From: Lonardi [MC] To: Price-list owners

Ref.: P-6.006/01 Date: 19/03/01

New LAE controller for Plug-in cabinets

Dear Sirs,

with the aim of a continuous improvement we are going to introduce our new LAE electronic controller in our plug-in cabinets:

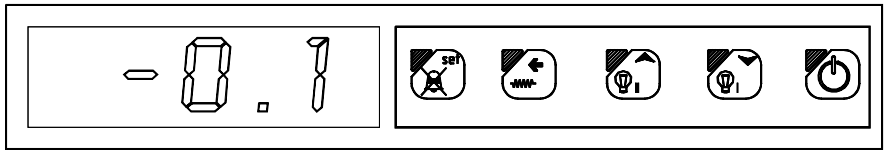
- ***CRONOS***
- ***IT2000X***
- ***GLYCOS***
- ***PROTEUS PLUS***

The reason that drive us to make this change is the better performance of LAE controller compared with EC 10 controller actually assembled in plug-in cabinets.

LAE performance

The advantage of LAE controller depends on some additional features as:

- Easy to use consolle that integrates all electrical and electronic switches in one compact board.



- Possibility to use the third probe that monitors the running temperature inside the cabinet (not in air suction or air intake).
- Intelligent management program that reduces power consumption because it is possible to use a day and a night setting in order to optimise the use of night covers or sliding doors (where available).

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- Easy maintenance of the controller as it is composed of two easy replacing parts; the consolle and an electric/electronic integrated circuit connected each other and with the cabinet components with faston wiring easy to replace and to connect.

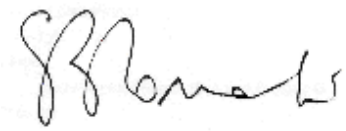
For additional information about LAE controller see Product Info P-1.002/00(56).

Timing of LAE introduction

The start of production of LAE electronic controller is planned for beginning of **week 18** (30th April 2001) and deliveries will follow after end of stock.
Note also that will be issued a price-list update as the codes of these cabinets will change.

Best regards

Gian Lonardi



EC *LAE* CONTROL PANEL

THE BUTTONS ON THE CONTROLLER ALLOW:

- Turning the controller on or off ("ON" led off, "OFF" led alight).

- Turning the cabinet hood lights on ("ON" led alight, "OFF" led off);
- passing from a parameter to the previous one;
- reducing the value associated with the parameter;

- turning the lights on under the middle shelf (optionals) ("ON" led alight, "OFF" led off);
- passing from a parameter to the following one;
- increasing the value associated with the parameter;
- activating manual defrosting;

- turning the demisting ventilator on ("ON" led alight, "OFF" led off). This is used when the cabinet is positioned in a very damp area, which could cause the formation of condensation on the glass;
- returning to the display function;

- visualising the value associated with the chosen parameter;
- accessing the parameter menus.

THE LIGHTED LEDS INDICATE:

- Compressor working;
- Belly section ventilation working;
- Defrosting working.

The control panel is fitted with a user interface, which contains a three-figure display and a keyboard with five function buttons.

NORMAL WORKING STATUS

During normal working, the display shows the actual temperature inside the cabinet.

USER PROGRAMMING STATUS

On installation, the user needs only programme the working temperature for the cabinet. To set this function, the user must depress the button and then "**SEL**" appears on the display. Using the buttons and the given value can be increased or decreased until the desired value is reached.
To terminate the operation, release the button. The working temperature to set on the electronic chart must coincide with the temperature indicated by the manufacturer of the goods displayed (see recommended conservation temperature printed on the product packaging).

NUMBER OF DAILY DEFROSTINGS

The number of daily defrostings is equally divided throughout the 24 hours. Defrosting time depends on the temperature after defrosting, which is checked by a probe connected to the control panel. However, defrosting time cannot exceed a maximum time, which is controlled by the electronic chart and varies depending on the defrosting version used:

- defrosting by blocking refrigeration: 4 cycles maximum duration 60 minutes (Cronos e Glycos).
- electrical defrosting (optional Cronos): 4 cycles maximum duration 30 minutes (Cronos) and 35 minutes (Proteus Plus).

When immediate defrosting is required, button must be pressed once and then again until the **"dF"** abbreviation appears. Press and keep depressed followed by .

During the defrosting cycle, the display shows the last temperature taken before beginning the cycle.

ALARM STATUS

The controller allows checking that the thermostat is working correctly, the periodic signal for condenser cleaning, besides the functional and anomaly alarms of the T1, T2 and T3 probes. When an alarm is set off, the controller activates the specific relay and signals the anomaly, by flashing the relative LED, **ALR** appears on the display and a sound alarm is set off.

