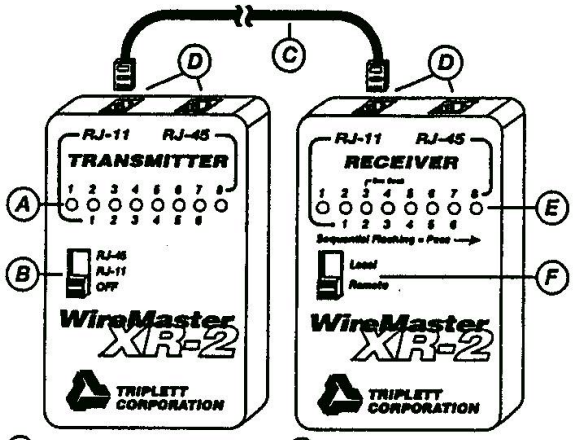
WireMaster XR-2

Instruction Manual



(A) Reference LEDs
(B) RJ-45 / RJ-11 Selector Switch
(C) Cable Under Test
(D) Modular Jacks
(E) Receiver LEDs
(F) Local / Remote Selector Switch

TRIPLETT

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84-822 Rev A 5/00

WireMaster XR-2 FEATURES:

a) Verifies point to point wiring of twisted pair LAN cables, telephone cables, and other types of cables that use RJ-11 and RJ-45 connectors.
b) Checks for continuity in cable conductors
c) Generates two distinct warble tones usable for cable tracing
d) 8 LEDs identify the source and destination of each conductor
e) Direct connection of 6 pin RJ-11 or 8 pin RJ-45 cables
f) Allows remote testing of long cable runs up to 1000 feet
g) TELCO protected
h) Long battery life

SPECIFICATIONS:

Output Tone: Approximately 5 volts peak to peak square wave.
Protection: Will withstand 56 VDC with 400 Ohms series resistance applied across any of the connector's pins for 2 minutes. Will withstand 75 VAC peak with 100 Ohms series resistance superimposed onto 56 VDC for 100 milliseconds. (TELCO bias and ringing current)
Cable Types: Any cable with RJ-11 connectors on both ends, or RJ-45 connectors on both ends.
Battery: 9 volt alkaline, NEDA 1604A, such as Eveready 522
Battery Life: Approximately 100 hours
Size: (EACH UNIT): 3.7" x 2.4" x 1.1" (93mm x 61mm x 28mm)
Weight: (EACH UNIT): Less than 5 ounces without battery installed

CONFIGURATION OPTIONS:

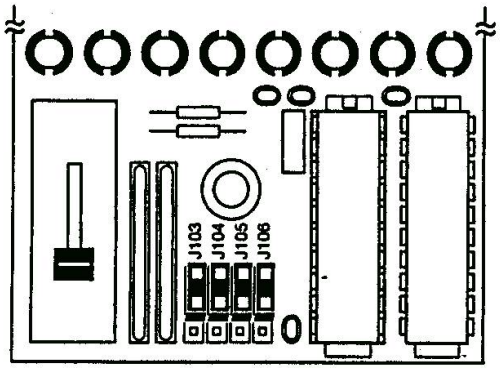
The **WireMaster XR-2** TRANSMITTER unit can be configured by placing shorting blocks on the two pin headers on the PC board. There are four different options that will work in any combination of jumper settings **(see Figure 1)**. They are as follows:

TYPE: When no jumper is on J103, the unit defaults to a 4 conductor RJ-11 test. The middle four LEDs will sequence 2, 3, 4, 5, 2, 3, ect. If a jumper is placed on J103, the unit will sequence the middle six LEDs to test a 6 conductor RJ-11 cable. This option is functional only when the RJ-45/RJ-11 switch is set to RJ-11.

TONE: When no jumper is on J104, the unit generates a HI pitched warble tone (800Hz and 700Hz toggling between each other). A LO pitched warble tone (600Hz and 500Hz) is enabled when a jumper is placed on J104.

DIRECTION: When no jumper is on J105, the unit defaults to the Straight-through wiring test. The LEDs on the TRANSMITTER unit will sequence in ascending order (left to right). If a jumper is placed on J105, the LEDs will sequence in descending order (right to left). This setting allows the RECEIVER LEDs to sequence in order when testing Reversed wiring.

