

# 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 <sup>(a)</sup>	Room temperature/ End of defrost 2 <sup>(b)</sup>	Digital input 1 <sup>(b)</sup>	Digital input 2 <sup>(a)</sup>	Power supply	Real Time Clock	Integrated Communication	Depth 43 mm	Depth 61mm	Standar	Extended (+ 2 switches)
<b>Thermometers</b>																
AKO-D14012	-	-	-	-	NTC/PTC	-	-	-	-	12/24 V	-	-	•	-	•	-
AKO-D14023	-	-	-	-	NTC/PTC	-	-	-	-	230 V	-	-	•	-	•	-
AKO-D14023-C	-	-	-	-	NTC/PTC	-	-	-	-	90-260 V	-	•	-	•	•	-
<b>1-relay drivers</b>																
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	-	•	•	90-260 V	•	•	-	•	•	-
AKO-D14125	16 A	-	-	-	NTC/PTC	-	-	-	-	230 V	-	-	•	-	•	-
<b>2-relay drivers</b>																
AKO-D14212	16 A	-	-	8 A	NTC	NTC	-	•	•	12 V	-	-	-	•	•	-
AKO-D14223	16 A	-	-	8 A	NTC	NTC	-	•	•	230 V	-	-	-	•	•	-
AKO-D10223	16 A	-	-	8 A	NTC	NTC	-	•	•	230 V	-	-	-	•	-	•
<b>3-relay drivers</b>																
AKO-D14312	16 A	-	6 A	8 A	NTC	NTC	-	•	•	12 V	-	-	-	•	•	-
AKO-D14323	16 A	-	6 A	8 A	NTC	NTC	-	•	•	230 V	-	-	-	•	•	-
AKO-D10323	16 A	-	6 A	8 A	NTC	NTC	-	•	•	230 V	-	-	-	•	-	•
AKO-D14323-C	16 A	-	6 A	8 A	NTC	NTC	-	•	•	90-260 V	-	•	-	•	•	-
<b>4-relay drivers</b>																
AKO-D14412-RC	6 A	6 A	6 A	6 A	NTC	NTC	NTC	•	•	12 V	•	•	-	•	•	-
AKO-D14423-RC	6 A	6 A	6 A	6 A	NTC	NTC	NTC	•	•	90-260 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 Relays		
	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-D14223	AKO-D10223	AKO-D14312	AKO-D14323	AKO-D10323	AKO-D14323-C	AKO-D14412-RC	AKO-D14423-RC
<b>Operating modes</b>																			
Cold	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Heat	-	-	-	•	•	•	•	•	•	•	-	-	-	-	-	-	-	-	-
<b>Control</b>																			
Compressor	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Crankcase heater	-	-	-	•	-	-	-	•	•	-	•	•	•	•	•	•	•	-	-
Evaporator fans	-	-	-	-	-	-	-	-	-	-	0	0	0	•	•	•	•	•	•
Defrost	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	•	•
Defrost 2nd fan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0
Alarm	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0
Light	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0
Solenoid (gas collection)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0
<b>Display</b>																			
Temperature	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Output icons	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Error messages	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
<b>Communications</b>																			
Modbus RTU	-	-	•	-	-	-	-	-	•	-	-	-	-	-	-	-	•	•	•
<b>Defrost type</b>																			
Compressor off	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Fan / air	-	-	-	-	-	-	-	-	-	-	0	0	0	•	•	•	•	•	•
Resistors	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	•	•
Inverted cycle	-	-	-	-	-	-	-	-	-	-	0	0	0	0	0	0	0	•	•
<b>Start of defrost</b>																			
By cycles	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
By compressor times	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
By clock (6 programs)	-	-	-	-	-	-	-	-	•	-	-	-	-	-	-	-	-	•	•
On equipment startup	-	-	-	•	-	-	-	•	•	-	•	•	•	•	•	•	•	•	•
<b>Completion of Defrost</b>																			
By maximum time	-	-	-	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
By temperature probe 2	-	-	-	0	-	-	-	0	0	-	0	0	0	0	0	0	0	0	0
By temperature probe 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	0
<b>Operating temperature change</b>																			
Energy saving	-	-	-	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
<b>Alarms</b>																			
Maximum temperature	-	-	-	•	-	-	-	•	•	-	•	•	•	•	•	•	•	•	•
Minimum temperature	-	-	-	•	-	-	-	•	•	-	•	•	•	•	•	•	•	•	•
External alarm by digital input	-	-	-	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
<b>Configurations depending on application</b>																			
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

