

## Version 2.066, 02-03-2018

- FIAT 500 reverse gear information send over CAN (hill holder bug fixed). The reverse gear switch should be connected to the switch 1 input

## Version 2.065, 02-03-2018

- Astra VRX CAN stream improved
- Corsa VRX CAN stream introduced
- Gearbox oil temperature and differential oil temperature added to parametric outputs

## Version 2.064, 14-12-2017

- OBD 2 support
- EMU serial protocol modified (increased update rate)
- Android Dashboard log import fixed (new Android Dash application is required)
- BMW E46 ABS CAN wheel speed support
- Ethanol content variable added to parametric / virtual outputs
- Marking modified cells can be disabled (General options)
- Log channel *CAM#2 swtich state* added
- Astra VRX CAN vehicle speed output fixed
- Idle vss increase parameter could be higher than 255 RPM
- Launch control time to activate parameter added
- 2D tables description font size fixed for high DPI displays
- New password entering dialog

## Version 2.063b, 29-11-2017

- 2D tables bug introduced in version 2.063 fixed

## Version 2.063, 28-11-2017

- Fiat 500 CAN stream modified (Hill holder error)
- Paddle shift strategy bug fixed, added 3<sup>rd</sup> input for R and 1 gear engagement
- EMU serial protocol modified (channels frequency)
- Modified cell marks are removed from autotune window

## Version 2.062, 30-10-2017

- Nissan QR25DE trigger pattern added
- Astra Vrx CAN stream updated

## Version 2.061, 30-10-2017

- Astra Vrx CAN stream updated
- Paddle shift strategy improved (added gear count and down shift per gear RPM limit)

#### **Version 2.060, 28-10-2017**

- Dwell calculations strategy during cranking improved
- Nissan alternative trigger strategy added
- User CAN stream bug with log channels > 255 fixed

#### **Version 2.059, 23-10-2017**

- Switch inputs improved (denouncing added)
- Paddle shift strategy

#### **Version 2.058, 19-10-2017**

- Mazda BP 4/3 trigger support
- Saab CAN stream
- Opel Astra VRX CAN stream

#### **Version 2.057, 12-10-2017**

- Mini Cooper R53 CAM stream improved, (DSC system works)
- Fiat 500 CAN stream improved (No random battery warning)
- Knock noise table is 3D now
- Gear cut strategy bug fixed (external controller)
- Debouncing added to momentary switches

#### **Version 2.056, 05-10-2017**

- Overrun fuel resume enrichment
- Honda S2000 coolant gauge recalibrated
- Boost target was wrong when Dcref is MAP based

#### **Version 2.055, 04-10-2017**

- Vehicle speed from GPS can be assigned to VSS channel
- Ignition angle could be trimmed using analog input (2D table)
- External fuel temperature sensor support added in addition to Flex Fuel
- Audi A3 2006 CAN stream added
- BMW E46 AC switch support added to CAN stream

#### **Version 2.054, 29-09-2017**

- Improved behavior on notebooks with FHD and SHD screens
- Fiat 500 EURO 6 CAN stream added

#### **Version 2.053, 13-09-2017**

- EGO feedback update interval bug fixed
- EVOX wheels speed sorted
- Steering wheel angle offset extended to -125 to 125 degs
- EGT alarm settings for ALS and LC added
- Knock sensing could be disabled during gear cut

#### **Version 2.052, 30-08-2017**

- Overboost protection added
- Ethanol content based RPM limit added
- Seadoo 36-2 specific trigger added
- EGO corection bug introduced in 2.051 fixed
- Modified cells in tables are marked

#### **Version 2.051, 03-08-2017**

- GPS speed could be used as parametric output argument
- MAP sensor trigger added to idle control
- Flex fuel TPS limit bug fixed
- VVTi PWM generation improved
- Swift 2<sup>nd</sup> gen odometer increase fixed

#### **Version 2.050, 31-07-2017**

- Fuel level calibration table visibility fixed (bug introduced in 2.047)

#### **Version 2.049, 28-07-2017**

- Fuel cut option added to ALS
- ALS ignition retard rated parameter added
- Brake switch support for Suzuki Swift 3<sup>rd</sup> gen CAN stream

#### **Version 2.048, 11-07-2017**

- Imperial units support bugs fixed
- FlexFuel input could be used as VSS source (HALL sensor only)
- GPS speed channel added to log

#### **Version 2.047b, 10-07-2017**

- Imperial units support bug fixed
- User CAN stream could be exported to canx format for PMU use
- EDL-1 logs could be load by open log function

