LSI SVSKA2001 Data Logger Reprogramming Kit User Manual

Contents

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Revisions list

Issue	*Date*	*Description of changes*
Origin	04/09/2020	
1	17/09/2020	Change “Skip Flash Erase” option on pages 13 and 14
2	11/10/2021	Replaced pen drive and related references
3	20/07/2022	Replaced ST-Link utility with STM32 Cube Programmer; added unlock commands; made minor changes

About this manual

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LSI LASTEM reserves the right to carry out changes to this product without timely updating of this document.

1.Introduction

This manual explains how to install and use the SVSKA2001 kit for reprogramming the Alpha-Log and Pluvi- One data loggers. Before proceeding with the use of this kit, try the LSI.UpdateDeployer software (see IST_05055 manual).
The kit can also be used to unlock the data loggers in case of lock.

The USB pen drive contains:

- ST-LINK/V2 software and drivers
- STM32 Cube Programmer software
- firmware of LSI LASTEM data loggers
- this manual (IST_03929 Data logger reprogramming kit – User manual)

The procedure consists of:

- installing the programming software and the ST-LINK/V2 programmer drivers on the PC
- connecting the ST-LINK/V2 programmer to the PC and to the data logger
- sending the firmware to the data logger or sending it the unlock commands in case of lock.

2. Preparing the data logger for the connection

The reprogramming or unlocking of the data logger takes place by means of the ST-LINK programmer. To connect the programmer, it is necessary to remove the electronic boards of the data logger as described below.

CAUTION! Before proceeding use an antistatic device (e.g. an antistatic wrist strap) to reduce, damp- ens, inhibits electrostatic discharge; the buildup or discharge of static electricity, can damage elec- trical components.

1. Remove the two caps and then unscrew the two fixing screws.

2. Remove terminal 1÷13 and 30÷32 from the terminal board. Then on the right side of the terminal board, apply light pressure downwards and at the same time push towards the inside of the data

logger until the electronic boards and the display come out completely.

3 Installing the programmer software and drivers on PC

The STM32 Cube Programmer software facilitates fast in-system programming of the STM32 microcontrollers during development via the ST-LINK, ST-LINK/V2 and ST-LINK-V3 tools.
Note: The part number of the STM32 Cube Programmer software is “SetupSTM32CubeProgrammer_win64.exe”.

3.1 Getting started

This section describes the requirements and the procedures to install the STM32 Cube Programmer (STM32CubeProg).

3.1.1 System requirements

The STM32CubeProg PC configuration requires as a minimum:

- PC with USB port and Intel® Pentium® processor running a 32-bit version of one of the following Microsoft® operating systems:
  o Windows® XP
  o Windows® 7
  o Windows® 10
- 256 Mbytes of RAM
- 30 Mbytes of hard disk space available

3.1.2 Installing the STM32 Cube Programmer

Follow these steps and the on-screen instructions to install the STM32 Cube Programmer (Stm32CubeProg):

1. Insert the LSI LASTEM pen drive on the PC.
2. Open the folder “STLINK-V2\en.stm32cubeprg-win64_v2-11-0”.
3. Double-click the executable SetupSTM32CubeProgrammer_win64.exe, to initiate the installation, and follow the on-screen prompts (from fig. 1 to fig. 13) to install the software in the development environment.

