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Emergency Locator Transmitters

A Company of the Orolia Group

## INITIAL INSTALLATION MANUAL



### AF INTEGRA / AF-H INTEGRA With built-in GPS and Integral Antenna

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**Users are kindly requested to notify KANNAD of any discrepancy,  
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## 1. Introduction

The instructions in this manual provide the information necessary for the initial installation of AF INTEGRA / AF-H INTEGRA ELT system.

## 2. KANNAD INTEGRA System Presentation

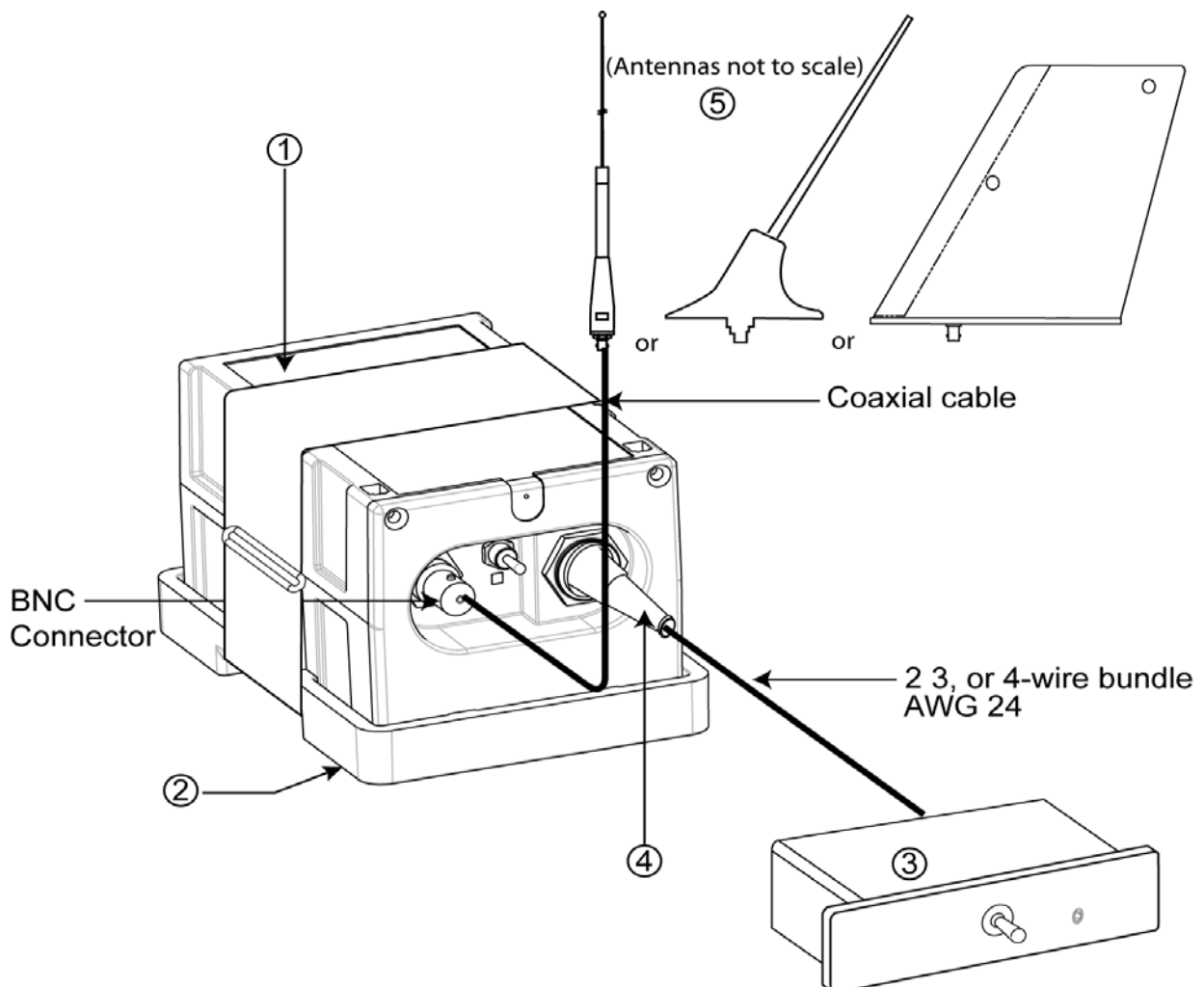
### A. System overview

NOTE: for details of approved part number of AF INTEGRA / AF-H INTEGRA system, [Refer to Section 12. Compatibility list for INTEGRA ELTs System, page 53.](#)

AF INTEGRA / AF-H INTEGRA system is composed of:

1. a transmitter;
2. a mounting bracket;
3. a remote control panel (RCP)(see note 1 page 2);
4. a DIN-12 connector or programming dongle to connect the RCP;
5. an approved external whip, rod or blade antenna.

*Figure 1: ELT system description*



The most effective external antenna configuration is on top of the fuselage, aft of the wing or near the vertical stabilizer. The ELT and mounting bracket should be mounted in the aircraft as close as the antenna as practicable with a coaxial cable towards the antenna as short as possible. The remote control panel<sup>(1)</sup> is installed in the cockpit and connected to the ELT with a 2, 3, 4-wire bundle (not supplied) according to the type of Remote Control Panel.

Note: (1) **The RCP is optional only if the commands and controls of the ELT are reachable and visible from the pilot seated position.**

*(RTCA DO-204A): "Equipment control and indicator installed for in-flight use **shall** be readily accessible from the cockpit crew position.*

*The cockpit crew **shall** have an unobstructed view of visual indicator when in the normal seated position."*

### **B. Transmitter and bracket**

The ELT must be installed into one of the approved mounting brackets.

It may be installed on its standard mounting bracket or on a Universal Mounting Bracket to re-use existing drilling for retrofit.

[Refer to Section 12. Compatibility list for INTEGRA ELTs System, page 53](#) for Part Numbers of approved mounting brackets.

The bracket installed near the tail is designed to fix the ELT with a Velcro® strap. This enables quick removal of the ELT for maintenance or exchange.

*Figure 2: INTEGRA ELT with Mounting Bracket*



### C. Remote Control Panels (RCP)

Refer to [Section 12. Compatibility list for INTEGRA ELTs System, page 53](#) for Part Numbers of approved RCPs.

The RCP must be installed in the cockpit to monitor and control the ELT status. It must be connected via a 2, 3, or 4-wire bundle to the DIN-12 socket of the ELT (2, 3, 4-wire bundle is not supplied)

Note: An optional outside buzzer assembly can be connected to the ELT-RCP. It gives an audio indication of emergency location transmitter (ELT) activation. It is supplied with a mounting tray to install the buzzer on the aircraft.

*Figure 3: Outside buzzer*



#### *(1)RC100 KIT*

The RC100 remote control panel is connected to the ELT via a 3-wire cable equipped with a DIN-12 connector or optional programming dongle on the ELT side and directly connected to the RCP on the other side.

*Figure 4: RC100 Remote Control Panel*



*(2) RC102 KIT*

The RC102 remote control panel is connected to the ELT via a 2-wire cable equipped with a DIN-12 connector or optional programming dongle on the ELT side and directly connected to the RCP on the other side. 2 types of front panels are supplied in the kit. The appropriate front panel should be chosen according to the place available on the aircraft's instrument panel.

Note: the optional outside buzzer is not available with this RCP.

*Figure 5: RC102 Remote Control Panel*



*(3) RC200*

The RC200 or RC200 NVG remote control panel is connected to the ELT via a 3 or 4-wire bundle equipped with a DIN-12 connector or optional programming dongle on the ELT side and a D-SUB Female 9 pins connector on the other side.

*Figure 6: RC200 Remote Control Panel*





*(4) RC300 / RC300 NVG*

The RC300 is connected to the ELT via a 4-wire bundle equipped with a DIN-12 connector or optional programming dongle on the ELT side and a D-SUB 9 PTS Male connector on the other side.

*Figure 7: RC300 Remote Control Panel*



*(5) RC600 NVG*

The RC600 NVG is connected to the ELT via a 5-wire bundle equipped with a DIN-12 connector or optional programming dongle on the ELT side and a female 22-pin connector on the other side.

*Figure 8: RC600 NVG Remote Control Panel*



#### ***D. External antennas***

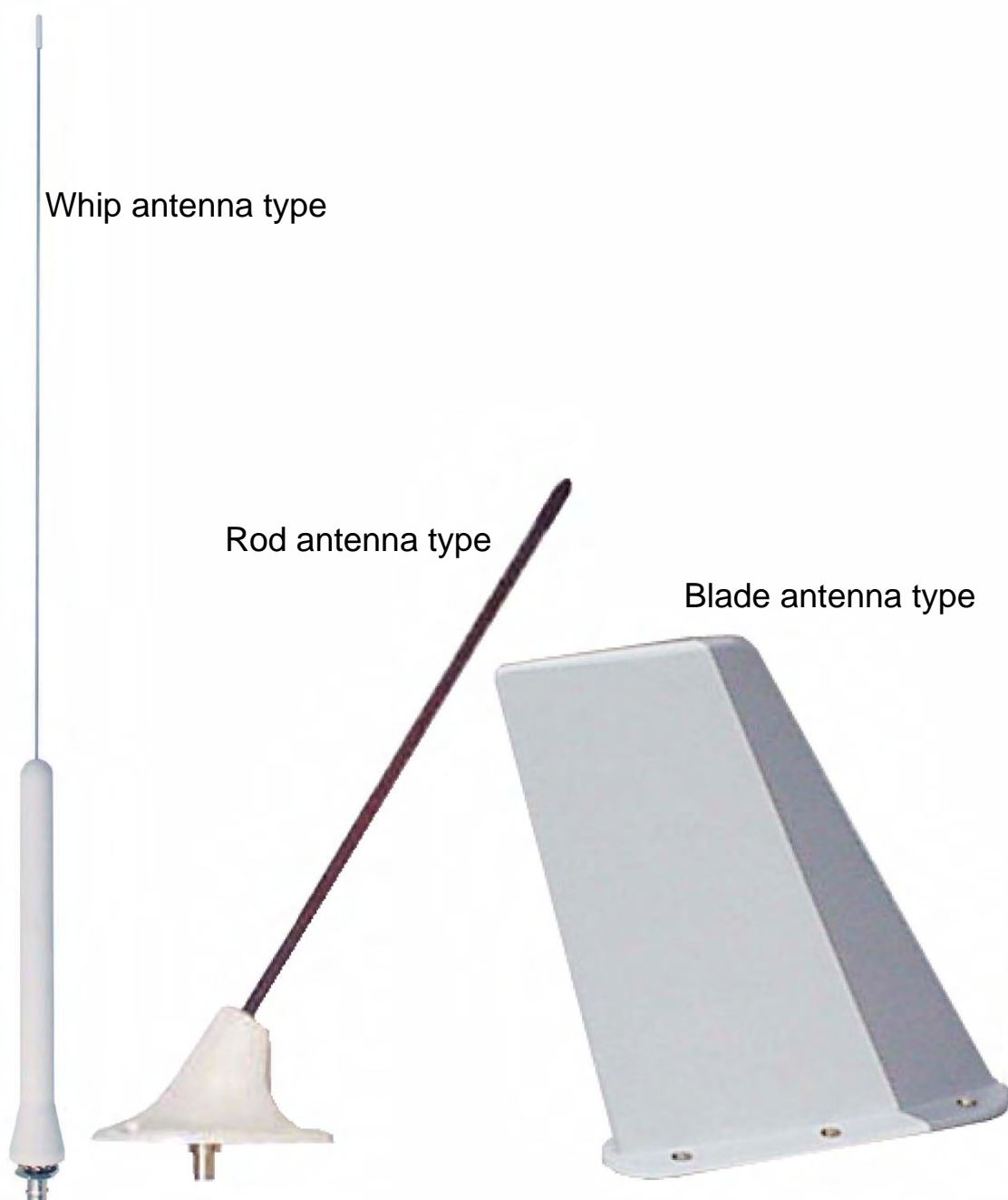
The external antenna can be either of whip, rod or blade type according to aircraft speed.

Connection to the ELT will be carried out with a 50 Ohm coaxial cable ended with two male BNC connectors.

**IMPORTANT NOTICE: KANNAD recommends a cable with radio electric properties similar or better to those of a RG58 cable.**

Note: the 50 Ohm coaxial cable and the male BNC connectors are not supplied.

*Figure 9: Whip, rod and blade antennas*



### 3. Registration

#### **A. General**

The ELT must be registered prior to installation onboard.

When a 406 MHz ELT is installed in an aircraft, it is imperative that the aircraft owner register the ELT. Each 406 MHz ELT contains a unique identification code that is transmitted to the satellite. This helps the "Rescue Coordination Center" (RCC) determine whether an emergency has actually occurred. The unique identification permits accessing a data base.

The registration card available from the local registration authority must be completed and returned to this authority.

Any change of ownership shall also be declared and registered with the local registration authority.

#### **B. Registration in USA**

Mail or Fax your registration form to:

NOAA/SARSAT  
NSOF, E/SP3  
4231 Suitland Road  
Suitland, MD 20746

or Save Time! Register your beacon online at:

[www.beaconregistration.noaa.gov](http://www.beaconregistration.noaa.gov)

All online registrations will be entered into the National 406 MHz Beacon Registration Database on the same day of entry. Registration forms received via postal mail will be entered within 2 business days of receipt. For online registrations, a confirmation letter with your completed registration information form will be sent immediately via e-mail or fax (if provided). Confirmation letters sent via postal mail should arrive within two weeks. Once your registration confirmation is received, please review all information. Any changes or updates to your registration information can be done via the internet, fax, e-mail or postal mail. If you do not receive your registration confirmation from NOAA on the same day you submit it over the internet or within two weeks if you submit it by postal mail, please call NOAA toll-free at: 1-888-212-SAVE (7283) or 301-817-4515 for assistance.

After initial registration (or re-registration) you will receive a NOAA Proof of Registration Decal by postal mail. This decal is to be affixed to the beacon and should be placed in such a way that it is clearly visible. If for some reason you do not receive the registration decal within two weeks, please call NOAA toll-free at: 1-888-212-SAVE (7283) or 301-817-4515.

Failure to register, re-register (as required every two years), or to notify NOAA

of any changes to the status of your 406 MHz beacon could result in penalties and/or fines being issued under Federal Law. The owner or user of the beacon is required to notify NOAA of any changes to the registration information at any time. By submitting this registration the owner, operator, or legally authorized agent declares under penalty of law that all information in the registration information is true, accurate, and complete. Providing information that is knowingly false or inaccurate may be punishable under Federal Statutes. Solicitation of this information is authorized by Title 47 - Parts 80, 87, and 95 of the U.S. Code of Federal Regulations (CFR). Additional registration forms can be found on the NOAA-SARSAT website at:

[www.sarsat.noaa.gov](http://www.sarsat.noaa.gov) or at: [www.beaconregistration.noaa.gov](http://www.beaconregistration.noaa.gov)

### ***C. Registration in Canada***

Beacon information is held in the Canadian Beacon Registry maintained by the National Search and Rescue Secretariat for use in search and rescue operations. Online access to the Registry is available for all beacon owners to register new beacons or to update their beacon information. You can add or update your beacon information by accessing the registry directly, sending in a completed registration form or by talking to one of our beacon registry representatives.

You can access the registry:

- online: [www.canadianbeaconregistry.com](http://www.canadianbeaconregistry.com)
- by email: [CBR@Sarnet.dnd.ca](mailto:CBR@Sarnet.dnd.ca)
- by fax: 1-613-996-3746
- by telephone: 1-800-727-9414 or 1-613-996-1616

The registration information must be updated when the aircraft ownership changes as per the Canadian Airworthiness Notice AN B029 (refer to following link):

[http://www.nss.gc.ca/site/Emergency Beacons/canadian beacon registry e.asp](http://www.nss.gc.ca/site/Emergency_Beacons/canadian_beacon_registry_e.asp)

Additional information and registration forms can be found on the Canadian NSS website at:

[http://www.nss.gc.ca/site/cospas-sarsat/INTRO e.asp](http://www.nss.gc.ca/site/cospas-sarsat/INTRO_e.asp)

## 4. ELT Installation

### A. *ELT and bracket installation recommendations*

The ELT shall not be installed within 30cm (1 ft) of a compass or flux gate.

The distance between ELT and antenna shall be determined so that, according to the coaxial cable chosen.

The ELT front panel should be easily accessible to connect the external antenna and the remote control panel device and to check the ELT good operation (controls and lights).

#### (1) *FAA Recommendations*

Installation must be made by qualified personnel in accordance with FAA regulations. Duplicating a previous installation may not be acceptable. Refer to:

***FAA - Advisory Circular 43.13-2B (Acceptable Methods, Techniques, and Practices - Aircraft Alterations), specifically, Chapters 1, 2, 11 and 13.***

#### (2) *TSO C126a Section 5 b. Application Data Requirements*

*"The conditions and tests for TSO approval of this article are minimum performance standards. Those installing this article, on or in a specific type or class of aircraft, must determine that the aircraft installation conditions are within the TSO standards. TSO articles must have separate approval for installation in an aircraft. The article may be installed only according to 14 CFR part 43 of the applicable airworthiness requirements".*

#### (3) *RTCA DO-182 Recommendations*

*"All ELT system components which must survive to a crash intact,...should be attached to the airframe in such a manner that the attachment system can support a 100g load... in the plus and minus directions of the three principal axes of the aircraft."*

#### (4) *RTCA DO-204a Requirements*

*"The ELT unit shall be mounted to primary aircraft load-carrying structures such as trusses, bulkheads, longerons, spars or floor beams (not aircraft skin) or a structure that meets the requirements of the following test. The mounts shall have a maximum static local deflection no greater than 2.5 mm when a force of 450 Newtons (100 lbf) is applied to the mount in the most flexible direction. Deflection measurements shall be made with reference to another part of the airframe not less than 0.3 m or more than 1.0 m from the mounting location. Typical approaches for adding shelf and rail platform mounting provisions to aircraft structure as shown an FAA Advisory circular 43.13-2(), Chapter 2."*

**B. ELT location recommendations**

KANNAD provides additional safety functions in the INTEGRA ELTs such as built-in GPS and integral antenna.

