PMU-16
POWER MANAGEMENT UNIT

CHANGE LOG

2022-01-15

Client: 57.0
Firmware: 57.0

Notes:
– The firmware 57.0 and 57.0-exp are exactly the same firmware.

2021-12-29

Client: 57.0 exp
Firmware: 57.0 exp

Notes:

Starting from 1st January 2022 all devices produced by ECUMASTER will have 12-digit serial numbers (until now 8-digit serial numbers have been used).

Firmware:

New features:
– **Added support for devices with 12-digit serial numbers**

Client:

New features:
– **Added support for devices with 12-digit serial numbers**
– Added firmware upgrade prompt when connecting the device for the first time to client software
– Added firmware upgrade prompt when opening the project file from newer firmware version
– Added "Offline firmware configuration selection" when loading project files from older firmware in offline mode (with CAN adapter not connected to PC)
– Added 'Fixed frequency' option for CSV exporter (GraphLog / Export icon / advanced exporter)

CAN Streams:

New:
– Lotus_Elise.canx
– SCS_Delta_D800.canx
– BoschMotorsport_MS4Sport.canx

Updated:
– EvoX.canx – fixed 'c_gear' channel
– EMU_BLACK.canx – added separate channels for virtual and parameter outputs
– Haltech.canx – added 'checkEngineLight' and 'batteryLight'

2021-09-29

Client: 56.0.2 exp
Firmware: 56.0 exp

Client:

Improvements:
– DBC Importer (v4-pmu):
– An additional space before the '@' character in the .DBC file is now handled correctly
– The popup "Unit mapping file has been changed. Do you want to save it?" no longer appears if the unit mapping is not changed.
– Signal multiplier and divider calculation has been improved

Fixes:
– A division by zero crash has been fixed (this bug could occur when the divider of CANbusInput has been set to zero by a previous version of DBC Importer).

2021-08-05
Client: 56.0 exp
Firmware: 56.0 exp

Firmware:

New features:
– Delayed turning off (requires separate Battery 12V and Ignition Switch 12V wiring)
– Use the F9 and type 'Delayed turn off' to put the pane of the current desktop:
– Turn Off Minimal Time [seconds]
– Turn Off Maximum Time [seconds]
– Turn Off Channel (when this channel becomes high (non-zero) after Minimal Time the device will power off).
– Channel 'pmu.isTurningOff' has been added to do custom actions
– Switching the ignition switch back ON when Delayed Turning Off is used causes PMU to restart (it is possible after 0.5 seconds after starting the Delayed Turning Off procedure)

Improvements:
– A log file in the Internal Memory of PMU is properly closed when PMU is shutting down by the Ignition Switch (requires separate Battery 12V and Ignition Switch 12V wiring).

2021-07-05
Client: 55.0.1
Firmware: 55.0

Notes:
– The firmware 55.0 and 55.0-exp are exactly the same firmware.

2021-06-07
Client: 55.0.1 exp
Firmware: 55.0 exp

Client:
Fixes:
– Project Tree: Confirmation of Delete operation works properly for all buttons of Grayhill keypads

Ecumaster USBtoCAN:

– Internal software updated to v15.1 (automatic update offered when starting the PMU Client). This update improves the reliability of CAN communication with a PMU device.

Client: 55.0 exp
Firmware: 55.0 exp

Firmware:

New features:
– Added support for '5x2 Ecumaster (7 colors)' keypad
– Added support for 'Emtron' keypad
– Added support for Backlight Intensity for Grayhill / Emtron / Motec/RaceGrade keypads
– Switch element can now count downwards using channel "Input channel down" / "Trigger edge down"

Improvements:
– Changing Open Ceremony and Backlight Color now works on '2x2 Ecumaster RGB (7 colors)' keypad

Client:
Fixes:
– Fixed keyboard width in the dialog for old "3 colors" keypads

Client: 53.5.1
Firmware: 53.5

Client:
Fixes:
– The Client software no longer freezes when trying to download very long logs from PMU-16DL / PMU-16AS internal memory.

