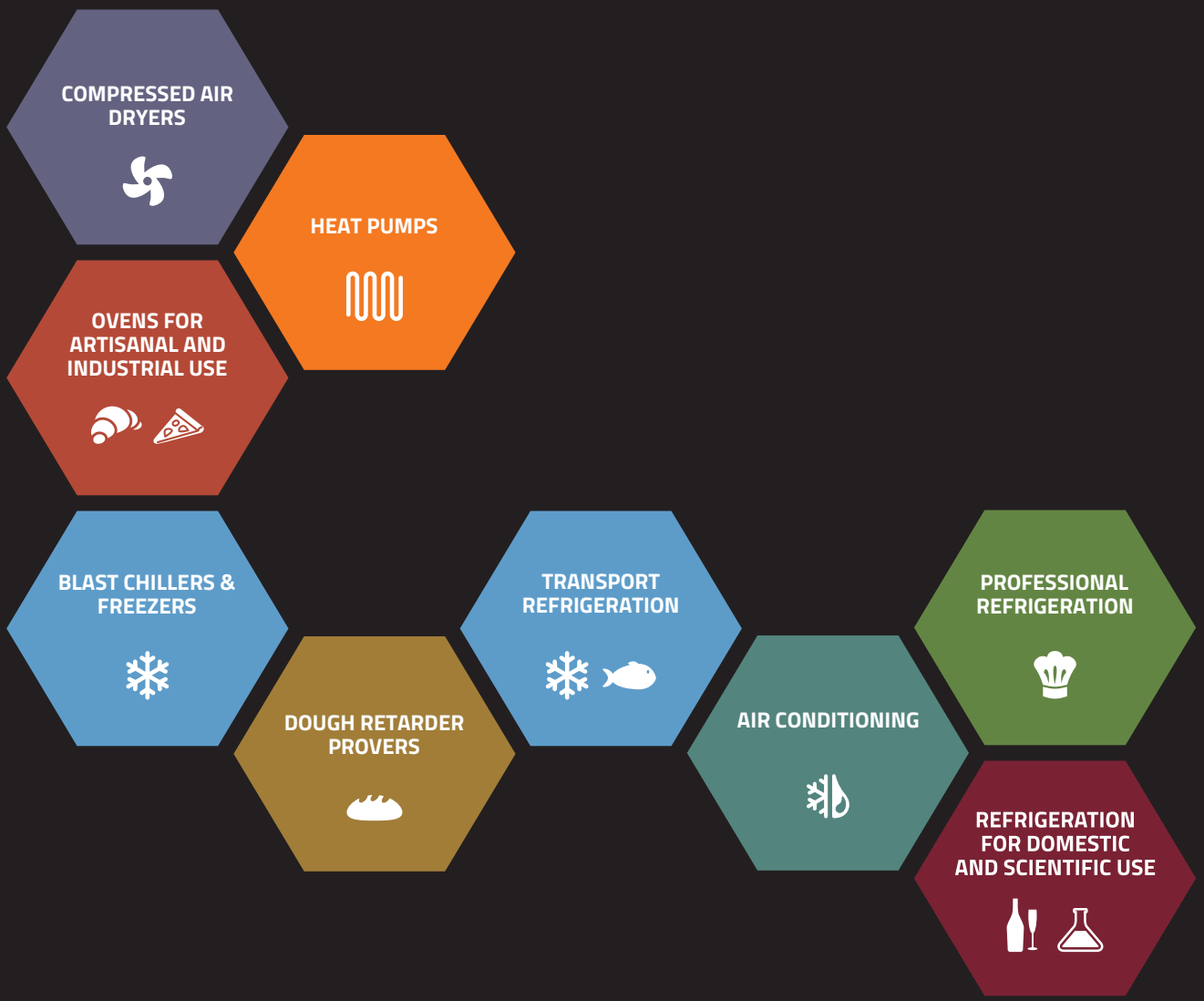
Applications



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

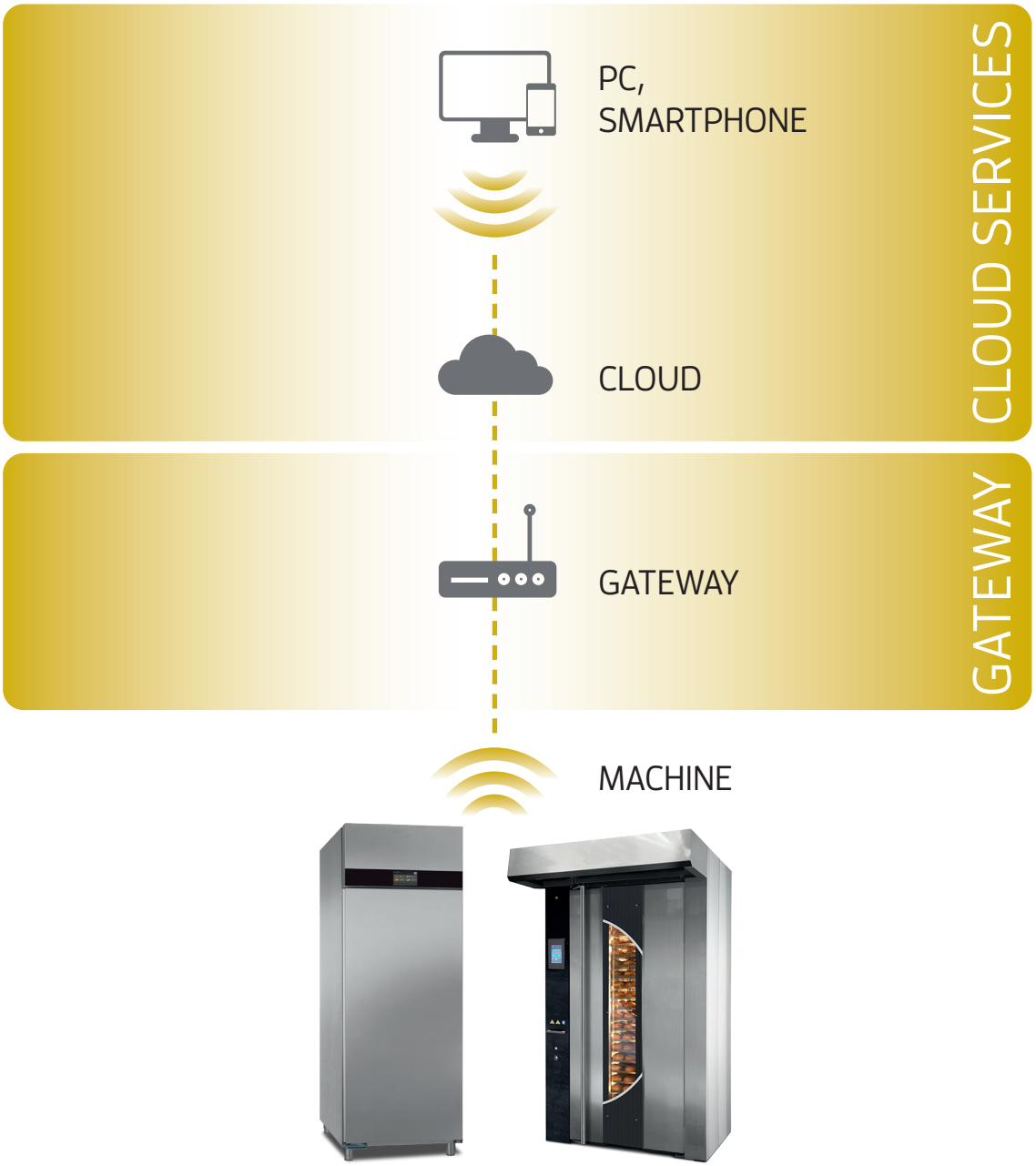
Our R&D division is continuously engaged in the assessment of the latest generation of new technologies, especially with respect to the collection and processing of data. These connectivity features are now easily obtainable providing great functionality for the end-user and the manager. Machines that 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.

