first Choice
Refrigeration Spares

CAREL

# DIGITAL CONTROLLERS

OCTOBER 2015

bsi. ISO 9001 Quality Management

FS 622615

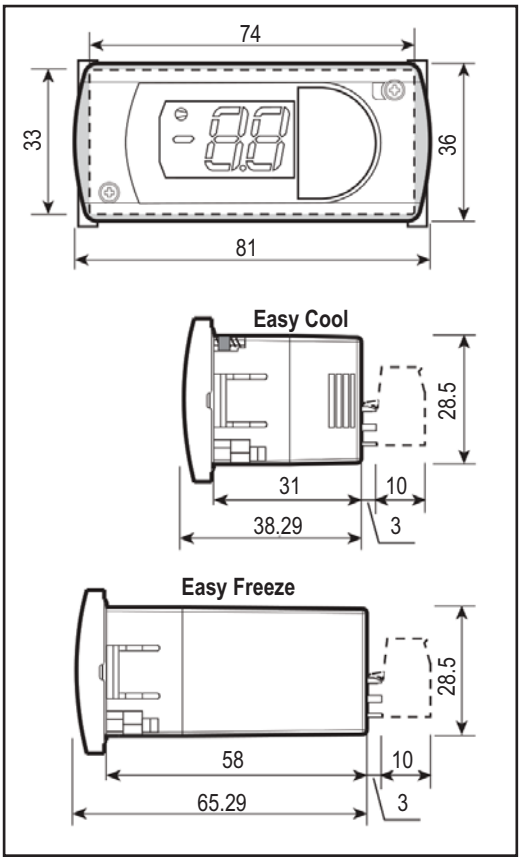
## ONE STOP SHOP FOR REFRIGERATION EQUIPMENT SPARES

# Easy Cool & Freeze Digital Controllers



Fast and simple installation with all the parameters needed to start the unit pre-programmed and ready to be used.

- Ideal solutions for plug-in cabinets, showcases and refrigerated displays in professional kitchens and commercial applications.
- High IP65 index of protection means the controllers can be installed in humid environments. A stick on cover is also available to protect the unit against drips and condensate.
- Alarm signals for high/low temperature.
- On/off/defrost functions accessible from the keypad.
- Removable faceplate can be customised.
- Easy Cool is pre-set to operate at 3°C with defrost by stopping the compressor. Supplied with 1 NTC probe 1500mm long.
  The following parameters are accessible after entering password: control, compressor protection, defrost, alarms.
- Easy Freeze is pre-set to operate at -18°C with defrost by temperature and fan management.
  Supplied with 2 NTC probes 1500mm long.
  The following parameters are accessible after entering password: control, compressor protection, defrost, alarms, evaporator fan management.

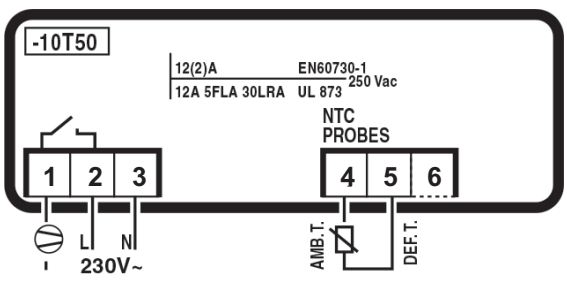



## SPECIFICATIONS

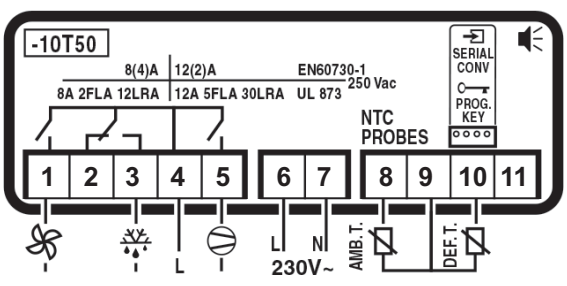
| Model | Easy Cool | Easy Freeze |
|---|---|---|
| Pre-set Temperature | 3°C | -18°C |
| Supply Voltage | 230V | 230V |
| Relays | 1 x16A | 1 x 16A, 2 x 8A |
| Probes suplied | 1 x NTC | 2 x NTC |
| Certification | CE & UL | CE & UL |
| Aperture size | 71 x 29mm | 71 x 29mm |

