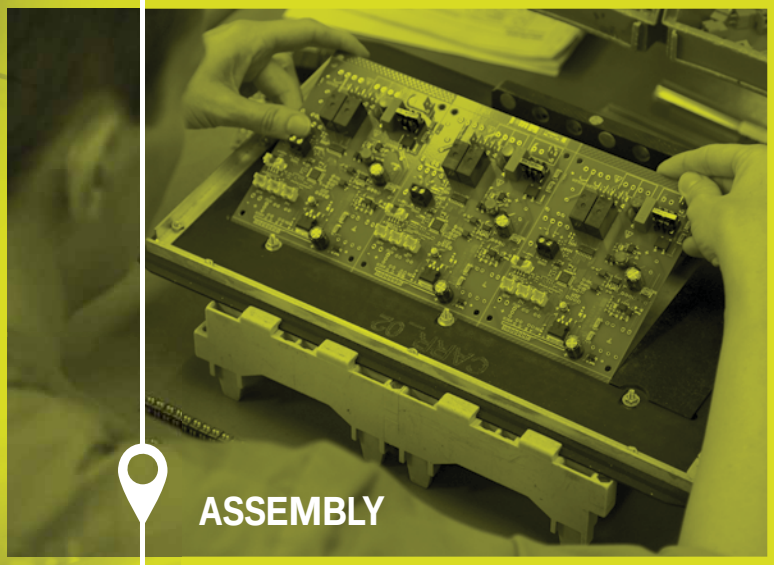
lae
ELECTRONIC

LOTS OF OPTIONS, JUST ONE CHOICE.

CATALOGUE

A successful method

PRODUCT DESIGNING



ASSEMBLY

EOL TEST

WORLDWIDE SALES

Suitable for use R290

Wireless connection

Bluetooth

Internet of Things

GLOBAL MARKET PRESENCE

Today millions of professional and commercial refrigerators, blast chillers and freezers, dough-retarder provers, ovens, air conditioners, compressed air dryers are controlled by high-performance regulators. You may often wonder who manufactures these customized electronic controls.

If you see a product operating with innovative technology & long lasting performance it is likely to be our LAE ELECTRONIC brand.

LEADER IN CUSTOMIZED CONTROLLERS

For many years we have proven to be leaders in the designing of customized controllers based on the technical specifications and design of the system to be controlled. For over thirty years, we have supported innovative changes requested by some of the most reputable world manufacturers.

Our Customers recognize the competency and the unique know-how with which we approach the project phases, creating synergies for the development of original and unique proposals. Solutions we help provide are the key to the complete success of their system.

PERFECT INTEGRATION

We aim to produce a perfect integration into your applications, without compromise, making LAE Electronic controllers among the best ever in the global marketplace. Our products have a solid reputation for reliability and incredible efficiency in the toughest working conditions. Being aesthetically sophisticated and easy to operate, they are just as user-friendly as a tablet or a smartphone.

ENVIRONMENT & ETHICAL CODE

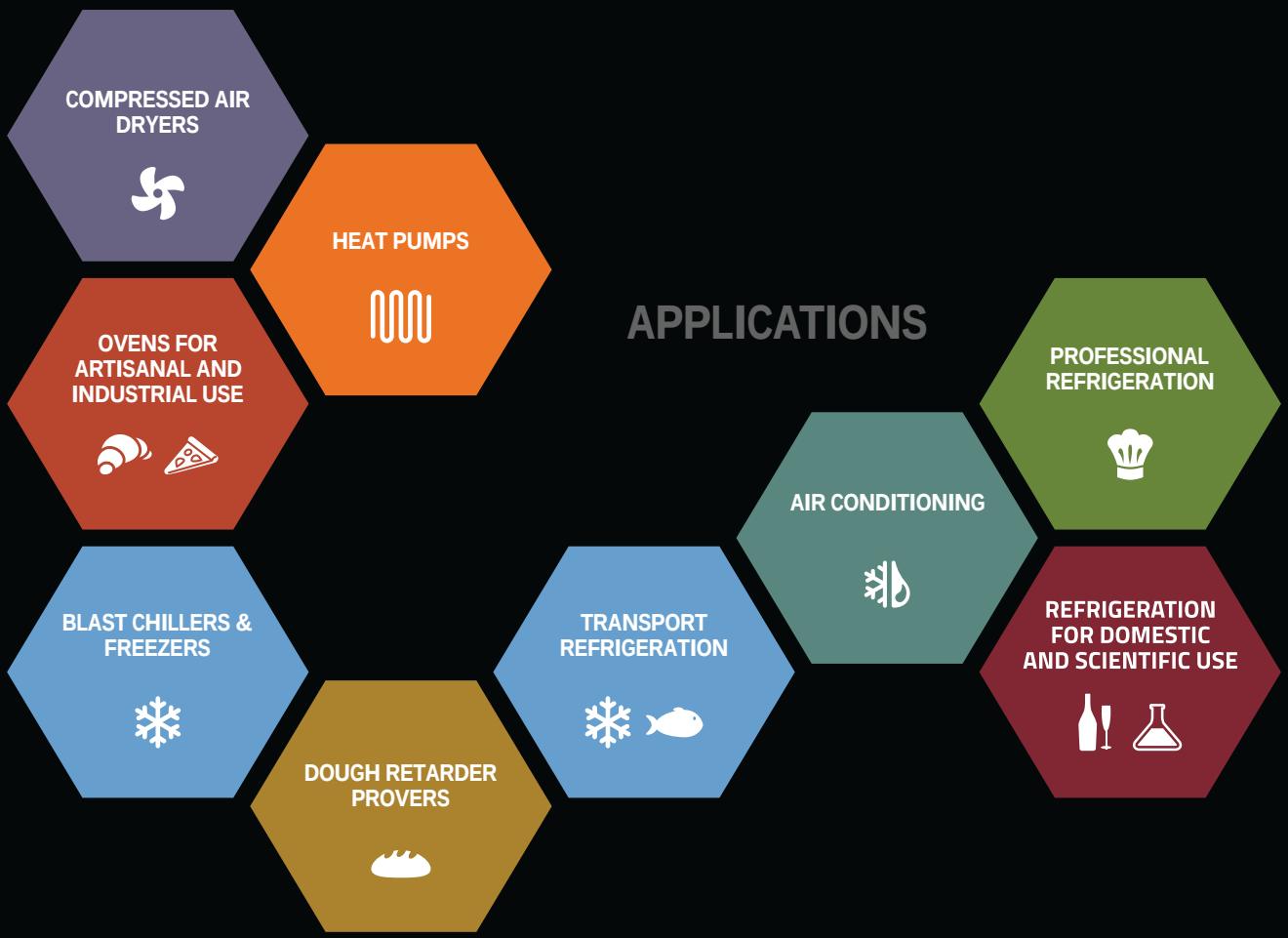
LAE policy is to always respect all environmental protection concerns that are important to all consumers. We develop functions and adopt technologies that best meet the growing needs for energy saving and low environmental impact.

Another cornerstone of our company policy is focused on ethical treatment of all workers. We closely work with exclusively selected suppliers that have adopted ethical codes.

CONNECTIVITY

Our R&D division is continuously engaged in the assessment of the latest generation of new technologies, especially with respect to the collection and processing of data. These connectivity features are now easily obtainable providing great functionality for the end-user and the manager. Machines that communicate and coordinate among them, by means of our controllers, form a much more efficient and easily controllable system, with enormous benefits in terms of safety, process stability and product quality.

Leader in the designing of high-profile solutions



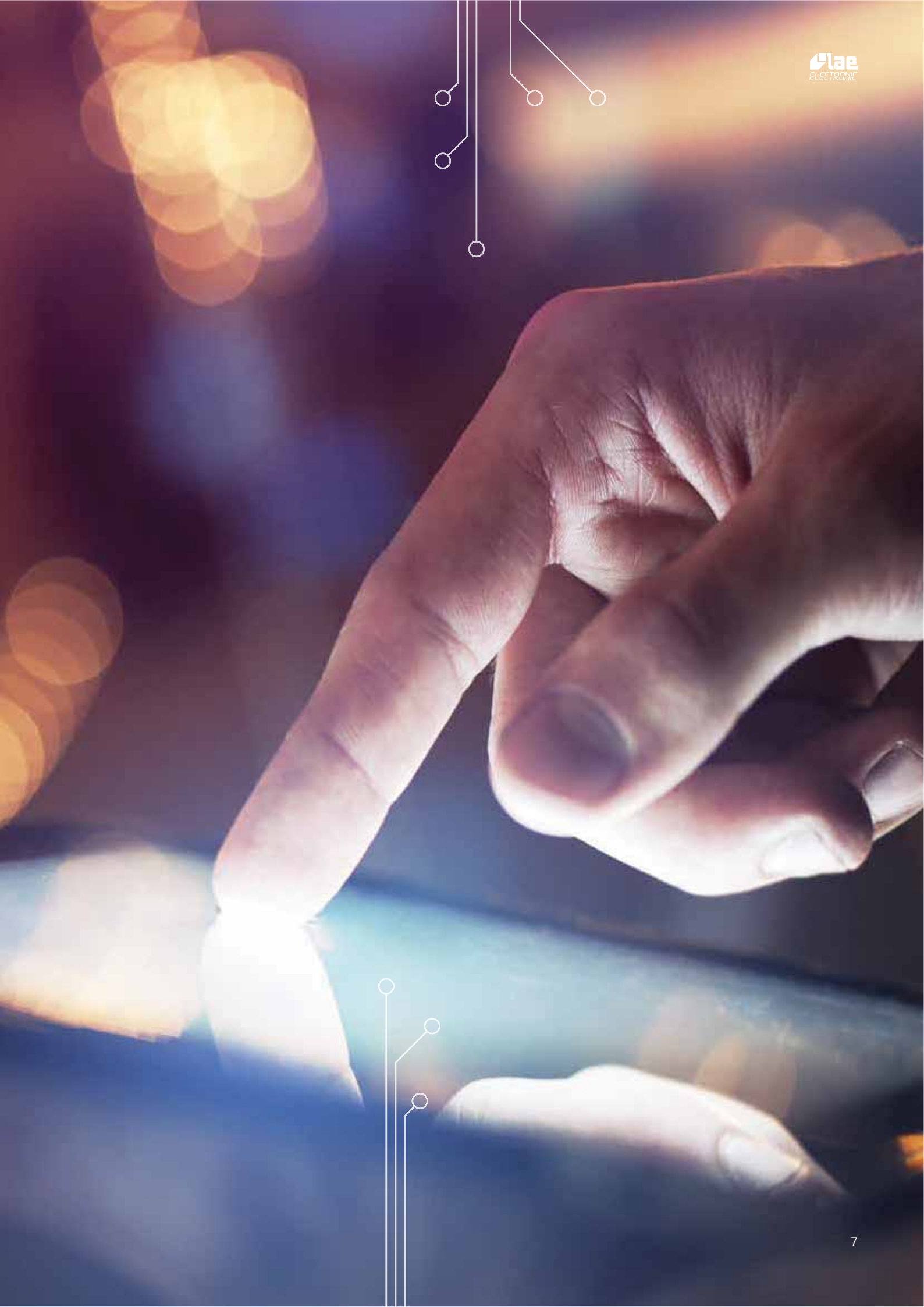
For over ten years LAE Electronic has been investing in technologies and human resources for the designing of high-profile customised controllers and Human-Machine Interfaces, in order to obtain the best results in terms of aesthetics, performances, versatility and intuitive use.