Cloud services

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

IOT READY

TO THE CLOUD:
WIFI OR ETHERNET

AUTOMATIC
CONFIGURATION

VERY HIGH SECURITY
LEVEL/ENCRYPTION

GTW-03

138 x 64 x 31 mm

For IoT communication

Main Features

- WiFi: IEEE 802.11 b/g/n
- 10/100 Ethernet interface (optional)
- USB Type A
- RS485
- Power supply: 10 to 30 Vdc, 200mA

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.

▪ The GTW-03 Gateway is a computer with Real Time Operating System, memory and communication ports, designed specifically to run IoT communication securely.

▪ Easy-to-install: connects the GTW-03 to the Modbus port of the LAE controller, which is recognised automatically.

▪ Easy-to-configure: via a Smartphone or PC, connect to the web page of the GTW-03 and connect it to your WiFi Access Point or to your cabled network.

▪ It may be customised: the GTW-03 automatically connects to the LAE Cloud designed in cooperation with Servitly. In addition, with a few simple adaptations, it's possible to send data to any IoT service provider (please get in touch with our local distributor to get a detailed offer).

Technical Data	
CPU	STM32
Core	Cortex-M4 @168MHz
Memory	4MB NOR FLASH
OS	Segger RTOS
Power supply	10 to 26 Vdc, 150mA
Tiny Size	138 x 64 x 31 mm
Internal web server for configuration and diagnosis	

Standard products

CONTROLLERS

REFRIGERATION CONTROLLERS

SUPERVISORY SYSTEMS

PROBES

CONTROLLERS

AC2-5

77 x 35 x 77 mm

Two channel universal Controller, ON/OFF or PID

Main Features

- Stylish Capacitive Touch display and keypad technology
- 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 7A relay
- Input for 0÷1V, 0/4÷20mA, PTC/NTC10K, TC J/K or Pt100
- Selectable Refrigerating/Heating (Dehumidifying/Humidifying) control
- Absolute or relative temperature alarms
- Connectivity to supervisory systems and gateway for cloud

Applications

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

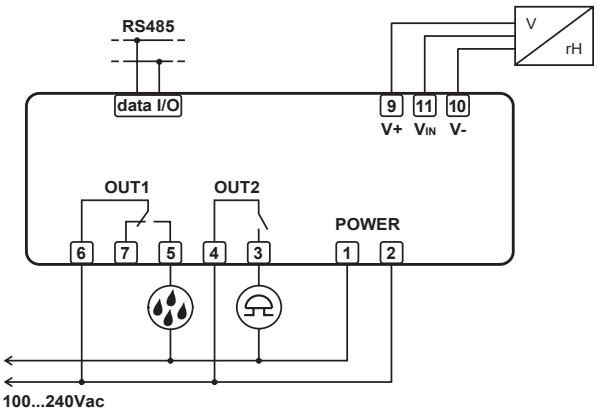
How to order **AC2-5**

Model	Suffix	Opt.	Description
AC2-5			Model and dimensions main unit 5 series
Inputs	A		Input 0...1V
	I		Input 0 / 4...20mA
	J		TC "J" (Iron-Constantan) / TC "K" (Chromel-Alumel)
	P		Thermistor Pt100
	T		PTC1000 / NTC10K
Connections	S		Screw Connections (built in screw terminals)
Outputs	1		Output 1
	2		Output 1 + 2
Type of outputs	R		Outputs on relay
	M		Output 1 on SSR drive, output 2 on relay
Power supply	L*		7 ÷ 30Vdc / 12Vac
	W		100 ÷ 240 Vac
Aux. functions		-	None
		-A	Serial communication TTL
		-B	Serial communication RS485

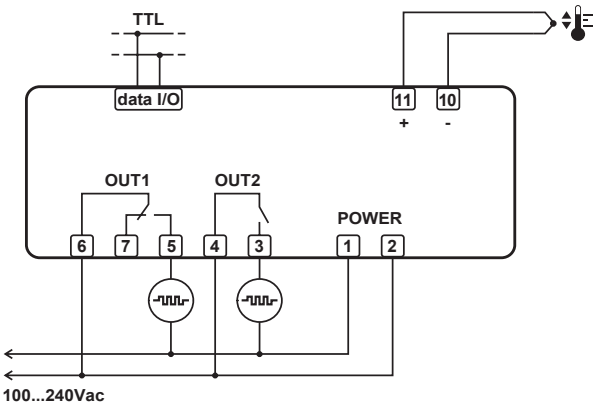
***** In the AC2-5...L version, the power supply of the controller and of the loads must be of type SELV or PELV.

AC2-5 series							
TECHNICAL DATA	**AC2-5T...**		**AC2-5P...**	**AC2-5J...**		**AC2-5A...**	**AC2-5I...**
Input Type	PTC	NTC10K	Pt100	TC "J"	TC "K"	0÷1V	0/4÷20mA
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 ±0.6°F	±0.3°C ±0.6°F	±0.3°C(a); ±1°C(b) < ±2°F	< ±3°C < ±5°F	< ±3mV	< ±0.2mA	
Resolution	0.1 / 1°C / 1°F			1 °C / °F		0.1 / 1	
Max. loads of outputs	OUT1	3.6 FLA, 21.6 LRA @ 240Vac; 12A resistive DC30 10A					
	OUT2	1 FLA, 6 RLA @ 240Vac; 7A resistive DC30 5A					
	SSR drive for OUT1	15mA 12Vdc					
Power supply	100 ÷ 240 Vac ±10%, 50/60Hz, 3W; 7 ÷ 30Vdc / 12Vac ± 10%, 3W						
Panel-cutout	71 x 29 mm						
Ambient temperature & humidity	-10... +50°C; 15%... 80% rH						

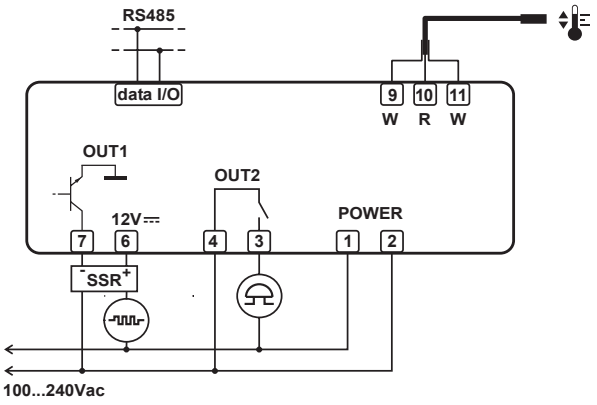
-50÷150°C[(a)]; [(b)] remaining range.
***** Approximate (for exact indications, please refer to the instructions for use)



