

Product Document



Application Note

AN000624

AS72xx

How to Program AS72xx Firmware with FlashCatUSB

v1-00 • 2019-May-22

Content Guide

1	Components and Installations.....	3	3	Firmware Program.....	8
2	Program the Firmware into the Onboard Memory	4	4	Revision Information.....	11
2.1	8-Pin Programmer Connector	4	5	Legal Information	12
2.2	Tag-Connect.....	5			
2.3	Using the FlashCat Programmer	6			

1 Components and Installations

AS72xx devices (including Smart Lighting Manager AS722x/AS721x devices and Spectral Sensing AS726x devices) require a flash memory¹ to work with and the memory holds AS72xx firmware. This file briefly discusses how to program the firmware with FlashCatUSB programmer.

Figure 1:

<http://www.embeddedcomputers.net/products/FlashcatUSB>

EmbeddedComputers

Main Products Software Production Contact Us

FlashcatUSB Classic Memory Programmer
The most popular SPI, I2C and JTAG programming device in use today. Compatible with thousands of Flash memory devices. Connects directly via SPI, I2C or JTAG hardware headers. Specific hardware support can be added using a easy to use device script feature.

SPI socket adapters (SO8, SO16, DIP8, WSON8) are [available here](#)
Parallel sockets (PLCC-32, TSOP-48, TSOP-56) are [available here](#)

Features:

- Open-source (Microsoft .NET 4.0) software for Windows PC
- Multi-language: English, French, German, Portuguese, and Spanish.
- Supported protocols: JTAG, SPI, SQI, I2C, MPF, NAND
- Fast 16MHz RISC processor with 32KB internal memory
- Upgradeable firmware over USB
- On board reset button (for device reset or bootloader mode)
- Universal CFI Flash programming support
- SPI Mode 0, 1, 2 compatible (32-bit addressing supported)
- USB 2.0 / 3.0 / 3.1 compatible
- Dual voltage 3.3v or 5v output via selectable switch
- Over 10 low-cost socket adapters available for purchase
- Supports both NOR and NAND Flash memory types
- Designed for programming in-circuit

MADE IN USA

FLASH-CAT

Part number	Description	Price
FCUSB2X	A standard FlashcatUSB Classic (PCB 2.2), USB 2.0 cable, and your choice of connection jumper cable/wires (see below for visual description).	<p>Ships in 24 hours</p> <p>Includes IDC cable</p> <p>Add to Cart</p> <p>\$29.99</p>

The FlashCatUSB systems exists from a programmer board, adapter(s) depending on the connectors on board, USB cable and an optional IDC cable. The standard system FlashCatUSB Classic (Part number FCUSB2X) is available from Embedded Computer², must be ordered with IDC cable and be completed by the adaptation system(s) to connect the customer test board³ to the FlashCat.

¹ See application note „AS72xx Flash program and update“

² <http://www.embeddedcomputers.net/products/FlashcatUSB/>

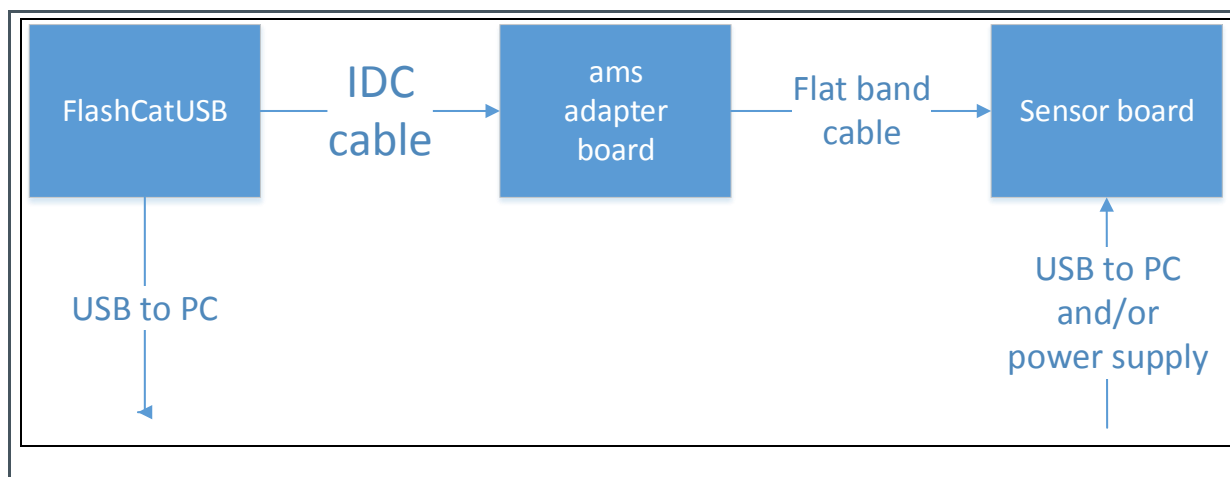
2 Program the Firmware into the Onboard Memory