If a new alarm occurs, press button , the **ALR** indication can be removed permanently, the buzzing silenced and the cause of the alarm can be seen. The indications on the display are:

- **A L** low temperature;
- **A H** high temperature;
- **A C** condenser cleaning;
- **A 1** anomaly with probe T1 (delivery);
- **A 2** anomaly with probe T2 (evaporator);
- **A 3** anomaly with probe T3 (suction).

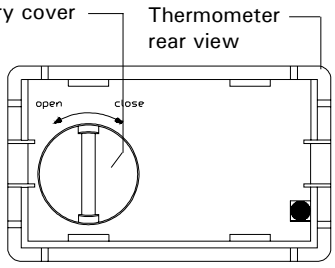
By pressing button , the buzzer is silenced after which, if the alarm continues, it is activated periodically for 20 seconds every hour until the alarm ceases. This is valid for all alarms, except the condenser cleaning alarm. The alarm led and relay are always activated while the alarm persists.

IF THE CONTROLLER IS TURNED OFF OR PUT IN STANDBY, THE COUNTERS AND ALARMS ARE ZEROED.

However, if any sort of alarm persists, the user must contact the nearest service centre.

THERMOMETER (OPTIONAL)

WARNING. The thermometer is fed by a D357H 1.5V battery supplied as standard. If it is off on installation: extract the thermometer from the appropriate support place under the shelf and gain access to the battery by unscrewing the rear cover and removing the insulation (film or piece of paper) placed behind the battery to prevent running down.



SETTING THE *LAE* CONTROLLER PARAMETERS

PARAMETERS:

The password must be entered to view and/or change any of the parameters.

ENTER PASSWORD:

The display must be working normally (showing the cabinet temperature);

- press button once, followed by button repeatedly until "**Pc**" is displayed;
- press and keep pressed button (code "**00**" is displayed) press button rrepeatedly until the access code (password) "**250**" is displayed, release the button ;
- the first parameter to be modified is displayed.

CHANGING THE PARAMETERS:

- With buttons and the parameter menu can be viewed;
- when the parameter to be changed is displayed, press and keep pressed button , , this parameter change is accessed and using buttons and , the displayed value can be increased or reduced until the desired value is reached;
- release the button , the controller automatically passes to the following parameter.

EXIT FROM THE DISPLAY OR PARAMETER CHANGE TAKES PLACE BY PRESSING BUTTON OR AFTER 30 SECONDS WITHOUT THE KEYBOARD BEING USED.