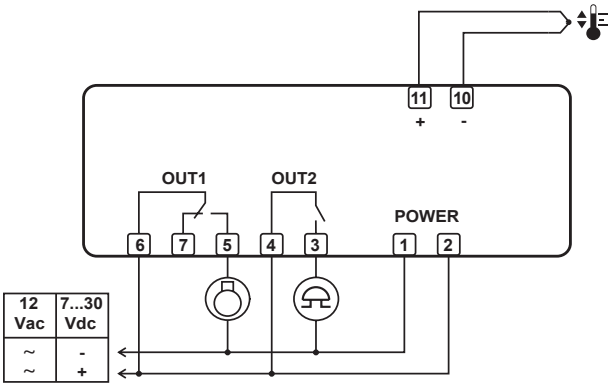
AC2-5AS2RW-B



AC2-5JS2RW-A



AC2-5PS2MW-B



AC2-5JS2RL

CONTROLLERS

AC2-27

72 x 94 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 relay or for SSR-piloting and auxiliary output on 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 for supervisory systems or IoT
- Selectable serial communication protocol ASCII or RTU

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.

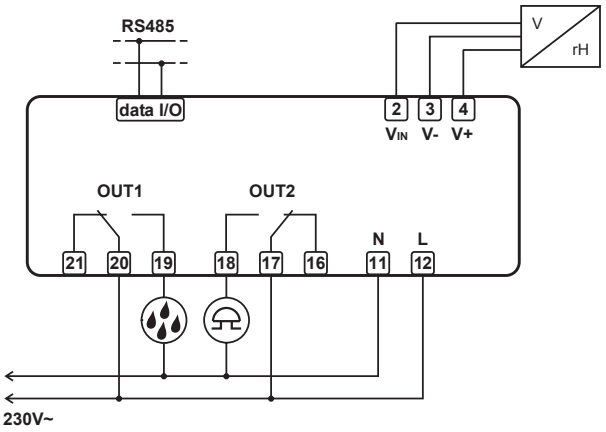
How to order **AC2-27**

Model	Suffix	Options	Description
AC2-27			Model and dimensions main unit 27 series
Inputs	A		Input 0...1V
	J		TC "J" (Iron-Costantan) / TC "K" (Chromel-Alumel)
	P		Thermistor Pt100
	T		PTC1000 / NTC10K
Connections	S		Screw Connections (buil-in screw terminals)
Outputs	1		Output 1
	2		Output 1 + 2
Type of outputs	R		Outputs on relay
	M		Output 1 on SSR drive, output 2 on relay
Power Supply	L*		7...30Vdc / 12Vac ±10%
	W		100...240 Vac
Aux. functions		-	None
		-A	Serial Communication TTL
		-B	Serial Communication RS485

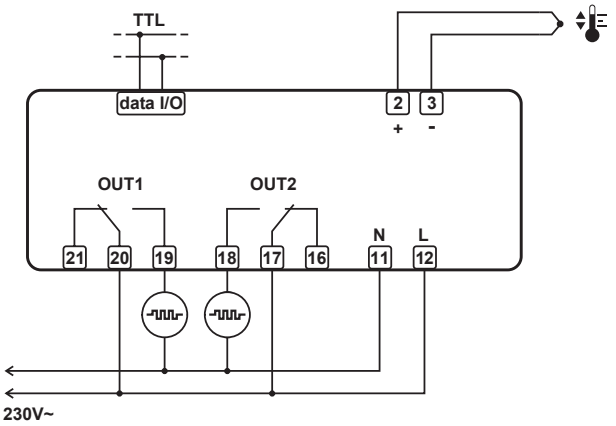
***** In the AC2-27...L version, the power supply of the controller and of the loads must be of type SELV or PELV.

AC2-27 series						
TECHNICAL DATA	**AC2-27T...**		**AC2-27P...**	**AC2-27J...**		**AC2-27A...**
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 ±0.6°F	±0.3°C ±0.6°F	±0.3°C[a]; ±1°C[b] < ±2°F	< ±3°C < ±5°F		< ±3mV
Resolution	0.1 / 1°C / 1°F			1 °C / °F		0.1 / 1
Max. loads of outputs	OUT1	3.6 FLA; 21.6 LRA 240Vac; 12A resistive				
	OUT2	3.6 FLA; 21.6 LRA 240Vac; 12A resistive				
	SSR drive for OUT1	15mA 12Vdc				
Power supply	100 ÷ 240 Vac ±10%, 50/60Hz, 3W; 7 ÷ 30Vdc / 12Vac ± 10%, 3W					
Ambient temperature & humidity	-10... +50°C; 15%... 80% r.H.					

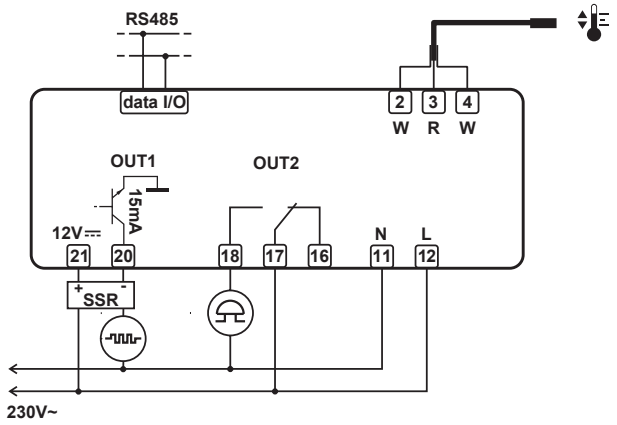
[a] -50÷150°C; [b] remaining range.
*Approximate (for exact indications, please refer to the instructions for use)



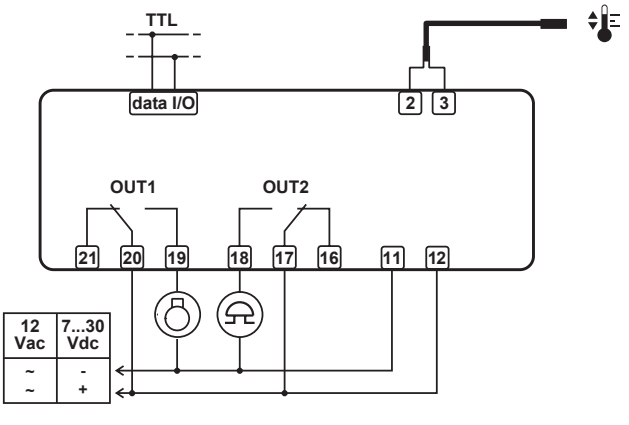
AC2-27AS2RW-B



AC2-27JS2RW-A



AC2-27PS2MW-B



AC2-27TS2RL-A

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.

