FEC Heliports Equipment

Remote Lighting Controller
FEC Type: HP0656/7/8
Installation Guide

Document Issue 1 30th November 2017

Note that this manual relates to

RLC V3.0 onwards

eAGLe

Table of Contents

Document Revision Sheet

Version	Date	Changes
1	30th November 2017	New Document for RLC V3 Production model

1 Compliance Statement - USA

FCC Compliance WARNING

Changes or modifications to the transmitter not expressly approved by the manufacturer could void the user's authority to operate this RF device.

FCC Compliance Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause interference, and

2. This device must accept any interference, including interference that may cause undesired operation of the device.

USA-Federal Communications Commission (FCC)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it may cause harmful interference to radio communications. However, there is no ensured specification that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by tuning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.

• Increase the distance between the equipment and the receiver.

• Connect the equipment to outlet on a circuit different from that to which the receiver is connected.

• Consult the dealer or an experienced radio/TV technician for help.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.

2 Compliance Statement – Europe

FEC HELIPORTS WORLDWIDE LTD
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DECLARATION OF CONFORMITY

We

FEC Heliports Worldwide Ltd
1 Mead Business Centre, 176-178 Berkhampstead Road, Chesham, HP5 3EE, UK

Declare under our own responsibility that the product

FEC Remote Lighting Controller V2, type numbers: HP0656, HP0657 and HP0658

to which this declaration relates are in conformity with all the essential requirements of R&TTE Directive 1999/5/EC

The following Harmonised Standards have been applied:

EN 60950-1:2006 +A2:2013
EN 62479:2010
EN 301 489-1 v1.9.2
EN 301 489-3 v1.2.1
EN 301 489-7 v1.3.1
EN 301 489-22 v1.2.1
EN 301 511 V9.0.2
EN 300 676-2 v1.5.1
EN 300 220-2 v2.4.1

Conformity against article 3.2 of the R&TTE Directive was assessed by Notified Body number 1588

Signature

Name: Fraser MacKay
Title: Commercial Director
Date: 17th April 2016

THE BRITISH ASSESSMENT BUREAU ISO9001
Certificate No: 184512

Company Registration No: 05993419
VAT Registration No: 919981568

aaa Association of Air Ambulances
Associate Membership No: 01092105

CE This product has been marked with the CE mark to show it is compliant with the relevant standards.

3 Installation

Installation of the FEC Remote Lighting Controller must be carried out by a suitably qualified electrician with full authority to undertake work in the safety critical environment of a helipad.

It is recommended that a formal Statement of Works, Standard Operating Procedure or similar is created and used for the initial installation and testing and all subsequent test and maintenance activities to ensure the safety of the installation and personnel.

3.1 Locating the Controller

The controller should be located in a secure location that is easy for operational staff to access the keypad and screen and appropriate for the aerials, mains and circuit wiring.

The enclosure is intended for wall mounting and, with suitable rails or adaptors, can be frame or pole mounted. Appendix 6 has a full size template for the mounting holes.

Although the enclosure is IP65 rated, a sheltered location is recommended.

Keep in mind that the controller will need:

1) Mains electricity supply and connection to the circuits to be controlled
2) An external VHF aerial connected, and
3) An external Cell aerial (supplied).

It is recommended that a mobile (cell) phone, on the same network as that intended for the controller, is used to check the signal strength/quality in the intended location.

3.2 Things you will need

Before starting the installation ensure that you have at least the following items in addition to those required for the rest of the installation:

1) A No.2 Philips (PH2) or No. 2 Pozidrive (PZ2) screwdriver to open the main enclosure.
2) A No. 0 or 1 Philips (PH1/2) or No. 1 Pozidrive (PZ1) screwdriver to access SIM cover.
3) The SIM (standard size not mini or micro) that you will be using. You will need to know the number to call it, but the controller does not need to know.
4) Fixing screws and wall plugs as required.

3.3 Preparing for Installation

Lay the controller on its back on a clean soft surface at least twice the width of the unit and undo the four corner retaining screws (note these screws are ‘captive’ and do not need to be fully removed).

Gently lift the front of the enclosure away from the base and lay face down to the left of the base unit. Be careful not to strain the cables as this could cause permanent damage.