Client: 53.5
Firmware: 53.5

Firmware:
Fixes:
– The first PWM-enabled output could be accidentally turned off or activated at DC=100% (regression from version 52.2)

Client: 53.1.1 exp
Firmware: 53.1 exp

Firmware:
Fixes:
– CAN Compound Streams: fixed frame corruption when frames with the same ID, but with index not defined by the project appears on the bus
Client:
Fixes:
– Editing the Hysteresis operation works again (fixed regression from version 53.0)

Client: 53.0 exp
Firmware: 53.0 exp

<u>Firmware:</u>
    New features:
- Toggle operation now has two new optional channels:
  - "Set channel" to set value to 1
  - "Reset channel" to reset value to 0

Client: 52.3.4
Firmware: 52.3

<u>Notes:</u>
    – The firmware 52.3 and 52.3-beta are exactly the same firmware.

Client: 52.3.4 beta
Firmware: 52.3 beta

<u>Client:</u>
    Fixes:
- The Client software works again on Windows XP (fixed regression from version 52.2)

Client: 52.3.2 beta
Firmware: 52.3 beta

<u>Client:</u>
    Fixes:
- DBC Importer: Proper importing of big-endian signals when bitPosition/bitCount is not multiple of 8 bits.
- Fixed device crashes after firmware upgrade when too many logged channels were used.
- Fixed overlapping of LED indicators on the status bar when more than 100% DPI scale was used

<u>CAN Streams:</u>

    New:
- Electronics_Limited_ME1_2.canx
- M11_Korvet.canx
- VAG_MED91.canx

    Updated:
- Motec_M1.canx: channels c_Driver_Switch1..6 and c_Driver_Rotary_Switch1..8 added
- Motec M1: CAN Input c_Fuel_Used_M1 changed to ecu.usedFuel
- Pectel SQ 6: CAN Input c_Fuel_Used_ecu changed to ecu.usedFuel
- EMU Black: CAN Input ecu.usedFuel added

Client: 52.3.1 beta
Firmware: 52.3 beta

<u>Client:</u>
Fixes:
– Fixed improper "Only pins with same current rating (e.g. 25A and 25A) can be linked together." message.

Client: 52.3 beta
Firmware: 52.3 beta

<u>Firmware:</u>
Fixes:
– Fixed synchronization problems when sending/receiving frames to/from CAN network.

<u>Client:</u>
Improvements:
– DBC Importer: improved signal importing for factors 0.2, 0.5 and similar.

Fixes:
– The client now properly recognizes files saved in an earlier version as being non-autosport (bug in the Client 52.2).

Changes:
– The Client is now entering OFFLINE mode when opening the project file directly from the Explorer. This change has been made to protect the project in memory of the connected device.

Client: 52.2 beta
Firmware: 52.2 beta

<u>Firmware:</u>
New features:
– **PMU-16 AS autosport version** support:
– 6 additional low-side outputs
– Higher current rating for high-side outputs (2 x 40 Amps and 14 x 25 Amps)
– Up to 10 outputs can be PWM modulated - even the low-side outputs

Improvements:
– The frequency of PWM output can now be changed while it's already active
– PWM DC Control now works properly for the 1%-99% range
– DC% log channel 'o_output.dc' is now calculated more precisely.

Changes:
– PWM DC Control step is now 1%, no matter how the 'out of' denominator is specified.

Fixes:
– The states of the outputs are properly handled when deleting / moving up/down (when working with connected device)

Note: This firmware 52.2 supports all the PMU-16 models: PMU-16, PMU-16 DL, PMU-16 AS

<u>Client:</u>

Improvements:
– CANbus ID=0x000 is now allowed for CANbus Message Object and CANbus Export

Fixes:
– Expanding/colapsing the CANbus Message Object in ProjectTree no longer resets every CAN Input in the device

Changes:
– Hysteresis operation now accept two real constants (no need to multiply by 10/100/1000 anymore)

2019-09-11

Client: 50.0.2 beta
Firmware: 50.0 beta

Client:

New features:
– Support for Peak PCAN-Ethernet Gateway.

