MiX Talk LTE Installation Guide

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INTRODUCTION

The MiX Talk unit together with its accessories is a dedicated hands free cellular telephone system, which is primarily used in Fleet Management applications.

The hands free system provides superior audio quality when operating in full duplex in GSM and LTE CAT 1 networks. The system also provides an auxiliary output that can be connected directly to an in-cabin radio to further enhance the incoming audio quality as well as ease of operation.

An external RF antenna mounted inside the vehicle's cabin is used to ensure extended network coverage.

The MiX Talk unit supports fixed dialling and fixed incoming call numbers for easy administrative management.

The MiX Talk unit can be directly setup and configured via a serial data cable connected to either a Laptop or PC. The unit can also be configured remotely via SMS. The MiX Talk Unit does not support any continuous GSM data transmission.

Once installed operators and service technicians will have limited access to its SIM card. Furthermore each individual unit will have its own encoded SIM pin number for further security against unauthorised usage.

Glossary Terms

ABBREVIATION	DESCRIPTION
BT	Bluetooth
GPS	Global Positioning System
GSM	Global System for Mobile Communications
GND	Ground (0V)
LTE	Long Term Evolution (It's a term used for the particular type of 4G that delivers a fast mobile Internet experience.)
RX	Receive
TX	Transmit
WiFi	Local Area Wireless Computer Network

Hardware **Features**

HANDS FREE OPERATION	The MiX Talk system consists of a main control unit together with a separate keypad, microphone, speaker and external RF antenna. These items are fixed installed inside the vehicle's cabin. The system provides complete hands-free operation only. It does not cater for any handheld microphone and/or speaker.
SEPARATE SIM CARD	The unit will have its own SIM card. Operators and service technicians will have limited access to SIM card, which is housed within the main control unit. The SIM pin number is encoded for each individual unit to further increase security against unauthorised usage.
CONFIGURABLE "DIALLING LIST" AND "INCOMING CALL LIST"	The unit provides an operator or service technician with the ability to configure and change a list of allowed phone numbers. The Dialling List can take up to 4 numbers. Apart from the numbers in the Dialling List, the Incoming Call List can take an additional 4 numbers. The Incoming Call List can also be configured as an Open Line in which case an incoming call can be from any number.
AUTO ANSWER	The unit can be configured to automatically answer an incoming call after a predefined number of rings. The number of rings is also configurable.
DIRECT AND/OR REMOTE CONFIGURATION	The MiX Talk unit can be directly setup and configured via a serial (RS-232) data cable connected either to a laptop or PC. Direct setup and configuration can also be done remotely via SMS.
KEYPAD DISPLAY	The human interface to the system is via a keypad display unit. See figure above. The keypad section has 5 buttons, and the display section consists of 6 LEDs.
SPEAKER AND MICROPHONE	The MiX Talk system comes with a separate speaker and microphone which are fixed installed inside the vehicle's cabin.
VOLUME CONTROL	The volume of the speaker is manually adjustable via a knob on the speaker unit.
RINGER / BUZZER	The unit has a buzzer that acts as a "Ringer" to ensure that the operator is always aware of an incoming call, even when the volume of the speaker is fully turned down. The buzzer also gives audio feedback to the operator when using the keypad.
RADIO MUTE FUNCTION	An open collector output from the MiX Talk unit gives it the ability to automatically Mute / Un-mute an in-cabin radio for incoming and outgoing calls.
POWER INDICATOR	The unit displays it's ON or OFF power status with a dedicated LED on the keypad.

Product Parts and **Spare** Parts

The following product parts are available:

PART NUMBER	PRODUCT NAME	DESCRIPTION
440FT0119	FM keypad	See image below
440FT0203	FM Voice Kit Speaker	See image below
440FT0196	MiX Talk Microphone	See image below
440FT0314	MiX Talk Main Harness MP7	MiX Talk Main Harness MP7 with Power (fused), Ground, Buzzer, Mute Control and FM Keypad Connector
440FT0315	MiX Talk Serial Harness SR2	MiX Talk Serial Harness for configuration and setup (Optional, Not required for operation)
P0054MT	MiX Talk Electronic Unit	MiX Talk Electronic Unit: Voice Module with SIM Card

440FT0932	MiX 6000 External GSM Antenna	See image below
P0055MT	MiX Talk Kit	MiX Talk Bundle: P0054MT-MiX Talk + 440FT0203-FM Voice Kit Speaker + 440FT0196-MiX Talk Microphone + 440FT0119-FM Keypad + 440FT0932-MiX 6000 External GSM Antenna + 440FT0314-MiX Talk Main Harness MP7

MIX TALK MAIN HARNESS

HANDS FREE SPEAKER

KEY PAD & HARNESS

EXTERNAL GSM ANTENNA

MIX TALK ELECTRONIC UNIT

HANDS FREE MICROPHONE

Power Requirements

The product is designed for use in 12V or 24V vehicles. Special vehicles and working machines with voltages above 33V will require a voltage converter to facilitate the required power supply input.

SAFETY PRECAUTIONS

Refer to section 10.

Preparing the SIM card

• The format of the SIM is "Nano" or (4FF).
• Before inserting the SIM card ensure that the SIM is configured as " NO PIN required".
• If a pin is required, then the SIM card must be preconfigured with "0000" or "00000".

Inserting of SIM card

In order to insert the SIM card, the following steps must be followed:

• Observe ESD precautions as prescribed in section 10.2
• The SIM card is accessible from the back panel.
• Insert the SIM card as indicated by the symbol on the label on the housing plastic.

Configuration of unit

Configurable items

The following items are configurable:

LIST OF CONFIGURABLE PARAMETERS	EXAMPLE/ALLOWED VALUES
Unit Serial Number	12 Character alphanumeric string Example: P0054BA123456
IMEI Number	353841083789587
MASTER Number	The MASTER number can be the subscriber number of any device that can send and receive a SMS message
CONFIG Number	The CONFIG numbers can be the subscriber number of any device that can send and receive a SMS message
Button Number (BUT)	The Button Numbers can be the subscriber number of any device that can initiate and receive voice calls
Incoming Call Number (PH)	The Incoming Call Numbers can be the subscriber number of any device that can initiate and receive voice calls
SMS Centre Number (SMS)	This number can normally be left blank. Else follow this URL **List of SMS Centre Numbers**
Low Power Timer (LP)	060, 120 or 300 seconds
Call Length Timer (CT)	0600, 0900, 1200 or 1800 seconds
Call Continue Timer (PB)	05, 10, 15 or 20 seconds
Ring Timer (RT)	020, 030, 060 seconds
Auto Answer (AA)	"NULL" (Disabled), 05, 10, 15 or 20 seconds
Open Line (OPEN)	1 or 0 seconds

For more detail on each configurable item see Appendix B.

