CE CAMCtrl Plus Temperature Controller

Controller with magnetic switch for service operation.
Electric panels for controlling and operating evaporator for refrigeration services with condenser equipments that already include an electric panel for power and operating of the compressor and condenser.
To control refrigeration services with the following elements: liquid solenoid, single-phase evaporator fans, air or electric defrosting.
Temperature register incorporated (1 channel). Switch for refrigerator interior light.
Buzzer and relay alarm signal. Graphic display.


AKO-15641


AKO-15642


AKO-15643

1- Warnings

Using the controller without following the manufacturer's instructions may alter its safety requirements.
To ensure correct operation of the apparatus, only NTC type probes supplied by AKO should be used. Between –40 °C and +20 °C, when the probe is extended up to 1000 m with minimum 0,5 mm² cable, deviation will be less than 0.25 °C (probe extension cable ref. **AKO-15586**)
The **AKO-5004** software will identify any of the 3 models as "**AKO-15633**".

2- Versions and References

Model	Fan	Sole-noid	Air	Defrosting		Power supply
				230V/I	400V/III	
AKO-15641	475W	230V	Si	-	-	230V~ +10% -15% 50/60Hz ± 3Hz
AKO-15642	475W	230V	-	2.500W	-	230V~ +10% -15% 50/60Hz ± 3Hz
AKO-15643	475W	230V	-	-	5.500W	230V~ +10% -15% 50/60Hz ± 3Hz

3- Installation

The controller should be installed in a place protected from vibrations, water and corrosive gases, and where ambient temperature does not exceed the value specified in the technical data.
In order for the controllers to have IP65 protection degree, the gasket should be properly installed between the apparatus and the perimeter of the panel cut-out where it is to be fitted.
In order to give a correct reading, the probe should be installed in a place without heat influences other than the temperature that is to be measured or controlled.

3.1 Wall Mounting

- Remove cover T from the equipment (Fig.1)
- Open the equipment and separate the front part of the housing (Fig.2).
- Drill the holes for the glands that are necessary for the cables to pass through, guided by the pre-cut centres on the sides of the housing.
- Drill 3 holes for anchoring the housing at the centres indicated 1, 2, 3 (Fig.3)
- Drill 3 holes in the wall, in accordance with the anchoring holes made previously in the equipment.
- Anchor the glands to the equipment.
- Insert and tighten the 3 screws+plug through the housing, on the 3 holes drilled in the wall.
- Pass the cable through the glands.
- Connect to connector strip B.
- Mount the front part on the housing (Fig.2).
- Insert and tighten screws D and F (Fig. 1).
- Connect to connector strip A.
- To facilitate installation, part of the internal wiring is supplied disconnected: connect according to Figure 5.
- Close cover T, insert and tighten screws A and C (Fig. 1).

3.2 Panel Mounting (maximum panel thickness: 3mm)

- Remove cover T from the equipment (Fig.1)
- Open the equipment and separate the front part of the housing (Fig.2).
- Replace the joint installed at the front by the panelling joint, ensuring that it is in the right position.
- Make an opening in the panel with the dimensions indicated (Fig.4).
- Drill the holes for the glands that are necessary for the cables to pass through, guided by the pre-cut centres on the sides of the housing.
- Finish drilling holes G and J with a 4 mm bit. (Fig.3)
- Anchor the glands to the equipment.
- Pass the cable through the glands.
- Connect to connector strip B.
- Attach the front to the housing, through the panel and tighten the 45 mm screws through holes D, E, F, G H, J (Fig.1 and Fig.3).
- Connect to connector strip A.
- To facilitate installation, part of the internal wiring is supplied disconnected: connect according to Figure 5.
- Close cover T, insert and tighten screws A and C (Fig. 1).

3.4 Connection

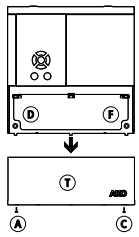


FIG.1

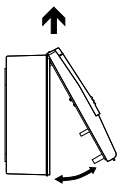


FIG.2

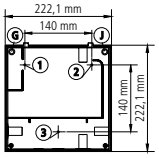


FIG.3

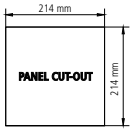


FIG.4

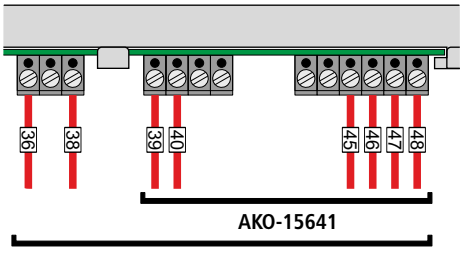
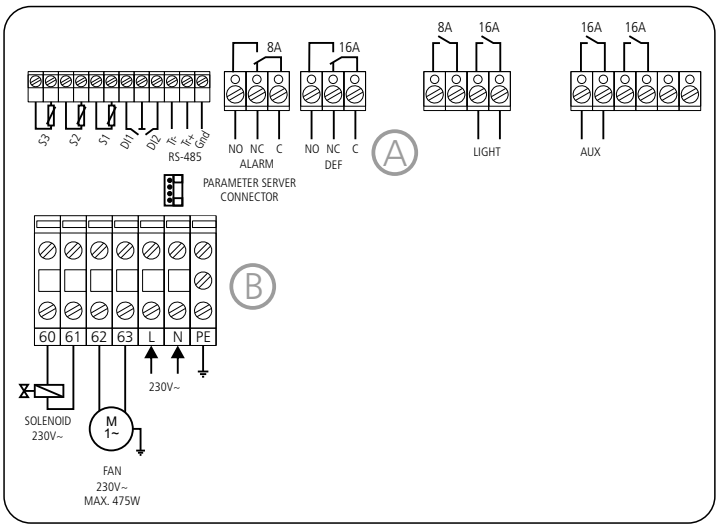