Improvements:
– Added list of predefined sensors (Analog Input dialog - Wizard button)

Fixes:
– Missing channels from EMU_BLACK.canx have been restored back (pump state, fan state, etc). (regression in version 50.0).

2019-05-31

Client: 50.0 beta
Firmware: 50.0 beta

Firmware:
(NOTE: Firmware can be upgraded using File / UpgradeFirmware command from Client menu)

New features:
- Timers
- Calibrated Analog Sensors
- Decimal places and units support in Numbers, AnalogInputs and Tables
- Support for Compound CAN streams (4bit, 8bit, 16bit)
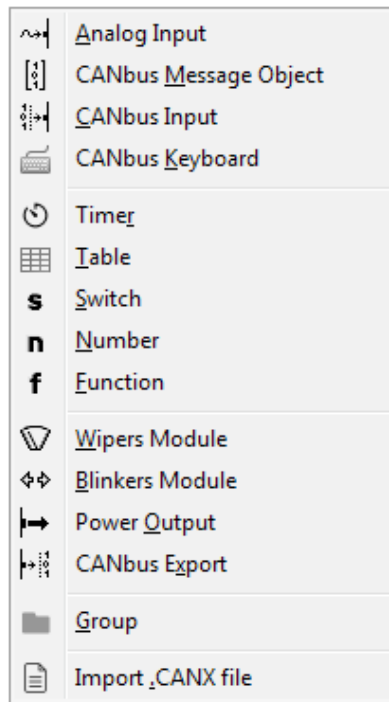- New "Changed" operation for logical Functions

Improvements:
- Bitfield can be assigned as the channel of the Table

Changes:
- Evaluation order of elements has been changed to reflect order in the Project Tree. Now the evaluation order is the same as in the ADU.

CANbus Keyboards	
Tables	
Analog Inputs	
CANbus Mobs	
CANbus Inputs	
CANbus Keyboards	
Timers	
Tables	
Switches	
Numbers	
Functions	
Power Outputs	
Switches	
Wipers	
Blinkers	
Power Outputs	
CANbus Exports	

Analog Input
CANbus Message Object
CANbus Input
CANbus Keyboard

Timer
Table
Switch
Number
Function

Wipers Module
Blinkers Module
Power Output
CANbus Export

Group

Import .CANX file

Client:

New features:
- UI system has been adopted from the ADU - use F9 to add a pane to the desktop
- Duplicate button in the ProjectTree
- Save .CANX in the CANbusMob window
- Widths of columns are preserved: ProjectTree, TextLog, OutputMonitor, AnalogMonitor, VariablesInspector
- GraphLog: Shift+S toggles between lines and points+lines

Improvements:
- Channels added to Custom 1/2/3 Log windows are now preserved when upgrading the firmware
- Changed name of the F5 shortcut in the menu to "Reset project in the PMU-16"
- Delete command from ProjectTree is now working a lot faster
- Bitfield can be assigned as the channel of the Table (requires firmware 50.0 or later)

Changes:
- Changed MinimalClientVersion required to load a project. You will not be able to load a project saved by this Client software in its previous version. Please backup your project.
- The desktops layout file format has been changed and the extension of such files was renamed to .pmulayout2
- .CANX files moved to PMU\CANX\ folder and user .CANX files moved to PMU\CANX\USER\ folder

Fixes:
- Exporting the CSV files no longer causes a crash for some input data

Important note:
- Version number scheme of the Client has been changed: Now it's always FirmwareMajor.FirmwareMinor.ClientFixes (ClientFixes is omitted when zero) e.g. 50.0.1
    - FirmwareMajor changes when new firmware introduces new settings in the Client
    - FirmwareMinor changes on every fix in the new firmware that NOT introduces new settings
    - ClientFixes changes on every Client only update

CAN streams:
- Added AbitM11
- Added ECUMASTER Battery Isolator
- Added ECUMASTER CAN Switchboard V3
- Added Emerald
- Added Haltech
- Added Holley_HEFI
- Added Hondata
- Added KMS MD56
- Added LinkECU GenericDash
- Added MBE
- Added Motec M84 to PDM
- Added Trijekt
- Several .CANX files has been updated

Ecumaster USBtoCAN:

- Internal software updated to v14.0 (automatic update offered when starting the PMU Client). This software improves compatibility with an older version of PMU/ADU Client.

