OM247
Installation Guide

OM247 Installation Tool User Guide

Issue Date: 07/09/11

Document No: 94-0033-4-F

G4S Monitoring Technologies Ltd

4 Dominus Way
Meridian Business Park
Leicester
LE19 1RP UK

Tel: +44 (0) 116 229 2600
Fax: +44 (0) 116 229 2604
Web: **www.g4s.com/uk**

Table of Contents

Introduction

This section introduces you to the concepts and terms used when installing a tag. It contains the following pages:

Welcome

Welcome to the Installation Tool User Guide. It has been written for Field Monitoring Officers (FMOs) who need to install and check monitoring equipment. It is arranged in the following sections:

- **Getting Started** (page 8) explains the basics that you'll need to know before using the Installation Tool for the first time.
- **Controls and Status Lights** (page 17) shows you what the tool's buttons do, and explains what the different coloured lights mean.
- **Installing Monitoring Equipment** (page 24) describes how to install tags and monitoring / tracking devices.
- **Removing and Replacing Tags** (page 41) describes how to decommission and replace 'PID' and 'SOLO' tags.
- **Tamper Investigation & RAM Survey** (page 45) describes how to investigate suspected tag-tampers and how to perform a RAM (Random Alternative Monitoring) survey.
- **Trouble Shooting** (page 48) explains what the MU and TU error messages mean, and how to resolve them.

Related Documents

- EMMO User Guide

Terms and Abbreviations

This page explains the terms and abbreviations used in this guide:

Term	Meaning
DOCK	**Docking Station—**intelligent docking/charging station for the OM247-TRAK (TU).
EMMO	**Electronic Monitoring Mobile Organiser—**a software program that runs on a PDA. It is used to display the full status details of the monitoring equipment. (See the EMMO User Guide).
FMO	**Field Monitoring Officer—**an Officer who visits the subject, typically at the curfew address, to install the monitoring equipment, set up the curfew and investigate any problems during the curfew.
GPS	**Global Positioning System—**the satellite system used to track the position of a TU or SOLO.
GPRS	**General Packet Radio Service—**extension of the GSM standard, primarily used for data transfer applications.
GSM	**Global System for Mobile communications—**the international standard for mobile telephones.
IrDA	**Infrared Data Association—**the standard protocol for infrared communications.
LBS	**Location Based Service—**method of locating a TU or SOLO by calculating its distance from mobile-phone masts. Used as a back-up to GPS location.
MU (OM247-MU)	**Monitoring Unit—**the telephone unit that detects any nearby PIDs, and automatically contacts the Control Centre if the curfew conditions are broken.
PDA	**Personal Digital Assistant—**a small, hand-held portable computer.
PID (OM247-PID)	**Personal Identification Device—**an electronic tag worn by a subject.
RAM	**Random Alternative Monitoring—**the survey mode used to detect any nearby PIDs.
SOLO (OM247-SOLO)	A one-piece GPS-enabled tag worn by a subject.
Subject	A person who is being electronically monitored as a part of a curfew order.
Tag	An electronic monitoring bracelet worn by the subject—either an OM247-PID or an OM247-SOLO.
TU (OM247-TRAK)	**Tracking Unit—**A GPS-enabled device carried by a subject.

Overview

The OM247-FIT Fitting and Installation Tool is a multi-function device. It combines a mechanical fitting-tool with an electronic control unit.

Using just a single tool, you can set up and fit a tag to a subject and install a monitoring or tracking unit. The tool can also be used to investigate any suspected tampering with the monitoring equipment. The same tool is used to un-install the monitoring equipment at the end of the curfew period.

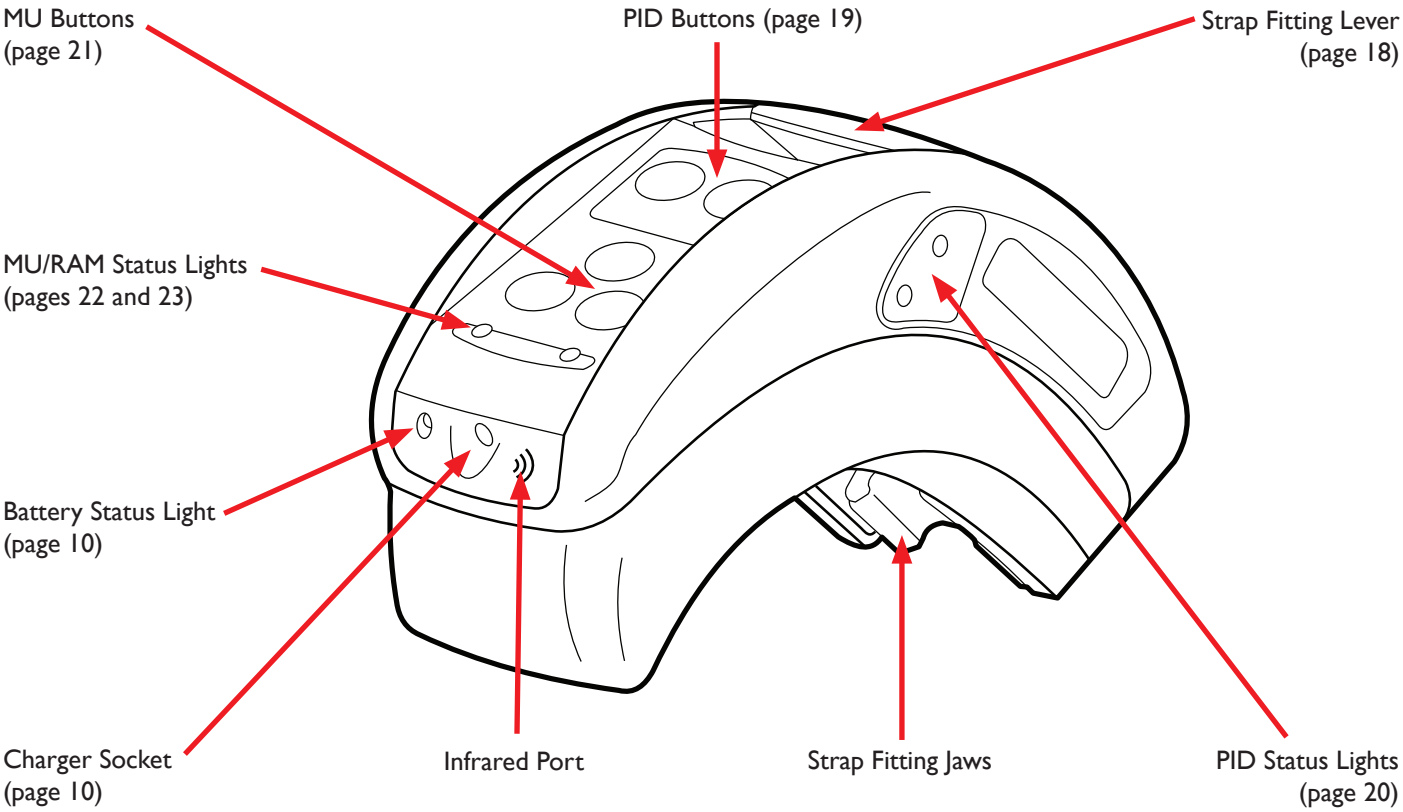
Every tool has a serial number printed on its side. This unique ID is automatically recorded in the central database whenever the tool is used to install any monitoring equipment.

In RAM (Random Alternative Monitoring) mode, the tool can be used to detect any nearby tags. This allows you to perform a 'drive-by' check to confirm that a subject is complying with their curfew conditions. You can also connect the tool to a PDA running 'EMMO' to display the full details of any tags that have been detected. (See the EMMO User Guide).

