Change log for version 1.227 14.03.2026

- Detection of Classic V3 firmware for downgrade
- Detection when the device is in bootloader
- Support for BT switches (requires EDL with the firmware 1.24 or newer and eDash appliaction)
- EDL firmware version channel added

Change log for version 1.226 02.03.2025

- CAM toothed wheel with 2 missing teeth trigger added
- Table set added to EMU CAN stream

Change log for version 1.225 01.03.2024

- Idle PWM control bug fixed
- Max RPM limits set in all functions and tables to 18000

Change log for version 1.224 13.10.2023

- AC max CLT ragne increased to
- In ALS the pedal position is used instead of TPS

Change log for version 1.223 14.06.2023

- Fixed problem with negative values of channels sent via BT Module
- In ALS the pedal position is used instead of TPS

Change log for version 1.222 03.11.2022

- Per cylinder fuel cut added to Launch control
- Subaru EZ30 trigger support added
- Fuel cut percent on the log displayed correctly as %
- Autotune axis change bug fixed
- AC clutch state added to parametric outputs
- Copy / Paste tables value rounding error fixed

Change log for version 1.221

- Patter spark cut added (Ignition / General)
- Pattern fuel cut added
- Soft rev limiter option for pattern fuel cut added
- Suzuki 36-2-2 trigger pattern added
- Crop to selection added for the log

Change log for version 1.220b

- Bug with Autotune (change load axis to TPS) fixed

Change log for version 1.220

- EMU clinet but with popup error window with EGO Feedback parameters fixed

Change log for version 1.219

- VW CAN stream CLT output calculation improved
- Any spark cut event disables EGO correction for the Transients delay time
- Any spark cut event disables knock sensig for user defined time (sprak cut delay in Knock action parameters)
- Parameters tree panel witdht can be set to more than 300px
- Gauges can be displayed as gauge, value or bar,
- Channel properties added on pop up menu for quick tune display and gauges

Change log for version 1.218

- Custom fuel correction table
- New modes for Sync without camsync: Sync as soon as CAM is decoded or Sync at first fuel cut
- Export log to CVS fixed

Change log for version 1.216

- CAM based trigger with the missing tooth support added. The number of tooth must be equal to the half of tooth on the trigger wheel (eg. for 24-1 it must be 12)
- EDL logs now display proper time when selected option *Display System Time*.

Change log for version 1.213

- CAN Analog inputs issue (wrong voltage scale) introduced in version 1.212 fixed
- CAN Analog inputs can be used with the Launch control *Analog RPM control input*
- Gear detection based on gear position sensor bug fixed (spikes when there was no VSS signal connected)
- Desktops are saved correctly during firmware upgrade

Change log for version 1.212

- Racechrono support over serial BT module
- Support for Ecumaster CAN switchboard (ID 0x666)

Change log for version 1.211

- RX-8 CAN stream ABS type selector
- Blip function bug fixed
- BMW E46 coolant gauge CAN stream modified
- Focus RS CAN stream fixed

Change log for version 1.210

- Mazda BP trigger added

Change log for version 1.209

- Scatter plots
- Stepper motor support improved
- Idle control: when stepper motor is used, it is possible now to keep it powered when the MAP is above defined target. It prevents stepper motor to move during boost.
- VTEC: Additional parameter to activate vtec over given RPM, independent to other parameters
- Honda S2000 (F20C) CAM#2 support added for faster synchronization
- Interrupts management modified

Change log for version 1.208

- Knock boost correction

Change log for version 1.207

- Idle afterstart DC scale table added
- Activation delay added to Idle PID and ignition control
- Now log channels selector added
- New shortcuts added for Log graph:
  – **Ctrl+Left / Ctrl+Right, -** Previous tab / Next Tab
  – **F5** start new log (clear log + resume if paused)
  – **S** - save log
  – **O** - open log
  – **Ctrl + X**- clear log

Change log for version 1.206

- Min and max TPS/MAP values added to the knock action
- 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

Change log for version 1.205b

- Bug with the 2D tables introduced in version 1.205 fixed

Change log for version 1.205

- Ecumaster serial log stream modified (channels frequency)
- Fiesta MK6 CAN stream fixed (battery voltage, milage)
- Modified cell marks are removed from autotune window

Change log for version 1.204

- CAN switches can be used with parametric / virtual outputs
- Alternative nissan trigger

Change log for version 1.203

- Mini Cooper R53 CAM stream improved, (DSC system works)
- Fiat 500 CAN stream improved (No random battery warning)

Change log for version 1.202

- Renault Megan RS CAN stream added (RPM, CLT)
- Gear calculations when speed source is CAN fixed
- Honda S2000 coolant gauge recalibrated
- Over run fuel resume enrichment added

Change log for version 1.201

- Improved behavior on notebooks with FHD and SHD displays

Change log for version 1.200 RC

- Crosshair on the tables displays correct when imperial units selected
- Modified cells in tables are marked
- Conditional logging bug fixed
- MAP sensor trigger added to idle control
- VVTi PWM generation improved
- Log files from EDL1 (*.bgc) are associated with EMU client
- BGC files can be opened from graph log window (open file icon)

Change log for version 1.189c EXP3

- Axis values decimal point bug fixed

Change log for version 1.189b EXP2

- Tester firmware detection (firmware could be updated to the production one)

Change log for version 1.189 EXP1

- Imperial units support added
- Clio Williams trigger synchronization improved

Change log for version 1.188 EXP1

- Bug in idle stepper motors control fixed
- Bug with desktops load introduced in 1.187 fixed

Change log for version 1.187 EXP1

- Graph log user interface from EMU BLACK implemented to EMU
- Quick tune flickering issue fixed
- TAB + Arrows allows to move among the opened windows
- Flex fuel temperature correction works without tables blend

Change log for version 1.186 EXP2

- Golf R32 CAN stream added
- VIPER V10 trigger pattern added

Change log for version 1.185 EXP1

- Gear ratio is correctly calculated when speed source is CAN BUS
- CAN BUS ecumaster protocol frame 606 added (see help for more details)
- Fuel pump state, AC clutch, Coolant Fan and parametric outputs can assigned to CAN BUS output.