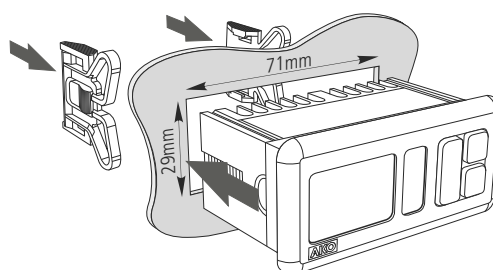
### 3 - Thermometers

- 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
<b>Input</b>			
NTC/PTC Probe	1		
<b>Options</b>			
Integrated Communications	-	-	RS485 Modbus RTU
<b>Technical Features</b>			
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	90-260 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 <sup>2</sup>		

#### 3.1- Front panel and fixing:



Wiring diagram [page 8](#)

## 4 - 1 relay controller

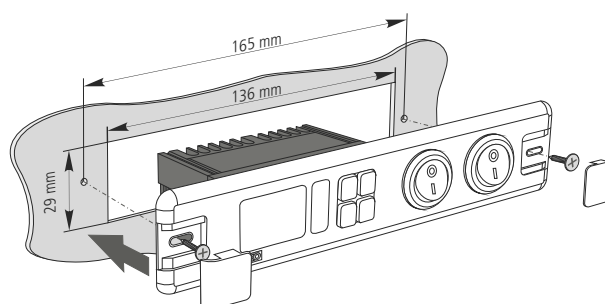
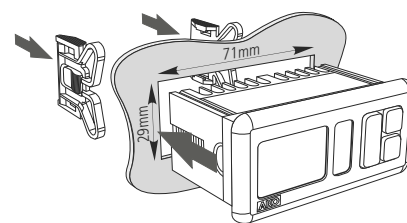
- Ideal for positive service (temperatures above 3 °C) and static refrigerated units with positive temperature.
- HOT/COLD operation selectable by program.
- Wizard to simplify startup with the 8 most common applications (soft drinks, fruit and vegetables, frozen, etc.)
- Defrost by compressor shutdown.

- 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
<b>Input</b>							
NTC/PTC Probe	1	1	1	1	1	1	1
NTC/PTC Probe or digital in. <sup>1</sup>	–	–	–	–	1	1	1
Digital input	–	–	–	–	1	1	1
<b>Outputs (according to EN60730-1)</b>							
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
<b>Options</b>							
Integrated Communications	–	–	–	–	–	–	RS485 Modbus RTU
Real Time Clock	–	–	–	–	–	–	Si
<b>Technical Features</b>							
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	90-260 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 <sup>2</sup>						

<sup>1</sup> Input configurable as probe or digital input

### 4.1- Front panel and fixing:



Wiring diagram [page 8](#)

## 5- 2 relay controllers

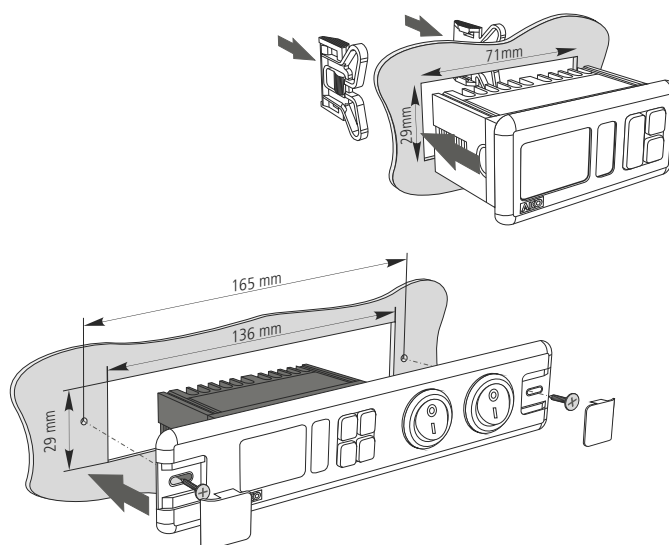
- Ideal for positive service (temperatures above 3 °C) with air defrosting, ventilated refrigerated units with a positive temperature and static refrigerated units with a negative temperature.
- Defrost by compressor shutdown, air, resistance, and cycle reversal.
- Auxiliary relay configurable for fans,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

