Firmware Update 3.0 – MSA G1 SCBA

The MSA G1 SCBA was developed with the promise to provide continuous advancements in technology. Fulfilling that promise, MSA is pleased to announce the release of the **G1 SCBA firmware 3.0.** This release provides a host of new features, the first of which provides seamless implementation of the upcoming MSA Integrated TIC (Thermal Imaging Camera) Control Module, an industry first. Whether searching for a hot spot, victim or escape route, the MSA G1 Integrated TIC will increase safety by providing you the ability to see through the smoke and darkness.

Another industry first includes Bluetooth[®] connection to MSA Portable Gas Detection Instruments, giving incident command visibility into the presence of dangerous gases through the G1 SCBA telemetry system.

MSA remains committed to continuously researching and developing innovative technologies to improve product performance and deliver new and exciting features and functions. Firmware 3.0 is a product of that commitment. Several additional improvements have been made, including Bluetooth[®] performance enhancements, further elevating the overall experience.

Finally, this update provides the user with the ability to activate the TIA (Tentative Interim Amendment) to the 2013 edition of 1982 NFPA PASS Alarm sound pattern. This new universal PASS alarm tone was designed to be more recognizable to the ear, aid in determining the directionality of the sound and override the traditional "din" of the fire ground, ultimately improving the response time to a downed firefighter.

To ensure updates are executed as swiftly and easily as possible, MSA incorporated Bluetooth technology into each and every G1 SCBA. This Bluetooth link allows every G1 SCBA to be updated wirelessly with this new firmware. This document provides step by step instruction on how to perform the firmware 3.0 update as well as information regarding new features, product enhancements, and compatibility requirements.

Starting December 21st, 2016, all MSA G1 SCBA and replacement parts shipped from Murrysville, PA will be equipped with firmware version 3.0. Products shipped prior to December 21st, 2016 will need to be updated using MSA A2 Software.

Previous Firmware Update 2.003

MSA previously released software version 2.003 to improve pressure sensor performance. No other changes were made as part of this update. New firmware version 3.0 provides additional features and improvements. Firmware version 2.003, and prior firmware versions, are not required to be installed before updating to version 3.0.

G1 Firmware 3.0 Notes:

New Features:

- Integrated TIC Control Module support for G1 SCBAs. All G1 SCBA users who plan to add the Integrated TIC Control Module must update their firmware to v3.0 before using the Integrated TIC Control Module with the G1 SCBA. For full details concerning this feature and functionality, please read the G1 SCBA with Integrated TIC Operating Manual (P/N 10176561).

- G1 SCBA Bluetooth® compatibility with MSA Altair 4XR, Altair 5X BT, and Altair 5X PID/IR. The G1 SCBA with Long Range Radio can be wirelessly paired and connected to a compatible MSA Portable Gas Detection Instrument to provide gas detection alarms and real-time readings through the A2 Accountability Software. For full details concerning this feature and functionality, please read the G1 SCBA Wireless Accessory Manual (P/N 10170289).

- G1 SCBA support for the NFPA 2018 PASS Sound Pattern TIA. With the firmware 3.0 update, G1 SCBAs shipped before December 21st, 2016 will continue to have the 2013 Sound Pattern, however the 2018 Sound Pattern may be quickly enabled using an MSA RFID tag. For instructions to enable the 2018 Sound Pattern, please visit www.msafire.com/breathe/.

  NOTE: *G1 SCBAs shipped after* December 21st, 2016 *will have the NFPA 2018 Sound Pattern installed at the factory.*

- Streamlined and compressed graphics support for G1 SCBA Control Module. With v3.0, the G1 SCBA separates graphic reprogramming to reduce future firmware update time. For additional information regarding changes to the Control Module graphics, please refer to the FAQ section of this document.

- Dual Mode Medium Pressure Alarm Sound functionality, configurable through the MSA A2 Software. The new dual mode medium pressure sound provides an early warning pressure alarm at 66% and a continuous alarm at 50%.