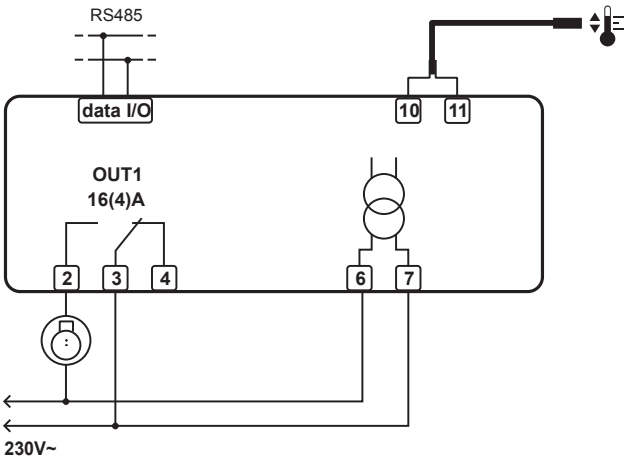
How to order **LTR-5**

Model	Suffix	Options	Description
LTR-5			Model and dimensions main unit
Inputs	A		Input 0...1V (rH%)
	C		NTC 10K
	T		PTC1000
Connections	S		Screw connections (fixed screw terminals)
Outputs	R		Relay 16(4)A
	F		SSR drive
Power Supply	D		12 Vac/dc
	E		230 Vac
	U		115 Vac
Aux. functions		-	None
		-A	TTL serial port
		-B	RS485 serial port

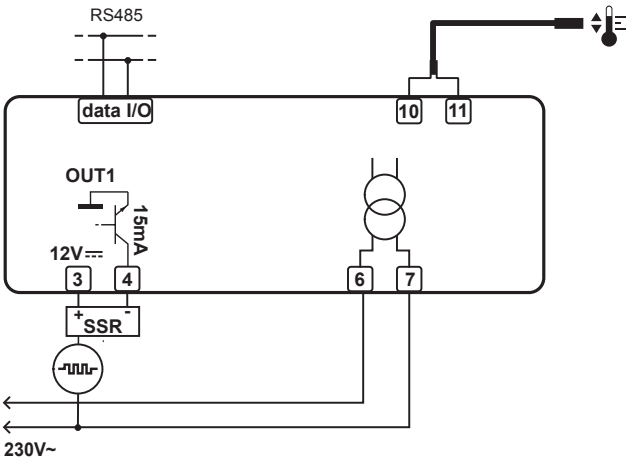
Standard Models
› LTR-5CSRE, LTR-5CSRE-A, LTR-5CSRE-B, LTR-5ASRE
› On request, the LTR-5 is also available with gasket for a better protection between bezel and panel.

Technical Data

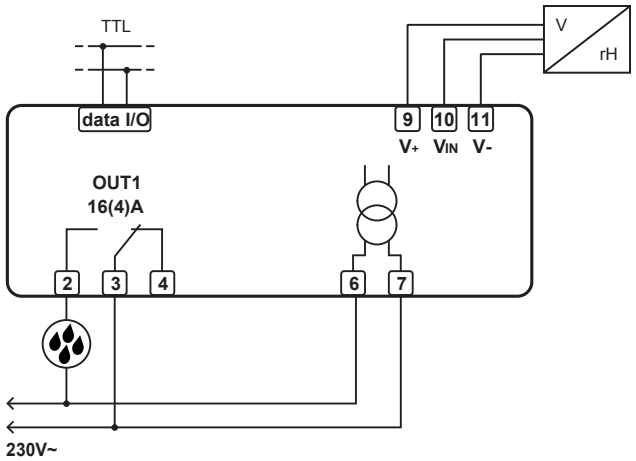
Power supply	
LTR-5...D	12Vac/dc±10%, 2W
LTR-5...E	230Vac±10%, 50/60Hz, 2W
LTR-5...U	115Vac±10%, 50/60Hz, 2W
Relay outputs (LTR-5...R...)	
LTR-5.SR...	OUT1 16(4)A
LTR-5.QR...	OUT1 12(4)A
SSR drive (LTR-5...F...)	
OUT1	15mA 12Vdc
Inputs	
LTR-5A...:	0...99%r.H.
LTR-5C...:	-40...125°C
LTR-5T...:	-50...150°C
Measuring accuracy	
LTR-5A...:	<±0.7%r.H. in the measuring range
LTR-5C...:	<±0.3°C -40...100°C; ±1°C out of that range
LTR-5T...:	<±0.3°C -50...140°C; ±1°C out of that range
Front protection	IP54
Ambient temperature & humidity	-10÷50°C; 15%÷80%



LTR-5CSRE-B



LTR-5CSFE-B



LTR-5ASRE-A

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(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
- TTL or RS485 serial port, connectivity option to LAE supervisory systems or IOT
- UL approved

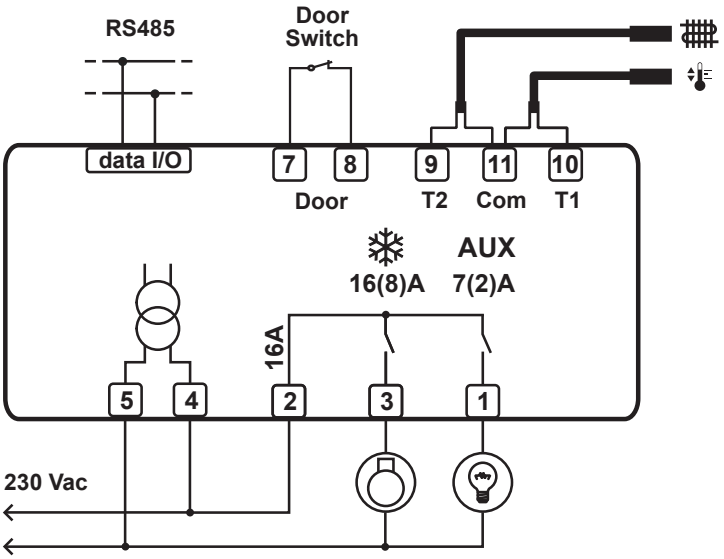
Applications

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

How to order **AT1**

Model	Suffix	Options	Description
AT1-5			Model and dimensions main unit
Inputs	A		Thermostat probe
	B		Thermostat probe + evaporator probe + door switch input
Connectors	Q		Quick Connections (detachable screw terminals)
	S		Screw Connections (fixed screw terminals)
Outputs	5		Thermostat relay (16(8)A)
	6		Thermostat relay (16(8)A) + Aux relay 7(2)A
Power Supply	D		12 Vac/dc
	E		230 Vac
	U		110 Vac
Relay type			Standard relays
		H	Sealed relays for flammable gas applications
Aux functions		-	None
		-A	TTL serial port
		-B	RS485 serial port
Overlay artwork		GK	Standard version
		LK	With lights button

› The standard display is RED
› All versions include buzzer
› Upon request, the AT1-5 is also available with a gasket for a better protection between bezel and metal panel



AT1-5BS6E-BGK

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	
Relay outputs:		
	AT1-5.**Q5**(6)... Compressor	12(8)A
	AT1-5.**S5**(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
Power supply	230V~ ±10% 50÷60Hz 3W	
Front protection	IP54	
Panel cut-out	71 x 29 mm (WxH)	
Ambient temperature & humidity	-10÷50°C; 15%÷80% r.H.	

