

MDT-122 S

RF / IR Man-Down Transmitter

SpiderAlert®

User's Guide

1. INTRODUCTION

The MDT-122 S is an automatic personal security transmitter. This micro-processor controlled transmitter is designed for use by guards in a prison, by security officers in an organization or institution, or by employees in a large industrial complex (as an industrial safety device). The unit is a part of the SpiderAlert® network. The transmitter is activated in the following events:

1. PANIC

When the guard needs help, he presses both buttons (pushing both buttons is required to prevent an accidental panic message transmission).

2. MANDOWN

When the guard falls down (automatic transmission when the unit is tilted by more than 60°).

3. PULL-CORD

The MDT-122 S automatically transmits a pull-cord alarm:

- When the unit is forcibly pulled from the holder and the pull cord is detached from the holder's belt
- When the unit is intentionally pulled by the holder (emergency event) and the pull cord is detached from his belt.

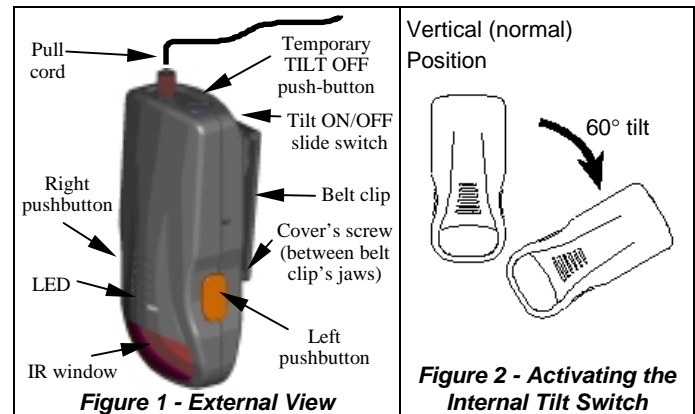
4. TAMPER

When the transmitter is opened by an unauthorized person.

5. LEFT OR RIGHT BUTTON

When the guard presses the left or right push-button, an attendance message is sent to the security main station (confirming that he is not attacked) and the unit is also tested (the LED is lit).

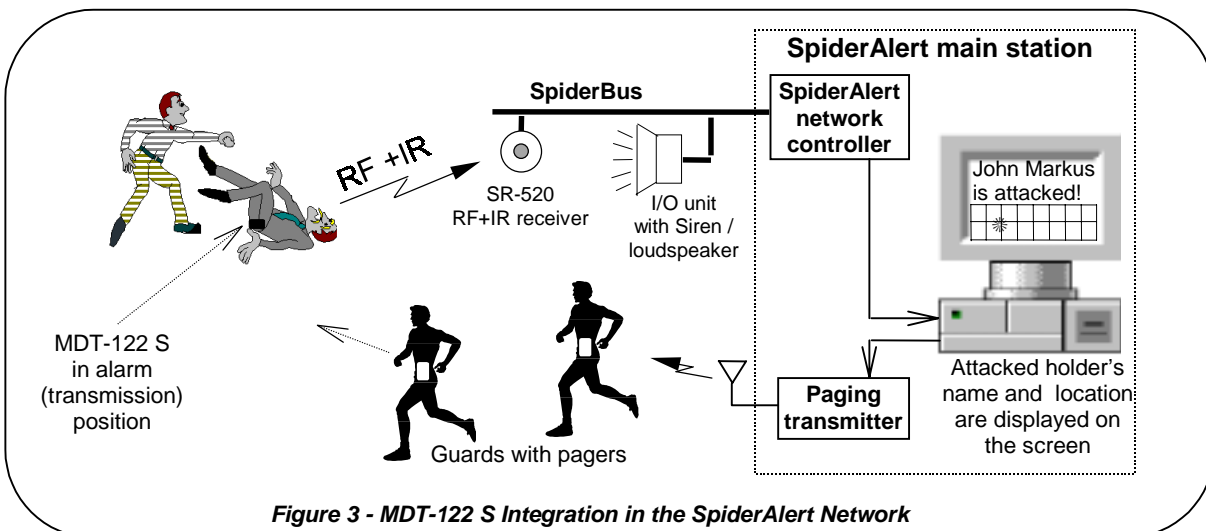
When activated, the transmitter delivers an identifiable alert message (one of various messages, according to the events predetermined priority) to the main security station.



