

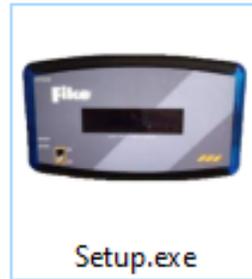
## OUTPUT ANALYZER FIRMWARE UPGRADE PROCEDURE

Use the following procedure to upgrade the firmware on existing Output Analyzers to the latest version, which adds the following testing functionality to the unit.

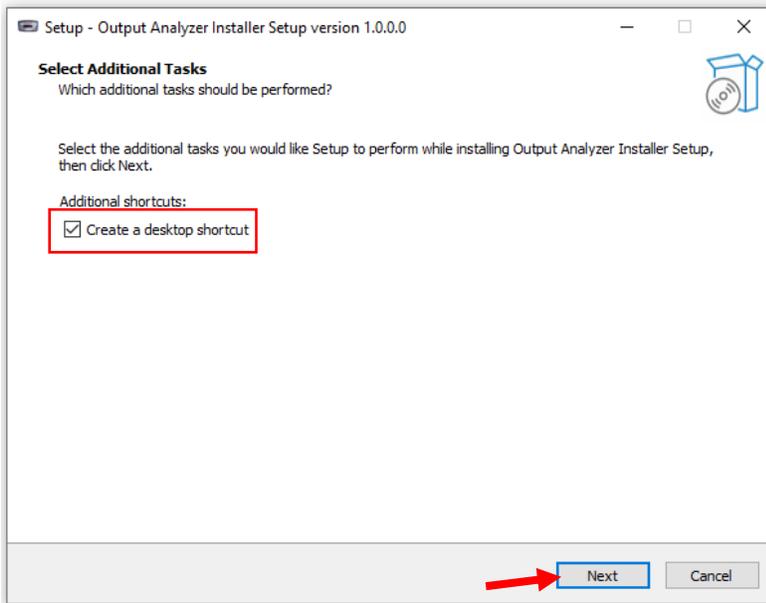
1. Adds features for testing the EPACO Solenoid EPC.
2. Corrects a known issue with the testing of explosion-protection ARMs.
3. Adds features for testing the functionality of the Actuator Field Modules (AFM) used with the Fike EXP explosion protection control panel.

**Step 1.** Locate the **Output Analyzer Firmware Updater Ver1.0.zip** file on the Fike Portal. Save the file to your PC or memory stick.

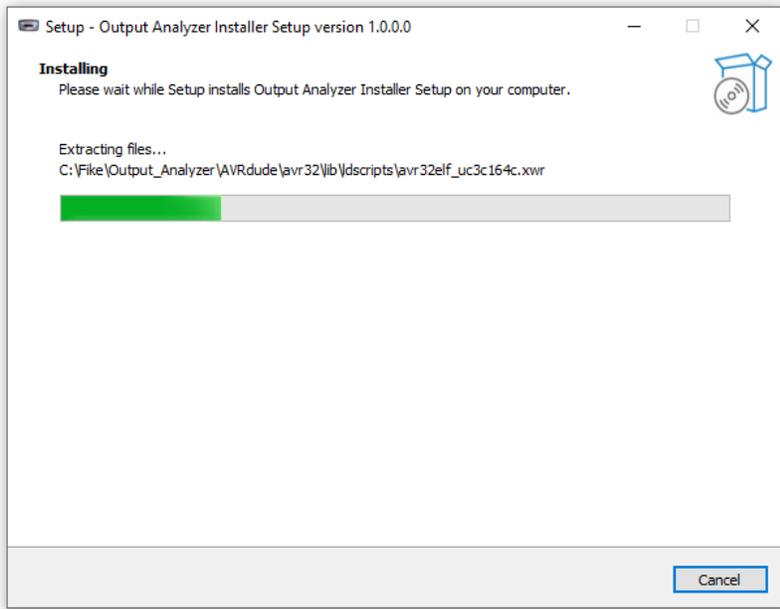
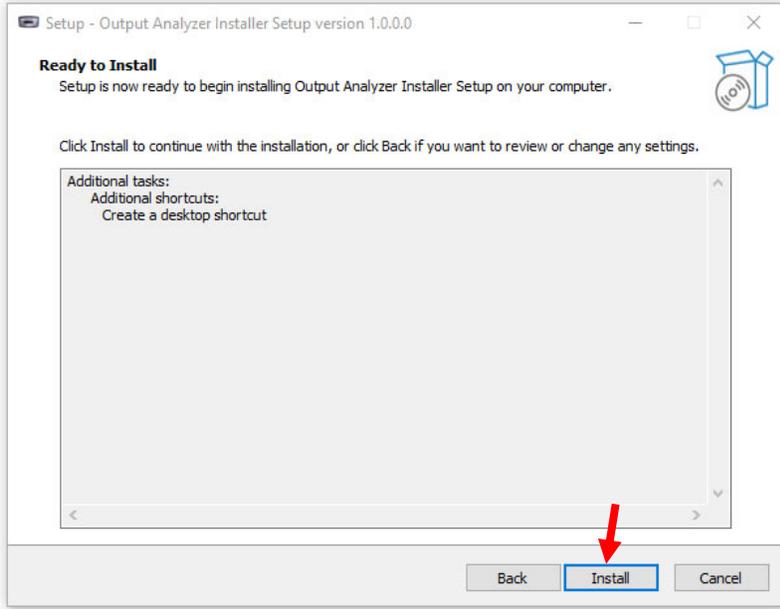
**Step 2.** Unzip the file, then click on the **Setup.exe** file to install the Firmware Updated Tool on your PC.