FIG.5

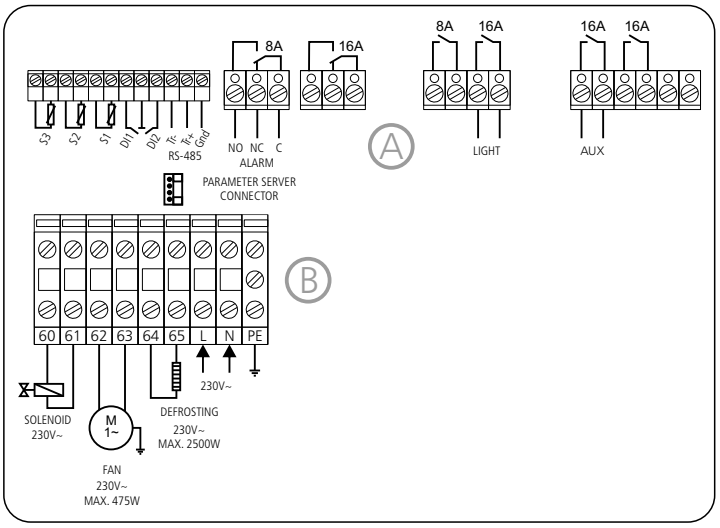
CONNECT THE BATTERIES PRIOR TO STARTING UP THE equipment
The probe and its lead should NEVER be installed in the same ducting as power or control cables.
Always disconnect the power supply when making the connections.
The power-supply circuit should be fitted with a main switch and residual current protection outside the panel (as per R.E.B.T.).
Power supply cables should be H05VV-F 2x2.5 mm² or H05V-K 2x2.5 mm².

IMPORTANT: The function of every probe entry depends on its configuration (See table "Assignment of entries")
To obey EN12830 you must configure the control probe and the register probe seperatly.

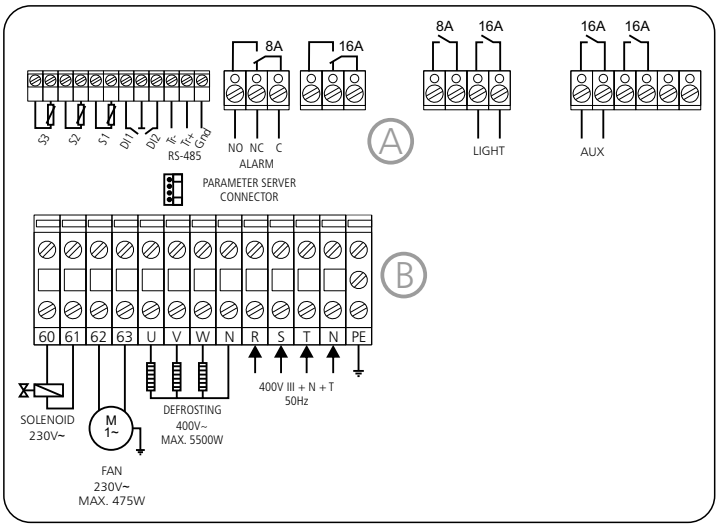
AKO-15641



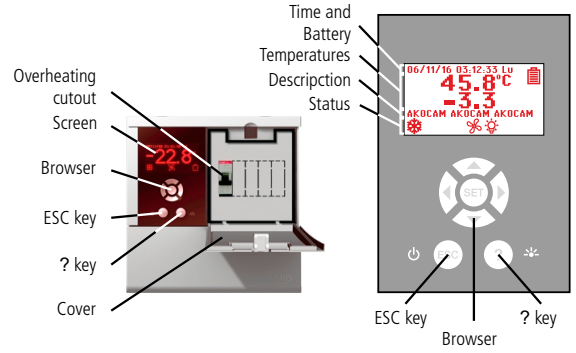
AKO-15642



AKO-15643



4- Front Panel Functions



4.1 Time and Battery

View time in format: YY/MM/DD HH:MM:SS day of the week

Configurable in menu: (CLOCK)

View the status of the equipment battery:

Battery flat Battery charging Battery charged

4.2 Temperatures

View the temperatures of the selected probes in °C or in °F

Configurable in the menu: (GENERAL STATUS)

4.3 Description

This allows a brief description of the facility to be inserted or a name to be given to the equipment.

Configurable by pressing the **SET** + ▶ keys for 5 seconds.

4.4 Status

View the status of the functions performed by the control.

COOL (Compressor)
Permanent: Cooling relay COOL (compressor) energised.
Flashing: Because of the temperature detected by probe 1, the COOL relay should be energised, but is not due to a programmed parameter.

FAN
Permanent: FAN relay energised

DEFROST
Permanent: Indicates defrosting in operation.

DEFROST ENDED BY TIME
Permanent: Indicates last defrost ended by time.

CONTINUOUS CYCLE
Permanent: Indicates that the continuous cycle is active.

ALARM ON
Permanent: Alarm indicator activated.

ALARM MUTED
Flashing: Indicates pressing of a pushbutton after the alarm indication. Alarm relay off.

LIGHTING
Permanent: Indicates that lighting is on.