2019-04-25
Client: 0.045
Firmware: 0.045

Firmware:

New features:
- Added support for RaceGrade / MoTeC keypad.
- Added new type of button 'Indicator3' to control individual LEDs (Grayhill / Racegrade / MoTeC keypads).

Client:

Changes:
- Changed MinimalClientVersion required to load project. You will not be able to load project saved by this Client software in its previous version. Please backup your project.
- The keypads are now configured using the CANopen node ID (default 0x15 for Ecumaster keypads) instead of the Buttons ID. This is exactly the same way as in the Light Client.

2019-04-17

Client: 0.044.6.1
Firmware: 0.044.6

<u>Client:</u>

    Fixes:
- Importing from CANX file more than 8 CANbus Mobs per CAN channel no longer leads to the project corruptions.

2019-04-09

Client: 0.044.6
Firmware: 0.044.6

<u>Firmware:</u>

    Fixes:
- Changing the speed of the CAN2 no longer causes Bit Stuffing Errors.
- PMU device no longer freezes when internal data flash memory is corrupted. An appropriate message will appear when connecting to the Client software.

<u>Client:</u>

    Improvements:
- Improved support for Window XP

    Fixes:
- Fixed another timeout bug in Ecumaster USBtoCAN update process (Windows XP).
- Peak CAN interface is working on Windows XP

<u>Ecumaster USBtoCAN:</u>

- Internal software updated to v0.12 (automatic update offered when starting the PMU Client).

2019-03-26

Client: 0.044.5
Firmware: 0.044.4

Improvements:
- Names of documents on the menu bar are properly handled when working with multiple PMUs
- More space between names of devices on the toolbar.
- Performance of CAN input channels improved even in high CAN traffic.

Fixes:
- Grayhill 5x4 and 4x5 keypad: bottom row of buttons behaves as expected
- Fixed timeout bug in Ecumaster USBtoCAN update process.

2019-01-02

Client: 0.044.2
Firmware: 0.044.0

Fixes:
- Encoding issue no longer causes a crash when working with the Finnish version of Windows.

Client: 0.044.0
Firmware: 0.044.0

New features:
- Support for new '**2x2 Ecumaster (7 colors)'** keypad

Improvements:
- Master Retry now resets only overcurrent and undercurrent outputs. (Ecumaster ADU no longer restarts on Master Retry if connected to PMU output.)
- Master Retry does not reset the requested value of the output ("o_output = k_key or o_output" will preserve its state).

Fixes:
- Switching access to the CAN between ADU / PMU / LightClient works in all cases.

Client: 0.043.1
Firmware: 0.043.0

New CAN Streams: (Use: Import CANX from Project Tree)
- AEM
- DTA Fast S series
- Emtron
- Evo X
- Life Racing
- MaxxECU
- Megasquirt 2 & 3
- Syvecs

Client: 0.043.0
Firmware: 0.043.0

New features:
- Support for Grayhill keypads added (CANopen version)

Fixes:
- Fixed PMU freeze when changing CAN2 speed when CAN bus line has different speed.
- Diagnostics channels pmu.diag.can1/2.rxErrors/txErrors work as expected
- Timeouts of CANbus massage objects work properly in all situations

Client: 0.042.8
Firmware: 0.042.5

New features:

- Switching CAN adapter between ADU and PMU. You can work with two clients at the same time and switch adapter between them. ADU Client 50.1 or newer is required

2018-09-19

Client: 0.042.7
Firmware: 0.042.5

Improvements:

- Ecumaster USBtoCAN: internal software updated to v0.10 (automatic update offered when starting the PMU Client).
- Status bar now shows CAN1 / CAN2 status (like in the ADU Client).

