

MINDA PERSONAL PROTECTION SYSTEM

TX-400 KEY-FOB TRANSMITTER

Operating Instruction

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**Tactical Technologies Inc.
1701 Second Ave
Folsom, PA 19033
610-522-0106**

www.tacticaltechnologies.com

OVERVIEW

Thank you for purchasing a MINDA TX-400 Transmitter, which uses a low-power microprocessor for 'house-keeping' and offers the following factory programmable options:

- A Unit Identity Code (TX ID number 1,2,3,or 4) which will allow a single receiver to identify up to four different transmitters.
- A very secure Family Identity Code, enabling secure use of multiple groups of transmitters and receivers together in the same location - without receiving alarms in ALL receivers.
- Full compatibility with other MINDA equipment
- Transmitter 'Low Battery' alert sent to receiver
- Very low power consumption

Keep this instruction manual in a safe place - it contains important information and helpful tips which will assist you to obtain the best possible performance from your new MINDA system.

OPERATING FREQUENCY

All MINDA systems for use in the United States operate on a frequency of 418MHz in the UHF band. The operating radio frequency cannot be changed to suit a specific customer's needs.

BATTERY INSTALLATION

The MINDA TX-400 transmitter requires an internal 12 volt 33mA/hour battery type GP 23A (Duracell type MN-21).

To install a new battery into a key-fob style transmitter, the two-piece case must be pried open by inserting and carefully twisting a flat-bladed screwdriver into the groove formed by the two case halves. The old battery can then be removed and replaced by a new one, taking care to ensure that it is orientated in accordance with the polarity markings on the inside of the case. The case top should then be carefully aligned with the LED and gently but firmly snapped closed just using finger pressure.

OPERATION

The TX-400 will only communicate with an appropriate MINDA receiver, such as the RX-400 pocket receiver, or the RX-500 portable/mobile/tabletop receiver.

The TX-400 is operational immediately upon inserting the battery.

The TX-400 has two buttons: RED and BLACK. The RED button sends a RED ALARM to a MINDA receiver. The BLACK button sends a GREEN alarm to a MINDA receiver. Press and hold either button for at least 1 second to transmit your alarm.

The TX-500 has one RED LED. The red LED illuminates during transmissions. In use, if the red LED on the transmitter fails to light, or is lit dimly, the transmitter battery probably needs to be replaced.

WHAT IS ACTUALLY TRANSMITTED

Whenever a 'MINDA' transmitter operates, the actual digital data message transmitted contains all of the following pieces of information, repeated a number of times:

< I am a 'MINDA' transmitter >
and < My Family Identity is 'xxx' >
and < I am Unit I.D. 'y' >
and < My alarm status is 'red/green' >
and < My battery status is 'OK/low' >

If the first two pieces of data in the above message exactly match the information programmed into the 'MINDA' receiver, then the rest of the information will be decoded and displayed on the receiver's LEDs. If they do not match, the entire message is ignored.

UNIT IDENTITY

A MINDA TX-400 Keyfob Transmitter can have one of four possible Unit Identities (1, 2, 3 or 4) pre-programmed by the factory.

The user can not alter the pre-programmed Unit Identity Code (shown on the label on the back of the case) whenever required.

Note: Check that you know the Unit Identity (1,2,3,or 4) of the transmitter that you intend to use by sending a test signal to a 'MINDA' receiver and noting which of its LEDs illuminates.

ANTENNA

The transmitter's antenna is the external small black cord. **Never** attempt to shorten, fold up or modify the transmitter antenna since such action will seriously degrade the range of the MINDA system. When using the key-fob transmitter, hold the case so that the short cord antenna points away from you, and then press the appropriate button for at least one second. The small red LED should illuminate.

FAMILY IDENTITY CODE

Each MINDA system, when supplied to a customer, will have already been programmed at time of manufacture with a common default 'Family Identity Code' (hexadecimal 94) enabling it to be used with any other of the standard MINDA products. The Family Identity Code for a particular family of MINDA units can easily be re-programmed by returning all of the equipment to Tactical Technologies Inc. The TX-400 transmitter can be programmed with any one of a possible 255 Family Identity Codes.

For a MINDA system to operate with, and recognize up to four independent transmitters, the Family Identity Code of the receiver and transmitter(s) all have to match **AND** each of the transmitters must have a different Unit Identity (1,2,3 or 4).

A microprocessor controlled MINDA receiver will only respond to signals from those transmitters sending the same Family Identity Code that it has been pre-programmed to accept. This capability minimizes the risk of interference between similar systems that happen to be operating within radio range of one another. It is **absolutely vital** therefore, to ensure that all transmitter and receiver units that have to operate together are programmed with the same Family Identity Code. Signals received from any 'alien' transmitter operating within range will not be decoded and, instead, treated by the receiver as radio interference on the channel.