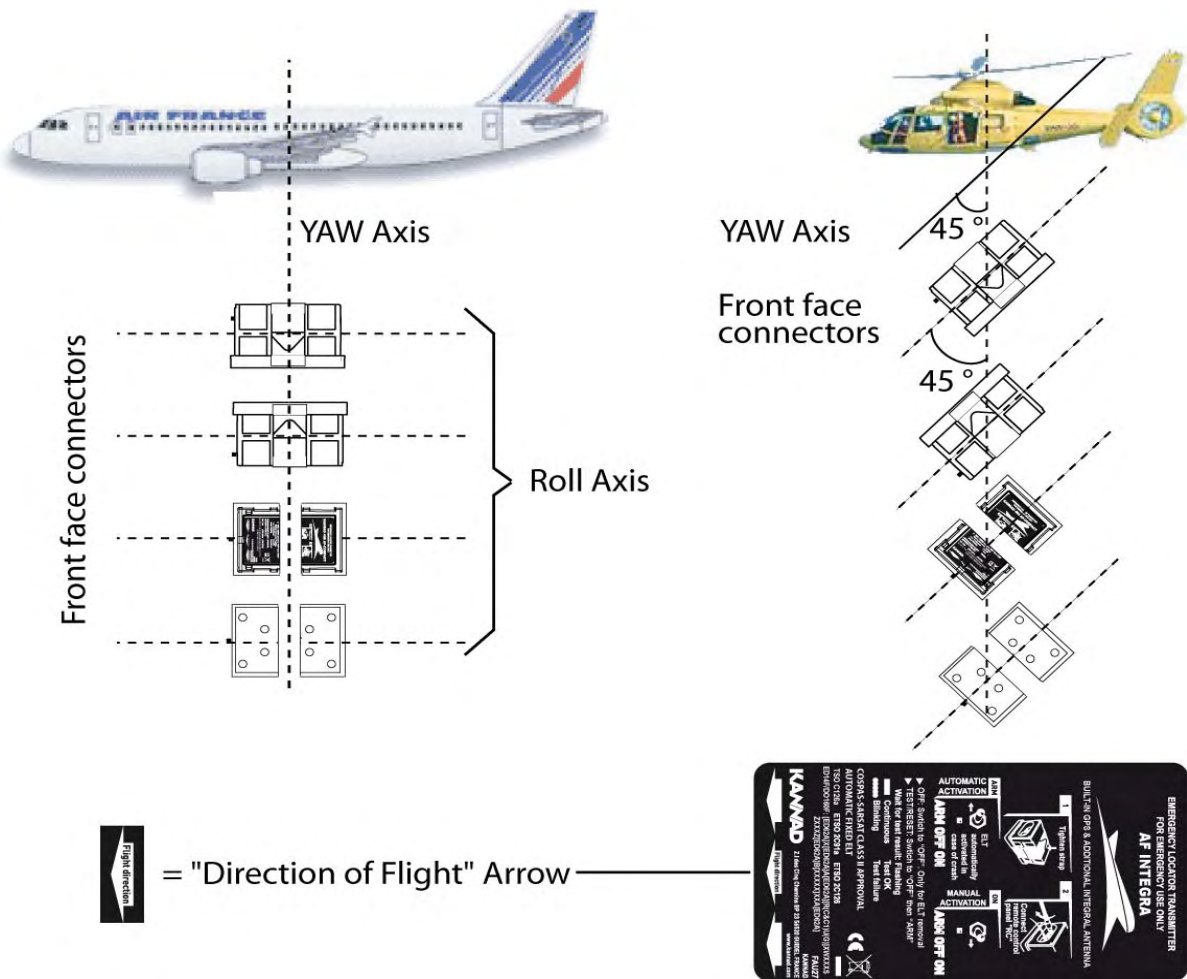
If the link towards the external antenna is defective, the integral antenna, protected by the high resistance housing of the ELT, may help to establish a link towards the satellites COSPAS-SARSAT system.

However, KANNAD cannot control neither the environment of the ELT when a crash occurs nor a too important metallic structure around the ELT. For these reasons, KANNAD recommends to install the ELT in a location in such a way that the vertical extension of the integral antenna is exposed to a RF transparent window.

**C. Bracket installation procedure**

(1) Determine location and direction

Figure 10: KANNAD AF INTEGRA, axis of installation



- Determine the location of the ELT onboard according to [paragraph A. ELT and bracket installation recommendations page 9.](#)
- The G-Switch axis shall be directed to sense the primary crash pulse

along the longitudinal axis of the aircraft. Reference to the G-Switch is given by the arrow "Flight direction" on the label affixed to the top of the ELT.

**(a) Fixed wing aircraft with AF INTEGRA**

Refer to [Figure 10: KANNAD AF INTEGRA, axis of installation.](#)

The G-Switch sensor axis shall be pointed to sense the primary crash pulse along the longitudinal axis of the aircraft (with maximum tolerance of  $\pm 2^\circ$ ). Consequently, the AF INTEGRA shall be mounted:

- with the arrow of the "Flight direction" label pointed towards the front of the aircraft;
- in any position parallel to the roll axis.

**(b) Helicopters with AF INTEGRA**

Refer to [Figure 10: KANNAD AF INTEGRA, axis of installation.](#)

AF INTEGRA may be installed on helicopter. The ELT unit should be mounted (with maximum tolerance of  $\pm 2^\circ$ ):

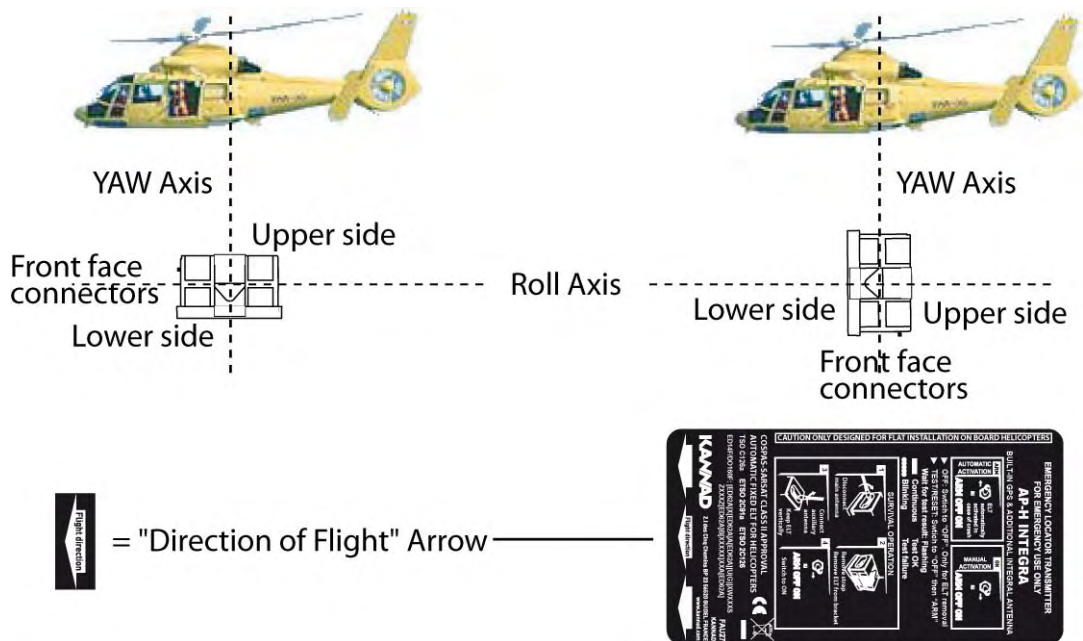
- with "Flight direction" arrow towards the front of the helicopter;
- with the front face connectors pointing downwards at a  $45^\circ$  angle to the yaw axis;
- in any position parallel to the  $45^\circ$  axis.

**(c) Helicopters with AF-H INTEGRA**

Refer to [Figure 11: KANNAD AF-H INTEGRA, axis of installation.](#)

***IMPORTANT: AF-H INTEGRA is designed to be mounted on board helicopters only.***

Figure 11: KANNAD AF-H INTEGRA, axis of installation



The "Direction of Flight " arrow shall point towards the front or the bottom of the helicopter (and not pointing 45° downwards):

- If the AF-H INTEGRA is installed with the "Direction of Flight " arrow pointing towards the front of the helicopter, the ELT shall be mounted with the upper side pointing towards the top of the helicopter.
- If the AF-H INTEGRA is installed with the "Direction of Flight " arrow pointing towards the bottom of the helicopter, the ELT shall be installed with the lower side pointing towards the front of the helicopter

(2) Fix the mounting bracket

- Drill 4 holes Ø 6 mm in the aircraft structure according to "Drilling mask": Refer to Compact Mounting bracket (S1840502- 01), Outline dimensions and weight, page 35 [Inner holes (1, 2, 3, 4) should be preferred] or Refer to Compact Universal Mounting bracket (S1840502- 02), Outline dimensions and weight, page 36 according to mounting bracket used.
- If the attachment system is not solid enough to withstand a 100G load ([ELT + bracket weight] x 100) on the bracket, a reinforcement plate (not supplied) should be installed as shown [Figure 12: Bracket installation](#) in order to be compliant with the RTCA DO-182 recommendation.
- Fix the bracket with the 4 screws, 8 washers and 4 nylstop nuts supplied.



**IMPORTANT: tighten to a torque between 4 and 5 Newton x meter.**

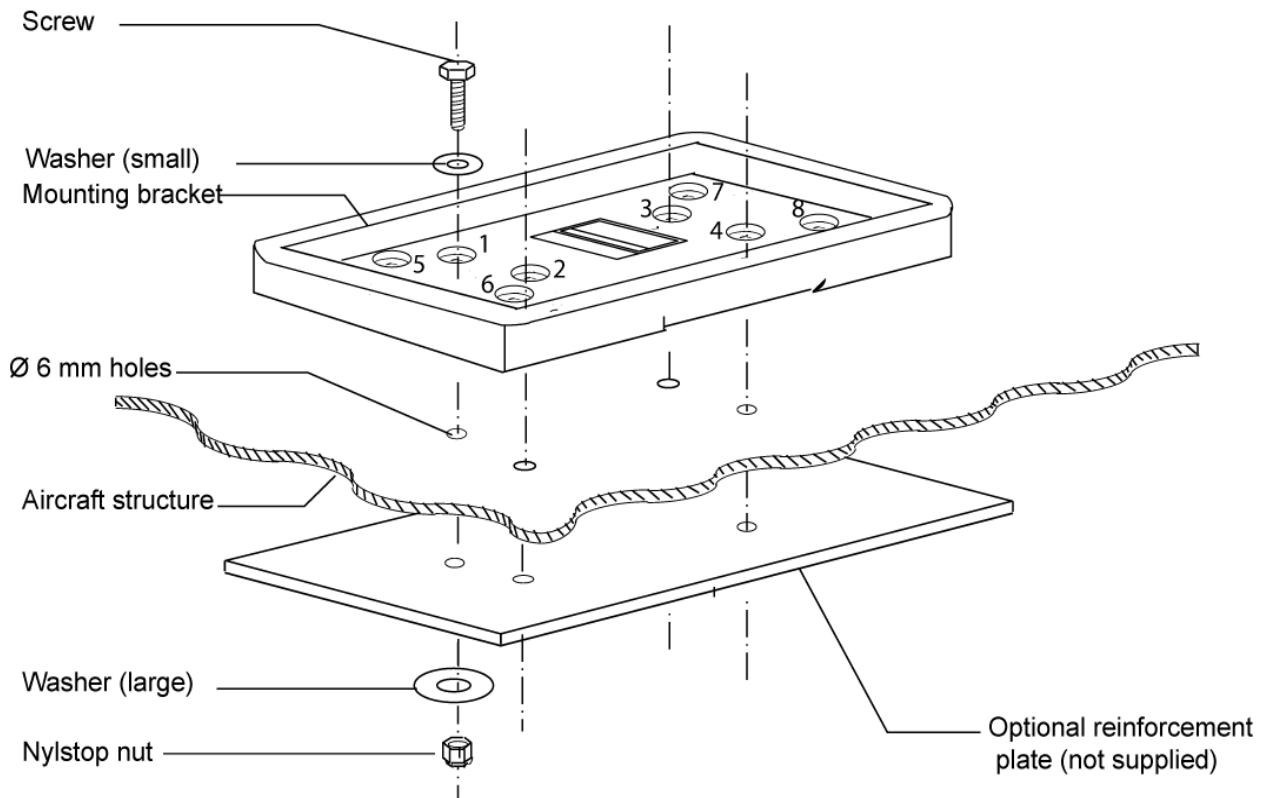
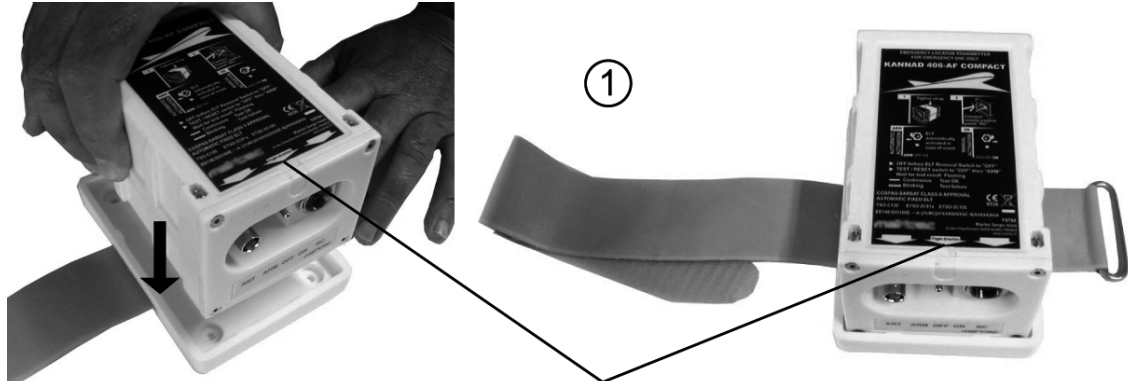


Figure 12: Bracket installation

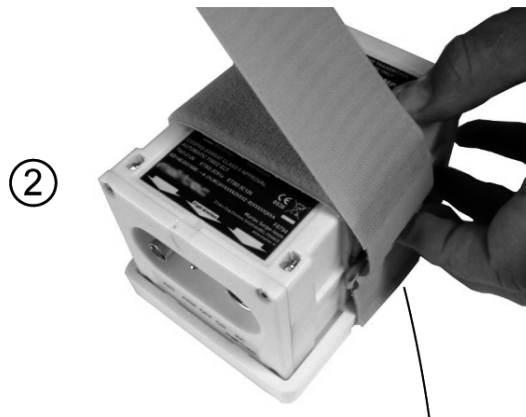
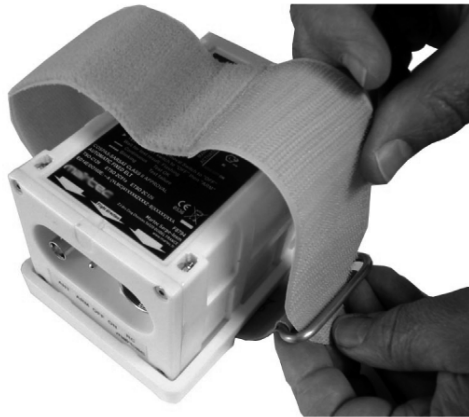
#### **D. ELT installation procedure**

1. Mount the transmitter on the bracket
  - For AF INTEGRA or AF INTEGRA (ER), with "Flight Direction Arrow" of the ELT pointed towards the front of the aircraft, according to [Figure 10: KANNAD AF INTEGRA, axis of installation page 10](#).
  - For AF-H INTEGRA or AF-H INTEGRA (ER), with "Flight Direction Arrow" of the ELT pointed towards the front or downwards the helicopter according to [Figure 11: KANNAD AF-H INTEGRA, axis of installation page 12](#).

2. Slide the self-stripping strap through the buckle. **Ensure the buckle is correctly positioned (indifferently on right or left side of ELT) regarding the horizontal center line of ELT as shown Detail A.**
3. Fasten the self-stripping strap tightly.



Flight Direction arrow



Detail A

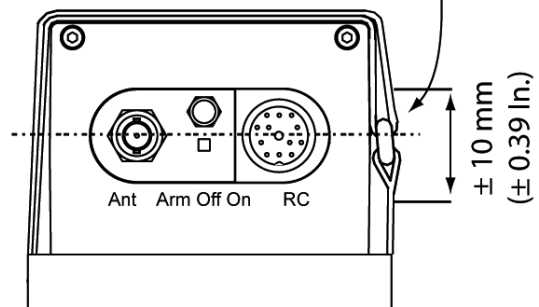


Figure 13: Installing the transmitter on the bracket

## 5. Antenna Installation

Use only whip, rod or blade approved antennas.

### A. Antenna Installation Recommendations

#### (1) FAA Recommendations

Installation must be made by qualified personnel in accordance with FAA regulations. Duplicating a previous installation may not be acceptable. Methods for installing antenna are outlined in AC43.13-12, refer to:

**FAA - Advisory Circular 43.13-2B (Acceptable Methods, Techniques, and Practices - Aircraft Alterations), specifically, Chapters 1, 3, 11 and 13.**

#### (2) RTCA DO-204 Recommendations for external antenna location

*"ELT antennas should be located away from other antennas to avoid disruption of antenna radiation patterns."*

*"Idealistically, for the 121.5 MHz ELT antenna, 2.5 meter separation is sufficient separation from VHF communications and navigation receiving antennas to minimize unwanted interferences."*

*"ELT antennas should be vertically polarized when the aircraft is in the normal flight attitude."*

*"ELT antenna mounting surface should be able to withstand a static load equal to 100 times the antenna weight applied at the antenna mounting base in all directions."*

*"The antenna should be mounted as close to the respective ELT as applicable. The proximity of the ELT antenna to any vertically-polarized communications antenna shall be such as to minimize radio frequency interference and radiation pattern distortion of either antenna. Coaxial cable connecting the ELT antenna installation should not cross the aircraft production breaks and should have vibrations proof RF connectors on each end. The coaxial connecting the ELT transmitter to the external Antenna should be secured to the aircraft structure and when the coaxial cable is installed and the connectors are mated, each end should be have some slack."*

#### (3) External Antenna Location

*EUROCAE ED62A § 6.1.10.2*

*"The most effective antenna configuration for typical high-wing and low-wing aircraft is an external antenna, on top of the fuselage, and aft of the wing (high-wing), or near the vertical stabilizer (low-wing). Both ELT antennas should be located away from other antennas to avoid disruption*

*of antenna radiation patterns. Detuning of the 121.5 MHz antenna may be required avoid the effects of radiated inter-modulation products which may be possible from non-operating 121.5 MHz ELTs exposed to high levels of RF energy.*

*Idealistically, for the 121.5 MHz ELT antenna, 2.5 meter separation is sufficient separation from VHF communications and navigation receiving antennas to minimize unwanted interference. The 406 MHz ELT antenna should be positioned at least 0.8 m from VHF communications and navigation receiving antennas to minimize interference.*

*External antennas, which have been shown to be compatible with particular ELT will either be part of the ETSO/TSO'd ELT or will be identified in the ELT manufacturer's installation instructions.*

*Recommended methods for installing antenna are outlined in FAA AC 43.13-2B. The Antenna should be mounted as close to the respective ELT as practicable."*

### **B. Antenna installation procedure**

The antenna must be mounted on the top of the aircraft to assure maximum visibility of satellites. The upper aft portion of the fuselage should be preferred. It should be mounted away from projections such as a propeller, tail surfaces, or the shadow of large antennas. It is the responsibility of the installation agency to determine the appropriate and adequate antenna installation.

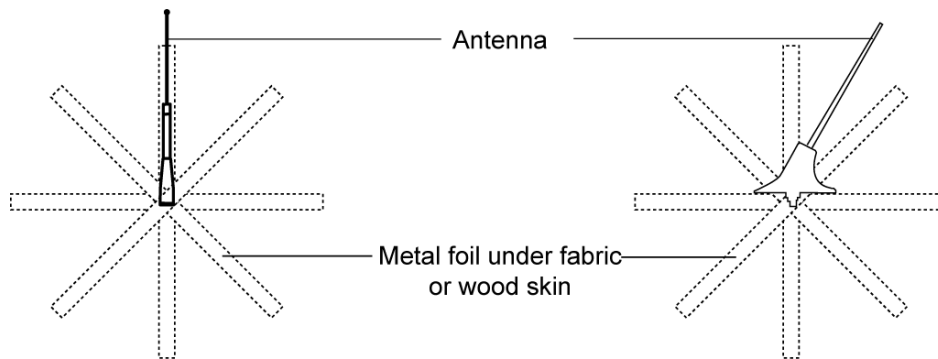
Locate a position on the fuselage according to [Section \(2\) RTCA DO-204 Recommendations for external antenna location, page 15:](#)

A double plate may be necessary for the antenna to meet rigidity specifications in [Section \(2\) RTCA DO-204 Recommendations for external antenna location, page 15.](#)

A 9 Kilogram force (20 pound force) applied in all direction should not cause an appreciable distortion in the aircraft skin.

