

AKE.207.012 Series Controllers for Refrigeration User Manual



Please read this document thoroughly before installation and before use of device and follow all recommendations; keep this document with device for future consultation. Only use the device in the way described in this document; do not use the same as a safety device.



The device must be disposed of in compliance with local standards regarding the collection of electric and electronics equipment.

1. INTRODUCTION

1.1 Introduction of Device

AKE.C207012 series are the elegant and stylish controller to manage refrigeration systems.

The user interface is designed with high quality 7 segment display and 4 units of high sensitive touch buttons. It provides ease of use with high sensitive touch buttons. The flexible, impact resistant and waterproof panel makes cleaning easier and its lifetime longer.

The MODBUS Conversion Module is available as an additional equipment. And it can work in a system where more than one cooling system is controlled.

With the Parameter Transfer Device (PTD), the saved parameters in a device can be transferred to other devices.

Changeable visual design and customer oriented design is available.



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SPECIFICATIONS / PRODUCTS	AKE.C207012.01.01	AKE.C207012.02.01
GENERAL FEATURES		
Screen Size and Type	7 Segment Display 47*22	
Button Type	4 x Touch Button	
Customer Specific Logo	•	•
Logo Backlight		
POWER SUPPLY		
12-24 VAC/DC		
230 VAC	•	•
85-305 VAC (SMPS)		
ANALOG INPUTS		
Room Probe (NTC)	•	•
Evaporator Probe (NTC)		•
Condenser Probe (NTC)		
Auxiliary Probe 1 (NTC)		
Auxiliary Probe 2 (NTC)		
Auxiliary Probe 3 (NTC)		
DIGITAL INPUTS		
Door Switch		
Auxiliary Digital Input (AUX)	•	•
DIGITAL OUTPUTS		
Compressor	30A	30A
Defrost		10A
Evaporator Fan		5A
Condenser Fan		
Cabinet Light		
Alarm		
Solenoid Valve		
Drainage Valve		
Glass Fan or Resistance		
Auxiliary Digital Output (Cabinet Light or Alarm)		
COMMUNICATIONS		
MODBUS RS-485	Optional	Optional
USB	Optional	Optional
TTL	•	•
OTHER FEATURES		
LOMOS-Local Monitoring System	•	•
HACCP	Optional	Optional
Real Time Clock	Optional	Optional
Internal Buzzer	Optional	Optional
AUXILIARY EQUIPMENTS		
PTD- Parameter Transfer Device	•	•
Humidity Sensor Converter	Optional	Optional
MC- MODBUS Converter	•	•
TECHNICAL DATA		
Operating Temperature	-5.....+55	
Storage Temperature	-30.....+85	
Relative Humidity	10.....90%(Non condensing)	
Protection (Front Face)	IP65	
Unit of Measure	C/F	

2. DEVICE DIMENSION and ASSEMBLY

Please consider following recommendations when installing device;

- Installation of the device should be done by experienced technicians in accordance with the artworks indicated above. Otherwise the responsibility belongs to the buyer.

- Please do not install the device near any heat source. The operating ambient temperature of the device should be between 0 to 50 °C. In the case of installing the device near heat source, buyer must take additional precautions for cooling device. Otherwise the responsibility belongs to the buyer.

- Cross section dimensions is indicated above. Please consider these dimensions when installing device.

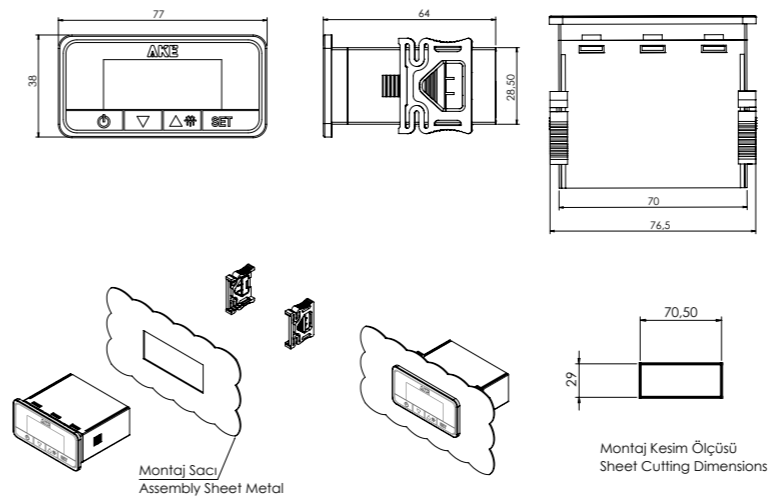
- Place the device the installation area on plate.

