

# ***MINDA PERSONAL PROTECTION SYSTEM***

## **RX-500 Maxi-MINDA Receiver**

### **Operating Instruction**

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## IMPORTANT NOTE

You are advised to read these instructions carefully and completely before using this equipment **BUT**, if you really cannot wait, the Quick-Start Guide found at the end of this manual will give you the basic do's and don'ts...

## OVERVIEW

Thank you for purchasing a 'Maxi-MINDA' RX-500 receiver which uses a low-power microprocessor to offer the following options:

- A very secure Family Identity Code
- Very low stand-by power consumption by using battery economizer.
- Automatic battery back-up operation if external power source fails.
- Fully protected against inadvertent reversal of external D.C. supply.
- Programmable alarm signal - can repeat at regular intervals.
- Optional loud alarm (up to 1.5 watts) when using external power.
- Internal loudspeaker and jack socket for connection of an external alarm loudspeaker.
- Relay-switched contacts **or** open-drain FET output for external switching.
- 9 volt 200mA regulated D.C. output is available to power other equipment (only when receiver is using external power).
- Jamming alert - with programmable time delay.
- Lost signal alert - with programmable time delay and repeat option.
- Battery monitoring of transmitters that are using the same Family Code.
- Serial programming interface to a PC (additional items required)

## CAUTION

A 'Maxi-MINDA' receiver will only respond to signals from those transmitters sending the same Family Identity Code as the one that it has been pre-programmed to accept. This 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 correctly with the same Family Identity Code. Any signals received from an 'alien' transmitter operating within range will not be decoded and, instead, treated by the receiver as radio interference on the channel.

## BATTERY INSTALLATION

The 'Maxi-MINDA' receiver requires a 9-volt MN1604 alkaline battery which is fitted into the removable cassette accessible from the rear panel. This battery supply is automatically disconnected whenever external power of adequate voltage and correct polarity is applied through the rear connector.

## BATTERY ECONOMIZER

The battery economizer operates by switching the receiver on for a very brief period, looking for a signal and if nothing is found, switching it off again. If a signal is found to be present, the receiver then 'locks-on' for long enough to process and display any alarm signal that may have been received.

If the single green LED above the 'On/Off' switch regularly flashes, this indicates that the battery economizer circuit is in operation - if it illuminates steadily then the economizer has been overridden. While the receiver is in the pulsing 'standby' mode, it is in fact, switched on for less than two percent of the time, thereby dramatically extending the RX-500's operating endurance when using the internal battery supply.

The slight penalty for using the battery economizer is that any incoming alarm transmission must last long enough to catch the receiver during one of its 'on' periods and ensure that it is

recognized and decoded. All intelligent TX-500 Keyfob or TX-600 Belt transmitters will automatically transmit a signal long enough for this to occur. Possible problems when using a MINDA TX-400 transmitter can be eliminated by ensuring the transmit button on the keyfob is always pressed for at least one second.

As supplied, unless a customer has requested otherwise, an RX-500 'Maxi-MINDA' receiver normally has its battery economizer **enabled** while it is operating on its own internal battery and **disabled** (i.e. receiver runs continuously) once external supplies are present. This arrangement can be changed at the factory, if required, by re-programming the receiver.

### **EXTERNAL POWER SOURCES**

If an external power source of greater than 10 volts, and of correct polarity, is connected to the Maxi-MINDA' RX-500, the receiver will automatically use this supply in preference to its internal battery. If for any reason the external supply fails (possible due to AC supply failure) the unit then reverts to its internal battery and continues operating normally.

### **TX UNIT IDENTITIES**

A 'Maxi-MINDA' receiver can be configured (by re-programming) to respond in different ways and with different timings to each of the four possible transmitter Unit Identities (1, 2, 3 or 4), to suit particular operational needs

### **'RED' AND 'GREEN' ALERTS**

When the 'Maxi-MINDA' receiver is operating and a valid signal is received from a transmitter with the same Family Identity Code, the appropriate red or green LED on the receiver will light and an audible pulsed tone alarm will be heard. The tempo of this pulsed tone is faster for a 'Red' alarm than for a 'Green' alarm, thereby facilitating the aural discrimination between urgent and non-urgent transmissions.

When the 'Maxi-MINDA' is using its internal battery the alarm tone is produced by a piezo beeper. When an external power supply is being used an additional high power amplifier driving an internal loudspeaker is automatically enabled. The loudness of the alarm signals produced by the piezo beeper cannot be adjusted. If desired, the beeper can be switched off completely so that all audible alarms are produced only through the loudspeaker with their loudness (from silence to full-volume) being adjusted by means of the front panel volume control. To turn off the beeper refer to the paragraph entitled 'Disabling the Piezo Alarm', but note that this should only be done when the receiver is always to be powered from an external source.

In some operational situations it may be desirable for the 'Maxi-MINDA' receiver to remain silent whenever a 'Green' signal is received and only produce an audible alert on receipt of a 'Red' alarm signal. How the receiver responds to these signals is programmable and can also, if required, be made switch-selectable for use by the operator. As supplied, unless a customer has requested otherwise, an RX-500 'Maxi-MINDA' receiver has a 'Green Alarm' switch on the front panel, adjacent to the 'On/Off' switch, which enables an operator to select whether or not a 'Green' alarm signal is accompanied by an audible warning signal.

