PRODUCT MANUAL

Output Analyzer V2.0

P/N 10-2983

P/N 06-905
Rev A, May 2024

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Table of Contents

List of Figures

List of Tables

1.0 GENERAL

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

Figure 1 - Output Analyzer V2.0

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.
5. EXP Actuator Field Modules (AFM), board P/N 10-3012 and P/N 10-3054.
6. EXP Actuator Field Modules Solenoid (Solenoid AFM), board P/N 10-3055.
7. Explosion Protection Controller Solenoid Edition (EPC Sol Ed.)*, P/N 10-2729.

The device's portability and ease of use make it ideal for performing quick tests that provide peace of mind and help you know your system is working correctly.
**Purchase of P/N E10-070 required to conduct EPC testing.*

1.1. Specifications

Weight: 6.5 ounces (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

1.2. Features

- On-off switch
- Back-lit LCD
- Rechargeable battery
- Removable test jumpers
- Durable plastic housing
- Can be used to determine firing current of Fike energetic devices
- Replaces cumbersome and outdated flashbulbs for testing
- Substitutes for 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

1.3. Approvals

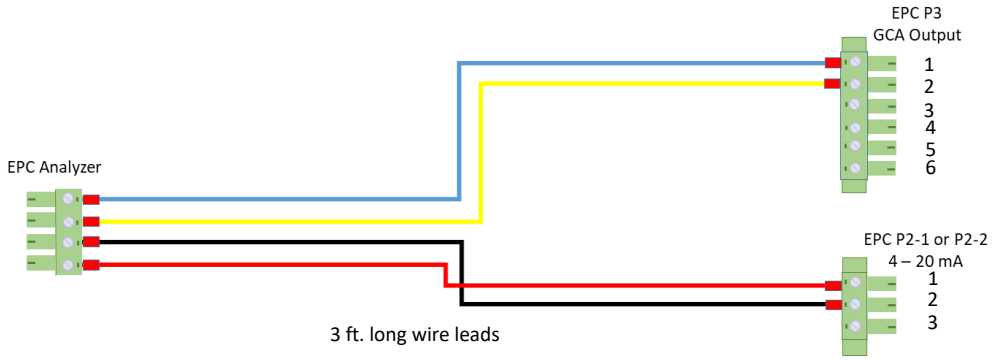
The Analyzer has been tested and complies with the limits for a Class A digital device, pursuant to Part 15 of FCC rules. When the equipment is operated in a commercial environment, these limits provide reasonable protection against harmful interference. This equipment generates, uses, and can radiate 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.

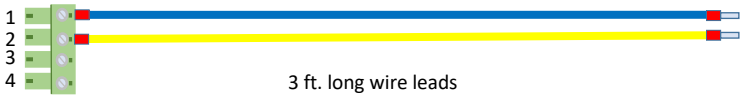
2.0 SUPPLIED COMPONENTS

The Output Analyzer comes with the following components:

P/N 10-2986, EPC Test Harness- Output and Sensory Input



P/N 10-2987, IRM/ARM Test Harness - Output or Supervisory Current Test

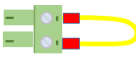


P/N 10-2988, Field Box Test Connector

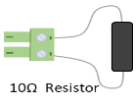
P/N F0292619, EXP AFM Test Harness

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

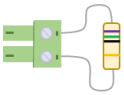
P/N 10-2989, 0Ω Current Test – Minimum Resistance Shunt



P/N 10-2990, 10Ω Current Test – Maximum Resistance Resistor (jumper)



P/N 10-2991, 75Ω EPC and Field Wiring – Supervisory Resistor (jumper)

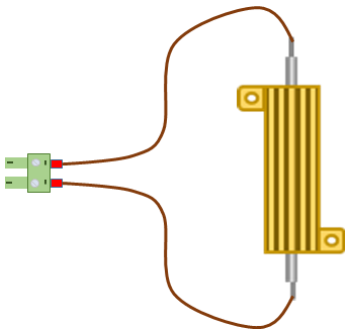


P/N 02-16516, 2-Position Plug – Field Wiring Current Test

P/N F0292617, 5Ω EXP Test Jumper

P/N F0292616, 1Ω ARM Test Jumper

P/N F0292618, 30Ω EP/EXP Solenoid Test Jumper



P/N 02-16505, USB Charging Cable – 5Vdc ONLY!

DO NOT charge at higher voltages!
Electrical damage will occur!

P/N 02-16506, Output Analyzer Case

NOTE: *The Output Analyzer is supplied with a charging cord but does not include a wall charger or a 1-Ohm Resistor 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.

3.0 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 does not appear to be working according to the supplied user instructions.

CAUTION – Ensure the proper resistors are used for each test as detailed in the instructions. Use of the incorrect resistor can cause damage to the system.

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

4.0 BATTERY LIFE

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.*

The device is shipped with only a partial charge. It must be fully charged before being used for testing. One full charge typically takes about 1.5 hours.

IMPORTANT: *The device will display a notification when the battery is at 20%, at which time it should be charged in order to preserve battery life. While testing may continue with battery at or below 20%, low battery notifications will persist every 10 seconds until the unit is plugged in, which means it will interrupt work.*

B	a	t	t	e	r	y		@		2	0	%		
P	w	r		o	f	f		a	n	d		C	H	R	G

The Battery Warning message can be cleared by turning the unit off, but the message will remain if the unit is powered up again without charging. Battery charge is displayed on initial power up, and it can be checked periodically by using Option 7 (Chk Batt Chrg) to keep track of usage.

5.0 CONTROLS/INTERFACE

On initial power-up, the battery charge will display for three (3) seconds. This will help personnel gauge whether all tests can be completed on the current charge. Next, the panel will display "Fike Analyzer Select Tool Use." Press and release the SELECT button to view the main menu.

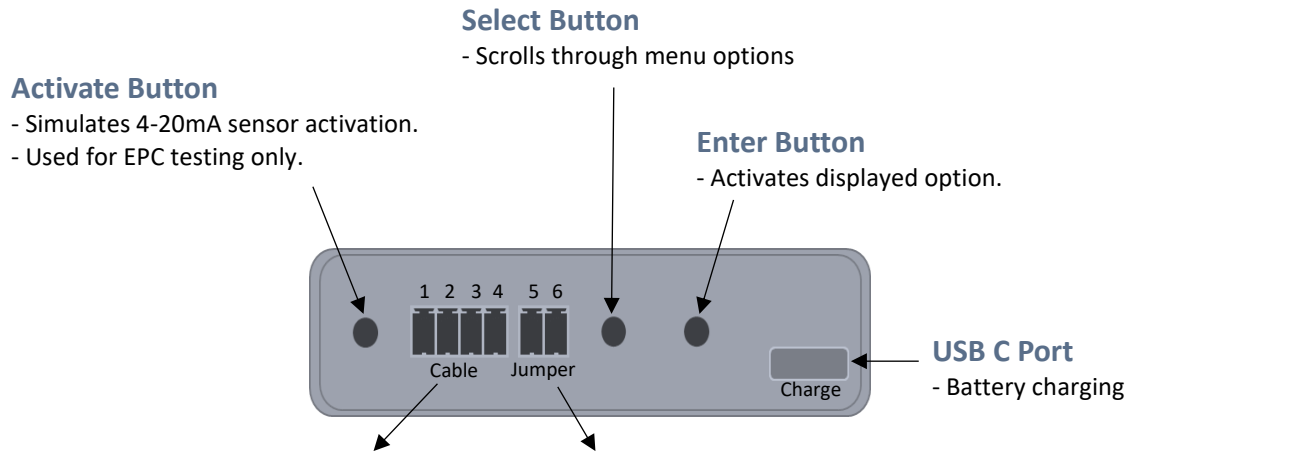


Figure 2 - Output Analyzer Controls and Interface

5.1. 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 the desired function is reached. 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.

Table 1 - Menu Options

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	EXP AFM Tool	Allows the user to test all Standard EXP AFMs.
6	EXP Sol AFM Tool	Allows the user to test all Solenoid EXP AFMs.
7	EPC Sol Tool	Allows the user to test all Solenoid EPCs.
8	View Memory	Displays the results of the previous test.
9	Clear Memory	Wipes memory to ensure no data leaves the facility.
10	Chk Batt Chrg	Provides a status update of battery capacity.

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 the SELECT and ENTER buttons simultaneously to return to the main menu.

Charge Battery

Connect a USB-C cable to any 5VDC USB charger (not included). Battery charge is displayed on initial power-up and can be viewed anytime under Option 7 of the main menu.