Getting Started

This section explains the basics that you'll need to know to use the Installation Tool. It contains the following pages:

General Layout



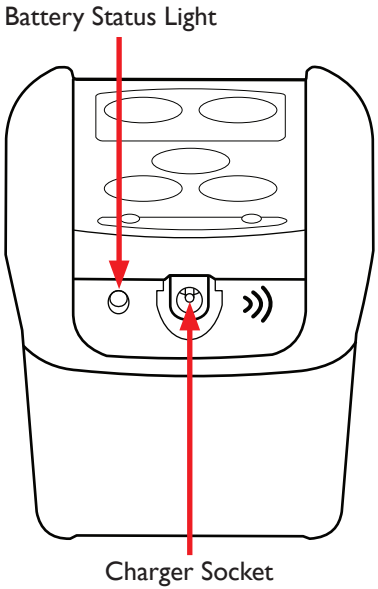
Charging the Battery

When the tool needs charging, the battery status light flashes red.

To charge the battery, plug the supplied charger into the socket on the front of the tool. A full charge should take around 2 ½ hours.

While the battery is charging, the battery light goes red.
When the battery is fully charged, the battery light goes out.

Mode	Status Light		Meaning	Action
In Use	○	Off	Battery OK	n/a
	✸	Flashing Red	Battery low	Recharge battery
Charging	●	Red	Battery charging	Leave connected to charger
	○	Off	Battery full	Unplug charger



Sleep Mode

When not in use, the tool automatically goes into sleep mode to conserve battery power.

To Reactivate the Tool:

- Press any button or move the strap fitting lever.

  When the tool is activated after being in sleep mode for more than five minutes, all of its lights will flash red in sequence until it detects a key fob's radio signal. (See **FMO's Key Fob** on page 12).

FMO's Key Fob

An Installation Tool will not work unless it detects an active FMO's key fob nearby.

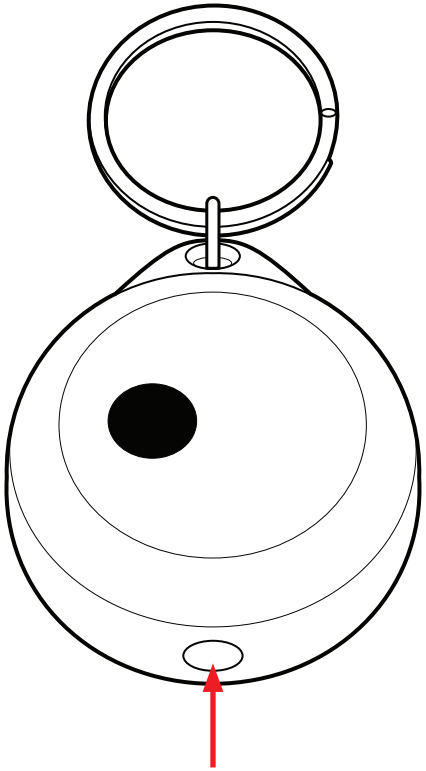
When you activate the tool from **Sleep Mode** (see page 11) it searches for a key fob. When it finds one, it beeps and its lights start flashing. When the lights stop flashing, the tool is ready to use.

If the tool doesn't find a key fob within 5 minutes, it returns to sleep mode.

Key Fob Batteries

The key fob should flash a red light every 5 seconds. If the red light is not flashing, the battery is dead and the key fob should be replaced.

You can check the Key Fob's battery status with the Installation Tool. (See **Checking the Key Fob's Battery** on page 13).



Checking the Key Fob's Battery

To Check the Key Fob's Battery:

1. Put the Key Fob into the tool.

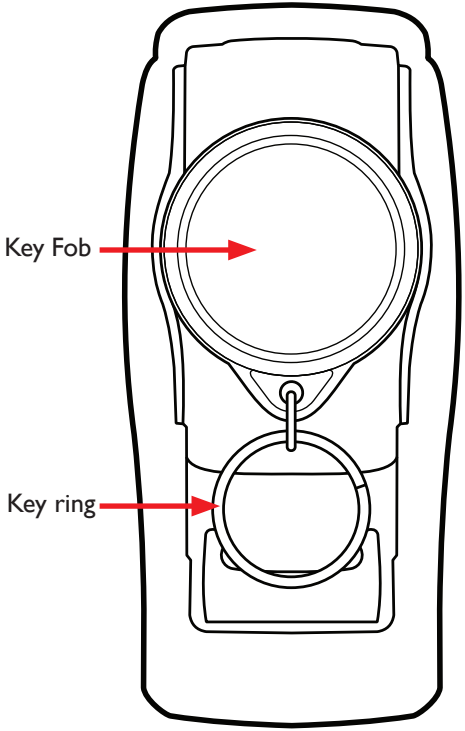
! Make sure that the metal key ring points towards one end of the tool (see picture on the right).

2. Press the **PID GET STATUS** button. 

3. Check the **PID OK** and **PID SLEEP/FAULT** lights on the side of the tool. (See table below):

Light	Colour		Meaning
PID OK		Green	Key Fob OK.
PID SLEEP/ FAULT		Flashing Amber	Low battery.
		Red	Dead battery/Comms fault. (Check that the key fob is aligned correctly in the tool).

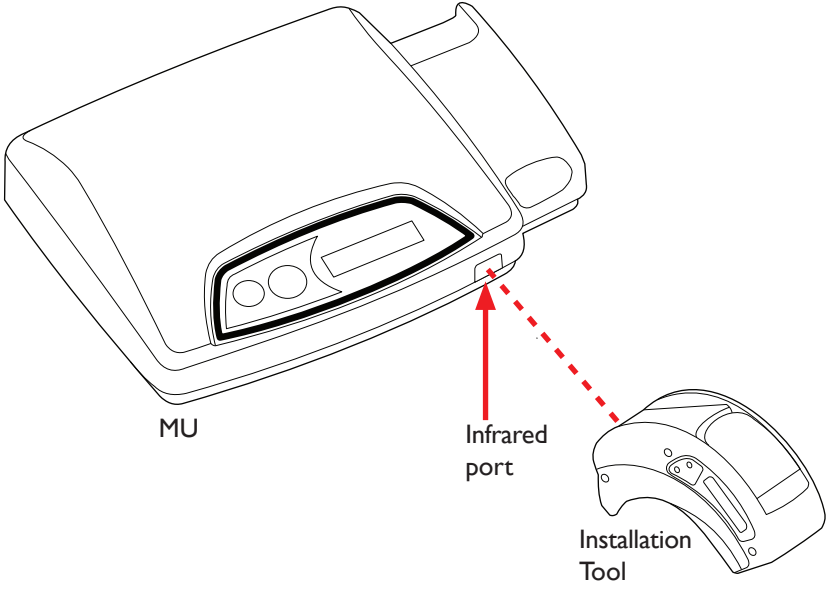
i Tip: You can use the "Get PID Status" option on EMMO to get the key fob's battery level. (See the EMMO User Guide).



Linking to MUs

The MU uses an infrared link to communicate with the Installation Tool or a PDA running EMMO. (See the EMMO User Guide).