ENERGY SAVING
Permanent: Indicates that energy saving function is on.

HACCP (Hazard Analysis and Critical Control Point)
Permanent: Indicates that HACCP function is on.
Flashing: HACCP alarm stored.

AUX (Auxiliary)
Flashing: AUX relay activated by key.

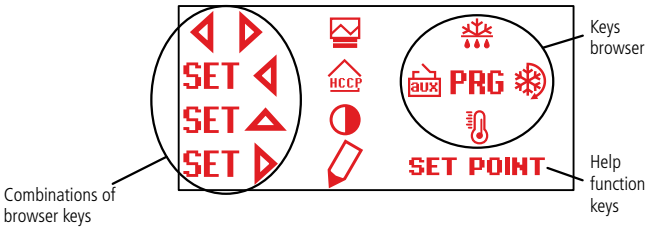
AUX (Auxiliary)
Flashing: AUX relay activated by digital input.

AUX (Auxiliary)
Flashing: AUX relay indicating whether the equipment is connected or disconnected.

AUX (Auxiliary)
Flashing: AUX relay operating as a second defrosting device.

AUX (Auxiliary)
Flashing: AUX relay operating as PUMP DOWN.

AUX (Auxiliary)
Flashing: Auxiliary relay active copying relay status for compressor.



4.5 Browser

The key function help screen appears after any key on the browser is pressed

UP key ▲
- When pressed for 5 seconds, manual defrost is activated/deactivated for the programmed duration.
- In programming, it moves the selection upwards.
- In programming, it makes the displayed value increase

LEFT key ◀
- Press to activate / deactivate the AUX relay.
- In programming, it moves the selection to the left.

DOWN key ▼
- When pressed for at least 5 seconds, the SP Set Point temperature is displayed.
- In programming, it moves the selection downwards.
- In programming, it makes the displayed value reduce.

RIGHT key ▶
- When pressed for at least 5 seconds, it activates the CONTINUOUS CYCLE during the time for which it has been programmed.
- Pressing during 5 secondes with the CONTINUOUS CYCLE active, it interrupts the process inmediately.
- In programming, it moves the selection to the right.

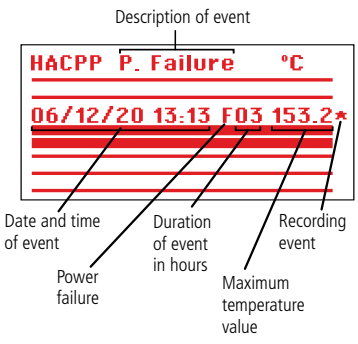
SET key
- When pressed for at least 5 seconds the parameters folder screen is displayed.
- In programming, it accepts the programmed new value.

ESC /
- Accepts the alarms and disconnects alarm outputs.
- Pressing during 5 seconds it turns off the unit leaving it in STAND-BY. The display shows when the unit is disconnected.
- In programming, it permits leaving a parameter without accepting the changes, return to the previous menu and exit programming.

? / key
- By pressing, it turns on/off the lighting relay. The lighting key continues operating even if the unit is on mode.
- In programming, the parameter or selected function help screen is displayed.

SET + ▲ keys (CONTRAST)
- When pressed for at least 5 seconds, the screen contrast can be adjusted. Once inside the contrast adjustment screen, press ▲ or ▼ to increase or reduce the contrast.

SET + ◀ keys (HACCP)
- When pressed for at least 5 seconds, the HACCP (Hazard Analysis and Critical



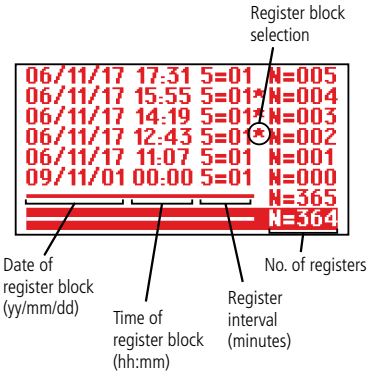
Control Point) events recorder is accessed.

SET + ▶ keys (DESCRIPTION, EDIT TEXT)

- When pressed for at least 5 seconds, it permits the user to enter a brief description of the facility or give a name to the equipment.
  To edit the description press by selecting the character to be entered using the browser keys and press **SET**. Select ▶ in the screen to move the character to be entered to the right or ◀,to the left. Select ▱ to erase a character that has been incorrectly entered. Press 🖫,to save the description.

◀ + ▶ keys (RECORDER)

- When pressed for 5 seconds, the data recorder is accessed.
- The recorder stores the data in 366 blocks of 96 data recorders in each block. There must be at least one probe configurated as record probe. (See table "Assignment of entries")
- Select the desired block using the browser keys. The block is selected by *.
- Press the ▶ key to add the previous block to be displayed or printed to the selection.
- Press the ◀ key to eliminate the block that is not required to be displayed or printed from the selection.

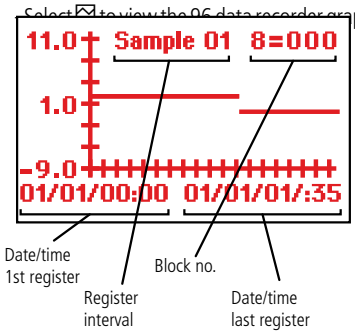


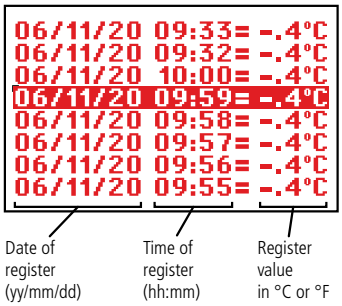
- Press the **SET** key to accept the block selection.

