIGN

- Intuitive design with 3 keys and simple diagnostics of the controller status, facilitating quick and direct access to more common functions.
- Reduced display with LEDs for quick interpretation of the facility's status.

## APPLICATIONS

Industrial and commercial refrigeration, refrigeration and freezer units, display cabinets, electrical panels, etc.

## ELECTRICAL CONNECTIONS



## TECHNICAL SPECIFICATIONS

Power supply	12V, 230V Depending on model	
Measurement range	NTC	-50.0 °C to +99.9 °C
Resolution	1°C	
Precision	± 1 °C	
Working environment	5 to 40 °C	
Storage environment	-30 to 70 °C	
Dimensions of panel cut-out	58 x 25.4 mm	
Depth	47.5 mm	
Front dimensions	32 x 66 mm	

## MODELS

	Relay outputs				Inputs					Options				Format				Packaging		
	Compressor res. (induc.)	Defrosting	Fan res. (induc.)	Light/Aux/Alarm	Temperature control	Temp. after defrosting	Ambient temperature	Digital input 1	Digital input 2	Power supply	Buzzer	Real Time Clock	Integrated communication	Reduced panel	Standard panel	Big Display Panel	Long panel		DIN Rail	Wall-mounting
<b>Thermometer</b>																				
AKO-13012	-	-	-	-	-	-	NTC	-	-	12V	-	-	-	•	-	-	-	-	-	12 units
AKO-13023	-	-	-	-	-	-	NTC	-	-	230V	-	-	-	•	-	-	-	-	-	12 units
<b>2 relays thermostat</b>																				
AKO-13112	12A(9)	-	-	-	NTC	-	-	-	-	12V	-	-	-	•	-	-	-	-	-	12 units
AKO-13123	12A(9)	-	-	-	NTC	-	-	-	-	230V	-	-	-	•	-	-	-	-	-	12 units

# 05\_ MODULAR CONTROLLERS FOR FOOD SAFETY

## BENEFITS



### VERSATILE DESIGN AND PRODUCT SAFETY

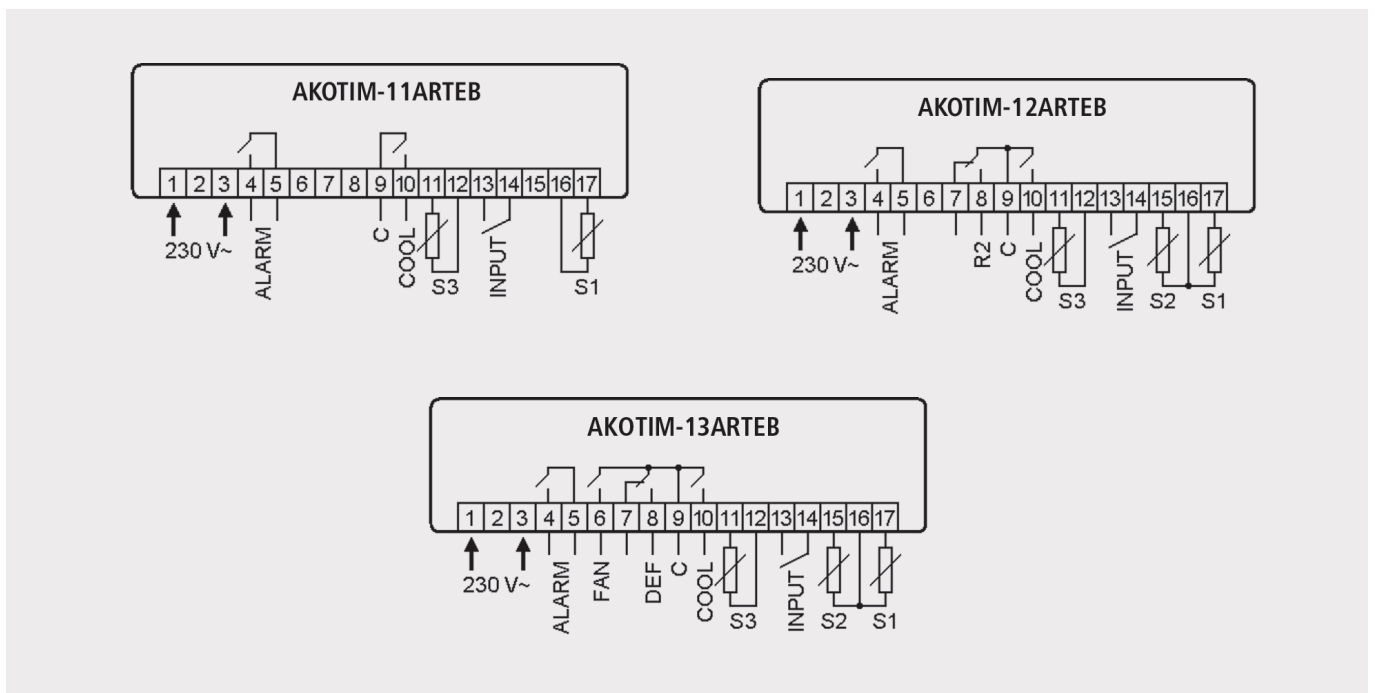
- Highly intuitive design, making it easy to diagnose controller status with quick access keys to certain functions.
- They store information on the maximum and minimum temperatures reached, as well as other useful parameters for HACCP.
- Flexibility in installation systems, with a wide range of connectors depending on the application.



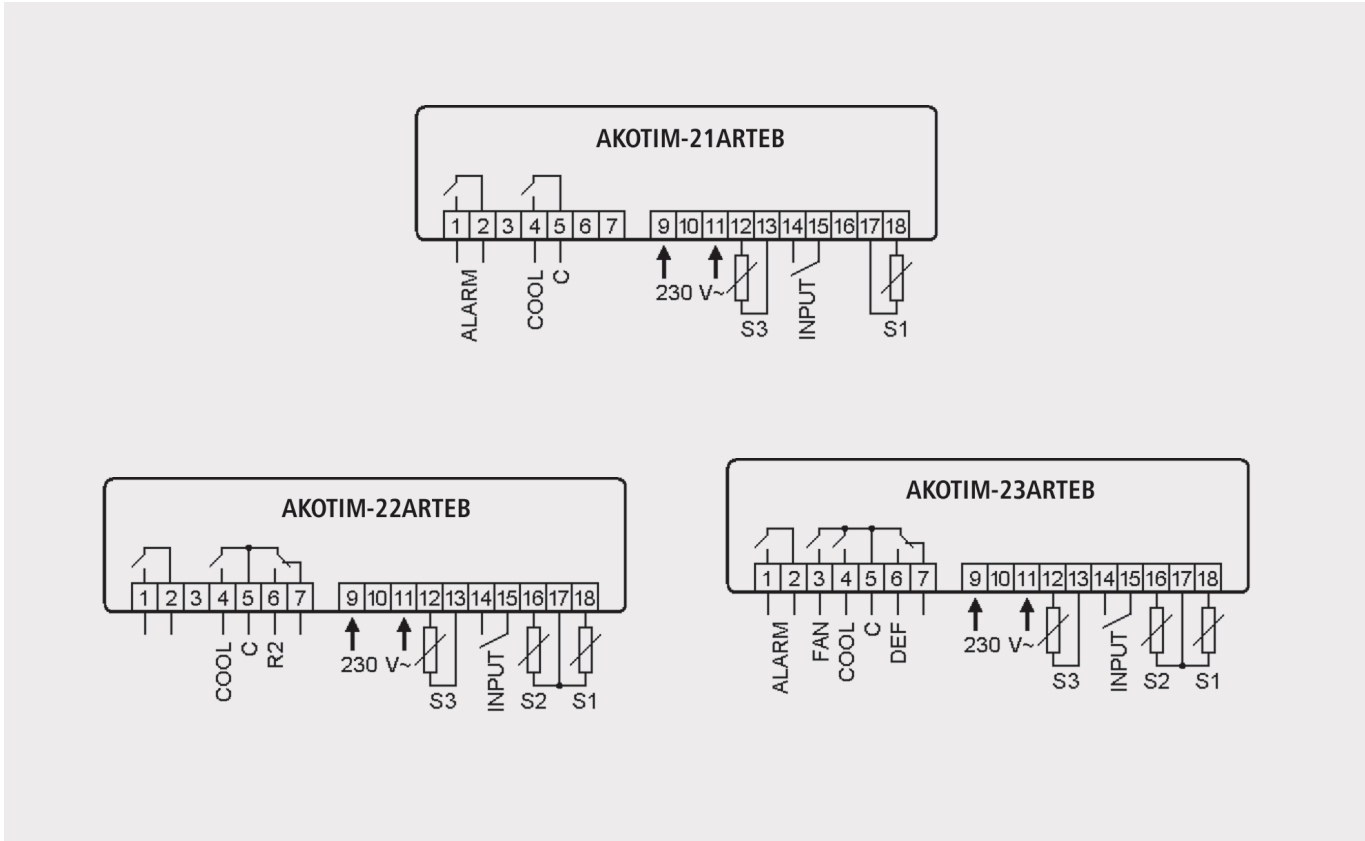
## APPLICATIONS

Industrial and commercial refrigeration, display cases, electrical panels, etc.

## ELECTRICAL CONNECTIONS



**ELECTRICAL CONNECTIONS**



**TECHNICAL SPECIFICATIONS**

Power supply		230V
Measurement range	NTC	-50.0 °C to +99.9 °C
Precision		±1 °C
Relay 1 COOL		16(4)A*, 250V, cosφ=1, SPST
Relay 2 DEF or R2		8A*, 250V, cosφ=1, SPDT
Relay 3 FAN		5A*, 250V, cosφ=1, SPST
Relay 4 ALARM		5A*, 250V, cosφ=1, SPST
Working environment		5 °C to 40 °C
Storage environment		-30 to 70 °C

\* The specified current for each relay is its individual maximum, if more than one is connected, the sum current (COOL+DEF+FAN) must not exceed 17.5A (EN61010) or 13A (EN60730).



