
WHAT'S NEW DEVICE DRIVER SET 10.2.23.X

This document outlines the enhancements which have been made in the FM Device Driver set, 10.2.23.x. This set now supersedes the previous released version 9.3.27.x.

Increased integrity of Odometer

- Speed calibration could become corrupted in the OBC memory of new units rendering the ODO inaccessible and making the setting of ODO confusing. This has now been rectified.
- Un-calibrated OBC's will no longer present a negative value (-1) to prevent confusion.
- Under specific OBC reset conditions the ODO could be reset to a zero value. This issue has been rectified.
- ODO accuracy has been improved to ensure the ODO represents the physical distance travelled by the vehicle when using GPS speed or CAN speed. Under certain rare conditions, where speed remained absolutely constant, inaccuracies could occur.

Improved handling of large configuration files

- Improvements have been implemented which prevent a firmware upgrade from affecting the function of an OBC with an oversized configuration file.
- Incidences of large scripts (embedded in config) not running effectively have been removed.

Wi-Fi improvement

- An issue with the decoding of Wi-Fi addresses has been addressed.

Progressive Shutdown feature improvement

- The progressive shutdown function on Relay Drives 1 and 2 has been improved.

GSM enhancements

The following changes have been included in the device drivers to improve overall reliability:

- Improvements to GPRS session management. Sessions is only created when there is data to be send to the office (Active Events or Messages). If the session fails the OBC will commence with a back-off mechanism to a point where it will only attempt to make a session every 20 minutes. A successful session will reset this mechanism.
- Insertion of a GSM diagnostic plug will cancel any pending GPRS back-offs. It will also force the sending of periodic AVL messages to the server. If no session is established it will establish a GPRS connection with the office.
- Aggressive session management will only be operation on non-roaming networks.
- Improvements were made to the interoperability between SMS and GPRS for active events and messaging. Only when the OBC loses GPRS communications for a longer period of time it will send active events via SMS if configured to do so.
- Fallback to SMS messaging and active events improvements were made for situations where the OBC is completely out of GPRS coverage.
- The SMS-service-centre-address is now set before an SMS is actually sent. This improves the modem state-machine efficiency and reduces possible SIM access.
- Under certain conditions (Temperature and network dependant) the modem was found to lockup and could not be woken. The firmware has been modified to cycle Positive-Drive for 10 seconds when the modem does not respond for more than 30 minutes. This will only occur when the modem is awake, but has not communicated since the OBC booted up. Please take note that if you have a device connected to positive drive you will experience a short power dip. This mechanism is implemented to allow the OBC to be always contactable, no matter what.
- Positive drive switch-off time has been reduced, especially when the modem is already off, or when no SIM is inserted. This feature is used with the intrinsically safe switch input.
- GSM modem power management is improved relating to modem shut down.
- When the OBC runs off the internal back-up battery it will run down to its lowest safe charge level. Thereafter it will enter the safe-shutdown procedure. The modem will be shut down first thereafter

the OBC itself will shut down to prevent the battery from entering deep discharge. Specified back-up duration is still achieved with lots of legroom.

- The “user string” is now only sent during modem boot-up to reduce SIM access. In previous versions of the firmware this string was sent about every 10 seconds.
- General modem handling improvements have been implemented to increase robustness. This includes mechanisms like: modem wakeup, SIM card communications reduction.
- A function to enable SIM card ID logging has been added. It is now possible to record IMEI, IMSI and SCID. This is not available from the user interface as yet, but it will be accessible over the air or via the SDK interfaces for later software enhancements.
- A new control has been added for the FM33x6 modems, which will wake the modem if OBC temperature is less than 55°C, or if no battery detected. This feature is triggered on a 3 minute loop. This function was needed to allow the OBC to recover from conditions where the modem went into automatic shut down mode (most likely caused by excessive ambient temperature conditions).
- A new parameter is also exposed by the firmware to indicate that the modem entered the automatic shutdown state. The modem will shutdown in the case of excessive temperature (80°C, 60°C with battery backup) or over and under voltage conditions. Note that these temperatures relates to the modem device temperature, which is about 5°C higher than the ambient temperature, depending of lots of factors.
- Data corruption that could occur under certain conditions during link establishment was fixed (High AVL or Active events rates increases the changes of this occurrence).
- Communications has been improved during bad coverage/packet loss conditions.
- General improvements to the transport layer of the communications stack was made, e.g. where a good connection is available the postponed NACK-timer has been cancelled.
- To enable compatibility with the MiX Toolbox, an improved FM_Comms link establishment process has been implemented. A specific sequence on ON-OFF pulses on the RTS line will indicate to the OBC that in needs to release S3 to the SDK interface.

Battery Management improvements

New battery management has been implemented for MF3316, including:

- Auto-disconnection of the battery from the modem has been removed. This caused the batteries to charge to full capacity. It is not good to store Li-Ion batteries at high charge as it reduces its life cycle. The battery will now stay connected to the modem and the modem will manage the charging and discharging there-of.
- The battery diagnostic beep and flash codes have been removed, but can still be viewed using the FM Terminal.
- Battery state is now reported accurately when the FM OBC goes into battery backup
- Battery-trip for the GSM modem has been exposed as a device parameter
- In some instances, modems did not shut down correctly when the battery was running on a low voltage and there was a possible change of SIM corruption. This has been improved to gracefully shut down the modem and then the OBC when the low level of the back-up voltage is reached.
- When the internal temperature of the OBC exceeds 55°C then the battery will be disconnected as it is not recommended to consume current from the battery at this high temperature. The battery will be re-connected depending on the temperature and charge state. With low charge it is connected at 43°C. With good charge it is connected at 55°C.

FM200 Plus specific feature

- Support included for the “Intermax (Next G)” for the Australian networks. This is only available on the FM200Plus as GSM modems is supported on S2 only.