There alternative setups for firmware uploads depend on the used sensor test boards. Please check the data sheets for the programming interface to use. Alternative variants are described in the following.

2.1 8-Pin Programmer Connector

Depending on the version, the AS72xxx boards have an 8-pin programmer connector onboard which connect the sensor device to the FlashCatUSB programmer via **ams** adapter board³ and flat band cable³. This variant is named programming memory with the FlashCatUSB utility.

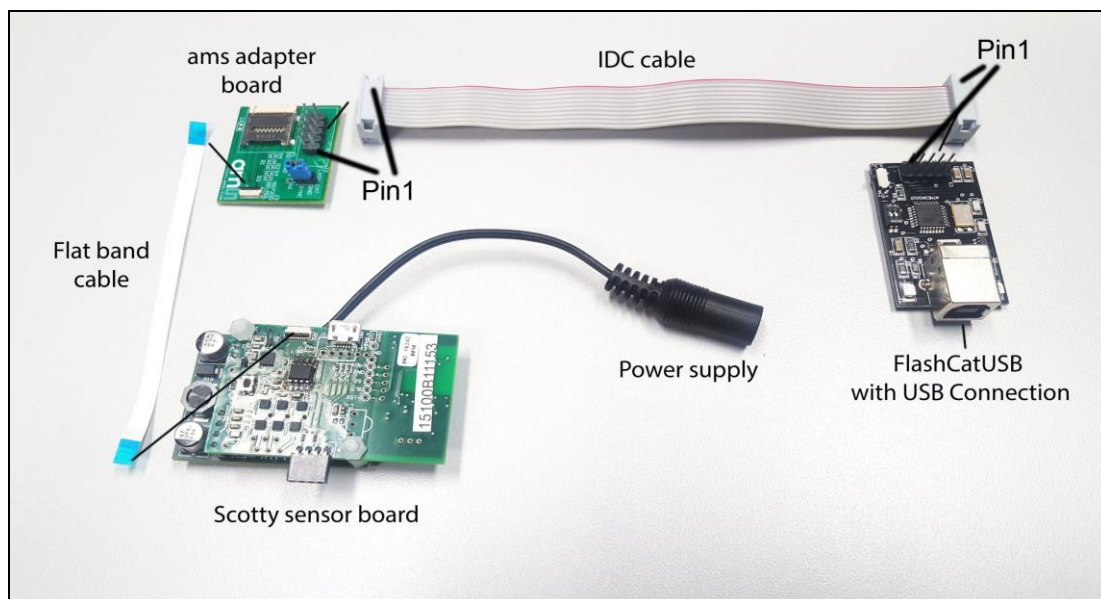
Figure 2:
Sensor Board with FlashCatUSB and ams Adapter Board for 8-Pin Programmer Connector



Note, **ams** offers a wide range of alternative Sensor boards with/without direct power supply and/or only USB connection. The figure below shows an example. Please check the data sheets of the single sensor boards for the specific connections between sensor board, USB and power supply. Check the data sheets for all necessary connections (e.g. power supply) in case of any issue.

