



LAVASynC+ Installation Manual

January 11, 2019
Revision A05

Abstract

The LAVASynC family of products permits the charging of select Samsung tablets and mobile phones while simultaneously interacting with USB-C USB type accessories. The LAVASynC+ family members include extended features such as battery modulation, screen brightness management, and improved network operation.

This document describes the LAVASynC+ product setup and software installation procedure for the mobile device (either tablet or mobile phone).

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Introduction

Using LAVASynC+ products requires the following installation steps:

- ❑ Obtain a copy of the “LAVASynC+ Software Release.ZIP” from LAVA Sales or Support
- ❑ Copy the LTM.INI file, to the Internal Storage folder of the mobile device.
- ❑ Install the LAVA Tablet Manager application on the mobile device
- ❑ Allow LAVA Tablet Manager to change system settings
- ❑ Enable a WiFi connection
- ❑ Enable the LTM application as a Device Administrator and activate the KNOX license
- ❑ Disable the WiFi connection (optional)
- ❑ Turn off the “auto screen brightness” on the mobile device
- ❑ Verify the time zone and time on the mobile device
- ❑ Connect the LAVASynC+ product to the mobile device with the user-supplied cable
- ❑ Apply power to the LAVASynC+ product

This installation package is for mobile devices running Android 7.0 and newer.

There are no jumpers to be set on a LAVASynC+ product required by the standard installation.

Do not plug in USB accessories during the initial setup. Always test a system in incremental steps and the prescribed order.

This document describes each of the above steps in further detail.

Note: The LAVA Tablet Manager **must** be installed on the mobile device; else the LAVASynC+ product restarts the USB connection every few minutes.

Note: The USB-C cable used to connect the LAVA product to the mobile device is not included. Any standard USB-C to USB-C cable can be used. Any length up to 2 meters (6.6 feet) is acceptable. The cable need not be electronically marked. The USB-C cable **must** support data and charging.

Note This installation package is for mobile devices running Android 7.0 and newer. If your mobile device is running Android 6.0 or older, please contact LAVA Sales or Technical Support for assistance.

Note: This document does not discuss issues related to the remote setup of a mobile device when using Samsung’s KNOX Configure.

LAVASynC+ Software Release Package

The “LAVASynC+ Software Release” package is provided by LAVA Sales or Support for LAVASynC+ customers. The file is named “LAVASynC+ Software Release.zip”. The package content can be extracted on a PC or mobile device with one of many decompression tools that are freely available.

LAVASynC+ Software Release - Files		
Item	File Name	Description
1	README.TXT	The README file is a summary of the release packages along with the most recent information.
2	LTM.APK	The “LAVA Tablet Manager” is an application which must be installed on the mobile device to permit a LAVASynC+ to function. This application has no GUI component.
3	Setup1\LTM.INI Setup2\LTM.INI Setup3\LTM.INI Setup4\LTM.INI	The LTM.INI is the configuration file for the “LAVA Tablet Manager” application. The four versions are described later in this document.
4	LTM_Setup.APK	The “LTM Setup” utility allows the LTM.INI file to be viewed, modified, or created on a mobile device. The installation document has you start with one of 4 standard configurations, which can then be customized once the system is running.
5	LBI.APK	The “LAVA Battery Information” application is a free utility used to verify the battery charge status. Installation of this application is recommended for initial verification of a LAVASynC+ product. The LBI application can be removed once the device is operational.
6	LAVASynC+ Installation Manual.PDF	This is the document currently being read.
7	LAVA Battery Information Manual.PDF	The manual for the LAVA Battery Information application.

The LAVA Tablet Manager (LTM) is only available as part of the release package. The LTM application **must** be installed to permit an eSTS to function. The LTM application is not on GooglePlay due to the particular installation steps required.

The LAVASynC+ applications are “sideloaded” onto the mobile device, rather than going through Google Play. To “sideload” an application, copy the APK file to a mobile device folder such as the Download folder. Using the “My Files,” locate and select the APK to begin the installation. You may have to permit installation from “Unknown sources” depending on your specific mobile device settings.

An alternative to copying the APKs to a mobile device folder is to place the files on a memory stick and use a suitable adapter to make the files accessible by the mobile device.