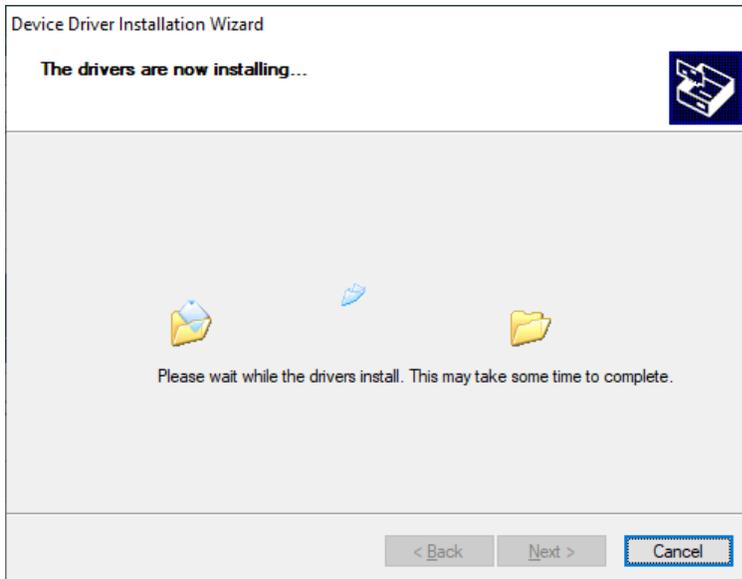
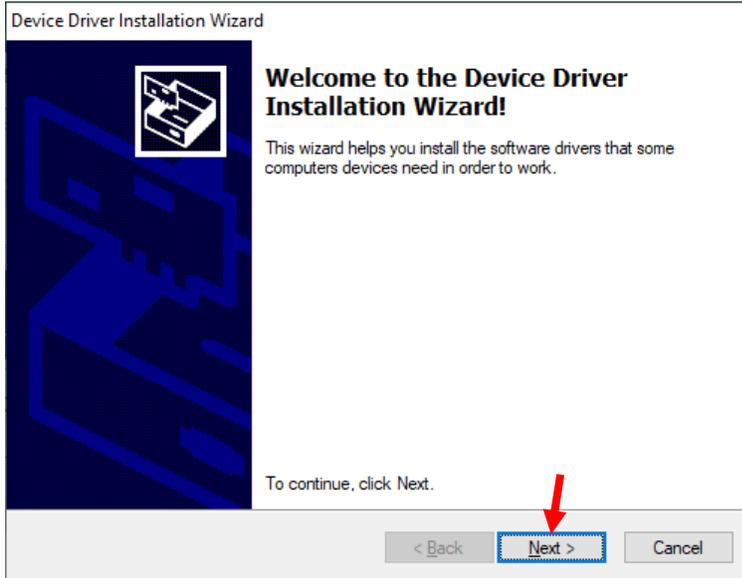
**Step 3.** From the Setup screen, the Create a Desktop shortcut is selected by default. If left selected, the icon below is placed on your desktop once the installation is complete. Click **Next**.



