PRODUCT MANUAL

Output Analyzer

P/N 10-2983



Doc. P/N 06-905 Rev. 1 / December 2018



SOLUTIONS

- Fire Protection
- Explosion Protection
- Overpressure Protection
- Pressure Activation

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1.0 GENERAL

Weight: 6.5 ounce (184 grams) Size: 5.75 x 3.5 x 1.125 inches (146 x 89 x 28.6 mm) Temperature Limitations: 32-120°F (0-49°C) Power Requirements: Rechargeable Lithium-Ion battery Casing: ABS plastic



Figure 1.0-1 Output Analyzer

The Fike Output Analyzer (10-2983) is a compact, rechargeable, hand-held device that is designed to be used by Fike factory-trained and certified service technicians to test and verify operation of the following Fike releasing components:

- 1. Explosion Protection Controller (EPC)*, P/N E10-0066.
- 2. Impulse Release Module (IRM), P/N 10-2748.
- 3. Fire Agent Release Module (Fire ARM), P/N 10-1832.
- 4. Explosion Protection Agent Release Module (EP-ARM), P/N E10-010.

The device's portability and ease of use makes it ideal for performing quick tests that provide peace of mind and help you know your system is working properly.

The Output Analyzer comes with the following components:



*Purchase of P/N E10-070 required to conduct EPC testing.



NOTE: The Output Analyzer comes with a charging cord but <u>does not come with a wall charger or a 1-Ohm Resistor</u> used in EPC testing.

Please obtain a charger to fully charge the battery before testing. To ensure this device remains compliant with EMC Directive 2014/30/EU, the unit shall not be used while charging the battery and the battery charger used for charging the device shall be compliant with the requirements of EN61326-1.

The 1-Ohm Resistor is included in the E10-070 kit purchased by EP Service Technicians, of which the 10-2983 Output Analyzer is a part.

2.0 FEATURES

- On-off switch
- Back-lit LCD display
- Rechargeable battery
- Removable test jumpers
- Durable plastic housing
- Can be used to test fire the EPC
- Replaces cumbersome and outdated flashbulbs for testing
- Substitutes portable oscilloscopes for electrical measurements
- Finds series/parallel wiring faults in an EPC system by examining supervisory current levels anywhere in the field wiring loop

3.0 APPROVALS



The Analyzer has been tested and complies with the limits for a Class A digital device, pursuant to Part 15 of FCC rules. When the equipment is operated in a commercial environment, these limits provide reasonable protection against harmful interference. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference with radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his or her own expense. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This product complies with the essential requirements of the following applicable European directive(s) and carries the CE marking accordingly: (1) EMC Directive 2014/30/EU; and (2) RoHS Directive 2011/65/EU.

4.0 SAFETY INFORMATION



WARNING - When wired to the EPC, the Output Analyzer is capable of activating the EPC when the ACTIVATE button is pressed, even when the device is turned off. Prior to using the tool, verify that all GCA's connected to the EPC series firing circuit (P3-2) are disconnected from the circuit. For ARM (10-1832) testing, disarm the GCA as noted in the 06-106 *ARM Manual*. For IRM (10-2748) testing, remove the IVO from the container and IRM.



CAUTION – Do not use the Output Analyzer if it appears to be damaged or if the device doesn't appear to be working according to the supplied user instructions.



CAUTION - Do not use the Output Analyzer on any solenoid circuit or damage will occur!



STATIC DISCHARGE – Use a grounding strap to eliminate static discharge sources prior to working with GCAs.

IMPORTANT: Pack and safely store the Fike Output Analyzer when not in use. Do not allow the Analyzer to remain connected to live circuitry, as this will reduce battery life.

5.0 BATTERY LIFE

The device is shipped with only a partial charge; therefore, you'll need to fully charge the battery before you begin testing. One full charge typically takes about 1.5 hours to complete and will provide roughly 22 hours of use.

Battery @ 20% Pwr off and CHRG

IMPORANT: The device will notify you when the battery is at 20%, at which time you'll want to plug it in to charge and preserve battery life. While you will be able to continue testing even when the battery falls to 20%, low battery notifications will persist every 10 seconds until the unit is plugged in, which means it will interrupt your work.

The battery warning message can be cleared by turning the unit off, but the message will remain if you turn the unit on again without charging. Remember that battery charge is displayed on initial power up, and you can check it periodically by using Option 7 (Chk Batt Chrg) to keep track of usage.