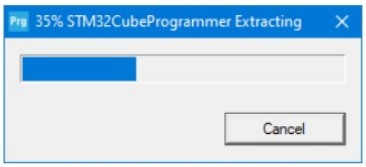


fig. 1 – Preparing to install

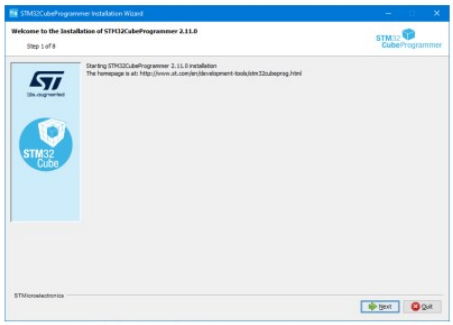


fig. 2 - Click Next to continue

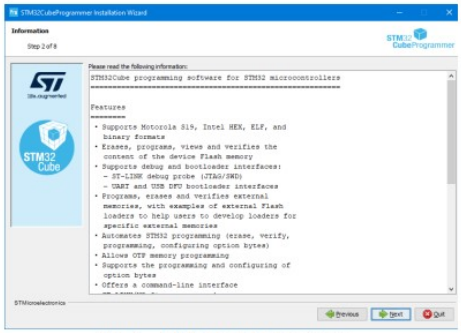


fig. 3 – Click Next to continue

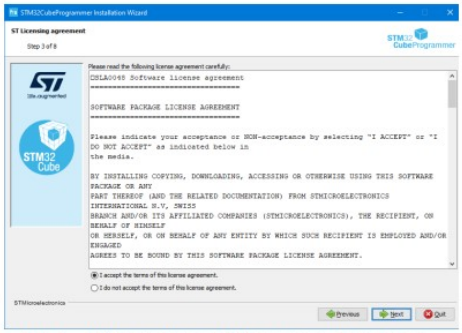


fig. 4 – Click on “I accept the terms…” and then Next

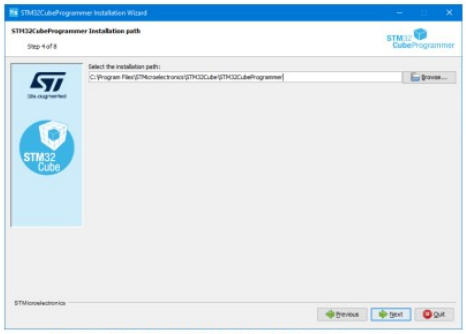


fig. 5 - Click Next for the default directory

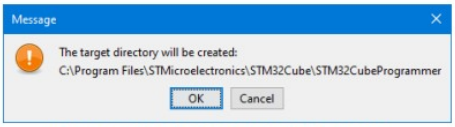


fig. 6 - Click OK to confirm the directory

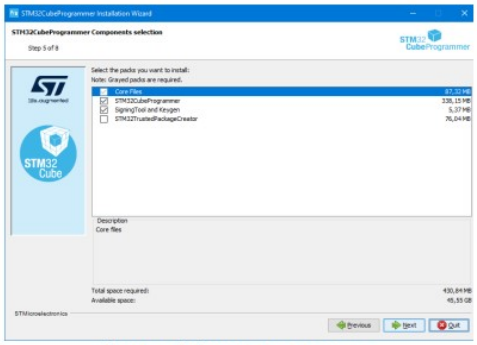


fig. 7 - Click Next to continue

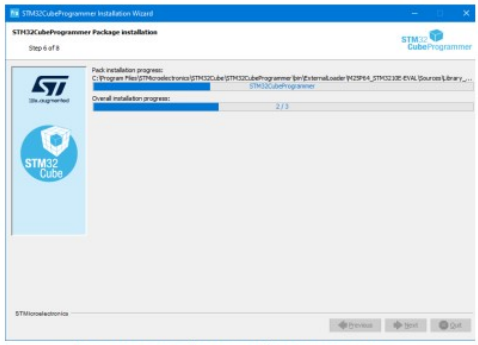


fig. 8 – Wait the installation progress

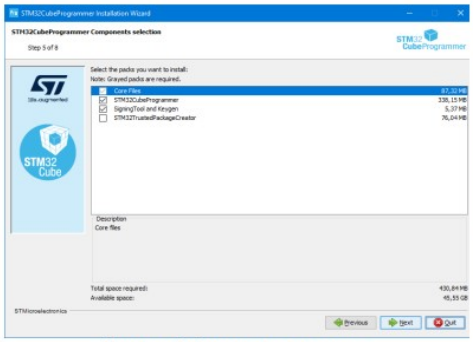


fig. 7 - Click Next to continue

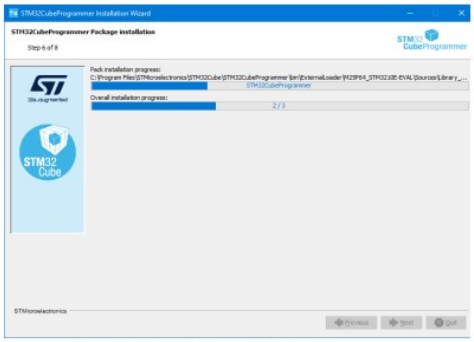


fig. 8 – Wait the installation progress

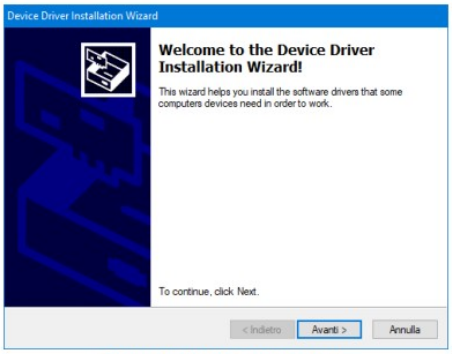


fig. 9 - Click Next to continue

