XTreme EFIS / EMS

Firmware Revisions

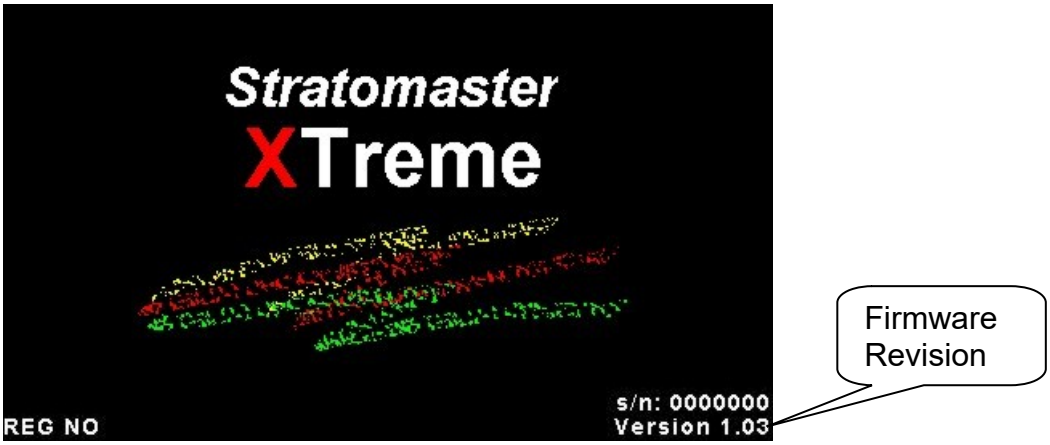
Document - English 2.23

Introduction

This document keeps track of firmware revisions for the MGL Avionics Stratomaster XTreme instrument range.

The XTreme's firmware can be upgraded in the field to the latest version via the SD card. This will keep your XTreme up to date with bug fixes, new features etc. The name of the file must be called XT2EFIS.FW (EFIS file) and XT2EMS.FW (EMS file) and it must reside in the root directory. When the XTreme powers up it will first look at the SD card to see whether the file exists, if it does then it will prompt the user to upgrade the firmware. Use the soft keys at the bottom to select whether to upgrade to the new firmware or to exit the firmware upgrade feature. If the file does not exist, then the firmware upgrade function is bypassed and the XTremes main program is executed. Please check http://www.mglavionics.co.za/XTreme.html regularly for the latest firmware releases.

The revision number is displayed on the instrument's startup screen as follows.



Note:

Please load default settings after a firmware upgrade. This is necessary in case the updated firmware contains new menu items / Unit settings etc. Please write down your current unit settings before loading the default settings. Press and hold the left and right most soft keys simultaneously on power up to load default factory settings. The following screen will be displayed:

Below is the correct procedure to follow to successfully upgrade your Xtreme system

1) Save your settings to a SD card by selecting the "*SAVE SETTINGS TO SD CARD*" function in the Miscellaneous section.
2) Power off the unit.
3) Insert the SD card with the new firmware upgrade file and power up the unit.
4) The unit should prompt you to upgrade the firmware.
5) Upgrade the firmware.
6) Once the firmware has upgraded it will then execute the new firmware.
7) Press and hold the left and right most soft keys when the firmware version is displayed. The words "LOADING DEFAULT SETTINGS" should appear.
8) Recall your settings from the SD card by selecting the "*RECALL SETTINGS FROM SD CARD*" function in the Miscellaneous section.
9) Verify that all your settings and the firmware version number is correct.
10) Done!

Upgrading to a Major Firmware Version

Settings cannot be saved and the unit will have to be restored to factory defaults

1) Power off the unit.
2) Insert the SD card with the new firmware upgrade file and power up the unit.
3) The unit should prompt you to upgrade the firmware.
4) Upgrade the firmware.
5) Press and hold the left and right most push buttons when the "PLEASE WAIT" message is displayed. Keep holding these buttons until you see the Xtreme splash screen. It should take around 10 seconds.
6) Verify that the firmware version number is correct.
7) Manually re-enter your settings
8) Done!

