

FALCOM AVL FIRMWARE RELEASE

VERSION: [avl_2.16.0_rc17](#)

BIOS version: 2.2.1

Official release date: 09.03.2018

Release date to manufacturing: 19.03.2018*

List of firmware files:
[avl_2.16.0_rc17_20180306.frp](#)
[avl_2.16.0_rc17-fw.cC_96F9-.zip](#)
[avl_2.16.0_rc17.bin](#)

Hardware compatibility: This firmware applies to the following FALCOM products:

AVL Devices	Hardware Revisions	Supported firmware versions	Notes
FOX3 (2G) Series	09,10,12,14,16	avl_2.16.x; avl_2.15.x; avl_2.14.x;	Use the PFAL command <code>\$PFAL,MSG.Version.HardwareRev</code> to get shown the hardware revision of your AVL device.
	01,02,03,04,05,07,08	avl_2.16.x; avl_2.15.x; avl_2.14.x; avl_2.13.x; avl_2.12.x;	
FOX3-3G Series (namely AU, standard and Lite versions)	09,10,12,14,16	avl_2.16.x; avl_2.15.x; avl_2.14.x	
	01,02,03,04,05,07,08	avl_2.16.x; avl_2.15.x; avl_2.14.x; avl_2.13.x; avl_2.12.x;	
BOLERO-LT2-MS-B1	05	avl_2.16.x; avl_2.15.x; avl_2.14.x;	
	01,02,03,04	avl_2.x.x;	

NOTE: This firmware version is **ONLY** for the FALCOM products explicitly mentioned above! Do not try to update other FALCOM products using this firmware.

* Delivery of devices with new Firmware 2.16.0 rc17 will be deferred until all devices in our stock with previous Firmware version have been dispatched.

DOCUMENTATION:

The following document(s) is(are) provided as part of the AVL firmware release "[avl_2.16.0_rc17](#)". In order to download them you will have to log-in first (please use the provided **Username** and **Password**). Click here to log-in: <http://www.falcom.de/>.

Filename	Description
AVL_PFAL_Commands_Set.pdf	Lists and describes all PFAL commands supported by this firmware release.

SUMMARY OF CHANGES:

Version	Description	Created by	Date
2.16.0.2	Firmware release "avl_2.16.0_rc17"	FALCOM	16 March 2018
2.15.0.4	Firmware release "avl_2.15.0_rc4"	FALCOM	30 March 2017

	<h1>Release Notes</h1>		FALCOM AVL Products
			Release date: 06.03.2018
	Firmware version: avl_2.16.0_rc17		Document revision: 2.16.0.2

1) Preface

This release note describes the new functionalities of the firmware release "**avl_2.16.0_rc17**" and is intended for use as a reference when updating an AVL device to version "**avl_2.16.0_rc17**".

2) Important Notes

The firmware file with extension "***.frp**" is for the update through the **Workbench**. The firmware file with extension "***.bin**" is for the update remotely OTA (RUpdate) by a server or/and for the update through a **terminal software** (e.g.: Hyperterminal, PComm Pro). The firmware file with extension "***.zip**" is for the new **WebUpdate**.

To update the firmware with the extension "***.frp**", please use the **Workbench** version **2.6.2_RC7** or higher. To update the firmware with the extension "***.bin**" you can use the old **Workbench** version **2.4.1_rc9** or any **terminal software** (example: Hyper terminal, Pcomm Pro).

DON'T switch off the AVL device while it reboots after the firmware update. The duration of the reboot after the firmware update may take approx. 45 seconds.

Before upgrading the firmware on the device, it is strongly recommended to upload and backup all history data on your server and finally delete this data on the device.

3) Firmware Installation Notes

The installation package consists of firmware in three different formats *.bin, *.frp and *.zip. You can choose whether you want to update the firmware via following interfaces:

Interfaces	File	Description	References
RS-232 PORT	*.frp	This is primarily intended for updating one device first, to ensure the process completes properly before rolling the update to a group of other devices. Use " Falcom_Workbench_xx-2.7.2-RC1.exe " and update the "*.frp"-file via the serial port.	Chapter 5
	.bin	This is also primarily intended for updating one device first, to ensure the process completes properly before rolling the update to a group of other devices. Use Terminal emulators (e.g. Hyperterminal, PComm Pro) or the old version " Falcom_Workbench_2.4.1-RC9.exe " and update the ".bin"-file via the serial sort.	References [4]
WEB-SERVER	*.zip	This is a perfect solution when multiple deployed AVL devices need updating. The firmware file is located in your web-server and you send to the AVL device the URL of a web server you have set up for downloading that firmware file over-the-air.	References [2]
TCP-SERVER	*.bin	This is an advanced solution for fleet management services when multiple AVL devices need updating. This solution presupposes that this functionality is already or should be implemented on your TCP-Server. During the update process, the AVL devices can still be used for other tasks (i.e. executing alarms, sending messages etc.)	References [3]
Remote with Workbench	*.frp	This solution lets you update the firmware remotely on several AVL devices. More details can be found in the online help in the Workbench software.	References [4]

4) Prerequisites concerning the PC

A 32/64-bit-WINDOWS operating system (Windows XP, Vista, 7) or Linux is running on your PC and about 50 MByte free space on your hard disk is required. The RS-232 interface must be configured with the following parameters:

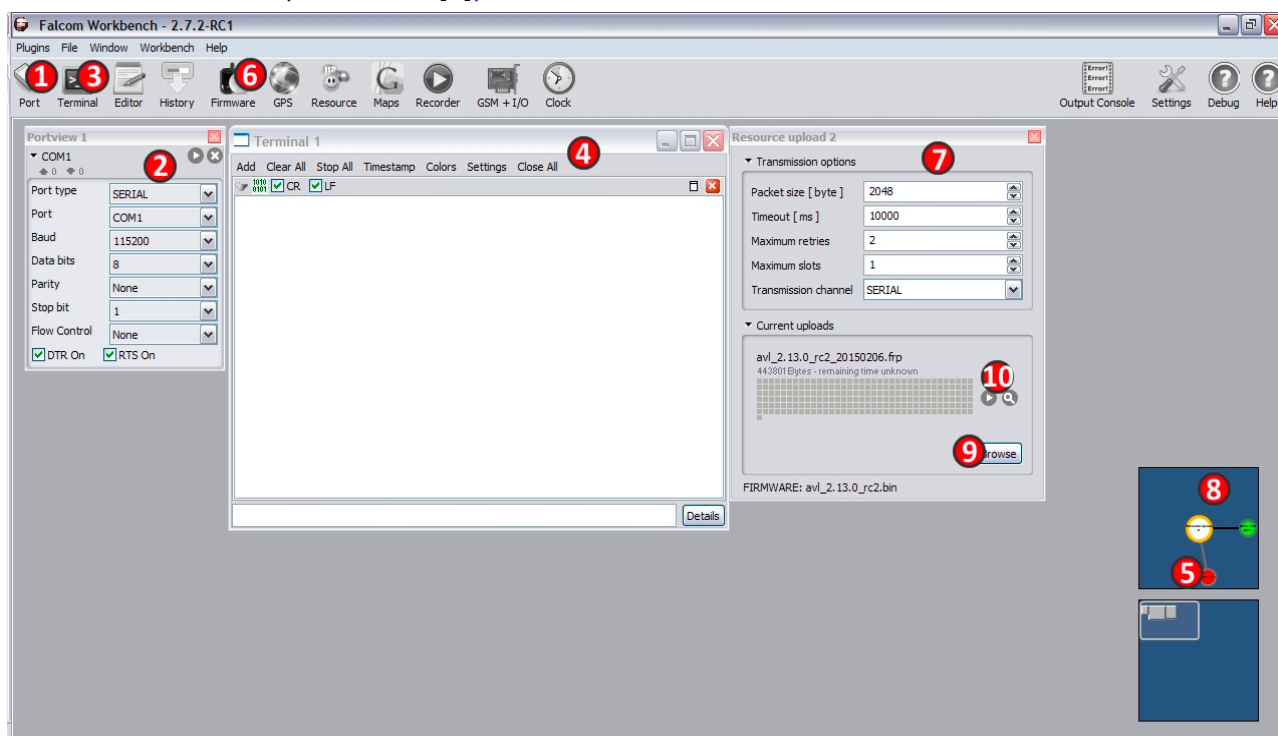
- Baud rate: 115200
- Data Bits: 8
- Parity: None
- Stopbits: 1
- Flow Control: None

5) Firmware Update Process

These instructions are specific to updating your FALCOM AVL device via COM interface (Serial Port).