Remember to point the tool or PDA at the infrared port on the front of the MU:



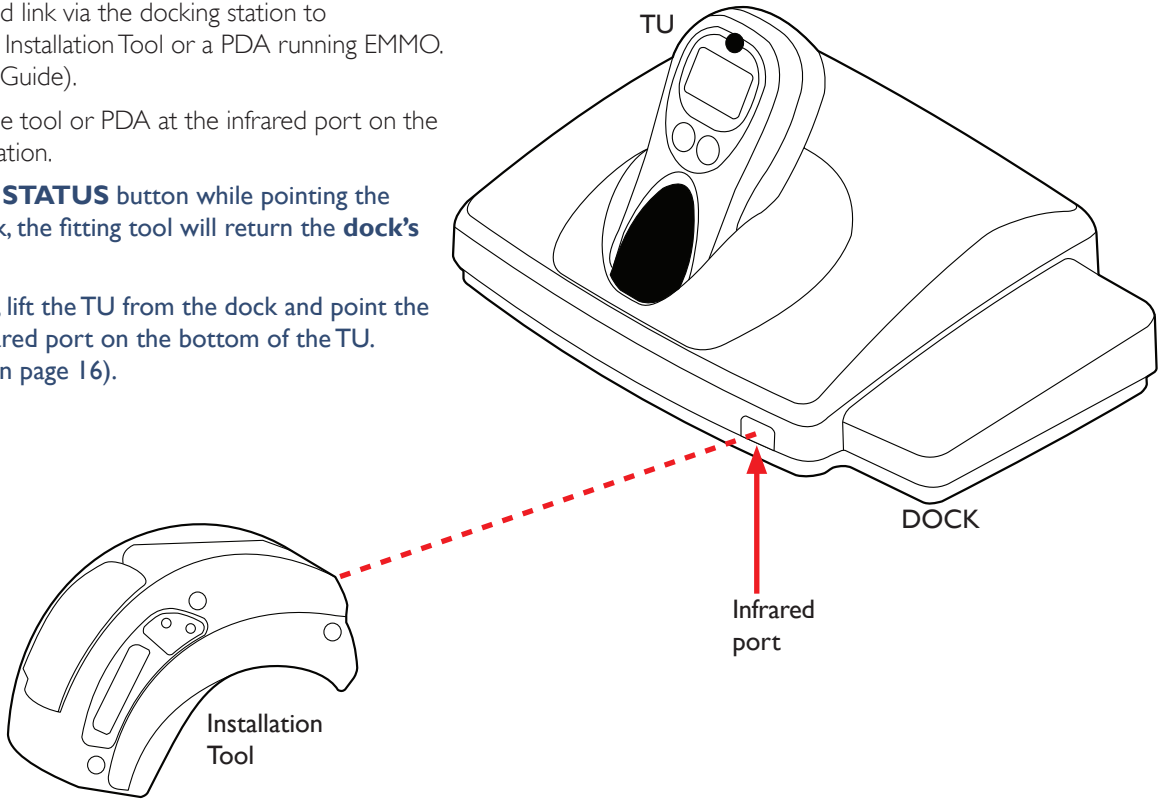
Linking to TUs

The TU uses an infrared link via the docking station to communicate with the Installation Tool or a PDA running EMMO. (See the EMMO User Guide).

Remember to point the tool or PDA at the infrared port on the front of the docking station.

If you press the **GET STATUS** button while pointing the fitting tool at the dock, the fitting tool will return the **dock's status.**

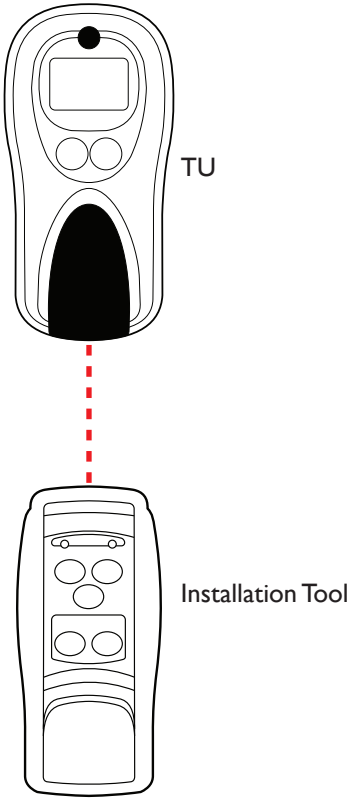
To get the TU's status, lift the TU from the dock and point the fitting tool at the infrared port on the bottom of the TU. (See **Get TU Status** on page 16).



Get TU Status

Generally, when linking to TUs, you should place the TU in its dock and point the Fitting tool at the infrared port on the front of the dock. (See **Linking to TUs** on page 15).

However, if you need to get the TU's status, you should remove the TU from its dock and point the fitting tool directly at the infrared port on the bottom of the TU. (See right).

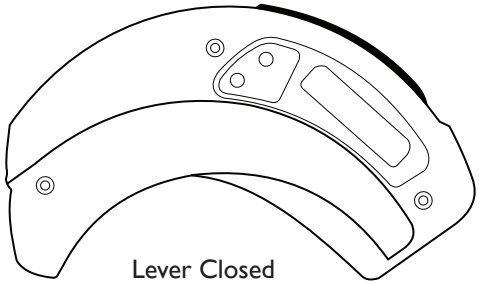


Controls and Status Lights

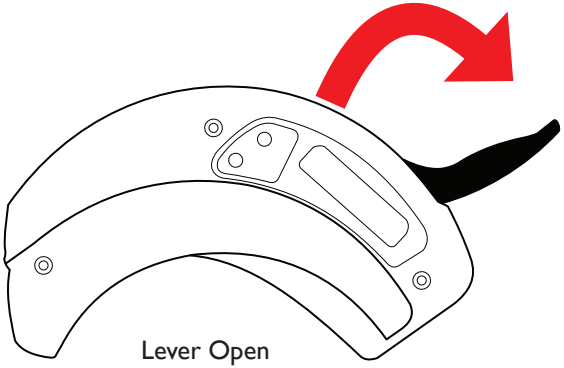
This section explains what the tool's controls do and where to find them. It contains the following pages:

Strap Fitting Lever

Open the Strap Fitting Lever to lock the ends of the strap into the PID.



Lever Closed

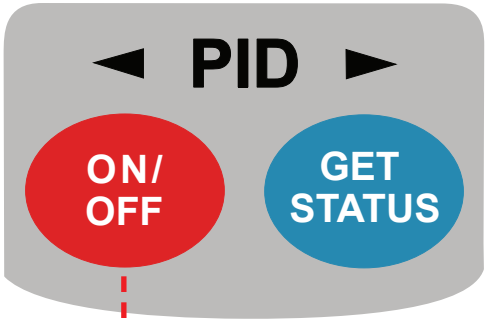


Lever Open

PID Buttons

The two PID buttons are used to control the PID or SOLO. You'll find them on the top of the tool. (See **General Layout** on page 9).

Press the **ON/OFF** button to cycle through the following modes in turn: **Sleep, Survey, Active.**

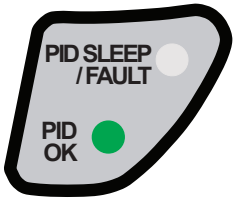


Press the **GET STATUS** button to get the status of the PID or SOLO. (See **PID Status Lights** on page 20).

You cannot switch a tag to Survey Mode if it is in a tamper state. If the tag's battery is low, it will always stay in Sleep Mode.

PID Status Lights

There are two identical sets of PID Status lights; one on each side of the tool. (See **General Layout** on page 9).



The **PID OK** light is steady green when the PID/SOLO is active, and flashing green when the PID/SOLO is in survey mode, i.e. during installation.

