

BR1-28 INSTRUCTIONS FOR USE

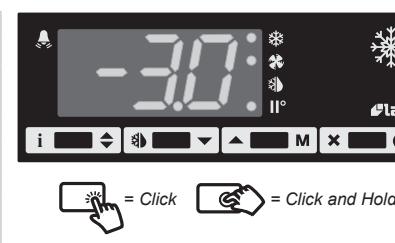
Thank you for having chosen an LAE electronic product. Before installing the instrument, please read this instruction booklet carefully in order to ensure safe installation and optimum performance.

1. INSTALLATION

- The BR1-28 controller, size 107x95x47 mm (WxHxD), is to be secured to a DIN rail in such a position as to ensure that no liquid infiltrates causing serious damage and compromising safety.
- 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.
- Place the probe T1 inside the room in a point that truly represents the temperature of the stored product.
- Place the probe T2 on the evaporator where there is the maximum formation of frost.
- The function of probe T3 is determined by the parameter T3. With T3=DSF the probe measures the temperature to be displayed. With T3=CND the probe measures the condenser temperature, it must therefore be placed between the fins of the condensing unit. With T3=ZEU the probe measures the temperature of the second evaporator and it must therefore be placed where there is the maximum formation of frost. With T3=NON, the third probe is disabled.
- At the first power-up or after a long power failure, the display might show "T1M": press any of the buttons to mute the buzzer, then check if the real time clock is correct (MIN, HRS).

2. DISPLAY INFO

Alarm		Room high temperature alarm
Thermostat output		Room low temperature alarm
Fan output		Condenser high temperature
Defrost output		Generic alarm
I ^o Activation of 2 nd set		Condenser clean warning
OFF Controller in stand-by		Probe T1 failure
DEF Defrost in progress		Probe T2 failure
do Door open alarm		Probe T3 failure
EIN Check clock time		



In case of alarm, press any key to mute the buzzer sound.

Info items		Navigation	
t1	Instant probe 1 temperature	Display value	Next
t2	Instant probe 2 temperature	Previous	Exit
min	Minutes of the RTC		
hr	Hours of the RTC		
Set	Start time for timed actions		
End	End time for timed actions		
tmax	Max probe 1 temperature		
tmin	Min probe 1 temperature		
cnd**	Compressor working weeks		
Loc	Keypad state lock		
*: only if enabled	**: only if ACC > 0		

3. OPERATION

Setpoint I and II: display and modification		Standby (SB=YES)	
1°	Increase	3°	Decrease
I Set II Set			
3"			

3.1 SELECTION OF SECOND PARAMETER GROUP

Manual (IISM=MAN)	Automatic (IISM=ECO)	Contact (IISM=DI)	Real time clock (IISM=RTC)
3"	ECO (See Fig. 3)	Dx A=CLS Dx A=OPN	Group II. Start at STT End at EDT

3.2 DEFROST START

Manual	Real time clock (DFM=RTC)	Timed (DFM=TIM)	Optimized (DFM=FRO)	Remote (DXO=RDS)
2"	Scheduled at DH1...DH6 time	DFT hours	T2 < 0°C for DFT hours	Dx A=CLS Dx A=OPN
Synchronized (D3O=DSY)				
Start and end are synchronized among connected BR1-28				

3.3 DEFROST TERMINATION

Time limit	Survey of 1 evaporator before time limit	Survey of 2 evaporators before time limit
DTO minutes	DTO minutes or T2 ≥ DLI	DTO minutes or T2 and T3 ≥ DLI

Resuming thermostatic cycle. When defrost is over, if DRN is greater than 0, all outputs will remain off for DRN minutes, in order for the ice to melt completely and the resulting water to drain. Moreover, if probe T2 is active (T2=YES), the fans will re-start when the evaporator gets to a temperature lower than FDD; Vice versa, if probe T2 is not active (T2=NO) or after defrost has come to an end, such condition does not occur by end of the time FTO, after FTO minutes have elapsed the fans will be switched on anyway.

Caution: if DFM=NON or C-H=HEA all defrost functions are inhibited; if DFT=0, automatic defrost functions are excluded. During defrost, high temperature alarm is bypassed.

4. CONFIGURATION PARAMETERS

Access / Navigation / Modification			
-30	SPL	IISL	Visualize value
-30	5''	SPL	Increase or decrease value
-30	5''	SPL	Next or previous parameter
-30	5''	SPL	Exit

PAR	RANGE	DESCRIPTION
SPL	-50...SPH	Minimum limit for SP setting.
SPH	SPL...110°	Maximum limit for SP setting.
SP	SPL...SPH	Setpoint (value to be maintained in the room).
C-H	REF; HEA	Refrigerating (REF) or Heating (HEA) control mode.
HY0	1...10°	Thermostat OFF -> ON differential.
HY1	0...10°	Thermostat ON -> OFF differential.
CRT	0...30min	Compressor rest time. The output is switched on again after CRT minutes have elapsed since the previous switchover. We recommend to set CRT=03 with HY0<2°.