When the transmitter is activated, the holder's name and exact location are displayed on main security station screen (according to the SpiderAlert® network programming) and a siren and/or audible alarm are activated, to provide the necessary help (see figure 3).

The transmitter is attached to the user's belt with a clip like a pager, or inside a pouch / holster and connected with a pull cord to the guard's belt.

The transmitter is not activated during the guard's regular daily activities (running, jumping, sitting, bending, removing cloths, going to bathroom and going off and on duty).



2. SPECIFICATIONS

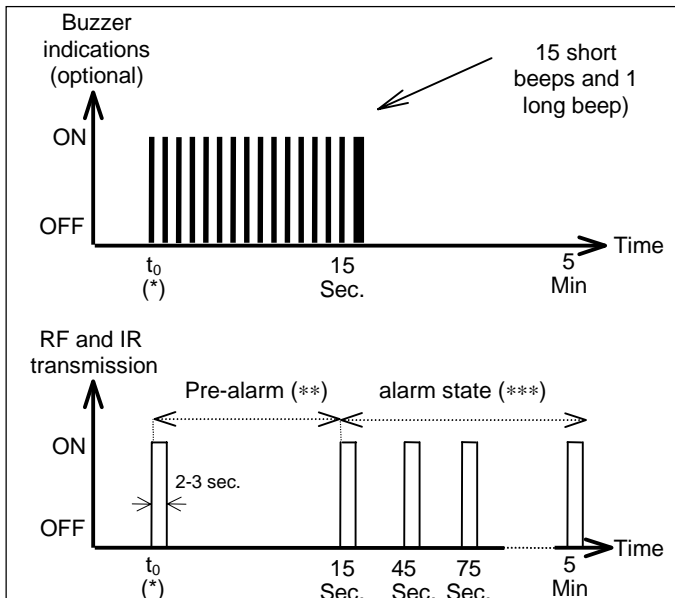
Transmission types: Infra-Red (IR) and Radio Frequency (RF).
RF frequency (MHz): 315, 404, 418 or 433.92.
Transmitter's ID code: 24-bit digital word, pulse width modulation.
Overall message length: 36 bit
Power source: 3.6 V, Lithium battery, size 1/2 AA / 1.2 Ah, (Tadiran TL-2150 or equivalent.)
Current consumption: 15µA standby, 10 mA in operation (including LED).
Battery life: 3-4 years in normal use
Battery supervision: battery condition data is automatically included in every transmitted message.
Operating temperature: 0°C to 49°C (32°F to 120°F)
Dimensions (H x W x D): 123 x 54 x 50 mm (4-13/16 x 2-1/8 x 1-15/16 in.) including belt clip.
Housing: 3mm ABS plastic box
Weight: 138 g (4.9 Oz.)
Color: Dark gray

3. FUNCTIONAL DESCRIPTION

3.1 Visual and Audible Warning Timing

A built-in tilt sensor activates the unit when the unit is tilted by more than 60° (see figure 2). When the unit is activated, it enters to a pre-alarm state for 15 seconds. This period enables the user to return the transmitter to the normal (vertical) position, to prevent an unintentional false alarm transmission. During this period an audible warning is sounded by the buzzer and a visual warning is indicated by the internal LED. The buzzer's sound can be disabled by using an internal buzzer's switch.

The unit's functional timing is presented in figure 4.



* t_0 = MDT-122 S activation time.

** Pre-alarm state starts with a pre-alarm transmission. If the transmitter is returned to normal (vertical) position within 15 seconds, pre-alarm cancellation signal (restore message) is transmitted to the main security station. When the internal tilt pre-alarm DIP switch is set to OFF position, the pre-alarm and cancellation transmissions are not enabled.

*** Alarm state starts 15 seconds after the unit activation, every 30 seconds, for 5 minutes. If during this period the unit is returned to normal (vertical) position, the transmitter transmits alarm restore message (only after 5 minutes) to the main security station.

3.2 Detailed Transmission Description

Once triggered, the transmitter sends out an RF and IR signals with a 24-bit identification code. This code identifies the Man-Down transmitter to the main station that automatically displays the holder's name and exact location on the central computer's screen (figure 3).

A supervision message (an option applicable with the proper software version) is automatically transmitted by the unit. It is transmitted every 30 seconds (in emergency situation) or 60 minutes (in non-emergency situation), according to position of an internal "supervision type" DIP switch. The main security station is thus informed, at regular intervals, about the MDT-122 S active participation in the system.