XTreme-EFIS

Version 3.03 12/12/2022 (Franz Lamers)

Bug: Fixed the Fuel range value over writing Range:

Version 3.02 08/12/2022 (Franz Lamers)

Enhancement: Added extra warning message for UL Power turbo engines
Bug: Fixed the VSI value over writing the G-Force negative limit exceed value

Version 3.01 02/11/2022 (Franz Lamers)

Enhancement: Improved the accuracy of the pressure and temperature sensors
Bug: Reorganised the temperature sender probe menu

Version 3.00 13/10/2022 (Franz Lamers)

Version 3.XX code cannot be used on Generation 1 or Generation 2 EFIS units
-New Xtreme EFIS hardware
-Major Software changes

Version 2.08 16/10/2022 (Franz Lamers)

Enhancement: Enabled dual calculated fuel tanks / dual fuel flow
Enhancement: Added a calculated fuel tank warning message on startup
Enhancement: Added the Altitude referenced to 1013 and QNH to the datalogging
Bug: Adjusted the memory accelerator module causing certain processors to freeze

Version 2.07 15/08/2021 (Franz Lamers)

Bug: Fixed 0.1L menu overrun in fuel level setup
Enhancement: Added in a misc information screen
Enhancement: Changed current gain to default 315
Enhancement: Changed the magnetic variation WMM tables to the latest version
Bug: Fixed compass in-fight calibration not showing 111 and 222
Bug: Fixed Rotax 912is Throttle position, ambient pressure, ECU hours, Engine hours
Enhancement: Data recording changed to SD card .CSV file

Version 2.06 23/11/2020 (Franz Lamers)

Bug: Fixed GForce negative value

Version 2.05 30/09/2020 (Franz Lamers)

Bug: Fixed the datalogging of the fuel pressure value

Version 2.04 10/03/2020 (Franz Lamers)

Enhancement: Changed the magnetic variation WMM tales to the latest version

Enhancement: Added an Autopilot warning message output alarm
Enhancement: Changed all engine monitor green to lime for easier viewing
Enhancement: Added a NAV/G-Meter display option
Enhancement: Disabled the waypoint reached alarm output

Version 2.03 14/09/2018 (Franz Lamers)

Bug: Fixed the CDI display not going left

Version 2.02 28/02/2017 (Franz Lamers)

Bug: Fixed J and E-Type TC negative values

Version 2.01 07/11/2014 (Franz Lamers)

Bug: Fixed GPGGA NMEA output message

Version 2.00 31/08/2014 (Franz Lamers)

Version 2.XX code cannot be used on Generation 1 EFIS units
New Xtreme EFIS hardware

Version 1.37 11/09/2020 (Franz Lamers)

Enhancement: Changed the magnetic variation WMM tables
Enhancement: Disabled the waypoint reached alarm output

Version 1.36 14/09/2018 (Franz Lamers)

Bug: Fixed the CDI display not going left

Version 1.35 06/04/2018 (Franz Lamers)

Enhancement: Added an Autopilot warning message output alarm
Bug: Fixed J and E-Type TC negative values
Enhancement: Changed all engine monitor green to lime for easier viewing

Version 1.34 01/02/2015 (Franz Lamers)

Enhancement: Added a NAV/G-Meter display option

Version 1.33 26/10/2014 (Franz Lamers)

Bug: Fixed bug created in version 1.31 with compass airtalk deviation mode
Bug: Added GPGGA message to the NMEA output

Version 1.31 18/10/2013 (Franz Lamers)

Enhancement: Completed the autopilot

Enhancement: Changes to user setting of the heading and altitude bugs
Enhancement: Various changed to the CAN bus code
Enhancement: Various changes to the navigation and HSI code
Enhancement: The internal clock is now syncronised to the GPS once a valid time has been received
Enhancement: Various enhancements and bug fixes

Version 1.30 04/07/2013 (Franz Lamers)

Enhancement: Added in the 2 axis autopilot menus and preflight checks (Servo checks are enabled)
Enhancement: Added in support for the new auto calibrating SP6 compass
Enhancement: Redone the current calibration menu option and calculations
Bug: Fixed the G-Force not going negative when using the SP7 with the CAN protocol
Enhancement: Added a "current" setting to the altitude bug and heading bug selection
Enhancement: Updated the magnetic variation tables
Enhancement: Added the slip indicator if a SP6 has been connected and no attitude sensor is present

Version 1.29 10/06/2013 (Franz Lamers)