Each of the approved antennas requires a ground plane. On fabric-covered aircraft or aircraft with other types on nonmetallic skins, a ground plane must be added. This can be accomplished by providing a number of metal foil strips in a radial position from the antenna base and secured under the fabric or wood skin of the aircraft. The length of each foil radial should be at least equal to the antenna length and width at least 1 inch due to the diameter of the antenna. The ground plane must be connected to the shield of the antenna connector.

See figure below:



*Figure 14: Antenna ground plane for non metallic aircraft*

According to the antenna to be installed, use the appropriate outline drawings and drilling masks to determine the hole pattern and drill size refer to the relevant antennae outline dimensions [page 42](#), [page 43](#), [page 44](#).

Fabricate a 50 Ohms coaxial cable long enough to reach between the ELT installation location and the antenna location.

**IMPORTANT: The use of a low attenuation coaxial cable is recommended. The maximum permitted attenuation in the coaxial is 2db@400 MHz (See [Important notice, External antennas, page 6](#)).**

Fit both ends of coaxial cable with a waterproof Male BNC connector (not supplied), reference RADIALL R141007 or equivalent.

Connect one Male BNC connector to the antenna Female BNC socket.

**6. RCP installation**

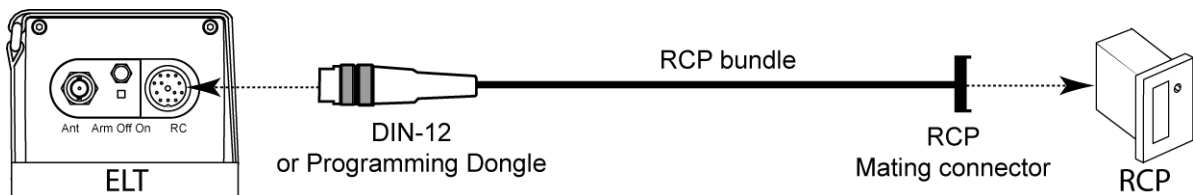
**A. RCP Installation Recommendations**

The RCP shall be installed in the cockpit. The RCP shall be readily accessible from the pilot's normal seated position.

**B. RCP Installation Procedure**

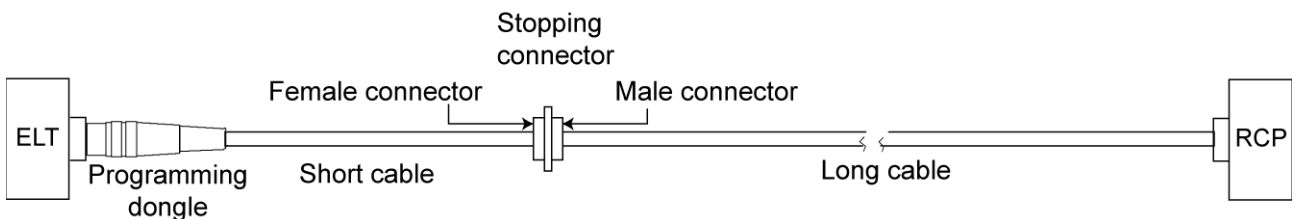
The RCP must be connected to the ELT via a DIN-12 connector (P/N S1820514-03) or a Programming Dongle (Refer to Section 12. Compatibility list for INTEGRA ELTs System, page 53) on the ELT side and the relevant mating connector of the RCP on the RCP side (except for RC100 and RC102, wires directly connected to the RCP without connectors).

*Figure 15: Example of connection ELT to RCP*



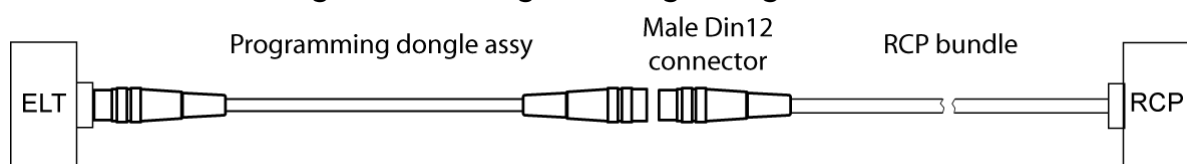
NOTE 1: in order to easily remove the programming dongle, when the RCP is connected to the ELT via a Programming Dongle (P/N S1820514-01), it is recommended to fit its cable with a stopping connector as close as possible to it (see figure below).

*Figure 16: Bundle with stopping connector*



NOTE 2: The mounting of a stopping connector may be skipped by using our pre-wired Programming Dongle ASSY (P/N S1820514-06). This dongle is fitted with the Programming Dongle (S1820514-01) on the ELT side and a female DIN-12 connector on the RCP side. In this case, a RCP bundle must be fabricated using a male DIN-12 connector (reference P/N S1820514-03 or BINDER 680-1-09-0329-00-12) and the relevant mating connector of the RCP.

*Figure 17: Programming Dongle ASSY*



### (1)RC100

RC100 RCP is supplied as a kit ([Refer to Figure 18: RC100 mounting diagram](#)).

Connection of RC100 requires a 3-wire bundle or 5-wire bundle if an outside buzzer is connected. A pin-to-pin wiring has to be provided by the installer with AWG24 wires. Shielded wires are recommended.

The wires are soldered to the switch pins, a resistor and LED pins. This operation can be carried out before installation.

On the ELT side, the wires are soldered to a 12-pin plug that can be either a standard "DIN12 connector" (P/N S1820514-03) or a connector with an integrated serial memory module called "Programming Dongle" (P/N S1820514-01).

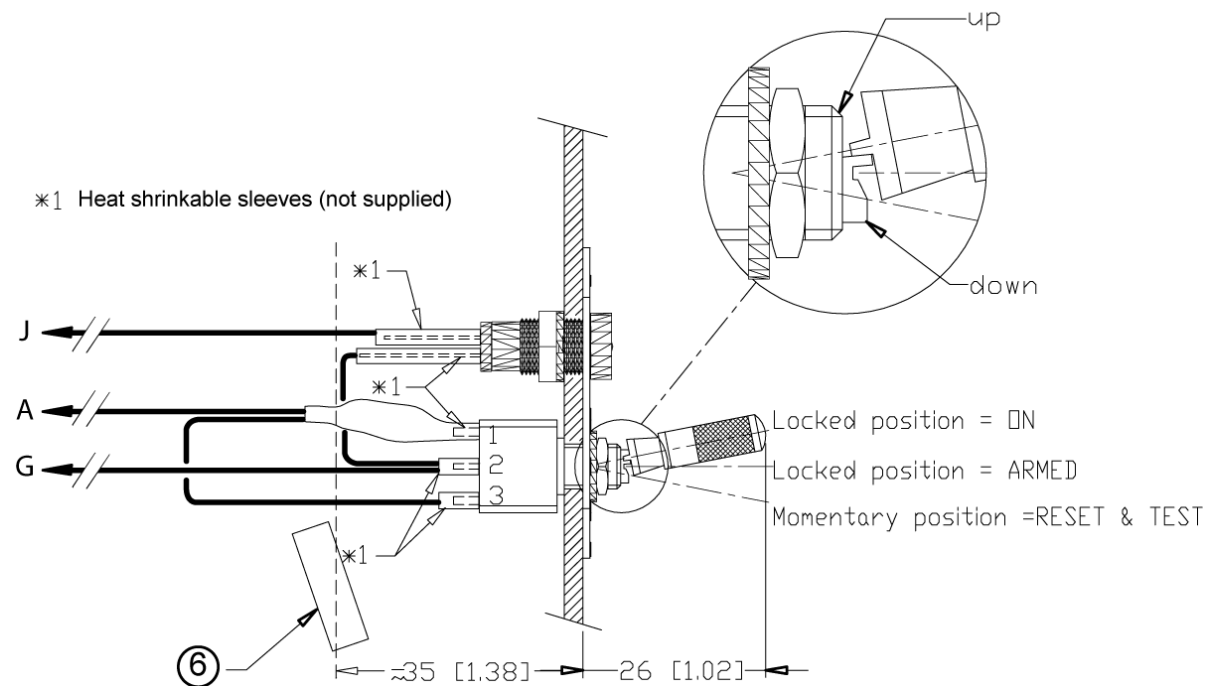
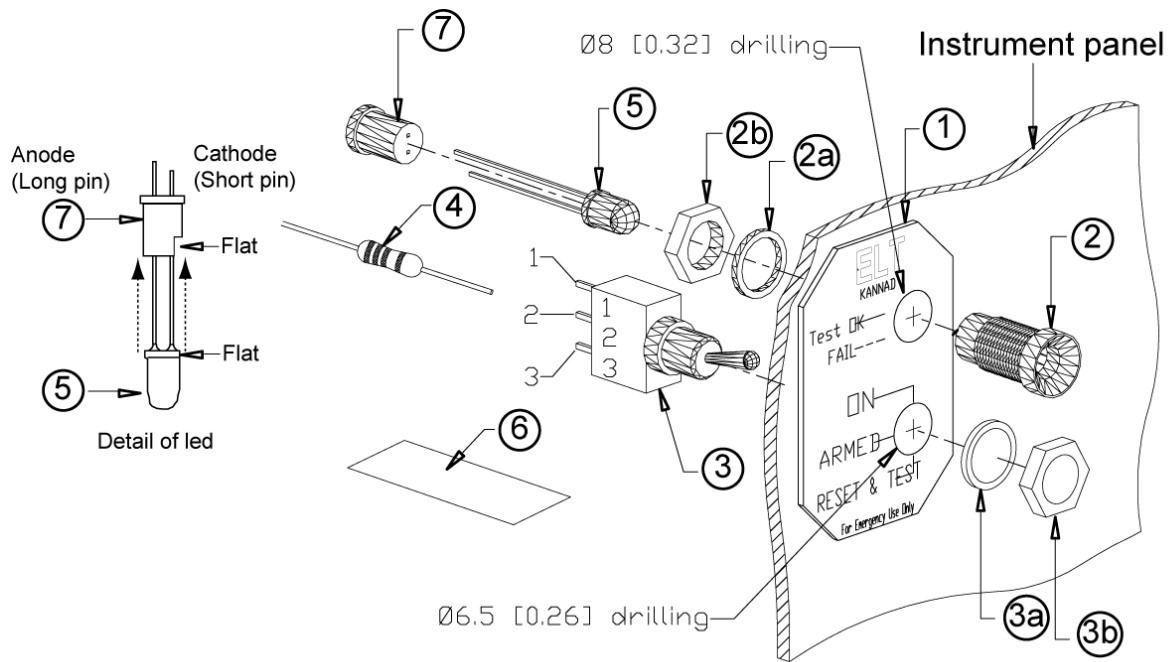
### **Mount and install RCP**

[Refer to Figure 18: RC100 mounting diagram](#)

NOTE: Pins of LED, pins of switch and resistor must be protected by heat shrinkable sleeves.

- Place the front plate (1) on the instrument panel;
- Trace the centers of the two holes according to drilling mask supplied;
- Drill a hole  $\varnothing$  8 mm for the LED mounting (2) (top of the panel);
- Drill a hole  $\varnothing$ 6.5 mm for the switch (3) (bottom of the panel);
- Tear off protection from self-adhesive film;
- Stick the front plate (1) on the instrument panel;
- Install the LED mounting (2), with washer (2a) and nut (2b). Tighten nut;
- Solder the resistor (4) to pin 1 of Switch (3);
- Connect the anode (long pins) of LED (5) to pin 2 of switch (3);
- Make a strap between pin 3 of switch (3) and resistor (4);
- Connect wires to pin 2 of switch (3), the resistor (4) and the cathode (short pins) of LED (5);
- Stuck the "identification label" (6) on the cable bundle near the switch;
- Insert the LED into the LED stand (7) taking care the flat part of the LED be in front of the flat part of the LED stand;
- Insert LED (5) fitted with LED stand (7) inside the LED mounting (2);
- Install the switch (3) with washer (3a) and nut (3b), locked position upwards. Tighten nut.

*Figure 18: RC100 mounting diagram*



**Connect RCP to ELT**

Solder the DIN12 connector or Programming Dongle on the other side of the bundle: [Refer to Figure 40: RC100 Wiring diagram, page 48](#)

**Outside buzzer installation and connection (option)**

- Mount and install buzzer: [Refer to Section 7. Outside Buzzer Installation, page 28.](#)
- Connect the buzzer to the ELT: [Refer to Figure 40: RC100 Wiring diagram, page 48.](#)



## (2) RC102

RC102 RCP is supplied as a kit ([Refer to Figure 19: RC102 mounting diagram, page 23](#)). 2 types of front plates may be installed. Choose the appropriate front plate according to the aircraft's instrument panel. The kit also includes 2 LEDs. The white LED is a NVG LED (Night Vision Goggles) only used for military aircraft, the red LED is a standard LED.

**CAUTION: use NVG LED only for military aircraft equipped for night vision goggles. Never install this LED in RCP for standard aircraft.**

Connection of RC102 requires a 2-wire bundle. A pin-to-pin wiring has to be provided by the installer with AWG24 wires. Shielded wires are recommended.

The wires are soldered to a PCB installed on the switch. This operation can be carried out before installation.

On the ELT side, the wires are soldered to a 12-pin plug that can be either a standard "DIN12 connector" (P/N S1820514-03) or a connector with an integrated serial memory module called "Programming Dongle" (P/N S1820514-01).

### **Mount and install RCP**

[Refer to Figure 19: RC102 mounting diagram, page 23.](#)

NOTE: Pins of LED must be protected by heat shrinkable sleeves.

#### Front plate (1a)

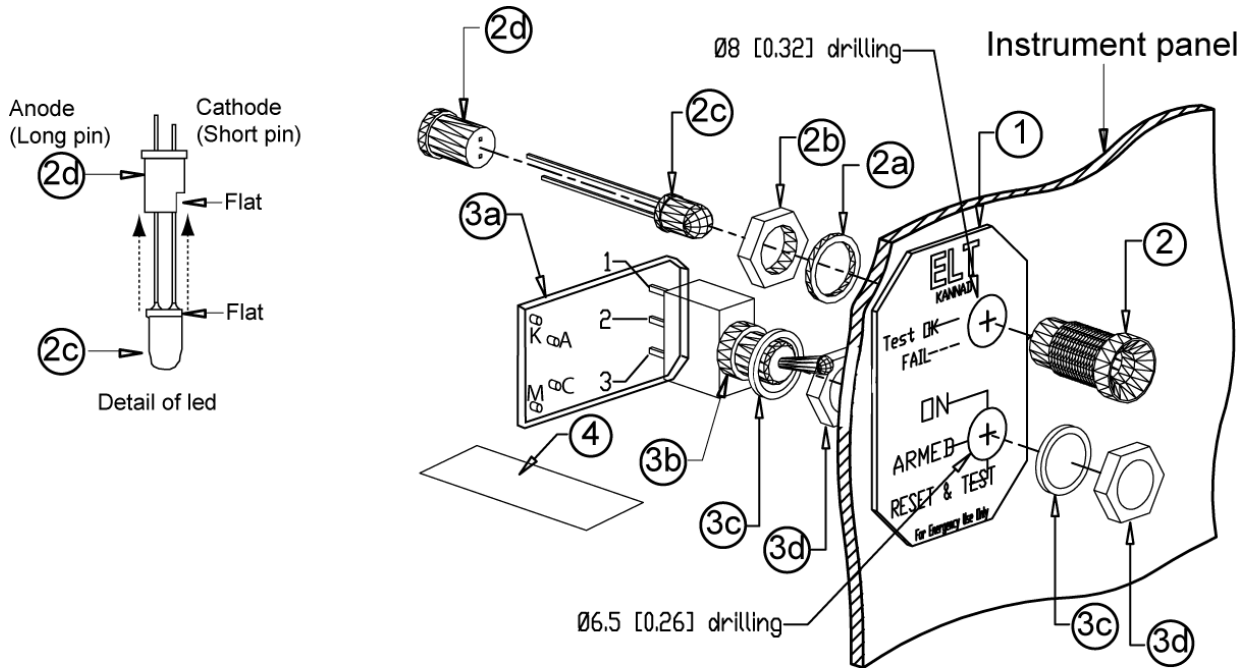
- Place the front plate (1a) on the instrument panel and use it as drilling mask or;
- Trace the centers of the two holes according to drilling mask supplied;
- Drill a hole  $\varnothing$  8 mm for the LED mounting (2) (top of the panel);
- Drill a hole  $\varnothing$ 6.5 mm for the switch (3b) (bottom of the panel);  
Note: the switch (3b) is already soldered to a PCB (3a)
- Tear off protection of front plate (1a) from self-adhesive film;
- Stick the front plate (1a) onto the instrument panel;
- Install the LED mounting (2), with washer (2a) and nut (2b). Tighten nut;
- Connect the anode (long pin) of LED (2c) to A of PCB (3a);
- Connect the cathode (short pin) of LED (2c) to C of PCB (3a);
- Connect wires to K and M of PCB (3a);
- Insert the LED into the LED stand (2d) taking care the flat part of the LED be in front of the flat part of the LED stand;

- Insert LED (2c) fitted with LED stand (2d) inside the LED mounting (2);
- Install the switch and PCB assembly (3b+3a) with washers (3c) and nuts (3d), locked position upwards. Tighten nut;
- Stuck the "identification label" (4) on the cable bundle near the PCB.

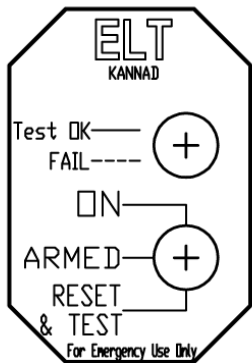
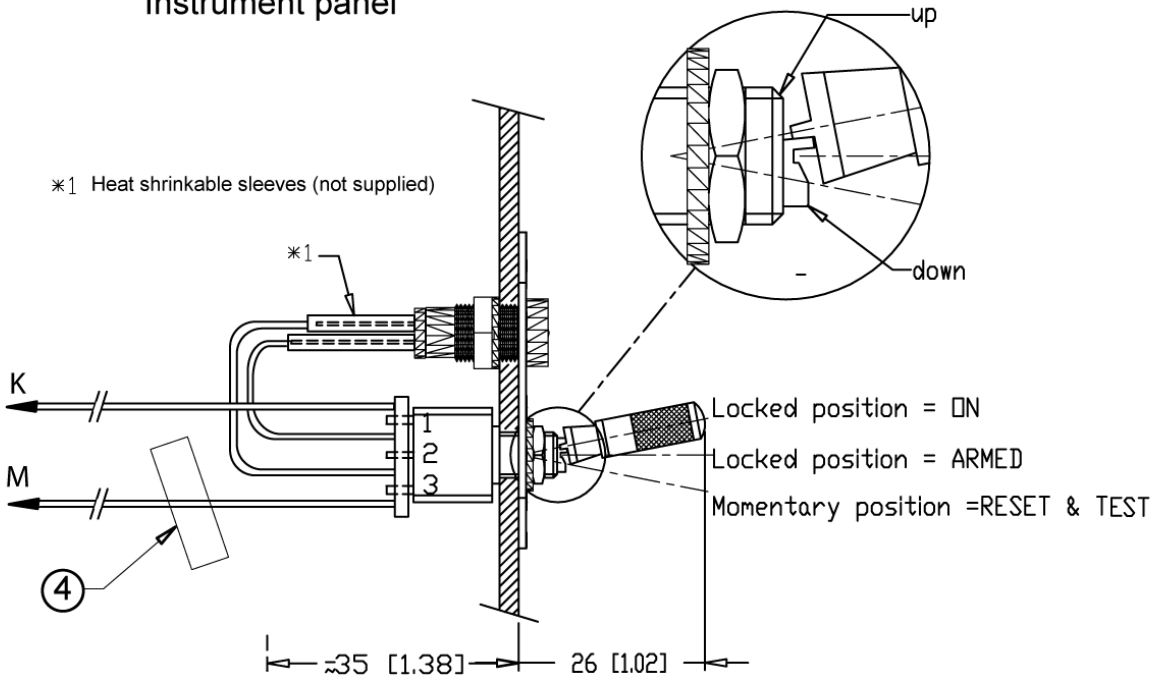
#### Front plate (1b)

- Place the front panel (1b) on to the instrument panel and use it as drilling mask or;
- Trace the centers of the two holes according to drilling mask supplied;
- Drill a hole  $\varnothing$  8 mm for the LED mounting (2) (left of the panel);
- Drill a hole  $\varnothing$ 6.5 mm for the switch (3b) (right of the panel);  
Note: the switch (3b) is already soldered to a PCB (3a).
- Drill 4 holes of  $\varnothing$  3 mm for the screws used to fix the RCP;
- Screw the front plate (1b) onto the instrument panel;
- Install the LED mounting (2), with washer (2a) and nut (2b). Tighten nut;
- Connect the anode (long pin) of LED (2c) to A of PCB (3a);
- Connect the cathode (short pin) of LED (2c) to C of PCB (3a);
- Connect wires to K and M of PCB (3a);
- Insert the LED into the LED stand (2d) taking care the flat part of the LED be in front of the flat part of the LED stand;
- Insert LED (2c) fitted with LED stand (2d) inside the LED mounting (2);
- Install the switch and PCB assembly (3b+3a) with washers (3c) and nuts (3d), locked position upwards. Tighten nut;
- Stuck the "identification label" (4) on the cable bundle near the PCB.

