

CE Data Sheet - DARWIN temperature controllers

1 - Quick Selection Guide

	Relay outputs				Inputs					Options			Panel			
	Compressor	Defrost	Fan	Auxiliary	Temperature control	End of defrost temperature ^(a)	Room temperature/ End of defrost 2 ^(b)	Digital input 1 ^(b)	Digital input 2 ^(a)	Power supply	Real Time Clock	Integrated Communication	Depth 43 mm	Depth 61mm	Standar	Extended (+ 2 switches)
Thermometers																
AKO-D14012	-	-	-	-	NTC/PTC	-	-	-	-	12/24 V	-	-	•	-	•	-
AKO-D14023	-	-	-	-	NTC/PTC	-	-	-	-	230 V	-	-	•	-	•	-
AKO-D14023-C	-	-	-	-	NTC/PTC	-	-	-	-	90-240 V	-	•	-	•	•	-
1-relay controllers																
AKO-D14112	16 A	-	-	-	NTC/PTC	NTC/PTC	-	•	•	12/24 V	-	-	-	•	•	-
AKO-D14120	16 A	-	-	-	NTC/PTC	-	-	-	-	120 V	-	-	•	-	•	-
AKO-D14123	16 A	-	-	-	NTC/PTC	-	-	-	-	230 V	-	-	•	-	-	•
AKO-D10123	16 A	-	-	-	NTC/PTC	-	-	-	-	230 V	-	-	•	-	•	-
AKO-D14123-2	2 CV	-	-	-	NTC/PTC	NTC/PTC	-	•	•	230 V	-	-	-	•	•	-
AKO-D14123-2-RC	2 CV	-	-	-	NTC/PTC	NTC/PTC	-	•	•	90-240 V	•	•	-	•	•	-
AKO-D14125	16 A	-	-	-	NTC/PTC	-	-	-	-	230 V	-	-	•	-	•	-
2-relay controllers																
AKO-D14212	16 A	-	-	8 A	NTC/PTC	NTC/PTC	-	•	•	12 V	-	-	-	•	•	-
AKO-D14220	16 A	-	-	8 A	NTC/PTC	NTC/PTC	-	•	•	120 V	-	-	-	•	•	-
AKO-D14223	16 A	-	-	8 A	NTC/PTC	NTC/PTC	-	•	•	230 V	-	-	-	•	•	-
AKO-D10223	16 A	-	-	8 A	NTC/PTC	NTC/PTC	-	•	•	230 V	-	-	-	•	-	•
3-relay controllers																
AKO-D14312	16 A	-	6 A	8 A	NTC/PTC	NTC/PTC	-	•	•	12 V	-	-	-	•	•	-
AKO-D14320	16 A	-	6 A	8 A	NTC/PTC	NTC/PTC	-	•	•	120 V	-	-	-	•	•	-
AKO-D14323	16 A	-	6 A	8 A	NTC/PTC	NTC/PTC	-	•	•	230 V	-	-	-	•	•	-
AKO-D10323	16 A	-	6 A	8 A	NTC/PTC	NTC/PTC	-	•	•	230 V	-	-	-	•	-	•
AKO-D14323-C	16 A	-	6 A	8 A	NTC/PTC	NTC/PTC	-	•	•	90-240 V	-	•	-	•	•	-
4-relay controllers																
AKO-D14412	6 A	6 A	6 A	6 A	NTC/PTC	NTC/PTC	NTC/PTC	•	•	12 V	-	-	-	•	•	-
AKO-D14412-RC	6 A	6 A	6 A	6 A	NTC/PTC	NTC/PTC	NTC/PTC	•	•	12 V	•	•	-	•	•	-
AKO-D14420	6 A	6 A	6 A	6 A	NTC/PTC	NTC/PTC	NTC/PTC	•	•	120 V	-	-	-	•	•	-
AKO-D14423	6 A	6 A	6 A	6 A	NTC/PTC	NTC/PTC	NTC/PTC	•	•	230 V	-	-	-	•	•	-
AKO-D14423-RC	6 A	6 A	6 A	6 A	NTC/PTC	NTC/PTC	NTC/PTC	•	•	90-240 V	•	•	-	•	•	-
AKO-D14423-P	16 A	8 A	6 A	6 A	NTC/PTC	NTC/PTC	NTC/PTC	•	•	90-240 V	-	-	-	•	•	-
AKO-D14423-P-RC	16 A	8 A	6 A	6 A	NTC/PTC	NTC/PTC	NTC/PTC	•	•	90-240 V	•	•	-	•	•	-

(a) The end of defrost probe and digital input 2 share the same input.