PARAMETERS TABLE FOR CABINET WITH *LAE* CONTROL PANEL

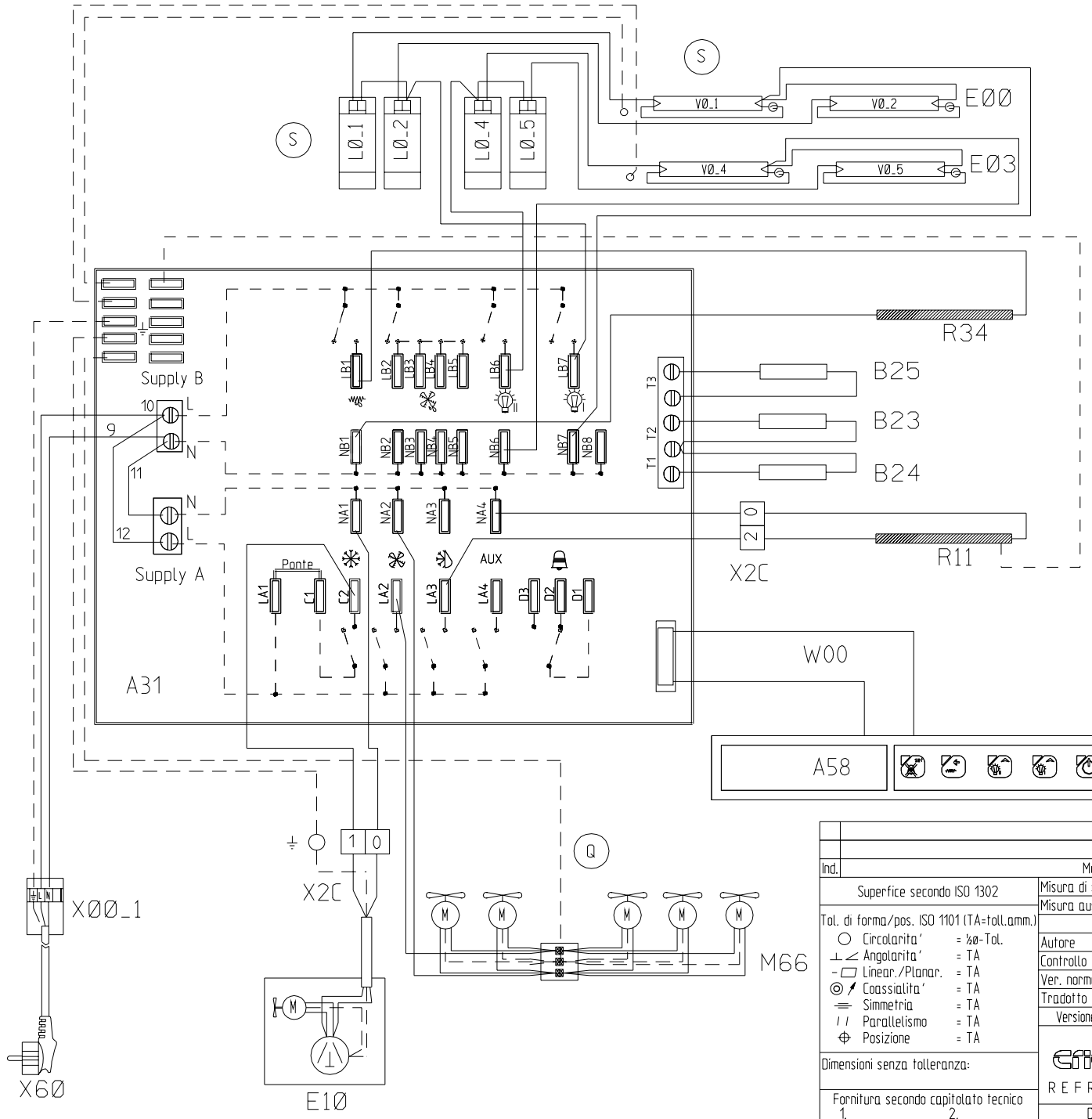
To modify the configuration parameters use the password = 250		U.M.	CRONOS 72004040 aut.defrost	CRONOS 72004050 elec.defrost
SPL	Minimum set allowed	°C/°F	**-10**	**-10**
SPH	Maximum set allowed	°C/°F	**15**	**15**
SP	Main set point	°C/°F	**2**	**2**
HY	Main thermostat delay	°C/°F	**2**	**2**
NSP	Night set point	°C/°F	**3**	**3**
NHY	Night thermostat delay	°C/°F	**3**	**3**
DFR	Defrosting frequency	n°	**4**	**4**
DLI	Defrosting end temperature	°C/°F	**12**	**12**
DTO	Maximum defrosting duration	min	**60**	**30**
DTY	Defrosting type (OFF/ELE/GAS)	–	**OFF**	**ELE**
DRN	Dripping time	min	**2**	**2**
DDY	Display control during defrosting	min	**10**	**10**
FDC	Fan control during defrosting (END/THS/CON)	–	**CON**	**CON**
FRT	Fan delay after defrosting	°C/°F	**50**	**50**
ATL	Lower alarm threshold	°C/°F	**-7**	**-7**
ATH	Upper alarm threshold	°C/°F	**10**	**10**
ATD	Temperature alarm delay	min	**60**	**60**
ATI	T1/T3 control alarm probe	T1/T3	**T1**	**T1**
ACL	Condenser cleaning interval time	weeks	**0**	**0**
CRT	Compressor stop	min	**4**	**4**
CDC	Security cycle	0,,,10	**5**	**5**
HEA	Heating function starting	Yes/No	**NO**	**NO**
NGT	Night function starting	Yes/No	**NO**	**NO**
T2	T2 probe starting	Yes/No	**YES**	**YES**
T3	T3 probe starting	Yes/No	**YES**	**YES**
TDI	Display selection	T1/T3	**T1**	**T1**
SCL	Display scale	°C/°F	**C°**	**C°**
OS1	T1 probe correction	°C/°F	**0**	**0**
OS2	T2 probe correction	°C/°F	**0**	**0**
OS3	T3 probe correction	°C/°F	**0**	**0**
ADR	Peripheral unit address	0,,,255	**0**	**0**

LEGEND FOR THE PLUG IN ELECTRICAL DIAGRAMS

Ⓐ Terminals 6 to 8 = contact output N.O. MAX. 2A (remove jumper from terminals 5 and 6)
Ⓑ Terminals 8 to 10 = refrigeration output 230V 50Hz 1PH+N MAX. 2A
Ⓓ Electric panel.
Lighting ballast box.
Ⓕ Control dash-board.
Ⓖ Display case length.
Ⓗ Lamps/ballast rated electrical powers.
Ⓘ Rated power referred to 230 Vac 50 Hz mains supply.
Refrigeration outlet max. 2A AC3.
Ⓠ Presence and features of electrical components or user elements.
230 Vac 50 Hz supply, 1PH+N+Gnd.
Ⓛ Refrigerated unit control electric wiring diagram.
Ⓜ 8-11 = N.O. clean contact refrigerator outlet (remove cable 32 in terminals 10 and 11).
Ⓝ 8-9 = 230 Vac 50 Hz refrigeration outlet, max. 6A AC1.