Colour		Meaning
●	Green	Active Mode
✸	Flashing Green	Survey Mode

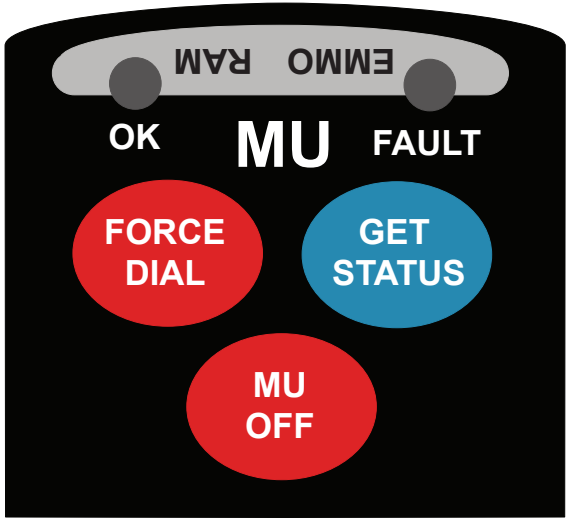
The **PID SLEEP/FAULT** light shows you if the PID/SOLO is in sleep mode, or if there is a tamper problem or hardware fault:

Colour		Meaning
✸	Flashing Red	PID/SOLO in tamper state
●	Red	Tool–to–PID/SOLO link error
●	Amber	Sleep Mode
✸	Flashing Amber	Battery low
✸	Flashing Red/Amber	Hardware fault

MU Buttons

The three MU buttons are used to control the MU or TU. You'll find them on the top of the tool. (See **General Layout** on page 9).

Press the **FORCE DIAL** button to dial-up and send the MU or TU's event log to the central database.



Press the **GET STATUS** button to get the status of the MU or TU. (See **MU Status Lights** on page 22).

Press the **MU OFF** button to shut down the MU or TU.

Note: Un-plug the mains power from the MU or TU docking station **before** shutting down.

MU Status Lights

You'll find the two MU status lights on the top of the tool, above the MU buttons. (See **General Layout** on page 9).

To view the MU status lights, hold the tool so that the charger socket points away from you.

(The same lights are used when you are in RAM/EMMO mode, but are labelled the other-way-round. (See **RAM Status Lights** on page 23).

The **MU OK** light confirms that the MU or TU has not been tampered:

Button	Colour	Meaning
GET STATUS	Green	MU/TU OK, no tamper
	Flashing Green	Tool connecting to MU/TU

The meaning of the **MU FAULT** light changes depending on the button that you have just pressed.
(See **MU Buttons** on page 21).

Button	Colour	Meaning
GET STATUS	Red	Tool–to–MU/TU link fault
	Flashing Red	MU/TU tampered
	Amber	AC power not connected
	Flashing Amber	Low battery
	Flashing Red/Amber	MU/TU radio fault
MU OFF	Red	Tool–to–MU/TU link fault
	Flashing Red	AC power still connected
	Flashing Amber	Modem in use
	Flashing Red/Amber	MU/TU fault
FORCE DIAL	Red	Tool–to–MU/TU link fault

RAM Status Lights

The RAM Status Lights are used when you are **Performing a RAM Survey** (see page 47), or are linking to a PDA running the EMMO software. (See the EMMO User Guide).

To view the EMMO status lights, hold the tool so that the charger socket points towards you.

(The same lights are used when you communicate with the MU or TU, but are labelled the other-way-round.
(See **MU Status Lights** on page 22).

The **EMMO** light is green when the tool is in EMMO Mode. (It blinks green when the tool is communicating with the PDA).

Colour		Meaning
●	Green	Tool in EMMO mode
✸	Flashing Green	Tool communicating with PDA

The **RAM** light blinks every time that it receives a radio signal from an active tag during a RAM survey.

The colour of the blink shows the status of each detected tag:

Colour		Meaning
✸	Green Blink	Active tag found, no tamper
✸	Red Blink	Tampered tag found
✸	Amber Blink	Tag with low battery found

Installing Monitoring Equipment

This section tells you how to use the tool to install monitoring equipment. It contains the following pages:

MU/TU-Dock Positioning Tips

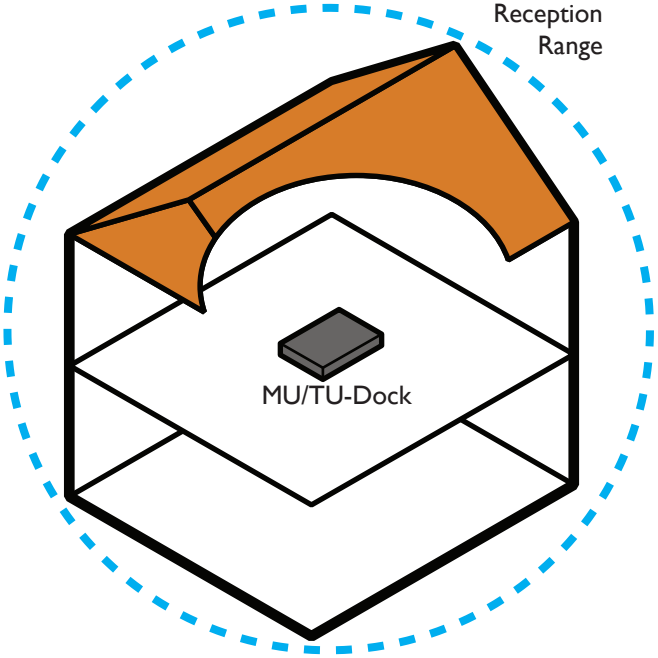
Remember the following tips when installing an MU or a TU-Dock:

Dos

- ✓ Position the MU/Dock as near to the centre of the house as possible. (See right).
- ✓ Position the MU/Dock near to a mains electricity socket (and telephone socket if installing a landline MU).
- ✓ Place the MU/Dock on a stable, level surface such as a table.

Don'ts

- ✘ Don't position MUs/Docks on window-ledges or next to outside walls.
- ✘ Don't position MUs/Docks directly on the floor.
- ✘ Don't create trip-hazards by trailing power or telephone cables across the floor.
- ✘ Don't position MUs/Docks near metal objects such as heating radiators.
- ✘ Don't position MUs/Docks on or near electrical equipment such as microwave ovens or loudspeakers.



Typical installation position using a single MU/TU-Dock in a 2-storey house.

Initialising an MU

1. Phone the monitoring centre and give them the MU and PID/SOLO's serial numbers.

2. **Multicom/Landline MU ONLY—**Connect an ordinary phone to the phone line and check that the line is active. **DO NOT** connect the MU to the phone line at this stage.

3. Place the MU in a suitable location and plug it into the mains power supply. (See **MU/TU-Dock Positioning Tips** on page 25).

   Multicom/GSM MU ONLY—The MU will automatically start to initialise and register with the GSM mobile network.

   If the MU displays **"NO GSM SIGNAL"**, move the MU to a different location.

4. While the MU is initialising, measure the subject's ankle and select the correct size of strap. (See **Preparing Straps for Installation** on page 29).

5. Next, fit either a PID or a SOLO tag to the subject. (See **Fitting a PID to a Subject** on page 30, or **Fitting a SOLO to a Subject** on page 33).

Initialising a TU

1. Phone the monitoring centre and give them the TU, Dock and PID serial numbers.
2. Place the Dock in a suitable location and plug it into the mains power supply. (See **MU/TU-Dock Positioning Tips** on page 25).
3. Place the TU into the Dock. **(Figure 1)**

   The TU automatically starts to initialise and register with the GSM mobile network, and starts to search for a PID in survey mode. **(Figure 2)**

   If the TU displays **"NO GSM SIGNAL"**, leave the TU docked and move the docking station to a different location.

   If the TU displays **"REMOVE UNIT AND GET GPS"**, lift the TU from the dock and take it outside. (See **Getting a GPS Location Fix** on page 28).
4. While the TU is initialising, measure the subject's ankle and select the correct size of strap. (See **Preparing Straps for Installation** on page 29).
5. Next, fit the PID to the Subject's ankle, (See **Fitting a PID to a Subject** on page 30).