6.0 EPC TESTING

6.1. EPC Operational Overview

The Output Analyzer performs two essential 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 includes plugs 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 supplies adequate firing current, with readings occurring instantaneously once the Analyzer is connected to most devices.

IMPORTANT: *DO NOT use the Analyzer's ACTIVATE button when connected to a field device. Activate a field device test via separate input to the EPC's detection circuit.*

6.2. Interpreting EPC Measured Results

When the Analyzer is used 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.

6.3. 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. The average of the four test readings for the EPC 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.*

6.3.1. 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 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.

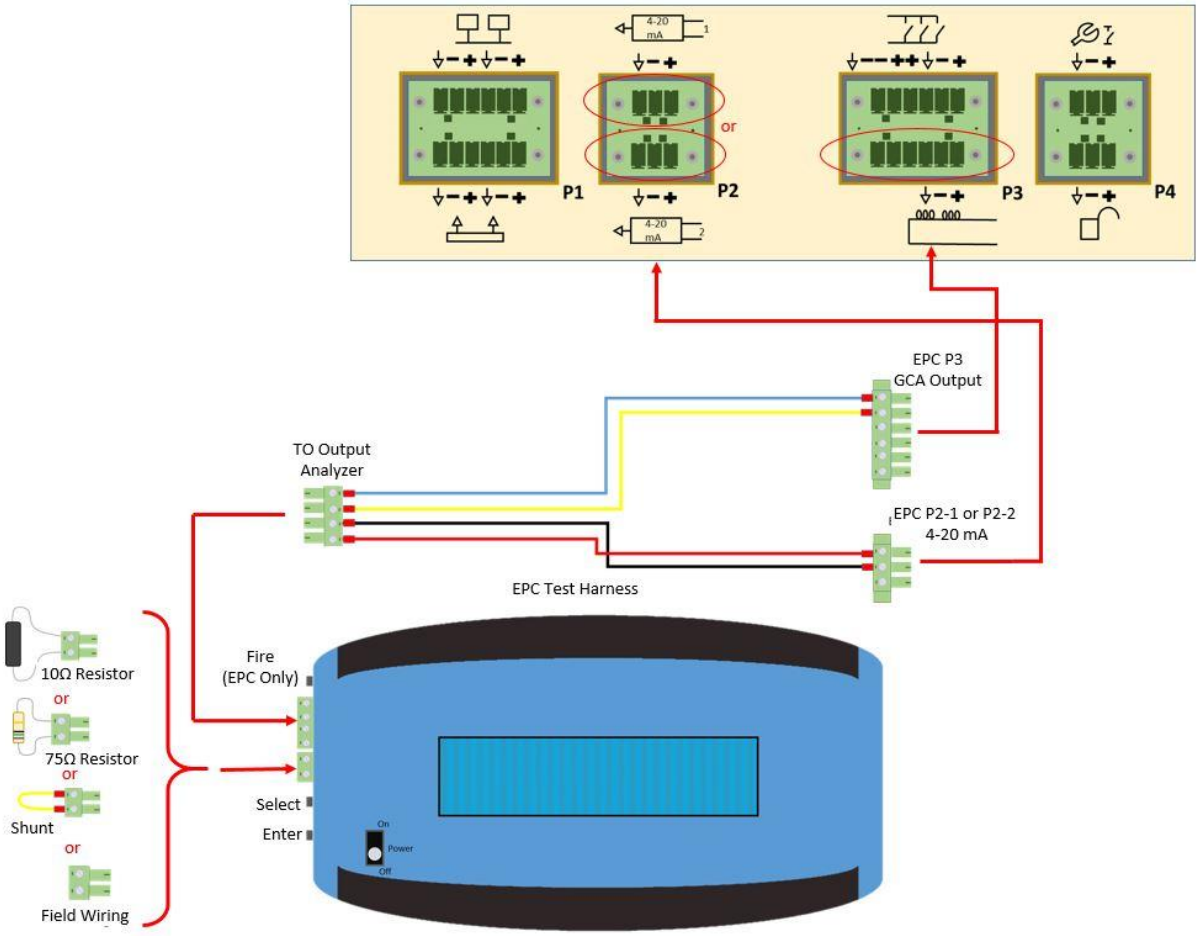


Figure 3 - EPC Series Firing Circuit Activation Current

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 3.
5. Connect the 0Ω shunt to the Analyzer jumper port, as shown in Figure 3.
6. Connect the EPC harness to the EPC Analyzer.
7. Apply power to the Analyzer.
8. The Analyzer's firmware version displays, followed by battery status.

O	u	t	p	u	t		A	n	a	l	y	z	e	r	
V	e	r	s	i	o	n	:		1	.	0				

V	b	a	t	:		4	.	0	3						
B	a	t	t	e	r	y		@		1	0	0			%

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.

F	i	k	e		A	n	a	l	y	z	e	r			
S	e	l	e	c	t		T	o	o	l		U	s	e	

E	P	C		A	n	a	l	y	z	e	r				
C	o	n	n	e	c	t		L	e	a	d	s			

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

E	P	C		A	n	a	l	y	z	e	r			
L	e	a	d	s		C	o	n	n	e	c	t	e	d

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

W	a	i	t	:		C	h	a	r	g	i	n	g	
C	o	u	n	t	d	o	w	n	:		3	0		

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

S	y	s	t	e	m		R	e	a	d	y			
A	c	t	i	v	a	t	e		N	o	w			

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 Analyzer's front panel. (See Section 7.2, Interpreting EPC Measured Results, for more information or if you have questions regarding the results.)

5	.	9	7		5	.	7		5	.	5		5	.	2
E	P	C		P	a	s	s	e	s						

2	.	8	0		2	.	7		2	.	7		2	.	6
R	e	p	l	a	c	e		E	P	C					

15. Record the obtained readings for future reference, because the Output Analyzer does not store results in memory. Subsequent tests will override current test data.
16. Remove the minimum-resistance shunt on the Analyzer. Insert 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 for future reference.
18. Press and release the SELECT and ENTER buttons simultaneously to return to the Main Menu.
19. Select the EPC TOOL option from the Main Menu to prepare for the next test.

6.3.2. Test 2: EPC Supervisory Current Test

This test verifies the acceptability of the supervisory current supplied by the EPC's series firing circuit. The Analyzer includes jumpers and test leads used to perform this test. To begin:

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 4 below.

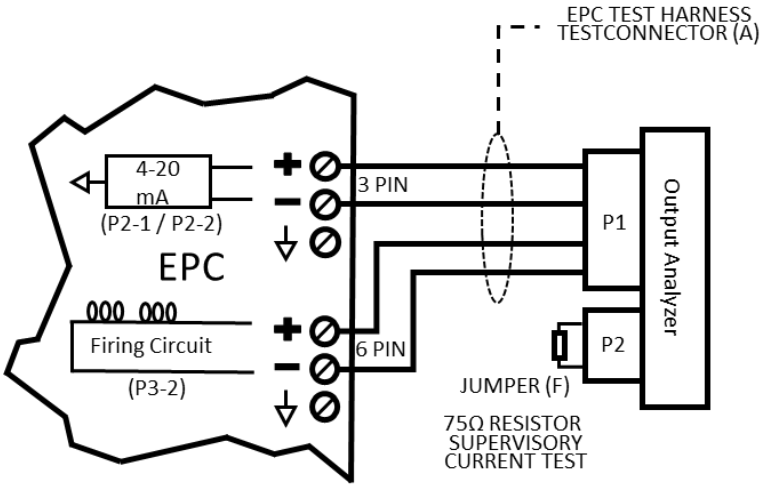


Figure 4 - EPC Series Firing Circuit Supervisory Current Test

4. Connect the 75Ω Resistor to the Analyzer, as shown in Figure 4 above.
5. Apply power to the EPC.
6. Apply power to the Analyzer, wait 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 be displayed. (See Section 7.2, Interpreting EPC Measured Results, for more information or if you have questions regarding the results.)

S	u	p	e	r	v	i	s	o	r	y					
C	u	r	r	e	n	t	:		5	.	9		m	A	

7. Record the obtained reading for future reference, because the Output Analyzer does not store results in memory. Subsequent tests will override current test data.

NOTE: *The supervisory current is intended only as a troubleshooting tool to determine 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 simultaneously to return to the main menu.
9. Select the EPC TOOL option from the Main Menu to prepare for the next test.

6.3.3. Test 3: EPC Field Test

This test verifies that the EPC supplies the acceptable activation current to the field devices through series firing circuit field wiring. The Output Analyzer kit includes jumpers and test leads used to perform these tests. To begin:

1. Verify the EPC is powered down.
2. Disconnect and shunt 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. Install shunt wire leads into the GCA firing circuit terminals at the field box under testing.
5. 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, as shown in Figure 5 below.

