# StecaGrid Inverter – Domestic Installation

## Inverter summary

| | |
|---|---|
| Inverter Manufacturer | Steca |
| Inverter Model | StecaGrid 3600 |
| Inverter Size | 3600W |
| Maximum number of inverters connected to a single SPLASH Monitoring STREAMbox | 99 |

## List of parts required for connection of inverter to SPLASH Monitoring

To enable you to connect the above inverter to SPLASH Monitoring you will need a SPLASH Monitoring STREAMbox and connection cables, these parts are listed below.

| Part description | Part number |
|---|---|
| Inverter Make / Model | As above |
| SPLASH Monitoring STREAMbox | SMSB HW - Hardwired network and inverter connections |
| Connection cable STREAMbox to inverter | Part numbers Steca D9F-RJ45 3m<br><br>Steca D9F-RJ45 10m |
| Connection cable STREAMbox to clients router or LAN | Part numbers SM CAT5 1m – 1m CAT5 cable<br><br>SM CAT5 2m – 2m CAT5 cable<br><br>SM CAT5 5m – 5m CAT5 cable<br><br>SM CAT5 10m – 10m CAT5 cable |
| **Optional** | USB to RS485 D9F Adapter |

**Installation Guidelines**

We have found that the most reliable long-term results are achieved when the Streambox, DL2 and their respective power supplies are installed well away from daily operational areas. The problem is that the loss of the Splash Monitoring service is not immediately obvious, so it can be many days or weeks before someone realises that their system is not being updated. We are in the process of developing a mechanism to detect the loss of communication which optionally sends an email alert to one or more nominated recipients, but it is always prudent to minimise the risk of disruption by following these guidelines:

- If possible install the equipment and power supplies well away from daily operational areas such as someone's desk or work bench.

- Try and secure the equipment by attaching it to a wall or shelf with screws, Velcro or double sided tape. This should prevent it from slipping and becoming disconnected.

- Always secure the STREAMbox power cord to the STREAMbox using the P clip supplied. The P clip should be located on the back of the STREAMbox using one of the existing jack posts, as illustrated:



- Always ensure the LAN cables you use are in sound condition with their retaining clips intact, and make sure they are securely fitted to the equipment by giving them a gentle tug.

- Always ensure that all cables are secured using cable ties to protect them from accidental snagging.

- Never stretch cables to the point where any movement could cause them to become dislodged.

- Always install the STREAMbox with the ridged heat sink outwards and the side vents unobstructed. It doesn't matter what orientation is used; horizontally on its bottom (the flat black surface); or vertically on its side.

- The equipment and power supplies will be labelled 'DO NOT SWITCH OFF', but you should inform people with access to the installation area that this equipment should not be turned off; for example cleaning and maintenance personnel.

# Basic Connectivity



The photo above shows the connectivity between the various devices. The connections from left to right are:

1 – CAT5 or CAT6 LAN cable between the STREAMbox and your LAN, router or Network Access Device (blue cable).
2 – D9 to RJ45 cable between COM1 on the STREAMbox and the first inverter (beige cable).
3 – CAT5 or CAT6 extension cable between inverters (black cable).

The terminator switch to the left of the RJ45 sockets on the first inverter should be in the left hand position (unterminated), as should all subsequent inverters except the last one where the terminator switch should be in the right hand position (terminated).

Network Access Device: This may be a Router, ADSL Modem, Switch or other network device connected to the Internet.

Please take care when connecting the inverter(s) to the STREAMbox, if the distances are long then SPLASH Monitoring approved twisted pair cable is crucial.

## Setting Up Your STREAMbox

Unless the STREAMbox has already been configured according to your specifications, it will be configured to acquire a DHCP IP address from your router or DHCP server. For most domestic applications this will work without any modification. However, if you do need to change its settings see below for guidance.

## Trouble Shooting:

"No Stream Found" on the SM Web site:
This is because the web site hasn't received any data from the STREAMbox.

- Steca inverters can be interrogated for data if the AC power is connected, so make sure the inverter is powered up.

- Allow at least 10 minutes after powering up the STREAMbox before starting your diagnostic checks.

- Check the connections between the STREAMbox and your router and ensure you have a solid green light at the top left of the RJ45 socket and a flashing green light at the top right of the socket.

- No solid green light could indicate: the STREAMbox is switched off (check the power light on the front of the STREAMbox); or the router isn't powered up, or the LAN cable isn't connected to the router; or the LAN cable is faulty. To eliminate the LAN cable and router, connect the LAN cable to a known working device like your laptop or PC and if you can get a web session, then the LAN connectivity is OK.

- Check the connection between the STREAMbox and the inverter. There's not much you can do other than check the physical connections at the STREAMbox, USB converter and the inverter.