#### **Version 2.047, 09-07-2017**

- Imperial units introduced (general settings)
- New help format introduced (general settings)
- Clio Williams trigger synchronization improved
- Brake switch added
- EVO X lateral G and Yaw rate reading fixed
- EVO X steering wheel position offset added (Sensors/Other/Parameters)
- Corvette CAN stream added (AC switch, wheel speed)
- DBW characteristic could be as a TPS/MAP function (experimental)
- Fuel cut reason flags bug fixed (fuel pressure cut, oil pressure cut, idle fuel cut)
- Gear cut switch support modified (inverted state, works once per switch)
- Gear cut works correctly with analog#5 and analog#6 inputs
- Gear detection when gear sensor used fixed
- EMU connection status on status bar fixed

- Copy / Paste bug fixed with floating point values (eg. Lambda tables)

#### **Version 2.046, 13-06-2017**

- Seadoo spark CAN stream added
- Lotus Exige CAN stream fixed
- When idle valve type is set to None, idle control is disabled
- Soft RPM limiter hysteresis minimum value is 1 now
- Differential control tables size changed from 6x6 to 8x5

#### **Version 2.045, 23-05-2017**

- CAN BUS wheel speed validation for VSS calculations
- Swift 3<sup>rd</sup> gen CAN stream improved
- Lotus Exige CAN stream added

#### **Version 2.044, 13-05-2017**

- Bug with analog inputs used as enable switch for strategies fixed. (The bug was introduced in version 2.040)

#### **Version 2.043, 11-05-2017**

- Swift 3<sup>rd</sup> generation speed from CAN reading fixed
- Nissan 350Z AC clutch activation message added
- CAN Analogs and CAN Switches added to Virtual and Parametric outputs

#### **Version 2.042, 10-05-2017**

- User defined CAN stream bug fixed (when the user CAN stream was enabled, always during, connection PC local calibration differs from EMU BLACK calibration),
- injection angle control code performance optimized

#### **Version 2.041, 07-05-2017**

- RPM of 2<sup>nd</sup> engine can be set via user CAN stream,
- idle after start rpm increase bug fixed (when rpm increase was > 255),
- rpm spike (for low resolution trigger wheels and TFI) during cranking bug fixed,
- CAN analog inputs defined in user CAN stream (in rx messages) have priority over PMU standard stream

#### **Version 2.040, 28-04-2017**

- Second fuel rail support (for additional fuel delivery)
- Staged injection could be assigned to 2 outputs
- Switches based on CAN Analog inputs bug fixed
- Quick tune display flickering issue fixed
- Graphical log tabs names are correctly refreshed after opening user layout at startup

#### **Version 2.039, 22-04-2017**

- Staged injection load could be forced to MAP when Alpha-N selected
- Swift MK3 oil pressure sensor CAN support fixed

- Blending for LC tables added (use rotary switch or pot)
- Virtual output 3 could be used to activate idle PID control
- Displaying floating point numbers in quick tune window improved

#### **Version 2.038, 13-04-2017**

- CAN Analog inputs could be used for Diff control rotary switch,
- Gear cut indicator added on status bar

#### **Version 2.037, 06-04-2017**

- CLT boost scale added,
- 2<sup>nd</sup> lambda sensor could be connected using external controller,
- LSU 4.2 / 4.9 PID settings are embedded into firmware and cannot be altered anymore,
- Copy / Paste in client software correctly handle non integer numbers

#### **Version 2.036, 04-04-2017**

- BMW ITB throttle control added
- Start / stop strategy sends starter motor request over CAN BUS

#### **Version 2.035, 29-03-2017**

- Bug from versions 2.030 – 2.034 with pullups when BT CAN stream enabled fixed,
- Gear detection bug fixed
- 1JZ/2JZ CAM#2 support added for faster synchronization
- For ALS pedal position is used instead of TPS
- Bug with CLT/IAT error code at device startup fixed
- DBW can control is assigned to fixed ID 0x667

#### **Version 2.034, 13-03-2017**

- Copy / Paste functions for tables use windows clipboard (it is possible to copy tables cells to Excel)
- Race Technology dash serial stream fixed (low update rate)
- Honda S2000 CAM#2 support added for faster synchronization
- Swift 3<sup>rd</sup> gen CAN oil pressure switch support

#### **Version 2.033, 10-03-2017**

- Fix for user defined CAN

#### **Version 2.032, 07-03-2017**

- Fix for high DPI laptops displays,
- Golf R32 can stream added,
- User defined CAN stream UI improved,
- ALS max egt is now calculated using internal EGT as well as CAN EGT

#### **Version 2.031, 06-03-2017**

- Firmware 2.030 doesn't contain all listed features and fixes. 2.031 is the proper one

#### **Version 2.030, 06-03-2017**

- User defined CAN stream,
- CAN output added for Nitrous output,
- Differential controller oil pump maximum work time added,
- Differential controller behavior during Launch control could be defined,
- Check engine code added for differential control (when oil pump cannot build required pressure),
- Switch input could be used as Oil pressure sensor input,
- Nitrous active state added to the EMU CAN stream,
- Gear and gear ratio is calculated when speed source is CAN wheel speed