The major world players recognise the competency and the unique know-how with which we approach the project phases. This has become our core-business, allowing an expansion in turnovers and means.

Touch screen displays

We offer high-performance TFT touch screen displays with various formats, from 4.3” up to 10”, both capacitive and resistive.

The variety of graphic options is unlimited, in order to offer the most suitable configuration to those who daily need to work with an intuitive and effective interface, featuring no complications.

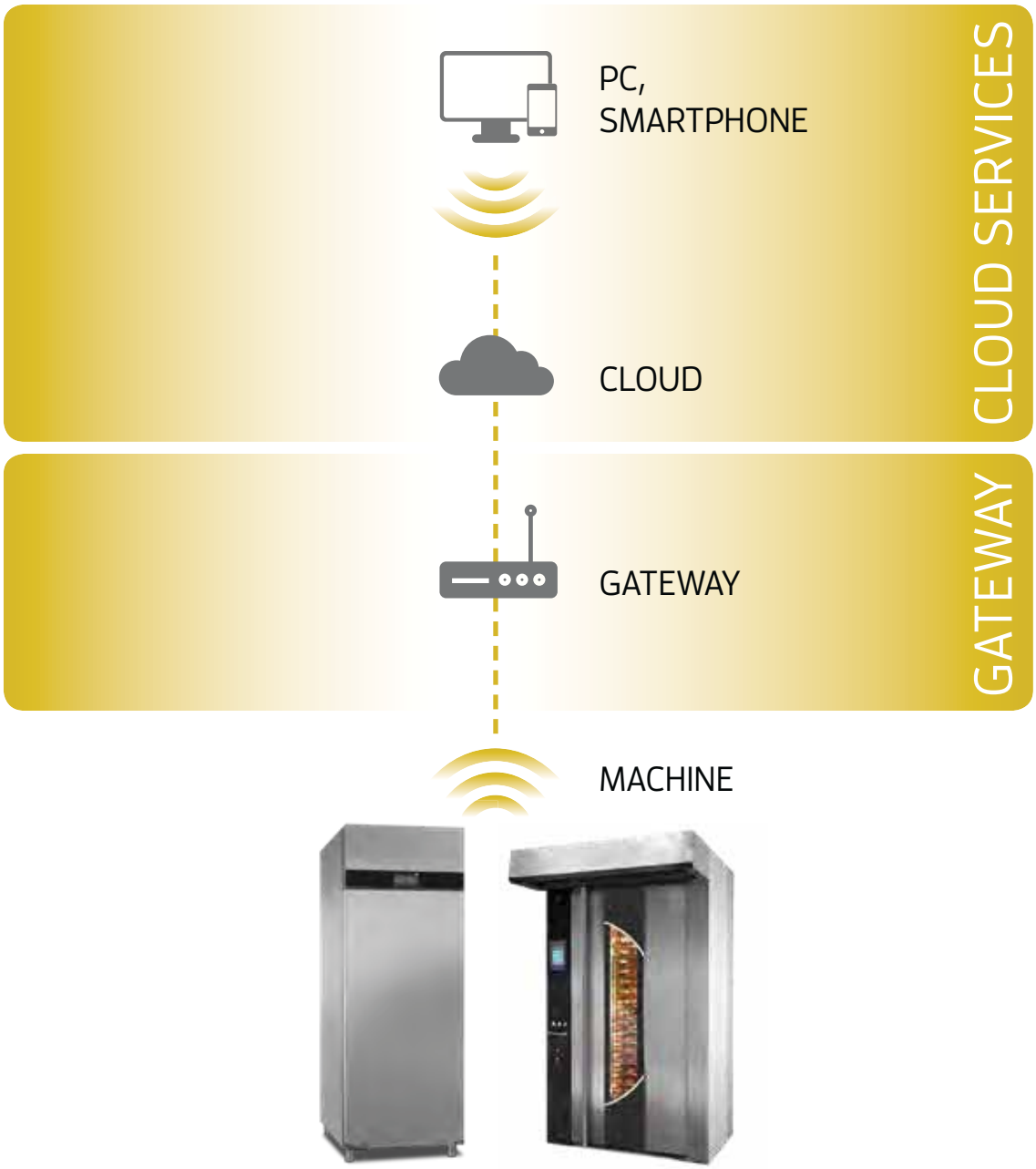


Cloud sevices

A cloud-based software suitable for use with the LAE controllers, **accessible anywhere and anytime via a web browser or mobile App**.

Its User Interface may be **customised** to suit the specific customer's requirements as to webpage layout, colours, logo and functions.

The adoption of the **most updated security and privacy standards** is guaranteed at all times.



The complete scenario of the plant connected is always and anywhere **under control via your Smartphone, tablet or PC**.

Maximum productivity is thus ensured and **the risk of downtimes, unpredicted maintenance costs and high operation costs is actually eliminated**.
A precise continual supervision allows the machine parameters to be programmed when needed and machine components to be serviced or replaced in a timely manner so as to always maintain the best product quality and texture without the risk of losses.

This cloud-based software is a very powerful service tool to **add** significant **value to the offer range of OEMs**, service engineers and system managers, ensuring peace of mind, long lasting operation and optimised performance of the machines.

Gateway

WIFI OR RS485

TO THE CLOUD:
3G OR NB-IOT

SIM CARD WITH
GDSP TECHNOLOGY

AUTOMATIC
CONFIGURATION

VERY HIGH SECURITY
LEVEL/ENCRYPTION

GTW-0X

90 x 60 x 28 mm

For IoT communication

Main Features

- WiFi: IEEE 802.11 b/g/n
- Bluetooth
- GSM/GPRS/EDGE, UMTS/HSDPA/HSUPA and NB-IoT networks supported
- SIM connector
- Connector for LCD LVDS display
- RTC

Applications

Air conditioners, heating systems, commercial and professional refrigerators, blast chillers and freezers, dough-retard provers, heating/cooling combi catering machines, professional ovens, ice makers, transport refrigeration, high-end domestic refrigerators.

Technical Data	
CPU	NXP i.MX 6ULL
Core	Cortex-A7 @ 800MHz
Memory	28MB DDR3-800, 256MB SLC NAND Flash
OS	Linux embedded, YOCTO project (rev. 4.1.43)
10/100 Ethernet interface	
USB Type A	
microSD	
RS485	
RS232	
Power supply	7 to 40 Vdc
Tiny Size	90 x 60 x 28 mm
Internal web server	

• The GTW-0x Gateway is a computer with Operating System, memory and communication ports, designed specifically to run IoT communication securely.

• One single gateway may serve several controllers, connected to it via WiFi or RS485 hard-wired line.

• An internal webserver configures the network of controllers automatically without complications for the user.

• The connection from the Gateway to the cloud takes place on 3G or NB-IOT or alternatively via Ethernet through a local router. Very high security level and ecryption are ensured at all times.

• A SIM card designed for data traffic, with GDSP technology, allows global coverage, at very low traffic costs.

Standard products

CONTROLLERS

AC1-2W

110 x 53 x 75 mm

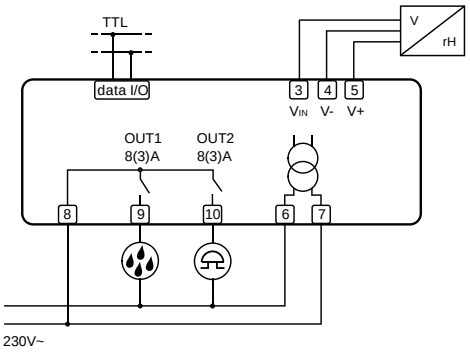
Two channel universal Controller, ON/OFF or PID

Main Features

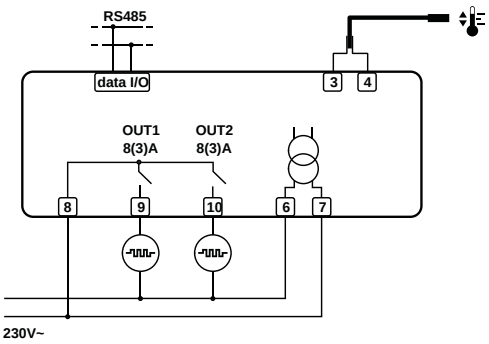
- Wall-mount controller
- Runs on mains power supply
- PID with autotuning or ON/OFF control
- Input for 0÷1V, PTC/NTC10K
- 0.1 / 1°C or 1°F resolution
- Selectable Refrigerating/Heating (Dehumidifying/Humidifying) control
- Absolute or relative temperature alarms
- ON/OFF button on front
- Connectivity to LAE TAB supervisory systems

Applications

Temperature: control of small cold stores, heating systems, bains-marie, ovens, laboratory equipment.
Humidity: control of greenhouses, seasoning cells, cold rooms, air-conditioned rooms.



