GBA – MS008

Product Bulletin

Updating a GBA Validator Using a USB Memory Device

Introduction

The GBA ST1, ST1C and ST2 validators can be supplied with an optional USB interface, which can be used to reprogram a unit from a USB Mass Storage Device (memory stick). Those validators with a USB interface are fitted with a mini-AB receptacle.

Locating the USB Port

The USB port is located as shown in the following figures.
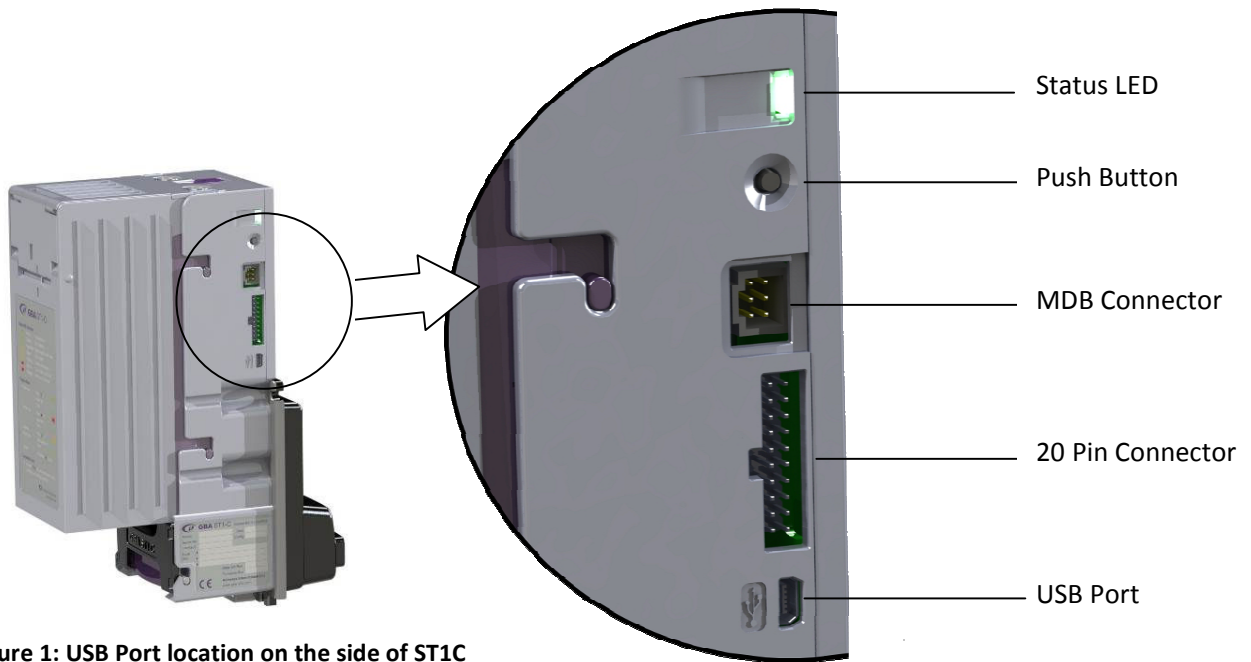
ST1C Validator

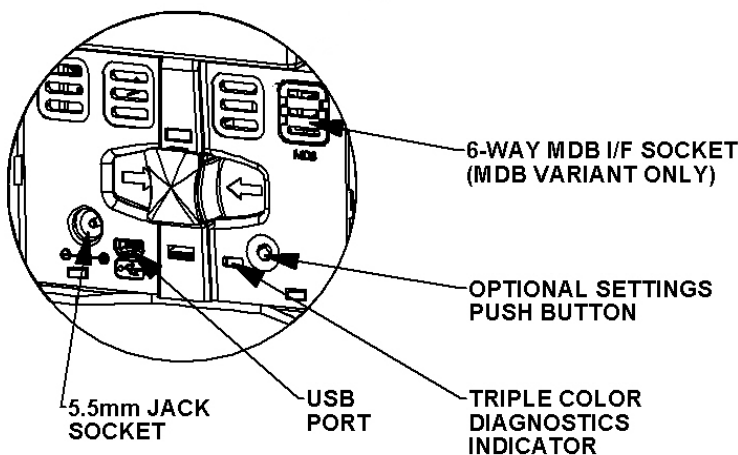Figure 1: USB Port location on the side of ST1C

ST1 Validator

Figure 2: USB Port location on the back of ST1

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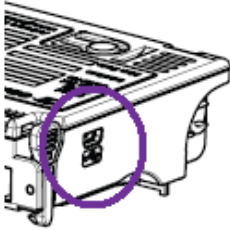
ST2 Validator

Figure 3: USB Port location on the side of ST2

Connecting a USB Mass Storage Device

Most USB memory devices are fitted with a standard-A plug, which fits the standard sockets on a PC. To connect the memory device to a validator requires a suitable adaptor cable, such as the one shown in Figure 4: USB Memory Device and Adaptor Cable.