(b) The room temperature probe or end of defrost 2 and digital input 2 share the same input.

2- Quick Feature Selection Guide

	Thermometers			1 Relay					2 Relays					3 Relays					4 Relés							
	AKO-D14012	AKO-D14023	AKO-D14023-C	AKO-D14112	AKO-D14120	AKO-D14123	AKO-D10123	AKO-D14123-2	AKO-D14123-2-RC	AKO-D14125	AKO-D14212	AKO-D14220	AKO-D14223	AKO-D10223	AKO-D14312	AKO-D14320	AKO-D14323	AKO-D10323	AKO-D14323-C	AKO-D14412	AKO-D14412-RC	AKO-D14420	AKO-D14423	AKO-D14423-RC	AKO-D14423-P	AKO-D14423-P-RC
Operating modes																										
Cold	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Heat	-	-	-	•	•	•	•	•	•	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Control																										
Compressor	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Crankcase heater	-	-	-	•	-	-	-	•	•	-	•	•	•	•	•	•	•	•	•	-	-	-	-	-	-	-
Evaporator fans	-	-	-	-	-	-	-	-	-	0	0	0	0	•	•	•	•	•	•	•	•	•	•	•	•	•
Defrost	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	•	•	•	•	•	•	•	
Defrost 2nd fan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	
Alarm	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Light	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Solenoid (gas collection)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	
Display																										
Temperature	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Output icons	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Error messages	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Communications																										
Modbus RTU	-	-	•	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•	-	•	-	-	•	-	•	
Defrost type																										
Compressor off	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Fan / air	-	-	-	-	-	-	-	-	-	0	0	0	0	•	•	•	•	•	•	•	•	•	•	•	•	
Resistors	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	•	•	•	•	•	•	•		
Inverted cycle	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	•	•	•	•	•	•	•		
Start of defrost																										
By cycles	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
By compressor times	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
By clock (6 programs)	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	-	•	-	-	•	-	•	-		
On equipment startup	-	-	-	•	-	-	-	•	•	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Completion of Defrost																										
By maximum time	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
By temperature probe 2	-	-	-	0	-	-	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
By temperature probe 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0		
Operating temperature change																										
Energy saving	-	-	-	0	-	-	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Fast freezing	-	-	-	0	-	-	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Alarms																										
Maximum temperature	-	-	-	•	-	-	-	•	•	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Minimum temperature	-	-	-	•	-	-	-	•	•	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
External alarm by digital input	-	-	-	0	-	-	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Severe external alarm by digital in.	-	-	-	0	-	-	-	0	0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
Configurations depending on application																										
Multipurpose	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Frozen	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Fruit and Vegetables	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Fresh Fish	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Soft Drinks	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Bottle Racks	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
AC/Ventilators	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
Heat/Incubators	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	

• Standard
 0 Depending on configuration
 - Not available
 * We recommend equipment with one relay only

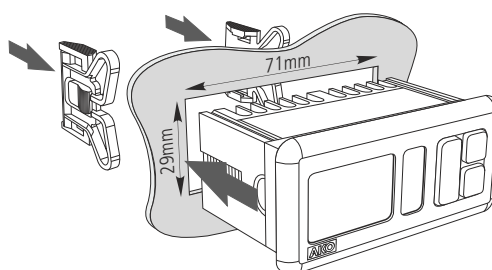
3 - Thermometers

- Ideal for temperature indication.
- Temperature display in °C or °F with decimal point.
- NTC/PTC probe selectable by program. Allow probe calibration.

- A single button for adjusting parameters.
- Integrated communications (depending on model).
- 1 NTC probe included.

	AKO-D14012	AKO-D14023	AKO-D14023-C
Input			
NTC/PTC Probe		1	
Options			
Integrated Communications	-	-	RS485 Modbus RTU
Technical Features			
Protection degree	IP65		
Panel cutout dimensions	71 x 29 mm		
Front panel dimensions	79 x 38 mm		
Power Supply	12/24 V \approx	230 V 50/60 Hz	90-240 V 50/60 Hz
Power consumption	2.5 VA	3.5 VA	6 VA
Depth	43 mm		61 mm
Keys	1, silicone		
NTC temperature range	-50,0 °C to +99,9 °C (-58,0 °F to 211 °F)		
PTC temperature range	-50,0 °C to +150 °C (-58,0 °F to 302 °F)		
Display	Red, 3 digits, negative sign and status LEDs		
Resolution	0,1 °C		
Installation	Panel-mounted with anchors		
Working temperature	-10 to 50 °C, humidity <90 %		
Storage temperature	-30 to 70 °C, humidity <90 %		
Connection	Connections via screw terminals. Cables up to 2.5 mm ²		