Change log for version 1.184 EXP2

- Autotune bug fixed,
- Copy / Paste works using windows clipboard. It is possible to copy tables into Excel / Open office calc,

Change log for version 1.184 EXP1

- Citroen C4 CAN stream added
- EVO X can stream bug fixed (no more ASC error when stay on ignition on)
- Drawing graphical logs speed greatly improved

Change log for version 1.183 EXP1

- DLI 7M-GE system supported
- COLT CZ CAN stream added
- During spark cut, dwell error log channel shows correct values
- USB communication improved

Change log for version 1.182b EXP1

- Quick tune display bug with lambda/afr display fixed

Change log for version 1.182 EXP1

- Boost DC can be used as a DBW Target (for motorized throttle boost control)
- Log channel on the log graph can be selected via popup menu (righ mouse button)
- Quick tune display log channels can be customized (right mouse button)

Change log for version 1.181 EXP1

- Maserati V6 trigger added
- Ford focus RS can stream fixed (rear window heating, AC)
- DBW calibration package included

Change log for version 1.180 EXP1

- VW 30-2-30-2 trigger pattern added
- DC Ref table in DBW configuration can be in function of target pos or throttle pos
- Tables processing speed optimized
- RX8 dashboard CLT characteristic improved

Change log for version 1.179EXP1

- Renault Clio 2 can stream fixed
- DBW control signal generation improved

Change log for version 1.178EXP1

- Boost control solenoid could be disabled using analog input
- Gear sensor is correctly supported when no VSS signal

EMU Client

- USB communication improved

Change log for version 1.177EXP1

- CAN BUS module communication improved
- Gear box oil temperature sensor added

EMU Client

- CAN EGT channels are displayed correctly on the log

Change log for version 1.176EXP1

- LSU 4.2 measurement precision increased by 0.015 lambda
- Ford Tierra primary trigger added
- Entering bootloader for Rev B processors improved

EMU Client

- Pop up menu for log window allows easy channels configuration
- Auto scale of Y axis for log channel could be set
- Import of DL1 logs time base bug fixed

Change log for version 1.175EXP1

- RX8 CAN fixed: oil pressure, water temp., odometer
- Fiesta MK6 CAN stream added
- Hysteresis for AC pressure added

Change log for version 1.174EXP1

- Launch control RPMs could be controled via analog IN

Change log for version 1.173EXP1

- Detection of CPU revision and fixed bug with CPU revision B

EMU Client

- CPU revision displayed in about box

Change log for version 1.172 EXP1

- VSS readings are correct when gear detection scale is set to sensor
- LC fuel enrichment bug fixed
- ECUMASTER logger support added

Change log for version 1.171 EXP1

- Sensitivity switching in function of RPM for primary trigger VR sensor input

EMU Client

- Auto scaling of 3D Graph modified
- SHIFT+O and SHIFT+P shortcuts changed to CTRL+SHIFT+P and CTRL+SHIFT+O
- 2JZ VVTI electronic throttle added to the wizard

Change log for version 1.170 EXP1

- Gearcut advanced mode (gear time and gear level depends on gear)
- Analog inputs are correctly read during making map permanent

Change log for version 1.169 EXP1

- MUX1-MUX3 can be used in parametric output

Change log for version 1.168 EXP1

- Primary trigger input delay bug fixed
- EVO X AC switch support (over CAN BUS)
- Firmware upgrade support for PRO EMS devices fixed

Change log for version 1.167 EXP1

- MAP dwell correction table added

Change log for version 1.166 EXP8

- Ethanol content is now transmitted in ECUMASTER CAN stream

EMU Client

- Outputs tester
- Channel logs presets could be defined by user
- If calibration defined in windows client software differs from the configuration in EMU device. the user could select what calibration should be used

Change log for version 1.165 EXP1

- LC fuel enrichment could be negative (enleanment)
- Override wastegate DC table added to Launch Control
- DBW characteristic tables enlarged (2 additional RPM rows)
- Porsche 130 tooth trigger fixed

EMU Client

- Collapse option tree view shortcut added (CTRL + \)

Change log for version 1.164 EXP1

- Gear sensor could be connected now to CAN analog input
- Porsche 130 tooth trigger support

Change log for version 1.163 EXP2

- Fixed bug with ALS arming
- Fixed bug with 2dn ALS DBW opening table
- Lancer EVO X throttle added to the wizard

Change log for version 1.163 EXP1

- 3 missing tooth primary trigger pattern bug fixed
- Renault Clio RS 3 CAN BUS support added
- Audi RS4 CAN BUS support added
- TPS and RPM arming added to ALS
- 2D table of DBW throttle opening in function of RPM added for ALS

Change log for version 1.162 EXP3

- Lancer EVO X trigger added
- Lancer EVO X CAN support added (RPM, CLT, coolant fan, AYC)
- Injection angle control added (start of injection / end of injection) using 3D injection angle table
- Ignition output offset is automatically applied to injection phase
- TPS integrator constant could be as low as 10ms

Change log for version 1.161 EXP1

- Logging level added for password protected device. For limited log parameters: *ignition angle, ignition from table, injectors PW, injectors DC, afr target, lambda target, cam1, cam2 angle, cam1, cam2 target, VE* are not logged nor send via serial protocol
- Ignition restore rate added to ALS strategy
- Ignition restore rate added to Launch control strategy
- Ignition restore rate added to Rolling antilag strategy
- DBW characteristic gear based scale added
- DBW characteristic gear based limit added