CT1	0...30min	Compressor/Heater output run when probe T1 is faulty. With CT1=0 the output will always remain OFF.
CT2	0...30min	Compressor/Heater output stop when probe T1 is faulty. With CT2=0 and CT1>0 the output will always be ON. Example: CT1=4, CT2=6. In case of probe T1 failure, the compressor will cycle 4 minutes ON and 6 minutes OFF.
DFM	NON; TIM; FRO; RTC	Defrost start mode NON : defrost function is disabled (<i>the following parameter will be FCM</i>). TIM : regular time defrost. FRO : the defrost time count is only increased when the conditions occur for frost to form on the evaporator (optimised time increase). If the evaporator works at 0°C, defrost frequency depends on the thermal load and climatic conditions. With setpoints much lower than 0°C, defrost frequency mainly depends on the refrigerator operating time. RTC : the defrost time is scheduled by parameters DH1, DH2, ...DH6.
DFT	0...99 hours	Time interval among defrosts. When this time has elapsed since the last defrost, a new defrost cycle is started. For example, with DFM=TIM and DFT=06 , a defrost will take place every 6 hours.
DFB	NO/YES	Defrost timer backup. With DFB=YES , after a power interruption, the timer resumes the count from where it was left off with ±30 min approximation. With DFB=NO , after a power interruption, the defrost timer will re-start to count from zero.
DH1 ... DH6	HH.M	Scheduled time for defrost 1 to 6. HH hours from midnight, M tens of minutes. Accepted values go from 0.00 to 23.5. After "23.5" the value is "--" that means "skipped defrost". Example: DH1=8.3 means 8.30 AM.
DLI	-50...110°	Defrost end temperature.
DTO	1...120min	Maximum defrost duration.
DTY	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).
DSO	OFF; LO; HI	Defrost start - thermostat cycle synchronization OFF : none. The defrost will occur without delay. LO : defrost start will be postponed to compressor cut-out (SOD = max delay). HI : defrost start will be postponed to compressor cut-in (SOD = max delay).
SOD	0...30 min	Timeout for defrost start - thermostat cycle synchronization. If 0, defrost will start immediately.
DPD	0...240sec	Evaporator pump down. At the beginning of defrost, defrost outputs (determined by DTY) are OFF for DPD seconds.
DRN	0...30min	Pause after defrost (evaporator drain down time).
DDM	RT; LT; SP; DEF	Defrost display mode. During defrost the display will show: RT : the real temperature; LT : the last temperature before defrost; SP : the current setpoint value; DEF : "dEF".
DDY	0...60min	Display delay. The display shows the information selected with parameter DDM during defrost and for DDY minutes after defrost termination.
FID	NO/YES	Fans active during defrost.
FDD	-50...110°	Evaporator fan re-start temperature after defrost.
FTO	0...120min	Maximum evaporator fan stop after defrost.
FCM	NON; TMP; TIM	Fan mode during thermostatic control. NON : the fans remain ON all the time; TMP : Temperature-based control. The fans are ON when the compressor is ON. When the compressor is turned OFF, the fans remain ON as long as the temperature difference Te-Ta is greater than FDT . The fans are turned ON again with FDH differential. (Te = Evaporator temperature, Ta = Air temperature); TIM : Timed-based control. The fans are ON when the compressor is ON. When the compressor is OFF, the fans switch ON and OFF according to parameters FT1 , FT2 , FT3 (See Fig.2).
FDT	-12...0°	Evaporator-Air temperature difference for the fans to turn OFF after the compressor has stopped.
FDH	1...12°	Temperature differential for fan re-start. Example: FDT = -1, FDH=3. In this case, after the compressor has stopped, the fans are OFF when Te > Ta - 1 (FDT), whereas the fans are ON when Te < Ta - 4 (FDT-FDH).
FT1	0...180sec	Fan stop delay after compressor/heater stop.
FT2	0...30min	Timed fan stop. With FT2=0 the fans remain on all the time.
FT3	0...30min	Timed fan run. With FT3=0 , and FT2 > 0 , the fans remain off all the time.
ATM	NON; ABS; REL	Alarm threshold management. NON : all temperature alarms are inhibited (<i>the following parameter will be ACC</i>). ABS : the values programmed in ALA and AHA represent the real alarm thresholds. REL : the alarm threshold is obtained by the sum of setpoint, thermostat differential and ALR/AHR.
ALA	-50...110°	Low temperature alarm threshold.
AHA	-50...110°	High temperature alarm threshold.
ALR	-12...0°	Low temperature alarm differential. With ALR=0 the low temperature alarm is excluded.
AHR	0...12°	High temperature alarm differential. With AHR=0 the high temperature alarm is excluded.
ATI	T1; T2; T3	Probe used for temperature alarm detection.
ATD	0...120min	Delay before alarm temperature warning.
ACC	0...52 weeks	Condensate periodic cleaning. When the compressor operation time, expressed in weeks, matches the ACC value programmed, "CL" flashes in the display. With ACC=0 the condenser cleaning warning is disabled and CND disappears from Info Menu.
IISM	NON; MAN; ECO; DI; RTC	Switchover mode to second parameter set NON : inhibition to use the second parameter group (<i>the following parameter will be SB</i>). MAN : button M switches the two parameter groups over. ECO : automatic switchover to the second parameter group, when ECO conditions are detected. DI : switchover to the second parameter group when Dlx input is on.