(a) Download the firmware file and Workbench software needed from the following hyperlinks.

1. Open your installed browser and enter "<https://www.falcom.de/distributor-login/?origin=4>"
2. Sing-in using the login data (Username & Password) received by e-mail from FALCOM.
3. Select: **Support -> Drivers & Firmware -> Drivers & Firmware > AVL (FOX3.....)**
4. Download "**avl_2.16.0_rc17.zip**" and extract the file you downloaded into a temporary folder on your PC.
5. Run the "**workbench-x32.exe**" software. If this software is still not installed on your PC, download it first (References [1]) and start the installation.



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(b) Begin the firmware update process (refer to the fig. above).

1. Connect the AVL device to your PC either directly using the programming cable or the corresponding evaluation board.
2. Click **Port** (1) icon, select the COM port settings from the **PortView1** (2) and click the **Play** button next to the text "COM.." to open the selected COM port.
3. Click **Terminal** (3) icon, select **TerminalView 1** (4) and go to the **ConnectionView** (5) and connect it to the **Serial Port COM1**.
4. Click the **Firmware** (6) icon, select "SERIAL" from the **Transmission Options** (7), go to **ConnectionView** (8) and connect it to the **Serial Port COM1**.
5. Click **Browse** (9) button and select firmware file as "*.frp" from the temporary folder where the firmware was expanded.
6. Click **Play** (10) button to start the firmware update. This button appears only if the firmware file has already been selected.
7. Wait until the update process completes. While the update is running, do not send any command to the device and do not manually reboot it until the device restarts itself.
8. After the update process successfully completes, a success message will appear. Click "OK" button to restart the AVL device.
9. After device restarts and configuring the unit, you can execute the command **\$PFAL,Cnf.Backup** to save the user configuration as factory settings. If the AVL device was already configured, you can execute the same command after the firmware update to save the user configuration as factory settings.
10. FALCOM recommends that you update one device first, to ensure the process completes properly before rolling the update to a group of other devices.
11. Click **Help** (11) button for more details about the workbench software.

6) New and Modified Functions

NEW FEATURES:

This is a list of the new features in the current firmware release.

✓ Added new PFAL commands

MSG.Event[,<interface>],<"text">	<p>This command allows you to send "user defined commands" via PFAL command to the FOX3 and receive answers on the server side about the transmission and execution of that user commands.</p> <p><interface> specifies the interface on which the event for the user defined command has to be generated. If the interface parameter is omitted, then the device will answer/respond on that channel receiving the command.</p> <table> <tr> <td>Serial0</td><td>Generate the event on serial port 0</td></tr> <tr> <td>Serial1</td><td>Generate the event on serial port 1</td></tr> <tr> <td>USB</td><td>Generate the event on USB port</td></tr> <tr> <td>TCP</td><td>Generate the event on TCP channel</td></tr> <tr> <td>User</td><td>Generate the event on user</td></tr> </table> <p><text> defines the text or used defined command. It can be a customized command e.g. "door.open".</p> <p>Example: Sending from server: \$PFAL,MSG.Event,TCP,"door.open" Device answers: <\$PFAL,MSG.Event> \$SUCCESS <end> Alarm configuration: \$PFAL,CNF.Set,AL10=TCP.Client.eReceive d="door.open":msg.send.RawSerial0,0,"I O5.Set=hpulse,2000"&IO6.set=lpulse,500 Inform server about the execution status of user command "door.open": \$PFAL,CNF.Set,AL11=IO.e2=fedge:TCP.Cli ent.Send,8,"event_text=door.open,OK"</p>	Serial0	Generate the event on serial port 0	Serial1	Generate the event on serial port 1	USB	Generate the event on USB port	TCP	Generate the event on TCP channel	User	Generate the event on user
Serial0	Generate the event on serial port 0										
Serial1	Generate the event on serial port 1										
USB	Generate the event on USB port										
TCP	Generate the event on TCP channel										
User	Generate the event on user										
TCP.Client.FlushSendBuffer	Use this command to transfer the data available in the TCP.CLIENT.SENDMODE=2[,<buffer_level>] before the buffer is filled up.										
GSM.SMS.SendMulti,<"number">,<protocol>,<"text">	Use this command to send SMS with more than 160 characters. The SMS message will then be split in two or more messages on the receiving modem/cell phone.										
SYS.Device.Reset[,<timeout>]	Additional (optional) parameter [<timeout>] for the command <i>SYS.Device.Reset[,<timeout>]</i> . This optional parameter specifies the delay in seconds (default 5 sec) for the command execution.										