Disconnect the following cables from the keypad enclosure:

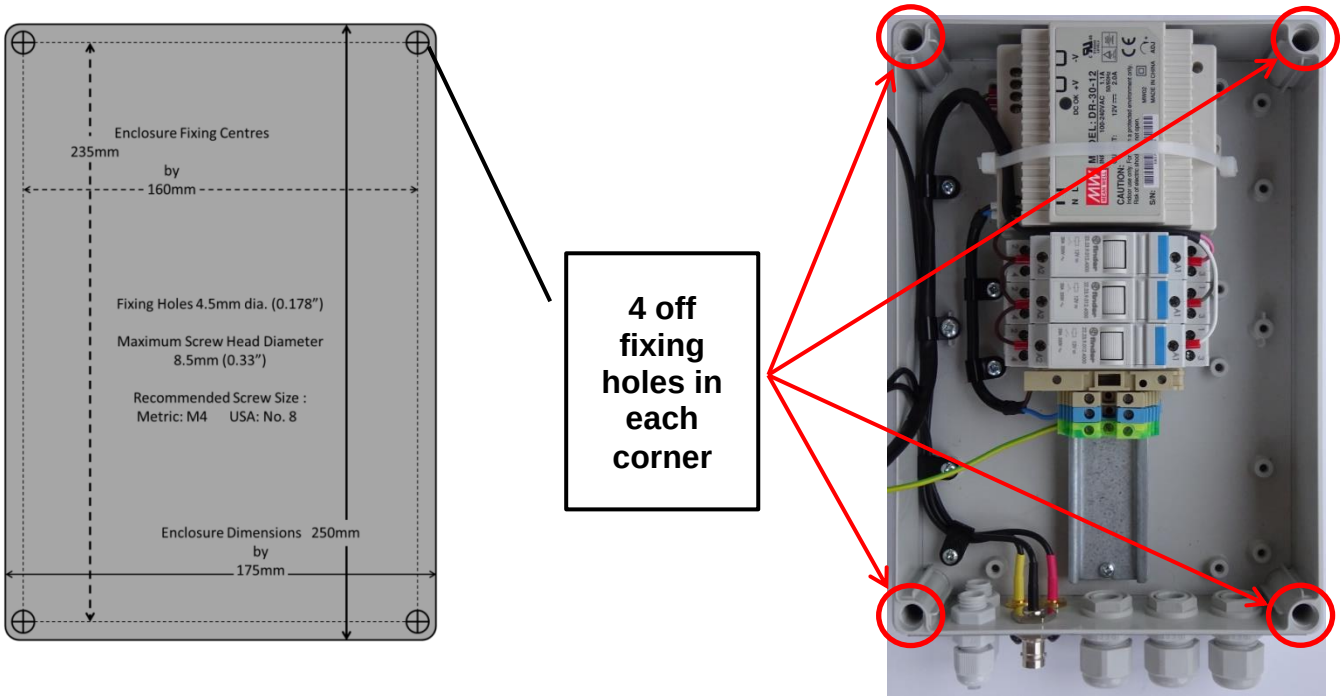
1) Main power and relay controller ribbon cable
2) VHF BNC Aerial cable, and
3) Meteorological pack connection cable (if fitted)

Note: 1) and 3) may have retaining screws. Use a PH1/2 or PZ2 screwdriver to remove and use a small amount of Loctite 248 Medium Strength thread locking compound on re-assembly.

The unit is fitted with a wrap-tie transit strap around the PSU. This may be cut off at this stage.

3.4 Installing the Base Unit

Either by measurement or using the template in Appendix 1, mark out and drill (and plug) the surface to which the controller is to be fixed.



If the fixing screws are not in a convenient position for the surface on which the controller is to be fixed then the use of rails, frames or battens is recommended.

DO NOT DRILL HOLES THROUGH THE ENCLOSURE BASE

The fixing screws are in the same position as the top cover retaining screws. The maximum screw diameter is 4.5mm (0.178") and a maximum head diameter of 8.5mm (0.33"). Recommended screw sizes are Metric M4 or USA No. 8 of a suitable length and type for the surface.

Mount the base of the enclosure and ensure that the fixing screws are secure but do not over-tighten as this could damage the enclosure and compromise the IP65 rating.

Once the base has been fitted, the unit can be wired up (next section). Take particular care not to damage the Power Supply Unit, Relay Driver board and Relays during the installation of cables.

