

## AT1-5 INSTRUCTIONS FOR USE

Thank you for having chosen a LAE electronic product. Before installing the instrument, please read these instructions carefully to ensure maximum performance and safety.

### DESCRIPTION



Fig.1 — Front panel

- Info / Setpoint button.
- Manual defrost / Decrease button.
- Increase / manual activation button.
- Exit / Stand-by button.

### INDICATIONS

- Thermostat output
- Auxiliary output
- Alarm

### INSTALLATION

- Insert the controller through a hole measuring 71x29 mm.
- Make sure that electrical connections comply with the paragraph "wiring diagrams". To reduce the effects of electromagnetic disturbance, keep the sensor and signal cables well separate from the power wires.
- Fix the controller to the panel by means of the suitable clips, by pressingly gently; if fitted, check that the rubber gasket adheres to the panel perfectly, in order to prevent debris and moisture infiltration to the back of the instrument.
- Place the probe T1 inside the room in a point that truly represents the temperature of the stored product.
- Place the probe T2 where there is the maximum formation of frost.

### OPERATION

#### DISPLAY

During normal operation, the display shows either the temperature measured or one of the following indications:

<b>DEF</b> Defrost in progress	<b>HI</b> Room high temperature alarm
<b>REC</b> Recovery after defrost	<b>LO</b> Room low temperature alarm
<b>OFF</b> Controller in stand-by	<b>E1</b> Probe T1 failure
<b>CL</b> Condenser clean warning	<b>E2</b> Probe T2 failure
<b>DO</b> Door open alarm	

#### INFO MENU

The information available in this menu is:

<b>T1</b> Instant probe 1 temperature	<b>TLO</b> Minimum probe 1 temperature recorded
<b>T2</b> Instant probe 2 temperature	<b>CND</b> Compressor working weeks
<b>THI</b> Maximum probe 1 temperature recorded	<b>LOC</b> Keypad state lock

#### Access to menu and information displayed.

- Press and immediately release button .
- With button or select the data to be displayed.
- Press button to display value.
- To exit from the menu, press button or wait for 10 seconds.

#### Reset of THI, TLO, CND recordings

- With button or select the data to be reset.
- Display the value with button .
- While keeping button pressed, use button .

#### SETPOINT (display and modification of desired temperature value)

- Press button for at least half second, to display the setpoint value.
- By keeping button pressed, use button or to set the desired value (adjustment is within the minimum **SPL** and the maximum **SPH** limit).
- When button is released, the new value is stored.

#### STAND-BY

Button , when pressed for 3 seconds, allows the controller to be put on a standby or output control to be resumed (with **SB**=YES only).

#### KEYPAD LOCK

The keypad lock avoids undesired, potentially dangerous operations, which might be attempted when the controllers is operating in a public place. In the INFO menu, set parameter **LOC**=YES to inhibit all functions of the buttons. To resume normal operation of keypad, adjust setting so that **LOC**=NO.

#### DEFROST

**Timed defrost.** Defrosting starts automatically when necessary time has elapsed to obtain the defrosting frequency set with **DFR**. For example, with **DFR**=4 defrosting occurs once every 6 hours. The internal timer is set to zero when power is applied to the controller and at each subsequent defrost start. When the controller is put on a standby, the accumulated time count is "frozen" (is not incremented).

**Manual defrost.** Defrosting may also be induced manually by keeping the button pressed for 2 seconds.

**Defrost type.** Once defrost has started, Compressor and Defrost outputs are controlled according to the parameters **DTY** and **OAU**. The AUX output is associated to defrost function with **OAU**=DEF exclusively.

**Defrost termination.** Defrost lasts as long as time **DTO** but, if the evaporator probe has been enabled (**T2**=YES) and temperature **DLI** is achieved before this time elapses, defrost will be terminated in advance.

**Caution: if C-H=HEA all defrost functions are inhibited; if DFR=0 the timed defrost function is excluded; during defrost, the high temperature alarm is inhibited.**

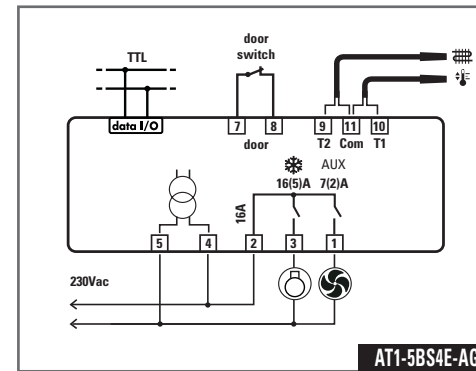
### CONFIGURATION PARAMETERS

- The setup menu is accessed by pressing button + for 5 seconds.
- With button or select the parameter to be modified.
- Press button to display the value.
- By keeping button pressed, use button or to set the desired value.
- When button is released, the newly programmed value is stored and the following parameter is displayed.
- To exit from the setup, press button or wait for 30 seconds.

