

Skipper's Mate TESS - The Essential Security System

Getting Started and Testing

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1. Welcome to TESS !

This document is intended to be used once you have assembled your TESS system – the illustrated Assembly Notes are available in PDF format from the Downloads page on the web site <https://www.skippersmate.co.uk>.

This is intended to help you configure and test the system for your own boat with the minimum of effort. Many Skipper's Mate users decide to test the system at home before taking it to the boat or wiring it in. Section 3 contains some brief notes on ways to use the system at home.

This document is intended to help you get your Skipper's Mate modules up and running quickly.

Errors and Liability

No documentation is without errors. If you find any, please post on the via the Forum on the web site at <https://www.skippersmate.co.uk> and accept our apologies. No liability is accepted for this documentation or any assumptions made.

IMPORTANT NOTE – TESS is one edition from a modular system. You may well have items (such as sensors with Sensor Control Units) which are not described here. Please refer to the web site for further documentation.

2. All About Your TESS

2.1 TESS Features

The Essential Security System (TESS) is a compact security system offering :

- Boat Control Unit in customised enclosure
- camera
- PIR
- LED light
- GPS
- broadband connection (via 3G/4G and/or external wireless)

TESS can :

- warn you of intruders or burglars on your boat
- capture video and send immediate message
- send SMS and/or email alerts*
- deter a burglar with an automatic light/optional strobe/siren
- switch on light for night-time camera viewing
- automatically switch on LED light if intruder detected

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- detect and alert you if your boat moves (sending position, track & speed)
- record and track your boat

* SMS alerts are available as part of the free Remote Access trial – if you wish to continue to use these you will need to sign up to Remote Access.

Remote Access – additional features

- allow you, wherever you have an Internet connection, to visit your boat and control the boat as if you were on board
- allows you to view the camera(s) live
- allows you to view live GPS details remotely
- see your boat track on Google maps remotely
- view the stored video of an incident/intruder (12 months storage – optionally longer)
- receive SMS alerts

2.2 TESS – How She Works

You can add a range of editions or features from other parts of Skipper's Mate (e.g. discrete Sensor Control Units attached via Bluetooth and sited elsewhere around the boat) to TESS.

However, TESS is intended to give you a central Boat Control Unit with attached :

- PIR
- camera
- relay unit – to switch on LED light and optional devices (e.g. strobe, siren, boat lights)

Other separate devices (e.g. further PIRs with their own Sensor Control Units communicating over Bluetooth or IP cameras communicating over Wi-Fi) can be added but TESS is a single entity. So, when you use the Control Panel and Alert Control Panel with TESS the BCU switch is the one which affects the TESS PIR. Unless you have a separate Sensor Control Unit with a PIR then the PIR switch(es) are not relevant. Your camera will normally be set up as Camera 1 and will be a ribbon cable daylight camera plugged directly into the BCU (Raspberry Pi).

TESS with the attached PIR, LED light and a daylight camera are intended to provide a low-consumption method of obtaining video of intruders – the PIR detects motion and triggers the LED light. The motion-sensing camera takes video. Both PIR and camera send alerts (email/SMS).

Additional cameras can be added and other cameras can be swapped for the daylight ribbon cable camera – see web site or contact us.

IMPORTANT NOTE – When TESS boots the relays will automatically “click”. If there are lights attached these may flash. This is normal.

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2.3 List of Items included

Boat Control Unit (BCU) – Raspberry Pi 3B

Micro-SD card for BCU

Voltage step-down – 12V or 24V to 5V

Power cable (USB to micro USB) for BCU

2 off USB extension cables - 25cm**

Enclosure

3G/4G mobile broadband dongle (unlocked)*

AND/OR

Wi-Fi dongle with removable antenna (reverse SMA connection)

** SIM not supplied*

*** if the order contains a Powered USB hub these will be omitted*

In some instances, a Powered USB hub may have been added, to ensure adequate power provision for the number of devices supplied.

3. Testing TESS At Home

Many boat owners may prefer to experiment with Skipper's Mate at home before taking it to the boat. To do that you should ensure that you can power TESS and any additional kit (e.g. Sensor Control Units).

The TESS BCU needs either a 5V 2A power supply with a micro USB or you need to get yourself set up with an old car/boat battery and emulate the set up on the boat.

If you have a powered hub again it needs either a 240V transformer or to be powered via a USB/barrel jack connector from the BCU voltage stepdown.