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- ✓ Added a protocol in hexadecimal value for motion sensor data

8000	<p>Added new protocol GP3DP with a hex value of 8000 into the list of protocols that can be used to send out motion sensor data using the command \$PFAL,<channel>.Send</p> <p>Example: Sending from the FOX3: \$PFAL,Cnf.Set,AL1=IO.Motion.eForce:TCP.Client.send,8000,""</p> <p>Received data by the server: \$GP3DP,-2126,-681,-1733,-8192,-3204,-4044,653,620,-642,1793*18</p>
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- ✓ Implemented new events and new operators as comparison for the following events

SYS.eUserText=<"text">	Occurs on that interface where the PFAL command MSG.Event is supposed to be executed.
SYS.Trigger.e<index>[=<state>]	<p>Implemented event for the triggers SYS.Trigger.e<index>[=<state>]. Occurs when a trigger changes its state.</p> <p><index> ranges from 0 to 39.</p> <p><state> can be set to: high or low</p>
GSM.eMCC[<comp><MCC>]	Implemented a set of optional comparators ("=", "==", "!=") as a comparison of MCC
GSM.eOpLost[<comp><ID "name">]	Implemented a set of optional comparators ("=", "==", "!=") as a comparison of the lost operator with ID or name.
GSM.eOpFound[<comp><ID "name">]	Implemented a set of optional comparators ("=", "==", "!=") as a comparison of the found operator ID or name.
GSM.sOpValid[<comp><ID "name">]	Implemented a set of optional comparators ("=", "==", "!=") as a comparison of the valid operator ID or name.
SYS.1Wire.eRegister<comp>whitelist	Implemented a new 1Wire event with a set of comparators ("=", "!=") to compare the ID of a 1Wire sensor with the IDs of sensors entered in the whitelist during registration.
SYS.1Wire.eRelease<comp>whitelist	
SYS.eSerialData0<comp>whitelist	Implemented a new SerialData0 and SerialData1 events with a set of comparators ("=", "!=") to compare the data received on the 1 st serial port with the data entered into the whitelist.
SYS.eSerialData1<comp>whitelist	
SYS.eUSBData<comp>whitelist	Implemented a new USBData event with a set of comparators ("=", "!=") to compare the data received on the USB port with the data entered into the whitelist.

- ✓ Added new wakeup condition for Doze mode

SYS.Device.eStart=Doze[,<reason>]	Added new reasons to the event SYS.Device.eStart=Doze[,<reason>]
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- | | |
|--|---|
| | <p><reason> can now be set to:</p> <p><IGN Ring CAN RTC Timer Motion AiWu Idle LowBat ExtPwrDetect ExtPwrDrop></p> |
|--|---|
- ✓ Added new settings to configuration parameters or new configuration parameters

<p>DEVICE.COMM.BINEVENT=raw,<timeout></p>	<p>This is very helpful when receiving data/string/id on the serial ports of the FOX3 series without fixed end-of-text or termination characters e.g. line feeds. Setting timeout to 1000 ms, allows the device to generate the corresponding serial data event every 1 second when receiving data from a serial connection.</p> <p><timeout> ranges from 0 ... 2000</p>
<p>TCP.CLIENT.SENDMODE=<mode>[,<buffer_level>]</p>	<p>Added new optional setting for configuration parameter TCP.CLIENT.SENDMODE=2[,<buffer_level>]</p> <p><buffer_level> determines the number of bytes of data (max 1 MB) that can be saved before being transmitted. Once the <buffer_level> is filled up, the device transfers automatically all the data within the buffer via TCP. Use the command TCP.Client.FlushSendBuffer to transfer the data before the buffer is filled up.</p>
 - ✓ Increased number of Timers, Triggers, Counters and Macros to 40.

<p><index> = 0..39</p>	<p>Increased number of Timers, Triggers, Counters and Macros to 40. New <index> ranges from 0 to 39</p>
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 - ✓ Implementation of concurrent reception with three satellite navigation systems.