SPEED: When no jumper is on J106, the unit sequences from one conductor to another in about 0.6 seconds. If a jumper is placed on J106, the sequencing speed will be 4 times slower.



USER PROGRAMMABLE JUMPER DIAGRAM

JUMPER	FUNCTION	NO JUMPER	WITH JUMPER
J103	TYPE	RJ-11 4 pin	RJ-11 6 pin
J104	TONE	HI Pitch	LO Pitch
J105	DIRECTION	FORWARD	REVERSE
J106	SPEED	NORMAL	SLOW

Figure 1

SAFETY WARNING:

The **WireMaster XR-2** test set is not designed to be used on energized cables. This test set will not withstand a direct cross to 110 VAC 60Hz power line. Failure to follow this warning will lead to product failure or personal injury.

WIRE TRACING, TONE GENERATION:

The TRANSMITTER can generate one of two distinct warble tones, a low pitch or a high pitch. These are user selectable by moving shorting blocks inside the unit (see CONFIGURATION OPTIONS). Two TRANSMITTER units, one set for HI pitch and the other set for LO pitch, can be used to trace two cables at the same time without creating confusion (see Figure 2). The tones are sent automatically when the unit is turned on. For direct connection, insert the cable's plug into the RJ-45 or RJ-11 jack. Connecting via a wall plate or wiring hub requires the use of a patch cable (optional accessory). The far end of the cable being traced can be located by using an inductive amplifier such as the Triplett HOUND or HOUND 2 PROBE.

NOTE: Use on live LAN or Telephone cables will yield erroneous results. NEVER TEST ENERGIZED CABLES.

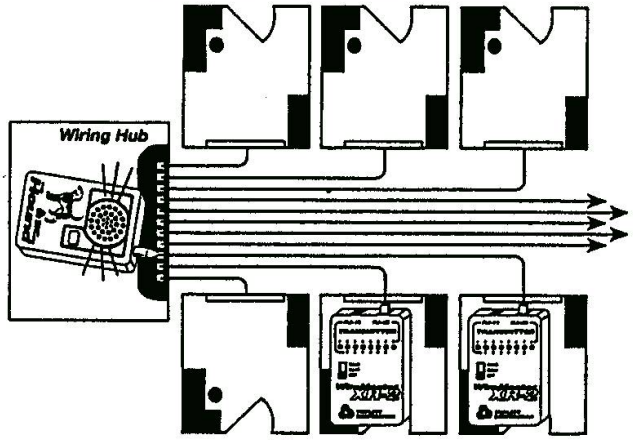


Figure 2

WIRE TESTING INSTRUCTIONS / "LOCAL TEST" FOR JUMPER CABLES

Attach the TRANSMITTER to one end of the cable to be tested, inserting the cable's connector into the appropriate jack on the TRANSMITTER, and setting the switch on the TRANSMITTER to agree with the jack being used. Connect the RECEIVER to the other end of the cable, inserting the connector on the cable into the appropriate jack on the RECEIVER. If the cable being tested is a "jumper cord", and both the TRANSMITTER and the RECEIVER units are visible to the user, set the switch on the RECEIVER to LOCAL. Observe the LEDs on the TRANSMITTER and the RECEIVER as they sequence through the test.

On a "straight through" cable, the LEDs on the TRANSMITTER and on the RECEIVER will sequence together (regardless of whether the TRANSMITTER is set to FORWARD or REVERSE direction), lighting the same LEDs on the TRANSMITTER and RECEIVER. On some cables, some LEDs on the RECEIVER may not light. This may be normal, depending on the number of conductors in the cable.

For example, telephone cables, which use 6 pin RJ-11 connectors, often have only 2 or 4 conductors in them. Consequently, only 2 or 4 LEDs will light up on the RECEIVER. Telephone cables are often wired in reverse.... so when LEDs 2,3,4, and 5 light up in sequence on the TRANSMITTER (TRANSMITTER set to FORWARD), LEDs 5,4,3, and 2 will light up in sequence on the RECEIVER.