Benefit of utilizing Dual (RF+IR) technology

The main benefit of using the dual (RF+IR) technology is the capacity to pinpoint the user (transmitter) location in multi-store buildings.

The RF transmission, including 24-bit user ID, penetrates walls, floors and ceilings. The IR transmission serves as room pinpoint confirmation and is blocked by walls, floors and ceilings. The combination of dual transmission reception enables to accurately trace the room in which the user is located. Reception of dual transmissions is defined as "Verified Alarm". Reception of RF

transmission only, in another room, indicates that the user is within this receiver's range but not in the same room.

The signals, that are received in the central station software, can be filtered to indicate either dual transmission reception of pinpointed location (Verified Alarms) or single (RF) transmission reception as well for approximated location. Undefined transmission codes can be also filtered out in the software. This option is especially important in multi-store buildings, where sending assistance to the wrong floor, because of false location detection, can be detrimental.

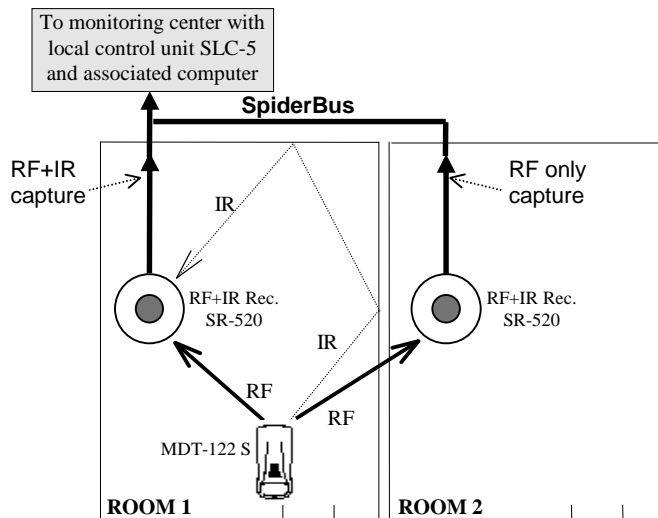


Figure 5 - Demonstration of RF+IR technology advantage

Note: In this illustration, the receiver in room #1 receives the RF and IR signals and sends a verified alarm message. The receiver in room #2 receives RF transmission only and sends unverified alarm message.

3.3. Low Battery Voltage Indication

The battery is automatically tested every 1 hour, under load condition. In addition, when the battery voltage is low, the LED blinks while pressing the left or right push-button switch.

3.4 External Buttons Functions

1st. Left or Right push-buttons

When the guard presses the left or right push-button, an attendance message is sent to the security main station (confirming that he is not attacked) and the unit is also tested (the LED is lit).

Whenever the left and right push-buttons are pressed, panic alarm message is transmitted. Panic alarm starts 15 seconds after pressing both push-buttons, and repeated every 30 seconds, for 5 minutes.

1st. Tilt ON-OFF slide switch

The switch is located at the rear side of the unit, above the belt clip. By using this switch the user can disable the tilt sensor function. (this is necessary when a guard goes off duty or performs such activities that can activate the transmitter and create false alarm).

2nd. Temp Tilt Off Push-Button Switch

The push-button is located at the top of the unit. It is used for temporary disabling (5 minutes) of the tilt sensor function. After temporary disabling of the tilt function, to enable it again the Tilt ON-OFF slide switch should be switched to OFF position and then to ON again.

3.5 Pull Cord Function

The MDT-122 S is connected to the holder belt by the pull cord. The pull cord disconnection alarm is transmitted in the events that are detailed in paragraph 1C. This alarm is repeated every 30 seconds for 5 minutes.

3.6 Internal DIP Switches Functions

The internal DIP switches (fig. 6) functions and their default positions (set by the manufacturer) are detailed in table 1.

Table 1 - Internal DIP Switches Functions

DIP switch No.	Description	Default position
1	Buzzer ON/OFF (*)	ON
2	Pull cord option	OFF
3	Supervision ON/OFF	OFF
4	Supervision message type (**)	OFF (slow)
5	Pre-tilt alarm transmission ON/OFF (***)	ON
6	Tilt alarm delay ON/OFF (****)	ON

- * Buzzer ON/OFF - buzzer enable/disable during transmission.
- ** **Supervision type**
OFF position - the supervision messages are transmitted every 60 minutes (slow rate)
ON position - the supervision messages are transmitted every 30 seconds (rapid rate).
When the tilt on/off slide switch is set to off position, the supervision message type is slow (the position of dip switch number 3 is disregarded).
- *** **Pre-tilt alarm**
ON - Enables Pre-alarm and Restore events.
OFF - Disables Pre-alarm and Restore events.
- **** **Tilt alarm delay**
Fifteen seconds pre-alarm delay enabled/disabled.
(If the "tilt alarm delay" DIP switch is set to OFF position (no delay) the Tilt pre-alarm DIP switch position is disregarded).

