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### IMPORTANT

The Acumen CAT21 is suitable for any motorcycle or scooter with a 12V DC negative earth (ground) electrical system.

Installation must only be undertaken by an Acumen authorised installer.

**WARNING - Incorrect installation can have severe safety implications**

### HANDOVER CHECKLIST

**Upon completion of installation of the Acumen CAT21, and testing by the installer, ensure the user:**

- 1 Has the operation of the Acumen CAT21 demonstrated to them
- 2 Is provided with the User Guide
- 3 Is advised of the location of the in-line fuse and spare fuse
- 4 Is advised of the location of the system protection switch
- 5 Is advised of the location of the customisation wire
- 6 Is advised of the location of the accessory output wire
- 7 Is given all three copies of the completed Installation Certificate, and
- 8 Is given the Warranty Terms and Conditions document

# Planning the installation

## The Acumen CAT21 consists of the following main components;

- Acumen CAT21 main unit (ECU)
- 2 x Remote Transmitters
- Fitting Kit, comprising
  - Anti-tamper switch
  - LED with holder
  - 10 x cable ties
  - 2 x M5 screws
  - 2 x M5 well nuts
  - 1 x fuse holder
  - 2 x fuses
  - 1 x Diode
- Literature pack

## Tool Required:

- Pliers/Cable strippers/Cable cutters
- Drill with 9.5mm and 8mm bits
- Soldering equipment
- Adhesive lines heatshrink tubing
- High quality insulating tape
- Masking tape (for drilling LED hole)
- Multimeter
- General workshop tools
- Motorcycle wiring diagram

## CAT21 ECU

Before installing the system, plan where you are going to install the CAT21 ECU. The more protected it is the more effectively it will be able to do its job. Try to get the unit under a lockable or bolted on item/panel, such as under the tank or within the fairing. The area under some motorcycle seats is very secure, some are not.

The ECU should be secured to the motorcycle by the two 5mm stainless steel screws and wellnuts provided in the fitting kit

## System LED indicator

We recommend the system LED is always fitted. As well as warning that there is an armed security system on the motorcycle, (and that it is armed), the LED also displays diagnostics and may assist in PIN entry. Mount the LED to suit customer preference.