Bug: Fixed the fuel pressure not showing when both fuel flows and fuel levels are disabled
Bug: Fixed the sunrise/sunset time when certain UTC offsets are used
Bug: Fixed a problem with the fuel setup menu scrolling when exiting the fuel pressure setup menu
Enhancement: Changed RPM to RPM 1 and ROTOR to RPM 2 and added labels to identify the RPM inputs
Enhancement: Changed ROTOR RPM input to RPM 2 and increased values to 99999
Enhancement: Added RPM labels to the main RPM displays
Enhancement: Center justified the RPM values and cleaned up the RPM1/2 display
Enhancement: Center justified the MAP value in the arc display
Bug: Fixed fuel flow when using a single flow, dual levels and the mode is set to diff/sum and not dual
Bug: Fixed the fuel calculation problem when a single flow, 1 calculated tank and 1 physical tank is used
Enhancement: Cleaned up certain ems setup menu options
Enhancement: Added 0.1 litre resolution to the fuel tanks
Enhancement: Cleaned up the fuel total display
Enhancement: Added a filter to the compass heading display
Enhancement: Added NMEA GPGGA and GPRMC serial output messages
Bug: Fixed a menu scroll issue in the MAP setup menu option
Enhancement: Increased the size of the RPM1&RPM2 values in the MFD
Enhancement: Cleaned up the MFD RPM1/RPM2/MAP fields
Bug: Fixed the MAP min/max value saving
Enhancement: Compressed the code size a bit

Version 1.28 28/03/2013 (Franz Lamers)

Enhancement: Made the backlight control finer and allowed it to dim even further
Bug: Fixed the TC readings when the OAT goes below 0 degrees Celsius
Bug: Fixed the Vs and Vne on/off menu items been swapped around

Version 1.27 29/11/2012 (Franz Lamers) (MUST LOAD DEFAULT SETTINGS AFTER UPGRADE)

Enhancement: Support added for the 912iS CAN engine
Bug: Fixed the horizontal bar if the low alarm or low caution is below the display minimum value
Bug: Fixed some datalogging variables
Bug: Fixed ANALOG AUX 1/3 and 2/4 headings to accommodate the RDAC-XF
Enhancement: Added page numbers to the EMS menu
Enhancement: Added the RDAC-XF fuel pressure and current channels

Version 1.26 29/10/2012 (Franz Lamers)

Enhancement: Added CAN protocol support for the MGL SP6 and SP7
Bug: Fixed a bug created in ver 1.25 with the pressure lineariser
Bug: Fixed a bug with AUX1/3 and 2/4 max/min display
Enhancement: Added page numbers to the main menu
Enhancement: Moved up warning messages as to not block the airspeed and altitude and made them smaller
Enhancement: Changed the "RANGE EXCEEDED" message to "ATTITUDE EXCEEDED"
Enhancement: Changed the sensitivity of the slip indicator

Version 1.25 16/08/2012 (Franz Lamers)

Requires to load default settings.
Enhancement: Added support for the Sandia transponder
Enhancement: Added support for the MGL RDAC-XF old style optical connector extended messages
Enhancement: Added a menu option to select between normal and extended RDAC messages, ignore if using the CAN interface
Enhancement: Added any direction of ADC values to user pressure and temperature linearisers
Enhancement: Changed the UTC offset to +-13:00
Enhancement: Added a device failure cross for the CO Monitor
Enhancement: Automatic recall of the info/checklist page on startup
Bug: Fixed the OAT display if the OAT low alarm is less the the OAT display minimum value
Bug: Fixed the fuel calculated tank calculation error

NOTE: IF USING THE RDAC_XF PLEASE SET DIP SWITCHES TO A=ON and B=ON if using the old RDAC connection.
RDAC PROTOCOL MUST THEN BE SET TO EXTENDED
FOR CAN SET THEM TO A=OFF AND B=OFF

Version 1.24 26/04/2012 (Franz Lamers)

Enhancement: Added support for the MGL RDAC-XF, The Xtreme can now handle 2xRPM inputs and 2xFuel flow inputs.

Version 1.23 09/03/2012 (Franz Lamers)

Bug: Fixed differential calculated fuel level when using dual flow senders and a single calculated tank
Enhancement: Changed the menu option for GPS Flight Path to Attitude source and added a "none" field for a gray background EFIS screen

Version 1.22 19/02/2012 (Franz Lamers)

Bug: Fixed datalogging for oil temp/pressure if Fahrenheit/psi units is selected
Enhancment: Added a cancel goto on the goto waypoint page if a active waypoint is in progress

Version 1.21 02/02/2012 (Franz Lamers)

Bug: Fixed waypoint type selection when creating a new waypoint

Version 1.20 02/01/2012 (Franz Lamers)

Enhancement: Added save softkey to the new route & edit route name functions
Enhancement: Added route selection to main display softkey
Enhancement: Added the view route function
Enhancement: Added the delete waypoint from route function
Enhancement: Added the add/insert waypoint to route function
Enhancement: Fixed the atan2 error when using the XTreme-EFIS PC simulator
Bug: Fixed the serial protocol to interface to the CNV-ALT2
Bug: Added a Altitude encoder test function to the Altitude menu

Enhancement: Alarms are now activated when in the menu system
Enhancement: External alarm and checkbox added to the simulator
Enhancement: Route funcitonality is now complete

Version 1.19 27/12/2011 (Franz Lamers)

(Vertical power recommendations):
Bug: If a device is on then only the "OFF" softkey is shown, if the device is off then only the "ON" softkey is shown
Bug: Only enabled devices are now shown
Enhancement: Removed the flaps, pitch and roll trim menus
Enhancment: Changed the on/off softkey labels to left/right, up/down for the roll trim, flaps and pitch trim

Bug: Fixed the new route function saving
Enhancment: Added the delete route function
Enhancment: Added the edit route name function
Enhancment: Added back/exit softkeys to the RTC setting menu option
Enhancment: Added back/exit softkeys to the airframe inspection timer setting
Enhancment: Added back/exit softkeys to the maintenance timer menu option
Enhancment: Added back/exit softkeys to the hobbs time menu option
Enhancment: Added back/exit softkeys to the change hobbs code menu option
Enhancment: Added back/exit softkeys to the aircraft registration menu option

Version 1.18 01/10/2011 (Franz Lamers)

Bug: Fixed datalogging error if the Analog Aux 3 was not set to temperature

Version 1.17 22/09/2011 (Franz Lamers)

Enhancement: Disabled dual calculated tanks
Enhancement: Added menu option to select which tank adds to range calculations
Enhancement: Changed the dual calc/physical tank to independent separated tanks
Enhancement: Rounded off calculated fuel level

Version 1.16 19/09/2011 (Franz Lamers)

Bug: Fixed automatic flight log saving

Version 1.15 28/08/2011 (Franz Lamers)

Enhancement: Added CSV file format export to the flight log
Enhancement: Changed the flight log to RAM to avoid flash write cycles
Bug: Fixed the data recording
Bug: Fixed dual fuel level single flow & dual fuel dual flow alarm over writing text below

Version 1.14 14/06/2011 (Franz Lamers)

Bug: Fixed ETA time indication
Enhancement: Rewrote analog display channel code to be able to display single NTC CHT channel and 3 analog channels
Enhancement: Reorganised the menu order for oil temperature/pressure and current menus
Enhancement: Added VDO 120 degree C temperature sender

Version 1.13 24/05/2011 (Franz Lamers)

Bug: Fixed psi to bar conversion when using the UMA 7psi (T1EU07) sender
Enhancement: Made the fuel totals text bigger
Bug: Fixed saving of manual fuel input
Enhancement: Changed CO Guardian to CO Monitor
Enhancement: Optimised the ADC menu

Still to be done:
-Routes needs to be completed
-VPX devices must only be shown if enabled

Version 1.12 02/05/2011 (Franz Lamers)

Enhancement: Added sign to GF for SP7
Enhancement/Bug: Fixed/Added x1,x10,x100 multiplier to EGT/CHT setups
Enhancement: Added VPX alarm messages
Enhancement: Removed Elec Sys display from the display setup menu. It is automatically enabled when the electrical system is selected.
Bug/Enhancement: Moved the fuel data and QNH setting to non-volatile memory
Enhancement: Improved flight log code
Enhancement: File system upgrade
Enhancement: Improved timer accuracy (Hobbs,Maintenance,Airframe and fuel calculation)
Enhancement: Changed flight timer from flashing to just the semi colon to flash to indicate an active flight

Still to be done:
-Routes needs to be completed
-VPX devices must only be shown if enabled

Version 1.11 27/03/2011 (Franz Lamers)

Enhancement: Added SP4/SP7 velocity message
Enhancement: Added Vertical Power VP-X support (beta release)
Enhancement: Moved the navidata file to the root directory for compatibility with other MGL EFIS products

Known bugs:
-Users reported flight log problems

Still to be done:
-Routes needs to be completed
-VPX devices must only be shown if enabled
-VPX alarm messages must be implemented