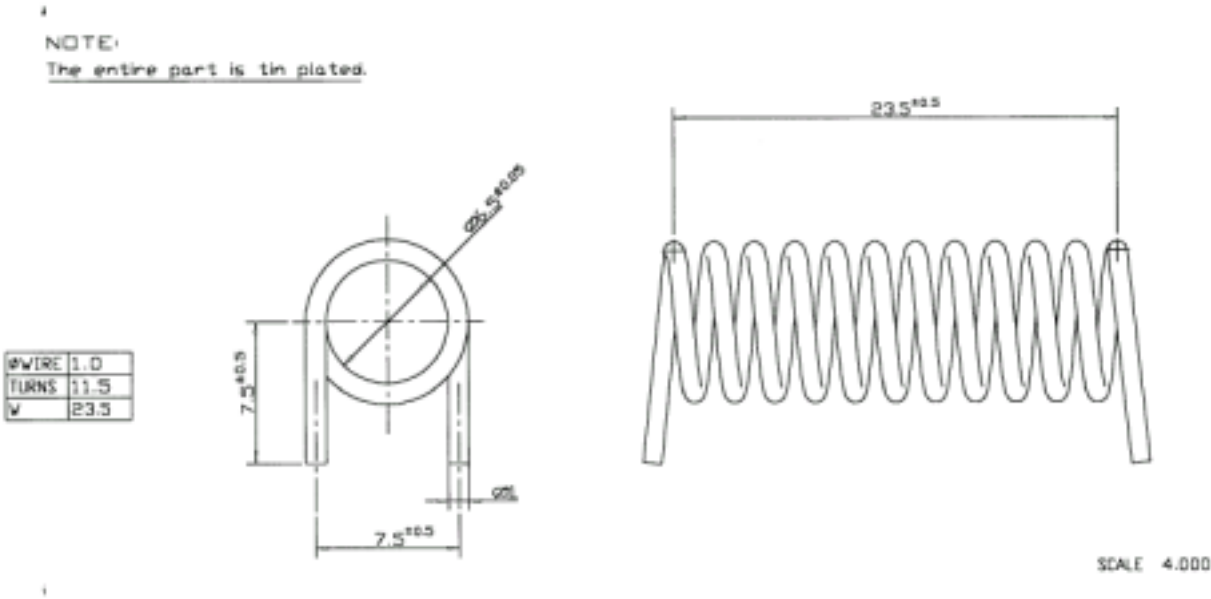
3.7 LED Indicator Functions

The red LED indicator is lit for short duration whenever a message (detailed in the previous paragraph) is transmitted and flashes when pressing the left or right push-button if the battery voltage is low.

3.8 Buzzer Functions

The internal buzzer sounds, for example, in the following situations:

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- 1st. During 15 seconds of the "tilt pre-alarm" (see figure 4).
- 2nd. During tilt alarm (long beep starting 15 seconds after pre-alarm state).
- 3rd. When somebody is tampering / stops tampering with the unit.
- 4th. Whenever the internal DIP switch setting is changed.

3.9 Transmission Events Messages

No.	Event	No.	Event
1	Supervision	17	Tilt enabled
2	Verified supervision	18	Tilt disabled
3	Tamper	19	Verified Tilt alarm
4	Verified tamper	20	Verified tilt enabled
5	Push button	21	Low battery
6	Verified push button	22	Verified low battery
7	Panic alarm	23	Low battery restore
8	Verified panic alarm	24	Tilt restore
9	Pre-tilt alarm	25	Verified tilt restore
10	Verified Pre-tilt alarm	26	Pull-cord restore
11	Tilt alarm	27	Verified pull-cord restore
12	Verified Tilt alarm	28	Tamper restore
13	Pull-cord alarm	29	Verified Tamper restore
14	Verified Pull-cord alarm	30	Tilt disable
15	Pre-tilt restore	31	Verified tilt disable
16	Verified Pre-tilt restore		