2018-04-09

Client: 0.042.5
Firmware: 0.042.5

Fixes:

- Function evaluation when "True delay" and "False delay" parameters were both non-zero fixed.
- Output voltage is now properly measured on PMU HW3 model.

2018-02-27

Client: 0.042.1
Firmware: 0.042.1

New features:

- Support for new '**6x2 Ecumaster (7 colors)'** keypad
- Changing **back light color** for 7-colors Ecumaster keyboards (Use More settings button in keyboard setup dialog)
- **Delays** in IsTrue/isFalse/comparision operations. Examples:
    a) channel is 1, when c_ecu_rpm > 2000 for 5s
    b) channel is 1, when c_csb_switch1 is holded down for 1s
- Pulse operation - **retrigger** (retriggering pulse in the middle of active pulse)

New CAN Streams: (Use: Import CANX from Project Tree)

- **Motec M1 ECU**
- **ViPec/Link ECU (Generic Dash 2)**
- **Ecumaster EGTtoCAN**

2018-01-08

Client: 0.035.2
Firmware: 0.035.0

Fixes:

- (client) Fixed crash when creating/editing Switch (bug since client version 0.034.1)

2018-01-02

Client: 0.035.1
Firmware: 0.035.0

Fixes:
- (client) Fixed crash when editing CANbus Mob on firmware lower than 0.035

Client: 0.035.0
Firmware: 0.035.0

New features:
- Support for new '**4x2 Ecumaster (7 colors)'** keypad
- Support for **Pectel SQ6 CAN stream** (Use Import CANX from Project Tree)

Improvements:
- Now CANbus Inputs are automatically grouped by CANbus Mobs (firmware 0.035 required)
- Maximum length of names in a project increased to 30 characters (up from 20) - works with any firmware
- Heating model for outputs is now calculated using filtered current. It fixes some Overcurrent situation when Inrush current was equal to Max current.

Fixes:
- EMU_BLACK.canx - fixed c_ecu_injPW and c_ecu_ignAng

Client: 0.034.1
Firmware: 0.034.0

This is Client only update. Contains firmware 0.034.0, the most recent firmware.

The firmware 0.034.0 fixes CAN terminator issues on CAN1 / CAN2.
Now it works as documented:
- **CAN1: no terminator (USBtoCAN termination or external terminator on CAN1 required)**
- **CAN2: user selectable terminator (Treeview/PMU/CANbus setup)**

Improvements:
- Added c_ecu_cltError to EMU_BLACK.CANX
- Generate Pinout command: added *Min current*, *Max current*, *Inrush current* / *Inrush time* for outputs (menubar: Devices/Generate Pinout)

Fixes:
- Fixed bug with minimum and maximum value when creating the Table.
- Password is now correctly replaced with ●●●●●● (fixed regression from version 0.033)

Client: 0.034.0
Firmware: 0.034.0

The firmware 0.034.0 fixes CAN terminator issues on CAN1 / CAN2.
Now it works as documented:
- **CAN1: no terminator (USBtoCAN termination or external terminator on CAN1 required)**
- **CAN2: user selectable terminator (Treeview/PMU/CANbus setup)**

Improvements:
- Switch element – range has been extended to 0..255 (up from 0..4)
- Default frequency of some channels has been increased:
  - pmu.o?.voltage now logged at 25Hz (up from 5Hz)
  - pmu.a?.voltage now logged at 25Hz (up from 5Hz)
  - pmu.acc*/pmu.gyro* now logged at 25Hz (up from 5Hz)

Fixes:
- Fixed program freezing after 5 hours of working
- Fixed terminator issues on CAN1 / CAN2
- Project Tree: Fixed channel corruption when Move up/Move down/Delete command was used and project used output.dc, output.timeAboveMax or mob.timeout channels.