LOW BATTERY WARNING

When the battery voltage of a MINDA TX-400 transmitter drops to a level where battery replacement is desirable, each subsequent transmission made will be 'tagged' to indicate this fact to the receiving end. When a MINDA receiver recognizes a 'tagged' signal from a MINDA transmitter, the LED indicator appropriate to that transmitter's Unit Identity will start to 'blink out' briefly about once per second.

BATTERY LIFE

The TX-400, when equipped with a fresh battery, should operate for more than 5000 activations of the transmitter.

TRANSMISSION RANGE

When using the MINDA system over a line-of-sight path, a range of greater than 100 yards is likely, whereas in a busy street, hotel, or indoors the range will be less.

GETTING THE BEST RESULTS WITH MINDA

To maximize the effectiveness and communications range of a 'MINDA' alarm system there are some simple 'tricks' that really do work and which, on all occasions when it is practical and convenient to use them, can be used to enhance its performance. These are....

- When carrying and using the 'MINDA' receiver, try to allow the antenna wire to hang freely from the receiver case and also remember that audible warnings from the built-in 'beeper' may be somewhat muted if the small hole on the label side of the unit is significantly obstructed.
- Remember that the human body is largely comprised of water. When using a transmitter, face in the direction of the receiving location so that your own body does not obstruct the emitted radio signal. If possible, hold the transmitter away from your body so that there is free space around its antenna. NEVER shorten or wrap up the transmitter antenna wire.
- When using a 'MINDA' transmitter or receiver inside a vehicle, try to ensure that its antenna is kept above the window line to ensure that signal levels are maximized.
- If you are in the street and communications get difficult, try holding the unit just above the roof of a parked car with the antenna wire pointing upwards. By doing this the metal roof of the vehicle will act as a counterpoise earth and so enhance the signals .

TROUBLESHOOTING GUIDE

If signals from a TX-400 transmitter are not being received by a MINDA receiver the following tests should be undertaken:

- 1.) Check that the transmitter is not out of receiver range by temporarily reducing the distance between the units to 10 yards or less. Begin to increase the distance again until signals transmitted are not received reliably. This will give a good indication of the likely maximum working range that can be achieved in the particular location used for these tests.
- 2.) Observe the red LED on the transmitter. If it fails to light, or is lit dimly, when a button is pressed the battery probably needs to be replaced.
- 3.) If the units still fail to communicate, check that the MINDA receiver is operating correctly by pressing and releasing its RESET button and confirming that the eight LEDs briefly illuminate. If this does not happen, replace the battery in the receiver with a new one and try again.
- 4.) Confirm that interference or another signal is not jamming the receiver. If necessary, move the receiving location away from the source of the interference.
- 5.) Check that other transmitters (in the same family) are being received OK.
- 6.) Return the faulty transmitter for check-out and/or repair.

MAINTENANCE

The MINDA transmitters require minimal maintenance. Problems with the internal electronics are unlikely unless the unit has been subjected to some physical damage. The most likely sources of difficulty will be associated with the transmitter battery or its contacts, the mechanical switches, or the antenna. These items should be inspected regularly and corrective action taken, where found to be necessary.

TRANSMITTER SPECIFICATION

UNITED STATES OF AMERICA FCC COMPLIANCE:

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. 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 UNDESIRE OPERATION.*

U.K RADIO AUTHORITY'S COMPLIANCE:

The unit is fully compliant with the U.K. Radio Authority's Specification MPT1340 for short-range radio alarm systems.

*Operating frequency: 418.00 MHz nominal
Overall freq. accuracy: ± 100 kHz
Operating range: 50 to 150 metres (depends on the local environment)
Transmitter E.R.P.: 0.5 milliwatt (-6dBm) typical
Internal power source: 12 volt alkaline battery (MN-21)
Current drain: < 20 mA while actually transmitting
Operating temp. range: -10 to +55 degrees Celsius
Battery life: Depends on number of transmissions*

GUARANTEE

Tactical Technologies Inc. guarantees these MINDA products from any faults due to defective materials or workmanship for a period of 12 months from the date of purchase. Where the fault is the result of misuse, negligence or inexpert repair, Tactical Technologies Inc. reserve the right to make a charge to cover the extra costs involved.

RE-PROGRAMMING OF OPTIONS

Re-programming of any MINDA equipment requires specialist electronic knowledge, possibly a PC (not for TX-400) and peripheral equipment. For this reason, most customers will find it more convenient to return the equipment to Tactical Technologies Inc. for re-programming.