| Part No | Description | Order Qty |
|---|---|---|
| EASYCOOL | Easy Cool Digital Controller | 1 |
| EASYCOOL-5 | Easy Cool Digital Controller | 5 |
| EASYFREEZE | Easy Freeze Digital Controller | 1 |
| EASYFREEZE-5 | Easy Freeze Digital Controller | 5 |

## WIRING DIAGRAMS




Easy Cool



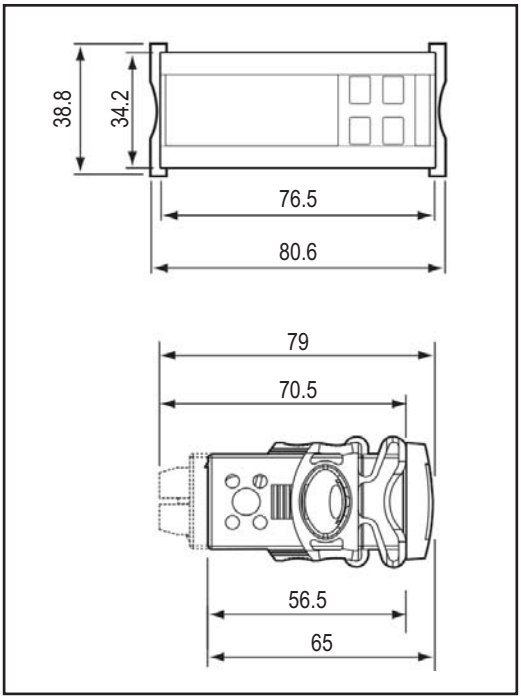

Easy Freeze

ir33 smart is a controller suitable for all applications in the refrigeration market and comes pre-loaded with 6 sets of parameters to match both high and low temperature applications.

- Ideal solutions for plug-in cabinets, bottle coolers, showcases, wine cellars, refrigerated displays, control panels for cold rooms and and professional catering refrigerated systems (under counter fridge, portable fridge, refrigerated draws).
- IP65 rated for use in humid environments.
- Suitable replacement for a multitude of controllers with a choice of 6 pre-programmed parameters
  **bn1** - normal temperature ventilated units with electric defrost (timed).
  **bn2** - normal temperature ventilated units with electric defrost (temperature) and light management.
  **bn3** - normal or low temperature ventilated units with electric defrost (temperature) and light management.
  **bn4** - normal temperature ventilated units with electric defrost (two evaporators, temperature).
  **bn5** - normal or low temperature ventilated units with electric defrost (two evaporators, temperature).
- Each configuration comes with a specific connection diagram, detailing the probes and actuators (compressor, defrost heater, evaporator fans, light, etc.).
- HACCP compliant and the data stored is guaranteed for 10 years, even in the event of power failures.
- Alarm signals for high & low temperature, probe failure, external open door, antifreeze, HACCP.
- Defrost by off cycle (stop compressor), hot gas, electric by temperature/time and smart defrost in different operating modes.