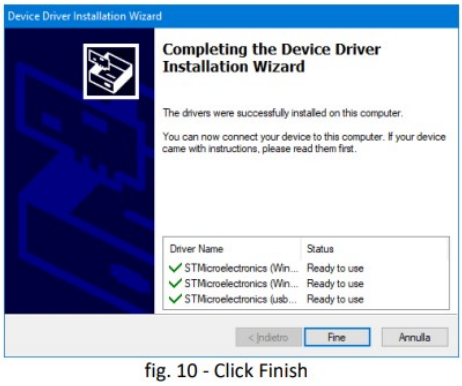


fig. 10 - Click Finish

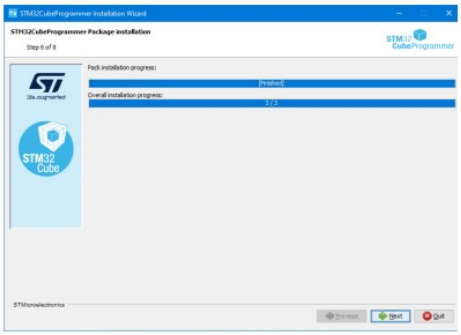


fig. 11 - Click Next to continue

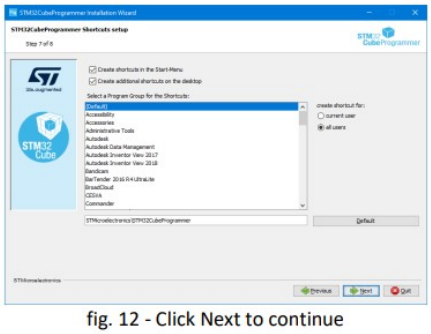


fig. 12 - Click Next to continue

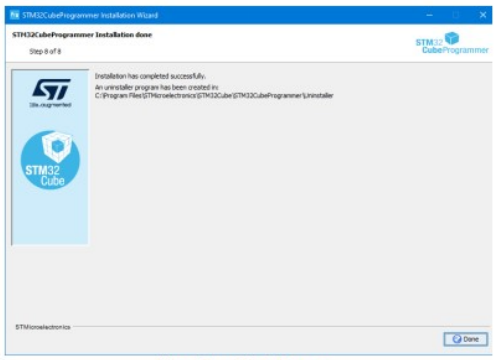


fig. 13 - Click Done

3.1.3 Installing ST-LINK, ST-LINK/V2, ST-LINK/V2-1 USB driver signed for Windows7, Windows8, Windows10

This USB driver (STSW-LINK009) is for ST-LINK/V2, ST-LINK/V2-1 and ST-LINK/V3 boards and derivatives (STM8/STM32 discovery boards, STM8/STM32 evaluation boards and STM32 Nucleo boards). It declares to the system the USB interfaces possibly provided by the ST-LINK: ST Debug, Virtual COM port and ST Bridge interfaces.
Attention! The driver must be installed prior to connecting the device, to have a successful enumeration.
Open the folder “STLINK-V2\Driver” of the LSI LASTEM pen drive and double-click the executable:

- dpinst_x86.exe (for 32-bit operating system)
- dpinst_amd64.exe (for 64-bit operating system)

To initiate the installation, follow the on-screen prompts (from fig. 14 to fig. 16) to install the drivers

fig. 14 - Click Next


fig. 15 - Click Install

fig. 16 – Click Finish

3.2 Connection ST-LINK, ST-LINK/V2, ST-LINK/V2-1, ST-LINK/V3 to USB port

Connect the USB cable:

- Micro-USB to ST-LINK/V2

- USB type-A to USB port PC

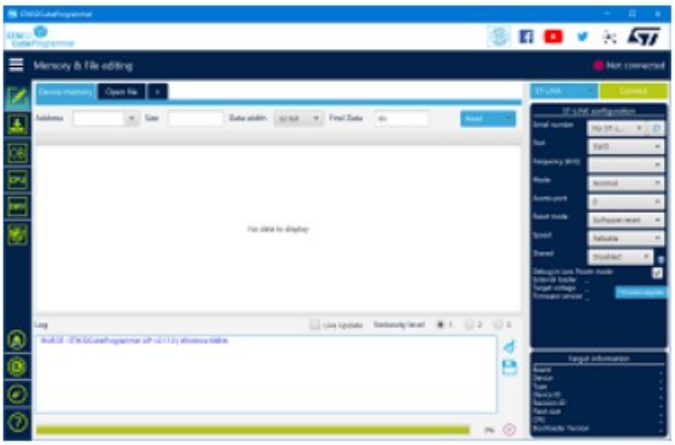
  It will turn on red LED on the programmer:

3.3 Upgrade the firmware

1. Open 

and after few seconds 

will appear the main window



2. Proceed to upgrade the firmware as described from fig. 17 to fig. 20. The PC must be connected on internet.

fig. 17 – Click Firmware Upgrade

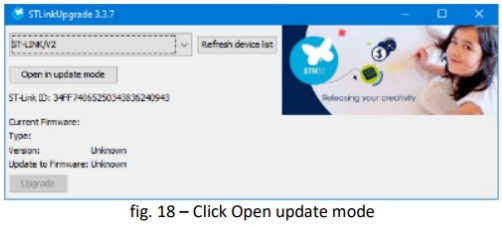


fig. 18 – Click Open update mode

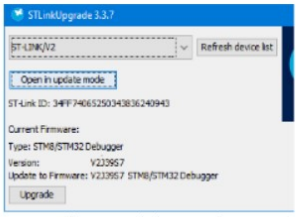


fig. 19 – Click Upgrade

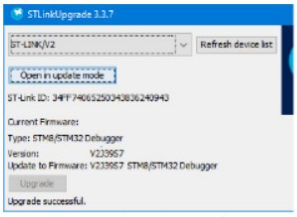


fig. 20 – Close the Window

4 Connection to the data logger

For connecting the data logger to the programmer, proceed as follows:

1. Connect the 8 pin Female/Female cable to the J13 black connector of the card connector (if there is a cable connected, disconnect it) and to the connector JTAG/SWD of the probes. Then connect the power cable (terminal block 13+ and 15-) and switch on the data logger.

2. . Set ST-LINK configuration parameters and do the connection as described from fig. 21 to fig. 22.