### **TRANSMITTER LOW BATTERY ALERT**

Once the battery in any of the transmitters being used falls in voltage such that it is in need of replacement, all subsequent transmissions sent by that unit will be 'tagged' to this effect until the battery is replaced.

Once this tagged signal has been detected by the 'Maxi-MINDA' receiver, its LED indicator corresponding to that transmitter Unit Identity will start to blink out briefly about once per second.

Note that a transmitter whose battery has become completely discharged can NOT send the low-voltage warning.

## **RECEIVER JAMMING ALERT**

Any signal received on the frequency will cause the receiver to lock-on, whether it is local electrical interference, a transmission with a different family code, or a 'wanted' signal from a transmitter on your own family code.

However, if the 'Maxi-MINDA' receiver is 'jammed' by a continuous unrecognized signal, after 5 seconds (factory re-programmable for longer periods) it will produce a series of rapid audible beeps. This allows the user to move to an interference-free location. As soon as the interference clears the beeps will cease.

## **LOSS-OF-SIGNAL ALERT**

If an RX-500 'Maxi-MINDA' receiver has had a Loss-of-Signal Threshold time programmed, then when an initial 'Green' transmission is received from any of its associated transmitters one of four internal pre-programmed time clocks will start counting. Each subsequent 'Green' transmission from that same transmitter unit will reset that time clock to zero. If, however, the pre-set threshold time period elapses **before** another 'Green' signal has been received then the appropriate green LED on the receiver will begin to flash and a 'Lost Signal' audible alarm will be produced.

Until the receiver operator pushes the 'Reset' button to clear the audible and visual alarms, the 'Lost Signal' warning alert tone will continue to be repeated at pre-programmed (Repeat Time) interval(s).

If different transmitter units (but with the same Family Identity Code) are then received, other time clocks commence operation independently in the same way as described above. If a valid 'Red' alarm signal is received from any of its associated transmitters the 'Maxi-MINDA' receiver will, of course, generate all of its normal audible and switching alarms.

The threshold time that has to elapse between successive green transmissions before the receiver sounds a 'Lost Signal' alarm, and also the repeat time between each alarm signal are both programmable, independently, for each of the four Unit Identities.

As supplied, unless a customer has requested otherwise, a 'Maxi-MINDA' receiver normally has these alarms inhibited in order to prevent possible operator confusion. The next section on Confidence Signalling explains how this feature can be used to good effect in an operational situation.

## **CONFIDENCE SIGNALLING**

A 'MINDA' intelligent transmitter (TX-500 keyfob or the TX-600 Belt unit) can be programmed so that for any or all of the four identities it can send a regular (Green) confidence transmission as an "I'm here and OK" signal.

### *Here's an idea:*

If an RX-500 'Maxi-MINDA' receiver has its 'Green Alarm' switch set to 'Off' and has been programmed with a suitable Loss-of-Signal Threshold time (see the 'Loss-of-Signal' paragraph above), the following scenario becomes possible:

In a situation where an intelligent 'Re-MINDA' transmitter and a 'Maxi-MINDA' receiver are being used to protect a person close-by but out of sight, the regular (Green) confidence transmission will keep the receiver silenced all the while it is present. If the transmitter moves out of radio range, its battery fails, or it is otherwise disabled the receiver will sound a 'Lost Signal' alarm as soon as the signal has been missing for the pre-programmed period of time. This enables, for example, a VIP to be guarded at night by a bodyguard in an adjoining room, or a person going into a potentially hazardous situation to be protected by a back-up team in a vehicle close-by. An intelligent MINDA transmitter can send confidence signals

entirely automatically without disturbing the user unless he, or she, wishes to send a 'Red' alarm signal in the usual way.

**IMPORTANT NOTES:** It is always possible that a 'Maxi-MINDA' receiver could miss a confidence transmission from one of its associated transmitters if it coincides with a stronger transmission from another unit or because of local radio interference. The risk of such a false alarm can be reduced by programming the receiver Loss-of-Signal Threshold time to be a few seconds more than twice the Confidence Repeat period of the transmitter(s).

For example, if the transmitter sends an automatic confidence signal every five minutes, a 'Lost Signal' alarm period of about ten and a quarter minutes should be programmed into the receiver. This will allow one confidence transmission to be missed by the receiver and not cause an alarm signal to be produced.

If more than one transmitter (of the four possible) operating with a 'Maxi-MINDA' receiver has been programmed to send confidence signals more frequently than about every 5 minutes, there is a likelihood of these transmissions overlapping occasionally and one or other of them not being decoded by the receiver. The likelihood of serious interference can be reduced significantly if each of the transmitters is programmed with different Confidence Repeat intervals, since any two signals clashing on one occasion will not do so the next time around.

