



Controller Selection Table	94
Thermometers & Temperature Displays (LT Series)	95
Capillary & Dial Thermometers	96
Thermometers & Timers	97
Digital Thermostats (MT Series)	98
Digital Thermostats (LT Series)	99
Digital Thermostats	100
Digital Defrost Controllers (MP1-15 Hawco Universal Controller)	103
Digital Defrost Controllers LD1 & LD2-15)	104
Digital Defrost Controllers (LDU15 & LCD15)	105
Digital Defrost Controllers	106
Digital Defrost Controllers (SSD Series)	108
Digital Defrost Controllers (ID Series)	109
Digital Defrost Controllers	110
Digital Defrost Controllers (IR33 Series)	111
Coldroom Control Panels (Mastercella Series)	112
Accessories & Sensors	113

01

02

03

04

05

06

07

08

09

10

11

12

05 Temperature Display & Control

Controller Selection Table

Model	Supply	Probe Type	Inputs								Outputs							Options						
			Thermostat	Evapoator	Condensor	Auxiliary	Auxiliary Switch	Digital Input	Door Switch	Thermostat	Defrost	Evaporator Fans	Condenser Fans	Alarm	Lights	Buzzer	Auxiliary	Heat/Cool Mode Select	Remote Display	Infrared	Int. Alarm Buzzer	Real Time Clock	Programme Key Set-Up, TTL Serial Com.	RS485 Serial Com.
MP1-15B4E-A (P)	240V	PTC/10K NTC	•	•						•	•	•	•					•				•		
LDU151E-BG	240V	2K NTC	•								•													•
LDU152E-AG (P)	240V	2K NTC	•								•												•	
LDU152E-AL (P)	240V	2K NTC	•								•			•									•	
LDU152E-EG (P)	240V	2K NTC	•								•			•									•	•
LD1-15B2E-AL	240V	2K NTC	•			•				•	•					•	•						•	
LD2-15B4E-S (P)	240V	2K NTC	•	•						•	•	•	•											
LCD15CS3E (P)	240V	2K NTC	•	•		•				•	•	•	•											
LCD15CS3E-A (P)	240V	2K NTC	•	•		•				•	•	•	•										•	
LCD16	Display Unit																							
FC06-15M01	1.5m Connecting Cable																							
LCD28CS4E-B	240V	2K NTC	•	•		•	•			•	•	•	•					•	•				•	
LGD32S4E-A	240V	2K NTC	•	•		•	•			•	•	•	•					•					•	
BIT12RU	Display Unit c/w 2.0m Cable																							
BIT20B11E	240V	2K NTC	•								•											•		
BIT20B22E	240V	2K NTC	•	•							•	•	•									•		
RDC122T1R3B	12V	PTC	•	•							•	•	•					•				•		
SMD12RU20	Display Unit c/w 2.0m Cable																							
SMD12RU35	Display Unit c/w 3.5m Cable																							
SMD34RU	Display Unit																							
FC10-20M01	2.0m Connecting Cable																							
SSD90B35E-C	240V	PTC	•	•						•	•	•	•					•	•				•	
SSD90C65E-C	240V	PTC	•	•	•					•	•	•	•					•	•				•	
ID961 12V 8A	12V	PTC/10K NTC	•								•												•	
ID961 230V 8A	240V	PTC/10K NTC	•								•												•	
ID971 12V	12V	PTC/10K NTC	•	•							•	•											•	
ID974 230V	240V	PTC/10K NTC	•	•							•	•	•										•	
ID974/B 12V 8A	12V	PTC/10K NTC	•	•							•	•	•										•	
ID974/B 230V 8A	240V	PTC/10K NTC	•	•							•	•	•										•	
ID985 LX	12V	PTC/10K NTC	•	•				•			•	•	•					•					•	
PJ32C00000	230V	NTC	•	•							•	•	•										•	
PJ32S0C000	230V	NTC	•	•							•												•	
PJ32S1P000	230V	NTC	•								•												•	
PJ32W00000	230V	NTC	•	•							•	•											•	
IR33C7HR01	115/230V	10K NTC/PTC	•	•					2		•	•	•					•				•	•	
IR33COLN00	12/24V	10K NTC	•	•					2		•	•	•					•				•	•	
IR33F7EN00 (P)	230V	10K NTC/PTC	•	•					2		•	•	•					•				•	•	
IR33F7EN00 (P)/C	230V	10K NTC/PTC	•	•					2		•	•	•					•				•	•	
IR33F7EN00 (P)/F	230V	10K NTC/PTC	•	•					2		•	•	•					•				•	•	
IR33F7EN01	230V	10K NTC/PTC	•	•					2		•	•	•					•				•	•	
IR33S0EA00	230V	10K NTC	•	•					1		•	•										•	•	
IR33S0EP00 (P)	230V	10K NTC	•	•					1		•											•	•	
IR33S0EP00 (P)/C	230V	10K NTC	•	•					1		•											•	•	
MD33D2EN00	230V	10K NTC	•	•					3		•	•	•					2				•	•	
MD33D5FB00	230V	10K NTC	•	•					3		•	•	•					2				•	•	

01
02
03
04
05
06
07
08
09
10
11
12

Temperature Display & Control 05

Thermometers & Temperature Displays (LT Series)

LT6



Features:

Panel display Range between -50 and +150°C
Displays in °C, 1° resolution Sensor
Very compact size

Dimensions: 64[w] x 32[h] x 81[d]mm
Panel cut out: 58[w] x 26[h]mm



Model	Power Supply	Input Type	List Price £
LT6CTD-2	12V ac/dc ± 10%	PTC	30.56

LT12



Features:

Panel display Range between -100 and +600°C (PT100)
Displays in °C, 1° resolution Sensor
Standard panel mount size

Dimensions: 77[w] x 35[h] x 77[d]mm
Panel cut out: 71[w] x 29[h]mm



Model	Power Supply	Input Type	List Price £
LT12CPE	230V ac ± 10%	PT100	36.44
LT12CTE-2	230V ac ± 10%	PTC	31.70

LTS12



Features:

Instantaneous & Min/Max temperature display.
Easy selection of scale in °C/°F, of fixed or automatic resolution. Range -100...+900° (T/C)
Runs on mains power supply.

Dimensions: 77[w] x 35[h] x 77[d]mm
Panel cut out: 71[w] x 29[h]mm



Model	Power Supply	Input Type	List Price £
LTS12PTD	12V ac/dc ± 10%	PTC/PT100	28.55
LTS12PTI	24Vac/dc ± 10%	PTC/PT100	36.44
LTS12PTE	230V ac ± 10%	PTC/PT100	40.45
LTS12TCD	12V ac/dc ± 10%	J/K TYPE TC	36.44
LTS12TCE	230V ac ± 10%	J/K TYPE TC	40.45



AO-TM1210

LCD Mini Thermometers

Hawco LCD temperature displays.
Battery powered (Supplied) with snap in design for panel mounting.

Model	Range	Colour	Dimensions (mm)	Sensor length	List Price £
FM880FPEX BLACK	-10 to +110°C	Black	45.5 x 27 x 14.8	3m	9.50
FM880L WHITE	-5 to +50°C	White	45.5 x 27 x 14.8	Internal	9.50
FM880LEX WHITE	-40C to +50C	White	45.5 x 27 x 14.8	3m	9.50
AO-TM1210ES 200MM-RC	-20 to +70°C	White	45.5 x 27 x 14.8	2m	10.72
AO-TM1210ES BLACK-RC	-40 to +70°C	Black	45.5 x 27 x 14.8	3m	10.72
AO-TM1210ES WW-RC	-40 to +70°C	White	45.5 x 27 x 14.8	3m	10.72
AO-TM1210ES 400MM BK	-20 to +70°C	Black	45.5 x 27 x 14.8	4m	10.72