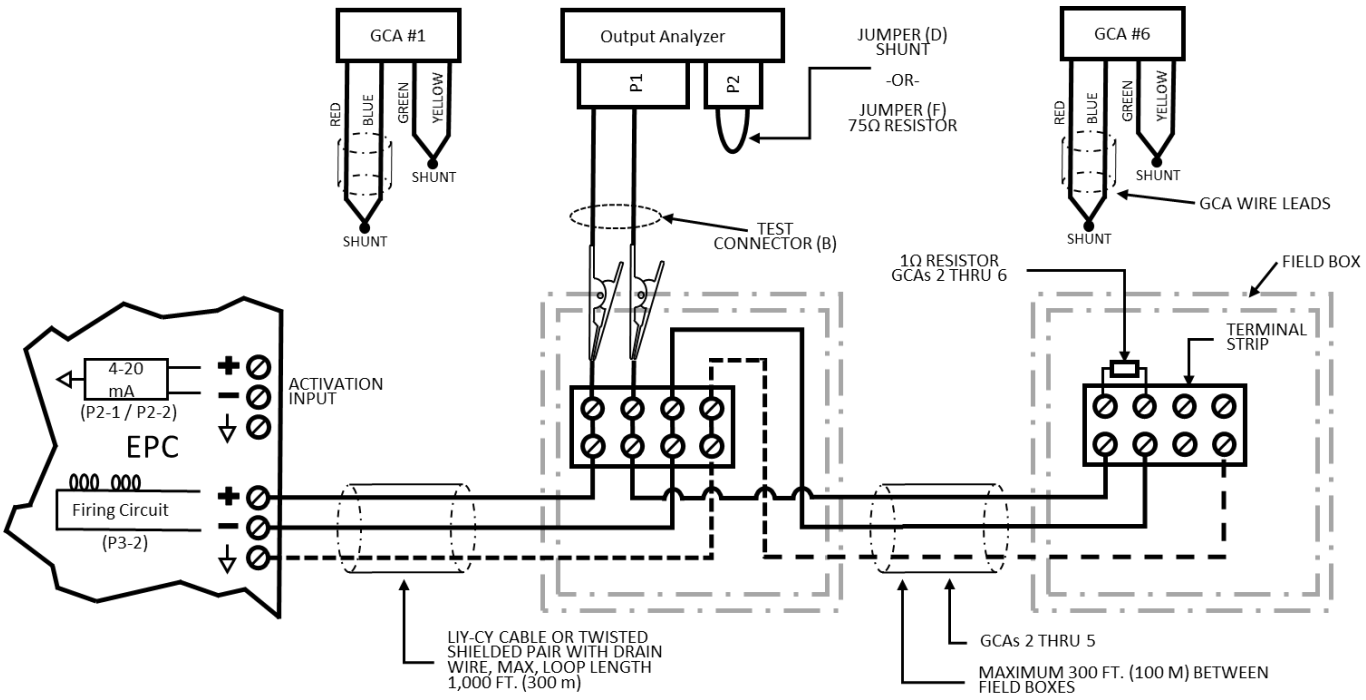


Figure 5 - Field Wiring Activation Current Test

6. Connect the 0Ω shunt to the Analyzer, as shown in Figure 5 above.
7. Apply power to the EPC.
8. Turn on the Analyzer, wait 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:

E	P	C		A	n	a	l	y	z	e	r			
C	o	n	n	e	c	t		L	e	a	d	s		

E	P	C		A	n	a	l	y	z	e	r			
L	e	a	d	s		C	o	n	n	e	c	t	e	d

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.

W	a	i	t	:		C	h	a	r	g	i	n	g
C	o	u	n	t	d	o	w	n	:		3	0	

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

S	y	s	t	e	m		R	e	a	d	y		
A	c	t	i	v	a	t	e		N	o	w		

11. **WAIT!** DO NOT use the ACTIVATE button on the Analyzer to initiate the test. 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 display the reading obtained during the test and the PASS/REPLACE result.

5	.	9	7		5	.	7		5	.	5		5	.	2
E	P	C		P	A	S	S	E	S						

2	.	8		2	.	7		2	.	7		2	.	6	
R	E	P	L	A	C	E		E	P	C					

13. Record the obtained reading for future reference, because the Output Analyzer does not store results in memory. Subsequent tests will override current test data.

14. Reset the EPC and ensure it is in a normal "up" condition, with trouble light not illuminated.

15. Proceed to Test 4.

6.3.4. Test 4: Field Wiring Supervisory Current Test

This Output Analyzer test verifies the EPC's supervisory current supplied to the field devices via series firing circuit field wiring. The Output Analyzer kit includes jumpers and test leads used to perform this test. To begin:

1. Connect the alligator leads to the Analyzer and field box terminals, as shown in Figure 5.

2. Install the 75Ω Resistor into 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.

S	u	p	e	r	v	i	s	o	r	y			
C	u	r	r	e	n	t	:		5	.	9	m	A

4. Record the reading obtained for future reference, because 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 usually are connected.

9. Ensure the EPC is in a normal "up" condition, with trouble light not illuminated.

10. Repeat Tests 3 and 4 for each field box, measuring each box's activation and supervisory current.

11. End of testing. Place the system back into normal operational state.

7.0 IRM TESTING

7.1. IRM Operational Overview

The Output Analyzer can perform two essential 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 supplies adequate firing current, with readings occurring momentarily. (NOTE: 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. Activate the IRM using a release event on the fire alarm control panel (e.g., activate the release station).*

7.2. Interpreting IRM Measured Results

When the Analyzer is used 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 reading in milliamps. The acceptable supervisory current reading at the IRM is 24mA (+/- 4mA).

7.3. 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 Figure 6 below.

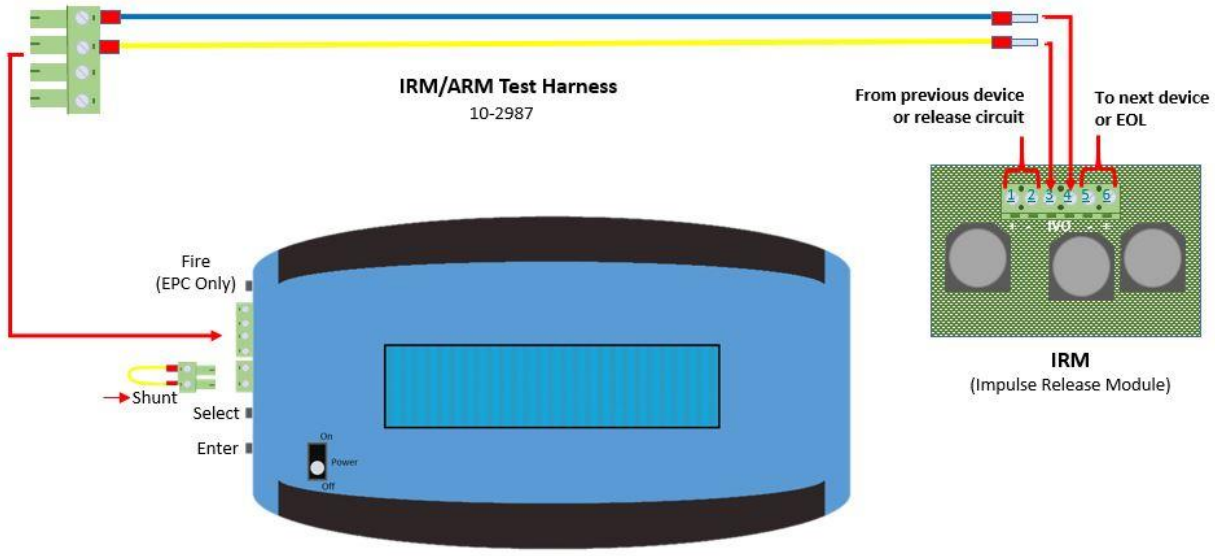


Figure 6 - IRM Circuit Activation Current Test

3. With the Analyzer installed, enable the release circuit and IRM (one Analyzer per IRM, or repeat testing for each one).
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).

I	R	M		S	u	p	e	r	v	i	s	o	r	y
C	u	r	r	e	n	t		3	2	m	A			

6. Record the IRM supervisory current reading for future reference, because subsequent tests will overwrite current test data.
7. Install the 0Ω Shunt (short jumper) into 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.