SMS **Configuration**

The configuration of a unit via SMS messages is described in Appendix C.

Configuration Using A **PC Based Application**

The configuration of a unit when it is connected to a PC or laptop via a serial cable is described in Appendix D.

MiX Fleet **Manager**

MiX Talk is NOT integrated with MiX Fleet Manager

Configuration of telephone numbers are only possible via:

1. SMS commands from a standard mobile phone
2. Using a serial cable and Windows Application

The screenshot below is for the existing FM Voice Kit (only compatible with FM36xx) and this functionality is currently NOT supported for MiX Talk.
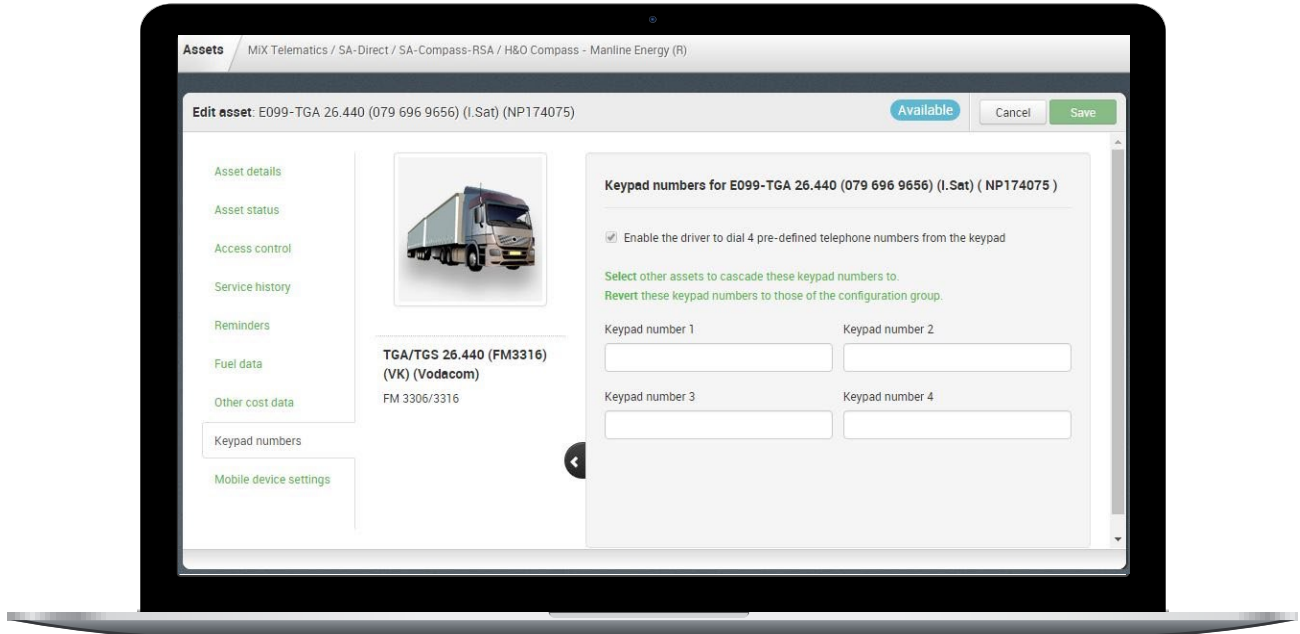
INSTALLATION

Installation **Steps**

STEP	ACTION	SOFTWARE TOOLS
1	Ensure the SIM is correctly prepared (refer to section 3.1)	None
2	Insert the SIM card (refer to ESD precautions in section 3.2).	None
3	Configure the unit using the PC Configuration Utility	Configuration Utility (Separate user guide)
4	Install the MiX Talk main harness and connect to the vehicle's power.	None
5	Install the MiX Talk electronic unit	None
6	Install the MiX Talk speaker, microphone, and antenna	None
7	Connect the connectors of the main harness and accessories to the electronic unit	None
8	Ensure that the units start up correctly. The keypad LED's turn on sequentially and three long beeps sound on the buzzer and speaker	None
9	Test Installation	Initiate a voice call to or from the unit.

During installation

Should it be necessary to remove seats, covers or other components, care should be taken to avoid accidental damage and/or disconnection of cables.

- All components should be checked for damage prior to being installed into the vehicle.
- For small installation openings, a drill should be used.
- For larger openings, a conical milling cutter, compass saw or file should be used.
- All rough edges should be trimmed.
- Careful attention must be paid to the manufacturers' safety regulations for all tools used.
- Oils and fuels must be collected in appropriate containers and disposed of in accordance with the law.

Positioning of product components

Installers should ensure that the components of the product do not influence or hamper the functioning of the vehicle's systems.

- Care should be taken to ensure that the product's components do not get damaged during installation.
- Ensure that sufficient space is available for all components of the product, prior to commencing the installation.
- Should the bracket be used to fix the unit to the vehicle, make sure that the unit and bracket are securely clipped together. Add a cable-tie around the complete housing and bracket assembly for a more secure mounting it required.
- Avoid installing in known high-temperature areas, such as parts of the engine bay or near major heat sources. Operating range: -20°C to +80°
- Ensure that the unit and harness are secured to prevent the harness vibrating differently to the unit at the harness connectors.
- Do not install the product in or near the location of mechanical or electrical airbags.
- Do not install the external GSM antenna onto any cable or metal parts.
- Do not drill into supporting or stabilizing braces or beams.

General Wiring Requirements

- Note the product's wire gauge cross-sectional area. If the wire gauge cross-section is reduced, current density increases which may cause the wiring to overheat.
- Cables should be routed in existing channels and should not be routed parallel to ignition cables or other cables subject to high current.
- Cables should be fixed with cable-ties or adhesive tape.
- Do not route cables over moving parts or too close to the high voltage areas (like the spark plugs)
- Do not fix cables on the steering column.
- Ensure that the cables are not exposed to pulling, pressure or shearing deformation.
- If the cables are routed through drilled holes, rubber grommets or similar protection should be used.
- Suitable cable-strippers should be used to strip insulating material from cables and cable-strippers should be adjusted to suit the wire gauge being stripped, to avoid damaging or separating the wire strands.
- Cables should only be connected using solder or suitable crimping lugs.
- A proper crimping tool should be used on all crimping lugs.
- Careful attention must be paid to the manufacturers' safety regulations for all tools used.
- Insulate all exposed wires to prevent short-circuits. Use good quality adhesive tape or heat shrink (provided).
- Connections to vehicle power supply must be installed with a fuse (check if the main harness is fitted with a fuse).
- Be aware that short-circuiting may be caused by faulty connections and crushed or damaged cables.
- Short-circuiting the vehicle's electrical system may result in fire, explosion of the battery and/or damage to other electrical systems. To prevent this, all connections carrying current must be soldered and insulated correctly. Other connections such as the speed signal, RPM signal, brake light or clutch switch can be made with crimping lugs.
- Incorrect connections can lead to short circuits. Connections should only be made in accordance with the vehicle's wiring diagram.
- Current and voltage should be measured with a multi-meter or diode test lamp.
- The use of inadequate test equipment may result in damage to control devices or other electrical systems.
- Route the harness in such a way as to prevent water condensation that may form on the cable from running into the unit. This can be achieved by having the harness at a lower point just before it connects to the unit. If the back plate is lower than the rest of the unit, water can accumulate inside the unit with no way to escape and invalidates the IP54 rating. The unit should also never be exposed to direct water spray and jets.
- Shortening of antenna wires:

  o It would be better to circle/coil excess wires. Avoid sharp bends at the zig/zags. Take care not to tie coax wires too tight. The coax should not be squeezed or pinched. Using the broadest possible cable tie.
  o The best place to circle/coil the wires is about 300 mm in line from the antenna.
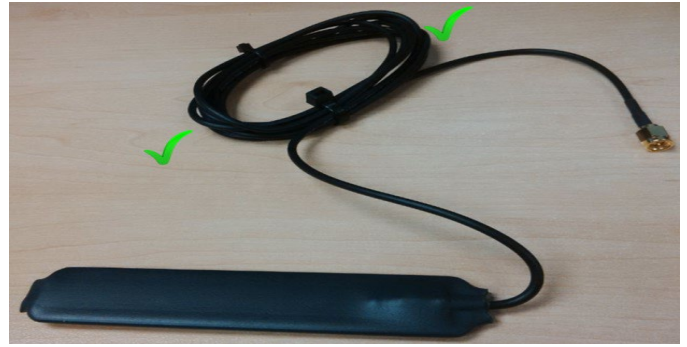 o Refer to image below for more detailed GSM wiring instructions

Avoid ❌	Recommended ✅

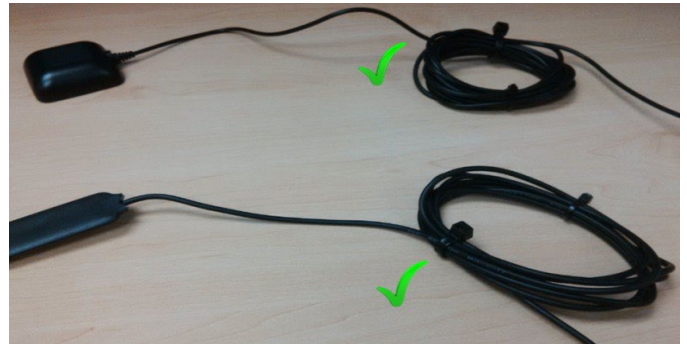| Avoid sharp corners and bends:	Use rounded bends:

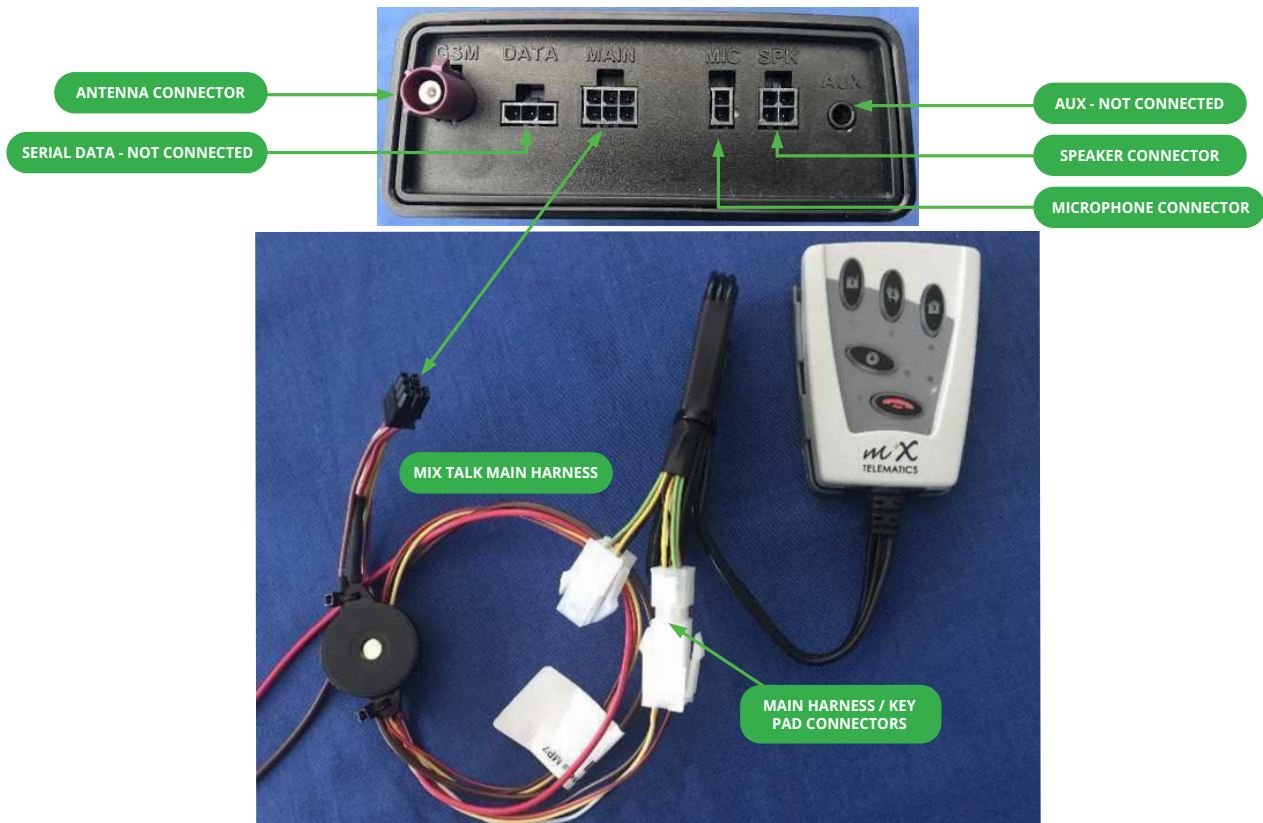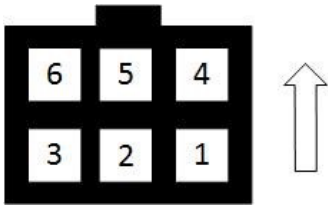| Avoid coupling between 2 different pieces of wire:	Separate coiled wires where possible:

Harnesses and **connectors**

Please read section 10 (Safety) of this document before installing the vehicle harness. Confirm which of the harnesses will be used in the install as the wire colours will differ depending on the harness selected. All connector diagrams are shown from the back (wiring side) of the harness.

ANTENNA CONNECTOR

SERIAL DATA - NOT CONNECTED

AUX - NOT CONNECTED

SPEAKER CONNECTOR

MICROPHONE CONNECTOR

MIX TALK MAIN HARNESS

MAIN HARNESS / KEY PAD CONNECTORS

MiX Talk Main Harness MP7

Connector viewed from the back (wiring side) of harness (440FT0314) .

PIN	COLOR (PRIM/SEC)	NAME	FUNCTION	APPLICATION INFORMATION
1	White	Mute	Output Mute	Connect this wire to the vehicle radio's mute input, in order to mute the car radio when a call is received or started.
2	Red/Blue	Power	Keypad Power	
3	Brown	GND	Ground	
4	Yellow/Green	Buzzout	Buzzer Output	
5	Yellow	KP Data	Keypad Data	
6	Red	BAT+	Battery Positive	

Keypad

The Keypad connects to the 4-pin plug on the Main Harness (440FT0314). See image above.

Standalone Voice Speaker

The FM Voice Kit Speaker (440FT0203) connects to the 4 way connector on the front panel. See image above.

To ensure clear audio with no echos, follow the general guidelines below:
• Install the speaker as far as possible from the microphone and make sure that it does not face the microphone directly.
• If you install the speaker under the dash, make sure that it faces downwards to the opening in the dash and not sideways to the dash panels.
• Set the speaker volume control to maximum because it can be very noisy in a heavy vehicle.

Hands Free Microphone

The FM Voice Kit Microphone (440FT0196) connects to the 2 way connector on the front panel. *Note this Microphone is different from the old FM Voice Kit microphone and marked with a blue heat-shrink sleave on the cable. See image.*

See picture above for the recommended installaion position of the microphone for the best audio quality. Please keep the following general guidelines in mind when installing the mic:

• *Do not strap the microphone wire together with the GSM antenna wire.*
• Audio signals are pressure waves – so if you mount it against the window or rigid object that vibrates, the mic itself will create noise.
• Do not mount it on windows, because then it picks up wind, road and engine noise via vibrations.
• Mount it on something soft (like the roof panel of the vehicle or soft rubber mat, so that it is not affected by any vibrations)
• Mount is as close to the driver as possible and directly in front of him (that is where the sound waves are the most powerful)
• Mount it in a place where the turbulence of the wind from the windows does not affect it and create noise when the window is open.
• For the best performance the windows must be closed when you make a call.
• Also see guide lines on the installation of the GSM antenna below.

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Serial Data Configuration Port

When using the MiX Talk Serial Harness SR2 (440FT0315) during configuration it si connected to the 3 way connector on the front panel. See image above.

External GSM antenna

It is recommended to adhere to following important principles:
a) Make sure that there is a distance of at least 1 m between the microphone and the GSM antenna.
b) Don't mount the GSM blade antenna on metal, as this effects GSM communication. For best results, mount on glass or other non-conducting surfaces.
c) Don't mount a GSM antenna directly on another GSM antenna or any other antennae.
d) Don't mount the GSM antenna directly on the OBC.
e) Do not pinch the coaxial cable.
f) Avoid pinching the coaxial cable or bending it sharply (zigzags).
g) It would be better to circle/coil excess wires. Take care not to tie coax wires too tight. Using the broadest possible cable tie (refer to section 4.4).
h) The best place to circle/coil the wires is about 300 mm in line from the antenna.

WIRING AND **CONNECTIONS**

Positioning the **Product in the vehicle**

Note: Please follow the instructions, regarding the positioning of product components, as contained in the "Safety" section, of this document, section 10.

- The Product must be installed inside the passenger compartment or the driver cabin, to protect it from possible damage by water, solvents, fuel or other environmental factors.
- The Product should not be installed in or near the ventilation, heating system, or hot surfaces which may cause it to overheat or be damaged by condensed water vapour.
- The Product should be installed in a position where it will not be subjected to pressure, impact or excessive vibration. Uneven surfaces, where the box can be deformed or damaged should be avoided.
- Select the installation position carefully before proceeding with the installation.
- Mark and drill the required holes.
- Route cables from the unit to the appropriate senders within the vehicle. Additional information can be found in the "Harness Installation" section of this document.

AFTER INSTALLATION

Initial **Start-up**

Once the power is connected ensure that the units starts up correctly. The keypad LED's turn on sequentially and three long beeps sound on the buzzer and speaker. The unit can also be reset by the "On hook" button for longer than 5 secs. The unit will then go through the start-up sequence again.

LED flash codes

After the start-up sequence the power LED will flash green once a second.

Testing Installation

Initiate a voice call to or from the unit and ensure that the incoming and outgoing voice quality and loudness is correct.

Closing Steps

Check all relevant vehicle functions.

Explain the functions of the Product system to the user.

Keypad Functions
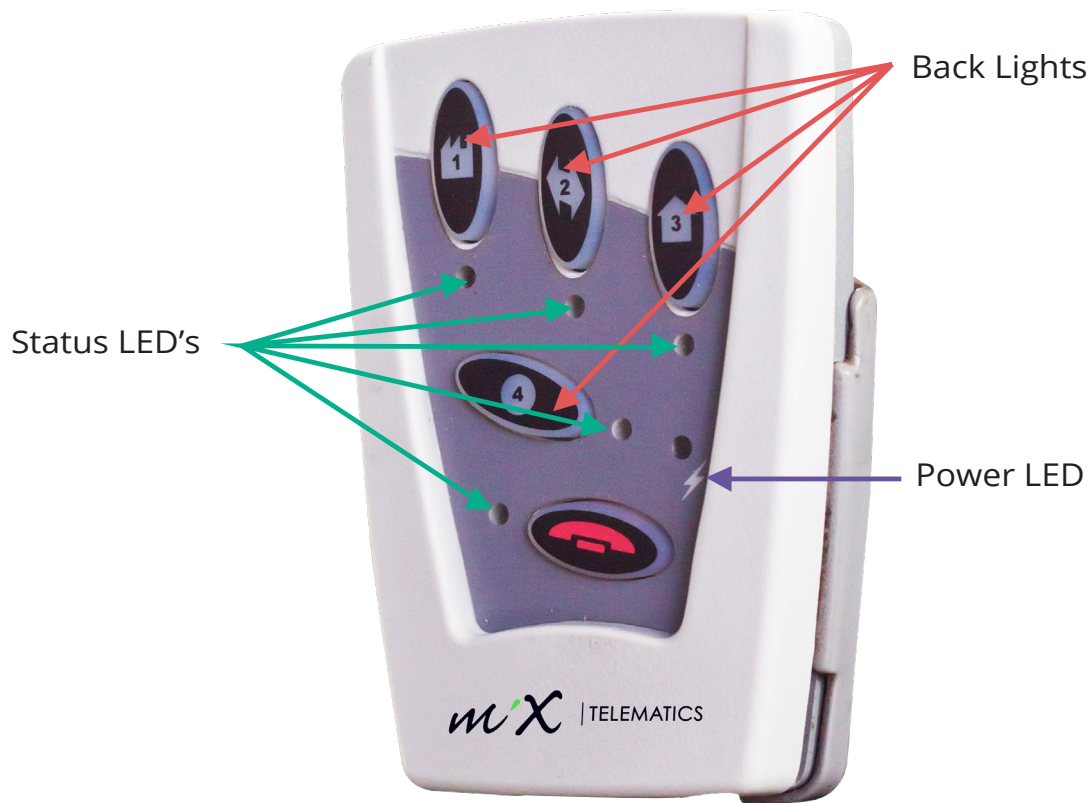

Back Lights

Status LED's

Power LED

Figure 1 Keypad LED's

Refer to Figure 1:

Answer incoming call with any of the four buttons • Terminate call with the "On hook" button • Status LED will indicate missed calls from pre-configured numbers • Power LED show current state (active / low-power mode) • Back-Lights ON in active mode, OFF in low-power mode.

TROUBLESHOOTING

Supporting Documentation can be found on the MiX Help Centre:
Link: https://mixhelpcentre.mixtelematics.com/hc/en-us/sections/8081459736092-MiX-Talk

SYMPTOM	PROBABLE CAUSE	ACTION
Unit does not switch ON (LED does not flash)	No battery voltage applied to Product.	Check the voltage supply to the Product Ensure the connectors are properly fitted Check fuse if applicable
GSM unable to register on network	No SIM card inserted or SIM inserted the wrong way round. Automatic commissioning is not possible on the GSM network selected GSM network is out of range.	Refer to section 3.1 for the correct SIM card orientation. Alternatively replace the SIM card. Use a serial configuration harness and the Configuration software to manually program APN and server settings for the unit. Check coverage of chosen GSM network using coverage map or a cell phone on the same network.

ROUTINE **MAINTENANCE**

ITEM	MAINTENANCE	PERIOD

PRODUCT **SPECIFICATIONS**

Technical description

Refer to the Product Fact Sheet for more details. **Link:** https://mixhelpcentre.mixtelematics.com/hc/en-us/sections/8081459736092-MiX-Talk.

APPENDIX A: **SAFETY**

Installer **Requirements**

• Installation should only be undertaken by a vehicle technician with comprehensive occupation specific knowledge. Installation by an unqualified technician may adversely affect the operating reliability of the vehicle and could endanger other road users.
• A basic knowledge of vehicle electrical and mechanical systems is required to successfully install the Fleet Manager system.
• The system should only be installed by a suitably qualified vehicle technician with a basic knowledge of the operation of computers.
• Installation technicians should attend a training course to acquire the skills needed for installation, configuration and operation of the Fleet Manager system.
• Installers should consult the vehicle manufacturer's documentation for the specific vehicle make and model prior to undertaking an installation.
• Installers should pay particular attention to the location of fuel systems, hydraulic systems, compressed air systems and other electrical and mechanical systems, which may have a bearing on the installation.
• Installers should pay attention to any changes to the vehicle's systems or settings, which should be noted prior to the installation.
• Installers should not smoke or make use of naked flames, which could cause a fire in or near the vehicle.

After installation, verify that no interference is caused to the vehicle's electrical system. Check dashboard warning lights and error messages. Should any error conditions exist, remove the installed unit and contact MiX Telematics for assistance.

Tools

• Standard technical equipment and appropriate tools for use with vehicles are required to install the product.
• Vehicle specific tools may be required for the removal of consoles and covers.
• Supporting tools
• Multi-meter

Secure the workplace

• Remove the ignition key from the vehicle's ignition lock.
• Ensure that the vehicle's engine cannot be unintentionally started during the installation.
• Short-circuiting the vehicle's electrical system may result in fire, explosion of the battery and/or damage to other electrical systems.
• Electrical shock from high voltage batteries must be avoided, as this may lead to death or injury.
• The negative terminal of the vehicle's battery should be disconnected before commencing installation. If the vehicle has additional batteries, it may be necessary to disconnect the negative terminals of these batteries too.

Precautions

ESD
Prior to touching the PCB, inserting a new SIM or replacing the battery, always take ESD precautions:

• Either use an earthed wrist strap or touch a known earth point (or negative potential in the vehicle) prior to handling the unit.
• If the PCB must be handled, avoid direct contact with any of the components and handle it by only touching the edges of the PCB.

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Unit **Serial Number**

Summary:

The Unit Serial Number of the MiX Talk Unit is programmed onto the unit's internal memory during the manufacturing of the unit. Each MiX Talk unit has its own Unit Serial Number.

IMEI Number

Summary:

The IMEI Number of the MiX Talk Unit is programmed onto the unit's internal memory during the manufacturing of the unit.

MASTER Number

Summary:

The MASTER number is exclusively used to communicate with the MiX Talk unit via SMS messages. The messages sent to the MiX Talk Unit contain configuration or query information and the messages received from the MiX Talk Unit contain configuration acknowledge and query reply information.

The MASTER number can be used to configure any parameter. The MASTER number can be used to query any parameter.

All SMS notifications sent by a MiX Talk unit when a parameter configuration change has been implemented (successful or not) will be copied to the MASTER number as well. This provides the feature whereby all configuration changes implemented on a single (or group of units with the same MASTER number) can be logged.

CONFIG Number

Summary:

Similar to the MASTER number, the four CONFIG numbers are exclusively used to communicate with the MiX Talk unit via SMS messages. The four CONFIG numbers send SMS messages that contain configuration or query information to the MiX Talk Unit and receive SMS messages that contain configuration acknowledge and query reply information from the MiX Talk Unit.

The CONFIG number can be used to configure any parameter. The CONFIG number can be used to query any parameter.

Button Number

Summary:

The four Button Numbers (BUT) are exclusively used for voice calls. The MiX Talk unit can dial any of four telephone numbers configured as a Button Number. Thus for example if the operator presses button number one then the unit will dial the telephone number configured and associated with button number one.

The MiX Talk unit will respond with three beeps if the corresponding button number has not been configured yet.

The MiX Talk unit can also receive voice calls from any of the four subscriber numbers configured against a Button Number. Thus for example if the operator receives a call from the telephone number configured and associated with button number two then the MiX Talk unit will initiate ringing and the LED on button number two will light up.

Incoming Call Number

Summary:

The four Incoming Call Numbers (PH) are exclusively used for incoming voice calls.

The MiX Talk unit can receive voice calls from any of the four subscriber numbers configured as an incoming call number. The four incoming call numbers are associated with the fifth LED. Thus if the operator receives a call from a subscriber number configured as an incoming number then the MiX Talk unit will initiate ringing and the fifth LED will light up.