In anticipation that many installations will only require two cables to be fitted, one of the cable glands is fitted with a nylon plug to ensure integrity of the enclosure if only two cables are required. To use this gland, simply remove the plug. If replacing, do not over-tighten as this may permanently damage the gasket.

3.5 Installing the Cell aerial

The Cell aerial is shipped in the outer accessory packaging. Carefully remove it from the plastic bag and screw onto the external aerial connector. Do not over-tighten as this may permanently damage the aerial or socket but ensure it is fully home.

Be careful when handling the front panel to ensure that the aerial is not damaged.

3.6 Electrical Installation

It is recommended that mains cables are fixed first to avoid damage to aerial or signal cables.

If the FEC RLC is to be operated from a mains power supply it must be connected to the supply using a fused double pole isolator.

The controller has a maximum power consumption of 30watts so if the supply is only powering the controller (the switched circuits being separate) then a 5 Amp fuse should be used.

If the same supply is to be used both to power the controller and the switched circuits then the cable, switch and fuse rating need to be sized accordingly.

WARNING – If the circuits to be switched are fed from a separate isolator it is imperative that this is also isolated before work is commenced.

3.7 Circuit Connectors and Cable Entry *(V4 enclosure)*

The Picture below shows the connectors and cable entry arrangements on the bottom of the base for RLC V3 units

VHF aerial connector

Meteorological Cable Gland (without blank plug)

Aux/BMS Cable Gland (without blank plug)

UHF connector Position (if fitted)

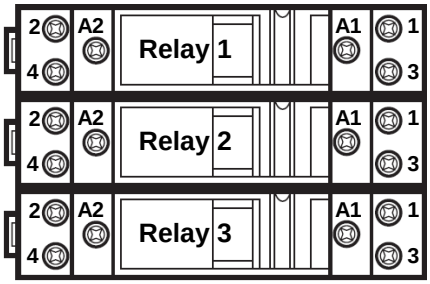
Cellular Radio connector

3 Mains in/out cable glands (1 with blanking plug)

3.8 Relays

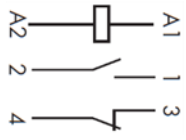
Three 20 Amp Finder type 22.23 relays are fitted to the controller. Each has 1 Normally Open (NO) and 1 Normally Closed (NC) contact set as shown in the schematic (box right).

Optionally Finder type 22.22 with 2 NO contact sets each can be fitted.



