

# MCT-302

## Supervised PowerCode Magnetic Contact Transmitter



## Installation Instructions

### 1. INTRODUCTION

The MCT-302 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-302 might collide with transmissions from other PowerCode transmitters, a "smart" anti-collision transmission sequence is used.

The MCT-302 tamper switch is activated when the cover is removed. In a tamper situation, a message is transmitted from the reed switch input with the "tamper alert" marker ON. 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 from the reed switch input only (if enabled) or from the auxiliary input only (if the reed switch is disabled) once in 60 minutes. 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 3.6 V Lithium Thionyl Chloride battery. A weak battery will cause a "low battery" marker to be added to any message transmitted.

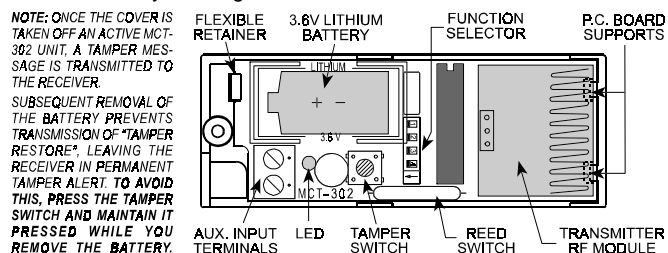


Figure 1. MCT-302 with Cover Removed

### 2. SPECIFICATIONS

**Frequency (MHz):** 315, 404, 418, 433.92 or other frequencies according to 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 k $\Omega$

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

**Supervision:** Signaling at 60-minute intervals 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 is restored).

**Power Source:** 3.6 V Lithium Thionyl Chloride (LiSOCl<sub>2</sub>) battery, size 1/2 AA, Tadiran TL-5902 or equivalent.

**Nominal Battery Capacity:** 1.2 Ah

**Current Drain:** 5  $\mu$ A standby, 8 mA in operation (including LED)

**Battery Life (with LED on):**

@ 10 transmissions per day: Over 10 years

@ 50 transmissions per day: About 6 years

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

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

**Standards:** Meets FCC Part 15, ETS 300-220 and MPT1349

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.

The 418 & 433.92 MHz models of this device comply with the European Council Directive EMC 89/336/EEC & 92/31/EEC, and bear the CE mark and certification.

### 3. INSTALLATION

#### 3.1 Mounting

It is highly recommended to attach the transmitter to the fixed frame and the magnet to the movable part (door or window), as shown in Figure 2. Make sure that the magnet is located not more than 6 mm (0.25 in.) from the transmitter's marked side.

- Remove the case closure screw (Figure 3).
- Remove the unit's cover as shown in Figure 4.
- Flex out the circuit board retainer (Figures 1 and 5) and detach the circuit board from the base.
- Hold the base against the mounting surface and mark the drilling points through the mounting holes (Figure 5).
- Drill the holes and fix the base to the wall using the 2 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.

- Mount the magnet near the marked side of the MCT-302.
- 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.

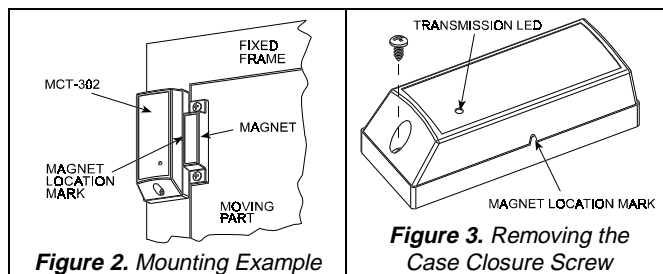


Figure 2. Mounting Example

Figure 3. Removing the Case Closure Screw

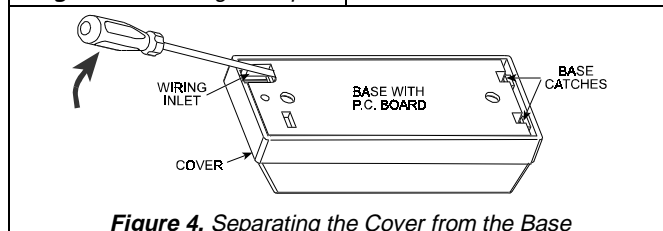


Figure 4. Separating the Cover from the Base

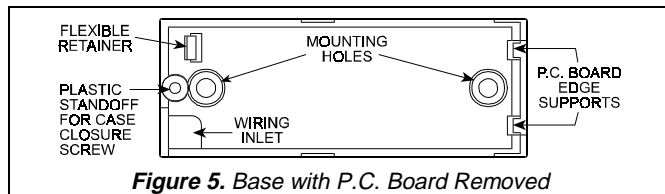


Figure 5. Base with P.C. Board Removed

### 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.

- A. Connect the auxiliary detector's alarm contacts across the MCT-302 auxiliary input terminals.

- B. If the auxiliary input of the MCT-302 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.
- C. 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.

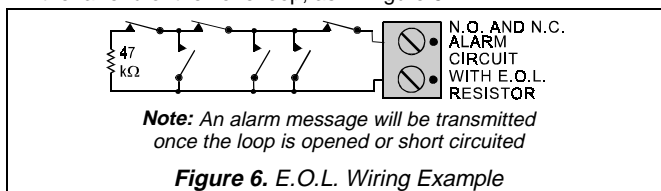


Figure 6. E.O.L. Wiring Example

## 4. PREPARATION FOR USE

### 4.1 The Function Switches

#### A. Switch Tasks

The MCT-302 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	

**SWITCH SW1:** Determines whether the reed switch input will be active or inactive.

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

**SWITCH SW2:** Determines whether the auxiliary input will behave as a 47kΩ end-of-line (E.O.L.) input or as a normally closed (N.C.) input.

**SWITCH SW3:** Determines whether the transmitter will report a restore event when an input restores from an alarm condition.

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

**SWITCH SW4:** In non-supervised systems, it is sometimes required to report an alarm repeatedly at short intervals, until the disturbed input reverts to its normal (undisturbed) state. **SW4** is used to select between repetitive and one-shot transmission.

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

When done, install the battery as directed in Para. 4.2.

## 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.

### 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 ½ AA battery between the battery clips, at the correct polarity. **For proper operation, only Lithium Thionyl Chloride battery (Tadiran TL-5902 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-302 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-302 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.



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Refer to separate warranty statement

