PilotAware Installation Kit 1 Rohan Antennas July 2018.

PilotAware was initially developed as carry on equipment to be carried onto all types, EASA, C of A and permit However, a permanent or semi- permanent† installation is a much better installation for the following reasons.

- Antenna location can be optimised for better transmission and reception of the 1090MHz and 869.5 MHz frequencies that PilotAware uses.
- GPS antenna location can be optimised for maximum satellite signals and strength.
- The main PilotAware unit can be located out of sight anywhere on the aircraft for convenience.
- A permanent power supply can be connected so that PilotAware starts to boot as soon as the master switch is thrown.
- There are no cables showing and the installation will be neatly out of the way.
- PilotAware runs cooler away from the heat of the dashboard top

INSTALLING EQUIPMENT IN YOUR AIRCRAFT IS A SPECIALISED OPERATION. IF YOU DO NOT FEEL COMPETENT IN DOING THIS PLEASE CONSULT A QUALIFIED ENGINEER. THESE GENERIC INSTALLATION INSTRUCTIONS ARE FOR INFORMATION ONLY AND PROVIDED IN GOOD FAITH BUT MAY PROVIDE ERRORS. IT IS UP TO YOU AS PILOT IN CHARGE TO ENSURE THAT THE INSTALLATION IS FIT FOR PURPOSE AND SAFE OPERATION. THIS INSTALLATION KIT IS NOT CS-STAN APPROVED.

Installation Kit 1.
Contents

- 1 off 869.5MHz antenna with internal BNC connector. The long one
- 1 off 1090Mhz antenna with internal BNC connector. The shorter one
- 2 off 2metre LM240 low loss coaxial cable with SMA-BNC connectors
- 1 off Remote GPS antenna.
- 1 off Anker Cigarette Lighter Power Supply
- 1 off 12V Power Socket
- Cable ties
- Downloadable Installation instructions†

†Please note that if you are installing using an existing PilotAware Classic unit rather than a PilotAware Rosetta you will have to add an SMA to MCX converter or pigtail.

Rosetta unit not supplied with installation kit
But available separately with a discount

Removing Parts from the Rosetta Unit.

Using the standard PilotAware Rosetta you need to remove the two black antennas connected to the gold SMA connectors and the GPS PCB dongle attached to the USB socket. The GPS dongle is located under the slide off panel at the end of the Rosetta unit and is the one that does not have a pigtail connected to it. These 3 items are not used in the installation so can be set aside. (note the will not have been supplied with a Rosetta + installation kit combination).

The Rosetta, or Classic unit should be installed somewhere convenient in the aircraft and which has access to 5.2V, 1.2A power using the standard 1 meter lead, the remote antennas, the remote GPS and cable access to the intercom or headsets if required. (This cable is not supplies as cable lengths will vary. Amazon Basics are a very good inexpensive supplier.) Location of the Rosetta or Classic unit can be behind the panel, under the seat or anywhere suitable. It will be attached using the tie wraps provided or by any other preferable means. There is a ¼ inch screw thread in the Rosetta case if this is useful for securing the unit, but do not screw in too tightly or too deep.

(i) Installing the GPS antenna.

Firstly, the GPS antenna should be located so that it has a full view of the satellites in medium earth orbit. This is usually on the dashboard. It can be in other locations but be aware that the GPS signals will be attenuated (weakened) by metal, water (human bodies) or carbon fibre. The GPS supplied is not weather proof and therefore unsuitable for external mounting if the aircraft is expected to get wet. Find a suitable location and drill or cut a slot for the GPS cable USB connector to pass through the dashboard for onwards cable dressing to where the Rosetta unit is to be mounted. 3 metres of cable is supplied with the remote GPS for this to be accomplished.

(ii) Installing the Radio Antennas.

Both antennas are installed in a similar way. The longer antenna is the PilotAware P3i 869.5MHz antenna and the shorter one is the 1090MHz ADSB Mode C/S antenna.

The antennas are Monopole Antennas and therefore need a ground plane to work properly. Metal aircraft will provide this ground plane. None Metal aircraft will require a local ground plane similar to that used for your transponder and or permanent air band radio. The local ground plane if required, should be thin aluminium or thin copper, as large as possible but as a minimum 25-30cm square.

Drill a 12mm hole through the outer skin of the fuselage and the ground plane, if fitted. A step drill is very useful for this. It may be desirable to use the thin stainless steel penny washers provided to spread the load, particularly on plastic or fabric surfaces. It is important that there is electrical connectivity between the antenna case and the aircraft/ground plane. Tighten up the nut and apply Loctite as required. A little petroleum jelly will provide weatherproofing.

Do the same for the second antenna. Positioning of the antenna will be different from aircraft type to aircraft type and is subject to avoiding the mass of the engine or the water in the bodies of the occupants to avoid attenuation. Information on locating antennas, is provided at http://www.pilotaware.com/wp-content/uploads/2016/10/PilotAware-Antennas.pdf

The antennas should ideally be a minimum of 150mm away from other antennas and as far away as possible for best operation.

Connect the BNC end of the coaxial cable to the antenna and route the cable to the location of the Rosetta case. Secure the cable with the cable ties supplied or other preferred fixants.

(iii) Connecting the Power Supply.

It is most important that the power cable supplied with the Classic or Rosetta Unit is used in the installation. Avoid runs longer than 1 metre between the Rosetta unit and the Anker power supply.

Included in the installation kit is an Anker Cigarette lighter charger which has been shown to provide an excellent inexpensive noise free USB supply for PilotAware. A Cigarette lighter socket is also provided. This should be cabled to the switched 12V supply (NOT 24V) of your aircraft via a suitable fuse or circuit breaker. PilotAware will draw a max of 2.1 amps at 5.2V from the ANKER charger which translates to less than 1A from the 12V supply. A 1-2A fuse will suffice. Cable and fuses are not supplied as this will be bespoke to the installation and type of aircraft in which it is fitted. It is recommended that low smoke and fume cable is used 20AWG.

The Anker Charger will be a tight fit in the cigarette lighter socket. A cable tie can be used for greater security. The assembly should be cable tied in a suitable location, securely but not too tight. With this installation, the PilotAware will boot up when the master switch is operated. ENSURE THAT THERE IS ELECTRICAL FIDELITY AND THAT ALL CONTACTS ARE INSULATED.

If you do not feel confident to do this yourself get a qualified engineer to do this for you. Alternatively, you could use a Charge 2 Charge 4 EASA approved USB power supply. The latter being suitable for 24V, as well as 12V systems.

Additional Information.

1. Use low smoke and fume cable where possible.
2. With the antennas extended the PilotAware unit can be located anywhere in the aircraft. The only thing that hasn't been extended is the WiFi which will work perfectly if the unit is hidden say behind the dashboard. If you need it, the power of the WiFi signal can be increased to 100mW. This is done on the Network Page of the PilotAware Web pages via 192.168.1.1
3. Affix the PilotAware unit using Velcro and cable ties so the unit is secure but not too tight.
4. Engineering good practice.

    (i) Crimp don't solder
    (ii) Don't run cables parallel for too long to avoid induction.
    (iii) Tie cables well but not too tight.
    (iv) Use low smoke and fume cables where possible
    (v) Smear some petroleum jelly around the edge of the outside of the external antenna screw as a moisture barrier.

Every installation will be different. However, we trust that this information helps you to make a neat and more permanent installation. If you need help don't forget to visit the PilotAware Forum where there will be advice from fellow pilots who will have possibly installed PilotAware in aircraft similar to yours. Also, reciprocate if you have done a successful installation and add to the knowledge.

Safe Flying. PilotAWare Team

July 2018