3.1- Front panel and fixing:



Wiring diagram [page 8](#)

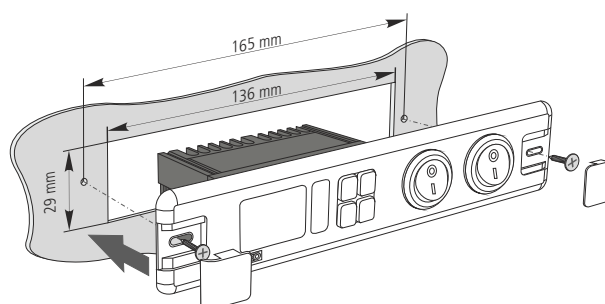
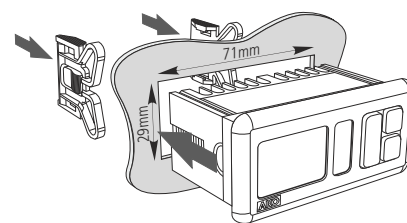
4 - 1 relay controller

- Ideal for positive service (temperatures above 3 °C) and static refrigerated units with positive temperature.
- HOT/COLD operation selectable by program.
- Wizard to simplify startup with the 8 most common applications (soft drinks, fruit and vegetables, frozen, etc.)
- Defrost by compressor shutdown.
- Temperature display in °C or °F with decimal point.
- NTC/PTC probe selectable by program. Allows probe calibration.
- Configurable digital inputs (door, external alarm, severe external alarm, remote defrosting, ECO mode, or rapid cooling).
- Integrated communications (depending on model).
- 1 NTC probe included (except model **AKO-14125**).

	AKO-D14120	AKO-D14123	AKO-D10123	AKO-D14125	AKO-D14112	AKO-D14123-2	AKO-D14123-2-RC
Input							
NTC/PTC Probe	1	1	1	1	1	1	1
NTC/PTC Probe or digital in. ¹	–	–	–	–	1	1	1
Digital input	–	–	–	–	1	1	1
Outputs (according to EN60730-1)							
16 A control relay [rest. (induc.)]	Simple SPST 12(9) A	Simple SPST 12(9) A	Simple SPST 12(9) A	Simple SPST 12(9) A	Double throw SPDT 12(9) A	–	–
2 VA control relay [rest. (induc.)]	–	–	–	–	–	Double throw SPDT 16(10) A	Double throw SPDT 16(10) A
Options							
Integrated Communications	–	–	–	–	–	–	RS485 Modbus RTU
Real Time Clock	–	–	–	–	–	–	Yes
Technical Features							
Protection degree	IP65	IP65	IP50	IP65	IP65	IP65	IP65
Panel cutout dimensions	71 x 29 mm	71 x 29 mm	136 x 29 mm	71 x 29 mm	71 x 29 mm	71 x 29 mm	71 x 29 mm
Front panel dimensions	79 x 38 mm	79 x 38 mm	181 x 29 mm	79 x 38 mm	79 x 38 mm	79 x 38 mm	79 x 38 mm
Power supply	120 V 50/60 Hz	230 V 50/60 Hz	230 V 50/60 Hz	230 V 50/60 Hz	12/24 V≈	230 V 50/60 Hz	90-240 V 50/60 Hz
Power consumption	4 VA	3.5 VA	3.5 VA	3.5 VA	2.5 VA	3.5 VA	7 VA
Depth	43 mm				61 mm		
Keys	3, silicone				4, silicone		
NTC temperature range	-50,0 °C to +99,9 °C (-58,0 °F to 211 °F)						
PTC temperature range	-50,0 °C to +150 °C (-58,0 °F to 302 °F)						
Display	Red, 3 digits, negative sign and status LEDs						
Resolution	0,1 °C						
No. control relays	100.000 operations according to EN60730-1						
Installation	Panel-mounted with anchors						
Work temperature	-10 to 50 °C, humidity <90 %						
Storage temperature	-30 to 70 °C, humidity <90 %						
Connection	Connections via screw terminals. Cables up to 2.5 mm ²						

¹ Input configurable as probe or digital input

4.1- Front panel and fixing:



Wiring diagram [page 8](#)