AA Open angle.
AC Closed angle.
A31 Control card for refrigerated unit.
A58 Display card.
A67 Speed change for motor-driven fan.
B15 Control level water switch.
B23 Evaporator temperature probe.
B24 Room temperature probe. Ⓜ
D00 Compressor 2 delaying device.
D14 Timer.
E00 Upper lighting.
E02 Anterior front apron lighting - optional.
E03 Interim shelf lighting.
E10 Condenser unit.
F0G A31 card primary fuse.
F00 Refrigeration outlet fuse.
F03 Fuse for R34-E00-E03-R11.
F05 Fuse for auxiliaries M66-M111-M112.
F001 Compressor 1 fuse.
F002 Compressor 2 fuse.
F4A1 Compressor 1 high pressure pressure switch.
F4A2 Compressor 2 high pressure pressure switch.
K00 Remote switch for refrigeration outlet.
K001 Compressor 1 remote switch.
K002 Compressor 2 remote switch.
L0_ Fluorescent lamp ballast.
M011 Motor driven compressor n° 1.
M012 Motor driven compressor n° 2.
M111 n° 1 Condenser unit fan.
M112 n° 2 Condenser unit fan.
M66 Evaporator motor driven fans.
R-C Anti-noise filter.

R11 Evaporator defrost resistance element.
R34 Anti-fog resistance element.
R37 Re-evaporation water heater.
S4B Night temperature thermostat (only with night cover) remove the cable that is between terminals 4 and 5.
S4I Safety heater thermostat.
S44 End-defrost thermostat.
S13 Anti-fog resistance element switch.
S17 Display case lighting switch.
S19 Display case supply switch.
S45 Temperature thermostat.
S171 Line n° 1 light switch.
S172 Line n° 2 light switch.
T3A Controller supply transformer for refrigerated unit.
V0 Fluorescent lamp.
W00 Flat.
XA Terminal block for to be earth-wire wiring.
X2C 2 poles terminal.
X2I Insulation derivation terminal.
X00 User connector terminal board.
X00_1 Display case supply terminal box.
X00_2 Terminal box for defrost resistance element outlet and condenser unit or solenoid valve.
L-N = refrigeration outlet. 220 Vac 50 Hz max. 2A (AC3).
X40 Power supply connection for re-evaporatin water heater.
X50 Plug for the re-evaporatin water heater.
X60 Display case supply plug. Connect to mains 220/230 Vac 50 Hz.
Y13 Liquid line solenoid valve.
Y15 Hot-gas defrost solenoid valve.



LEGGENDA			
Fase Neutro	SIMBOLO	DESCRIZIONE	
		= faston maschio su basetta	XF
LB7 + NB7		= luci standard	E00
LB6 + NB6		= luci luci optional	E02/E03
LB2..5 + NB2..5		= ventilatori antiappannanti	M3A
LB1 + NB1		= resistenza antiappannante standard e optional	R34
C2 + NA1		= compressore	E10
LA2 + NB2		= ventilatori di vasca	M66
LA3 + NA3		= resistenza di sbrinamento	R11
D1 + (D2 & D3)		= allarme	P
LA4 + NA4	AUX	= uscita ausiliaria	Q

					(H)		(H)	
(G)	L0_1 V0_1	L0_2 V0_2	L0_4 V0_4	L0_5 V0_5	R34 WATT	M66 WATT	R11 WATT	
1250	30 W	-	30 W	-	24	33X1	270	
1875	58 W	-	58 W	-	36	33X2	460	
2500	30 W	30 W	30 W	30 W	49	33X2	640	
3125	36 W	36 W	36 W	36 W	62	33X3	830	
3750	58 W	58 W	58 W	58 W	74	33X5	1020	
				(I)				

Ind.	Modifica	Autore	Data	Controllo	Ver. norme	Rev.-Nr.

Superfice secondo ISO 1302

Tol. di forma/pos. ISO 1101 (TA=toll.amm.)
- Circolarita' = ½ø-Tol.
- Angolarita' = TA
- Linear./Planar. = TA
- Coassialita' = TA
- Simmetria = TA
- Parallelismo = TA
- Posizione = TA

Dimensioni senza tolleranza:

Fornitura secondo capitolato tecnico
1. 2.
3. 4.

Misura di controllo
Misura ausiliaria ( )

	Data	Nome
Autore	26.01.01	PAOLO
Controllo		
Ver. norme		
Tradotto		

Versione valida: solo italiana

CRIOSBANC REFRIGERATION

Materiale: PLUG-IN
Pz.grezzo-Nr.:
Descrizione: SCHEMA EL. EC LAE
Disegno-Nr.: Criosbanc 71005590
Sost.il:
Origine:

Peso in kg:
CAD
Scala:
Foglio:
Segue: