Procon

MELCOTEL II

FOR INSTALLERS

INSTALLATION MANUAL Version 1.0.9

For safe and correct use, please read this installation manual thoroughly before installing the PROCON MELCOTEL II.

MITSUBISHI ELECTRIC UK

Preface

Safety warnings

⚠ **Caution:**

Do not expose to rain or moisture.

⚠ **Shielded Signal Cables:**

Use only shielded cables for connecting peripherals to any Procon MELCOTEL II device to reduce the possibility of interference with radio communications services. Using shielded cables ensures that you maintain the appropriate EMC classification for the intended environment.

⚠ **CE Notice:**

This product has been determined to be in compliance with the following European Safety and EMC Directives:

2014/53/EU - The Radio Equipment Directive (RED)
2014/35/EU - The Low Voltage Directive (LVD)
2011/65/EU - The Restriction of Hazardous Substances Directive (RoHS)

⚠ **European Union, Class A:**

Class A products are intended for use in non-residential/non-domestic environments. Class A products may also be utilized in residential/domestic environments but may cause interference and require the user to take adequate corrective measures.

This is a Class A product. In a domestic environment this product may cause radio frequency interference in which case the user may be required to take adequate measures.

A “Declaration of Conformity” in accordance with the preceding directives and standards has been made and is available on request.

If this equipment does cause interference with radio communications services, which can be determined by turning the equipment off and on, you are encouraged to try to correct the interference by one or more of the following measures:

Reorient the receiving antenna.
Relocate the Procon MELCOTEL II with respect to the receiver.
Move the Procon MELCOTEL II away from the receiver.

If necessary, consult a Procon MELCOTEL II technical support representative or an experienced radio/television or EMC technician for additional suggestions.

Disclaimer

⚠ **Warranty:**

All products manufactured on behalf of Mitsubishi Electric UK are warranted against defective materials for a period of three years from the date of delivery to the original purchaser.

⚠ **Warning:**

Mitsubishi Electric UK assumes no liability for damages consequent to the user of this product. We reserve the right to change this manual at any time without notice. The information furnished by us is believed to be accurate and reliable. However, no responsibility is assumed by us for its use, nor for any infringements of patents or other rights of third parties resulting from its use.

Amendment Register

Document Version	Latest Firmware Version	Date	Author	Notes
1.0.0	V2.06	15/06/15	CD/SM/GD	Initial Version
1.0.1	V2.06	23/06/15	GD	Added additional information for connecting to 3rd party extractor fan fault outputs
1.0.2	V2.06	01/07/15	GD	Spelling correction in Section 9
1.0.3	V2.07	17/09/15	GD	Change to the URL for downloading the configuration software
1.0.4	V2.08	25/02/16	GD	Added section 7.2 on Local Remote Controller Mode Selection Button Disablement.
1.0.5	V2.08	19/07/16	SC	Added 'connecting mains' instruction page
1.0.6	V2.08	05/08/16	SC	Made further minor text changes due to safety testing recommendations
1.0.7	V2.08	15/08/16	SC	Changed mains cable to 1.5mm and changed M20 cable gland details
1.0.8	V2.08	22/05/18	GD	Changed the URL for the configuration software download in section 8.2. Other minor formatting changes.
1.0.9	V2.0.8	24/07/18	GD	Corrected Figure 12 to show the extract fan fault output connected to CN32 between pins 1 and 3 instead as pins 1 and 2.

Any additional notes since printing will be appended to the rear of this document on separate sheets of paper.

Contents

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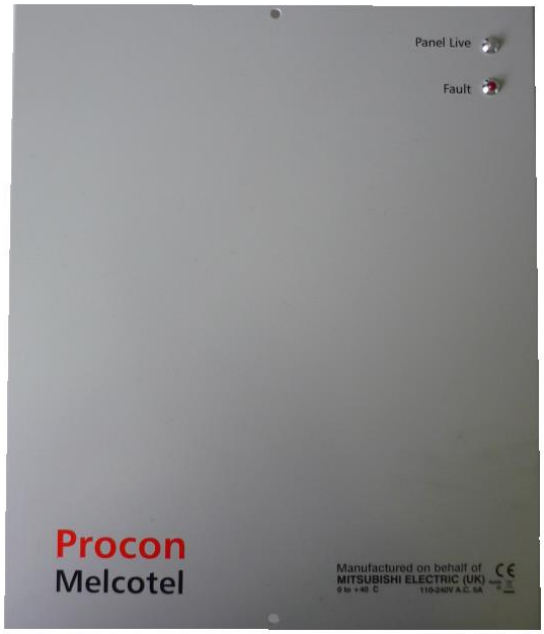
[Fig. 1]

Items included with the MELCOTEL II

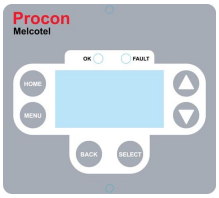
A	1 x MELCOTEL
B	1 x OUTDOOR SENSOR
C	1 x LOCAL MANAGEMENT DISPLAY (BACKLIT)

A



B

C



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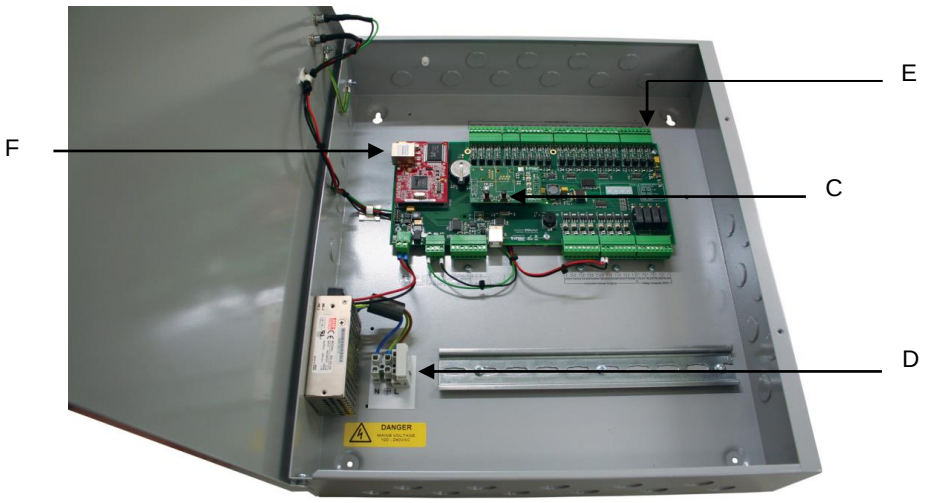
[Fig. 2]

Inside and the outside of the MELCOTEL II

A
B

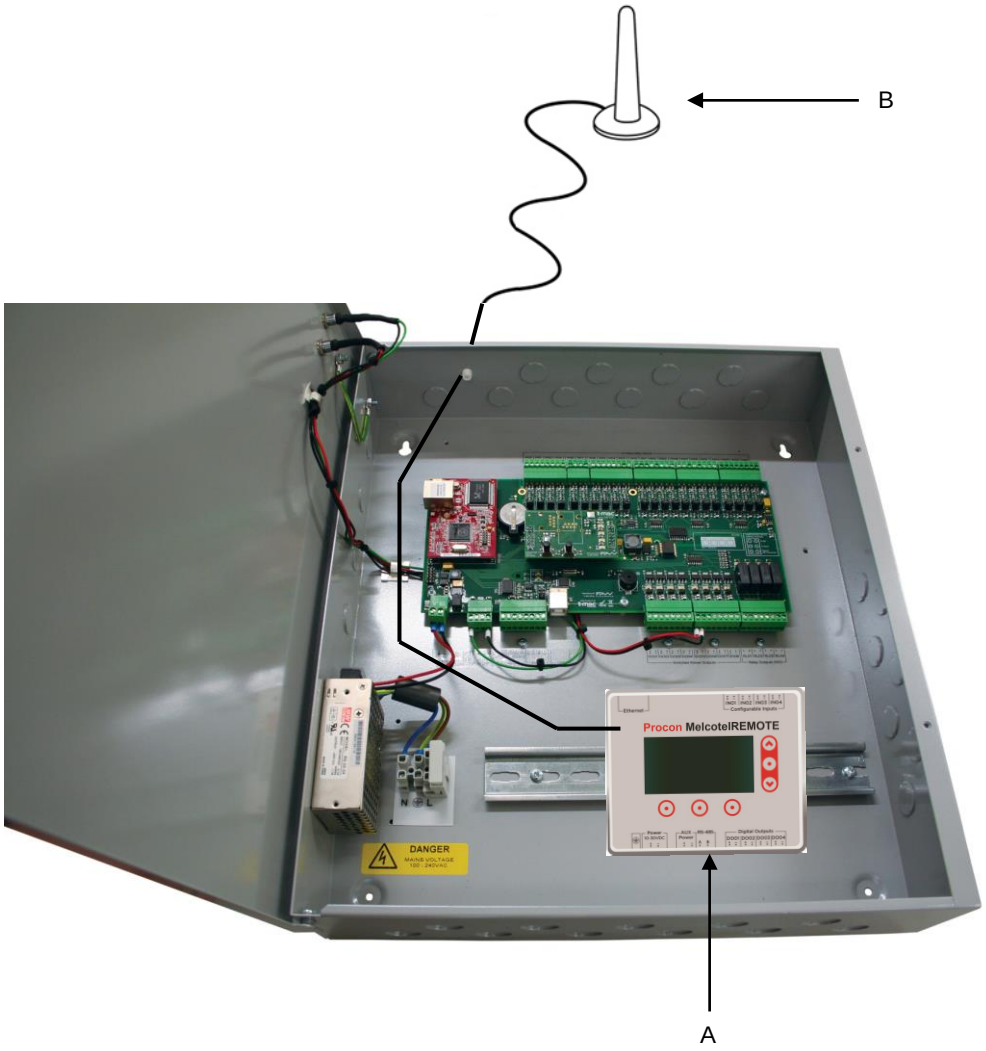
A	Power LED
B	Fault LED
C	Reset and SYNC button
D	Power supply terminal
E	Sensor and fire alarm inputs
F	Ethernet connection



F
E
C
D

3

[Fig. 3] Illustration of Melcotel II with optional MelcotelREMOTE



A MelcotelREMOTE

B MelcotelREMOTE antenna for GPRS option

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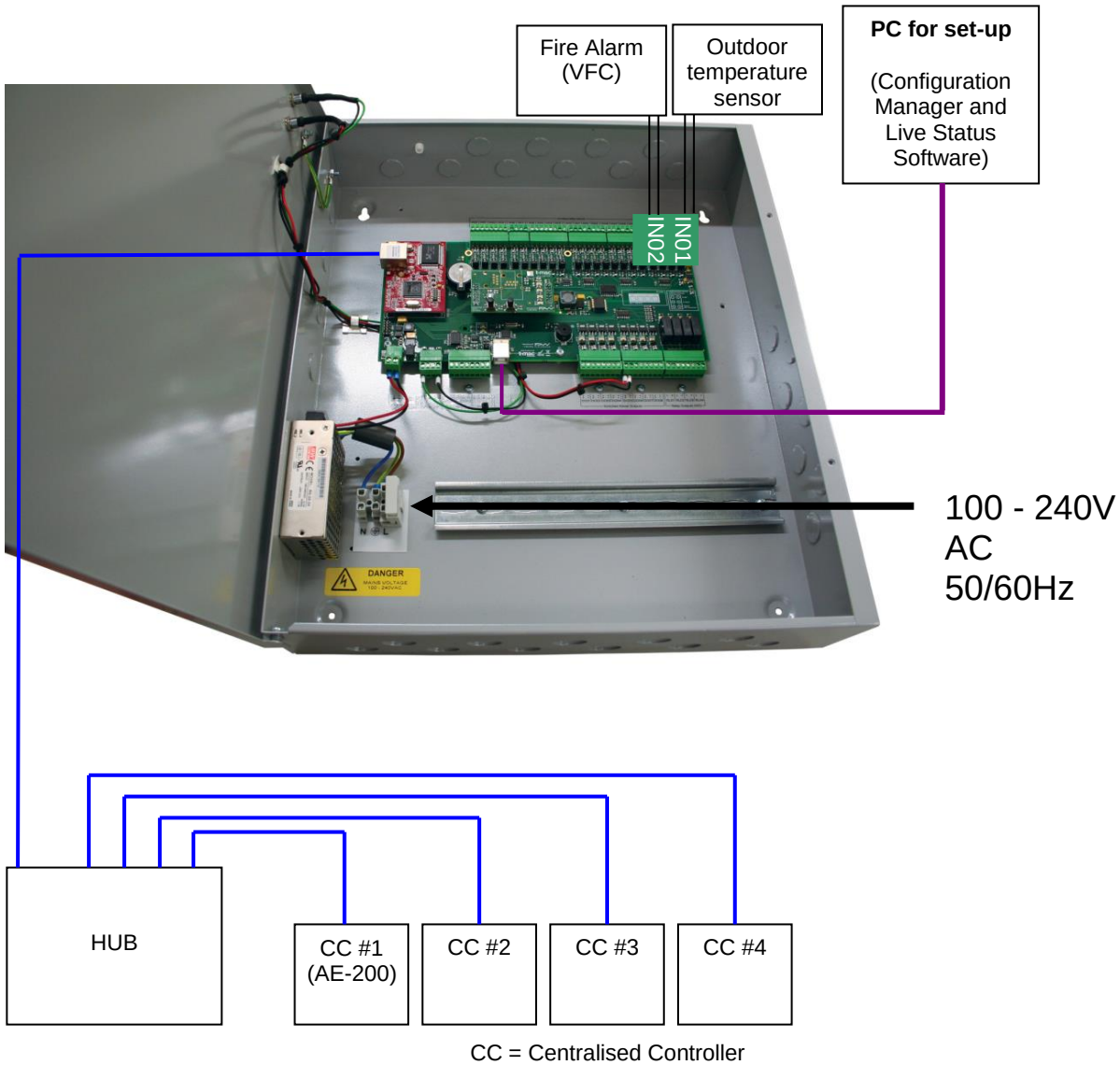
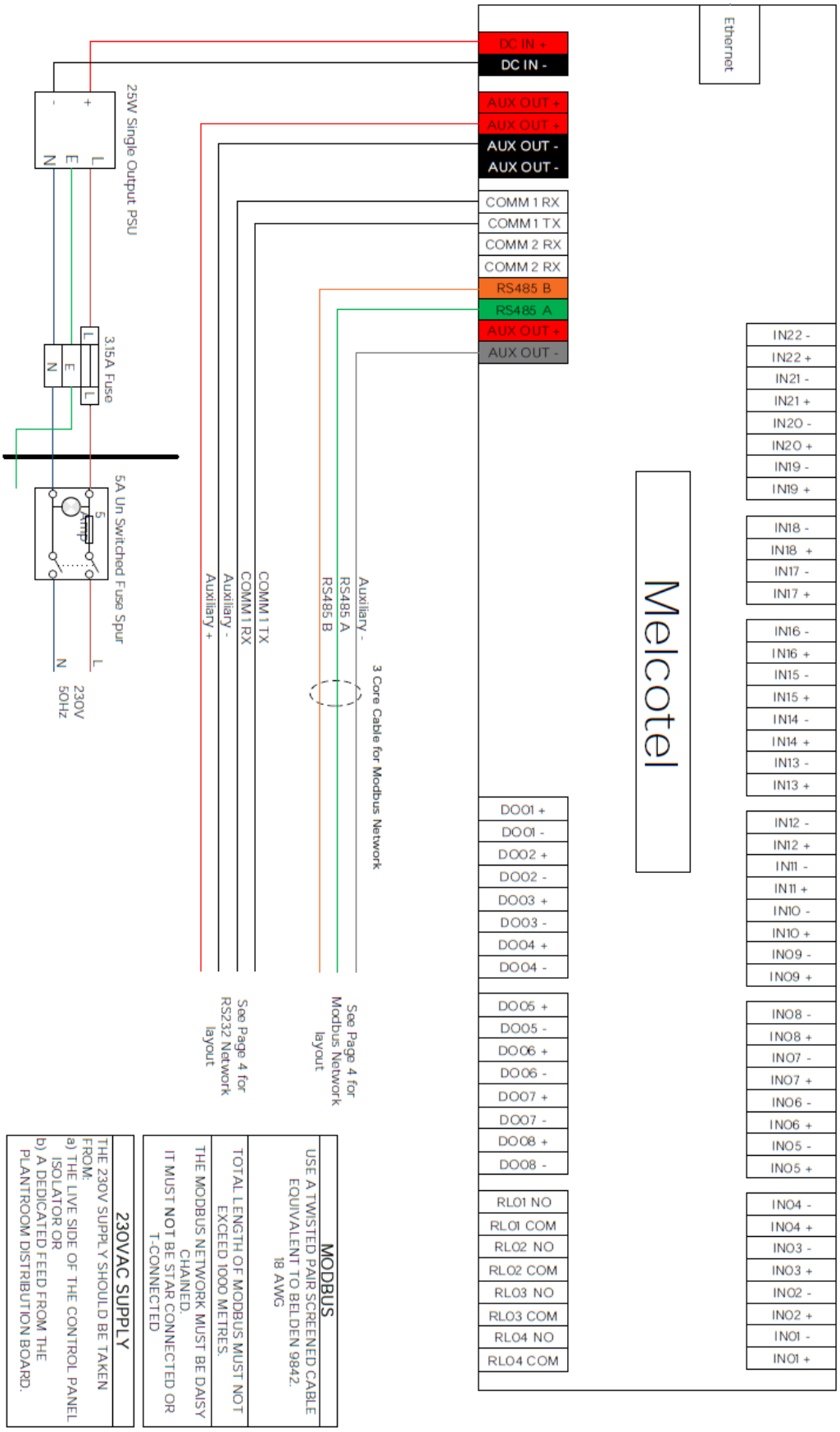
[Fig. 4] Melcotel II connection overview



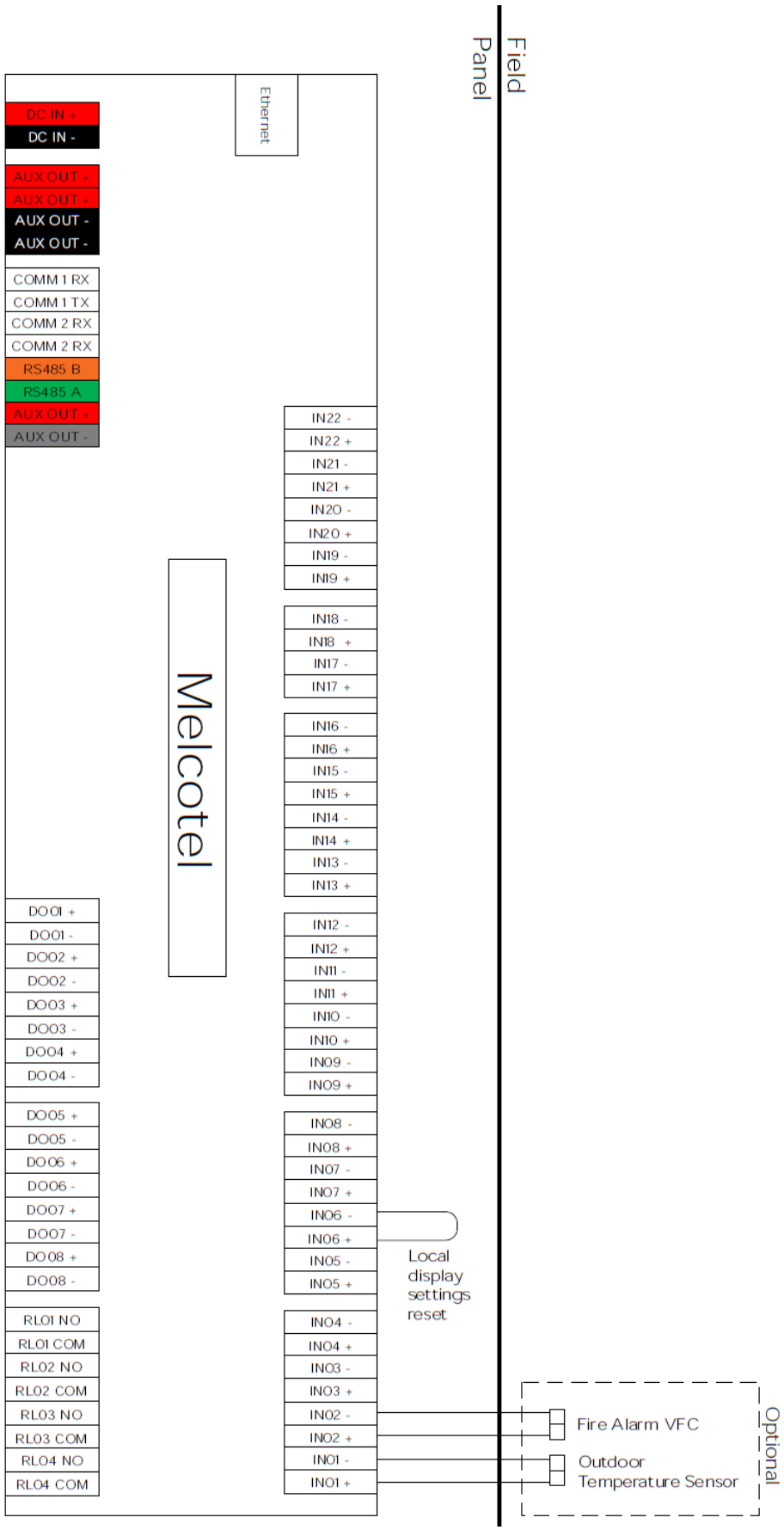
Notes:

- HUB and network cables (—) not supplied by MEUK
- MELCOTEL II and HUB will require 230VAC power supply
- Network cables must be patch network cable and NOT cross over when using a hub
- Network cables must be a maximum of100m long

5 **[Fig. 5]** Wiring diagram of the MELCOTEL II – Power and network connections



6 **[Fig. 6]** Wiring diagram of the MELCOTEL II – Inputs



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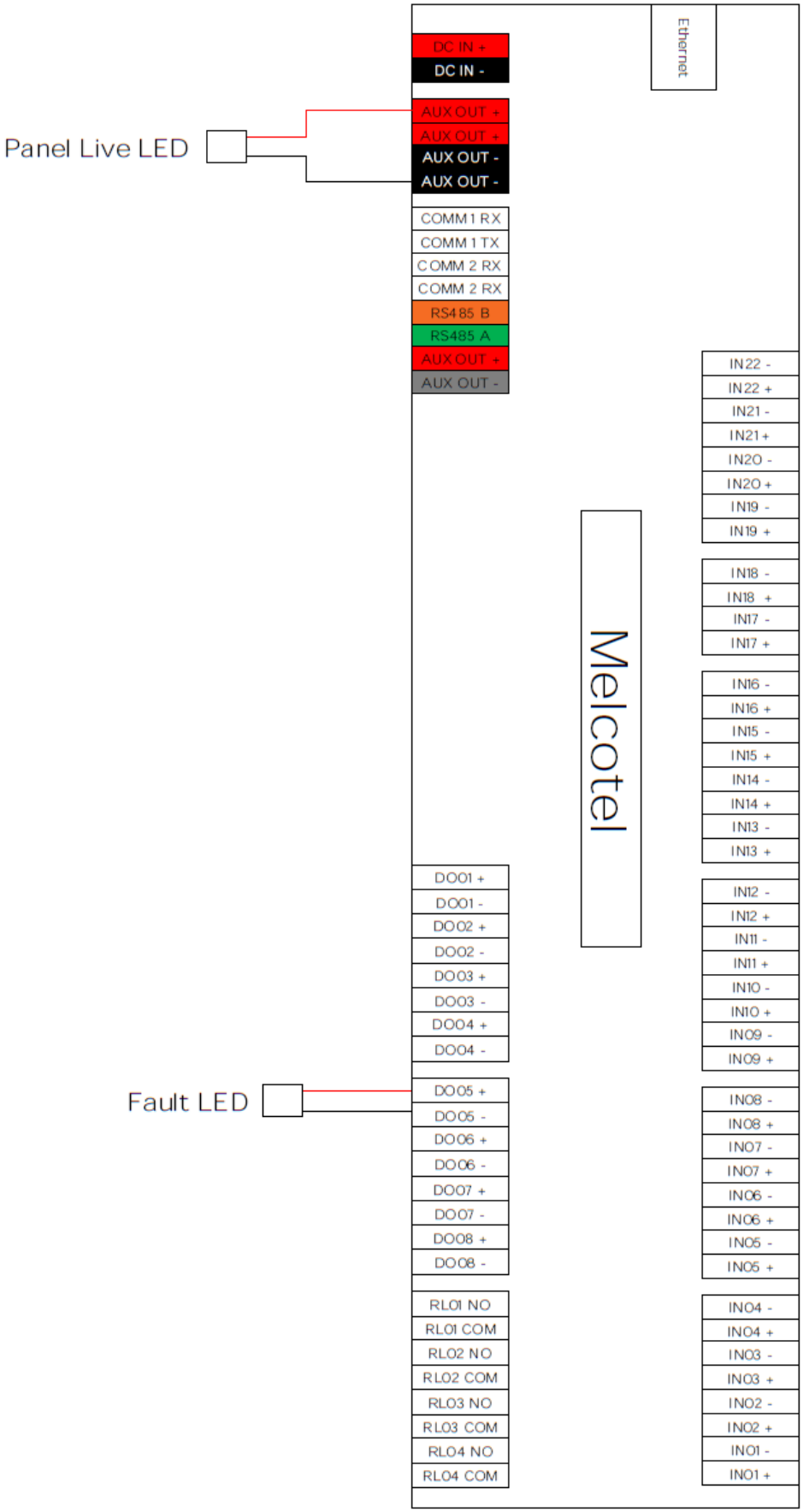
[Fig. 7] Wiring diagram of the MELCOTEL II – Outputs



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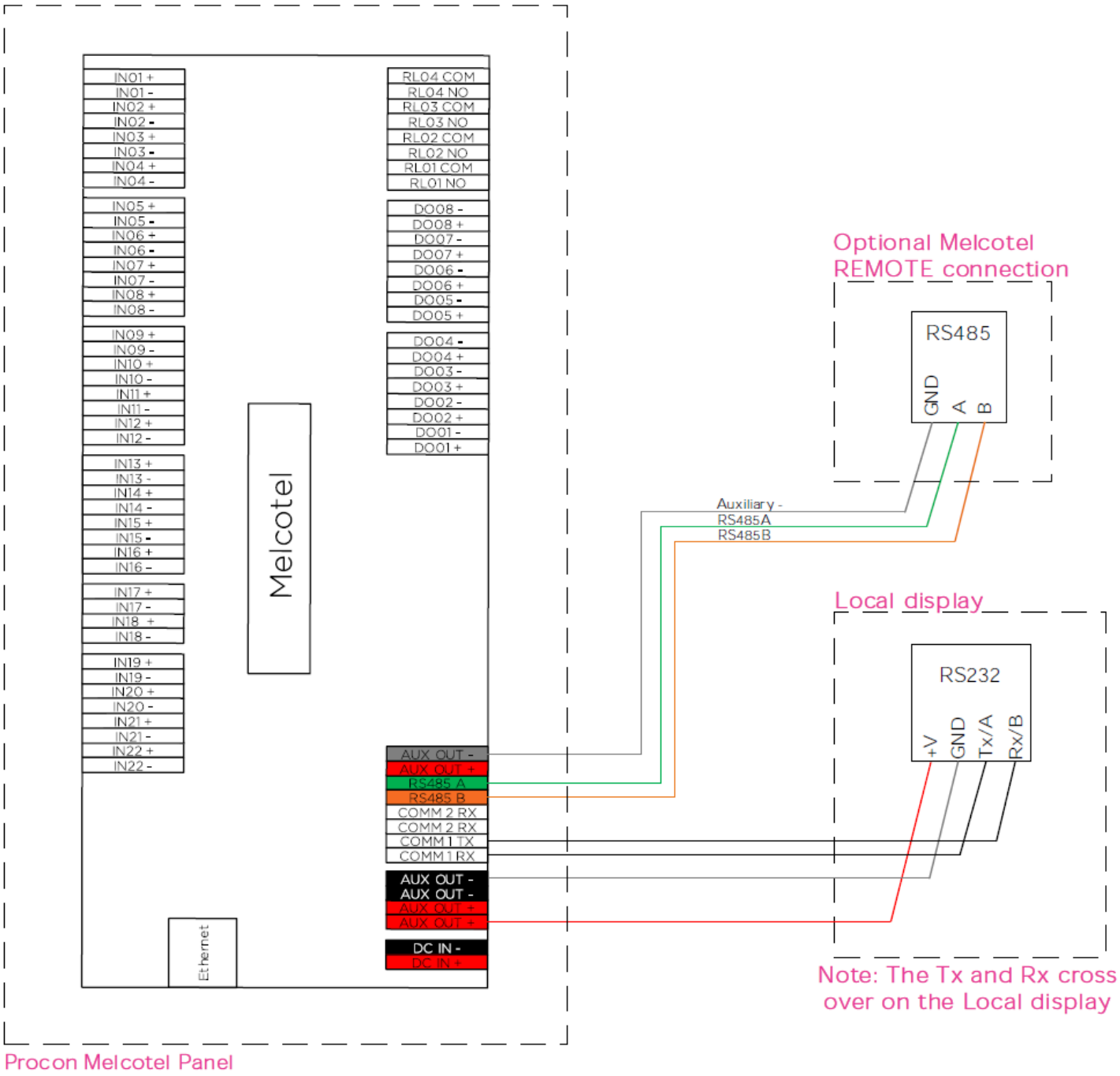
[Fig. 8] Wiring diagram of the MELCOTEL II – Communications



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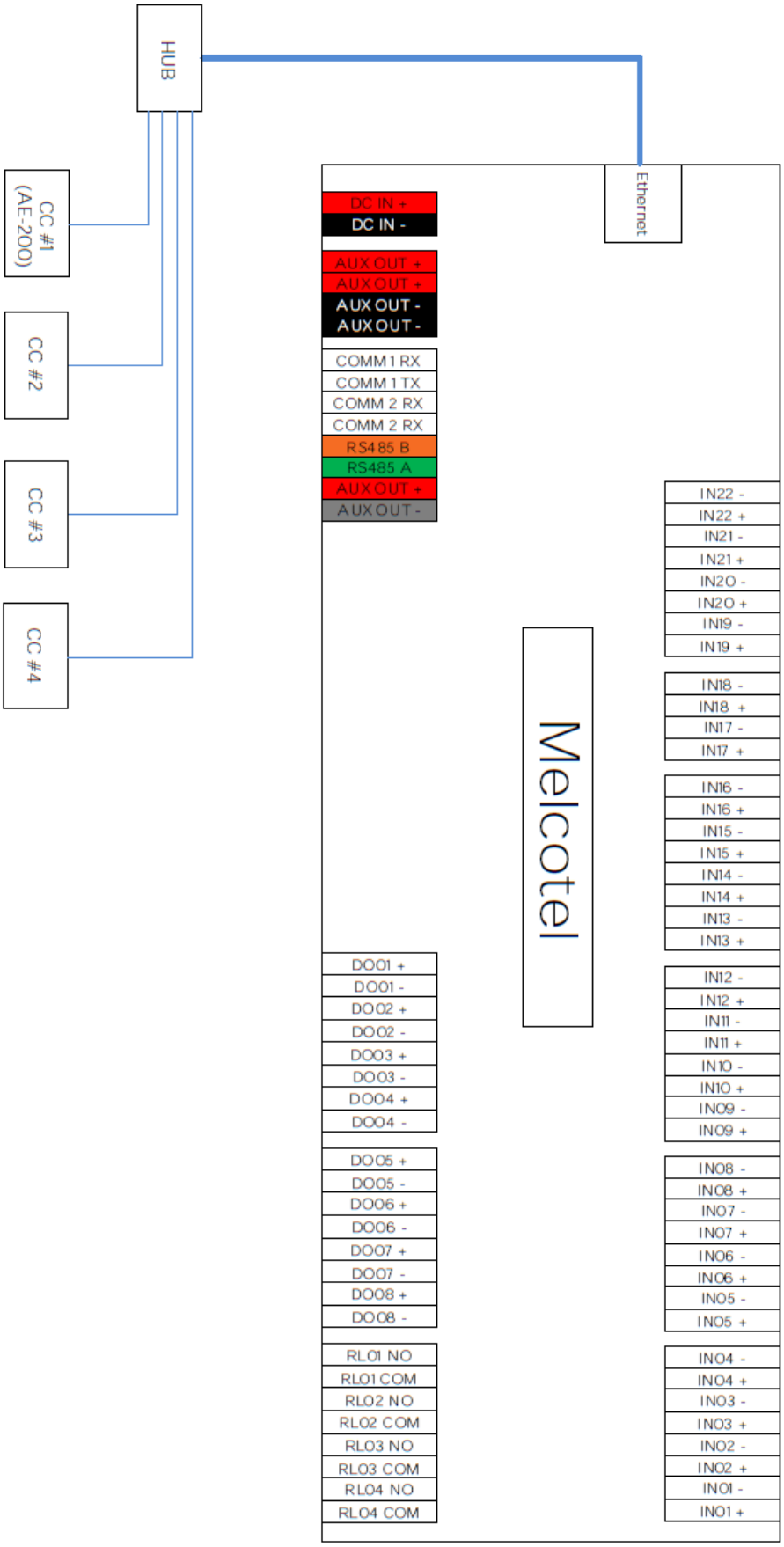
[Fig. 9] Wiring diagram of the MELCOTEL II – Ethernet network



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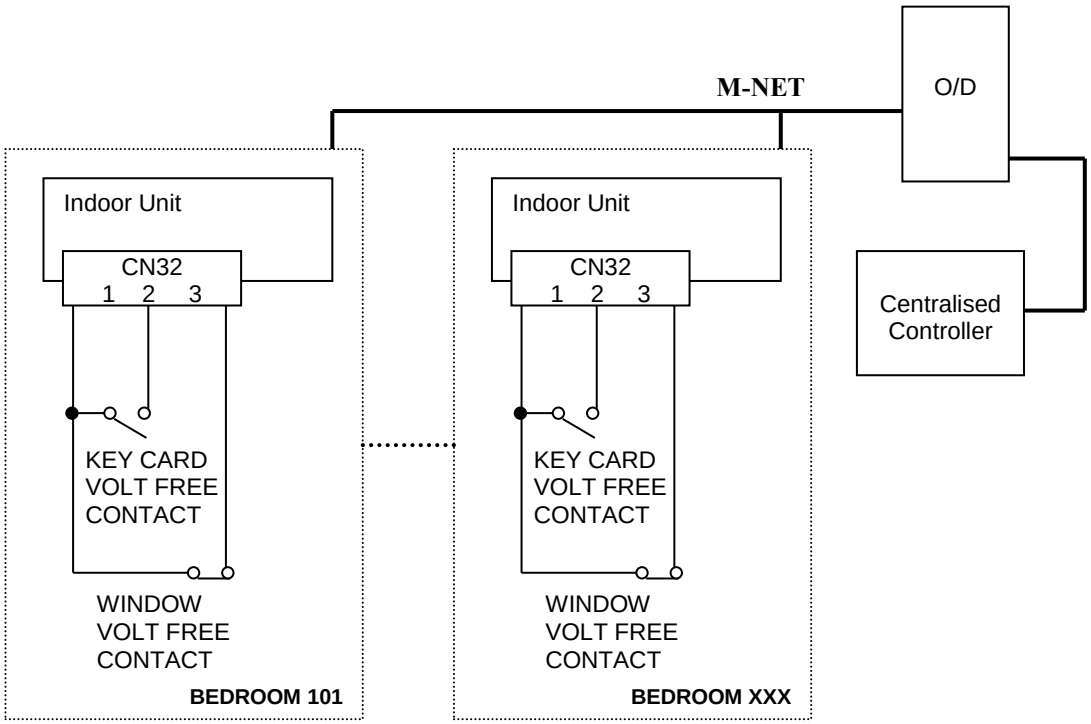
[Fig. 10]

Wiring diagram of each indoor unit using a key card volt free contact and a window volt free contact



Notes:

- A PAC-SA89TA (3 wire adaptor) is required for each indoor unit
- Keycard contact is normally opened
- Window contact is normally closed
- Optionally window contact input can be used for extractor fan fault volt free signal instead
- DIP switched 1-1, 1-9 and 1-10 must all be in the ON position to enable the inputs

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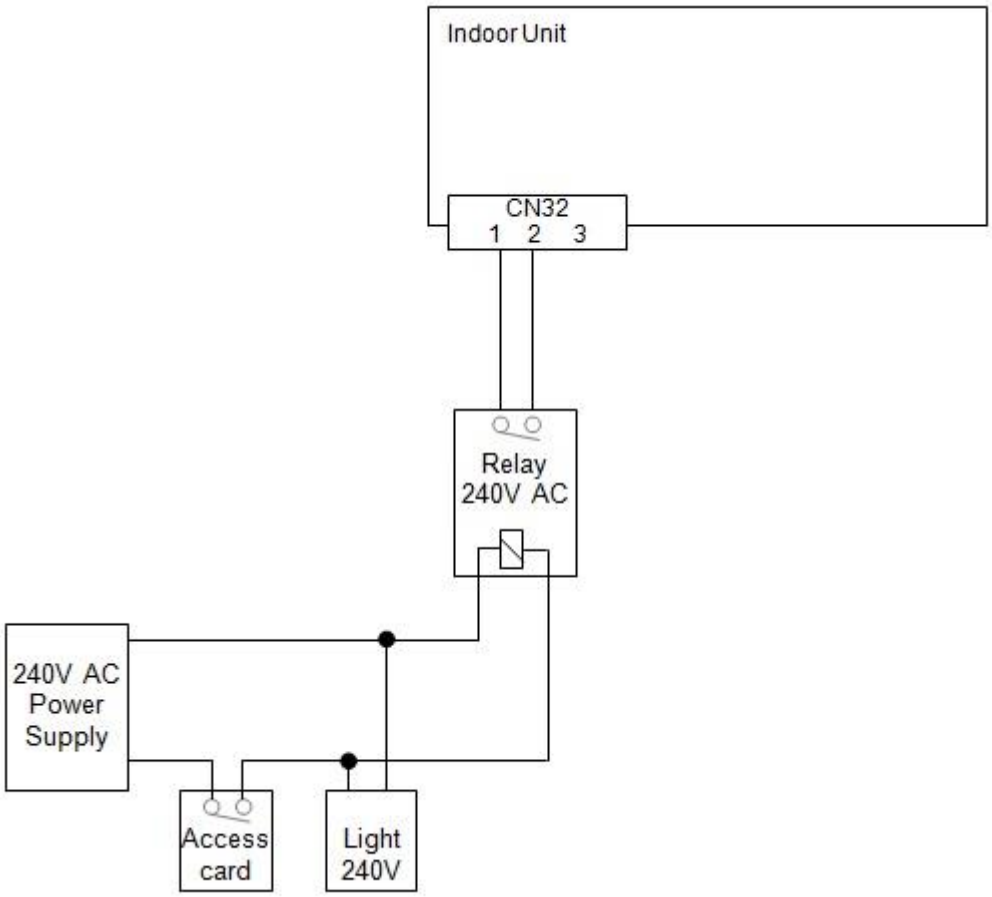
[Fig. 11]

Wiring diagram of an indoor unit using a powered key card contact



Notes:

- When the keycard contact does not have a volt free contact and supplies the bedroom lighting, it is necessary to install an additional relay as shown above
- DIP switched 1-1, 1-9 and 1-10 must all be in the ON position to enable the inputs

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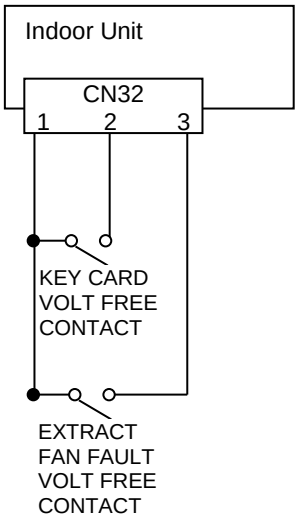
[Fig. 12]

Wiring diagram of an indoor unit to a 3rd party extract fan fault volt free output



Notes:

- A PAC-SA89TA (3 wire adaptor) is required for each indoor unit
- Extractor fan fault outputs must be normally open type
- Extractor fan fault outputs cannot be used when using window contacts, as they use the same input.
- DIP switches 1-1, 1-9 and 1-10 must all be in the ON position to enable the input

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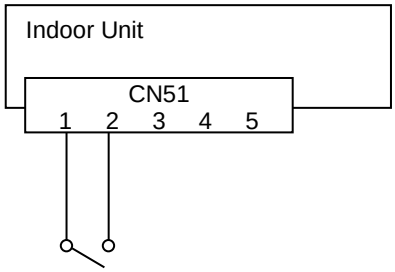
[Fig. 13]

Wiring diagram of an indoor unit to pressure switch volt free contact, when filter monitoring is used



PRESSURE
SWITCH
VOLT FREE
CONTACT

Notes:

- DIP switched 1-1, 1-9 and 1-10 must all be in the ON position to enable the input

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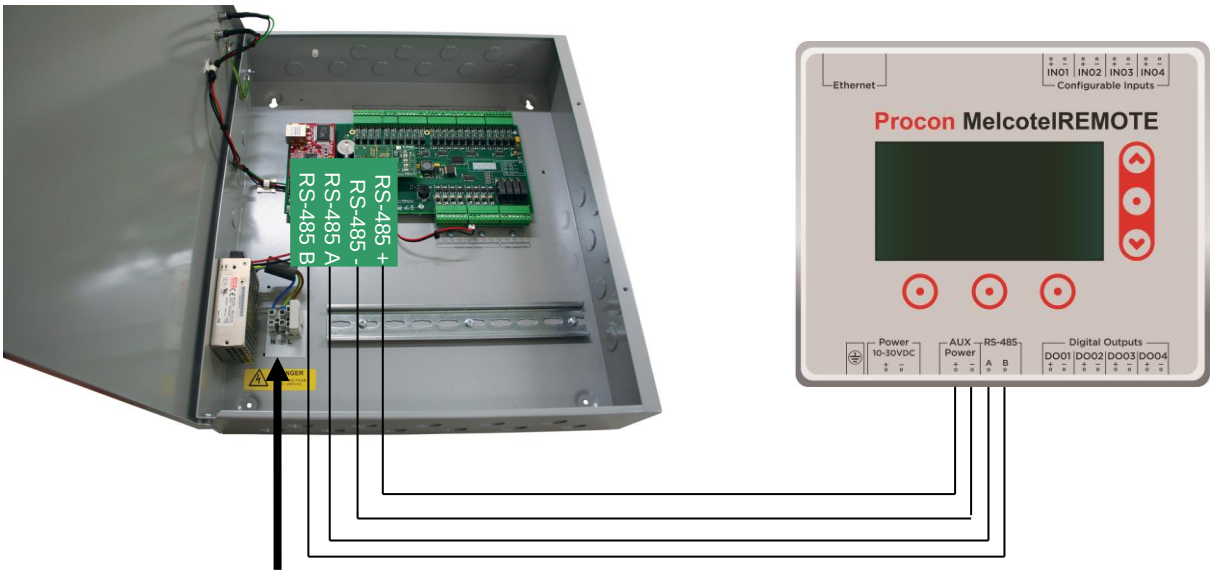
[Fig. 14]

Wiring diagram between the MELCOTEL II and MelcotelREMOTE



100 - 240V 50/60Hz

Melcotel	MelcotelREMOTE
RS-485 +	AUX Power +
RS-485 -	AUX Power -
RS-485 A	RS-485 A
RS-485 B	RS-485 B

Notes:

- All four connections are required, i.e. +V, GND, A and B.
- Shielded cable must be used. Mains flex or other unshielded cable must not be used.
- The cable shield must be connected to GND at one end only

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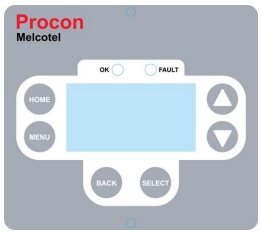
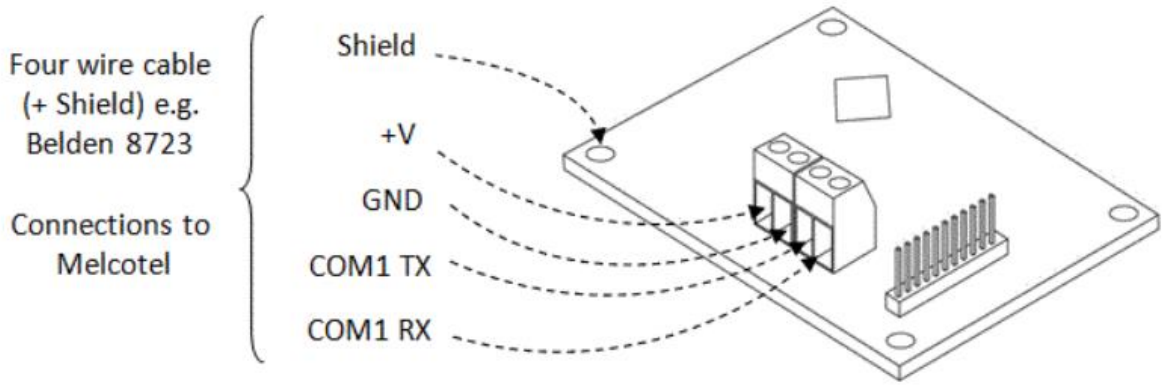
[Fig. 15]

Wiring diagram between the MELCOTEL II and the Local Management Screen





Local Display	Melcotel
+V	AUX OUT +
GND	AUX OUT -
TX/A	RS-232 COM1 RX
RX/B	RS-232 COM1 TX

Notes:

- The local display will connect to the second RS-232 port (labelled COM1) on the Melcotel II
- The maximum cable length between Melcotel II and the display is 10 metres.
- The screen has a backlit LCD display

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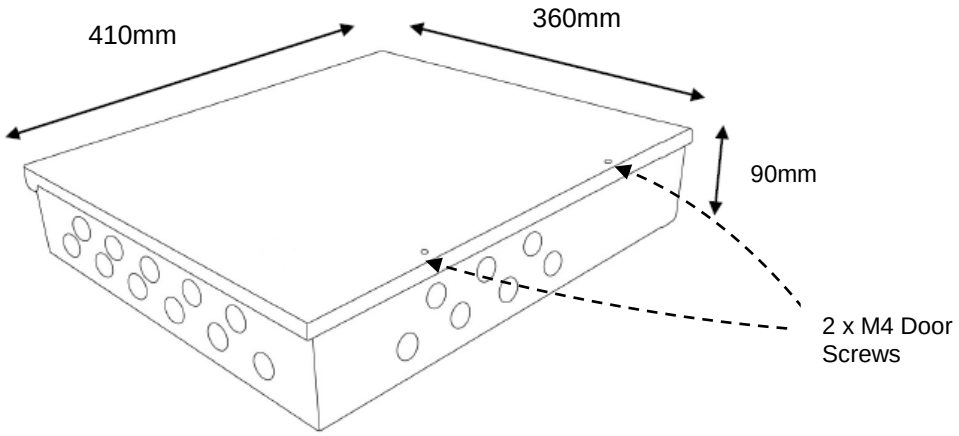
[Fig. 16]

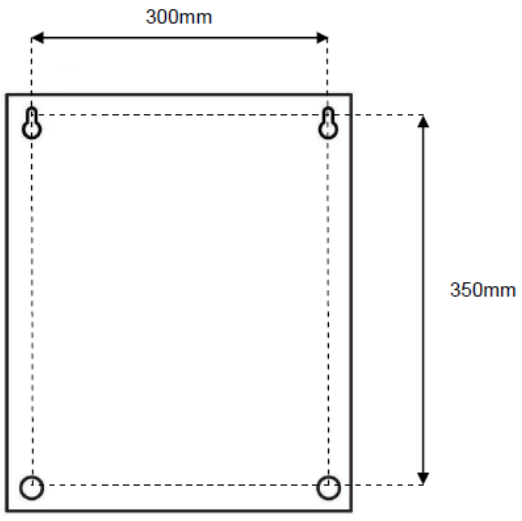
Mounting details and dimensions of the MELCOTEL II

The MELCOTEL should be mounted next to, or near to the building's primary distribution panel. Suitable space should be provided all around the panel for cable conduit and additional equipment.



Enclosure dimensions

Open the enclosure lid, by removing the two M4 screws on the right hand side of the front face. Then open the door (hinged down left hand side). The 4 x mounting holes are located on the rear metal face.



Enclosure Weight = 4.5Kg

Use suitable wall fixings for the weight of the unit.

Any un-used open knock-outs must be blanked with a solid 20mm diameter grommet

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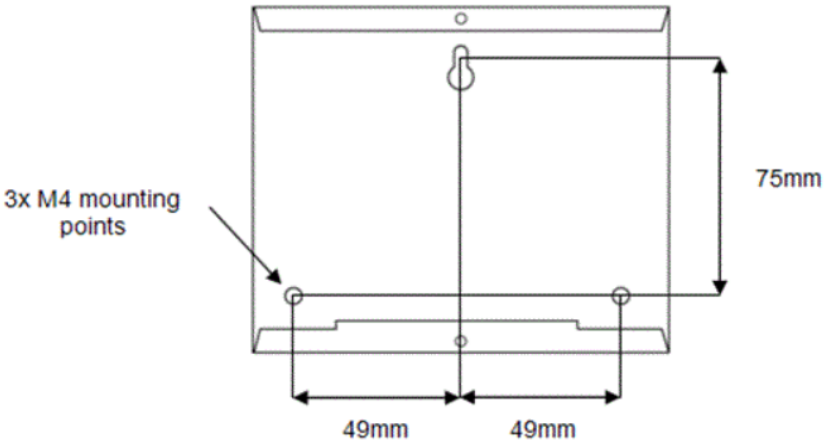
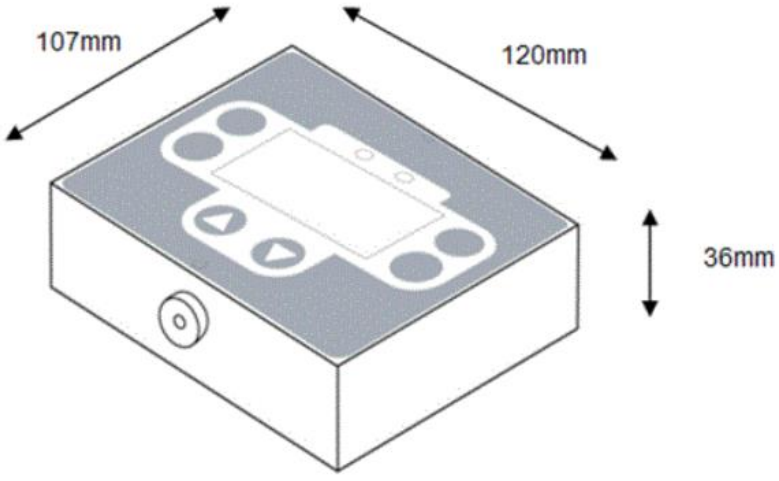
[Fig. 17]

Mounting details and dimensions of the Local Management Screen





1. Connecting mains power

Step 1:

A 6A single gang fused switch must be provided in-line with the mains supply and be in close proximity to the Melcotel enclosure. It must be clearly marked as the disconnecting device. The supply should also be fed via a 6amp type B circuit breaker in the distribution box.

⚠The construction of the connections of the conductors should be such that, if the cord were to slip in its anchorage, the protective earth conductor would be the last to take the strain.

⚠ Ensure that the mains cable supplying the Melcotel is rated to the following specification:

- 1.5mm^2 - 3 core flexible flex blue, brown, yellow/green
- External diameter 8mm
- BS EN 50525

Recommended cable: CEF Part Code: 3183B1.5W050

⚠ This apparatus must be earthed via the 3 way mains terminal block shown in Figure 6 below.

Connect Live (L), Neutral (N) and Earth (E) to the 3-way terminal block located in the bottom left hand corner of the Melcotel enclosure, as indicated below.

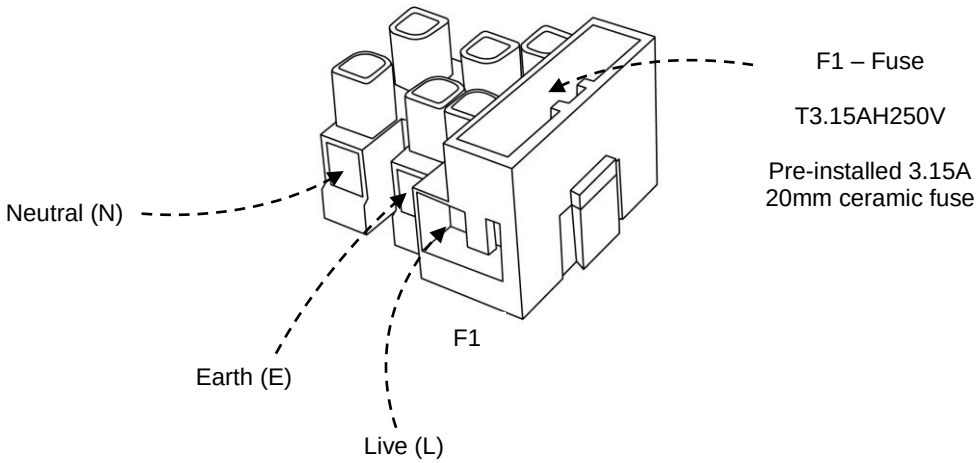


Figure 6: Mains terminal block connection

⚠ The mains cable should be secured to the metal enclosure using a suitable M20 locking gland with a flammability rating of UL 94-V1 or better.
It is recommended to use the following cable gland from Hummel which is UL-94 V0 rated:

Manufacturer part number – Hummel cable gland: 1.209.2000.51

Manufacturer part number – Hummel locking nut: 1.262.2000.50

2. Quick set up

Step 1:

Ensure that the following DIP switches are set for each indoor unit:
- SW1-1 ON (to activate remote controller sensor)
- SW1-9 and 1-10 ON (to activate keycard and window inputs on CN32 and pressure switch input on CN51)

Step 2:

Connect the MELCOTEL II to the centralised controller(s) (i.e. AE-200 and EW-50 controller types) using Ethernet patch network cable and a hub. A maximum of four centralised controllers can be connected,

⚠ Note: The first centralised controller **must** be of type AE-200.

If just one centralised controller is being connected then a hub is not necessary, an Ethernet crossover cable can be used instead.

Step 3:

If required connect the outdoor temperature sensor to IN01. This sensor is not polarity sensitive, the connections can be either way around.

Step 4:

If required connect the fire alarm volt free output to IN02. This contact must be normally closed.

Step 5:

Connect the Local Management Screen to the RS-232 connection labelled COM1 on the MELCOTEL II (see fig. 8 and fig. 15).

The screen has a backlit LCD screen and two LED indicator lights as standard.

⚠ Note: The backlight will switch off 10 minutes after power up, or 10 minutes after the last button press. The backlight will also switch on for a 30 minute period every time a new fault message is shown on screen.

Step 6:

If required connect CN32 for each indoor unit using a PAC-SA89TA if using key card and/or window contacts:
- Key card volt free normally open contact across pins 1 and 2 (see figures 10 and 11).
- Window volt free normally closed contact across pins 1 and 3 (see figure 10).
- Optionally the window contact input can be used for an extract fan fault volt free normally open contact across pins 1 and 3 (see figure 12).

If required connect CN51 for each indoor unit using a PAC-SA88HA if using filter pressure switch:
- Pressure switch volt free normally open contact across pins 1 and 2 (see figure 13).

Step 7:

Download the latest version of the MELCOTEL II configuration software from www.melcotel.co.uk

Step 8:

Install the MELCOTEL II Configuration Manager software on your PC.

Step 9:

Apply power to the MELCOTEL II unit, which will produce a single beep.

Step 10:

Connect a USB cable between your PC and the MELCOTEL II. Wait for the Melcotel USB device to be recognised and for any drivers to be installed.

Step 11:

Run the Configuration Manager software and configure the MELCOTEL II accordingly (see Configuration section for an explanation of the configuration settings).

After the new settings have been written the MELCOTEL II unit will produce a short beep. After this beep please power cycle the MELCOTEL II.

⚠ Note: Always connect the USB cable before running the configuration software.

3. Overview

The Procon MELCOTEL II is designed to be used in hotels as a central controller for City Multi indoor units, via AE-200 and EW-50 controllers. MELCOTEL II can connect to up to four of these controllers simultaneously via Ethernet, so up to 200 City Multi units can be indirectly controlled.

⚠ Note: The first centralised controller **must** be of type AE-200.

MELCOTEL II can provide different types of control depending on the application. Some hotels may have a key card entry system where the room occupant inserts a key card when entering the room. This can be used to force the indoor unit on when the key card is present, and switch it off when not present. Some hotels may also have window contact switches installed which switch when the room window is opened. This can be used to switch the indoor unit off when the window is open. Both these switches can be connected to digital inputs on the indoor unit, MELCOTEL II continually monitors them and detects any change in state.

MELCOTEL II can optionally be connected to a fire alarm panel and used to force all indoor units off in the event of the fire alarm being activated.

There are two PC applications which complement MELCOTEL II, *MELCOTEL II Configuration Manager* and *MELCOTEL II Live Status*. These applications require a USB connection to MELCOTEL II.
MELCOTEL II Configuration Manager can be used for changing any configuration settings, and should be used only when commissioning the system or making future amendments.
MELCOTEL II Live Status can be used to monitor the current status of all indoor units in the hotel. This can be used at any time.

MELCOTEL II can also be connected to a Local Management Display to provide limited functional control that can globally change the settings for the indoor units. In addition the screen shows fault messages when they are present.

MELCOTEL II has an RS-485 port which enables live status information to be read out using the Modbus RTU protocol. MELCOTEL II acts as a Modbus slave device which will connect to the optional MelcotelREMOTE device for remote monitoring and control.

The only physical connections needed when installing MELCOTEL II are:

- 100-240V 50/60 Hz power supply
- Ethernet connection to network containing the AE-200/EW-50 controllers.
- External thermistor temperature sensor (optional)
- Normally closed connection to fire alarm panel (optional)

Figure 1 shows the items included with the MELCOTEL II.

Figure 2 shows the inside and the outside of the MELCOTEL II.

Figure 3 shows anIllustration of Melcotel II with optional MelcotelREMOTE

Figure 4 shows a Melcotel II connection overview.

Figure 5 shows a wiring diagram of the MELCOTEL II – Power and network connections

Figure 6 shows a wiring diagram of the MELCOTEL II – Inputs

Figure 7 shows a wiring diagram of the MELCOTEL II – Outputs

Figure 8 shows a wiring diagram of the MELCOTEL II – Communications

Figure 9 shows a wiring diagram of the MELCOTEL II – Ethernet network

3.1 Overview with Key card system

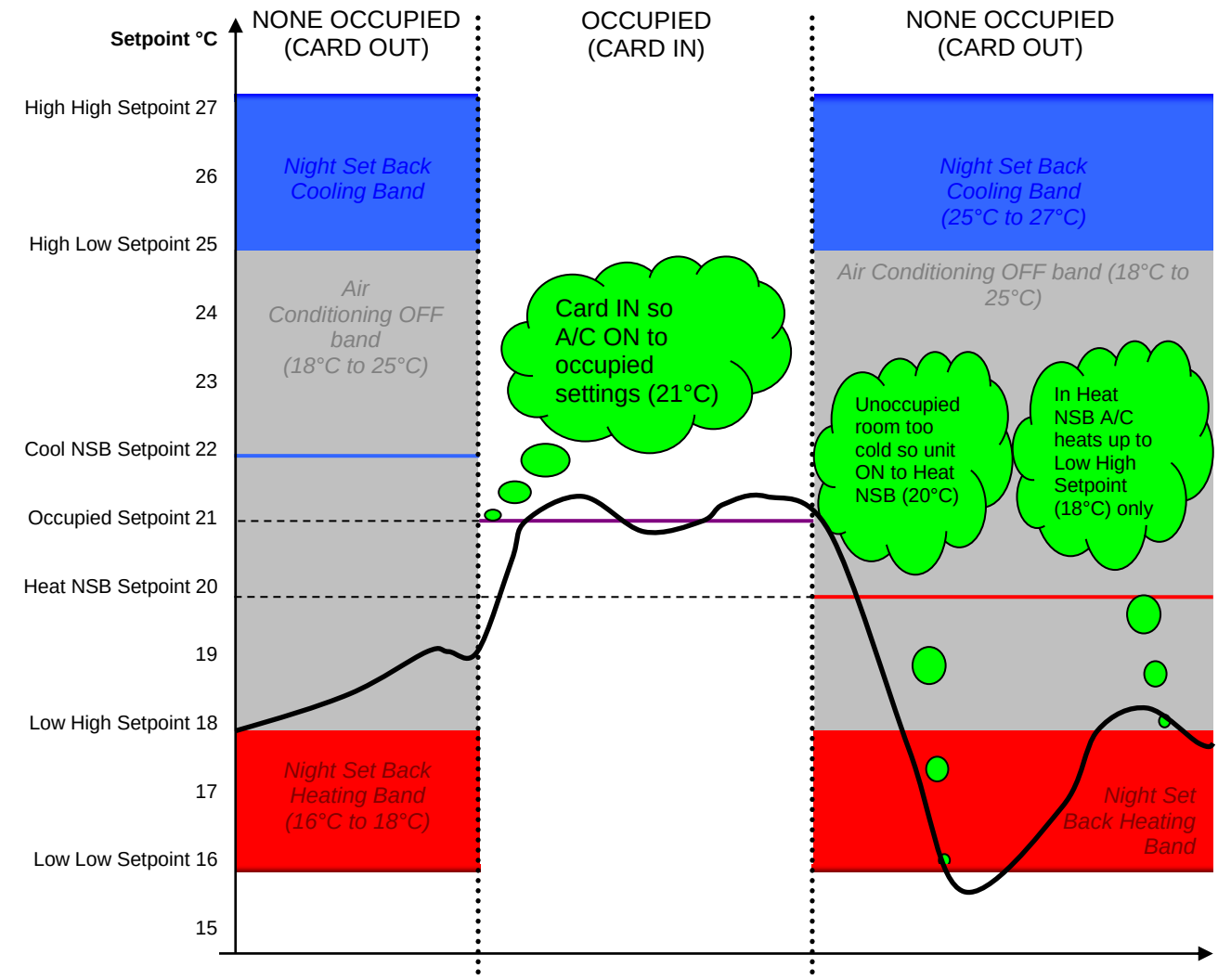
The key card system is used to detect if the room is occupied or not.

When the room is occupied (Key card in), the MELCOTEL II switches ON the A/C to “occupied settings” for instance, ON, AUTO, 21°C.

When the room is not occupied (Key card out), the MELCOTEL II sets the room in “Night Set Back” and monitors the room temperature using the remote controller sensor. If the room temperature is too low and below the Low Low Setpoint, for instance 16°C, the MELCOTEL II will restart the A/C to “Low High Setpoint + Heating Deadband” for instance 18°C+2°C=20°C. When the room temperature has reached “Low High Setpoint”, in this example 18°C the MELCOTEL II will switch OFF the A/C to save energy.

The same principle works in cooling. If the room temperature is too high and above High High Setpoint, for instance 27°C, the MELCOTEL II will restart the A/C to “High Low Setpoint - Cooling Deadband” for instance 25°C-3°C=22°C. When the room temperature has reached “High Low Setpoint”, in this example 25°C the MELCOTEL II will switch OFF the A/C to save energy.

At any time, if a window sensor is installed and activated, the MELCOTEL II will switch OFF the A/C when the window is opened and the occupied/unoccupied settings will be deactivated.



NSB: Night set back

3.2 Overview without Key card system

Each time the A/C is switched ON, the room is deemed as occupied.

When someone switches ON the A/C, the MELCOTEL II will reset the settings to “occupied settings” for instance, ON, AUTO, 21°C.

After some time, the MELCOTEL II will switch OFF the A/C to save energy. This time is predefined with the OFF time settings. Six OFF settings can be set for instance, 09:00, 11:00, 13:00, 15:00, 17:00 and 20:00.

When the A/C is OFF, the MELCOTEL II sets the room in “Night Set Back” and monitors the room temperature using the remote controller sensor. If the room temperature is too low and below the Low Low Setpoint, for instance 16°C, the MELCOTEL II will restart the A/C to “Low High Setpoint + Heating Deadband” for instance 18°C+2°C=20°C. When the room temperature has reached “Low High Setpoint”, in this example 18°C the MELCOTEL II will switch OFF the A/C to save energy.

The same principle works in cooling. If the room temperature is too high and above High High Setpoint, for instance 27°C, the MELCOTEL II will restart the A/C to “High Low Setpoint - Cooling Deadband” for instance 25°C-3°C=22°C. When the room temperature has reached “High Low Setpoint”, in this example 25°C the MELCOTEL II will switch OFF the A/C to save energy.

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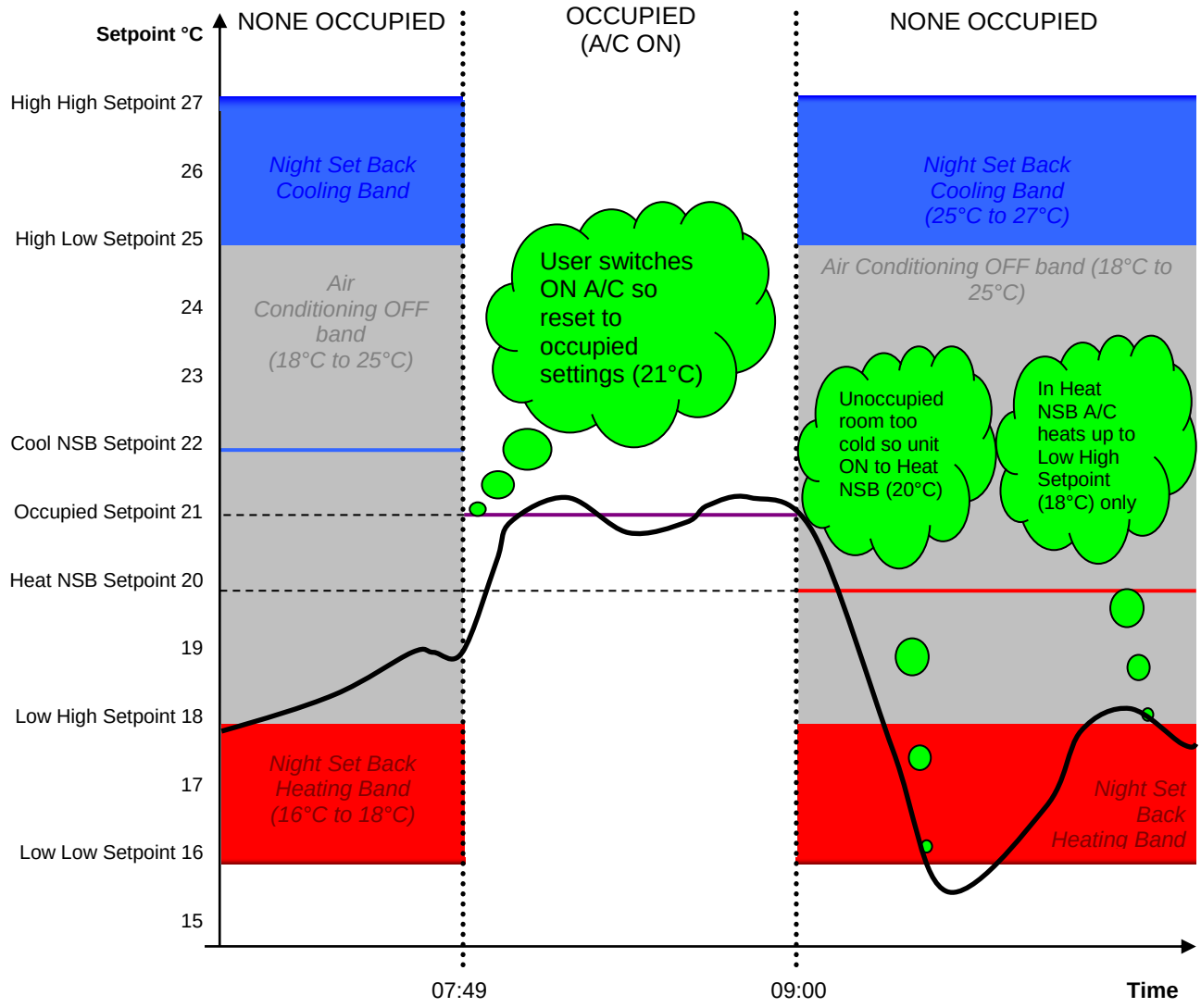


NSB: Night set back

4. Physical Connections

4.1 Power Supply

MELCOTEL II requires a 100-240V 50/60Hz power supply capable of supplying 700mA.

4.2 Ethernet Connection

MELCOTEL II connects to the centralised controllers through its Ethernet port. A network must be formed which contains just the MELCOTEL II and between one and four centralised controllers, all connected via a hub. No other Ethernet devices should be connected to the network.

If a single centralised controller is to be connected then a crossover Ethernet cable can be used instead of a hub.

An Ethernet connection is searched for upon power up; if no connection is found the Fault LED will switch ON and remain ON to indicate a fault.

Also if MELCOTEL II fails to communicate with any of the enabled centralised controllers for five minutes the Fault LED will switch ON and remain ON until the fault is removed.

⚠ **Note:**

Other conditions can cause the Fault LED to remain ON; these are described in the Clock Settings chapter.

⚠ **Note:**

If there is an Ethernet connection error then the connection is retried every 10 seconds. This retry will not occur if the MELCOTEL II is communicating with any PC software through USB. Close any such programs which are running to allow the connection to re-establish.

4.3 Local Management Screen

A Local Management Screen can be optionally connected to RS-232 COM1 on the MELCOTEL II, see figures 8 and 15.

When connected the screen gives some limited functional control that can globally change the settings for the indoor units. The wire link on input IN06 determines whether these changes are lost at 10am each day. If the wire link is fitted (the default state) the settings changes are lost at 10am, if the wire link is not fitted the changes are not lost at 10am.

For more details on the functionality refer to the Local Management Screen chapter.

⚠ **Note:** If the IN06 wire link is fitted or removed the MELCOTEL II will need power cycling for the change to take effect.

4.4 Outside Temperature Sensor

The supplied outside temperature sensor can be optionally connected to input *IN01* on the MELCOTEL II.

When connected, this temperature can be used for outside temperature compensation, lowering or increasing temperature setpoints or to switch the VRF into ‘Heating’ only mode. If disconnected the MELCOTEL II will detect this and perform no compensation

4.5 Fire Alarm Input

MELCOTEL II can be optionally connected to a fire alarm panel and force all indoor units off in the event of the fire alarm being activated. The connection takes the form of a volt free contact on input *IN02* on the MELCOTEL II. The connection will be a normally closed contact which will open when the fire alarm is active.

There is no way of enabling or disabling the fire alarm input, so if it is not to be used then a permanent wire link must be placed across both terminals of IN02.

Refer to the Fire Alarm Input chapter for more information.

4.6 Key Switch / Window Contact Connections

If applicable to the installation the Key Switch and Window Contact connections with the City Multi indoor unit are as follows:

Input	City Multi Indoor Connector	Pins	State	Input Type
Key Switch	CN32 (see note 1)	1 & 2	Normally Open	Volt free contact
Window Contact	CN32 (see note 1)	1 & 3	Normally Closed	Volt free contact

All switched inputs/contacts must be volt free contacts.

Note 1: PAC-SA89TA (3 wire adaptor) is required for each indoor unit.

4.7 Extract Fan Faults

The Window Contact input can optionally be used for indicating extract fan fault signals. This is configured using the PC Configuration Manager software.

It is not possible to have both window contacts and extract fan faults enabled.

The connections are as follows:

Input	City Multi Indoor Connector	Pins	State	Input Type
Extract Fan Fault	CN32 (see note 1)	1 & 3	Normally Open	Volt free contact

Note 1: PAC-SA89TA (3 wire adaptor) is required for each indoor unit.

4.8 Filter Pressure Switch

If filter monitoring is to be used, the pressure switch output is connected to one indoor unit. The PC configuration software is used to select which indoor unit this is. The connection between pressure switch and indoor unit is as follows:

Input	City Multi Indoor Connector	Pins	State	Input Type
Filter Pressure Switch	CN51 (see note 1)	1 & 2	Normally Open	Volt free contact

Note 1: PAC-SA88HA (5 wire adaptor) is required for the indoor unit.

5. Power Up

5.1 Normal Power Up

The MELCOTEL II will power up and commence operation as soon as power is applied. The green Panel Live LED will switch ON and remain ON until the power is removed.

If no buttons on the Melcotel unit are held in on power up then a normal power up sequence will occur, this will be signified by a single bleep of 500ms duration.

The red Fault LED will switch ON initially after power up, but will switch OFF within 30 seconds if no fault conditions exist. If this LED stays ON for more than 2 minutes then refer to the troubleshooting section of this document.

6. Clock Settings

The correct date and time must be known as the functionality of MELCOTEL II relies on it (e.g. for season switching, night-time offset etc.).

6.1 Clock Synchronisation

Centralised controllers have their own Real Time Clock (RTC), MELCOTEL II utilises this and synchronises it's clock with the clock from the first centralised controller (AE-200) on the network (the first controller is named *CC 1* when using the MELCOTEL II Configuration Manager PC software).

It is therefore imperative that:

- *CC 1* is always enabled (this can be done via MELCOTEL II Configuration Manager)
- *CC 1* is always connected to the network and powered up.
- *CC 1* is set with the correct time/date.

Periodic synchronisation occurs every 15 minutes to prevent the RTCs from drifting apart. If daylight saving time is required then this must be enabled on *CC 1*. The MELCOTEL II does not perform its own daylight saving time adjustment.

Clock synchronisation with *CC 1* will occur:

- Immediately after power up
- Every 15 minutes

Once the date/time is successfully read from CC *1* it is then validated, any date prior to year 2000 will be assumed invalid. If a valid date/time cannot be obtained then all control functionality will be disabled (except the fire alarm functionality).

⚠ **Note:**

The Fault LED will switch ON and remain ON if there is a failure to read the clock from *CC 1*, or the value read is invalid. It will remain in the ON until the clock value is valid.

⚠ **Note:**

There are other conditions which cause the Fault LED to remain ON, these are described in the Physical Connections chapter.

7. Centralised Controller Settings

7.1 Old Model Compatibility Mode

The AE-200 and EW-50 centralised controllers have a setting called '*Old Model Compatibility Mode*'.

MELCOTEL II needs to have this setting set to ON to be able to communicate successfully with the centralised controllers. On power up MELCOTEL II will read this setting from all centralised controllers, if any have this set to OFF then MELCOTEL II will send a command to set it to ON. If this happens the centralised controller will then reset, which is perfectly normal operation.

⚠ **Note:**

There is no need to manually change the Old Model Compatibility Mode setting on any centralised controllers, the MELCOTEL II will do this automatically on power up if needed.

7.2 Local Remote Controller Mode Selection Button Disablement

When a local remote controller is installed which has a Mode Selection button, this button MUST be disabled for correct operation with MELCOTEL II.

This setting can be found on the AE-200E touch screen on the Indoor Unit Control screen, on the 2nd page. The Prohibit Remote Controller Mode button must be set to 'Prohibit'.

8. Configuration

8.1 MELCOTEL II Configuration Manager

All configuration of MELCOTEL II is performed using *MELCOTEL II Configuration Manager* software.

Configuration settings can be read and written to a connected MELCOTEL II device, and there is also an option to save the current configuration to a file. This can be useful if a backup copy of the settings is required, or if the same settings are to be used for a different MELCOTEL II.

Also a configuration settings file can be created without connecting to a MELCOTEL II device, this means a configuration can be set up off-site and simply loaded into MELCOTEL II upon installation.

⚠ **Important Note:**

Install the Configuration Manager and follow the on screen instructions to install the USB drivers **BEFORE** connecting MELCOTEL II to the PC.

8.2 Installing MELCOTEL II Configuration Manager

Download the latest version of the MELCOTEL II Configuration Manager software from www.melcotel.co.uk

Once downloaded, run the program and follow the on screen instructions to install all necessary files. The USB drivers will be automatically installed, if a message appears stating the drivers have not passed 'Windows Logo' testing click 'Continue Anyway'.

To run the program go to the Start Menu and navigate to *All Programs* ⇨ *Melcotel Software* ⇨ *MELCOTEL Config Manager*.

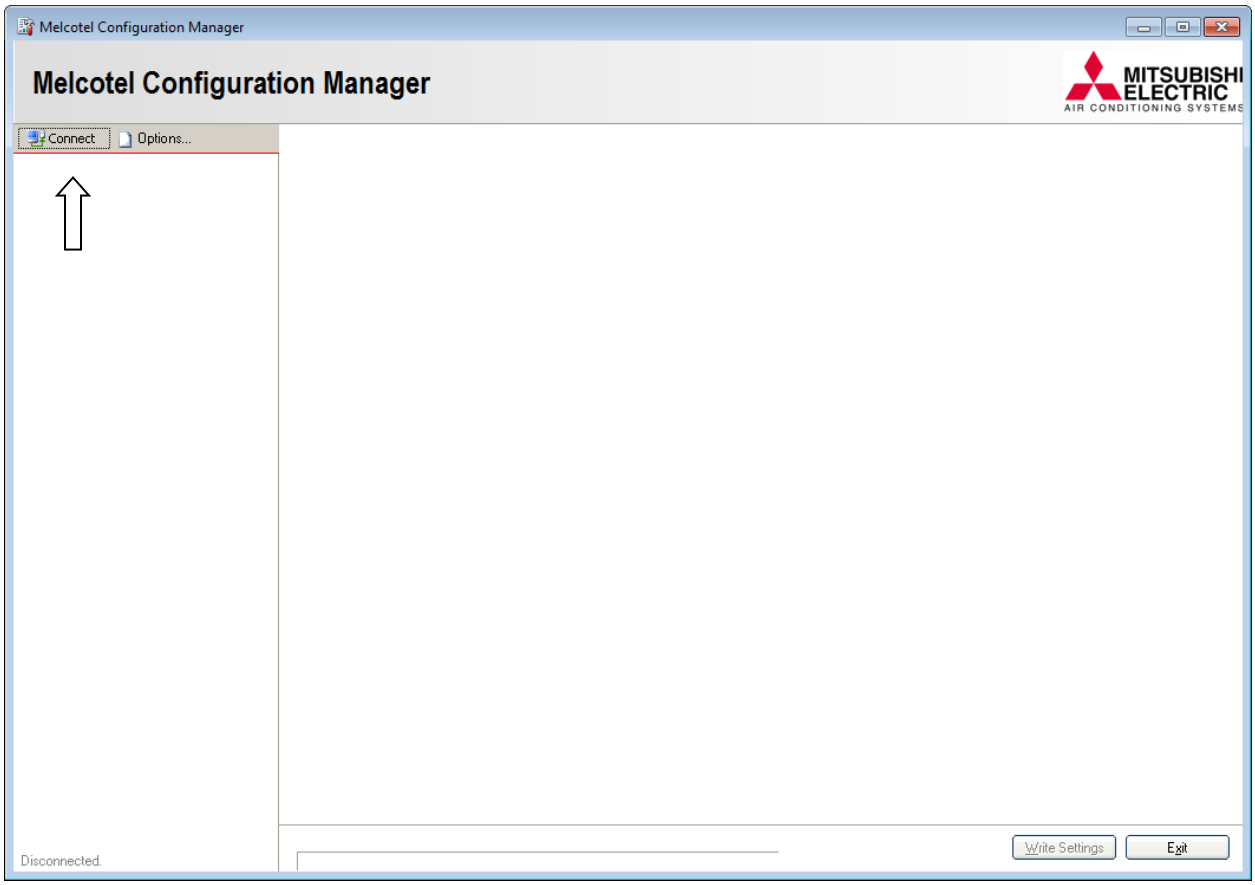
A help file can also be found on the Start Menu.

The latest configuration software is found in the drop down menu as shown below.

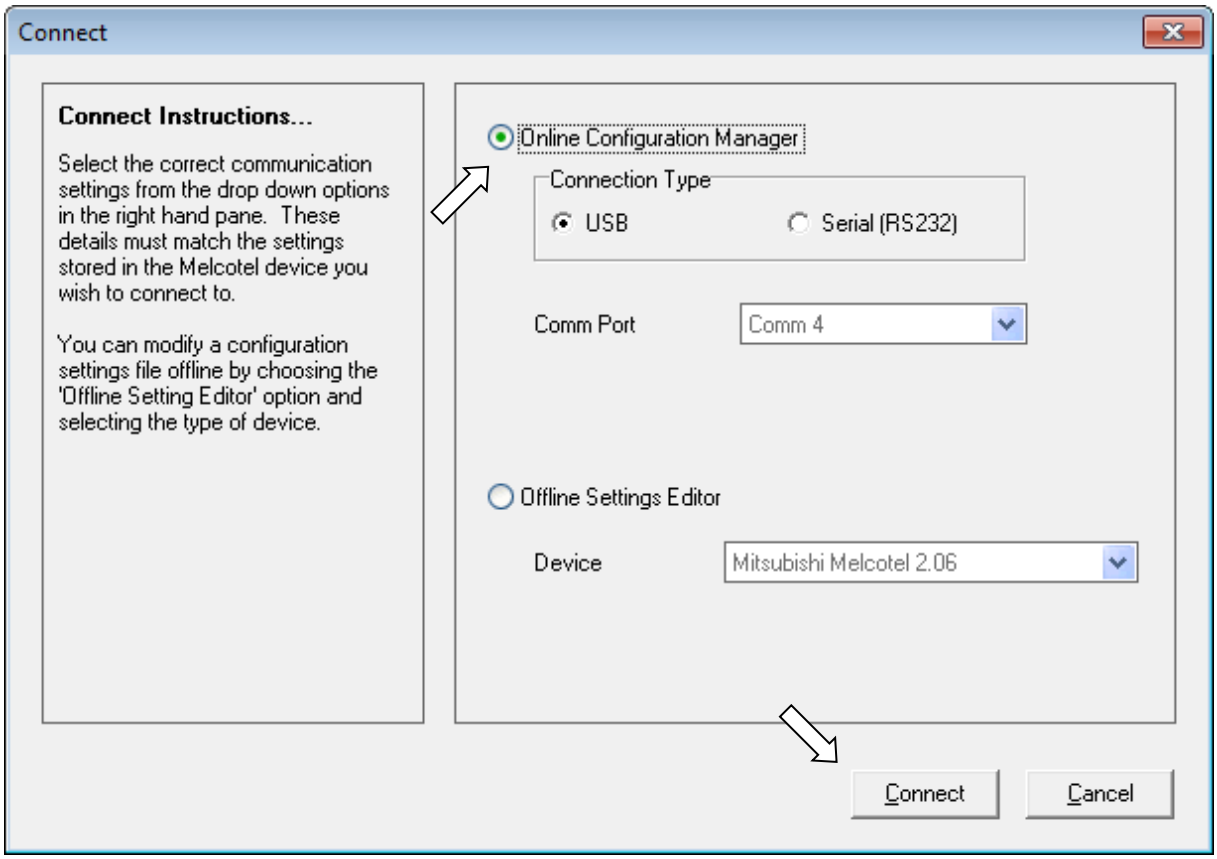
8.1 Connecting to MELCOTEL II

Make sure the Configuration Manager Application is installed but not running.
Power up the MELCOTEL II and connect to the PC using a USB cable. When a MELCOTEL II is first plugged in it may be necessary to install the required USB drivers. If this happens follow the on screen instructions and let the PC automatically search for and find the drivers it needs.

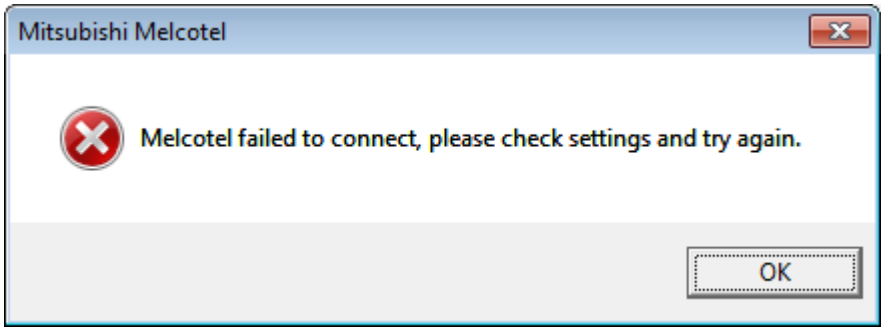
When connected and with the correct drivers installed you can then run the MELCOTEL II Config Manager application from the PC Start Menu. When loaded (this may take a few seconds), click the 'Connect' button.



Now select ‘Online Configuration Manager’ and connection type ‘USB’. Then click ‘Connect’.



If there is a connection problem the following message will be shown:



If this message appears, try connecting a few more times. If the problem persists, try power cycling the MELCOTEL II unit and restarting the Configuration Manager software.

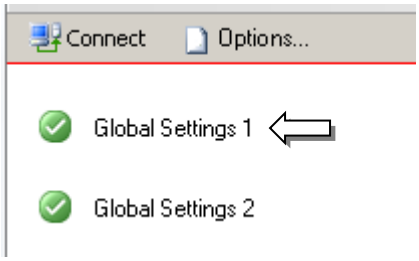
Upon successful connection all settings are read from the MELCOTEL II. At this point they can be modified, written to the MELCOTEL II, or saved to a file.

The following sections describe the settings in detail.

8.2 Global Settings

Global Settings 1

The following settings are within the global settings 1 within the configuration software



8.2.1 IP Addresses

The MELCOTEL II and each centralised controller have their own IP address to identify themselves on the network. The IP addresses are given in dot-decimal notation, for example 192.168.1.1.

⚠ **Note: 'CC' denotes 'Centralised Controller'**

All factory IP address settings are:

Device	Default IP address
MELCOTEL II	192.168.1.6
CC 1	192.168.1.1
CC 2	192.168.1.2
CC 3	192.168.1.3
CC 4	192.168.1.4

It is recommended to use these settings so they match the factory defaults.

8.2.2 CC Enabled Flags

Between one and four CCs can be enabled, only enable the ones which are connected to the network. MELCOTEL II will try and communicate with all enabled CCs.

⚠ **Important Note:**

CC 1 must be enabled at all times as MELCOTEL II uses that device for clock synchronisation. The other CCs can be enabled / disabled independently of each other.

8.2.3 Enable Key Card Switches

There are essentially two types of control MELCOTEL II can perform, *Key Switch* control and *Non Key Switch* control. Key Switch control should be enabled if each room in the hotel is fitted with key switches which are wired back into the indoor unit on Digital Input 1.

The operation of both of these control types are described elsewhere in this document.

8.2.4 Enable Window Contacts

For both Key Switch and Non Key Switch control types there is the option to enable *Window Contacts*. This should be enabled if each room in the hotel is fitted with window contacts which are wired back into the indoor unit on Digital Input 2.

When a window is opened the drive will be switched OFF and a command sent to Melcotel to prohibit the drive from being switched ON via the wall controller.

When the window is subsequently closed the drive will be returned to its previous state from before the window was opened and the drive will no longer be prohibited via the wall controller.

8.2.5 Global Heating Deadband

Global Heating Deadband is a value in °C and is used when the unit is going into *Low Setback*. Refer to the Low Setback section for a more detailed description.

8.2.6 Global Cooling Deadband

Global Cooling Deadband is a value in °C and is used when the unit is going into *High Setback*. Refer to the High Setback section for a more detailed description.

8.2.7 Force Off Times

The MELCOTEL II can optionally be configured to switch the drives of all enabled groups off at certain times of the day. This can be achieved by enabling one or more *Off times*. Each off time comprises of an hour and minute value.

Although it is restricted through the Config Utility, if an invalid time is set it will be ignored. Any off times specified after that will also be ignored.

⚠ **Note:**

The force off feature only applies to non key switch mode of operation. If key switches are enabled the off times can still be set up, but they will be ignored.

⚠ **Note:**

If a group is in High / Low Setback then the force off times will be ignored.

⚠ **Note:**

The times must also be entered on chronological order. Any out of order will be ignored.

⚠ **Note:**

If the *Night-time Offset* feature is enabled and it's time matches one of the force off times, the force off will have priority, hence no Night-time Offset functionality will occur.

8.2.8 Season Start Dates

Up to 4 seasons can optionally be configured, each season having a start month and start day.
Each group can have different High/Low Setback setpoints for each season if required.

The seasons must be set in chronological order, but season does not have to start on 1st Jan. If set to date after 1st Jan then the previous season will be assumed.

⚠ **Note:**

The current season is calculated after a successful clock synchronisation with *CC1*.
The current season is also calculated every 60 minutes, so potentially a season may not be entered until one hour past the season start date.

8.2.9 Night-time Offset

MELCOTEL II can be optionally configured to automatically adjust the setpoint of all enabled groups at a certain time of day (typically the early hours of the morning).

The relevant settings are:

Night-time Offset Enable – Enables or disables the feature.

Night-time Offset Time – The time in hours and minutes to activate the offset.

Night-time Offset – The offset in °C to apply.

Night-time Force Off Enable – If enabled the on/off will be switched off instead of having the setpoint adjusted.

If the group is in *Autoheat* or *Heat* modes the setpoint is lowered by offset value.
If the group is in *Autocool* or *Cool* modes the setpoint is increased by the offset value.
The setpoint is not adjusted if in any other mode (i.e. Fan, Dry or Auto).

⚠ **Note:**

The setpoint will also only be adjusted if the on/off is switched on and not in low / high setback.

⚠ **Note:**

If one of the *Force Off* times is the same as the Night-time Offset time then the Force Off will have priority.

⚠ **Note:**

"OFF" in this case means night set back / unoccupied settings.

8.2.10 Season Global Setpoint Offsets

The *Season Global Setpoint Offsets* automatically adjusts the default *On Setpoint* value for every group. For each season, the global setpoint offset can be different but not for each group as it is a global value. For instance:

Season 1 Global Setpoint Offsets 0°C
Season 2 Global Setpoint Offsets 1°C
Season 3 Global Setpoint Offsets 1°C
Season 4 Global Setpoint Offsets 0°C

8.2.11 Outside Temperature Offset

A thermistor temperature sensor can be optionally connected to input *IN01* on the MELCOTEL II PCB (refer to the *Physical Connections* chapter). MELCOTEL II considers any temperature in the range -10°C to 40°C to be valid, it will be assumed no sensor is connected if any value outside this range is detected.

This external temperature is then used to determine an offset, this offset automatically adjusts the default *On Setpoint* value for every group. The value of the offset is configurable for the temperature ranges given below:

External Temperature	Default Value
< -10°C	No default value, offset 0°C always used
>= -10°C and < -5°C	-3°C
>= -5°C and < 5°C	-2°C
>= 15°C and < 15°C	0°C
>= 15°C and < 25°C	2°C
>= 25°C and < 40°C	3°C
>= 40°C	No default value, offset 0°C always used

If the Outside Temperature Offset feature is not required set all values to 0°C.

8.3 Group Settings

There are certain settings which can be set differently for each group.

8.3.1 Group Enabled Flag

Each group on each CC can be enabled or disabled appropriately. Only enable the groups which are actually set up on each CC, otherwise MELCOTEL II will try and read from groups which do not exist.

8.3.2 On Setting (Mode)

At certain times MELCOTEL II must set up a group with pre-configured *On Settings*.
During Key Switch control this is when:

- MELCOTEL II detects that a key card has been inserted.
- A key switch is inserted and the on/off has been detected as going from off to on (i.e. the occupant switching the on/off on).

During Non Key Switch control this is when:

- The on/off has been detected as going from off to on (i.e. the occupant switching the on/off on).

The *On Setting (Mode)* is the mode which the group will be forced to then the On Settings are applied.

8.3.3 On Setting (Setpoint)

Similarly to the On Setting (Mode) described previously, the *On Setting (Setpoint)* is the setpoint the group is forced to when the On Settings are applied.

8.3.4 Setback Settings

There are separate setback settings for each group, for each of the four seasons.

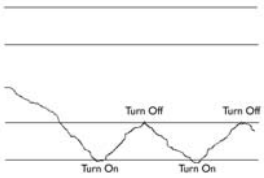
8.3.4.1 Low Setback

To avoid the rooms getting too cold a *Low Setback* feature has been implemented into MELCOTEL II. If the room temperature drops below a certain point then the on/off will be forced on, the mode will be set to Heat and the setpoint set to a configurable point.

The relevant settings are:

Low Low Setpoint – When a group's inlet temperature drops below this point Low Setback is activated, for instance 17°C.

Low High Setpoint – When a group's inlet temperature increases past this point , for instance 19°C Low Setback is deactivated and normal operation resumes



When entering low setback the setpoint is changed to equal the Low High Setpoint value **plus** the *Global Heating Deadband* value. This guarantees the inlet temperature will definitely reach and exceed the Low High Setpoint.

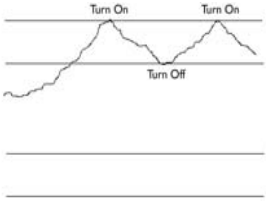
8.3.4.2 High Setback

To avoid the rooms getting too hot a *High Setback* feature has been implemented into MELCOTEL II. If the room temperature increases past a certain point then the on/off will be forced on, the mode will be set to Cool and the setpoint set to a configurable point.

The relevant settings are:

High High Setpoint – When a group's inlet temperature increases past this point High Setback is activated, for instance 27°C.

High Low Setpoint – When a group's inlet temperature drops below this point, for instance 25°C High Setback is deactivated and normal operation resumes.



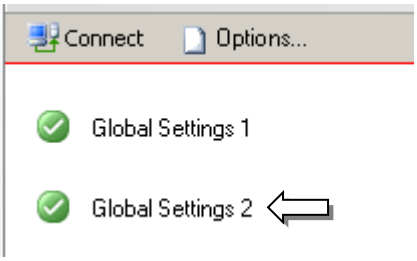
When entering high setback the setpoint is changed to equal the High Low Setpoint value **minus** the *Global Cooling Deadband* value. This guarantees the inlet temperature will definitely reach and decrease past the High Low Setpoint.

⚠ **Note:**

Under occupied or "OFF" settings, low or high setback will perform. The system will only switch fully OFF under fire alarm conditions.

Global Settings 2

The following settings are within the global settings 2 within the configuration software



8.3.4.3 Low Setback Offset

The Low Setback Offset allows for the setback temperature to be lowered during a user defined time period set within the Melcotel II config software.

For example if the setback temperature is set at 18°C then between 12.00am and 07.00am the setback temperature could be set at 16°C (offset by 2°C).

The offset value is between 1°C and 5°C(If set to 0ºC then Setback is disabled between the start and end times).

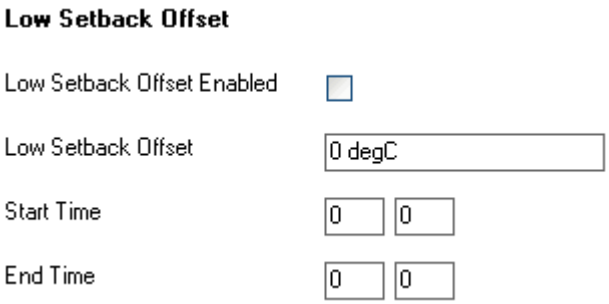
This function could be used as an energy saving function during the day when the rooms are unoccupied or to lower the setback during the night when the guest is sleeping.

This function is activated via checkbox in configuration software.

If this setting is checked, then the low setback offset feature will be enabled.

If this setting is unchecked, then the low setback offset feature will be disabled and Melcotel will not operate any differently to current operation.

Default setting will be low setback offset disabled (unchecked).



8.3.4.4 Setback Disabled

The Setback Disable function allows for the setback temperature to be disabled between a user defined time period set in the config software.

The a/c indoor unit will not provide any back ground temperature during this period.

This function could be used as an energy saving function during the day when the rooms are unoccupied or to disable the setback during the night when the guest is sleeping (Note the room temperature will not be controlled unless the indoor unit is switched on via the room remote controller).

For example if the disabled setback is set between 12.00am and 07.00am the indoor unit will not turn on at all between these hours regardless of the room temperature unless operated by the room remote controller.

The low setback offset feature will operate for both keycard and non-keycard systems.

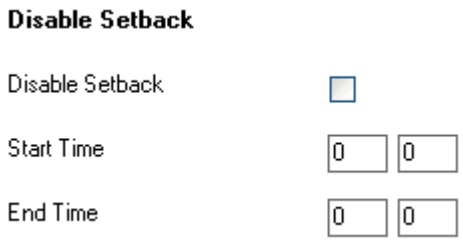
Note: For keycard systems low setback is always disabled anyway whilst the keycard is inserted.

This function is activated via checkbox in configuration software.

If this setting is checked, then setback will be disabled during the given time period.

If this setting is unchecked, then setback will not be disabled and Melcotel will operate as per current operation.

The default setting will be setback enabled (unchecked).



8.3.5 Automatic Fan Speed Setting

The Fan Speed Setting function sets the fan speed to a pre-determined speed whenever the a/c is switched on either in the setback mode or via guest activation of the indoor unit.

If the fan speed is changed via the room wall controller the Melcotel will not reset it.

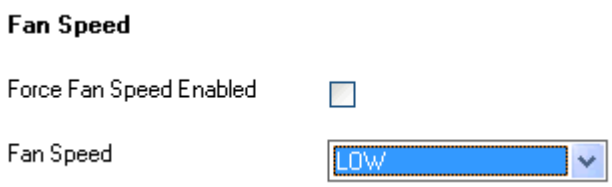
The fan speed can be pre-set from Low, Medium, High or Auto.

This function is activated via checkbox in configuration software.

When this setting is checked, the fan speed will be set whenever Melcotel sets a group's drive setting ON (e.g. if a keycard is inserted or the drive is switched on via wall controller).

If this setting is unchecked. the fan speed will not be set and Melcotel will not operate any differently to current operation.

The default setting will be disabled (unchecked).



8.3.6 Temperature Boost

This feature will switch the a/c on once a day bring the room to a pre-determined temperature.

The boost setting allows the user to specify the start time and end time for the boost (i.e. 4pm to 5pm).

The boost setpoint can pre-set within the configuration manager.

At the boost start time the boost feature will activate for all groups. At the boost end time the groups will revert back to their settings from just before the boost started.

If during the boost period any settings are changed via the wall controller the boost for that group will immediately end and group will not return to its setting from before the boost started.

The boost feature will also not activate if the Melcotel II deems the room to be occupied. I.e. key card is inserted or room controller is switched on.

This setting can be used to pre-warm the rooms in the winter season so that they are at a comfortable temperature prior to guest check in. This function could also be used to pre-cool the room in the summer season should this be required.

This function is activated via checkbox in configuration software or via the local management screen (if fitted).

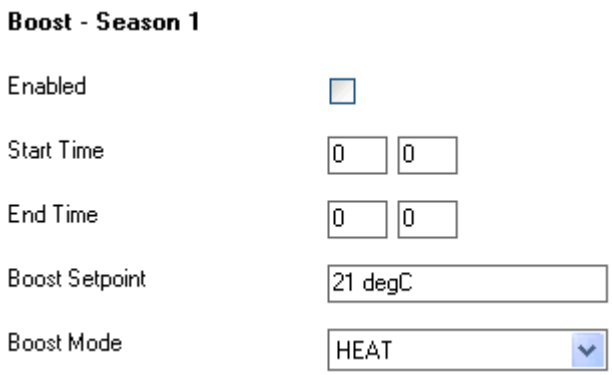
This setting will be a checkbox in the Configuration Manager called '*Season x Enable Boost*'.

When this setting is checked, the boost feature will be enabled for the season.
If this setting is unchecked, the boost feature will not be enabled and Melcotel will not operate any differently to current operation for that season.

The default setting will be disabled (unchecked).

Example shown below is for season 1

**Note the season settings in global settings 1 must be set correctly to correspond with the correct temperature boost facility.*



8.3.7 Heating Only Mode

The Heating only mode can be used to take the VRF systems out of auto and lock into heating in instances of cold temperature.

If this feature is enabled this setting will switch the mode of the VRF into heating only instead of auto.

This can be set using the external temperature sensor and have a user defined temperature threshold or via the local management screen (if fitted).

This feature can be enabled for all seasons.

If the external temperature sensor is used then the heat mode is activated instead of auto if the external temperature is below a certain threshold. The user can pre-determine the external temperature that this function is activated via the configuration software.

There will be four checkboxes (one for each season) in Configuration Manager to enable the Heating Only mode feature for those seasons.

This setting will be a value in ºC which can be set to a value between -10 and 20ºC.

The default value for this setting will be 5ºC.

This function is activated via checkbox in configuration software or via the local management screen (if fitted).

There will be four checkboxes (one for each season) in Configuration Manager to enable the Heating Only mode feature for those seasons.

When this setting is checked, for a season the heating only mode feature will be enabled for that season.

If this setting is unchecked, for a season the heating only mode feature will not be enabled for that season.

The default setting for each season will be disabled (unchecked).

8.3.8 Enabling Local Display Features.

Certain local display menu items can be enabled or configured using the Configuration Manager software.

Enable Occupied Setpoint Adjustment

This setting will be a checkbox in the Configuration Manager called '*Enable Occupied Setpoint Adjustment*'.

When this setting is checked, the Occupied Setpoint Adjustment menu item will be visible on the local display.

If this setting is unchecked, the Occupied Setpoint Adjustment menu item will not be visible on the local display.

The default setting will be disabled (unchecked).

Occupied Setpoint Maximum Positive and Negative Adjustment

This setting will be a value between 0 and 5ºC.

E.g. a value of 2ºC means the occupied setpoint can be decreased by a maximum of 2ºC or vice versa for increase of setpoint.

Unoccupied Setpoint Maximum Positive and Negative Adjustment

This setting will be a value between 0 and 5ºC.

E.g. a value of 2ºC means the unoccupied setpoint can be increased by a maximum of 2ºC. or vice versa for negative setpoint.

**Note the hotel may only want the management to positively adjust either occupied or unoccupied settings – if this is required leave the negative adjustment as 0°C.*

Local Display Settings

Occ Setpoint Adjust Enabled	☐
Occ Setpoint Max +ve Adjust	0 degC
Occ Setpoint Max -ve Adjust	0 degC
Unocc Setpoint Adjust Enabled	☐
Unocc Setpoint Max +ve Adjust	0 degC
Unocc Setpoint Max -ve Adjust	0 degC

8.3.9 Fault Codes To Ignore

The Melcotel will be able to ignore up to 10 ranges of fault codes. Each range has a start and end fault code. To ignore just a single fault code the start and end fault code will be set to the same value.

E.g. to ignore fault code 6607 both the start and end codes will be set to 6607.

Any unused start and end fault code ranges are to be populated with 8000 (i.e. no faults present). This will be the default setting for all ranges.

Fault Codes To Ignore

Range 1 Start Code	8000	Range 1 End Code	8000
Range 2 Start Code	8000	Range 2 End Code	8000
Range 3 Start Code	8000	Range 3 End Code	8000
Range 4 Start Code	8000	Range 4 End Code	8000
Range 5 Start Code	8000	Range 5 End Code	8000
Range 6 Start Code	8000	Range 6 End Code	8000
Range 7 Start Code	8000	Range 7 End Code	8000
Range 8 Start Code	8000	Range 8 End Code	8000
Range 9 Start Code	8000	Range 9 End Code	8000
Range 10 Start Code	8000	Range 10 End Code	8000

9. Group Scan

A scan feature will be added which forces the MELCOTEL II to scan for all enabled groups on all centralised controllers connected.

This is activated from the ‘Global Settings 1’ tab using the MELCOTEL II Configuration Software.

Note: At least 1 group must already be enabled for the scan feature to operate correctly.

It will only be possible to instigate this scan using the Configuration Manager software. When the scan is complete the *Group Enabled* flags will automatically be updated in the configuration software.

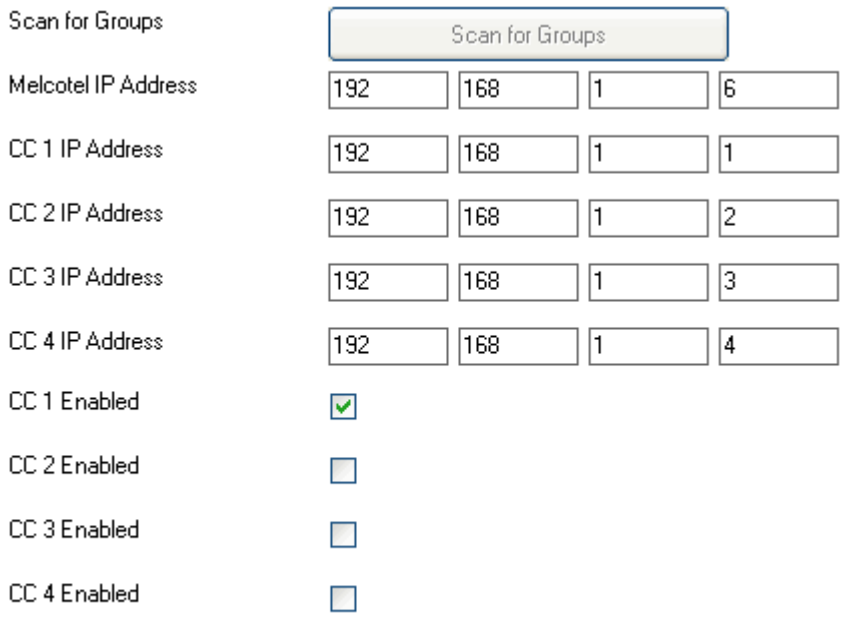
As the scan will also pick up groups for non-bedroom units, on completion of the scan a warning dialog box will be displayed warning the user that any non-bedroom groups need to have their *Group Enabled* flags unselected.

All Non-Bedroom units need to be removed and should have their own schedules set up on the Centralised Controllers are local remote controllers if not centrally controlled.

After completion of the scan the settings must be written to the Melcotel for them to take effect.

Whilst the scan is in progress normal Melcotel control functionality will be halted. It is not anticipated the scan will take more than 1 minute to complete.

Note: The Melcotel unit must have firmware V2.00 or greater for the scan button to be visible.



10. Filter Dirty Indication

The filter dirty function is found within the Global Settings 2 tab.

This setting will be a checkbox in the Configuration Manager called '*Enable Filter Warning*'.

When this setting is checked, the Melcotel will read the DIDO Input 3 state on CN51 for the nominated group and enable a filter warning if the state is read back as '1'.

If this setting is unchecked, then Melcotel will not perform any filter warning functionality.

The default setting will be disabled (unchecked).

Note: If the filter is dirty a message will be shown on the local display (if fitted).

Pressure Sensor Centralised Controller

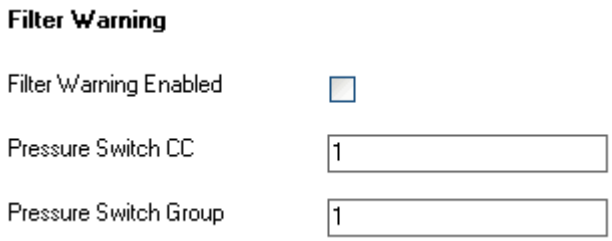
This setting will be a value between 1 and 5 which selects which CC which contains the group/indoor unit the pressure sensor will be connected to.

The default value for this setting will be 1.

Pressure Sensor Group

This setting will be a value between 1 and 50 which selects the group/indoor unit the pressure sensor will be connected to.

The default value for this setting will be 1.



11. Local Management Display

A Local Management Screen can be optionally connected to RS-232 COM1 on the MELCOTEL II, see figures 8 and 15.

When connected the screen gives some limited functional control that can globally change the settings for the indoor units. The wire link on input IN06 determines whether these changes are lost at 10am each day. If the wire link is fitted (the default state) the settings changes are lost at 10am, if the wire link is not fitted the changes are not lost at 10am.

The settings available are:

- Heating Only Mode
- Occupied Setpoint Offset
- Setback Low Setpoint
- Heating Boost

In addition the screen shows fault messages when they are present. The messages which may be displayed include:

- Melcotel II communication fault (i.e. comms fault between local management screen and Melcotel II)
- CC communication fault (message includes CC number)
- Indoor unit fault codes (message includes the fault code, the M-Net address and Room name/number)
- Filter dirty (if filter monitoring is enabled)
- Extract fan fail (if 3rd party extract fan monitoring is enabled)

11.1.1 Group Name Update

On power up the local management display screen will request MELCOTEL II to read all group names from the centralised controllers to ensure they are all current.

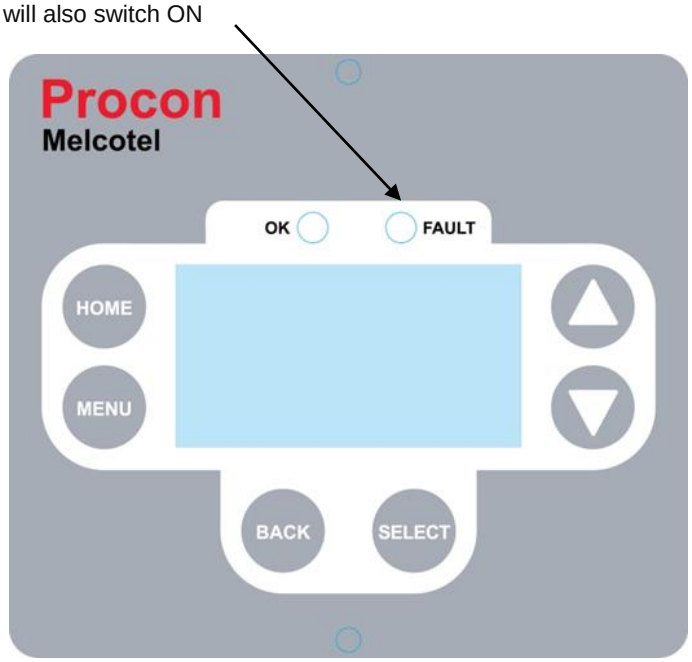
If any group names have been changed via the centralised controllers it will be necessary to power cycle the local display for it to show the correct names.

11.1.2 Home Screen

Upon power up a welcome screen will be shown briefly before the home screen is shown. Under normal operation the home screen will just show “No Messages”.

If a fault is detected the home screen will change to show details of the fault. The top line of the screen will change to indicate the total number of faults and the one currently being shown. If it is an indoor unit fault code the message will show the group (room) name, the CC number, the MNet address and the fault code itself.

The fault indication light will also switch ON



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The screen will only show details of one fault at a time. When more than one fault is present a message will appear on the bottom line of the screen indicating the Up and Down buttons can be pressed to scroll though the list of fault messages.

When faults disappear they will immediately be removed from the screen, there will be no historical record of faults.

Warning messages will also be shown on screen just as fault messages are.

11.1.3 Menu

Pressing the *Menu* button on the local display brings up a scrollable menu. Some items in this menu are always enabled but others are enabled using the Configuration Manager software.

The menu items which are not enabled will not be shown in the menu and hence cannot be selected.

The lists of function that appear in the menu are listed below.

Heating Only Mode

This menu item allows the heating only mode feature to be enabled (See the *Heating Only Mode* section) if not enabled via Configuration Manager.

If enabled via Configuration Manager the feature will not operate if the external temperature is higher than the threshold or there is an external temperature sensor fault.

If enabled through the local display the feature will always be enabled regardless of the external temperature or if there is a sensor fault.

Occupied Setpoint

This menu item allows a positive or negative offset to be applied to the Occupied Setpoint (the 'ON' setpoint) in steps of 1ºC. The menu item will only exist if enabled using the Configuration Manager software.

The offset limits are settings which also can be changed using the Configuration Manager software.

When the menu item is selected the 'ON' setpoint from the first enabled group (usually CC #1 Group #1) is shown. When the new value is saved the offset (difference) is calculated and stored, and this offset is applied to the ON setpoint for all groups.

A message will be shown on the screen saying that all rooms may not have the same setpoint.

Setback Low Setpoint

This menu item allows a positive or negative offset to be applied to the Unoccupied Setpoint (the 'Low Low Setpoint') in steps of 1ºC. The menu item will only exist if enabled using the Configuration Manager software. The offset limits are settings which also can be changed using the Configuration Manager software.

When the menu item is selected the 'Low Low' setpoint from the first enabled group (usually CC #1 Group #1) is shown. When the new value is saved the offset (difference) is calculated and stored, and this offset is applied to the Low Low setpoint for all groups.

A message will be shown on the screen saying that all rooms may not have the same setpoint.

Enable Heating Boost
This menu item allows the boost feature to be activated for a period of 1 hour. After this time period has elapsed the boost will come to an end.

The menu item will only exist if the boost feature is disabled using the Configuration Manager software.

Firmware Versions

This menu item allows the firmware version of both Melcotel and local display to be displayed. The menu item will always be visible.

From the menu screen pressing the *Back* or *Home* button will return to the Home screen.

Help

This menu item will show a message telling the user to visit http://www.melcotel.co.uk/help for help.

11.1.4 Settings reversion

If a wire link is fitted on Melcotel configurable input IN06, any changes made through the local display will be lost every day at 10:00am. If the wire link is not fitted the changes will not be lost at 10:00am and will stay permanent.

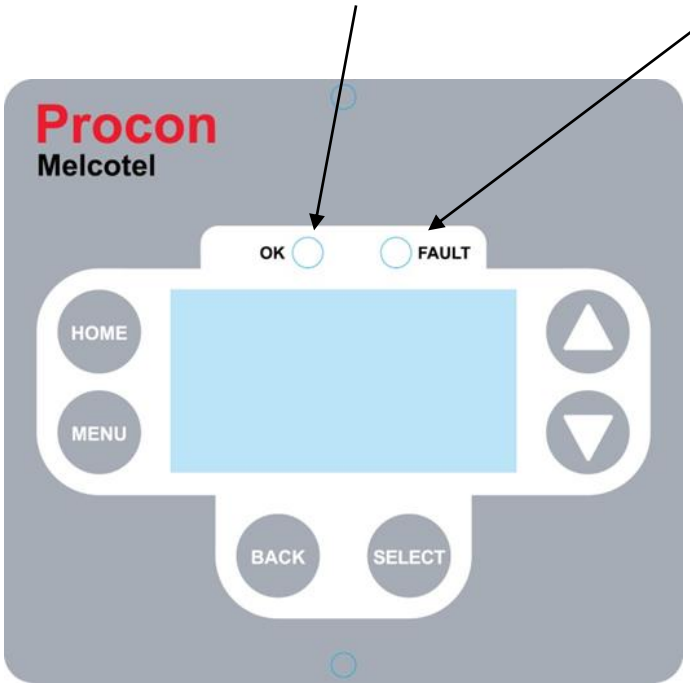
By default (for new units) the wire link will be fitted.

All changes will be lost if the Melcotel is reset/power cycled.

*Note for all hotels that are part of large groups/branded the link should remain so that all local settings are reverted.

11.1.5 LED Indicators

When there are no faults or warnings present the green ’OK’ LED will be ON and the red ‘FAULT’ LED will be switched OFF.



If there are any faults or warnings the green ‘OK’ LED will be switched OFF and the red ‘FAULT’ LED will be switched ON.

11.1.6 LCD Backlight

On power up the LCD backlight will switch ON for 10 minutes.

If at any time a button is pressed the backlight will switch ON for 10 minutes. This 10 minute period will be reset upon every button press.

If there are no fault or warning messages present the backlight will switch ON for 30 minutes upon a fault or warning occurring.

12. Key Switch Control

Some hotels may have a key switch system installed, where the occupant inserts a key card when they enter the room, and remove it when they leave. This is then used to detect whether the room is occupied or not.

Under key switch control window contacts can be optionally enabled. If window contacts are enabled, under all circumstances the on/off will be forced off while the window is open. If window contacts are not enabled then the window is assumed to be closed for control purposes.

The on/off should always be switched off when a key card is absent. If the on/off is detected as being on when key card is absent it should be immediately forced off. The only time the on/off is on with the key card absent is when Low/High setback is active.

Low and high setback operate only when a key card is not inserted and the window is closed.

During key switch control each group will be in one of the following states:

- *NORMAL* (Key card inserted and window closed)
- *KEY CARD REMOVED* (Window closed)
- *LOW SETBACK* (Key card removed and window closed)
- *HIGH SETBACK* (Key card removed and window closed)
- *WINDOW OPEN*

12.1 NORMAL State

If a key card is inserted and window closed the group will be in the NORMAL state.

Because a key card is present this indicates the room is occupied, so the on/off, mode & setpoint can be changed to any value via the remote controller.

If the on/off goes from the off to the on state the group's *On Settings* will also be applied (i.e. when the occupant switches the on/off off and on again).

If the window is opened the on/off will switch off immediately and the state will change to WINDOW OPEN.

⚠ **Note:**

When going from the NORMAL to the WINDOW OPEN state due to the window opening the MELCOTEL II remembers whether the on/off was on or off before the window opened. When the window is then closed the on/off resumes it's state from before the window opening.

The LOW SETBACK and HIGH SETBACK states cannot be entered from the NORMAL state, the key card must be removed.

12.2 KEY CARD REMOVED State

If a key card is not inserted the group will be in the KEY CARD REMOVED state.

If in this state the on/off is detected as being on (i.e. the occupant has switched the on/off on) then the on/off will be switched off. This strategy can be deactivated with version 1.10 or above by applying a wire link across input IN03. Note that the jumper setting on IN03 must be set to 0 to 10kΩ / Digital.

If a key card is inserted in this state the on/off will switch on and the group's *On Settings* will be applied. The state will then change to NORMAL.

If the window is opened the on/off will switch off immediately and the state will change to WINDOW OPEN.

If the group's inlet temperature drops below its *Low Low Setpoint* several events will occur:

1) The on/off will switch on.
2) The mode will be set to Heat.
3) The setpoint will be set to the group's *Low High Setpoint* **plus** the *Global Heating Deadband*.
4) The state will change to LOW SETBACK.

If the group's inlet temperature increases past its *High High Setpoint* several events will occur:

1) The on/off will switch on.
2) The mode will be set to Cool.
3) The setpoint will be set to the group's *High Low Setpoint* **minus** the *Global Cooling Deadband*.
4) The state will change to HIGH SETBACK.

12.3 WINDOW OPEN State

If the window is open the on/off will always be forced off. If in this state the on/off is detected as being on (i.e. the occupant has switched the on/off on) then the on/off will be switched off.

The only way to get out of this state is to close the window.

If the window was opened in the NORMAL state then the state of the on/off is remembered from just before the window opening. If the window then closes with a key card inserted the on/off will resume it's state from before the window opened. The state will then change to NORMAL.

If the window closes with a key card inserted but the previous state was not NORMAL then the on/off will be switched on. The state will then change to NORMAL.

12.4 LOW SETBACK State

The LOW SETBACK state can only be entered from the KEY CARD REMOVED state when the group's inlet temperature drops below the group's *Low Low Setpoint*.

If the inlet temperature exceeds the group's *Low High Setpoint* then the on/off will be forced off and the state will change to KEY CARD REMOVED.

If a key card is inserted the on/off will switch on and the group's *On Settings* will be applied. The state will then change to NORMAL.

If the window is opened the on/off will switch off immediately and the state will change to WINDOW OPEN.

While in the LOW SETBACK state any of the settings can be changed (i.e. on/off, mode, setpoint). Every 15 minutes MELCOTEL II will check which groups are in Low Setback and if any settings have been changed then they will be forced back to what they should be for Low Setback.

Night-time Offset will be ignored while in the LOW SETBACK state.

Force Off times will be ignored while in the LOW SETBACK state.

12.5 HIGH SETBACK State

The HIGH SETBACK state can only be entered from the KEY CARD REMOVED state when the group's inlet temperature increases past the group's *High High Setpoint*.

If the inlet temperature drops the group's *High Low Setpoint* then the on/off will be forced off and the state will change to KEY CARD REMOVED.

If a key card is inserted the on/off will switch on and the group's *On Settings* will be applied. The state will then change to NORMAL.

If the window is opened the on/off will switch off immediately and the state will change to WINDOW OPEN.

While in the HIGH SETBACK state any of the settings can be changed (i.e. on/off, mode, setpoint). Every 15 minutes MELCOTEL II will check which groups are in High Setback and if any settings have been changed then they will be forced back to what they should be for High Setback.

Night-time Offset will be ignored while in the HIGH SETBACK state.

Force Off times will be ignored while in the HIGH SETBACK state.

13. Non Key Switch Control

Some hotels do not have a key switch system installed, hence it is impossible to know all the time whether the room is occupied or not.

Under non key switch control window contacts can be optionally enabled. If window contacts are enabled, under all circumstances the on/off will be forced off while the window is open. If window contacts are not enabled then the window is assumed to be closed for control purposes.

Low and high setback can start at any time while the window is closed.

During non key switch control each group will be in one of the following states:
- *NORMAL* (Window closed)
- *LOW SETBACK* (Window closed)
- *HIGH SETBACK* (Window closed)
- *WINDOW OPEN*

13.1 NORMAL State

If the window is closed and Low or High Setback is not active then the group will be in the NORMAL state.

If the on/off goes from the off to the on state the group's *On Settings* will be applied (i.e. when the occupant switches off and on again).

If the window is opened the on/off will switch off immediately and the state will change to WINDOW OPEN.

⚠ **Note:**

When going from the NORMAL to the WINDOW OPEN state due to the window opening the MELCOTEL II remembers whether the on/off was on or off before the window opened. When the window is then closed the on/off resumes it's state from before the window opening.

If the group's inlet temperature drops below its *Low Low Setpoint* several events will occur:
5) The on/off will switch on.
6) The mode will be set to Heat.
7) The setpoint will be set to the group's *Low High Setpoint* **plus** the *Global Heating Deadband*.
8) The state will change to LOW SETBACK.

If the group's inlet temperature increases past its *High High Setpoint* several events will occur:
5) The on/off will switch on.
6) The mode will be set to Cool.
7) The setpoint will be set to the group's *High Low Setpoint* **minus** the *Global Cooling Deadband*.
8) The state will change to HIGH SETBACK.

13.2 WINDOW OPEN State

If the window is open the on/off will always be forced off. If in this state the on/off is detected as being on (i.e. the occupant has switched the on/off on) then the on/off will be switched off.

The only way to get out of this state is to close the window.

If the window was opened in the NORMAL state then the state of the on/off is remembered from just before the window opening. If the window then closes the on/off will resume it's state from before the window opened. The state will then change to NORMAL.

13.3 LOW SETBACK State

The LOW SETBACK state can only be entered from the NORMAL state when the group's inlet temperature drops below the group's *Low Low Setpoint*.

If the inlet temperature exceeds the group's *Low High Setpoint* then the on/off will be forced off and the state will change to NORMAL.

If the window is opened the on/off will switch off immediately and the state will change to WINDOW OPEN.

While in the LOW SETBACK state, if any of the on/off, mode or setpoint settings are detected as having changed, it is assumed that the room is occupied and the NORMAL state will be entered. At this point both LOW SETBACK and HIGH SETBACK will be inhibited for 60 minutes.

Night-time Offset will be ignored while in the LOW SETBACK state.

Force Off times will be ignored while in the LOW SETBACK state.

13.4 HIGH SETBACK State

The HIGH SETBACK state can only be entered from the NORMAL state when the group's inlet temperature increases past the group's *High High Setpoint*.

If the inlet temperature drops below the group's *High Low Setpoint* then the on/off will be forced off and the state will change to NORMAL.

If the window is opened the on/off will switch off immediately and the state will change to WINDOW OPEN.

While in the HIGH SETBACK state, if any of the on/off, mode or setpoint settings are detected as having changed, it is assumed that the room is occupied and the NORMAL state will be entered. At this point both LOW SETBACK and HIGH SETBACK will be inhibited for 60 minutes.

Night-time Offset will be ignored while in the LOW SETBACK state.

Force Off times will be ignored while in the LOW SETBACK state.

14. Fire Alarm Input

MELCOTEL II can be optionally connected to a fire alarm panel and force all indoor units off in the event of the fire alarm being activated. The connection takes the form of a volt free contact on input *IN02* on the MELCOTEL II. The connection will be a normally closed contact which will open when the fire alarm is active.

There is no way of enabling or disabling the fire alarm input, so if it is not to be used then a permanent wire link must be placed across both terminals of IN02.

When the fire alarm activates (input IN02 becomes open circuit) the MELCOTEL II will repeatedly force all enabled groups off. All other control functionality will be disabled until the fire alarm is deactivated.

The Fault LED will flash once a second to indicate the fire alarm is active, this flash will occur regardless of whether the Fault LED was ON or OFF beforehand. The flashing will stop when the fire alarm is deactivated.

15. Upgrading Older Melcotel Systems

All older Melcotel Systems can be upgraded to include the Local Management Display Screen which can be purchased via your local Mitsubishi Electric Living Environmental Systems dealer.

The additional features described in the Global Settings 2 require the Melcotel to have the latest configuration software downloaded and upgraded.

The Melcotel software also needs upgrading if the Local Management Display Screen is fitted to any older Melcotel systems.

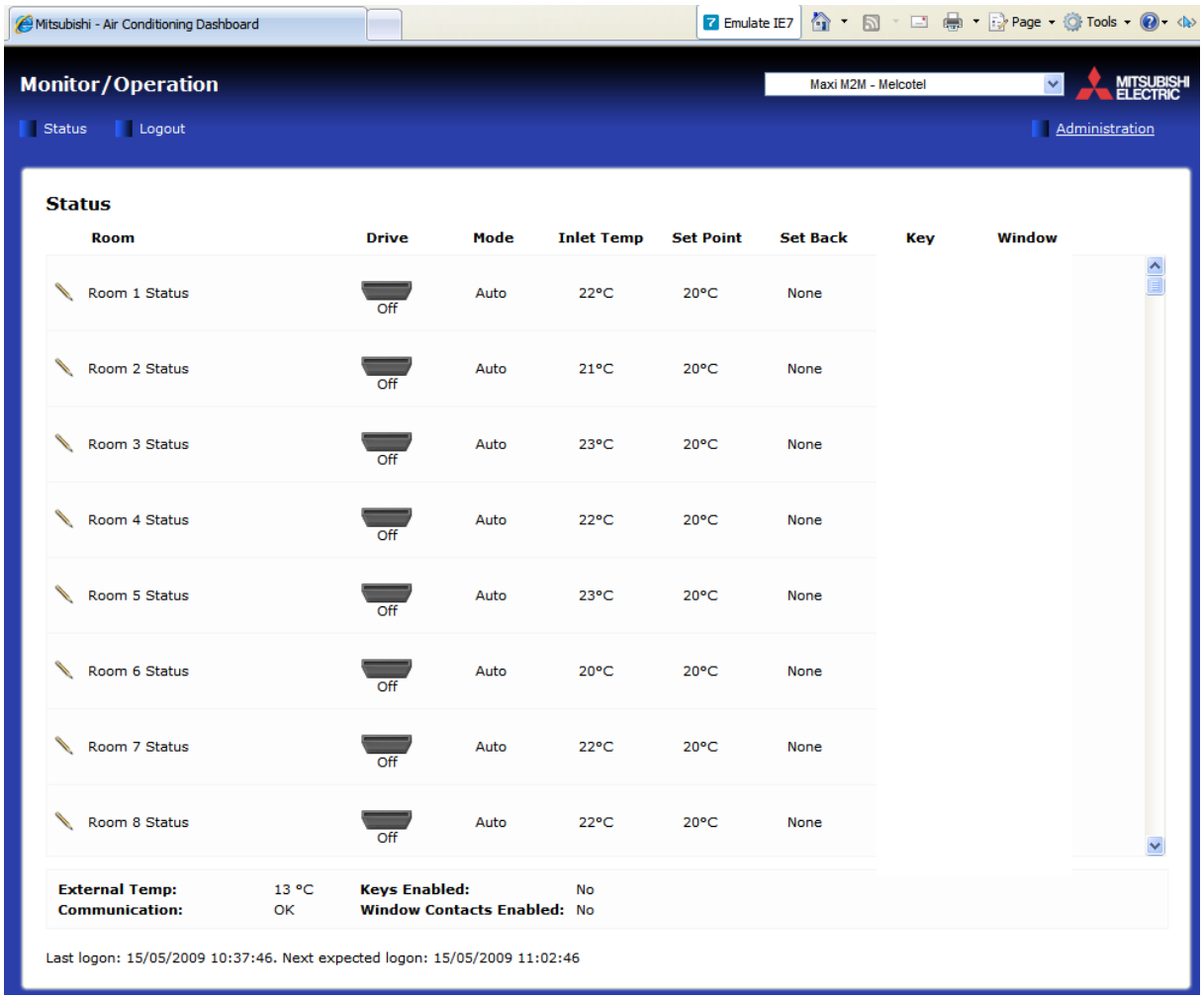
16. MELCOTEL II and MelcotelREMOTE

The MELCOTEL II can be connected to the optional MelcotelREMOTE for monitoring purposes only using the RS-485 connection. Figures 8 and 14 show the wiring between MELCOTEL II and MelcotelREMOTE.

This function will enable the end user and the contractor to monitor:

- On/off
- Mode
- Room temperature
- Setpoint
- Set back status (on low, on high, none)
- Key card status
- Window sensor status
- External temperature (when supplied sensor is installed)
- Communication status between MELCOTEL, centralised controllers and indoor units
- Key card enabled status
- Window sensor enabled status

Screenshot of the dashboard



17. Applicable Air Conditioning Models

17.1 Using key card and / or window sensor

The MELCOTEL II interface when used with the key card and / or the window sensor can only be used with the following outdoor models:

- P**Y-YGM-A (R410A)
- P**Y-YHM-A (R410A)
- P**Y-YJM-A (R410A)
- P**Y-YKM-A (R410A)
- P**Y-YLM-A (R410A)
- P**Y-VKM-* (R410A)

⚠ **Note** The MELCOTEL II only supports the AE-200 and EW-50 centralised controllers.

17.2 NOT Using key card and / or window sensor

The MELCOTEL II interface when NOT used with the key card and / or the window sensor can only be used with the following outdoor models:

- P**Y-YMF-B (R22)
- P**Y-YMF-C (R407C)
- P**Y-YME-A (R407C)
- P**Y-YGM-A (R410A)
- P**Y-YHM-A (R410A)
- P**Y-YJM-A (R410A)
- P**Y-YKM-A (R410A)
- P**Y-YLM-A (R410A)
- P**Y-VKM-* (R410A)

⚠ **Note** The MELCOTEL II only supports the AE-200 and EW-50 centralised controllers.

18. Important Notes

⚠ Please note that:

- **The MELCOTEL II cannot be used with Splits systems**
- The MELCOTEL II can only be used with City Multi systems
- The MELCOTEL II when used with key card and / or window sensor can only be used with **R410A City Multi systems**

- The Ethernet hub and network cable are not supplied by Mitsubishi Electric UK
- Network cables must be patch network cable and NOT cross over if using a hub
- Each network cable must be a maximum of 100m in length

- The AE-200 must be used as CC1 (centralised controller 1)
- **The AE-200 date/time must be set properly as the MELCOTEL II reads the date/time from the first CC (centralised controller)**

- **The DIP switch 1-1 must be set ON for each indoor unit**
- **The DIP switch 1-9 must be set ON for each indoor unit**
- **The DIP switch 1-10 must be set ON for each indoor unit**

- The IN01 input on the MELCOTEL II is set to Thermistor and should not be changed
- The IN02 input on the MELCOTEL II is set to Digital and should not be changed
- The IN05 input on the MELCOTEL II is set to Digital and should not be changed

- The MELCOTEL II can be connected to the MelcotelREMOTE for monitoring purposes ONLY
- The MELCOTEL II and the MelcotelREMOTE cannot be displayed on the M2M web portal but only using a dashboard

- The MELCOTEL II cannot control more than 200 indoor units
- The MELCOTEL II cannot control more than 4 centralised controllers

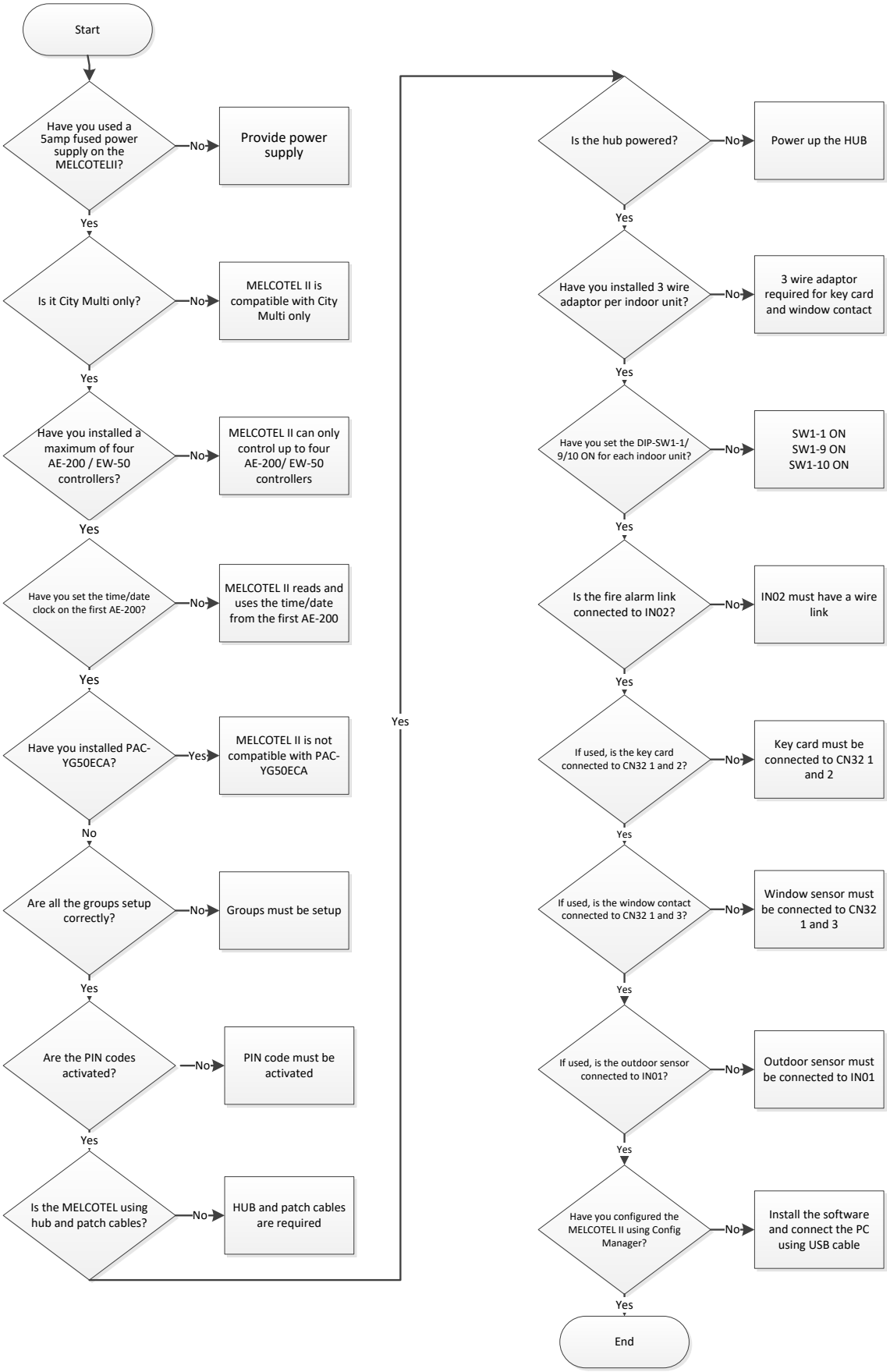
- The speed of the MELCOTEL II indoor unit scanning will depend of the number of indoor units

- The MELCOTEL II outdoor sensor supplied should not be installed in direct sun light

- **The commissioning tools MUST be installed before connecting the MELCOTEL II to the PC**
- It is recommended to power cycle the MELCOTEL II when the setup has been completed

- When a local remote controller is installed which has a Mode Selection button, this button MUST be disabled for correct operation with MELCOTEL II.
  This setting can be found on the AE-200E touch screen on the Indoor Unit Control screen, on the 2nd page. The Prohibit Remote Controller Mode button must be set to 'Prohibit'.

19. Troubleshooting



This product is designed and intended for use in the residential, commercial and light-industrial environment.

The product at hand conforms to the following EU regulations:

2014/53/EU - The Radio Equipment Directive (RED)
2014/35/EU - The Low Voltage Directive (LVD)
2011/65/EU - The Restriction of Hazardous Substances Directive (RoHS)

Please be sure to put the contact address/telephone number on this manual before handing it to the customer.

MITSUBISHI ELECTRIC UK

MITSUBISHI ELECTRIC UK, TRAVELLERS LANE, HATFIELD HERTFORDAHIRE, AL10 8XB