Product Setup

Selecting the LTM.INI file

The LTM.INI file is the configuration file for the LAVA Tablet Manager (LTM) application. There are several samples of the file in the release package, each with minor adjustments.

LTM.INI FILE SELECTION				
Configuration File	Features		Products	Notes
	Battery Modulation	Wired Ethernet		
Setup1\LTM.INI	✓	✓	LAVASynC+ 2UE LAVASynC+ E LAVASynC+ P2UE LAVASynC+ PE LAVASynC+ vc5UE LAVASynC+ vc2UE LAVASynC+ vcE	Used to support the battery protection and Ethernet operation.
Setup2\LTM.INI	--	✓	LAVASynC+ 2UE LAVASynC+ E LAVASynC+ P2UE LAVASynC+ PE LAVASynC+ vc5UE LAVASynC+ vc2UE LAVASynC+ vcE	Used to support Ethernet operation but temporarily disable the battery protection feature.
Setup3\LTM.INI	✓	--	LAVASynC+ 3U LAVASynC+ vc3U LAVASynC+ vc1U LAVASynC+ 1U-OEM LAVASynC+ BM-OEM	Used to support the battery protection operation on products which do not include an Ethernet adapter. This configuration can also be used on an Ethernet-based device to disable the Ethernet interface temporarily.
Setup4\LTM.INI	--	--	All LAVASynC+ products	Used with any LAVASynC+ to temporarily disable the battery protection feature and Ethernet adapter.
Note: All configuration files use the LTM screen brightness management feature.				

Once the LAVASynC+ product is working, you may customize the settings in LTM.INI file for your project. The “LAVASynC+ Product Family - Reference Manual” contains a detailed description of the INI file. The file format is UTF-8 (simple ASCII). Any simple text editor can be used to view and change an LTM.INI file. The mobile devices do not ship with a suitable editor for the INI file as a standard feature.

The “LTM Setup” utility allows the most common attributes in the LTM.ini file to be directly managed on the tablet.

The LTM application checks for updates to the LTM.INI file, which permits updates to the configuration to be made at any time.

Installation of LAVA Software

Software Installation Steps		
Step	Action	Comments
1	Copy the required LTM.INI file to the Internal Storage folder of the mobile device. This folder that contains sub-folders such as Download, Playlists, Music, and so on.	The LTM.INI file is the configuration file for the LAVA Tablet Manager application. The sample configuration files are described earlier in this document. Do not keep the “SetupN” folder name; only copy the required LTM.INI file to the mobile device.
2	Install LTM.APK.	This application is “sideloaded” onto the mobile device. The LTM application appears in the Application manager as "LAVA Tablet Manager VII". This application has no GUI component.
3	Allow LTM to access system settings.	Locate “LAVA Tablet Manager VII” in the Application Information screen of the mobile device. Under Advanced settings, go into the “Apps that can change system settings” screen. Enable the permission, which allows LTM to update the screen brightness of the mobile device.
4	Install LTM_Setup.APK	This utility is “sideloaded” onto the mobile device. The utility appears in the mobile device Application manager as “LTM Setup”. Installation of this utility is optional.
5	Install LBI.APK	This utility is "sideloaded" onto the mobile device. The LBI utility appears in the mobile device Application manager as "Battery Information". Installation of this utility is optional.
6	Enable WiFi on the mobile device.	The next step requires a valid Internet connection over WiFi.
7	Activate the “LAVA Tablet Manager VII” as a Device Administrator.	Locate the “Device administrators” menu. On newer mobile devices, the required menu is under the “Lock screen and security” + “Other security settings”. On older mobile devices, the required menu is under “General” + “Security”. Enable “LAVA Tablet Manager VII” in the Device Administrator menu, and then select ACTIVATE. After selecting activate, the next menu presented is for accepting a Samsung KNOX license. If you previously installed a mobile Device Management application, the KNOX license screen may not be displayed, as it has already been agreed to. After the KNOX license activation, an Android Toast message reports success or failure. If the request fails, disable the application in "Device administrators" and try again in a few minutes. Ensure you have a connection to the Internet over WiFi.
8	Disable WiFi (optional)	After completing the Samsung KNOX authentication, the WiFi connection can be turned off.
9	Disable Auto Screen Brightness.	The Auto Screen Brightness must be disabled in the mobile device to permit LTM to manage the screen brightness.
10	Verify the time zone, date, and time are correct.	Several LTM features require that the correct time is set on the mobile device.
End of the Software Installation		

Connect the LAVASynC+ product to the Mobile Device

Connect the user provided USB-C cable to the USB-C receptacle labeled “Mobile Device” on the LAVA product. Either end of the cable can be used. Afterwards, connect the other end of the cable to the mobile device.