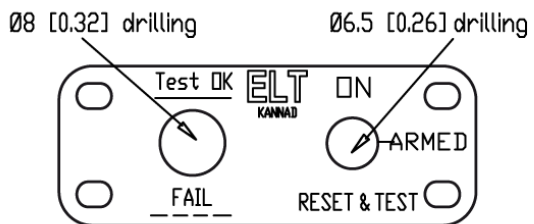
Figure 19: RC102 mounting diagram



Instrument panel



Front plate (1a)



Front plate (1b)

**Connect RCP to ELT**

Solder the DIN12 connector or Programming Dongle on the other side of the bundle (pins K and M):

[Refer to Figure 41: RC102 Wiring diagram, page 49](#)

Stuck the "CAUTION label" on the cable bundle close to the DIN12 connector.

***(3) RC200***

The RC200 RCP is designed to be installed:

- either on the instrument panel with 4 screws (rivets bush recommended, not supplied );
- or below the instrument panel with a special mounting tray (supplied).

**Installation on the instrument panel**

- Determine RC200 location on the instrument panel:
  - Make a cutout on the instrument panel according to the Drilling mask ([Refer to RC200 Outline Dimensions, page 39](#)).
  - Mark the 4 holes needed for the RC200 using the drilling mask or the RC200 as a guide.
  - Drill the 4 marked holes, diameter depending on rivets bush used.
  - Install the RC200 by fitting it into the cutout.
  - Secure the RC200 (4 rivets bush recommended).
- Note: Rivets bush are not supplied.

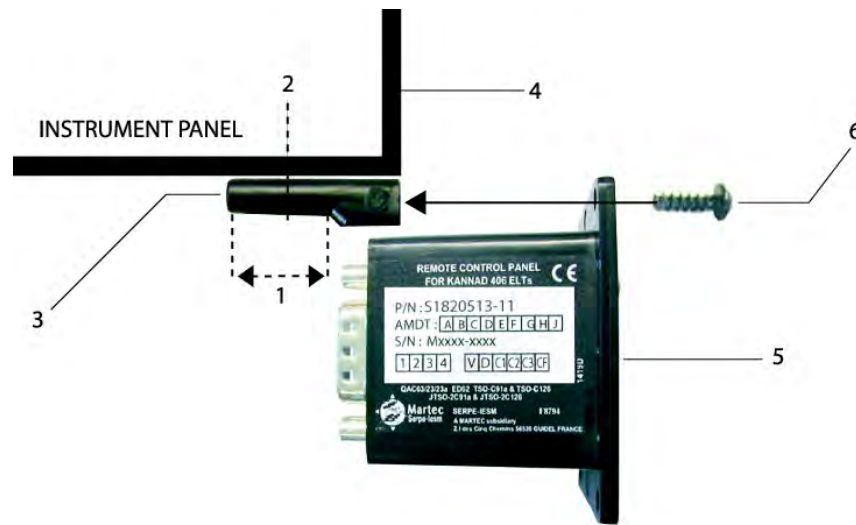
**Installation below the instrument panel**

[Refer to Figure 20: Installation of RC200 with mounting tray.](#)

Determine RC200 location below the instrument panel (be sure the location meets the requirements established in RTCA-DO-204).

- According to the "area to be drilled" (1) of the mounting tray (3), determine the location of the screws or rivets (2) used to secure the mounting tray (3) to the instrument panel (4).
- Drill 2 holes on the mounting tray and on the instrument panel, diameter depending on screws or rivets used.
- Secure the mounting tray (3) to the instrument panel (4).
- Secure the RC200 (5) to the mounting tray (3) with the 2 screws (6) supplied (torque 0.8 Nm).

*Figure 20: Installation of RC200 with mounting tray*



**Connection**

Refer to [Figure 42: RC200 Wiring diagram, page 50](#)

RC200 is an RCP without internal buzzer. It can be connected to an optional outside buzzer and/or to an external warning

A 3-wire bundle is required to connect RC200 to the ELT. If the optional outside buzzer and/or external warning is installed, a 4-wire bundle is required.

Fabricate a 3 or 4-wire bundle (AWG 24, shielded preferred) long enough to reach between the ELT installation location and the cockpit RCP location.

Slide heat-shrinkable sleeves on both sides of each wire.

On the ELT side:

- Solder the wires to the DIN12 connector supplied with the pack according to wiring diagram.
- Put heat-shrinkable sleeves to protect the pins

On the RCP side:

- Solder the wires from DIN-12 connector to the female 9-pin D-SUB connector according to wiring diagram.
- Put heat-shrinkable sleeves to protect the pins.

Outside buzzer installation and connection (option)

- Mount and install buzzer: [Refer to Section 7. Outside Buzzer Installation, page 28.](#)
- Connect the outside buzzer: [Refer to Figure 42: RC200 Wiring diagram, page 50.](#)

External warning installation and connection (option): [Refer to Figure 42: RC200 Wiring diagram, page 50](#)

Connect the female 9-pin D-SUB connector to the male 9-pin D-SUB plug of the RC200.

#### (4) RC300 / RC300-NVG

The RC300 RCP is designed to be installed in a standard rack of an aircraft cockpit. As compliant with NF L 65-211 standard, no drilling is necessary to install this RCP. The precise location of RC300 is to be determined according to aircraft manufacturer instruction.

A male 9-pin D-SUB connector, reference AMPHENOL 17DE09PTZ or equivalent, must be used as mating connector to connect the bundle to the RCP connector.

#### **Connection with DIN-12 connector or Programming dongle**

[Refer to Figure 43: RC300 Wiring diagram, page 51](#)

Fabricate a 4-wire bundle (AWG 24, shielded preferred) long enough to reach between the ELT installation location and the cockpit panel RCP location. Slide heat-shrinkable sleeves on both sides of each wire.

On the ELT side:

- Solder the wires to the DIN-12 connector (or programming dongle) to be connected to the ELT or to the DIN-12 male connector of RCP bundle if a Programming Dongle ASSY is used ([Refer to Figure 17: Programming Dongle ASSY](#)).

On the RCP side:

- Solder the wires to the male 9-pin D-SUB connector according to wiring diagram.
  - If an optional outside buzzer is connected:
    - Mount and install the buzzer: [Refer to Section 7. Outside Buzzer Installation, page 28](#)
    - Connect the buzzer: [Refer to Figure 43: RC300 Wiring diagram, page 51](#).
- Put heat-shrinkable sleeves to protect the pins.
- Connect the male 9-pin D-SUB connector to the female 9-pin D-SUB plug of RC300.

### (5) RC600 NVG

The RC600 NVG RCP is designed to be installed in a standard rack of a military helicopter cockpit. As compliant with NF L 65-211 standard, no drilling is necessary to install this RCP. The precise location of RC600 is to be determined according to aircraft manufacturer instruction.

A female 22-pin socket, reference D38999/26JC35SA, must be used as mating connector to connect the bundle to the RCP connector.

#### **Connection with DIN-12 connector or Programming dongle**

[Refer to Figure 44: RC600 Wiring diagram, page 52](#)

Fabricate a 4-wire bundle (AWG 24, shielded preferred) long enough to reach between the ELT installation location and the cockpit panel RCP location. Slide heat-shrinkable sleeves on both sides of each wire.

On the ELT side:

- Solder the wires to the DIN-12 connector (or programming dongle) to be connected to the ELT or to the DIN-12 male connector of RCP bundle if a Programming Dongle ASSY is used ([Refer to Figure 17: Programming Dongle ASSY](#)).

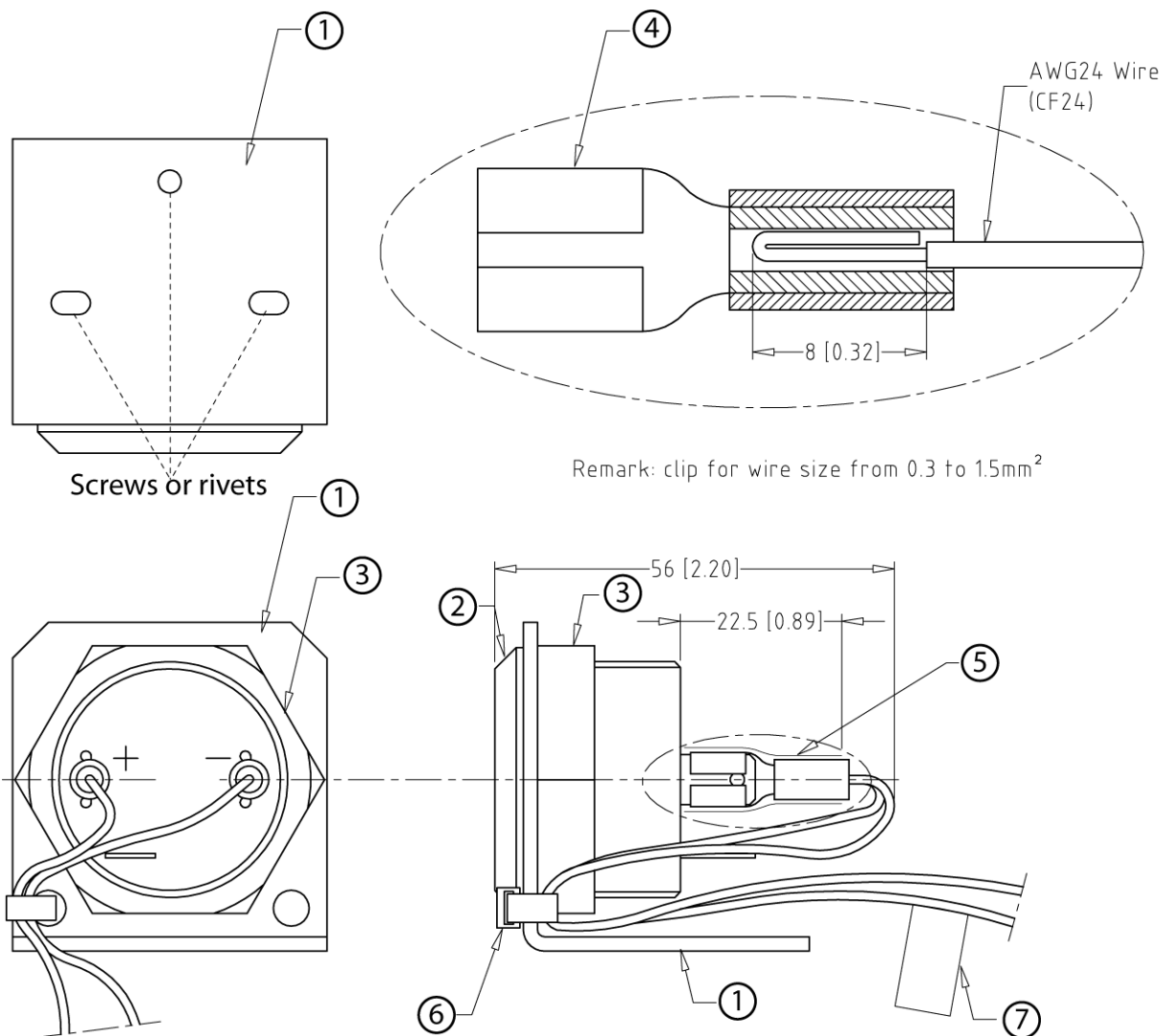
On the RCP side:

- Solder the wires to the female 22-pin socket according to wiring diagram.
  - Connect Outside Lamp, Horn, Lamp test and Backlight.
  - If an optional outside buzzer is connected:
    - Mount and install the buzzer: [Refer to Section 7. Outside Buzzer Installation, page 28](#)
    - Connect the buzzer: [Refer to Figure 44: RC600 Wiring diagram, page 52](#).
- Put heat-shrinkable sleeves to protect the pins.
- Connect the female 22-pin socket to the male 22-pin plug of RC600.

## 7. Outside Buzzer Installation

- Drill 3 x Ø 3mm holes according to drilling mask (Refer to Figure 28: Outside buzzer, Outline dimensions);
- Fix the mounting tray (1) with 3 M3 screws and nuts or with 3 rivets;
- Install the buzzer (2) on the into the mounting tray and tighten plastic nut (3) (maximum torque on plastic nut: 6Nm);
- Crimp the Fast-On terminals (4) on the wires;
- Wrap the Fast-On terminals with heat shrinkable sleeve (5) (25 mm);
- Using clamps (6), fix the wires on the mounting tray;
- Affixed the label (7) on the wires.

*Figure 21: Buzzer installation*





## 8. ELT Connection

1. Connect the cable of the external antenna to the BNC connector of the front panel.
2. Connect the DIN12 connector of the Remote Control Panel cable to the DIN 12 socket of the front panel.
3. Set the 3-position switch of the front panel to ARM.

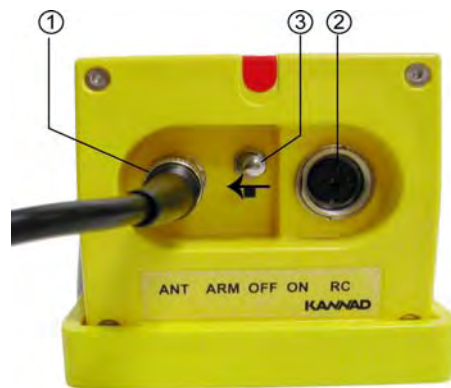


Figure 22: Installation, controls and connectors

- Perform the first power up procedure (see below).

## 9. First power up procedure

***Do not perform these tests without the antenna connected.***

### A. ELT operational tests

NOTE: ELT operational tests only provide the aircraft operator with an indication that the ELT is transmitting; however, a positive result cannot be interpreted as meaning that the ELT meets all operational parameters.

- Check that the antenna is correctly connected
  - Do not perform self-test without antenna connected.**
- Tune aircraft radio to 121.5 MHz and ensure you can hear it.
- Switch from position "OFF" to position "ARM" or press RESET & TEST on the Remote Control Panel (ensure that the ELT switch is in position "ARM").
- Listen for the buzzer - it operates during the whole Self-test procedure. Close to the end of self-test a short (3 sweeps) 121.5 transmission is made - confirm this on the aircraft radio.
- After a few seconds, the test result is displayed with the red visual indicator and the buzzer will sound:
  - One long flash indicates that the system is operational and that no error conditions were found.
  - A series of short flashes indicates the test has failed.

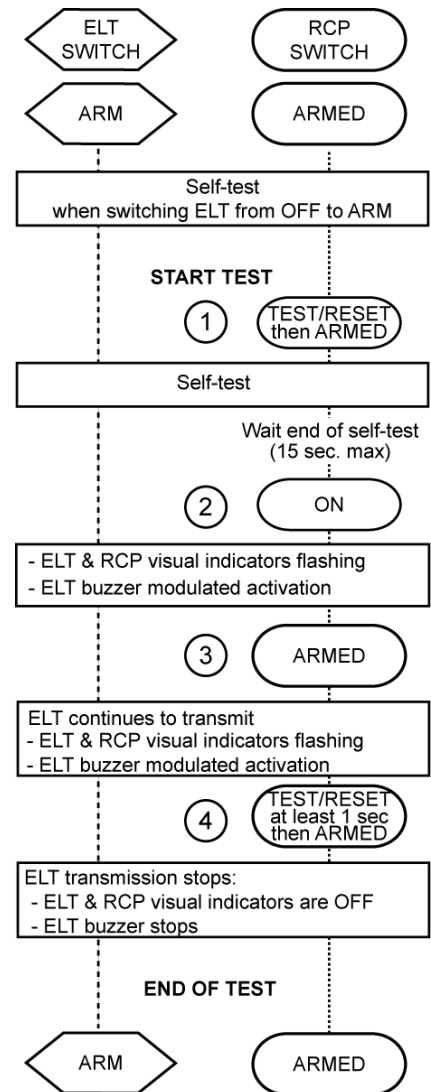
**Remark: The number of flashes gives an indication of the faulty parameter detected during the self-test.**

3+1	LOW BATTERY VOLTAGE
3+2	LOW RF POWER
3+3	FAULTY VCO LOCKING (FAULTY FREQUENCY)
3+4	NO IDENTIFICATION PROGRAMMED
3+5	FAULTY VSWR (EXT. ANTENNA)
3+6	GPS SERIAL LINK (ELT internal check)

***If self-test fails, contact the distributor as soon as possible.  
Unless a waiver is granted, flight should be cancelled.***

**B. RCP operational tests**

Check correct operation of RCP LED annunciator by switching ELT and RCP as described in the sequential procedure [Figure 23: RCP LED operation](#) (with ELT switch in the "ARM" position).



*Figure 23: RCP LED operation*

### C. 406 and 121.5 MHz transmission test

NOTE: Transmissions tests only provide the aircraft operator with an indication that the ELT is transmitting; however, a positive result cannot be interpreted as meaning that the ELT meets all operational parameters.

#### (1) 406 MHz

This test should be carried out with a COSPAS-SARSAT decoder.

**Note: If a COSPAS-SARSAT decoder is not available, the coding sheet supplied by the programmer for the beacon (or dongle) with the corresponding CSN proves that the beacon (or dongle) is correctly programmed. Skip to § (2) 121.5 MHz.**

- Perform self-test (Press RESET and TEST on the RCP or switch ELT from OFF to ARM).
- Check with the COSPAS-SARSAT decoder that, except for the 5th and the 6th digits, the decoded message is identical to the programmed message.

NOTE: The message transmitted during self-test sequence always begins with FF FE D0 whereas a programmed message begins with FF FE 2F.