## Set up in just 5 seconds

1. **Switch the unit on while pressing Prg**
2. **Choose the best set of parameters for the application**
3. **Confirm selection by pressing Prg**

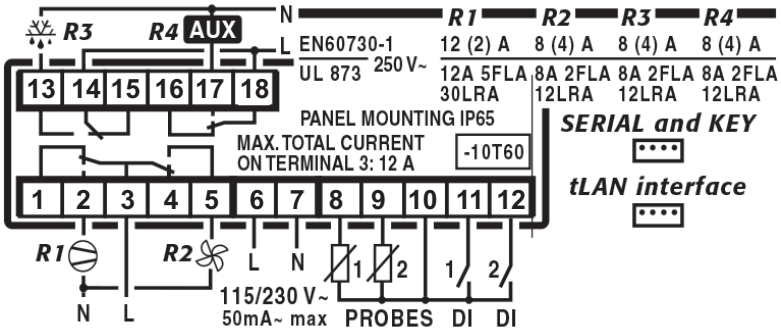



## SPECIFICATIONS

| | |
|---|---|
| Model | IR33C7HB0E |
| Pre-set Parameters | 6 |
| Supply Voltage | 115/230V |
| Relays | 1 x 16A, 3 x 8A |
| Probes (not supplied) | 2 x NTC (10 kohm at 25°C)/PTC (985 kohm a 25°C) |
| Digital Input | 2 voltage free configurable |
| Certification | CE & UL |
| Aperture size | 71 x 29mm |

| Part No | Description | Order Qty |
|---|---|---|
| IR33C7HB0E | ir33 smart Digital Controller | 1 |
| IR33C7HB0E-5 | ir33 smart Digital Controller | 5 |

## WIRING DIAGRAM



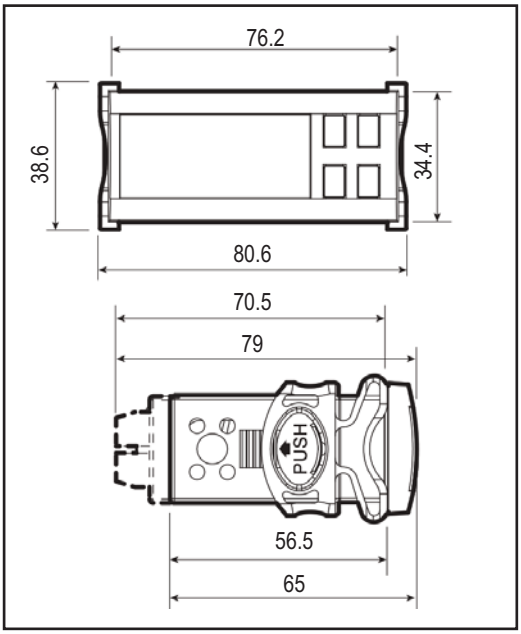
CAREL

# ir33 Universal Digital Controllers

**FIRST CHOICE REFRIGERATION SPARES LTD**

ir33 is a dependable and versatile controller suitable for commercial catering cold storage and display applications.

- Suitable for plug-in cabinets, bottle coolers, showcases, wine cellars, refrigerated displays, control panels for cold rooms and and professional catering refrigerated systems (under counter fridge, portable fridge, refrigerated draws).
- IP65 rated for use in humid environments.
- For operation at ambient temperatures up to 60 °C.
- 3 digit display plus decimal point.
- 115/230V ac model with a built in switching power supply.
- Programmable keys, RS485 serial connection and infrared remote control available.
- Up to 4 relays to switch loads up to 16A.
- HACCP compliant and the data stored is guaranteed for 10 years, even in the event of power failures.
- Alarm signals for high & low temperature, probe failure, external open door, antifreeze, HACCP.
- Defrost by off cycle (stop compressor), hot gas, electric by temperature/time and smart defrost in different operating modes.




## OPTIONAL

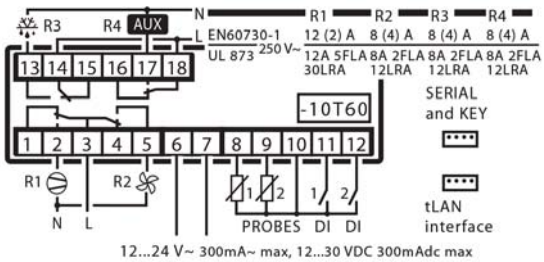
IRTRUES000 remote IR control for ir33 range, including the ir33 smart controller.