6.0 CONTROLS/INTERFACE

On initial power up, the battery charge will display for three (3) seconds; this will help you gauge whether you can complete all tests on the current charge. Next, the panel will display "Fike Analyzer Select Tool Use." Once you see this message, press and release the SELECT button to view the main menu.



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Figure 6.0-1 Output Analyzer Controls and Interface
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6.1. Navigation Menu

- 1. Press and release the SELECT button to advance through the menu options on the front LCD panel.
- 2. Continue to press and release the SELECT button until you reach the desired function. The navigation menu functions in a loop and there is no back button, so if you advance past an option, you'll need to press and release the SELECT button to loop back to the desired option.

Option	What it is	What it does
1	EPC Tool	Allows the user to test all EPCs.
2	IRM Tool	Allows the user to test all IRMs.
3	Fire ARM Tool	Allows the user to test all Fire Panel based ARMs.
4	EP ARM Tool	Allows the user to test all Explosion Protection (EP) based ARMs
5	View Memory	Displays the results of the previous test.
6	Clear Memory	Wipes out memory to ensure no data leaves facility.
7	Chk Batt Chrg	Provides status update of battery capacity.

Table 6.1-1 Menu Options

Confirm or Choose Option

Press and release the ENTER button to confirm/choose the option shown on the display.

Return to Main Menu

Press and release both the SELECT and ENTER buttons at the same time to return to the main menu.

Charge Battery

Connect a USB C cable into any 5Vdc USB charger (not included). Battery charge is displayed on initial power and can be viewed at any time under Option 7 of the main menu.

7.0 EPC TESTING

7.1. EPC Operational Overview

The Output Analyzer is used to perform two important testing functions associated with EPC series firing circuits. The first testing function assesses the EPC's ability to supply the correct current (amps) required to activate the actuator devices connected to the series firing circuit. The second testing function assesses the integrity of the field wiring by verifying the supervisory current at each device field box.

The Output Analyzer comes equipped with connectors to connect it to the detection input terminals (P2-1 or P2-2), to the series firing circuit output terminals, or to field box connections. When the device is connected to an EPC for testing, pressing and releasing the ACTIVATE button sends an activation signal to the EPC and triggers its series firing circuit for testing purposes. The device then measures the current supplied by the firing circuit and displays the result on the LCD panel. Four readings are taken to ensure the EPC is supplying adequate firing current, with readings occurring instantaneously once the analyzer is connected to most devices.

IMPORTANT: DO NOT use the ACTIVATE button on the Analyzer when it is connected to a field device; instead, activate a field device test via separate input to the EPC's detection circuit.

7.2. Interpreting EPC Measured Results

Once you've used the Analyzer to test the activation current supplied by an EPC, the Analyzer will display the results on the front panel as either EPC PASSES or REPLACE EPC.

When the Analyzer is used to test the supervisory current supplied by the EPC, it will display the supervisory current reading in milliamps. The acceptable supervisory current reading at the EPC or field device is 3 - 10 mA.

7.3. EPC Testing Procedures

If an EPC is configured with "AND"ed detectors, you will need to test the firing current by activating both 4-20 mA detection inputs (P2-1 and P2-2) using standard service procedures. If optical detectors are connected to the EPC's contact closure detection input (P3), you will need to test the firing circuit by activating the detection input using standard service procedures, rather than using the Activate button.

NOTE: The upper limit of each test range is provided to help you determine when a component is nearing the end of its useful life and should be replaced. For the EPC, the average of the four test readings must be greater than or equal to 95% of 3 amps, or 2.85A. If the average is approaching 2.85A, consider replacing the EPC.

7.3.1. Test 1: EPC Series Firing Circuit Activation Current Test

This Output Analyzer test verifies the acceptability of the activation current supplied by the EPC's series firing circuit. The Analyzer comes with several jumpers and test leads that are used to perform these tests. To get started:

- 1. Power down the EPC.
- 2. Disconnect the detection input circuit terminal blocks (P2-1 and P2-2) from the EPC.
- 3. Disconnect and shunt the series firing circuit terminal block (P3-2) from the EPC.
- 4. Use the EPC Test Harness supplied with the Analyzer to connect it to the EPC's 4-20 mA detection circuits (P2-1 or P2-2) and series firing circuit (P3-2), as shown in Figure 7.3.1-1 below.

99

4-20 1 mA 1

111

SI

- 5. Connect the 0Ω shunt to the Analyzer jumper port, as shown in Figure 7.3.1-1.
- 6. Connect the EPC harness to the EPC Analyzer.