## MODELS

	Relay outputs				Inputs					Options				Format					Packaging	
	Compressor res. (induc.)	Defrosting	Fan res. (induc.)	Light/Aux/Alarm	Temperature control	Temp. after defrosting	Ambient temperature	Digital input 1	Digital input 2	Power supply	Buzzer	Real Time Clock	Integrated communication	Reduced panel	Standard panel	Big Display Panel	Long panel	DIN Rail		Wall-mounting
<b>Single relay thermostat</b>																				
AKOTIM-11ARTEB	12A(9)	-	-	5A(4)	NTC	-	NTC	•	-	230V	•	•	-	-	•	-	-	-	-	12 units
AKOTIM-21TE	12A(9)	-	-	-	NTC	-	NTC	•	-	230V	-	-	-	-	-	-	-	•	-	12 units
AKOTIM-21ARTEB	12A(9)	-	-	5A(4)	NTC	-	NTC	•	-	230V	•	•	-	-	-	-	-	•	-	12 units
<b>2 relays thermostat</b>																				
AKOTIM-12ARTEB	12A(9)	8A(4)	-	5A(4)	NTC	NTC	NTC	•	-	230V	•	•	-	-	•	-	-	-	-	12 units
AKOTIM-22TE	12A(9)	8A(4)	-	-	NTC	NTC	NTC	•	-	230V	-	-	-	-	-	-	-	•	-	12 units
<b>3 relays thermostat</b>																				
AKOTIM-23TE	12A(9)	8A(4)	5A(4)	-	NTC	NTC	NTC	•	-	230V	-	-	-	-	-	-	-	•	-	12 units
<b>4 relays thermostat</b>																				
AKOTIM-13ARTEB	12A(9)	8A(4)	5A(4)	5A(4)	NTC	NTC	NTC	•	-	230V	•	•	-	-	•	-	-	-	-	12 units
AKOTIM-23ATE	12A(9)	8A(4)	5A(4)	5A(4)	NTC	NTC	NTC	•	-	230V	-	-	-	-	-	-	-	•	-	12 units
AKOTIM-23ARTE	12A(9)	8A(4)	5A(4)	5A(4)	NTC	NTC	NTC	•	-	230V	-	•	-	-	-	-	-	•	-	12 units
AKOTIM-23ARTEB	12A(9)	8A(4)	5A(4)	5A(4)	NTC	NTC	NTC	•	-	230V	•	•	-	-	-	-	-	•	-	12 units

The model + **A** means the version with additional **ALARM 4 relays** for alarms.

The model + **R** means the real time clock version.

The model + **T** means the version with input for a third probe.

The model + **E** means the version with digital input.

The model + **B** means the version with internal audible alarm buzzer.

# 06\_ CONTROLLERS FOR COMPRESSOR RACKS AND CONDENSER UNITS

## BENEFITS



### USABILITY AND EFFICIENCY

- Advanced control algorithms for units with floating condensation and frequency shifters for condenser and compressor fans.
- Auto-setting function avoiding complex parametrisations.
- Up to 5 stages of control, with 2 analogue outputs, 6 digital inputs and 2 analogue inputs.



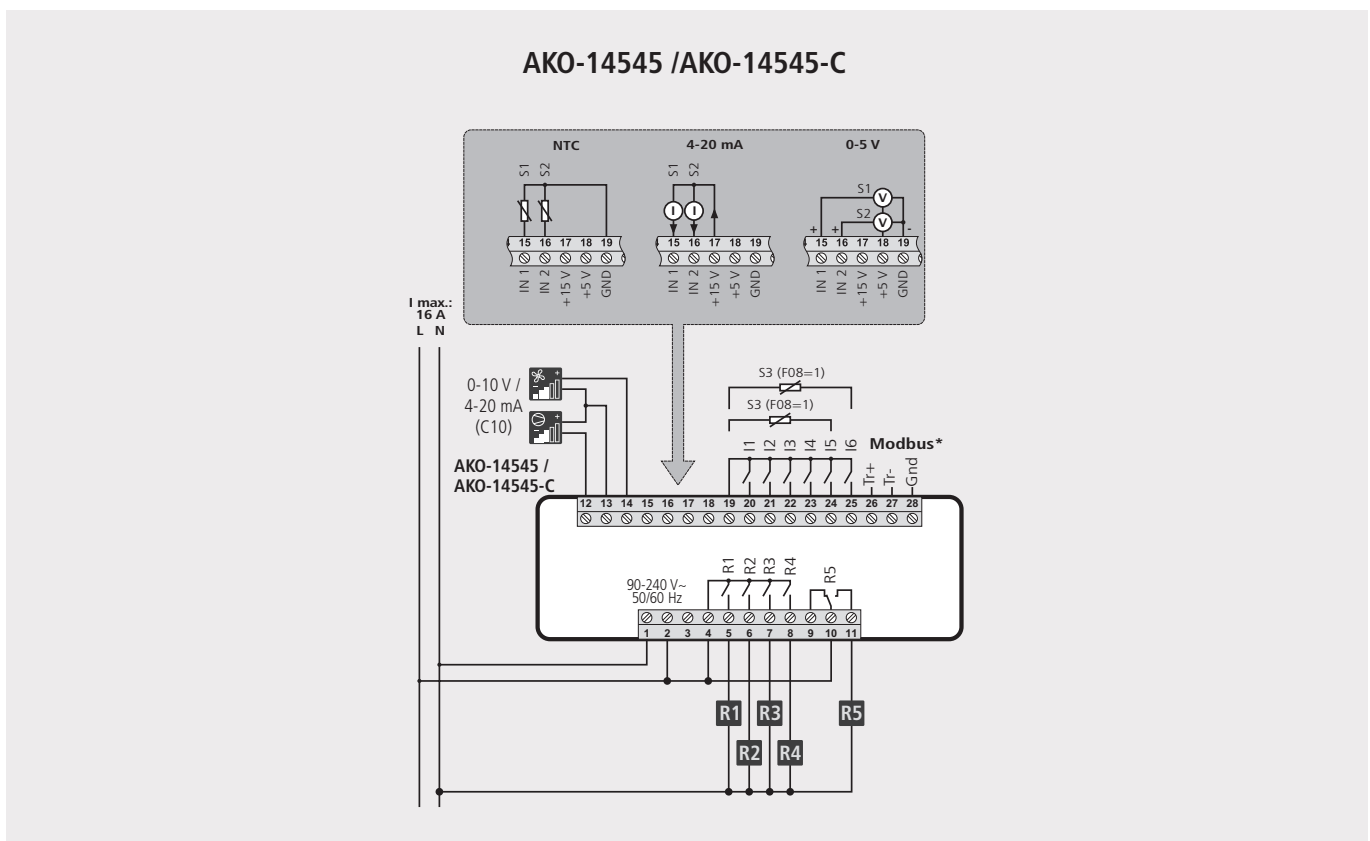
### VERSATILE AND INTUITIVE DESIGN

- Display, control and regulation of compressor units in a compact, highly reliable form.
- Graphic display using icons that represent the activated functions to facilitate the control and security of the components at all times.

## APPLICATIONS

Industrial and commercial refrigeration facilities.

## ELECTRICAL CONNECTIONS



## TECHNICAL SPECIFICATIONS

Power supply		90-240V, 50/60Hz
Inputs		2 analogue inputs + 6 digital inputs
Relays	R1 to R4	5(4) A 250 V~
	R5	5(4) / 250 V~ with switch
Types of probe		NTC
		4-20 mA
		0-5 V ratiometric
Measurement range	NTC	-50.0 °C to +99.9 °C
	4-20 mA / 0-5 V	-60 to 999
Resolution	NTC	0.1°C
	4-20 mA / 0-5 V	0.1
Working environment		-10 to 50 °C, humidity <90 %
Storage environment		-30 to 70 °C, humidity <90 %
Protection degree of front side		IP65
Mounting		Panel assembly using fastenings
Dimensions of panel cut-out		71 x 29 mm
Front dimensions		79 x 38 mm
Depth		61 mm
Gas compatibility		R404a, R134a, R717a, R22, R410a, R507a, R744, R407a, R407f, R1234y

## MODELS

Description	Model	Power supply	Packaging
5-stage central unit	AKO-14545	90-240 V	1 unit
5-stage unit with MODBUS communication	AKO-14545-C		

# 07\_ ELECTRONIC EXPANSION VALVE CONTROLLER

## BENEFITS



### EASE OF INSTALLATION

- Quick and easy start-up with just 3 parameters.
- Kit provided with all the necessary elements for the regulation of the expansion valve: Controller, temperature probe, pressure probe and power transformer.



### VERSATILITY AND USABILITY

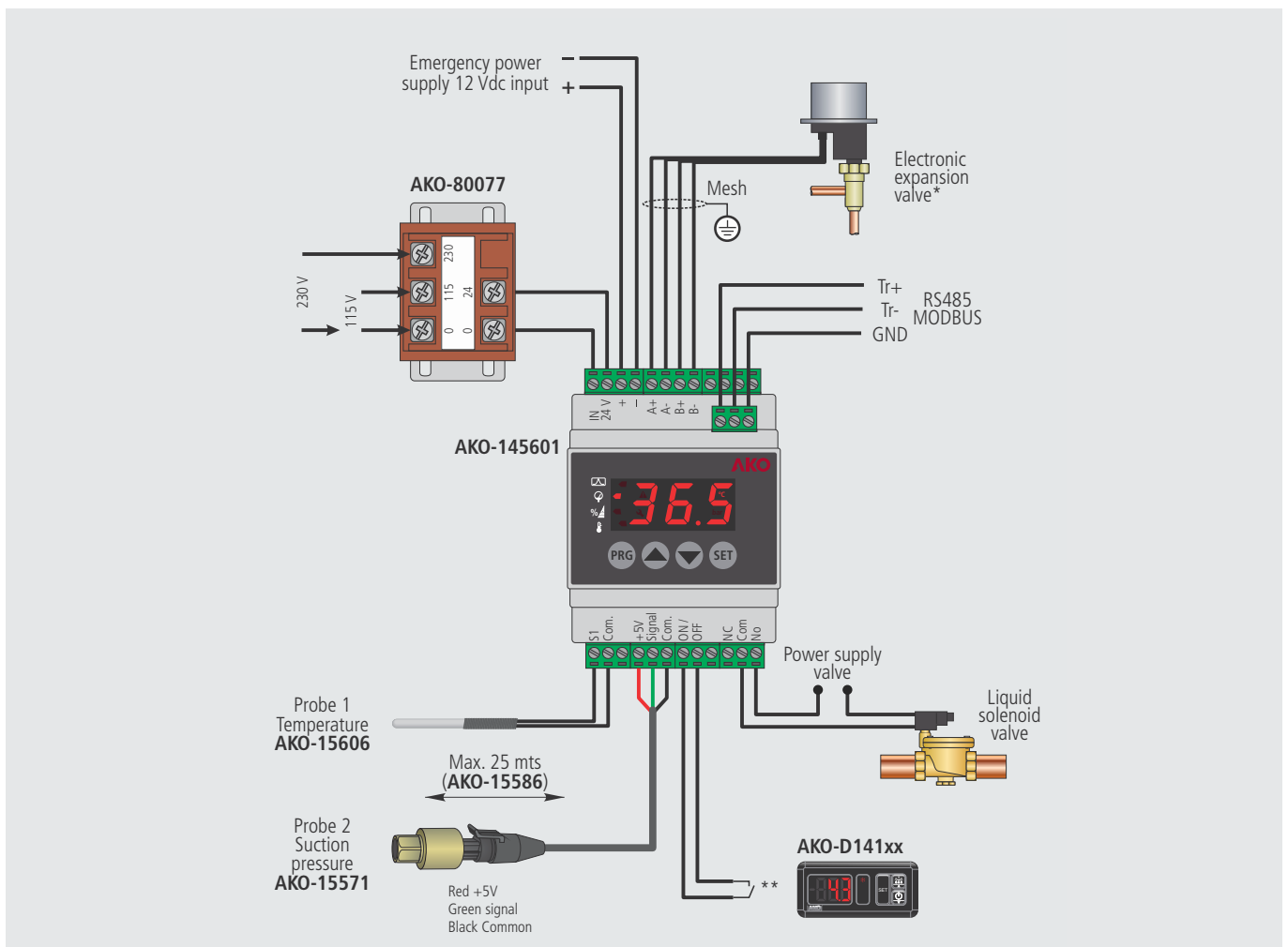
- Efficient management of the positioning of the electronic expansion valve.
- Wide range of use, for a wide variety of expansion valves and refrigerant gases.