5- 2 relay controllers

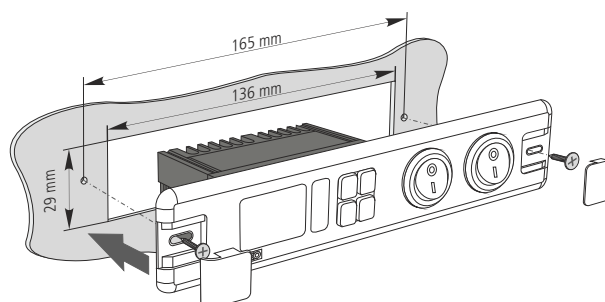
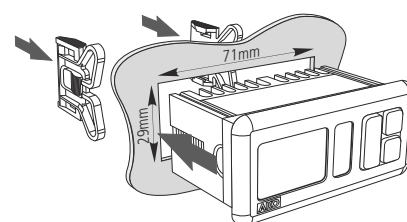
- Ideal for positive service (temperatures above 3 °C) with air defrosting, ventilated refrigerated units with a positive temperature and static refrigerated units with a negative temperature.
- Defrost by compressor shutdown, air, resistance, and cycle reversal.
- Auxiliary relay configurable for fans, defrost, alarm or light.
- Temperature display in °C or °F with decimal point.

- Wizard to simplify startup with the 7 most common applications (soft drinks, fruit and vegetables, frozen, etc.).
- NTC/PTC probe selectable by program. Allow calibration of probe 1.
- Configurable digital inputs (door, external alarm, severe external alarm, remote defrosting, ECO mode, or rapid cooling).
- Includes 1 NTC probe

	AKO-D14212	AKO-D14220	AKO-D14223	AKO-D10223
Inputs				
NTC/PTC Probe	1	1	1	1
NTC/PTC Probe or Digital input ¹	1	1	1	1
Digital input	1	1	1	1
Outputs (according to EN60730-1)				
16 A control relay [rest. (induc.)]	Double throw SPDT 12(9) A			
8 A auxiliary relay [resist. (induc.)]	Double throw SPDT 8(4) A			
Technical Features				
Protection degree	IP65		IP65	IP50
Panel cutout dimensions	71 x 29 mm			136 x 29 mm
Front panel dimensions	79 x 38 mm			181 x 38 mm
Power supply	12 V _≈	120 V 50/60 Hz	230 V 50/60 Hz	
Power consumption	2 VA	4 VA	3.75 VA	
Depth	61 mm			
Keys	4, silicone			
NTC temperature range	-50,0 °C to +99 °C (-58,0 °F to 211 °F)			
PTC temperature range	-50,0 °C to +150 °C (-58,0 °F to 302 °F)			
Display	Red, 3 digits, negative sign and status LEDs			
Resolution	0,1 °C			
No. control relays	100.000 operations according to EN60730-1			
Installation	Panel-mounted with anchors			
Work temperature	-10 to 50 °C, humidity <90 %			
Storage temperature	-30 to 70 °C, humidity <90 %			
Connection	Connections via screw terminals. Cables up to 2.5 mm ²			

¹ Input configurable as probe or digital input

5.1- Front panel and fixing:



Wiring diagram [page 8](#)

6- 3 relay controllers

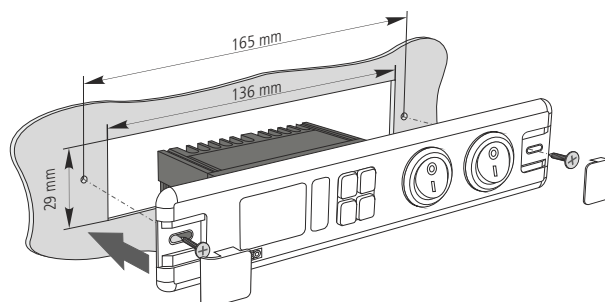
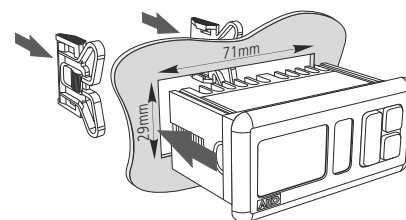
- Ideal for negative or positive service, ventilated refrigerated units with positive or negative temperature.
- Auxiliary relay configurable for fans, defrost, alarm or light.
- Wizard to simplify startup with the 7 most common applications (soft drinks, fruit and vegetables, frozen, etc.)
- Defrost by compressor shutdown, air, resistance, and cycle reversal.

- Temperature display in °C or °F with decimal point.
- NTC/PTC probe selectable by program. Allow calibration of probe 1.
- Configurable digital inputs (door, external alarm, severe external alarm, remote defrosting, ECO mode, or rapid cooling).
- Integrated communication (depending on model).
- 1 NTC probe included.