If you have any Sensor Control Units in addition to TESS these will need either a suitable 9V power supply or a supply via the voltage stepdown supplied with each SCU.

IMPORTANT NOTE – If you have Sensor Control Units configured/purchased the system will expect them to be present. See forum/web site for details on the Bluetooth reading method. IF YOUR TESS REBOOTS OFTEN, THE ABSENCE OF SENSOR CONTROL UNITS IT EXPECTS IS THE MOST LIKELY CAUSE.

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4. Accessing TESS On Board with Your Phone/Tablet/PC

4.1 Logging In for the First Time

In order to login you need TESS powered up. This should power up the Wi-Fi Access Point/Hotspot with an SSID of **Skipper'sMate**. Access this from your wireless device (tablet, smartphone, laptop), with a WPA/2 password of **skippersmate**. (Note you should be able to personalise these from the system menus - see note regarding wireless IP cameras).

Browse to **192.168.51.254** and you should see the login screen.

Has your system been synchronised already ? We try where possible to synchronise systems. So first, try your User Id and Password (copy emailed to you when you ordered or registered). If that doesn't work then try the defaults User Id : **Skipper** and Password: **Mate**.

If your system has not been synchronised and you log in as Skipper, use the menu option Control / Synchronise, enter your personal id and password. Once it has completed it will give you a Status message. Reboot and you should be able to attach to the hotspot and login as **you** from now on.

IMPORTANT NOTE – If you log in to the Central Server (via the web site) but all menu options are crossed through, preventing you from using any menu option, you have used incorrect login credentials. The system permits a passive login, thereby preventing any bots hammering at the server in attempts to get access to programs. If you have forgotten your login details (emailed to you when you registered/purchased) then please contact us via the web site Contact form.

5. Broadband Access via TESS to the Outside World

If you are on board, and TESS is setup with either external Wi-Fi Broadband access or 3G/4G Broadband access then you should simply be able to connect to your Boat Wi-Fi Hotspot (SSID by default is **Skipper'sMate** with a password of **skippersmate**) and then be able to browse the Internet as you would connected to any Internet connection (e.g. your home Wi-Fi router or a signal when you're out and about).

Details on how to connect your TESS system via 3G/4G or an external Wi-Fi source can be found in **Chapters 5 and 6** of the **User Manual** (available from the Downloads page of the web site) but have been included as **Appendices A and B** of this document for easy of reference for the new TESS owner.

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6. Broadband Access to Your Boat TESS from the Outside World

To access your boat and the information provided by your Skipper's Mate TESS system you will need to visit the web site <https://www.skippersmate.co.uk>. Obviously your TESS system must already be communicating with the world – see **Section 5** above and **Appendices A** and **B**.

From the web site, select the **Login** button and login using the credentials you created whilst purchasing and/or registering (sent to you by email).

Then you can either :

- use the **Control / Visit Boat** option where you can carry out tasks as though you were on board (see the **Note : to view your camera remotely** in **Section 10.1** below)

OR

- use the Remote Access facilities e.g. setting up email/SMS alert addresses/numbers, viewing camera(s) remotely, viewing graphs (if you have voltage or temperature/humidity sensors)

7. Alerts Email and SMS – Overview

7.1 Alert Setup and Testing

Skipper's Mate alerts vary slightly according to the source of the alert :

- GPS geo-fencing
- PIR motion detection
- camera motion detection (including video and/or snapshot capture)

AND

- sensor detection (not part of TESS but sensors, in addition to the built-in PIR) can be added – see web site

ALL Alerts require :

In order for email and/or SMS alerts to work, several settings need to be in place :

- at least one alert recipient (email address) and/or SMS numbering

GPS and Make/Break Alerts require :

- the device to issue alerts **MUST** be switched on in the **Control Panel** – see separate section for which switch is required for the TESS PIR
- the overall **ALL** switch must be turned on in the **Alert Control Panel**
- the switch for the specific device must be turned on in the **Alert Control Panel**

Analogue Alerts (Voltage, Temp/Humid/DewPt) require :

- Alert range set using menu option under Settings menu for each type of alert. Values outside

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the range set will generate alerts.

7.2 Alert Recipients

These should have been set up by the process when you purchased and/or registered your details.