## APPLICATIONS

Industrial and commercial refrigeration facilities.

## ELECTRICAL CONNECTIONS



## TECHNICAL SPECIFICATIONS

Power supply	24 V~ +10% / -15%, 50/60 Hz
Expansion valve output	Valves with bipolar stepper motor
Accuracy of the opening control	1/1000 (0.0 to 100.0 %)
Working environment	-10 to 50 °C, humidity <90 %
Storage environment	-20 to 60 °C, humidity <90 %
Solenoid valve relay	2(2) A 250 V~
Degree of protection	IP2X
Mounting	DIN rail
Communications	MODBUS RTU / ASCII (RS485)

### Compatible electronic expansion valves

Manufacturer	Danfoss	Alco	Sporlan	Carel
Models	ETS 12.5 ETS 25B ETS 50B ETS 100B ETS 250 ETS 400	EX4 EX5 EX6 EX7 EX8	SEI 0.5~11 SEI 1.5 ~20 SEI 30 SEI 100 SEI 175	E2V

### Compatible refrigerant gases

R-22 R-507C	R-134A HFO 1234ze	R-404A R-744	R-407C R-407A	R-410A R-407F	R-717 R-507A	R-23 R-245F
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## MODELS

Description	Model	Packaging
Electronic expansion valve control kit composed of: - AKO-145601 controller - AKO-15571 pressure probe - AKO-15606 temperature probe	AKO-14560	1 unit
EEV electronic controller (Spare)	AKO-145601	1 unit
Pressure probe from -1 to 15 bar	AKO-15571	1 unit
Pressure probe from -1 to 25 bar	AKO-15572	1 unit
Pt1000 temperature probe from -100 to 120 °C	AKO-15606	1 unit
Power transformer 110 - 220 V / 24 V	AKO-80077	1 unit



# 08\_ ON/OFF AND 48X48 PID CONTROLLERS

## BENEFITS



### EFFICIENT START-UP AND CONTROL

- Ultra-fast "plug and play" start-up with initial configuration wizard.
- Optimisation of energy usage via the ECO mode.



### VERSATILE DESIGN

- IP65 on the front side for the whole range.
- Highly intuitive design, making it easy to diagnose controller status with quick access keys to certain functions.



### CONNECTIVITY

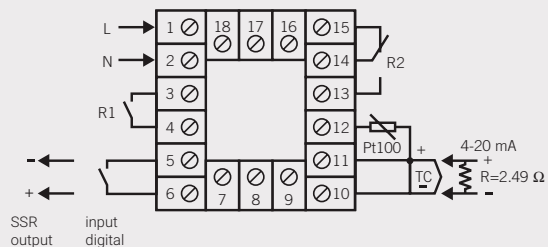
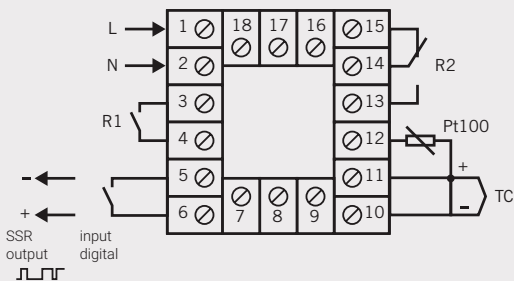
- Available with Modbus communication.
- Digital inputs for remote activation, management and control.



## APPLICATIONS

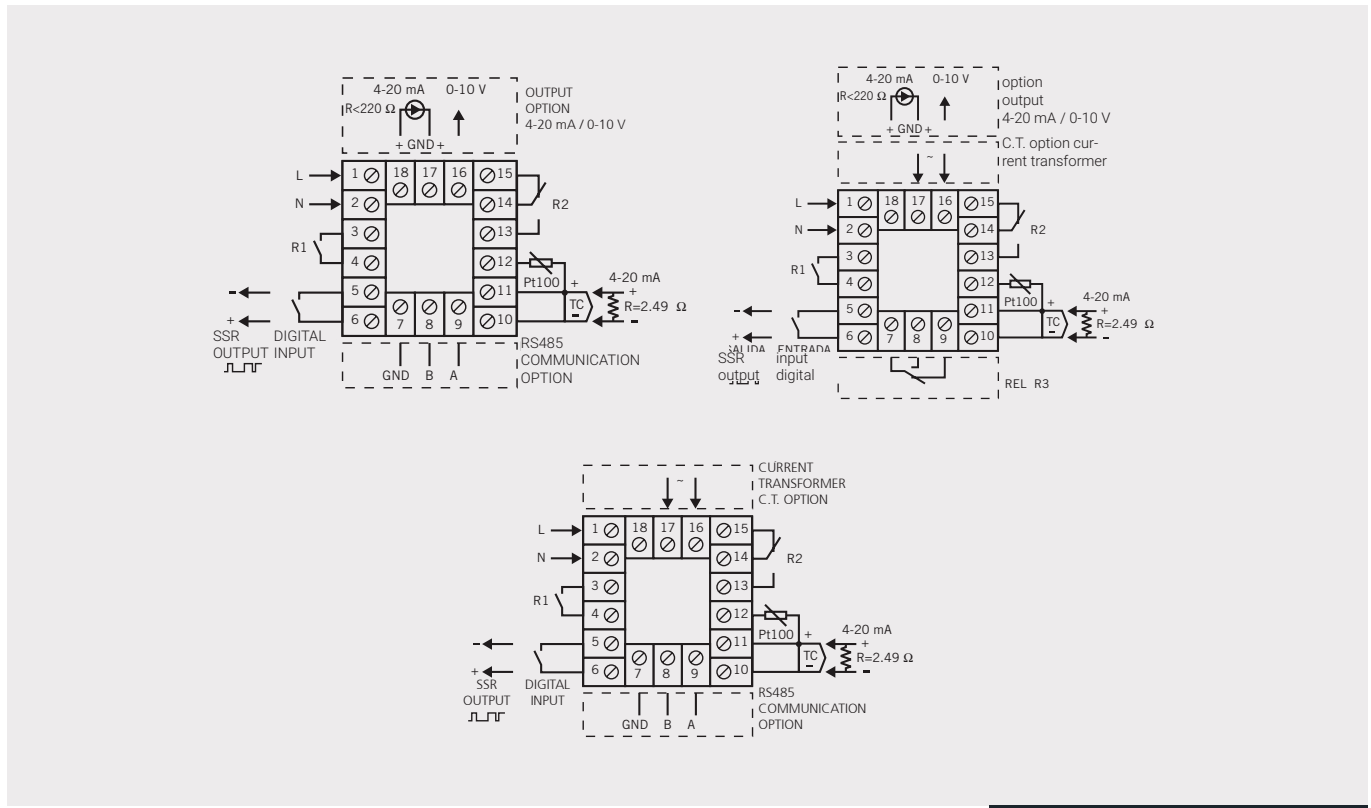
Ovens, electrical panels, industrial facilities, etc.

## ELECTRICAL CONNECTIONS



**ON/OFF CONTROLLERS**

## ELECTRICAL CONNECTIONS



## PID CONTROLLERS

## TECHNICAL SPECIFICATIONS

Power supply		20-48V, 100-240V, depending on model
Controller type	ON/OFF	AKO-15440, AKO-15490
	PID	AKO-15450, AKO-15430, AKO-15480, AKO-15487, AKO-15460, AKO-15463
Configurable probe input	ON/OFF	Pt100, Thermocouple J and K
	PID	Pt100, Thermocouple J and K, 4-20mA
Measurement range	Pt100	-99.9 °C to +850 °C
	TJ	-99.9 °C to +800 °C
	TK	-99.9 °C to +1370 °C
	4-20mA	-999 °C to +2500 °C
Resolution		0.1°C
Working environment		0 °C to 55 °C
Storage environment		-30 °C to 70 °C
Dimensions of panel cut-out		45 x 45 mm
Depth		119 mm
Front dimensions		48 x 48 mm

## MODELS

---

Model	CT Module	Module 4-20mA/0-10V	Module RS485	Module relay 3	Power supply	Packaging
AKO-15402	–	–	•	–	20 to 48 V AC/DC	1 unit
AKO-15430	–	•	–	–	20 to 48 V AC/DC	
AKO-15440	–	–	–	–	20 to 48 V AC/DC	
AKO-15450	–	–	–	–	100 to 240 VAC 50/60Hz	
AKO-15451	•	–	–	–	100 to 240 VAC 50/60Hz	
Ako-15452	–	–	•	–	100 to 240 VAC 50/60Hz	
AKO-15460	–	–	–	•	100 to 240 VAC 50/60Hz	
AKO-15463	–	•	–	•	100 to 240 VAC 50/60Hz	
AKO-15480	–	•	–	–	100 to 240 VAC 50/60Hz	
AKO-15487	–	•	•	–	100 to 240 VAC 50/60Hz	
AKO-15490	–	–	–	–	100 to 240 VAC 50/60Hz	

# CONTROLLERS FOR TEMPERATURE OR HUMIDITY/PRESSURE/FLOW

## BENEFITS



### EFFICIENT START-UP AND CONTROL

- Quick "plug and play" start-up and you only have to choose the type of probe to use: NTC, PTC, Pt100, Thermocouple and 4-20mA (the latter only available for panel controllers).
- One probe and two relay outputs configurable as independent stages, control for neutral zone, related stages or one stage and alarm.