05 Temperature Display & Control

Capillary & Dial Thermometers




Arthermo Capillary Thermometers



	Model	Range	Description	List Price £
	QP80 0-120C	0.. 120°C	Arthermo QP80 Ø50mm Capillary thermometer, Black dial .2.0m Capillary	16.19
	QP-F 81	-40.. +40°C	Arthermo Square Bezel thermometer 55x55mm, Ø52mm Cutout, 1500mm Capillary	14.56
	RO-88 0-120C	0.. 120°C	Arthermo thermometer, White dial/Black case 1.5m Capillary	13.98
	ROF88 -40/+40	-40.. +40°C	Arthermo thermometer, White dial/Red-Blue scale. 1.5m Capillary.	13.98
	C71-52MM-DIA 0/300C	0.. +300°C	Arthermo C71 Ø52mm Thermometer. Black dial. 1.0m Capillary S/S.	16.48
	CF72 60MM -20/+60C	-20.. +60°C	Arthermo CF72 Ø60mm Thermometer. 3.0m Capillary S/S.	16.48
	CPN 0/120C	0.. 120°C	Arthermo dial thermometer Ø50mm. White dial 1.5m Capillary S/S.	16.19
	CPN 0/60C	0.. +60°C	Arthermo dial thermometer Ø52mm 0-60°C. White dial/black case. 1.5m Capillary PVC/S/S.	15.00
	F84 52MM-40/+40 1.5	-40.. +40°C	Arthermo dial thermometer Ø52mm. White dial. Type FA chrome front flange. 1.5m Capillary PVC.	16.48
	F84 100MM 0/120C	0.. 120°C	Arthermo dial thermometer Ø100mm. White dial. Type FA chrome front flange. 3.0m Capillary	25.00
	F87R 100MM -40/+40	-40.. +40°C	Arthermo dial thermometer Ø100mm. White dial. Type FA chrome reversible flange. 1.5m Capillary PVC.	18.64

Arthermo Dial Thermometers



	Model	Range	Description	List Price £
	F540	-40.. +40°C	Arthermo Bi-metal thermometer Ø52mm -40-+40°C. White dial/Blue numbers/red pointer. S/S case. With hook & rear stand.	5.89
	F569-50 0/120C	0.. 120°C	Arthermo dial thermometer Ø50mm. White dial. 1/4" thread, 30mm stem & lock nut.	9.50
	F569-52 -35/+35C	-35.. +35°C	Arthermo dial thermometer Ø50mm. White dial. 1/4" thread, No stem, supplied with lock nut.	9.50

Temperature Display & Control 05

Thermometers & Timers

Solar Powered Thermometers



Hawco solar powered thermometer. Battery back-up & lead (Min length 120mm, Max 150mm). External sensor, white case. Switch selection of °C/°F.

Model	Range	List Price £
SL880EX 150MM	-50.. +70°C	10.00

Min/Max LCD Thermometers



Built in Hi/Low alarm. Comes without battery

Model	Internal Sensor Range	External Sensor Range	Dimensions (mm)	List Price £
NTS-888	0.. +50°C	-50.. +70°C	115x64x17mm	15.38



3m remote sensor. Complete with battery.

Model	Internal Sensor Range	External Sensor Range	Dimensions (mm)	List Price £
SW-888	-5.. +50°C	-50.. +70°C	66x68x21mm	13.95

Digital Countdown Timers

Timer 12



Features:

Panel mounted timer.
Countdown in hours and minutes or minutes and seconds
Manual start/stop of countdown. Manual switching on/off of output.

Applications:

Control of duration of industrial processes, control of dough preparation time in baking plants, control of cooking time in ovens.

Dimensions: 77[w] x 35[h] x 77[d]mm
Panel cut out: 71[w] x 29[h]mm



Model	Power Supply	Relay	Functions	List Price £
TIMER 122D/1	12V ac/dc ± 10%	5(3)A	Countdown in hours & minutes	56.65
TIMER 122D/2	12V ac/dc ± 10%	5(3)A	Countdown in minutes & seconds	56.65

TMR15



Features:

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

Applications:

Control of duration of industrial processes, control of dough preparation time in baking plants, control of cooking time in ovens.

Dimensions: 77[w] x 35[h] x 77[d]mm
Panel cut out: 71[w] x 29[h]mm



Model	Power Supply	Relay	List Price £
TMR15D-A	12V ac/dc ± 10%	16(4)A	56.65
TMR15E-A	230V ac ± 10%	16(4)A	56.65

05 Temperature Display & Control

Digital Thermostats (MT Series)



Features:

Wall & panel mount thermostat with two independent or linked channels
 Refrigerating or heating control selection for each channel
 Two-step control or with main setpoint and alarm threshold
 Load start limitation and safety function in the event of sensor failure.
 Considerable power may be directly driven due to the 7A relay.

Applications:

Control of small cold stores, refrigerated cabinets and tables, heating systems, temperature baths and ovens.

Specification

Range:
-50 to 150°C
Resolution:
1°
Accuracy:
±0.7° (-30 to 110°C)

MTC4

Dimensions: 64[w] x 32[h] x 81[d]mm
Wall mounted



Model	Power Supply	Input	Relay	Features	List Price £
MTC4T1RE/3 (P)	230V ac ± 10%	PTC	2 x 7A	Two Stage	68.47

MTC12

Dimensions: 77[w] x 35[h] x 77[d]mm
Panel cut out: 71[w] x 29[h]mm



Model	Power Supply	Input	Relay	Features	List Price £
MTC12T1RD/3 (P)	12V ac/dc ± 10%	PTC	2 x 8(3)A	Two stage	62.64

MTC27

Dimensions: 54[w] x 90[h] x 70[d]mm
Panel cut out: 54[w] x 45[h]mm
DIN rail mounted



Model	Power Supply	Input	Relay	Features	List Price £
MTC27T1RE/2	230V ac ± 10%	PTC	6A	-	51.03
MTC27T1RE/3	230V ac ± 10%	PTC	2 x 7A	Two Stage	68.47

MTR6

Features:

Panel thermostat with programmable differential.
 Refrigerating or heating mode control selection.
 Load start limitation and safety function in the event of breakage of the sensor Very compact size.



Applications:

Control of small cold stores, refrigerated cabinets and tables, heating systems, temperature baths and ovens.

Dimensions: 64[w] x 32[h] x 81[d]mm
Panel cut out: 58[w] x 26[h]mm



Specification

Range:
-50 to 150°C
Resolution:
1°
Accuracy:
±0.7° (-30 to 110°C)

Model	Power Supply	Input	Relay	Features	List Price £
MTR6T1RD (P)	12V ac/dc ± 10%	PTC	8(3)A	-	46.44

Units with PTC or NTC inputs are supplied complete with a standard 2m probe (ST1K20P1 [PTC] or SN2K20P1 [NTC]).
 Due to the variety of thermocouples and PT100 sensors, these must be purchased separately with each unit.
 Please contact the sales office for details.

Accuracies quoted are for controller only. For overall accuracy sensor accuracy needs to be taken into account.

Temperature Display & Control 05

Digital Thermostats (LT Series)

LTR15

Features:

Runs on mains power supply
 PID with autotuning or ON/OFF control
 Output on relay (16A), Input for PTC, NTC
 or 0 to 1V 0.1 / 1°C or 1°F resolution.
 Refrigerating or heating mode control selection.
 ON/OFF button on the front.
 Load start limitation and safety function in the event of probe failure.
 Quick setup through ZOT-LTR device
 Connection to LAE supervisory systems HTD and TAB. (Only with RS485 serial)



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.

Dimensions: 77[w] x 35[h] x 77[d]mm
Panel cut out: 71[w] x 29[h]mm

Model	Power Supply	Input	Relay	Features	List Price £
LTR15C1RE-A (P)	230V ac ± 10%	NTC (10K)	16A	-	49.90
LTR15T1RD-A (P)	12V ac/dc ± 10%	PTC	16A	-	46.44
LTR15T1RE-A (P)	230V ac ± 10%	PTC	16A	-	49.90
ZOT LTR15	LTR 15 Programming Key				35.00

LTW15

Features:

Panel thermostat with two independent outputs.
 Programming of: readout, output control via Hysteresis or PID.
 Auto-tuning function for PID control.
 Programmable Neutral Zone, Two Step or Single stage control with alarm.
 Available inputs: T/C J-K, Pt100, PTC, NTC, 0/4...20mA, 0..1V.
 Outputs on relay or SSR piloting.
 Quick setup through ZOT-LTW device.



Applications:

Temperature: Ovens and thermostatic baths, incubators, precision heated and/or refrigerated systems.

Dimensions: 77[w] x 35[h] x 77[d]mm
Panel cut out: 71[w] x 29[h]mm

Model	Power Supply	Input	Relay	Features	List Price £
LTW15K1FD	12V ac/dc ± 10%	K Type T/C	1 x SSR	-	59.13
LTW15K1RD	12V ac/dc ± 10%	K Type T/C	1 x 8(3)A	-	59.13
LTW15K2FD	12V ac/dc ± 10%	K Type T/C	2 x SSR	Two Stage	64.80
LTW15K2MD	12V ac/dc ± 10%	K Type T/C	1 x SSR, 1 x 8(3)A	Two Stage	64.80
LTW15K2RD	12V ac/dc ± 10%	K Type T/C	2 x 8(3)A	Two Stage	64.80
LTW15P1FD	12V ac/dc ± 10%	PT100	1 x SSR	-	59.13
LTW15P1RD	12V ac/dc ± 10%	PT100	1 x 7(3)A	-	59.13
LTW15P2RD	12V ac/dc ± 10%	PT100	2 x 7(3)A	Two Stage	64.80
LTW15T1FD	12V ac/dc ± 10%	PTC	1 x SSR	-	59.13
LTW15T1RD	12V ac/dc ± 10%	PTC	1 x 5(3)A	-	59.13
LTW15T2RD	12V ac/dc ± 10%	PTC	2 x 7(3)A	Two Stage	64.80
ZOT LTW	LTW 15 Programming Key				35.00

Accuracies quoted are for controller only. For overall accuracy sensor accuracy needs to be taken into account.