2017-11-20

Client: 0.033.0
Firmware: 0.033.0

New Features:
- User-defined tables (2D / 3D, variable size, each axis can be user-selectable), can be used as **PWM tables**

Improvements:
- Wipers: "Brake delay time" added to allow fine-tuning of the wiper parking spot. The wiper motor is not powered in this state.
- PWM: When the Duty cycle is ZERO, the output is completely turned off.
- PWM can be activated even if the output is Active. No need to turn off / turn on the output.
- Project Tree: added keyboard shortcut for Move up / Move down – Alt+UpArrow / Alt+DownArrow
- Ecumaster USBtoCAN device: reliability and performance improvements (USBtoCAN software update to v0.5 is offered automatically when starting PMU Client).
- Parameter panel and Status bar are properly scaled on high-DPI devices.

Fixes:
- Fixed rare crash related to "Use client data"/"Get data from PMU" when working with 2 PMUs.
- Fixed crash related to the escape key pressed in Canbus Mob creation invoked from Canbus Input dialog
- Fixed crash when exiting application in Offline mode

2017-10-13

Client: 0.031.1
Firmware: 0.031.0

Fixes:
- Fixed connection problems between Ecumaster USBtoCAN and the latest firmware 0.031.0

New Features:
- (firmware) Improved Power Control Model. Support for devices with delayed activation (such a ABS module in the car).
- (firmware) Password protection
- Added ability to choose "Use client data" or "Get data from PMU" if data are different when connecting
- Autoscale on GraphLog (requires firmware 0.030.0 or later)
- Export GraphLog data to Excel (CSV file format); also works with selection
- Display filter can be assigned to each GraphLog channel (GraphLog - right mouse button - Properties). Useful for smoothing accelerometer data. Turned on by default for two pmu.boardTemperatures.
- (firmware) Channels can be multiplied by constant *1, *10, *100, *1000, *custom, raw in CANbusExport
- (firmware) Each subchannel can be multiplied by constant *1, *10, *100, *1000, raw in Number
- (firmware) Decimal places in Canbus Input – for example, c_pmu.batteryVoltage is now 12,5V instead of 12500
- Some channel can be viewed as bitfields (pmu.can1.state, pmu.can2.state, pmu.outActiveMask, pmu.outFaultMask, pmu.outOvercurrentMask, pmu.outShutdownMask) (requires firmware 0.031.0 or newer)
- (firmware) Number: added Modulo operation (reminder)
- (firmware) Number: added Lookup operations (for simple lookup tables; 2,3 or 4 entries)

Improvements:
- Reconnect command (Shift+Ctrl+B) – two PMU can be turned on one after another
- Hot unplug/plugin Ecumaster USBtoCAN possible
- When downloading log from DL memory of PMU, the file is saved to Logs\ directory with date/time included in file name (e.g. Logs\20170622_1703_12.pmulog)
- Added warning message when one of PC<=>PMU communications CAN IDs is used in CANbus Export (IDs 0x12-0x17 on CAN1).
- GraphLog – value axis has now variable number of helper lines
- GraphLog – current value displayed on each graph
- Wipers dialog – added check to ensure that Park Switch could be used only with output O8.
- Logs saved on PC: It's now possible to analyze logs, even if some modification was made to the project. Only names of elements must match.
- GraphLog min/max ranges automatically configured for CanbusInputs, AnalogInputs, keyboard buttons
- Pausing the GraphLog works as expected in all situations
- Channels outside of 8 bytes in Canbus Export are now disabled for easier understanding.
- EMU_BLACK.CANX updated to support decimal places (for example: c_ecu_lambda from EMU/BLACK has now fractional part) – (requires firmware 0.031.0 or newer)

- PMU.CANX updated to support decimal places (requires firmware 0.031.0 or newer)
- GraphLog: Inrush current and Max current lines visible on o_name.current channels

Fixes:
- Constant -16383 can be assigned to any channel (as stated in the documentation).
- Fixed bug when some u16/s16 empty channel in the middle of Canbus Export was not properly saved to the device.
- GraphLog now shares the same configuration for all desktops
- Sometimes during connecting Client showed that PMU data are corrupted and asked for restore. This rare bug has been fixed.
- When saving .pmulog file, the debug file .pmulograw is no longer saved
- Fixed focus problem on some popup windows, when clicked outside the popup

2017-07-19

Client: 0.026.6 exp
Firmware: 0.026.6

Fixes:
- (firmware) Fixed proper activation of brake circuit for wipers. Wipers should park as expected now.
- (client) Fixed rare crash after firmware upgrade.
- (client) Fixed crash when using popupMenu on empty GraphLog

2017-07-04

Client: 0.026.5 exp
Firmware: 0.026.2

This is Client only update. Contains firmware 0.026.2, the most recent compatible firmware.