Example of message programmed in ELT:

FF FE **2F** 96 E3 AF 0F 0F 7F DF FF 62 60 B7 83 E0 F6 6C

Example of same message decoded by Cospas-Sarsat Decoder:

FF FE **D0** 96 E3 AF 0F 0F 7F DF FF 62 60 B7 83 E0 F6 6C

#### (2) 121.5 MHz

***This check shall only be conducted during the first five minutes of any UTC, (co-ordinated universal time) hour, and restricted in duration to not more than five seconds. Be sure to notify any nearby control tower of your intentions.***

This test must be carried out with a VHF receiver either with the aircraft VHF receiver or with a not on-board VHF receiver.

**IMPORTANT: Aircraft VHF receiver may be used only if 406 MHz test was carried out with a Cospas-Sarsat decoder, otherwise check 121.5 MHz using a VHF receiver (not the on-board VHF receiver) several dozens meters away from the antenna. This ensures to validate the antenna.**

- Tune VHF receiver to 121.5 MHz;
- Start transmission:
  - either on ELT: ON position;
  - or on the RCP: ON position (the ELT shall be in ARM position);
- Only 2 "sweep tones" are heard after 5 seconds, then the 121.5 MHz stops.

- Stop transmission:
  - either on ELT: OFF or ARM position;
  - or on the Remote Control Panel: press TEST and RESET (the ELT shall be in ARM position).
  - continue to listen to 121.5 MHz for a few seconds to ensure that the ELT does not continue to transmit after the test is terminated.

**IMPORTANT: If the ELT operates for approximately 50 seconds, a 406 MHz signal is transmitted and is considered valid by the satellite system.**

**At the end of the first power up procedure, switch the ELT to ARM.**

The ELT is now in stand by mode and ready to be activated:

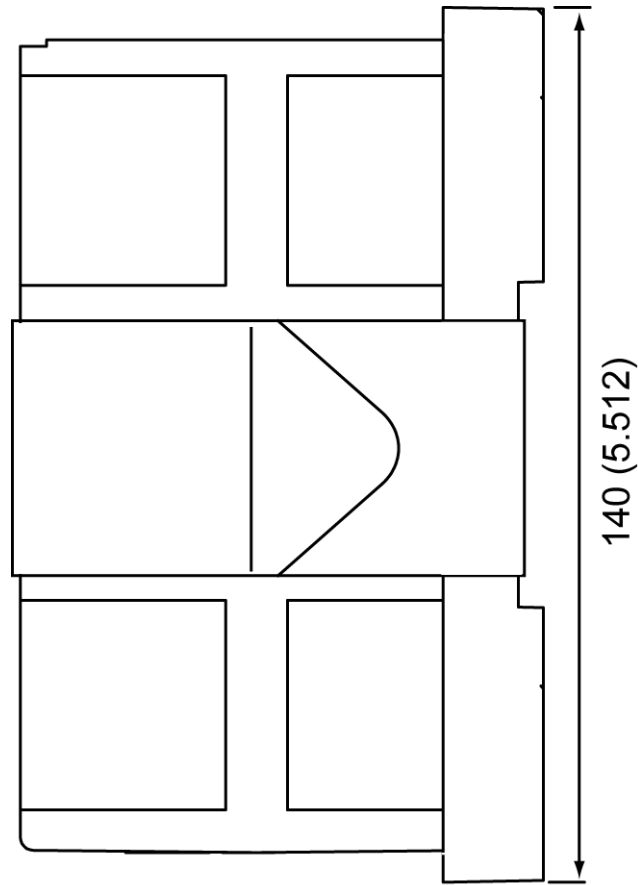
- either automatically by G-Switch sensor if a crash occurs;
- or manually by Remote Control Panel.

*Note : switching to ON directly on the ELT front panel will also activate the ELT.*

**10. Outline dimensions and weights**

*Figure 24: Outline Dimensions and weight with Compact Mounting Bracket*

Typical weight with mounting bracket:  
Weight in grams (pounds in brackets)  
AF INTEGRA: 880 (1.94)  
AF-H INTEGRA: 885 (1.95)



Note: all dimensions are in millimeters  
(inches in brackets)

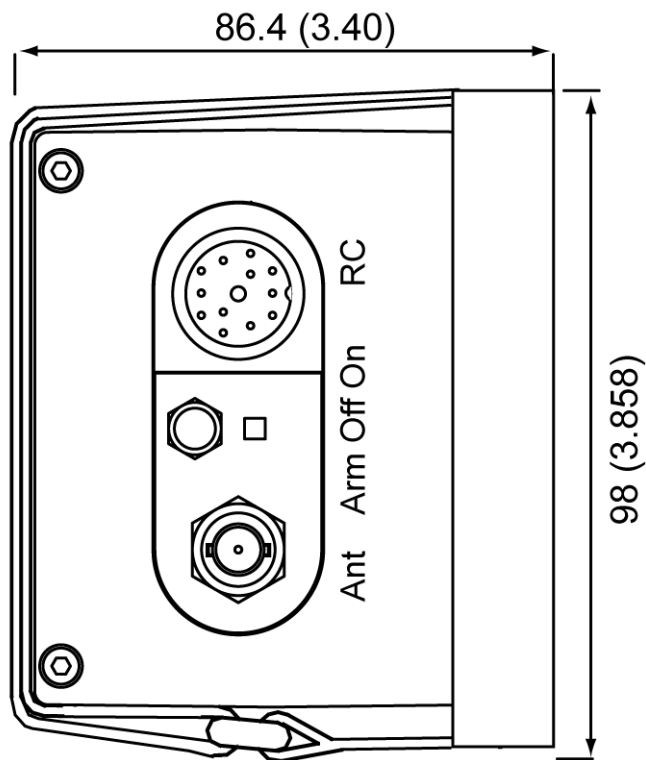


Figure 25: Outline dimensions and weight with Universal Mounting Bracket

Typical weight with mounting bracket:  
Weight in grams (pounds in brackets)  
AF INTEGRA: 905 (1.99)  
AF-H INTEGRA: 910 (2.00)

Note: all dimensions are in millimeters  
(inches in brackets)

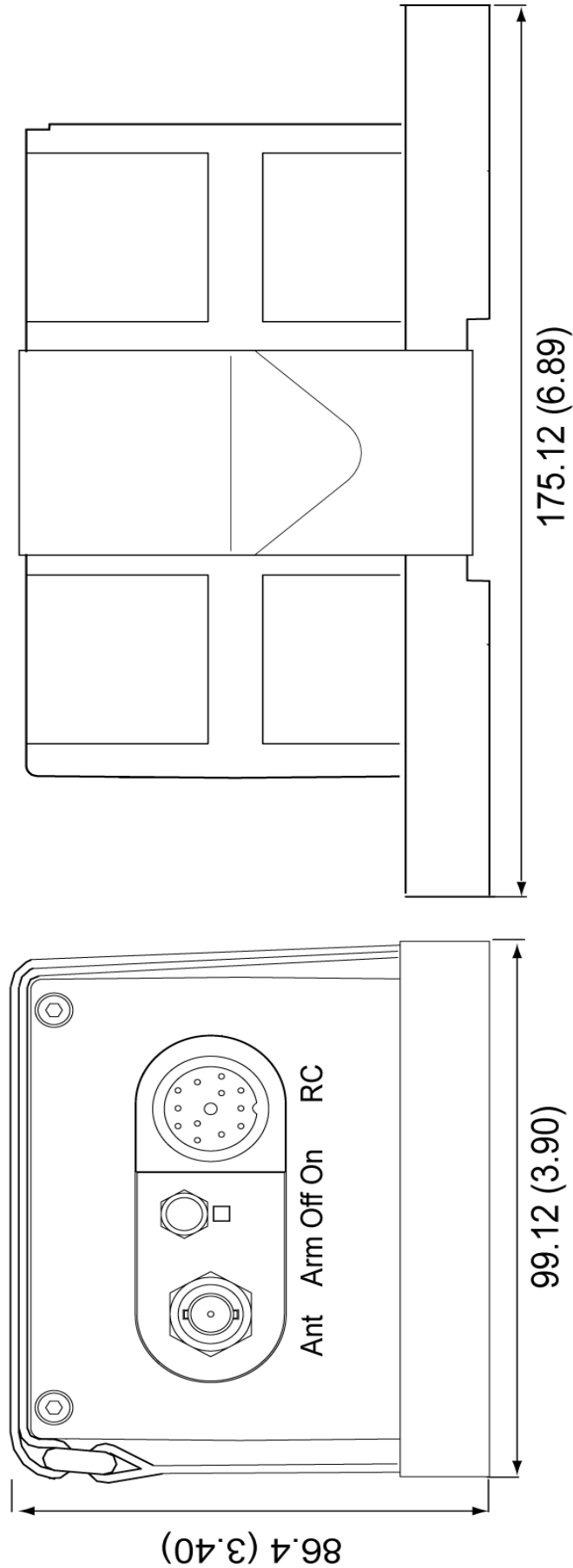
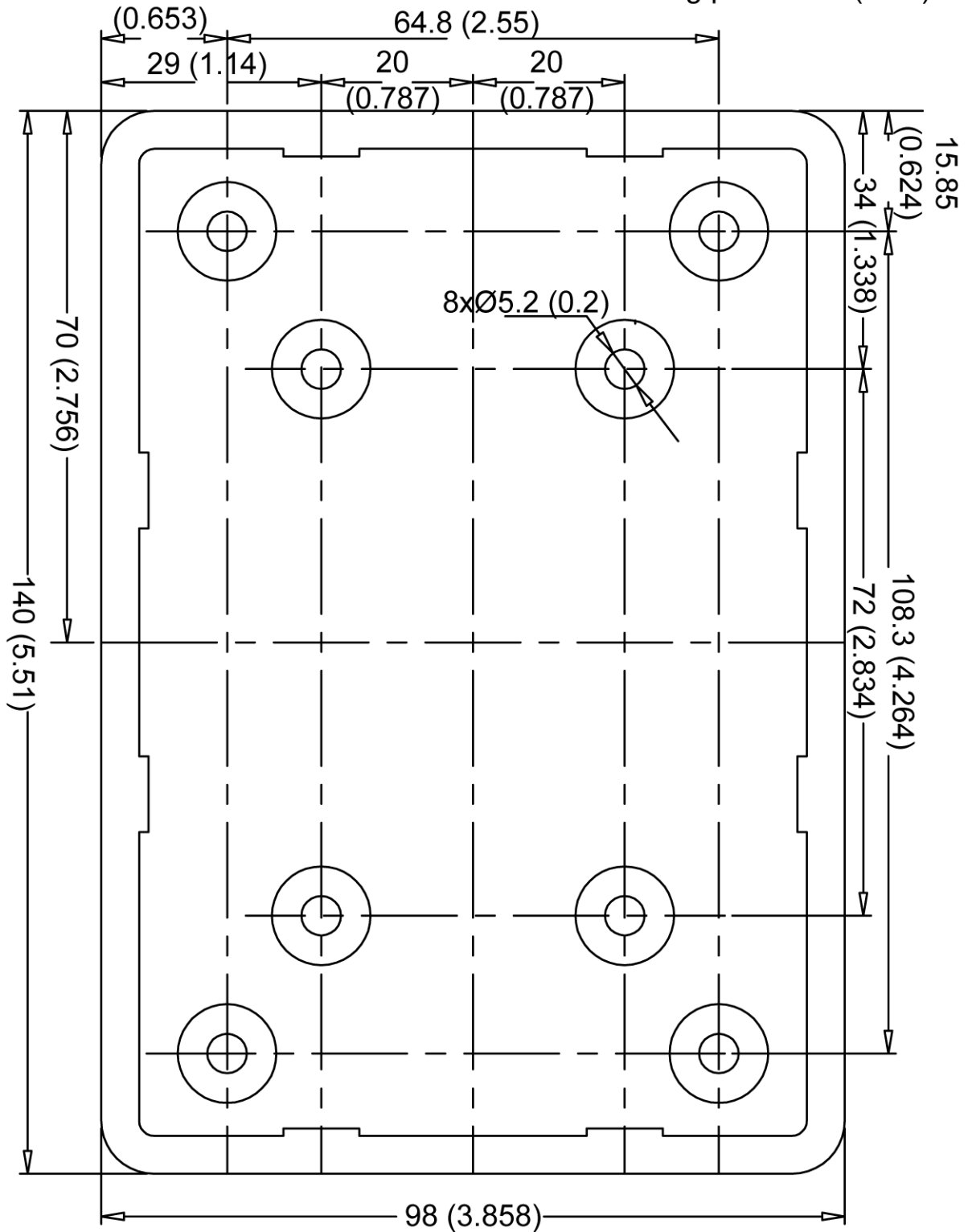


Figure 26: Compact Mounting bracket (S1840502- 01), Outline dimensions and weight

Note: all dimensions are in millimeters  
(inches in brackets)

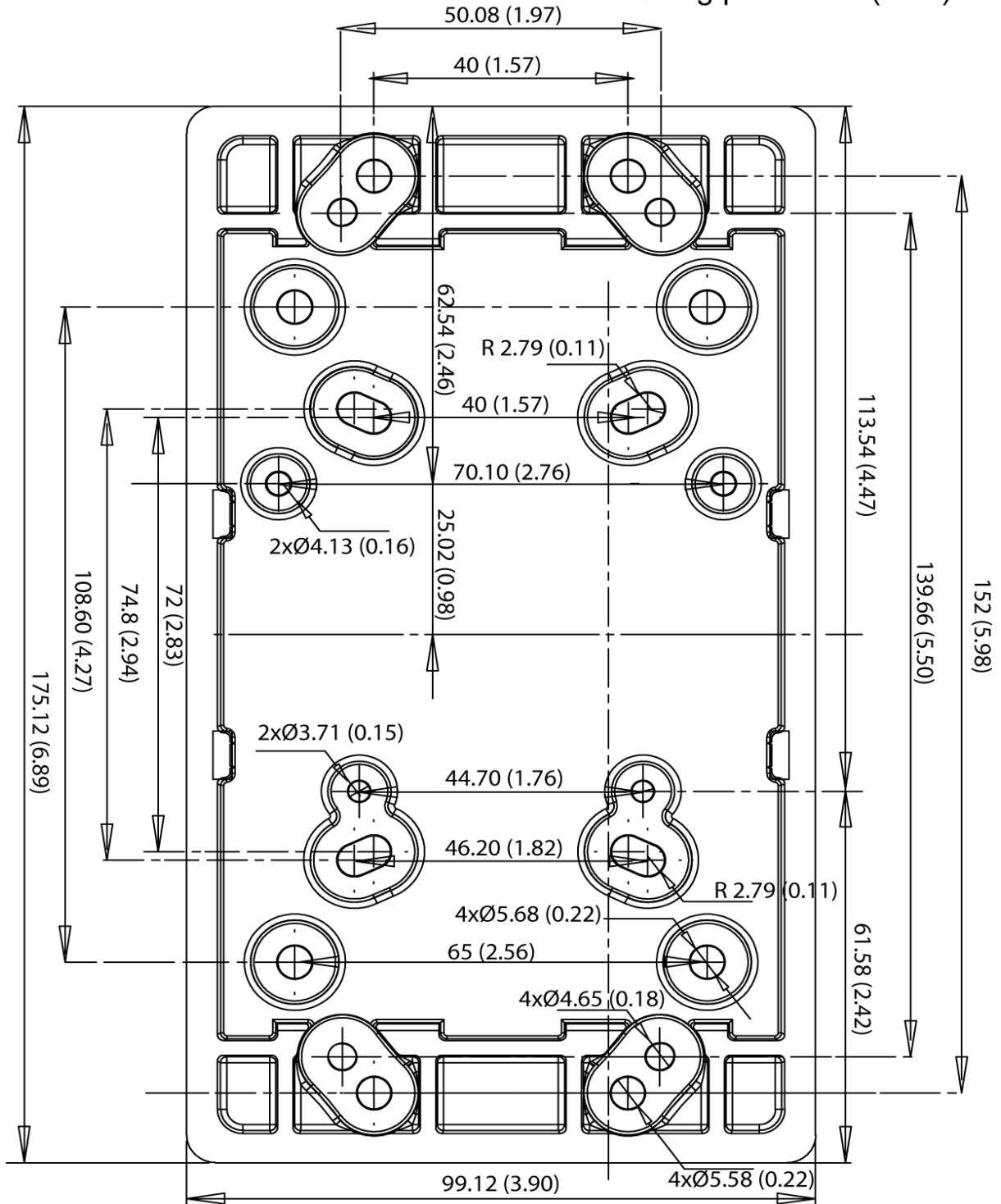
Typical weight in grams  
(pounds in brackets) with  
attaching parts: 157 (0.35)



*Figure 27: Compact Universal Mounting bracket (S1840502- 02), Outline dimensions and weight*

Note: all dimensions are in millimeters  
(inches in brackets)

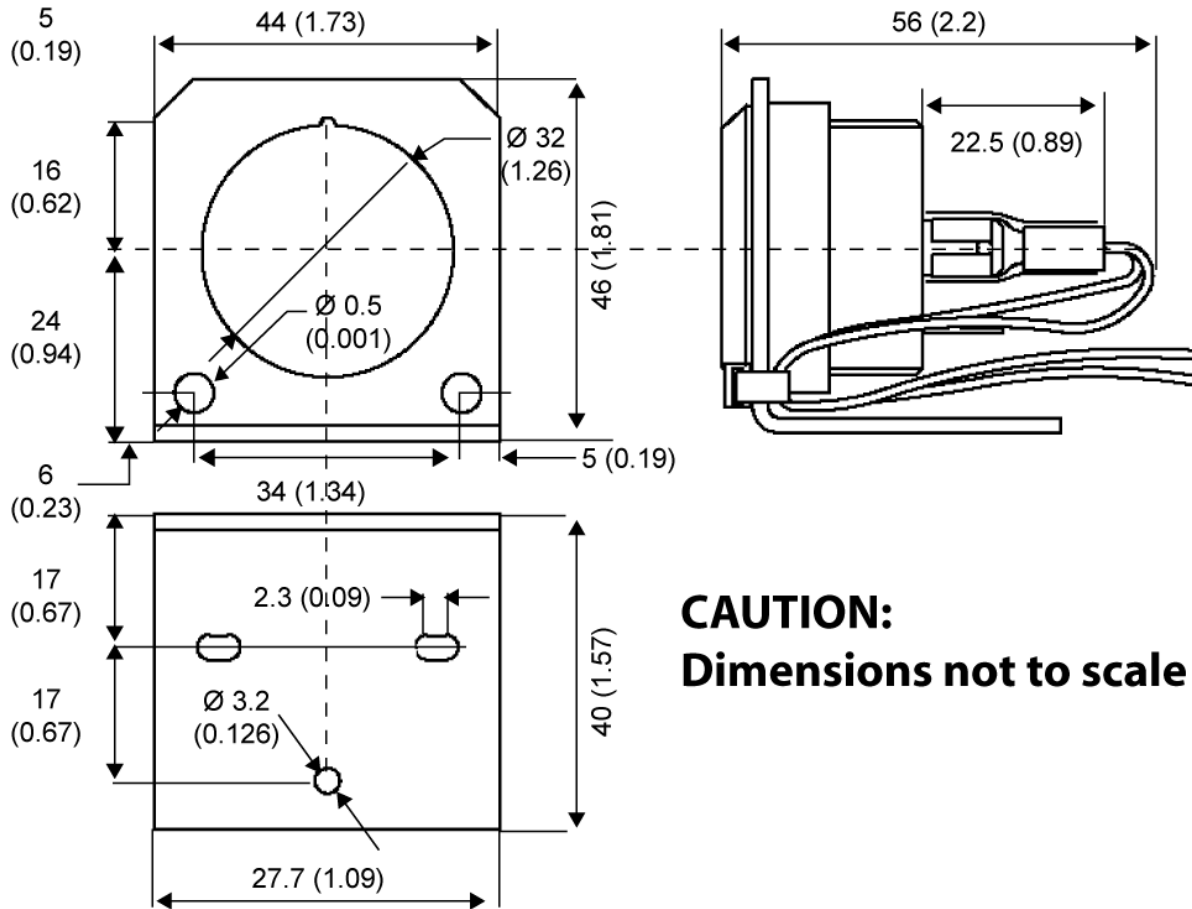
Typical weight in grams  
(pounds in brackets) with  
attaching parts: 182 (0.40)