SMS Centre Number

Summary:

This number can normally be left blank but in some cases the SMS Centre Number is required to enable the MiX Talk unit to send SMS messages.

A list of SMS centre numbers:

- Vodacom +27829129 for both prepaid and contract customers. You can also try +27829119 if the first number does not work.
- Cell C message +27841000000 for both Cell C contract and prepaid customers.
- Virgin mobile +27741000050 for both prepaid and Virgin mobile contract customers.
- MTN message - Prepaid customers: +27831000113; Contract customers: +27831 000002
- 8ta message and Telkom Mobile +2791197

Low Power Timer

Summary:

The Low Power Timer is used to trigger the operating mode change from idle to low power. The timer starts when the unit enters idle mode when no voice call and/or keypad activity is detected.

Call Length Timer

Summary:

The Call Length Timer is used to limit the length in time of voice calls. Once the timer reaches zero the MiX Talk unit responds with four beeps to warn the operator that is about to cut the call. The operator then needs to press any button except the "On Hook" button to extend the call.

Call Continue Timer

Summary:

Once the Call Length Timer has reached zero and the MiX Talk unit has responded with four beeps to warn the operator that is about to cut the call. Then the time allowed for the operator to press any button except the "On Hook" button to extend the call is determined by the Call Continue Timer.

Incoming Ring Timer

Summary:

The Incoming Ring Timer is used to indicate a missed call. When the unit receives an incoming call the Incoming Ring Timer is activated. If the Incoming Ring Timer reaches zero before the call is answered by the operator, then the unit will indicate a missed call.

If the missed call is from a subscriber number associated with a Button then the corresponding Button LED will flash. If the missed call is from any other number then the fifth LED will flash.

Auto Answer Timer

Summary:

The Auto Answer Timer is used to determine when the unit should automatically answer an incoming call. When the unit receives an incoming call the Auto Answer Timer is activated. If the Auto Answer Timer reaches zero before the call is answered by the operator, then the unit will automatically answer the call.

Set Open Line

Summary:

When the "Set Open Line" parameter is set to 1 then the unit will allow incoming calls from any subscriber number.

When the "Set Open Line" parameter is set to 0 the feature is disabled and then the unit will allow incoming calls only from subscriber numbers associated with one of the four Buttons or from a subscriber number configured as one of the four Incoming Call Numbers.

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Table 1 – Set **Configuration Message** Structure

Category	Message Initiator	Destination	Message ID	Parameter Number	Parameter	Format	Example	Restrictions
Set Master Number Method-1 (with existing Master Number)	Command	MiX Talk Device	MASTER	1	Existing Master Number	+27836750000	MASTER;+27836750000;+27836750001	On first power-up the MASTER will be set to the default of 10 zeros. New Master Number and Cell number used to send SMS must be the same.
				2	New Master Number	+27836750001		
	Reply	Master	MASTER	1	Existing Master Number	+27836750000	MASTER;+27836750000;+27836750001;OK	Reply from applicable MiX Talk Device.
				2	New Master Number	+27836750001		
				3	Confirmation	OK		
Set Master Number Method-2 (with IMEI Number)	Command	MiX Talk Device	MASTER	1	IMEI Number	353841083789487	MASTER;353841083789487;+27836750001	This message can be sent by any device that can generate a SMS. The number from the SMS originator is ignored. When the value of Parameter 1 in the message received matches the IMEI number of the unit then the MASTER number will be set to the value of Parameter 2.
				2	Allocated Number	+27836750002		
	Reply	Master	MASTER	1	IMEI Number	353841083789487	MASTER;353841083789487;+27836750001;OK	Reply from applicable MiX Talk Device **NOTE:** The reply will be sent twice to the new MASTER no
				2	New Master Number	+27836750001		
				3	Confirmation	OK		
Set Config Number	Command	MiX Talk Device	CONF	1	Config Number Indicator	One numerical digit	CONF;1;+27836750002	Cell number used to send SMS = Master or Config Number
				2	Allocated Number	+27836750002		
	Reply	SMS Sender and Master	CONF	1	Config Number Indicator	One numerical digit	CONF;1;+27836750002;+27836750000;OK	Reply from applicable MiX Talk Device
				2	Allocated Number	+27836750002		
				3	SMS Sender Number	+27836750000		
				4	Confirmation	OK		
Set Button Number	Command	MiX Talk Device	BUT	1	Button Number Indicator	One numerical digit	BUT;1;+27836750006	Cell number used to send SMS = Master or Config Number
				2	Allocated Number	+2783675000		
	Reply	SMS Sender and Master	BUT	1	Button Number Indicator	One numerical digit	BUT;1;+27836750006;OK	Reply from applicable MiX Talk Device
				2	Allocated Number	+27836750006		
				3	Confirmation	OK		
Set Incoming Call Number	Command	MiX Talk Device	PH	1	Button Number Indicator	One numerical digit	BUT;1;+27836750006	Cell number used to send SMS = Master or Config Number
				2	Allocated Number	+27836750010		
	Reply	SMS Sender and Master	PH	1	Button Number Indicator	One numerical digit	BUT;1;+27836750006;OK	Reply from applicable MiX Talk Device
				2	Allocated Number	+27836750010		
				3	Confirmation	OK		