AC1-2WAQ2RE-A



AC1-2WTQ2RE-B

AC1-2W series

Functions		AC1-2WT...	AC1-2WA...
Input type	PTC	NTC10K*	0÷1V
Range	-50÷150°C -60÷300°F	-40÷125°C -40÷260°F	Configurable in setup
Accuracy	±0.3°C	±0.3°C	±3mV
Resolution	0.1 / 1°C / 1°F		0.1 / 1
Ambient temperature	-10÷50°C		

[a]-50÷150°C; [b] remaining range.
* The standard NTC10K is the SN4B20P1

AC1-2W	T	Q	2	R	E	-B
	(1)	(2)	(3)	(4)	(5)	(6)

Pos.	Function	Description
(1)	Input	**A** = 0÷1V; **T** = PTC / NTC10K
(2)	Connections	**Q** = Detachable screw terminals
(3)	Output No.	**1** = one; **2** = two
(4)	Output type	**R** = relay
(5)	Supply	**E** = 230Vac 50/60Hz 50/60Hz 3 W
(6)	Serial comm.	**Nil** = no; **-A** = TTL; **-B** = RS485

How to order:
› AC1-2WTQ2RE-B (PTC/NTC10K input, detachable screw terminals, 2 relays, 230Vac supply voltage, RS485 port)
› AC1-2WAQ2RE-A (0÷1V input, detachable screw terminals, 2 relays, 230Vac/dc supply voltage, TTL port)

› **In order to know versions available, please consult LAE or our local dealer.**

CONTROLLERS

AC1-5

77 x 35 x 77 mm

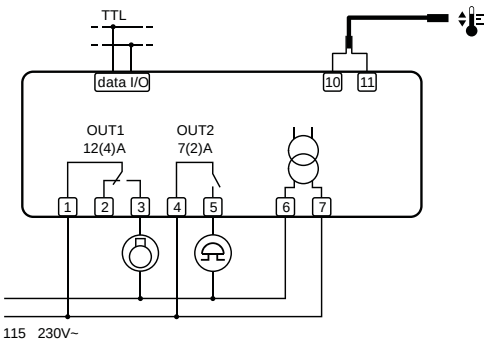
Two channel universal Controller, ON/OFF or PID

Main features

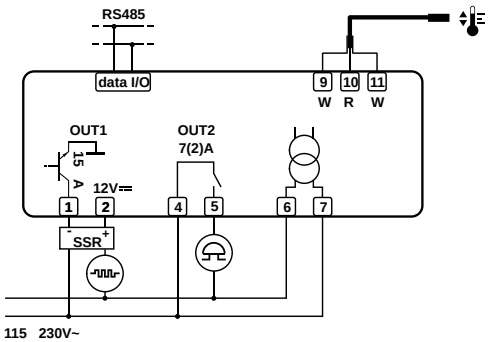
- Runs on universal mains power supply
- PID with autotuning or ON/OFF control
- Main output on 12A relay or for SSR-piloting and auxiliary output on 5A relay
- Input for 0÷1V, 0/4÷20mA, PTC/NTC10K, TC J/K or Pt100
- 0.1 / 1°C or 1°F resolution
- Selectable Refrigerating/Heating (Dehumidifying/Humidifying) control
- Absolute or relative temperature alarms
- ON/OFF button on front
- Connectivity to LAE TAB supervisory systems

Applications

Temperature: Control of small cold stores, refrigerated cabinets and tables, heating systems, heated cupboards, bains-marie, ovens, laboratory equipment.
Humidity: Control of greenhouses, seasoning cells, cold rooms, air-conditioned rooms.



AC1-5TS2RW-A



AC1-5PS2MW-B

Series AC1-5

Functions	AC1-5T...		AC1-5P...	AC1-5J...		AC1-5A...	AC1-5I...
Input type	PTC	NTC10K*	Pt100	TC "J"	TC "K"	0÷1V	0/4÷20mA
Range	-50 +150°C	-40 +125°C	-100 +850°C	-50 +750°C	-50 +999°C	Configurable in setup	
Accuracy	±0.3°C	±0.3°C	±0.3°C[a]; ±1°C[b]	±3°C		±3mV	±0.2mA
Resolution	0.1 / 1°C / 1°F			1°C / 1°F		0.1 / 1	
Panel cut-out	71 x 29 mm (W x H)						
Ambient temperature	-10÷50°C						

[a] -50÷150°C; [b] remaining range
* The standard NTC10K is the SN4B20P1

How to order:
› AC1-5TS2RW-A (PTC/NTC10K input, screw terminals, 2 relays, 115÷230Vac supply voltage, TTL port)
› AC1-5JS2MW-B (J/K TC input, screw terminals, output 1 on SSR drive, output 2 on relay, 115÷230Vac supply voltage, RS485 port)

› On request, the AC1-5 is also available with gasket for a better protection between bezel and panel.

› In order to know versions available, please consult LAE or our local dealer.

AC1-5	T	S	2	R	W	-B
	(1)	(2)	(3)	(4)	(5)	(6)

Pos.	Function	Description
(1)	Input	**A** = 0÷1V; **I** = 0/4÷20mA; **J** = TC 'J'/'K'; **P** = Pt100; **T** = PTC/NTC10K
(2)	Connections	**S** = built-in screw terminals
(3)	Output No.	**1** = one; **2** = two
(4)	Output type	**R** = relay; **M** = Out1 on SSR, Out2 on relay
(5)	Supply	**D*** = 12Vac/dc; **W** = 115...230Vac 50/60Hz; 3 W
(6)	Serial comm	**Nil** = no; **-A** = TTL; **-B** = RS485

* = in the version with 12Vac/dc power supply, the maximum voltage on the outputs is 50Vac/dc, in order to ensure safety insulations.

CONTROLLERS

AC1-27

71 x 97 x 61 mm DIN rail

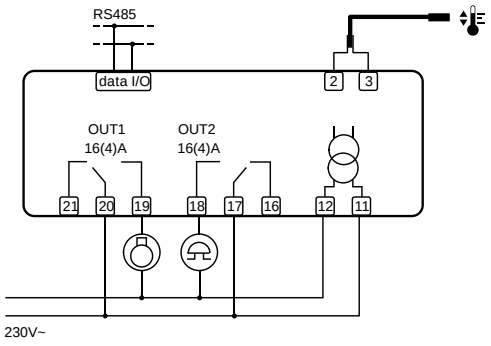
Two channel universal Controller, ON/OFF or PID

Main features

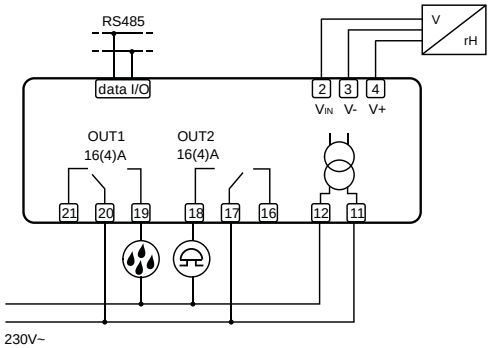
- Runs on mains power supply
- PID with autotuning or ON/OFF control
- Main output on 12A relay or for SSR-piloting and auxiliary output on 5A relay
- Input for 0÷1V, PTC/NTC10K, TC J/K or Pt100
- 0.1 / 1°C or 1°F resolution
- Selectable Refrigerating/Heating (Dehumidifying/Humidifying) control
- Absolute or relative temperature alarms
- ON/OFF button on front
- Connectivity to LAE TAB supervisory systems

Applications

Temperature: on control panels for small cold stores, heating systems, heated cupboards, bains-marie, ovens, laboratory equipment.
Humidity: on control panels for greenhouses, seasoning cells, cold rooms, air-conditioned rooms.



AC1-27TS2RE-B



AC1-27AS2RE-B

AC1-27 series

Functions	AC1-27T...		AC1-27P...	AC1-27J...		AC1-27A...
Input type	PTC	NTC10K*	Pt100	TC "J"	TC "K"	0+1V
Range	-50÷150°C -60÷300°F	-40÷125°C -40÷260°F	-100÷850°C -150÷999°F	-50÷750°C -60÷999°F	-50÷999°C -60÷999°F	Configurable in setup
Accuracy	±0.3°C	±0.3°C	±0.3°C[a]; ±1°C[b]	±3°C		±3mV
Resolution	0.1 / 1°C / 1°F			1 °C / °F		0.1 / 1
Ambient temperature	-10÷50°C					

[a]-50÷150°C; [b] remaining range.
* The standard NTC10K is the SN4B20P1

AC1-27	T	S	2	R	E	-B
	(1)	(2)	(3)	(4)	(5)	(6)

Pos.	Function	Description
(1)	Input	**A** = 0÷1V; **J** = TC 'J' / 'K'; **P** = Pt100; **T** = PTC / NTC10K
(2)	Connections	**S** = built-in screw terminals
(3)	Output No.	**1** = one; **2** = two
(4)	Output type	**R** = relay; **M** = Out1 on SSR, Out2 on relay
(5)	Supply	**D** = 12Vac/dc; **E** = 230Vac 50/60Hz; **U** = 115Vac 50/60Hz 3W
(6)	Serial comm.	**Nil** = no; **-A** = TTL; **-B** = RS485

How to order:
› AC1-27JS2RE-B (TC J/K input, screw terminals, 2 relay outputs, 230Vac supply voltage, RS485 port).
› AC1-27AS2E-B (0÷1V input, screw terminals, 2 relay outputs, 230Vac supply voltage, RS485 port))

› In order to know versions available, please consult LAE or our local dealer.

CONTROLLERS

LTR-5

77 x 35 x 77 mm

Single output ON/OFF or PID controller

Main features

- Runs on mains power supply
- PID with autotuning or ON/OFF control
- Output on relay (16A) or SSR piloting
- Input for PTC, NTC10K or 0÷1V
- 0.1 / 1°C or 1°F resolution
- Refrigerating (dehumidifying) or heating (humidifying) control mode selection
- ON/OFF button on front
- Connectivity LAE supervisory systems

Applications

Temperature: Control of small cold stores, refrigerated cabinets and tables, heating systems, heated cupboards, bains-marie, ovens, laboratory equipment.
Humidity: Control of greenhouses, seasoning cells, cold rooms, air-conditioned rooms.