## SPECIFICATIONS

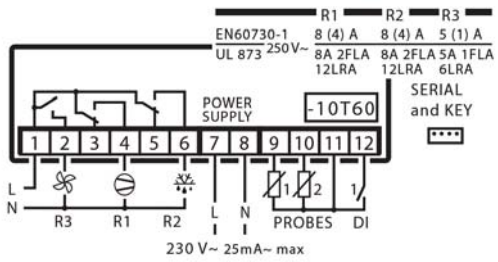
| Model | IR33C0LN00 | IR33F0EHA0 | IR33F7EN00 |
|---|---|---|---|
| Supply Voltage | 12-24V ac | 230V ac | 230V ac |
| Relays | 1 x 16A, 3 x 8A | 1 x 2HP, 1 x 8A, 1 x 5A | 2 x 8A, 1 x 5A |
| Probes | 2 x NTC (10 kohm at 25°C) | 2 x NTC (10 kohm at 25°C) | 2 x NTC (10 kohm at 25°C) |
| Digital Input | multifunction | multifunction | multifunction |
| Temperature Range | -50 to +90°C | -50 to +90°C | -50 to +90°C |
| Certification | CE | CE | CE |
| Aperture size | 71 x 29mm | 71 x 29mm | 71 x 29mm |

| Part No | Description | Order Qty |
|---|---|---|
| IR33C0LN00 | ir33 Digital Controller 12-24V with 4 relay outputs | 1 |
| IR33F0EHA0 | ir33 Digital Controller 230V with 3 relay outputs (2HP) | 1 |
| IR33F7EN00 | ir33 Digital Controller 230V with 3 relay outputs | 1 |
| IRTRUES000 | IR Remote Control for ir33 range | 1 |

## WIRING DIAGRAMS




**IR33C0LN00**




**IR33F0EHA0 / IR33F7EN00**

Tel: 01543 460398 Fax: 01543 504141 Email: refrigeration@firstchoice-cs.co.uk Web: www.firstchoice-cs.co.uk

MasterCella offers an integrated solution for static or ventilated cold rooms.

- Suitable for cold rooms and freezer rooms, seasoning rooms, small refrigerated warehouses.
- Directly manages single-phase units with up to 2 Hp compressor relay.
- IP65 rated for use in humid environments.
- Model with safety door interlock already fixed in the box
- Big box with space available to plug electro-magnetic components and comfortable wiring, and a powerful electric board.
- Serial connector for programming key and network aiding quick installation and maintenance.
- HACCP management is standard and the data stored is guaranteed for 10 years, even in the event of power failures. This guarantees control over the temperature of stored foods in compliance with the requirements of the HACCP system.
- Alarm signals for high & low temperature, probe failure, external open door, antifreeze, HACCP.
- Real time clock records alarm times.
- MasterCella manages smart defrosts, consequently ensuring energy savings in the system as a whole.
- Optional 'hot point' display terminal and RS485 board.