HP0656: Finder 22.23 Relay Connections

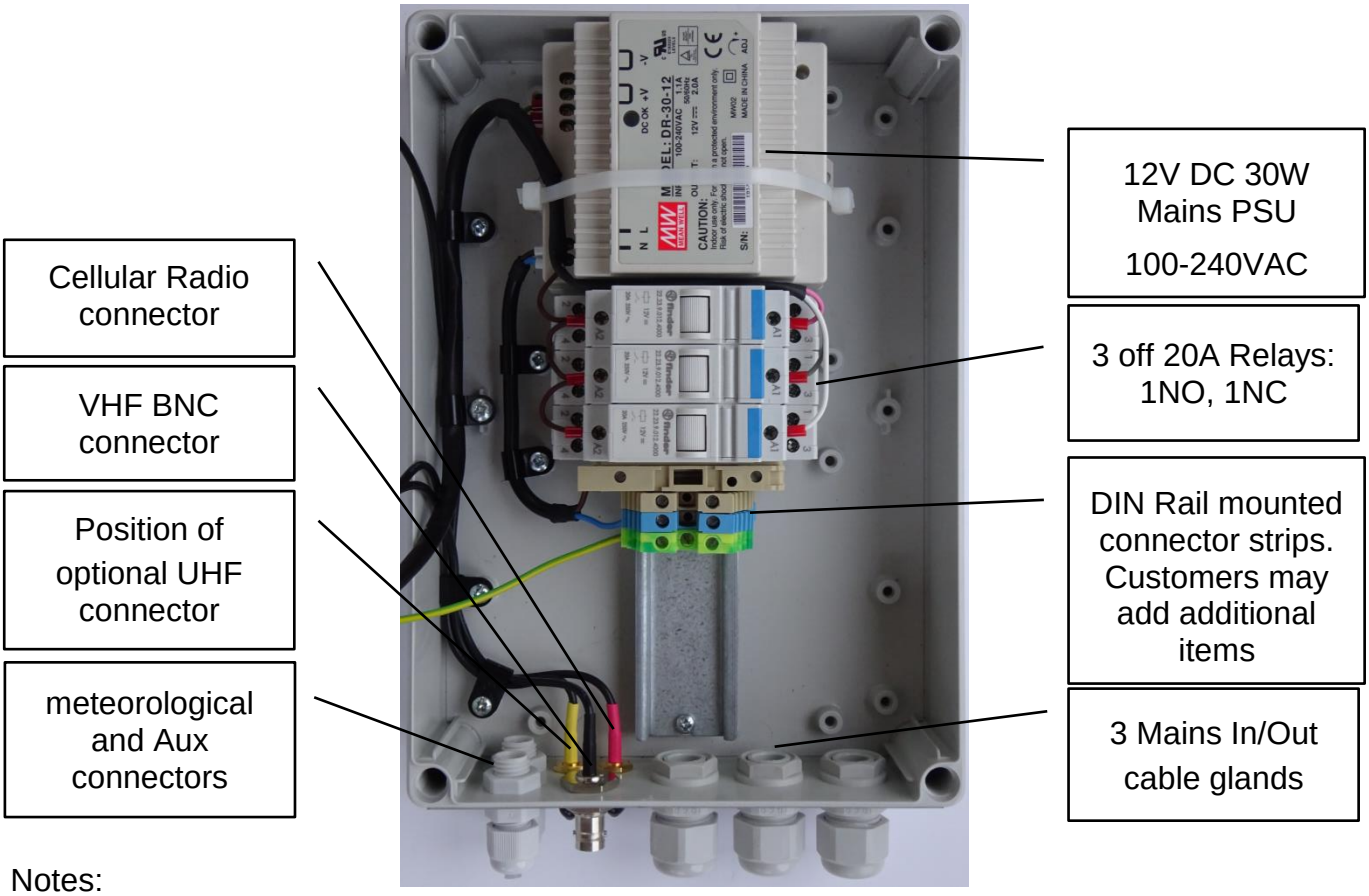
A1 – Coil – DO NOT TOUCH
A2 – Coil – DO NOT TOUCH
1 – NO1
2 – COM1
3 – NC2
4 – COM2



Top view as mounted in base

3.9 Mains wiring

The arrangement of the base units is shown below (V4 Enclosure).



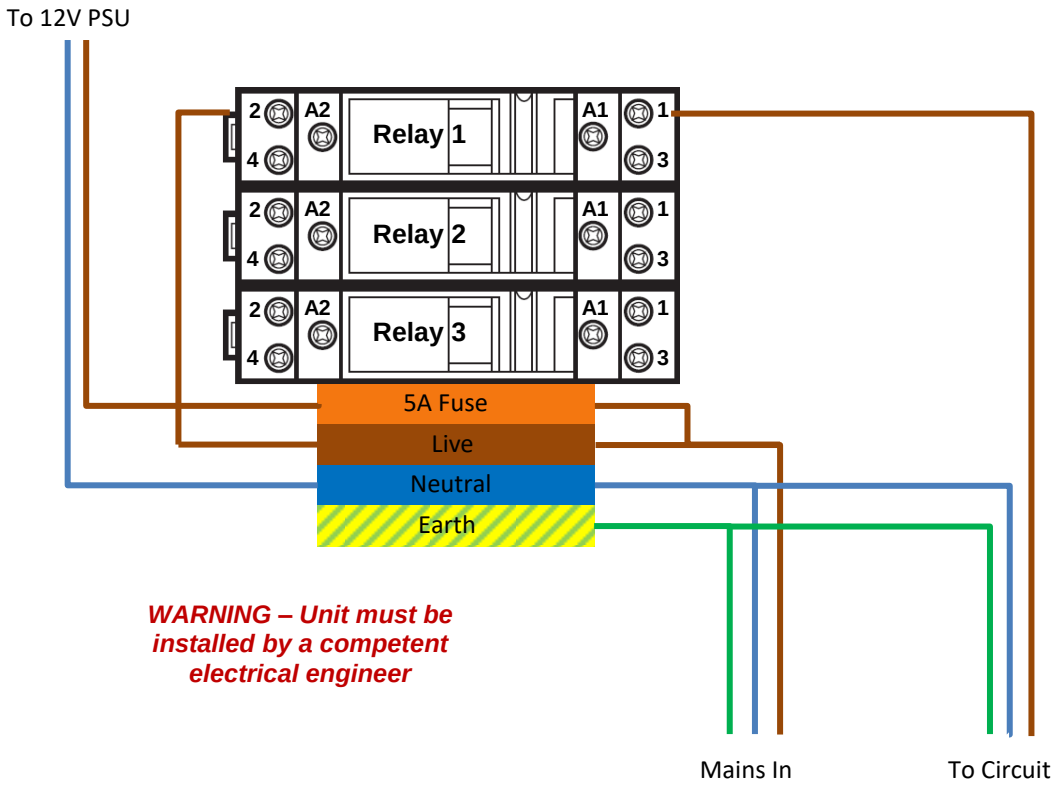
Notes:

1) Live (Brown), Neutral (Blue) and Earth (Green/Yellow) 4mm IMO DIN rail mounted connector strips are provided for customer wiring.
2) Additional connectors can be added by the customer but pay particular attention to:
    a. Such connectors are often open on one side. Care must be taken to ensure that the open side is always covered by its neighbour or end plate.
    b. The earth connector is fixed and grounded to the DIN rail by a central screw. To move this connector, slacken the central screw, move as required and re-tighten.
    c. The Earth connector provides the earth bonding connection to the controller.
    d. The connectors must be gently pushed tight against the PSU and Relay Interface Board to ensure that these items are prevented from sliding on the rail.
3) The controller is fitted with a mains powered 12V Power Supply Unit (PSU). The installer must connect this to the incoming mains supply via the fuse (provided) using suitable 2 core cable (2x1mm 240V). The PSU is double insulated and is not earthed.
4) The relays are rated at 20A AC for a resistive load.
5) If higher currents or highly inductive loads are to be switched by the controller the use of an external ‘Contactor’ of the correct rating must be used.

3.10 Basic Wiring Diagram

A simplified circuit diagram is shown below for a single switched circuit.

NB – To allow the lights to be operated in the event of a unit failure it is strongly recommended that a mains by-pass switch is incorporated into the circuit by a qualified electrician.



Notes

1) The 5A fuse in the DIN rail holder is for fusing the feed to the 12V PSU only.
2) Installers can add additional DIN rail mounting Live, Neutral and Earth terminals.
3) DIN Rail mounting fuse holders may also be added.
4) If additional items are added to the rail, follow the instructions below.
5) Secondary circuit load characteristics may require an external contactor.