- Then, complete the assembly by using montage apparatus. Please attach the montage apparatus to right and left side of device and tighten them. Please avoid using high -torque screwdriver.

- The appliance should be cleaned with a soft, damp cloth with a front panel. Thinner etc. do not use substances.

- Never remove the warranty label. Otherwise, your device is not covered by the warranty. The appliance must be repaired by authorized service personnel.

- In case of any malfunction, do not interfere with the device. If the malfunction continues, notify the service in writing with the explanation.



3.DEVICE CONNECTION DIAGRAM

Please consider following recommendations when making electrical connection of device;

- Connection of the device should be done by experienced technicians in accordance with the diagram. Otherwise the responsibility belongs to the buyer.

- The supply voltage must be checked before the device is energized. (230VAC)

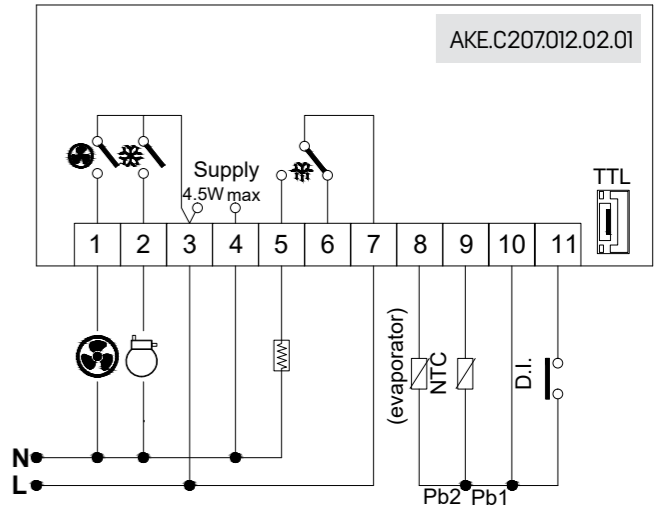
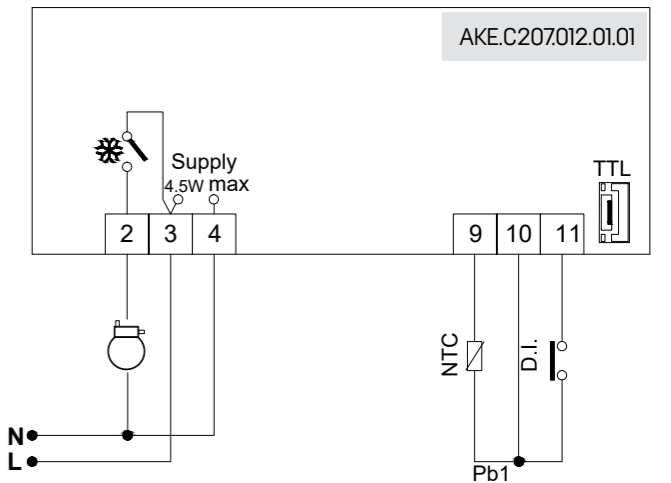
- If more than one electronic device is used, separate feeder lines for each device must be towed. Insulation traces and line filters should be used on the supply line where there is excessive electrical noise.

- The cables carrying the sensor and input signals to the device shall be prevented from being moved and influenced separately as far as possible from the inductive load cables operating as feed, control, switching.

- Shielded cables should be selected for the cables that carry the sensor and input signals to the device, and the cable shield must be connected to the ground.

- Never remove the warranty label. Otherwise, your device is not covered by the warranty. The appliance must be repaired by authorized service personnel.

