



LAVA STS-** Quick Start

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Revision A01

Overview

This document describes how to setup a LAVA STS-E, STS-PE, STS-2UE, STS-P2UE, or STS-3U.

The LAVA STS-xx products are used to charge a Samsung Tablet with simultaneous operation of USB accessories such as a keyboard, a mouse, an external hard drive, or card readers. The range of USB accessories supported, are inherent in the tablet being used.

The LAVA products are shipped with a custom 3.3 foot (1 meter) micro USB to micro USB cable.

Initial Setup

Locate the charger and charge cable, which was provided with your Samsung Tablet. Start with the tablet turned on. In the Tablet Battery menu, enable the “Display battery percentage” option.

Plug one end of the 3.3 foot cable into the tablet. Either end of the cable can be used. Note the connector orientation is correct, as it has angled edges to ensure it only fits one way.

Plug the other end of the 3.3 foot cable into the “To Tablet” receptacle of the LAVA device. Note the connector orientation is correct, as it has angled edges to ensure it fits only one way.

Plug the charge cable into the “5V Power Input” of the LAVA device. The PoE capable unit labels this input “Aux. 5V Input”.

Locate and observe the current state of the battery charge icon on the tablet status line.

Plug the Tablet charger into an active AC outlet.

The STS-** green LED by the Blue Button on the Lava device will flash for about 2 seconds, then turns off. After the 2 seconds. The adjacent yellow LED goes active.

The tablet battery charge icon now has a lightning bolt across it to indicate that the tablet is being charged. Depending on the tablet, you may also have a brief status message such as “USB connector connected”.

If the LAVA device has 1 or more USB A receptacles, you may now plug in a device for further testing.

If you are using a LAVA device that provides wired Ethernet support, you may connect the LAVA device to a network via the RJ45 receptacle. The RJ45 receptacle has a yellow status LED for USB activity, and a green status LED for network activity.

The STS-PE and STS-P2UE are PoE devices. Using the “Aux. 5V” Input allows the LAVA device to be verified out of the box. Once verified, simply unplug the charge cable from the ‘Aux. 5V Input’ and plug the RJ45 receptacle into a PoE capable switch or PoE power injector. **Do not use the ‘Aux.5V Input’ when connected to a PoE enabled switch or PoE Power Injector.**

When using wired Ethernet, the Connections->More networks->Ethernet settings may need to be setup prior to accessing a network. The tablet provides options for dynamic and static network address assignment. If there is no Ethernet menu, the tablet does not support wired Ethernet.

STS- SimulCharge Product Family – Charge Modes**

The LAVA STS-** SimulCharge products supports two charging modes.

The SimulCharge mode allows to tablet to be charged and operated as a USB Master. As a USB Master the tablet controls external USB accessories. In SimulCharge mode the tablet never provides power to the external USB accessories.

The Charge-Only mode allows the tablet to be charged at the highest rate supported by the tablet. In Charge-Only mode no USB accessories can be interacted with. Charge-Only mode is the same as being plugged directly into the original charger provided with the tablet.

The product status lights report which mode is active. A yellow indicator reports SimulCharge mode is active. A green indicator reports Charge-Only mode is active.

The power on default state is always SimulCharge.

STS- SimulCharge Product Family – Changing Charge Modes**

The LAVA STS-** SimulCharge products have a Mode button which is used to alternate between SimulCharge and Charge-Only mode. The power on default state is always SimulCharge.

The Mode button has two different behaviors depending on when the device was built. Devices manufactured after November 20, 2015 use method 1, while earlier devices use method 2.

Changing Modes – Method #1

Pressing the Charge Mode button for 5 seconds or more, places the tablet into Charge-Only Mode. The tablet remains in Charge-Only mode for 7 minutes before automatically changing back to SimulCharge mode, even if the Charge Mode button remains held down.

The 7-minute Charge-Only window can be cancelled by double clicking the Charge Mode button. To click the button press for 1 second, release for 1 second and then repeat once more

The power on default is always SimulCharge.

The green LED by the Blue Button indicates Charge-Only mode is active. On power up this LED flashes for about 2 seconds, then turns off. The pattern seen on this LED on startup is a distinctive flash-flash-pause, which is occurs 4 times.

Changing Modes – Method #2

When pressing the Mode Select button for at least $\frac{1}{4}$ second then releasing it, the Mode is toggled between SimulCharge Mode and Charge-Only Mode. If the button is pressed for more than 4 seconds, the button is ignored until released then pressed again.

The power on default is always SimulCharge.

The green LED by the Blue Button normally indicates Charge-Only mode is active. On power up this LED will flash for about 2 seconds, then turns off. The pattern seen on this LED is a continuous on-off pattern for the 2 second duration.

When is Charge-Only Mode required?

Many Samsung Tablets will not power on in SimulCharge mode if the battery has been allowed to discharge to 0. Placing the tablet in Charge-Only mode allows the tablet to be turned on and provide a faster charge to the battery prior to switching to SimulCharge mode.

In Simulcharge Mode, many Samsung tablets do not allow the battery to be charged at the full rate. If a tablet with a discharged battery is turned on prior to a minimum charging, the power demands on startup result in the tablet turning immediately back off. The tablet power demands depend on the tablet model, the applications running, and the screen brightness.

The Samsung Tab 4 Tablets running KitKat are a special case. When these tablets are turned off, they will not charge in SimulCharge mode. When these tablets are turned off, they cannot be powered up in SimulCharge mode, no matter what the battery level. The STS-** button is an important recovery mechanism for these devices.

The Samsung Tab 4 Tablets running Lollipop are another special. When turned off, some of these units will charge in SimulCharge mode and even allow the tablet to be turned on. In some cases the tablet powers up and is not in a charging state. Briefly changing to Charge-Only mode and back to SimulCharge corrects the issue. The safe way to start up a Tab 4 Lollipop tablet is to enter Charge-Only mode, turn on the tablet, then change to Simulcharge mode. The problems with the Lollipop firmware appear to have been partially addressed in the update.

Product Type Jumper (new units only)

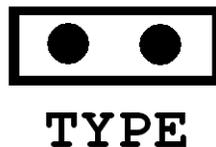
The units manufactured after November 20, 2015 support an internal TYPE jumper pad. This jumper pad determines the algorithm used to switch between SimulCharge and Charge-Only mode. The earlier units never have this jumper populated.

With no jumper installed a new switching algorithm is used, which is the manufacturing default. With the jumper installed, the switching algorithm used by the old units is used.

The new algorithm is critical for the Samsung Tab S2 tablets. Using the old timing, results in the Tab S2 not charging poorly or not at all. Using the old algorithm results in the battery icon reporting a charging lightning bolt, creating the illusion that a proper charge is taking place.

This jumper must be applied to allow the STS-** device to work with the Samsung Tab 4 Tablet running Lollipop. The Samsung Tab 4 Tablet running KitKat can be run with either setting.

Figure 1: TYPE Jumper on STS- Board**



The “TYPE” jumper is a 2-pin jumper block located on the STS-** board.
A jumper is placed across the pins to enable the alternate timing.