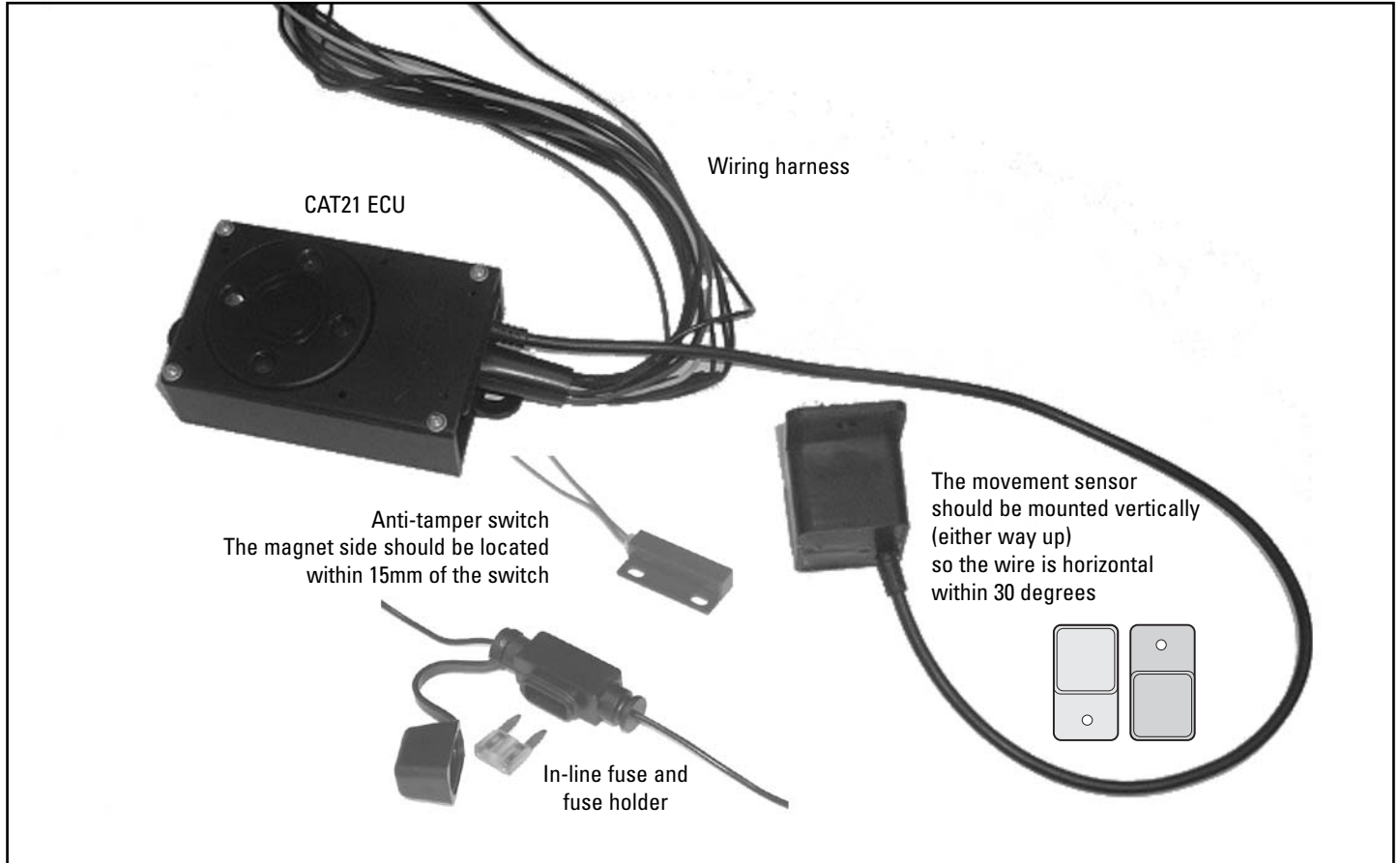
## Anti-Tamper Switch

The Anti-tamper switch is fitted to advise the owner if an attempt is being made to access the CAT21 ECU. The switch should be fitted under a panel that needs removal to gain access to the CAT21 ECU.

## Movement sensor

The movement sensor should be mounted vertically (so the wire is horizontal) within 30 degrees. The unit can be vertical with the mounting flange to the top or bottom, along the bike or across the bike. No other setting or adjustment is required. The nearer the centre of the bike it is, the less sensitive it is.

# Main Components Installation



# Wiring Installation

All wiring should be soldered and insulated as appropriate. Plan where you will make your wiring connections. In general, most connections can be made at a central point in the motorcycle wiring loom. As all system wiring is black, we recommend you fit the untagged black wires first (step 1) to avoid confusion should you cut a colour tag off then drop the wire! Alternatively, tie a knot in the two ground wires prior to fitting.

1. The untagged **BLACK** wire should be connected to the motorcycle wiring loom, or on the motorcycle main frame (not sub frame). Do not fit to the Motorcycle battery negative terminal.
2. Splice the **PINK** tagged wires into the left and right indicator power leads (not the earth side). These circuits will handle 8 amps each side.  
**NOTE!** The motorcycle may require a diode to be fitted - see page 4.
3. Connect the **GREY** and **ORANGE** tagged wires to the matching wires of the CAT21 LED indicator.
4. Connect the 2 **GREEN** tagged wires to the anti-tamper switch wires.
5. The **BROWN** tagged wire (not the brown wire) connects the CAT21 to the motorcycle ignition system. Acumen recommend this wire is spliced into the wire from the ignition switch to the fuse box. This way, regardless of which fuses may have failed (apart from the main one!) the CAT21 will still 'see' the ignition.
6. The In-line fuse holder (the fuse should be removed) should be soldered to the **RED**-tagged wire and the other side of the wire to a permanent 12v supply - DO NOT connect directly to the motorcycle battery positive terminal. The fuse should be easily accessible by the user, and the spare fuse taped near by.