To check these, visit your account on the Central Server via the web site and check Settings :

- Email Contacts
- SMS Contacts

At least one valid email account and/or one valid mobile phone number for SMS messages must be stored on your Central Server account for alerts to work.

7.3 Once Only Alerts (except Cameras)

Once only – the system is currently set up so that you receive a single alert (set of email & SMS alerts) when an alert condition is detected. At that point the alert is disabled and **will not be re-enabled until you do so** by clicking on the link in an email or SMS. (Note on GPS SMS)

Why Once Only ? Our take on this is that you do not want to be bombarded by alerts telling you that your batteries are a bit low – after all if you're away from the boat then you probably can't do anything till you get there. We may consider, at a later date, enhancing the system so that you can choose whether alerts will continue to remind you of a single alert condition – if this is an issue that you feel strongly about please post on the Skipper's Mate forum.

For details on Camera Alerts see Section 10.

7.4 Email Alerts

There is no limit to the time or number of emails which will be sent. You do not need a Remote Access agreement. Emails will ONLY stop if an alert has been triggered and you have not chosen to reset it – see **Once Only** above.

7.5 SMS Alerts

- to receive SMS alerts the boat owner must be able to use the Remote Access system (either as a free trial or with a subscription). Note that this does not apply to Email alerts – ALL users of the system can receive email alerts whether or not they can use Remote Access
- users must have sufficient SMS credits left to receive SMS alerts (top up warning issued by email)*

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* Typically you're unlikely to run out of SMS credits unless something really horrid is going on or the system has been set up to send alerts to all and sundry

SMS alerts – In order to receive SMS alerts you need either to be using the FREE Remote Access which comes with TESS – 3 months – or have purchased an extension to Remote Access. You should receive an email reminder you when you're close to the expiry of your Remote Access period.

No. of SMS alerts – you will receive an allocation of SMS alerts for each month of Remote Access. If you are getting close to the maximum SMS alerts included for the period, you will receive an email and can purchase a Top Up. If you use all your SMS alerts for the month, you will continue to receive email alerts, and email reminders that you're out of SMS credits, but will not receive alerts by SMS until you either Top Up or the new month starts.

8. GPS Setup and Alerts

8.1 GPS Setup and Testing

If you have your GPS plugged in – either directly to the BCU (with or without a USB extension cable) or to a powered USB hub (if you have one) * and your GPS is switched on via the Control Panel - then your GPS should be visible to Skipper's Mate :

(* see notes on **Forum** re Powered Hub under **Knowledge Base / Can I ? Will it ? / Do I need a powered hub ?**)

- **Be patient !** A GPS can take some time (between a few minutes and as much as an hour or two) to get going. Firstly it should flash (about once a second) to indicate that it has located satellites. Via the Boat Login you can see GPS / GPS Real-Time Update. This should show the No. of Satellites at the foot of the page. You normally need a minimum of 3 or 4 satellites to get a decent fix.
- **Metres From Base** – if you want GPS alerts to work use the **Set Base** button. This will store your current position. The Alert Distance is set, as a default, to 30 metres. This can be changed using the menu option GPS / GPS Settings – Alert Distance (metres) and saving the value with the OK button.

Errors/Problems with GPS

If your GPS is not switched on or working correctly :

- you will see "Initialising gps. Please be patient" in the Status bar of the GPS Real-Time Update program and the program will not display any data
- plots may not be shown by Plot Your Position (you may see the pink anchor marking your Base and one plot point (boat icon)) but no more will be shown

8.2 GPS Alerts

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See **Section 7 – Alerts – General** to ensure the setup has been completed for Alerts to work.

Control Panel – GPS must be switched on via the Control Panel for Alerts to work.

Alert Control Panel –

- **ALL** switch must be on – the purpose of this is to allow you to switch off ALL alerts when you approach the boat or get on board to stop alerts being sent when its only you
- **GPS** must be switched on

9. TESS PIR Setup and Alerts

Note that this section refers *specifically to the built-in TESS PIR* – and NOT to any separate Sensor Control Unit with a PIR – see documentation for Sensors on web site.

9.1 TESS PIR Setup and Testing

- Ensure your PIR is connected correctly – see Assembly Notes
- Ensure your TESS relay unit is connected correctly – see Assembly Notes
- Ensure that the **BCU** is switched on on the **Control Panel**

Test your PIR by waving at it. You should hear the relay “click”. If not, check your wiring – see the Assembly Notes available from the Downloads page on the web site. All kit is soak-tested so it will have been working before despatch.