<p>\$PFAL,GPS.NAV.GNSS=GPS[,GLONASS/GALILEO/BEIDOU]</p>	<p>Defines the satellite navigation system(s) to be activated for tracking. Combining of up to 3 different Satellite Navigation system names in one command line is allowed. Names are comma separated.</p>
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 - ✓ Implemented new dynamic entries (variables)

<p>&(Replace<index>)</p>	<p>Used to report the text specified to the corresponding REPLACE<index>. <index> = 0..9</p>
<p>&(UserEventText)</p>	<p>Used to report the text (user defined command) specified with PFAL command MSG.Event[,<interface>],<"text"></p>
 - ✓ Increased number of global CAN messages to max. 50 (FOX3 has 31 and IOBOX-CAN has 14)
 - ✓ Increased number of global CAN variable slots to 50
 - ✓ Increased the buffer size of the send commands to 4096 bytes
 - ✓ Increased the size of the URL names to 255 characters

CHANGES:

This section presents what is changed in this firmware release.

- ✓ NONE

IMPROVEMENTS:

This section presents what is improved in this firmware release.

✓ NONE

REMOVED:

This section presents what is removed in this firmware release.

✓ None

NEW PREMIUM-FEATURES:

This is a list of new PREMIUM-FEATURES in this firmware release.

✓ None

NEW FEATURES FOR IOBOX-MINI:

This section presents what is new in the firmware release regarding the IOBOX-MINI.

✓ None

NEW FEATURES FOR IOBOX-CAN:

This section presents what is new in the firmware release regarding the IOBOX-CAN.

✓ None.

CHANGES:

This section presents what is changed in this firmware release.

✓ NONE

IMPROVEMENTS:

This section presents what is improved in this firmware release.

✓ NONE

FIXED ISSUES:

This is a list of issues that were fixed in the current firmware release.

- ✓ Fixed a synchronization bug where devices could not generate the event `Sys.eTimeSync="RTC"` after wakeup from Doze. In the prior version, the time was not synchronized with RTC time (as long as the device did not see any satellites) after wakeup from Doze.
- ✓ Fixed a time bug where set time for Sleep mode with timer could not be set greater than `Timer=18:12:20`
- ✓ Fixed an alarm (AL) bug where the state `GSM.VoiceCall.sReady` could not be configured.

- ✓ Fixed an execution issue where the command `Sys.Device.CfgUpdateMode` would display an "ERROR" text in the answer.
- ✓ Fixed a bug where the event `IO.Motion.eForce` could not be generated if the z-axis was added in the `MOTION.FORCE=on,500,XYZ`.
- ✓ Fixed a bug where FOX3-3G devices could not send RMC protocol via SMS.
- ✓ Fixed a bug where CANB interface could not work if the first CAN interface was not active and enabled.
- ✓ Preventing the modification in the `PFAL,Cnf.Set,GSM.IMEI`. It is READ ONLY
- ✓ Fixed an audio bug where audio interface on some FOX3-3G-AU device could not work properly.

KNOWN ISSUES:

This is a list of known issues in the current firmware release.

Mantis ID	Priority	Status	Bug Summary
-	-		RFID-A-B-EXT & AVL device. When the AVL device goes into the doze low power mode, a Tag should be double passed within the reader magnetic field to detect the ID of that Tag on the AVL serial port. The first swipe is to wake up the AVL device from the doze mode and the second swipe is to detect the ID of that Tag and generate the corresponding event.
-	High		Currently the event <code>GPS.MultiGeofence.e<id></code> works only with the optional event type "inside" or "outside". However, using of the events <code>GPS.MultiGeofence.e<id>=inside</code> and <code>GPS.MultiGeofence.e<id>=outside</code> with an "?" (OR-conjunction) will do the same as using <code>GPS.MultiGeofence.e<id></code> alone. Solution example: <code>\$PFAL,CNF.Set,AL0=GPS.MultiGeofence.ex=inside?GPS.MultiGeofence.ex=outside:TCP.Client.Send,8,"Multigeofence IN/OUT"</code>

7) References

This is a list of references used for updating this firmware release into one of the FALCOM AVL devices. The current version of the documents/software can be directly downloaded from the FALCOM download site (<http://www.falcom.de>). To download the documents/software, just click on any of these hyperlinks below.

- [1] [FALCOM Workbench software](#)
- [2] [AppNote_WebUpdate_Howto.pdf](#)
- [3] [AppNote_Firmware_Remote_Update.pdf](#)
- [4] [AppNotes_Remote_Update_With_Workbench.pdf](#)