Series LTR-5

Functions	LTR-5T..	LTR-5C..	LTR-5A...
Input type	PTC	NTC10K	0÷1V
Range	-50÷150°C -60÷300°F	-40÷125°C -40÷260°F	0÷99.9% r.H.
Accuracy	±0.3°C[a]; ±1.0°C[c]	±0.3°C[b]; ±1.0°C[c]	±0.7% r.H.
Resolution	0.1 / 1°C, °F		0.1 / 1 % r.H.
Front protection	IP55		
Panel cut-out	71 x 29 mm (W x H)		
Ambient temperature	-10÷50°C		

[a]-50÷140°C; [b]-40÷110°C; [c] remaining range.

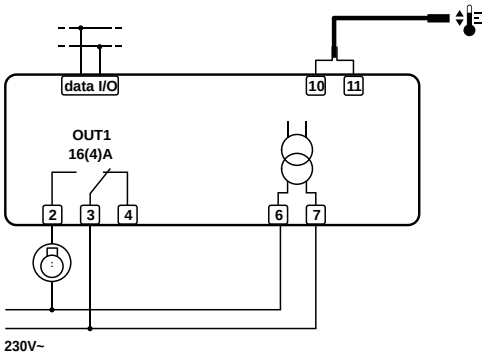
LTR-5	C	S	R	E	-B
	(1)	(2)	(3)	(4)	(5)

Pos.	Function	Description
(1)	Input	**T** = PTC; **C**** = NTC10K; **A** = 0÷1V
(2)	Connectors	**S** = screw terminals
(4)	Output type	**R** = relay; **F** = SSR drive
(5)	Supply	**D** = 12Vac/dc; **E** = 230Vac, **U** = 115Vac, 2 W
(6)	Serial comm.	**-** = no serial port; **-A** = TTL; **-B** = RS485

**** The standard NTC probe is the SN4B20P1

How to order examples:
› LTR-5CSFE-B (NTC10K input, 1 SSR drive output, screw terminals, 230Vac supply, RS485 port)
› LTR-5ASRE (0÷1V input, 1 relay, screw terminals, 230Vac supply, no serial port)

› On request, the LTR-5 is also available with gasket for a better protection between bezel and panel.
› In order to know more options available for the models, please consult LAE or our local dealer.



REFRIGERATION CONTROLLERS

AD2-5

77 x 35 x 90 mm

Universal Refrigeration Controller

Main features

- Defrosts at regular intervals
- Optional synchronized defrost start and termination with master-slave connection
- Selectable NTC10K or PTC input
- Universal 115-230Vac power supply
- FLEXICOLD function for energy saving or alternative setpoint
- Optional control of a second compressor or evaporator
- Excellent evaporator fan control
- Temperature, door open, condenser high temperature/pressure alarms
- Light and standby control (On/Off)
- Connectivity to LAE supervisory systems

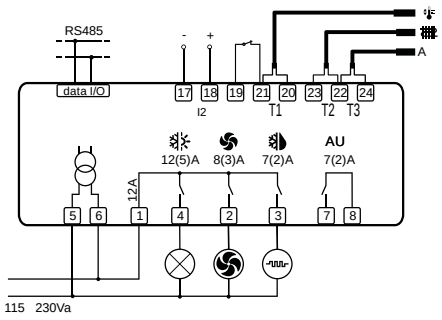
Applications

Plug-in cabinets, supermarket display cases, cold stores, control panels, upright fridges and freezers, refrigerated tables.

AD2-5 series

Functions		B03W-BG	C14W-AG	C34W-BG
Temperature inputs	Thermostat	●	●	●
	Evaporator	●	●	●
	Auxiliary		●	●
Door switch input	Voltage free contact	●	●	●
Digital inputs	Voltage free contact		●	
	12¸24Vac voltage			
	Defrost synchronisation			●
Outputs	Thermostat	●	●	●
	Evaporator fans	●	●	●
	Defrost	●	●	●
	Auxiliary		●	●
Power supply	115-230Vac	●	●	●
	12Vac/dc			
Serial port	TTL serial port		●	
	RS-485 serial port	●		●
Keypad	Generic	●	●	●
	With light button			

› All models come with an alarm buzzer.
› All models are fitted with detachable screw terminals.
› On request, the AD2-5 is also available with gasket for a better protection between bezel and metal panel.
› In order to know more options available for the models, please consult LAE or our local dealer.



Technical Data	
Control Range	-50÷120°C, -55÷240°F
Resolution	0.1 / 1 °C; °F
Accuracy	NTC10K: <±0.3°C (-40.0÷70.0°C) PTC1000: <±0.5°C (-50÷120°C)
Sensor type	Selectable NTC10K standard mod. SN4B20P1/P2/P3 or PTC1000
Power supply	115÷230V~ ±10% 50÷60Hz 3W
Front protection	IP55
Panel cut-out	71 x 29 mm (W x H)
Ambient temperature	-10÷50°C

AD2-5C34W-BG

REFRIGERATION CONTROLLERS

BR5

77 x 35 x 90 mm

Compact Comprehensive Refrigeration Controller

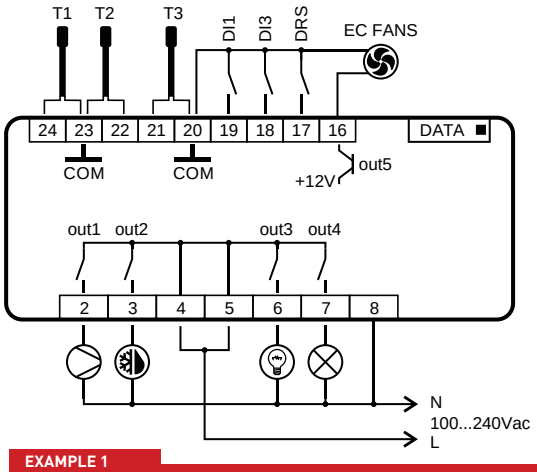
NEW

Main features

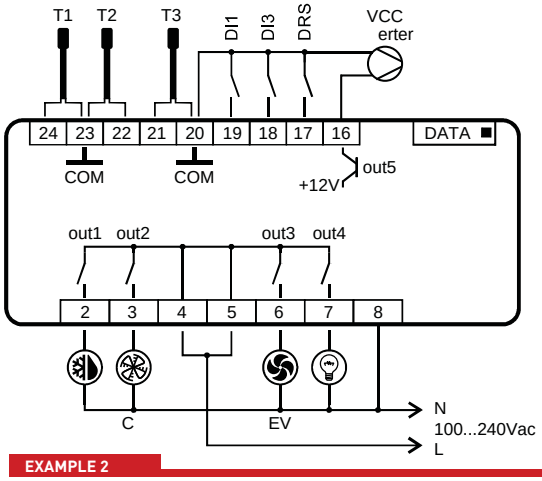
- Up to 5 configurable outputs for a perfect adaptation to the specific needs such as: control of variable speed compressors (*example 2*) or fans (*example 1*), drive of a large external compressor relay (*example 3*), control of lights, ON/OFF fans, heaters, switched loads, defrost, alarms, second evaporator
- With or without RTC for timed control functions
- Suitable for R290 compressors
- Universal mains power supply
- Connectivity to residential supervisory systems or Cloud
- Several display colour options: amber, blue, green, red or white

Applications

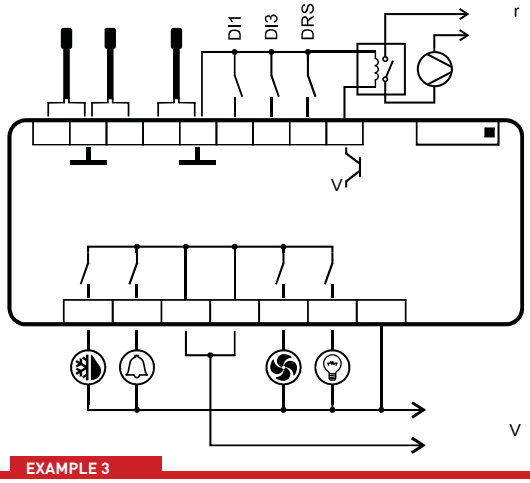
Upright refrigerators, plug-in and supermarket display cases, refrigerated vehicles, cold stores, control panels.



EXAMPLE 1



EXAMPLE 2



EXAMPLE 3

BR5 series

Functions			-A001WR	-B001WR	-A101WT
Output OUT5	-A	For ECM fans	●		●
	-B	For VCC		●	
RTC	0	Fitted	●	●	
	1	None			●
Inputs/Outputs	01	Standard version: 6 inputs, 4 outputs	●	●	●
Power Switch	W	100...240Vac	●	●	●
Serial communication	R	RS485	●	●	
	T	TTL			●
	F	WiFi (external module)			
Aesthetical options and F/W	-	None			

› All models are fitted with buzzer.

Technical Data	
Range	-50÷110°C, -58÷180°F
Resolution	0.1 / 1°C; °F
Precision	<±0.5°C within the measurement range
Sensor type	NTC 10KΩ@25°C
Relay output max loads (240Vac):	
OUT1	12A resistive 3.5 FLA; 21 LRA
OUT2	7A resistive 1 FLA; 4 LRA
OUT3	7A resistive 1 FLA; 4 LRA
OUT4	7A resistive 1 FLA; 4 LRA
OUT5	SELV 90mA@12Vac
Power supply	100÷240Vac ±10% 50÷60Hz 3W
Ambient temperature	-10÷50°C
Real Time Clock battery	>10 years

REFRIGERATION CONTROLLERS

AD2-28

107 x 95 x 47 mm

Versatile Split Refrigeration Controller

Main features

- Cyclic defrosts
- Synchronized defrost start and termination with master-slave connection
- Selectable NTC10K or PTC input
- FLEXICOLD function for energy saving or alternative setpoint
- Optional control of a second compressor or evaporator
- Excellent evaporator fan control
- Absolute or relative temperature alarms, door open alarm, condenser high temperature/pressure alarm
- Light and standby control (On/Off)
- Connection to LAE supervisory systems
- Available display unit: LCD-5S or RU33

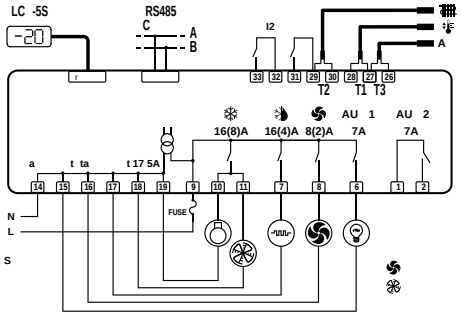
Applications

Upright refrigerators, plug-in and supermarket display cases, cold stores, control panels.