I	R	M		A	N	A	L	Y	Z	E				
R	e	a	d	y		F	o	r		T	e	s	t	

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	.	3	4		6	.	7		4	.	7		3	.	1
I	R	M		P	A	S	S	E	S						

2	.	3	9		3	.	4		4	.	0		3	.	5
F	A	I	L		R	E	P	L	A	C	E		I	R	M

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. The average of the four test readings for the IRM 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, because 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 simultaneously to return to the Main Menu.
13. End of testing. Place the system back into normal operational state.

8.0 FIRE ARM TESTING

8.1. Fire ARM Operational Overview

The Output Analyzer can perform two essential testing functions associated with the Fire ARM 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 supplies adequate firing current, with readings occurring momentarily. (NOTE: There is a slight delay between fire control panel activation and firing circuit release).

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

8.2. Interpreting Fire ARM Measured Results

When the Analyzer is used 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 20mA – 54mA.

8.3. Fire ARM Testing Procedures

1. **WARNING!** 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 7 below.

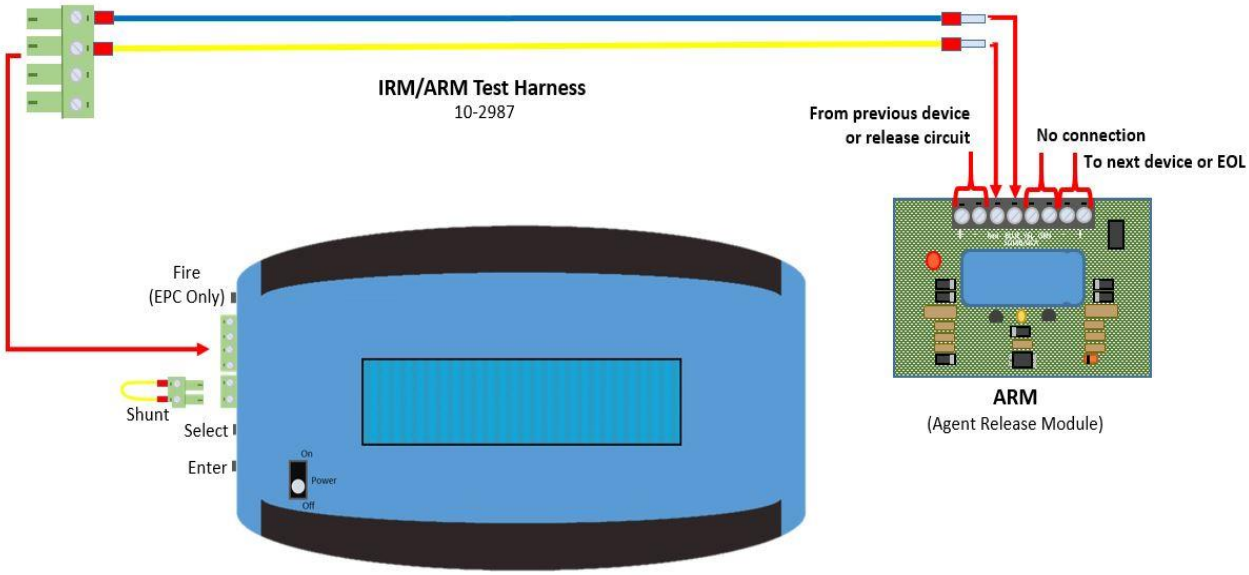


Figure 7 - Fire ARM Circuit Activation Current Test

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

A	R	M		S	u	p	e	r	v	i	s	o	r	y	
C	u	r	r	e	n	t		3	2	m	A				

4. Record the ARM supervisory current reading for future reference, because subsequent tests will override current test data.

5. Install the 0Ω Shunt (short jumper) into 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.

A	R	M		A	N	A	L	Y	Z	E	R				
R	e	a	d	y		f	o	r		T	e	s	t		

6. Activate the ARM by initiating an input (e.g., 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	.	6	5		6	.	1		3	.	9		2	.	3
A	R	M		P	A	S	S	E	S						

1	.	7	8		2	.	2		2	.	6		2	.	8
F	A	I	L		R	E	P	L	A	C	E		A	R	M

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. The average of the four test readings for the Fire ARM 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 simultaneously to return to the Main menu.

9. Power down and remove the tester.

10. End of testing. Place the system back into normal operational state.

9.0 EP ARM TESTING

9.1. EP ARM Operational Overview

The Output Analyzer can perform two essential testing functions associated with the EP ARM's firing circuit. The first testing function assesses the integrity of the field wiring by measuring the supervisory current (without jumper installed) at the EP ARM. The second testing function (with 1Ω Jumper installed) assesses the EP ARM's ability to supply the correct current (amps) required to activate the actuator devices connected to the firing circuit.

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 supplies adequate firing current, with readings occurring instantaneously.

9.2. Interpreting EP ARM Measured Results

When the Output Analyzer is used 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 20mA – 54mA.

9.3. EP ARM Testing Procedures

1. **WARNING!** Disable the EP ARM and shunt all GCAs connected to the system (per E06-018-2 and E06-017-2) before proceeding!
2. Connect the Analyzer to the EP ARM, as shown in Figure 8 below.

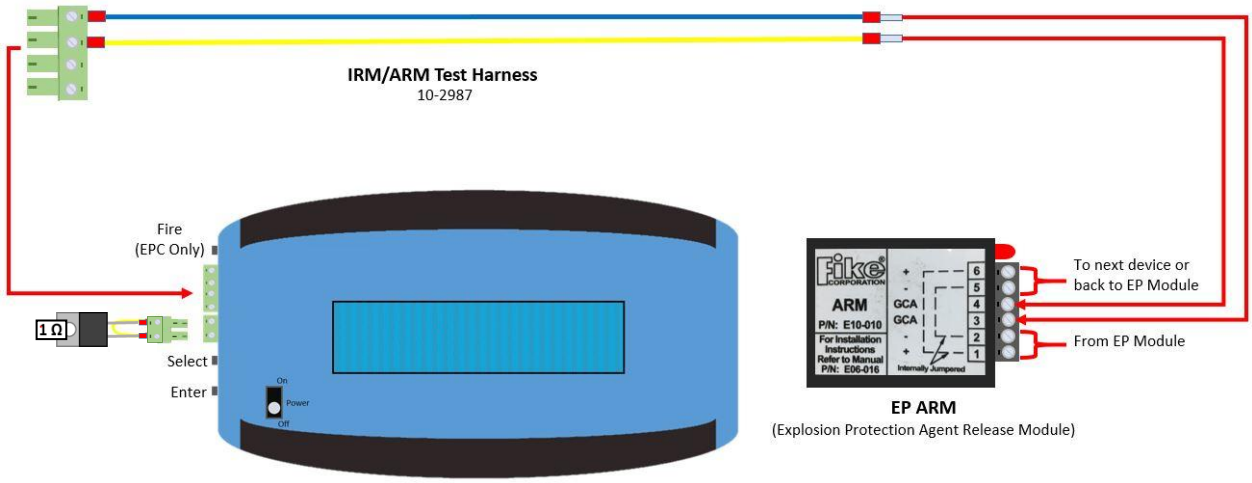
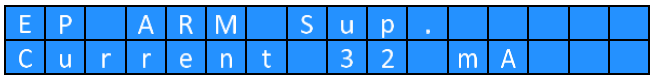


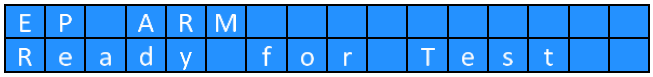
Figure 8 - EP ARM Series Firing Circuit Activation Current Test

3. With no jumper installed, the supervisory current will be displayed as 20mA - 54mA, nominal.

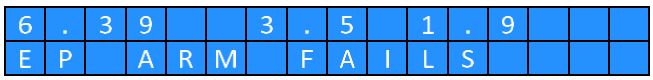


4. Record the EP ARM supervisory current reading for future reference, because subsequent tests will override current test data.

5. Install the jumper into the Analyzer. With the 1Ω 35W Jumper installed, the Analyzer display will read "Ready for Test."



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



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

   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 (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 simultaneously to return to the main menu.

9. Power down and remove the tester.

10. End of testing. Place the system back into normal operational state.

10.0 EXP AFM TESTING

10.1. EXP AFM Operational Overview

The Output Analyzer can perform two essential testing functions associated with the EXP AFM's firing circuit. The first testing function uses a 5Ω jumper to assess the EXP AFM's ability to supply the correct current (amps) required to activate the actuator devices connected to the firing circuit. The second testing function uses a 75Ω jumper to assess the integrity of the field wiring by measuring the supervisory current at the EXP AFM.