Notes: Only consecutive blocks with the same register interval can be selected

The register frequency is configured through the parameters menu 🔧, specifically, the **Recorder Frequency** parameter.

- Select 🗁 to view the 96 data recorder
- Select 🖻 to view the 96 data recorder graph.





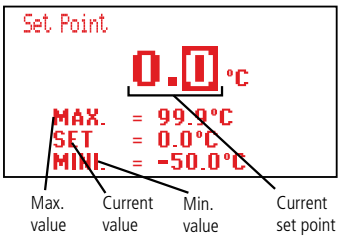
5- Adjustment and Configuration

It should only be programmed or modified by personnel who are fully conversant with the equipment operation and possibilities

5.1 Set Point temperature.

The factory SET POINT default value is 0.0 °C.

- Press ▼ key for 5 seconds to display SET POINT. It displays the current SET POINT value.
- Press the browser keys to change the Set Point to the required value.
- Press **SET** key to accept the new SET POINT. The display returns to the current temperature display status



When **PASSWORD** is displayed, PASSWORD programmed in PASSWORD parameter of 🔧 menu should be entered to access the current SET POINT.

- Press the browser keys to enter the programmed (Password).
- Press **SET** key to accept password. The current SET POINT value will be displayed and it can be already modified.

5.2 Parameter configuration

Level 1 Menus

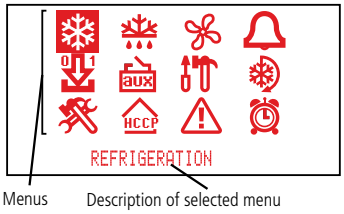
- Press the SET key for 5 seconds to view the MENUS.
- Press the browser keys to select the menu.
- Press the SET key to access the parameters of the selected menu.

If **PASSWORD** appears, enter the access code (password) programmed in the **ACCESS CODE** parameter of the menu 🔧 to access the current adjustment (Set Point).

- Press the browser keys to enter the programmed code (Password).
- Press the **SET** key to accept the code. The menus that can be modified are displayed.

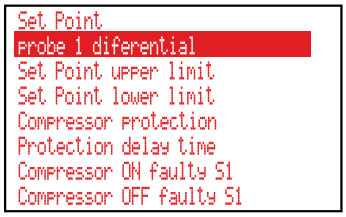
Level 2 Parameters

- In the desired menu of level 1 MENUS, press **SET** key. Level 2 PARAMETERS programming is accessed. The first parameter of the selected menu is displayed on the screen.
- Press the navigation keys to select the parameter.

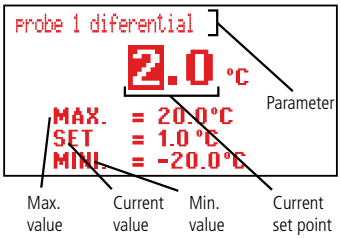


Level 3 Values

- To display the current value of any parameter, select the required one and press **SET** key simultaneously. Once it is displayed, press the browser keys to change the value.
- Press **SET** key to accept the new value. The programming returns to LEVEL 2 PARAMETERS.



REMARK: If no key is pressed for 25 seconds in either of the previous steps, the controller will automatically return to the CURRENT TEMPERATURE display status without modifying any of the parameters values.



6- Description of Parameters and Messages

Values in the **Def.** column are factory-set.

Level 1	Menus and Description					
❄	**Level 2**	**REFRIGERATION control (Compressor)**				
	Level 3	**Description**	**Values**	**Mín.**	**Def.**	**Máx.**
		Set Point	(°C/°F)	-40.0	0.0	99.9
		probe 1 differential (Hysteresis)	(°C/°F)	0.1	1.0	20.0
		Calibration of probe 1	(°C/°F)	-20,0	0,0	20,0
		Set Point upper limit (°C/°F) (It cannot be set above this value)	(°C/°F)	-40.0	99.9	320
		Set Point lower limit (°C/°F) (It cannot be set below this value)	(°C/°F)	-40.0	-40.0	320
		Compressor protection delay type: OFF/ON (From the last switch-off) ON (At switch-on)		off/on	off/on	on
		Compressor protection delay time	(min.)	0	0	255
		"COOL" (Compressor) relay time in ON in case of faulty probe 1 (If 0 the relay will always be OFF disconnected)	(min.)	0	10	255
		"COOL" (Compressor) relay time in ON in case of faulty probe 1 (If 0 the relay will always be OFF disconnected)	(min.)	0	5	255
		Compressor stops when opening door? (NO= Connected) (YES=Disconnected)		No	No	Yes
❄	**Level 2**	**DEFROST control**				
	Level 3	**Description**	**Values**	**Mín.**	**Def.**	**Máx.**
		Defrost type: (Electrical heater) (Reverse cycle)			EH	
		Defrost count (Frequency) (Compressor operation sum) (RTC: Real time clock)			Fre.	
		Defrost frequency: Elapsed time between 2 starts		0	6	120
		Defrost maximum duration		0	30	255
		Type of message during defrost: (Current temperature display) (Defrost start temperature display) (Display DEFROST message)			Def.	
		Message maximum duration Time added at the end of defrost	(min.)	0	5	255
		Defrost final temperature by probe 2 If probe 2 is programmed	(°C/°F)	-40.0	8.0	99.9
		Defrost start-up on equipment switch-on:		No	No	Yes
		Defrost start-up delay on equipment switch-on	(min.)	0	0	255
		Signals if defrost ends due to maximum time		No	No	Yes
		Drip time, compressor stops and FAN relay off when defrost ends	(min.)	0	1	255
✱	**Level 2**	**FANS control (Evaporator)**				
	Level 3	**Description**	**Values**	**Mín.**	**Def.**	**Máx.**
		Fans stop temperature by probe 2. If probe 2 is programmed	(°C/°F)	-40.0	4.0	99.9
		probe 2 differential	(°C/°F)	0.1	1.0	20.0
		Stop fans when compressor stops? (NO= connected) (YES=disconnected)		No	No	Yes

