

# MCT-302T

## Supervised PowerCode Magnetic Contact Transmitter



## Installation Instructions

### 1. INTRODUCTION

The MCT-302T is a fully supervised, PowerCode magnetic contact transmitter. It features a built-in reed switch (that opens upon removal of a magnet placed near it) and an auxiliary hard-wired input, programmable as either N.C. or E.O.L., for use with additional sensors - pushbuttons, detectors, door contacts etc.

An on-board DIP switch allows the installer to disable the magnet-operated reed switch if only the auxiliary input is needed.

The reed switch and the auxiliary input behave as separate transmitters, although they trigger the same RF module into transmission. Each input has a unique 24-bit PowerCode ID, selected in the factory from over 16 million possible code combinations.

Upon alarm, a digital message is transmitted, composed of the disturbed input's PowerCode ID followed by various status and message-type markers. Alarm and other data are thus forwarded to the receiver. Since messages transmitted by the MCT-302T might collide with transmissions from other PowerCode transmitters, a "smart" anti-collision transmission sequence is used.

An on-board tamper switch opens when the cover is removed, and an "under-board" tamper switch opens if the unit is forcibly removed from its mounting place. In a tamper situation, a tamper message is transmitted from the reed switch input. If the installer disables the reed switch, tamper is reported by the auxiliary input instead.

A periodic supervision message, distinguished by a specific marker, is transmitted automatically once in 60 min. (USA) or 15 min. (Europe) or according to local standards from the reed switch input only (if enabled) or from the auxiliary input only (if the reed switch is disabled). The target receiver is thus informed, at regular intervals, of the unit's active participation in the system.

An LED lights whenever alarm or tamper events are reported. The LED does not light while a supervision message is being transmitted.

Operating power is obtained from an on-board 3.0 V Lithium Thionyl Chloride battery. A weak battery will cause a "low battery" marker to be added to any message transmitted.

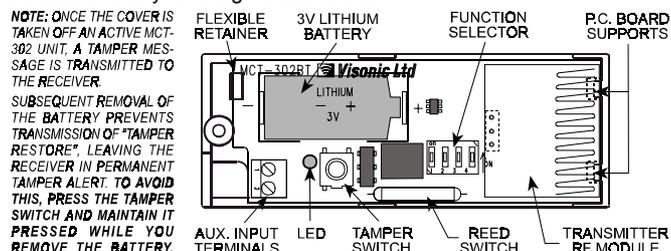


Figure 1. MCT-302T with Cover Removed

### 2. SPECIFICATIONS

**Frequency (MHz):** 315, 433.92, 868.95, 869.2625 or other per local requirements

**Transmitter's ID Code:** 24-bit digital word, over 16 million combinations, pulse width modulation.

**Overall Message Length:** 36 bits

**Alarm Inputs:** 2, one internal and one external, with a separate 24-bit transmitter ID each.

**Auxiliary Input Circuit Type:** N.C. / E.O.L., selected with DIP switch

**E.O.L. Resistor Required:** 47 kΩ

**Message Repetition:** Repetitive transmission (once every 3 minutes) or one-shot, as selected with on-board DIP switch.

**Supervision:** Signaling at 60 min. (USA) or 15 min. (Europe) intervals or according to local standards from the reed switch (if enabled) or from the aux. input (if the reed switch is disabled).

**Response to Tamper Event:** Tamper report every 3 minutes (until the tamper switch re-closes).

**Power Source:** 3V Lithium battery, Panasonic type CR-2 or equivalent

**Battery Life Expectancy:** 3 years (for typical use)

**Battery Supervision:** Automatic transmission of battery condition data as part of any status report.

**Operating Temperature:** 0°C to 49°C (32°F to 120°F).

**Dimensions:** 81 x 22 x 23.5 mm (3-3/16 x 7/8 x 15/16 in.).

**Weight: MCT-302T (excluding battery):** 34 g (1.2 oz)

**Magnet:** 13 g (0.45 oz)

**Standards:** Meets FCC Part 15, MPT1349 and Directive 1999/5/EC

This device complies with Part 15 of the FCC Rules and RSS-210 of Industry and Science Canada. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This device complies with the essential requirements and provisions of Directive 1999/5/EC of the European Parliament and of the Council of 9 March 1999 on radio and telecommunications terminal equipment.