- In case of any malfunction, do not interfere with the device. If the malfunction continues, notify the service in writing with the explanation.



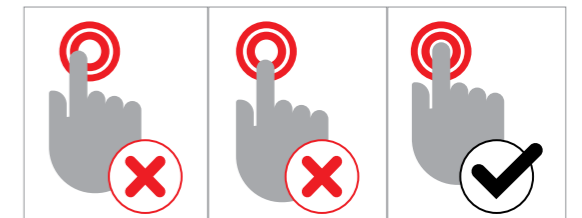
4.USE OF DEVICE

4.1. Button Functions



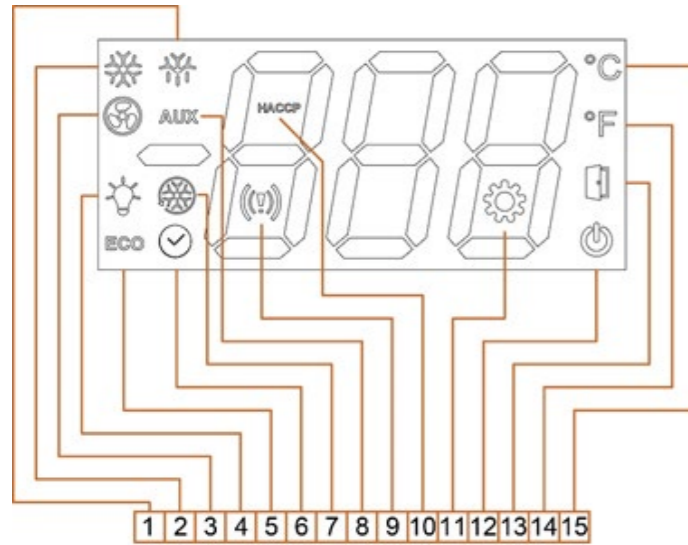
BUTTON - NAME	PULL-PUSH	HOLD DOWN
1- On-Off	Used to return to the previous menu. ESC button.	Allows the device to turn ON / OFF.
2- Down/Decrease button	Scrolls through the menu. Used to set parameter values.	
3- Up/increase or manual defrost button	Scrolls through the menu. Used to set parameter values.	Starts or stops manual defrost.
4- Settings	Allows access to set values menu. Saves the entered setpoint.	It allows to access to Level 1 and Level 2 parameter menus.

* Note: The functions, indicated above, may be change according to models.



* Note: When using the device, make sure that your finger touches the button exactly. Please refer to the illustration in Figure 4 below:

4.2. Display



LED	FUNCTION	OPERATING SITUATION		
		ICON ACTIVE	ICON DISABLED	FLASH
1	Defrost	Defrost active.	Defrost disabled.	Defrost request.
2	Compressor	Compressor active.	Compressor disabled.	Compressor request.
3	Fan	Fan active.	Fan disabled.	Fan request.
4	Light	Light active.	Light disabled.	
5	Energy Saving	Energy saving active.	Energy saving disabled.	
6	RTC-Real Time Clock			Active outputs depends on time.
7	Continuous cooling cycle.	Continuous cooling cycles active.	Continuous cooling cycles disabled.	
8	Auxiliary Output	AUX active.	AUX disabled.	
9	Alarm			Alarm active.
10	HACCp	Data saving.		
11	Settings	Settings menu active.		
12	On-Off	Device off.	Device on.	
13	Door Switch	Door is open.	Door is closed.	Door is open for a while.
14	Heat Scale °F	Therm is °F.		
15	Heat Scale °C	Therm is °C.		

* Note: The functions, indicated above, may be change according to models.

4.3 USE OF DEVICE

The use of the device is as follows. The functions of the device buttons are described in Section 4.2. The capabilities of the AKE.207012 series are arranged in two separate menus. These menus are:

- Machine Status Menu.

- Programmable Parameter Menu.

4.3.1 Machine Status Menu

To access the Machine Status Menu, touch and release the SET button. You can display the menu contents by scrolling with the up and down buttons.