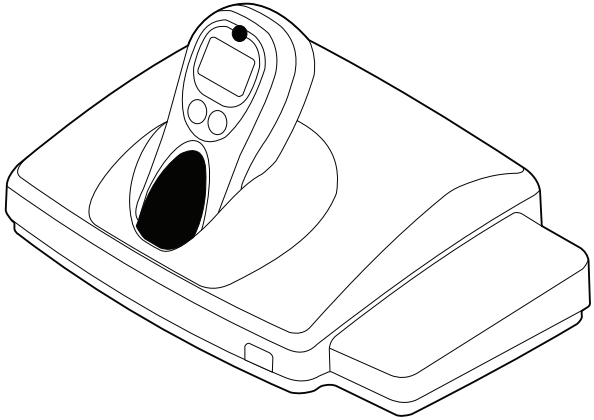


Figure 1—Place TU in Dock

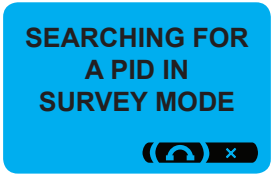


Figure 2—Searching for PID

Getting a GPS Location Fix

After the TU has connected to the GSM network (see **Initialising a TU** on page 27) it will attempt to get a GPS location fix.

If the TU displays **REMOVE UNIT AND GET GPS** (Figure 1) the GPS signal is too weak indoors, and you must take the unit outside to get a GPS fix.

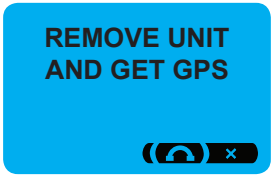


Figure 1—Get GPS Location Fix

To Get a GPS Fix:

1. Lift the TU from the Dock and take it outside to an area with a wide, clear view of the sky, away from any tall buildings.

2. Stay still until the tracker displays **GPS OK: PUT UNIT BACK IN CRADLE.** (Figure 2)

3. Go back indoors and place the TU back into its dock.

4. While the TU continues to initialise, measure the subject's ankle and select the correct size of strap. (See **Preparing Straps for Installation** on page 29).

5. Next, fit the PID to the Subject's ankle, (See **Fitting a PID to a Subject** on page 30).

Figure 2—GPS OK

Preparing Straps for Installation

1. Measure the subject's ankle and select the correct size of strap. **(Figure 1)**

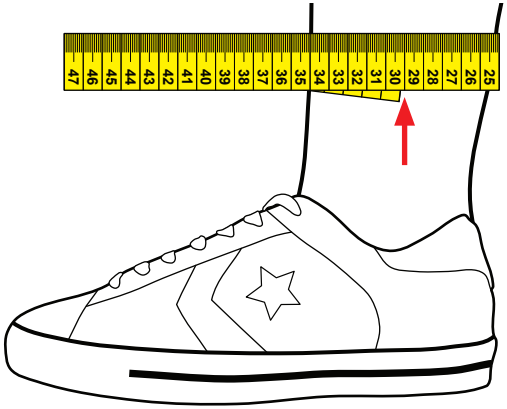


Figure 1—Measure the subject's ankle

2. When you have selected a strap of the correct length, fold down the two tabs on the ends of each clip. **(Figure 2)**

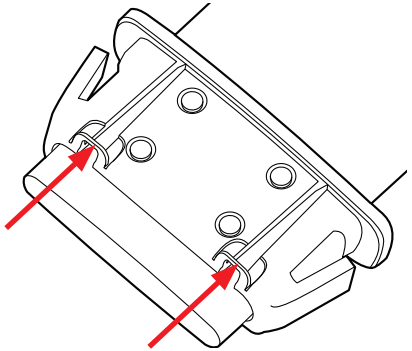


Figure 2—Fold down the two tabs on both strap clips

Fitting a PID to a Subject

Before fitting a PID to a subject, select and prepare the correct size strap. (See **Preparing Straps for Installation** on page 29).

Make sure that the MU or TU is initialised. (See **Initialising an MU** on page 26, or **Initialising a TU** on page 27).

1. With the Strap Fitting Lever closed, click the PID into the tool. **(Figure 1)**

2. Push one end of the strap between the tool's jaws.

3. Pull on the free end of the strap so that the clip is tight against the jaws. **(Figure 2)**

4. Open the Strap Fitting Lever, until you hear a click. **(Figure 3)**

   The strap is now fitted in one end of the PID.

Continued on **next page.**

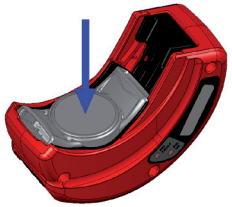


Figure 1
Click PID into Tool

Figure 2
Pull on free end of strap

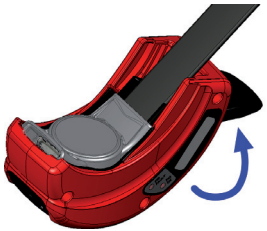


Figure 3
Open the strap-fitting-lever

Fitting a PID to a Subject (continued)

5. Check that the **PID SLEEP/FAULT** light is flashing red.

6. Close the Strap Fitting Lever and remove the PID and strap from the tool. **(Figure 4)**

Figure 4—Remove PID and strap from tool

7. Pull the end of the strap to make sure that it is securely fitted into the PID.

8. Push the free end of the strap between the tool's jaws.

9. Pull on the strap so that the clip is tight against the jaws. **(Figure 5)**

Figure 5
Pull on free end of strap

Continued on **next page.**

Fitting a PID to a Subject (continued)

10. Holding the tool, wrap the strap and PID around the subject's ankle and click the PID into the Installation Tool. **(Figure 6)**

11. Open the **Strap Fitting Lever,** until you hear a click.

    The strap should be fitted securely around the subject's ankle.

12. Check that the **PID OK** light is flashing green.

13. Close the **Strap Fitting Lever** and remove the tool from the PID. **(Figure 7)**

14. Pull on the ends of the strap to make sure that it is securely fitted into the PID.

15. Next, perform a Range Survey.
    (See **MU Range Survey and Data Upload** on page 37, or **TU Range Survey and Data Upload** on page 39).

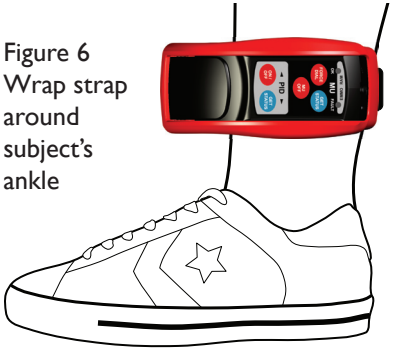


Figure 6
Wrap strap around subject's ankle

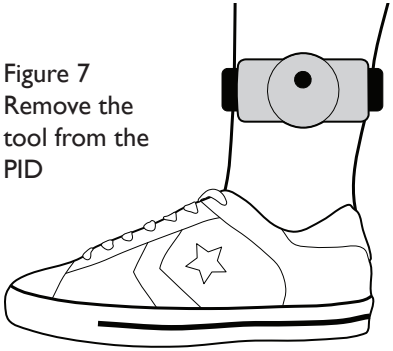


Figure 7
Remove the tool from the PID

Fitting a SOLO to a Subject

Before fitting a SOLO to a subject, select and prepare the correct size strap. (See **Preparing Straps for Installation** on page 29).

SOLO tags can be either installed on their own, or with an MU. If you are installing a SOLO with an MU, make sure that the MU has been initialised. (See **Initialising an MU** on page 26).