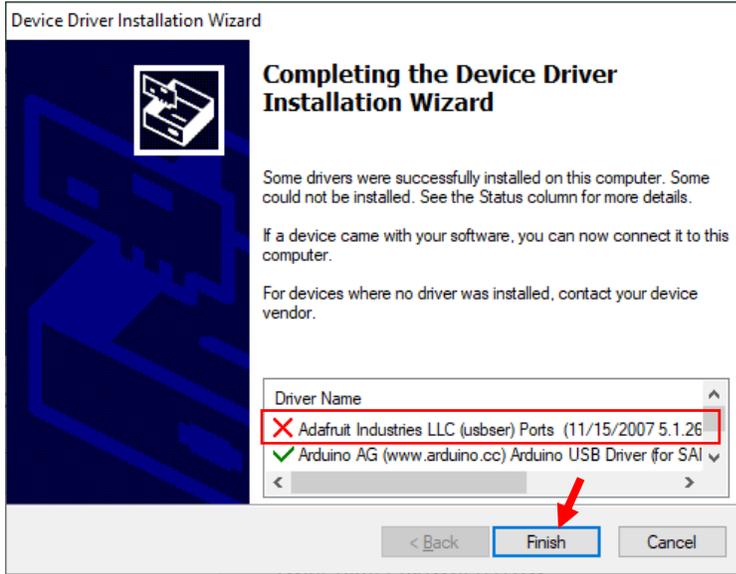
**Step 4.** Click Install to begin the installation.



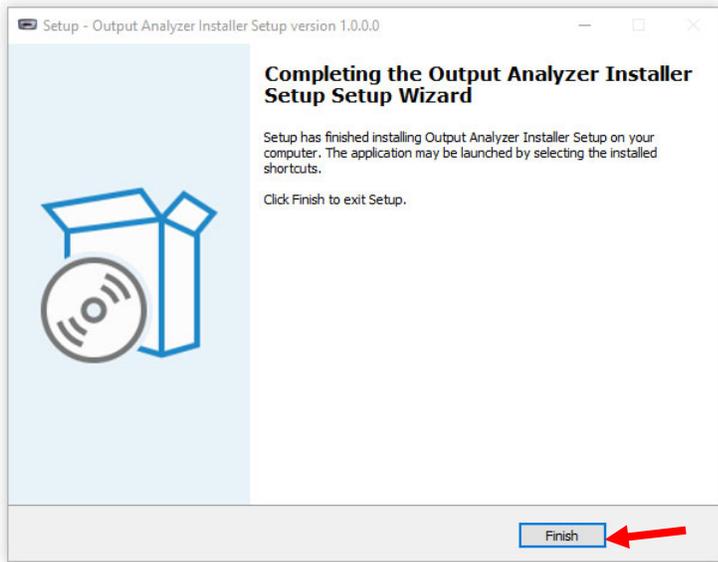
**Step 5.** When the green bar is complete, you will see a pop-up for "Device Driver Installation Wizard," Click Next to begin installing the Device Driver.



**Step 6.** Only drivers needed for your PC will be installed. If you see a driver that failed to install, it isn't required for your operating system. Click **Finish**.

