

MYLAPS LOOP TESTER



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1. Features

1.1 Introduction

The LoopTester is a versatile device that measures the signal strength emitted by a loop and offers support in detection of a damaged coax cable and establishing the location of a wire break in a loop.

1.2 Buttons

The LoopTester features two buttons for controlling the device.

1.  Power/Menu button
2.  Set/Select button

1.3 Power

To switch the LoopTester on or off, please follow the following instructions:

- Switch on: Press the "Power" button (➡) for more than 1 second.
- Switch off: Press the "Power" button (➡) for more than 2 seconds.

The illumination of the display is switched off automatically 1 minute after the last time a switch has been pressed. In order to re-illuminate the display, shortly press the "Set" button (◻●).

The LoopTester is completely switched off automatically 10 minutes after the last time a switch has been pressed.

When the LoopTester is switched on a splash screen is shown (figure 1). This splash screen shows the state of the battery. Battery life depends on the type and make of the used battery, but ball-park figures for a regular 9V alkaline battery are:

- Storage: >5 years
- Operational with display de-illuminated: ~1 month
- Operational with display illuminated: ~1 day

When the battery has run out of power it needs to be replaced with a fresh 9V battery (Figure 2). The battery compartment is located at the rear of the LoopTester and it can be reached by removing the rubber protective cover of the LoopTester.

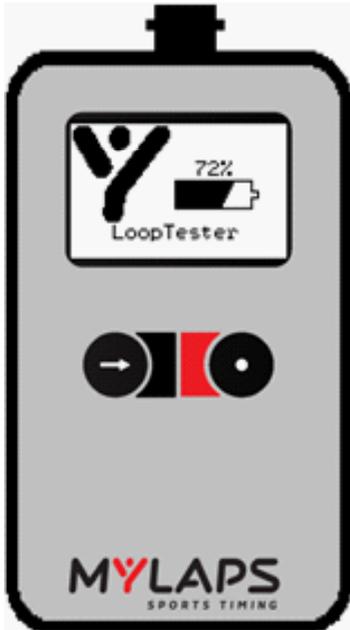


Fig. 1: Splash Screen with Battery Status Indication



Fig. 2: 9V Alkaline Battery

1.4 Menu

1.4.1 Activating the menu

If the LoopTester is switched on, the menu is activated by pressing the "Menu" button (⏸). Any current activity that the LoopTester might be performing at that moment will be terminated.

1.4.2 Cycling through the menu

If the menu is visible, pressing the "Menu" button (⏸) cycles through the menu. Every time the "Menu" button (⏸) is pressed, the next menu item will be highlighted (Figure 3 & Figure 4).

1.4.3 Selecting an operation from the menu

As long as the menu is visible, a menu item will be highlighted. When the "Select" button (▶) is pressed, the operation associated with the highlighted menu item will be started (Figure 3 and Figure 4).



Fig. 3: Select Transmitter



Fig. 4: Select Receiver

1.5 Loop Transmitter

When the Loop Transmitter function is chosen, the LoopTester emits a 6.8MHz signal to the BNC connector. The display continuously reports the state of the connection to the loop. Three states can be detected by the LoopTester:

1. Coax Ok: Connection box properly detected.
2. Coax Open: No circuit detected; coax cable not attached, coax cable damaged or connection box damaged.
3. Coax Short: Short circuit detected; coax cable or connection box damaged.

As long as a loop with a connection box is properly connected to the BNC connector the display shows the message "Coax Ok" (Figure 5). Additionally the display shows the type of loop that is detected ("TranX" or "TranX/ChipX"). When no coax cable is connected to the BNC connector or when the coax loop to the connection box is not closed, the message "Coax Open" is shown on the display (Figure 6). When a coax cable is connected, but suffering from internal damage in the form of a short circuit, the message "Coax Short" is shown on the display (Figure 7).



Fig. 5: Proper Connection

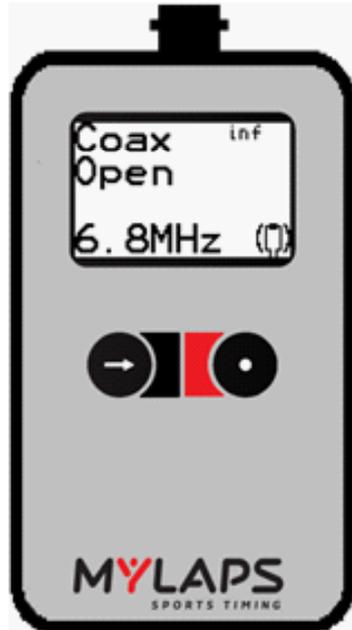


Fig. 6: Open Circuit

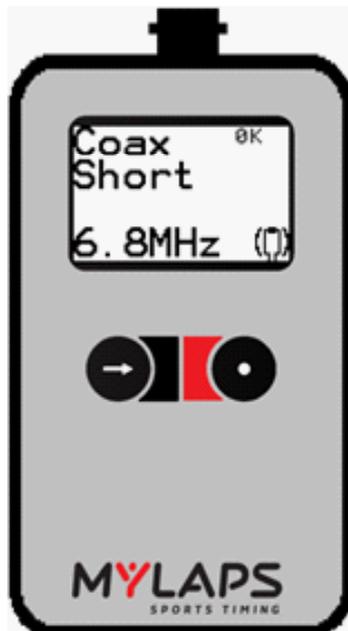


Fig. 7: Short Circuit

1.6 Loop Receiver

When the Loop Receiver function is chosen, the LoopTester is tuned to receive a 6.8MHz signal. The display reports the strength of the received signal (Figure 8). The received signal strength is reported in three ways:

1. Current absolute strength
2. Historic absolute strength
3. Current relative strength

The current absolute strength is shown in the top right corner of the display. The historic absolute strength is shown in a running histogram that reports the strength of the received signal in the most recent 10 seconds. The current relative strength is shown in the bottom left corner of the display.

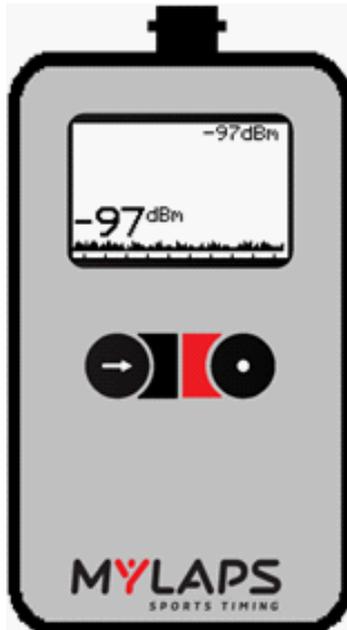


Fig. 8: Signal Receiving

2. Operation

2.1 Introduction

A typical way of testing a loop requires 2 LoopTester devices and consists of the following steps:

1. Connect LoopTester 1 to a loop.
2. Set LoopTester 1 to Transmit mode.
3. Check whether LoopTester 1 is properly connected to the connection box.
4. Set LoopTester 2 to Receive mode.
5. Check the received signal strength in order to detect the location of a possible loop wire break.

These steps lead to the setup depicted in Figure 9.

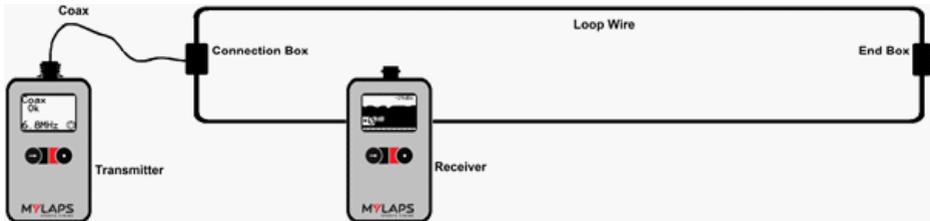


Fig. 9: Typical Test Set-up

2.2 Typical Signal Levels

Typical signal levels for a correctly functioning loop are approximately:

- Near the coax cable: -55 dBm
- Near the connection box: -40 dBm (close to the loop wire)
- Near the End box: -50 dBm (close to the loop wire)
- Anywhere near the loop: -55 dBm(5cm distance from the wire)

2.3 Testing the connection box

If the LoopTester is properly connected to the connection box and the LoopTester is set to transmit mode, the message "Coax OK" is shown on the display (Figure 10). If this message cannot be seen, but the message "Coax Open" or "Coax Short" is displayed, the LoopTester is not properly connected to the connection box of the loop or the coax cable might be damaged.



Fig. 10: LoopTester Properly connected

2.3 Checking for a loop wire break

If the LoopTester is properly connected to the connection box and the loop is free of any wire breaks, the LoopTester will receive a high signal level when the LoopTester is held near any part of the loop (Figure 11).



Fig. 11:
High Signal Level

If the loop suffers from a wire break, the received signal level will vary significantly, depending at which part of the loop the signal level is measured. In order to accurately find the location of a wire break, the following plan must be followed:

1. Hold the LoopTester in receive mode near the loop as close as possible to the connection box.
2. Press and hold the "Set" button () for 1 second. The reference level will be set to the current received signal level. This is indicated by the relative strength level in the bottom left corner of the display being reset to 0dBm (Figure 12).



Fig. 12: Relative Signal Level Test

3. Move the LoopTester over the loop wire in steps of 0.5m and monitor the relative level in the bottom left corner of the display. The relative level should be in the range between -5dBm and +5dBm on every location. If any location shows a drop of more than 5dBm, the loop wire is probably broken.
4. If the loop wire is broken, the location of a break can be established by searching for the lowest received signal strength. The signal directly above a break is typically more than 20dBm lower than the reference level (Figure 13).