- 7. Turn on the Analyzer.
- 8. The Analyzer's firmware version displays, followed by battery status.

Output Analyzer	VBat: 4.03
Version 1.1	Battery at 100%

9. SELECT TOOL USE displays next. Press and release the SELECT button until EPC TOOL displays. Press ENTER to select this option. The device will prompt you to connect the leads.

Fike Analyzer	EPC Analyzer
Select Tool Use	Connect Leads

10. Press and release the ENTER button to initiate the test. The following screen will display:

EPC Ar	nalyzer
Leads	Connected

11. As soon as the Analyzer tool recognizes there is an active connection, it will start its countdown:



12. Once the countdown timer completes, the display will indicate the system is ready for activation.

System Ready Activate Now

- 13. Press and release the ACTIVATE button on the Analyzer to initiate the test.
- 14. The Analyzer will initiate the EPC series firing circuit and display the activation current readings obtained during the test. EPC PASSES / REPLACE EPC will display on the front panel of the Analyzer. (See Section 7.2, *Interpreting EPC Measured Results*, for more information or if you have questions regarding the results.)

5.97 5.7 5.5 5.2	2.8 2.7 2.7 2.6
EPC Passes	REPLACE EPC

- 15. Record the readings obtained for future reference, since subsequent tests will override current test data.
- 16. Replace the minimum resistance shunt on the Analyzer with the 10-ohm resistor. Reset the EPC and make sure it is in "normal" status, with no trouble light on.
- 17. Repeat Steps 7-14 and record the test readings obtained for future reference.
- 18. Press and release the SELECT and ENTER buttons at the same time to return to the Main Menu.
- 19. Select the EPC TOOL option from the Main Menu to prepare for the next test.

7.3.2. Test 2: EPC Supervisory Current Test

This Output Analyzer test verifies the acceptability of the supervisory current supplied by the EPC's series firing circuit. The Analyzer comes with jumpers and test leads that are used to perform this test. To get started:

- 1. Power down the EPC.
- 2. Disconnect and shunt the series firing circuit terminal block (P3-2) from the EPC.
- 3. Use the EPC Test Harness supplied with the Analyzer to connect it to the series firing circuit (P3-2), as shown in Figure 7.3.2-1 below



Figure 7.3.2-1 EPC Series Firing Circuit Supervisory Current Test

- 4. Connect the 75Ω Resistor to the Analyzer, as shown in Figure 7.3.2-1 above.
- 5. Power on the EPC.
- 6. Turn on the Analyzer, wait the three seconds for the battery charge status to flash, then press and release the SELECT button to arrive at the EPC Tool menu (Option #1); press the ENTER button to choose this option. The supervisory current supplied by the series firing circuit (P3-2) will display. (See Section 7.2, Interpreting EPC Measured Results, for more information or if you have questions regarding the results.)



7. Record the reading obtained for future reference, since supervisory current results are not stored in memory.

NOTE: The supervisory current is intended only as a trouble-shooting tool to gauge whether anything has changed since the last reading. The supervisory current reading at the EPC or the field device will be between 3 - 10 mA.

- 8. Press and release the SELECT and ENTER buttons at the same time to return to the main menu.
- 9. Select the EPC TOOL option from the Main Menu to prepare for the next test.

7.3.3. Test 3: EPC Field Test

This Output Analyzer test verifies that the acceptable activation current is being supplied by the EPC to the field devices through series firing circuit field wiring. The Analyzer comes with jumpers and test leads that are used to perform these tests. To get started:

- 1. Make sure the EPC is powered down
- 2. Disconnect and <u>shunt</u> all GCAs connected to the EPC's series firing circuit (P3-2).
- 3. Install a 1-Ohm Resistor (P/N E10-0174) (available separately) where the GCA leads are disconnected, except at the field box under testing.
- 4. At the field box under testing, install short wire leads into the GCA firing circuit terminals.
- 5. On the first field box to be tested, use the 14-inch long leads and alligator clips supplied with the Analyzer to connect the EPC output terminals to the GCA firing circuit on the first field box to be tested (see Figure 7.3.3-1 below).