EMU Client

- Used outputs list improved (fixed support of ignition outputs)

Change log for version 1.160 EXP1

- Gear cut signal source analog input strategy improved (now retard functions are working)
- Gear cut fuel multiplier parameter added
- 2nd DBW characteristic table added (switchable)
- DBW control during launch control added
- EMU State added as a parameter for parametric outputs

Change log for version 1.159 EXP1

- Porsche Carrera 3.2 129 tooth trigger added
- Ecumaster CAN BUS switch panel experimental support added

Change log for version 1.158 EXP1

- S65B40 VDO idle throttle support added (CAN)
- Optimizing PC communication

EMU Client

- Real time logging improved
- Show assigned inputs option added

Change log for version 1.157 EXP1

- DBW PPS plausibility check fixed
- Primary trigger delay compensation added (input delay parameter)
- 2 sets of boost gear scales
- Parametric outputs now can enable check engine light
- New parameters for parametric outputs (Radiator fan, VTEC, Injectors DC, TC Torq. reduction)

Change log for version 1.156 EXP1

- Renault Clio CAN support improved (CLT)
- Gearcut blip bug fixed (in 1.155 the throttle opening was limited to 50%)
- Min VSS to activate gearcut added
- DBW PPS plausibility check improved

Change log for version 1.155 EXP1

- Dual distributor added to spark distribution type
- Ford focus st CAN improvements

Change log for version 1.154 EXP1

- PECTEL SQ6 protocol frame ID 0x170 update rate increased twice
- Blip for downshift (load cell required) bug fixed
- Fuel usage per hour bug fixed

EMU Client

- When upgrading to the same firmware version the calibration and desktops are loaded correctly
- Analog inputs definition (Sensor / Analog inputs) fixed

Change log for version 1.153 EXP1

- Second PPS plausibility check improved
- Blip for downshift (load cell required) added
- 1UZFE VVTi cam decoder added

Change log for version 1.152 EXP1

- Staged injection bug fixed (for 100%DC of secondary injectors)
- Fuel usage per hour channel added
- FIAT 500 CAN BUS support
- Nitrous fuel scale table can be negative (for decreasing fuel dose)

Change log for version 1.151 EXP1

- MAP sensor characteristic can be defined using MAP sensor calibration table
- Default values for WBO PID controller modified

- Gear cut active log channel added

Change log for version 1.150 EXP1

- CAN BUS module support from version 1.149 fixed
- VVTI control after engine start can delayed

Change log for version 1.149 EXP1

- FlexFuel fuel scale value added
- BMW S65B40 cam sensor support (for 2 intake cams control using additional exhaust cam sensor)
- Second PPS potentiometer could be defined for plausible check

EMU Client

- Import of Lambda / AFR target from serial datalog fixed

Change log for version 1.148 EXP1

- In rare condition (1/30000 injections) the single injection time was incorrect. Already fixed.
- Support for ECUMASTER S65B40 Control module (electronic ITB, electronic idle control throttle)
- Virtual outputs could be used to activate any strategy based on switch (eg. Boost map change, tables change, LC, ALS and so on)

Change log for version 1.147 EXP1

- Gear variable added to parametric output
- Renault Clio CAN stream modified

Change log for version 1.146 EXP1

- Lotus Elise trigger CAM sync support
- Boost DC output fixed (no signal when no RPM)
- Primary trigger type: Toothed wheel with additional tooth behavior change. Now the gap detection scale is applied during cranking and engine running

Change log for version 1.145 EXP1

- Stepper motor outputs are initialized for high state (+12V) instead of ground, during start-up
- WBO enabled when no RPM fixed
- Shift light bug fixed (now the R and Neutral shift light is equal to 1st gear shift light)
- Lambda disturb option added for EGO Feedback (experimental)
- **Launch control modified, needs reconfiguration!!!**

EMU Client

- Clear log crash fixed in the case of using disable logging when paused

Change log for version 1.144 EXP1

- Renault Clio CAN support added

EMU Client

- Crash during log clear when alarms enabled fixed

Change log for version 1.143 EXP1

- Idle control *Activation increase duration* parameter stores correctly
- LC strategy modified (spark cut percent is interpolated now, fuel and spark can be totally disable over cut off RPM
- AEM CAN protocol added (RPM, TPS, MAP, Lambda, Lambda target, IAT, CLT, CFAN, FPUMP, Check engine, Battery, VSS, Gear)
- Mazda RX8 CAN support fixed. Now the wheel speed is read correctly

EMU Client

- Honda CLT/IAT sensors wizard fixed (thanks Przema)

Change log for version 1.142 EXP1

- Logbook VSS and EGT fixed
- Idle control new parameters to increase target RPM when idle control is activated to prevent too low RPMs (experimental)

EMU Client

- Alarms added (on gauges and on toolbar)

Change log for version 1.141 EXP1

- Analog input switch threshold modified. On is over 3.66V (previously 3.9V), Off is under 1.22V (previously 0.96V)

EMU Client

- Fueling help restored
- Fuel / General paramblock description fixed
- Suzuki Swift 1.6 throttle added to DBW Wizard

Change log for version 1.140 EXP1

- PWM table X axis is now customizable (MAP, TPS, CLT)
- ALS fuel cut idle control improved
- KS error indication over 600RPM
- Lambda / AFR target add to ECUMASTER serial protocol