05 Temperature Display & Control

Digital Thermostats

LTC15

Features:

Ideal for wholesalers as one model fits several applications.
Runs on mains power supply.
PID with autotuning or ON/OFF control.
Truly user-friendly programming.
0.1 / 1°C or 1°F resolution.
Selectable Input: PTC/NTC, TCJ/K, Pt1100, 0+1V, 0/4+20mA.
Powerful main output on relay (16A) and mixed outputs on relay and SSR drive piloting option.
Refrigerating or heating mode control selection.
Two Stage, Neutral Band, Alarm threshold control.
Standby button on front.
Quick setup through ZOT-LTC device.
Connection to LAE supervisory systems TAB.(Only with RS485 serial)



Applications:

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

Dimensions: 77[w] x 35[h] x 77[d]mm

Panel cut out: 71[w] x 29[h]mm

Model	Power Supply	Input	Relay	Features	List Price £
LTC15J2RE-A (P)	230V ac ± 10%	K/J Type T/C	16(4), 7(2) A	Two Stage	64.80
LTC15T2RE-A (P)	230V ac ± 10%	NTC (10K)/PTC	16(4), 7(2) A	Two Stage	64.80

IC Series

Features:

Temperature display range -50 to 99°C
NTC/PTC selectable probe input (Not IC912)
IP65 front display



Dimensions: 74[w] x 32 [h] x 60[d]mm

Panel cut out: 71[w] x 29[h]mm

Accuracy
0.5% better than full scale
Resolution
1°C

Model	Power Supply	Input	Relay	Features	List Price £
IC901 12V 8A	12V ac/dc ± 10%	PTC	8A		£33.00
IC901 230V 8A	230V ac ± 10%	NTC (10K)	8A		£35.85
IC902 12V PTC	12V ac/dc ± 10%	PTC	8A		£50.00
IC912 PT100 12V	12V ac/dc ± 10%	PT100	8A	TTL	£45.00
IC915 12V	12V ac/dc ± 10%	2 x PTC	8A	Independent Relays, TTL	£56.88

PJ32

Features:

Refrigeration or heating control selection
Display in °C or °F (Selectable)
Ergonomic back-lit three-button keypad;
Highly-efficient red LED display
Quick programming, using hardware key.



Dimensions: 81[w] x 36[h] x 68[d]mm

Panel cut out: 71[w] x 29[h]mm

Model	Power Supply	Input	Relay	Features	List Price £
PJ32V6P	230V ac ± 10%	2 x PTC	1 x 16A	Buzzer	£37.00

TTL - Allows the use of ZOT set-up key

Accuracies quoted are for controller only. For overall accuracy sensor accuracy needs to be taken into account.



MHC12

Panel humidistat, one or two independent or linked channels, Humidifying or dehumidifying control selection for each channel. Two-step control or with main setpoint and alarm threshold. Load start limitation and safety function in the event of breakage of the sensor. Considerable power may be directly driven. Runs on mains power supply.

Applications

Control of greenhouses, seasoning cells, air-conditioned rooms.

Model	Power Supply	Input	Relay	Features	List
					Price £
MHC12A7RD/2	12Vac/dc ± 10%, 2W	0-1 Vdc	1 x 8(3)A	One threshold	46.44
MHC12A7RD/3	12Vac/dc ± 10%, 2W	0-1 Vdc	2 x 8(3)A	Two thresholds	62.64
MHC122A7RE/2	230V ac ± 10%, 50/60Hz, 2W	0-1 Vdc	1 x 8(3)A	One threshold	49.90



MHR4

Wall humidistat with programmable differential Humidifying or dehumidifying mode, control selection, Load start limitation and safety function in the event of breakage of the sensor. Runs on mains power supply.

Applications

Control of greenhouses, seasoning cells, air-conditioned rooms.

Model	Power Supply	Input	Relay	Features	List
					Price £
MHR4A7RE	230V ac ± 10%, 50/60Hz, 2W	0-1 Vdc	5(3)A		53.89

For humidity sensors to suit the above - see page 116

Mod.T

Arthermo mechanical thermostat with liquid expansion probe for outside use. Especially suitable for temperature control and regulation of refrigerators, industrial or commercial freezers. Complete with knob & bezel and fixing screws.

Arthermo boxed thermostat with liquid expansion probe. Especially suitable for temperature control and regulation of refrigerators, industrial or community freezers. Comes complete with cable gland and control knob.

Contact rating: SPDT 16(5)A 250V ac
Switching differential: Typically 5K
Range: -35 to 35°C

Mechanical Thermostats



MOD.T -35/+35C



MOD.T -35/+35 BOX

Model	Capillary Length	Capillary Coating	Dimensions	Knob position	List
					Price £
MOD.T -35/+35C	1.5m	S/S/PVC	34x44x35mm	Front	14.65
MOD.T -35/+35 BOX	1.5m	Nickel	85x57x40mm	Front	23.32
MOD.T -35/+35 BOX(L)	1.5m	PVC	117x70x45mm	Top	23.32

05 Temperature Display & Control

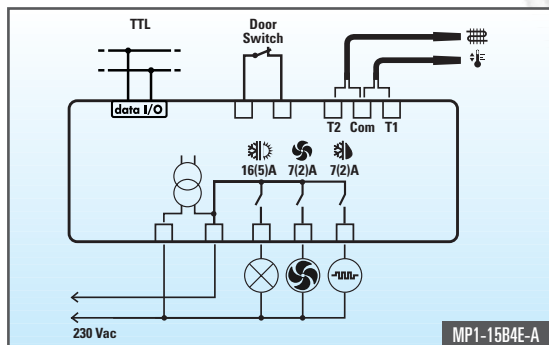


Compact All-Purpose Thermostat MP1-15

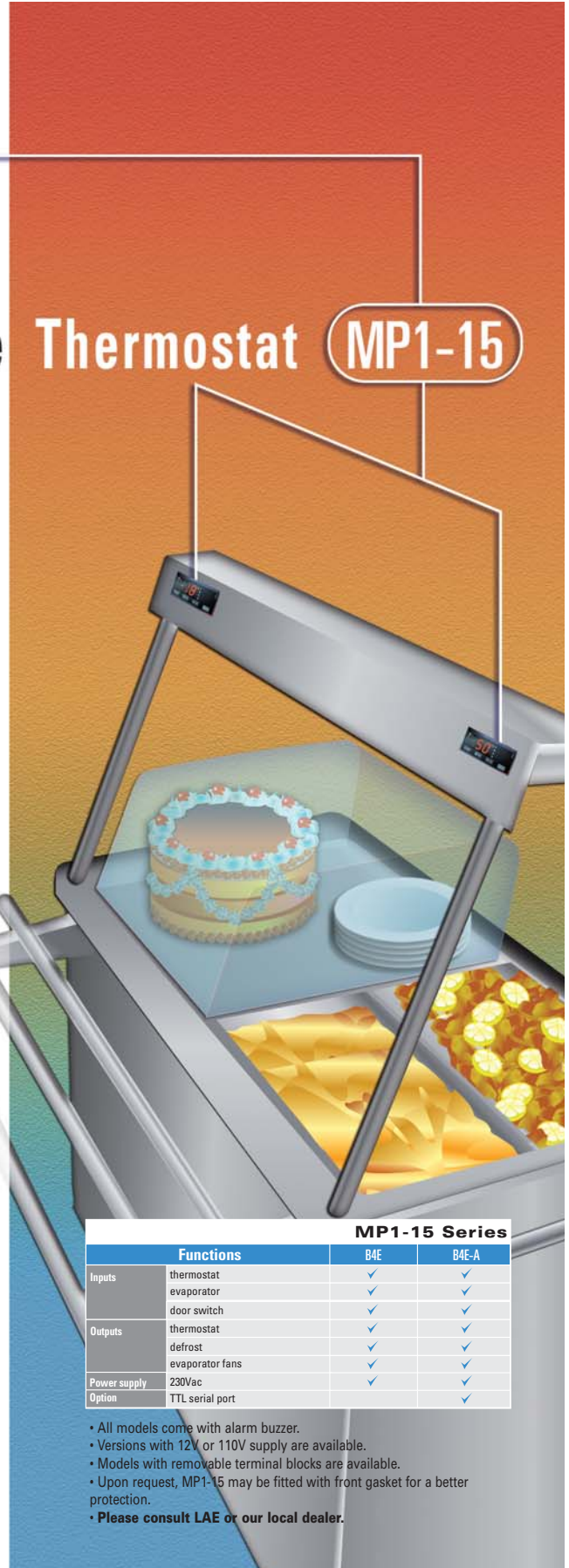
CONFIGURABLE, USER FRIENDLY & CONVENIENT TO USE. MP1-15 IS A NEW COMPACT UNIVERSAL THERMOSTAT, DESIGNED SPECIFICALLY FOR THE DISTRIBUTION AND SPARE PARTS MARKET. WITH EXCELLENT ON-THE-SPOT CONFIGURATION, CREATING FLEXIBILITY OF INPUTS (PTC OR NTC) AND OUTPUTS AS WELL AS A RANGE OF OPERATION OPTIONS. SUITABLE FOR A VERY WIDE RANGE OF APPLICATIONS DEPENDING ON IT'S CONFIGURATION DEFINED BY THE INSTALLER. MP1-15 MAY BE CONFIGURED AS AN HT/FRIDGE DEFROST CONTROLLER WITH ONE OR TWO SENSORS, AN LT/FREEZER DEFROST CONTROLLER WITH TWO SENSORS AND THREE OUTPUTS, OR A SINGLE STAGE ON/OFF THERMOSTATIC CONTROL FOR REFRIGERATION OR HEATING APPLICATIONS. GREAT VERSATILITY, EXCELLENT PERFORMANCE, MAJOR ADVANTAGES FOR THE INSTALLER.