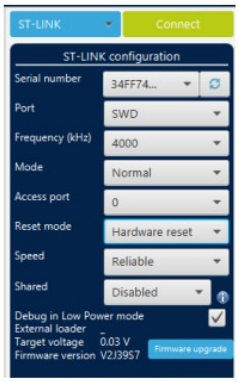


fig. 21 – Click Connect

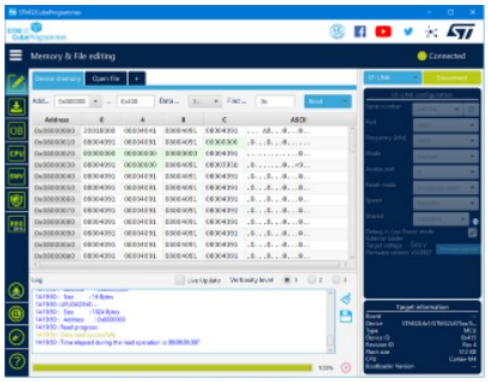


fig. 22 – Wait the connection

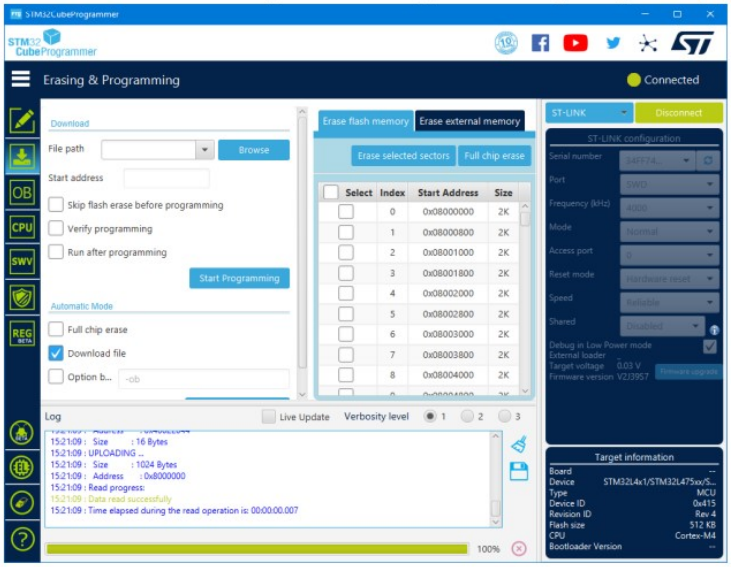
Now, you are able to reprogram the data logger (§5).

5 Reprogramming data loggers

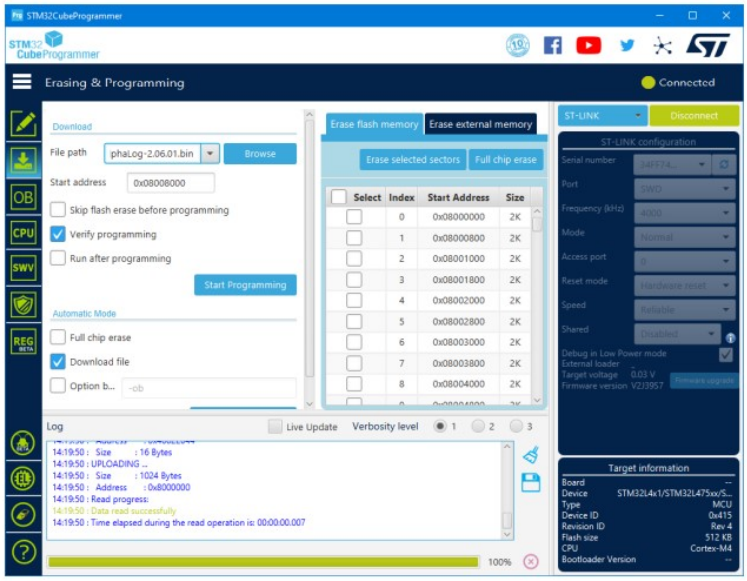
The firmware of the data logger is stored in the microprocessor memory at the address 0x08008000 while at the address 0x08000000 there is the boot program (bootloader).
To upload the firmware, follow the instructions of chapter §5.1.
For an update of the bootloader, follow the instructions of the chapter §0.

5.1 Firmware upload

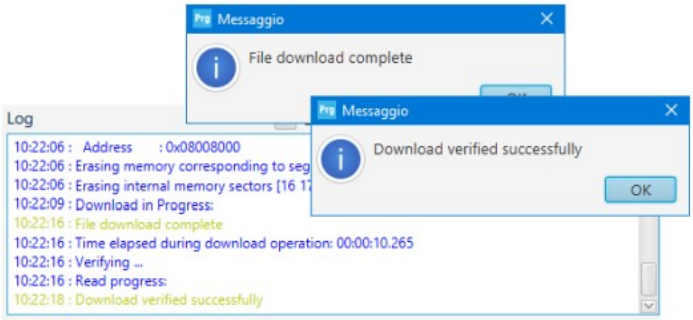
1. Click  on of the STM32 Cube Programmer. It will appear the Erasing & Programming option.