EMU Client

- Crash during clearing log fixed

Change log for version 1.139 EXP1

- AC fan could be activated with AC clutch
- Coolant fan can be disabled when no RPM
- Idle RPM Ref table is active if RPM is above idle control RPM or TPS > IdleTPSLimit (in previous version only TPS condition was used)
- When Fuel Cut idle control is used with ALS, then if RPM is below ALS RPM min the timer is not restarted

EMU Client

- Autotune crash fixed
- Log zoom In / Out can be performed by up and down arrow

Change log for version 1.138 EXP1

- Renault Alpina 66-2-2-2 support added
- Fuel cut idle control when ALS switch on
- Idle VE DC correction table change to 3D (DC/RPM)
- Afterstart RPM increase can be slow released after defined duration
- Coolant fan engage delay option added to allow increase idle RPM before fan activation

EMU Client

- Autosaving logs (general options / Log / Auto save log)
- Log recording can be suspended when Log is paused (General options / Log / Stop logging when paused)
- Connecting new device bug fixed (crash)
- Conditional logging
- Autotune for AlphaN bug fixed

Change log for version 1.137 EXP1

- New ignition output pair (3+6)
- Ignition output cranking table (for starting engine in wasted spark mode)
- Lambda range extended from (0.7-1.7) to 0.6-2.0
- Suzuki swift M16A CAM decoder added

EMU Client

- Log timing can be PC current time based (general options / Log / Display system time)
- Log channels can be configured (min, max, redline). Alarms are not working yet

Change log for version 1.136 EXP1

- Fuel cut idle

EMU Client

- Firmware upgrade bug fixed
- During firmware upgrade, in the device directory there is automatically backup of current calibration

Change log for version 1.135 EXP1

- Momentary switch support added (see Help for sensor/momentary switch)
- Gear cut ignition retard added

EMU Client

- P65 coils wizard definitions fixed
- Autotune bug with TPS parameters fixed
- EMU protocol import fixed

Change log for version 1.134 EXP1

- External MAP sensor range extended to 800kPa
- Overpressure fuel cut delay added
- Boost DC ref table can be defined in function of MAP/RPM instead of TPS/RPM

EMU Client

- Autotune bugs fixed and improvements
- AFR/Lambda target table bug with Load on Y axis fixed

Change log for version 1.132 EXP1

- VVTi support fort EVO9 improved
- EJ25 Mixed (trigger wheel 36-2-2-2, 7 tooth camsync (old subaru), 2 multitooth cam triggers)
- CAN BT module CAN ID changed to 0x7db

Change log for version 1.131 EXP1

- MAP sensor reading strategy modified to improve MAP value stability.

Change log for version 1.130 EXP2

EMU Client

- Log pause/resume bug fixed

Change log for version 1.130 EXP1

- Filtering for oil and fuel pressure
- BT CAN communication moved to ID `0x16B6ECD8`
- Nitrous fuel PW adder table in function of RPM
- Idle AC RPM target increase
- Logbook engine error codes bug fixed

EMU Client

- Import of Ecumaster serial protocol log from Keelog Ghost serial dataloger and Dashboard tablet

Change log for version 1.128 EXP1

- Logbook records error codes,
- DBW invert motor option,
- DBW friction accrue option added

Change log for version 1.127 EXP1

- Logbook (Max RPM, Max MAP, Max CLT, Max IAT, Time on full throttle),
- Stuck throttle protection,
- ALS fuel enrichment can be negative

Change log for version 1.126 EXP1

- Timers added (can influence fuel, ignition and boost)
- TPS/RPM fuel scale added + activation when no ALS active (Fueling / general)
- MAP/RPM correction added
- For AlphaN AFR/Lambda target can be MAP based (Fueling / general)

EMU Client

- Unused strategies can be hidden in client software (*Tools / Available strategies*)

Change log for version 1.125 EXP1

- Virtual outputs bug fixed
- Timers added (not full functionality)

Change log for version 1.124 EXP1

- FlexFuel temperature reading bug fixed
- AC pressure parameter added to parametric outputs

EMU Client

- Extra desktop 4 and 5 added
- Gauge word removed from gauge window title bar

Change log for version 1.123 EXP1

- New ignition output pairs are available (1+4, 1+6, 3+2, 5+2)
- AC clutch can be disable if CLT is greater than defined
- FlexFuel Lambda blend (advanced fueling) bug fixed

EMU Client

- AC clutch can be disable if CLT is greater than defined

Change log for version 1.122 EXP1

- VSS can be calculated based on CAN wheel speed
- Flat shift new parameters: ignition retard and fuel enrichment

Change log for version 1.121 EXP1

- BT CAN Module support
- Fueling strategy Basic Lambda bug fixed
- Deceleration enrichment lean limit bug fixed

Change log for version 1.120 EXP1

- Nissan VQ35 trigger support
- Time stamp channel added to Ecumaster serial protocol
- Flags representing all active fuel dose corrections (Log/Fueling/ Fuel corrections)
- Flags representing all active ignition correction (Log/Ignition/Ignition corrections)

EMU Client

- AC clutch state displayed on the client status bar

Change log for version 1.119 EXP1

- DBW strategy improved
- DBW can be controlled via CAN-BUS (eg. could be used for BLIP)
- MAP filtering could be disabled when TPS rate is greater than defined
- AC Clutch could be disabled over defined RPMs
- Fuel cut based on TPS position could based on the pedal position (when DBW used)

EMU Client

Change log for version 1.118 EXP1

- Two sets of ALS tables (switchable)
- Deceleration enrichment

- Overrun fuel cut RPM could be increased during afterstart enrichment
- ALS disable nitrous bug fixed

EMU Client

- Windows redraw modified

Change log for version 1.117 EXP1

- USB communication improved

EMU Client

- CPU usage reduced
- USB communication improved

Change log for version 1.116 EXP1

- Cranking fuel PW (time divided by 2) when Batch all injectors option selected bug fixed (bug introduced in 1.114)
- USB communication improved
- Variables range check at device startup
- BMW DBW Direct mode improved

EMU Client

- CPU usage reduced
- USB communication improved

Change log for version 1.115 EXP1

- Charge temperature bug fixed (when charge temperature was negative the fuel dose was incorrect!)