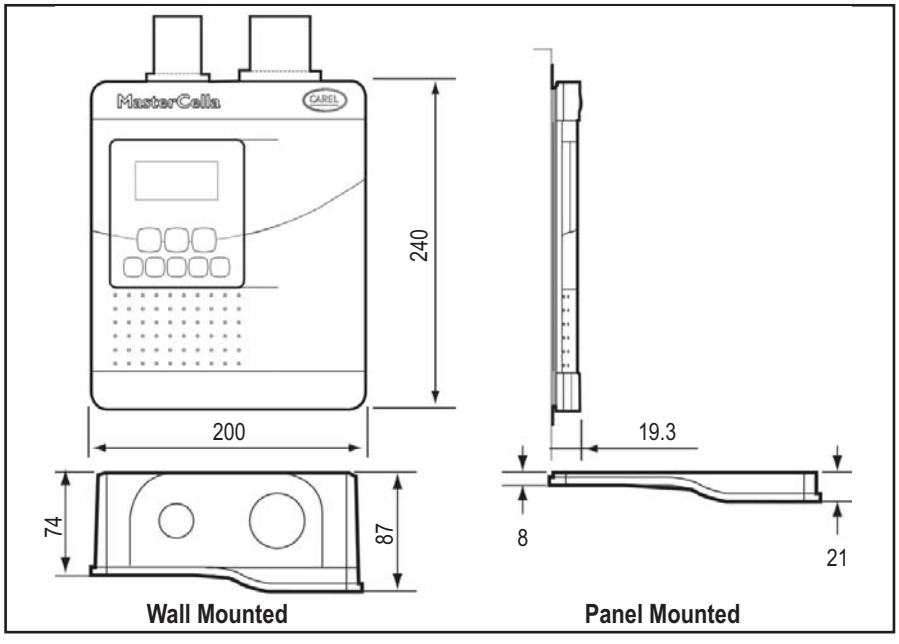
*Model MD33D2EN00*

*Model MD33D5FB00*

## SPECIFICATIONS

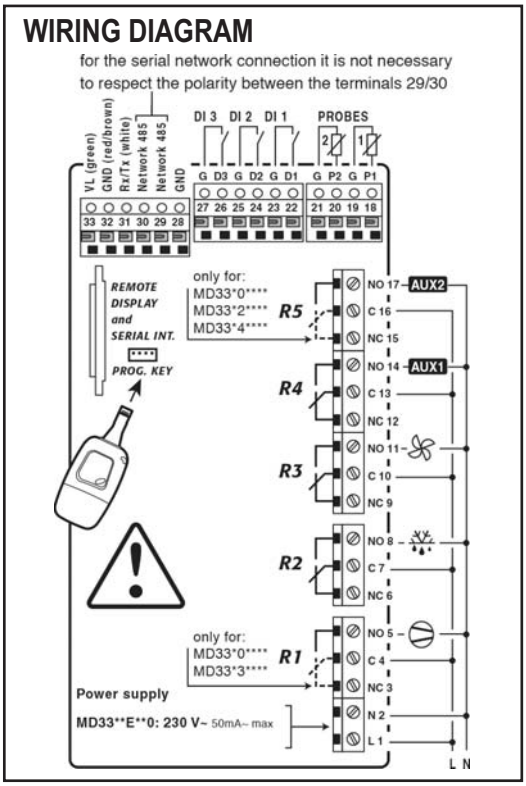
| Model | MD33D2EN00 | MD33D5FB00 |
|---|---|---|
| Safety Door Interlock | not fitted | fitted |
| Supply Voltage | 230V | 230V |
| Relays | 1 x 30A, 2x 16A, 2 x 8A | 1 x 30A, 2x 16A, 2 x 8A |
| Probes (not supplied) | up to 5 NTC/PTC | up to 5 NTC/PTC |
| Digital Input | up to 3 voltage free configurables | up to 3 voltage free configurables |
| Certification | CE | CE |

| Part No | Description | Order Qty |
|---|---|---|
| MD33D2EN00 | MasterCella Digital Controller | 1 |
| MD33D5FB00 | MasterCella Controller with interlock | 1 |