Version 1.10 14/03/2011 (Franz Lamers)

Bug: Fixed slow navidata search function
Enhancement: Added navidata display types
Bug: Fuel mode was not initilised after a recall settings

Version 1.09 26/02/2011 (Franz Lamers)

Enhancement: EMS and EFIS scroll wrap around
Enhancement: Changed EMS temp lower limit to -40C (-40F)
Bug: Fixed EGT/CHT scanning when VFR/EMS page is displayed
Enhancement: Added edit multiplier to temperature/pressure and current channels
Bug: Fixed pressure user lineariser edit multiplier display

Version 1.08 07/08/2010 (Franz Lamers) (MUST LOAD DEFAULT SETTINGS)

Enhancement: Added in navigation (waypoints and routes (Routes not functional at present))
Enhancement: Added in Aircraft registration on the main VFRpage
Enhancement: Changed the CHT increments to 1 degree instead of 10
Enhancement: Extended the "INIT DATA REC FILE" message to 1 second minimum
Enhancement: Improved menu text visibility
Enhancement: Swapped the on/off around in the Altitude bug,Heading bug and timer menu
Enhancement: Swapped the up/down and start/stop in the timer menu
Enhancement: Info pages and checklists must be in their own directory on the SD card (INFOPAGE,CHECKLST)
Enhancement: Reduced abbreviations for TMR/FT/LCL to T/F/L to make more space for the CDI and to declutter the main EFIS page
Enhancement: Upgraded the file system
Enhancement: Made the GPS fix EFIS text item smaller
Bug: Fixed DA meters conversion on EFIS screens
Enhancement: Added splash screen display to XTreme simulator
Enhancement: Added GPS fix mode to range variable on the EMS screen if GPS ground speed is used
Enhancement: Added checklist and infopage viewing to the simulator
Enhancement: Changed the compass heading triangle to indicate GPS ground track
Enhancement: Added mini HSI display on the MFD and VFR pages
Enhancement: Added VSI scale 500ft/min, 1000ft/min, 2000ft/min, 4000ft/min
Enhancement: Reduced VSI m/s reading to one decimal place
Enhancement: Removed fuel message when no fuel related indicators are shown
Enhancement: Sub menus now rotate around
Enhancement: Removed "REALIGN AHRS" and "LEVEL PITCH" from the EFIS/MFD Sub menus when no AHRS attached
Enhancement: Added a EFIS/HSI display screen mode
Enhancement: Added save/recall settings feature from SD card
Enhancement: Added filter for volts display
Enhancement: Removed UP/DN from the VSI dial
Enhancement: Upgraded the GPS flight path
Enhancement: Added option to use GPS track for compass reading if the user is not using the compass hardware
Bug: Fixed Timer running to slowly
Enhancement: Improved Pressure units accuracy
Bug: Fixed ASI calibration value if different units are selected
Enhancement: Rotax 912 mode now uses the temperature sender type in the AUX3, AUX4 (AUX3,AUX4 function must be set to temperature)
Enhancement: Increased user linearisers to 16 points
Enhancement: Swapped On/Exit keys around for heading and altitude bug
Enhancement: Added support for vertical power VP-X
Bug: Fixed EGT/CHT main display when EGT channels=0
Enhancement: Added support for CO Guardian
Enhancement: Changed "VOLT" text to "BAT" on th ems page
Enhancement: Added roll around support for the main menu

Version 1.07 20/11/2010 (Franz Lamers)

Bug: Fixed maintenance timer running to quick

Version 1.06 19/08/2010 (Franz Lamers)

Bug: Fixed asi span max bug which was limited to 250 km/h. Changed to 450km/h

Version 1.05 25/06/2010 (Franz Lamers) (MUST LOAD DEFAULT SETTINGS)

Enhancement: Made changes to the menu system to make it easy to navigate (EXIT MENU/BACK/ARROWS/MULTIPLIER tabs)
Enhancement: Made Insert SD Card message box smaller
Enhancement: The GPS baud rate message is hidden if the user selects the internal GPS