Fixes:
- Fixed Group Selection command (Ctrl+G or button "Group"). The names of all elements in the project were corrupted after this command.

2017-06-08

Client: 0.026.2 exp
Firmware: 0.026.2

Fixes:
- (firmware) Fixed not responding buttons on Ecumaster keyboard
- Fixed crash when using Undo (Ctrl+Z) too deeply after Firmware Upgrade

Improvements:
- Ecumaster USBtoCAN - performance improved on slower computers

Client: 0.026.0 exp
Firmware: 0.026.0

New Features:
- (firmware) CAN 2.0B support with extended ID (29 bits)

Improvements:
- Improved reliability of client on slow computers

Fixes:
- Fixed crash when saving some projects
- Fixed loading of projects containing channel with dot character (e.g. c_pmu.a3.voltage)

Client: 0.025.0 exp
Firmware: 0.025.0

Improvements:
- (firmware) CANbus Input: Timeout value and Default value separated.

Fixes:
- Fixed Ecumaster USBtoCAN rare disconnection bug. USBtoCAN software update is offered automatically when starting PMU Client.
- Fixed CANbus Export – channels were accidentally changed when deleting other elements.

Changes:
- Changed MinimalClientVersion required to load project. You will not be able to load project saved by this Client software in its previous version.

Client: 0.024.0 exp
Firmware: 0.024.0

New Features:
- Support for Life Racing keyboard (ProjectTree: Add/Keyboard and change Size to '4x5 - Life Racing')
- Support for new Ecumaster 3x2 (7 colors) keyboard.
- Speed of CAN2 could be configured: 125 Kbps, 250 Kbps, 500 Kbps, 1000 Kbps (TreeView: PMU/CANbus Setup)

Improvements:
- Confirmation message added when deleting element that is referenced by other element.
- "EMULATED" text is shown on toolbar of Output/Analog Monitor when apropriate Emulator is used.
- Import .CANX file: CANbus ID could be configured (useful when using two EMUBLACKs in one car or EMUBLACK on non standard ID)
- Pinout Generator (menu Devices/Generate Pinout) - added CANbus Mobs and Keyboards.
- EMU_BLACK.canx updated: added inputs c_ecu_nitrus and c_ecu_starterRequest

Changes:
- Changed MinimalClientVersion required to load project. You will not be able to load project saved by this Client software in its previous version.

Fixes:

- Device name is properly updated on Device Bar (#1. #2. #3. #4. #5.)
- Fixed rare crash when closing the application.
- When creating new CANbus Input default frame offset is now +0.
- Opened file name is preserved when doing Make Permanent and Upgrade Firmware.
- Keyboards: Radiobuttons now work as expected even if no 'Radiobutton Group' is present.
- F4 shortcut (Channel List) work properly when editing Power Outputs.
- Generated pinout is now properly displayed in Internet Explorer, Microsoft Edge and Mozilla Firefox.

2017-03-24
Client: 0.023.2 exp
Firmware: 0.023.2

Fixes:
- (firmware) Fixed Output Emulator for outputs with double/triple pins.
- Several fixes for "Support for high DPI tablets/laptops and custom font size in Control Panel"

2017-03-22
Client: 0.023.1 exp
Firmware: 0.023.0

Improvements:
- Support for high DPI tablets/laptops and custom font size in Control Panel.