³ FlashCatAdapter (RD-MDL programmer) - this is an optional purchase unit whose availability is not always guaranteed. Please ask **ams** sales for delivery time, price and alternatives.

Figure 3 :
Example for Sensor Board SLIK with FlashCatUSB and 8-Pin Programmer Connector⁽¹⁾

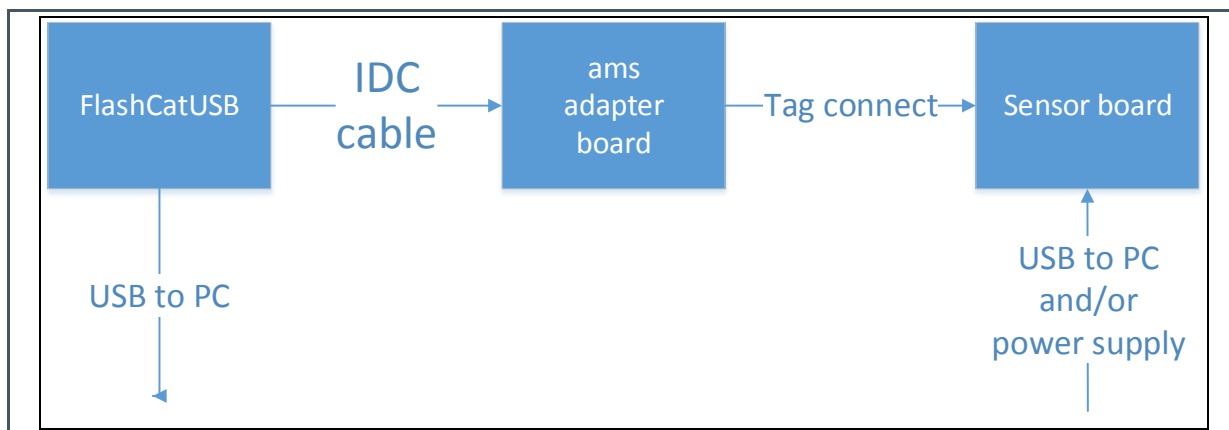


- (1) Connect the flat band cable to the connector with the bare contacts facing down and/or the blue insulating tape facing up.

2.2 Tag-Connect

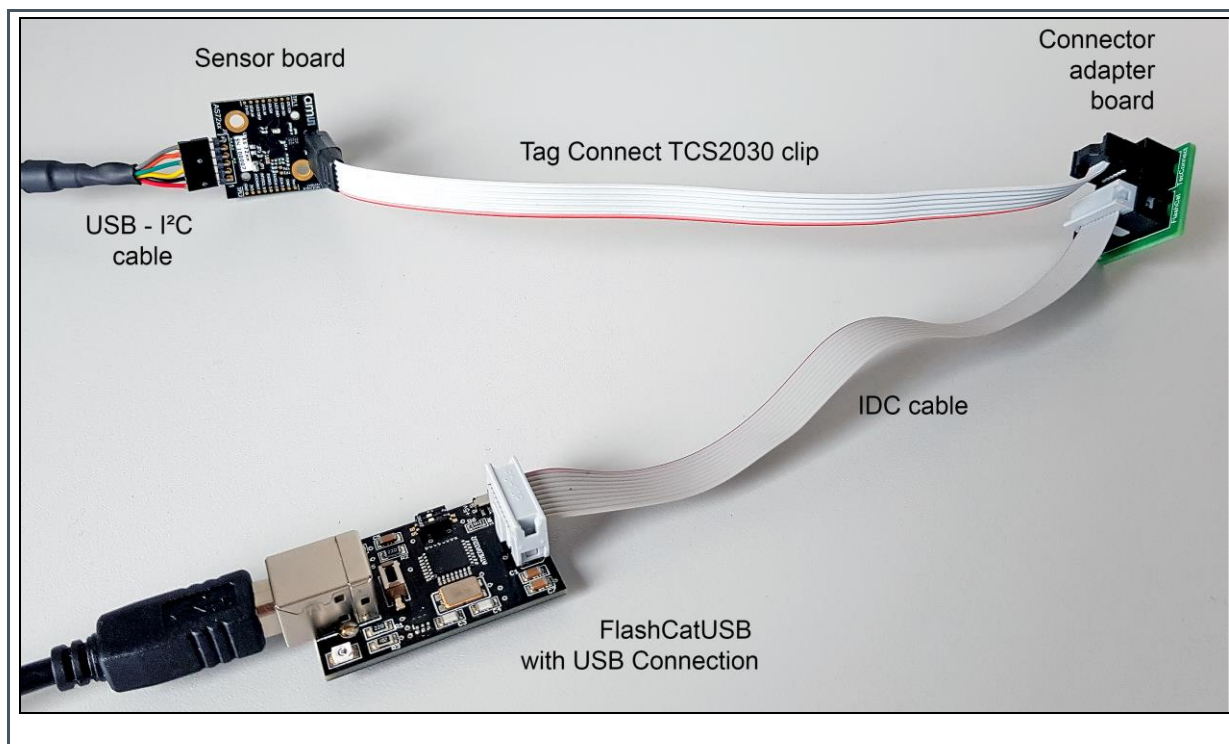
New test boards have a 6-pole tag interface on board which can be connected with the TC2030-clip (for more details see www.tag-connect.com). Figure 4 shows all necessary components of the Tag-connect programmer tool with sensor and adapters. Figure 5 shows an example as full system assembled, ready for use. Note the user manuals, which include more details for the special sensor board connectors.