MAIN SPECIFICATIONS

CONTROL RANGE:	-50÷120°C
RESOLUTION:	0.1 / 1°; °C / °F
ACCURACY: PTC1000:	<±0.5°C (-50÷120°C)
NTC10K:	<±0.3°C (-40.0÷70.0°C); <±0.5°C IN REMAINING RANGE
SENSOR TYPE:	SELECTABLE NTC10K MOD. STANDARD SN4K20P1/P2 Or PTC1000 MOD. STANDARD ST1K20P1/P2
POWER SUPPLY:	230V~ ±10% 50÷60Hz 3W
FRONT PROTECTION:	IP55
DIMENSIONS:	77x35x77 MM (WxHxD)
PANEL CUT-OUT:	71x29 MM (WxH)
AMBIENT TEMPERATURE:	-10÷50°C



VIA PADOVA, 25
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		MP1-15 Series	
		B4E	B4E-A
Inputs	thermostat	✓	✓
	evaporator	✓	✓
	door switch	✓	✓
Outputs	thermostat	✓	✓
	defrost	✓	✓
	evaporator fans	✓	✓
Power supply	230Vac	✓	✓
Option	TTL serial port		✓

- All models come with alarm buzzer.
- Versions with 12V or 110V supply are available.
- Models with removable terminal blocks are available.
- Upon request, MP1-15 may be fitted with front gasket for a better protection.
- **Please consult LAE or our local dealer.**

Temperature Display & Control 05

Digital Defrost Controllers (MP1-15 Hawco Universal Controller)

Configurable, user friendly & easy to use. MP1-15 is a new compact universal thermostat, designed specifically for the distribution and spare parts market. With excellent on-the-spot configuration, creating flexibility of inputs (PTC or NTC) and outputs as well as a range of operation options. Suitable for a very wide range of applications depending on its configuration defined by the installer.

MP1-15 may be configured as an HT/fridge defrost controller with one or two sensors, an LT/Freezer defrost controller with two sensors and three outputs, or a single stage On/Off thermostatic control for refrigeration or heating applications.

Great versatility, excellent performance giving major advantages to the installer.

Features:

- Multi Function Panel thermostat
- PTC/NTC Probe selection
- Heating/Cooling select
- Controls the compressor directly (Large 16A Relay)
- Evaporator fan timed control
- Temperature defrost termination
- Alarm on buzzer Door open and temperature alarm
- Condenser clean alarm
- HACCP functions
- Two stage control set-up
- Runs on mains power supply
- Door Switch Input
- Electrical, hot gas or off cycle defrost
- Selectable ON/OFF Button



Specification

Control Range:

-50 to 120°C

Resolution:

0.1/1°; °C/°F

Accuracy:

PTC1000: $\leq \pm 0.5^{\circ}\text{C}$ (-50.0 to 120.0°C)

NTC10K: $\leq \pm 0.3^{\circ}\text{C}$ (-40.0 to 70.0°C); $\leq \pm 0.5^{\circ}\text{C}$ IN REMAINING RANGE

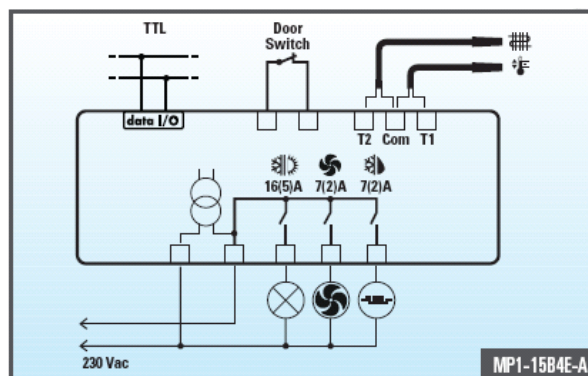
Applications:

- Off cycle defrost controller, Electric/Hot gas defrost LT/Freezer controller, Heating/Cooling thermostat, Two-Stage thermostat

Dimensions: 77[w] x 35[h] x 77[d]mm

Panel cut out: 71[w] x 29[h]mm

Model	Power Supply	Input	Relays	Features	List Price £
MP1-15B4E-A (P)	230V ac \pm 10%	2 x NTC (10K) / PTC	Compressor 16(4)A Evap. Fan 7(2)A Defrost 7(2)A	Heat/Cool Select, Buzzer	54.20



Accuracies quoted are for controller only. For overall accuracy sensor accuracy needs to be taken into account.

05 Temperature Display & Control

Digital Defrost Controllers LD1 & LD2-15)

LD1-15

Features:

Panel thermostat for High Temperature
 Controls the compressor directly
 Evaporator fan timed control
 Temperature defrost termination
 Alarm on buzzer Door open and temperature alarm
 Condenser clean alarm
 HACCP functions
 Quick setup through ZOT device
 Connection to LAE supervisory systems TAB. (Only with RS485 serial)
 Runs on mains power supply
 Light and ON/OFF buttons
 Electrical, hot gas or off cycle defrost



Applications:

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

Dimensions: 77[w] x 35[h] x 77[d]mm

Panel cut out: 71[w] x 29[h]mm



Specification

Range:
-40 to 40°C
resolution:
0.1 / 1°; °C / °F
Accuracy:
<±0.3°C (-40.0 to 70.0°C)

Model	Power Supply	Input	Relays	Features	List Price £
LD1-15B2E-AL (P)	230V ac ± 10%	2 x NTC (2K)	Compressor 16(4)A Evap. Fan 7(2)A	Buzzer	55.62

LD2-15

Features:

Panel thermostat for High and Low Temperature.
 FLEXICOLD self-learning refrigeration control.
 Runs on mains power supply
 Controls the compressor directly (16A relay).
 Excellent evaporator fan timed control.
 Electrical, hot gas or off cycle defrost.
 Alarm on buzzer Door open and temperature alarms.
 Condenser clean alarm.
 HACCP functions.
 On/Off button.



Applications:

Freestanding upright cabinets, cold stores, refrigerated plug-in display cases and counters, control panels, where maximum cost reduction is a must.

Dimensions: 77[w] x 35[h] x 77[d]mm

Panel cut out: 71[w] x 29[h]mm



Specification

Range:
-30.0+30.0°C
resolution:
0.1 / 1°C; °C / °F
Accuracy:
<±0.2°C (-30.0+30.0°C)

FLEXICOLD

Model	Power Supply	Input	Relays	Features	List Price £
LD2-15B4E-S (P)	230V ac ± 10%	2 x NTC (2K) Door Switch	Compressor 16(5)A Def. Heater 7(2)A Evap. Fans 7(2)A	TTL	75.33

Flexicold control senses normal and heavy load conditions of use of the refrigerator and automatically adapts the control parameters to suit.

TTL - Allows the use of ZOT set-up key

Accuracies quoted are for controller only. For overall accuracy sensor accuracy needs to be taken into account.