#### **Version 2.029, 16-02-2017**

- Lancer EVO CAN stream update: steering wheel angle, yaw rate
- Nissan 350ZX CAN stream coolant fan support added

#### **Version 2.028, 16-02-2017**

- USB packet timeout restored to the value from version 2.026 (fix connection issue on slow PC)
- EVO X CAN stream fixed
- Nissan 350ZX CAN stream added
- Lotus 2ZZ cable throttle CAN stream added
- Idle control PWM generator bug fixed (when the PC connected to device)
- Log based autotune bug fixed
- Bug with loading autos save logs fixed

#### **Version 2.027b, 25-01-2017**

- Connection time improvement

#### **Version 2.027, 24-01-2017**

- All inputs / outputs could be labeled by user (Show assigned outputs / inputs and press right mouse button to rename)
- Boost blend now works correctly with CAN Analogs
- USB communication improved
- Firmware upgrade time improved (25sec instead of 30 sec)
- Switch#1-#3 debouncing added
- Dwell error value is correct when spark cut occurs
- Visible min and max values for given channel are marked on the log
- Drawing log speed is improved by a factor of 5
- Open log window allows also opening EDL-1 files
- Numeric keypad could be used for entering table values

#### **Version 2.026, 05-01-2017**

- All pressure sensors are defined as 2 point 2D table. Each sensor has own x axis (voltage). **Due**

**to this modification when upgrading from older firmware pressure sensors calibration should be corrected!.**

- Differential control added (for EVO 9,10) and Haldex,
- Differential oil pressure sensor added,
- Quick tune display log channels could be customized (right mouse button)
- New log groups (pressure and temperature)
- Crash when right mouse button was pressed on log group icon fixed

#### **Version 2.025, 29-12-2016**

- Lotus CAN stream fixed (fuel level and check engine status)
- Suzuki Swift 2<sup>nd</sup> gen CAN stream added
- TAB+Arrows allow to swap between windows
- Default deskto layout added

#### **Version 2.024, 17-12-2016**

- Output for VVTi control could be inverted (for HBRIDGE low side control)

#### **Version 2.023, 13-12-2016**

- Haldex 4gen control strategy added ( requires modification of haldex module)
- Ignition outputs 4+5 could be paired
- PWM output signal generation bug fixed
- VSS max value increased to 500 km/h
- DBW calibration package included

#### **Version 2.022, 08-12-2016**

- DC Ref table in DBW configuration can be in function of target pos or throttle pos
- Tables processing speed optimized
- VSS value is calculated correctly when speed source is CAN
- Real time autotune improved (lock cells)

#### **Version 2.021, 06-12-2016**

- Idle DC correction in function of IAT
- Real time autotune improved

#### **Version 2.020, 04-12-2016**

- Wizard for temperature and pressure sensors
- Real time autotune replaces “K” key based autotune (experimental)
- Bug when restoring password protected device to factory state fixed

### **Version 2.019, 26-11-2016**

- Internal MAP could be used as BARO when external MAP is used
- VIPER V10 trigger added
- Device delayed off using virtual output as off condition
- Renault Clio CAN stream fixed
- Help updated

### **Version 2.018, 18-11-2016**

- DBW PWM control signal generation modified to decrease heat and lower the throttle noise
- Bug with initialization of DBW and FlexFuel input when there was CAN BUS error during startup
- Boost control solenoid can be disabled by switch / analog

### **Version 2.017, 04-11-2016**

- PC USB communication improved
- ECM CAN switch board support improved
- PMU CAN communication improved

### **Version 2.016, 30-10-2016**

- Support for CAN keyboard connected to PMU
- New temperature sensors added (gear box oil, differential oil, power steering fluid, pre IC)
- Default state for CAN keyboard can be defined
- Overrun fuel cut bug fixed (the cut was always performed above resume RPM)
- Tabs added for graph window to speed up switching between different log sets (shortcut keys from 1 to 6)

### **Version 2.015, 17-10-2016**

- 8 CAN analog inputs added (from PMU device)
- 8 CAN Switches added (16 total)
- CAN support for CAN switch board (8 switches + 2 analogs) (CAN ID 0x666)
- 3 momentary switches added (could be controlled via CAN switch board or CAN keyboard)
- CAN ID for EGT moved to 0x660 and 0x661
- CLT engine protection bug fixed
- Now all BLACK files (log, calibration, scope, DL1 logger files) are associated with application and could be opened just by mouse click,
- Fuel cut reason log group added
- Graph log window improved:
  - Zoom extent

- Channel autoscale
- Scaling center is at the cursor
- Extended popup menu (mouse button right) allow fast channel change or setup
- Different line style (thin, thick, dots)
- Up to 16 channels on the log

## **Version 2.014, 08-10-2016**

- Bosch LSU 4.2/4.9 response speed improved
- Alternator control added
- When importing DL1 data logger data, log window refreshes correctly
- All files associated with BLACK (project, log, scope DL1 log) can be opened just by clicking the file