FX255 D3 DECODER/REPEATER

FOX ELECTRONICS (PTY) LTD
SPECIALIZED SECURITY MONITORING EQUIPMENT

FX 255 D3

INSTRUCTION MANUAL

V1.0

PLEASE READ THIS MANUAL CAREFULLY TO ENSURE THE CORRECT OPERATION AND INSTALLATION OF THE DECODER.

CONTENTS

Please note that on our quest to improve on the features of the FX255 system, features and specifications may change without notice.

SAFETY PRECAUTIONS

CAUTION

TO REDUCE THE RISK OF ELECTRONIC SHOCK, DO NOT REMOVE THE COVER OR WORK ON THE INTERNAL COMPONENTS IF YOU ARE NOT A QUALIFIED ELECTRONICS TECHNICIAN

To insure safe and trouble free operation follow all safety and operating instructions in this manual.

FOR YOUR SAFETY

- Disconnect the 220v AC before removing the FX255 cover.
- Do not expose the FX255 to water or excessive moisture.
- Do not connect external devices, chargers or batteries to the internal 12 volt supply.
- Always select the battery switch to the OFF position to disconnect the internal battery when the FX255 is not in use.
- Use a damp cloth for cleaning.

VENTILATION:

There should be at least 10cm space between the top, rear and sides of the FX255 to allow ample ventilation. Do not close any of the ventilation holes on the lid.

POWER REQUIREMENTS:

220v AC 50Hz
13.8V DC external adaptor

To keep the warranty void the FX255 base station may only be repaired by an Fox electronics authorized repair technician. Any unauthorised repairs can cause poor performance of your equipment.

INTRODUCTION

The FX 255 D3 alarm monitoring station is a compact self-contained unit designed for monitoring of long range data transmitters as a standalone unit or with a repeater network.

It consists of a decoder/encoder, receiver, transmitter, internal power supply and backup battery in a compact durable enclosure, and is programmable to be used as a decoder or repeater station. The LCD display on the front panel provides the user with the last 4 received transmitter codes and telemetry information. Received information is reported to a USB port or programmable RS232 communications port.

The repeater network can utilize up to 32 repeaters working with auto pathfinder technology to allow all repeaters to relay through each other to efficiently send signals to the base station. Repeaters report battery low, mains-fail, auto test and repeater number.

Up to 255 users may utilize the same frequency repeater network, using a maximum of 10 000 codes per user.

FEATURES

- Self contained unit with battery backup and charger.
- X55 coding allow up to 255 users to share a frequency.
- Each user has a 10 000 code capability.
- Dual frequency decoding.
- Encrypted coding format allows for secure data transmission.
- Auto test report with repeater number .
- 999 Telemetry and Activation condition codes are possible with X55 coding.
- 4 Line x 20 character display which displays the last 4 code numbers with telemetry and signal count.
- The FX255 is programmable as a decoder or repeater.
- Internal real time clock and calendar.
- External buzzer output with remote reset input.
- Single or dual antenna termination.
- Up to 30 repeaters may be used on one system to provide good range and reliable communications.
- Repeater pathfinder technology ensures fast airtime saving communication.

SPECIFICATIONS

General

Frequency range	135 - 175 MHz
Frequency control	Synthesized
Frequency stability	5 ppm
Channel spacing	12.5 KHz
Operating temperature range	-10 to + 60°C
Termination	SO239
Impedance	50 Ohms
Dimensions	W 250mm x D 220mm x H 75 mm

Receiver

Sensitivity	-120 dBm (12 dB Sinad EIA)
Adjacent channel Selectivity	-70 dB
Inter-modulation	-65 dB
Spurious rejection	-70 dB

Transmitter

RF output	5 or 12 watt selectable / 50 ohms
Spurious emission	-70 dB below carrier
Modulation type	FM
Frequency deviation	adjustable to maximum 3.0 KHz

Power supply

Main supply	13.8 volts DC internal power supply
Backup power	6.5 Ah battery

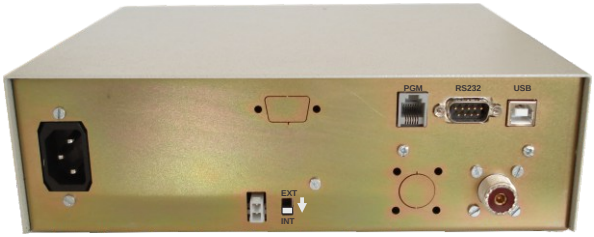
Power Consumption

Receiver and decoder	145 mA
Transmitting signals	5 watt 1.5 amp (110 msec) 12 watt 2.5 amp (110 msec)