Figure 4:
Parts of Sensor Demo Board with FlashCatUSB Programmer, Adapters and Tag-Connector



All adapters are available in conventional shops; exclude the FlashCat adapter board X1X2, which is available from **ams**. Ask the FAE or sales team from **ams** to order it.

Figure 5:
Assembled Sensor Demo Board with FlashCatUSB Programmer, Adapters and Tag-Connector



Connect all parts as shown in the Figure 4. Then connect USB cable and/or if necessary the power supply. Note, there are some board specific requirements possible. For example, you must connect also RESET and GND pins by wire in case of firmware upload at the iSPI evaluation board version 1.0. Therefore, please ask our FAE team for system specific conditions.

2.3 Using the FlashCat Programmer

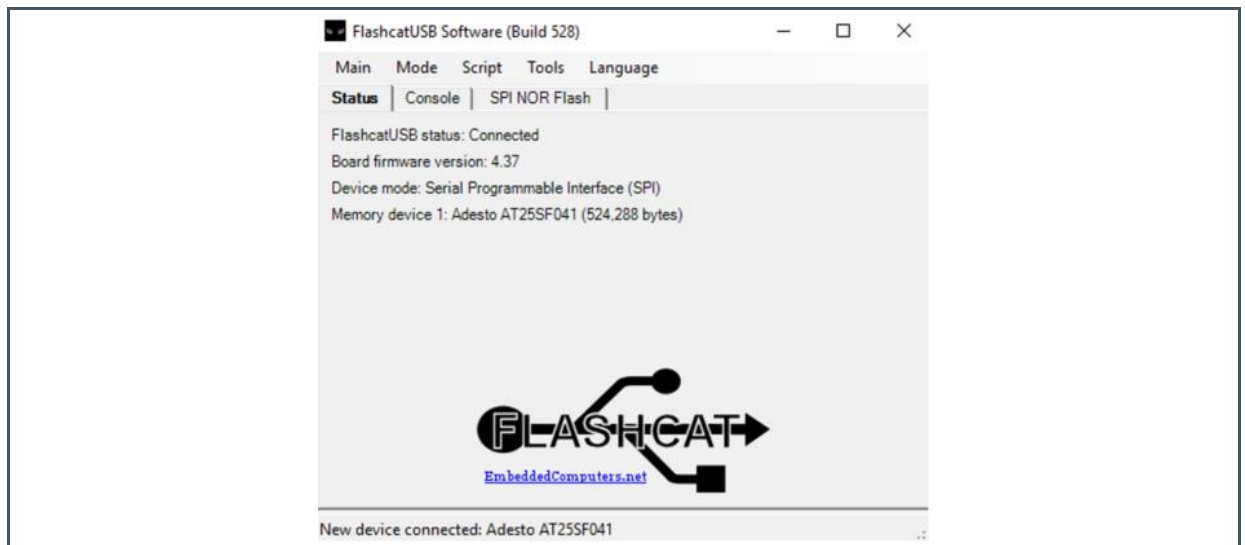
When you connect FlashCatUSB programmer to your computer for the first time, you may need to redirect the OS to the driver folder from FlashCatUSB utility package to install the driver⁴. After the driver installation, please check FlashCatUSB firmware by double clicking "FlashCatUSB.exe" to bring the screen up as below. The firmware version of the FlashCatUSB board should be the version 4.12 or later with SPI interface.