AD2-28 series

Functions		B1T5E-A	C1S4E-A	C1S5E-B
Temperature inputs	Thermostat	●	●	●
	Evaporator	●	●	●
	Auxiliary		●	●
Door switch	Voltage free	●	●	●
Digital input aux.DI2	Voltage free	●	●	●
	12÷24Vac			
	Defrost synchronisation			
Connections	Quick on M/F			
	On screw terminals	●	●	●
Displays	LCD-5S		●	●
	RU33	●		
Outputs	Thermostat	●	●	●
	Evaporator fans	●	●	●
	Defrost	●	●	●
	Auxiliary 1	●	●	●
	Auxiliary 2	●		●
Power supply	230Vac	●	●	●
Serial port	TTL	●	●	
	RS-485			●

› All models come with an alarm buzzer.
› In order to know more options available for the models, please consult LAE or our local dealer.



Technical data	
Range	-50...120°C, -55...240°F
Resolution	0.1 / 1 °C; °F
Precision	NTC10K: <±0.3°C (-40.0÷70.0°C) PTC1000: <±0.5°C (-50÷120°C)
Sensor type	Selectable NTC10K standard mod. SN4B20P1/P2/P3 or PTC1000
Power supply	230V~ ±10% 50÷60Hz 3W
Ambient temperature	-10÷50°C

Technical data LCD-5S display unit	
Dimensions	77 x 35 x 20 mm (WxHxD)
Panel cut-out	71 x 29 mm (WxH)
Front protection	IP55
Ambient temperature	-10÷50°C

Technical data RU33 display unit	
Dimensions	169 x 38 x 25 mm (WxHxD)
Panel cut-out	163 x 31.5 mm (WxH)
Front protection	IP55
Ambient temperature	-10÷50°C

REFRIGERATION CONTROLLERS

AR2-28

107 x 95 x 47 mm

Versatile Split Refrigeration Controller with RTC

Main features

- Up to six real time defrosts
- Synchronized defrost start and termination with master-slave connection
- Selectable NTC10K or PTC input
- FLEXICOLD function for energy saving or alternative setpoint
- Optional control of a second compressor or evaporator
- Excellent evaporator fan control
- Absolute or relative temperature alarms, door open alarm, condenser high temperature/pressure alarm
- Light and standby control (On/Off)
- Connection to LAE supervisory systems
- Available display unit: LCD-5S or RU33

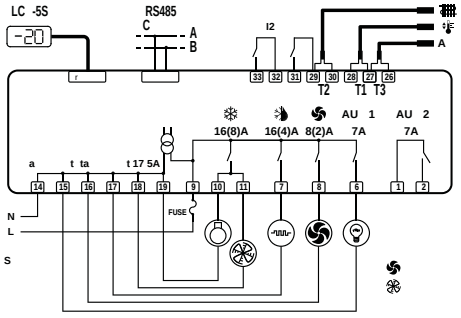
Applications

Plug-in cabinets, supermarket display cases, cold stores, control panels, upright fridges and freezers, refrigerated tables and all those applications where real time defrost is required.

AR2-28 series

Functions		B1T5E-A	C1S4E-A	C1S5E-B
Temperature inputs	Thermostat	●	●	●
	Evaporator	●	●	●
	Auxiliary		●	●
Door switch	Voltage free	●	●	●
Digital input aux.DI2	Voltage free	●	●	●
	12÷24Vac			
	Defrost synchronisation			
Connections	Quick on M/F			
	On screw terminals	●	●	●
Displays	LCD-5S		●	●
	RU33	●		
Outputs	Thermostat	●	●	●
	Evaporator fans	●	●	●
	Defrost	●	●	●
	Auxiliary 1	●	●	●
	Auxiliary 2	●		●
Power supply	230Vac	●	●	●
Serial port	TTL	●	●	
	RS-485			●

› All models come with an alarm buzzer.
› In order to know more options available for the models, please consult LAE or our local dealer.



Technical data	
Range	-50...120°C, -55...240°F
Resolution	0.1 / 1 °C; °F
Precision	NTC10K: <±0.3°C (-40.0÷70.0°C) PTC1000: <±0.5°C (-50÷120°C)
Sensor type	Selectable NTC10K standard mod. SN4B20P1/P2/P3 or PTC1000
Power supply	230V~ ±10% 50÷60Hz 3W
Ambient temperature	-10÷50°C

Technical data LCD-5S display unit	
Dimensions	77 x 35 x 20 mm (WxHxD)
Panel cut-out	71 x 29 mm (WxH)
Front protection	IP55
Ambient temperature	-10÷50°C

Technical data RU33 display unit	
Dimensions	169 x 38 x 25 mm (WxHxD)
Panel cut-out	163 x 31.5 mm (WxH)
Front protection	IP55
Ambient temperature	-10÷50°C

REFRIGERATION CONTROLLERS

AH1-5

77 x 35 x 90 mm

Controller for transport refrigeration

Main features

- Refrigeration and heating controller with neutral band
- Selectable NTC10K or PTC input
- Universal 110-230Vac power supply
- FLEXICOLD function for energy saving or alternative setpoint
- Optional control of a second compressor or evaporator
- Excellent evaporator fan control
- Temperature, door open, condenser high temperature/pressure alarms
- Light and standby control (On/Off)
- Connectivity to LAE supervisory systems

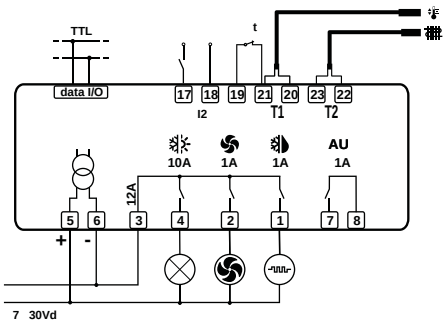
Applications

Refrigerated vehicles, plug-in cabinets, refrigerated display cases, control panels.

AH1-5 series

Functions		B14L-AG	B14W-AG	C24W-BL
Temperature Inputs	Thermostat	●	●	●
	Evaporator	●	●	●
	Auxiliary			●
Door switch input	Voltage free contact	●	●	●
Digital inputs	Voltage free contact	●	●	
	12÷24Vac voltage			●
Outputs	Thermostat	●	●	●
	Evaporator fans	●	●	●
	Defrost	●	●	●
	Auxiliary	●	●	●
Power supply	115-230Vac		●	●
	7-30Vdc	●		
Serial port	TTL serial port	●	●	
	RS-485 serial port			●
Keypad	Generic	●	●	
	With light button			●

› All models come with an alarm buzzer.
› All models are fitted with detachable screw terminals.
› On request, the AH1-5 is also available with gasket for a better protection between bezel and metal panel.
› In order to know more options available for the models, please consult LAE or our local dealer.



Technical Data	
Control range	-50÷120°C, -55÷240°F
Resolution	0.1 / 1 °C; °F
Accuracy	NTC10K: <±0.3°C (-40.0÷70.0°C) PTC1000: <±0.5°C (-50÷120°C)
Sensor type	Selectable NTC10K standard mod. SN4B20P1/P2/P3 or PTC1000
Power supply	115-230V~ ±10% 50÷60Hz 3W
Front protection	IP55
Panel cut-out	71 x 29 mm (WxH)
Ambient temperature	-10÷50°C

AH1-5B14L-AG

REFRIGERATION CONTROLLERS

AR2-5

77 x 35 x 90 mm

Universal Refrigeration Controller with RTC

Main features

- Up to six real time defrosts
- Synchronized defrost start and termination with master-slave connection
- Selectable NTC10K or PTC input
- Universal 110-230Vac power supply
- FLEXICOLD function for energy saving or alternative setpoint
- Optional control of a second compressor or evaporator
- Excellent evaporator fan control
- Temperature, door open, condenser high temperature/pressure alarms
- Light and standby control (On/Off)
- Connectivity to LAE supervisory systems

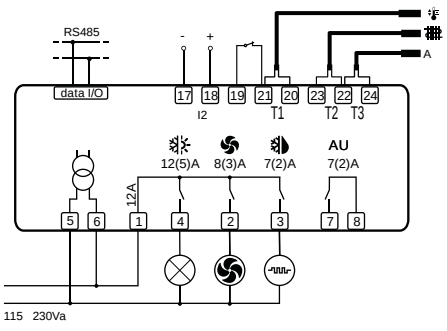
Applications

Plug-in cabinets, supermarket display cases, cold stores, control panels, upright fridges and freezers, refrigerated tables.

AR2-5 series

Functions		C14D-BG	B24W-BG	C34W-BG
Temperature inputs	Thermostat	●	●	●
	Evaporator	●	●	●
	Auxiliary	●		●
Door switch input	Voltage free contact	●	●	●
Digital inputs	Voltage free contact	●		
	12÷24Vac voltage		●	
	Defrost synchronisation			●
Outputs	Thermostat	●	●	●
	Evaporator fans	●	●	●
	Defrost	●	●	●
	Auxiliary	●	●	●
Power supply	115÷230Vac		●	●
	12Vac/dc	●		
Serial port	TTL serial port			
	RS-485 serial port	●	●	●
Keypad	Generic	●	●	●
	With light button			

› All models come with an alarm buzzer.
› All models are fitted with detachable screw terminals.
› On request, the AR2-5 is also available with gasket for a better protection between bezel and metal panel.
› In order to know more options available for the models, please consult LAE or our local dealer.