#### DISABLING THE PIEZO ALARM

The alarm signals produced by the piezo beeper can, if required, be switched off altogether by moving an internal switch. To access it, carefully open the RX-500 'Maxi-MINDA' receiver's case and look for the small switch on the rear of the front panel PCB, between the blue piezo beeper and the right-hand ribbon connector. When the slider is in the down position (nearer to the bottom of the case) these tones are enabled - to turn them off move it in the opposite direction (i.e. towards the beeper).

**NOTE:** Remember that when this switch is 'up' (tones **disabled**), the only audible alarm signals generated will be those produced by the RX-500 'Maxi-MINDA's internal audio power amplifier and loudspeaker, and these will only be present as long as the receiver is powered from an external supply.

#### EXTERNAL CONNECTIONS

The rear panel of the 'Maxi-MINDA' is shown in Figure 1 below:

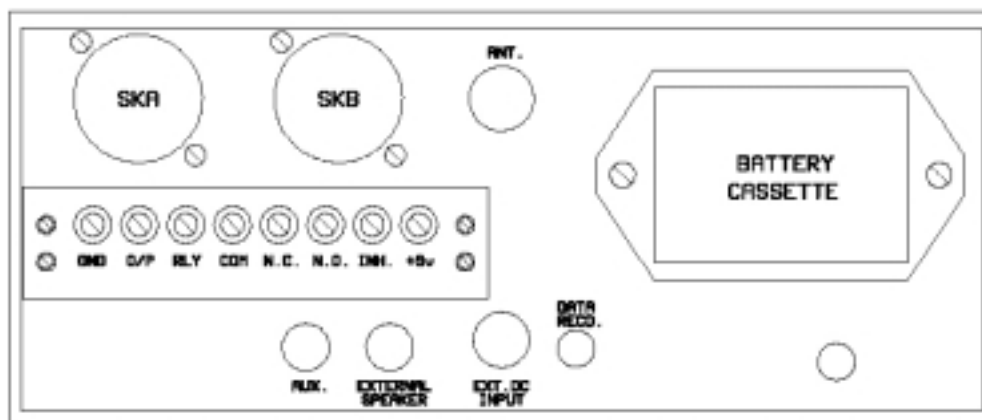


Figure 1

--SKA and SKB are only used to connect a 'Maxi-MINDA' receiver, TX-500 transmitter, or TX-600 transmitter to a PC for programming. During normal operation no connections should ever be made to them.

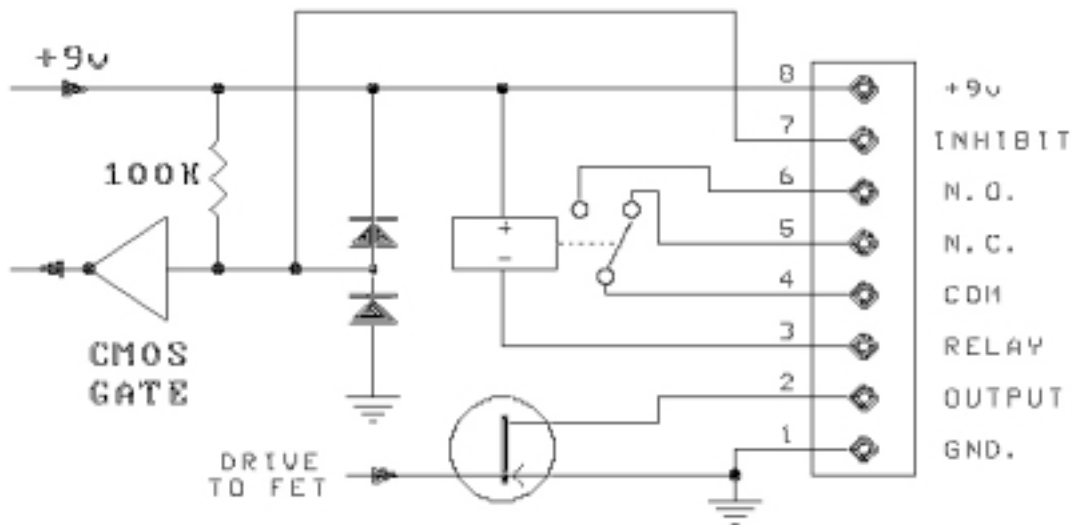
--The 'Data Received' LED and the 'AUX' connector (if equipped) can also be ignored.

--The 'Ext. DC Input' connector is used to connect an external D.C. supply to the RX-500 'Maxi-MINDA' receiver. The voltage must be in the range of 10-16 volts D.C. (2.1mm plug, center pin positive) (Radio Shack Part No. 273-1652).

--The 'External Speaker' connector, a 3.5mm mono jack socket, permits an external loudspeaker to be used to produce the alarm tones in place of the internal speaker. Any external loudspeaker connected to this socket must have an impedance of greater than 8 ohms in order to protect the 'Maxi-MINDA's amplifier circuitry against damage.

--The large terminal strip on the rear panel of the 'Maxi-MINDA' enables a variety of external switching options to be achieved. It is, however, **strongly** recommended that the receiver always be connected to an external D.C. supply if any significant current is to be drawn from Terminal No. 8 (+9v out) of the terminal strip.

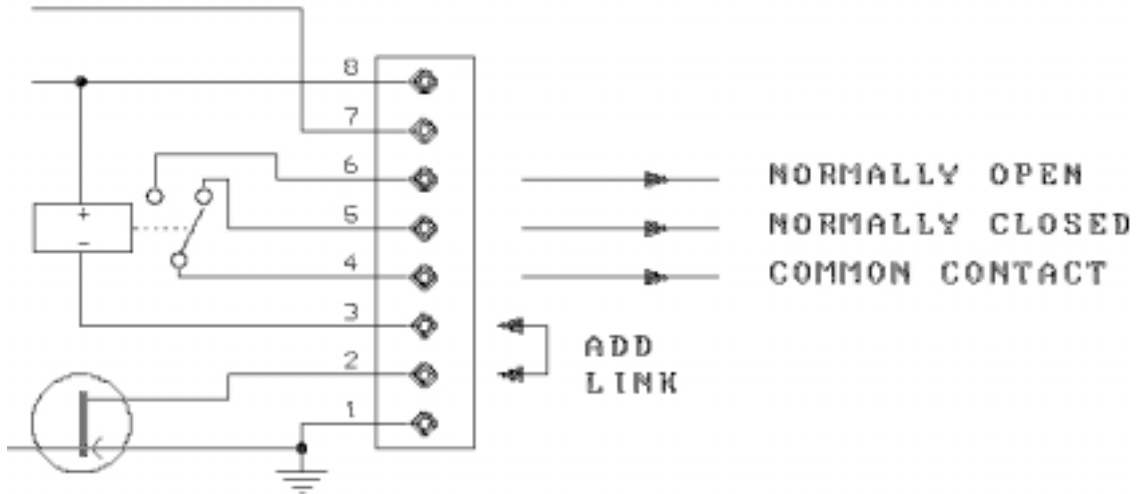
The internal 'Maxi-MINDA' circuitry immediately associated with the eight connections is as shown in Figure 2:



*Figure 2 - Internal circuitry of the Maxi-MINDA receiver*

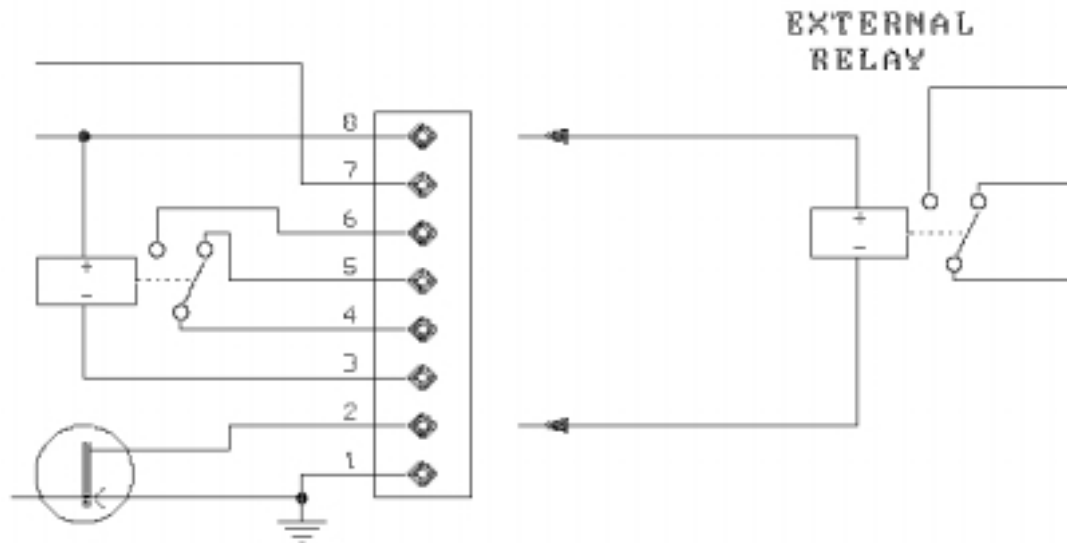
The FET is switched 'On' whenever a 'Red' alarm signal from **any** of the four transmitter Unit Identities is recognized by the 'Maxi-MINDA', and it will stay switched on until the alarm is cancelled by pressing the 'Reset' button.

There is an internal relay available, which can be activated, if required, by this FET. To do this, add a link between the 'Output' and 'Relay' terminals, and then the dry (fully isolated) relay contacts are available as 'Com' (Common), N.C. (Normally Closed) and N.O. (Normally Open) on the terminal strip. See Figure 3



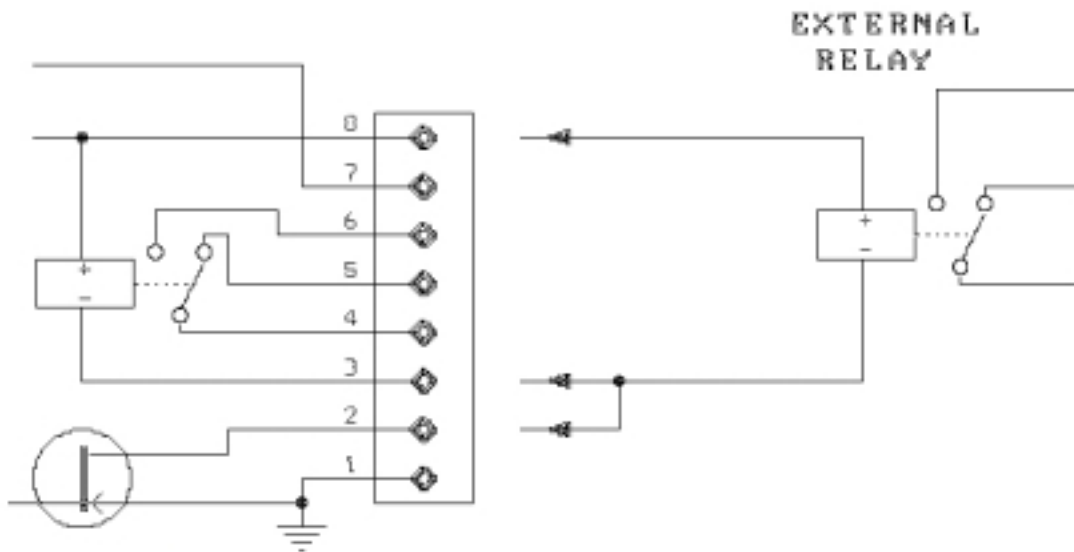
*Figure 3 - Using the internal 'dry' relay contacts*

The internal relay contacts are only capable of switching a resistive load of up to 1 Amp at 24 volts. If higher voltages or currents have to be switched an external relay, providing that it has a coil voltage between 6 and 9 volts, can be used in place of the internal one by connecting it as shown in Figure 4:



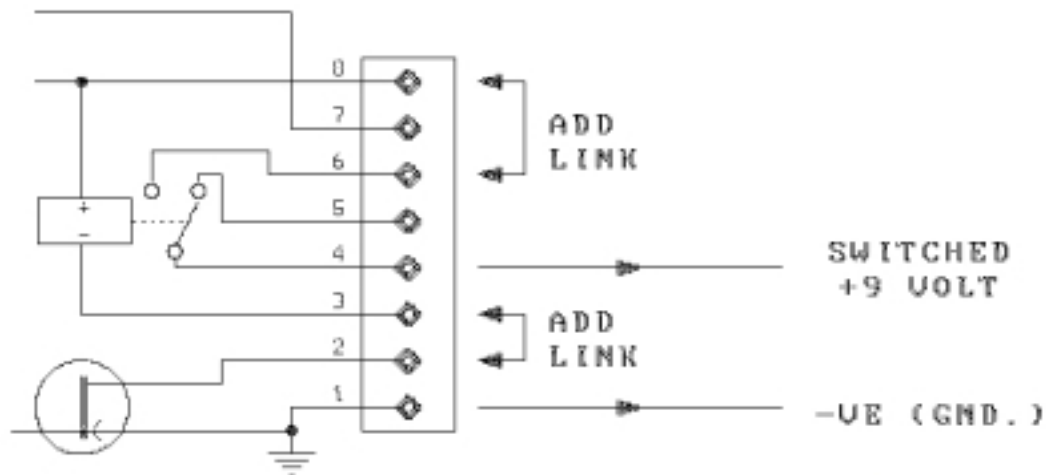
*Figure 4 - Activating an external relay instead of the internal one*

If both the internal relay **and** an external one are required, then connect them as shown in Figure 5:



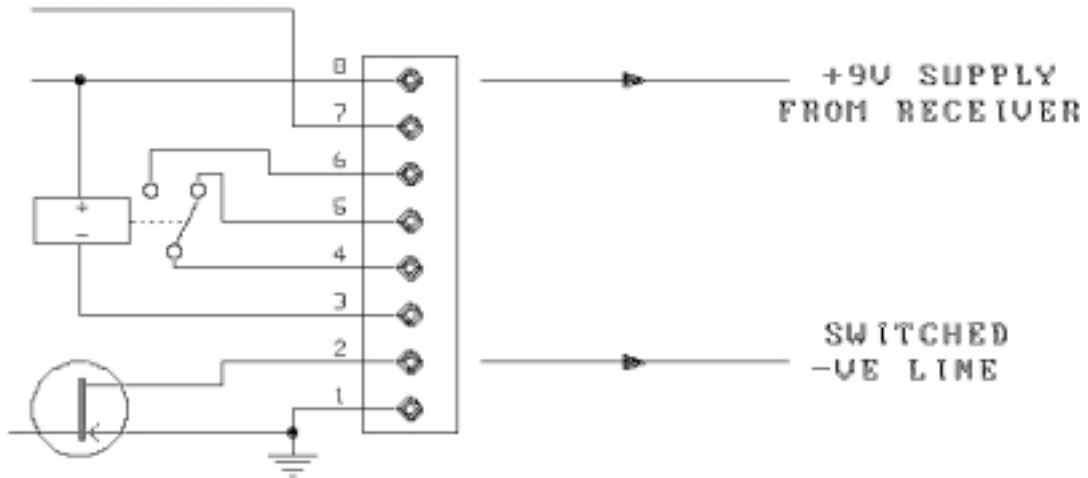
*Figure 5 - Activating an external relay as well as the internal one*