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
- TTL or RS485 serial port, connectivity option to LAE supervisory systems or IOT
- UL approved

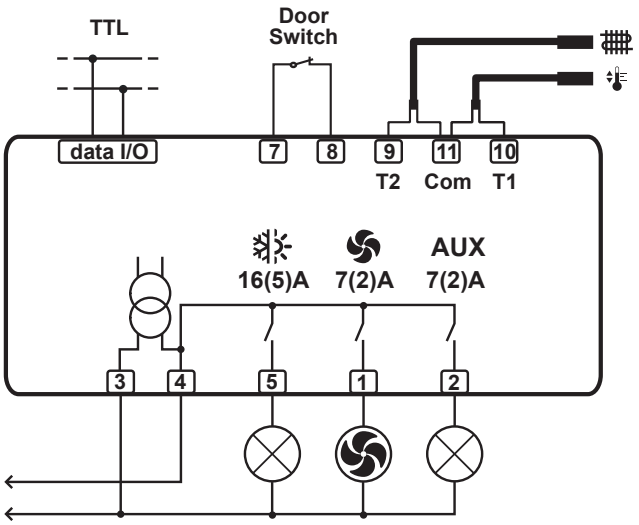
Applications

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

How to order **AT2**

Model	Suffix	Options	Description
AT2-5			Model and dimensions main unit
Inputs	B		Thermostat probe + evaporator probe + door switch input
Connectors	Q		Quick Connections (detachable screw terminals)
	S		Screw Connections (fixed screw terminals)
Outputs	4		Compressor relay 16A (High Power) + evap. fans + defrost
Power Supply	D		12 Vac/dc
	E		230 Vac
	U		110 Vac
Aux functions		-A	TTL serial port
		-B	RS485 serial port
Overlay artwork		GK	Standard version
		LK	With lights button

› The standard display is RED
› All models come with an alarm buzzer
› Upon request, the AT2-5 is also available with gasket for a better protection between bezel and metal panel



AT2-5BS4E-AGK

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	
Relay outputs:		
	AT2-5.**Q**... Compressor	12(5)A 240vac
	AT2-5.**S**... Compressor	16(5)A 240vac
	Evaporator fans	7(2)A 240vac
	Auxiliary loads	7(2)A 240vac
	AT2-5.**Q**...	maximum total current 12A
	AT2-5.**S**...	maximum total current 16A
Power supply	230V~ ±10% 50÷60Hz 3W	
Front protection	IP54	
Panel cut-out	71 x 29 mm (WxH)	
Ambient temperature & humidity	-10÷50°C; 15%÷80% r.H.	

REFRIGERATION CONTROLLERS

CD5

77 x 35 x 90 mm

Indestructible, Totally Adaptable, Incredibly User-Friendly Controller

Main Features

- Up to four powerful outputs, all configurable for a perfect adaptation to the specific requirements, such as: direct control of a highly rated compressor, LED light control, ECM ON/OFF fan control, regulation of heaters for heating/catering equipment, control of switched loads, defrost, alarms.
- Suitable for R290 natural refrigerant gas.
- Immediate configuration of the specific control mode (HT, LT, heating etc.).
- Excellent measurement accuracy ±0.1°C.
- Universal power supply.
- TTL or RS485 serial port; IoT connectivity option.
- Selectable ASCII/RTU communication protocol.
- Several display colour options: blue, white, red.

Applications

Fridges and freezers, cold stores, control panels, food warmers, bain-maries.

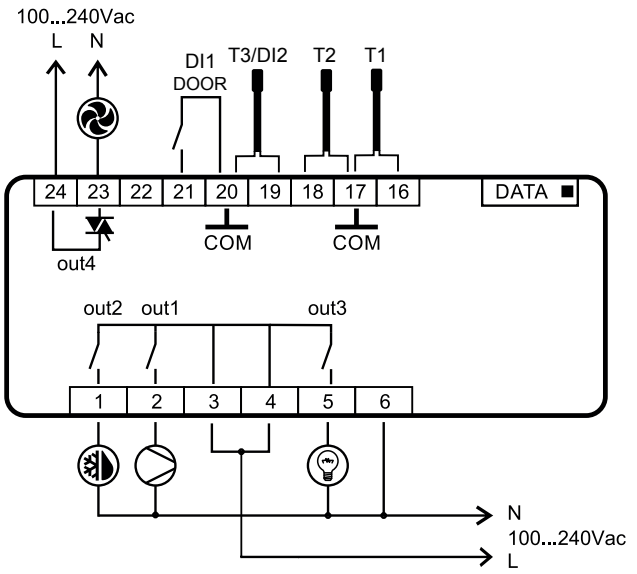
How to order **CD5**

Model	Suffix	Opt.	Description
CD5			Model
Inputs/ Outputs	01		Standard version: 4 inputs, 3 relay outputs, 1 SSR output
	02		Standard version: 4 inputs, 3 relay outputs
Power Switch	W		100...240 Vac
Relays	N		Standard relays (not sealed)
	H		Sealed relays
Serial port	R		RS485
	T		TTL
	N		None
Display		B	Blue
		R	Red
		W	White
Aesthetical options and customised F/W		-	None
		-xxx	LAE alpha-numeric code to specify extra specs

Standard Model
› CD5-01WHRW

› All versions are fitted with alarm buzzer

Technical Data	
Range	-50÷110°C, -58÷180°F
Resolution	0.1 / 1 °C; °F
Precision	±0.1°C within the measurement range
Sensor Type	NTC10KΩ@25°C
Maximum loads of outputs:	
OUT1	15 FLA; 90 LRA; 15A resistive 120Vac – 240Vac
OUT2	10A resistive @ 120Vac; 7A resistive @ 240Vac
OUT3	10A resistive @ 120Vac; 7A resistive @ 240Vac
OUT4	SSR 1A (30A inrush)
Power Supply	100÷240Vac ±10% 50÷60Hz 3W
Ambient temperature & humidity	-10÷50°C; 15%÷80% r.H.


100...240Vac
L
N
DI1
DOOR
T3/DI2
T2
T1
24
23
22
21
20
19
18
17
16
DATA
COM
COM
out4
out2
out1
out3
1
2
3
4
5
6
N
100...240Vac
L

CD5-01WHRx

REFRIGERATION CONTROLLERS

CR5

77 x 35 x 90 mm

Adaptable, Incredibly User-Friendly, Refrigeration Controller with RTC

Main Features

- Up to four powerful outputs, all configurable for a perfect adaptation to the specific requirements, such as: direct control of a highly rated compressor, LED light control, ECM ON/OFF fan control, regulation of heaters for heating/catering equipment, defrost, alarms.
- Real time defrosts with optimisation algorithm, for energy saving and a better food preservation.
- Suitable for R290 natural refrigerant gas.
- Immediate configuration of the specific control mode (HT, LT, heating etc.).
- Excellent measurement accuracy ±0.1°C.
- Universal power supply.
- TTL or RS485 serial port; IoT connectivity option.
- Selectable ASCII/RTU communication protocol.
- White LED display.

Applications

Cold stores, fridges and freezers, and all those applications where optimised real time defrosts are needed.