Enhancements:
- G1 SCBA Bluetooth audio quality with Motorola APX Radios
- Clear G1 Speaker Module output audio
- New Bluetooth Pairing Save option, maintains pairing through SCBA battery removal

- New data-logging for software updates and battery removal
- Bluetooth connection reliability
- Battery status & battery alarm accuracy
- Preserve Personal & Resource Tag information through software updates

<u>Compatibility of Component Versions</u>

Every time the G1 SCBA is turned on, a hardware and firmware check is performed to verify compatibility. With the introduction of new firmware versions, the system will alert the user by the hardware alarm when all components of the SCBA are **not** the same version. This scenario may occur following a G1 SCBA service where an electronic module is replaced with a new electronic module. All repair and replacement components from MSA will have the latest version of firmware installed prior to shipping.

To correct the compatibility of electronics:

Step 1: Remove the battery when the SCBA hardware (HW) alarm is active.

> **NOTE:** *Double pressing the green reset buttons on the control module will not turn the SCBA off when the unit is in HW alarm.*

Step 2: Reinstall the battery into the SCBA. Once the startup screen is complete (after approximately 5 seconds), quickly turn off the SCBA by double pressing a green reset button on the control module. The SCBA must be powered off before it enters HW alarm.

> **NOTE:** *If the unit goes into hardware alarm, repeat steps 1 & 2.*

Step 3: Place the SCBA into ***Service Mode*** by pressing and holding either of the green reset buttons on the control module until the service mode screen appears (~10 sec).

Step 4: Follow the steps for updating the firmware in the SCBA. The system will detect which components have old firmware and update only those that require the latest version. Once complete, restart the system to clear the hardware alarm.

> **NOTE**: *If the hardware alarm is not cleared after the update, contact MSA customer service at 1-800-MSA-2222.*

Updating to G1 SCBA Firmware 3.0

Required Components:

- Personal Computer (PC) with Bluetooth capability (or using P/N 10161282-SP)
- Installation of MSA A2 Software. Before starting, verify the bootloader version that is installed in the G1 Power Module by entering Service Mode and selecting System Info. The power module bootloader version will be either B 1.006 or lower, OR B 1.008 or higher.

Step 1: Connect the PC to the internet and start the MSA A2 Software.

Step 2: Place up to six (6) SCBA into *Service Mode* by pressing and holding a green reset button on the control module until the service mode screen appears (~10 sec). Position the SCBAs as close to the PC as possible.
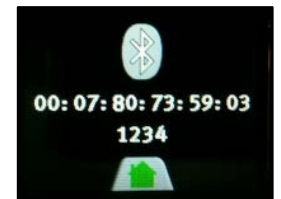
> **NOTE**: *G1 SCBAs must have the same bootloader installed. If they do not, only one (1) SCBA will update at a time.*

Step 2 & 3

Step 3: Scroll down and choose *Data Link* with the red CM button. (To scroll up and down, use the green reset buttons.)

Step 4: The SCBA Bluetooth address will appear on the screen. It may take up to 30 seconds for it to appear. Wait until the address appears on the control module displays. For later reference, record the last two digits.

Step 4

Step 5: Within the MSA A2 Software, select *G1 Firmware* and select the *Check for Updated Firmware* button in the upper right corner of the window to search for the latest firmware version.

Step 6: Select *Software Version 3.0* and select *YES* to download the image to the PC. *Only download the image once to the PC.*

Step 5

Step 7: Select the correct boot loader for the SCBA(s).

> **NOTE**: *G1 SCBAs must have the same bootloader installed. If they do not, only one (1) SCBA will update at a time.*

Step 8: From the G1 Firmware update screen, select the *Scan for G1 Devices* option.