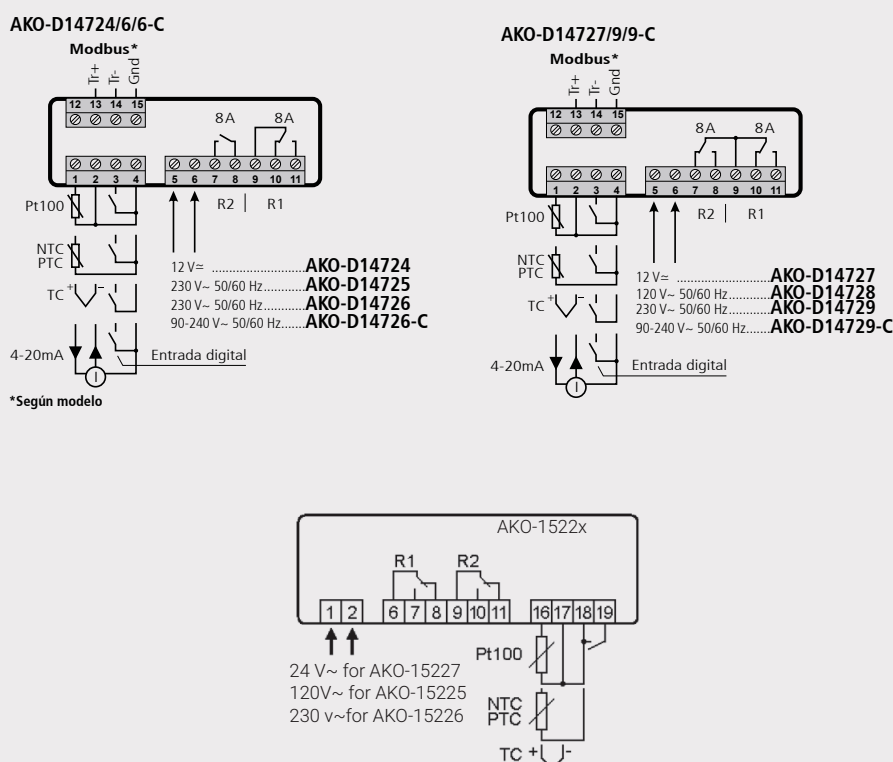
### VERSATILE DESIGN

- IP65 frontal protection across the whole range (control panel).
- Highly intuitive design, making it easy to diagnose controller status and quick access keys to certain functions.

## APPLICATIONS

Ovens, electrical panels, industrial facilities, incubators, dryers, etc.

## ELECTRICAL CONNECTIONS



## TECHNICAL SPECIFICATIONS

Power supply	12V, 24V, 120V, 230V, 90-240V	
Relay 1	8(4) A 250 V~ with switch	
Relay 2	AKO-D14724/25/26/26-C	8(4) A 250 V~
	Other	8(4) A 250 V~ with switch
N° of relay operations	EN60730-1: 100,000 operations	
Resolution	-100 to 100 °C	0.1°C
	>100 °C	1°C
Measurement range	NTC	-50.0 °C to +99.9 °C
	PTC	-50.0 °C to +150 °C
	Pt100	-100 °C to +440 °C
	Thermocouple J	0 °C to +600 °C
	Thermocouple K	0 °C to +999 °C
	4-20mA	-999 to 999 (configurable)
Working environment	-10 to 50 °C, humidity <90 %	
Dimensions of panel cut-out	Panel controllers only	71 x 29 mm

## MODELS

Model	Relay outputs		Inputs					Options		Format		Packaging		
	Relay 1	Relay 2	NTC	PTC	Pt100	Thermocouple	4-20mA	Power supply	Communication	Panel	DIN rail			
AKO-D14724	8(4)A with switch	8(4)A	•	•	•	•	•	12V	-	•	-	12 units		
AKO-D14725			•	•	•	•	•	120V	-	•	-			
AKO-D14726			•	•	•	•	•	230V	-	•	-			
AKO-D14726-C			•	•	•	•	•	90-240V	•	•	-			
AKO-D14727		8(4)A with switch	•	•	•	•	•	12V	-	•	-			
AKO-D14728			•	•	•	•	•	120V	-	•	-			
AKO-D14729			•	•	•	•	•	230V	-	•	-			
AKO-D14729-C			•	•	•	•	•	90-240V	•	•	-			
AKO-15227			•	•	•	•	•	-	24V	-	-		•	6 units
AKO-15226			•	•	•	•	•	-	230V	-	-		•	



# 10\_ MULTIFUNCTION TEMPERATURE CONTROLLERS

## BENEFITS



### EFFICIENT START-UP AND CONTROL

- Fast start-up without the need for complex configurations.
- Two probes and two relay outputs that can be assigned independently to each probe or to their differential.



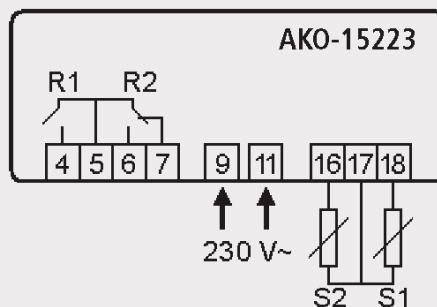
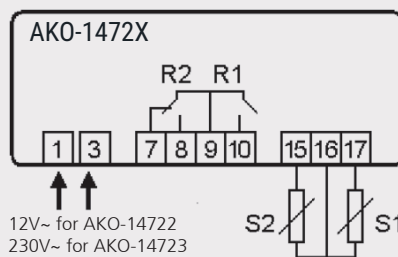
### VERSATILE DESIGN

- IP65 frontal protection across the whole range (control panel).
- Intuitive design, making it easy to diagnose the controller status with quick access keys to certain functions.

## APPLICATIONS

Solar energy, electrical panels, industrial facilities, etc.

## ELECTRICAL CONNECTIONS



## TECHNICAL SPECIFICATIONS

Power supply	12V, 230V depending on model
Inputs for NTC probe	AKO-149xx
Resolution	0.1°C
Probe tolerance at 25°C	± 0.4 °C
Relay 1	16 (4) A*, 250 V, cos j=1, SPST
Relay 2	8 A*, 250 V, cos j=1, SPDT
N° of relay operations	EN60730-1: 100,000 operations
Precision	±1°C
Working environment	5 to 40 °C
Storage environment	-30 to 70 °C

\* The specified current for each relay is its individual maximum, if more than one is connected, the sum current must not exceed 17.5A (EN61010) or 13A (EN60730).

## MODELS

Model	Relay outputs		Options	Format		Packaging
	Relay 1	Relay 2	Power supply	Panel	DIN rail	
AKO-14722	12(9)A	8(4)A with switch	12V	•	–	12 units
AKO-14723			230V	•	–	
AKO-15223			230V	–	•	6 units

# 11\_ ACCESSORIES FOR THERMOSTATS AND CONTROLLERS



AKO-14910



AKO-80004A



AKO-15586



AKO-155908

Description	Model	Packaging
Transparent cover - front protection (not compatible with Darwin)	AKO-14910*	120 units (B)
Probe extension cable, 3 x 0.5 mm <sup>2</sup> screened	AKO-15586	100m (A)
Probe extension cable H, 2 x 0.5 mm <sup>2</sup> screened	AKO-15586H	100m (A)
Stainless Steel Sheath, 1/2" thread Gas	AKO-155908	10 units
Pt-100 to 4-20 mA converter	AKO-80004A	1 unit

(A) Packing lengths are as usual, however we reserve the right to deliver in lengths other than those indicated.

(B) Minimum and indivisible packaging units.

\* Not compatible with Darwin units.



# PARAMETER SERVERS



AKO-D14918

### Tools for copying parameters

The equipment must be set up with the same configuration.  
 The portable servers allow the installer to quickly load a pre-programmed configuration to the equipment, without having to program it.

Description	Model	Power supply	Packaging
CMOS/RS485 converter module	AKO-14917	-	6 units
Darwin unit programming key	AKO-D14918	-	10 units
USB/RS485 Converter	AKO-80039	-	1 unit





## PROBES AND ACCESSORIES

NTC temperature probes				
Description	Model	Temperature range	Packaging	
NTC probe, 1.5m cable	AKO-14901 (A)	range -50 °C to 105 °C	48 units	
NTC probe, 2m cable	AKO-14902 (A)	range -50 °C to 105 °C	48 units	
NTC probe, 3m cable	AKO-14903 (A)	range -50 °C to 105 °C	48 units	
NTC probe, 6m cable	AKO-14906 (A)	range -50 °C to 105 °C	24 units	
Waterproof NTC probe, 1.5m cable, IP68 protection	AKO-15561 (B)	range -50 °C to 105 °C	10 units	
Stainless steel NTC probe With conical prong and 3m cable	AKO-14915 (C)	range -50 °C to 110 °C	1 unit	
NTC Probe Accuracy Kit AKOCORE Advance + Evaporator Clips	AKO-14950	range -50 °C to 100 °C	1 unit	
PTC temperature probes				
Description	Model	Temperature range	Packaging	
PTC probe, 1.5m cable	AKO-155801	range -50 °C to 105 °C	10 units	
PTC probe, 2m cable	AKO-155802	range -50 °C to 150 °C	10 units	
PTC probe, 3m cable	AKO-155803	range -50 °C to 150 °C	1 unit	
PTC probe, 7m cable	AKO-155807	range -50 °C to 150 °C	10 units	
Pt100 temperature probes				
Description	Model	Temperature range	Packaging	
Pt-100 probe up to 180°C, 2.0m unbraided cable	AKO-15585A	range -40 °C to 180 °C	1 unit	
Pt-100 probe up to 350°C, 2M braided cable	AKO-15587	range -60 °C to 350 °C	1 unit	
Humidity probes 4-20mA				
Description	Model	Temperature range	Packaging	
Housed humidity probe + 4-20 mA converter	AKO-80040 (A)	range -10 °C to 70 °C	1 unit	
Tubular humidity probe with 4-20 mA output	AKO-80013 (B)	range -5 °C to 50 °C	1 unit	
Wall-mounted Humidity Probe 0-100% and -20°C to +50°C, 4-20mA	AKO-14980 (C)	Range -20° to 50° C	1 unit	
Controller accessories				
Description	Model	Temperature range	Packaging	
Transparent cover - front protection (not compatible with Darwin)	AKO-14910 (A)	–	120 units	
Extension cable for temperature probes	AKO-15586 (B)	–	100m	
Stainless Steel Sheath, 1/2" thread Gas	AKO-155908 (C)	–	10 units	
Transformers and power supply				
Description	Model	Temperature range	Packaging	
Voltage converter 14V to 30V/12V, 5VA	AKO-15589 (A)	–	10 units	
Transformer 120-230/12V, 3VA	AKO-15590 (B)	–	12 units	
Power source, 115-230VAC/24VDC, 1,0A	AKO-80014 (C)	–	1 unit	