Figure 7.3.3-1 Field Wiring Activation Current Test

- 6. Connect the 0Ω shunt to the Analyzer, as shown in Figure 7.3.3-1 above.
- 7. Power on the EPC.
- 8. Turn on the Analyzer, wait the three seconds for the battery charge status to flash, then press and release the SELECT button to arrive at the EPC Tool menu (Option #1). Press the ENTER button to choose this option. The following screens will briefly display:

EPC Analyzer	EPC Analyzer
Connect Leads	Leads Connected

9. With the leads connected and the appropriate test jumper installed, the Analyzer will initiate a 30-second countdown timer to ensure the internal series firing circuit on the EPC is charged and ready to fire. The Analyzer will display a countdown to indicate when the time delay has expired and the EPC is ready for testing.

Wait: Charging Countdown: 30

10. Once the countdown timer reaches 0, the display will indicate the system is ready to be activated.



- 11. WAIT! DO NOT use the ACTIVATE button on the Analyzer to initiate the test. Instead, activate the series firing circuit by initiating an input signal at the EPC's 4-20 mA detection inputs (P2-1 or P2-2).
- 12. The Analyzer will then display the reading obtained during the test, along with the PASS/REPLACE result.

5.97 5.7 5.5 5.2	2.8 2.7 2.7 2.6
EPC Passes	REPLACE EPC

- 13. Record the reading obtained for future reference, since subsequent tests will override current test data.
- 14. Reset the EPC and ensure it is in a normal "up" condition, with no trouble light on.
- 15. Proceed to Test 4.

7.3.4. Test 4: Field Wiring Supervisory Current Test

This Output Analyzer test verifies the supervisory current being supplied by the EPC to the field devices through series firing circuit field wiring. The Analyzer comes with jumpers and test leads used to perform this test. To get started:

- 1. Connect the alligator leads to the Analyzer and field box terminals, as shown in Figure 7.3.3-1.
- 2. Install the 75Ω Resistor on the Analyzer.
- 3. The supervisory current supplied by the series firing circuit (P3-2) will be displayed. The reading must be within two tenths of the value measured in Test 2.

Supervisory Current: 5.9mA

- 4. Record the reading obtained for future reference, since subsequent tests will override current test data.
- 5. Return to the main menu and select the EPC tool again.
- 6. Disconnect the test connector from the field box terminals.
- 7. Power down the EPC.
- 8. Install a 1-Ohm Resistor (P/N E10-0174) onto the field box terminals where the GCA leads are normally connected.
- 9. Ensure the EPC is in a normal "up" condition, with no trouble light on.
- 10. Repeat Tests 3 and 4 for each field box, measuring both the activation and supervisory current for each box.
- 11. End of testing. Place system back into normal operational state.

8.0 IRM TESTING

8.1. IRM Operational Overview

The Output Analyzer can be used to perform two important testing functions associated with the IRM firing circuit. The first testing function assesses the IRM's ability to supply the correct current (amps) required to activate the actuator devices connected to the firing circuit; the second testing function assesses the integrity of the releasing circuit field wiring by measuring the supervisory current at the IRM.

When the device is connected to an IRM for testing, the activation signal is provided via a release event on the fire alarm control panel, such as when the release station is activated. The device will then measure the current supplied by the firing circuit and display the result on the LCD panel. Four readings will be taken to ensure the Fire IRM is supplying adequate firing current, with readings occurring momentarily (there is a slight delay between fire control panel activation and firing circuit release).

IMPORTANT: The Output Analyzer ACTIVATE button does not apply to testing an IRM. Instead, activate using a release event on the fire alarm control panel (e.g., activate the release station).

8.2. Interpreting IRM Measured Results

Once you've used the Analyzer to test the activation current supplied by the IRM, the Analyzer will display the results on the front panel as either IRM PASSES or FAIL REPLACE IRM. When the Analyzer is used to test the supervisory current supplied by the releasing panel or module, it will display the supervisory current reading in milliamps. The acceptable supervisory current reading at the IRM is 24mA +/- 4mA.

8.3. IRM Testing Procedures

- 1. WARNING! Before you begin this test, disable the IRM and disconnect IVO(s) per the 06-552 IRM Manual.
- 2. Connect the Analyzer to the IRM as shown in 8.3-1 below.



Figure 8.3-1 IRM Circuit Activation Current Test

- 3. Enable the release circuit and IRM with the Analyzer installed (one per IRM or repeat testing for each one at a time).
- 4. Wait 60 seconds to allow the capacitors time to charge. If the panel does not immediately return to normal, reset the panel to a normal state.
- 5. Remove the 0Ω Shunt from the Analyzer. The supervisory current will be displayed (.20mA .54mA).