Technical Data

Control Range	-50÷120°C, -55÷240°F
Resolution	0.1 / 1 °C; °F
Accuracy	NTC10K: <±0.3°C (-40.0÷70.0°C) PTC1000: <±0.5°C (-50÷120°C)
Sensor type	Selectable NTC10K standard mod. SN4B20P1/P2/P3 or PTC1000
Power supply	115÷230V~ ±10% 50÷60Hz 3W
Back-up battery	>150 hours
Front protection	IP55
Panel cut-out	71 x 29 mm (WxH)
Ambient temperature	-10÷50°C

AR2-5C34W-BG

REFRIGERATION CONTROLLERS

AT1-5

77 x 35 x 77 mm

Refrigeration Controller for HT applications

Main Features

- Selectable Refrigerating or Heating control
- Integrated defrost functions
- Runs on mains power supply
- Direct compressor control through high power 16(4)A or 16(8)A relay
- Selectable NTC10K or PTC probe input
- Auxiliary output configurable in four different operation modes
- Temperature, door open alarms
- Optional light control button
- Connectivity to LAE supervisory systems
- UL approved

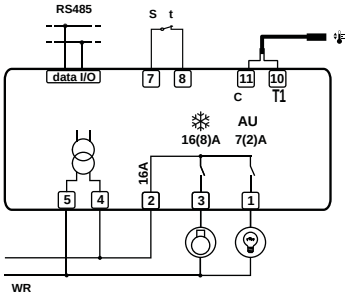
Applications

Freestanding upright cabinets and counters, cold stores, plug-in display cases, control panels, heated cabinets.

Series **AT1-5**

Functions		AS5E-G	BS2E-BG	BS6E-AL
Inputs	Thermostat	●	●	●
	Evaporator		●	●
	Door switch		●	●
Outputs	Thermostat 16(4)A		●	
	Thermostat 16(8)A	●		●
	Auxiliary 7(2)A		●	●
Power supply	230Vac	●	●	●
Serial port	TTL			●
	RS-485		●	
Kaypad	Generic	●	●	
	With light button			●

› Models with removable screw terminal blocks are available. In this case, the letter "S" of code changes in "Q", ex. AT1-5BQ2E-BG.
› All models come with an alarm buzzer.
› Versions with 110V power supply are available.
› On request, the AT1-5 is also available with gasket for a better protection between bezel and metal panel.
› In order to know more options available for the models, please consult LAE or our local dealer.



Technical Data	
Control range	-50÷120°C
Resolution	0.1 / 1 °C; °F
Accuracy	NTC10K: <±0.3°C (-40.0÷70.0°C) PTC1000: <±0.5°C (-50÷120°C)
Sensor type	selectable NTC10K standard mod. SN4B20P1/P2 or PTC1000
Power supply	230V~ ±10% 50÷60Hz 3W
Front protection	IP55
Panel cut-out	71 x 29 mm (WxH)
Ambient temperature	-10÷50°C

AT1-5AS6E-BG

REFRIGERATION CONTROLLERS

AT2-5

77 x 35 x 77 mm

Refrigeration Controller for HT/LT

Main Features

- Selectable Refrigerating or Heating control
- Runs on mains power supply
- Direct compressor control through high power 16(5)A
- Auxiliary output configurable in six different operating modes
- Selectable NTC10K or PTC input
- Electrical, off cycle or hot gas defrost
- Temperature, door open alarms
- Optional light control button
- Connectivity to LAE supervisory systems
- UL approved

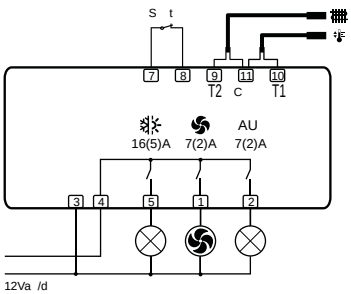
Applications

High or Low Temperature upright cabinets and counters, cold stores, plug-in display cases, control panels, heated cabinets.

Series AT2-5

Functions		BS4E-G	BS4E-AL	BS4E-BG
Inputs	Thermostat	●	●	●
	Evaporator	●	●	●
	Door switch	●	●	●
Outputs	Thermostat	●	●	●
	Evaporator fans	●	●	●
	Auxiliary	●	●	●
Power supply	230Vac	●	●	●
Serial port	Serial port TTL		●	
	Serial port RS-485			●
Kaypad	Generic	●		●
	With light button		●	

› Models with removable screw terminal blocks are available. In this case, the letter "S" of code changes in "Q", ex. AT2-5BQ4E-AL.
› All models come with an alarm buzzer.
› Versions with 110V power supply are available.
› On request, the AT2-5 is also available with gasket for a better protection between bezel and metal panel.
› In order to know more options available for the models, please consult LAE or our local dealer.



Technical Data	
Control Range	-50÷120°C
Resolution	0.1 / 1 °C; °F
Accuracy	NTC10K: <±0.3°C (-40.0÷70.0°C) PTC1000: <±0.5°C (-50÷120°C)
Sensor type	Selectable NTC10K standard mod. SN4B20P1/P2 or PTC1000
Power supply	230V~ ±10% 50÷60Hz 3W
Front protection	IP55
Panel cut-out	71 x 29 mm (WxH)
Ambient temperature	-10÷50°C

AT2-5BS4E-G

REFRIGERATION CONTROLLERS

BD1-28

107 x 95 x 47 mm

Split Comprehensive Refrigeration Controller

Main features

- Refrigeration controller with cyclic defrosts
- Enhanced ECO Energy Saving management
- Optional compressor variable speed control
- Suitable for R290
- Up to 2 auxiliary configurable outputs (Light, switched loads, second evaporator etc.)
- Universal mains power supply
- Connectivity to hard-wired supervisory systems
- Many display options: coloured LED's with DU5S, capacitive touch TU5S or high contrast LCD, fully customised

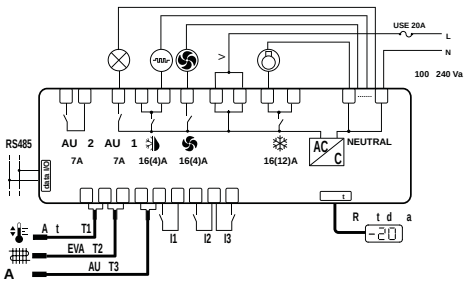
Applications

Upright refrigerators, plug-in and supermarket display cases, cold stores, control panels.

BD1-28 series

Functions		B0Q3W-A	C1S4WH-B	C1S5W-B
Temperature inputs	Thermostat	●	●	●
	Evaporator	●	●	●
	Auxiliary		●	●
DI1, DI2 digital inputs	Voltage free contact	●	●	●
DI3 aux. digital input	Voltage free contact/ defrost synchronization		●	●
Outputs	Thermostat	●	●	●
	Evaporator fans	●	●	●
	Defrost	●	●	●
	Auxiliary 1		●	●
	Auxiliary 2			●
Connections	Quick with M/F connectors	●		
	Screw terminals		●	●
Power supply	100÷240Vac	●	●	●
R290 option			●	
Aux functions	TTL serial port	●		
	RS485 serial port		●	●

› All models come with an alarm buzzer.
› **In order to know more options available, please consult LAE or our local dealer.**



Technical Data	
Range	-50÷110°C, -58÷180°F
Resolution	0.1 / 1 °C; °F
Precision	<±0.5°C within the measurement range
Sensor type	Mod. standard SN4B20P1/P2/P3
Power supply	100÷240Vac ±10% 50÷60Hz 3W
Ambient temperature	-10÷50°C

BD1-28C1S5W-B

REFRIGERATION CONTROLLERS

BR1-28

107 x 95 x 47 mm

Clever Split Refrigeration Controller with RTC

Main features

- Up to six real time defrosts per day
- Enhanced ECO Energy Saving management
- Optional compressor variable speed control
- Suitable for R290
- Up to 2 auxiliary configurable outputs (Light, switched loads, second evaporator etc.)
- Universal mains power supply
- Connectivity to hard-wired supervisory systems
- Many display options: coloured LED's with DU5S, capacitive touch TU5S or high contrast LCD, fully customised
- UL approved

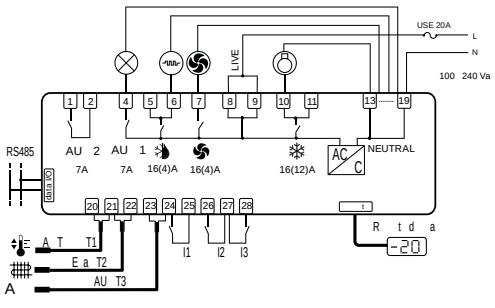
Applications

Upright refrigerators, plug-in and supermarket display cases, cold stores, control panels.

BR1-28 series

Functions		B0Q3W-A	C1S4WH-B	C1S5W-B
Temperature inputs	Thermostat	●	●	●
	Evaporator	●	●	●
	Auxiliary		●	●
DI1, DI2 digital inputs	Voltage free contact	●	●	●
DI3 aux. digital input	Voltage free contact/ defrost synchronization		●	●
Outputs	Thermostat	●	●	●
	Evaporator fans	●	●	●
	Defrost	●	●	●
	Auxiliary 1		●	●
	Auxiliary 2			●
Connections	Quick with M/F connectors	●		
	Screw terminals		●	●
Power supply	100÷240Vac	●	●	●
	7÷30Vdc			
R290 option			●	
Aux functions	TTL serial port	●		
	RS485 serial port		●	●

› All models come with an alarm buzzer.
› **In order to know more options available, please consult LAE or our local dealer.**



BR1-28C1S5W-B

Technical Data	
Range	-50÷110°C, -58÷180°F
Resolution	0.1 / 1 °C; °F
Precision	<±0.5°C within the measurement range
Sensor type	NTC10, standard mod. SN4B20P1/P2/P3
Power supply	100÷240Vac ±10% 50÷60Hz 3W
Ambient temperature	-10÷50°C

REFRIGERATION CONTROLLERS

BR1-27

71 x 97 x 61 mm DIN rail

Clever Split Refrigeration Controller with RTC

Main features

- Up to six real time defrosts per day
- Enhanced ECO Energy Saving management
- Defrost synchronisation between two or more controllers
- Up to 2 auxiliary configurable outputs (Light, switched loads, second evaporator etc.)
- Universal mains power supply
- Connectivity to hard-wired supervisory systems, or wireless option

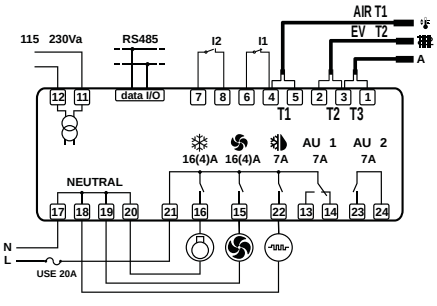
Applications

Cold stores, control panels.

