

# TX85X RADIO TRANSMITTER



## 1. OVERVIEW

The FSK TX85X is a synthesised long-range alarm transmitter operating in the VHF (135 to 175MHz) band.

It is available with radio output power of 10W or 15W in two different models.

There is one antenna connection available, for use with a folded dipole antenna with connector (for superior transmitter range) or for use with a whip antenna with connector.

The TX85X has seven dedicated hard-wired alarm inputs which can be programmed to trigger on high levels, low levels or on both levels. It also has one hard-wired output for triggering the panel via an FSK Remote or to trigger a siren driver.

One alarm input (zone 3) can be given a delay time from activation to the transmitter generating an alarm message. This is used for elimination of false/accidental alarms or for connection to alarm panels which have siren annunciation.

Each of the seven alarm inputs has the option of a (jumper selectable) internal pull-up for use with negative trigger alarm panels or sensors.

There is a dedicated AC fail input (with its own rectification diode) to sense the AC supply.

The TX85X has a built-in battery voltage monitor with a programmable low battery reporting delay.

In addition to the 7 hard-wired inputs, there is the option of a Contact ID input which can be connected to an alarm panel telephone line communicator.

Using the standard FSK messaging protocol, the contact ID input provides for up to 32 alarm zones and 20 users, as well as a variety of other signals available over the panel's contact ID interface.



Using the new FFSK protocol, the TX85X can send full contact ID (999 zones and 99 partitions) over-the-air. The FFSK protocol is selectable using the handheld programmer.

The contact ID input normally requires no special programming on the alarm panel for correct operation. This may however, be dependant on the alarm panel connected to the TX85X.

There is a serial port interface which can be used in conjunction with selected alarm panels

The serial port input provides for up to 32 alarm zones and 20 users, as well as a variety of other signals available over the panel's serial interface.

The TX85X can be fitted with a remote control receiver which is used in conjunction with the FSK rolling-code remote controls. The remote control will generate a Panic Alarm. The remote control does not occupy any of the seven alarm inputs. Up to ten remote controls can be taught into the TX85X.

The TX85X is programmable via a PC using the TX85X programming cable and Dongle or a Handheld Programmer.

### **Programmable features include**

- The alarm type to be sent per input on high activation and/or low activation of the input.
- Zone activation delay (zone 3 only).
- Automatic test interval (1 to 72 Hours)
- AC fail delay (Off or 1 to 120 minutes)
- AC Restore delay (Off or 1 to 30 minutes)
- Low Battery Delay (Off or 1 to 30 minutes)
- Power-up Signal

## **2. OPERATION**

### **Hard-wired zones**

The TX85X monitors all of its seven inputs continuously. When an input has changed for more than 100mS (to stop false alarms), the TX85X checks if an alarm is to be sent on that input, for that input state (high or low)

If an alarm is to be sent, it is put into a queue. The number of times the alarm is to be sent depends on the severity of the alarm, e.g. Panic Alarms are sent four times, Burglaries three times and lesser alarms twice.

The TX85X checks the queue continuously and sends the alarms, with a delay between alarms, until all pending alarms have been sent.

The delay between alarms is based on the TX85X account code and is designed for transmitters to 'miss' each-other on the network.

The alarms are prioritized according to the input number, input 1 is the highest priority and input 7 the lowest priority.

Higher priority inputs are sent first,

e.g. If input 3 is triggered followed by input 1

- Input 1 is sent first
- If it has already sent one or more alarms for input 3, the alarm is interrupted
- All attempts from input 1 are sent
- The remaining attempts from input 3 are sent.

Each of the seven hard-wired inputs has a pull-up resistor which is put in-circuit by means of a jumper. When the jumper is installed on that input, the input is pulled to the high condition and must be pulled low by the alarm panel or an external sensor.

Normally, inputs which have the pull-up jumper installed are programmed to send an alarm on the low condition (negative trip).

### **AC Fail**

The TX85X has a dedicated AC fail input (CAC). The CAC input can be connected to an AC signal (10 to 20V rms) or a DC signal (10 to 20V). Normally, the CAC input is connected to one of the secondary terminals on the transformer used as the alarm panel's power supply.

The AC fail can be programmed to have a delay of anywhere between 1 and 120 minutes. The TX85X can also be programmed not to report an AC fail.

If the AC has failed for the delay period, an AC fail alarm will be transmitted by the TX85X. The AC fail alarm will not be re-transmitted until the AC has been restored and has failed again (AC fail alarm is latched)

If the AC has been restored for the AC restore delay period, an AC restored alarm will be transmitted. The AC restored alarm will not be re-transmitted unless the AC fails again (AC restore alarm is latched).

If the AC fail alarm has been enabled, the TX85X will report the condition of the AC input by means of an AC fail or AC restore alarm 5 minutes after it has been powered-up. This is done to aid with the installation of the unit.

### **Battery Low**

The TX85X has an on-board battery voltage monitor. The battery voltage monitor has a threshold of 10,5V.

Should the battery voltage fall below the threshold for more than the battery low delay time, the TX85X will transmit a low battery alarm.

Should the battery voltage remain below the low battery threshold, the low battery alarm will be transmitted every hour.

The low battery alarm can be disabled.

### **Power Restored**

The TX85X can be programmed to send a Power Restored alarm after power has been applied to the unit.

### **Automatic Test Message**

The TX85X can be programmed to transmit a periodic test message. The periodic test interval is programmable between 1 and 72 hours.

The actual periodic test interval will be slightly shorter than the programmed interval.

The periodic test interval is suppressed if the TX85X has sent another alarm before the periodic test time has expired.

### **Contact ID**

The TX85X has to have the contact ID circuitry installed in order for the radio to send alarms originating on the alarm panel's telephone line communicator

The alarm panel communicator TIP and RING lines are connected to the TIP and RING terminals on the TX85X

Contact ID alarms from the control panel are sent by means of audible DTMF tones (the tones used for dialling on a normal telephone).

## **Refer to the standard for Ademco Contact ID**

**Digital Communication Standard - Ademco ® Contact ID Protocol –  
for Alarm System Communications  
SIA DC-05-1999.09  
Security Industry Association  
Copyright 1999 - Ademco Group  
Publication Order Number: 14085**

**The alarm panel has to be programmed correctly in order for it to send Contact ID alarms.**

- The alarm panel must not have telephone line monitoring programmed in
- The alarm panel must be programmed for tone (DTMF) dialling
- The alarm panel must have the contact ID codes programmed in (in most panels, the default setting is all contact ID codes installed)
- The alarm panel must have a telephone number programmed in (default is '22')
- The alarm panel must have a four digit account code programmed in (default is '5432')

## **How Contact ID works**

- When the alarm panel wishes to send an alarm over the contact ID connection, it will:
  - Enable its telephone line output
  - Dial using the tone dialler
- The TX85X will wait for the break in the dialling digits and will acknowledge the alarm panel
- The alarm panel will send the Contact ID alarm digits using DTMF tones
- The TX85X will send the kiss-off tone to acknowledge receipt of the Contact ID alarm.

Once the alarm has been received by the TX85X, it will be converted into an FSK alarm code ready for transmission over the radio network

Not all Contact ID alarms have a valid over-the-air code and these alarms will be ignored by the TX85X

Valid alarms will be placed in a queue and will be transmitted, in the order in which they were sent by the panel.

The number of attempts sent for each alarm depends on the severity of the alarm. Alarms are sent in the same way as those sent for hard-wired zones.

### **Serial Port Alarms**

Some alarm panels have a suitable serial port connection for the relaying of alarms to the radio.

The TX85X has to be ordered with the correct software version for the transmission of these alarms over the radio network

A serial cable for that alarm panel will be supplied with the TX85X. The serial cable has the following connections:

- Data from Alarm Panel to TX85X
- Data from TX85X to Alarm Panel (not used with all alarm panels)
- Ground (common) connection

The data is sent via TTL (0V and 5V) levels using an asynchronous UART format. The BAUD rate and protocol depend on the alarm panel being used.

### **How Serial Alarms Work**

When the alarm panel has an alarm to send, it transmits it via the serial connection to the TX85X.

Some alarm panels require an acknowledgement signal to be sent back. This signal is generated by the TX85X

Once the alarm has been received by the TX85X, it will be converted into an FSK alarm code ready for transmission over the radio network

Not all serial alarms have a valid over-the-air code and these alarms will be ignored by the TX85X

Valid alarms will be placed in a queue and will be transmitted, in the order in which they were sent by the panel.

The number of attempts sent for each alarm depends on the severity of the alarm. Alarms are sent in the same way as those sent for hard-wired zones.

## Remote Control Receiver

The TX85X can be supplied with a remote control receiver built on board. The remote control receiver is used for remote Panic Alarms. The remote control receiver operates in addition to the seven hard-wired inputs, contact ID alarms and serial alarms.

The remote control receiver responds to the FSK rolling-code remote controls. Up to ten remote controls can be programmed into each TX85X fitted with a remote control receiver.

How the remote control receiver works

To program a remote control into the receiver,

- Put the jumper on the 'L'earn plug
- Press the Red button on the remote control twice (until the red lamp on the receiver flashes twice)
- Remove the jumper after all the required remotes have been taught into the remote receiver

To forget all remote controls

Should a remote control get lost or have to be replaced, all of the remote controls can be 'forgotten' from the remote control receiver's memory.