## WIRING DIAGRAM

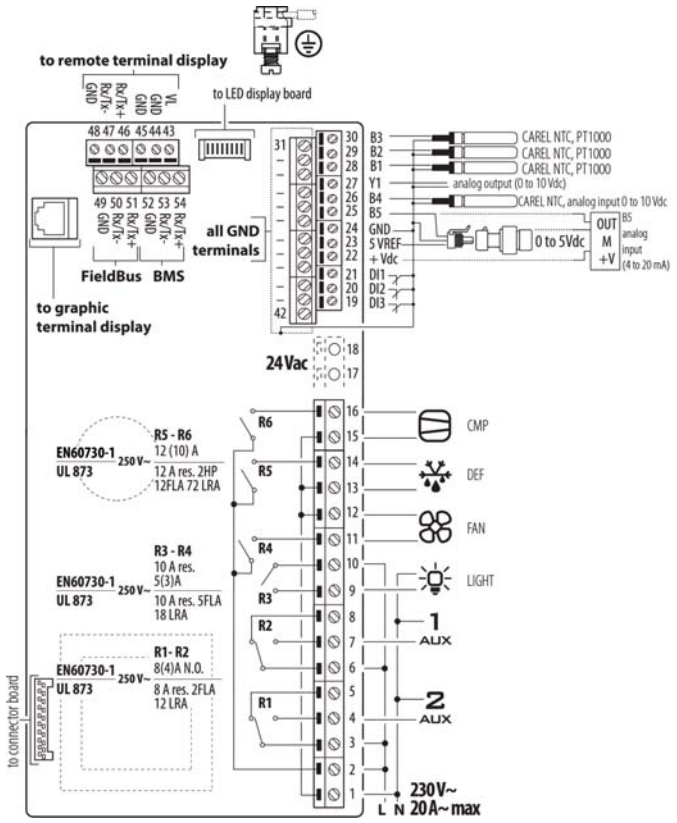
for the serial network connection it is not necessary to respect the polarity between the terminals 29/30

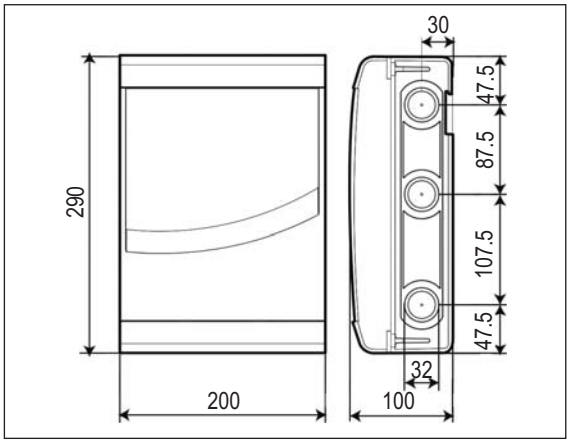


UltraCella and its expansion modules provide flexible solutions for large cold rooms.

- Suitable for large cold rooms and freezer rooms, refrigerated warehouses.
- To control single-phase units up to 2 Hp, or configured with optional Power Modules suitable for single and three phase units up to 7.5HP.
- UltraCella and its expansion modules are easy to assemble on DIN rail directly or preassembled before mounting.
- IP65 rated for use in humid environments.
- Up to 6 relays (compressor, defrost, evaporator fans, light and 2 auxiliary outputs for additional features).
- Up to 4 temperature probes, humidity and pressure sensors.
- Controlling up to 2 additional features: 2° compressor, pump down, condenser fan, humidification system.
- Intelligent logic based on average measurement of 2 temperature sensors.
- Easy to install thanks to track for DIN rail for fast wall mounting and standard screw fixing, more GND terminals for sensors and wide 7.5mm relay terminals and in voltage 230Vac relays.
- Easy to commision thanks to configuration through wizard, available on remote Service Terminal (optional) and 10 preset configurations for main food conservation applications. After commissioning you can save parameters on USB key for the next cold room.
- Easy to use thanks to USB port to dowload temperature and alarm data logging (HACCP) and to download/upload receipts
- Intuitive built-in HMI with big display.

| Part No | Description | Order Qty |
|---|---|---|
| WB000DW0F0 | UltraCella Digital Controller | 1 |




Key

| | | |
|---|---|---|
| B1…B5 | Analogue inputs 1…5 | |
| DI1 | Door switch | |
| DI2, DI3 | Digital inputs 2, 3 | |
| Y1 | 0…10 V analogue output | |
| GND | Grounding for signals | |
| 5 VREF | Ratiometric pressure probe power supply | |
| +Vdc | Active probe supply (humidity) | |
| CMP | DO1 (*) | Compressor |
| DEF | DO2 (*) | Defrost |
| FAN | DO3 (*) | Evaporator fan |
| LIGHT | DO4 (*) | Light |
| AUX1 | DO5 (*) | Auxiliary output 1 |
| AUX2 | DO6 (*) | Auxiliary output 2 |
| L, N | Power Supply | |
| Fieldbus | Fieldbus Serial | |
| BMS | BMS Serial | |

## UltraCella optional extras

**WM00ENNI00**
**ULTRA EVD MODULE**

Provides outstanding energy saving results of CAREL ExV. Includes Ultracap function and internal power transformer. Unit is commisioned through the UtraCella controller.

| Part No | Description | Order Qty |
|---|---|---|
| WM00ENNI00 | Ultra EVD Module | 1 |

**WM00P0003N**
**ULTRA POWER MODULE**

contains circuit breaker switch and relay for 3HP compressor control.

| Part No | Description | Order Qty |
|---|---|---|
| WM00P0003N | Ultra Power Module | 1 |

also available are expansion modules for 3ph units:

**ULTRA 3PH EVAPORATOR MODULE** (not shown)

for evaporators from 6- 9kW with optional ExV management.

**ULTRA 3PH FULL MODULE** (not shown)

for condensing unit from 4-7.5HP, evaporators from 6-9kW and optional ExV management.

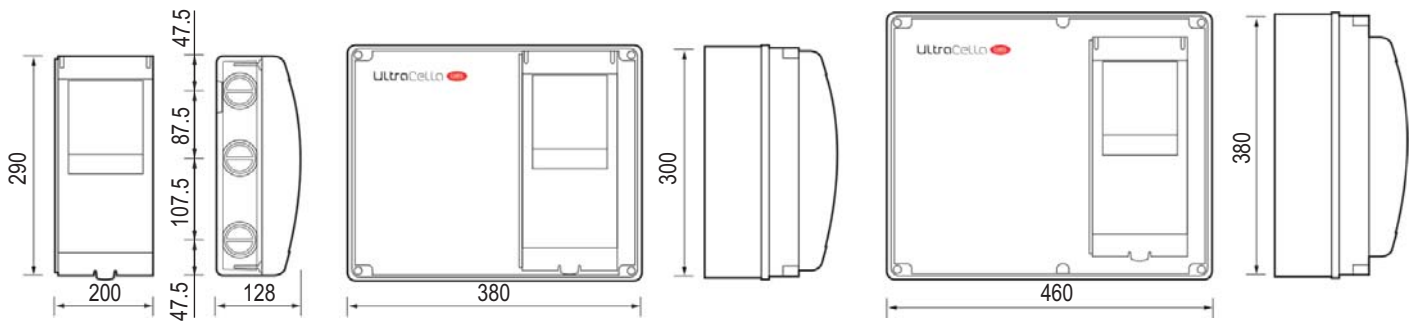
**PGDEWB0FZ0**
**SERVICE TERMINAL**

Connects to an UltraCella controller, without having to open the unit, for easy commissioning and programming of control parameters.

| Part No | Description | Order Qty |
|---|---|---|
| PGDEWB0FZ0 | Service Terminal | 1 |

## SPECIFICATIONS

| output | | | | | | inputs | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Relays | | | | | | Sensors | | | | | Digital inputs | | |
| Compressor | Defrost heaters | Evaporators fans | light | AUX1 | AUX2 | B1 | B2 | B3 | B4 | B5 | DI1 | DI2 | DI3 |
| 2 HP, 230 Vac | 2 HP, 230 Vac | 16 A, 230 Vac | 16 A, voltage free | 8 A, voltage free | | NTC NTC HT PT1000 | | | NTC NTC HT 0 to 10 V | 4 to 20 mA 0 to 5 Vrat | door switch | configurable | |




Ultra EVD & Power Module | Ultra 3ph Evaporator Module | Ultra 3ph Full Module

CAREL temperature probes

- Range of accurate NTC and PT100 probes in a choice of materials and in various lengths for temperature measurement duties in a range of different cold storage applications.
- Range of additional probes, including PTC probes, are also available *(details and prices on request)*.

| Part No | Type | Ohms | IP | Size | Length | Temperature | Housing Material |
|---|---|---|---|---|---|---|---|
| NTC015HP00 | NTC | 10k @ 25°C | IP67 | Ø6x15mm | 1500mm | -50 to 105 °C | Polyolefin |
| NTC030HP00 | NTC | 10k @ 25°C | IP67 | Ø6x15mm | 3000mm | -50 to 105 °C | Polyolefin |
| NTC060HP00 | NTC | 10k @ 25°C | IP67 | Ø6x15mm | 6000mm | -50 to 105 °C | Polyolefin |
| NTC015WP00 | NTC | 10k @ 25°C | IP68 | Ø6x52mm | 1500mm | -50 to 105 °C | stainless steel |
| NTC030WP00 | NTC | 10k @ 25°C | IP68 | Ø6x52mm | 3000mm | -50 to 105 °C | stainless steel |
| NTC060WP00 | NTC | 10k @ 25°C | IP68 | Ø6x52mm | 6000mm | -50 to 105 °C | stainless steel |
| PT1030HF01 | PT1000 class B | | IP67 | Ø6x20mm | 3000mm | -50 to 105 °C | rubber |
| PT1060HP01 | PT1000 class B | | IP67 | Ø6x15mm | 6000mm | -50 to 105 °C | Polyolefin |

## Cold Room Alarm

CAREL ColdWatch Trapped Personnel Alarm

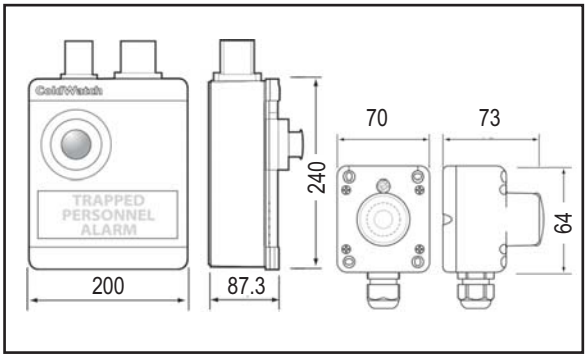
- Safety system for low temperature cold rooms.
- It allows personnel trapped inside the cold room to call for help by pressing an emergency button and activating an audio/visual warning on the control panel mounted outside.
- Complies with European standard UNI EN 378-1:2008, Annex D "Protection for people who are inside cold rooms", point 3 "Emergency switch or signal" which applies to cold rooms with a volume of more than 10 m3, operating at sub zero temperature.
- Control unit which is fixed outside the cold room combines a siren and flashing light and incorporates voltage-free contact for controlling additional devices, such as: shutdown cold room, switch on the light in the cold room, activate a telephone dialler.
- Back up battery housed inside the control unit supplies power in the event of blackouts (12Vdc, 10h life time fully charged).
- Emergency button that is installed inside the cold room has an LED on the mushroom-head pushbutton that is on at all times, so the button can be identified even in the dark.

### SPECIFICATIONS

| | |
|---|---|
| Part No | CM00005953 |
| Electrical Supply | 230Vac 50/60Hz |
| Battery | 12Vdc 10h life time fully charged |
| Control module | -10 to 40°C IP43 |
| Visual signal | Flashing red LED |
| Audible signal | 90 dB at 1 m |
| Auxillary relay | 250 Vac 8A AC1 (contact closed with alarm active) |

| Part No | Description | Order Qty |
|---|---|---|
| CM00005953 | ColdWatch Cold Room Alarm | 1 |

### DIMENSIONS

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