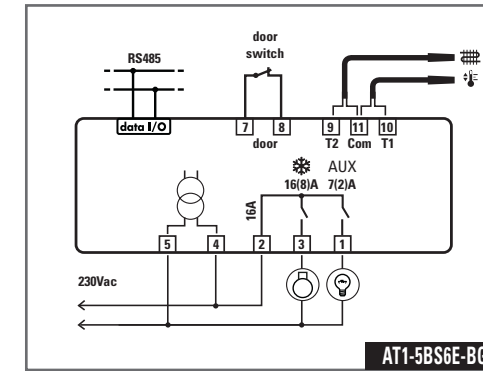
PAR	RANGE	DESCRIPTION
<b>SCL</b>	1°C; 2°C; °F	Readout scale. 1°C (only with <b>INP</b> =SN4); measuring range -50/-9.9 ... 19.9/80°C 2°C: measuring range -50 ... 120°C °F: measuring range -55 ... 240°F  Caution: upon changing the <b>SCL</b> value, it is then <u>absolutely</u> necessary to reconfigure the parameters relevant to the absolute and relative temperatures ( <b>SPL</b> , <b>SPH</b> , <b>SP</b> , <b>ALA</b> , <b>AHA</b> , etc..)
<b>SPL</b>	-50..SPH	Minimum limit for <b>SP</b> setting
<b>SPH</b>	SPL.120°	Maximum limit for <b>SP</b> setting
<b>SP</b>	SPL... SPH	Setpoint (value to be maintained in the room).
<b>C-H</b>	REF; HEA	Refrigerating (REF) or Heating (HEA) control mode
<b>HYS</b>	1...10°	OFF/ON thermostat differential   Refrigerating control ( <b>C-H</b> =REF) Heating control ( <b>C-H</b> =HEA)
<b>CRT</b>	0...30min	Compressor rest time. The output is switched on again after <b>CRT</b> minutes have elapsed since the previous switchover. We recommend to set <b>CRT</b> =03 with <b>HYS</b> <2.0°.
<b>CT1</b>	0...30min	Thermostat output run when probe T1 is faulty. With <b>CT1</b> =0 the output will always remain OFF.
<b>CT2</b>	0...30min	Thermostat output stop when probe T1 is faulty. With <b>CT2</b> =0 and <b>CT1</b> >0 the output will always be ON. Example: <b>CT1</b> =4, <b>CT2</b> =6: In case of probe T1 failure, the compressor will cycle 4 minutes ON and 6 minutes OFF.
<b>CSD</b>	0...30min	Compressor stop delay after the door has been opened (active only if <b>DS</b> =YES).
<b>DFR</b>	0...24(1/24h)	Defrost frequency expressed in cycles/24 hours.
<b>DLI</b>	-50...120°	Defrost end temperature.
<b>DTO</b>	1...120min	Maximum defrost duration.
<b>DTY</b>	OFF; ELE; GAS	Defrost type OFF: off cycle defrost (Compressor and Heater OFF). ELE: electric defrost* (Compressor OFF and Heater ON). GAS: hot gas defrost* (Compressor and Heater ON). * The defrost output is active if only <b>OAU</b> =DEF.
<b>DDY</b>	0...60min	Display during defrost. If <b>DDY</b> =0 during defrost the temperature continues to be displayed. If <b>DDY</b> >0, during defrost the display shows DEF, when defrost is over REC is displayed during <b>DDY</b> minutes.
<b>ATM</b>	NON; ABS; REL	Alarm threshold management. NON: all temperature alarms are inhibited (the following parameter will be <b>ADO</b> ). ABS: the values programmed in <b>ALA</b> and <b>AHA</b> represent the real alarm thresholds. REL: the values programmed in <b>ALR</b> and <b>AHR</b> are alarm differentials referred to <b>SP</b> and <b>SP+HY</b> .   Temperature alarm with relative thresholds, refrigerating control ( <b>ATM</b> =REL, <b>C-H</b> =REF). Temperature alarm with relative thresholds, heating control ( <b>ATM</b> =REL, <b>C-H</b> =HEA).
<b>ALA</b>	-50... 120°	Low temperature alarm threshold.
<b>AHA</b>	-50... 120°	High temperature alarm threshold.
<b>ALR</b>	-12... 0°	Low temperature alarm differential. With <b>ALR</b> =0 the low temperature alarm is excluded.
<b>AHR</b>	0... 12°	High temperature alarm differential. With <b>AHR</b> =0 the high temperature alarm is excluded.
<b>ATD</b>	0... 120min	Delay before alarm temperature warning.
<b>ADO</b>	0... 30min	Delay before door open alarm warning.
<b>ACC</b>	0...52 weeks	Condenser periodic cleaning. When the compressor operation time, expressed in weeks, matches the <b>ACC</b> value programmed, "CL" flashes in the display. With <b>ACC</b> =0 the condenser cleaning warning is disabled.
<b>SB</b>	NO/YES	Stand-by button enabling .
<b>DS</b>	NO/YES	Door switch input enabling (closed when door is closed).
<b>OAU</b>	NON; 0-1; DEF; LGT; ALR;	AUX output operation NON : output disabled (always off). 0-1 : the relay contacts follow the on/standby state of controller. DEF: output programmed for defrost control. LGT : output enabled for light control. ALR : contacts make when an alarm condition occurs.
<b>INP</b>	SN4; ST1	Temperature sensor selection. With <b>INP</b> = SN4, the probes must be the LAE models SN4.; with <b>INP</b> = ST1, the probes must be the LAE models ST1...