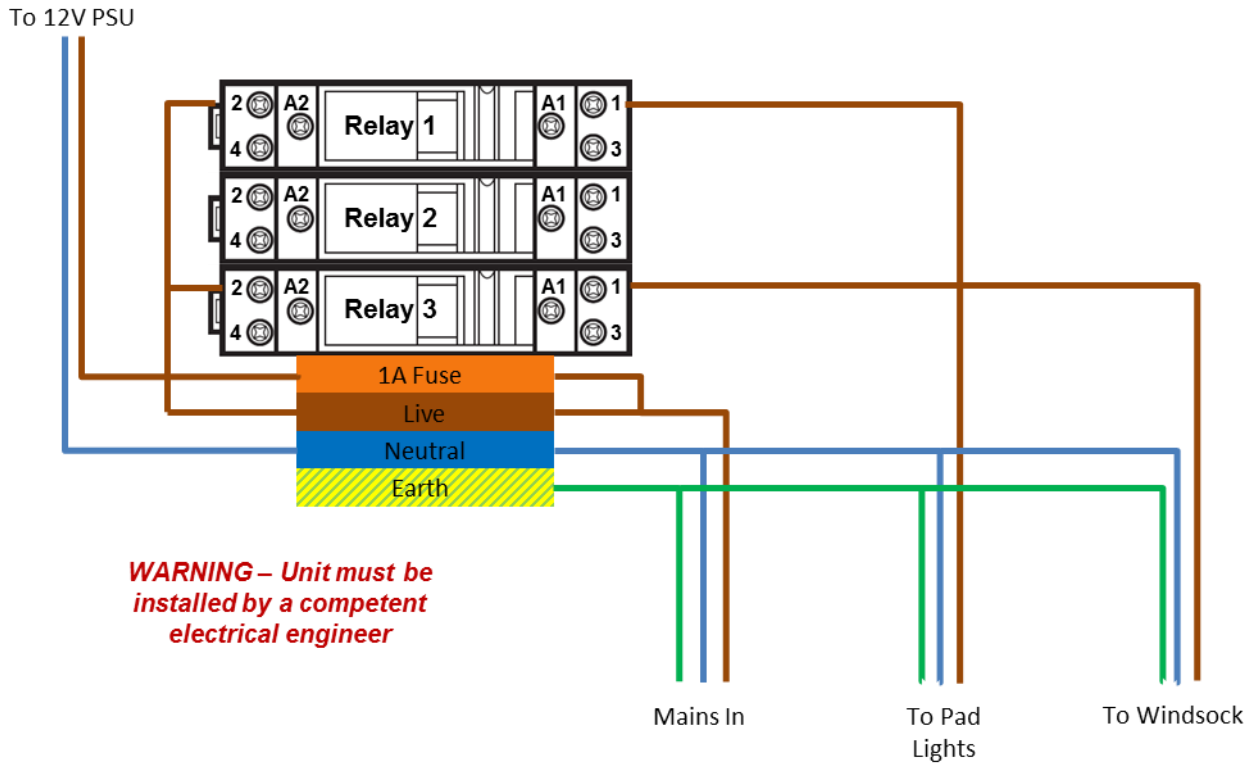
NB – Do not run the light circuits via the 5A fuse – this is only for the feed of the 12V mains Power Supply Unit (PSU).

Any light circuit fuses should be specific to each circuit.

3.11 Basic Wiring Diagram (Timeout Alert)

A simplified circuit diagram is shown below for a single switched circuit with a separate windsock feed from Relay 3 to support Timeout Alert.

NB – To allow the lights to be operated in the event of a unit failure it is strongly recommended that a mains by-pass switch is incorporated into the circuit by a qualified electrician.



DIN Rail Mounted Items

DIN rail mounting terminals etc. generally ‘snap’ onto the rail with plastic clips either side.

The Earth terminal has grips onto the rail which are metal, connected to the terminal block (to earth the rail) and actuated by the middle screw (of three).

To add terminal blocks:

a) Slacken the middle screw of the earth block and slide it down the rail (there is no need to remove it)
b) Snap in the required additional terminals (sliding others as required)
c) Push the earth terminal back up to ensure no gaps between terminal and re-tighten the middle screw

NB – Ensure that no live connections are exposed by the insertion of additional connectors.

3.12 Basic Circuit Testing

Even before connecting the keypad, the circuits can be tested as the relays incorporate manual testing buttons.

Once the mains wiring has been completed and it is safe to energise the controlled circuit, turn on the mains supply.

3.12.1 12V DC PSU

Check that the PSU LED is lit:

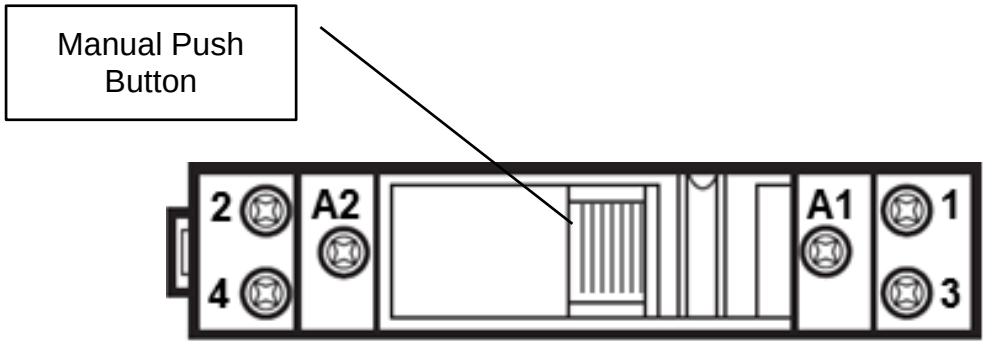
- The green LED on the PSU marked ‘DC OK

If the LED on the PSU does not light, then check the mains supply, cable and fuse.