*Figure 28: Outside buzzer, Outline dimensions*

Note : all dimensions are in millimeters  
(inches in brackets)



**CAUTION:**  
**Dimensions not to scale**

*Figure 29: RC100 Outline dimensions*

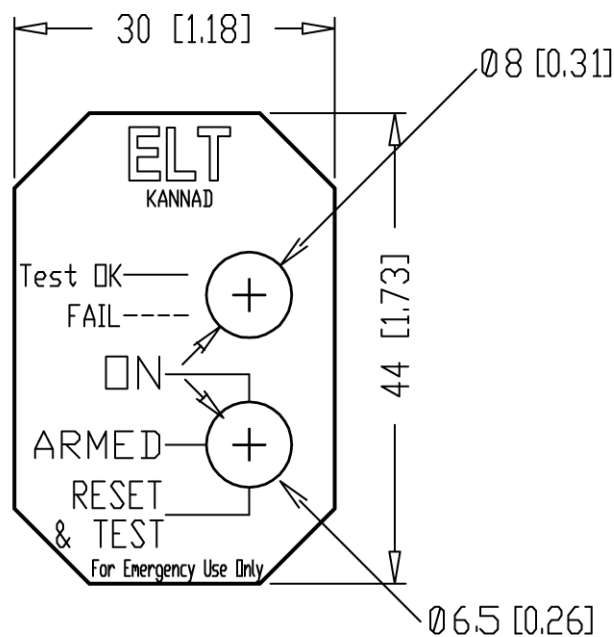
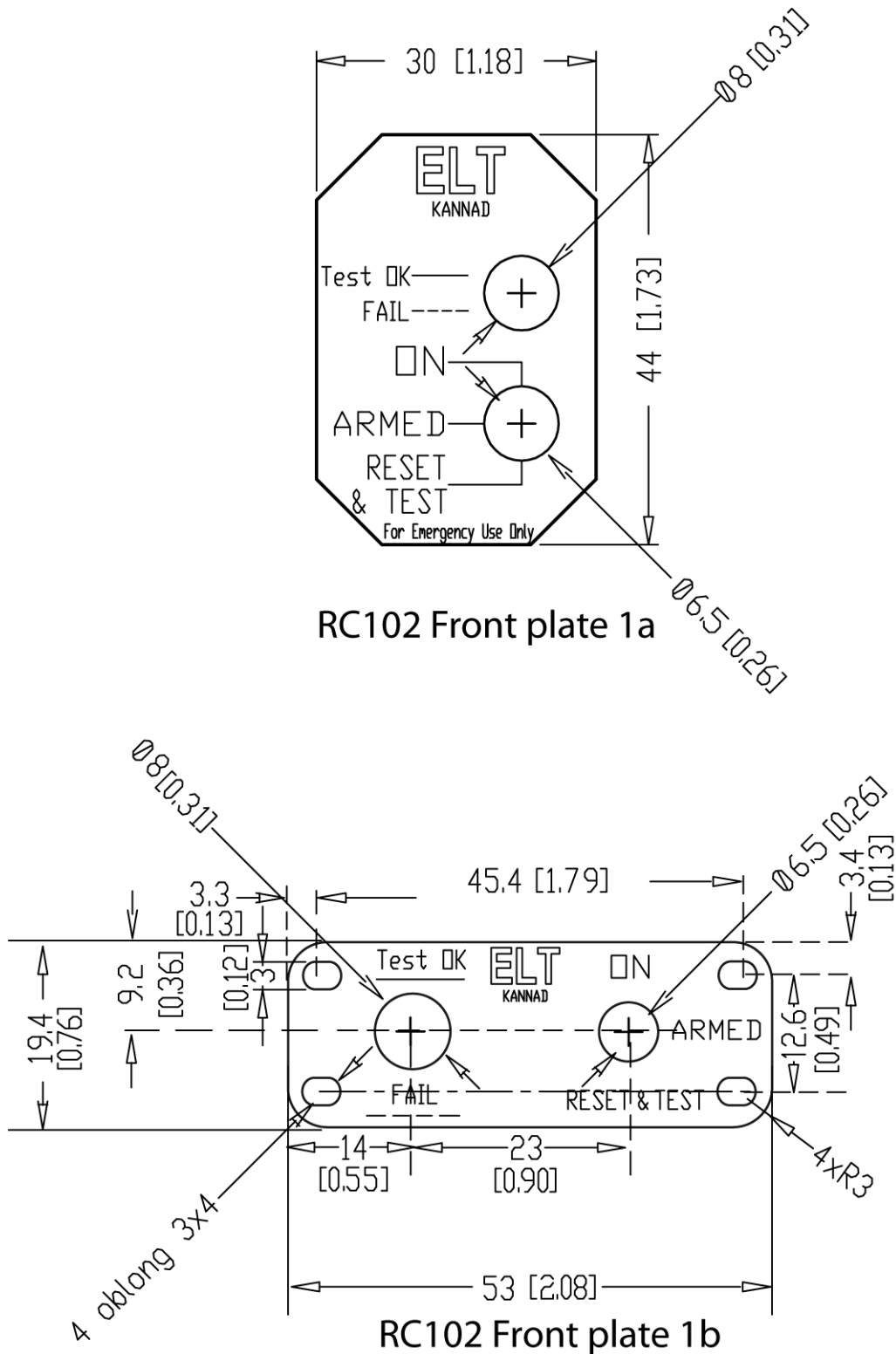


Figure 30: RC102 Outline dimensions



RC102 Front plate 1a

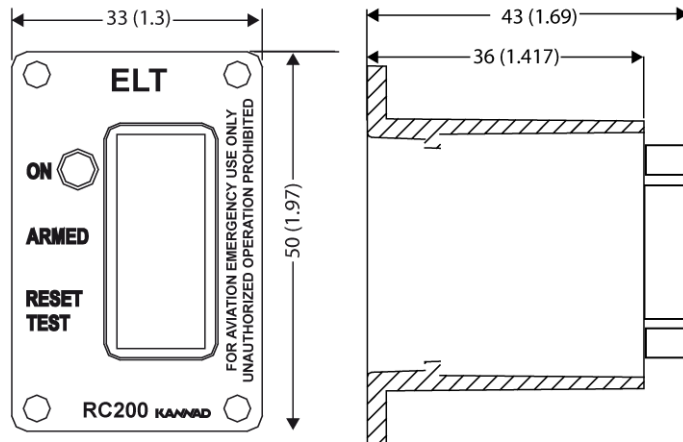
RC102 Front plate 1b

**CAUTION: Dimensions not to scale**

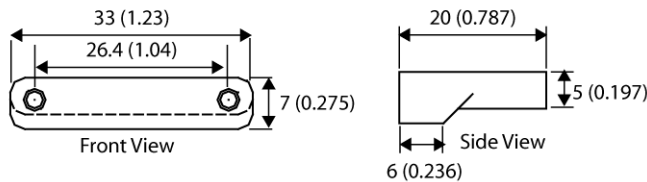
*Figure 31: RC200 Outline Dimensions*

Note: all dimensions are in millimeters  
(inches in brackets)

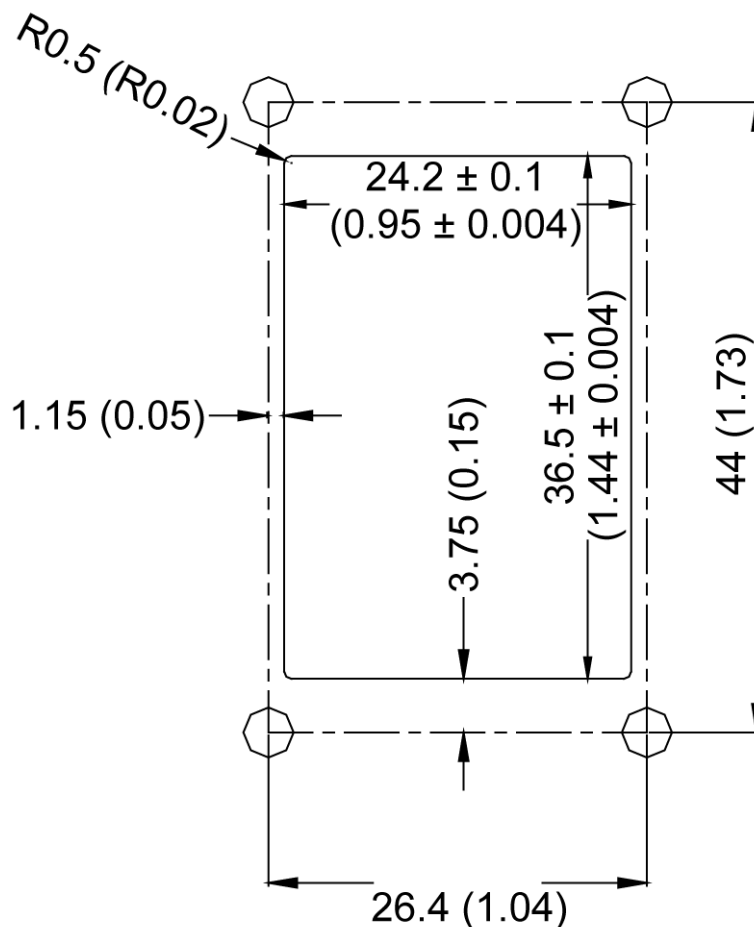
Tolerance:  $\pm 0.2$  mm (0.008)



**CONTROL PANEL**



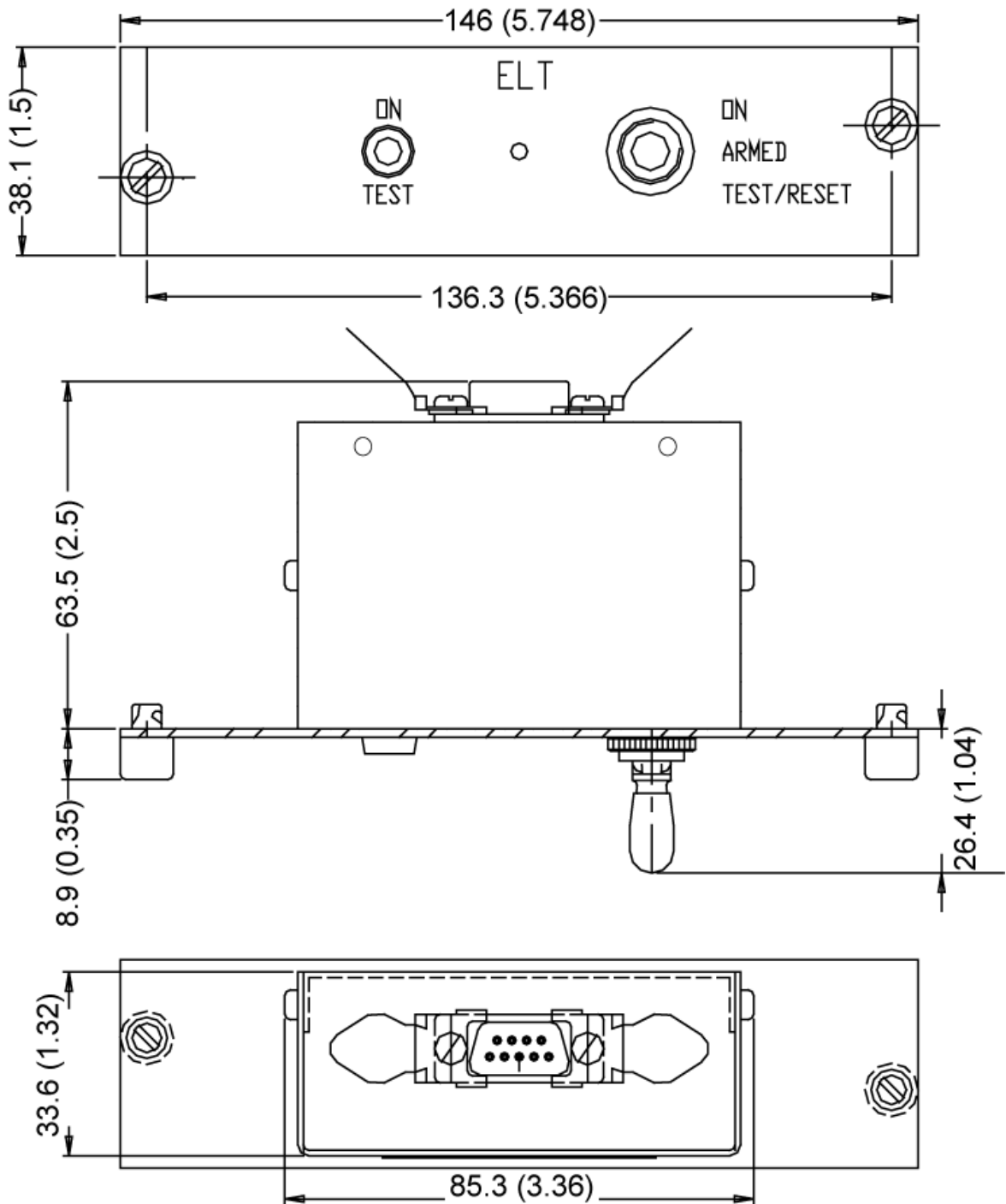
**MOUNTING TRAY**



**CAUTION: Dimensions not to scale**

Figure 32: RC300 Outline Dimensions

Note: All dimensions are in millimeters (inches in brackets)



*Figure 33: RC600 Outline dimensions*

Note: All dimensions are in millimeters (inches in brackets)

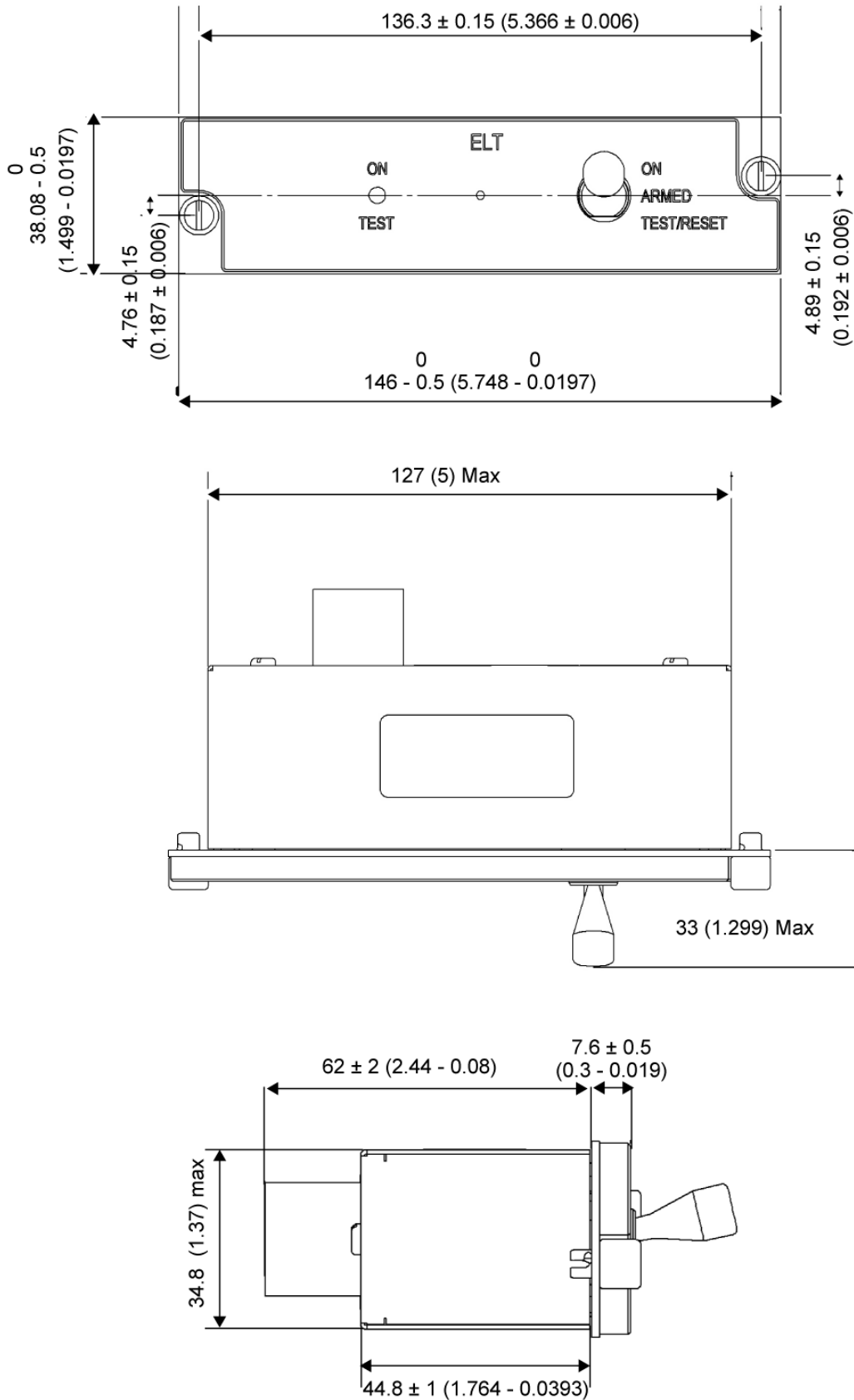


Figure 34: AV-200 Outline dimensions and weight

Note: all dimensions are in millimeters  
(inches in brackets)

Weight: 85 g (0.19 lbs)