Plug the memory device firmly into the connector and then power up the validator.

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Figure 4: USB Memory Device and Adaptor Cable.

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File location on the memory device

The validator files should be stored in the root directory of the memory stick. This will appear as "F:\" or similar letter in "My Computer" on a Windows™ PC. The files should not be put in any folder, as the validator will not find them. Note that older and smaller devices have a limit on how many files can be stored in the root directory (typically 512).

In the root directory you can store one firmware file, one dataset file and one configuration file that matches the country code of the note dataset. It is <u>strongly</u> recommended that you use the **USB Wizard Tool** which is included in the GBA Talk and GBA Service utilities. This will check that you do not make any mistakes.

 It is not necessary to have all of these files. You can, for instance, just have a new configuration file on the device and just that will be loaded.

Sequence of events

1. When the validator detects that a USB device is connected, it will scan the files in the root directory.

2. While the validator is reading the memory device, the Status LED will flash orange/green alternately. The speed of flashing will reflect the speed at which the individual device communicates.

3. The validator first searches for a firmware file (this has the suffix "phy"). If it finds one, it then checks the firmware version number. If the version number is different from the current firmware (whether higher or lower) it will load that firmware and then restart. Once it has restarted it will check the USB memory device for other files.

4. If more than one firmware file is found, the validator stops reading the memory device and goes into an error state.

5. If it finds no firmware files, it proceeds directly to the next stage.

6. It next checks for a dataset file (suffix "stx") and loads that. The dataset file name will be in the form "ST2 **06** N0419100.stx". Again, if there is more than one dataset file, the validator will stop reading and go into an error state. Also, if the validator determines that the dataset format is not compatible with the current firmware version, it will not download the dataset.

7. Once the dataset is loaded, the validator then looks for a corresponding configuration file. The file name will be in the form "**06**_101_M00.xml". The first 2 characters are the currency code and must match the second block of characters in the dataset filename.

8. Again, if the validator finds more than one configuration file for that currency, it will enter an error state.

9. Note that dataset and configuration files are issued by AstroSystems with the correct naming convention names. Please do not edit the file names as this can confuse the validator.

10. Once the validator has finished, it will repeatedly flash a 4 colour code on the Status LED at the side, indicating either success or failure, until the memory device is disconnected. The success/error codes are shown below.

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USB Download Error codes displayed by the diagnostic LED:

Status / Fault	Flash 1	Flash 2	Flash 3	Flash 4
Success	Orange	Green	Green	Green
On board Faults				
Fault with validator USB interface	Orange	Red	Red	Orange
Bus Error (Slave and Host pins high)	Orange	Red	Red	Red
USB Download Disabled	Orange	Red	Red	Green
Device Faults				
USB Device not recognised	Orange	Orange	Red	Green
Cannot read MST Boot Sector	Orange	Orange	Red	Orange
Error reading MST	Orange	Orange	Red	Red
File faults				
Too many dataset files found	Orange	Orange	Orange	Green
Error in dataset file	Orange	Orange	Orange	Orange
Too many configuration files found	Orange	Orange	Orange	Red
Error in configuration file	Orange	Orange	Green	Green
Too many firmware files found	Orange	Orange	Green	Orange
Error in firmware file	Orange	Orange	Green	Red
The GBA found a firmware file on the USB device but it is for a different model	Orange	Red	Orange	Green
Firmware does not support this dataset	Orange	Red	Orange	Orange

Points to Note about the USB Memory Device

The memory device should be a conventional USB memory device (i.e. with no novelty features), formatted by Windows in a FAT format, not NTFS. To find out what format has been used, in Windows Explorer select the device, right click and select "Properties". On the "General" tab, the type should be described as "Removable Device" and file system as "FAT". Devices with smaller capacities tend to work more reliably. Also the files must not be encrypted in any way.

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Revision History

Version	Date	Issued By	Comments
1.0	03-Feb-2014	Steve Lewis	First Issue
2.0	24-Jul-2014	Steve Lewis	Added diagrams for USB port location. Added new error code on LED if the firmware file is for a different model.

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