INSTALLATION

Unpack the FX255 D3 decoder and check that the power and computer USB or RS232 cable is removed before disposing of the box. (Recycle where possible)

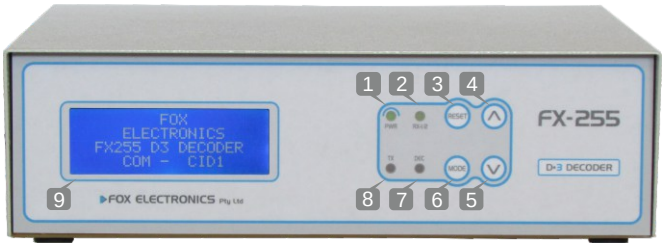
1. Set the battery Select Switch to the internal battery position(down). The FX255 D3 will power up on the internal backup battery.



2. Insert and tighten the antenna connector.

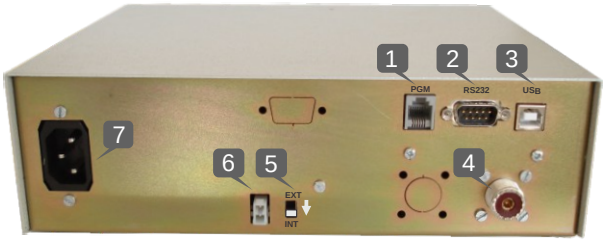
3.Connect the USB (or RS232) cable connector to the FX255 D3 Base and to an available computer USB (or RS232) port. USB driver software must be loaded onto the windows based software. Note Windows XP and older is not supported.

Fx255 CONTROL LAYOUT



1. Status LED : Indicates microprocessor operation
2. Reset Switch : Used to reset or return out of a display function.
3. Volume UP : Increase the speaker volume.
4. Volume DOWN : Decrease the speaker volume.
5. Mode switch : Used for selecting various modes of FX255 functions.
6. Repeat LED : Indicates data transmitting in repeater mode
7. LCD display : 4 Line display indicating the last 4 codes received with telemetry and signal count information.

FX255 COMMUNICATION PORT LAYOUT



1. Programmer Port : RJ12 programmer input for the FX Programmer.
2. RS232 Port : Programmable RS232 computer communication.
3. USB-B Port : USB computer communication.
4. Antenna Connector : For PL259 connectors at 50 OHM impedance.
5. DC input Switch : Select switch for internal or external DC battery backup.
6. External DC input : DC input socket for external DC supply.
7. AC adapter : Accepts standard 3 pin 220v AC cable.

OPERATION

On Start Up the LCD will Display the following:

Programmed for a Decoder/Base it will display the Communications port setting. Programmed as a Repeater it will display the Repeater Number and Talk Thru repeater numbers.

Volume and Squelch

To adjust the volume press the UP or DOWN control buttons on the front of the FX255 decoder. This will allow the user to select a comfortable audio level. It is important to monitor radio signals to ensure that incoming codes are decoded.

To open the squelch press the MODE button once. Select the volume level if necessary and press the RESET button to clear the squelch.

NOTE: Adjustment of both these controls have no affect on signal reception.

PWR, RX-1/2 , TX and DEC LED indicators

PWR - Power LED should flash ON for a ¼ second approximately once every second, indicating that the processor is operating correctly. If the AC power is OFF the LED will flash for ½ a second approximately every second to indicate AC loss.

RX1/2 - LED indicates Green when RX1 is selected and Red for RX2.