# 3.

## TEMPERATURE AND HUMIDITY DATALOGGERS

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01\_ RECORDING AND MONITORING OF TEMPERATURE AND HUMIDITY 24/7/365

02\_ TEMPERATURE AND HUMIDITY DATA LOGGERS  
IN ACCORDANCE WITH EUROPEAN STANDARD EN 12830

03\_ 2-CHANNEL TEMPERATURE, HUMIDITY AND EVENT DATALOGGERS:  
WALL MOUNTING

02\_

# TEMPERATURE AND HUMIDITY DATA LOGGERS IN ACCORDANCE WITH EUROPEAN STANDARD EN 12830



# TEMPERATURE AND HUMIDITY DATA LOGGERS, EUROPEAN STANDARD EN 12830

## CAMREGIS

### BENEFITS



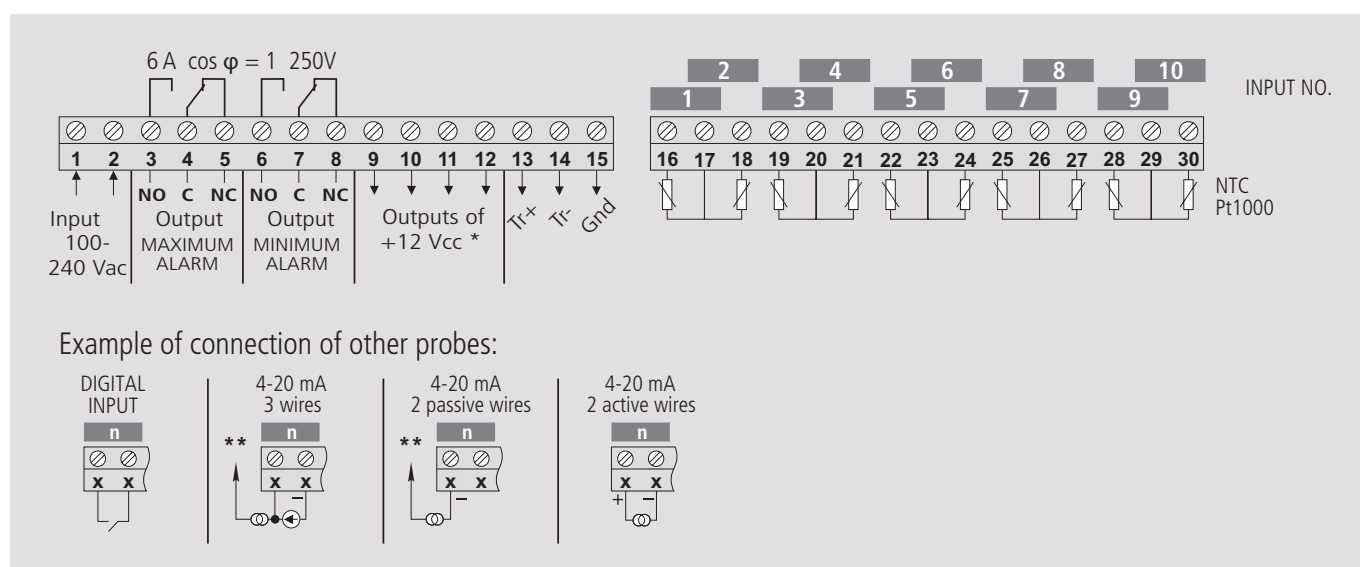
#### SUITABLE FOR RECORDING TEMPERATURE, HUMIDITY AND EVENTS.

High brightness and large graphic display. Configuration and text menus with on-screen help. Fast print key, which allows you to print the last calendar week. Internal memory of up to 3 years, with a recording frequency of 15 minutes. Built-in RS485 communication. ModBus protocol. Possibility to connect Pt100 probes to 5 inputs. Event logging of digital inputs.

### APPLICATIONS

Refrigeration and freezer rooms, chest fridges and freezers, refrigeration and freezer units and display cabinets for refrigerated and frozen products as well as for any installation in which a temperature and/or humidity record is required but that does not require metrological control.

### ELECTRICAL CONNECTIONS



## TECHNICAL SPECIFICATIONS

Power supply		100 to 240Vac, 50/60Hz
Temperature alarm relay outputs		1 maximum and 1 minimum
Maximum temperature range	NTC	-50°C to +105°C
	Pt100	-150 °C to 590 °C
	Pt1000	-150°C to +550°C
	4-20mA	-999 to 999
Resolution		0.1 °C
Maximum error margin between -40°C and +40°C		± 1°C
Precision	NTC	±1 °C
	Pt100	±1 °C
	Pt1000	from -100 °C to +100 °C ±2 °C, other scale:±1%
	4-20mA	±1 %
Ambient operating temperature		0°C to +50°C
Record intervals		5, 15, 30 minutes (configurable)
Data stored in memory		1 year, 3 years, 6 years (depending on configuration)
Self-sufficiency (in case of power failure)		> 6 hours of recording
Battery		Li-Polymer
Graph scale		Self-adjusting
Length of each graph		Weekly from Monday to Sunday (15 minute intervals)
Protection degree of the log		IP65
Nominal dimensions		230 x 230 x 90 mm
Internal buzzer		

## MODELS

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Description	Model	Power supply	Packaging
2-Input temperature and humidity data logger	AKO-15780	100-240V	1 unit
2-Input temperature and humidity data logger with printer	AKO-15782	100-240V	1 unit
5-Input temperature and humidity data logger	AKO-15750	100-240V	1 unit
5-Input temperature and humidity data logger with printer	AKO-15752	100-240V	1 unit
10-Input temperature and humidity data logger	AKO-15740	100-240V	1 unit
10-Input temperature and humidity data logger with printer	AKO-15742	100-240V	1 unit
NTC probe from -50 to +100 °C, 1.5 m cable	AKO-14901	-	48 units
NTC probe from -50 to +100 °C, 3 m cable	AKO-14903	-	48 units
NTC probe from -50 to +100 °C, 6 m cable	AKO-14906	-	48 units
Wall-mounting humidity probe, 10 to 95%, -5/50°C, 4-20 mA output	AKO-80013	-	1 unit
Tubular humidity probe, 5%-95%, -10/70 °C, 4-20 mA output	AKO-80040	-	1 unit
Thermal paper roll as a spare part	AKO-15703	-	10 units
Spare battery	AKO-15704	-	1 unit
USB/RS485 converter, with 2m cable to PC	AKO-80039	-	1 unit
SOFTRegis, software management and monitoring of AKO dataloggers	AKO-5008	-	1 unit
Probe extension cable, 3 x 0.5 mm2 screened	AKO-15586	-	100m



03\_

## 2-CHANNEL TEMPERATURE, HUMIDITY AND EVENT DATALOGGERS: WALL-MOUNTING



# 2-CHANNEL TEMPERATURE, HUMIDITY AND EVENT DATALOGGERS: WALL-MOUNTING

## CAMREGIS BASIC

### BENEFITS



#### SIMPLE INSTALLATION AND GREAT USABILITY

- Wall-mounting datalogger with configurable inputs depending on application.
- Acoustic alarm, alarm relay and SD card for direct data download.



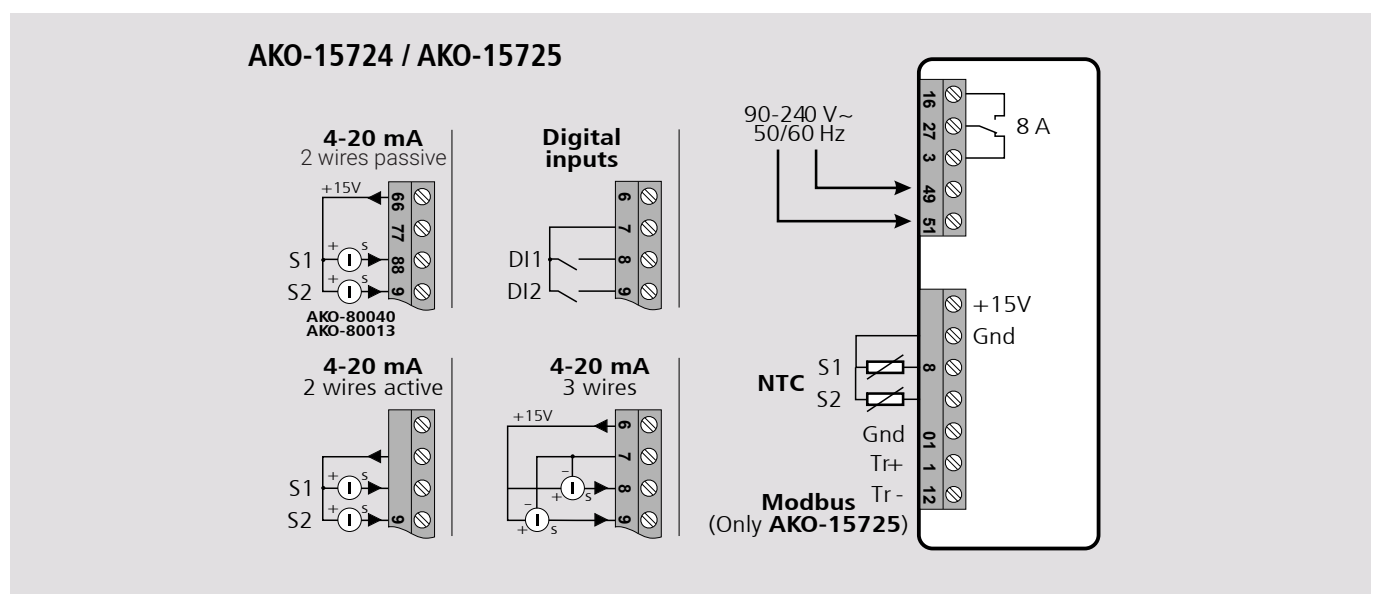
#### VERSATILE AND INTUITIVE DESIGN

- Two displays for displaying current measurement values, current time and active alarm icons, minimum or maximum values and status of digital inputs.
- Quick access from keypad to data download and display of maximum and minimum values in the last 24h.

### APPLICATIONS

Refrigeration and freezer rooms, chest fridges and freezers, refrigeration and freezer units and display cabinets for refrigerated and frozen products as well as for any installation in which a temperature and/or humidity record is required but that does not require metrological control.