IRM Supervisory Current .32mA

- 6. Record the IRM supervisory current reading for future reference, since subsequent tests will overwrite current test data.
- 7. Install the 0Ω Shunt (short jumper) onto the Analyzer
- 8. The display will read "Ready for Test." Reset the panel if required to obtain a normal panel, and wait 60 seconds for the capacitor to charge.

IRM ANALYZE Ready for Test

- 9. Activate the IRM by initiating an input that will cause the panel output to trigger the IRM.
- 10. The current reading will be displayed, along with "IRM PASSES" or "FAIL REPLACE IRM."

7.34 6.7 4.7 3.1	2.39 3.4 4.0 3.5
IRM PASSES	FAIL REPLACE IRM

NOTE: The upper limit of each test range is provided to help you determine when a component is nearing the end of its useful life and should be replaced. For the IRM, the average of the four test readings must be greater than or equal to 95% of 4.5 amps, or 4.275A. If the average is approaching 4.275A, consider replacing the IRM.

- 11. Record the IRM firing current reading for future reference, since subsequent tests will overwrite current test data.
- 12. Press and release the ENTER button to repeat the test or press and release the SELECT and ENTER buttons at the same time to return to the Main Menu.
- 13. End of testing. Place system back into normal operational state.

9.0 FIRE ARM TESTING

9.1. Fire ARM Operational Overview

The Output Analyzer can be used to perform two important testing functions associated with the Fire ARM's firing circuit. The first testing function assesses the Fire ARM's ability to supply the correct current (amps) required to activate the actuator devices connected to the firing circuit; the second testing function assesses the integrity of the field wiring by measuring the supervisory current at the ARM.

When the Analyzer is connected to a Fire ARM for testing, the activation signal is provided via a release event on the fire alarm control panel, such as when a release station is activated. The Analyzer will then measure the current supplied by the ARM firing circuit and display the result on the LCD panel. Four readings will be taken to ensure the Fire ARM is supplying adequate firing current, with readings occurring momentarily (there is a slight delay between fire control panel activation and firing circuit release).

IMPORTANT: The ACTIVATE button does not apply to Fire ARM testing. Instead, activate using a release event on the fire alarm control panel (e.g., activate release station).

9.2. Interpreting Fire ARM Measured Results

Once you've used the Analyzer to test the activation current supplied by the Fire ARM, the Analyzer will display the results on the front panel as either Fire ARM PASSES or Fail REPLACE ARM.

When the Analyzer is used to test the supervisory current supplied by the releasing panel or module, it will display the supervisory current reading in milliamps. The acceptable supervisory current reading at the Fire Suppression ARM is 24mA +/- 4mA.

9.3. Fire ARM Testing Procedures

- 1. WARNING! Before you begin, power off the panel, allow the caps to discharge (about 10 min.), then shunt all GCA's (per 06-106 ARM III Rev 2) connected to the system before proceeding!
- 2. Connect the Analyzer to the ARM as shown in Figure 9.3-1 below



Figure 9.3-1 Fire ARM Circuit Activation Current Test

3. Remove the 0Ω Shunt from the Analyzer. The supervisory current will be displayed (.20mA - .54mA).

ARM Supervisory Current 0.32mA

- 4. Record the ARM supervisory current reading for future reference, since subsequent tests will override current test data.
- 5. Install the 0Ω Shunt onto the Analyzer. The display will read "Ready for Test." Reset the panel if required to obtain a normal panel, and wait 60 seconds for the capacitor to charge.

ARM ANALYZER Ready for Test

6. Activate the ARM by initiating an input (pull station or test switch) that will cause the panel output to trigger the ARM.

7. The current reading displays, along with "ARM PASSES" or "FAIL REPLACE ARM."

5.65 6.1 3.9 2.3	1.78 2.2 2.6 2.8
ARM PASSES	FAIL REPLACE ARM

NOTE: The upper limit of each test range is provided to help you determine when a component is nearing the end of its useful life and should be replaced. For the Fire ARM, the average of the four test readings must be greater than or equal to 95% of 3.5 amps, or 3.325A. If the average is approaching 3.325A, consider replacing the ARM.

- 8. Press and release the ENTER button to repeat the test, or press and release the SELECT and ENTER buttons at the same time to return to the Main menu.
- 9. Power down and remove the tester.
- 10. End of testing. Place system back into normal operational state.