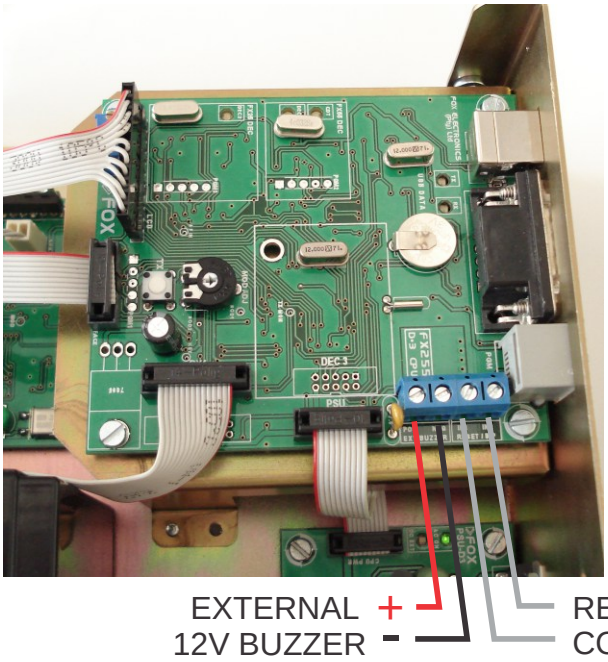
TX - LED indicates when the FX255 D3 is transmitting data.

DEC - LED will flash every time data is read off the network.

Buzzer Reset and Code Acknowledge

After a code is received the buzzer will auto reset or if programmed it will stay on until the reset button is pressed. This feature is selected in programming.

Remote Reset and External Buzzer Connection



Remote Reset : Used for external reset switch / remote connection
A normally open contact is required for reset.

External Buzzer : Output at 12 volt and 1 ampere maximum load.
Note polarity on terminal block.

PROGRAMMING

Insert the FX Programmer into the programming socket located at the back of the FX 255 D3 decoder. The programmer will power up and you are ready to start programming.

SETTING UP GENERAL FEATURES

Press [1] to view the settings of general features.

To enable a feature the corresponding NUMBER must be ON. To alter the settings press the corresponding NUMBER KEY on the keypad to toggle the function operation.

To EXIT and save - press the # key.

DIGIT	FUNCTION	ON	OFF
1	HEARTBEAT	30 SEC	5 MINUTES
2	RS232 SPEED	9600	19200
3	RS232 MODE1	3 DIG TLM / CID1	1 DIG TLM / CID0
4	RS232 MODE2	FX255 STD	SURGUARD
5	CODE PREFIX	ENABLED	DISABLED
6	MULTI USER	DISPLAY ALL	SINGLE USER
7	SYSTEM MODE	PATHFINDER	STANDARD
8	BUZZER	SUSTAIN	AUTO RESET

BASE STATION OR REPEATER PROGRAMMING

The change from base station to repeater or the other way around is done by the following instructions:

PRESS [2] [000] for BASE STATION
[2] [001] for REPEATER NO 1
[2] [002] for REPEATER NO 2
up to REPEATER 16

NOTE: If the FX255 is in repeater mode the BUZZER output is automatically disabled.

TIME AND DATE PROGRAMMING

The FX255 is equipped with a real time clock and calendar that will NOT be lost if the unit is turned off.

To program the time and date follow these instructions:

PRESS [6][1234][6][1] - The current date and time will be displayed.

Enter new [HOUR] [MIN] [DAY] [MONTH] [YEAR] [#] to save

To set the time to 16:30 and the date to 24/03/2016 the entry's will be:

PRESS [16] [30] [24] [03] [16] >followed by a long BEEP .

NOTE : The time is set in 24hour mode.

PROGRAMMING 2nd USER DECODING

The FX255 may be programmed to allow 2 users on a frequency to be decoded to one Base station decoder.

PRESS [3] [user ID] >followed by a long BEEP .

NOTE: To disable 2nd user decoding, program user ID to "000".

In this mode the Alpha prefix is automatically enabled to differentiate between the two user signals decoded.

PROGRAMMING REPEATER REPEAT THROUGH

The FX255 as a repeater is programmable to allow preprogrammed repeaters to repeat though a set repeater. This allows repeaters to be daisy chained to the base station. A repeater can only allow 4 other repeaters to repeat though.

To program Repeater NO. 1 to allow Repeater NO.5 and 7 to repeat through, the following must be programmed on Repeater NO.1.

To allow Repeater NO.5 repeat through.
PRESS [6][1234][6][3] [40] [005] > followed by a long BEEP .

To allow Repeater NO.7 repeat through.
PRESS [6][1234][6][3] [41] [007] >followed by a long BEEP .

NOTE: To disable repeat though, program locations 40,41,42,43 to "000".