1. Phone the Monitoring Centre and give them the SOLO's serial number.

2. With the strap-fitting-lever closed, click the SOLO into the tool. **(Figure 1)**

3. Push one end of the strap between the tool's jaws.

4. Pull on the free end of the strap so that the clip is tight against the tool's jaws. **(Figure 2)**

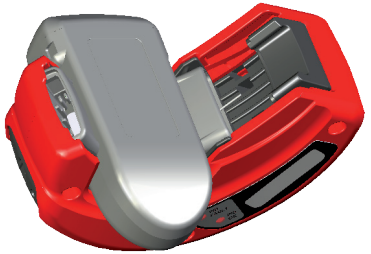


Figure 1
Click SOLO into Tool

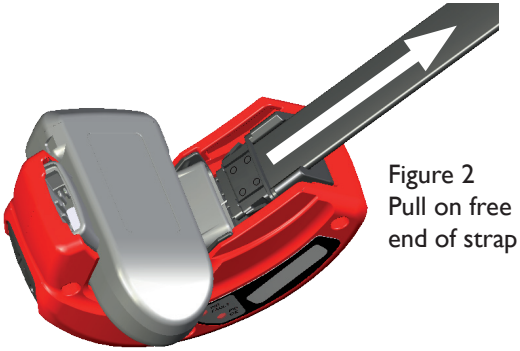


Figure 2
Pull on free end of strap

Continued on **next page.**

Fitting a SOLO to a Subject (continued)

5. Open the strap-fitting-lever until you hear a click. **(Figure 3)**

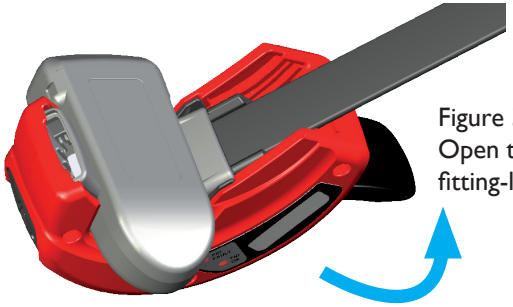


Figure 3
Open the strap-fitting-lever

The strap is now fitted in one side of the SOLO.

6. Check that the **PID SLEEP /FAULT** light is flashing red.

7. Close the strap-fitting-lever and remove the SOLO and strap from the tool. **(Figure 4)**

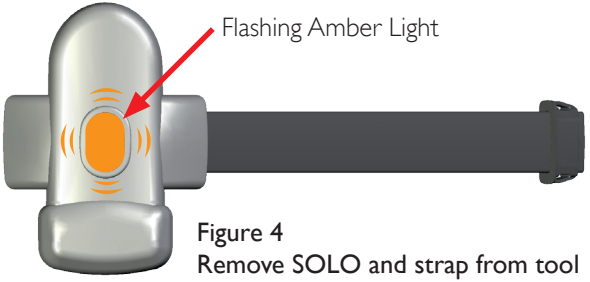


Figure 4
Remove SOLO and strap from tool

8. Check that the light on the SOLO is flashing amber.

9. Pull on the free end of the strap to make sure that it is securely fitted into the SOLO.

Continued on **next page.**

Fitting a SOLO to a Subject (continued)

10. Push the free end of the strap between the tool's jaws.

11. Pull on the strap so that the clip is tight against the tool's jaws. **(Figure 5)**

12. Wrap the strap and SOLO around the subject's ankle and click the SOLO into the tool. **(Figure 6)**

! Make sure that the round end of the SOLO is pointing upwards.

13. Open the strap-fitting-lever until you hear a click.

The strap is now fitted securely around the subject's ankle.

Figure 5
Pull on free end of strap

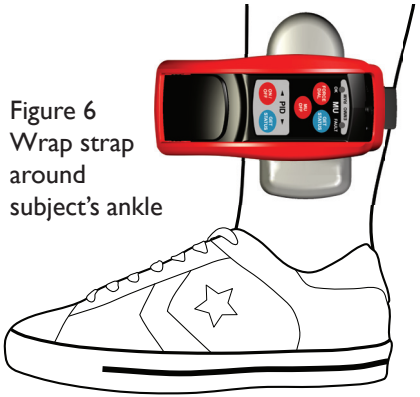
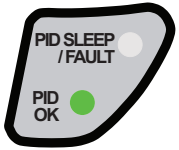


Figure 6
Wrap strap around subject's ankle

Continued on **next page.**

Fitting a SOLO to a Subject (continued)



14. Check that the **PID OK** light is flashing green.

15. Close the strap-fitting-lever and remove the tool from the SOLO. **(Figure 7)**

16. Pull on the strap to make sure that both ends are securely fitted into the SOLO.

    The SOLO flashes amber while it contacts the monitoring server.

    When the installation details are uploaded, the SOLO vibrates for 5 seconds and a constant green light shines for 10 seconds.

17. If the SOLO is being installed on its own, when the green light on the SOLO goes out, the installation is complete.

18. If you are installing the SOLO with an MU, you must perform an MU range survey. (See **MU Range Survey and Data Upload** on page 37).

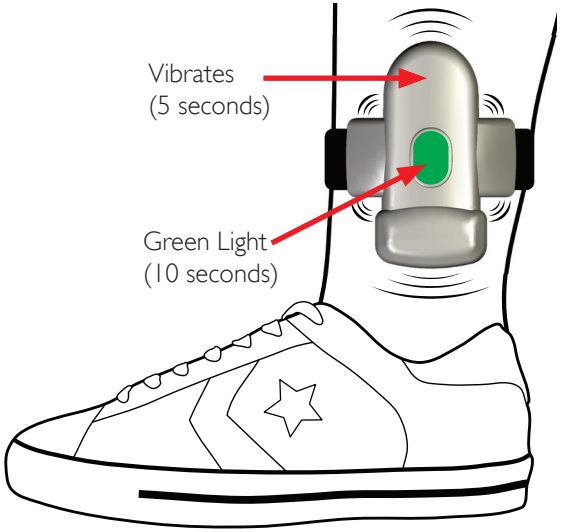


Figure 7—Remove the tool from the SOLO

MU Range Survey and Data Upload

When the MU has initialised and a new PID or SOLO has been fitted to the subject, the MU automatically goes into Survey Mode. (See **Initialising an MU** on page 26, and either **Fitting a PID to a Subject** on page 30, or **Fitting a SOLO to a Subject** on page 33).

1. The MU starts beeping and displays the new tag's serial number.

```
SURVEY P205764
Press BLUE button when walk
around complete
```

2. Walk the subject around all areas of the premises.

   The MU beeps every time that it receives a radio signal from the tag in survey mode.

   ! The MU should beep every second.
   • A 'missed' beep shows a possible blind-spot.

3. When the survey is complete, press the **blue button** on the MU.

   The MU displays the MU and tag serial numbers, and the survey ranges (R1 and R2)

```
MU20634 P205764 R1=180 R2=190
Press BLUE button when call
complete
```

4. Phone the monitoring centre on your mobile and tell them the **range values** (R1 and R2).

5. **Multicom/Landline MU ONLY**
   Connect the MU to the phone line wall socket and connect the extension phone to the MU.

Multicom/Landline MU Connections

Continued on **next page.**

MU Range Survey and Data Upload (continued)

6. When you have completed your call to the monitoring centre, press the **blue button** on the MU again.

The MU tries to call Control, and displays:
Calling Control - Connecting.

If the call connects successfully, the MU displays:
Calling Control – Transferring.

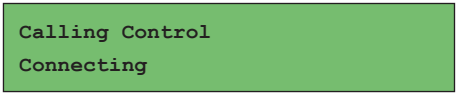
The MU should then display:
Calling Control – Call connected OK.