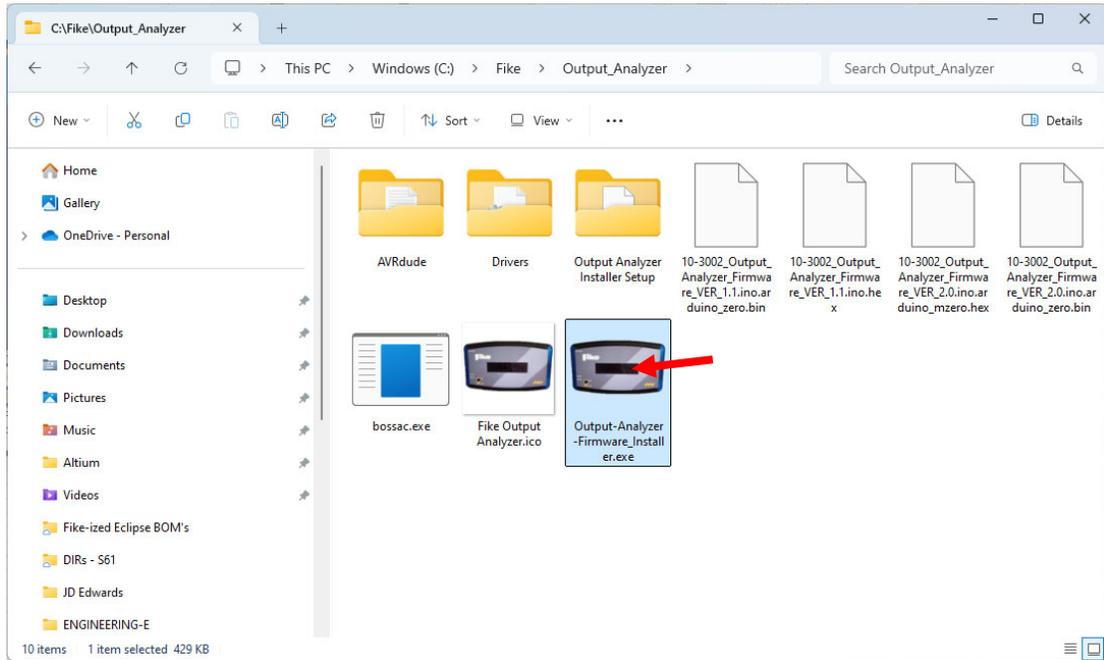


**Step 7.** The Wizard for the Output Analyzer Firmware installer is complete. Click **Finish**.

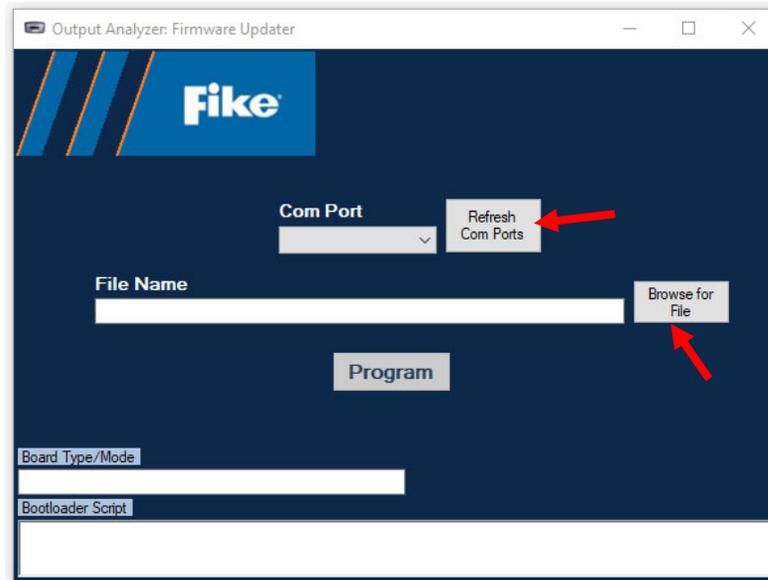


**Step 8.** Connect the output analyzer to your PC using a USB-C cable, then power it on.

**Step 9.** Navigate to the **C:\Fike\Output\_Analyzer** folder, then click on the **Output Analyzer Firmware Installer** executable to initiate the Output Analyzer Firmware Updater.



**Step 10.** Ensure the Output Analyzer is turned on and connected to your PC. Then click the **Refresh Com Ports** button in the firmware updater.