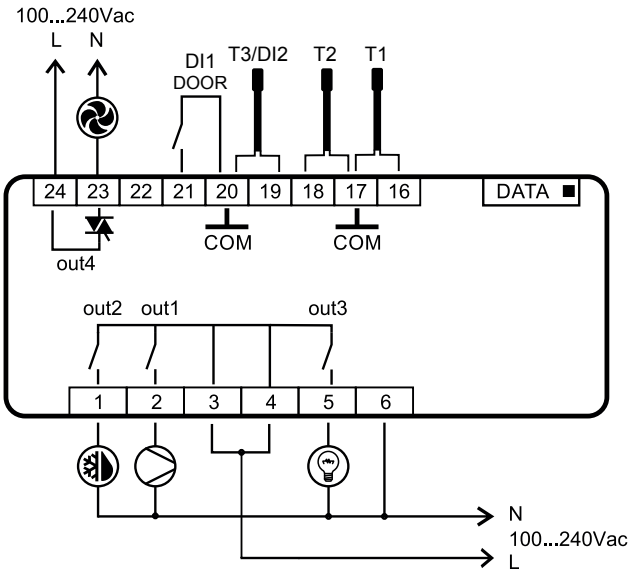
How to order **CR5**

Model	Suffix	Opt.	Description
CR5			Model
Inputs/ Outputs	01		Standard version: 4 inputs, 3 relay outputs, 1 SSR output
	02		Standard version: 4 inputs, 3 relay outputs
Power Switch	W		100...240 Vac
Relays	N		Standard relays (not sealed)
	H		Sealed relays
Serial port	R		RS485
	T		TTL
Aesthetical options and customised F/W		-	None
		-xxx	LAE alpha-numeric code to specify extra specs

Standard Model
› CR5-01WHR

› All versions are fitted with alarm buzzer and white display

Technical Data	
Range	-50÷110°C, -58÷180°F
Resolution	0.1 / 1 °C; °F
Precision	±0.1°C within the measurement range
Sensor Type	NTC10KΩ@25°C
Maximum loads of outputs:	
OUT1	15 FLA; 90 LRA; 15A resistive 120Vac – 240Vac
OUT2	10A resistive @ 120Vac; 7A resistive @ 240Vac
OUT3	10A resistive @ 120Vac; 7A resistive @ 240Vac
OUT4	SSR 1A (30A inrush)
Power Supply	100÷240Vac ±10% 50÷60Hz 3W
Ambient temperature & humidity	-10÷50°C; 15%÷80% r.H.


100...240Vac
L
N
DI1
DOOR
T3/DI2
T2
T1
24
23
22
21
20
19
18
17
16
DATA
COM
COM
out4
out2
out1
out3
1
2
3
4
5
6
N
100...240Vac
L

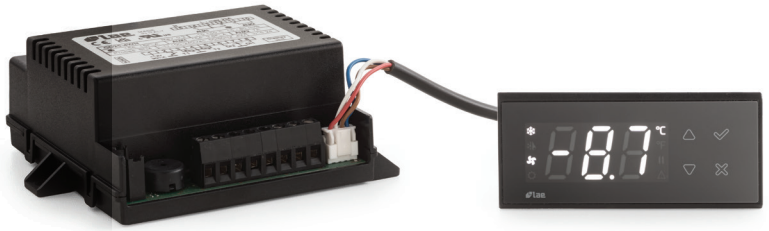
CR5-01WHR

REFRIGERATION CONTROLLERS

CD25

104 x 87 x 40 mm

Split HT/LT Refrigeration Controller



Main Features

- Three highly rated relays, SSR drive on board
- Configurable control of the outputs
- Set of parameters for evergy saving
- Universal power supply 100-240Vac
- Suitable for R290 and ATEX environments
- Excellent measurement accuracy ±0.1°C
- RS485 serial port, IoT connectivity option
- Selectable ASCII or RTU communication protocol
- Various options for the display unit: touch technology or with mechanical pushbuttons
- UL approved

Applications

Upright refrigerators, refrigerated tables, beverage coolers, plug-in display cases for shops and supermarkets, cold rooms, control panels.

How to order the **CD25**

Model	Suffix	Options	Description
CD25			Model and dimensions Main Unit
Outputs	4		3 relays, 1 SSR drive
Power supply	W		100...240 Vac 50/60 Hz
Relays	H		Sealed relays
Aesthetic Options and FW			None
		-xxxx	LAE Alpha-numeric code to define the extras

› All models are fitted with buzzer.
› All models are fitted with 2 analogue inputs, 2 digital inputs and RS485 serial communication port.
› Out of standard models not contemplated in the table above, will feature a part number deriving from the basic part number with the addition of a number at the end of the field "OPTIONS".

Standard Model

› CD25-4WH 3 relays, 1 SSR drive, 2 analogue inputs, 2 digital inputs, RS485 serial port.

Technical Data Touch Display TD5	
Dimensions	77 x 35 x 18.1 mm (WxHxD)
Panel cut-out	71 x 29 mm (WxH)

Standard Models

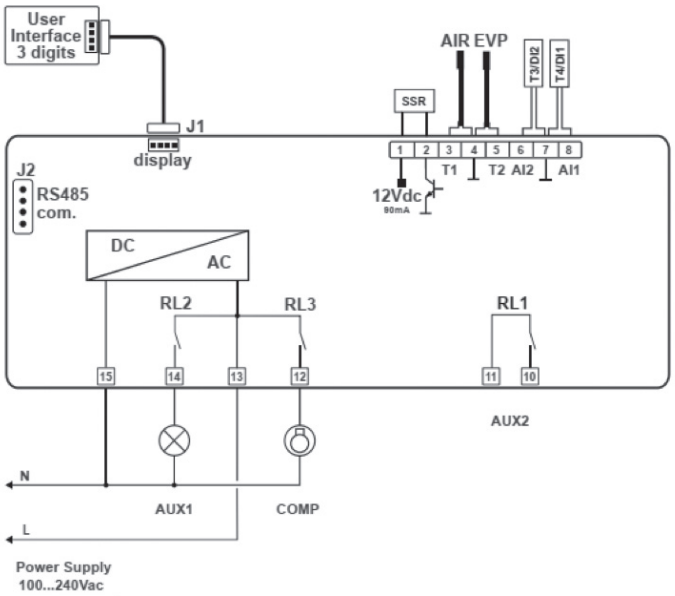
› **TD5S-W** display with white LEDs, **totally sealed IP55**

› **TD5S-R** display with red LEDs, **totally sealed IP55**

› **TD5U-W** display with white LEDs, **front protection IP54**

› **TD5U-R** display with red LEDs, **front protection IP54**

Technical Data	
Range	-50...110°C, -58...180°F
Resolution	0.1 / 1 °C; °F
Precision	<±0.1°C within the measurement range
Sensor type	NTC10K
Power supply	100...240Vac ±10%, 50/60Hz, 6W
Maximum loads of outputs:	
Compressor	Motor load 16FLA / 96LRA max. @ 240Vac; resistive load 16A @ 240Vac
AUX1	Motor load 3.6FLA / 21.6LRA max. @ 240Vac; resistive load 15A @ 240Vac
AUX2	Resistive load 7A @ 240Vac
Drive SSR	90mA @ 12Vdc Max. Ampacity on common terminals FT5 is altogether 23A
Ambient temperature & humidity	-10...+50°C; 15%...80% r.H.