The cable should not exceed the 2 meters (6.6 foot) limit defined by the specifications. The cable need not be electronically marked due to the current levels involved. Any reputable USB-C cable is acceptable provided it supports data and charging.

Powering a LAVASynC+ product with a “Power Adapter” input

The LAVASynC+ E, LAVASynC+ 2UE, LAVASynC+ 3U, LAVASynC+ 1U-OEM, and LAVASynC+ BM-OEM have a “Power Adapter” input.

Connect a USB power supply to the USB-C receptacle labeled “Power Adapter” input.

The Samsung Travel Adapter and cable provided with the mobile device offer a suitable USB power supply for the LAVASynC+ product. Ensure the power supply is rated for 5 volts and at least 2 amperes. Do not extend the original power supply cable until the system is debugged.

The “Power Adapter” input on the LAVASynC+ product **is only** for providing power to the product. A significant advantage to the USB-C receptacle is that either orientation can be used.

The voltage reaching the product should be at least 5 volts. The preferred range is 5.1 to 5.25 volts. The input voltage must never exceed 5.25 volts. Exceeding 5.25 volts can result in **immediate** damage to the product and possibly other components in the system. Application of the wrong input voltage does violate LAVA’s Manufacturer Warranty.

Many mobile devices now ship with a Samsung’s Travel Adapter which is also labeled “Adaptive Fast Charging”. This adapter is compatible with the LAVASynC+ (and LAVASynC) products. This new generation of charger provides 5 volts as default and optionally 9 volts. Only the 5-volt option is enabled by the LAVASynC+ (and LAVASynC) products.

Powering a LAVASynC+ “vc” product

The LAVASynC+ “vc” products are powered through a DC barrel jack with a 2-millimeter positive center pin. The barrel jack is labeled “11-36 VDC In”. The user supplies the power cable and power supply.

The typical application uses either a 12-volt 2-ampere power supply or a 24-volt 1-ampere power supply. The permitted input range is 11 to 36 volts. Any unregulated power supply can be used. This range of supported voltages allows the power supply to be placed up to 50 feet away from the LAVASynC+ when a suitable wire gauge is used.

When connecting the LAVASynC+ to the supply, ensure the wiring is such that the center pin is positive. If the polarity is reversed, the damage to the LAVASynC+ is immediate. Application of the wrong input voltage does violate LAVA’s Manufacturer Warranty.

The attached power supply and wiring are responsible for providing short circuit protection.

Powering up a PoE capable unit

The LAVASynC+ PE and LAVASynC+ P2UE usually derive power from the network cable. Attach a network cable between the RJ45 port of the Sync+ and a PoE enabled Network Switch or Poe Injector.

If you do not have a PoE-enabled Network Switch or PoE Injector, a USB Power Supply can be connected to the "Aux. Power Adapter" input of the LAVASynC+ product. Always verify the connector orientation to prevent damaging the receptacle. Ensure the supply is rated for at least 2 amperes. This receptacle **is only** for providing power to the LAVASynC+ product.

The voltage which is reaching the LAVASynC+ product through the "Aux. Power Adapter" input should be at least 5 volts. The preferred range is 5.1 to 5.25 volts. The input voltage must never exceed 5.25 volts. Exceeding 5.25 volts can result in **immediate** damage to the LAVASynC+ and possibly other components in the system. Application of the wrong input voltage does violate LAVA's Manufacturer Warranty.

Warning:	<i>When supplying power through the "Aux. Power Adapter" input on the LAVASynC+ PE or LAVA Sync+ P2UE, you must not use PoE supplied power.</i>
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Power Up Behavior

With power applied to the LAVASynC+ product, the green “Device Link” LED and the yellow “Charge Status” LED will flash on for ½ second and then off for ¾ seconds to confirm they are both functional.

When no device is detected as being connected to the LAVASynC+, both LEDs flash on and off every second.