Due to the bug with charge temperature calculations, firmware version 1.110, 1.111, 1.112, 1.113 must be upgraded to 1.115!!!

Change log for version 1.114 EXP1

- PWM 3 Wire solenoid without spring support added
- Idle PWM solenoids DC correction in function of battery voltage
- Acceleration enrichment TPS Factor bug fixed
- Acceleration enrichment strategy improved (re-tune of acceleration enrichment might be required)
- DBW ITB direct invert control added
- Per injectors cut rev limiter (for SR20 engines)
- Batch all injectors during acc. enrich function improved
- Reinitialization of CAN Bus module bug fixed

EMU Client

- Minor corrections

Change log for version 1.113 EXP1

- Virtual Output #1 and #2 added
- Parametric outputs can be named
- Coolant fan can be activated if the coolant sensor fails
- Flat shift TPS limit added
- Fuel pump on and coolant fan on flags added to log

EMU Client

- Application doesn't require administrator rights,
- File association moved from application to installer,
- Table entries division operator bug fixed
- SSE2 instruction support disabled to maintain compatibility with older CPUs
- Auto positioning of new tables on free desktop area
- Windows snapping
- New customization window
- New gauges layouts added

- OpenGL optimization
- Auto hide option panel added
- Gauges flickering fixed
- New status bar with CEL details
- New upgrade firmware interface (two progress bars)
- Application termination (exit) bug fixed. Now it always exit.

Change log for version 1.112 EXP1

- Modified EMU CAN protocol. New frame 0x605 added
- VE correction based on Idle valve DC (for Alpha-N)

EMU Client

- EMU files (.emu, .emulog, .emuscp) are associated with the application. EMU client will open the files if double clicked
- Divide operator added to cell modify operators (eg. 2/ divides cells by 2)

Change log for version 1.111 EXP1

- Staged injection added
- Full group injection during acceleration enrichment added

Change log for version 1.110 EXP1

- 3 wire PWM idle control bug fixed
- New advanced fueling mode
- Charge air temperature estimation table
- AC compressor clutch strategy
- Idle RPM could be increased when AC clutch engaged and/or coolant fan turned on
- Boost control solenoid frequency increased to 400kPa
- AC pressure and AC evap temp. sensors support added
- Fuel level sensor signal filtered to prevent sudden change of its value
- Mini Cooper R53 CAN-BUS support added
- Peugot 206 RC CAN-BUS support added

EMU Client

- Maximization of windows fixed
- Real time autotune
- Tune display
- Flickering of windows fixed (?)

Change log for version 1.104 EXP1

- Ignition outputs are not active after power up
- Ignition outputs can be assigned to Coolant fan, Fuel pump and Check engine functions
- Subaru EJ20 three cam sensors support added (VSS input used for one sensor)
- Afterstart idle DC increase option added
- Polaris RZR CAN stream bug fixed

EMU Client

- Windows XP incompatibility bug fixed
- New electronic throttles added to the wizard

Change log for version 1.102 EXP1

- DBW strategy improved by introducing friction correction
- Polaris RZR CAN stream added

EMU Client

- Application build using the latest Microsoft compiler and latest wxWidgets library
- UI no longer flickers
- The size of paramlist windows and group log windows should be optimal
- Keys assignment may change due to new wxWidgets library (assigning new keys might be required)

Change log for version 1.1 RC1

- TPS Rate log improved

EMU Client

- Bin axis wizard works with non integer numbers

Change log for version 1.1 BETA

- Traction control disable if second table set function works correct

EMU Client

- OpenGL crash fixed
- Desktops could be renamed
- Some speed optimization
- New injectors added to Injectors Wizard
- UI flickering problem improved

Change log for version 1.1 BETA

- WBO Heater support improved

EMU Client

- Clear log crash fixed
- OpenGL support improved
- Next/Previous tab shortcuts added],[keys
- Save / Load desktop layouts
- Help for all EMU options added
- Contributors list added

Change log for version 1.071 EXP1

- New version of rolling antilag strategy
- RX8 Dash CAN protocol RPM fixed
- Citroen C2 CAN protocol improved (speed displayed without ABS computer)

EMU Client

- IDL flag added to status bar
- Close all windows option bug fixed (crash)
- Bug with closing windows fixed (crash)
- TAB key switches between options tree view and child windows

Change log for version 1.070 EXP1

- VSS input frequency divider
- FlexFuel sensor can be connected to VSS input
- Rolling antilag added

EMU Client

- New flags added to status bar
- About box shows device serial number
- Throttle Bosch 0280750030 added to the DBW Wizard

Change log for version 1.069 EXP1

- BMW Z4 CAN dashboard support
- Mazda RX8 CAN dashboard support
- Disable CAM sync above given RPM
- Sensitivity switch strategy for CAM sync improved
- Scope trace for N+1 primary trigger bug fixed

EMU Client

- Customize keys, new shortcuts added
- New option for 3D tables added (automodify cells above cursor)

Change log for version 1.068 EXP1

- Knock sensor channel #2 readings bug fixed
- Ignition event that causes knock is logged (Knock ignition event channel)
- Ignition event trim extended to +/- 15 degrees

IMPORTANT: The engine noise table prepared with the previous software version should be lowered about 0.22V due to change in dynamic range of knock sensor input.