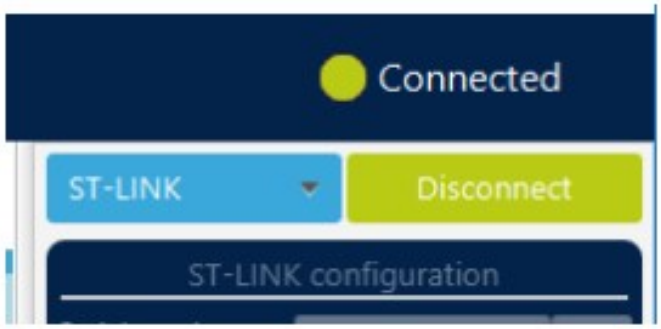
2. 2. Click on “Browse” and choose the .bin file to upgrade the product (the first version of bin file is stored in FW\ path of the LSI LASTEM pen drive; before proceeding contact LSI LASTEM for the latest version).
   ATTENTION! It is important to set these parameters:
   - ➢ Start address: 0x08008000
   - ➢ Skip Flash Erase before programming: unselected
   - ➢ Verify programming: selected



3. Click Start programming and wait for the programming operation end.



4. Click Disconnect.

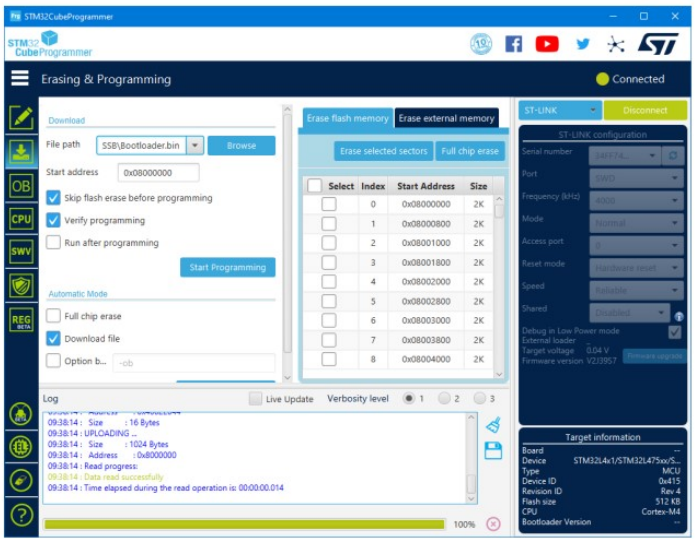


5. Disconnect the power and the cable from board.
6. Reassemble the product in every it parts (§0, proceeding backwards).
   ATTENTION! Firmware must be loaded at 0x08008000 (Start Address). If the address is wrong, it is necessary to load the bootloader (as described in chapter §0), before repeating the firmware upload. ATTENTION! After loading the new firmware the data logger continue to show the previous firmware version.

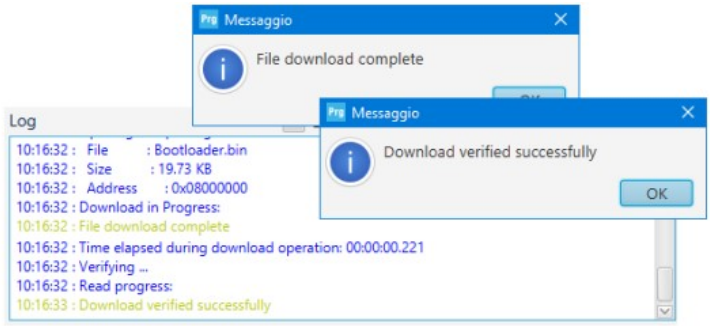
5.2 Programming bootloader

The procedure is the same as for the firmware upload. Start address, File path (the name of the firmware) and other parameters must be changed.