If the LED on the PSU lights but the LEDS on the rear of the keypad enclosure do not light, suspect a continuity problem with the DC feed cable to the keypad. If this cannot be resolved there is a fault with the unit which must be returned.

3.12.2 Manually checking the mains switched circuit

To test the mains switched circuit, press the button on the top of the relay(s).



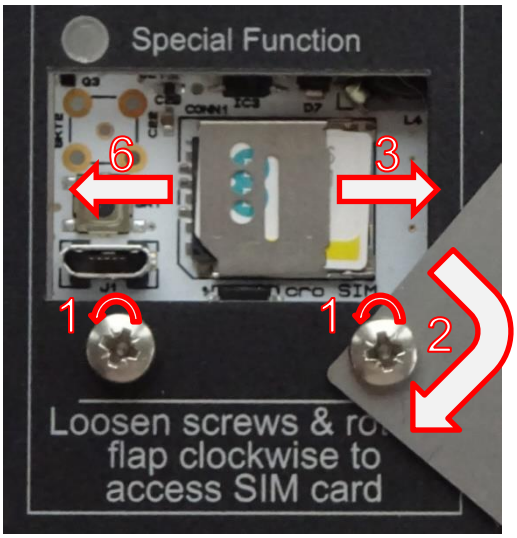
This will make the contact for the normally open contact and break the contact for the normally closed contact.

Once the PSU and circuit have been checked as above the controller can be re-assembled in the reverse order that it was taken apart and the front cover attached.

3.13 Inserting the SIM

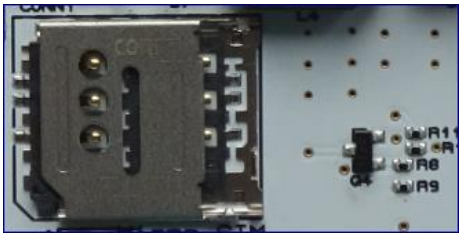
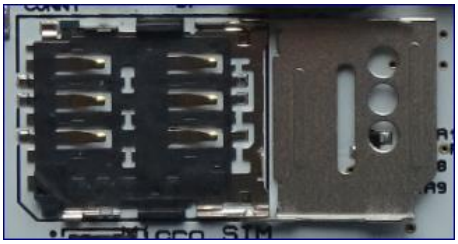
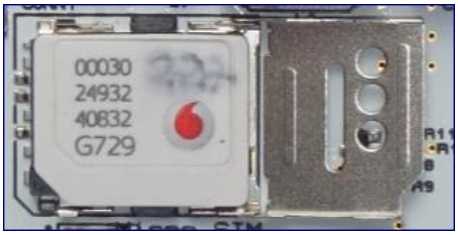
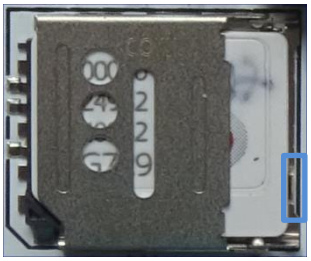
While the front panel including the keypad and LCD are disconnected and before re-assembly the micro SIM should be fitted.

The SIM holder is located behind a rotating flap on the back of the keypad unit (right).



To fit the SIM:

1) Slacken the two screws (using a Philips PH1/2 or Pozidrive PZ2 screwdriver). There is no need to remove the screws or cover
2) Rotate the cover clock-wise as shown

3) Slide the metal SIM carrier gently to the right and then pull forward	4) Open the cover to the right
	
5) Place the SIM onto the contacts oriented as shown.	6) Ensuring that the SIM is properly aligned within the holder, close the lid fully and, while applying gentle pressure, slide the cover to the left until a click is heard/felt.
	

7) Check that the cover is properly shut and that the SIM is butted to the stop (blue box – photo, bottom right)
8) Rotate the cover back into place and gently re-tighten the screws.

3.14 Final Assembly

Re-attach the cable(s) between the front panel unit and the base unit.

Re-attach the VHF antenna cable to the BNC socket.