USB and RS232 SERIAL PORT PROTOCOL

OPERATION

The decoded T9 signal will provide the computer software with the transmitter code number , type of system activation, repeater number and user ID. All this information is important in order for the computer software to log all activation's and repeater activity.

The repeater number indicates repeater received and will be a '0' for a signal received directly by the decoder.

USB- The use of the USB port requires Driver software to be installed on the monitoring computer. The software drivers are supplied with the FX255 D3.

DATA MESSAGE COMPOSITION

Enter [1] [3] [#] on the LCD programmer to enable the standard format.

The form of the message is:

(**ID) ACCT RN I Q XYZ PP CCC S E**

ID = 2 Digit Customer ID prefix (0-9, A-F) Programmable on Base on/off
ACCT= 4 Digit Account number (0-9999)
RN = Repeater number (0-99).
I = Signal strength (0-9).
Q = Event qualifier, which gives specific event information:
1/E = New Event or Opening
3/R = New Restore or Closing
@ = Heartbeat signal (sent every 5 minutes)
XYZ = Event code (3 digits 0-999)
PP = Partition number (2 digits 0-4)
CCC = Zone number (Zone or User # Open/Close reports) (3 digits 0-999)
S = 1 Digit Hex checksum - (0-9,A-F)
calculated such that: (Sum of all message digits < multiple of 15)
E =End off byte 'OD' HEX carriage return

There are other RS232 formats available that are described on page 14 of this manual.

NOTE : FOX CID and SURGURD format are the only communication protocols that will support T9 Muli-data transmission.

RS 232 CABLE CONNECTION TO A COMPUTER.

BASE		COMPUTER
DB 9 FEMALE	**DB 9 FEMALE**	**DB 25 FEMALE**
Pin 2 - Data Rx	---------- Pin 3 - Data Tx	Pin 2 - Data Tx
Pin 3 - Data Tx	---------- Pin 2 - Data Rx	Pin 3 - Data Rx
Pin 5 - Data Gnd	---------- Pin 5 - Data Gnd	Pin 7 - Data Gnd

INTERFACE PROTOCOL BETWEEN BASE AND COMPUTER

FORMAT : Asynchronous serial data
BAUD RATE : 19200 (programmable to 9600)
DATA BITS : 8
PARITY : No parity
HANDSHAKE : No handshake
STOP BITS : 1

RS 232 DATA SENT TO COMPUTER

INPUT TRIGGER	EVENT CODE	ZONE	PARTITION
1 - EMERGENCY	E003	000	00
2 - ALARM	E000	000	00
3 - LOCK UP	R001	000	00
3 - OPEN UP	E002	000	00
4 - TELE 1	E004	000	00
5 - TELE 2	E005	000	00
6 - TELE 3	E006	000	00
7 - TELE 4	E007	000	00
8 - TELE 5	E060	000	00
9 - AC FAIL	E010	000	00
9 - AC RESTORE	R011	000	00
AUTO TRIGGER	EVENT CODE	ZONE	PARTITION
BATT LOW	E008	000	00
BATT RESTORE	R009	000	00
FX255 HOUR TEST	E012	000	00
TECH TEST	E013	000	00
OVER VOLTAGE	E015	000	00
POWER UP	E017	000	00
STAT ARMED	E020	000	00
STAT DISARMED	R040	000	00

MULTI-DATA EXTENDED TELEMETRY DATA

The standard list of the most common telemetry data is provided below. Please Note that there are many more not listed here. A complete list is available on request.

ACTIVATION	EVENT CODE	ZONE	PARTITION
MEDICAL	E100	1-200	1-3
FIRE	E110	1-200	1-3
SMOKE	E111	1-200	1-3
PANIC	E120	1-200	1-3
DURESS	E121	1-200	1-3
SILENT PANIC	E122	1-200	1-3
BURGLARY	E130	1-200	1-3
GENERAL ALARM	E140	1-200	1-3
SILENT BURGLARY	E146	1-200	1-3
AC LOSS	E301	0	000
SYSTEM BATTERY LOW	E302	0	000
OPEN / CLOSE	E/R400	USER	1-3
OPEN / CLOSE BY USER	E/R401	USER	1-3
MANUAL TEST REPORT	E601	0	000
PERIODIC TEST REPORT	E402	0	000

TROUBLE SHOOTING

BEFORE CALLING FOR TECHNICAL SUPPORT !