The contents of the Machine Status Menu include:

- SET : Entering setpoint value.
- Pbr : Monitoring room Probe value.
- PbE : Monitoring evaporator Probe value
- ndF : Monitoring the next defrost time

To enter set point value, touch SET button and access Machine Status Menu. Then touch SET button after displaying SET parameter. Please enter set point value with the help of UP/DOWN buttons and touch SET button to save the value and return machine status menu. If you want to return machine status menu without saving the set point that you entered, please touch ESC button. To return home screen, please touch ESC button while on the Machine Status Menu.

To monitor room probe value, touch SET button and access Machine Status Menu. Then touch SET button after displaying Pbr parameter. To return machine status menu, please touch ESC button. To return home screen, please touch ESC button while on the Machine Status Menu.

To monitor evaporator probe value, touch SET button and access Machine Status Menu. Then touch SET button after displaying PbE parameter. To return machine status menu, please touch ESC button. To return home screen, please touch ESC button while on the Machine Status Menu.

To monitor next defrost time, touch SET button and access Machine Status Menu. Then touch SET button after displaying ndF parameter. To return machine status menu, please touch ESC button. To return home screen, please touch ESC button while on the Machine Status Menu.

4.3.2 Programmable Parameter Menu

To access programmable parameter menu, please hold down SET button at least 5 seconds. Programmable Parameter Menu includes Level 1 Parameter Menu (PA1) and Level 2 Parameter 2 (PA2).

To enter Level 1 parameter menu (PA1), please touch SET button while on PA1 screen. You can display other parameters by scrolling in the menu with the Up / Down buttons. Touch the SET button to change the values of any parameter. Please enter set point value with the help of UP/DOWN buttons and touch SET button to save the value and return Level 1 Parameter Menu. If you want to Level 1 Parameter Menu without saving the set point that you entered, please touch ESC button. To return programmable parameter menu, please touch ESC button while on the Level 1 Parameter Menu. To return home screen, please touch ESC button while on the Programmable Parameter Menu.

To enter Level 2 parameter menu (PA1), please touch SET button while on PA2 screen. In the case of PAS=1, the password will be requested. After confirming password, you can access the Level 2 parameter menu. You can display other parameters by scrolling in the menu with the Up / Down buttons. Touch the SET button to change the values of any parameter. Please enter set point value with the help of UP/DOWN buttons and touch SET button to save the value and return Level 2 Parameter Menu. If you want to Level 2 Parameter Menu without saving the set point that you entered, please touch ESC button. To return programmable parameter menu, please touch ESC button while on the Level 1 Parameter Menu. To return home screen, please touch ESC button while on the Programmable Parameter Menu.

5. Auxiliary Equipment

5.1. AKE.PTD.01 - Parameter Transfer Device



PTD is a program device that allows parameter transfer between AKE controllers for refrigeration.

It allows transfer of recorded data to flash memory via USB.

It can be used as RTC conversion kit. (For only non-RTC models)

It can be used as audible caution hardware kit. (For only non-buzzer models.)

5.2.AKE.MCK.01 - Modbus Converter



- It can be used as a converter kit for models that do not have MODBUS communication protocol.
- It's used for Local Monitoring System.

5.3. AKE.NTC.01 - NTC Sensor



- Measurement Range : -40 °C to 120 °C
- Length of Cable : 1m-1.5m-2m-3m
- Size of Probe : 6x30 mm. (QxL)

(Package content includes NTC sensor.)