BR1-27 series

Functions		C1S5W-B
Temperature inputs	Thermostat	●
	Evaporator	●
	Auxiliary	●
DI1, DI2 digital inputs	Voltage free contact / Defrost synchronisation	●
Outputs	Thermostat	●
	Evaporator fans	●
	Defrost	●
	Auxiliary 1	●
	Auxiliary 2	●
Connections	Screw terminals	●
Power supply	100÷240Vac	●
Aux. functions	RS485 serial port	●

› All models come with an alarm buzzer.
› **In order to know more options available, please consult LAE or our local dealer.**



Technical Data	
Range	-50÷110°C, -58÷180°F
Resolution	0.1 / 1 °C; °F
Precision	<±0.5°C within the measurement range
Sensor type	NTC10K mod. standard SN4B20P1/P2/P3
Power supply	100÷240Vac ±10% 50÷60Hz 3W
Ambient temperature	-10÷50°C

REFRIGERATION CONTROLLERS

BIT25

86 x 82 x 44 mm

Split HT/LT Refrigeration Controller

Main features

- Three highly rated relay outputs
- Configurable control of Aux 1 and Aux 2 outputs
- Alternate set of parameters for energy saving
- Management of multiple alarms
- Option of setpoint adjustment via a potentiometer, no display
- Standby button (On/Off)
- Universal power supply 100-240V
- Suitable for R290
- Connection to LAE supervisory systems
- UL approved

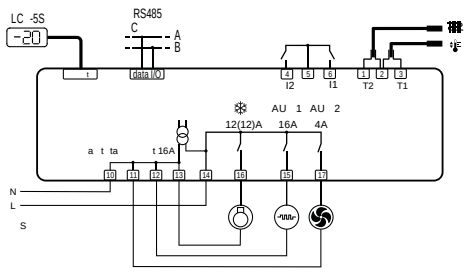
Applications

Upright refrigerators, bottle coolers, plug-in display cases for shops and supermarkets, cold stores, control panels.

BIT25 series

Functions		BS1E-A	B1S2E-A	B1S3WH-B
Temperature inputs	Thermostat	●	●	●
	Evaporator	●	●	●
Digital inputs	DI1 digital input	●	●	●
	DI2 digital input	●	●	●
Outputs	Thermostat	●	●	●
	Auxiliary 1		●	●
	Auxiliary 2			●
R290 option				●
Power supply	230Vac	●	●	
	115Vac			
	100÷240Vac			●
Serial port	TTL	●	●	
	RS-485			●

› All models come with an alarm buzzer and DI1 digital input.
› In order to know more about versions available for the models, please consult LAE or our local dealer.



BIT25B1S3W-B

Technical Data	
Range	-50...110°C, -58...180°F
Resolution	0.1 / 1 °C; °F
Precision	<±0.5°C within the measurement range
Sensor type	NTC10K mod. standard SN4B20P1/P2
Power supply	115Vac, 230Vac or universal 100..240Vac ±10% 50÷60Hz 3W
Ambient temperature	-10÷50°C

LCD-5S display unit	
Dimensions	77 x 35 x 20 mm (WxHxD)
Panel cut-out	71 x 29 mm (WxH)
Front protection	IP55

DISPLAYS

Displays for BD / BR1-28

DU5S Red, Blue or Amber LED display unit	
Dimensions	77 x 35 x 20 mm (W x H x D)
Panel cut-out	71 x 29 mm (W x H)
Front protection	IP55
Ambient temperature	-10÷50°C

TU5S Blue LED capacitive touch display unit	
Dimensions	77 x 35 x 13 mm (W x H x D)
Panel cut-out	71 x 29 mm (W x H)
Panel thickness	0.9 to 1.2 mm
Front protection	IP55
Ambient temperature	-10÷50°C

DU00 High contrast LCD display	
Dimensions	78 x 64 x 15 mm (W x H x D)
Panel cut-out	57 x 60 mm (W x H)
Front protection with external overlay	IP67
Ambient temperature	-10÷50°C

Model	Features
DU5S	Red LEDs
DU5S-AMB	Amber LEDs
DU5S-BLU	Blue LEDs
DU00-02	With buzzer
DU00-03	Without buzzer
TU5S-BLU	Blue LEDs

› In order to know MOQ per model and options available, please consult LAE or our local dealer.

REFRIGERATION CONTROLLERS

LCD32

196 x 38 x 78 mm

Compact multi-function refrigeration controller

Main features

- Panel thermostat for High and Low Temperature
- Runs on mains power supply
- Evaporator fan control
- Electrical, hot gas or off cycle defrost
- Light or auxiliary load control
- Quick connectors for Lives and Neutrals
- Two operating parameter sets
- Door open, high/low temperature, HP alarms
- Automatic condenser clean warning
- Connection to LAE supervisory systems

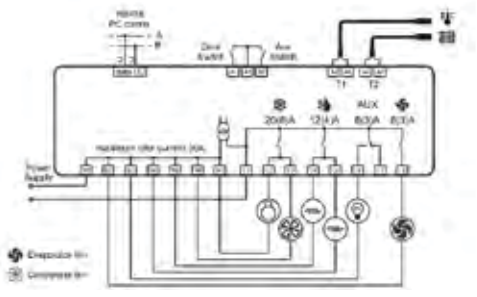
Applications

Cold stores, refrigerating cabinets, tables and counters, saladettes, medical cabinets and display cases, both static and ventilated.

LCD32 series

Functions		Q4E-C	S4E-C
Connections		Quick	Screw terminals
Inputs	Thermostat	●	●
	Evaporator	●	●
Outputs	Thermostat	●	●
	Defrost	●	●
	Evaporator fans	●	●
	Auxiliary	●	●
Options	Door switch + aux.	●	●
	TTL serial port		
	RS485 serial port	●	●
Power supply	230Vac	●	●

› On request the LCD32 is also available with gasket for a better protection between bezel and metal panel. In this case, the code changes in, for ex. LCD32Q4E-CS. Please ask information about standard versions available with this option.
› In order to know versions available, please consult LAE or our local dealer.



LCD32Q4E-C

Technical Data	
Programming Range	-30.0÷30.0°C
Resolution	0.1 / 1; °C / °F
Accuracy	<±0.2°C (-30.0÷30.0°C)
Sensor type	NTC, standard mod. SN2B20P1/P2
Power supply	230Vac ±10%; 50/60Hz; 3W
Front protection	IP55
Panel cut-out	163 x 31.5 mm
Ambient temperature	-10÷50°C

COMPRESSOR CONTROLLER

MS-27

71 x 97 x 61 mm DIN Rail

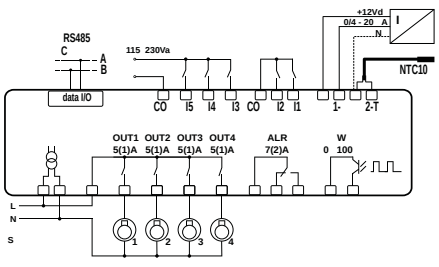
Multi-compressor or multi-fan controller

Main features

- Four ON/OFF outputs for the control of single or multi-stage compressors or fans.
- Proportional output for speed control (inverters).
- Output with change-over contacts for alarm control.
- Input for pressure transmitter (0/4...20mA) or for a temperature probe (NTC10K).
- Two digital inputs on voltage free contact for programmable function, up to three digital optocoupled voltage inputs for a complete system diagnostics.
- Selection of the control algorithm: rotation of outputs, sequential activation, optimisation of the available power.
- Pressure – Temperature conversion according to gas used.
- Storage of the latest nine alarms.
- Automatic maintenance management.
- Connectivity to LAE supervisory systems.

Applictions

For cryogenerators in supermarkets, cold stores and all cryogenic systems with variable demand.



MS27-1SE-B

MS-27 series

Functions		-1SE-A	-1SU-B
Connections	Screw terminals	●	●
Power supply	230Vac	●	
	115Vac		●
Serial port	TTL	●	
	RS485		●

› In order to know more options available for the models, please consult LAE or our local dealer.

Technical data		
Pressure input	type	0/4...20mA (LAE PGT35)
	range	-1.0...45.0bar
	resolution	0.1bar
	accuracy	±0.2bar
Temperature input	type	NTC10K (LAE SN4...)
	range	-50.0...120.0°C
	resolution	0.5°C
	accuracy	±0.5°C
Power supply	MS27...E	230Vac±10%, 50/60Hz, 3W
	MS27...U	115Vac±10%, 50/60Hz, 3W
Relay outputs	OUT1...OUT4	5(1)A
	Alarm	7(2)A
Front protection	IP55	
Ambient temperature	-10÷50°C	

TIMER

TMR15

77 x 35 x 77 mm

Countdown timer

Main features

- Panel moun timer
- Countdown in hours and minutes or minutes and seconds
- Manual start/stop of countdown
- Remote start of countdown
- Manual switching on/off of output
- Mains powered
- Buzzer to warn countdown end
- Keypad lock

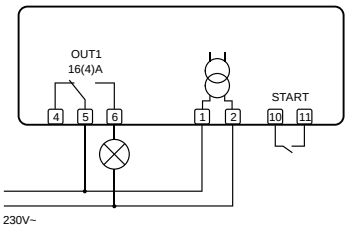
Applications

Control of duration of industrial processes, control of dough retarders, control of cooking time in ovens.

TMR15 series

Standard versions	Power supply	Buzzer
TMR15E	230Vac ±10%, 3W	
TMR15E-A	230Vac ±10%, 3W	●
TMR15D-A	12Vac/dc ±10%, 3W	●

Technical Data	
Outputs	Out 16(4)A 240V~
Power supply	230Vac ±10% 3W
Front protection	IP55
Panel cut-out	71 x 29 mm (WxH)
Ambient temperature	-10÷50°C



TMR15E-A

TAB 5.0

Monitoring, Logging and Programming Software

Main Features

- Overall plant monitoring
- Storage of temperature, humidity, pressure, alarms
- Display and printing in numerical and graphic form of stored data
- Export of stored data for Excel* or other spread sheets
- Diagnostics with dynamic graphs of all analog and digital inputs
- Virtual instrument for analysing the system and setting regulator parameters
- Direct sending of emails and SMS relating to the alarm state
- Connection to remote PC for tele-servicing via Internet
- Languages available: English, German, Italian, Polish.