Enhancement: Removed the EGT/CHT high alarm value from the EMS pages
Enhancement: Replaced the auto VFR info pages toggle buttons to manual only
Enhancement: Removed wind speed/direction from displaying if no 2D/3D fix
Enhancement: File system has been upgraded with a fast seek
Enhancement: Centered the "DONE" message
Enhancement: Moved the EFIS flight timer menu option to the timer setup menu
Enhancement: Reorganised the ADC Values menu
Enhancement: Renamed the PFD Setup menu to EFIS Setup
Enhancement: Moved Volts setup/OAT setup to the EFIS setup menu
Bug: Fixed the data recoding file no creation selection
Enhancement: Fixed up the 3rd increment text in the ASI indicator
Enhancement: Added a full screen VFR page
Enhancement: Shifted some items around on the VFR page to accommodate the compass and windspeed/direction
Enhancement: The ASI needle now goes over the ASI dial text
Enhancement: Added in a special Rotax 912/914 mode to use the built in CHTs
Enhancement: Added GPS fix/heading/ground speed to the PC simulator
Bug: Fixed the info pages when scrolling past 7 info pages
Enhancement: Changed the look of the info/checklist selection
Enhancement: Replaced the MISC icon
Bug: Fixed Fuel totals incrementing if no RDAC connected
Bug: Fixed Acquiring spelling mistake on the GPS page
Enhancement: Added red cross marks to the compass indication if no compass is connected
Enhancement: Added full ascii table to checklists for multiple language support
Enhancement: Removed the tick boxes from the checklist page

Version 1.04 09/06/2010 (Franz Lamers) (MUST LOAD DEFAULT SETTINGS)

Bug: Fixed the saving of the heading bug on/off and altitude bug on/off
Enhancement: Changed RPM/Rotor low alarm/caution to be able to go down to 0
Enhancement: Alarm message boxes are automatically resized to best fit text
Enhancement: Change the OAT temperature units to its own setting - it is not set via global temperature units
Bug: Fixed RPM/Rotor pulses/rev key increment
Enhancement: Added charge/discharge current channels to min/max page

Version 1.03 04/06/2010 (Franz Lamers) (MUST LOAD DEFAULT SETTINGS)

Enhancement: Changed display minimum for RPM/Rotor to 0
Enhancement: Added support for the MGL current monitor
Enhancement: Removed all flashing of any variable that hits the yellow status
Bug: Fixed the 0.1 increment/decrement of the MAP setup variables using "Hg
Bug: Fixed Fuel tank 1/2 setup where Gallons quick increment key was out by a factor of 10
Bug: Fixed simulator com error message
Enhancement: Rounded off asi dial increments to the nearest 10
Enhancement: Saved MAP calibration value in to the calibration memory so the user does not have to reenter it when default settings are loaded

Version 1.02 29/05/2010 (Franz Lamers) (MUST LOAD DEFAULT SETTINGS)

Enhancement: Added DA in front of density altitude for easier identification.
Enhancement: Removed max windspeed from max/min screen
Bug: Fixed local/zulu time in XTreme simulator
Bug: Fixed RPM quick key increment for 1000 rpm increments
Enhancement: removed the magnetic variation menu item from the GPS menu. The magnetic variation menu still remains in the compass menu
Bug: Fixed GPS COG for magnetic/true indication
Bug: Fixed altitude encoder baud rate stuck on 9600
Enhancement: Added magnetic/true indication for gps cog
Enhancement: Added "CALC" to fuel level if it is a calculated fuel tank

Enhancement: Changed rotor max rpm values from 99999 to 9999
Enhancement: Removed rotor/rpm sides variable
Enhancement: Added Rotor max/min display variables
Enhancement: Added rotor rpm to the EMS page
Enhancement: Added in the GPS flight path

Version 1.01 26/05/2010 (Franz Lamers)

Initial release

XTreme-EMS

Version 2.13 02/11/2022 (Franz Lamers)

-Improved the accuracy of the pressure and temperature sensors

Version 2.12 16/10/2022 (Franz Lamers)

Bug: Adjusted the memory accelerator module causing certain processors to freeze

Version 2.11 05/09/2022 (Franz Lamers)

Enhancement: Enabled dual calculated fuel tanks / dual fuel flow
Enhancement: Extended RPM & rotor pul/rev to 2 decimal places (Customer must adjust after upgrading)
Enhancement: Minor bugs fixes
Enhancement: General clean up

Version 2.10 31/01/2022 (Franz Lamers)

Enhancement: Added in a direct connection option to the Rotax 912iS ECU
Bug: Improved timing of the timers
Enhancement: Minor changes

Version 2.09 14/06/2021 (Franz Lamers)