2017-03-17
Client: 0.023.0 exp
Firmware: 0.023.0

New Features:
- **Analog Emulator and Output Emulator** - just connect your PMU on your desk and you can emulate analog inputs and power outputs. See Help (F1) for details.
- Brightness support for CAN keyboard (key LED brightness / back light brightness)
- Up to 20 Switches can be created in project (up from 8).

Improvements:
- CAN keyboard can now be disconnected and reconnected again.
- CAN keyboard can now be powered by one of PMU power output without any problems.

Fixes:
- (client) Fixed USBtoCAN support on **Windows Vista** (USBtoCAN performance improvements on other systems as well)
- canSwBoard_ID668.canx renamed to canSwBoard_ID666.canx (This is only filename change, you don't need to reimport/change anything).

- EMU_BLACK.canx, canSwBoard_ID334.canx, canSwBoard_ID666.canx - reintroduced changes from v0.020.6 (fixed regression from v0.021.0)
- CANbus Export now correctly supports CAN2

2017-03-09

Client: 0.022.0 exp
Firmware: 0.022.0

- (firmware) Fixed reliability of logging to PC when working on slow computer / heavy loaded CAN1.
- (client) Added support for Kvaser CAN adapter.
- (client) Fixed several crashes related to handling corrupted logging data.
- (client) Fixed rare crash when PMU was disconnected
- (client) Proper detection of disconnection when CAN1 L and H is shorted.
- (client) Fixed firmware upgrade after previus upgrade was aborted.

2017-03-02

Client: 0.021.1 exp
Firmware: 0.021.1

- Up to 50 Numbers can be created in project (increased from 20).
- Changed MinimalClientVersion required to load project. You will not be able to load project saved by this Client software in its previous version.
- (firmware) Fixed: Temperature values (temperature1/temperature2/flashTemperature) are correct immediately after starting the device
- Updated example projects in EXAMPLES/EXPO/
- Added link in Help menu: Online ChangeLog
- Default value for Inrush Current has been changed to 120A.
  a) This settings allow easier tuning of Inrush Current (use the maximum value, test the output, see the Peak Current in Output Monitor and alternatively lower the Inrush Current value to proper value)
  b) This settings protect output transistors from excessive flyback energy in the case of inductive load.
- Warning messages added to Help.

2017-02-24

Client: 0.020.6 exp
Firmware: 0.020.6

- (firmware) Fixed: PMU16 (non DL) can freeze during startup when checking presence of DL memory.
- Client now checks if firmware is not outdated and suggest upgrade
- Added status bar information in Client about available: functions / numbers / operations.
- EMU_BLACK.canx updated:
  - added input c_ecu_fuelPumpSt
  - added input c_ecu_coolantFanSt
  - added input c_ecu_acClutchSt
  - added input c_ecu_acFanSt
  - aIn1..aIn6 – changed Volts to miliVolts (0..5000 steps instead of just 0..5)

- mob renamed to "m_emublack"
- canSwBoard_ID668.canx / canSwBoard_ID668.canx updated:
    - mob renamed to "m_canSwBoard"

2017-02-20

Client: 0.020.5 exp
Firmware: 0.020.4

- Several fixes for slow computers
- [CHANGE] USBtoCAN adapter is detected ONLY once during Client startup. Single PMU can be connected later. But still if using multiple PMU – devices need to be connected before Client Startup.
- Fixed fatal popup window: assert failed: !"unreachable"
- Fixed fatal popup window: assert failed: "IsRunning(), Use ScheduleExit() on not running loop"
- Faster disconnection detection
- Fixed validation for PowerOutputs confirming dialog by ENTER key
- Updated HELP file
- Changed destination email address for BugTrap.
- [NEW] Ability to print Pinout - use menu item: Device/Generate Pinout to generate .HTML file
- [KNOWN ISSUE] Password protection is still not working. Please do not enter password.

2-02-2017

Client: 0.020.4 exp
Firmware: 0.020.4

- (Firmware) Fixed initialization of DataLogging system in PMU16-DL

24-01-2017

Client: 0.020.3 exp
Firmware: 0.020.3

- Initial Release