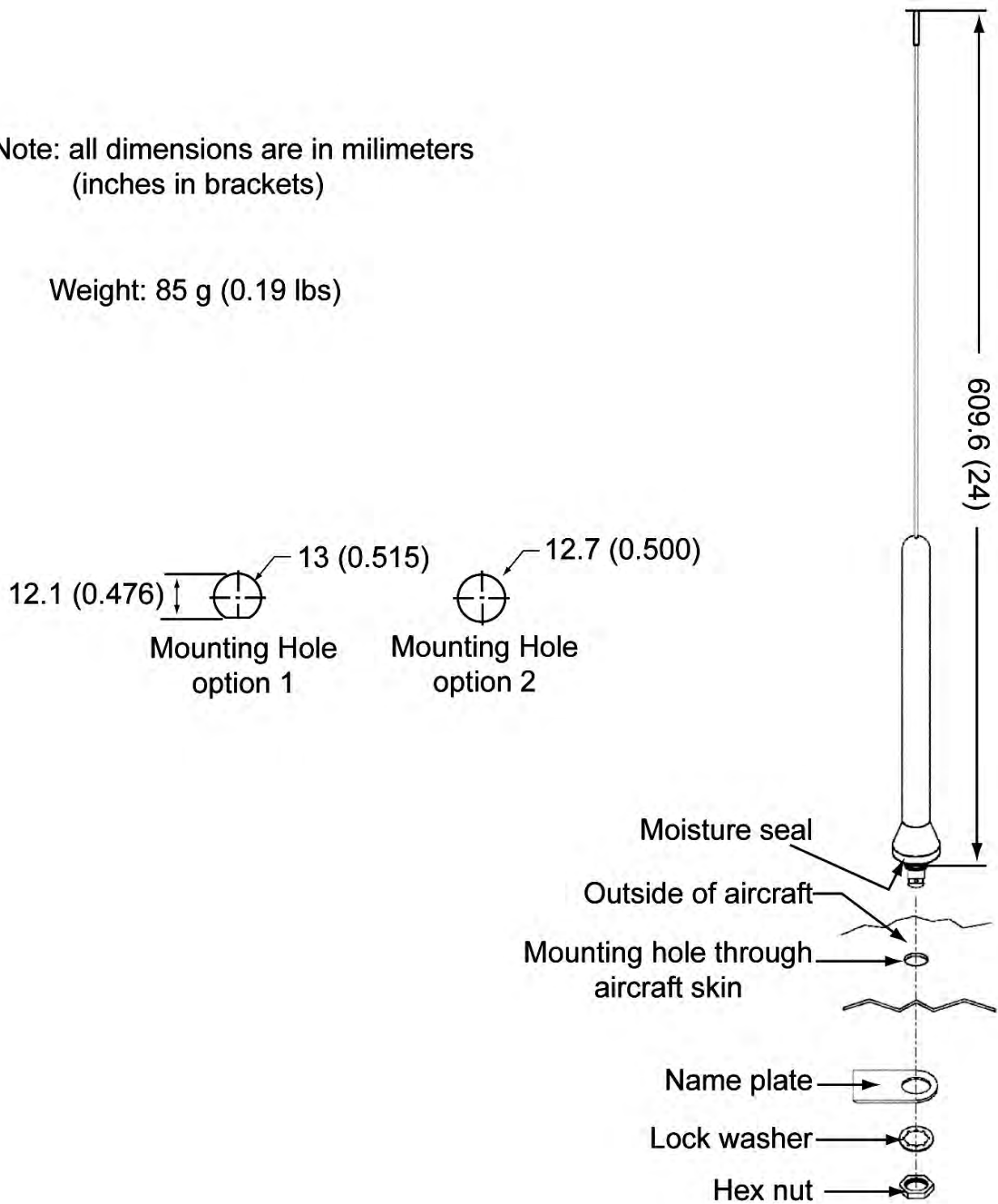
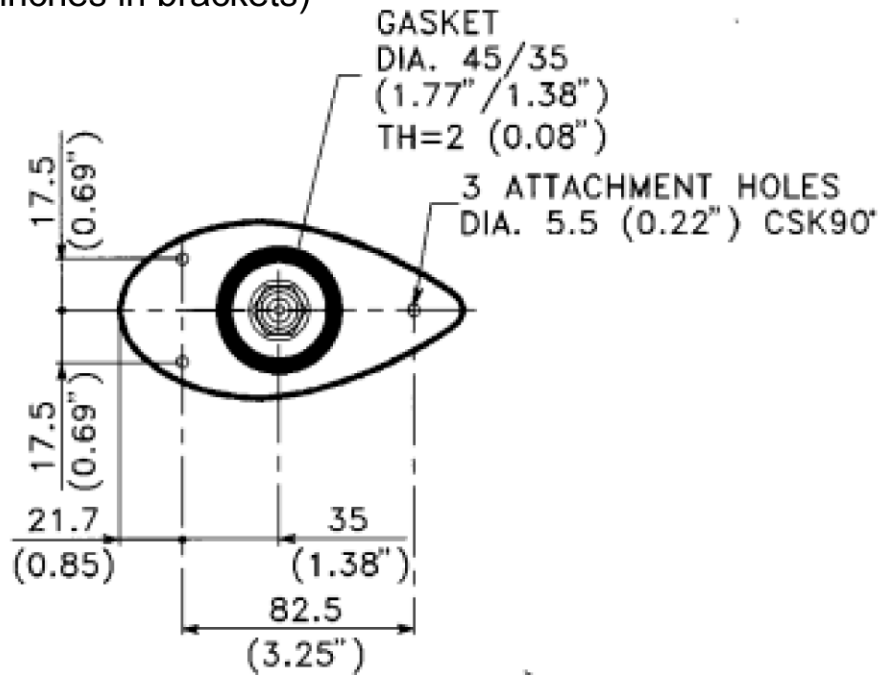


Figure 35: ANT300 Outline dimensions and weight

Note: all dimensions are in millimeters  
(inches in brackets)



Weight: 150 g (0.33 lbs)

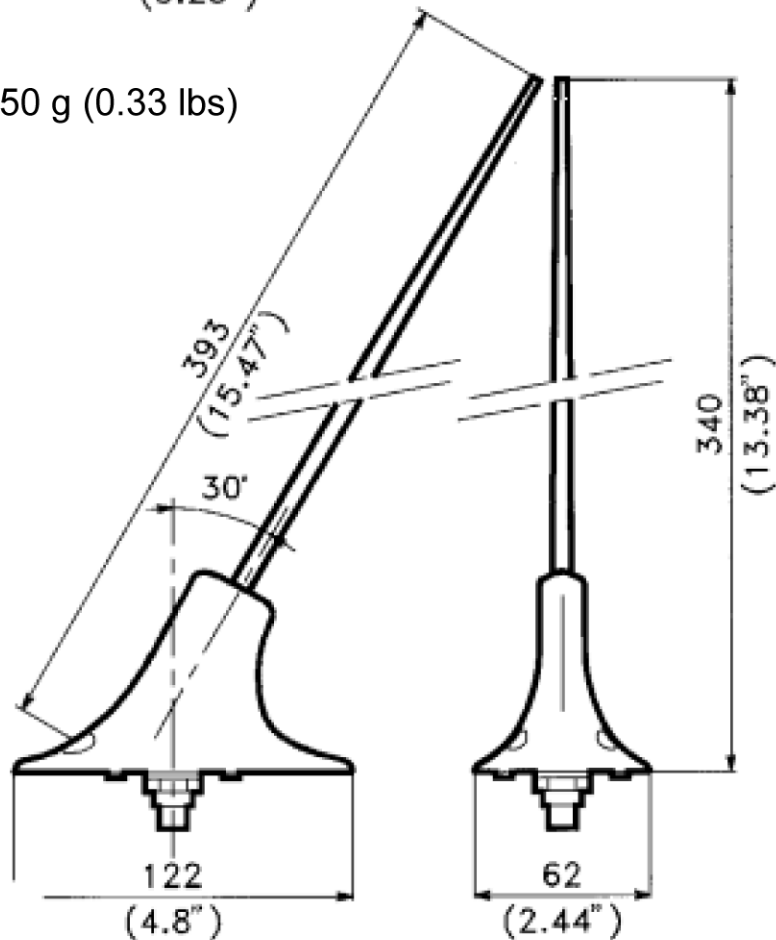


Figure 36: AV-300 Outline dimensions and weight

Note: all dimensions are in millimeters (inches in brackets)

Weight: 255 g. (0.56)

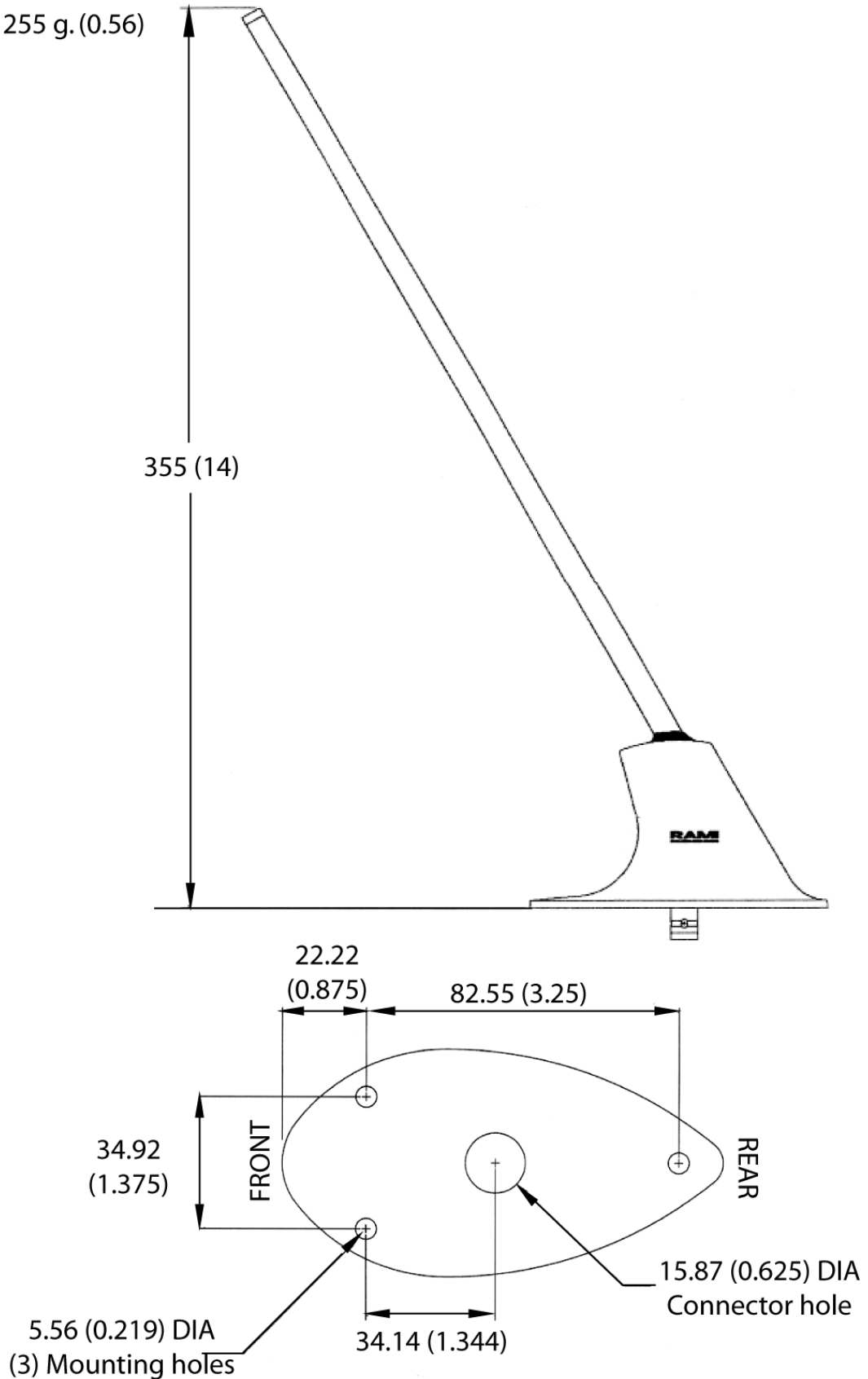
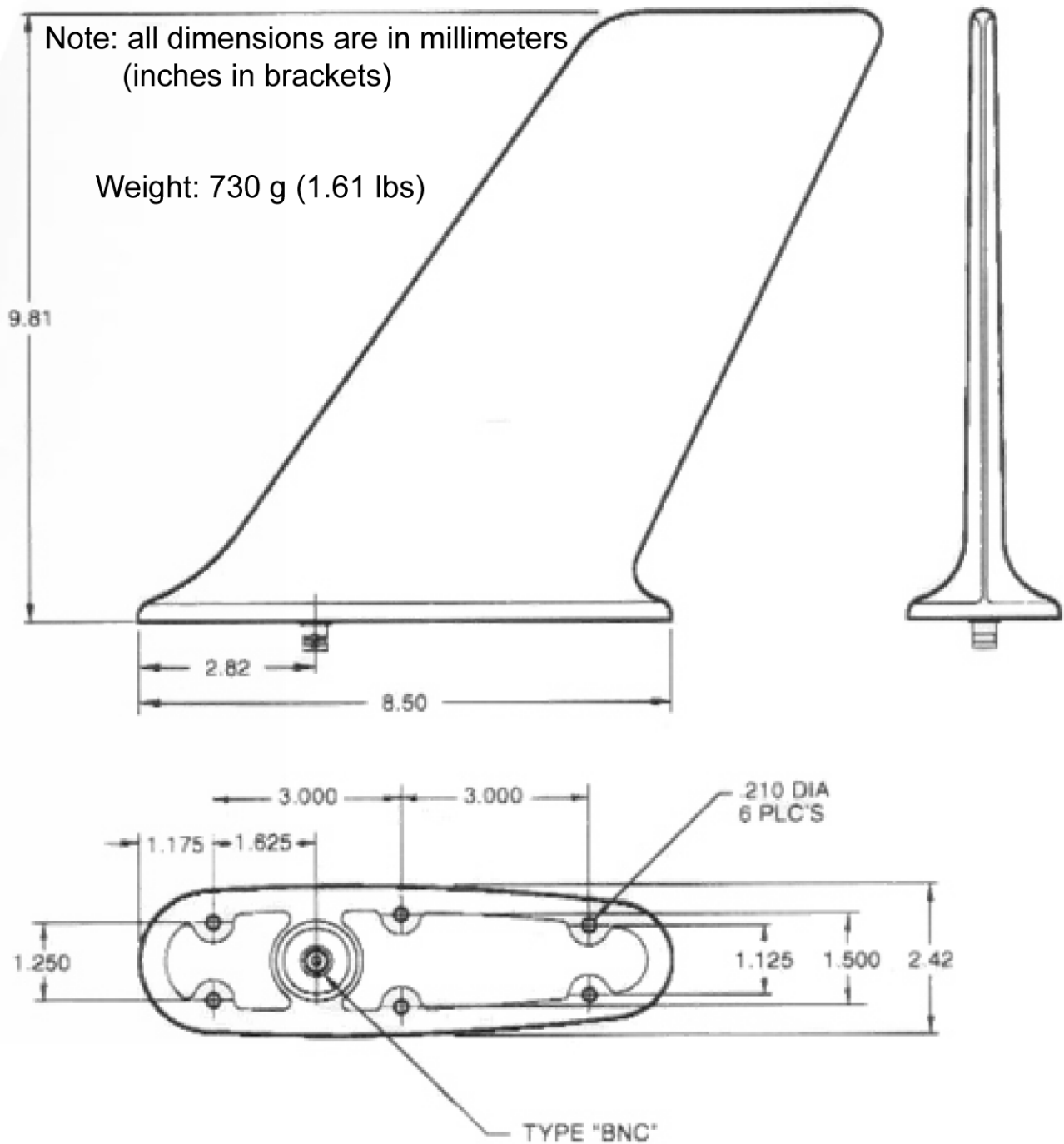




Figure 37: ANT500, Outline dimensions and weight



*Figure 38: ANT560, Outline dimensions and weight*

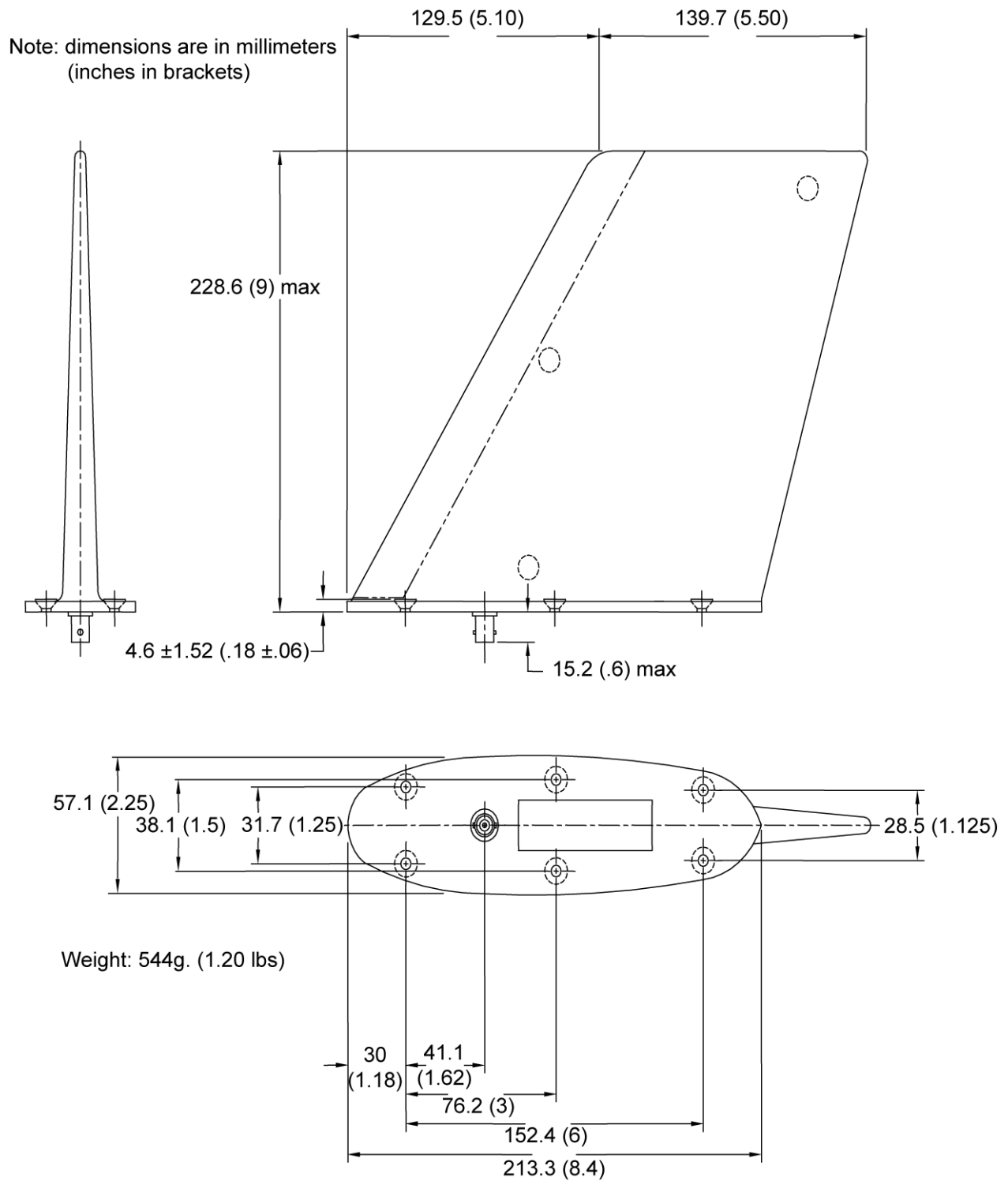
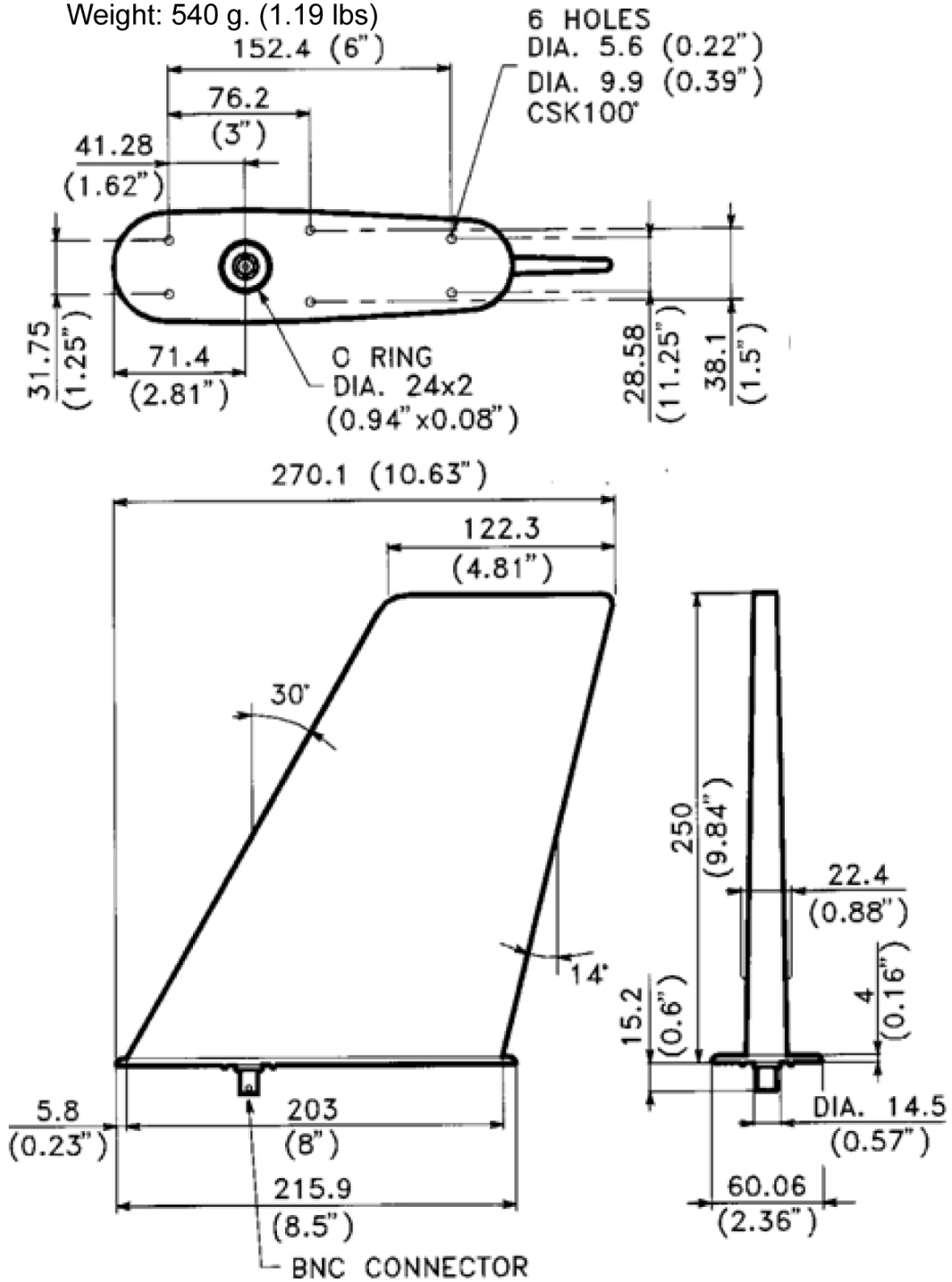