Step 8

Step 9: Select devices matching the address of the G1 SCBA. If the name is cropped, use the address which is listed in smaller font on the lower right corner of the icon.
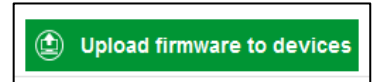
> **NOTE:** *Perform updates on up to six (6) SCBA at a time. Some PCs will not be capable of handling more than one (1) SCBA at a time. If unsuccessful with six (6) SCBA, then only program one (1) at a time.*

Step 9

Step 10: Select the *Upload firmware to devices* option in the lower right corner of the A2 window. Choose **Yes** to proceed.

> **IMPORTANT**: *At this time, devices will turn off and A2 will attempt to latch onto the devices to start the reprogramming process. One of the following situations will occur:*
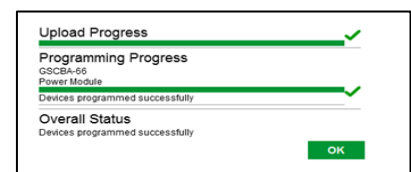

Step 10

> *(1) A2 begins boot loading SCBAs and the reprogramming process will be completed on all SCBAs.*

> *(2) A2 does not latch onto one of the SCBA and the SCBA starts up normally. This SCBA is currently not being reprogrammed and can be turned off (quick double press of reset button) for this series of reprogramming. This SCBA can be reprogrammed as part of the next set of reprogramming. **DO NOT cancel the update process for the other SCBA.***

> *(3) A2 does not latch onto any SCBA and the SCBAs start up normally. Turn all SCBAs off and repeat the steps 1 – 10 above.*

> *(4) A2 begins to program one or multiple SCBAs and fails during programming (the power module blinks but the CM will be off). **DO NOT REMOVE the G1 battery or rescan A2 for the device**. Leave the units in their current state and re-attempt programming by selecting "Upload firmware to devices". Repeat this step until the SCBAs program.*

> **WARNING:** DO NOT cancel the A2 reprogramming process or touch the SCBA that are currently being reprogrammed. The device that started normally can be turned off until the programming process completes for the other SCBAs. Canceling the programming process or removing the battery from the G1 SCBA may cause a programming error.

> **NOTE:** *Approximately 20 minutes are required to update firmware when all SCBA components are programmed.*

Step 11: When the update completes, the G1 SCBA will reboot and A2 will show an indication of success.

Step 11

To verify the new firmware version

Step 1: Place the SCBA into **Service Mode** by pressing and holding a green reset button on the control module until the service mode screen appears (~10 sec).

Step 2: Scroll down and select **System Info** using the red alarm button. (To scroll up and down, use the green reset buttons.)

Step 3: All modules show hardware (H), software (S), and bootloader (B) versions. The new software version should read **S 3.00** for the regulator, control, and power modules.

Frequently Asked Questions

1. ***Will the G1 SCBA continue to operate normally if the firmware is not updated?***

   MSA recommends updating the SCBA firmware to the latest version to ensure optimal performance and new feature addition. However, the G1 SCBA will continue to operate as it does today if the firmware is not updated.

2. ***Where to obtain MSA A2 Software?***

   The following link provides access to MSA A2 Software, as well as licensing information. http://us.msasafety.com/productSoftwareDownloads

3. ***How to find out if the SCBA has the latest firmware?***

   The best way to verify is to place the SCBA into Service Mode and review System Info. System Info displays the unit's software version; the new software version should read S 3.00 for the regulator, control, and power modules.

4. ***How much time is needed to update the G1 SCBA?***

   The process requires approximately 20 minutes to update to firmware 3.0.

5. ***How to obtain the latest firmware version?***

   To obtain the latest firmware version, install MSA A2 Software and select G1 Firmware. The software reaches MSA servers and downloads the latest version.

6. ***Can more than one (1) SCBA be updated at a time?***

   Yes. Following the instructions shown above, up to six (6) SCBAs can be updated at a time. Instructions must be followed carefully to ensure a successful program. Some

personal computers are not capable of reprogramming more than one SCBA at a time. If the steps above do not work for six SCBA, program only one SCBA a time thereafter.

