

	Release Notes		Lantronix AVL Products
			Release date: July 22 ^h 2026
	Firmware version: avl_5.1.0_rc8		Document revision: 5.1.0

Lantronix AVL FIRMWARE RELEASE

VERSION: [avl_5.1.0_rc8](#)
 BIOS version: 5.0.0
 Official release date: [22/07/2026 \(D/M/Y\)](#)
 List of firmware files:
[avl_5.1.0_rc8_20260720.signed.frp](#)
[avl_5.1.0_rc8-Z3e9356c7.signed.zip](#)
[avl_5.1.0_rc8_20260720.signed.txt](#)

Hardware compatibility: This firmware applies to the following LANTRONIX products with Cortex processor:

Devices	Hardware Revisions	Supported firmware versions	Notes
FOX5	-	avl_5.x.x (only)	1. Use the PFAL command <code>\$PFAL,MSG.Version.HardwareRev</code> to get shown the hardware revision of your AVL device. The device responds with (second line shows the hardware version): <pre>\$<MSG.Version.HardwareRev> \$11-NUCHB \$SUCCESS</pre> 1) The hardware revision is also printed on the product label, located on the back panel of the device. In the Serial Number (S/N) field there are 3 digits in parenthesis, for example, 60148(9XX)50600014, and the number "XX" is the hardware revision of the device. If the number is "11", it means that the hardware revision is 11.

* On request

IMPORTANT

- This firmware version is **ONLY** for the LANTRONIX products explicitly mentioned above! Do not try to update other LANTRONIX products with this firmware, otherwise, you will not be able to operate your device anymore.
- Before updating the new firmware on your FOX5 series, it is strongly recommended to **back up** the configuration with the command **`$PFAL,CNF.Backup`**
- Before upgrading the firmware on your FOX5 series, it is recommended to **upload and back up** all history data on your server (if needed) and finally **delete** this data on the device.

NOTE

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- If FOX5 devices with older firmware versions (e.g. 5.0.0_xx) are upgraded to this new firmware version (5.1.0_xx), please contact LANTRONIX to receive the BLE activation codes and continue to use this feature without additional costs.
- The latest FW [avl_5.1.0_rc8](#) is for FOX5 with the CORTEX CPU

DOCUMENTATION:

The following document(s) is (are) provided on <https://www.lantronix.com/> as part of the AVL firmware release "[avl_5.1.0_rc8](#)".

Filename	Description
PFAL Command Reference	Lists and describes all PFAL commands supported by this firmware release.

Description	Created by	Date (M/D/Y)
Firmware release " avl_5.1.0_rc8 "	Lantronix	22/07/2026
Firmware release " avl_5.1.0_rc7 "	Lantronix	10/07/2026
Firmware release " avl_5.1.0_rc2 "	Lantronix	06/05/2026
Firmware release " avl_5.0.0_rc11 "	Lantronix	11/04/2026
Firmware release " avl_5.0.0_rc8 "	Lantronix	06/04/2026
Firmware release " avl_5.0.0_rc3 "	Lantronix	24/12/2025

1) Preface

This release note describes the new functionalities of the firmware release "[avl_5.1.0_rc8](#)" and is intended for use as a reference when updating an AVL device to version "[avl_5.1.0_rc8](#)".

2) Important Notes

The firmware file with extension "***.frp**" is for the update through the **Workbench** and for the update remotely OTA (RUpdate). The firmware file with extension "***.txt**" is for the update through **terminal emulators** (e.g.: Hyperterminal, PComm Pro). The firmware file with extension "***.zip**" is for the WebUpdate. To update the firmware with the extension "***.frp**", please use the **Workbench** version **10.7127.beta**. To update the firmware with the extension "***.txt**" you can use any **terminal emulator** (example: Hyper terminal, Pcomm Pro). To initiate a WebUpdate use the command **\$PFAL,SYS.WebUpdate.Start,"[http://url](#)",80** or **\$PFAL,SYS.WebUpdate.Start,"[http://url](#)"** or **\$PFAL,SYS.WebUpdate.Start,"[https://url](#)",443** or **\$PFAL,SYS.WebUpdate.Start,"[https://url](#)"** on the device. 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.

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3) Firmware Installation Notes

The installation package consists of firmware in three different formats *.frp and *.zip. and *.txt. 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 " Workbench " and update the "*.frp"-file via the serial port.	
WEB-SERVER	*.zip	This is a perfect solution when multiple deployed AVL devices need updating. The firmware file is located in your webserver and you send to the AVL device the URL of a web server you have set up for downloading over-the-air the firmware file.	
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.	
TCP-SERVER	*.frp	This solution lets you update the firmware remotely on several AVL devices.	
Remote with Perception	*.zip	This solution lets you update the firmware remotely on several AVL devices. More details can be found in the online help in the Perception software.	
Terminal SW	*.txt	You can upload the firmware with the extension *.txt serially over a terminal SW such as PComm Lite, Tera Term, etc.	