Re-attach the Cellular Radio antenna cable to the SMA socket on the rear panel

If fitted, e-attach the UHF Radio antenna cable to the SMA socket on the bottom of the LCD & Keypad unit

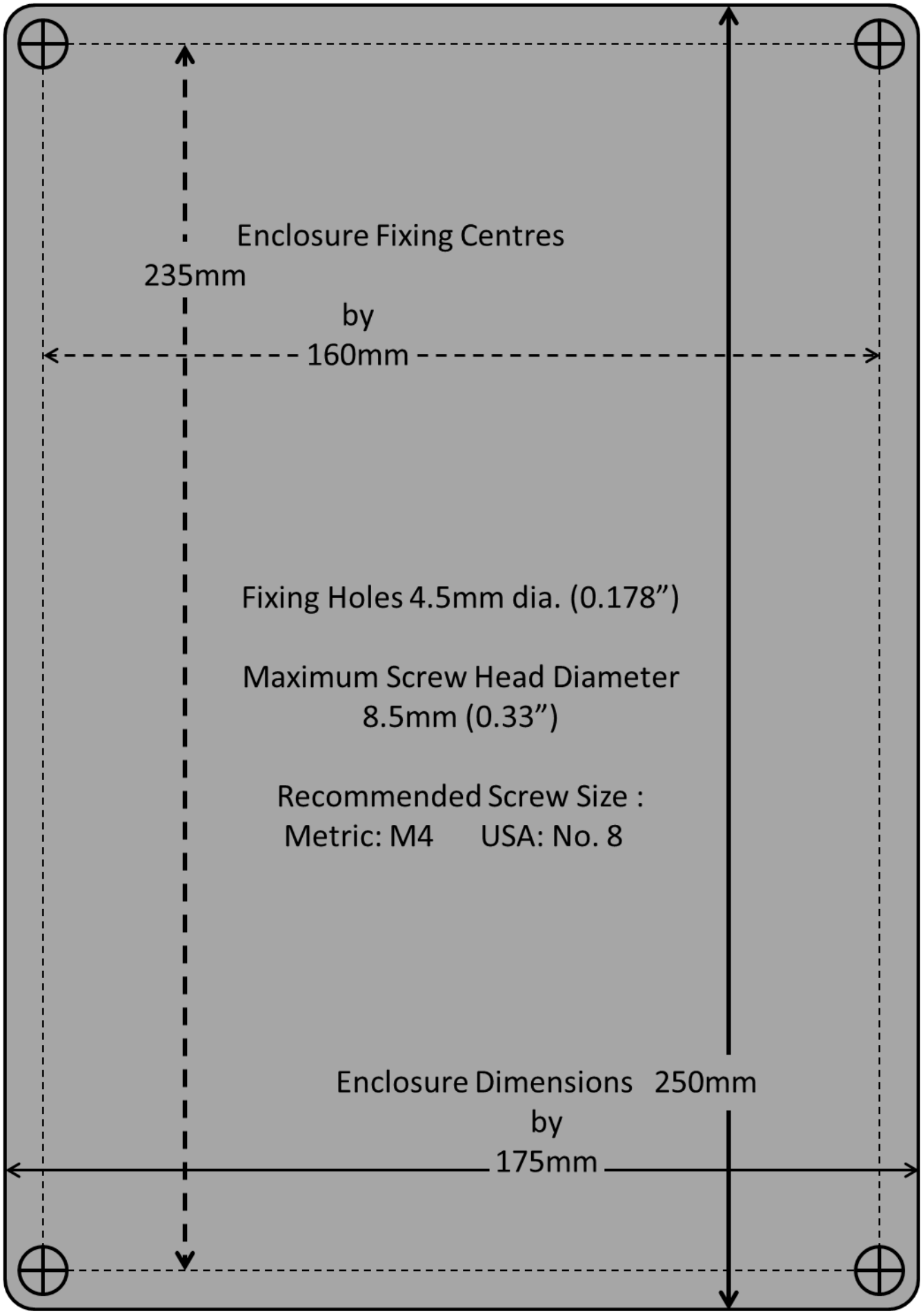
Re-assemble the front cover to the base unit and tighten the retaining screws firmly but not too tight.

Take care that:

1) All connectors and cables are secure and that they are not caught in anything.
2) The enclosure retaining screws are screwed in evenly and firmly but not too tight

4 Mounting Template

The template below is at a scale of 1:1 if this document is printed on A4 paper or US Letter and no scaling options are used e.g. do NOT use the printing option ‘scale to fit’.



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