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FALCOM

PROMOTION-KIT

Getting started

FOR **FOX3/-3G** DEVICES, ONLY

Version: 1.0.5; Modified: Tuesday, June 23, 2015

Table of contents

Version history:

This table provides a summary of the document revisions.

Version	Author	Changes	Modified
1.0.5	F. Beqiri	- Added new items in the PROMOTION-KIT: 1) USB to serial converter with extension cable 2) External antenna (**FAL-ANT-11** for FOX3 only and **FAL-ANT-12** for FOX3-3G device) 3) 8 hours free technical support	06/23/2015
1.0.4	F. Beqiri	- Added basic configuration settings when using your SIM card and TCP server - see chapter 5.3	06/05/2015
1.0.3	F. Beqiri	- Added figure 14 in chapter 5.3	06/04/2015
1.0.2	F. Beqiri	- Changed: STARTER-KIT to PROMOTION-KIT	06/03/2015
1.0.1	F. Beqiri	- Updated: chapters 2.2 and 5.1.	06/02/2015
1.0.0	F. Beqiri	- Initial version.	02/12/2015

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1 ABOUT THIS DOCUMENT

This document provides information about the FOX3/-3G PROMOTION-KIT giving customers the possibility to easily and quickly evaluate the product and all its functionality.
This document was written assuming the user has basic computer knowledge, and is familiar with the Windows operating environment.

1.1 Audience

This document is intended for system integrator and application developers.

1.2 How this document is organized

This guide consists of following chapters:

- Chapter **2**, "Overview" gives an overview of the FOX3/-3G PROMOTION-KIT and describes its contents.

- Chapter **3**, "Getting started" provides installation instructions of the PROMOTION-KIT and testing its functionality.

- Chapter **4**, "Control-Box" provides an overview of the control-box and describes how to use it.

- Chapter **5**, "Appendix" provides information how the firmware operates and information about the included installation cables. Here is also explained how to operate with your own SIM card and how to login the FOX3/-3G device to your own remote server.

2 OVERVIEW

This PROMOTION-KIT provides all the necessary hardware, software, and documentation to easily and quickly evaluate the performance of your FOX3/-3G device. The FOX3/-3G device is shipped pre-configured allowing system integrators and developers to test the factory-preloaded configuration and see how the FOX3/-3G device works. Once the device is powered up, it connects automatically to the FALCOM *trace4you* server which supports two-way communication interface between server and device and lets you track all activities of the device, pull and change the factory-preloaded device configuration. You don't need anything else to get started with PROMOTION-KIT. Only an internet enabled computer (PC client) with a pre-installed standard web browser is required. After you log in to the *trace4you* server, the exact location and other information transmitted from the device will be displayed on the map.

2.1   Scope of delivery

PROMOTION-KIT consists of 1 outer box with 3 small boxes inside. Before you start up the PROMOTION-KIT, make sure that your package includes the following items listed in table 1 below. If any item is missing or damaged, please contact your vendor immediately.

Figure 1: PROMOTION-KIT delivery package.

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Article name	Quantity	Description
FOX3/-3G (BOX)		
FOX3 unit	1	FOX3 or FOX3-3G unit, pre-configured with access to the FALCOM **Trace4You** server. The device is placed in the IGN-Sleep mode prior to being shipped from the factory and can be woken up via IGN-Switch or a high signal on IGN-pin.
Battery	1	1000 mAh rechargeable battery (already inserted and connected to the FOX3/-3G)
PREMIUM-FEATURES	-	All PREMIUM-FEATURES are activated by the factory. For details how to use them refer to the corresponding Application Notes listed in chapter 2.2
SIM-Card	1	Prepaid SIM card. Service fee includes 10MB of data transfer and 3 months access to the FALCOM *trace4you* server for evaluation purposes.
FAL-ANT-11 / FAL-ANT-12	1	Depending on which Promotion Kit you ordered, one of the following external antennas will be part of your kit: **FAL-ANT-11 :** Quad Band GSM+GPS combination antenna) for FOX3 only. **FAL-ANT-12** : Penta Band GSM+GPS combination antenna) for FOX3-3G. More details: http://www.falcom.de/products/accessories/antennas/
Instruction sheet	1	Necessary information how to get started with FALCOM AVL devices.
Info-Sheet	1	Contains log-in data to access the online documentation on the FALCOM website and FALCOM *trace4you* frontend server for evaluation purposes.
Support	-	8 hours free technical support.
FOX3/-3G-CONTROL-BOX		
Control-Box	1	To test the functions of the FOX3/-3G device and allows connection to your PC for evaluation purposes.
USB to SERIAL	1	This cable allows a serial connection through the USB port of the PC to the serial port of the control box.
CA31	1	Installation cable for FOX3/-3G with interface to the RFID-Reader or JAZZ2. This cable allows to install your FOX3/-3G to the vehicle.
CA69	1	This cable allows testing of the available pins on the accessory port of the FOX3/-3G (e.g. 1-Wire bus). It has a 4pin connector for connecting to a RFID-Reader or JAZZ2 device.
POWER-SUPPLY-BOX		
Power Suppy	1	Type **FW7238/12** incl. UK/US/AU/EU adaptor

Table 1: The list of items included in the PROMOTION-KIT.