⁴ Download the installation files from <http://www.embeddedcomputers.net/software/> and follow the instructions in the FlashCatUSB manual to install the driver and software

After the software installation, please make the following steps to initialize the programming system⁵:

- SLIK and FlashCat both powered off, no USB connected
- Connect the FlashCat and adapter to the SLIK
- Connect power to the sensor test boards
- Plug the FlashCat into the USB port directly on the PC (not a docking station)
- Start the FlashCatUSB software

Figure 6:
Start Window FlashCatUSB



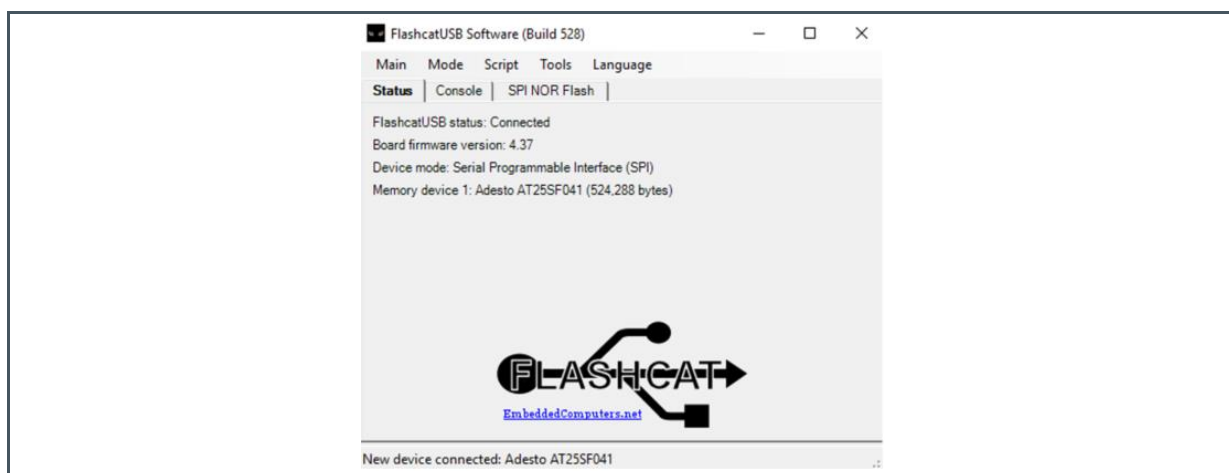
In case of the error “not connected FlashCat” after a successful driver installation, please download latest FlashCatUSB software and read the manual. Sometime, it is necessary to update the firmware of the FlashCat (Ex- FCUSB.CLASSIC.x.xx.SPI.I2C.EXT.hex). Therefore, read the page 11 of the “FlashcatUSB_Manual”.