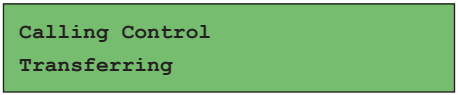
The MU beeps, and starts to download the range setting and PID serial number from the Control Centre.

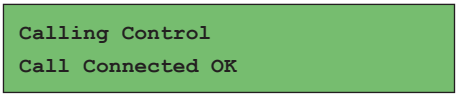
When the download is complete, the MU beeps three times and displays the **PID Install OK** message for 20 seconds.

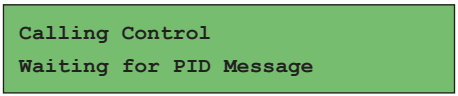
The installation is complete.
The MU displays the current date and time.

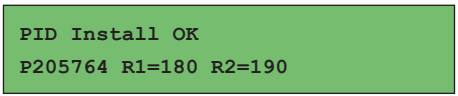
(If you do not see the **PID Install OK** message, see **MU Error Messages** on page 50).











TU Range Survey and Data Upload

When the TU has initialised and a new PID has been fitted to the subject, the TU automatically goes into Survey Mode. (See **Initialising a TU** on page 27, and **Fitting a PID to a Subject** on page 30).

1. The TU displays **WALK AROUND WITH PID** and the PID's serial number.
2. Leaving the TU docked, walk the subject around all areas of the premises.

   The TU beeps every time that it receives a transmission from the PID in survey mode.

   The TU should beep once every second. A 'missed' beep shows a possible blind-spot.
3. When the survey is complete, press the **left-hand button** on the TU.

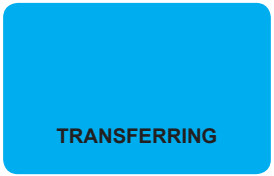
   The TU beeps and displays the TU and DOCK serial numbers.
4. Press the **right-hand button** to view the PID's serial number and the survey ranges:
5. Phone the monitoring centre on your mobile and tell them both range settings.
6. When you have completed your call to the monitoring centre, press the **right-hand button** on the TU again.

Continued on **next page.**

TU Range Survey and Data Upload (continued)

The TU tries to call Control, and displays:
CONNECTING.

If the call connects successfully, the TU displays:
TRANSFERRING



The TU beeps, and starts to download the range setting and PID serial number from the Control Centre.

When the download is complete, the TU displays **INSTALLATION SUCCESSFUL** for 20 seconds.

The installation is complete.
The TU displays the current time.

If you do not see the **INSTALLATION SUCCESSFUL** message, see the **TU Error Messages** on page 52

Removing and Replacing Tags

This section explains how to remove and replace tags.
It contains the following pages:

Abandoning an Install

To abandon an install at any point:

1. Remove the Tag

- Cut the **middle** of the strap with scissors and remove the PID or SOLO from the subject. **(Figure 1)**

Note: It is impossible to switch the tag to sleep mode, unless the strap has been cut or opened.

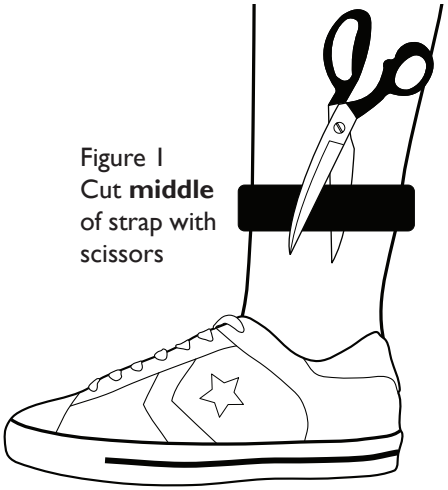


Figure 1
Cut **middle** of strap with scissors

2. Switch Off the Tag

- Clip the tool over the PID/SOLO.
- Press the **PID ON/OFF** button.

The **PID SLEEP/FAULT** light on the side of the tool shines amber to show that the tag is in sleep mode, then starts flashing red to indicate a strap-cut tamper. (See **PID Status Lights** on page 20).

3. Reset the MU or TU

- Press the **red button** on the MU.

Or:

- Press the **right-hand button** on the TU.

Removing a Tag

Follow the steps below to remove a tag at the end of a curfew period:

1. Switch Off the MU or TU

- Unplug the MU or docking station from the mains power supply.
- Point the tool at the front of the MU or the bottom of the TU. (See **Linking to MUs** on page 14, or **Linking to TUs** on page 15).
- Press the **MU OFF** button.

2. Remove the Tag

- Cut the **middle** of the strap with scissors and remove the PID or SOLO from the subject. **(Figure 1)**

Note: It is impossible to switch the tag to sleep mode, unless the strap has been cut or opened.

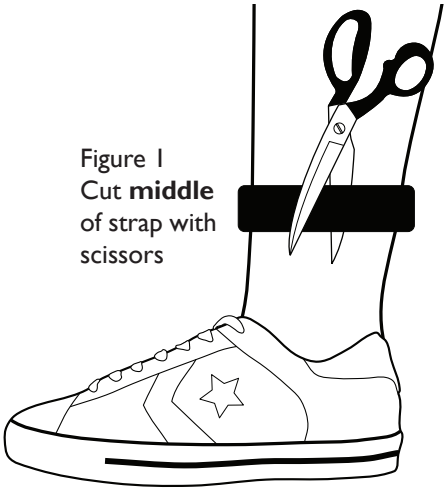
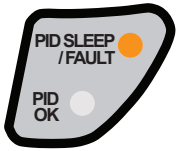


Figure 1
Cut **middle** of strap with scissors

3. Switch Off the Tag

- Clip the tool over the PID or SOLO.
- Press the **PID ON/OFF** button.

The **PID SLEEP/FAULT** light on the side of the tool shines amber to show that the tag is in sleep mode, then starts flashing red to indicate a strap-cut tamper. (See **PID Status Lights** on page 20).



Replacing a Tag

Follow the steps below to replace a tampered or faulty PID:

1. Switch off the MU or TU. (See **Removing a Tag** on page 43).

2. Cut the **middle** of the strap with scissors and remove the tag from the subject. **(Figure 1)**

3. Put the PID into sleep mode. (Clip the tool over the tag and press the **PID ON/OFF** button).

4. Phone the monitoring centre and tell them the new tag's serial number.

5. Plug the MU or docking station back into the mains power supply.

6. Fit the new tag to the subject. (See **Fitting a PID to a Subject** on page 30, or **Fitting a SOLO to a Subject** on page 33).

7. Continue with the rest of the install procedure. (See **MU Range Survey and Data Upload** on page 37, or **TU Range Survey and Data Upload** on page 39).

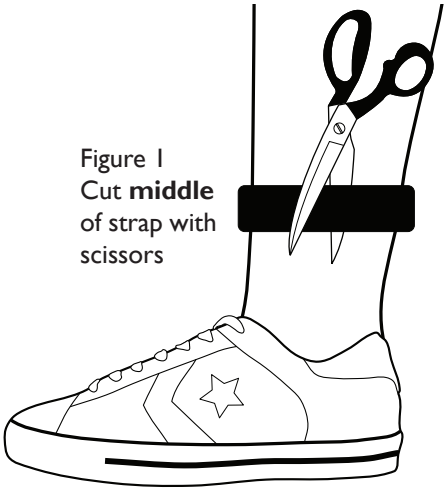


Figure 1
Cut **middle** of strap with scissors

Tamper Investigation & RAM Survey

This section explains how to investigate any suspected tampers and how to perform a RAM (Random Alternative Monitoring) survey. It contains the following pages:

Investigating Tamper Alerts

Follow the steps below when you need to investigate a tamper alert:

! DO NOT remove the tag from the subject's leg before checking the tag and strap for signs of tampering.