1. Click on  of STM32 Cube Programmer. It will appear the Erasing & Programming option



2. Click on “Browse” and choose the Bootloader.bin stored in the LSI LASTEM pen drive (path FW\). ATTENTION! It is important to set these parameters:
   - ➢ Start address: 0x08000000
   - ➢ Skip Flash Erase before programming: selected
   - ➢ Verify programming: selected
3. Click Start programming and wait for the programming operation end.



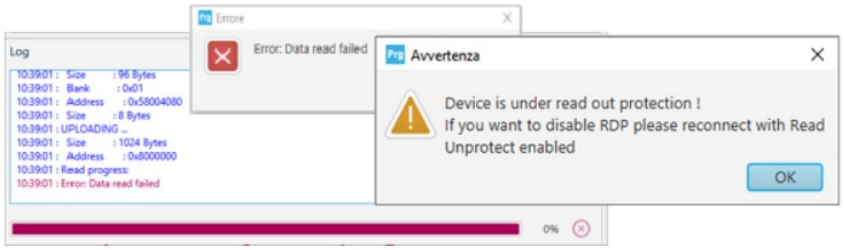
Now, continue with the firmware upload (see §5.1).

6 How to unlock LSI LASTEM data loggers in case of locking

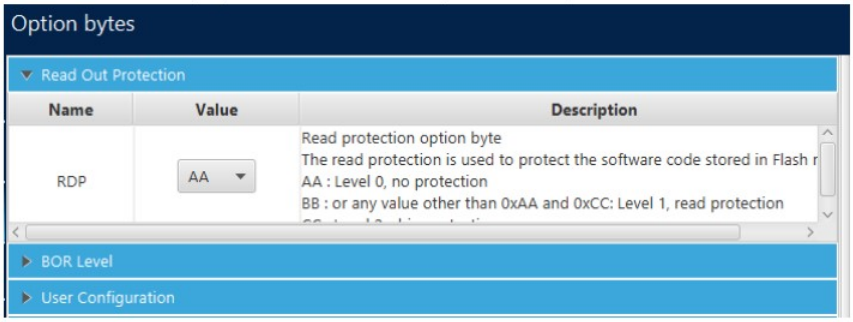
The SVSKA2001 programming kit can be used to unlock Pluvi-One or Alpha-Log data logger. It could happen, during its operation, that the data logger locks. In this situation the display is off and the Tx/Rx green LED is on. Turning the instrument off and on does not solve the problem.

To unlock the data logger, proceed as follows:

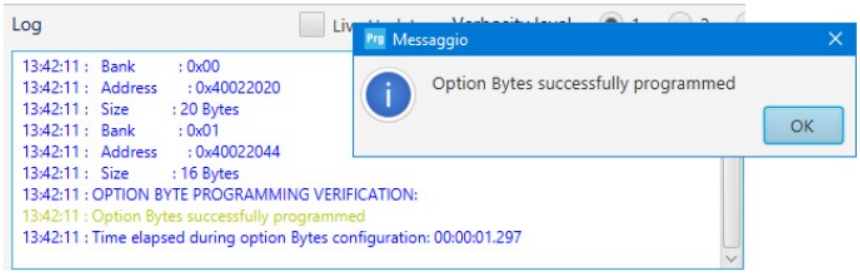
1. Connect the data logger to the programmer (§0, §4).
2. Run STM32 Cube Programmer and click Connect. An error message appears:



3. Click OK and then ,  expand RDP Out Protection, set the RDP parameter to AA



4. Click Apply and wait the end of the operation



Then, proceed with the programming of the bootloader (§5.2) and the firmware (§5.1).

7 SVSKA2001 programming kit disconnection

Once the reprogramming procedures have been completed, disconnect the SVSKA2001 programming kit and close the data logger as described in chapter §0, proceeding backwards.

	**LSI SVSKA2001 Data Logger Reprogramming Kit** [pdf] User Manual SVSKA2001 Data Logger Reprogramming Kit, SVSKA2001, SVSKA2001 Reprogramming Kit, Data Logger Reprogramming Kit, Logger Reprogramming Kit, Data Logger, Reprogramming Kit