A 'Maxi-MINDA' can provide 9 volts at up to 200 mA current (providing it is being powered by an external D.C. supply) to operate an external device, and enable it to be switched on and off by the receiver's internal relay contacts, see Figures 6 and 7:



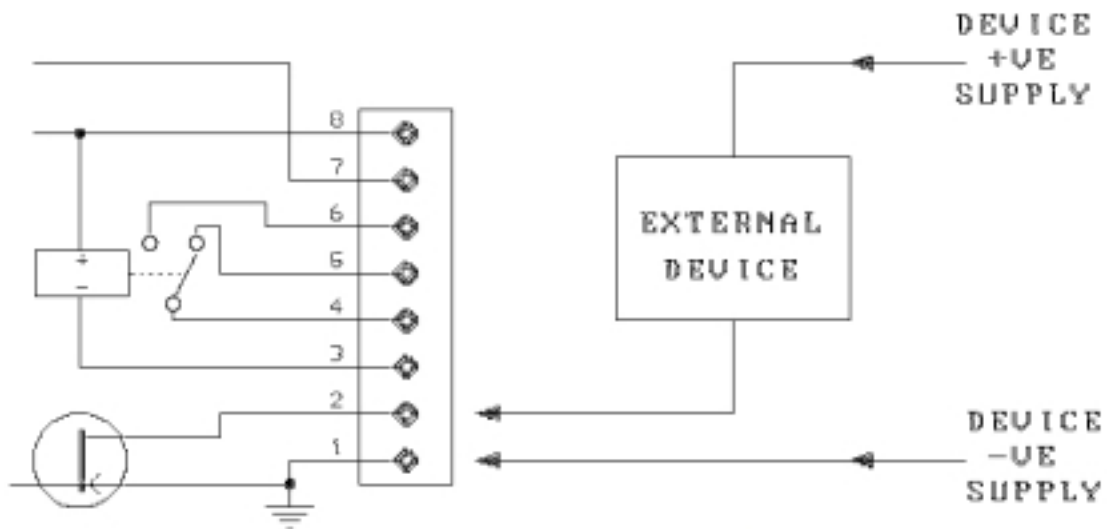
*Figure 6 - Providing a switched 9V to an external device (switched +ve)*





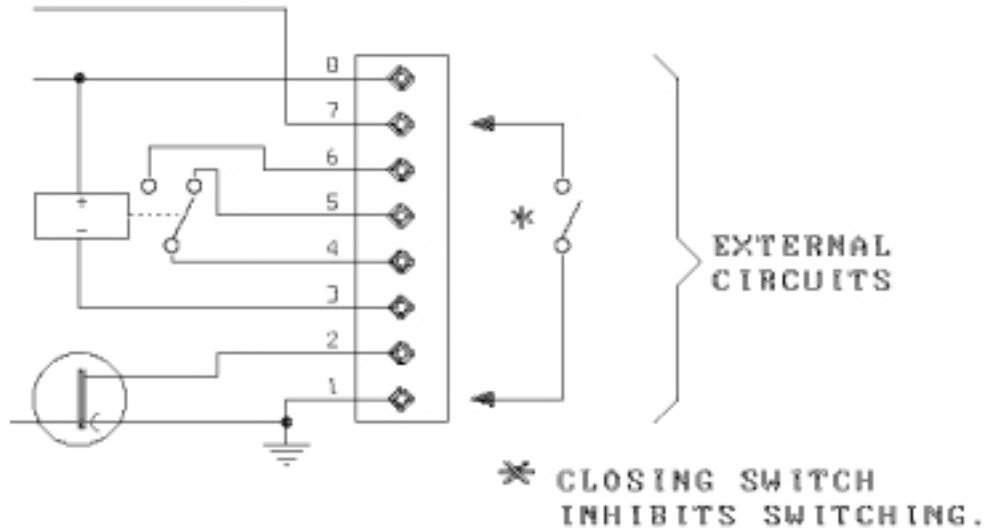
*Figure 7 - Providing a switched 9V to an external device (switched -ve)*

The FET can directly switch a current of up to 300 mA without using the internal relay. Figure 8 shows the connections:



*Figure 8 - Switching an external device consuming less than 300mA*

The 'Inhibit' line can be used to inhibit any switched output without resetting the 'Maxi-MINDA'. If, for instance, a large remote bell were connected to ring whenever a 'Red' alarm was received, the Inhibit line could be used to cancel the alarm locally without having to return to the 'Maxi-MINDA' receiver and press the 'Reset' button. All that is required is for the 'Inhibit' line to be temporarily grounded until the alarm has been cancelled at the receiver. Figure 9 shows the **additional** connections needed to implement the 'Inhibit' function:



*Figure 9 - Additional connections required to inhibit the alarm output*

**CAUTION:** The 'Inhibit' line should only be used to **temporarily** inhibit the external switched outputs until the RX-500 'Maxi-MINDA' receiver can be reset manually. If it is used, **it must be 'un-grounded' immediately after resetting the receiver** in order for any external switching function to continue functioning.