- Wizard to simplify startup with the 8 most common applications (soft drinks, fruit and vegetables, frozen, etc.).
- NTC probe. 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-D14223	AKO-D10223
<b>Inputs</b>			
NTC Probe	1	1	1
NTC Probe or Digital input <sup>1</sup>	1	1	1
Digital input	1	1	1
<b>Outputs (according to EN60730-1)</b>			
16 A control relay [rest. (induc.)]	Double throw SPDT 12(9) A	Double throw SPDT 12(9) A	Double throw SPDT 12(9) A
8 A auxiliary relay [resist. (induc.)]	Double throw SPDT 8(4) A	Double throw SPDT 8(4) A	Double throw SPDT 8(4) A
<b>Technical Features</b>			
Protection degree	IP65	IP65	IP50
Panel cutout dimensions	71 x 29 mm	71 x 29 mm	136 x 29 mm
Front panel dimensions	79 x 38 mm	79 x 38 mm	181 x 38 mm
Power supply	12 V <sub>≈</sub>	230 V 50/60 Hz	
Power consumption	2 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)		
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 <sup>2</sup>		

<sup>1</sup> Input configurable as probe or digital input

### 5.1- Front panel and fixing:



Wiring diagram [page 8](#)

## 6- 3 relay controllers

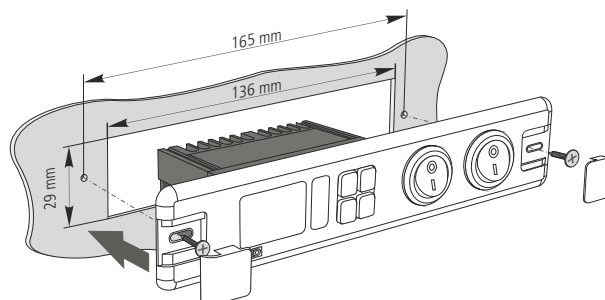
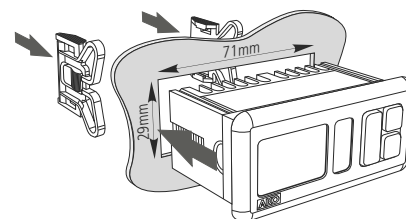
- Ideal for negative or positive service, ventilated refrigerated units with positive or negative temperature.
- Auxiliary relay configurable for fans, defrost, alarm or light.
- Wizard to simplify startup with the 8 most common applications (soft drinks, fruit and vegetables, frozen, etc.)
- Defrost by compressor shutdown, air, resistance, and cycle reversal.

- Temperature display in °C or °F with decimal point.
- NTC probe. 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-D14323	AKO-D10323	AKO-D14323-C
<b>Inputs</b>				
NTC Probe	1	1	1	1
NTC Probe or Digital input <sup>1</sup>	1	1	1	1
Digital input	1	1	1	1
<b>Outputs (according to EN60730-1)</b>				
16 A control relay [rest. (induc.)]	Double throw SPDT 12(9) A	Double throw SPDT 12(9) A	Double throw SPDT 12(9) A	Double throw SPDT 12(9) A
6 A fan relay [resist. (induc.)]	Simple SPST 5(4) A	Simple SPST 5(4) A	Simple SPST 5(4) A	Simple SPST 5(4) A
8 A auxiliary relay [resist. (induc.)]	Simple SPST 8(4) A	Simple SPST 8(4) A	Simple SPST 8(4) A	Simple SPST 8(4) A
<b>Options</b>				
Integrated communications	–	–	–	RS485 Modbus RTU
<b>Technical Features</b>				
Protection degree	IP65	IP65	IP50	IP65
Panel cutout dimensions	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	181 x 38 mm	79 x 38 mm
Power supply	12 V <sub>~</sub>	230 V 50/60 Hz	230 V 50/60 Hz	90-260 V 50/60 Hz
Power consumption	2 VA	3.75 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)			
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 <sup>2</sup>			

<sup>1</sup> Input configurable as probe or digital input

### 6.1- Front panel and fixing:



Wiring diagram [page 9](#)