Temperature Display & Control 05

Digital Defrost Controllers (LDU15 & LCD15)

LDU15

Features:

Panel thermostat for High Temperature
Compressor may be directly driven
Alarm on relay and buzzer
Automatic condenser clean indication
Programming of: readout, defrost duration and frequency, functions of relays and auxiliary button
HACCP functions
Quick setup through ZOT-LDU device
Connection to LAE supervisory systems HTD and TAB. (Only with RS485 serial)
Runs on mains power supply.



Applications:

Refrigerated tables, both static and ventilated refrigerators, with or without indoor lights, bottle coolers.

Dimensions: 77[w] x 35[h] x 77[d]mm
Panel cut out: 71[w] x 29[h]mm



Specification

Range:

-25 to 25°C

resolution:

0.1 / 1; °C / °F

Accuracy:

<±0.3°C (-5.0 to 25.0°C)

Model	Power Supply	Input	Relays	Features	List Price £
LDU151E-BG	230V ac ± 10%	NTC (2K)	Compressor 16(4)A	-	53.62
LDU152E-AG (P)	230V ac ± 10%	NTC (2K)	Compressor 16(4)A Auxillary (8(3)A)	Aux	55.62
LDU152E-AL (P)	230V ac ± 10%	NTC (2K)	Compressor 16(4)A Light (8(3)A)	Light	55.62
LDU152E-EG (P)	230V ac ± 10%	NTC (2K)	Compressor 16(4)A Auxillary (8(3)A)	Buzzer	59.92

New Model	Replaces	New Voltage	New Input
LDU15	CDC121 / SDU12	240V	NTC (2K)
LCD15	CDC122, MCDU11	240V	NTC (2K)

LCD15

Features:

Panel thermostat for High and Low Temperature
FLEXICOLD self-learning refrigeration control.
Electrical, hot gas or off cycle defrost
Condenser clean alarm
HACCP functions Quick setupthrough ZOT device.
Runs on mains power supply
Evaporator fan control
Alarm on buzzer Door open, HP alarms
On/Off button
Connection to LAE supervisory systems HTD and TAB. (Only with RS485 serial)



Applications:

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

Dimensions: 77[w] x 35[h] x 77[d]mm
Panel cut out: 71[w] x 29[h]mm



Specification

Range:

-40.0+40.0°C

resolution:

0.1 / 1°C; °C / °F

Accuracy:

<±0.2°C (-30.0+30.0°C)

FLEXICOLD

Model	Power Supply	Input	Relays	Features	List Price £
LCD15CS3E (P)	230V ac ± 10%	3 x NTC (2K) + Door Switch	Compressor 7(2)A Evap. Fans 7(2)A Def. heater 7(2)A	Buzzer	67.50
LCD15CS3E-A (P)	230V ac ± 10%	3 x NTC (2K) + Door Switch	Compressor 7(2)A Evap. Fans 7(2)A Def. heater 7(2)A	Buzzer, TTL	67.50

TTL - Allows the use of ZOT set-up key

Accuracies quoted are for controller only. For overall accuracy sensor accuracy needs to be taken into account.

05 Temperature Display & Control

Digital Defrost Controllers

LCD28

Features:

Thermostat for High and Low Temperature.
 FLEXICOLD self-learning refrigeration control.
 Runs on mains power supply.
 No need for contactors or external wiring.
 Evaporator fan control.
 Electrical, hot gas or off cycle defrost.
 Alarm on buzzer Door open, HP alarms.
 Condenser clean warning.
 HACCP functions.
 On/Off button
 Quick setup through ZOT device
 Connection to LAE supervisory systems HTD and TAB.



Applications:

Freestanding upright cabinets, cold stores, control panels, refrigerated plugin display cases and counters

Dimensions: 105[w] x 55[h] x 90[d]mm (LCD28),
 77[w] x 35[h] x 20[d]mm (LCD16 Display)
Panel cut out: 71[w] x 29[h]mm



Specification

Range:
 -40 to 40°C
resolution:
 0.1 / 1°; °C / °F
Accuracy:
 $\pm 0.3^{\circ}\text{C}$ (-40.0 to 70.0°C)

LCD16
 IP55

Model	Power Supply	Input	Relays	Features	List Price £
LCD28CS4E-B	230V ac \pm 10%	3 x NTC + Door Switch & Aux. Input	Compressor & Condenser Fans 20(6)A Def. Heater 12(4)A Evap. Fans 7(2)A Auxiliary 7(2)A	RS485 Serial	49.90
LCD16	Display to suit LCD28				15.00
FC06-15M01	1.5m Ribbon Cable to suit LCD28				3.50

LCD32

Features:

Panel thermostat for High and Low Temperature.
 Output to control the compressor directly.
 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 HACCP functions.
 Door open, temperature, HP alarms.
 Automatic condenser clean warning.
 Quick setup through ZOT-LCD device.
 Connection to LAE supervisory systems HTD and TAB. (Only with RS485 serial)
 Runs on mains power supply.



Applications:

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

Dimensions: 169[w] x 38[h] x 78[d]mm
Panel cut out: 163[w] x 31.5 [h]mm



Specification

Range:
 -30.0+30.0°C
resolution:
 0.1 / 1°C; °C / °F
Accuracy:
 $\pm 0.2^{\circ}\text{C}$ (-30.0+30.0°C)

Model	Power Supply	Input	Relays	Features	List Price £
LCD32S4E-A	230V ac \pm 10%	2 x NTC (2K) + Door Switch & Aux. Input	Compressor & Condenser Fans 20(6)A Def. Heaters(2) 12(4)A Evap. Fans 8(3)A Auxiliary 8(3)A	TTL	82.00

TTL - Allows the use of ZOT set-up key

Accuracies quoted are for controller only. For overall accuracy sensor accuracy needs to be taken into account.

Temperature Display & Control 05

Digital Defrost Controllers

BIT20

Features:

Electronic alternative to electro-mechanical systems.
 For High and Low Temperature.
 Destined for the OEM market
 Considerable power output for compressor control.
 No need for contactors or external wiring.
 Electrical, hot gas or off cycle defrost.
 Evaporator fan stop during defrost
 Parameter setting through dipperswitches and/or compact display unit.
 Runs on mains power supply.

Applications:

Small or medium sized refrigerating cabinets, both static and ventilated

Dimensions: 87[w] x 110[h] x 55[d]mm (BIT20),
 77[w] x 35[h] x 29[d]mm (BIT12 Remote Display)

Panel cut out: 71[w] x 29[h]mm



Specification

Range:

-35 to 25°C

Resolution:

1°

Accuracy:

±0.6° (-30 to 10°C)

Model	Power Supply	Input	Relays	Features	List Price £
BIT20A11E*	230VAC	NTC (2K)	Compressor 10(6)A	Dipswitch & RU	34.00
BIT20B11E*	230V ac ± 10%	NTC (2K)	Compressor 10(6)A	Remote Unit	34.00
BIT20A22E	230V ac ± 10%	2 x NTC (2K)	Compressor 10(6)A Def. Heater 8(3)A Evap. Fans 7(3)A	Dipswitch & Remote Unit	42.00
BIT20B22E	230V ac ± 10%	2 x NTC (2K)	Compressor 10(6)A Def. Heater 8(3)A Evap. Fans 7(3)A	Remote Unit	42.00
*Obsolete - While stocks last					
BIT12RU	Remote Display Unit with 1.85m Ribbon cable				15.00

RDC122

Features:

Panel controller for High and Low Temperature.
 Up to six defrost cycles a day.
 Clock with 20-day back-up battery.
 Up to four outputs for:
 Compressor, evaporator fans, defrosting and alarm.
 Electrical, hot gas, or off cycle defrost.
 Temperature terminated defrost.
 RS485 for data interchange with PC.

Applications:

Cold stores, refrigerated cabinets, counters and display cases for shops and supermarkets, in which defrosting must take place at well-defined times.

Dimensions: 77[w] x 35[h] x 97[d]mm

Panel cut out: 71[w] x 29[h]mm



Specification

Range:

-50 to 150°C

Resolution:

1°

Accuracy:

±0.5° (-25 to 100°C)

Model	Power Supply	Input	Relays	Features	List Price £
RDC122T1R3B	12V ac/dc ± 10%	2 x PTC (Plug)	Compressor 5(1)A Def. Heaters 5(1)A Evap. Fans 5(1)A Alarm 5(3)A	Real Time Clock, Buzzer	100.74

Accuracies quoted are for controller only. For overall accuracy sensor accuracy needs to be taken into account.