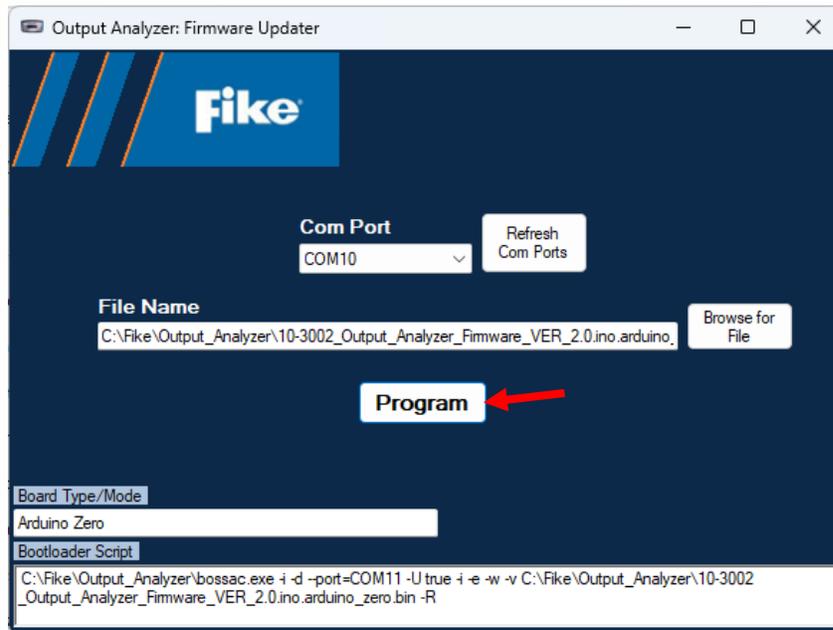


**Step 11.** Click the **Browse for File** button and navigate to the **C:\Fike\Output\_Analyzer** folder. If your Output Analyzer board type is listed as "Arduino Zero" or "Arduino Zero Bootloader," select only .bin files. If your board type is listed as "Arduino M0 PRO" or "Arduino M0 PRO (Bootloader mode) Native Port," select only .hex files.

 10-3002\_Output\_Analyzer\_Firmware\_VER\_X.XX.ino.arduino\_zero.bin

**Step 12.** Once the file has been selected, click the **Program** button.

*Caution: Ensure the USB cable is securely plugged into Output Analyzer and the PC. Ensure that power to your PC will not be interrupted during the update (approx. 2 min). Failure to follow these steps could cause the Output Analyzer to become permanently unresponsive. Contact Fike for further information.*



**Step 13.** Successfully updating an "Arduino Zero" and/or "Arduino Zero bootloader" analyzer will create the following command prompt box:

```

Administrator: Command Prompt

Write 46444 bytes to flash (726 pages)
write(addr=0x20005000,size=0x1000)
writeBuffer(src_addr=0x20005000, dst_addr=0x2000, size=0x1000)
[=====] 8% (64/726 pages)write(addr=0x20005000,size=0x1000)
writeBuffer(src_addr=0x20005000, dst_addr=0x3000, size=0x1000)
[=====] 17% (128/726 pages)write(addr=0x20005000,size=0x1000)
writeBuffer(src_addr=0x20005000, dst_addr=0x4000, size=0x1000)
[=====] 26% (192/726 pages)write(addr=0x20005000,size=0x1000)
writeBuffer(src_addr=0x20005000, dst_addr=0x5000, size=0x1000)
[=====] 35% (256/726 pages)write(addr=0x20005000,size=0x1000)
writeBuffer(src_addr=0x20005000, dst_addr=0x6000, size=0x1000)
[=====] 44% (320/726 pages)write(addr=0x20005000,size=0x1000)
writeBuffer(src_addr=0x20005000, dst_addr=0x7000, size=0x1000)
[=====] 52% (384/726 pages)write(addr=0x20005000,size=0x1000)
writeBuffer(src_addr=0x20005000, dst_addr=0x8000, size=0x1000)
[=====] 61% (448/726 pages)write(addr=0x20005000,size=0x1000)
writeBuffer(src_addr=0x20005000, dst_addr=0x9000, size=0x1000)
[=====] 70% (512/726 pages)write(addr=0x20005000,size=0x1000)
writeBuffer(src_addr=0x20005000, dst_addr=0xa000, size=0x1000)
[=====] 79% (576/726 pages)write(addr=0x20005000,size=0x1000)
writeBuffer(src_addr=0x20005000, dst_addr=0xb000, size=0x1000)
[=====] 88% (640/726 pages)write(addr=0x20005000,size=0x1000)
writeBuffer(src_addr=0x20005000, dst_addr=0xc000, size=0x1000)
[=====] 96% (704/726 pages)write(addr=0x20005000,size=0x580)
writeBuffer(src_addr=0x20005000, dst_addr=0xd000, size=0x580)
[=====] 100% (726/726 pages)
done in 0.549 seconds

Verify 46444 bytes of flash with checksum.
checksumBuffer(start_addr=0x2000, size=0x1000) = ea7b
checksumBuffer(start_addr=0x3000, size=0x1000) = 5fba
checksumBuffer(start_addr=0x4000, size=0x1000) = 3840
checksumBuffer(start_addr=0x5000, size=0x1000) = b0c7
checksumBuffer(start_addr=0x6000, size=0x1000) = a8c7
checksumBuffer(start_addr=0x7000, size=0x1000) = fff0
checksumBuffer(start_addr=0x8000, size=0x1000) = 25af
checksumBuffer(start_addr=0x9000, size=0x1000) = da0d
checksumBuffer(start_addr=0xa000, size=0x1000) = 97db
checksumBuffer(start_addr=0xb000, size=0x1000) = 48f4
checksumBuffer(start_addr=0xc000, size=0x1000) = 18a3
checksumBuffer(start_addr=0xd000, size=0x56c) = d394
Verify successful
done in 0.074 seconds
CPU reset.
readWord(addr=0)=0x20007ffc
readWord(addr=0xe000ed00)=0x410cc601
readWord(addr=0x41002010)=0x10010305
writeWord(addr=0xe000ed0c,value=0x5fa0004)

C:\Windows\System32>
    
```