## 7- 4 relay controllers

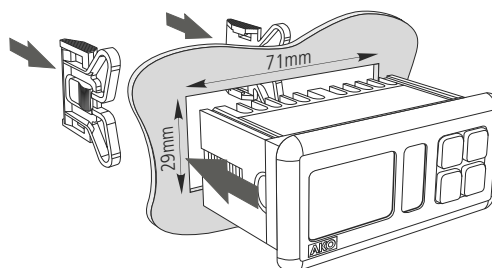
- Ideal for positive or negative service, ventilated refrigerated units with positive or negative temperature.
- Auxiliary relay configurable for fans, defrost, alarm or light.
- Wizard to simplify startup with the 8 most common applications (soft drinks, fruit and vegetables, frozen, etc.)
- Defrost by compressor shutdown, air, resistance, and cycle reversal.

- Temperature display in °C or °F with decimal point
- NTC probe. 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-RC	AKO-D14423-RC
<b>Inputs</b>		
NTC Probe		1
NTC Probe or Digital input <sup>1</sup>		2
<b>Outputs (according to EN60730-1)</b>		
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
<b>Options</b>		
Integrated communications		RS485 Modbus RTU
Real Time Clock		Si
<b>Technical Features</b>		
Protection degree	IP65	IP65
Panel cutout dimensions	71 x 29 mm	71 x 29 mm
Front panel dimensions	79 x 38 mm	79 x 38 mm
Power supply	12 V <sub>~</sub>	90-260 V 50/60 Hz
Power consumption	2.5 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)	
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 <sup>2</sup>	

<sup>1</sup> Input configurable as probe or digital input

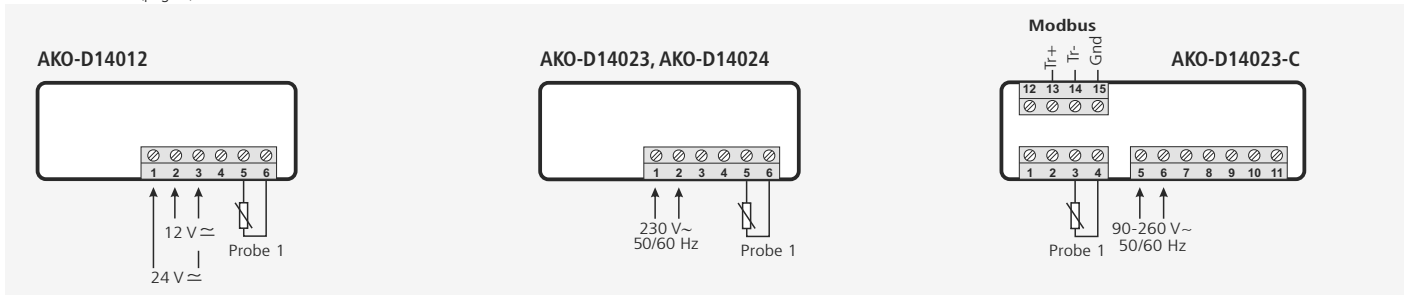
### 7.1- Front panel and fixing:



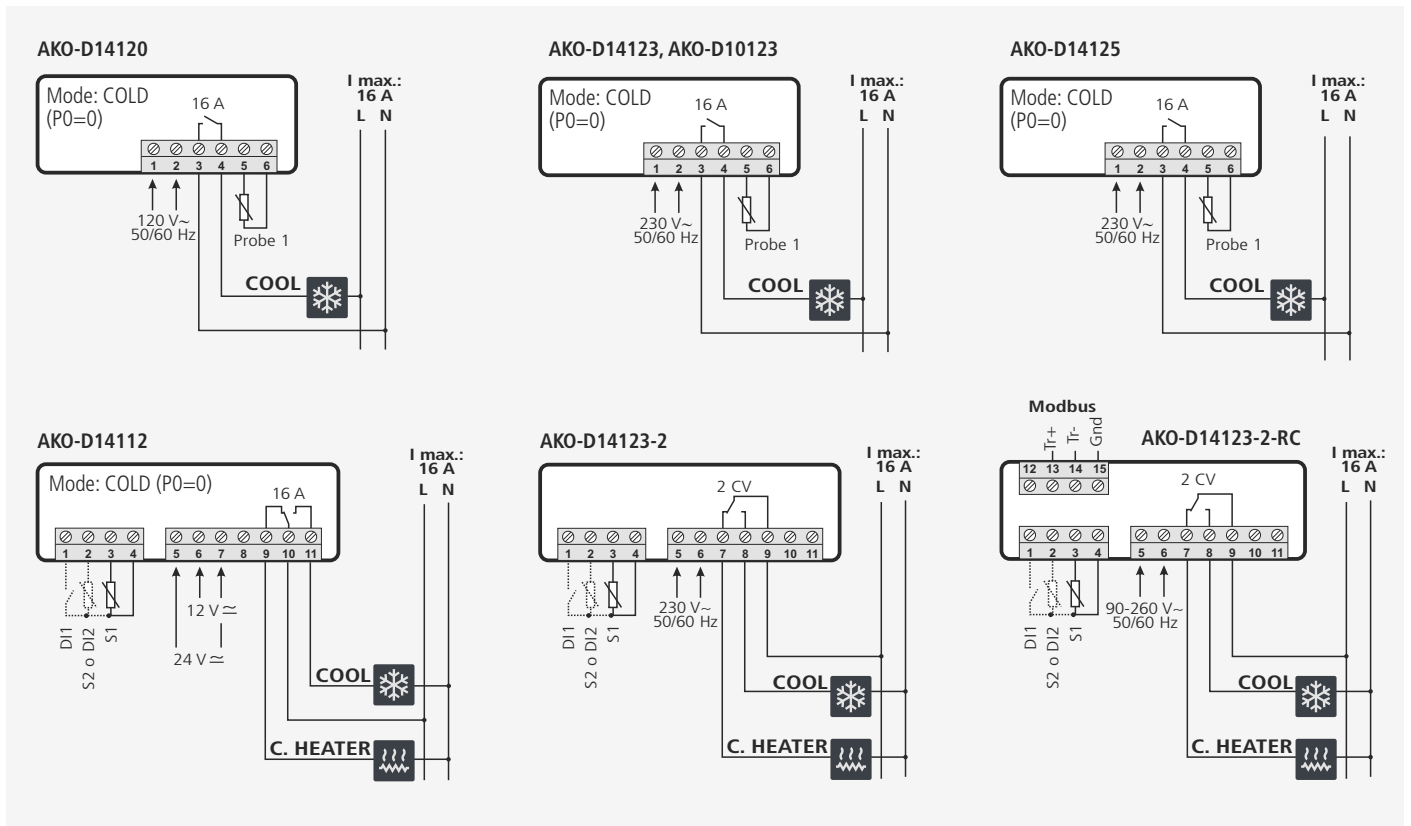
Wiring diagram [page 9](#)

## 8 - Wiring diagrams

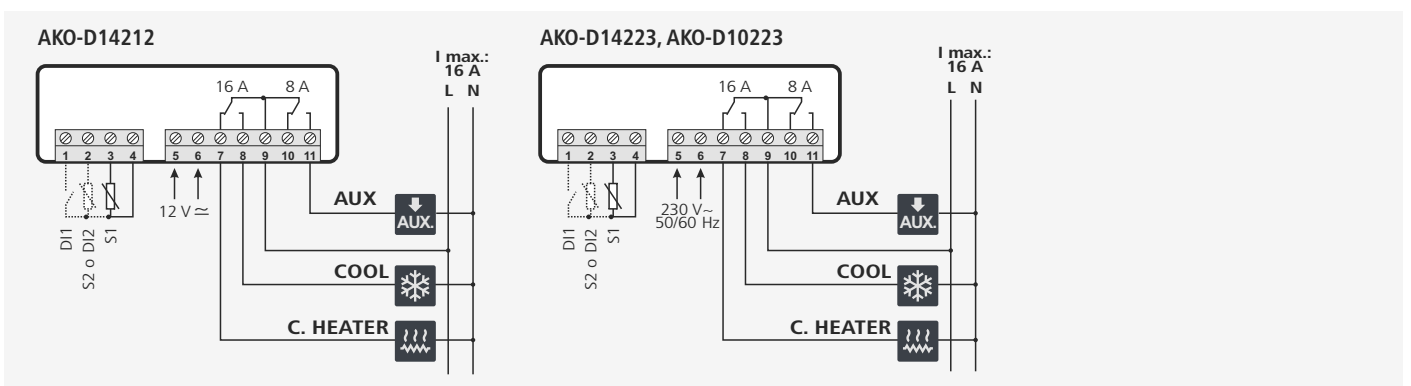
### Thermometer (page 3)