	AKO-D14312	AKO-D14320	AKO-D14323	AKO-D10323	AKO-D14323-C
Inputs					
NTC/PTC Probe			1		
NTC/PTC Probe or Digital input ¹			1		
Digital input			1		
Outputs (according to EN60730-1)					
16 A control relay [rest. (induc.)]			Double throw SPDT 12(9) A		
6 A fan relay [resist. (induc.)]			Simple SPST 5(4) A		
8 A auxiliary relay [resist. (induc.)]			Simple SPST 8(4) A		
Options					
Integrated communications	–	–	–	–	RS485 Modbus RTU
Technical Features					
Protection degree	IP65	IP65	IP65	IP50	IP65
Panel cutout dimensions	71 x 29 mm	71 x 29 mm	71 x 29 mm	136 x 29 mm	71 x 29 mm
Front panel dimensions	79 x 38 mm	79 x 38 mm	79 x 38 mm	181 x 38 mm	79 x 38 mm
Power supply	12 V _≈	120 V 50/60 Hz	230 V 50/60 Hz		90-240 V 50/60 Hz
Power consumption	2 VA	4 VA	3.75 VA		7 VA
Depth	61 mm				
Keys	4, silicone				
NTC temperature range	-50,0 °C to +99,9 °C (-58,0 °F to 211 °F)				
PTC temperature range	-50,0 °C to +150 °C (-58,0 °F to 302 °F)				
Display	Red, 3 digits, negative sign and status LEDs				
Resolución	0,1 °C				
No. control relays	100.000 operations according to EN60730-1				
Installation	Panel-mounted with anchors				
Work temperature	-10 to 50 °C, humidity <90 %				
Storage temperature	-30 to 70 °C, humidity <90 %				
Connection	Connections via screw terminals. Cables up to 2.5 mm ²				

¹ Input configurable as probe or digital input

6.1- Front panel and fixing:



Wiring diagram [page 9](#)

7- 4 relay controllers

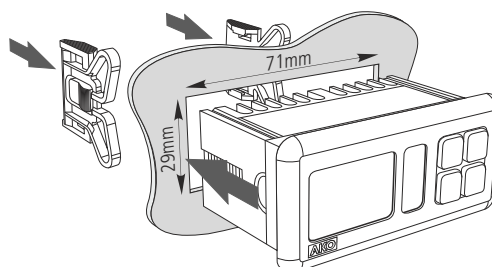
- Ideal for positive or negative service, ventilated refrigerated units with positive or negative temperature.
- Auxiliary relay configurable for fans, defrost, alarm or light.
- Wizard to simplify startup with the 7 most common applications (soft drinks, fruit and vegetables, frozen, etc.)
- Defrost by compressor shutdown, air, resistance, and cycle reversal.

- Temperature display in °C or °F with decimal point
- NTC/PTC probe selectable by program. Allow calibration of probe 1.
- Configurable digital inputs (door, external alarm, severe external alarm, remote defrost mode, ECO or rapid cooling)
- Integrated communications (depending on model).
- 1 NTC probe included.

	AKO-D14412	AKO-D14412-RC	AKO-D14420	AKO-D14423	AKO-D14423-P	AKO-D14423-RC / AKO-D14423-P-RC
Inputs						
NTC/PTC Probe				1		
NTC/PTC Probe or Digital input ¹				2		
Outputs (according to EN60730-1)						
6 A compressor relay [rest. (induc.)]				Simple SPST 5(4) A		
6 A fan relay [resist. (induc.)]				Simple SPST 5(4) A		
6 A defrost relay [rest. (induc.)]				Simple SPST 5(4) A		
8 A auxiliary relay [resist. (induc.)]				Simple SPST 5(4) A		
Options						
Integrated communications	No	RS485 Modbus RTU	No	No	No	RS485 Modbus RTU
Real Time Clock	No	Yes	No	No	No	Yes
Technical Features						
Protection degree				IP65		
Panel cutout dimensions				71 x 29 mm		
Front panel dimensions				79 x 38 mm		
Power supply	12 V _≈	12 V _≈	120 V 50/60 Hz	230 V 50/60 Hz	90-240 V 50/60 Hz	90-240 V 50/60 Hz
Power consumption	2 VA	3 VA	4 VA	3.75 VA	7 VA	7 VA
Depth				61 mm		
Keys				4, silicone		
NTC temperature range				-50,0 °C to +99,9 °C (-58,0 °F to 211 °F)		
PTC temperature range				-50,0 °C to +150 °C (-58,0 °F to 302 °F)		
Display				Red, 3 digits, negative sign and status LEDs		
Resolution				0,1 °C		
No. control relays				100.000 operations according to EN60730-1		
Installation				Panel-mounted with anchors		
Work temperature				-10 to 50 °C, humidity <90 %		
Storage temperature				-30 to 70 °C, humidity <90 %		
Connection				Connections via screw terminals. Cables up to 2.5 mm ²		