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2.2   Related documents

In addition to this document, the following files comprise the full set of FOX3/-3G product manuals and can be downloaded from the FALCOM web site (protected area). Download ing documents from the FALCOM website:

1. Open your installed browser and enter "https://www.falcom.de/distributor-login/?origin=4"
2. Log-in using the logging data (Username & Password) available in the Info Sheet delivered with the PROMOTION-KIT
3. Go to "Support" and select "AVL (FOX3, STEPPIII,.....)" from the "Documentation" selection box
4. This will list the supporting documents for all FALCOM AVL devices. Please, download just the documents listed in the table below.

NR	PDF file name	Description
[1]	AVL_PFAL_Configuration_Command_Set.pdf	Contains the description of the internal firmware and the supported Configuration Command Set for the FALCOM AVL devices.
[2]	FOX3_hardware_manual.pdf	Contains information about the hardware of the FOX3 device.

Table 2: Documents for download from the FALCOM website (protected area)

Downloading documents from the FALCOM website:

1. Open your browser and enter "https://www.falcom.de/support/documentation/application-notes/"
2. This will list the application notes for all FALCOM AVL devices. Please, download just the application notes listed in the table below.

NR	PDF file name	Description
[3]	AppNotes_AVL_IO.pdf	Contains information about the use of the IOs on FALCOM AVL devices
[4]	AppNote_CAN_FMS_CAN_OBDII_Howto.pdf	Contains information about the use of the CAN-BUS interface
[5]	AppNotes_AES_TCP.pdf	Contains information about the AES128 data encryption on FALCOM AVL devices
[6]	AppNotes_ECO-DRIVE-GPS.pdf	Contains information about the using of ECO-DRIVE-GPS on FALCOM AVL devices
[7]	AppNotes_INDEXED_HISTORY.pdf	Contains information about the indexed history on FALCOM AVL devices
[8]	AppNotes_Transform_history_data.pdf	Contains information about the conversation of the history data stored in a FALCOM AVL device
[9]	AppNote_Remote_update.pdf	Contains information of how to upgrade FALCOM AVL devices to a new firmware revision remotely via TCP
[10]	AppNotes_connecting_a_bar_code_scanner.pdf	Describes how to connect a bar code scanner to a STEPPII, STEPPIII, BOLERO-LT, FOX3/-3G etc. and store or transmit the scanned data.
[11]	AppNotes_AVL_Installation_Guide.pdf	This document provides all the necessary information to allow your FALCOM product to be properly and safely installed
[12]	AVL_AppNote_RFID_Howto.pdf	This document provides all the necessary information how to connect a RFID reader to your FALCOM product and work with it
[13]	AppNotes_1-Wire-Guide.pdf	This document provides all the necessary information how to connect 1-Wire sensors to your FALCOM product and work with them.
FALCOM Trace4You-fleet documents		
[14]	t4y_fleet_UsersGuide.pdf	This document provides all the necessary information how to get started and work with FALCOM *trace4you*-fleet server application/frontend.

Table 3: Documents for free download from the FALCOM website

These PDF files are viewable and printable from Adobe Reader. If you do not have the Adobe Reader installed, you can download it from http://www.adobe.com.

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3 GETTING STARTED

3.1 PROMOTION-KIT hardware set up

This chapter explains how to connect and set-up the PROMOTION-KIT.
Installing the PROMOTION-KIT in five steps:

1. Unpack the PROMOTION-KIT.
2. Connect the FOX3 unit to the control-box, PC and apply power.
3. Charge the internal battery of the FOX3/-3G and power up the device.
4. Install the FALCOM Workbench software and start the evaluation of the FOX3/-3G device
5. Access the online documentation from the FALCOM website using the login data available in the info sheet supplied with PROMOTION-KIT.

3.1.1 Unpacking the PROMOTION-KIT

Unpack the contents as shown in the figure below. There is no external antennas included in the PROMOTION-KIT, as the FOX3/-3G has also internal GSM/GPS antennas.
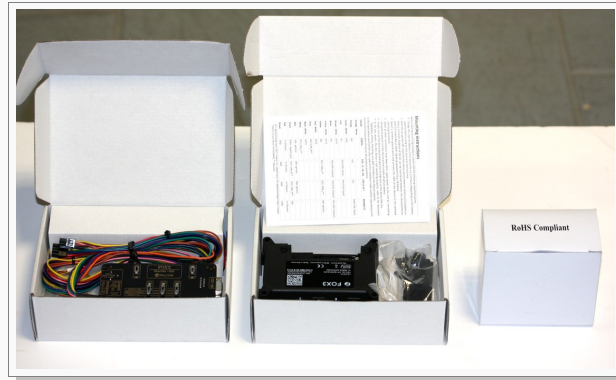

Figure 2: Boxes inside the PROMOTION-KIT.

PROMOTION-KIT Contents:

1) FOX3 or FOX3-3G (pre-configured, incl. SIM-Card and battery)
2) Control-box
3) USB-to-serial converter (incl. cable)
4) Power supply
5) US/UK/AU/EU adaptor
6) FAL-ANT-11 or FAL-ANT-12 (external antenna)
7) CA31 - Main port installation cable
8) CA69 - Accessory port cable
9) Mounting instructions
10) Info-sheet

Figure 3: PROMOTION-KIT contents.

