

## Firmware for the STDES-2KW5CH48V 2.5 kW - 48 V battery charger reference design for industrial light electric vehicles (LEVs)

Applications	2.5 kW battery charger for LEVs	Lead acid and lithium-ion battery charging profiles	Testing firmware mode	Comprehensive protections
Hardware Abstraction	Hardware Abstraction Layer API		Low layer (LL) APIs	
Hardware	STM32F072CBT6	L4984D MOSFET gate driver	Power MOSFET	PFC and LLC controller
STDES-2KW5CH48V				

### Features

- STSW-2KW5CH48V firmware implementation based on the STM32F072CBT6 32-bit MCU
- Lead acid and lithium-ion battery charging profiles
- Comprehensive protections

### Description

The STSW-2KW5CH48V software package is designed for the STDES-2KW5CH48V 2.5 kW battery charger for industrial light electric vehicles (LEVs).

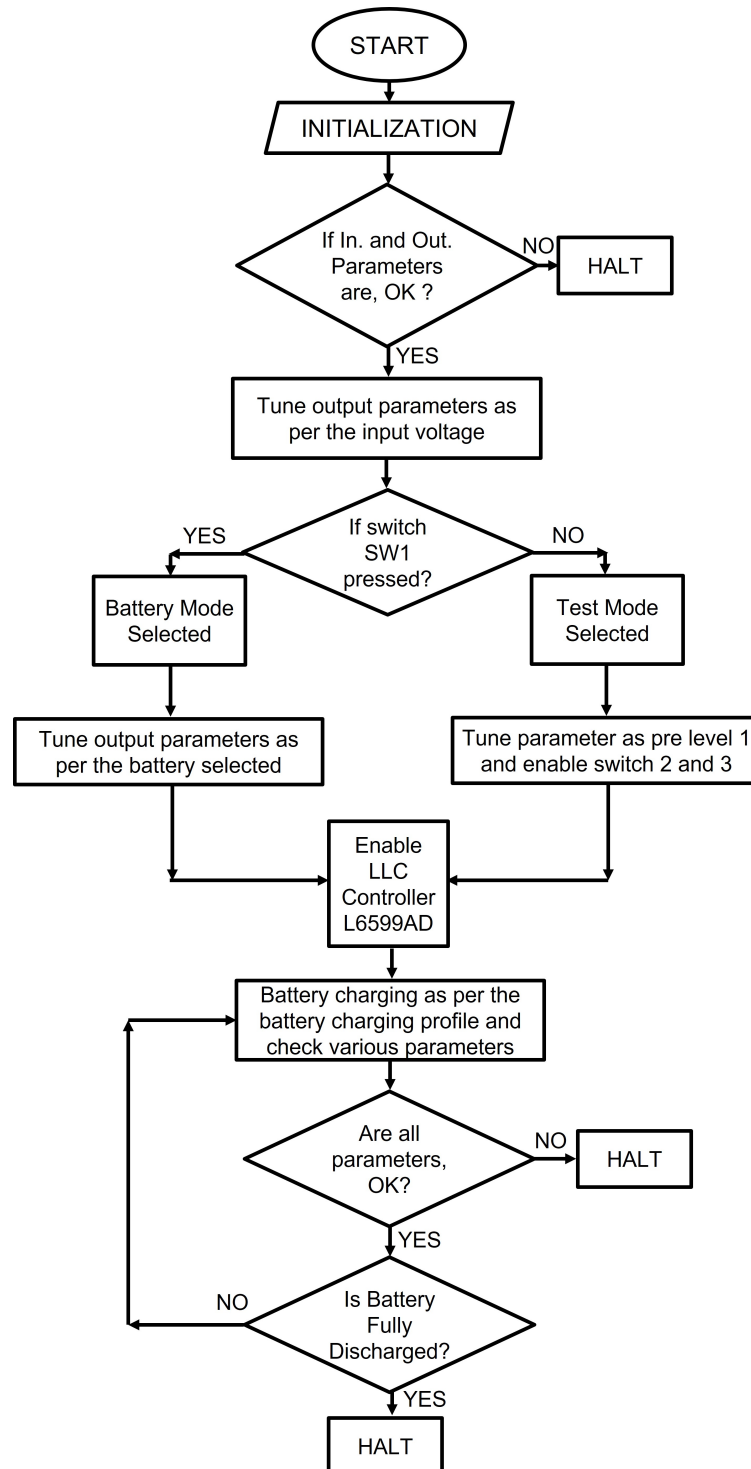
The STDES-2KW5CH48V consists of a power factor correction (PFC) circuit, controlled by the L4984D CCM PFC controller, and a DC-DC circuit based on a full bridge LLC resonant power converter, controlled by the L6599AD.

The firmware is based on libraries generated from STM32CubeMX. It runs on the STM32F072CBT6 high performance 32-bit ARM® Cortex®-M0 microcontroller. It manages the various power stages, adjusts parameters as per the battery charging profile, ensures comprehensive protections by continuously monitoring the input voltage and output signals, and communicates with the user interface.

Product summary	
Firmware for the STDES-2KW5CH48V 2.5 kW industrial LEV battery charger	STSW-2KW5CH48V
2.5 kW industrial LEV battery charger	STDES-2KW5CH48V
Mainstream Arm® Cortex®-M0 USB line MCU with 128 Kbytes of flash memory, 48 MHz CPU, USB, CAN, and CEC functions	STM32F072CBT6
Applications	EV Charging

## 1 Firmware flowchart

Figure 1. STSW-2KW5CH48V flowchart



## Revision history

Table 1. Document revision history

Date	Revision	Changes
14-Oct-2022	1	Initial release.

**IMPORTANT NOTICE – READ CAREFULLY**

STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST's terms and conditions of sale in place at the time of order acknowledgment.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of purchasers' products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. For additional information about ST trademarks, refer to [www.st.com/trademarks](http://www.st.com/trademarks). All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

© 2022 STMicroelectronics – All rights reserved