¹ Input configurable as probe or digital input

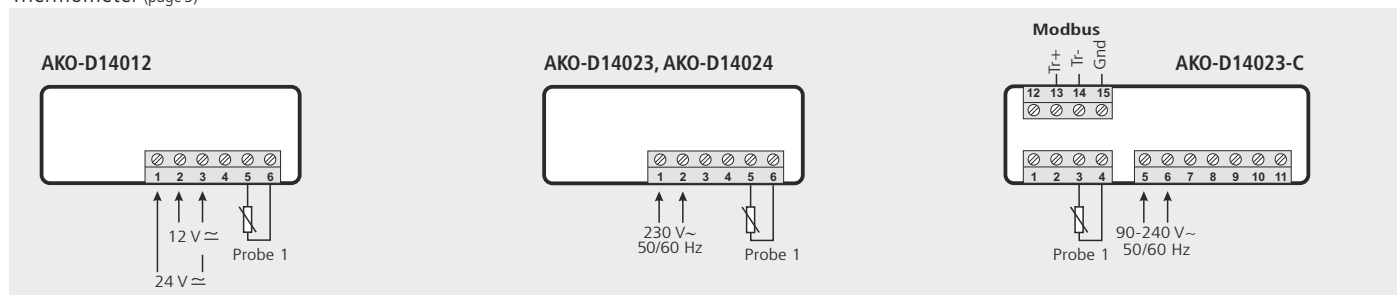
7.1- Front panel and fixing:



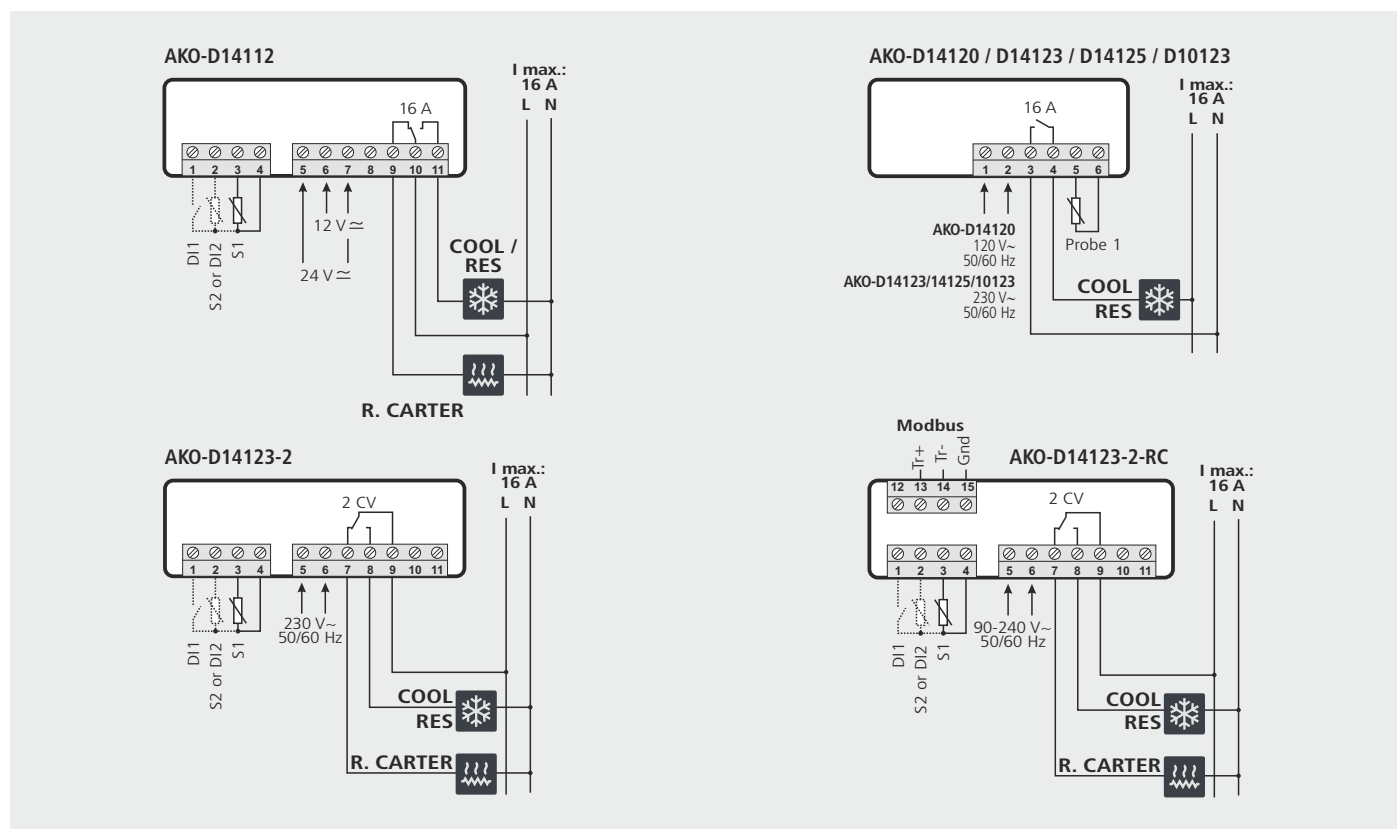
Wiring diagram [page 9](#)