05 Temperature Display & Control

Digital Defrost Controller (SSD90)

Features:

For High and Low Temperature.
 No contactors or external wiring.
 Up to three probes for:
 Thermostat, evaporator and condenser
 Up to seven power outputs for:
 Compressor, evaporator fans, condenser fans,
 defrosting, alarm, lights, auxiliary loads.
 On/off button
 Lights controlled manually or through door switch.
 Selection of scale in °C/°F.
 Up to eight alarm sources.
 Compact remote display units.
 RS485 serial port.
 Runs on mains power supply.



Specification

Range:
 -50 to 150°C / -40 to 250°F
resolution:
 1°
Accuracy:
 ±0.5° (-25 to 100°C)

Applications:

Cold stores, refrigerating cabinets and tables, refrigerated counters and display units, both static and ventilated. It can also be used to control heated cupboards.

Dimensions: 164[w] x 127[h] x 55[d]mm (SSD90),
 77[w] x 35[h] x 29[d]mm (SMD12 Display)
 190[w] x 37[h] x 23[d]mm (SMD34 Display)
Panel cut out: 71[w] x 29[h]mm (SMD12)
 184[w] x 31[h]mm (SMD34)

Model	Power Supply	Input	Relays	Features	List Price £
SSD90A10E-C	230V ac ± 10%	PTC (Plug)	Compressor 20(6)A	RS485 Serial	68.50
SSD90B30E-C	230V ac ± 10%	2 x PTC (Plug)	Compressor 20(6)A Def. Heater 8(3)A Evap. Fans 8(3)A	Door Switch, RS485 Serial	72.50
SSD90B35E-C	230V ac ± 10%	2 x PTC (Plug)	Compressor 20(6)A Def. Heater 8(3)A Evap. Fans 8(3)A Lights 8(3)A Auxillary 8(3)A Alarm 8(3)A	Door Switch, RS485 Serial Connection	76.50
SSD90C65E-C	230V ac ± 10%	3 x PTC (Plug)	Compressor 20(6)A Def. Heater 8(3)A Evap. Fans 8(3)A Lights 8(3)A Auxillary 8(3)A Alarm 8(3)A cond. Fans 8(3)A	Condensor Fans, Lights, Alarm, Aux, Door Switch, RS485	78.50
SMD12RU20	Display to suit SSD90 with 2m Ribbon cable				16.50
SMD12RU35	Display to suit SSD90 with 3.5m Ribbon cable				19.50
SMD34RU	Display to suit SSD90				18.60
FC10-20M01	2m Ribbon cable to suit SMD34 Display				5.00

Accuracies quoted are for controller only. For overall accuracy sensor accuracy needs to be taken into account.

Temperature Display & Control 05

Digital Defrost Controllers (ID Series)

Features:

A selection of Eliwells defrost controllers.



Ranging from single probe/single relay to three probe/4 relay with the capacity to control dual evaporators.



Specification

Range:

-50...110 °C (NTC); -50...140 °C (PTC)

Resolution:

1° or 0.1° (Model dependant)

Accuracy:

±0.5%

Dimensions: 74[w] x 32[h] x 60[d]mm

Panel cut out: 71[w] x 29[h]mm

Model	Power Supply	Input	Relays	Features	List Price £
ID961 12V 8A	12V ac/dc ± 10%	PTC or NTC (10K)	Compressor 8(8)A	-	£37.00
ID961 230V 8A	230V ac ± 10%	NTC (10K) or PTC	Compressor 8(8)A	-	£37.00
ID971 12V	12V ac/dc ± 10%	2 x PTC or 2 x NTC (10K)	Compressor 8(3)A Def Heater 8(3)A	-	£51.60
ID974 230V	230V ac ± 10%	2 x PTC or 2 x NTC (10K)	Compressor 8(3)A Def. Heater 8(3)A Evap. Fans 5(2)A	TTL	£50.00
ID974/B 12V 8A	12V ac/dc ± 10%	2 x PTC or 2 x NTC (10K)	Compressor 8(3)A Def. Heater 8(3)A Evap. Fans 5(2)A	TTL, Buzzer	£55.98
ID974/B 230V 8A	230VAC/DC	2 x PTC or 2 x NTC (10K)	Compressor 8(3)A Def. Heater 8(3)A Evap. Fans 5(2)A	TTL, Buzzer	£60.00
ID985 LX	12V ac/dc ± 10%	3 x PTC or 3 x NTC (10K)	Compressor 8(3)A Evap fans 8(3)A Def. Heater 1&2 8(3)A Alarm 5(2)A	Dual Evaporator defrosts	£65.00

TTL - Allows the use of ZOT set-up key

Accuracies quoted are for controller only. For overall accuracy sensor accuracy needs to be taken into account.

05 Temperature Display & Control

Digital Defrost Controllers (PJ32 Series)

'Plug-In' Style

CAREL

PJ32C *Low Temperature controller*

It has 3 relays and 230 Vac power supply, with the transformer fitted inside the enclosure, minimising the overall dimensions of the device.



Model	Power Supply	Input	Relays	Features
PJ32C00000	230Vac	2 x NTC (10K)	Compressor 8A Def. Heater 5A Evap. Fans 5A	Low Temp

List Price £
59.95

PJ32S *Medium Temperature controller*

This controller performs the functions of thermometer, thermostat and defrosting thermostat. The defrost cycle is performed by stopping the compressor. The more complete models feature an audible alarm signal (buzzer) and 16 A relays, available in two versions for controlling 3/4 Hp and 2 Hp compressors. It combines the performance of a simple thermostat and thermostat + defrosting device. The basic version offers the ideal balance between good performance and a very competitive price. The "top" version provides the user a family of instruments full of the advantages that characterise the plug-in range: fastening from the front, programming by key, backlit keypad, removable terminals and buzzer. The PJ32S* product range also features the PJ32S2* model, electronic thermostat with alarm relay. Versions operating at 12 Vac/dc or 115 Vac or 230 Vac are available.



Model	Power Supply	Input	Relays	Features
PJ32S0C000	230Vac	2 x NTC (10K)	Compressor 16A	Screw Terminals
PJ32S1P000	230Vac	NTC (10K) + Digital Input	Compressor 16A	Removeable Terminals, Buzzer

List Price £
59.95
55.62

PJ32W *Universal Control*

PJ32 heating/cooling is not a simple thermostat for normal temperature applications, but rather a complete range that includes models with 1 to 3 relays, with NTC or PTC probes.



Model	Power Supply	Input	Relays	Features
PJ32W00000	230VAC/DC	2 x NTC (10K)	2 x 8A	-

List Price £
57.30

PJ32Z *Universal Control*

PJ32 heating/cooling is not a simple thermostat for normal temperature applications, but rather a complete range that includes models with 1 to 3 relays, with NTC or PTC probes.



Model	Power Supply	Input	Relays	Features
PJ32Z60000	230VAC/DC	2 x PTC	2 x 8A 1 x 5A	-

List Price £
57.30

PJ32 Smart Key

The programming key allows the instrument to be programmed quickly when not powered, with the certainty of not having made errors. It reduces the number of product codes handled and allows the controller to be programmed in just a few seconds, even during the testing phase at the end of the



Model	Description
PJOPZKEY00	Smart Key For PJ32

List Price £
45.00

Accuracies quoted are for controller only. For overall accuracy sensor accuracy needs to be taken into account.

Temperature Display & Control 05

Digital Defrost Controllers (IR33 Series)

ir33 represents a true step forwards in the world of electronic controllers for refrigeration. There are significant new software functions, as well as extraordinary innovations in terms of hardware: first of all is the switching power supply. By using this technology, the range of power supply is extended. Depending on the version, this may range from 12 to 24V ac/dc or from 115 to 230V ac.



CAREL

The top of the range 115/230Vac model is very powerful, featuring 4 relays, one of which is 16A, clock, buzzer and infra red receiver. In addition, the controller is approved for operation at ambient temperatures up to 60°C.