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3.1.2 Connecting FOX3/-3G to the control-box

a) Before starting initial operation, switch all switches on the Control-Box to "OFF" (factory default setting).

b) Plug in the 8pin double row connector (1a) of cable (1) to the 8pin main port on the FOX3/-3G device. To unplug, press the "lever" on the back of this connector (1a) and pull it out.

c) Plug in the 6pin double row connector (1b) of cable (1) to the 6pin accessory port on FOX3/-3G. To unplug this connector press the "lever" on the back of this connector (1b) and pull it out.
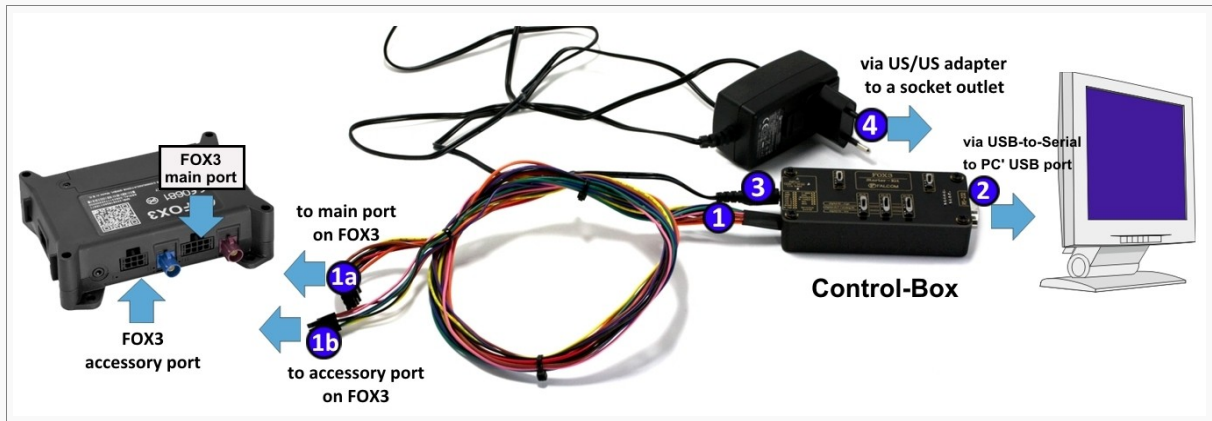

Figure 4: Connecting PROMOTION-KIT to FOX3/-3G and PC

d) Now, unpack the power supply from the box and plug it into the left input socket on the control-box marked "INPUT 12.0V … 32.0V". Then plug the AC adapter into the wall socket of your 220V electric mains (to access British/American wall socket use the included UK/US adaptor accordingly).

3.1.3 Charge the internal battery and power up the device

The internal battery in the device may be shipped with a minimal charge and will need to be fully charged before use.

To charge the internal battery follow the steps below:

e) After connecting the AC adapter to the Control-Box and into the wall socket, apply power to the control box and FOX3/-3G device by turning just the "**+IN**" switch to "**ON**" position.
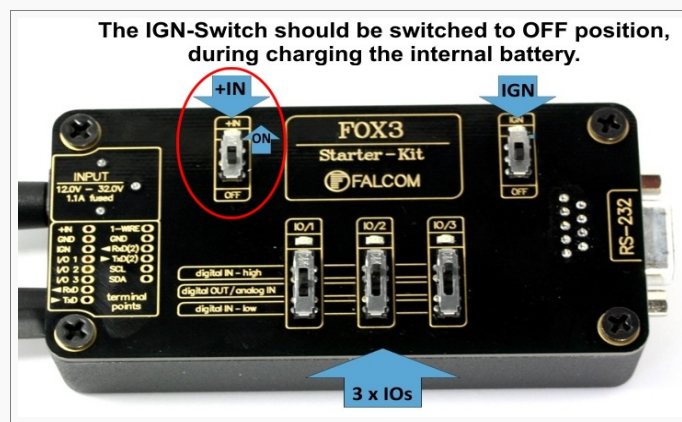

Figure 5: Overview of the control-box top panel (+IN = ON)

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f) Depending on the battery charge state, the charging time may by different but usually it takes 3-4 hours to fully charge the internal battery.

g) After the battery is fully charged, unpack the USB to serial converter and the USB extension cable. Remove the USB cover on the converter and connect the USB cable to the converter (1), see figure below. Plug the serial port of the converter to the COM port of the control box (2). Finally, plug the other end of the cable into a free USB port on your PC (3). This cable is used for communication between the FOX3/-3G and Workbench software for sending and receiving data as well as to change the configuration stored in the FOX3/3G device.
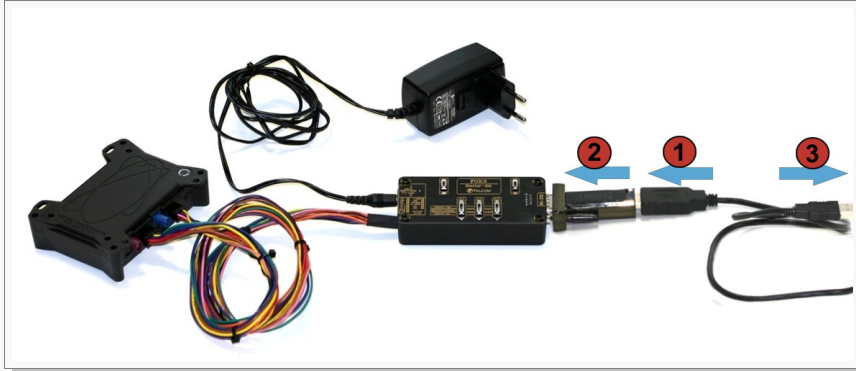

