

# CIRCUIT MAPPER SYSTEM

## INSTRUCTION MANUAL CMT24DS / CMT42DS / CMT84DS



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## TASCO, INC.

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**THIS TESTER IS DESIGNED FOR USE  
ONLY BY QUALIFIED ELECTRICIANS.**

**IMPORTANT SAFETY WARNINGS**



**⚠️WARNING**

Read and understand this material before operating or servicing this equipment. Failure to understand how to safely operate this instrument can result in an accident causing serious injury or death.



**⚠️WARNING**

Electric shock hazard:  
Contact with live circuits can result in severe injury or death.

**GENERAL SPECIFICATIONS CMT24DS/CMT42DS/CMT84DS**  
PATENT 8552709

**TRANSMITTER – CMT24DT/CMT42DT/CMT84DT**

**Power:** Standard 9 VDC Alkaline battery (Included)  
**Operating Voltage:** 0-300 V, Phase to Neutral  
**Current Draw:** 90 mA Avg.  
**Output Voltage:** 0.5 V Max. (Coupled to the line)  
**Output Pulse Frequency:** 166KHz, 250KHz  
**Operating Temperature:** 0° F – 120° F (-18°C -50°C)  
**Size:** 9.0" x 3.0" x 1.2" (229mm x 76mm x 30mm)

**RECEIVER – CMT2R**

**Power:** Standard 9 VDC Alkaline battery (Included)  
**Current Draw:** 35 mA Avg.  
**Signal Recognition:** Digital Pulse Code  
**Operating Voltage:** 0-600 V AC/DC  
**Operating Temperature:** 0° F – 120° F (-18°C -50°C)  
**Size:** 6.5" x 2.7" x 0.9" (105mm x 69mm x 23mm)

## THANKS FOR CHOOSING THE CIRCUIT MAPPER SYSTEM

This unique product uses new technology to perform functions never before offered in an electrical tester. This is the first device of its kind that maps multiple branch circuits of wiring systems concurrently. With todays sensitive electronic equipment, simply turning breakers off and on is no longer a viable option. Even modern circuit tracers typically trace only one branch circuit at a time. The Circuit Mapper transmitter connects to lines at the panel rather than at the end of the branch circuit. The Receiver displays the corresponding circuit number through digital signal processing, so you know exactly to which breakers the transmitter leads are connected. There is no time wasted comparing signals or looking for the strongest signal. Microprocessors have been used in this product to increase simplicity of use. Using the Circuit Mapper system will greatly reduce man-hours spent locating branch connections of electrical circuits!

## HOW THE CIRCUIT MAPPER SYSTEM OPERATES

Your Circuit Mapper is composed of two primary components: the Transmitter and the Receiver. A second Transmitter, the CMT84DT, is used when tracing more than 42 circuits in a single panel, or when tracing 2 separate panels.

The Transmitter ports are connected to the appropriate circuits using non-contact inductive clamps (CT clamps). The CT clamps are secured around the insulated wire, greatly reducing the risk of shock by eliminating the need for a live voltage direct connection. CT clamps are completely interchangeable as the digital signals are supplied by the Transmitter with a different numerical code being generated by each output jack. The Transmitter sends distinct digital signals to individual branch circuits on powered and unpowered systems! The Transmitter indicates unit power, low battery state and signal output is easy to check by inserting the Receiver probe into the CT clamp.

The Transmitter first connects directly to the supply conductors, in the electrical panel, using phase (alligator) clips. This connection provides filtering that reduces noise or stray signals between phases, neutral or ground.

The Receiver display indicates corresponding transmitter connection and a low battery condition. The Receiver is programmed to recognize the specific digital signal supplied to the line by each of the Transmitter CT clamps. The signal must repeat itself two times before the Receiver will indicate. This virtually eliminates the possibility of false readings from signal coupling. If there is no signal on the branch circuit being tested, the Receiver simply indicates two bars, --.

## HOW TO USE THE CIRCUIT MAPPER SYSTEM

The Transmitter sends distinct digital signals through each output jack that the Receiver is programmed to recognize. The leads are connected using miniature CT clamps that connect around the insulated portion of the electrical line, so temporary Transmitter connections are safe and simple.

## GETTING STARTED

### TRANSMITTER

1. Install 9 volt Alkaline battery in both the Transmitter(s) and Receiver. Verify battery doors are securely closed after installation. Never operate units without battery doors in place as electrical shock could result.
2. Push and release ON/OFF button on the Transmitter(s). The red Power LED illuminates, indicating the unit has performed a self-test and power is on. Transmitter power stays on for approximately 2 hours unless manually turned off. The two hour time-out saves battery life should the Transmitter be unintentionally left on.
3. Plug one CT clamp lead into output jack labeled #1 on Transmitter face (jack #1 corresponds to circuit #1 for testing purposes). CT clamps are interchangeable and can be connected to any output jack. Any combination of output jacks can be used at the same time.