### ELECTRICAL CONNECTIONS



## TECHNICAL SPECIFICATIONS

---

Power supply	90 - 240 V~
Inputs	2, configurable
Input configuration	NTC / 4-20 mA / Digital input / Disabled
Alarm relay	Yes (SPDT 8A)
Acoustic alarm	Yes (Buzzer)
Protection degree	IP40
SD card port	Yes
Installation	NTC probe, SD card and USB SD card reader
Measurement range	NTC: -50 °C to 99 °C
	4-20 mA: Configurable from -100 to 900

## MODELS

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Description	Model	Power supply	Packaging
CAMRegis BASIC 2 channels, 1 NTC probe included	AKO-15724	90-240 V	4 units
CAMRegis BASIC 2 channels with Modbus communication, 1 NTC probe included	AKO-15725	90-240 V	4 units

# 4.

## **MONITORING AND DETECTION OF GAS LEAKS**

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01\_ **GAS LEAK MONITORS**

02\_ **GAS LEAK DETECTORS**



# 01\_ GAS LEAK MONITORS

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## AKOGAS NDIR





# AKOGAS NDIR

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## BENEFITS

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### VERSATILE AND ROBUST

- Flexibility of installation. It can be installed for autonomous operation, or connected directly to our AKONet web server, AKONet.Edge or through the AKOGAS central unit.
- IP68 protection and working temperature of -30°C to +40°C. It can be used in freezer rooms thereby covering all possible applications.
- Its user interface facilitates use and diagnostics, minimising after-sales calls.



### MAXIMUM PRECISION AND SELECTIVITY

- Specific sensors for each type of gas which are extremely selective, avoiding false alarms for other gases, solvents, cleaning products.
- More than 95% accuracy in detecting gas leaks.
- Two detection levels, adjustable from 20 ppm to 2,000 ppm.
- Equipped with SetHold mode that avoids false alarms during refrigerant gas refill processes.



### INCREASED CONNECTIVITY

- Modbus equipped as standard for connection to the web server or AKONet.Edge.
- Optionally you can connect the CAMM Module which provides Bluetooth connectivity for mobile monitoring and control. With the CAMM Module, historical records for the following can also be obtained:
  - Gas leaks in ppm
  - Alarms and events
  - Assessment (changes in equipment configuration)

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The infrared gas monitors are specially designed to know the volume of any gas in the environment, from 1 PPM, and therefore, help drastically reduce the operating costs of your installation, whilst still having the advantage of being able to install it anywhere in the facility.

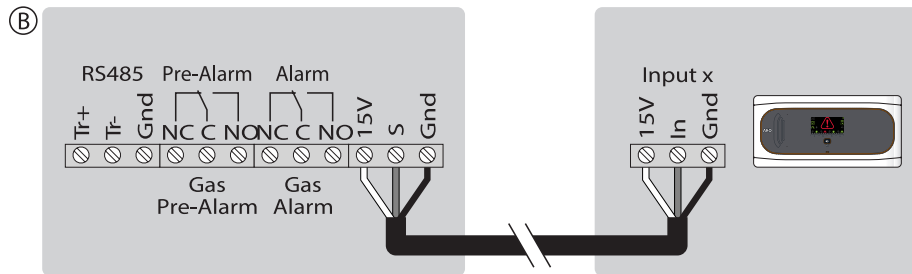
## APPLICATIONS

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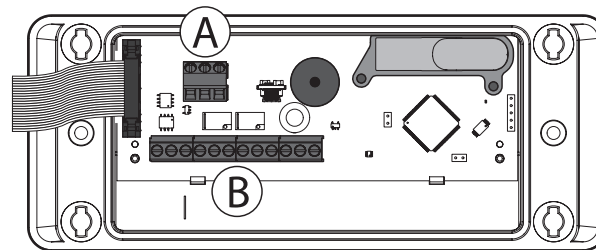
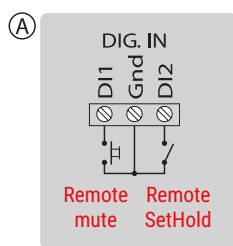
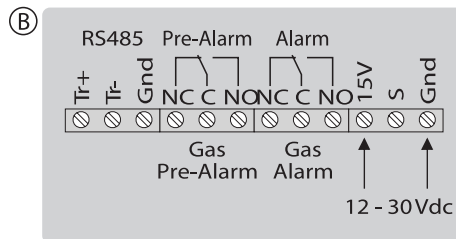
Commercial and industrial refrigeration installations, refrigeration and freezer rooms, machinery rooms, refrigeration and freezer units and commercial refrigerators, etc.

ELECTRICAL CONNECTIONS

Connected to Alarm Station 1788 N / Q 8888 SET



Autonomous operation 1788 N / Q 8882 SET



TECHNICAL SPECIFICATIONS

Power supply		12 - 30 Vdc
Energy usage	Typical	75 mA
	Maximum	100 mA
Ambient operating temperature		-30 °C to 40 °C
Ambient storage temperature		-30 °C to 60 °C
Maximum permissible humidity range		0 - 95 % RH (without condensation)
Protection degree		IP 68
Type of sensor		NDIR (Non-Dispersive Infra-red Technology)
Display range		0 - 2000 x1 ppm
EMC standards		EN61010
Dimensions		202 mm (W) x 82 (H) x 55.5 mm (D)

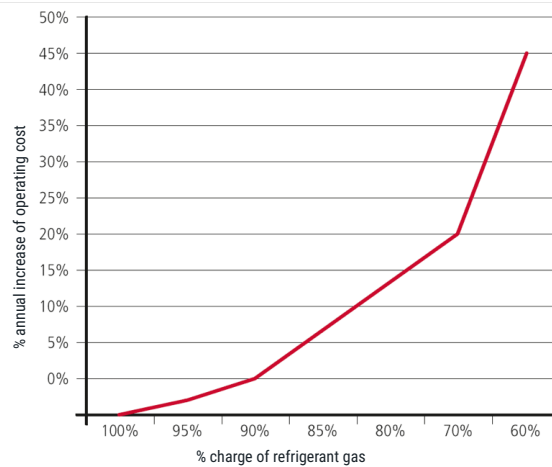
## EFFICIENCY IN THE EARLY DETECTION OF GAS LEAKS



With AKOGAS NDIR you can SAVE on:

- Charges of up refrigerants (Direct Saving)
- Energy consumption (Indirect Saving)
- Reduced maintenance costs
- Extend the service life of the facility parts

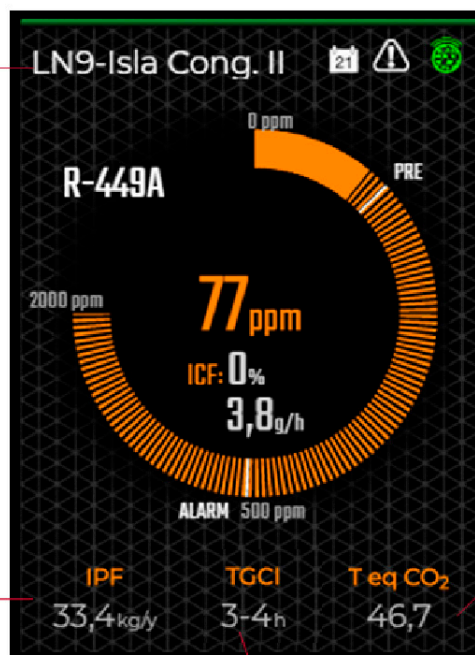
**IN A COOLING INSTALLATION, ELECTRICITY CONSUMPTION INCREASES EXPONENTIALLY WHILE THE GAS CHARGE IS LESS THAN THE NOMINAL CHARGE:**



**ADVANCE MONITORING OF GAS LEAKS ALLOWS A QUICK RESPONSE, THEREBY REDUCING COSTS, TIME AND INCREASING THE INSTALLATION LIFETIME.**

WHERE refrigerant is leaking

HOW MUCH refrigerant will leak during a year



WHICH is the environmental impact of the leak

WHEN the leak is higher

# BENEFITS OF GAS LEAK MONITORING

Rapid action in the event of a gas leak means enormous savings in time and unbeatable efficiency.

## MONITORING THE CONDITION OF GAS LEAKS IN A FACILITY RESULTS IN HIGHER SUCCESS RATES AND COST REDUCTION:



**Facility:** Supermarket  
**Area:** 800m<sup>2</sup>



Monitor location	Volume	Average PPM	Estimated leakage (gr/h)	Estimated leakage (kg/year)
Fishmonger's wall unit	3.75 linear metres	110	1.55	13.6
Dairy wall unit	6.25 linear metres	115	2.71	23.7
Oven chamber	24m <sup>3</sup>	125	7.62	66.7
Butcher's wall unit	10 linear metres	5	0.188	1.65
Charcuterie wall unit	7.5 linear metres	3	0.085	0.75
				106.4 kg/year

Being able to know and avoid any gas leak in a timely fashion means taking care of the environment, increasing peace of mind and improving the profitability of your business.

# MODELS

Description	Model	Detectable gases	Alarm levels		Packaging
			Pre-alarm	Alarm	
R22 Gas Monitor	AKO-575022	R22	Configurable		1 unit
Broadband Monitor for HFC Gases	AKO-575400	R-134a / R-404A / R-407A / R-410A / R-125 / R-448A, R-449A, R-407F			1 unit
IoT Broadband Monitor for HFC gases	AKO-575400N				1 unit
CO2 Gas Monitor	AKO-575744				CO2 (R-744)
Single channel gas leak detector	AKO-55624	-	-	-	1 unit
4 channel gas leak detector	AKO-55724	-	-	-	1 unit
Camm Module	AKO-58500	Accessory	-	-	1 unit
Transmitter Protector	AKO-58120	Accessory	-	-	5 units
Calibration tool	AKO-58110	Accessory	-	-	1 unit
Power source, 115-230VAC/24VDC, 1,0A	AKO-80014	Accessory	-	-	1 unit

\* Products based on NB (Narrow Band) technology are available wherever the operator has deployed such a network.

	TYPE OF INSTALLATION	BENEFITS
Gas Leak Monitor Network	<p>AKONET.EDGE</p>	<ul style="list-style-type: none"> <li>• Simple creation of a network of gas leakage monitors using AKONET.EDGE.</li> <li>• Connectivity to AKONET.Cloud via Ethernet or GPRS as standard.</li> <li>• Real time monitoring of the status of gas leaks.</li> </ul>
NB-IoT Gas Leak Monitors	<p>IoT</p>	<ul style="list-style-type: none"> <li>• Direct connectivity with AKONET.Cloud for the monitoring of the facility in places where device connection is impossible.</li> <li>• Device monitoring without the need for any installation.</li> <li>• Option to activate Live mode for displaying the facility's status in real time.</li> </ul>



# 02\_ GAS LEAK DETECTORS

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## AKOGAS



## BENEFITS

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### VERSATILE AND ROBUST

- Flexibility of installation. It can be installed for autonomous operation, connected directly to our AKONet web server or through the AKOGAS unit.
- IP68 protection and working temperature of -20°C to +40°C. It can be used in freezer rooms thereby covering all possible applications.
- Its user interface facilitates use and diagnostics, minimising post-sales calls.