⁵ Another sequence or reversing steps can result errors

3 Firmware Program

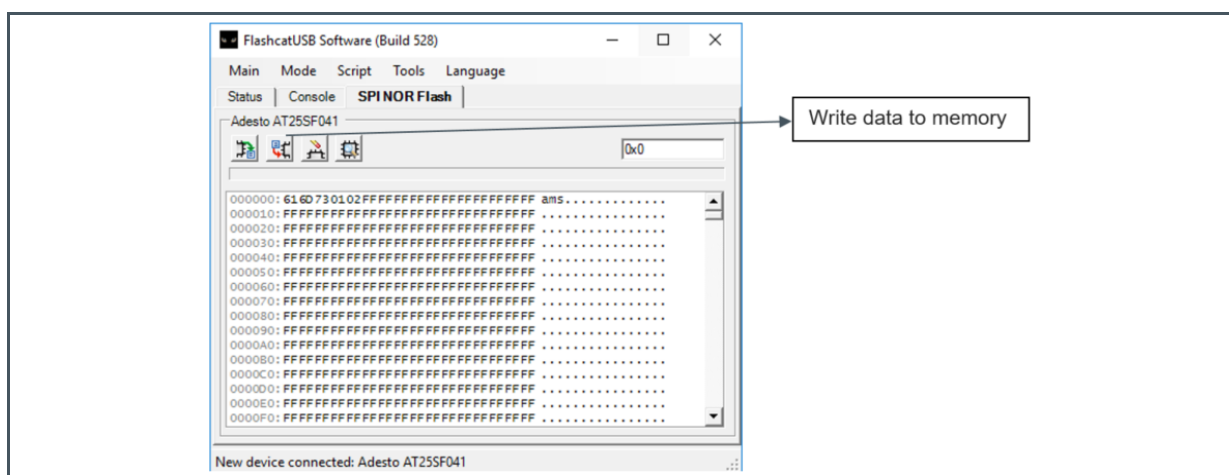
The FlashCatUSB programming utility works with either connection. Double click FlashCatUSB.exe to see the screen as shown below. (The version Build 528 as the example. Newer version of the utility should work as well). The utility automatically detected the flash memory with the name Adesto AT25SF041 or comparable types⁶.

Figure 7:
Start Window



Click “SPI Flash” tab, you will see the interface as below.

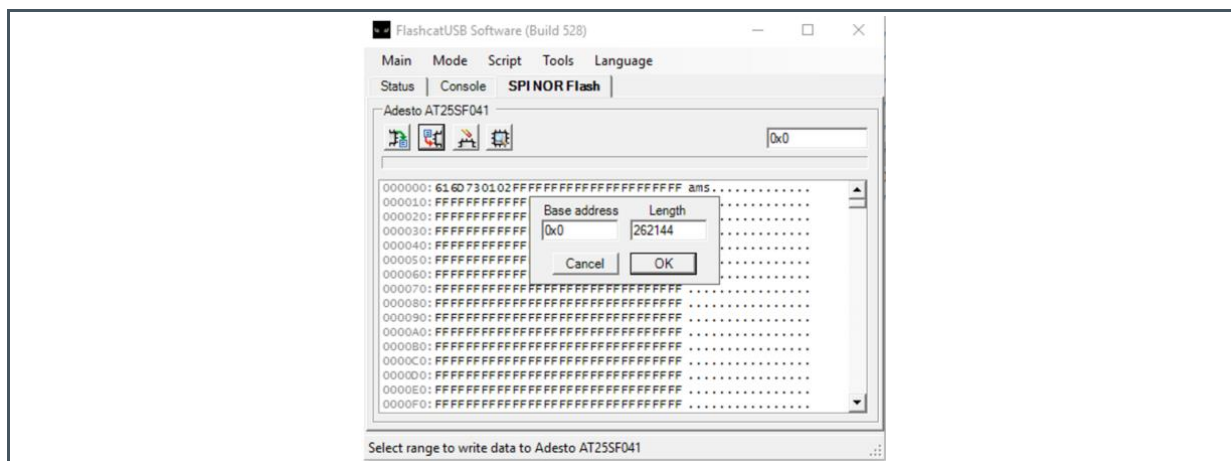
Figure 8:
SPI Flash Window



⁶ See the application note “AS72xx Flash program and update”