P	PARAMETER	Min.	Max.	Unit	Fac. Def.	STATEMENT
C-F	°C/°F	0(°C)	1(°F)	(°C/°F)	0	0 = °C, 1 = °F
d-i	Decimal or - Integer	0	1	-	0	0 = Decimal, 1 = Integer
PnU	Probe Quantity	1	6	-	1	
PI0	Probe 1 offset	-50	50	(°C/°F)	0	
P20	Probe 2 offset	-50	50	(°C/°F)	0	
Set	Set point	r1	r2	(°C/°F)	4	
ShS	Control differential.	0	19	°C/°F	2	Offset to manage compressor control (hysteresis)
Slo	Minimum set point value	-50	r2	°C/°F	-50	
Shi	Maximum set point value	r1	200	°C/°F	90	
/od	Operating mode	0	2	-	0	0= Defrost and Compressor, 1 = Compressor
CdI	Compressor delay when device switch on	0	100	min.	0	
Cnt	Waiting period for next compressor operating	0	100	min.	0	
CoF	Minimum compressor off time	0	100	min.	0	
CcT	Continuous Cycle	1	6	-	1	Continuous Cooling Operation
Con	Minimum compressor on time	0	100	min.	0	
dcP	Priority between defrost and compressor operation while defrost is operating.	0	1	-	0	0 = Compressor protection cautions have priority. 1 = Compressor protection cautions don't have priority.
ddS	Screen during defrost.	0	3	-	2	0 = Room temperature 1 = Room temperature before defrost. 2 = dEF article and room temperature before defrost. 3 = Setpoint.
dF	Defrost while device switch on	0	1	-	0	0 = No defrost while device switch on 1 = Start with defrost while device switch on.
dFd	Defrost delay while device switch on	0	199	min.	0	
d/o	Defrost type	0	4	-	0	0 = Heating 1 = Hot gas 2 = Heating 3 = Hot gas
dHS	Time scale	0	1	-	0	0 = Hour/Minute 1= Minutes/Second
dnt	Interval between defrost	0	199	h/min	8	
dEt	Defrost ending temperature	-50	130	°C/°F	4	
dti	Maximum defrost time	1	199	min./s	30	
dA	Alarm bypass time after defrost	0	15	h	1	
dd	Dripping time	0	15	min.	2	Dripping time after defrost
Fa	Evaporator fan management	0	1	-	0	If F2 or F3 =0 F0=0; Fans are continuously active. F0=1; Fans management depends on FI.
Fst	Evaporator fan management set point	-50	130	°C/°F	5	If F0=1, it depends on evaporator temperature.
FCS	Fans during compressor	0	1	-	1	0 = It depends on F0 1 = It depends on compressor.
FdS	Fans during defrost	0	1	-	1	0 = It depends on F0 1 = Off.
Fd	Fan delay after dripping time	0	15	min.	1	
AhS	Alarm and fan differential temperature	-20	20	°C/°F	2	
Alo	Low temperature alarm	-50	250	°C/°F	0	
AHi	High temperature alarm	-50	250	°C/°F	0	
AdL	Temperature alarm delay	0	199	min	0	
tOt	Time to reach setpoint	0	60	min	0	
InC	Digital input configuration	0	5	-	0	0=Passive, 1=Defrost, 2=Alarm, 3=Standby, 4= Door, 5=Drainage
IdF	Fans when opening door	0	1	-	0	
LoC	Key Lock	0	1	-	0	
PAS	Password	0	200	-	42	For PA2 parameters.
PhS	Phase reading	0	1	-	1	PhS = 0 ; Phase reading disabled, PhS = 1 ; Phase reading active.
bEP	Buzzer volume	0	1	-	1	bEP = 0 ; Turn the volume down. bEP = 1 ; Turn the volume up.
Frt	Restore factory setting	0	1	-	0	Set Frt = 1 ; touch SET button.
rhO	RTC Hour Value			-		
r/i	RTC Minute Value			-		
rda	RTC Date Value	1	31	-		
r/O	RTC Month	1	12	-		
ryE	RTC Year	1	99	-		
LPE	Log period	0	60	min	10	
Lti	Log Quantity	0	1000	-		
PtL	Parameter Transfer	0	1	-		
Sid	Communication ID	1	255	-	1	
6LS	Auxiliary Relay State	0	1	-	1	6LS = 0 ; Continuously active 6LS = 1 ; It depends on time.
6on	Auxiliary Relay Activating Time	0	23		05:00	
6oF	Auxiliary Relay Disabling Time	0	23		01:00	
LP	Lamp	0	1	-	1	LP = 0 ; Manuel control LP = 1 ; It depends on Lon and LoF.
Lon	Lamp activating time	0	23		07:00	Lamba açılış saati
LoF	Lamp disabling time	0	23		23:00	
Hot*	Maximum resistance operating time.	1	120	Hour	:5	

* Note: The functions, indicated above, may be change according to models.