*CMT84DT only:* Follow above step number 3 using output jack labeled #43.

### RECEIVER

1. Push and release ON/OFF button on Receiver. Two bars illuminate on LED display indicating the unit has performed a self-test and power is on. Receiver power stays on for approximately 2 minutes after a reading has been taken unless manually turned off. The 2 minute time-out saves battery life should the Receiver be unintentionally left on.
2. Turn on the Transmitter per prior instructions. Verify that CT clamp lead is plugged into transmitter output jack #1. With the Receiver turned on, insert metal Receiver pin through opening on CT clamp (clamp must be completely closed). The Receiver indicates signal recognition using the chasing segment animation on the display. When the signal is confirmed, it then indicates , verifying both units are functioning correctly and ready for use.

*CMT84DT only:* Follow above step number 3 using transmitter output jack #43. The Receiver will indicate  verifying both units are functioning correctly and ready for use.



## CONNECTING THE TRANSMITTER

The Transmitter is connected to each branch circuit at the breaker panel. It then sends signals, using the CT clamps, to powered or unpowered systems. To use on an unpowered system, the main breaker or fuse must be turned off, with the individual branch circuit breakers or fuses left in the on position.

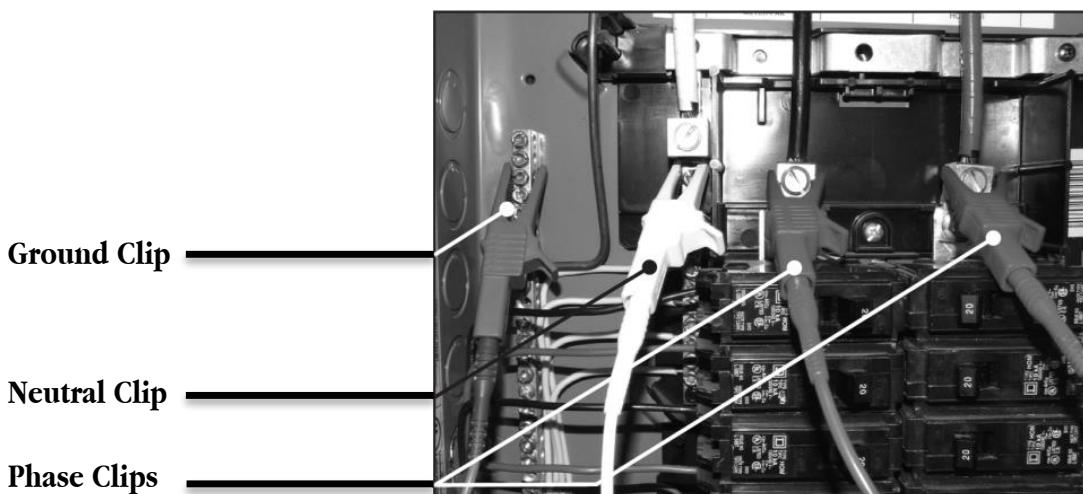
The “PHASE”, “NEUT” and “GND” connections should always be used when connecting the Circuit Mapper Transmitter. Without this connection, the Transmitter signal can couple to other circuits through the neutral return, causing multiple readings. If using a second transmitter in the same panel, it is only necessary to connect one set of the phase clips. If using the CMT84DT in a separate panel, it is necessary to connect the phase clips in that panel as well.

1. Carefully remove panel cover so no breakers are accidentally turned off.
2. Attach Transmitter to the outside of the panel using the magnet built into the back of the unit. Do not hang Transmitter from clip leads.
3. Attach the white alligator clip to the incoming neutral conductor or lug in the panel.
4. Attach the green alligator clip to incoming ground conductor, lug or panel ground.
5. Attach one red alligator clip to each incoming phase conductor or lug. It is normal for a spark to result from connecting the clips.

### NOTE:

Do not attach more than one alligator clip lead to any connection point referenced above.

Single phase panels will only require two red alligator clip lead connections.



Single phase shown, third phase would require the third phase clip to be connected

## CONNECTING THE TRANSMITTER (Continued)

6. Connect CT clamps to each individual branch circuit to be traced. CT clamps must be fully closed to properly send signal. It is normally easier to connect the CT clamps to circuits before plugging them into the Transmitter. In some cases, the circuit wire may need to be bent or moved to accommodate the CT clamp.
7. Plug CT clamp leads into the Transmitter. We recommend plugging each CT clamp into the output number that matches the actual breaker number. It is normal for the CT clamps to hum slightly due to magnetic fields caused by AC current. If there is considerable hum check to be sure all CT clamps are fully closed.
8. Turn on Transmitter. You are now ready to begin mapping the electrical systems. The Transmitter will stay on for approximately 2 hours unless manually turned off. Additional Transmitter CT clamp assemblies are available directly from the Tasco factory.