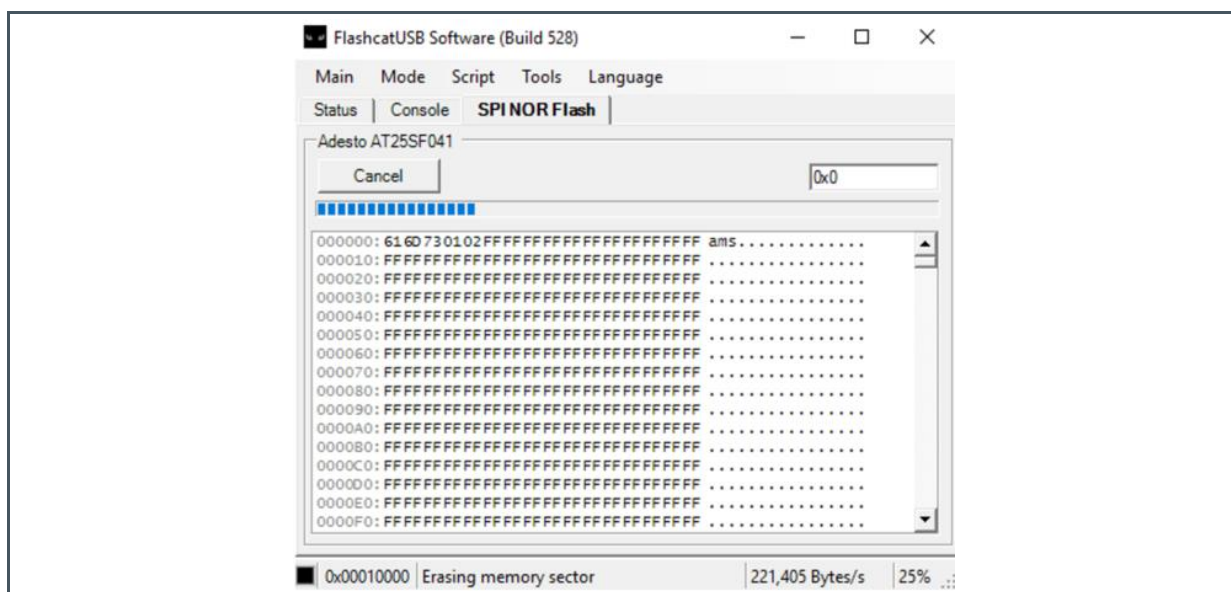
Then click the button for write data to memory for programming the device. The file selection window will show up and please select the firmware you would like to program into the device and click 'OK'. In case of update AS72XX_complete.bin file (e.g. 256k for Scotty) then click "OK" on the small window, which allows you to set Base Address and Length. Use the default value as shown in the window or ask the support team. In case of update AS72XX_update.bin file (base address 0x12000 for 56kbyte update) to prevent an overwrite of the signature.

Figure 9:
Recommend Default Value



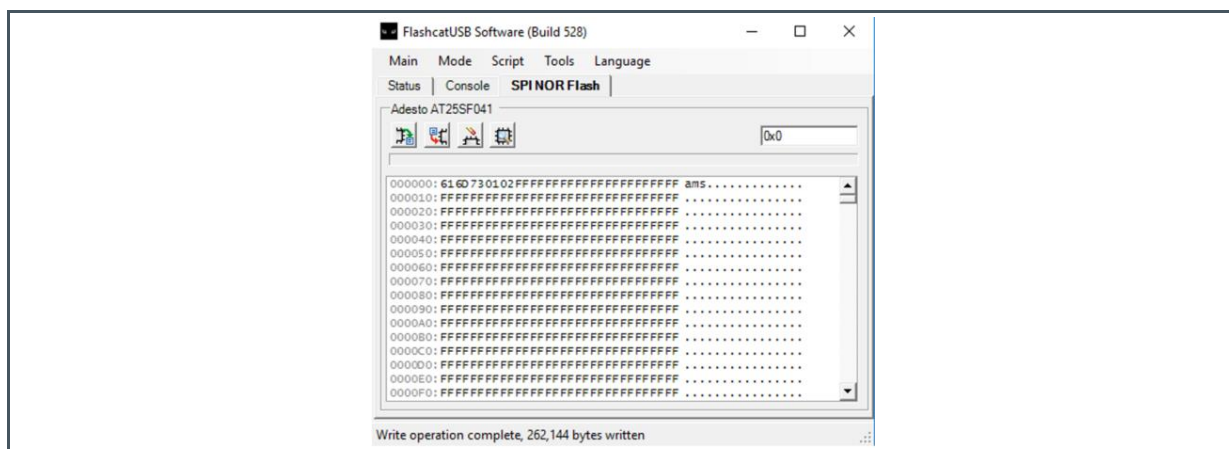
After clicking on "OK", the programming starts and it will take several seconds to complete.