**Step 14.** Successfully updating an "Arduino M0 PRO" and/or "Arduino M0 PRO (Bootloader Mode) Native Port" analyzer will create the following command prompt box:

```

Administrator: Command Prompt

SyncLoops      : 32
ByteDelay      : 0
PollIndex      : 3
PollValue      : 0x53
Memory Detail   :

-----
Memory Type Mode Delay Size  Indx Paged  Size  Size #Pages MinW  MaxW     Polled
-----
eeprom    65  10   0   0 no    4096   0   0  9000  9000 0x00 0x00
flash     65  10  256  0 yes  262144 256 1024 4500  4500 0x00 0x00
lfuse     0   0   0   0 no     1   0   0  9000  9000 0x00 0x00
hfuse     0   0   0   0 no     1   0   0  9000  9000 0x00 0x00
efuse     0   0   0   0 no     1   0   0  9000  9000 0x00 0x00
lock      0   0   0   0 no     1   0   0  9000  9000 0x00 0x00
calibration 0   0   0   0 no     1   0   0   0   0  0x00 0x00
signature 0   0   0   0 no     3   0   0   0   0  0x00 0x00
-----

Programmer Type : STK500V2
Description     : Atmel STK500 Version 2.x firmware
Programmer Model: AVRISP
Hardware Version: 3
Firmware Version Master : 4.05
Vtarget         : 0.0 V
SCK period      : 268.1 us

avrdude: AVR device initialized and ready to accept instructions

Reading | ##### | 100% 0.01s

avrdude: Device signature = 0x1e9801
avrdude: safemode: lfuse reads as 0
avrdude: safemode: hfuse reads as 0
avrdude: safemode: efuse reads as 0
avrdude: NOTE: FLASH memory has been specified, an erase cycle will be performed
          To disable this feature, specify the -D option.
avrdude: erasing chip
avrdude: reading input file "C:\Fike\Output_Analyzer\10-3002_Output_Analyzer_Firmware_VER_1.1.ino.hex"
avrdude: writing flash (62872 bytes):

Writing | ##### | 100% 1.56s

avrdude: 62872 bytes of flash written
avrdude: verifying flash memory against C:\Fike\Output_Analyzer\10-3002_Output_Analyzer_Firmware_VER_1.1.ino.hex:
avrdude: load data flash data from input file C:\Fike\Output_Analyzer\10-3002_Output_Analyzer_Firmware_VER_1.1.ino.hex:
avrdude: input file C:\Fike\Output_Analyzer\10-3002_Output_Analyzer_Firmware_VER_1.1.ino.hex contains 62872 bytes
avrdude: reading on-chip flash data:

Reading | ##### | 100% 1.35s

avrdude: verifying ...
avrdude: 62872 bytes of flash verified

avrdude: safemode: lfuse reads as 0
avrdude: safemode: hfuse reads as 0
avrdude: safemode: efuse reads as 0
avrdude: safemode: fuses OK

avrdude done. Thank you.
    
```

**Step 15.** Once the firmware has completed updating, the Output Analyzer's memory must be factory initialized.

- a. Turn the device power off, then back on.
- b. While the battery voltage is displayed, press and hold both the **Select** and **Enter** buttons until the "Format Memory?" message appears. You will have 3 seconds; otherwise, you must cycle power on the board and try again.

F	o	r	m	a	t		M	e	m	o	r	y	?			
S	e	l	e	c	t		=									
Y	e	n	t		=											

**Step 16.** Press and release (quickly) the "Select" button to format the memory.

**Step 17.** The following message will be displayed when factory memory initialization is completed successfully.

F	a	c	t	o	r	y		M	e	m	o	r	y			
r	e	s	e	t		c	o	m	p	l	e	t	e	d		

**Step 18.** Upon initial power-up, the new firmware version will be temporarily displayed. Verify it matches the firmware version that was downloaded and installed.

O	u	t	p	u	t		A	n	a	l	y	z	e	r		
V	e	r	s	i	o	n	:		2	.	X	.	X			