1. Inspect the tag and strap for signs of tampering:
   - Check that both ends of the strap are secured.
   - Check if the strap clips are damaged. **(Figure 1)**
   - Check that the strap has not been cut, torn or frayed.
   - Check for cracks, dents and scratches on the outer casing.
   - Check for clear or white glue residue.

2. Clip the tool over the tag. **(Figure 2)**

3. Press the **PID GET STATUS** button. 

4. Check the **PID SLEEP/FAULT** and **PID OK** lights on the side of the tool. (See **PID Status Lights** on page 20).

5. Further checks can be carried out using EMMO. (See the EMMO User Guide).

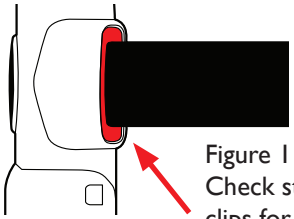


Figure 1
Check strap clips for damage

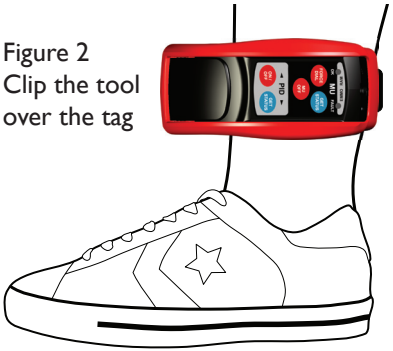


Figure 2
Clip the tool over the tag

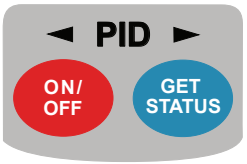
Performing a RAM Survey

RAM (Random Alternative Monitoring) mode allows you to find out if there are any PIDs or SOLOs nearby. You can perform a RAM using the tool on its own to quickly detect any tags and get their tamper status.

Use the EMMO software running on a PDA to get the full details of any detected tags (See the EMMO User Guide).

To Put the Tool into RAM Mode:

1. Press and hold down the **PID GET STATUS** button for 3 seconds.



2. While still holding down the **PID GET STATUS** button, press the **PID ON/OFF** button.

The **RAM** light blinks every time a tag's radio signal is detected. The colour of the blink shows the status of each detected tag:

RAM Light		Meaning
	Green Flash	Active tag found, no tamper.
	Red Flash	Tampered tag found.
	Amber Flash	Tag with low battery found.

Each active tag transmits a radio signal every 10 seconds. For example, if the tool detects only one tag, the RAM light blinks once every 10 seconds. If there are two tags nearby, the RAM light blinks twice every 10 seconds etc.

Trouble Shooting

This section explains the PID, MU and TU error codes.
It contains the following pages:

Installation Tool Errors

Error	Cause	Action
Unable to switch on Tool, no lights or beeps.	Flat battery.	■ Charge the battery (see page 10).
Battery Status Light is flashing red or amber.		
Tool won't wake up from Sleep Mode: All the lights flash red one after another, and the Tool returns to Sleep Mode.	Missing or faulty officer's key fob.	■ Make sure that a red key fob is nearby, and is flashing every 10 seconds. (See **FMO's Key Fob** on page 12).

MU Error Messages

Error	Cause	Action
NO GSM SIGNAL! Move unit to different location	Poor GSM (mobile phone) signal.	■ Move the MU to a location with better GSM reception.
MU FAIL! No GSM Signal		
CALL FAILED!		
MU FAIL! Return to GML	MU Failure.	■ Check that the MU is connected to the mains power. ■ Check the MU's status using EMMO, (see the EMMO User Guide) which may indicate possible interference (MU status codes J1/J2). Possible causes may include faulty car-remote key fobs. ■ If the MU still fails, return it for servicing.
PID INSTALL FAILED PID not in list	The number of the PID just installed on the MU does not match the PID number entered by the monitoring centre.	■ Call the monitoring centre and check that they have entered the correct PID and MU serial numbers.
PID INSTALL ABANDONED	The red button on the MU was pressed during the install.	■ Restart the installation from the beginning.

Continued on **next page.**

MU Error Messages (continued)

Error	Cause	Action
MORE THAN 1 PID IN SURVEY	The MU has detected more than 1 PID in survey mode.	■ Switch off or remove the extra PID(s) and restart the installation from the beginning.
PID INSTALL FAILED PID not seen	Possible PID number mismatch and/or GSM problem.	■ Call the monitoring centre and check that they have entered the correct PID and MU serial numbers. ■ If the MU and PID numbers are correct, switch off the MU, move it to a different location and restart the installation from the beginning.
PID INSTALL FAILED Communications fail		
PID INSTALL ABANDONED PID TAMPER DETECTED	PID is transmitting a tamper message.	■ Restart the installation from the beginning using a PID that is not in a tamper condition..
Line busy	Busy/engaged messages.	■ Wait for a moment and try again.
Line engaged		
BAD PUK	SIM card errors.	■ Return MU for servicing.
BAD PIN		
Reg Err		

TU Error Messages

Error	Cause	Action
PLACE UNIT IN CHARGING STATION	TU not docked correctly.	■ Re-dock the TU in the docking station ensuring the contact is firm and secure.
NO GSM SIGNAL RE-POSITION UNIT	Poor GSM (mobile phone) signal.	■ Move the docked TU to a location with better GSM reception.
CONNECTION FAIL		
REMOVE UNIT AND GET GPS	Poor GPS (satellite tracking) signal.	■ Lift the TU from the Dock and take it outside to an area with a wide, clear view of the sky, away from any tall buildings. (See **Getting a GPS Location Fix** on page 28).
MORE THAN 1 PID IN SURVEY	The TU has detected more than 1 PID in survey mode.	■ Switch off or remove the extra PID(s) and restart the installation from the beginning.
FAILED - PID NOT IN LIST	The PID number just installed on the TU does not match the PID number entered by the monitoring centre.	■ Call the monitoring centre and check that they have entered the correct PID and TU, and DOCK serial numbers.
FAILED - DOCK NOT IN LIST	The DOCK number just installed on the TU does not match the DOCK number entered by the monitoring centre.	
INSTALLATION ABANDONED	The installation was manually abandoned.	■ Restart the installation from the beginning.

Continued on **next page.**

TU Error Messages (continued)

Error	Cause	Action
FAILED - PID NOT SEEN	Possible PID number mismatch and/or GSM problem.	■ Call the monitoring centre and check that they have entered the correct PID and TU serial numbers. ■ If the TU and PID numbers are correct, unplug the docking station, switch off the TU, move it to a different location and restart the installation from the beginning.
FAILED TO CONTACT SERVER		
PID IS TAMPERED	PID is transmitting a tamper message.	■ Restart the installation from the beginning using a PID that is not in a tamper condition.
DOCK IS TAMPERED	DOCK is transmitting a tamper message.	■ Restart the installation from the beginning using a DOCK that is not in a tamper condition.
NO SIM CARD RETURN UNIT	Faulty/missing SIM in TU.	■ Return TU for servicing.
SIM LOCKED FAULT RETURN UNIT		
RADIOS ARE JAMMED	Radio interference.	■ Move the docking station or remove the source of the radio interference and restart the installation from the beginning. (Possible causes may include faulty car-remote key-fobs).
TRACKER FAULT RETURN UNIT	TU Failure.	■ Return TU for servicing. **! The TU will shut down after 10 seconds if it is not docked correctly while in this state.**

Index

Index (continued)

Index (continued)