LAN "crossover" cables conforming to the EIA 568 standard have two pairs of wires "crossed over" in the cable. Pins 1&2 at one end of the cable are wired to pins 3&6 at the other end of the cable. The other wires in the cable, although unnecessary in most LAN systems using the 568 standard, are usually wired straight through. Hence, on a typical crossover cable with RJ-45 connectors, when the TRANSMITTER is sequencing the LEDs from 1 to 8, the LEDs on the RECEIVER should sequence: 3_6_1_4_5_2_7_8.

If any of the LEDs that are supposed to light, do not light, then the conductors in the cable associated with the unlit LEDs are OPEN. If conductors are shorted together, the LEDs associated with the shorted conductors may glow dimly or not at all. If the LEDs on the RECEIVER flash in an inappropriate sequence, the conductors in the cable are mis-wired to one or both of the connectors.

WIRE TESTING INSTRUCTIONS / "REMOTE TEST"

Attach the TRANSMITTER to one end of the cable to be tested, inserting the cable's connector into the appropriate jack on the TRANSMITTER, and setting the switch on the TRANSMITTER to agree with the jack being used. Connect the RECEIVER to the other end of the cable, inserting the connector on the cable into the appropriate jack on the RECEIVER. Use patch cords as necessary if checking installed cables with connectors on wallplates. If the TRANSMITTER and RECEIVER cannot be seen simultaneously, set the switch on the RECEIVER to REMOTE.

On a "straight through" cable (with "straight through" patch cords), the TRANSMITTER DIRECTION (J105) must be set to FORWARD. The LEDs on the TRANSMITTER and on the RECEIVER will sequence together, lighting the same LEDs on the TRANSMITTER and RECEIVER. At the RECEIVER end, it is only possible to observe that the LEDs are flashing in sequence from left to right. 99% of the time, this is adequate indication that the wiring is correct.

On "reverse wired" cables, the TRANSMITTER DIRECTION (J105) must be set to REVERSE. The LEDs on the TRANSMITTER and on the RECEIVER will sequence opposite to each other. At the RECEIVER end, it is only possible to observe that the LEDs are flashing in sequence from left to right. 99% of the time, this is adequate indication that the wiring is correct.

However (using a "straight through" wired cable as an example), since the LEDs on the TRANSMITTER cannot be seen, it is not possible to tell if a particular LED on the TRANSMITTER is lit, when the same number LED on the RECEIVER is lit. That is, it is not possible to tell if the TRANSMITTER is sequencing 1_2_3..... etc, while the RECEIVER is sequencing 1_2_3.... etc. The TRANSMITTER might be sequencing 5_6_7.... etc. while the RECEIVER is sequencing 1_2_3... etc. At the RECEIVER end, the sequencing of the LEDs would seem to indicate that the cable is OK, when it is actually wired wrong. For this reason, the #3 LED (RJ-45 label) on the RECEIVER performs a special "stagger test". If the RECEIVER's circuitry detects a possible mis-wiring, the #3 LED will not light, even though the actual wire going to the #3 pin of the connector may be OK.

This might be because the cable is "reverse wired". A reverse wired cable should be obvious to the user, because with the TRANSMITTER set to FORWARD, instead of

REVERSE as it is supposed to be set, the LEDs on the RECEIVER will sequence from right to left (instead of left to right), and the #3 LED on the RECEIVER will not light. Similarly, attempting to test a "straight through" wired cable with the TRANSMITTER DIRECTION set to REVERSE will result in the same indications on the RECEIVER.

A simple, although not 100% accurate test for this condition, is to set the switch on the RECEIVER to LOCAL. If the #3 LED now lights, it is likely the cable is wired incorrectly for the setting of the DIRECTION jumper.

If this is the case, the TRANSMITTER can be set to the opposite direction to check this particular cable. This is done by placing a jumper on J105, as described in DIRECTION.

If the DIRECTION is changed in the TRANSMITTER, and the #3 LED still does not light at the RECEIVER with the switch in REMOTE, the wire connected to the #3 pin (RJ-45) might be open. To find out, set the switch on the RECEIVER switch to LOCAL. If the #3 LED on the RECEIVER now lights, and the LEDs flash in sequence, the #3 wire is not open, but the **cable is mis-wired in a configuration called "staggered"**. This is a very unlikely condition, but one which is technically feasible.