Figure 6: Connecting the converter with the USB cable

h) Finally, power up the FOX3/-3G device by turning the "**IGN**"-switch to "**ON**" position.
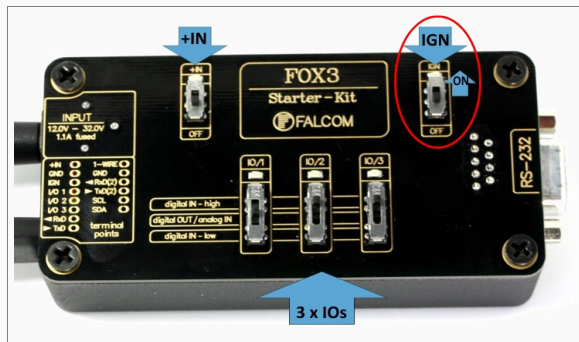

Figure 7: Overview of the control-box top panel (IGN = ON)

"**+IN**"   Supplies power to the control box and FOX3/-3G.

"**IGN**"   Turns on the FOX3/-3G (wakes it up from the IGN sleep mode).

i) If you want to use the FOX3/-3G with external antenna, remove first power from the device, unpack the supplied antenna and connect both ends of the antenna to the same colours of FAKRA connectors on the FOX3/3G and power up the device again.
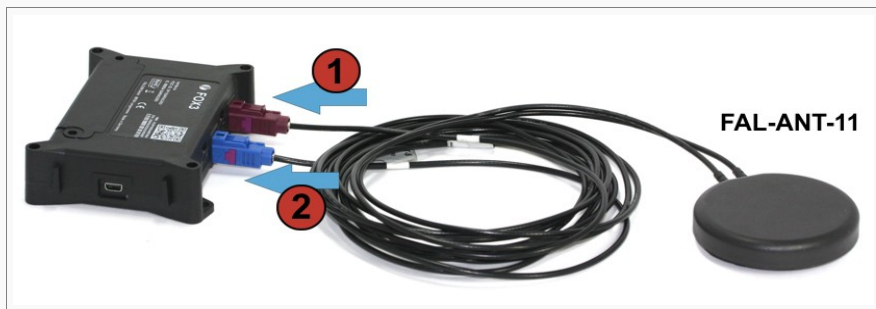

Figure 8: Connecting the external antenna

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3.1.4 Installing the FALCOM Workbench software and start evaluation

System requirements for Workbench software

(a) PC with 700 megahertz or higher processor Intel Pentium II or compatible processor recommended,

(b) 512 megabytes (MB) of RAM or higher recommended (512MB minimum supported; may limit performance and some features),

(c) 90 megabytes (MB) of available hard disk space (recommended 2 gigabytes),

(d) Keyboard and Mouse.

To be able to test your device with factory preloaded configuration or to change this configuration, you need to install the **Workbench** evaluation software. Go to the link below and download it: http://www.falcom.de/support/software-tools/falcom-workbench/.

An install shield will guide you through the installation. An integrated online help can be found after the installation completes.
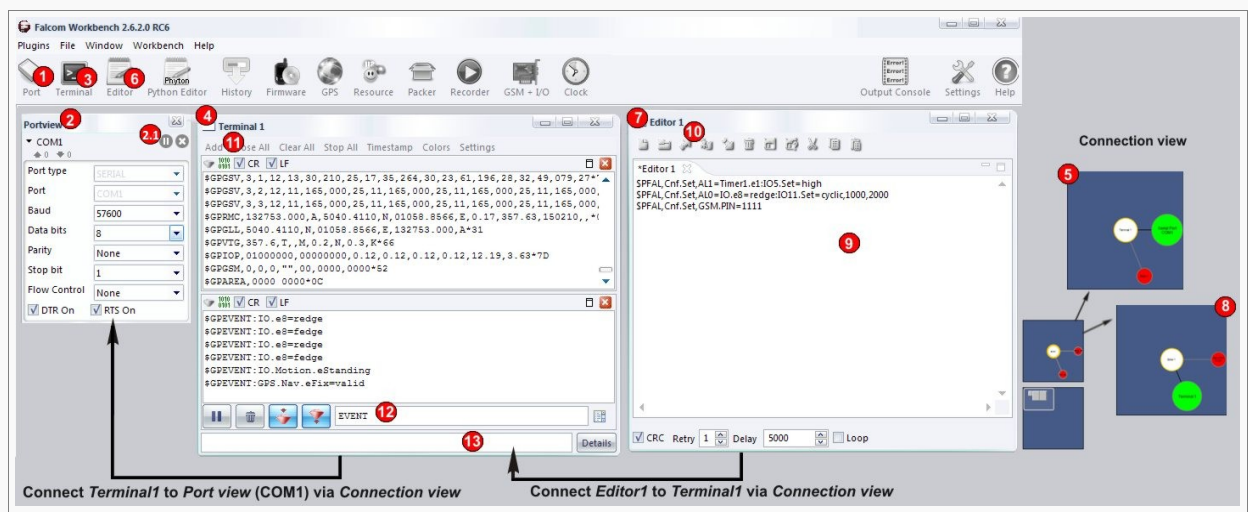

Figure 9: FALCOM Workbench software.