### 3. INSTALLATION

#### 3.1 Mounting

Attach the transmitter to the fixed frame and the magnet to the movable part (door or window - see Figure 2). Locate the magnet not more than 6 mm (0.25 in.) from the transmitter's marked side.

A. Remove the case closure screw (Figure 3).

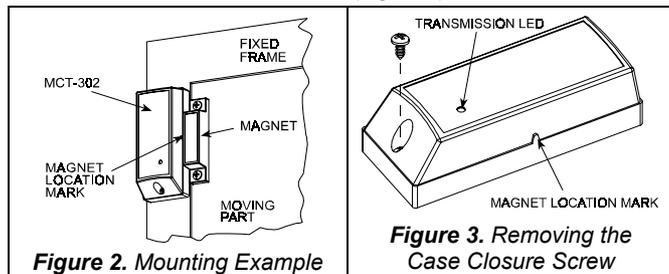


Figure 2. Mounting Example

Figure 3. Removing the Case Closure Screw

B. Remove the unit's cover as shown in Figure 4.

C. Flex out the circuit board retainer (Figures 1 and 5) and detach the circuit board from the base. **Take care not to break the glass of the reed switch at the side of the board!**

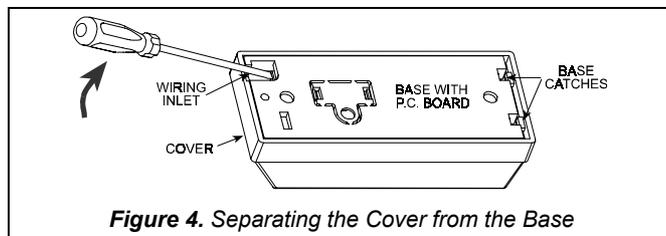


Figure 4. Separating the Cover from the Base

D. Hold the base against the mounting surface and mark the 3 drilling points through the mounting holes.

**Attention!** The MCT-302T carries an additional tamper switch under the board. This switch is actuated by a leaf spring, mounted on a small base segment that is loosely connected to the base (see Figure 5).

Be sure to make use of the screw that fastens the tamper switch actuator to the mounting surface. If the actuator is secured and the MCT-302T is forcibly removed from its mounting place, the actuator will break away from the base, causing the tamper switch to open. A tamper alarm will consequently be transmitted.

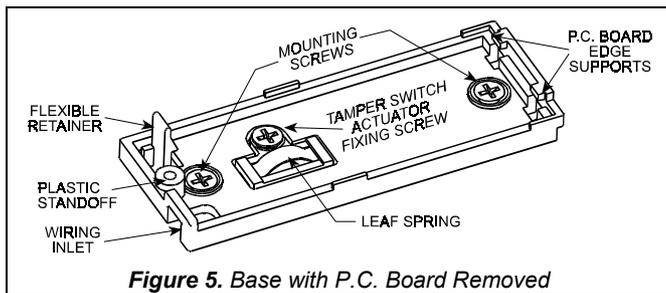


Figure 5. Base with P.C. Board Removed

E. Drill the holes and fix the base to the wall using the 3 screws with countersunk heads supplied in the package.

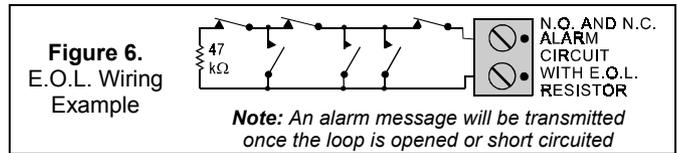
**CAUTION!** Screws with other type or size of head may short circuit the bottom side of the printed circuit board.

F. Mount the magnet near the marked side of the MCT-302T.  
G. Insert the edge of the P.C. board with the RF module into the edge supports, and press the other edge against the flexible retainer until it snaps home with a click.

## 3.2 Auxiliary Input Wiring

**Remember!** If your application does not require the auxiliary input, be sure to set DIP switch **SW2** to **OFF** and to short the input terminals together with a piece of jumper wire.

- Connect the auxiliary detector's alarm contacts across the MCT-302T auxiliary input terminals.
- If the auxiliary input of the MCT-302T is defined as a Normally Closed (N.C.) type (**SW2** set to **OFF**), series connected N.C. sensor contacts must be used exclusively. An E.O.L. resistor will not be required.
- If the auxiliary input is defined as an E.O.L. type (**SW2** set to **ON**), Normally Closed (N.C.) as well as Normally Open (N.O.) sensor contacts can be used. A 47kΩ E.O.L. resistor must be wired at the far end of the zone loop, as in Figure 6.