Level 2	FANS control (Evaporator)				
Level 3	Description	Values	Mín.	Def.	Máx.
	Fans status during defrost (Connected) (Disconnected)			Disc.	
	Start-up delay after defrost Operates if it is higher than Drip Time	(min.)	0	3	255
	Compressor stops when door opened? (NO= connected) (YES=disconnected)		No	No	Yes
Level 2	**ALARM control (Visual)**				
Level 3	**Description**	**Values**	**Mín.**	**Def.**	**Máx.**
	Configuration of temperature alarms (Relative to SP) (Absolute)			SP	
	Maximum alarm in probe 1	(ºC/ºF)	-40.0	50.0	320
	Minimum alarm in probe 1	(ºC/ºF)	-40.0	50.0	320
	Differential Alarms Temperature	(ºC/ºF)	0.1	1.0	20.0
	Temperature alarm delay from moment at which they should operate due to temperature	(min.)	0	30	255
	Temperature alarm delay in the start-up	(min.)	0	0	255
	Temperature alarm delay from the end of a defrost	(min.)	0	0	255
	Temperature alarm delay from digital input disabling If programmed as "Door contact"	(min.)	0	0	255
	Temperature alarm delay from digital input enabling If programmed as "Door contact"	(min.)	0	0	255
	Alarm relay Status (Connected) (Disconnected)			Con.	
Level 2	**DIGITAL INPUTS**				
Level 3	**Description**	**Values**	**Mín.**	**Def.**	**Máx.**
	Digital Input Nº1 configuration (Disabled) (Door Contact) (External alarm) (Severe external alarm) (Remote defrost) (Remote Energy saving) (Auxiliary activation) (Low pressure input) (Thermostat control)			Dis.	
	Alarm delay of digital Input Nº1	(min.)	0	0	255
	Polarity of digital input Nº1 (Normally open) (Normally closed)			NO.	
	Digital input Nº2 configuration (Disabled) (Door Contact) (External alarm) (Severe external alarm) (Remote defrost) (Remote Energy saving) (Auxiliary activation) (Low pressure input) (Thermostat control)			Dis.	
	Alarm delay of digital input Nº2	(min.)	0	0	255
	Polarity of digital input Nº2 (Normally open) (Normally closed)			NO.	
	Inact. with door open (time)	(min.)	0	0	255
	Cold room light timing	(min.)	0	0	255
Level 2	**AUX RELAY**				
Level 3	**Description**	**Values**	**Mín.**	**Def.**	**Máx.**
	AUX relay configuration (Disabled) (Activated by key) (Activated by input) (Equal state of equipment) (Second Defrost) (Pump down control) (Equal compressor state)			Dis.	
	Defrost 2 maximum duration	(min.)	0	30	255
	Defrost 2 final temperature				
	Defrost 2 Probe (Disabled) (probe 2) (probe 3)			Dis.	
	Pump down duration	(min.)	1	10	255
	Pump down On delay	(seg.)	0	5	60
Level 2	**GENERAL STATUS**				
Level 3	**Description**	**Values**	**Mín.**	**Def.**	**Máx.**
	Access password to parameters and Set Point		0	0	99
	Allocation of password to Set Point			No	
	Initial parameters: (YES, configure in "Def" and exit programming)			No	
	Registry interval	(min.)	0	15	60
	Address for units with communication		0	1	255
	Parameters transfer (Disabled) (Send) (Receive)			Dis.	
	Connected probes (probe 1) (probe 1 + 2) (probe 1 + 3) (probe 1,2 + 3)			S1	
	Probe to be displayed		1	1	3
	Display mode (1 probe + clock) (1 probe + text) (Connected probes + clock + text)			1SC	
	Temperature display unit		ºC	ºC	ºF
	Decimal point			Yes	
	Probe setting (TEM at S1/REG at S3), (TEM and REG at S3) (See table "Assignment of entries")			TEM at S1	
	Delay of all functions on power supply switch on	(min.)	0	0	255
	Type of operation (Direct, Cold) (Reverse, Heat)			Cold	
	Program version (Information)				
Level 2	**CONTINUOUS CYCLE**				
Level 3	**Description**	**Values**	**Mín.**	**Def.**	**Máx.**
	Continuous cycle duration	(h.)	0	1	24
Level 2	**ENERGY SAVING**				
Level 3	**Description**	**Values**	**Mín.**	**Def.**	**Máx.**
	Set Point during energy saving	(ºC/ºF)	-40.0	0	320
	Energy saving duration	(h.)	0	0	24