When the Output Analyzer is connected to an EXP AFM for testing, the activation signal is provided from the Remote Trigger tool (Fike P/N: F0280086). The Analyzer measures the current supplied by the EXP AFM's firing circuit and displays the result on the LCD panel. Four readings will be taken to ensure the EXP AFM supplies adequate firing current, with readings occurring instantaneously.

10.2. Interpreting EXP AFM Measured Results

When the Analyzer is used to test the supervisory current supplied by the EXP System Controller, it will display the supervisory current reading in milliamps. The acceptable supervisory current reading at the EXP AFM is 0.8 – 2.5mA.

When the Analyzer is used to test the activation current supplied by the EXP AFM, the Analyzer will display the results on the front panel as either EXP AFM PASSES or EXP AFM FAILS.

10.3. EXP AFM Testing Procedures

1. **WARNING!** Shunt the field wiring of all energetic devices being tested (GCAs or Metrons) by unplugging the connector attached to the Release Output plug (P1) of the EXP AFM. Then, plug the GCA or Metron field wiring into the shunt jumper supplied with the Remote Activation Trigger. See Figure 9.

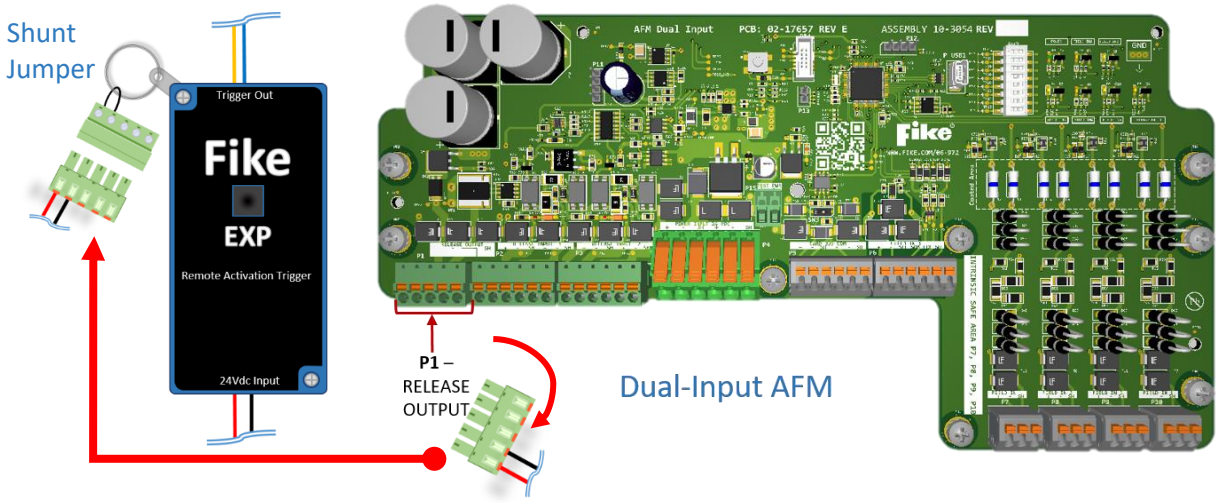


Figure 9 - EXP AFM Firing Circuit Activation Current Test (Dual Input shown)

2. Connect the Output Analyzer to the EXP AFM Release Output connector (P1), as shown in Figure 10.

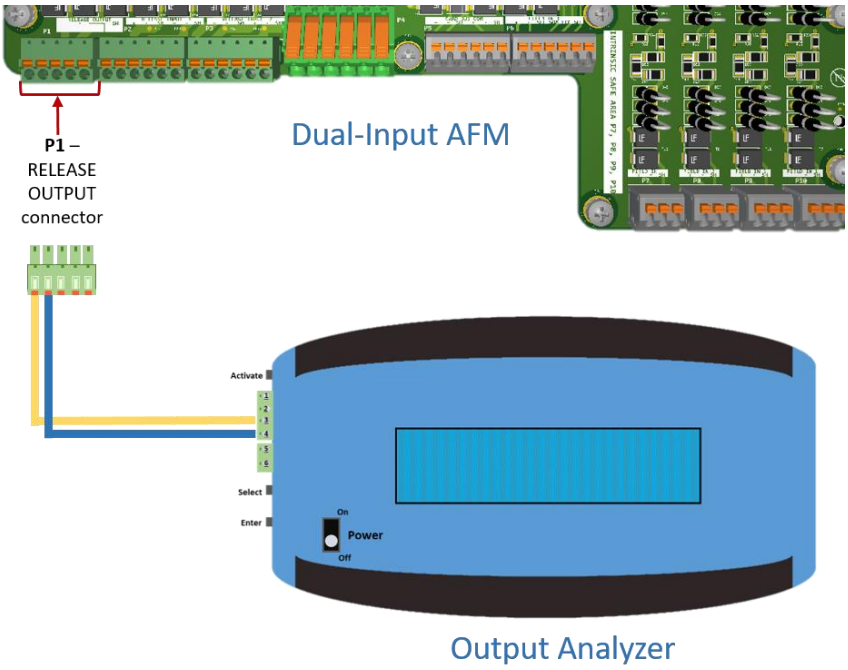


Figure 10 - EXP AFM Firing Circuit Activation Current Test (Dual Input shown)

3. Disconnect the "Release Input" plug being tested from the AFM and plug in the Remote Trigger "Trigger Out" connector to the AFM "Release Input" plug for input being tested (P2 or P3), as shown in Figure 11.

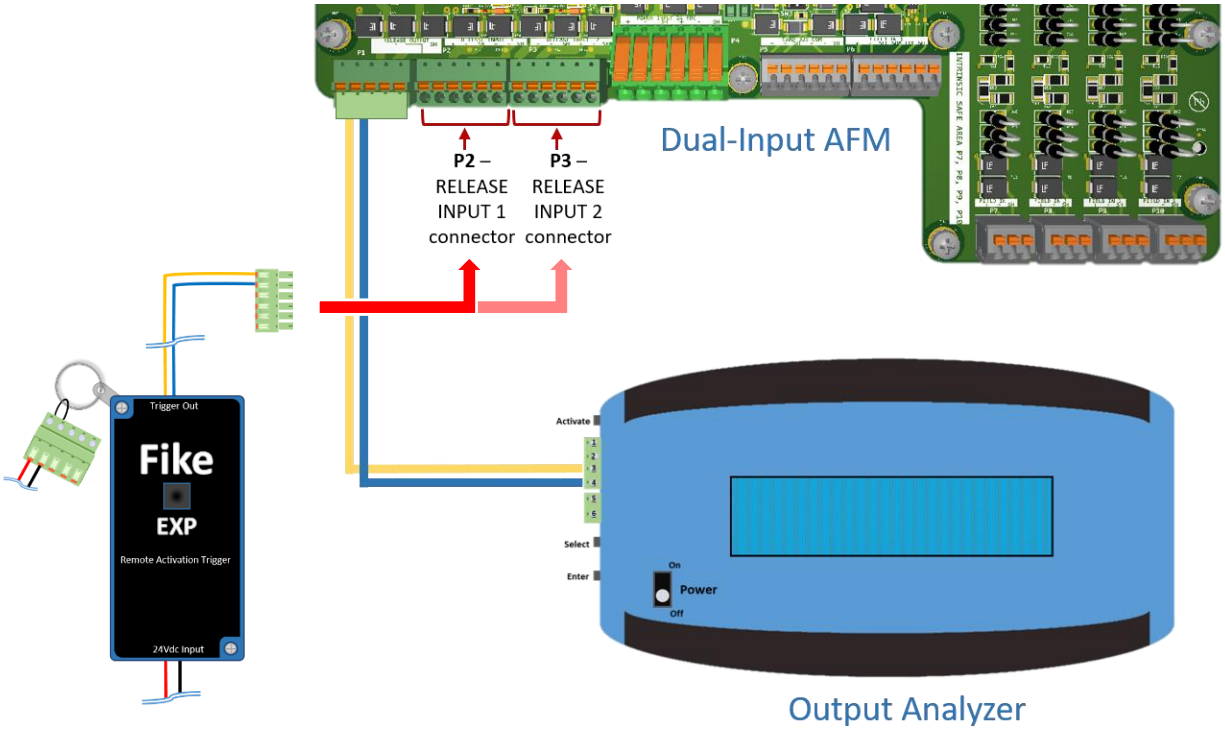


Figure 11 - EXP AFM Firing Circuit Activation Current Test (Dual Input shown)