If you have the LED light connected to the relay unit it should light up when you wave at the PIR. Similarly if you have a strobe or siren attached to the relay unit these should start.

9.2 PIR Alerts

See **Section 7 – Alerts – General** to ensure the setup has been completed for Alerts to work.

Control Panel – **BCU** must be switched on via the Control Panel for Alerts to work.

Alert Control Panel –

- **ALL** switch must be on – the purpose of this is to allow you to switch off ALL alerts when you approach the boat or get on board to stop alerts being sent when 'tis only you
- **BCU** must be switched on

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10. Camera Setup and Alerts

10.1 TESS Camera Setup and Testing

- Ensure your camera is connected correctly – see Assembly Notes
- Ensure your TESS relay unit is connected correctly – see Assembly Notes
- Ensure that **Cams** is switched on on the **Control Panel**
- Use the **Cameras / Camera 1** menu option – from the **Detection** tab, set **Motion Border?** On (this means that a rectangle will be shown around any motion detected when you view the camera) – and save with the **OK** button

Testing

- Test your camera by viewing it from the Boat ControlUnit – **Viewing / Camera 1**.
- Test your camera is detecting motion – wave your hand at it and you should see the rectangle around your hand on the camera view
- Details on captured video – *to be completed*

What happens if you attempt to view a camera which does not exist or is not functioning – will show a “Connecting” for some while and will eventually show a bordered rectangle with a broken image icon.

Note – to view your camera remotely you can log into the Central Server and use Viewing. If this is working you should be able to see your live camera. The Date/Time should be updating. You cannot log into the Central Server, select Visit Boat, log into the BCU and then select Viewing – ie view locally when you are a remote user - but then you don't need to – this is accessible remotely from the Central Server menus as a remote user.

10.2 Camera Motion Alerts

See Section 7 – Alerts – General to ensure the setup has been completed for Alerts to work.

Control Panel – Camera 1 must be switched on via the Control Panel for Alerts to work.

Alert Control Panel –

- **ALL** switch must be on – the purpose of this is to allow you to switch off ALL alerts when you approach the boat or get on board to stop alerts being sent when 'tis only you
- **Camera 1** must be switched on

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11. Additional Sensors and Alerts

TESS can be enhanced by adding Sensor Control Units and these can be configured to generate alerts. For more details of this please see the User Manual.

You can receive alerts for such occurrences as :

- intruder alert from hatch/door sensor(s)
- low/high voltage alert from voltage sensor
- low/high temperature or humidity alert from temperature/humid/dew pt. Sensor
- bilge level alert from bilge sensor

Each of these may be configured via the Settings / Sensor Settings option on the Boat Control Unit menus.

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Appendix A. Mobile Broadband 3G/4G

This is taken from the User Manual available from the Downloads page on the web site.

Using Mobile Broadband or external Wi-Fi Backhaul

You can connect to the Internet from your Boat Server with **EITHER** Mobile Broadband **OR** external Wi-Fi backhaul at any one time. You cannot have both active simultaneously.

Switching Between Sources

Once configured, you can switch between the two Internet sources by using the switches on the **Control Panel** (see the Control Menu on the Boat Server). Using the Control Panel to switch on one source will cause the other to be toggled off automatically.



Choosing Backhaul to Suit Your Location

To the end user on the boat using a personal device (e.g. tablet, laptop, smartphone) to access the Internet via the Boat Server, this should be seamless. Obviously it depends on what signal is available to you in any given location. You might, for example, if you are in your home berth wish to use the marina Wi-Fi if it is already included in your berthing package. Then when you cruise elsewhere you may want to use Mobile Broadband (3G/4G).

Which Mobile Broadband Supplier Should I Use ?

This has to be up to you, based on the supply of Mobile Broadband in the areas where you cruise. Skipper's Mate doesn't care what you use. The dongle supplied with the Communications Kit is unlocked so you can use any SIM you choose – and, of course, any subscription or Pay As U Go plan which suits you. Nor is there any reason why you cannot change the SIM to use a different ISP according to location and sources available. If you do change SIM you will need to use the **Broadband / 3G / 4G Settings** option to change the User Name and Password to those provide by the “new” ISP.