8 - Wiring diagrams

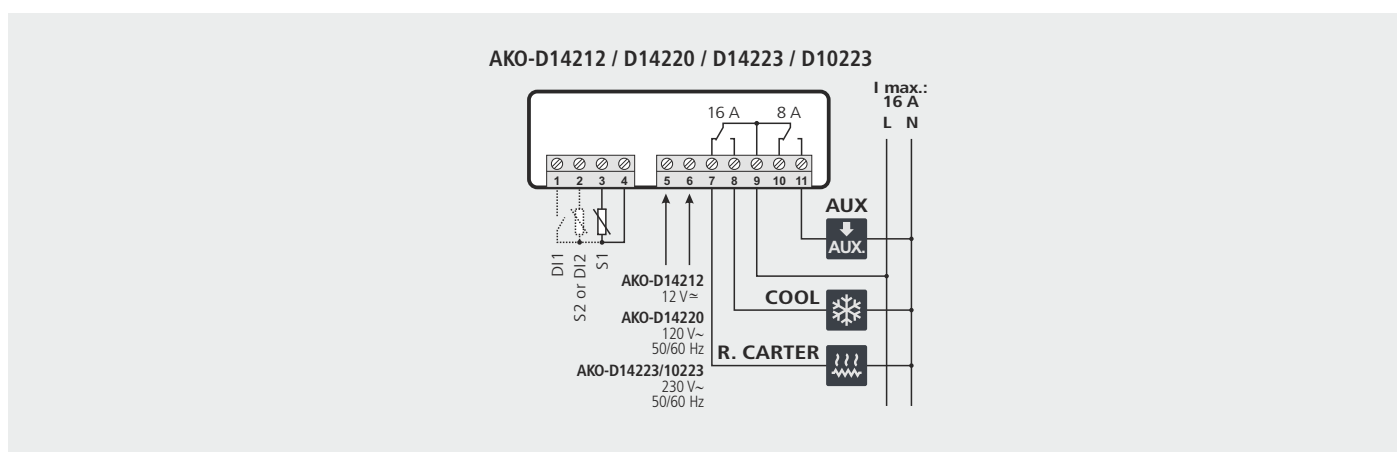
Thermometer (page 3)



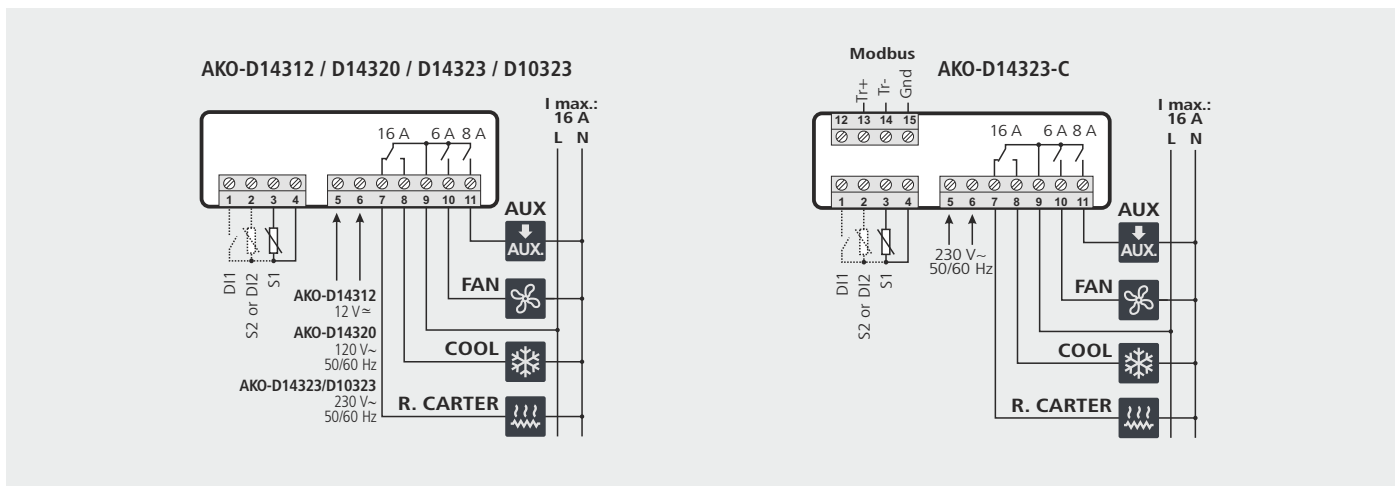
1 relay controller (page 4)