4. Plug the Remote Trigger 24VDC connector into the "TEST PWR" plug on the AFM, as shown in Figure 12.

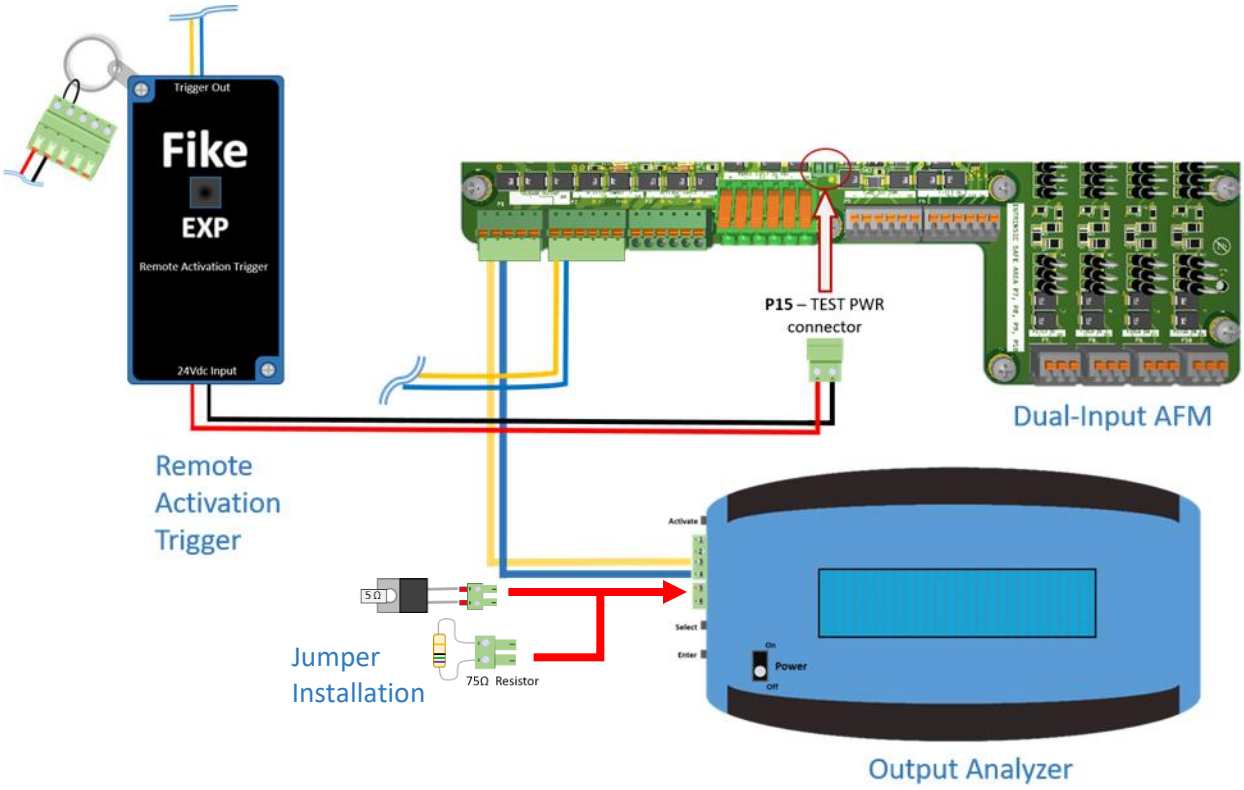


Figure 12 - EXP AFM Firing Circuit Activation Current Test (Dual Input shown)

5. Apply power to the Output Analyzer and select EXP AFM from the Menu Options.

A	n	a	l	y	z	e	r		O	p	t	.		5
E	X	P		A	F	M		T	o	o	l			

F	i	k	e											
E	X	P		A	F	M		A	n	a	l	y	z	e	r

6. If the Output Analyzer is not connected as shown in Figure 10, or the EXP AFM is not powered, the Disconnected/Off screen will be displayed.

E	X	P		A	F	M								
D	i	s	c	o	n	n	e	c	t	e	d	/	O	f	f

7. If a jumper with too low resistance is installed, a scrolling warning "STOP! Damage to Analyzer will occur" will be displayed, as well as the correct jumper resistance.

S	T	O	P	!		D	a	m	a	g	e		t	o	
U	s	e		5	R		J	u	m	p	e	r			

8. Install 75Ω jumper into Analyzer (Figure 12). With the 75Ω jumper installed, the supervisory current will be displayed. Record current if desired, then remove the 75Ω jumper.

	S	u	p	e	r	v	i	s	o	r	y				
	C	u	r	r	e	n	t	:		0	.	9	m	A	

9. Install 5Ω 35W jumper. When the 5Ω 35W jumper is initially inserted into the Output Analyzer, the 30 second countdown will begin. The The 30 second countdown allows for capacitors to be fully charged prior to testing.

	W	a	i	t	:		C	h	a	r	g	i	n	g
	C	o	u	n	t	d	o	w	n	:		3	0	

10. When the 30 second countdown completes, “System Ready Activate Now” will be displayed. Activate the EXP AFM by pressing the button on the Remote Activation Trigger.

E	X	P		A	F	M								
R	e	a	d	y		f	o	r		T	e	s	t	

11. The current reading is displayed, along with "EXP AFM PASSES" or "FAIL REPLACE AFM."

4	.	0	1		3	.	8		3	.	6		3	.	4
E	X	P		A	F	M				P	A	S	S	E	S

2	.	0	1		1	.	7		1	.	5		1	.	0
E	X	P		A	F	M					F	A	I	L	S

12. **(Applicable only to dual-input AFMs)**: Move the "Trigger Out" of the Remote Activation Trigger to Release Input 2 on the AFM, then repeat Steps 9 - 11.

    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. The average of the four test readings for the AFM must be greater than or equal to 95% of 3.8 amps, or 3.61A. If the average is approaching 3.61A, consider replacing the AFM.*

11.0 EXP SOLENOID AFM TESTING

11.1. EXP Solenoid AFM Operational Overview

The Output Analyzer can perform two essential testing functions associated with the EXP Solenoid AFM's firing circuit. The first testing function assesses the EXP Solenoid AFM'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 EXP Solenoid AFM. The 30Ω 50W Jumper is used for all EXP Solenoid testing. See Figures 13-16 for connection diagrams.

When the Analyzer is connected to an EXP Solenoid AFM for testing, the activation signal is provided from the Remote Trigger tool (Fike P/N: F0280086). The Analyzer will then measure the current supplied by the EXP Solenoid AFM's firing circuit and display the result on the LCD panel. An average of multiple readings will be taken to ensure the EXP Solenoid AFM supplies adequate firing current, with readings occurring instantaneously.

11.2. Interpreting EXP Solenoid AFM Measured Results

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 EXP Solenoid AFM is 8 – 10.5mA.

When the Analyzer is used to test the activation current supplied by the EXP Solenoid AFM, the Analyzer will display the results on the front panel as either EXP Solenoid AFM PASS or EXP Solenoid AFM FAIL.

11.3. EXP Solenoid AFM Testing Procedures

1. **WARNING!** Ensure circuit is disabled at Main Panel before conducting tests.
2. Disconnect the solenoid from the connector (P1) of the solenoid AFM. Connect to provided shunt on remote trigger.