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Getting Started with Mobile Broadband

Step 1 – Use the **Broadband / 3G / 4G Settings**. Most of the information is ONLY REQUIRED IF YOU PROVIDE YOUR OWN DONGLE, rather than the one in the Communications Kit.

You WILL need to enter the User Name and Password provided by your SIM supplier.

Step 2 – Make sure that you switch on the 3G/4G switch on the **Control / Control Panel** menu option.

Step 3 – Assuming that your Boat Server Wi-Fi Hotspot is working (which is covered in the previous chapter), any user on the boat, once connected to the Boat Server Wi-Fi Hotspot, will be using the 3G/4G Internet connection.

Not sure if the Internet connection is working ?

Choose the menu option **Control / Check Broadband Connection**. Hitting the OK button should, if you are connected, show you the IP address in the Status Bar. If not, it will give you an error. The help gives more details on what to check if it is not working.

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Appendix B. External Wi-Fi Backhaul

This is taken from the User Manual available from the Downloads page on the web site.

Choosing an External Wireless Connection as Your Backhaul

Don't confuse this with your Boat Wi-Fi Hotspot. This refers purely to an external wireless or Wi-Fi service such as that provided by a marina, yacht club or commercial supplier.

You can use any available local Wi-Fi hotspot (whether it's one you have an account for or one where you need to pay for time). See the *Quick Tip* further down about wireless connectivity outdoors and at a distance.

Step 1 – Ensure through **Control / Control Panel** that **Wless** is switched on. (Note that activating the wireless backhaul will toggle off the 3G/4G connection)

Step 2 - Select the menu option **Broadband / Connect to Wireless Signal**

If you have recently connected to/used this external wireless signal then it may simply reconnect. If not, use this task to display available signals and connect. You may sometimes need to use the **Rescan** button to refresh the list if nothing is found or you can't see the signals you want to connect to.

(Hit Rescan and still get "Nothing found" ? - check that you have turned **Wless** on in the Control / Control Panel. You can have either **3G/4G** OR **Wireless** connected at any one time.)

This program allows you to view the available EXTERNAL Wi-Fi signals and select the one you wish to connect your Boat Server to - allowing your on-board users/devices to share that connection to the Internet.

Open Only ? - If you wish to connect to an open or unsecured connection - such as a public or marina hotspot - then you can select **Open Only ?** to filter out the secured connections. This can be particularly useful in a busy place where there may be rafts of private secured hotspots.

If you want to connect to a secured connection - such as yacht club Wi-Fi where you have been given the WPA Passphrase - then leave this field clear.

Wireless Access Points - The list of available access points should appear in the list box when you open the program. **Note** that on some mobile devices you may need to click/expand the dropdown list to see the signals. You can use the **Rescan**  button to refresh the list. It should give you the message in the Status Bar "Searching for APs please wait". It may take a while. Once the APs have been found they will be displayed in a listbox. Secured/password-protected hotspots will be shown in red, unsecured hotspots in green. When your list of signals is displayed, click on the hotspot name (SSID) of your choice. It should appear in the **Selected Access Point** and then click on the **Connect** button.

WPA Passphrase - If the hotspot you choose to connect to is WPA2 protected, you will be asked for the passphrase. If the external Wi-Fi uses an older insecure protocol you will need to connect elsewhere.

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Once the SSID is selected, the program should show a message "Trying to connect". This may take some while so be patient. If successful, you should see the Status Message "Connected to 'SSID': IP 'nnn.nnn.nnn.nnn'". You should then be able to access the Internet. Of course, if you are connecting via a hotspot with a walled garden (e.g. a marina Wi-Fi hotspot) then you will need to enter the details they have provided in order to get to the web.

Quick Tip

Don't forget the old truism - no matter how large the megaphone the hotspot provider is using, if your own wireless device can't shout back then you can't hold a meaningful conversation. This means you may well find the connection is interrupted or fails entirely.

Re-siting your wireless receiver where it has good line of sight to the external wireless transmitter may help - possibly by using a USB extension cable (note that typically 3 metres is the maximum for a standard USB extn.). In some circumstances a more powerful receiver be needed.

The wireless units supplied with the Skipper's Mate kit also make allowance for an external antenna.

Not sure if the Internet connection is working ?

Choose the menu option **Control / Check Broadband Connection**. Hitting the OK button should, if you are connected, show you the IP address in the Status Bar. If not, it will give you an error. The help gives more details on what to check if it is not working.