It is possible to remotely test cables other than "straight through" or "reverse wired" types. However, the test may not be 100% accurate, because the user cannot see which LEDs are lighting on the TRANSMITTER when he is at the RECEIVER end.

In general, if any of the LEDs that are supposed to light, do not light, then the conductors in the cable associated with the unlit LEDs are OPEN. If conductors are shorted together, the LEDs associated with the shorted conductors may glow dimly or not at all. If the LEDs on the RECEIVER flash in an inappropriate sequence, the conductors in the cable are mis-wired to one or both of the connectors.

"NEXT" TEST:

The **WireMaster XR-2** does not perform a NEXT (Near End Crosstalk) Test. NEXT testing verifies that specific conductors in a cable are connected to specific pins on the RJ connectors. The **WireMaster XR-2** verifies that specific pins are connected together, but it does not verify that specific conductors are used to do this. On short LAN cables (less than 10 feet) and telephone cables (of any length), this is seldom a problem. However, on long LAN cables, "crosstalk" created by using the wrong conductors in the cable, may cause the LAN to malfunction. This means that some LAN cables may test OK on the **WireMaster XR-2**, but may not work when placed into service. The **Triplett PairMaster** will perform NEXT tests on LAN cables.

BATTERY REPLACEMENT:

Remove the screw on the back of the TRANSMITTER's case. Remove the case front. Replace the battery. Reassemble the case. The RECEIVER unit does not require a battery.

SAMPLE RESULTS:

LED Flashing Order	Cable Fault
1 2 3 4 5 6 7 8	NONE, Cable OK
2 1 3 4 5 6 7 8	Wire 1 & Wire 2 reversed
1 - - 4 5 6 7 8	Wire 2 & 3 shorted together or both Open
1 2 3 - 5 6 7 8	Wire 4 Open
4 5 3 1 2 6 7 8	Pair 1/2 transposed with Pair 4/5
1 2 3 7 5 6 4 8	Wire 4 & Wire 7 are switched
8 7 6 5 4 - 2 1	(RJ-45) Wired in Reverse, see WIRE TESTING

TRIPLETT ONE YEAR LIMITED WARRANTY

The Triplett Corporation warrants instruments and test equipment manufactured by it to be free from defective material or workmanship and agrees to repair or replace such products which, under normal use and service, disclose the defect to be the fault of our manufacturing, with no charge within one year of the date of original purchase for parts and labor. If we are unable to repair or replace the product, we will make a refund of the purchase price. Consult the Instruction Manual for instructions regarding the proper use and servicing of instruments and test equipment. Our obligation under this warranty is limited to repairing, replacing, or making refund on any instrument or test equipment which proves to be defective within one year from the date of original purchase.

This warranty does not apply to any of our products which have been repaired or altered by unauthorized persons in any way so as, in our sole judgment, to injure their stability or reliability, or which have been subject to misuse, abuse, misapplication, negligence, accident or which have had the serial numbers altered, defaced, or removed. Accessories, including batteries and fuses, not of our manufacture used with this product are not covered by this warranty.

To register a claim under the provisions of this warranty, return the instrument or test equipment to Triplett Corporation, Service Department, One Triplett Drive, Bluffton, Ohio 45817, transportation prepaid. Upon our inspection of the product, we will advise you as to the disposition of your claim.

ALL WARRANTIES IMPLIED BY LAW ARE HEREBY LIMITED TO A PERIOD OF ONE YEAR FROM DATE OF PURCHASE, AND THE PROVISIONS OF THE WARRANTY ARE EXPRESSLY IN LIEU OF ANY OTHER WARRANTIES EXPRESSED OR IMPLIED.

The purchaser agrees to assume all liability for any damages and bodily injury which may result from the use or misuse of the product by the purchaser, his employees, or others, and the remedies provided for in this warranty are expressly in lieu of any other liability Triplett Corporation may have, including incidental or consequential damages.

Some states (USA ONLY) do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. No representative of Triplett Corporation or any other person is authorized to extend the liability of Triplett Corporation in connection with the sale of its products beyond the terms hereof.

Triplett Corporation reserves the right to discontinue models at any time, or change specifications, price or design, without notice and without incurring any obligation.

This warranty gives you specific legal rights, and you may have other rights which vary from state to state.