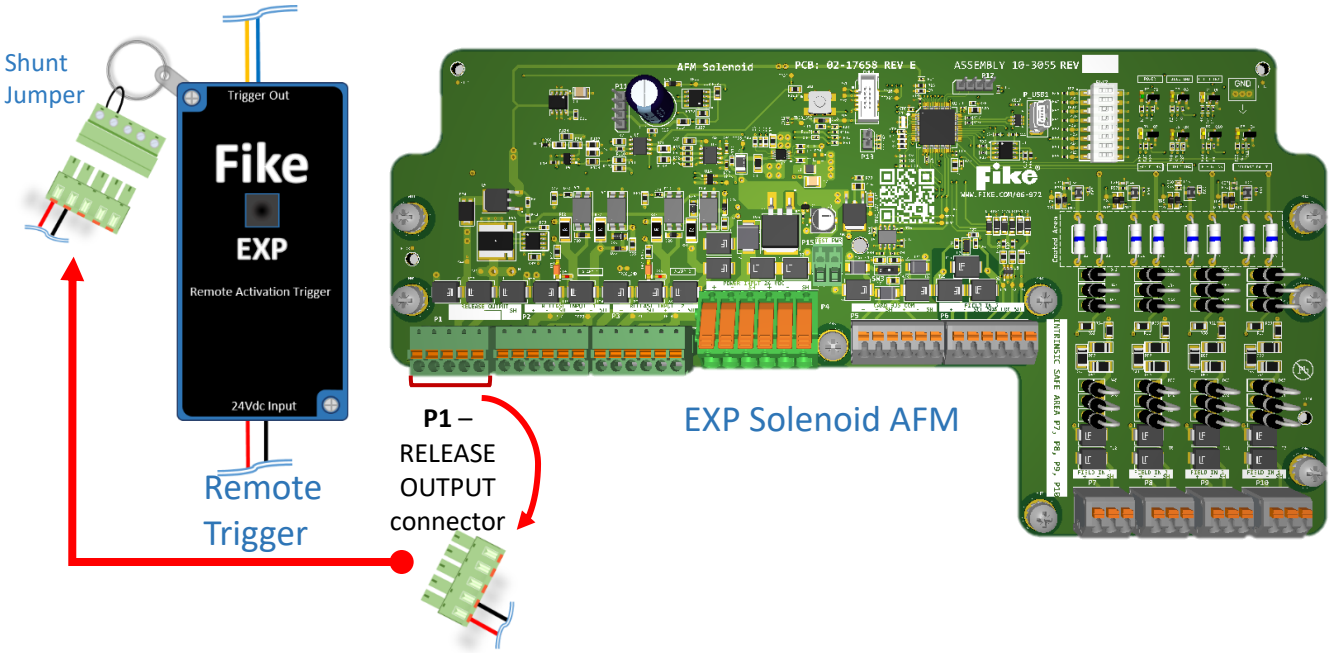


Figure 13 - EXP Solenoid AFM Series Firing Circuit Activation Current Test

3. Connect the Output Analyzer to the EXP AFM Release Output connector (P1), as shown in Figure 14 below.

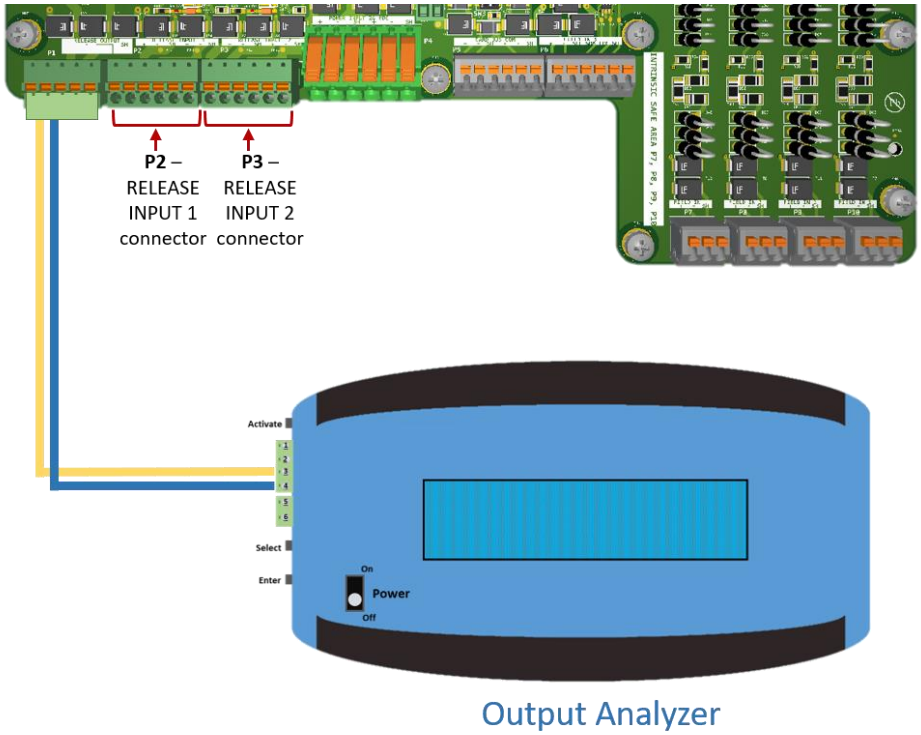


Figure 14 - EXP Solenoid AFM Firing Circuit Activation Current Test

4. Disconnect the "Release Input 1" plug from the AFM. Insert the Remote Trigger "Trigger Out" plug into the AFM "Release Input 1" connector on the AFM, as shown in Figure 15.

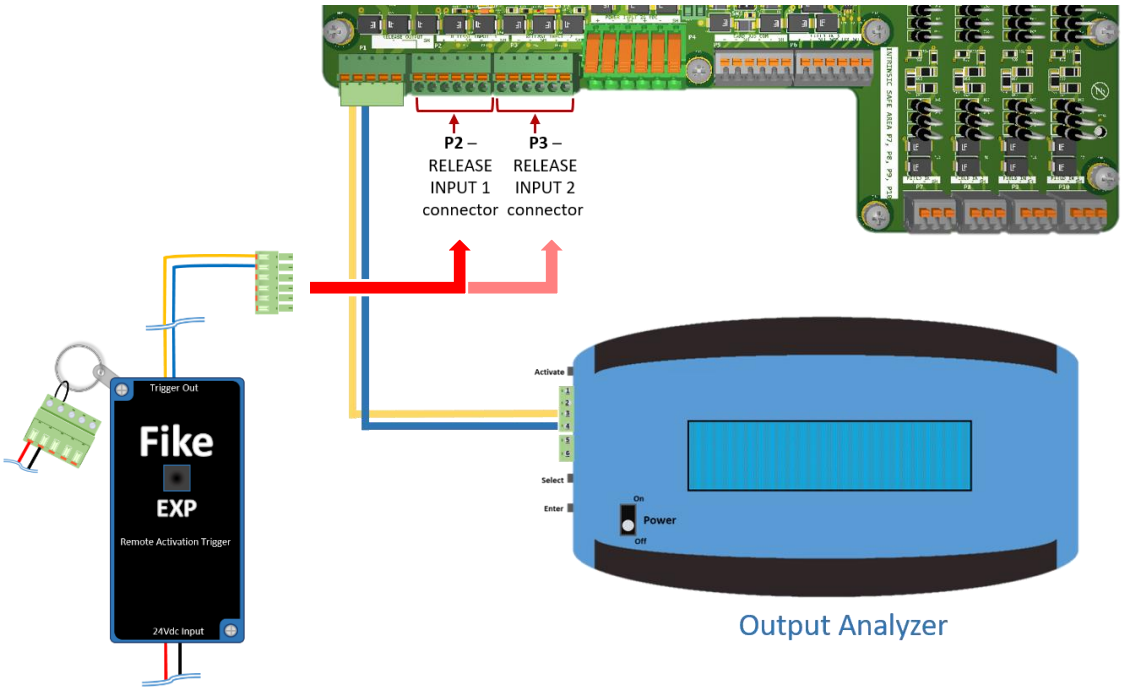


Figure 15 - Remote Trigger Connection Steps

5. Insert the Remote Trigger 24VDC plug into the "TEST PWR" connector on the AFM.

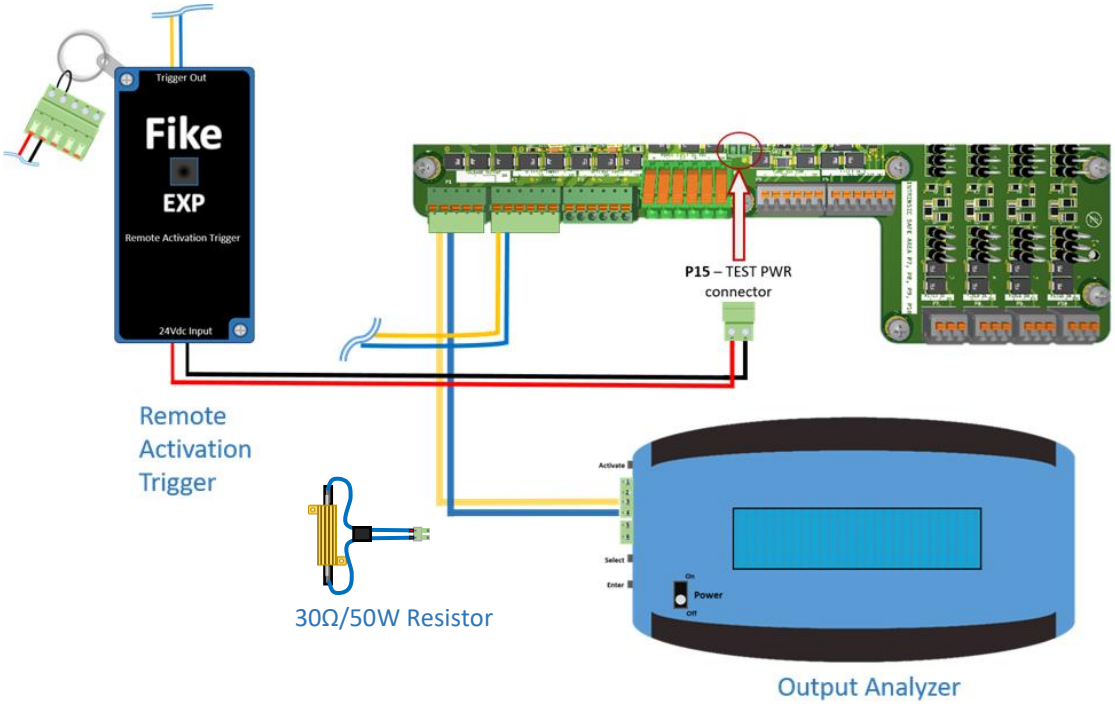


Figure 16 Remote Trigger Connection Steps

6. Apply power to the Output Analyzer and select “EXP Sol AFM” Tool from the Menu Options.

A	n	a	l	y	z	e	r		O	p	t	.		6
E	X	P		S	o	l	e	n	o	i	d		A	F	M

F	i	k	e		A	n	a	l	y	z	e	r		
E	X	P		S	o	l	e	n	o	i	d		A	F	M

7. If the Output Analyzer is not connected as shown in Figure 14 or if the EXP Solenoid AFM is not powered up, the Disconnected/Off screen will be displayed.