User Interface 3 digits
J1
display
J2
RS485 com.
DC
AC
AIR EVP
T3/DI2
T4/DI1
SSR
1 2 3 4 5 6 7 8
T1 T2 AI2 AI1
12Vdc
90mA
RL2
RL3
RL1
15 14 13 12
11 10
AUX2
N
AUX1
COMP
L
Power Supply
100...240Vac

CD25

REFRIGERATION CONTROLLERS

BR1-27

71 x 97 x 61 mm DIN rail

Clever 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.

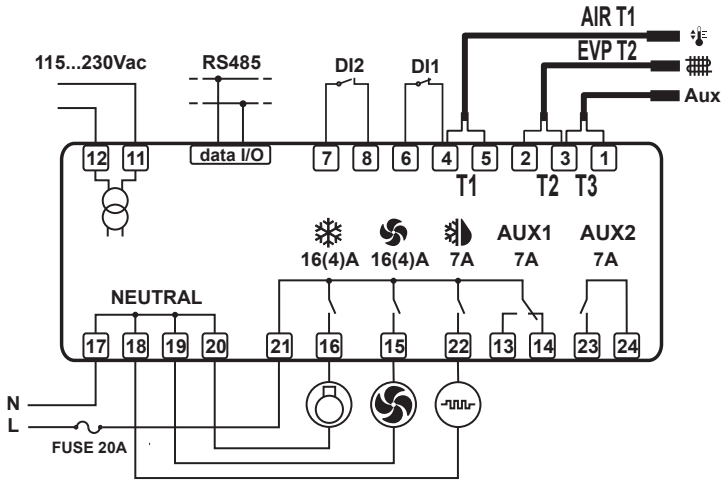
How to order **BR1-27**

Model	Suffix	Opt.	Description
BR1-27			Model and dimensions main unit
Inputs	B		Thermostat + evaporator probe
	C		Thermostat + evaporator + auxiliary probe
Aux digital input	1		Voltage free aux. digital input
Connections	S		Screw connections (built-in screw terminals)
Outputs	2		Compressor + evaporator fans
	3		Compressor + evaporator fans + defrost
	4		Compressor + evaporator fans + defrost + auxiliary 1
	5		Compressor + evaporator fans + defrost + auxiliary 1 + auxiliary 2
Power Supply	W		100...240 Vac
Aux functions		-	None
		-A	TTL serial port
		-B	RS485 serial port

› All models come with an alarm buzzer and digital inputs DI1, DI2

Standard Model
› BR1-27C1S5W-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	NTC 10KΩ@25°C
Relay output max loads (240Vac):	
	BR1-27...S...-...
Compressor	16A resistive 3.6 FLA 21.6 LRA
Evap. Fan	16A resistive 3.6 FLA 21.6 LRA
Defrost	7A resistive 1 FLA 4 LRA
Auxiliary loads 1	7A resistive 1 FLA 4 LRA
Auxiliary loads 2	7A resistive 1 FLA 4 LRA
Power supply	100÷240Vac ±10% 50÷60Hz 3W
Ambient temperature & humidity	-10÷50°C; 15%÷80% r.H.



BR1-27C1S5W-B

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

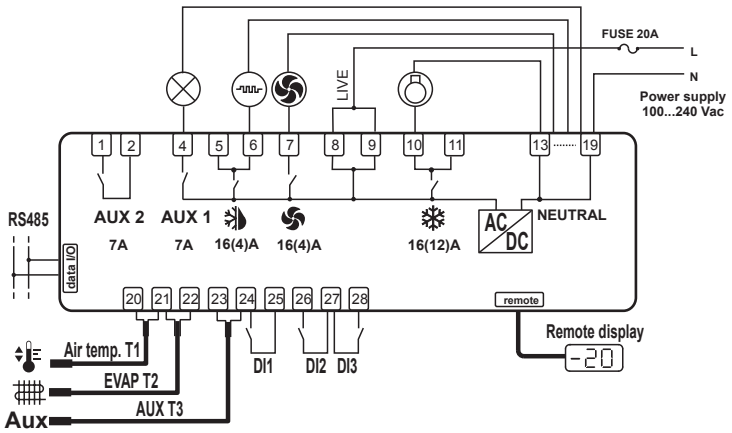
Applications

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

How to order **BD1-28**

Model	Suffix	Opt.	Description
BD1-28			Model and dimensions main unit
Inputs	B		Thermostat probe + evaporator probe
	C		Thermostat probe + evaporator probe + auxiliary probe
Aux digital input	0		None
	1		Voltage free aux digital input
Connectors	Q		Quick connections (male + female screw terminals)
	S		Screw connections (fixed screw terminals)
Outputs	2		Compressor (16(12)A) + evaporator fans (16(4)A)
	3		Compressor + evaporator fans + defrost (16(4)A)
	4		Compressor + evaporator fans + defrost + Aux 1 (7A)
	5		Compressor + evaporator fans + defrost + Aux 1 + Aux 2 (7A)
Power Supply	W		100...240 Vac
Relay type			Standard relays
	H		Sealed relays
Aux functions		-	None
		-A	TTL serial port
		-B	RS485 serial port

› All versions come with an alarm buzzer and digital input DI1, DI2.



BD1-28C1S5W-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	Mod. standard SN4B20P1/P2/P3	
Relay output max loads (240Vac):		
	BD1-28...S...-...	**BD1-28...Q...-...**
Compressor	16A resistive 12 FLA 72 LRA	16A resistive 12 FLA 72 LRA
Evap. Fan	16A resistive 3.6 FLA 21.6 LRA	16A resistive 3.6 FLA 21.6 LRA
Defrost	16A resistive 3.6 FLA 21.6 LRA	16A resistive 3.6 FLA 21.6 LRA
Auxiliary loads 1	16A resistive 1 FLA 4 LRA	16A resistive 1 FLA 4 LRA
Auxiliary loads 2	16A resistive 1 FLA 4 LRA	16A resistive 1 FLA 4 LRA
Power supply	100÷240Vac ±10% 50÷60Hz 3W	
Ambient temperature & humidity	-10÷50°C; 15%÷80% r.H.	

REFRIGERATION CONTROLLERS

BR1-28

107 x 95 x 47 mm

Clever Split Refrigeration Controller with RTC

Main features

- Refrigeration controller with timed 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, or wireless option
- Many display options: coloured LED's with DU5S, capacitive touch TU5S or high contrast LCD, fully customised
- UL approved

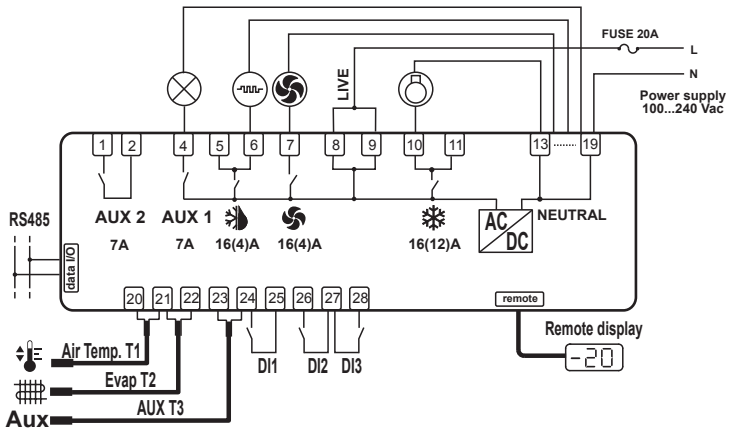
Applications

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

How to order **BR1-28**

Model	Suffix	Opt.	Description
BR1-28			Model and dimensions main unit
Inputs	B		Thermostat + evaporator probe
	C		Thermostat + evaporator + auxiliary probe
Aux digital input	0		None
	1		Voltage free aux digital input
Connections	Q		Quick connections (male + female screw terminals)
	S		Screw connections (built-in screw terminals)
Outputs	2		Compressor + evaporator fans
	3		Compressor + evaporator fans + defrost
	4		Compressor + evaporator fans + defrost + auxiliary 1
	5		Compressor + evaporator fans + defrost + auxiliary 1 + auxiliary 2
Power Supply	W		100...240 Vac
Relay type			Standard relays
	H		Sealed relays
Aux functions		-	None
		-A	TTL serial port
		-B	RS485 serial port

› All models come with an alarm buzzer and digital inputs DI1, DI2.