4) Prerequisites concerning the PC

A 32/64-bit-WINDOWS operating system (Windows XP, Vista, 7 , 10 and 11) 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

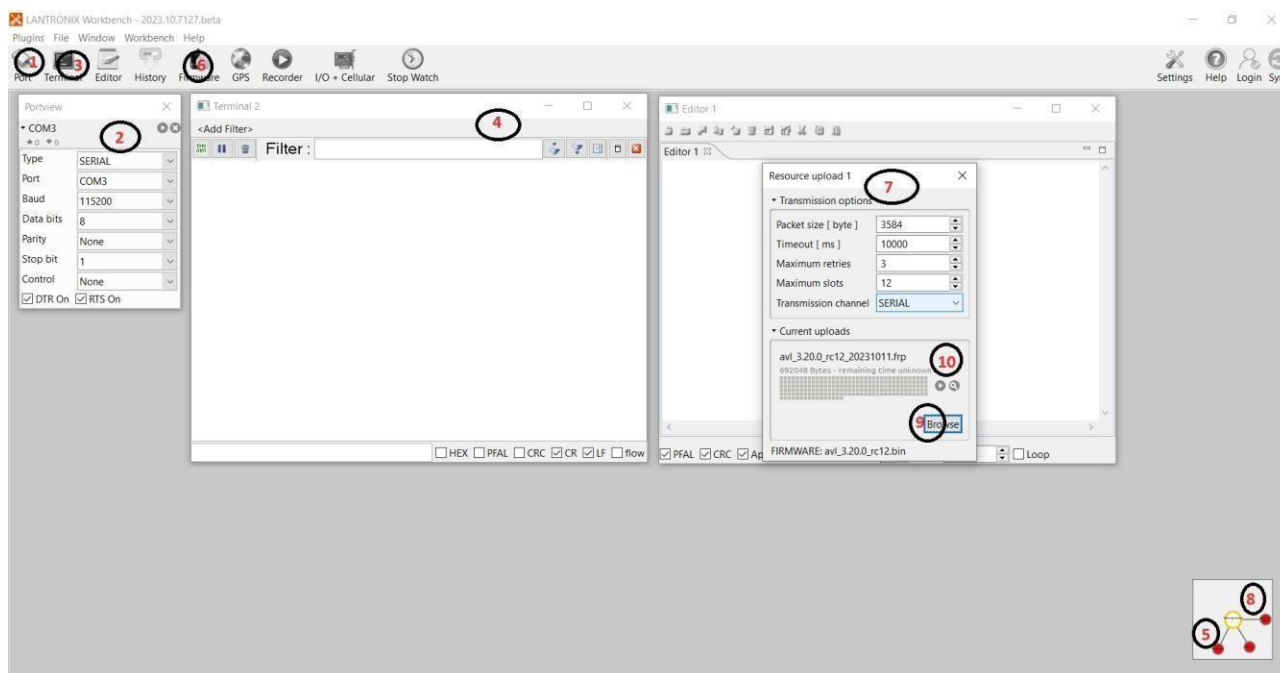
5) Firmware Update Process

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

	Release Notes		Lantronix AVL Products
			Release date: July 22 nd 2026
	Firmware version: avl_5.1.0_rc8		Document revision: 5.1.0

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

1. <https://www.lantronix.com/products/workbench/#tab-docs-downloads>
2. <https://www.lantronix.com/products/FOX5-series/#tab-docs-downloads>
3. Download " **avl_5.1.0_rc8.signed.frp**" and extract the file you downloaded into a temporary folder on your PC.
4. Run the "workbench" software. If this software is still not installed on your PC, download it first and start the installation.



(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. Do **NOT** update the firmware version 4.x.x on FOX5 devices with an older processor. The firmware version 5.x.x is **ONLY** for FOX5 with the **CORTEX (CT)** processor. Please verify the hardware revision from the table "**Hardware compatibility**" above and make sure you are upgrading a FOX5 device with CORTEX processor. LANTRONIX takes no liability and no responsibility for any cases, firmware versions have been flashed wrongly nor will LANTRONIX cover any costs associated with this happening.
3. 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.
4. Click **Terminal** (3) icon, select the **TerminalView 1** (4) and go to the **ConnectionView** (5) and connect it to the **Serial Port COM1**.
5. Click **Firmware** (6) icon, select "SERIAL" from the **Transmission Options** (7), go to **ConnectionView** (8) and connect it to the **Serial Port COM1**.
6. Click **Browse** (9) button and select the firmware file as "*.frp" from the temporary folder where the firmware was expanded.
7. Click **Play** (10) button to start the firmware update. This button appears only if the firmware file has already been selected.
8. 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.