Bug: Fixed EGT/CHT display when using ULPower Aux box
Enhancement: Added programmable labels in the datalog file
Bug: Removed duplicate headings in the datalog file

Version 2.08 08/06/2021 (Franz Lamers)

Bug: Fixed datalogging values storage
Bug: Fixed flight log hobbs decimal/normal minutes saving to .csv
Bug: Fixed 0.1L menu overun in fuel level setup

Version 2.07 21/04/2021 (Franz Lamers)

Bug: Fixed Rotax 912is Throttle position, ambient pressure, ECU hours, Engine hours, Device Status message overrun

Version 2.06 27/10/2020 (Franz Lamers)

Enhancement: Added selection for decimal or normal hours to Hobbs Meter

Version 2.05 29/07/2020 (Franz Lamers)

*****Major upgrade, needs default settings loaded*****

When upgrading, press and hold the right and left most push buttons when the "please wait" message is displayed. Keep holding these buttons until you see the Xtreme splash screen. It should take around 10 seconds

Enhancement: Changed the magnetic variation WMM tables to the latest version
Enhancement: Added in the UL Power engine and dedicated display

Enhancement: Added/updated sensor linearisation tables
Enhancement: Added in a magneto check function
Enhancement: Flight log updated every minute
Enhancement: Added more flight detect options
Enhancement: Added RPM2 to flight log
Enhancement: Data recording changed to SD card .CSV file
Enhancement: Added speed unit selection to GPS Setup instead of using the fuel speed unit
Enhancement: Implemented programmable labels for RPM1, RPM2, Volts, OT, OP, AUX1&2
Enhancement: Removed the CO Monitor function
Enhancement: Added in RPM/Rotor classic display and selection between arc styles
Enhancement: Added left/right and arc option to RPM2
Enhancement: Added OAT on/off option
Enhancement: Reorganised the display screen for analog channels to utilise the area more efficiently
Enhancement: Changed current gain to default 315
Enhancement: Added in the EGT/CHT trend graph
Enhancement: Added in a misc information screen
Enhancement: Added in individual RDAC comms / UL Power comms error red crosses
Enhancement: Cleaned up the Max/Min display
Enhancement: Added volts min write protection
Enhancement: Added in hobbs/maintenance timer start trigger
Enhancement: Added adc current values to zero/gain current calibration
Enhancement: General cleanup with many smaller changes
Enhancement: Added in CRC checks and error messages
Enhancement: Added Rotax 912is status and fault displays
Bug: Fixed RS232 high baud rate
Bug: Fixed ADC value display in the fuel pressure user calibration

Version 2.04 28/02/2017 (Franz Lamers)

Bug: Fixed J and E-Type TC negative values

Version 2.03 09/11/2016 (Franz Lamers)

Bug: Fixed fuel pressure user calibration setup menu return

Version 2.02 09/04/2015 (Franz Lamers)

Enhancement: Redone the current calibration menu option and calculations

Version 2.01 28/08/2014 (Franz Lamers)

Enhancement: Support added for the MGL RDAC-VD (See documentation for hardware modifications). CO Monitor must be off for the RDAC-VD to work.

Version 2.00 27/07/2014 (Franz Lamers)

Version 2.XX code cannot be used on Generation 1 EMS units
New XTreme EMS hardware
Bug: Fixed map menu item scrolling off screen
Bug: Fixed rotor low alarm

Version 1.12 01/08/2014 (Franz Lamers)

Bug: Fixed map menu item scrolling off screen

Bug: Fixed RPM2 low alarm
Enhancement: Changed rpm percentage to change in 1 resolution
Enhancement: Change MED->MEDIUM for fuel filter

Version 1.11 06/06/2013 (Franz Lamers)

LOAD DEFAULT SETTINGS ESSENTIAL
Bug: Fixed the fuel pressure not showing when both fuel flows and fuel levels are disabled
Bug: Fixed the sunrise/sunset time when certain UTC offsets are used
Bug: Fixed a problem with the fuel setup menu scrolling when exiting the fuel pressure setup menu
Enhancement: Changed RPM to RPM 1 and ROTOR to RPM 2 and added labels to identify the RPM inputs
Enhancement: Changed ROTOR RPM input to RPM 2 and increased values to 99999
Enhancement: Added RPM labels to the main RPM displays
Enhancement: Center justified the RPM values and cleaned up the RPM1/2 display
Enhancement: Center justified the MAP value in the arc display
Bug: Fixed fuel flow when using a single flow, dual levels and the mode is set to diff/sum and not dual
Bug: Fixed the fuel calculation problem when a single flow, 1 calculated tank and 1 physical tank is used
Enhancement: Cleaned up certain ems setup menu options
Enhancement: Added 0.1 litre resolution to the fuel tanks
Enhancement: Cleaned up the fuel total display