#### **TRANSMISSION RANGE**

When using the 'MINDA' system over a line-of-sight path it is likely that with the short flexible whip antenna attached to the receiver a working distance of over 100 yards will be obtained, whereas in a busy street, hotel or station the range will be noticeably less. With a proper elevated antenna connected to the 'Maxi-MINDA' receiver and an unobstructed line-of-sight path from the transmitter, a range of 400-500 yards may be possible.

It is recommended that before using a 'MINDA' system in a 'live' operational situation, a few tests should be carried out in the location(s) of interest to confirm consistent and reliable operation.

#### **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.*

'MINDA' operates in the 418MHz radio frequency band, which in the U.K. has been allocated for general short-range operation by low-power security systems and car alarms.

## LICENSING

All 'MINDA' products are license-exempt when used in the USA and the U.K.

## MAINTENANCE

The 'Maxi-MINDA' receiver requires minimal maintenance. Problems with its internal electronics are most unlikely unless the unit has had incorrect external voltages applied or suffered some physical damage.

The most likely sources of difficulty are likely to be with its external leads and connectors, or the antenna arrangement. These should all be inspected regularly and preventative or corrective action taken where found to be necessary

## GETTING THE BEST RESULTS

The following advice may be found useful and, if followed on those occasions when it is practical and convenient to do so, should help to ensure the best performance and communications range of a 'MINDA' system:

- The US FCC regulations and the UK M.P.T. regulations do not permit any modifications or attachments to a 'MINDA' transmitter to improve its transmitted signal, but no such restrictions apply to the receiving end of the system. A properly designed and installed external antenna, well positioned, and connected by suitable low-loss cable to an RX-500 'Maxi-MINDA' receiver, will provide a very noticeable improvement in operational range compared to that obtainable when using the basic short flexible antenna.
- If the 'Maxi-MINDA' receiver has to be used with the short flexible antenna attached then it should be positioned in a clear location away from other electronic equipment and possible sources of radio interference.
- Any person using a key-fob transmitter should always try to face in the direction that he wishes the signal to go so that his/her body does not obstruct the emitted radio signal. If possible, the transmitter should also be held away from the body so that there is free space around its antenna.
- When using a 'MINDA' transmitter (or a receiver with attached antenna) inside a vehicle, remember that signal levels will be maximized if the antenna is kept above the window line. Use an optional magnetically mounted vehicle antenna with the RX-500 'Maxi-MINDA' receiver whenever possible.

## TROUBLESHOOTING GUIDE

If a 'Maxi-MINDA' is not receiving signals from a 'MINDA' transmitter, the following tests should be undertaken:

- Check that the units are not out of range by temporarily reducing the distance between them to 10 yards or less. If all is then well, increase the distance again until signals transmitted are **not** received reliably. This will give a good indication of the likely maximum working range which can be achieved in that particular location.
- Observe the red LED on the transmitter. If it fails to light, or is lit dimly, when the transmitter is activated the transmitter battery probably needs to be replaced. The LED can easily be seen on a key-fob unit but there is no LED on the TX-600 belt transmitter.
- Check that other transmitters (with the same Family Identity Code) are being received correctly.
- Confirm that the receiver is not being jammed by interference, or from another signal. If necessary, move the receiver antenna away from the source of the interference.
- If the units still fail to communicate, check that the RX-500 'Maxi-MINDA' receiver is operating correctly by pressing and releasing its 'Reset' button and confirming that the eight LEDs briefly strobe.
- If the receiver appears to be completely 'dead' and is connected to an external source of power, disconnect all external cables and see what happens. If it now functions correctly, check that the

external power is getting to the receiver by measuring the voltage on the connector which should be a D.C. voltage in the range 10-16 volts. If this voltage is not present, the leads (and AC power supply unit if used) should be examined to find and rectify the fault. If the receiver still does not function with the external power connector removed, replace its internal 9 volt battery by a known good one and try again.

- Replace any other cables and connections, one at a time to see if the fault re-occurs and, if it does, investigate the cause accordingly.
- Return the faulty unit for workshop test and/or repair.

## RECEIVER SPECIFICATION

*Operating frequency:* 418.00 MHz nominal

*Overall freq. accuracy:*  $\pm 100$  kHz

*Sensitivity:* Typically -110dBm for reliable data decoding

*Max. receiving range:* Typically 100 yards when using a 'MINDA' transmitter but depends on local environment.