10.0 EP ARM TESTING

10.1. EP ARM Operational Overview

The Output Analyzer can be used to perform two important testing functions associated with the EP ARM's firing circuit. The first testing function assesses the EP ARM's ability to supply the correct current (amps) required to activate the actuator devices connected to the firing circuit; the second testing function assesses the integrity of the field wiring by measuring the supervisory current at the EP-ARM.

When the device is connected to an EP ARM for testing, the activation signal is provided from a pressure or optical detector. The device will then measure the current supplied by the EP-ARM's firing circuit and display the result on the LCD panel. Three readings will be taken to ensure the EP ARM is supplying adequate firing current, with readings occurring instantaneously.

10.2. Interpreting EP ARM Measured Results

Once you've used the Output Analyzer to test the activation current supplied by the EP-ARM, the Analyzer will display the results on the front panel as either EP ARM PASSES or FAIL REPLACE ARM.

When the Analyzer is used to test the supervisory current supplied by the Explosion Protection Controller, it will display the supervisory current reading in milliamps. The acceptable supervisory current reading at the EP-ARM is 20 - 54mA.

10.3. EP ARM Testing Procedures

- 1. WARNING! Before you begin, disable the EP Control Panel and shunt all GCA's (per E06-018-2 and E06-017-2) connected to the system before proceeding!
- 2. Connect the Analyzer to the EP ARM as shown in Figure 10.3-1 below.



Figure 10.3-1 EP ARM Series Firing Circuit Activation Current Test

3. Remove the 0Ω Shunt from the Analyzer. The supervisory current will be displayed as 20mA - 54mA, consistent with Section 10.2.

ARM Supervisory Current 32mA

- 4. Record the EP ARM supervisory current reading for future reference, since subsequent tests will override current test data.
- 5. Install the 0Ω Shunt onto the Analyzer. The display will read "Ready for Test." Reset the main EP Control Panel if required to obtain a normal panel, and wait 60 seconds for the capacitor to charge.

EP ARM ANALYZER Ready for Test

6. Activate the EP ARM by initiating a detection input that will cause the control panel output to trigger the EP ARM.

10.00 5.3 2.7	6.36 3.5 1.9
EP ARM PASSES	FAIL REPLACE ARM

7. The current reading displays, along with "EP ARM PASSES" or "FAIL REPLACE ARM."

NOTE: The upper limit of each test range is provided to help you determine when a component is nearing the end of its useful life and should be replaced. For the EP ARM, the first reading must be greater than or equal to 8, and the average of the three (3) test readings must be greater than or equal to 95% of 5.5 amps, or 5.225A. If the average is approaching 5.225A, consider replacing the EP ARM.

- 8. Press and release the ENTER button to repeat the test, or press and release the SELECT and ENTER buttons at the same time to return to the main menu.
- 9. Power down and remove the tester.
- 10. End of testing. Place system back into normal operational state.

11.0 VIEW MEMORY

This menu option displays test results from the previous test —whether on an EPC, IRM, or ARM— until you run a new test. This feature will store test results and allow you to recover them, should the Analyzer accidentally power down or if the active test ends before results are recorded.

12.0 CLEAR MEMORY

This menu option allows you to clear any results stored in memory, and is especially useful when storing data is against company policy.

13.0 CHECK BATTERY CHARGE (Chk Batt Chrg)

This menu option displays the current battery charge at any point before, during, or after testing. This option provides an approximation of the charge level and is intended as a reference only. As with any battery-operated device, the battery in the Output Analyzer should be charged periodically using a typical USB-C 5Vdc connection. Ensure the voltage rating of the connection is 5Vdc maximum or you could damage the device. Once the device is fully charged, *do not leave the unit connected to the battery charger* or you will reduce battery life.

To ensure this device remains compliant with EMC directive 2014/30/EU, the unit shall not be used while charging the battery and the battery charger used for charging this device shall be compliant with the requirements of EN61326-1.

14.0 TECHNICAL SUPPORT

We are confident in the quality and construction of the Fike Output Analyzer, but if you should ever have a problem or question, please feel free to contact us at:

Telephone: Main: 1-816-229-3405

Toll Free (US Only): 1-800-YES-FIKE (+1-800-937-3453)

Website:

www.fike.com

We also worked hard to prepare a manual that is easy to follow and understand. However, you, the customer, are going to be our best source for how well this manual actually works. If you have any comments or suggestions on how we can improve this manual, please let us know! Contact us at <u>feedback.manuals@fike.com</u>.