E	X	P		S	o	l	e	n	o	i	d		A	F	M
D	i	s	c	o	n	n	e	c	t	e	d	/	O	f	f

8. If a jumper with too low resistance is installed, a warning "STOP! Damage to Analyzer will occur" (Scrolling) will be displayed, along with the correct jumper resistance.

S	T	O	P	!		D	a	m	a	g	e		t	o	
N	e	e	d		3	0	R		J	u	m	p	e	r	

9. Install 30Ω 50W jumper. (See Figure 16.) With the jumper installed, the supervisory current will be displayed.

E	X	P		S	o	l		E	d				S	u	p
T	e	s	t		R	e	a	d	y		9	.	6	m	A

10. To activate the EXP Solenoid AFM, press the button on the Remote Activation Trigger. The current reading will be displayed, along with "EXP Solenoid AFM PASS" or "EXP Solenoid AFM FAIL.” **NOTE: Test current will only be displayed while trigger is pressed. DO NOT hold trigger longer than necessary to record reading, as overheating may occur.**

E	X	P		S	o	l	e	n	o	i	d		A	F	M
0	.	8	4	5		A	m	p	s		P	A	S	S	

E	X	P		S	o	l	e	n	o	i	d		A	F	M
0	.	6	9			A	m	p	s		F	A	I	L	

11. **(Applicable only to dual-input Solenoid AFMs)**: Move the "Trigger Out" of the Remote Activation Trigger to Release Input 2 on the AFM, then repeat steps 9 and 10.

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. The output current must remain at or above 0.8A for the EXP Solenoid AFM.*

12.0 EPC SOLENOID EDITION TESTING

12.1. EPC Solenoid Edition Operational Overview

The Output Analyzer can perform two essential testing functions associated with the EPC Solenoid Edition firing circuit. The first testing function assesses the ability of the EPC Solenoid firing circuit to supply the correct current (amps) required to activate the solenoid connected to the firing circuit. The second testing function assesses the integrity of the field wiring by measuring the supervisory current at each device field box. The 30Ω 50W Jumper is used for all EPC Solenoid testing.

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 supplies adequate firing current, with readings occurring instantaneously once the analyzer is connected to most devices.

12.2. Interpreting EPC Solenoid Edition Measured Results

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 EPC Solenoid Edition is 5.5 – 7.5mA.

When the Analyzer is used to test the activation current supplied by the EPC Solenoid Edition, the Analyzer will display the results on the front panel as either “EPC Solenoid Ed. PASS” or “EPC Solenoid Ed. FAIL.”

12.3. EPC Solenoid Edition Testing Procedures

1. **WARNING!** Disconnect the solenoid from the connector (P3) of the EPC.
2. Connect the Output Analyzer to the EPC Solenoid Edition Output connector (P3) and 4-20mA connector (P2), as shown in Figure 17 below.

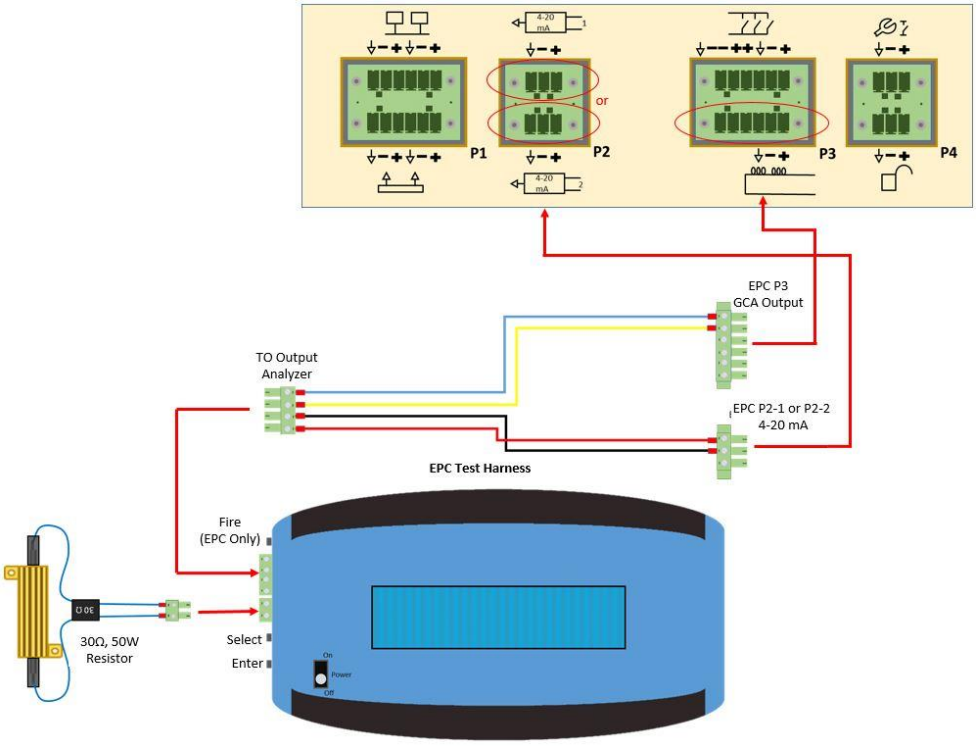


Figure 17 - EPC Solenoid Edition Firing Circuit Activation Current Test

3. Power on the Output Analyzer and select “EPC Sol Tool” from the Menu Options.

A	n	a	l	y	z	e	r		O	p	t	.		7
E	P	C		S	o	l		T	o	o	l			

F	i	k	e		A	n	a	l	y	z	e	r		
E	P	C		S	o	l	e	n	o	i	d		E	d	.

4. If the Output Analyzer is not connected as shown in Figure 17, or the EPC Solenoid Edition is not powered up, the Disconnected/Off screen will be displayed.

E	P	C		S	o	l	e	n	o	i	d		E	d	.
D	i	s	c	o	n	n	e	c	t	e	d	/	O	f	f

5. If a jumper with too low resistance is installed, a scrolling warning "STOP! Damage to Analyzer will occur" will be displayed, along with the correct jumper resistance.

S	T	O	P	!		D	a	m	a	g	e		t	o	
N	e	e	d		3	0	R		J	u	m	p	e	r	

6. Connect 30Ω 50W jumper. The supervisory current will be displayed.

E	P	C		S	o	l		E	d				S	u	p
T	e	s	t		R	e	a	d	y		6	.	0	m	A

7. Activate the EPC Solenoid by pressing the button on the Remote Activation Trigger. The current reading displays, along with "EPC Solenoid Ed. PASS" or "EPC Solenoid Ed. FAIL".

E	P	C		S	o	l	e	n	o	i	d		E	d	.
0	.	7	4	5		A	m	p	s		P	a	s	s	

E	P	C		S	o	l	e	n	o	i	d		E	d	.
0	.	5	4		A	m	p	s		F	A	I	L		

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 Solenoid Ed., the output current must remain at or above .69A.*

13.0 VIEW MEMORY

This menu option displays test results from the previous test —whether on an EPC, IRM, EXP, 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. The last test recorded will be the one displayed.

14.0 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.

15.0 CHECK BATTERY CHARGE (Chk Batt Chrg)

This menu option displays the current battery charge at any point before, during, or after testing. This option approximates 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 charger,* or else battery life may be reduced.

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.

16.0 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, will be our best source for how well this manual works. Please let us know if you have any comments or suggestions on how we can improve this manual! Contact us at feedback.manuals@fike.com.

Contact Information

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Fike has offices and manufacturing capabilities around the world.
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