Category	Message Initiator	Destination	Message ID	Parameter Number	Parameter	Format	Possible Values	Example	Restrictions
Set SMS Centre Number	Command	MiX Talk Device	SMS	1	Existing SMS Centre Number	+27831000002	N/A	SMSC; +27831000002	Cell number used to send SMS = Master or Config Number
	Reply	SMS Sender and Master	SMS	1	Existing SMS Centre Number	+27831000002	N/A	SMSC; +27831000002; OK	Reply from applicable MiX Talk Device
				2	Confirmation	OK			
Set Low Power Timer	Command	MiX Talk Device	LP	1	Low Power Timer in Second	Three numerical digits	60, 120,300	LP; 120	Cell number used to send SMS = Master or Config Number
	Reply	SMS Sender and Master	LP	1	Low Power Timer in Second	Three numerical digits	60, 120,300	LP; 120; OK	Reply from applicable MiX Talk Device
				2	Confirmation	OK			
Set Call Length Timer	Command	MiX Talk Device	CT	1	Call Length Timer in Seconds	Four numerical digits	600, 900, 1200, 1800	CT; 1200	Cell number used to send SMS = Master or Config Number
	Reply	SMS Sender and Master	CT	1	Call Length Timer in Seconds	Four numerical digits	600, 900, 1200, 1800	CT; 1200; OK	Reply from applicable MiX Talk Device
				2	Confirmation	OK			
Set Continue Timer	Command	MiX Talk Device	PB	1	Call Length Timer in Seconds	Two numerical digits	5, 10, 15, 20	5, 10, 15, 20	Cell number used to send SMS = Master or Config Number
	Reply	SMS Sender and Master	PB	1	Call Length Timer in Seconds	Two numerical digits	5, 10, 15, 20	PB; 15; OK	Reply from applicable MiX Talk Device
				2	Confirmation	OK			
Set Incoming Ring Timer	Command	MiX Talk Device	RT	1	Incoming Ring Time in Seconds	Three numerical digits	60, 120, 180	RT; 060	Cell number used to send SMS = Master or Config Number
	Reply	SMS Sender and Master	RT	1	Incoming Ring Time in Seconds	Three numerical digits	60, 120, 180	RT; 060; OK	Reply from applicable MiX Talk Device
				2	Confirmation	OK			
Set Auto Answer Timer	Command	MiX Talk Device	AA	1	Auto Answer Timer in Seconds	Two numerical digits	0, 5, 10, 15, 20	AA; 15 / AA;0	Cell number used to send SMS = Master or Config Number / Auto Answer disabled when NULL
	Reply	SMS Sender and Master	AA	1	Auto Answer Timer in Seconds	Two numerical digits	0, 5, 10, 15, 20	AA; 15; OK / AA; NULL; OK	Reply from applicable MiX Talk Device
				2	Confirmation	OK			
Set Open Line	Command	MiX Talk Device	OPEN	1	Open Line	Digital 1 or 10	1 or 0	OPEN; 1	Cell number used to send SMS = Master or Config Number
	Reply	SMS Sender and Master	OPEN	1	Auto Answer Timer in Seconds	Two numerical digits	1 or 0	OPEN; 1; OK	Reply from applicable MiX Talk Device
				2	Confirmation	OK			

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Table 2 – **Query Configuration** Message Structure

Message Initiator	Destination	Message ID	Parameter Number	Parameter	Format	Example	Restrictions
Command	MiX Talk Device	QUERY	1	Query Master Number	MASTER	QUERY;MASTER	Cell number used to send SMS = Master or Config Number
Reply	Master or Config	QUERY	1	Existing Master Number	+27836750000	QUERY;MASTER;+27836750000;OK	Applicable MiX Talk Device
			2	Confirmation	OK		
Command	MiX Talk Device	QUERY	1	Query Config Numbers	CONF	QUERY;CONF	Cell number used to send SMS = Master or Config Number
Reply	Master or Config	QUERY	1	Config Number 1	+27836750001	QUERY;CONF;+27836750001;+27836750002; +27836750003;+27836750004;OK	Applicable MiX Talk Device
			2	Config Number 2	+27836750002		
			3	Config Number 3	+27836750003		
			4	Config Number 4	+27836750004		
			5	Confirmation	OK		
Command	MiX Talk Device	QUERY	1	Query Button Numbers	BUT	QUERY;BUT	Cell number used to send SMS = Master or Config Number
Reply	Master or Config	QUERY	1	Button Number 1	+27836750005	QUERY;BUT;+27836750005;+27836750006; +27836750007;+27836750008;OK	Applicable MiX Talk Device
			2	Button Number 2	+27836750006		
			3	Button Number 3	+27836750007		
			4	Button Number 4	+27836750008		
			5	Confirmation	OK		
Command	MiX Talk Device	QUERY	1	Query Incoming Call Numbers	PH	QUERY;PH	Cell number used to send SMS = Master or Config Number
Reply	Master or Config	QUERY	1	Incoming Call Number 1	+27836750009	QUERY;PH;+27836750009;+27836750010;+27836750011; +27836750012;OK	Applicable MiX Talk Device
			2	Incoming Call Number 2	+27836750010		
			3	Incoming Call Number 3	+27836750011		
			4	Incoming Call Number 4	+27836750012		
			5	Confirmation	OK		

Message Initiator	Destination	Message ID	Parameter Number	Parameter	Format	Example	Restrictions
Comand	MiX Talk Device	QUERY	1	Query SMS Centre Number	SMSC	QUERY;SMSC	Cell number used to send SMS = Master or Config Number
Reply	Master or Config	QUERY	1	SMS Centre Number	+27831000002	QUERY;SMSC;+27831000002;OK	Applicable MiX Talk Device
			2	Confirmation	OK		
Comand	MiX Talk Device	QUERY	1	Query Parameter Values	TIMER	QUERY;TIMER	Cell number used to send SMS = Master or Config Number
Reply	Master or Config	QUERY	1	Low Power Timer	LP	QUERY;TIMER;LP;120;CT;1200;PB;10;RT;120;AA;10;OK	Applicable MiX Talk Device
			2	Low Power Timer Value	120		
			3	Call Length Timer	CT		
			4	Call Length Timer Value	1200		
			5	Call Continue Timer	PB		
			6	Call Continue Timer Value	10		
			7	Incoming Ring Timer	RT		
			8	Incoming Ring Timer Value	120		
			9	Auto Answer Timer	AA		
			10	Auto Answer Timer Value	10		
			11	Confirmation	OK		
Comand	MiX Talk Device	QUERY	1	Query Unit Serial number	SERIAL	QUERY;SERIAL	Cell number used to send SMS = Master or Config Number
Reply	Master or Config	QUERY	1	Unit Serial Number	P005BA123456	QUERY;SERIAL; P005BA123456;OK	Applicable MiX Talk Device
			2	Confirmation	OK		
Comand	MiX Talk Device	QUERY	1	Query Firmware Revision	REV	QUERY;REV	Cell number used to send SMS = Master or Config Number
Reply	Master or Config	QUERY	1	Unit Serial Number	P005BA123456	QUERY;REV;22.00.12;OK	Applicable MiX Talk Device
			2	Confirmation	OK		
Comand	MiX Talk Device	QUERY	1	Query Open Line	OPEN	QUERY;OPEN	Cell number used to send SMS = Master or Config Number
Reply	Master or Config	QUERY	1	Unit Serial Number	P005BA123456	QUERY;OPEN;1;OK	Applicable MiX Talk Device
			2	Confirmation			