EMU Client

- Customize keys (Tools / Customize keys)
- Bug with Select All fixed

Change log for version 1.066 EXP1

- Spike filter for CAM#1 removed completely
- MAP filtering improved. New filtering modes and filter power table in function of RPM
- Injectors opening time in battery function can be add to cranking and prime pulse fuel dose
- Restore rate for knock sensor action can be lower than 10

Change log for version 1.065 EXP1

- 3 missing tooth primary trigger decoder added
- Cranking time correction table

Change log for version 1.064 EXP1

- Cam trigger advanced filtering rewritten. Need to be tested in real word applications
- External MAP offset can be negative

Change log for version 1.063 EXP1

- Electronic throttle position can be used as TPS
- Idle ignition control without 2D table strategy bug fixed
- Nissan trigger decoder modified. Check your ignition timing after update!

Change log for version 1.062 EXP1

- Mitsubishi Colt 1.5 trigger pattern
- Pectel SQ-6 Omega CAN protocol

Change log for version 1.061 EXP1

- Up to 8 sensors over CAN-BUS support
- Per cylinder EGT fuel correction
- EGT Boost DC correction based on maximum EGT from EMU and CAN sesnors
- Each injector correction send to log (Fuel Trim 1-6)

EMU Client

- 20Hz dataloging (previous 10Hz)
- Log window improved:
  - scaling
  - HOME/END keys
  - 0.1 sec bars when scaled up
- Tables configuration bug fixed (color scheme selection)

Change log for version 1.060 EXP1

- Haltech E8 E11v2 CAN data
- VVTi CAM control solenoids frequency base bug fixed
- ALS bug fixed when engine goes outside RPM range
- ALS can disable nitrous activation

Change log for version 1.059 EXP1

- BMW E30 M3 116 tooth support
- New CAM#2 decoder: “Prim trig tooth range”

EMU Client

- Desktops are saved to disc before firmware upgrade

Change log for version 1.055 EXP1

- VTEC Off delay option added
- Support for CAN MODULE analog inputs

EMU Client

- Bugs and crashes from 1.054 corrected
- Bug trap added for easy crash report submission

Change log for version 1.054 EXP3

EMU Client

- Option for square 3D Tables
- Child windows keyboard focus improved

Change log for version 1.054 EXP1

- TFI trigger support

- CAN-DASH output for Shift Light and Check engine light
- Fuel cut above pressure variable max value increased to 700kPa
-

EMU Client

- CTRL+A selects all cells in table

Change log for version 1.053 EXP1

- Support for CAM N+1 trigger as primary one (divide real number of tooth by 2, eg. For 12+1 the number of teeth is 6)
- Ignition lock options (primary trigger settings) to lock ignition angle to fixed value
- VVTi for CAM#2 can use CAM#1 angle table (useful for V engines with 2 inlet VVTi cams)
- Vvti valve freqency bug fixed

Change log for version 1.052 EXP1

- 4 extra analog inputs with CAN-MODULE or EMU CAN
- New electronic throttle bodies added: BOSCH 0280750475, SUBARU 16112AA170

Change log for version 1.051 EXP1

- Fuel level sensor support
- Lotus Elise/Exige dashboard support
- MOTEC M800 set 1 CAN protocol support
- Engine protection for low and high coolant temperatures (rev limiters)
- Two symetrical tooth cam decoder (wasted spark)

Change log for version 1.050 EXP1

- DBW Wizard
- Launch control can be activated by MUX input
- TPS/MAP fuel correction table values expanded from 200% to 255%
- VSS to activation of Flat Shift bug fixed
- VSS to activation of Nitro bug fixed
- Ford Fiesta MK7 CAN messages added

EMU Client

- DBW Wizard
- CSV text file has column time
- 3D tables cross hair display method changed

Change log for version 1.049 EXP1

- MUX Switch support
- Fuel pressure delta is calculated correctly

Change log for version 1.048 EXP1

- 3UZ-fe cam decoder improved
- 1 tooth cam sync bug fixed (bug was introduced in version 1.047)
- FlexFuel readings can be limited to TPS opening

EMU Client

- Export selected log channels to CSV text file (separation character is ;)

Change log for version 1.047 EXP1

- Delta fuel pressure correction
- Delta fuel pressure fail safe with RPM limit
- WBO error detection improved
- 3UZ-fe cam decoder

EMU Client

- Engine status is displayed correctly (Running instead afterstart)
- Windows with parameters have correct height (all parameters are visible without scroll bar)

Change log for version 1.046 EXP1

- Honda J35A8 trigger engine start bug fixed

Change log for version 1.045 EXP1

- Audi trigger 135 teeth

Change log for version 1.044 EXP1

- Honda S2000 dash CLT output big fixed

EMU Client

- UI outlook improved for large system fonts
- Windows with 3D tables splitting strategy improved
- Help for parameters windows introduced (actually only for TPS and Oil pressure cut)
- Log can be scrolled with mouse wheel
- Bug with scrolling log using keys fixed
- User manual is installing with the software
- Error codes are displayed by name not a code number

Change log for version 1.043 EXP1

- Honda S2000 dash CLT output
- Idle DC ref correction in function of RPM error (2D table)
- Boost DC correction in function of boost error (2D table)
- Boost control solenoid DC is 0 if under inactive pressure (not min DC as in previous versions)
- Ids of EMU CAN-BUS protocol can be defined

Change log for version 1.042 EXP1

- Min CLT for Nitrous activation
- Ignition retard for soft rev limiter

EMU Client

- Bug from version 1.041 with gauges fixed
- Honda temperature sensor added to temp. sensors wizard

Change log for version 1.041 EXP1

- CAN BUS Ecumaster stream CLT channel is sent corectly
- First two sparks are at correct anlge (before were at TDC)

EMU Client

- Open 3D tables when load is on Y axis bug fixed
- Open / Save file dialogs opens in last visited directory. When device connected directory is changed to device name dir.