Level 2	HACCP				
Level 3	Description	Values	Mín.	Def.	Máx.
	Delay in registering a event after a temperature alarm	(min.)	0	0	255
Level 2	**LANGUAGE**				
Level 3	**Description**	**Values**	**Mín.**	**Def.**	**Máx.**
	English				
Level 2	**CLOCK**				
Level 3	**Description**	**Values**	**Mín.**	**Def.**	**Máx.**
	Date (Year Month Day)				
	Time (Week_Day Hour Minute)				
	Defrost 1 (Day Hour Minute)				
	Defrost 2 (Day Hour Minute)				
	Defrost 3 (Day Hour Minute)				
	Defrost 4 (Day Hour Minute)				
	Defrost 5 (Day Hour Minute)				
	Defrost 6 (Day Hour Minute)				
	Defrost 7 (Day Hour Minute)				
	Defrost 8 (Day Hour Minute)				
	Energy saving Start (Day Hour Minute)				

NOTE: When time parameters are modified, the new values are applied when the current cycle is completed. In order for it to have an immediate effect, switch the controller off and then on again.

MESSAGES	
PASSWORD	Password request to enter programming parameters or SET POINT
DEFROST	It indicates defrosting is being carried out.
EXTERNAL ALARM	Flashing with temperature
SEVERE EXT.ALARM	Flashing with temperature
ALARM HIGH TEMP.	**Flashing with temperature** - probe 1 temperature exceeds the parameter programmed in Maximum alarm in probe 1.
ALARM LOW TEMP.	**Flashing with temperature** - The probe 1 temperature is lower than the parameter programmed in Minimum alarm in probe 1
ALARM LOW PRESSURE	**Flashing with temperature** - Low pressure switch error with compressor On
probe 1, 2 or 3 FAILURE	probe 1, 2 ou 3 failure (Open circuit, crossed temp.> 110ºC or temp.<-55ºC)

ASSIGNMENT OF ENTRIES ACCORDING TO CONFIG. OF PROBE

PROBE CONFIGURATION	TEM at S1/REG at S3 (According to EN12830)			Connectors
	Probe 1	Control, alarms and HACCP probe	Input S1	25 and 26
	Probe 2	Defrost probe (or 2º defrost)	Input S2	23 and 24
	Probe 3	Registry probe (or 2º defrost)	Input S3	21 and 22
	TEM+REG at S3			Connectors
	Probe 1	Control, alarms, HACCP and registry probe	Input S3	21 and 22
	Probe 2	Defrost probe (or 2º defrost)	Input S2	23 and 24
	Probe 3	Product core probe (or 2º defrost)	Input S1	25 and 26

7- Parameter Transfer

AKO-14923 portable server, with no power supply, in which parameters programmed in a powered controller can be copied by transfer. Parameters can be transferred again from the server to other identical powered controllers

8- Maintenance

Clean the controller surface with a soft cloth, soap and water. Do not use abrasive detergents, petrol, alcohol or solvents.

Equipment including rechargeable electrical batteries:
This unit includes batteries which must be replaced when the device's autonomy time is below the indicated in the specifications. At the end of the unit's service life the batteries should be disposed of at a selective refuse collection site or returned to the manufacturer.

9- Technical Data

Temperature range . . . . . -40.0 ºC to 99.9 ºC
Resolution, Set Point and differential: . . . . . 0,1 ºC
Thermometric accuracy: . . . . . ± 1 ºC as per EN 12830 and EN 13485
Denomination . . . . . EN 12830, S, A, 1, -40 ºC +40 ºC; EN 13485, S, A, 1, -40 ºC +40 ºC
probe tolerance at 25 ºC: . . . . . ± 0,4 ºC
Input for probe: AKO-149XX
Maximum input power: . . . . . 24 VA
Working ambient temperature: . . . . . 0 ºC to 50 ºC
Ambient storage temperature: . . . . . -30 ºC to 70 ºC
Installation category: . . . . . II as per EN 61010-1
Pollution degree: . . . . . II as per EN 61010-1
Double insulation between the power supply, the secondary circuit and the relay output.
Recorder autonomy in the event of a power failure: . . . . . 48 Hours
Alarm autonomy in the event of a power failure: . . . . . 10 Hours
Battery: . . . . . Li-Polymer for recorder
Internal buzzer

Mounting warnings and electrical diagrams

WARNING!!

Disconnect mains power before performing any operation inside the electric panel.
All wiring must comply with the regulations in force and must be performed by authorized personnel.
Perform only the connections described in the electrical diagrams.
Use of the electrical panel contrary to the manufacturer's instructions may affect its safety requirements.

Working ambient temperature: +5 °C to + 50 °C
Assigned insulation voltage Ui = 440 V~
Electric panels with IP65 protection degree
CEM 1 environment
Connectors for copper conductors
Resistance to short circuits Isc=6 kA

Panel installation:
Do not knock or perform rough movements in the panel.
Perform connections according to installation manual.
The probe and its lead should NEVER be installed in the same ducting as power or control cables.
The earth connectors in the panels are installed to ensure continuity of the earth connection; however, the earth connection is not made by the connector and should be made outside the panel.
The neutral systems are TT or TNS type. The IT system cannot be used. The magneto-thermal protection cutout switches are phase/s + neutral, C curve, ensuring sectioning and protection against voltage spikes.
Close panel when not working on it.
Connection of main switch and residual current protection outside the electric panel as per the electrotechnical regulations for low voltage.

Verifications before panel start-up:
The power voltages and frequencies must be those shown in the table and diagram corresponding to each panel model.
Check that there are no loose parts or foreign bodies on the connections or components.
Check that there is no dust or moisture inside the panel.
Check that all components are properly fastened.
Check that power connection screws are properly tightened.
Check that power conductors are properly connected.
Check that outside lines are properly insulated and do not exert mechanical force on the connections inside the panel.