Figure 39: ANT650, Outline dimensions and weight

Note: all dimensions are in millimeters (inches in brackets)

Weight: 540 g. (1.19 lbs)



**11. Wiring diagrams**

*Figure 40: RC100 Wiring diagram*

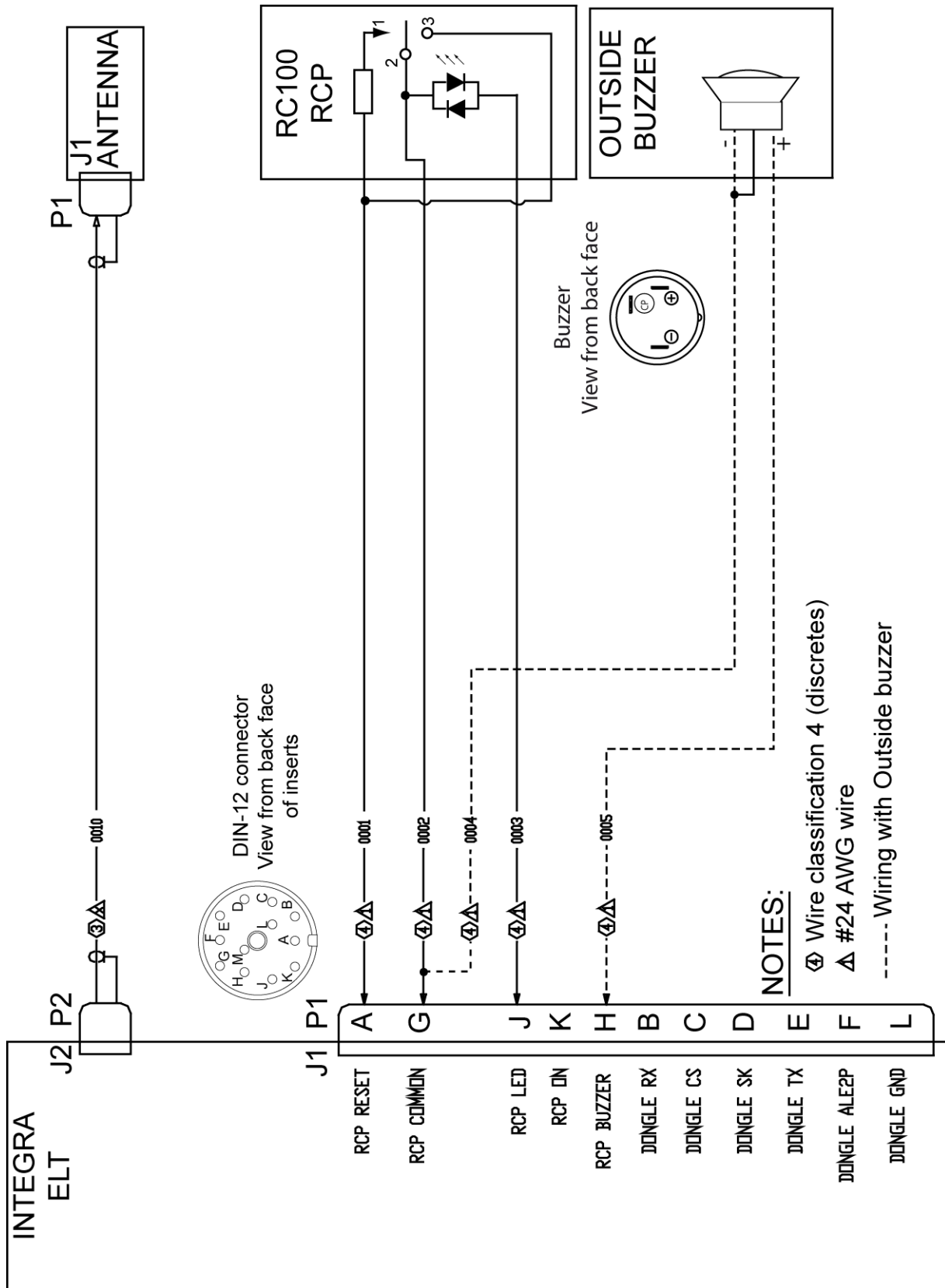
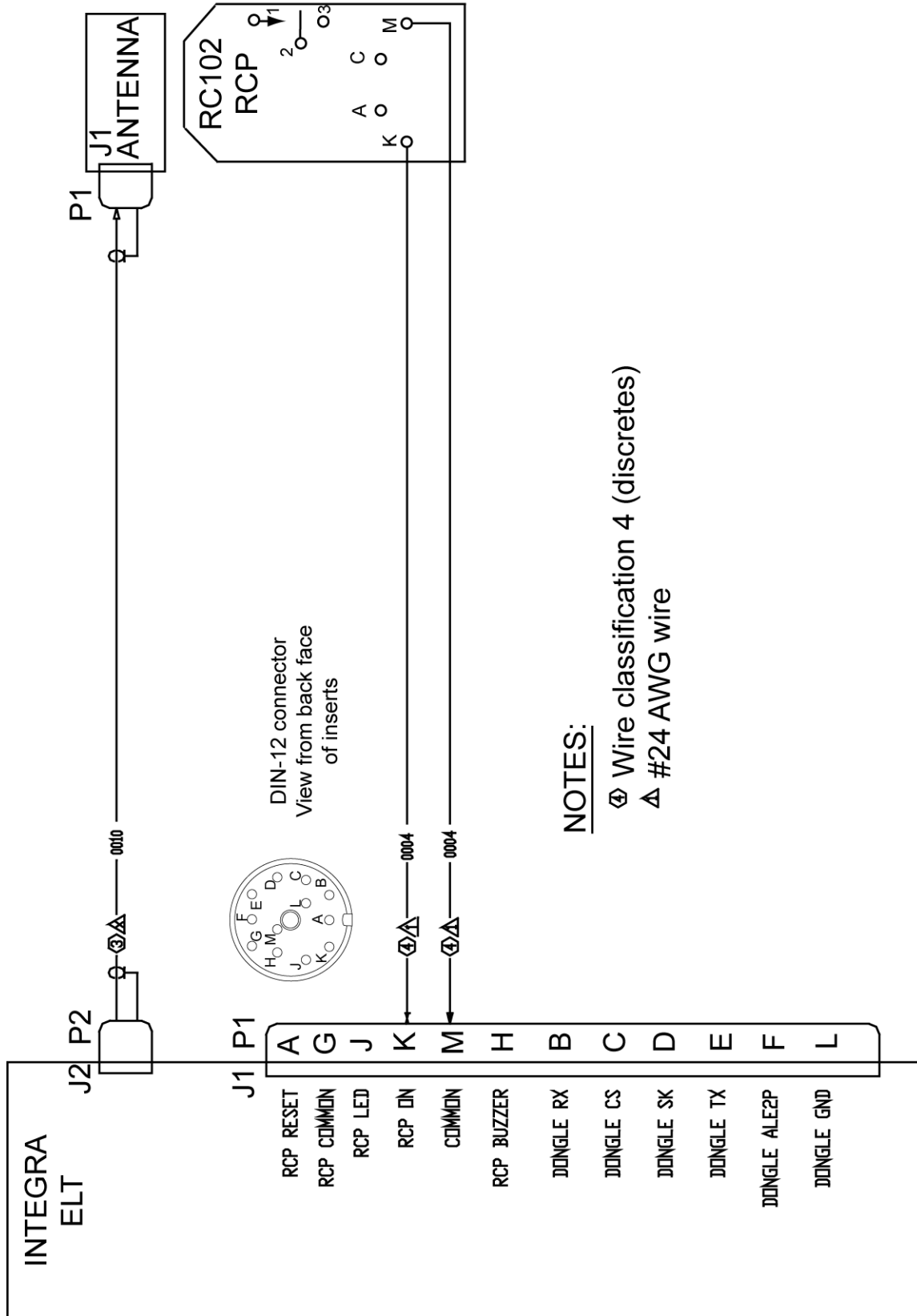


Figure 41: RC102 Wiring diagram



NOTES:

- ④ Wire classification 4 (discretes)
- △ #24 AWG wire



Figure 43: RC300 Wiring diagram

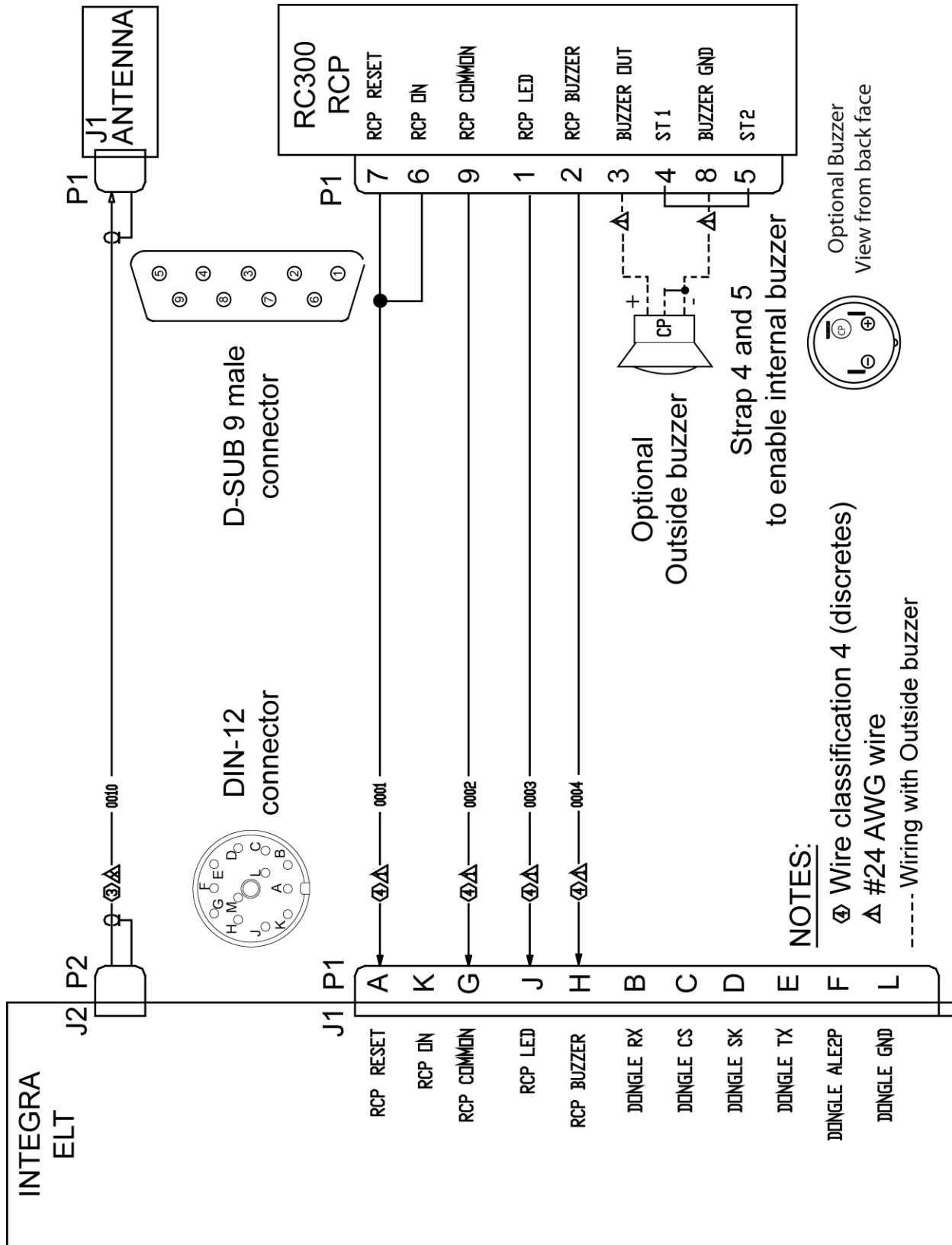
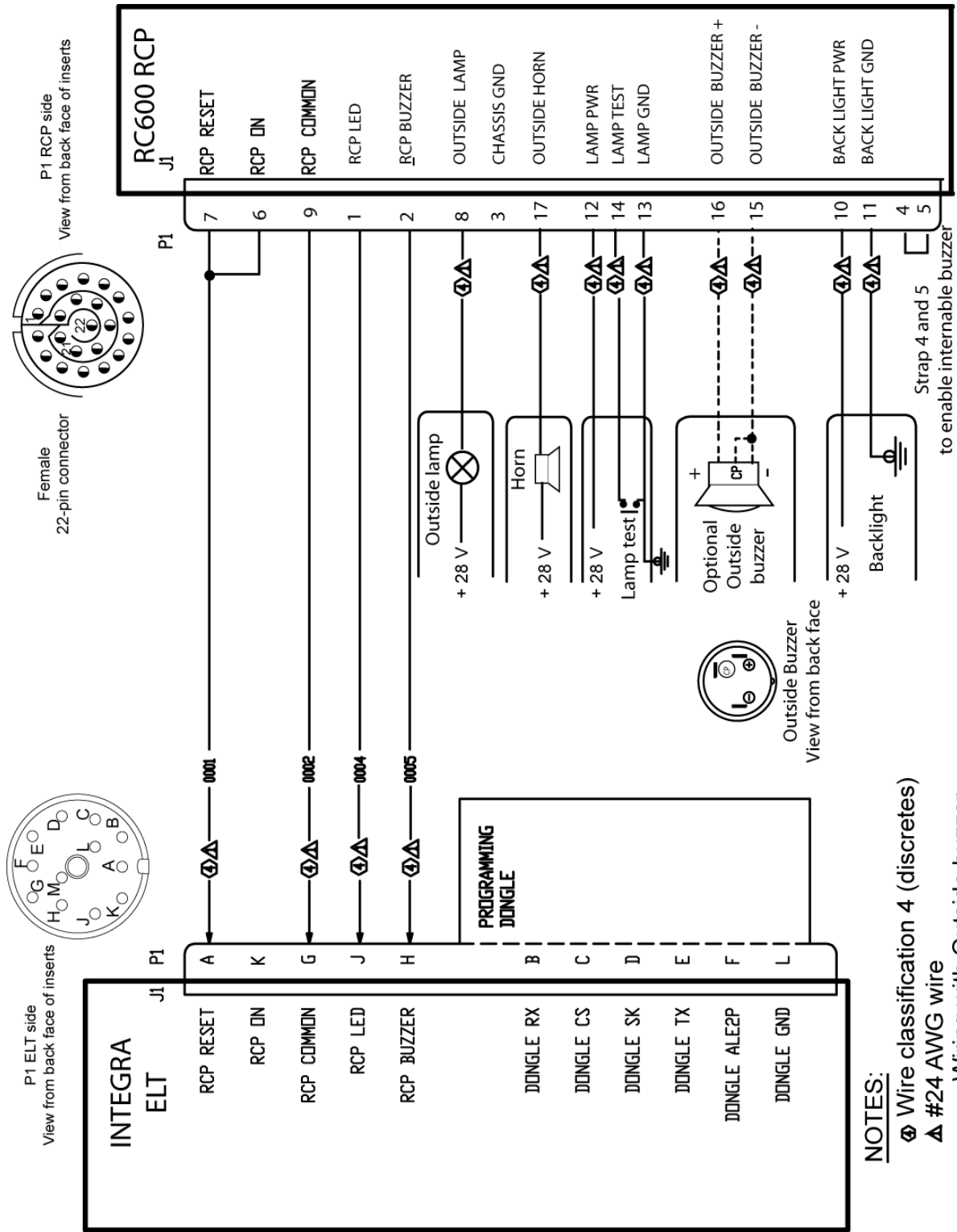


Figure 44: RC600 Wiring diagram





**12. Compatibility list for INTEGRA ELTs System*****A. Mounting brackets***

<b>KANNAD Designation</b>	<b>KANNAD Part Number</b>
COMPACT MOUNTING BRACKET KIT	S1840502-01
COMPACT UNIVERSAL MOUNTING BRACKET KIT	S1840502-02

***B. Remote control panels (RCP)***

<b>KANNAD Designation</b>	<b>KANNAD Part Number</b>
RC100 KIT	S1820513-03
RC102 KIT	S1820513-21
RC200	S1820513-11
RC300	S1820513-09
RC300-NVG	S1820513-10
RC600 NVG (Y)	S1820513-12
RC600-NVG (W)	S1820513-13

***C. Outside buzzer***

<b>KANNAD Designation</b>	<b>KANNAD Part Number</b>
OUTSIDE BUZZER KIT	S1820515-06

***D. DIN-12 connector or programming dongles***

<b>KANNAD Designation</b>	<b>KANNAD Part Number</b>
DIN-12 connector	S1820514-03
Programming dongle	S1820514-01
Programming A320	S1820514-04
Programming dongle A330-A340	S1820514-05
Programming dongle Assy	S1820514-06

**E. External antennas**

<b>KANNAD Designation</b>	<b>Manufacturer</b>	<b>KANNAD Part Number</b>
ANT300	CHELTON 1327-82	0124220
WHIP ANT AV200	RAMI AV-200	0146150
ROD ANT AV300	RAMI AV-300	0146151
BLADE ANT500	SENSOR SYSTEMS S65-8282-406	0124222
BLADE ANT560	DAYTON GRANGER ELT10-696-1	0145787
BLADE ANT650	CHELTON 2624-82	0124251
N/A	CHELTON 21-41	N/A



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