### MAXIMUM SAFETY AND COMPATIBILITY

- The HFC version is a single model that can detect more than 20 gases.
- 2 alarm relays linked to the alarm and pre-alarm (adjustable except for NH3), to activate ventilation and stop cold production, in accordance with EN-378.
- It uses a Sethold Mode to avoid false alarms during maintenance tasks.
- Configuration of the equipment using keyboard and screen, without the need to open it or work with bridge circuits and potentiometers.



### INCREASED CONNECTIVITY

- Using its two relays, alarm monitoring systems can be activated in the absence of a Modbus network.
- The alarm units provide a poor connection warning between the sensor and the unit, and a dedicated relay to send an alarm about the poor connection.



Our gas detection systems offer the following guarantees:

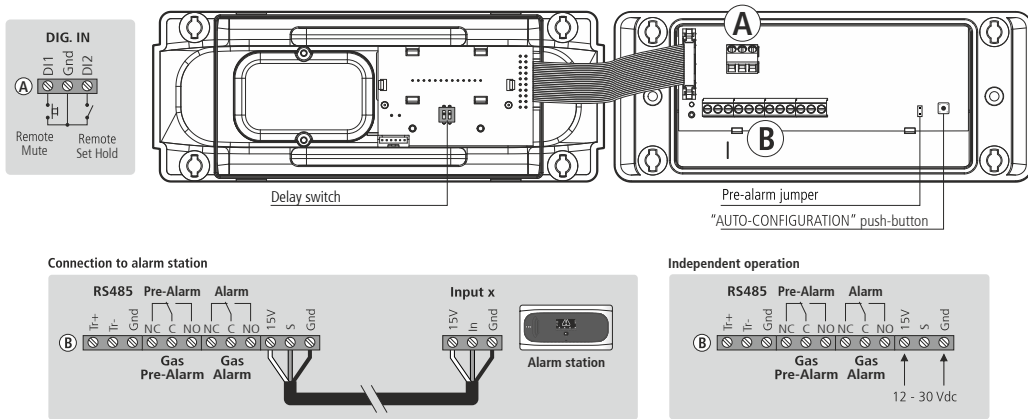
- 2 alarm levels in all models (required by EN-378 for CO2 and NH3).
- Built-in MODBUS for alarm management and remote monitoring.
- Adjustable alarm levels (except NH3).
- Acoustic and visual alarm built into the detector.

## APPLICATIONS

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Commercial and industrial refrigeration installations, refrigeration and freezer rooms, machinery rooms, etc.

**ELECTRICAL CONNECTIONS**



**TECHNICAL SPECIFICATIONS**

Power supply		12 - 30 Vdc
Energy usage	Typical	75 mA
	Maximum	100 mA
Ambient operating temperature		-20 °C to 40 °C (-40°C to 40°C for CO2)
Ambient storage temperature		-20 °C to 60 °C
Maximum permissible humidity range		0 - 95 % RH (without condensation)
Protection degree		IP68
Type of sensor		SC (Semiconductor) / NDIR for CO2
EMC standards		EN61010
Dimensions		202 mm (W) x 82 (H) x 55.5 mm (D)

## MODELS

Description	Model	Detectable gases	Defect levels		Second level set		Packaging
			Pre-alarm	Alarm	Pre-alarm	Alarm	
Alarm unit kit + U Detector (HFC)	AKO-55624U	R-134a, R-22, R-404A, R-407A, R-407C, R-407F, R-409A, R-408A, R-410A, R-422A, R-422D, R-424A, R-434A, R-442A, R-448A, R-449A, R-450A, R-452A, R-453A, R-507A, R-513A	500 ppm	1000 ppm	1500 ppm	3000 ppm	1 unit
Alarm unit kit + C Detector (NH3)	AKO-55624C	R-717 (NH3 / ammonia)	500 ppm	1000 ppm	-	-	1 unit
Alarm unit kit + D Detector (CO2)	AKO-55624D	R-744 (CO2)	4000 ppm	8000 ppm	5000 ppm	10000 ppm	8 units
Ammonia gas detector (R-717)	AKO-57613	R-717 (NH3 / ammonia)	500 ppm	1000 ppm	-	-	8 units
Universal gas detector	AKO-57614	R-134a, R-22, R-404A, R-407A, R-407C, R-407F, R-409A, R-408A, R-410A, R-422A, R-422D, R-424A, R-434A, R-442A, R-448A, R-449A, R-450A, R-452A, R-453A, R-507A, R-513A	500 ppm	1000 ppm	1500 ppm	3000 ppm	8 units
CO2 gas detector (R-744)	AKO-57615	R-744 (CO2)	4000 ppm	8000 ppm	5000 ppm	10000 ppm	1 unit
Single channel gas leak detector	AKO-55624	Depending on the connected detector	-	-	-	-	1 unit
4 channel gas leak detector	AKO-55724	Depending on the connected detectors	-	-	-	-	1 unit
Protector for Detectors and Alarm pushbuttons	AKO-58120	-	-	-	-	-	5 units

# 5.

## TRAPPED PERSON ALARM SYSTEMS

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01\_ TRAPPED PERSON ALARMS FOR PEOPLE SECURITY IN COLD ROOMS



# 01\_ TRAPPED PERSON ALARMS FOR PEOPLE SECURITY IN COLD ROOMS

## AKOALARM



# TRAPPED PERSON ALARM

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## AKOALARM

### BENEFITS

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#### MAXIMUM SAFETY

- IP65 protected unit and button to protect against humidity and water projection in the facility.
- Can be installed in rooms as low as -50°C.
- Complies with European standard EN-378-1.
- Powerful visual and audible alarm of 90dB at 1m.
- Equipped with MODBUS Communication to send alerts via mail through AKONet.
- Auxiliary Alarm Relay to send warnings via SMS through GSMAlarm.



#### VERSATILE AND ROBUST

- IP65 protection in the unit and button to withstand harsh environments and extreme working conditions.
- The button can be used at temperatures as low as -50°C, to ensure correct operation in deep-freeze rooms.
- User interface facilitates use and diagnostics, minimising post-sales calls.



#### INCREASED CONNECTIVITY

- Alarm relay to send SMS warnings via GSMAlarm in case of emergency.
- MODBUS built in as standard, to send emails through the AKONet system.



#### MAXIMUM PRECISION AND SELECTIVITY

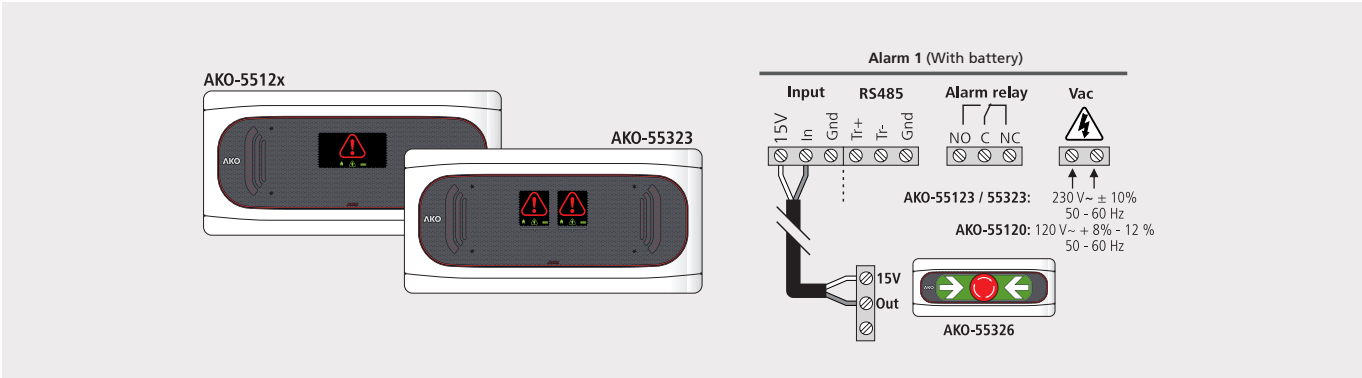
- Up to 10 hours of self-sufficiency, with the device in alarm state, as required by EN-378-1.
- On-screen indication of which room is in alarm state.
- Broken Cable Detection, and indication on screen to assure the perfect state of the facility and to guarantee maximum security.

### APPLICATIONS

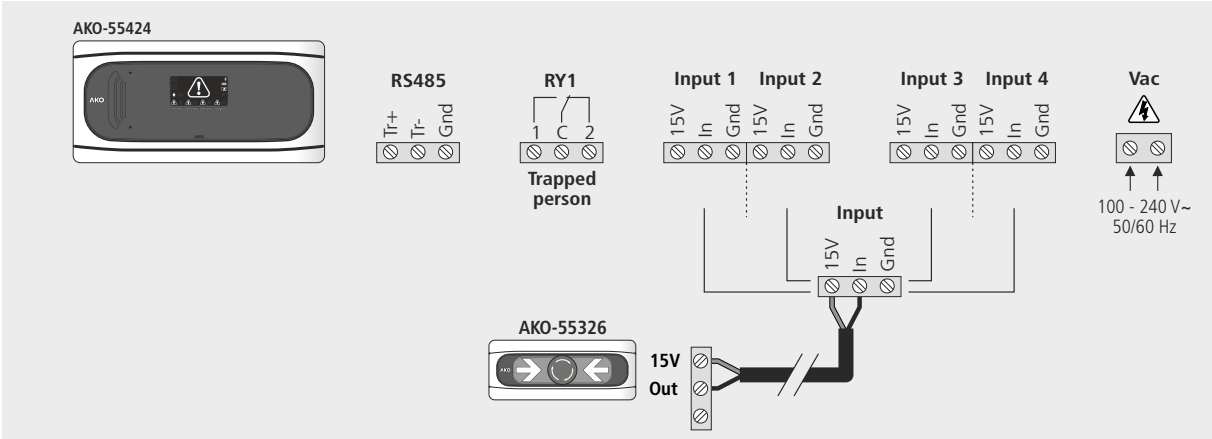
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Refrigeration and freezer rooms up to -50°C