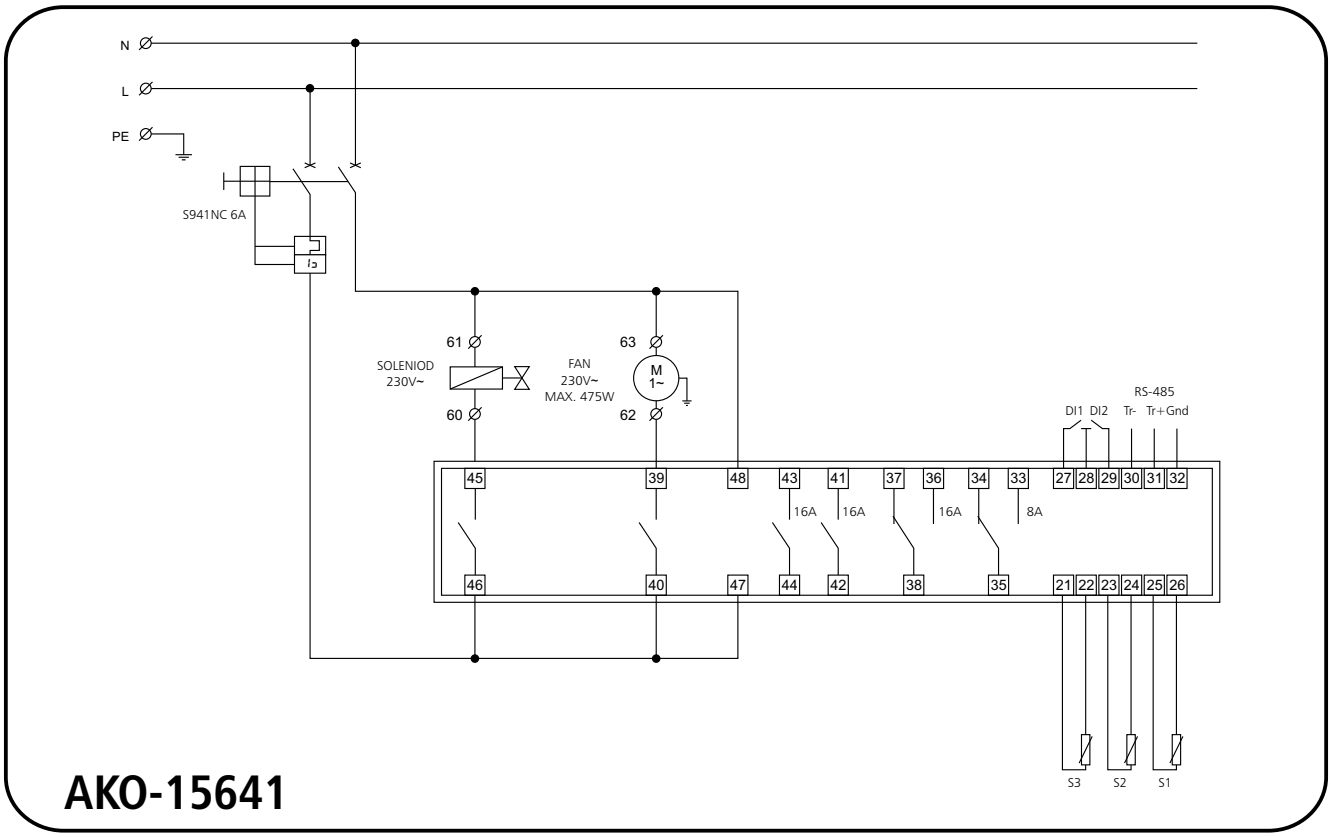
Verifications during panel start-up:
Check that electric arcing does not occur.
Check that relays and contacts do not produce rattles
Check that cables, controllers and the rest of the equipment do not overheat.