## APPENDIX D: **CONFIGURATION VIA PC/LAPTOP** APPLICATION.

Setup **Unit with Harnesses**

Refer to the description in paragraph 4.5

1. Connect Main Harness - 6-way connector
2. Connect Speaker Harness – 4-way connector

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3.Connect Antenna – Fakra connector
4.Connect Microphone – 2-way connector
5.Connect MiX Main Harness to +12V (Red = Positive, Brown = Negative)
6.Wait for unit start up confirmation – (Buzzer beep – speaker tone – buzzer beep – speaker tone)
7.Connect Serial Harness - 3-way connector
8.Open the MiX Talk Configuration application
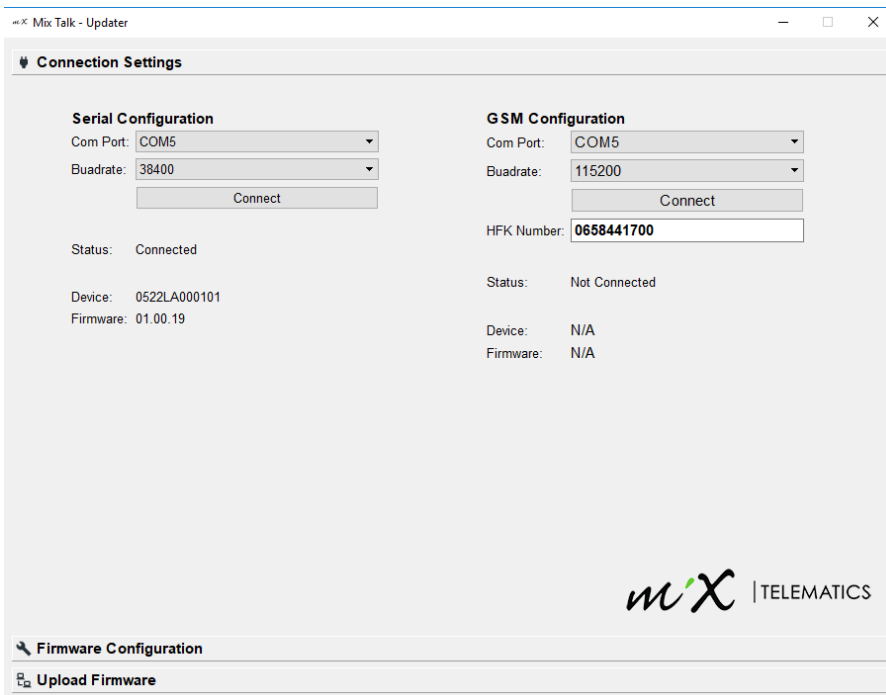
The following Screen will appear:
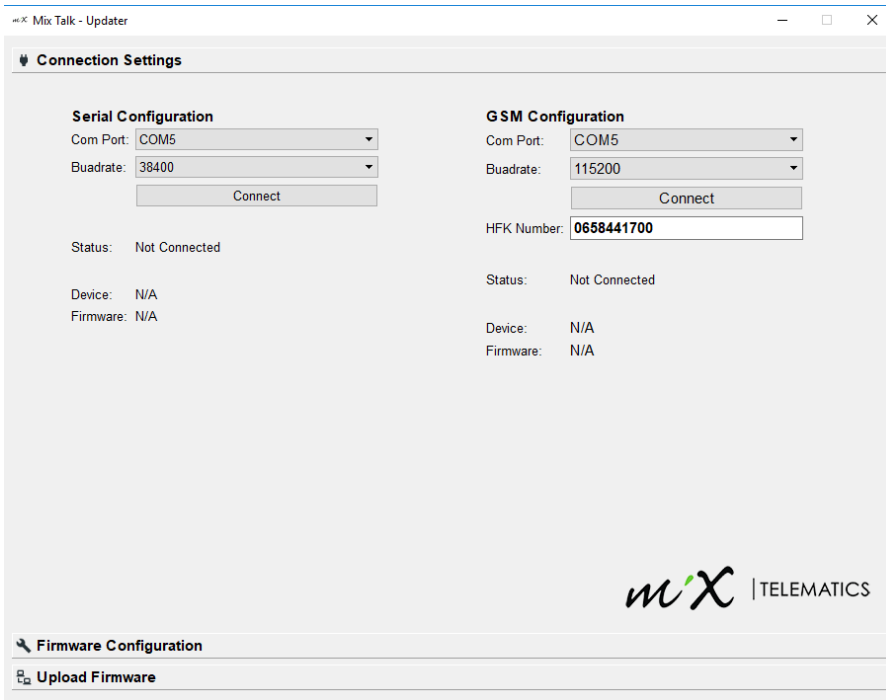
1.Select the correct Com Port from the drop down box below the Serial Configuration heading
2.Make sure the Baudrate is set to 38400
3.Click the connect button:

The following should appear:

• Status must show – Connected
• Device must show the unit serial number
• Firmware must show the current firmware revision

See example below:

Click on the **_Firmware Configuration_** tab

The following screen will appear

All the configuration items as set out in Appendix B can now be changed as required. See the examples of the application's visual feedback below.

First window

Mix Talk - Updater

Connection Settings

Firmware Configuration

Master Number ← Query
Master Number: 0834400123
New Master Number: 0834400123 → Set

Button Numbers ← Query
Button Number #1 0830044321 → Set
Button Number #2 +01234567890123 → Set
Button Number #3 +01234567890123 → Set
Button Number #4 +01234567890123 → Set

Incoming Numbers ← Query
Incoming Number #1 +01234567890123
Incoming Number #2 +01234567890123 → Set
Incoming Number #3 +01234567890123 → Set
Incoming Number #4 +01234567890123 → Set

Configuration Numbers ← Query
Cfg Number #1 +01234567890123 → Set
Cfg Number #2 +01234567890123 → Set
Cfg Number #3 +01234567890123 → Set
Cfg Number #4 +01234567890123 → Set

Misc
SMS Center Number +01234567890123 ← Query → Set
Open Line No ← Query → Set

Timers ← Query
Low Power Timer 300 → Set
Call Length Timer 1800 → Set
20 → Set
180 → Set
Null → Set

MiXTalkConfig ×
Successfully Updated Button Number 1
OK

Load Config
Save Config

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Upload Firmware

Second window

Mix Talk - Updater

Connection Settings

Firmware Configuration

Master Number ← Query
Master Number: +01234567890123
New Master Number: +01234567890123 → Set

Button Numbers ← Query
Button Number #1 +01234567890123 → Set
Button Number #2 +01234567890123 → Set
Button Number #3 +01234567890123 → Set
Button Number #4 +01234567890123 → Set

Incoming Numbers ← Query
Incoming Number #1 +01234567890123 → Set
Incoming Number #2 +01234567890123 → Set
Incoming Number #3 +01234567890123 → Set
Incoming Number #4 +01234567890123 → Set

Configuration Numbers ← Query
Cfg Number #1 0821233210 → Set
Cfg Number #2 000000000000000 → Set
Cfg Number #3 000000000000000 → Set
Cfg Number #4 0834321123 → Set

Misc
SMS Center Number +01234567890123 ← Query → Set
Open Line No ← Query → Set

Timers ← Query
Low Power Timer 060
  300
  120
  060
Call Length Timer → Set
Call Continue Timer → Set
Incoming Ring Timer 180 → Set
Auto Answer Timer Null → Set

Load Config
Save Config

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Load Config and save Config is not used at present.