1. After completing the installation, start the **Workbench.exe** by double-clicking on it. Open a new **COM Port** from the Toolbar **(1)**, on the **COM Port view (2)** choose the Port where FOX3/-3G is connected (go to Device Manager > Ports > USB Serial Port (COMxx), where **xx** is the COM port to use), define the port settings (**115200** bps, **8** Data bits, **No** Parity bit, **1** Stop bit, **None** Flow control) and finally, click the connect (play) icon **(2.1)** to open that COM Port. You can also get an online help in HTML format if you click "**Help**" button on the upper-right corner.

2. Open a new **Console** from the Toolbar **(3)**, click on the **Console1 (4)**, then go to **Connection view** and click on **COMPort (5).**

3. Open a new **Editor** from the Toolbar **(6)**, click on the **Editor1 (7)**, then go to **Connection view** and click on **Console1 (8).**

4. To send commands to the FOX3/-3G device, type them on the **Editor (9)** and then click on **Start sending configuration (10)** or double click with left mouse each configuration line on the **Editor (9)** individually.

5. To see all events generated by the FOX3/-3G device, either open a new console "Console2" or on the Console1 **(4)**, click "Add" **(11)**, type the text "GPEVENT" on input field **(12)**, finally click the button **(13)**"Filter incoming". A description how to operate with the Control-Box is given in chapter 4.

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3.1.5 Accessing online documentation

References to the online documentation are listed in chapter 2.2, Related documents.
How to send data to a TCP-Server or SMS messages to a phone number/SMS server and how to reconfigure the loaded configuration on the device, refer to the Related Documents [1]. A description how the firmware on the FOX3/-3G works is given in chapter 5.1.

3.2   Customer Support

Users of the PROMOTION-KITS can receive assistance up to 8 hours through technical support team.   Contact   our   technical   support   through   our   web   site   at: http://www.falcom.de/support/support-form/

3.3   FALCOM Trace4You server-frontend

The trace4you-fleet is a web-based tracking application that provides users with an easy-to-use interface from where you can remotely monitor and view the location of the FALCOM AVL devices in real-time. The trace4you application also allows to view the device history and device-generated event, view reports, manage geofences, pull and change the factory-preloaded device configuration. After the FOX3/-3G is successfully powered up, open a web browser (IE or Firefox) and follow the registration process as given on the enclosed slip of paper called „Info-Sheet".

3.4   How the basic configuration work ?

Once the FOX3/-3G device is powered up, it tries automatically to register to the GSM network, attach to the GPRS network and finally connect to the FALCOM *trace4yor* server using the factory-preloaded configuration. The connection state of the GPRS and TCP services will be shown by the generated events GSM.GPRS.eConnected and TCP.Client.eConnected telling you that the device is connected to the GPRS/TCP server. These events are displayed on the Terminal in the Workbench. The device GPS location is shown on the *trac4you* frontend server after log-in. For more details about the the *trace4you* server refer to the Related Documents [14].

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4 CONTROL-BOX - HARDWARE DESCRIPTION

This chapter gives you some information about the operation of the control box. It allows you to exercise the function of all inputs and outputs on the FOX3/-3G device without the need to add any other external component to them.

The components on the control-box can be identified from the figures below showing the front, top, and the rear panels.
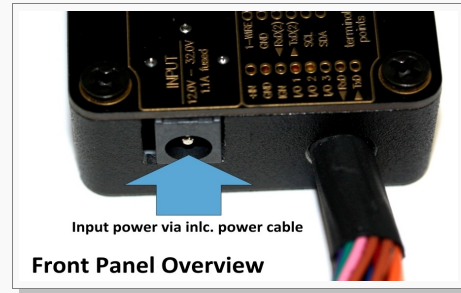
4.1 Front panel overview

Input power via inlc. power cable

Front Panel Overview

Figure 10:   Front panel of the control-box.

A description of each of the items on the front panel is provided in Table 4.

Item	Description
INPUT (12V – 32V)	Input power supply for control-box and FOX3/-3G device with **1.1 A** fuse protected.

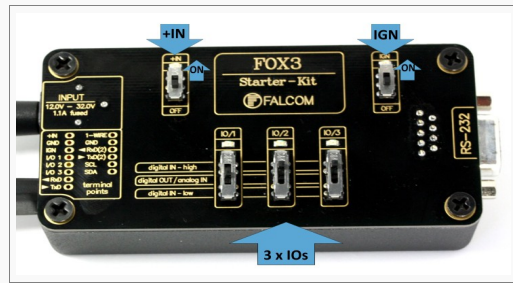**Table 4**:   Front panel overview.

4.2 Top panel overview

Figure 11:   Top panel of the control-box.

A description of each of the items on the top panel is provided in Table 5.

Item	Description
LED (+IN)	Lights when the **+IN**-switch is turned to ON.
LED (IGN)	Lights when the **IGN**-switch is turned to ON.
+IN - switch	This two-way-switch enables or disables power to the connected FOX3/-3G unit. (To enable power to the device, the **Current**- switch must be set to "**ON**")
IGN - switch	This two-way-switch wakes up the FOX3/-3G device from **IGN-sleep** mode and sets the **IGN-pin** of the FOX3/-3G to **High** or **Low signal level** for using the rising edge and falling edge events.
IO - switches	These pins have dual functions. All are controlled by the internal firmware of FOX3/-3G. Therefore, the user must define whether to use them as analog or digital pins. The configured digital pins can be inputs or outputs while the analog pins can only be inputs. Their function is controlled with commands with *$PFAL,IO0[1,2].Config=DI,1,10* or *$PFAL,IO0[1,2].Config=AI,1,10* by changing the electrical behaviour of the reference pin to digital or analogue input (**DI** = Digital input; **AI** = Analogue input). These three-way switches (from IO/1 to IO/3) allow operation of the IOs either as digital/analogue inputs or digital outputs. More details how to test these IOs, are given below.