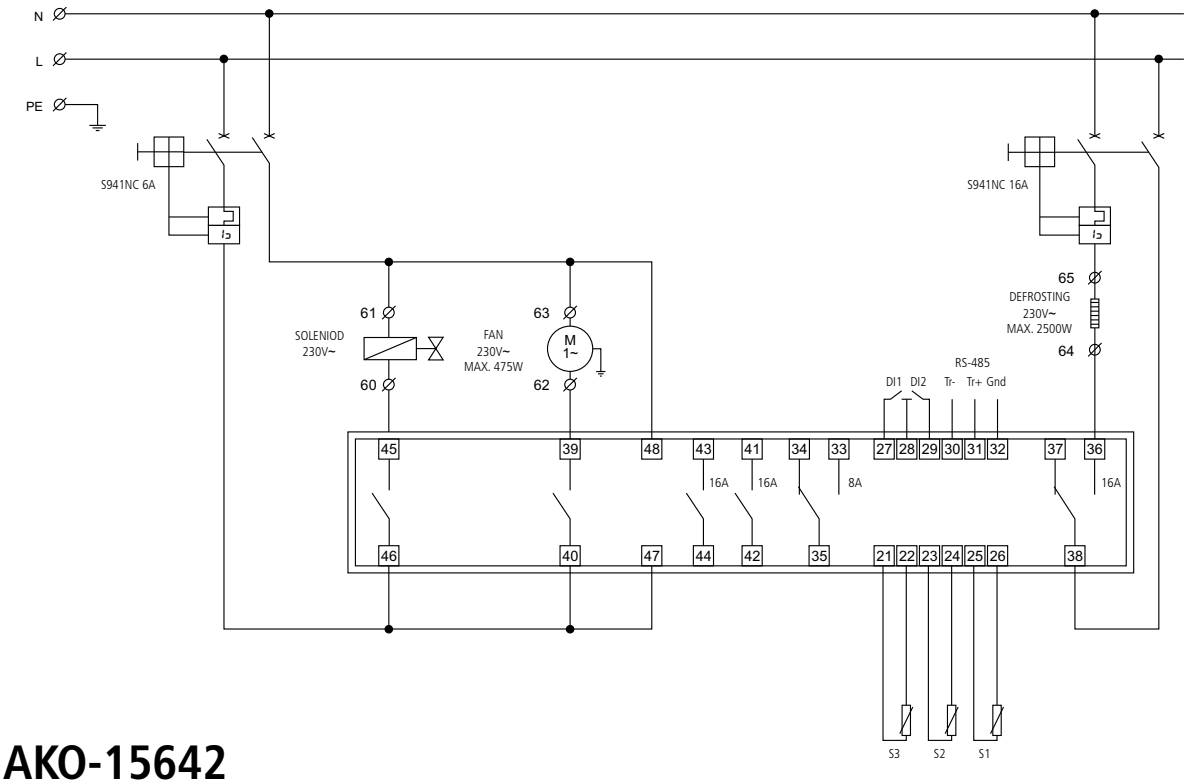
Verification after first 24 hours of operation:
Check that overheating does not occur.
Tighten screws and power connections.

Periodic preventive maintenance:
The panel should always be kept closed using the fasteners.
Tighten power connections annually.
Check for wear of the equipment annually.
Clean the panel outside surface with a soft cloth, soap and water.
Do not use abrasive detergents, petrol, alcohol or solvents.

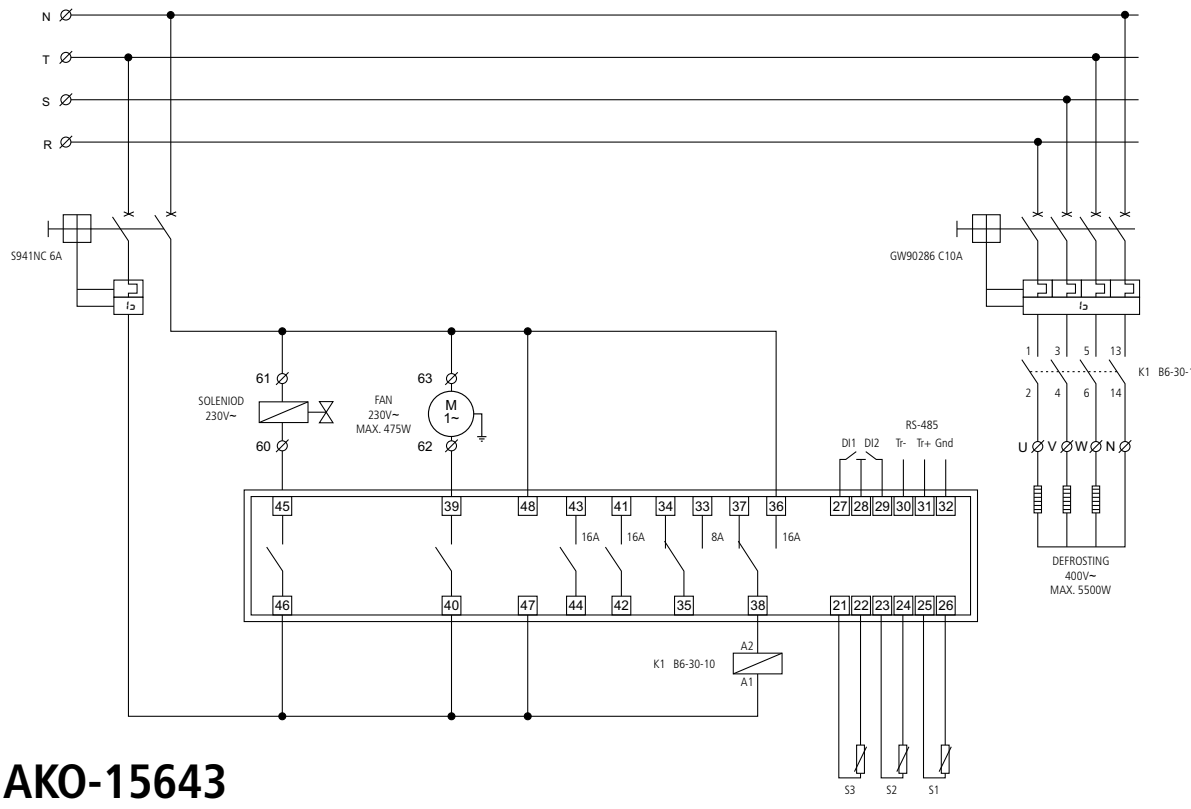
Electrical diagrams

IMPORTANT: The function of every probe entry depends on its configuration (See table "Assignment of entries")





AKO-15642



AKO-15643

351564102 REV.04 2013

Av. Roquetes, 30-38 | 08812 Sant Pere de Ribes | Barcelona | España
Tel. (34) 938 142 700 | Fax (34) 938 934 054 | e-mail: ako@ako.com | www.ako.com

AKO ELECTROMECÀNICA, S.A.L.