### 1 relay controller (page 4)

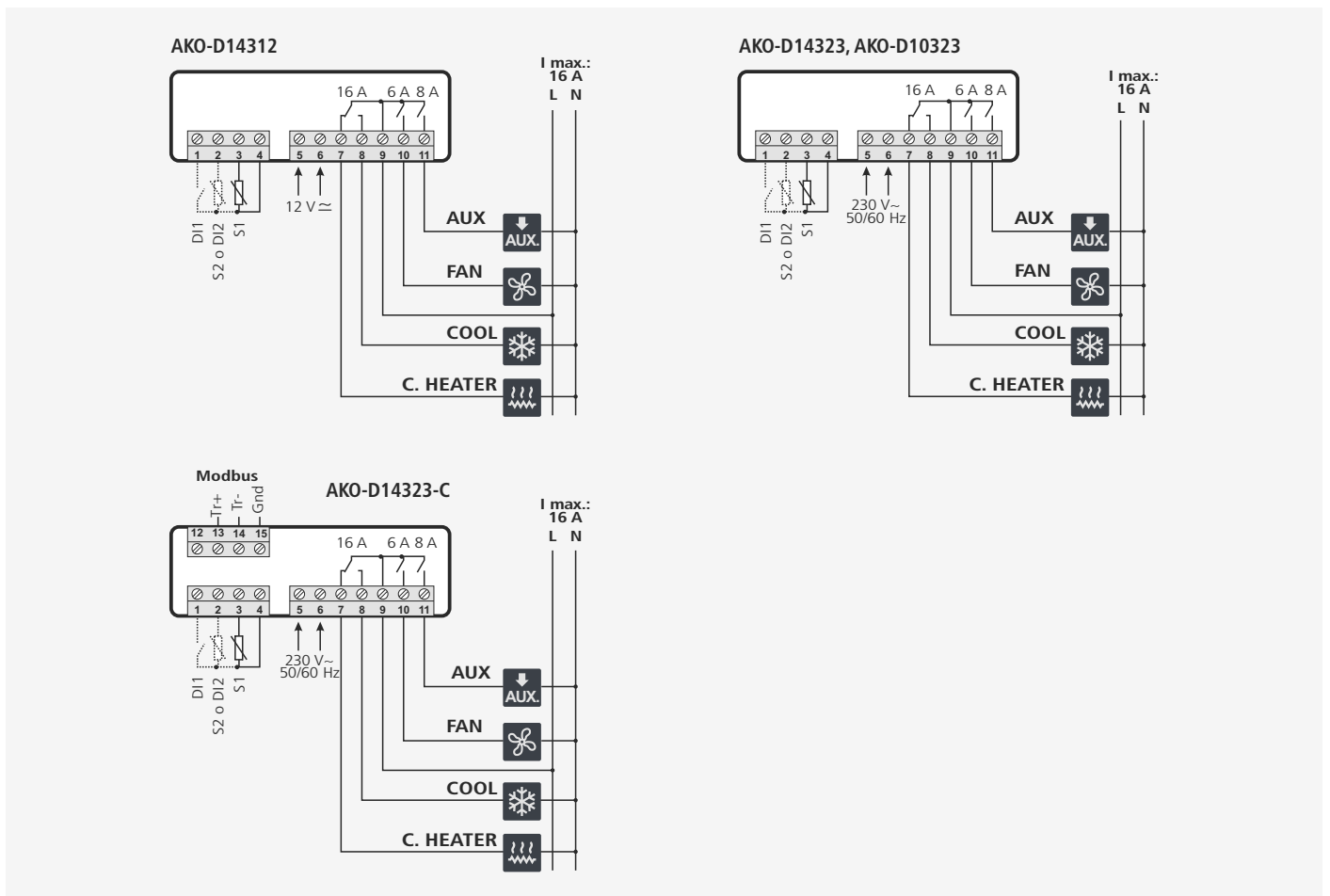


### 2 relay controllers (page 5)





3 relay controllers (page 6)



4 relay controllers (page 7)