7. The **YELLOW/GREEN** tagged wire is for accessories. It will supply a 12v positive output at 0.5 amp when the alarm is triggered, for accessories such as a pager or extra siren.
8. The **YELLOW** wire is to alter how the system arms. If the Yellow wire is permanently grounded, when the unit arms passively it will arm with ALL functions operational. The default setting (without the yellow wire grounded) means the system will arm only the immobilisation and the hot-wire (ignition) detection.
9. The **PURPLE** wire is the antenna for the radio receiver of the CAT21.  
DO NOT ground this wire and do not tape to wires carrying current.  
**INSERT THE IN-LINE FUSE the system will arm in 50 seconds unless the ignition is switched on.**

# Testing

The default setting for the Acumen CAT21 is to arm passively 50 seconds after the ignition is turned off. When the system arms it will detect 'hot wire' (ignition only). If the system is armed by using the key fob, within the 50 seconds, ALL alarm functions are operative.

1. Arm the system. With the LED flashing switch on the ignition, and then off. A full reaction of audible and visual warning will occur for 30 seconds. After the 30 seconds the system will return to monitoring mode.
2. Disarm the system. Rearm using the key fob. Let the LED flash. Remove the system fuse. An audible reaction for 30 seconds will occur.

**NOTE.** This test is dependent upon the CAT21's back-up battery being in a charged state. If the internal back-up battery is discharged this test may not perform correctly until the battery is charged. The battery is charged from the motorcycle ignition system.

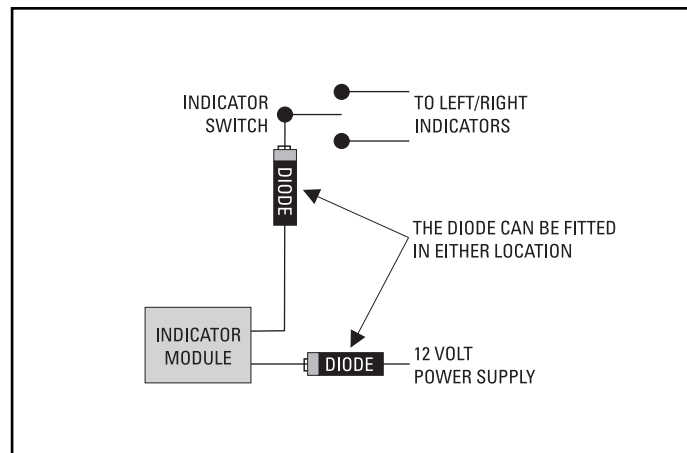
3. Disarm the system. Rearm using the key fob. Remove the panel protected by the anti-tamper switch. A full reaction of audible and visual warning will occur for 30 seconds.
4. Disarm the system. Rearm using the key fob. Test the movement function. To increase the sensitivity move the sensor housing to a different position - the more central along the bike it is, the less sensitive it is. The nearer the extremities of the m/c (such as rear light) the more sensitive it is.

## Does the motorcycle need a Diode?

Do this simple test to find out.

- Disarm the CAT21 system.
- Switch on the m/c ignition, and leave on
- Switch on the m/c headlight (main or dip beam)
- Switch on one side of the indicators and leave on
- Switch off the ignition - make sure you can clearly see the headlight
- Arm the alarm.

If the motorcycle headlight flashes in sequence with the indicators, you will need to add the diode from the fitting kit to the indicator circuit. See the diagram below



## Final checks

- Finally, make sure everything on the motorcycle works!
- Tape the system loom in the style of the original motorcycle loom.
- Refit all panels and clean, and hand over to customer following the Handover Checklist.

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# Troubleshooting

The Acumen CAT21 is manufactured using automotive specification parts, and is fully encapsulated to provide protection against water and vibration. The system relies on various signals to make it function correctly and any one of these signals may cause false reactions.

## **False alarms; Enter diagnostic mode to see why the alarm has triggered. (Refer to user guide)**

2 beeps - Blown fuse - Replace system fuse

3 beeps - The unit has detected an 'ignition on' signal

4 beeps - The movement or nudge sensor has reacted. Enter transportation mode to remove this function until the problem is sorted.

5 beeps - Anti-tamper switch has changed its state - ensure it is mounted correctly.

## **System cannot be armed or disarmed by the remote transmitter**

1. Check the ignition switch is in the off position
2. Check the system fuse
3. Check you are within normal operating range of the motorcycle (10 metres max)
4. Check the condition of the transmitter battery (see user guide)
5. The transmitter can be affected by other radio sources. This problem can usually be overcome by placing the transmitter as close as possible to the alarm system. Alternatively, you can move the motorcycle a distance which will reduce the affect of the interference. In this event you can disarm the system by using the PIN (see user guide).

# Wiring diagram