Change log for version 1.039 EXP1

- AIM protocol new channels: Oil temp, Oil pressure, Fuel pressure
- VTEC VSS Min parameter added

Change log for version 1.038 EXP1

- Subaru 36-2-2-2 trigger improved

Change log for version 1.037 EXP1

- Synchronization of two engines via extension port

EMU Client

- 3D tables position and size are handled correctly

Change log for version 1.036 EXP1

- Traction control x-axis assigned to TPS not to Load
- Traction control can be disabled under defined speed
- CAN-BUS bug fixed (works with old correctly with old CAN modules)
- Idle DC can be altered by analog input voltage

Change log for version 1.035 EXP1

- Trigger error scope trace

Change log for version 1.034 EXP1

- Traction control

EMU Client

- When loading project 3D tables with load on axis are updated correctly (AlphaN vs Speed density)

Change log for version 1.033 EXP1

- Spike filter for CAM#1 input

Change log for version 1.032 EXP2

- Gear detection based on voltage gearbox sensor
- Gear cut
- N + 1 60% - CAM#1 trigger added

EMU Client

- Load on Y axis bug fixed

Change log for version 1.031 EXP3

EMU Client

- 2D Tables reinterpolation bug fixed

Change log for version 1.031 EXP2

EMU Client

- Log is referenced on tables when tracked

Change log for version 1.031 EXP1

- VW Passat instrument cluster support (RPMs)
- BMW Multitooth CAM#2 trigger added

EMU Client

- Load on Y axis bug fixed (storing tables to EMU)
- Magneti Marelli temperature sensors added (AST04 and WST04)
- Magneti Marelli BAE 801 double coils wizard added

Change log for version 1.030 EXP1

- Nissan trigger improved. Please check ignition angle with timing lamp after upgrade!
- Vehicle speed is transmitted in Ecumaster serial protocol.

Change log for version 1.029 EXP2

- 2JZ VVTi engine start improved (cam decoder bug fixed)
- Citroen C2 CAN BUS support (dasboard, bsi, power steering)
- VANOS solenoid DC set to 50% when not controlled

EMU Client

- Configuration for 3D tables (load axis definition, color scheme)
- Password protected EMU can be reset to factory settings

Change log for version 1.027 EXP1

- Cycle once for parametric outputs
- Idle control internal resolution increased (control by 0.25%DC)
- VANOS solenoid DC set to 50% when not controlled

Change log for version 1.026 EXP1

- DBW support for ALS (Use DBW, BW Throttle opening)

Change log for version 1.025 EXP1

- Flat shift fixed time ignition cut
- Filtering of DBW pos
-

Change log for version 1.024 EXP1

- Faster engine start
- BMW E46 CAN-Bus dashboard support
- Cranking gap detection scale – for adjusting gap detection during cranking

Change log for version 1.023 EXP1

- Per cylinder injection trim
- PWM table can by scaled by PWM CLT scale table
- CAN-BUS module support
- CAN Ext. switch introduced for activation functions like LC, Boost Tbl, TBL Set, etc.
- EMU data log could be transmitted over CAN BUS
- WBO error checking sensitivity tuned
- Idle PWM frequency max limit increased to 500Hz

Change log for version 1.022 EXP1

- Race Technology data stream bugs fixed

Change log for version 1.021 EXP1

- FlexFuel sensor temperature readings fixed
- dTPS integrator constant can be defined
- Maximum value of Idle afterstart increase changed to 800
- Ignition correction table in function of CLT for Idle
- DBW opening characteristic changed for 3D table in function of TPS and RPM
- Double Warmup correction tables for FlexFuel use
- Double ASE correction tables for FlexFuel use
- Removed DBW position limit in function of RPM
- Maximum value for ASE table increased to 255%
- Maximum value for Warmup table increased to 255%
- Value ranges in datalog for FlexFuel channels fixed

EMU Client

Change log for version 1.020 EXP1

- TPS value under min voltage and TPS value over max voltage parameters added. **For TPS with inverted max and min value default values should be modified!**

EMU Client

- New operators for table editing added. Numbers with operator * multiply cells value (eg. 0,5*), operator + and – adds and subtracts values (eg. 7+ adds 7 to all selected cells).

Change log for version 1.019 EXP1

- VE, IGN, AFR, BOOST tables are 16x20 now
- VW 1.8T 4 teeth cam trigger type added
- Oil pressure cut function added
- Time cycling function added to parametric outputs
- Oil pressure, Oil temperature and Fuel pressure can be used as argument for parametric output
- IAT ignition correction is not applied if engine is idling.
- Check engine flags are logged now

EMU Client

- CEL (Check engine light) on status bar

Change log for version 1.016 RC1

- Rejection of incorrect pulse form VR sensor amplifier.
- TPS voltage log channel

EMU Client

- Ethanol content gauge

Change log for version 1.015 EXP1

- Ignition cut idle control
- Idle On/Off valve control
- Fire injector twice per cycle for wasted spark applications

EMU Client

Change log for version 1.014 EXP1

- ALS

EMU Client

- 3D tables selection outlook improved
- Temperature snsor wizard improved. Error message for wrong sensor data
- Road dyno

Change log for version 1.012 EXP1

- Characteristic table works for DBW
- Second cranking Fuel table for FlexFuel sensor blend
- Filtering option for secondary trigger

EMU Client

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Change log for version 1.011 EXP2

- WBO controller could be enabled even there is no RPM (enable when no RPM)
- Hysteresis added to VTEC control
- Full Flex Fuel sensor support
- WBO Heater could be used as NBO Heater
- VSS signal filter