# ELECTRICAL CONNECTIONS



**AKO-55123**



**AKO-55424**

## TECHNICAL SPECIFICATIONS

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Power supply	AKO-55123	230 V ~ ± 10% - 50/60 Hz
	AKO-55120	120 V ~ + 8% - 12% - 50/60 Hz
Maximum power absorbed during use	AKO-55123	3.1 VA
	AKO-55120	5 VA
Accumulators	Ni-MH 800 mAh	
Lighting + alarm autonomy	> 10 hours (*)	
Input compatibility	AKO-55326 pushbutton	
Alarm relay	SPDT 230 Vac, 3 A, cos j = 1	
Ambient operating temperature	-5 °C to 50 °C	
Ambient storage temperature	-30 °C to 70 °C	
Protection degree	IP 65	
Installation category	II s/ EN 61010-1	
Pollution level	II s/ EN 61010-1	
Double insulation between power supply, secondary circuit and relay output.		
Sound power	90 dB(A) at 1 meter	
MODBUS Address	Indicated on the label	
Dimensions	290 mm (W) x 141 mm (H) x 84.4 mm (D)	
Maximum cable distance from button	300 m	

---

### GUARANTEE THE SECURITY OF YOUR FACILITIES AND AVOID COSTLY PENALTIES BY COMPLYING WITH CURRENT REGULATIONS:

- EN-378-1: Trapped Person alarms must have an autonomy of 10 hours of operation in the event of a power failure in cold rooms operating at temperatures below 0°C.
-

## MODELS

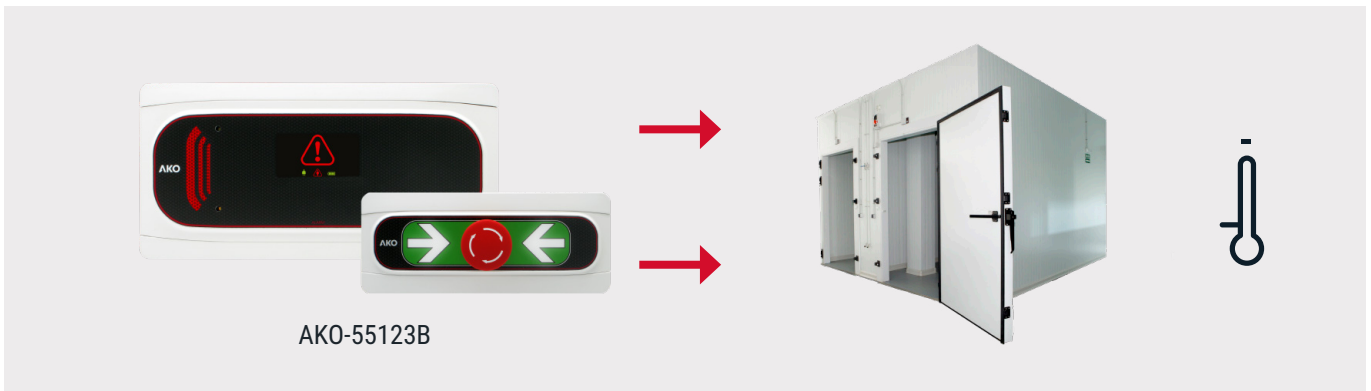
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Description	Model	Power supply	Packaging
Trapped Person Alarm Kit 1 Channel + 1 Pushbutton *	AKO-55123B	230 Vac	1 unit
Trapped Person Alarm Kit 1 Channel + 1 Pushbutton *	AKO-55120B	120 Vac	1 unit
Trapped Person Alarm Kit 4 Channel + 2 Pushbuttons *	AKO-55424B	90-240 Vac	1 unit
Trapped Person Pushbutton -50°C	AKO-55326	12 Vdc	8 units
Protector for Trapped Person Pushbutton	AKO-58120	-	5 units

(\*) Alarm unit with battery. Includes AKO-55326 pushbutton.

## FREEZER ROOMS

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# 6.

## **COMBINED ALARM SYSTEMS FOR LEAK DETECTION AND TRAPPED PERSON**

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01\_ COMBINED ALARM SYSTEMS FOR PEOPLE SECURITY

# 01\_ COMBINED ALARM SYSTEMS FOR PEOPLE SECURITY



# COMBINED ALARM SYSTEMS FOR PEOPLE SECURITY

## BENEFITS



### EASY INSTALLATION OF SOLUTION THAT IS UNIQUE ON THE MARKET

- Simple installation together with a user interface that facilitates use and diagnostics, minimising post-sales assistance.
- Alarm station compatible with any combination of trapped person buttons, gas leak detectors and monitors.



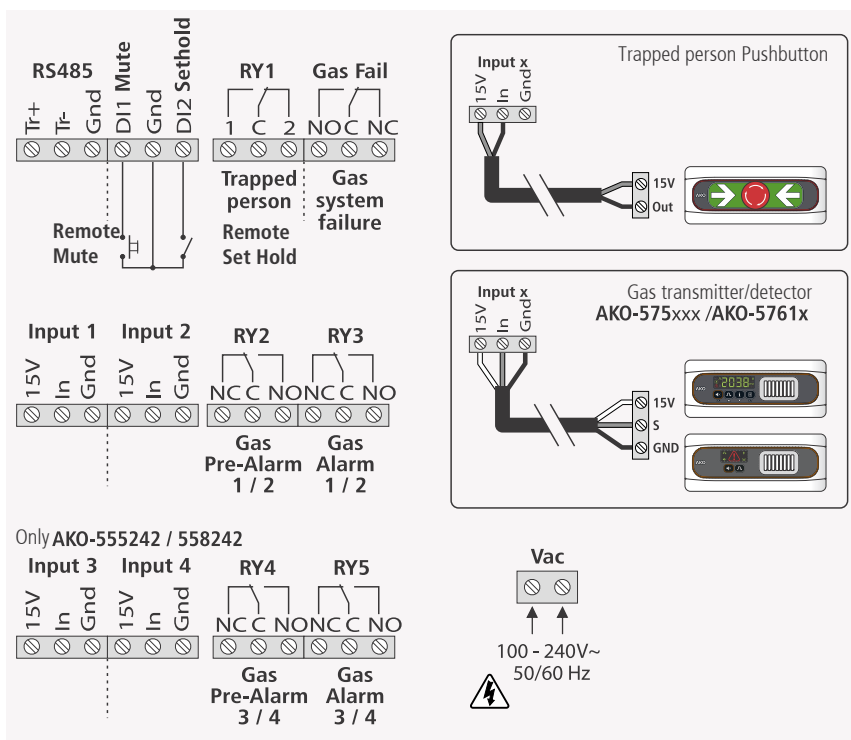
### MAXIMUM SAFETY AND RELIABILITY

- 2 and 4 channel models available, with and without a battery, with up to 6 independent output relays.
- Visual and acoustic warnings for trapped person, gas leak pre-alarm and alarm, detector/monitor failure and broken cable.

## APPLICATIONS

Cool rooms and freezer rooms

## ELECTRICAL CONNECTIONS



## TECHNICAL SPECIFICATIONS

- All inputs are compatible with semiconductor sensors, infrared sensors and the new AKO-55326 buttons.
- Complies with EN-378-1 and EN-378-3 standards.
- Sethold and Maintenance modes in all models to avoid false alarms during gas cleaning and/or refilling.
- MODBUS communication as standard for remote monitoring through AKONet web server.

Power supply	100-240 V~ 50/60 Hz	
Peak power input	15 W	
Accumulators (AKO-555xxx only)	Ni-MH 1.6 Ah	
Lighting + alarm autonomy (AKO-555xxx only)	> 10 hours (*)	
N° of inputs	AKO-555241 / AKO-558241	2
	AKO-555242 / AKO-558242	4
Input compatibility	AKO-55326 button	
	AKO-575xxx transmitter	
	AKO-5761x detector	
Relays	SPDT 8(2)A 250 V~	
Ambient operating temperature	-5 °C to 50 °C	
Ambient storage temperature	-30 °C to 60 °C	
Degree of protection	IP 65	
Installation category	II s/ EN 61010-1	
Pollution level	II s/ EN 61010-1	
Double insulation between power supply, secondary circuit and relay output		
Sound power	90 dB(A) at 1 meter	
MODBUS Address	Indicated on the label	
Maximum cable distance from button	300 m	
Dimensions	290 mm (W) x 141 mm (H) x 84.4 mm (D)	





**ALARM SOLUTIONS FOR COLD ROOMS**

IN COMPLIANCE WITH REGULATIONS ON REFRIGERATION SYSTEMS

**FREEZER ROOMS**

AKO-555241X  
Alarm system  
with battery

Trapped person alarm system with battery  
according to EN-378-1 (1) and leak detection  
system according to EN-378-3 (2)

GUARANTEES THE SAFETY OF FACILITIES COMPLYING WITH CURRENT REGULATIONS:

- (1) **EN-378-1:** In chambers with a temperature lower than 0°C the Trapped Person alarms must have an autonomy of 10 hours of operation in the event of a power failure.
- (2) **EN-378-3:** A gas detection system with two alarm levels (pre-alarm and alarm), each associated with a relay, shall be installed in cold rooms.



## MODELS

2 input combined central alarm kit with battery (includes 1 button + 1 detector)							
Description	Battery	Button	Gas detector	Model	Power supply	Packaging	Application
Combined alarm unit for gas leaks and trapped person 2 inputs	•	Included	HFC	AKO-555241U	100-240V	1 unit	Freezer rooms EN-378-1 EN-378-3
			NH3	AKO-555241C			
			CO2	AKO-555241D			

2 input combined central alarm kits without battery (includes 1 button + 1 detector)							
Description	Battery	Button	Gas detector	Model	Power supply	Packaging	Application
Combined alarm unit for gas leaks and trapped person 2 inputs	-	Included	HFC	AKO-558241U	100-240V	1 unit	Freezer rooms EN-378-1 EN-378-3
			NH3	AKO-558241C			
			CO2	AKO-558241D			Refrigeration rooms EN-378-3

Combined alarm unit							
Description	Battery	Button	Gas detector	Model	Power supply	Packaging	
2 input combined alarm unit for gas detection and trapped person	•	Not included	Not included	AKO-555241	100-240V	1 unit	
	-			AKO-558241			
4 input combined alarm unit for gas detection and trapped person	•			AKO-555242			
	-			AKO-558242			

Accessories for alarm units		
Description	Model	Packaging
Trapped Person Button -50°C	AKO-55326	8 units
Ammonia detector (NH3 /R-717)	AKO-57613	8 units
HFC gas detector	AKO-57614	
CO2 gas detector (R-744)	AKO-57615	
R-22 Gas Monitor	AKO-575022	1 unit
HFC gas monitor	AKO-575400	
CO2 gas monitor (R-744)	AKO-575744	