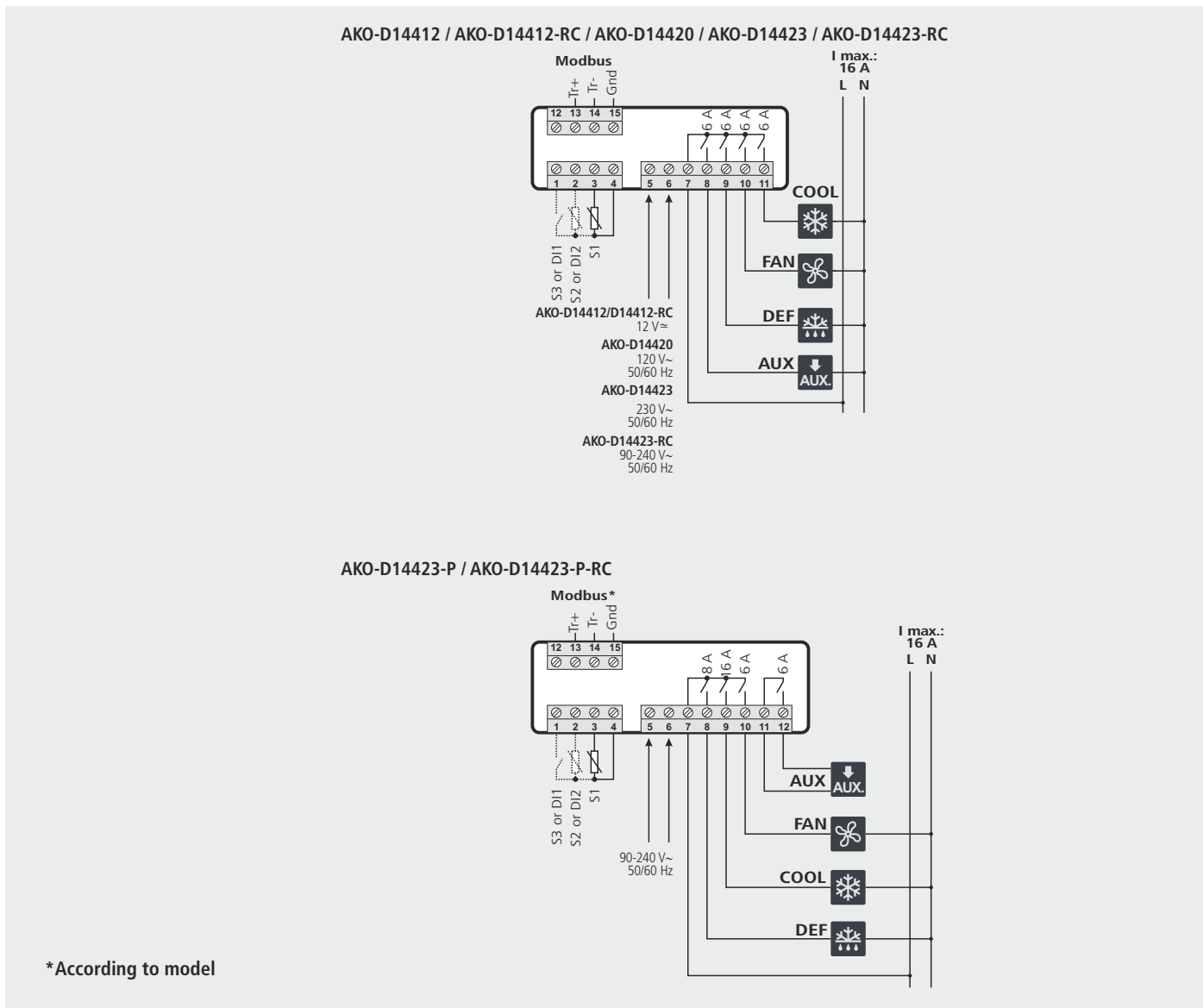
2 relay controllers (page 5)



3 relay controllers (page 6)



4 relay controllers (page 7)



*According to model



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