- Try power cycling the STREAMbox – switch it off, wait 5 sec, switch it back on.

- Try logging on to the STREAMbox: enter "splash" in your web browser's address line, or if your STREAMbox has a fixed IP address, enter that into your web browser. For instructions on how to use the STREAMbox's 'Web Information Page' go to http://www.splashmonitoring.com/assets/SM-STREAMbox-Web-Information-Page.html

- The most common issue we encounter is the site's network firewall not allowing outbound traffic. This is rarely an issue with domestic routers, but very common in managed commercial networks. Unless you have someone you can ask (like a network administrator) a good way to detect this issue is to log onto the STREAMbox and run a 'Healthcheck' report. This will give you lots of information including whether the STREAMbox can 'see' the internet.

- The STREAMbox is not able to work with a proxy server. If you have a proxy server you will need to make special arrangements with your network administrator to have the STREAMbox circumnavigate it by issuing a fixed IP address with appropriate privileges.

- Generally there must only be on 'master' device on an RS422/RS485 bus. The STREAMbox is a master device and as such can be the only one attached to your inverters, so make sure you don't have another data logging device attached to the RS422/RS485 bus. It will very likely work intermittently, but the data flow will be unreliable and possibly corrupt if there are multiple master devices attached.

- If you have multiple inverters attached to the STREAMbox, make sure each one has a unique address. You can see the inverter's address in the front panel display (on the StecaGrid: press 'set'; down-arrow to 'settings'; press 'set'; down-arrow to 'address'; press 'set'.

**Inverter Status Codes:**

On the Splash Monitoring web site we present four Labels for each inverter: "Full Status Code"; "Error Code"; "Warning Code"; and "Information Code". At any one time the inverter could be in a number of different states. For example it could have a "Mains Voltage too high" error (Code Number 1) and at the same time have an "Isolation Error" (Code Number 11). In these circumstances the STREAMbox will send each error alternately on subsequent scans. On the web site you will see the "Error Code" flip-flop between these two values on each scan.

In this example the "Full Status Code" will be "401" which is the sum of the "Mains Voltage too high" flag "00000001" and the "Isolation Error" flag "00000400" from the table below.

Separating the Errors, Warnings and Information codes means you can set different levels of alert on the web site. For example: if the "Error Code" is greater than 0, send an SMS to a maintenance engineer; whereas if the "Warning Code" is greater than 0, send an email to yourself. For information on how to set up alerts see the "Alerts" button on your SPLASH Monitoring Dashboard.

| Code Number | Flag | Error description | Error(F) Warning(W) Information(I) | Permanent * |
|---|---|---|---|---|
| 0 | 00000000 | No Errors or Warnings or Information | | |
| 1 | 00000001 | Mains voltage too high | E | |
| 2 | 00000002 | Locked (used in older application) | I | |
| 3 | 00000004 | Locked (used in older application) | I | |
| 4 | 00000008 | Mains voltage too low | E | |
| 5 | 00000010 | Locked (used in older application) | I | |
| 6 | 00000020 | Locked (used in older application) | I | |
| 7 | 00000040 | Mains frequency too high | E | |
| 8 | 00000080 | Mains frequency too low | E | |
| 9 | 00000100 | Residual current too high | E | |
| 10 | 00000200 | Mains DC current too high | E | |
| 11 | 00000400 | Isolation error | E | * |
| 12 | 00000800 | Invalid country code or no country code selected | E | * |
| 13 | 00001000 | DC-Input voltage too high | E | * |
| 14 | 00002000 | DC-Input voltage too low | W | |
| 15 | 00004000 | Internal error: Error | E | * |
| 16 | 00008000 | Internal error: Warning | W | * |
| 17 | 00010000 | Internal error: Information | I | * |
| 18 | 00020000 | Derating temperature | W | |
| 19 | 00040000 | Derating 10 minutes average value | W | |
| 20 | 00080000 | Derating external (p.E. EVU) | W | |
| 21 | 00100000 | Derating temperature > 30Min | W | |
| 22 | 00200000 | Derating 10 minutes average value > 30Min | W | |
| 23 | 00400000 | Derating external (p.E. EVU) > 30Min | W | |
| 24 | 00800000 | Date/time not set | I | |
| 25 | 01000000 | Option card error | I | * |
| 26 | 02000000 | 24h no energy injection | E | * |
| 27 | 04000000 | PE connection lost (just not implemented) | E | * |
| 28 | 08000000 | L and N changed (just not implemented) | E | * |
| 29 | 10000000 | Second line connected to N (just not implemented) | E | * |
| 30 | 20000000 | Grid error (Disconnection by ENS or grid islanding detected) | E | * |
| 31 | 40000000 | ENS Self Test failed | E | |
| 32 | 80000000 | Fan error detected | W | |

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