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Item	Description
	Please note that, due to the the PROMOTION-KIT comes with all PREMIUM-FEATURE activated, the IO2 and IO3 are activated for using the "CAN-INTERFACE". Only IO/1 remains free and can be used as general purpose input/output pin. For more details please refer to the Related Documents **[2].**
Testing IOs as digital inputs:	When the reference IO (e.g: IO/1) is configured as digital input with "**$PFAL,IO0.Config=DI,2,10**", the FOX3/-3G device will generate a rising edge event "IO.e0=redge" and set the state of the IO/1 to high "IO.s0=high", if: • *the position of the IO/1-Switch changes from "**Digital IN - Low"** to "**Digital IN - High".** and will generate a falling edge event "IO.e0=fedge" and sets its state to low "IO.s0=low", if: • *the position of the IO/1-Switch changes from "**Digital IN - High"** to "**Digital IN -Low".**
Testing IOs as analogue inputs:	When the reference IO (e.g: IO/1) is configured as analogue input with "**$PFAL,IO0.Config=AI,2,10**, you have to calibrate first this IO the low and high voltages. To do it, perform the following steps (e.g. IO/1): 1. *Switch the IO/1-Switch (IO/1) to "**Digital IN - Low"** position.* 2. *Send the command "**$PFAL,IO0.Calibrate,offset=0**" from the Workbench Editor ❾ (see Fig. 8) to FOX3/-3G.* 3. *Switch the IO/1-Switch (IO/1) to "**Digital IN - High"** position.* 4. *Send the command "**$PFAL,IO0.Calibrate,gain=15**" from the Workbench Editor ❾ (see Fig. 8) to FOX3/-3G.* 5. *Switch the IO/1-Switch (IO/1) to "**Digital OUT / analogue IN"** position. This position has a fixed voltage of approx. 6V.* Now, you can configure an alarm (e.g. *$PFAL,CNF.Set,AL31=Sys.Timer.e0&IO.s0>6.0:IO6.Set=high*) to switch on an LED (e.g. IO/3) when the voltage on the IO/3 is higher than e.g. 5.0 V. To test it, perform the steps below: 6. *Send the configuration "**$PFAL,CNF.Set,AL31=Sys.Timer.e0&IO.s2>5.0:IO13.Set=hpulse,5000**" from the Workbench Editor ❾ (see Fig. 8) to FOX3/-3G.* 7. *Switch the IO/1-Switch (IO/1) to "**Digital OUT / analogue IN"** position.* 8. *Send the command "**$PFAL,Sys.Timer0.Start=single,1000**" from the Workbench Editor ❾ (see Fig. 8) to FOX3/-3G.* After the timer expires (1 second has passed), the red LED on the FOX3/-3G (front side, next to the 6pin accessory port) goes ON for 5 seconds and then turns OFF. For more details about the LED on the FOX3/-3G, refer to the Related Documents **[2].**
Testing IOs as digital outputs:	When the reference IO (e.g: IO/1) is supposed to be used as digital output, there is no configuration to be done in the firmware. To test it, perform the steps below: 1. Remove the available configuration for the IO/1 with "**$PFAL,IO0.Config=**" 2. Switch the **IO/1-Switch** to the ***"Digital OUT / analogue IN"*** position 3. Send the command "**$PFAL,IO4.Set=high**" to set it to High 4. Send the command "**$PFAL,IO5.Set=low**" to set it to Low.

Table 5: Components on the top panel of the control-box and their functionality

4.3   Rear panel overview

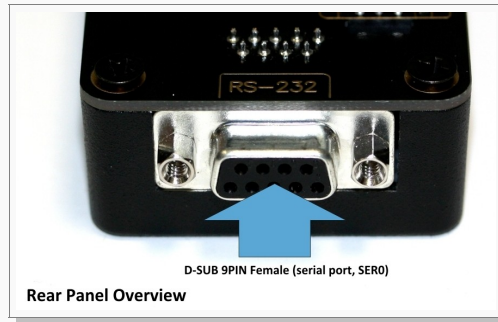D-SUB 9PIN Female (serial port, SER0)

Rear Panel Overview

Figure 12: Rear panel of the control-box.

A description of each of the items on the rear panel is provided in Table 6.

Item	Description
Serial port 0	*Via your own RS-232 cable you can connect the PROMOTION-KIT to a PC and evaluate the connected FOX3/-3G device.*

Table 6: Item description on the rear panel of the control-box.