Fig. 13: Wire Break Located

3. Guarantees & Warranties

MYLAPS warrants that, for a period of three (3) years from the date of shipping the decoders and the MYLAPS MX Rechargeable Power, MYLAPS RC DP, MYLAPS KART DP, MYLAPS Kart Rechargeable Power, MYLAPS Car/Bike DP, MYLAPS Car/Bike Rechargeable Power, MYLAPS Car/Bike Pro transponders covered by this warranty with defects, as determined solely by MYLAPS, caused by faulty materials, workmanship or design will be repaired or replaced, unless such defects were the result of any of the following: shipping; improper installation, maintenance or use; abnormal conditions of operation; attempted modification or repair by the customer or any third party; use of the goods in combination with other items; or an act of God. If repair or replacement of the goods is not possible or economical for MYLAPS, MYLAPS may, at its option, refund the purchase price of the goods or deliver replacement goods at its sole discretion. MYLAPS's liability shall be strictly limited to replacing, repairing or issuing credits at its option.

MYLAPS warrants that, for a period of two (2) years from the date of shipping the ProChip, MYLAPS Kart Fixed Power and the MYLAPS RC Rechargeable Power transponders covered by this warranty with defects, as determined solely by MYLAPS, caused by faulty materials, workmanship or design will be repaired or replaced, unless such defects were the result of any of the following: shipping; improper installation, maintenance or use; abnormal conditions of operation; attempted modification or repair by the customer or any third party; use of the goods in combination with other items; or an act of God. If repair or replacement of the goods is not possible or economical for MYLAPS, MYLAPS may, at its option, refund the purchase price of the goods or deliver replacement goods at its sole discretion. MYLAPS's liability shall be strictly limited to replacing, repairing or issuing credits at its option.

MYLAPS warrants that, for a period of one (1) year from the date of shipping the MYLAPS Onboard Display kit covered by this warranty with defects, as determined solely by MYLAPS, caused by faulty materials, workmanship or design will be repaired or replaced, unless such defects were the result of any of the following: shipping; improper installation, maintenance or use; abnormal conditions of operation; attempted modification or repair by the customer or any third party; use of the goods in combination with other items; or an act of God. If repair or replacement of the goods is not possible or economical for MYLAPS, MYLAPS may, at its option, refund the purchase price of the goods or deliver replacement goods at its sole discretion. MYLAPS's liability shall be strictly limited to replacing, repairing or issuing credits at its option.

MYLAPS warrants that, for a period of one (1) year from the date of shipping, all other goods covered by this warranty with defects, as determined solely by MYLAPS, caused by faulty materials, workmanship or design will be repaired or replaced, unless such defects were the result of any of the following: shipping; improper installation, maintenance or use; abnormal conditions of operation; attempted modification or repair by the customer or any third party; use of the goods in combination with other items; or an act of God. If repair or replacement of the goods is not possible or economical for MYLAPS, MYLAPS may, at its option, refund the purchase price of the goods or deliver replacement goods at its sole discretion. MYLAPS's liability shall be strictly limited to replacing, repairing or issuing credits at its option.

If the requirements set forth above and described under Remedies and Damages are not complied with, our warranty/guarantee shall not apply and we shall be discharged from all liability arising from the supply of defective goods.

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Remedies and Damages

1. MYLAPS shall not incur any liability under the above warranty unless:
 - i) MYLAPS is promptly notified in writing upon discovery by the customer that such goods do not conform to the warranty, and the appropriate invoice number and date of purchase information is supplied;
 - ii) The alleged defective goods are returned to MYLAPS carriage pre-paid;
 - iii) Examination by MYLAPS of goods shall confirm that the alleged defect exists and has not been caused by unauthorized use (including, without limitation, the use of an AMB decoder with non-MYLAPS hardware) misuse, neglect, method of storage, faulty installation, handling, or by alteration or accident; and
 - iv) With respect to MYLAPS decoders, customer has upgraded the firmware in its decoder within one month after MYLAPS has offered to provide customer with such upgraded firmware.
2. The customer acknowledges that the goods may include certain firmware imbedded therein. MYLAPS hereby grants a license to customer to use the imbedded firmware in an MYLAPS decoder, but only to the extent the decoder is used in connection with MYLAPS hardware. MYLAPS shall have the right to terminate the license immediately upon written notice to customer in case MYLAPS has a reasonable belief that customer at any time has used the MYLAPS decoder in connection with non-AMB hardware. Further, customer may not copy, compile, reverse compile, disassemble, translate, analyze, reverse engineer or attempt to reverse engineer the firmware, except as permitted by applicable law.
3. In addition, customer grants MYLAPS the option to repurchase any MYLAPS decoder if MYLAPS has a reasonable belief that customer has used the MYLAPS decoder in connection with non-MYLAPS hardware. The repurchase price shall be the fair market value on the date MYLAPS provides notice to customer that it intends to repurchase the decoder.

The above mentioned warranty/guarantee is irrespective of any rights granted to the buyer of MYLAPS equipment manufactured or sold by MYLAPS based on the laws of the Netherlands. Any correspondence regarding the above mentioned guarantee must be addressed to MYLAPS:

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CE information:

This device complies with the EMC directive 89/336/EEC. A copy of the declaration of conformity can be obtained at:

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