7. ***Does MSA plan to release additional firmware updates?***

MSA continues to investigate new technology and features that can be deployed into the G1 SCBA. Currently MSA does not have a set release date for a new version, however MSA will communicate when additional firmware updates are made available.

8. ***A G1 Control Module was replaced and now the SCBA is in hardware alarm. What is wrong with the unit?***

The replacement control module has the latest version of firmware (3.0) while the other SCBA components have a previous version. To clear the hardware alarm, follow the steps listed in this document to update firmware for the remaining electronic modules.

9. ***A G1 Regulator Module was replaced and now the SCBA is in hardware alarm. What is wrong with the unit?***

The replacement regulator module has the latest version of firmware (3.0) while the other SCBA components have a previous version. To clear the hardware alarm, follow the steps listed in this document to update firmware for the remaining electronic modules.

10. ***A G1 Power Module was replaced and now the SCBA is in hardware alarm. What is wrong with the unit?***

The replacement power module has the latest version of firmware (3.0) while the other SCBA components have a previous version. To clear the hardware alarm, follow the steps listed in this document to update firmware for the remaining electronic modules.

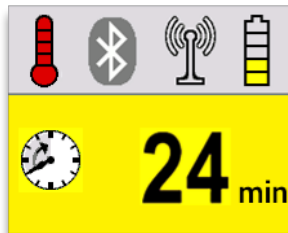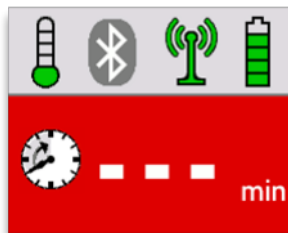11. ***How can the G1 SCBA be update to the NFPA 2018 PASS Sound Pattern?***

For information on how to update to the NFPA 2018 PASS Sound Pattern as well as information on the benefits, please visit: www.msafire.com/breathe/

G1 SCBA Firmware 3.0 Graphics Changes

Pre-Firmware 3.0   **After Firmware 3.0**

Startup Screen

- New icons for individual & team name configurations
- Redesigned progress bar

Secondary Screen

- Thermal alarm, Bluetooth, radio, battery, and clock icons redesigned
  Note: If icons are disabled, they will not appear on the display
- Thermal status indicated as either green (normal) or red (alarm)
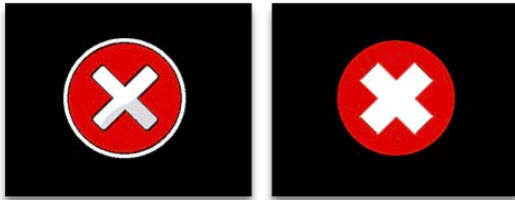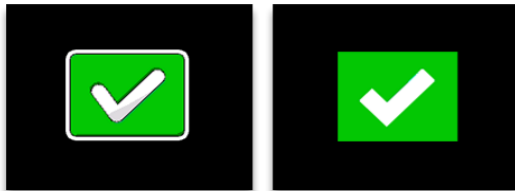- Enhanced font for time and unit displays

Shutdown Screen

- Enhanced Power icon animation; flashes blue-gray with a left-to-right decreasing progress bar

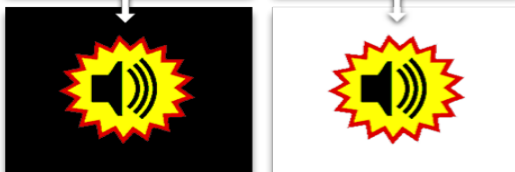### Service Mode Screen

- New font with redesigned navigation arrows

G1 SCBA Firmware 3.0 Graphics Changes

Status Screens

- Redesigned status icons

Alarm Screens

- Redesigned temperature and LCD temperature alarms to remove ambiguity between similar alarms
- Full alarm animation alternates background between black and white to emphasize flashing