Dimensions: 76.2[w] x 34.2[h] x 70.5[d]mm
Panel cut out: 71[w] x 29[h]mm

Model	Power Supply	Input	Relays	Features	List Price £
IR33S0EP00 (P)/C	230V	2 x NTC (10K) + 1 x Digital Input	Compressor 16A	Refrigerator Configured	60.00
IR33F7EN00 (P)/C	230V ac	2 x NTC (10K) or 2 x PTC + 2 x Digital Input	Compressor 16A Def. Heater 8A Evap. Fans 8A Auxillary/Light 8A	Chiller Configured	60.00
IR33F7EN00 (P)/F	230V ac	2 x NTC (10K) or 2 x PTC + 2 x Digital Input	Compressor 16A Def. Heater 8A Evap. Fans 8A Auxillary/Light 8A	Freezer Configured	60.00
IR33C7HR01	115V ac 230V ac	2 x NTC (10K) or 2 x PTC + 2 x Digital Input	Compressor 16A Def. Heater 8A Evap. Fans 8A Auxillary/Light 8A	I/R, Buzzer, Hotpoint Display	60.00
IR33COLN00	12V ac 24V ac	2 x NTC or 2 x PTC + 2 x Digital Input	Compressor 16A Def. Heater 8A Evap. Fans 8A Auxillary/Light 8A	Buzzer, Hotpoint Display	60.00
IR33F7EN00 (P)	230V ac	2 x NTC (10K) or 2 x PTC + 2 x Digital Input	Compressor 16A Def. Heater 8A Evap. Fans 8A Auxillary/Light 8A	Buzzer, Hotpoint Display	60.00
IR33F7EN01	230V ac	2 x NTC (10K) or 2 x PTC + 2 x Digital Input	Compressor 16A Def. Heater 8A Evap. Fans 8A Auxillary/Light 8A	I/R, Buzzer, Hotpoint Display	60.00
IR33S0EA00	230V ac	2 x NTC (10K) or 2 x PTC + 1x Digital Input	Compressor 8A Def. Heater 8A	Buzzer	60.00
IR33S0EP00 (P)	230V ac	2 x NTC (10K) + 1 x Digital Input	Compressor 16A	Buzzer	60.00
IR33C0HB00	115V ac 230V ac	2 x NTC (10K) + 2 x Digital Input	Compressor 16A Def. Heater 8A Evap. Fans 8A Auxillary/Light 8A	I/R, Buzzer, Hotpoint Display, Real Time Clock	79.00

Other variations are available in quantity from Carel. For details please contact the sales office.

Accuracies quoted are for controller only. For overall accuracy sensor accuracy needs to be taken into account.

05 Temperature Display & Control

Coldroom Control Panels (MasterCella Series)

MasterCella represents one of the leading products in the CAREL refrigeration range. When it was introduced to the market it marked a turning point within the industry. Today, thanks to the experience gained, MasterCella has been renewed and proposed to the market with an up-to-date design, closer to the customers current expectations. The new generation MasterCella is the answer to the needs of integrated solutions for cold rooms.



CAREL Features:

- More space dedicated to the wiring
- Possible installation of an isolator switch
- Cable connection either from the top or bottom
- Clock for real time defrost (MD33D5FB00 model only)
- HACCP functions (MD33D5FB00 model only)
- Easy customisation thanks to the removable front plastic particulars

These innovative and functional characteristics make MasterCella the benchmark within the refrigeration market.

Model	Power Supply	Input	Relays	Features	List Price £
MD33D2EN00	230V ac	2 x NTC (10K) + 3 x NTC/Digital Inputs	Compressor 30A Defrost 16A Evap. Fan8A Auxillary 8A Light/Aux 16A	Buzzer, HACCP, Hot Point Display, RS485	120.00
MD33D5FB00	230V ac	2 x NTC (10K) + 3 x NTC/Digital Inputs	Compressor 30A Defrost 16A Evap. Fan8A Auxillary 8A Light/Aux 2HP	Isolator, Real Time Clock, Buzzer, HACCP, IR, Hot Point Display, RS485	140.00
Replacement probe					
Part No.	Description				List Price £
NTC030HP00	3m NTC (10K) sensor				£ 8.64

Accuracies quoted are for controller only. For overall accuracy sensor accuracy needs to be taken into account.

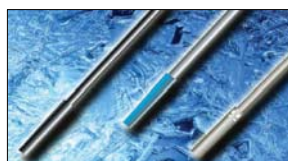


LAE Transformers

A range of transformers from LAE to suit a variety of applications.

Model	Supply Voltage	Output Voltage	Power	Frequency	Dimensions (WxHxD mm)	List Price £
TR24V/12	24V ac	12V ac	3VA	50/60 Hz	60.5 x 48 x 36	3.51
TR110V/12	110V ac	12V ac	3VA	50/60 Hz	60.5 x 48 x 36	3.51
TR230V/12	230V ac	12V ac	3VA	50/60 Hz	60.5 x 48 x 36	3.51
TR230V/24	230V ac	24V ac	3VA	50/60 Hz	60.5 x 48 x 36	3.51

PTC1000 (PTC) Sensors



Sensor Type: KTY81-121, 999Ω @ 25°C

Range: -40 to 105°C

Accuracy: ±1.5°C @ 25°C

Sheath: Ø6x34mm, TPE

Cable: 2 Wire x 0.35mm², -40 to 105°C, TPE, plug connector or points

IP Protection: IP67

PTC - ST1K... C/P

Model	Lead Length	Cable	Range	Connect	Sheath	List Price £
ST1K15P1	1.5m	2 Wire x 0.35mm ² , PVC	-40 to 105°C -		Ø6x34mm, TPE	8.64
ST1K20P1	2.0m	2 Wire x 0.35mm ² , PVC	-40 to 105°C -		Ø6x34mm, TPE	8.64
ST1K35P1	3.5m	2 Wire x 0.35mm ² , PVC	-40 to 105°C -		Ø6x34mm, TPE	10.10
ST1K50P1	5.0m	2 Wire x 0.35mm ² , PVC	-40 to 105°C -		Ø6x34mm, TPE	11.55
ST1K100P1	10m	2 Wire x 0.35mm ² , PVC	-40 to 105°C -		Ø6x34mm, TPE	16.40
ST1K200P1	20m	2 Wire x 0.35mm ² , PVC	-40 to 105°C -		Ø6x34mm, TPE	26.10
ST1K300P1	30m	2 Wire x 0.35mm ² , PVC	-40 to 105°C -		Ø6x34mm, TPE	33.80

Model	Lead Length	Cable	Range	Connect	Sheath	List Price £
ST1K15C1	1.5m	2 Wire x 0.35mm ² , PVC	-40 to 105°C Plug		Ø6x34mm, TPE	8.64
ST1K20C1	2.0m	2 Wire x 0.35mm ² , PVC	-40 to 105°C Plug		Ø6x34mm, TPE	11.65
ST1K35C1	3.5m	2 Wire x 0.35mm ² , PVC	-40 to 105°C Plug		Ø6x34mm, TPE	13.11
ST1K50C1	5.0m	2 Wire x 0.35mm ² , PVC	-40 to 105°C Plug		Ø6x34mm, TPE	15.12
ST1K60C1	6.0m	2 Wire x 0.35mm ² , PVC	-40 to 105°C Plug		Ø6x34mm, TPE	16.40

Sensor type: KTY81-121, 990Ω @ 2°

Range: -40 to 120°C

Accuracy: ±1.5°C @ 25°C

Sheath: Ø6x34mm; TPE

Cable: 2 wires x 0.35mm²; screen; -40+120°C; PETE; points

Protection: IP67

PTC - ST1L... P

Model	Lead Length	Cable	Range	Connect	Sheath	List Price £
ST1L20P-X	2.0m	2 Wire x 0.35mm ² , PETE, Screen	-40 to 120°C -		Ø6x70mm, S/S	21.00
ST1L150P	15m	2 Wire x 0.35mm ² , PETE, Screen	-40 to 120°C -		Ø7x40mm, nylon6	21.25
ST1L450P-	45m	2 Wire x 0.35mm ² , PETE, Screen	-40 to 120°C -		Ø7x40mm, nylon6	50.00

Sensor type: KTY81-121, 990Ω @ 2°

Range: -40 to 120°C

Accuracy: ±1.5°C @ 25°C

Sheath: Ø7x40mm; nylon6 and stainless steel

Cable: 3 wires x 0.22mm²; screen; -40+120°C; PETE; points

Protection: IP67

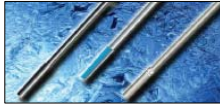
PTC - ST1N... P

Model	Lead Length	Cable	Range	Connect	Sheath	List Price £
ST1N20P	2.0m	3 Wire x 0.22mm ² , PETE, Screen	-40 to 120°C -		Ø7x40mm, nylon6	11.50
ST1N20P-01	2.0m	3 Wire x 0.22mm ² , PETE, Screen	-40 to 120°C -		Ø7x40mm, S/S	15.37

05 Temperature Display & Control

Accessories & Sensors

NTC (2K) - SN2K...P



Sensor type: NTC2K, 2000Ω @ 25°C
Range: -40+105°C
Accuracy: ±0.3°C @ 25°C
Sheath: Ø6x34mm; TPE
Cable: 2 wires x 0.35mm²; -40+105°C; TPE; points
IP Protection: IP67