5 APPENDIX

5.1   How the FOX3/-3G firmware operates ?

FOX3/-3G device can be easily integrated into a variety of new applications. It contains an independent-customized software that provides even greater performance and flexibility for its users and system integrators to develop high-performance applications. The concept of the device is based on a simple implementation for a wide range of applications with low costs and high flexibility. The software enables you to configure, to track, control and monitor the FOX3/-3G device via SMS, as well as allows you set and poll the configuration remotely over Internet from the remote server. The software comprises a set of word-like commands termed "PFAL". Each of these causes the system FOX3/-3G either to take a particular action or to read or set a particular configuration. The software provides the basic configuration settings needed when the system starts up and is used as starting points for the creation of user applications. The development of user applications is based on the advanced event-handling features provided by the operating software. The exact point at which you configure the FOX3/-3G unit depends on your application you want to develop. Events are triggered automatically at system run-time and manually when the inputs change.
A part of events triggered at system run-time can be:

- Geo-fence violations (in/out)
- Changes to analog inputs (signal exceeds the range)
- Over speed detection (exceeding the speed limits)
- Specific distance reached (distance reached event)
- Towing detection (park events)
- Moving/acceleration detection and many many other features.

A part of events triggered manually can be:

- Changes on digital or analog inputs (car' door open/close events, ignition on/off events)

FOX3/-3G executes actions in response to an event or state(s) or in any combination. FOX3/-3G can also execute direct actions immediately after the user sends a command (via SMS, TCP, RS-232) to the device. When an event is triggered, the alarms related to that event are automatically sent either over GSM (SMS, Data call) and/or via TCP, or internally used to switch On/Off something in remote e.g. activating a Buzzer.

A part of alarms that can be executed can be:

- Message generation (route verification arrival/departure notification via SMS/TCP)
- Activation of outputs in a number of ways (activate a buzzer)
- Data logging activation (stores the data inside the device)
- Handling of incoming messages of any type (Activation on SMS text type
- Vehicle doors Lock & Unlock
- Vehicle engine starter Disable and Enable
- Handling of Timers, Triggers and Counters, and many others

Above are listed just a few software features and for a full view of the set of events, states, alarms, configurations and their functionalities refer to the Related Documents [1].

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5.2   Installation cables (CA31 & CA69)

There are two installation cables (CA31 and CA69) included in the PROMOTION-KIT. The CA31 is used to install your FOX3/-3G device in a vehicle and additionally to interface FALCOM RFID reader or JAZZ2 via the 4-pin UCOM connector. This cable has an 8pin double row connector that connects to the FOX3/-3G and a 4pin double row connector that connects to one of the FALCOM accessories.

CA69 is used to test 1-wire interface using your own 1-wire sensors and second RS-232 interface. *Table 7* and *Table 8* provide a reference to the colour codes of these cables. More details about the in-vehicle installation, refer to the Related Documents [11].

HINT: When connecting the CA31 to the vehicle wiring, for security reason firstly connect the ground pin to the negative pole of the vehicle battery and then the +IN pin to the positive pole. When using a switch between FOX3/-3G and external power source, first turn the swich OFF during the installation and then ON after completing the installation.

Figure 13:   Supplied cables (*a reference to the colours and pinout is provided in Table 7 and Table 8*)

The pin function and the colour codes of the **CA31** is listed in table below:

COLOUR	NAME	DIRECTION	DESCRIPTION	LEVEL
Open-end wires				
RED	+IN	Input	Power supply input.	V_{+IN} = + 10.8 ... + 32.0 V Imax ≤ 1.5 A
BROWN	GND	-	Ground.	0 V
BLUE	IGN	Input	It can be either connected to the vehicle ignition and used for journey START and STOP reports, or connect it to the operating voltage +IN to wakeup the FOX3/-3G device from IGN-Sleep mode.	**HIGH** ≥+10.8 .. +32.0 V DC; **LOW** = 0V
ORANGE	I/O1	Input/Output	Software configurable pins. They can operate either as input or output. They have dual functions as analog or digital inputs.	**OUT**: 100 mA max. @ +0 .. +32.0V DC
YELLOW	I/O2	Input/Output		**IN**: 0 V..+32.0V DC (**High** & **Low** free-programmable)
GREEN	I/O3	Input/Output		**Analog : <** 32.0 V / 10 bits resolution
4pin UCOM Connector				
PURPLE	RxA_0	Input	**Serial Port 0 - R**eceive data	V24, ±12 V
BLACK	TxA_0	Output	**Serial Port 0 -** Transmit data	V24, ±12 V
RED	+IN	Input	Power supply input.	=+IN
BROWN	GND	-	Ground.	0V

Table 7:   Pinout of the CA31 cable cable

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The pin function and the colour codes of the **CA69** is listed in table below:

COLOUR	NAME	DIRECTION	DESCRIPTION	LEVEL
Open end wires				
PINK	1-Wire	Input /Output	1-Wire master interface for Driver ID, temperature and humidity sensors.	V_{OUT} = + 2.8 .. +5.0 V
BROWN	GND	-	Ground Reference.	0 V
PURPLE	RxA_1	Input	**Serial Port 1 -** Receive data.	V24, ±12 V
BLACK	TxA_1	Output	**Serial Port 1-** Transmit data	V24, ±12 V
YELLOW	SCL	Output	I2C bus interface - Serial Clock line	-
GREEN	SDA	Input /Output	I2C bus interface - Serial Data line	-
4pin UCOM Connector				
PURPLE	RxA_1	Input	**Serial Port 1 -** Receive data	V24, ±12 V
BLACK	TxA_1	Output	**Serial Port 1-** Transmit data	V24, ±12 V
RED	+IN	Input	Power supply input.	V_{+IN} = + 10.8 ... + 32.0 V Imax ≤ 1.5 A
BROWN	GND	-	Ground.	0V

