



Made in America

Limit Comparator for Dual-Wire Monitors Operating Instructions



Figure 1. EMIT [50524](#) Limit Comparator

Description

The EMIT Limit Comparator tests Dual Wire-Dual Operator Programmable Monitors and Zero Volt Monitors for proper calibration.

1. The purpose of the Limit Comparator for Dual Wire Monitors is to verify the calibration of the Dual Wire-Dual Operator Programmable Monitor and Zero Volt Monitor by checking 4 operator conditions: FAIL LOW, PASS SAFE (low limit), PASS SAFE (high limit), and FAIL HIGH.
2. There are 10 resistor settings on the resistor box which can be set using the rotary switch. Positions 3 through 8 have installed values. Positions 1 and 2 can be installed by the user for custom low limits. The standard settings are as follows:

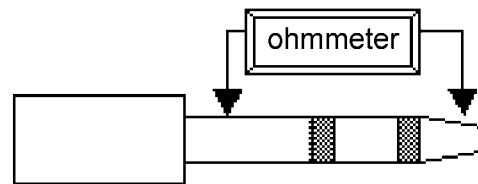
POSITION:

- 1.) optional low limit fail low
- 2.) optional low limit pass safe
- 3.) 1.91megohms FAIL LOW
- 4.) 1.91megohms PASS SAFE
- 5.) 10 megohms PASS SAFE
- 6.) 10 megohms FAIL HIGH
- 7.) 35 megohms PASS SAFE
- 8.) 35 megohms FAIL HIGH
- 9.) optional high limit pass safe
- 10.) optional high limit fail high

NOTE THAT THE LIMIT COMPARATOR IS USED TO CHECK ONE OPERATOR CIRCUIT AT A TIME. The Limit Comparator does not check the Ground Circuit of the monitor.

3. Ensure that the monitor to be checked is set up as described in the operating instructions and has power.
4. Connect the plug from the resistor box into the OPERATOR 1 remote jack.
5. Turn the rotary knob on the resistor box to “x Ohms LOW” (select x = 1.91 megohms or the optional low limit fail low, according to what operator low limit the monitor is calibrated at). Observe the operator 1 LED display on the front of the monitor. The yellow LED should be lighted illuminated (for [50515](#) / [50522](#) units only, audible alarm will not sound when testing the low limit) and the audible alarm should sound, indicating the fail low condition.
6. Turn the rotary knob on the resistor box to “x Ohms PASS” (select x = 1.91 megohms or the optional low limit pass, according to what operator low limit the monitor is calibrated at). The green LED on the monitor operator 1 display should be on, indicating the low limit pass condition.
7. Turn the rotary knob on the resistor box to “x Megohms PASS” (select x = 10 megohms, 35 megohms, or the optional high limit pass, according to what operator high limit the monitor is calibrated at). The green LED on the monitor operator 1 display should be on, indicating the high limit pass condition.
8. Turn the rotary knob on the resistor box to “x megohms HIGH” (select x = 10 megohms, 35 megohms, or optional high limit fail high, according to what operator high limit the monitor is calibrated at). The red LED on the monitor operator 1 display should be on and the audible alarm should sound, indicating the fail high condition.
9. Disconnect the resistor box plug from the operator 1 remote jack. Plug the resistor box plug into the operator 2 remote jack and repeat the four tests in steps 5 through 8 to test operator 2.

10. The correct color LED's must light for each step for the monitor to completely pass the calibration check. If an incorrect LED comes on during any portion of the test (example: expecting the green LED to light in step 7 but the monitor red LED is on) recalibrate the monitor with the Zero Volt Monitor Programmer (making certain that the correct calibration resistances are installed in the Programmer and the correct procedures are followed for that unit) and test each operator again with the Monitor Limit Comparator.



MAINTENANCE

Wipe the plug periodically with alcohol.

INSTALLING OPTIONAL LOW AND HIGH LIMIT LIMIT RESISTANCES

A.) Use a hex wrench to remove the rotary switch knob. Unscrew the 2 screws on the back of the unit and disassemble the unit.

B.) Two resistances must be installed for each limit: one for PASS and another for FAIL. These two resistances should be $\pm 10\%$ of the calibrating resistance. For example:

| Low Limit Calibration Resistance | Low Limit Fail Low Resistance [1M - (1M x 10%)] | Low Limit Pass Resistance [1M + (1M x 10%)] |
|----------------------------------|---|---|
| 1 megohm | 900 kilohms | 1.1 megohms |

C.) The table below specifies which numbered resistances on the circuit board correspond to the optional low limit and the optional high limit. Solder the appropriate resistors in these places.

| Optional low limit | Designated resistors on circuit board |
|--------------------|---------------------------------------|
| Low limit fail low | R1, R1A (*connected in series) |
| Low limit pass | R2, R2A (*connected in series) |

NOTE: Two resistor locations are connected in series are provided in case resistors need to be added to achieve the desired total resistance. Solder a shorting wire across the resistor locations that are not used.

D.) Assemble the unit and mark the appropriate places on the label for the optional limits.

E.) It is recommended to turn the rotary switch to the optional positions and measure the resistance from the tip to the body of the plug with an ohmmeter to verify the resistances.

Limited Warranty

EMIT expressly warrants that for a period of five (5) years from the date of purchase, EMIT Limit Comparators will be free of defects in material (parts) and workmanship (labor). Within the warranty period, a credit for purchase of replacement EMIT products, or, at EMIT's option, the product will be repaired or replaced free of charge. If product credit is issued, the amount will be calculated by multiplying the unused portion of the expected five year life times the original unit purchase price. Call our Customer Service Department at 909-664-9980 for a Return Material Authorization (RMA) and proper shipping instructions and address. Please include a copy of your original packing slip, invoice, or other proof of date of purchase. Any unit under warranty should be shipped prepaid to the EMIT factory. Warranty replacements will take approximately two weeks.

If your unit is out of warranty, call our Customer Service Department at 909-664-9980 (Chino, CA) or 01892 665313 (Crowborough, U.K.) for a Return Material Authorization (RMA) and proper shipping instructions and address. EMIT will quote repair charges necessary to bring your unit up to factory standards.

Warranty Exclusions

THE FOREGOING EXPRESS WARRANTY IS MADE IN LIEU OF ALL OTHER PRODUCT WARRANTIES, EXPRESSED AND IMPLIED, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE WHICH ARE SPECIFICALLY DISCLAIMED. The express warranty will not apply to defects or damage due to accidents, neglect, misuse, alterations, operator error, or failure to properly maintain, clean or repair products.

Limit of Liability

In no event will EMIT or any seller be responsible or liable for any injury, loss or damage, direct or consequential, arising out of the use of or the inability to use the product. Before using, users shall determine the suitability of the product for their intended use, and users assume all risk and liability whatsoever in connection therewith.