## 4. PREPARATION FOR USE

### 4.1 The Function Switches

#### A. Switch Tasks

The MCT-302T has a 4-position DIP switch function selector (Figure 7). Each switch lever allows you to select one of two options.

#### B. Setting the Switches

Set the function switches as desired prior to applying power. Use a ball point pen or another pointed object to shift the switch levers. The **ON** position is indicated by the arrow on the switch body.

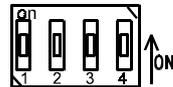


Figure 7. Function Selector

Table 1. Getting acquainted with the function selector

Sw-	Function	Pos.	Selected Option	Default
SW1	Reed switch input enable/disable	ON	Reed switch input is enabled	ON*
		OFF	Reed switch input is disabled	
SW2	Aux. input type selector	ON	Aux. input is E.O.L. (47 kΩ)	OFF
		OFF	Aux. input is N.C.	
SW3	Restore reports enable/disable	ON	Restore events reported	ON**
		OFF	Restore events not reported	
SW4	Transmit mode selector	ON	Alarms reported every 3 min.	OFF***
		OFF	Alarms reported only once	

\* With **SW1** set to **OFF**, the reed switch input will not initiate periodic supervision transmissions.

\*\* Selecting the **ON** position enables you to find out whether the door or window under surveillance are open or closed.

\*\*\* Transmissions initiated by "tamper" events will be repeated once every 3 minutes, regardless of **SW4** setting.

### 4.2 Testing the Unit

Before testing, set DIP switches **SW1** through **SW4** as required for the particular application (Para. 4.1).

A. Insert the battery between the battery clips, at the correct polarity. For proper operation, only Lithium Thionyl Chloride battery (Panasonic type CR-2 or equivalent) should be used.

B. Press the tamper switch once and release it.

**Note:** Since the cover is removed and power is applied, a tamper situation exists. Verify that the MCT-302T transmits (the LED lights briefly) once every 3 minutes.

C. When you are satisfied that tamper alerts are transmitted properly, put the cover on to return the tamper switch to its normal (undisturbed) position. Wait slightly over 3 minutes to verify that tamper transmissions cease. If all went well, secure the front cover to the base with the case closure screw.

D. Momentarily open the door or window and verify that the transmitter LED lights, indicating that transmission is in progress. If **SW4** is **ON**, wait 3 minutes to verify that the transmission is repeated at 3-minute intervals.

E. Close the door or window, thus restoring it to the undisturbed state and watch the LED. If **SW3** is set to **ON**, a "restore" transmission will now take place.

F. If the auxiliary input is used, momentarily activate the detector connected to it and check for a response similar to that described in D above. Then restore the input loop to its undisturbed state. The response should be as in E above.

G. Refer to the target receiver's installation instructions, and let the receiver "learn" the ID codes associated with the reed switch (if used) and the auxiliary input (if used).

**ATTENTION!** Because each input of the MCT-302T acts as an independent transmitter that has an individual ID, make sure that both input IDs are learned by the receiver.

With the target receiver in the **LEARN** mode, an alarm transmission from each input will enroll the input's ID in the receiver's memory.

A tamper transmission will also work if you remember this:

- If the reed switch input is enabled (**SW1** is **ON**), the tamper message will be sent with the reed switch's ID.
- If the reed switch input is disabled (**SW1** is **OFF**), the tamper message will be sent with the auxiliary input's ID.

## 5. MISCELLANEOUS COMMENTS

Visonic Ltd. wireless systems are very reliable and are tested to high standards. However, due to low transmitting power and limited range (required by FCC and other regulatory authorities), there are some limitations to be considered:

A. Receivers may be blocked by radio signals occurring on or near their operating frequencies, regardless of the digital code used.

B. A receiver responds only to one transmitted signal at a time.

C. Wireless devices should be tested regularly to determine whether there are sources of interference and to protect against faults.

**The user is cautioned that changes or modifications to the unit, not expressly approved by Visonic Ltd., could void the user's FCC or other authority to operate the equipment.**



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Refer to separate warranty statement