To forget all remote controls

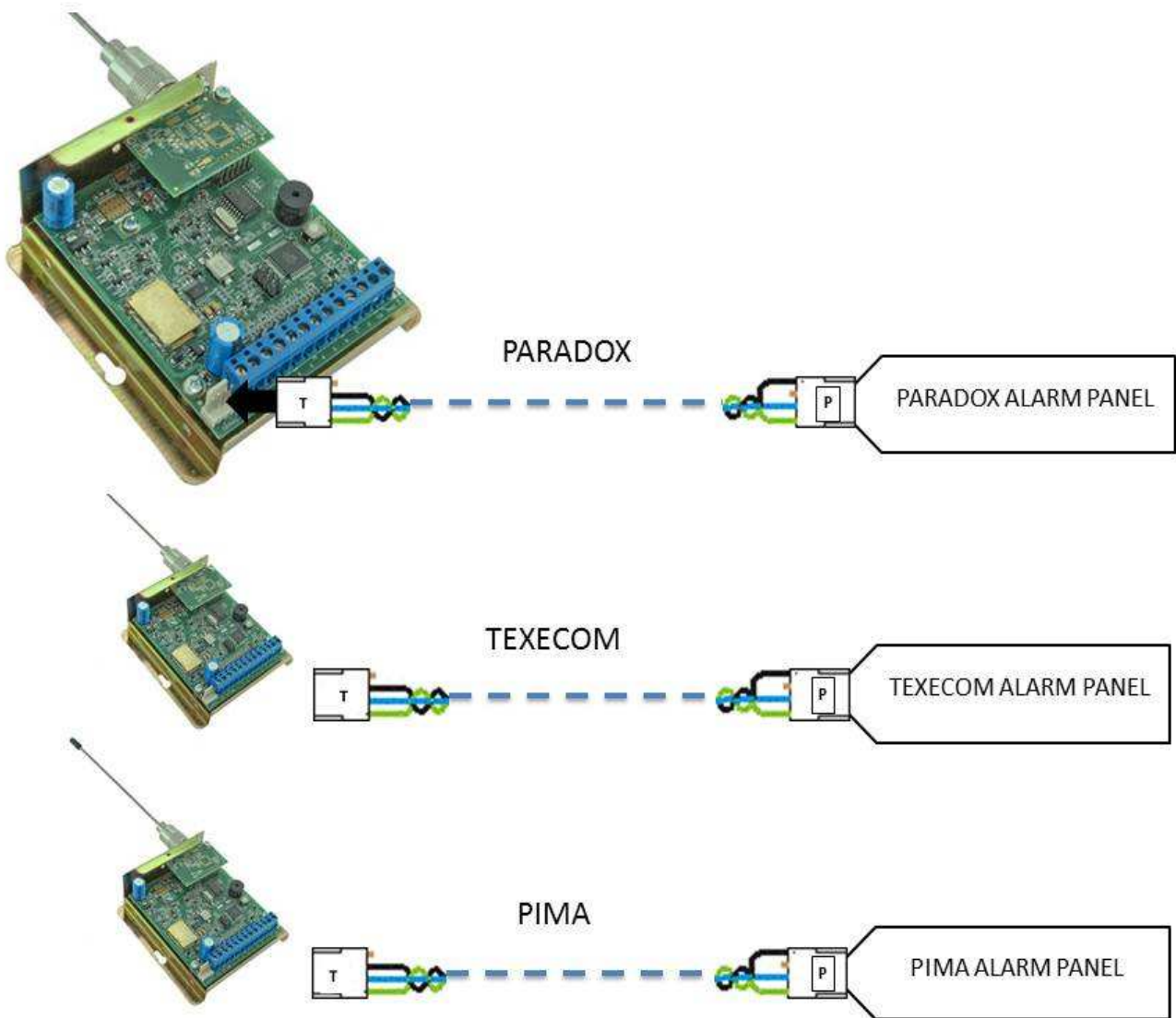
- Put the jumper on the 'F'orget plug.
- The Red lamp flashes five times
- Remove the jumper

The other remote controls will now have to be re-taught to the receiver.

## Alarm Inputs

Low Trigger Level	:	< 3V
High Trigger Level	:	> 7V
AC Fail (CAC) input sense	:	> 10V rms
Battery Low Threshold	:	10.5V ( $\pm 5\%$ )

**OUR SERIAL RADIO TRANSMITTERS CAN BE CONNECTED TO MOST LEADING CONTROL PANELS**



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**FSK TECHNICAL STANDBY NUMBERS:**

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