When a mobile device is detected by the LAVA Sync+ as being attached, and the LAVASynC+ is initially waiting for LTM to communicate, the LEDs flash every second but alternate.

Once the mobile device is detected and LTM is running, the green “Device Link” LED is on solid, and the yellow “Charge Status” LED pulse every 1.4 seconds. If the “Charge Status” LED is mostly on, the mobile device is charging. If the “Charge Status” LED is mostly off, the mobile device is discharging.

The Android Notification line at the top of the screen has an "LTM" displayed once the LTM application is active. With the LTM active, the extended features of the LAVASynC+ are enabled.

When using an Ethernet-based LAVASynC+, the Network Link and USB Activity LEDs pulse to confirm an active network connection. In the event, the network connection fails to work, verify the Ethernet interface is enabled in the mobile device setup.

If the “Allow LTM to access system settings” is skipped during the installation of LTM v3.00 (or newer), the required tablet setup screen is automatically presented shortly after LTM runs for the first time. This permission is required to allow LTM to manage the tablet screen brightness. If screen brightness management is turned off, this permission is not required. Using the screen brightness management feature is strongly recommended to reduce heat issues over time.

The “LTM Setup” Utility

The “LTM Setup” utility can be used to review, modify, or create an LTM.ini configuration file. The utility can be used while LTM is running, as changes are automatically picked up. This APK is part of the standard software release package for the LAVASync+ Product Family.

The utility allows the most common attributes in the LTM.ini file to be directly managed. Attributes that are not managed by LTM are written back to a modified INI file without any changes. The attributes not directly handled by “LTM Setup” can be modified on a PC with any standard text editor.

The “APPLY” in the top right corner is selected to write changes to the mobile device. Only comments at the top of the LTM.ini file are preserved. Attributes not directly managed by the utility are moved to the bottom of the file.

Once an LTM.ini file is finalized, it can be directly copied to other mobile devices which are to run with the same configuration.

The “LTM Setup” utility is compatible with all LAVASync+, eSTS, and STS-RBM products.

Installing the “LTM Setup” utility is optional.

The “LAVA Device Info” Utility

This utility is used to report the firmware versions on the LAVA product and several non-volatile settings. The non-volatile settings are generally modified by LTM based on the INI configuration file. Some settings can be directly modified with this utility. In some cases LAVA Support may ask you to install this utility to assist in diagnosing installation issues. This utility is not included in the installation steps.

Additional Comments

With LTM running, the battery level is maintained between the upper and lower thresholds defined in the LTM.INI file. The LAVA Battery Information (LBI) application can be used to monitor the battery charge status. When the charging state is active, the battery charging current can be viewed with LBI to ensure the mobile device is charging. The LBI application is used to log the battery charging status to a file, which allows the behavior over several hours to be monitored.

The mobile device charging icon cannot be relied upon to indicate if the battery is charging; the valid check is achieved only by checking the battery charge current or observing the charge level for a period of time. The mobile device draws less current from the external power supply during SimulCharge mode by design. If the mobile device is not charging, verify the voltage reaching the LAVA product is at least 5 volts. In some cases reducing the mobile device screen brightness, by 10 to 20 percent, allows the battery to charge. When using the screen brightness management feature, the configuration file must be modified if a different brightness level is desired.

The LTM.ini can be replaced at any point to alter the configuration. Changing the “user-debug=0” and “Ethernet-debug=0” settings can enable several useful debug messages. The “LAVASync+ Product Family - Reference Manual” contains a detailed description of the INI file.

Removing power to a LAVASync+ shuts down the LTM application, and all USB accessories are disconnected.

Technical Support

LAVA Technical support is open from 9:00 am to 5:00 pm Monday through Friday (EST).

Telephone: +1 416 674-5942

Fax: +1 416 674-8262

Toll-Free (US and Canada): 800 241-5282

Internet: www.lavalink.com/helpdesk

History

Document Revision	Date	Change
A02	July 6, 2018	Initial release.
A03	October 9, 2018	Updated for LTM v3.xx, which is compatible with Android 7 and 8.
A04	October 10, 2018	Minor updates.
A05	January 11, 2019	Eliminated the term “root” when referring to the storage location of the INI file. Added summary of the LAVA Device Info utility. Changed “rar” to “zip”.