	Release Notes		Lantronix AVL Products
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9. After the update process successfully completes, a success message will appear. Click “OK” button to restart the AVL device.
10. 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.
11. LANTRONIX recommends updating one device first, to ensure the process completes properly before rolling the update to a group of other devices.

6) New and Modified Functions

IMPROVEMENTS and BUGS FIXED:

- Added EEPROM file EEPROM_FOX5-4G_01-NUCH.eep
- Implemented AT#SIMSELECT for SIM switch, see gsm_cmd_extend.cxx
- Support bat charger SGM41513, see bios_interface.cxx
- Added updated BIOS version for FOX5, see bios_5.0.0.hex
- Sync and update for CYW20706 with FOX4
- Added support for TPM chip, see remote_update.cxx
- Added support for EG91 modem, see gsm_extended.cxx
- Added support for L26-DR, see gps_serial_nmea.cxx
- Added support for btstack, see bt_interface.cxx
- Added support for w25m512JV flash, see board_qspi.cxx
- Added support for PCF8563, see stm32f4_rtc.cxx
- Added support for LIS2DW, see io_i2c_motion.cxx
- Implemented temperatur monitor, see io_analog_stm32f4.cxx
- Implemented thermal protection monitor, see main.cxx
- Merged with latest b_avl3_3_20 tree
- Added DBG.GSM.Antenna to switch the antenna on the fly, see trace.cxx
- Added dyn. variable &(BLE.Addr), see protocol_dynamic.cxx
- changed BIOS_FACTOR_VEXT_POWER_MULTIPLIER (VIN)
- changed ADC_MAXVOLTAGE (IO1..2)
- Fixed motion wakeup, see io_i2c_motion.cxx
- Device is not getting power on when battery is connected and sleep mode is motion
- Device is not wakeup with Motion Parameter in Sleep/Doze Mode
- fixed timeout for HangupChannelExt(), see gsm_mux_interface.cxx
- filter out incorrect GPS times, see gps_serial_input_ublox.cxx
- fixed BLE command execution, see command_common.cxx
- PercepXion: "Update Certificate" option is not seen for device on Explore tab operations & three dot menu
- PercepXion: Product ID & Product type is showing as None on percepXion telemetry data
- Model name and Product name shows unsupported and ports shows 0
- PercepXion: Ports section is showing empty for FOX5 devices in device detail view.
- fixed missing PX-ID in MSG.Version.Complete, see command.cxx
- Restrict GSM.MODEPREF=LTE for the modem, see gsm_cmd_extend.cxx
- fixed temp measurement for DVT HW, see io_analog_stm32f4.h
- PercepXion: device temperature is showing as "0" in telemetry.

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- Typo - While enabling and disabling the OBDII (activ) seen
- Fixed incorrect failure for SYS.Device.Doze=Serial1, see command.cxx
- Fixed support for BLE.ADVNAME
- Updated cellular network initialization sequence: network configuration first and then AT+COPS=0
- Added AT#E2SMSRI for SMS notification, see `gsm_cmd_extend.cxx`
- fixed typo in `maintask()`, see `main.cxx`
- After connecting the IOBOX-CAN, when try to set the IO it's not working.
- Fixed motion wakeup, see `io_i2c_motion.cxx`
- Device is not getting power on when battery is connected and sleep mode is motion
- Device is not wakeup with Motion Parameter in Sleep/Doze Mode
- fixed timeout for `HangupChannelExt()`, see `gsm_mux_interface.cxx4`
- FOX5 unit shuts down instead of switching to internal battery
- Added fix for battery charge events (initial charging and low battery)
- All premium features enabled by default
- Added default configuration
- Errors in BLE commands and Dynamic variables.
- Fixes for Beidou constellation support
- Fix for reviving deeply discharged batteries

Section	Commands
	CNF.Set,PX.CLIENT.CONNECT=1,<URL> CNF.Set,PX.CLIENT.CONTENT_CHECK_INTERVAL CNF.Set,PX.CLIENT.DEVICE_DESCRIPTION CNF.Set,PX.CLIENT.DEVICE_NAME CNF.Set,PX.CLIENT.STATUS_UPDATE_INTERVAL Optional :- CNF.Set,PX.CLIENT.TLS=TLS13/TLS12

KNOWN ISSUES:

None

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