General problems with the FX255 D3 may be resolved by one or more of the following solutions. If after trying these suggestions, you are still experiencing problems, contact FOX Electronics for technical support.

- Check the STATUS LED for AC loss indication.
- Be sure the 3 pin AC plug is connected to a live outlet (Test with DVM or connect a test light).
- Be sure that the battery terminals are connected.
- Check that computer USB or RS232 connections are correct and secure (Only use original cables or cables assembled as described in this manual).
- Listen to incoming codes signals and check if they are decoded.
- The computer will only communicate if the RS232 port is correctly programmed.
- Check that your antenna connector to the FX 255 decoder is correctly terminated and secure.

PREPARE THE FOLLOWING INFORMATION THEN CALL THE SERVICE TECHNICIAN.

The following information will assist the Technician in helping your quickly and efficiently:

- A description of the problem.
- Repeater locations and numbers, Base Station location and antennas installed on site if you are experiencing signal problems.
- Notes on test transmitter tested from the control room indicating the repeaters received.
- Have a working voltage meter at your disposal.

NOTE: Accurate information given on questions asked by our technical staff ensure a faster and more accurate resolution to your problem.

FOX ELECTRONICS
FX 255 SHARE-NET MONITORING SYSTEM

T9 Transmitter
no A11052

The T9 VHF transmitter incorporates 8 programmable trigger inputs to suit the installation or alarm panel used. Power-up, battery low and DC over-voltage signals allow accurate pro-active installation monitoring.

FX 255 Repeater

T9 Transmitter
no C39041

FX 255 Decoder

A11052
C39041

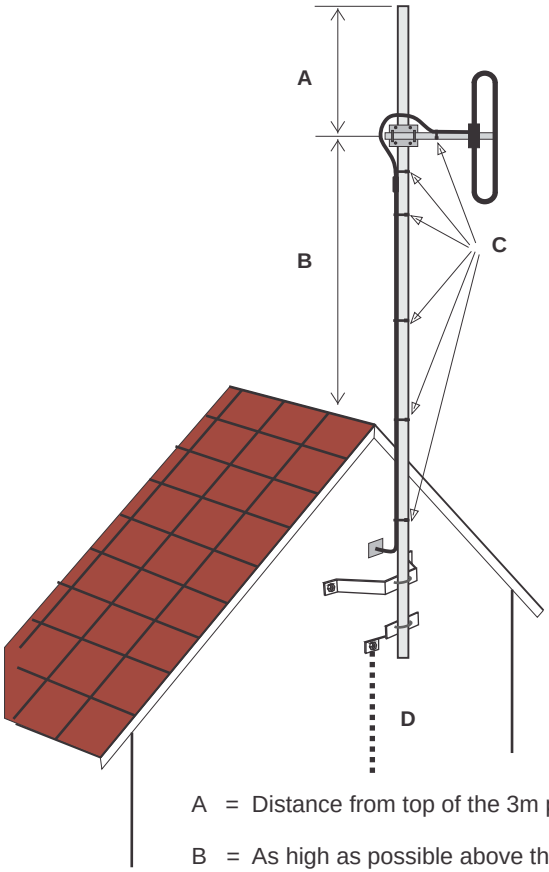
In SHARE-NET mode the FX255 repeater network will allow up to 255 users to utilize / share the same repeaters and monitor transmitters individually as if on their own network. More than one user may also be monitored by one Decoder.
The FX255 Decoder can be used as a standalone monitoring unit or within a network of repeaters. Repeaters allow for a greater area of operation and repeat the transmitter signals to the Decoder. Up to 16 Repeaters may be installed on a network.

Decoded signals are displayed on the LCD display and transferred to a USB and RS232 communication port for connection to a computer database.

The FX255 unit may be programmed as a Decoder or Repeater with a standard T9 programmer.

SINGLE OUTDOOR DIPOLE MOUNTING EXAMPLE

137 -175 MHz ANTENNA RANGE



A = Distance from top of the 3m pole 75cm

B = As high as possible above the top of the roof.

C = Tie the cable down every 50cm with cable ties as indicated.

D = Earth the antenna mast with an earth spike in the ground.

NOTE: The higher the antenna the better it will work. Use at least 4.7mm cable ties to secure the cable to the pole. Make sure that the connector at the Dipole antenna is insulated using the self sealing waterproof tape provided.