Table 8: Pinout of the CA69 cable

5.3 Installing your own SIM card and replacing the internal battery

To insert your own SIM card into the FOX3/-3G' SIM holder and replace the internal battery by a new one, follow the steps represented in figure below:
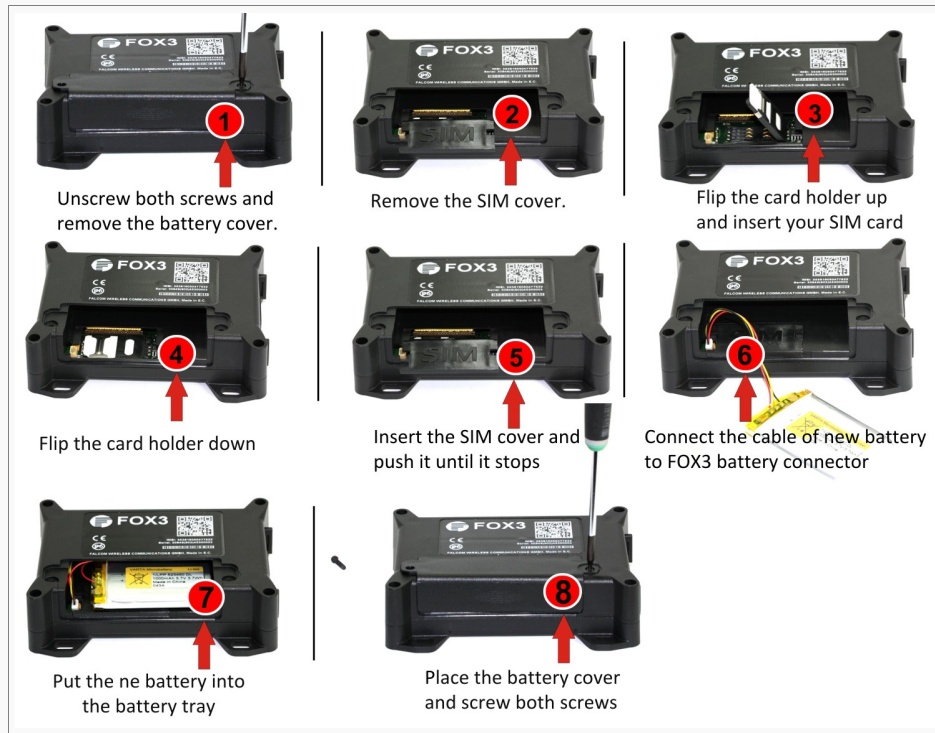

Figure 14:   Inserting you SIM card and replacing the battery by a new one

For more details refer to the Related Documents [2].

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When using your own SIM card and another TCP server, the following table shows the basic configuration settings that should be done in the FOX3 device to register the device in the GSM network and enable internet connection to your TCP-Server. These configuration settings should be done locally via serial port connection. After inserting your SIM card and powering up the device, send the following commands (marked in red) from Workbench **Editor** ❾ (see Fig. 8) to the FOX3/-3G.

SETUP	Settings required for a GPRS attachment
	$PFAL,Cnf.Set,GPRS.APN=internet.t-d1.de (enter your provider's APN) $PFAL,Cnf.Set,GPRS.QOS=3,4,3,0,0 $PFAL,Cnf.Set,GPRS.QOSMIN=0,0,0,0,0 $PFAL,Cnf.Set,PPP.USERNAME=t-d1 (if your provider requires) $PFAL,Cnf.Set,PPP.PASSWORD=gprs (if your provider requires)

SETUP	Settings required for a TCP connection.
	    Where: 2222.222.222.222 - is the IP-address of the TCP server to be connected;
	                1111 - is the TCP port number of the TCP server to be connected;

	$PFAL,Cnf.Set,TCP.CLIENT.CONNECT=1,2222.222.222.222,1111 (enter your IP and Port)
SETUP	Activate GPRS autostart to reconnect automatically when GPRS network connection gets lost.
	$PFAL,Cnf.Set,GPRS.AUTOSTART=1 (default = 0)
SETUP	Enter the SIM PIN to register the FOX3 device into the GSM network: Where: 1111 - is the PIN of the inserted SIM card.
	$PFAL,Cnf.Set,DEVICE.PIN=1111 (enter the PIN of the used SIM card)

Table 8: Adapt device configuration settings to your application conditions.

FOX3/-3G **LOGIN DATA TO YOUR SERVER**	After establishing TCP connection with your remote server, the following ServerLogin data is automatically sent to your remote server. For more details refer to the Related Documents [1].
	$<MSG.Info.ServerLogin> $DeviceName=FOX3 $Security=0 $Software=avl_2.13.0 (BxBGT1gzIHJldjowMy1OVUNIAgEA) $Hardware=FOX3 rev:03-NUCH $LastValidPosition=$GPRMC,143445.000,A,5040.4096,N,01058.8542,E,0.0 1,0.00,040315,, $IMEI=353816054739497 $PhoneNumber=+491734567124564 $LocalIP=10.208.151.168 $CmdVersion=2 $SUCCESS $<end>

Table 9: Login data sent automatically from the FOX3/-3G to your remote server when the device starts up.

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