Model	Lead Length	Cable	Range	Connect	Sheath	Type	List Price £
SN2K15P1	1.5m	2 Wire x 0.35mm ² , PVC	-40 to 105°C	-	Ø6x34mm, TPE	2K	6.48
SN2K25P1	2.5m	2 Wire x 0.35mm ² , PVC	-40 to 105°C	-	Ø6x34mm, TPE	2K	9.10
SN2K20P1	2.0m	2 Wire x 0.35mm ² , PVC	-40 to 105°C	-	Ø6x34mm, TPE	2K	8.64
SN2K35P1	3.5m	2 Wire x 0.35mm ² , PVC	-40 to 105°C	-	Ø6x34mm, TPE	2K	10.10
SN2K50P1	5.0m	2 Wire x 0.35mm ² , PVC	-40 to 105°C	-	Ø6x34mm, TPE	2K	11.55
SN2K100P1	10m	2 Wire x 0.35mm ² , PVC	-40 to 105°C	-	Ø6x34mm, TPE	2K	16.40

NTC (10K) - SN4K...P

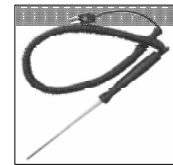
Sensor type: NTC10K, 10000Ω @ 25°C
Range: -40+105°C
Accuracy: ±0.3°C @ 25°C
Sheath: Ø6x34mm; TPE
Cable: 2 wires x 0.35mm²; -40+105°C; TPE; points
IP Protection: IP67

Model	Lead Length	Cable	Range	Connect	Sheath	Type	List Price £
SN4K20P1	2.0m	2 Wire x 0.35mm ² , PVC	-40 to 105°C	-	Ø6x34mm, TPE	10K	8.64

PTC Stab Probes

Hawco/LAE PTC sensor assembly. 1/8"Øx120mm long chisel tip. Black plastic handle with 2m coiled lead. Leads terminate with standard black 2 pin plug.

Sensor type: KTY21-6, PTC, 1000Ω @ 25°C
Range: -40+105°C
Accuracy: ±1°C @ 25°C



Model	Description	List Price £
LAE FOOD PROBE ASSY	LAE food probe assembly with handle	29.50

LAE Humidity Sensor



Sensor type: Capacitive
Output signal: 0 to 1 Vdc
Range: 0 to 100% RH
Accuracy: ±1% (0 to 50°C)
Sheath: Ø17 x 76mm
Connections: mPm connector
Pressure port: G 1/4" male, Brass + Steel
Protection: IP65
Ambient temperature: -20 to 80°C
Power supply: 8 to 28 Vdc

Model	Description	List Price £
HT2WAD	LAE humidity transmitter, 10-100% RH	89.25

Other Useful Accessories

Model	Description	List Price £
LAE GASKET	Rubber gasket to suit standard 71 x 35mm cut out controllers	1.00
504-103-R	Adhesive K type patch. 24x10mm, 2m leads. (Does not stick to rubber mat heaters)	4.45
SRM K-TYPE PATCH 3M	Adhesive K type patch. 24x10mm, 3m leads (For use with SRM Heaters)	8.00
LAE PROBE POCKET	S/S Probe pocket to suit probes upto Ø7.5mm. 3/8" BSP thread & Hex head	16.50
HTC20S	Heatsink compound 20ml. Use to improve thermal conductivity to surroundings	6.00

Carel Sensors

10000Ω @ 25°C

NTC 10K Sensors

Model	Lead Length	Range	IP Rating	Sheath	List Price £
NTC008WP00	0.8m	-50 to 105°C	IP68	S/S	8.64
NTC015HP00	1.5m	-50 to 50°C	IP68		8.64
NTC015WP00	1.5m	-50 to 105°C	IP68	S/S	8.64
NTC030HP00	3.0m	-50 to 50°C	IP68		8.64
NTC030WP00	3.0m	-50 to 105°C	IP68	S/S	10.64
NTC060HP00	6.0m	-50 to 50°C	IP67		10.64
NTC060WP00	6.0m	-50 to 50°C	IP68	S/S	11.55

Eliwell Sensors

999Ω @ 25°C

PTC Sensors

Model	Lead Length	Sheath Size	List Price £
SN7P0B1500	1.5m	For use with ID974 Controller Ø6x30mm	6.00
SN7-2000	2.0m	Ø6x30mm, Metal	6.00
SN7POA3000	3.0m	Ø6x30mm	6.00

10000Ω @ 25°C

NTC 10K Sensors

Model	Lead Length	Sheath Size	List Price £
SN8P0A1500	1.5m	For use with EWPC 185 Controller Ø6x40mm	6.00
SN8P6X1502	1.5m	For use with EWTM 052 Thermometer Ø6x40mm	6.00
SN8SAA1502	1.5m	For use with EWTM 053 Thermometer Ø6x40mm, Metal	10.00
SN8P0A3000	3.0m	For use with EWPC 961N Controller Ø6x40mm	6.00

Custom Sensors

PT100

Model	Lead Length	Cores	Insulation	Temp. Range	Class	Sheath	List Price £
MAN-301-0004	2.0m	3 Wire	PTFE	-50 to 200°C	B	Ø3x100mm	23.25
MAN-301-0009	2.0m	3 Wire	PTFE	-50 to 200°C	B	Ø6x50mm	21.55
MAN-301-0010	2.0m	3 Wire	PTFE	-50 to 200°C	B	Ø6x100mm, S/S	22.75
MAN-301-0010 3M	3.0m	3 Wire	PTFE	-50 to 200°C	B	Ø6x100mm	22.50
MAN-301-0011	2.0m	3 Wire	PTFE	-50 to 200°C	B	Ø6x300mm	22.50
MAN-301-0042	1.2m	2 Wire	PTFE	-50 to 200°C	B	Bulk head Fix	22.50
MAN-301-0060	3.5m	3 Wire	PTFE	-50 to 200°C	B	Ø6.35x38mm, S/S	22.50
MAN-301-0139	2.5m	3 Wire	PFA	-50 to 200°C	B	Flattened w/ handle	40.00
MAN-301-0144	2.5m	3 Wire	PFA	-50 to 200°C	B	Spike w/ handle	40.00

ThermoCouple

Model	Lead Length	Wires	Insulation	Temp. Range	Type	Sheath	List Price £
MAN-401-0003	2.0m	Flat twin	PTFE	-50 to 200°C	K	Ø3x50mm, S/S	13.75
MAN-401-0006	2.0m	Flat twin	PTFE	-50 to 200°C	K	Ø3x100mm, S/S	15.25
MAN-401-0013	5.0m	Flat twin	Glass Fibre	-50 to 350°C	K	Ø1/8"x90mm, S/S	17.20
MAN-501-0042	2.0m	Flat twin	PTFE	-50 to 250°C	J	Ø6x50mm, S/S	14.50
MAN-601-0014	2.0m	Flat twin	PTFE	-50 to 200°C	T	Ø6x50mm, S/S	13.75

The above are examples of the range of PT100's and thermocouples on offer. Not all are available from stock so please check availability before ordering. Special assemblies can be made to order for quantities of 10 or more.

05 Temperature Display & Control

Accessories & Sensors

Carel Accessories

*These items are not always available from stock and may have to be special ordered.
Please contact the sales office for details of availability.

ir33 can be programmed quickly, (without power), reducing the risk of error, using the special **programming key**. This accessory can be used to optimise the management of the product codes, perform technical service fast and effectively, and complete the programming in just a few seconds, even during the testing phase at the end of a production line. Configurable through software.



Model	Description	List Price £
IROPZKEY00*	IR33 & MD33 Programming Key	39.45

ir33 can be connected to a supervisor system via an **RS485 Network**, using the external connection module. This is easily inserted in the connector that is normally used for the programming key, at the same time of installation or a later retrofit.



Model	Description	List Price £
IROPZ48500	IR33 RS485 Serial Converter	22.24

"Hot point" Display terminal - Most models can be connected to a display used to read and check the values measured by the third probe, located in the hottest point of the cabinet, as per **EN 441-13 standard**.



Model	Description	List Price £
IROPZDSP00*	IR33 Hot point Display & Adapter	8.80

This **IR Remote** is used to directly access the main functions and configuration parameters and to program **ir33** from a distance, with a group of buttons that represent an exact copy of the instrument keypad.



Model	Description	List Price £
IRTRRES000*	IR33 IR Remote control	10.40

Rense Humidity sensors

The series 784 are low-cost relative humidity transmitters, combined with an optional temperature transmitter or temperature sensor. These low-cost probes are specially designed for HVAC applications.

Affordable
User selectable input/output
Pt100 or Pt1000 for temperature
Temperature range -40 to +100°C, (-40 to 212°F)
Outputs : 1, 5 or 10 Volt



Model	Description	List Price £
HX-784-I-L1 KIT	Rense humidity and cable kit	89.00
A-000031	Rense replacement cable. 2m length 4 wire with moulded plug	6.95