Available options

Available as full optional as described above but also in a "low cost version" for data logging only.
This version is called TAB LV

Applications

Supervision of the refrigeration process in supermarkets, convenience stores, shops, petrol stations, large kitchens, food factories, cruise ships etc.

System Requirements

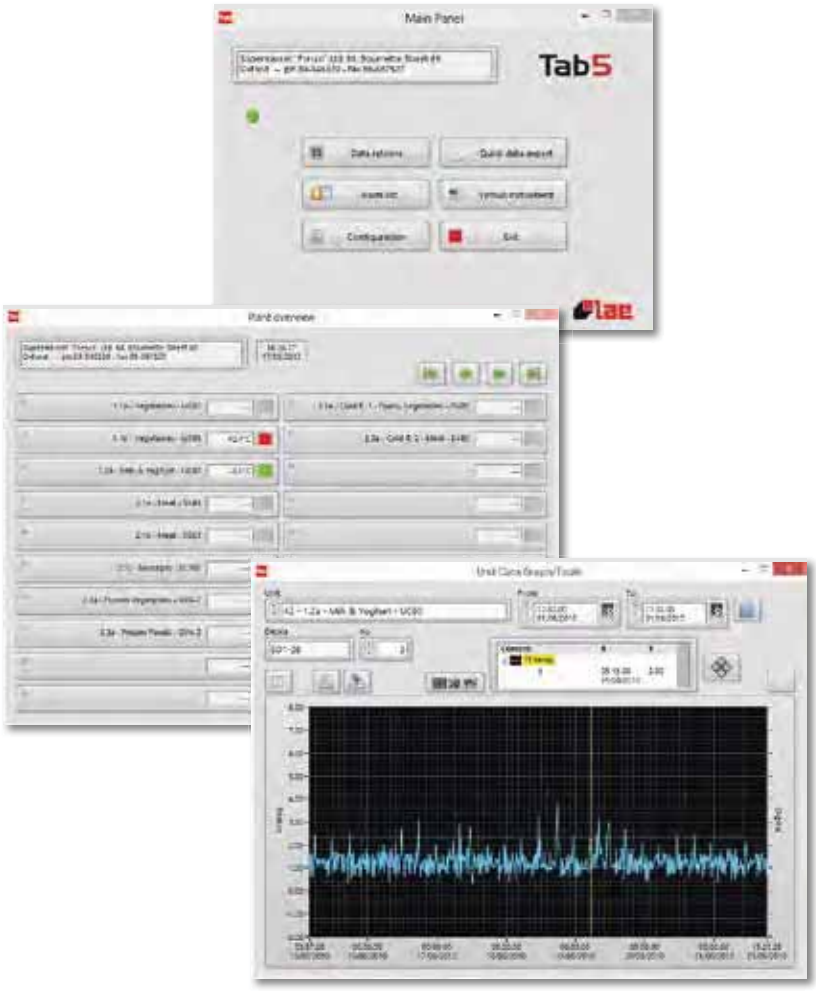
› Computer with Windows 7/8/10 operating system installed and properly running, minimum processor and memory as required from Windows version – USB port – Mouse

› 1024x768 pixel screen resolution

› 10GB available on Hard Disk

› RS232 serial port (COM) required if a GSM modem is fitted

› USB to RS-485 converter mod. USB485-STIXL. Up to 200 controllers connectable. Every 62 controllers, you must add a repeater ATC-109N



PROBES TRANSMITTERS

HT2WAD

Humidity transmitters

Technical data	
Sensor type	capacitive
Output signal	0÷1Vdc
Range	0%÷100% r.H.
Accuracy	±5% r.H. (25%÷75% r.H.)
Sheath	Ø14 x 40 mm
Protection	IP65 (electronics)
Operating temperature	0÷75°C (sensor) / 0÷50°C (electronics)
Dimensions of the enclosure	110 x 53 x 75 mm (electronics)
Power supply	12Vdc, 0.2W

PROBES TRANSMITTERS

PGT35

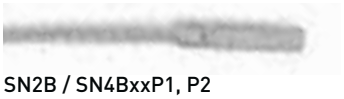
Pressure Transmitter

Technical data	
Sensor type	Piezoresistive gauge
Output	4÷20mA
Range	-0.5÷35.0 bar
Accuracy	max±1%FS (0÷50°C)
Sheath	Ø 17 x 58 mm
Connections	mPm connector
Pressure port	7/16"-20UNF male, steel AISI 316L
Protection	IP65
Ambient temperature	-40÷100°C
Power supply	8÷32Vdc

NTC2K & NTC10K

Temperature probes

SN2BxxPx	
Sensor type	NTC2K, 2000Ω @ 25°C
Range	-40÷120°C
Accuracy	±0.3°C @ 25°C
Sheath	Ø 6 x 29 mm; TPE
Cable	2 wires x 0.35 mm²; -40÷120°C; TPE; loose leads
Protection	IP67



SN2B / SN4BxxP1, P2

Standard Versions	
SN2B15P1, P2	1.5 m
SN2B20P1, P2	2 m
SN2B25P1, P2	2.5 m
SN2B30P1, P2, P3	3 m
SN2B50P1	5 m

SN4BxxP2-B

SN4BxxPx	
Sensor type	NTC10K, 10000Ω @ 25°C
Range	-40÷120°C
Accuracy	±0.3°C @ 25°C
Sheath	Ø 6 x 29 mm; TPE
Cable	2 wires x 0.35 mm²; -40÷120°C; TPE; loose leads
Protection	IP67

SN4BxxP3-Y

Standard Versions	
SN4B10P1	1 m
SN4B15P1, P2	1.5 m
SN4B20P1, P2	2 m
SN4B25P1, P2	2.5 m
SN4B30P1, P2	3 m
SN435P1, P2	3.5 m
SN4B40P1	4 m
SN4B50P1, P2	5 m
SN4B70P1	7 m

SN4BxxP4-S

Temperature probes

QT1KxxP1/P2	
Sensor type	KTY82-121, 1000 Ohm @ 25°C
Range	-40÷120°C
Precision	±1.5°C @ 25°C
Tube	Ø 6 x 20 mm; AISI 304 steel
Cable	2 wires x 0.25 mm²; thermoplastic rubber flat cable 1.65mm x 3.60mm; loose leads
Protection	IP67

Standard versions	
QT1K20P1, P2	2 m
QT1K30P1, P2	3 m
QT1K35P1	3.5 m
QT1K40P1	4 m
QT1K50P1, P2	5 m

QT1KxxP-X	
Sensor type	KTY82-121, 1000 Ohm @ 25°C
Range	-40÷120°C
Accuracy	±1.5°C @ 25°C
Tube	Ø 6 x 40 mm; AISI 304 steel
Cable	2 wires x 0.25 mm²; thermoplastic rubber flat cable 1.65mm x 3.60mm; loose leads
Protection	IP67

Standard versions	
QT1K20P-X	2 m
QT1K30P-X	3 m
QT1K50P-X	5 m

MOQ: 10 pieces

QT1KxxC 1/C2/C3	
Sensor type	KTY82-121, 1000 Ohm @ 25°C
Range	-40÷120°C
Precision	±1.5°C @ 25°C
Tube	Ø 6 x 20 mm; AISI 304 steel
Cable	2 wires x 0.25 mm²; thermoplastic rubber flat cable 1.65mm x 3.60mm; connectors
Protection	IP67

Standard versions	
QT1K15C1, C2	1.5 m
QT1K20C1, C2, C3	2 m
QT1K25C1, C2	2.5 m
QT1K30C1	3 m
QT1K35C1, C2	3.5 m
QT1K50C1	5 m
QT1K60C1	6 m

QT1LxxP-X	
Sensor type	KTY82-121, 1000 Ohm @ 25°C
Range	-40÷110°C
Precision	±1.5°C @ 25°C
Tube	Ø 6 x 20 mm; AISI 304 steel
Cable	2 wires x 0.25mm²; double insulated, thermoplastic rubber cable Ø3.3mm; loose leads
Protection	IP67

Standard versions	
QT1L20P-X	2 m

MOQ: 10 pieces

QT1NxxP-/01	
Sensor type	KTY82-121, 1000 Ohm @ 25°C
Range	-40÷110°C
Precision	±1.5°C @ 25°C
Tube	Ø 6 x 40 mm; AISI 304 steel
Cable	2 wires x 0.25mm²; screened silicon cable Ø 4.6mm; loose leads
Protection	IP67

Standard versions	
QT1N20P-/01	2 m
QT1N30P-/01	3 m

MOQ: 10 pieces

Pt100 & thermocouples

Temperature probes

QP1NxxP-X	
Sensor Type	Pt100 class B
Range	-40÷110°C
Precision	±0.3°C @ 0°C
Tube	Ø 6 x 40 mm; AISI 304 steel
Cable	3 wires x 0.25mm²; thermoplastic rubber cable Ø 3.4 mm; loose leads
Protection	IP67

Standard versions

QP1N20P-X	**2 m**

MOQ: 10 pieces

SPT0	
Sensor Type	Pt100 class "B" (DIN43760), 100Ω @ 0°C
Range	0÷400°C
Precision	±0.3°C or ±0.5°C (in the worst case scenario)
Response time	10 seconds in water
Sheath	Ø 6 x 160 mm; stainless steel AISI316
Cable	3 wires x 0.24 mm²; L = 100 cm, fiber glass, loose leads
Protection	IP65

TJ.ECO	
Sensor Type	J thermocouple
Range	0÷450°C
Precision	±2.5°C o ±0.75% (in the worst case scenario)
Response time	10 seconds in water
Sheath	Ø 6 x 160 mm; stainless steel AISI316
Cable	2 wires x 0.50 mm²; L = 300 cm, fiber glass, loose leads
Protection	IP65

TK.ECO	
Sensor Type	K thermocouple
Range	0÷600°C
Precision	±2.5°C o ±0.75% (in the worst case scenario)
Response time	approx. 2 seconds in water
Sheath	Ø 4.5 x 160 mm; INCONEL600
Cable	2 wires x 0.24 mm²; L = 300 cm, fiber glass, loose leads
Protection	IP65

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