Figure 10:
Window after Process Is Completed



Programming is completed.

Figure 11:
After Finish the Operation



After the successfully programming, please stop the FlashCatUSB software and disconnect all components. The sensor board now includes the new firmware. (Note: GUI will not work if FlashCat is connected to AS726x board. So make sure that FlashCat should be disconnect after any update).

4 Revision Information

Changes from previous version to current revision v1-00	Page
Initial version	

- Page and figure numbers for the previous version may differ from page and figure numbers in the current revision.
- Correction of typographical errors is not explicitly mentioned.

5 Legal Information

Copyrights & Disclaimer

Copyright ams AG, Tobelbader Strasse 30, 8141 Premstaetten, Austria-Europe. Trademarks Registered. All rights reserved. The material herein may not be reproduced, adapted, merged, translated, stored, or used without the prior written consent of the copyright owner.

Information in this document is believed to be accurate and reliable. However, ams AG does not give any representations or warranties, expressed or implied, as to the accuracy or completeness of such information and shall have no liability for the consequences of use of such information.

Applications that are described herein are for illustrative purposes only. ams AG makes no representation or warranty that such applications will be appropriate for the specified use without further testing or modification. ams AG takes no responsibility for the design, operation and testing of the applications and end-products as well as assistance with the applications or end-product designs when using ams AG products. ams AG is not liable for the suitability and fit of ams AG products in applications and end-products planned.

ams AG shall not be liable to recipient or any third party for any damages, including but not limited to personal injury, property damage, loss of profits, loss of use, interruption of business or indirect, special, incidental or consequential damages, of any kind, in connection with or arising out of the furnishing, performance or use of the technical data or applications described herein. No obligation or liability to recipient or any third party shall arise or flow out of ams AG rendering of technical or other services.

ams AG reserves the right to change information in this document at any time and without notice.

RoHS Compliant & ams Green Statement

RoHS Compliant: The term RoHS compliant means that ams AG products fully comply with current RoHS directives. Our semiconductor products do not contain any chemicals for all 6 substance categories, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, RoHS compliant products are suitable for use in specified lead-free processes.

ams Green (RoHS compliant and no Sb/Br): ams Green defines that in addition to RoHS compliance, our products are free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material).

Important Information: The information provided in this statement represents ams AG knowledge and belief as of the date that it is provided. ams AG bases its knowledge and belief on information provided by third parties, and makes no representation or warranty as to the accuracy of such information. Efforts are underway to better integrate information from third parties. ams AG has taken and continues to take reasonable steps to provide representative and accurate information but may not have conducted destructive testing or chemical analysis on incoming materials and chemicals. ams AG and ams AG suppliers consider certain information to be proprietary, and thus CAS numbers and other limited information may not be available for release.

Headquarters

ams AG
Tobelbader Strasse 30
8141 Premstaetten
Austria, Europe
Tel: +43 (0) 3136 500 0

Please visit our website at www.ams.com

Buy our products or get free samples online at www.ams.com/Products

Technical Support is available at www.ams.com/Technical-Support

Provide feedback about this document at www.ams.com/Document-Feedback

For sales offices, distributors and representatives go to www.ams.com/Contact

For further information and requests, e-mail us at ams_sales@ams.com