*Internal power source:* 9 volt 550 mA/hour alkaline battery (MN1604)

*Current drain:* < 300  $\mu$ A average (Batt. Economizer/no signal)

(on internal battery) < 20 mA whilst actually receiving a signal

*Current drain:* < 50mA (Batt. Economizer disabled/no signal)

(on external battery) 60 - 150mA whilst actually receiving a signal

*Internal battery life:* Depends on number of alarm signals received

*External power sources:* 1) 10 - 16 volts D.C. (negative ground)

*Operating temp. range:* -10 to +55 degrees Celsius

## NOTES ON 'MINDA' SYSTEM CODING

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

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 group of 'MINDA' units can easily be re-programmed by returning all of the equipment to Tactical Technologies Inc., or, if a 'MINDA' computer interface package has been purchased, by a suitably skilled user.

If the security offered by only 255 different codes is considered to be inadequate then the intelligent TX-500 or TX-600 transmitters can be re-programmed to utilize a much more sophisticated Family Coding system that offers a choice of billions of unique codes. This option is only practical so long as the customer does not need to operate a mixture of Intelligent (TX-500) and 'Dumb' (TX-400) transmitters into the same RX-500 'Maxi-MINDA' or RX-400 'MINDA' receiver.

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). The Unit Identity of a 'MINDA' TX-500 intelligent transmitter is user-switchable and can easily be changed - see the TX-500 'MINDA' Operating Instructions for more details. The Unit Identity of a 'dumb' key-fob transmitter (TX-400) is set during manufacture and cannot be changed by the customer. Unless each transmitter has its own individual identity, the receiver will be unable to identify the particular unit .

## 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 Code is 'xxx' >

**and** < I am Unit No. '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 a 'MINDA' receiver, then the rest of the information will be decoded and displayed on the LEDs. If they do not match, the entire message is ignored.

### **GUARANTEE**

Tactical Technologies Inc. guarantees to make good 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**

The configuration of an RX-500 'Maxi-MINDA' receiver, and any of the 'MINDA' range of intelligent transmitters, can be changed by re-programming them using a PC and a 'MINDA' custom-designed interface. This work requires some specialist technical knowledge as well as access to a PC and peripherals and, for this reason, most customers will probably find it more convenient to return the equipment to Tactical Technologies Inc. for re-programming.

Those customers who do have in-house technical expertise and sufficient 'MINDA' units to make an investment in programming software cost-effective, may wish to consider purchasing the special 'MINDA' programming kit which comprises hardware interface cables and connectors, custom software on disk, and full instructions. Further details and prices on this kit can be obtained from Tactical Technologies Inc.

### **PRE-PROGRAMMED SETTINGS**

The specific options and settings that were programmed into this RX-500 'Maxi-MINDA' receiver at the time of its manufacture are listed and set out in Appendix 1.

**Please remember** always to amend this listing to show any subsequent changes made by re-programming the equipment.

## **QUICK-START GUIDE**

Each 'Maxi-MINDA' RX-500 receiver can display two status indications from up to four different transmitters, either the TX-400 Keyfob Transmitter, the TX-500 Intelligent Keyfob Transmitter, the TX-600 Intelligent Belt Transmitter, or a mixture of these types, coded 1-4 and all operating with the same Family Identity Code.

Pressing the RED button on a key-fob style transmitter should light the appropriate red LED on the receiver; the BLACK one (BLUE on the TX-500) lights the green LED.

To operate, connect the RX-500 receiver to an external power source (if available), using an optional AC wall plug (12 VDC output, center pin positive) supply or a cigarette-lighter plug and lead if operating in a vehicle. The receiver can also be powered by an internal 9 VDC battery but with slightly fewer facilities because of the limited battery power available. Either plug the short whip antenna directly into the connector on the rear of the receiver or connect a more efficient remote one (magnetic type for car-roof or a mast mounted antenna) by means of a suitable feeder cable. Ensure that nothing is plugged into the two DIN connectors on the rear of the RX-500. Switch on the receiver and confirm that the green 'Power' light comes on, either steadily or flashing (see paragraph on Battery Economizer). Switch the 'Green Alarm' switch (if fitted) to the 'On' position.

### **Maxi-MINDA Desktop/Mobile Receiver - Operating Instructions**

Press and release the 'Reset' button and confirm that the eight LEDs light briefly in sequence as lamp-test that also confirms that the internal micro-processor is functioning. Adjust the front panel 'Volume' control to its mid-position. Note that this control will only have a noticeable effect whilst the RX-500 is being powered from an **external** power source. Take one of the transmitters that you intend to use with the 'Maxi-MINDA' RX-500 and send a test transmission. Confirm that the small yellow 'Signal' light on the receiver illuminates briefly and the message and transmitter Unit Identity are both correctly displayed by the LEDs, accompanied by an audible alarm signal. Briefly pressing the 'Reset' button will cancel any audible alert, repeat the lamp-test and extinguish any LEDs that were illuminated. Switch the 'Green Alarm' switch (if fitted) to whichever mode is required.

#### **Additional alerts provided:**

- 1.) A transmitter low-battery alert causes the appropriate LED indicator on the receiver to blink out briefly about once per second.
- 2) A receiver-jamming alert will cause a series of audible beeps to be generated. If this occurs you should move the receiver (or the remote antenna if used) to an interference-free location and as soon as the interference clears the beeps will cease.

***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 receiver.