Version 1.10 28/03/2013 (Franz Lamers)

Bug: Fixed the TC readings when the OAT goes below 0 degrees Celsius

Version 1.09 16/11/2012 (Franz Lamers)

Enhancement: Added the 912iS Coolant Temperature. Changed the ANALOG AUX1/3 menu option to Coolant Temp if a 912iS engine is detected

Version 1.08 14/11/2012 (Franz Lamers)

Enhancement: Support added for the 912iS CAN engine
Bug: Fixed the rotor alarm from activiating the current alarm

Version 1.07 07/11/2012 (Franz Lamers)

Bug: Fixed the horizontal bar if the low alarm or low caution is below the display minimum value
Bug: Fixed some datalogging variables

Version 1.06 20/09/2012 (Franz Lamers)

Enhancement: Added back/exit softkeys to the RTC setting menu option
Enhancement: Added back/exit softkeys to the maintenance timer menu option
Enhancement: Added back/exit softkeys to the hobbs time menu option
Enhancement: Added back/exit softkeys to the change hobbs code menu option
Enhancement: Added back/exit softkeys to the aircraft registration menu option
Bug: Fixed the OAT display if the OAT low alarm is less the the OAT display minimum value
Bug: Fixed the fuel calculated tank calculation error
Bug: Fixed ANALOG AUX 1/3 and 2/4 headings to accomodate the RDAC-XF
Bug: Fixed calibration factor for volts
Enhancement: Added the RDAC-XF fuel pressure and current channels to the XTreme-EMS
Enhancement: Automatic recall of the info/checklist page on startup
Enhancement: Added a device failure cross for the CO Monitor
Bug: Fixed a bug with AUX1/3 and 2/4 max/min display

Bug: Fixed a bug created in ver 1.05 with the pressure lineariser

Version 1.05 10/07/2012 (Franz Lamers)

Requires to load default settings.
Enhancement: Added support for the MGL RDAC-XF old style optical connector extended messages
Bug: Fixed the voltage readout when using the MGL RDAC-XF
Enhancement: Added a menu option to select between normal and extended RDAC messages, ignore if using the CAN interface
Enhancement: Added any direction of ADC values to user pressure and temperature linearisers
Enhancement: Changed the UTC offset to +-13:00

NOTE: IF USING THE RDAC_XF PLEASE SET DIP SWITCHES TO A=ON and B=ON if using the old RDAC connection.
RDAC PROTOCOL MUST THEN BE SET TO EXTENDED
FOR CAN SET THEM TO A=OFF AND B=OFF

Version 1.04 07/06/2012 (Franz Lamers)

Enhancement: Added support for the MGL RDAC-XF, The Xtreme can now handle 2xRPM inputs and 2xFuel flow inputs.

Version 1.03 29/09/2011 (Franz Lamers)

Enhancement: Disabled dual calculated tanks
Enhancement: Added menu option to select which tank adds to range calculations
Enhancement: Changed the dual calc/physical tank to independent separated tanks
Enhancement: Rounded off calculated fuel level
Bug: Fixed datalogging error if the Analog Aux 3 was not set to temperature

Version 1.02 20/08/2011 (Franz Lamers)

Enhancement: Added Current, Rotor RPM, 912 CHT to the datalogging output message
Bug: Fixed fuel flow data in datalogging output message
Bug: Fixed GPS GS max value overwriting CO max value

Version 1.01 16/08/2011 (Franz Lamers)

Bug: Added carriage return to the end of the data for the flight log
Enhancement: Renamed the flight log to XTFLIGHT.CSV
Bug: Fixed dual fuel level single flow alarm over writing text below
Bug: Fixed the GPS speed defaulting to cruise speed if the GPS signal is lost
Bug: Fixed the data recording
Enhancement: Changed the flight log to RAM to avoid flash write cycles
Enhancement: Added GPS display page enable/disable

Version 1.00 11/05/2011 (Franz Lamers)

Initial release

Instruments in the *XTreme* series

XTreme-EFIS Electronic Flight Information System
XTreme-EMS Universal Engine Monitor