<b>OS1</b>	-12.5...12.5°C	Probe T1 offset.
<b>T2</b>	NO/YES	Probe T2 enabling (evaporator).
<b>OS2</b>	-12.5...12.5°C	Probe T2 offset.
<b>TLD</b>	1...30 min	Delay for minimum temperature (TLO) and maximum temperature (THI) logging.
<b>SIM</b>	0...100	Display slowdown.
<b>ADR</b>	1...255	AT1-5 address for PC communication.

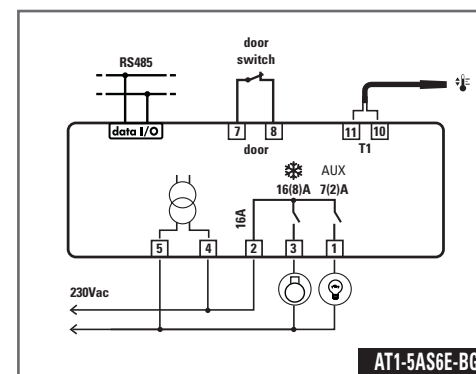
### WIRING DIAGRAM



AT1-5BS4E-AG



AT1-5BS6E-BG



AT1-5AS6E-BG

### TECHNICAL DATA

#### Power supply

AT1-5...E	230Vac±10%, 50/60Hz, 3W
AT1-5...U	115Vac±10%, 50/60Hz, 3W
AT1-5...D	12Vac±10%, 50/60Hz, 3W

#### Relay outputs

AT1-5. <b>Q1</b> (2)...	compressor 12(4)A
AT1-5. <b>S1</b> (2)...	compressor 16(4)A
AT1-5. <b>Q3</b> (4)...	compressor 12(5)A
AT1-5. <b>S3</b> (4)...	compressor 16(5)A
AT1-5. <b>Q5</b> (6)...	compressor 12(8)A
AT1-5. <b>S5</b> (6)...	compressor 16(8)A
Auxiliary loads 7(2)A 240vac	

AT1-5.**Q**... maximum total current 12A  
AT1-5.**S**... maximum total current 16A

#### Inputs

NTC 10KΩ@25°C,	LAE part No. SN4...
PTC 1000Ω@25°C,	LAE part No. ST1...

#### Measuring Range

-50...120°C,	-55...240°F
-50/-9.9 ... 19.9/80°C (with NTC10K only)	

#### Measuring accuracy

<0.5°C within the measurement range

#### Operating conditions

-10 ... +50°C; 15%...80% r.H.

#### CE – UL (Approvals and Reference Norms)

EN60730-1; EN60730-2-9;  
EN55022 (Class B);  
EN50082-1  
UL 60730-1A

#### Front protection

IP55

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