### NOTE:

Products using switching power supplies such as battery chargers and uninterruptible power supplies in close proximity to the panel may disrupt the transmitter signal.

## USING THE RECEIVER

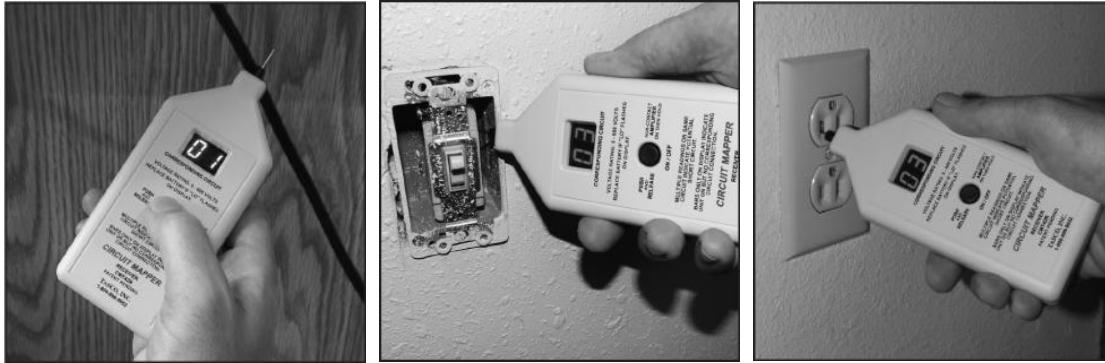
The Receiver is extremely easy to use. The metal prong should contact the conductor of the wire being tested. The prong can be plugged directly into the "hot" side of a receptacle. The prong will also reach light switch conductor screws if the cover plate is removed. This is an easy way to identify lighting circuits since it does not require an electrical contact point at the fixture.

### ⚠ CAUTION

If Receiver prong makes contact with metal boxes, grounds or other conductors, a short circuit may result.

1. Turn Receiver on. Two bars illuminate on the LED display, --. These bars illuminate any time the Receiver is turned on but no signal is detected. The Receiver turns itself off if unused for more than 2 minutes to save battery life.
2. Touch prong to conductor of circuit to be identified for at least three seconds. The digital readout indicates that it has locked on to the signal by displaying the chasing segment animation. Continue prong contact until the corresponding CT clamp

number is shown on the LED display. If more than one circuit breaker is connected to the same test point, the Receiver will indicate multiple connections. If the direction of animation changes, it is a sign that interference was found on the line, likely due to a battery charger or UPS, that caused the receiver to read a secondary channel. Continue to make contact until the signal is displayed.



3. If direct conductor contact is not possible, the Receiver has a built in amplifier that can read through most electrical wiring insulation. Hold the square Receiver tip (not prong) against the insulated wire to be tested. Push and hold the ON/OFF button until a reading is indicated. Continue holding button for an additional two seconds to verify a single circuit reading.
4. Use the "Map Pad" or your own form to document which breakers are feeding each branch circuit. Additional "Map Pads" and Receiver prongs are available directly from the Tasco factory.

Multiple receivers may be used at the same time with any of the transmitter models, increasing the efficiency of the panel mapping process. Additional receivers are available directly from the Tasco factory.

Accessory Parts list:

Accessory	CMT24DS qty.	CMT42DS qty.	CMT84DS qty.
Alligator clips, white	1	1	2
Alligator clips, green	1	1	2
Alligator clips, red	3	3	6
CT clamps	24	42	84
Carry Case	1	1	2
Map Pad	1	1	1
Spare receiver prongs	2	2	2

**NOTICE TO PURCHASER:**

All statements, technical information and recommendations contained herein are based on tests we believe to be reliable, but the accuracy or completeness thereof is not guaranteed, and the following is made in lieu of all warranties, express or implied. Manufacturer's only obligation shall be to replace such quantity of the product proved to be defective.

Manufacturer shall not be liable for any injury, loss or damage direct or consequential, arising from the use or misuse of this product. User shall determine the suitability of the product for his intended use, and user assumes all risk and liability in connection therewith. No statements or recommendations not contained herein shall have any force or effect unless in an agreement signed by officers of the manufacturer.

**WARRANTY:**

Tasco, Inc. warrants that the Circuit Mapper System will be free from defects in workmanship and materials for a period of two (2) years from the date of purchase.

Tasco, Inc. will, without charge, replace or repair, at its option any warranted product returned to the Tasco factory service department.

Tasco, Inc. shall not be liable for any consequential damages, including without limitation, damages resulting from loss of use or damages resulting from use or misuse of this product. Some states do not allow limitations of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific rights and you may also have rights which vary from state to state.

**EXCLUSIONS:**

This warranty does not apply in the event of misuse or abuse of the product or as a result of unauthorized repairs or alterations.

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