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	NTC 10KΩ@25°C	
Relay output max loads (240Vac):		
	BR1-28...S...-...	**BR1-28...Q...-...**
Condensed fan	16A resistive 12 FLA 72 LRA	12A resistive 12 FLA 72 LRA
Evap. Fan	16A resistive 3.6 FLA 21.6 LRA	12A resistive 3.6 FLA 21.6 LRA
Defrost	16A resistive 3.6 FLA 21.6 LRA	12A resistive 3.6 FLA 21.6 LRA
Auxiliary loads 1	7A resistive	7A resistive
Auxiliary loads 2	7A resistive	7A resistive
Power supply	100÷240Vac ±10% 50÷60Hz 3W	
Ambient temperature & humidity	-10÷50°C; 15%÷80% r.H.	

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.

SUPERVISORY SYSTEMS

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
- Configured for tele-servicing via remote control software Supremo®
- Languages available: English, German, Italian, Polish.

Available options

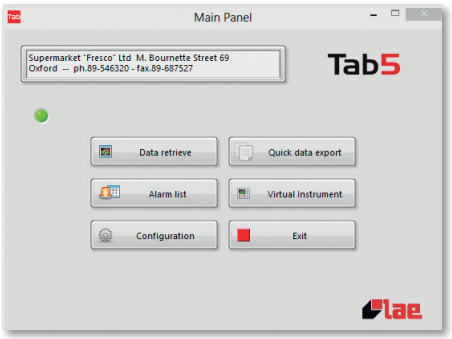
Available as full optional as described above but also in a "low cost version" for data logging only.
This version is called TAB LV

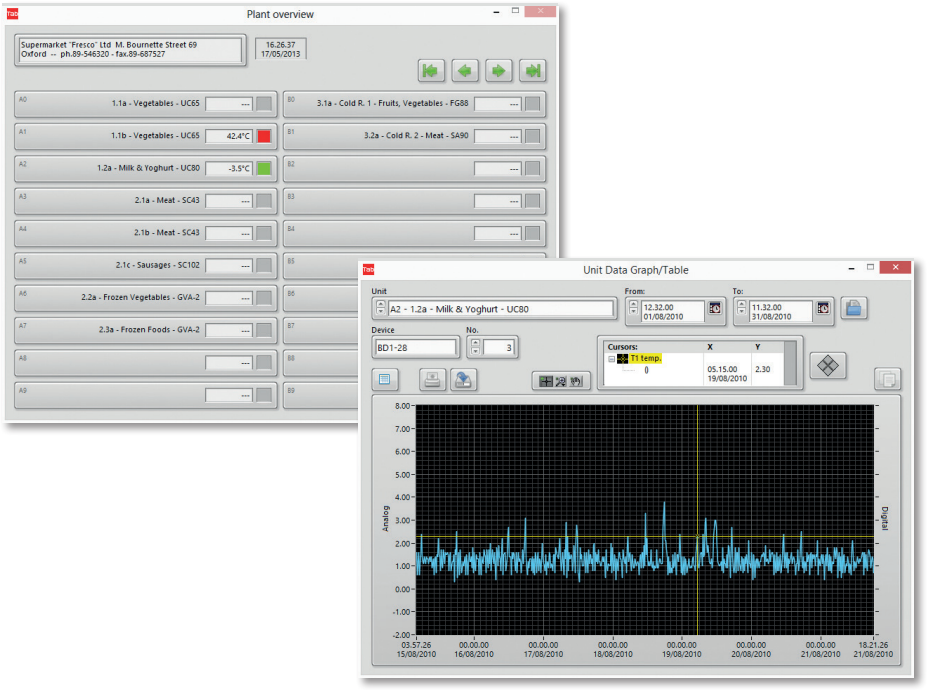
Applications

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

System Requirements

- Computer with Windows 7/8/10/11® operating system installed and properly running, minimum processor and memory as required from Windows version – USB port
- 1024x768 pixel screen resolution
- 50GB available on Hard Disk
- USB to RS-485 converter mod. USB485-STIXL. Up to 200 controllers connectable. Every 62 controllers, you must add a repeater ATC-109N
- RS232 serial port (COM) required if a GSM modem is fitted





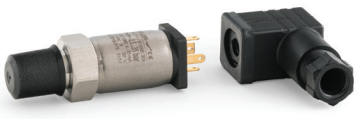
HT2WAD

Humidity transmitter

Technical data	
Sensor type	capacitive
Output signal	0÷1Vdc
Range	0%÷100% r.H.
Accuracy	±2%r.H. (10%÷90%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

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

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

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

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

SN2B / SN4BxxP1, P2

SN4BxxP2-B

SN4BxxP3-Y

SN4BxxP4-S

Pt100 & thermocouples

Temperature probes

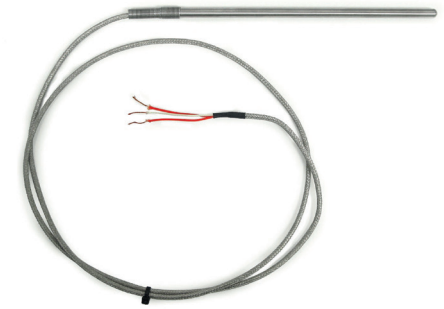
QP1NxxP-X	
Sensor Type	Pt100 class B
Range	-40÷110°C
Precision	±0.3°C @ 0°C
Tube	Ø 6 x 40 mm; AISI 304 steel
Cable	3 wires x 0.25mm²; thermoplastic rubber cable Ø 3.4 mm; loose leads
Protection	IP67

Standard versions

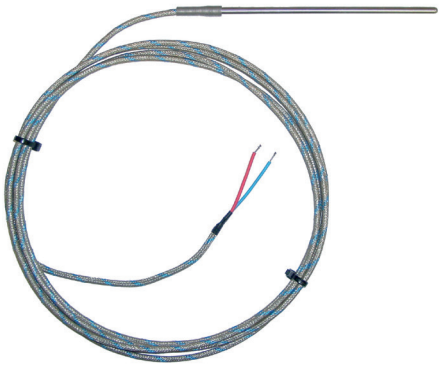
QP1N20P-X	2 m

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