EMU Client

- Log groups are sorted in main tree view
- Gauges are sorted in main tree view
- CLT gauge scale overlap fixed

Change log for version 1.010 EXP2

- Multittoth false trigger rejection

- MX-5 two teeth ignore false cam sync

EMU Client

- Paste bug fixed when paste to selected area

Change log for version 1.010 EXP1

- Battery voltage added as variable type for parametric output
- VTEC support
- Dual tables set support (VE, AFR, IGN, VVTi#1, VVTi#2, BOOST) for manual and VTEC switching

EMU Client

- Improved lost log frame support.
- Reduced flickering of text log controls
- Copy / Paste for cells of 2D and 3D tables (CTRL+C, CTRL+V)

Change log for version 1.009 EXP1

- Injection angle delay (for test purpose)
- Two teeth cam sync fals trigger detection (for MX-5 1.8BP)

Change log for version 1.008 EXP1

- Drive by wire (ETC) first release
- Two teeth cam sync modified

Change log for version 1.007 EXP1

- Double VVT tables
- VVT tables size increased from 8x8 to 12x12
- TPSvsMAP correction table size increased from 8x8 to 12x12
- Digital filter control added to MAP sensor input
- Dodge SRT CAS & CAM triggers
- Injectors DC value for low resolution ignition triggers bug fixed

EMU Client

- Sound added for make permanent function.
- Text items in log windows are sorted and colored

Change log for version 1.006 EXP5

EMU Client

- CTR+Arrows bug fixed.

Change log for version 1.006 EXP3

- Idle control for 3 WIRE PWM improved when inactive and DC = 0% or 100%
- Idle RPM Ref DC table is used only when Idle control inactive and TPS > idle acitve control threshold

EMU Client

- CLT wizard transfers the whole table to EMU

Change log for version 1.005 EXP1

- Idle control for 3 WIRE PWM improved. It could be required to tune DC Ref table
- Reverse option available for all idle valve types ,
- Integral limit for PID control fixed,
- Idle RPM ref table works correctly wit PWM and 3 WIRE PWM Valves
- IDLE VALVE control bug fixed. Under some rare condition the valve could open or close for no visible reason,
- Digital filtering for false cam signal for one tooth cam trigger,

EMU Client

- Assigned outputs list

Change log for version 1.004 EXP2

- 2 teeth cam sync (MX5 1.6BP)

EMU Client

- Tables colors recalculate correct if there is no 3D graph

Change log for version 1.004 EXP1

- Double vanos support
- Race Technology dash support

Change log for version 1.003 EXP1

- Idle control: ignition correction in function of target error
- Idle control: idle control active up to max idle RPM parameter
- Idle control: DC Ref in function of RPM when idle control not active
- Boost control: closed loop functionality fixed
- Boost control: PID scaling removed (PID parameters are not compatible with previous version !)
- Boost control: PID debug to log
- Boost control: Logged value of boost target is correct
- Oil pressure, fuel pressuer and oil temperature sensors support added

Change log for version 1.002 EXP1

- Subaru 36-2-2-2 primary trigger support
- Subaru 6 teeth primary trigger support
- Subaru 7 teeth cam sync support
- Output for Speedometer bug fixed
- Nitrous min gear

Change log for version 1.001 EXP1

- Lotus Elise engine start improved
- WBO error detection improved (no false check engine light)
- Gear dependent nitrous activation
- TPS vs MAP 3D VE correction table
- TPS vs MAP 3D ignition correction table
- Alpha-N with MAP based ignition
- Alpha-N with MAP based ignition and MAP multiplication
- Max acceleration enrichment limit increased to 250
- Sustain rate for acceleration enrichment increased to 95%

Change log for version 1.000 EXP4

EMU Client

+ 2D tables bug fixed (crash)

Change log for version 1.000 EXP3

EMU Firmware

+ disable spark during overrun fuel cut (to decrease coils and coil driver load)
+ Porsche 132 teeth trigger sec trigger filter added

EMU Client

+ log window scrollbar functionality improved
+ when disconnected you can always scroll log
+ log could be scrolled with keys. Arrows scroll by 2, shift + arrows scroll by 10, page up/ page down scroll by 32

+ space key on log window pause / resume logging
+ cancel button on log preset window works correct
+ autoscale for 3d graphs
+ changing bins correctly re-interpolates all dependent tables
+ x axis bins wizard bug fixed

Change log for version 1.000 EXP2

EMU Firmware

+ Lotus Elise / Rover trigger added
+ fixed speedometer bug when no vss present

EMU Client

+ log file name bug fixed

Change log for version 1.000 EXP1

EMU Firmware

+ CLT range increased to 250C
+ invert output for main relay
+ changing output for main relay disable previous output

EMU Client

+ making permanent feedback on connection status
+ making permanent saves current project into QuickSave directory of current device
+ VW Beetle CLT sensor added
+ Log file name format improved
+ Boost target could be lower than 100kPa

Change log for version 0.999 EXP8

EMU Firmware

+ Porsche trigger (4 cylinder 132 teeth + 1 on cranksahft)

Change log for version 0.999 EXP7

EMU Client

+ colours added to connection status
+ automatic reconnection
+ software doesn't hang when loosing USB connection with EMU device.

Change log for version 0.999 EXP6

EMU Firmware

+ ROVER K Series 18-1-18-1 primary trigger decoder added
- both edges for primary trigger

EMU Client

Change log for version 0.999 EXP5

EMU Firmware

+ Honda J35A8
+ missing tooth cam decoder added

+ Fixed dwell bug when low resolution trigger used
+ Both edges for primary trigger
+ Mazda MX-5 3 teeth cam#2 decoder added

EMU Client