

Manual for Torque Module Type DMMAP und DMMAH for Alltrax[®] Controller



Issue Date: 22.02.2011

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Torque Module DMMAP and DMMAH



By the use of the extension module, the throttle characteristic of a RPM controller like ALLTRAX can be changed into a torque control which you are used from your traditional motor cycle. Different torque characteristics can be selected in 8 steps by switches.

Easy to install:

Connect the module interfaces in between the throttle sensor and the motor controller and fix the module on the bike. If necessary, change controller settings, ready!

Module variantes:

DMMAP for ALLTRAX controller
and Potentiometer throttle

DMMAH for ALLTRAX controller
and Hall sensor throttle



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Driving with the Torque Module



With your DMM torque control module the throttle response of your electrical motorcycle will be similar to that of a traditional gas bike.

The electronics of the module will smoothen the unwanted abrupt spikes of high torque that appear at low and medium RPM values. Thus it will be easier to find the throttle position where the vehicle will take up speed.

If you release the throttle completely, the motor current will immediately be stopped. This is important e.g. for emergency break situations.

However, if you release the throttle completely while driving, the motor current will follow the subsequent upturn of the throttle with a small delay, which might lead you to turn up the throttle farther than appropriate. Therefore we advise you to not always completely release the throttle during driving.

The above mentioned delay effect can be minimized by using our particularly tailored throttle curve in your ALLTRAX® AXE controller.

http://www.automotive.picoamps.de/doc/throttlecurve_module.hex

The usage on public streets requires a corresponding permission.

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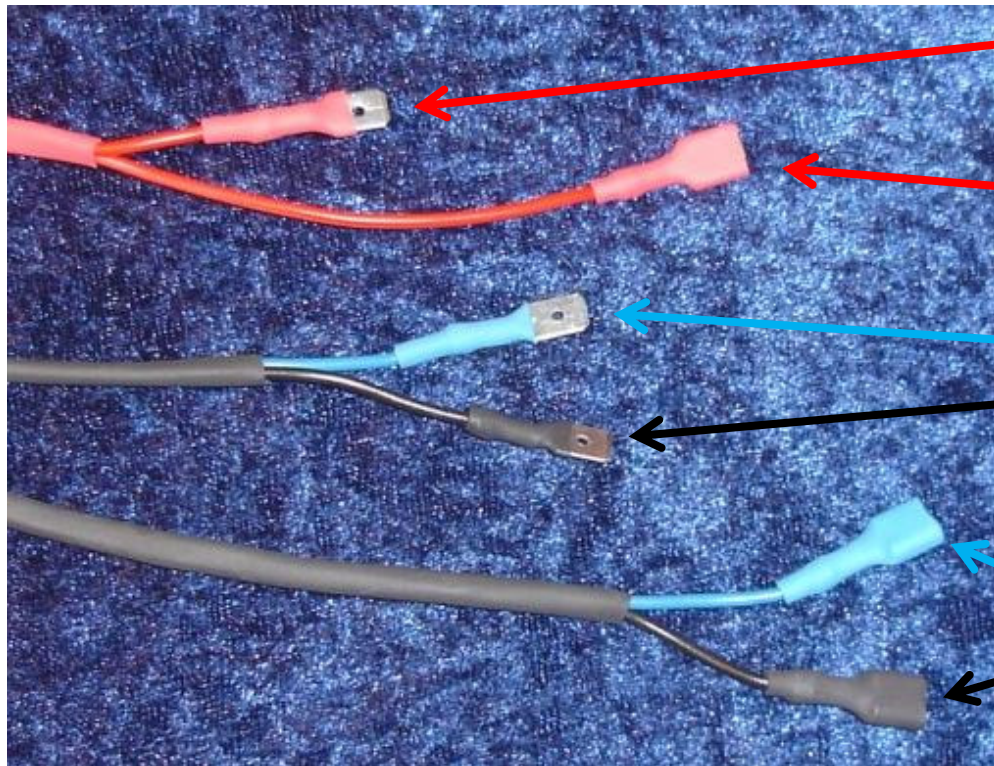
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DMMAP Connections



The torque module for ALLTRAX controllers and potentiometer throttle sensor, labeled as DMMAP has the following interfaces :



Modul Power Supply 48 V

- Red plug

Power Supply to Controller

- Red jack

Module Inputs

- Blue plug (Signal)
- Black plug (Ground)

Module Outputs

- Blue jack (Signal)
- Black jack (Ground)

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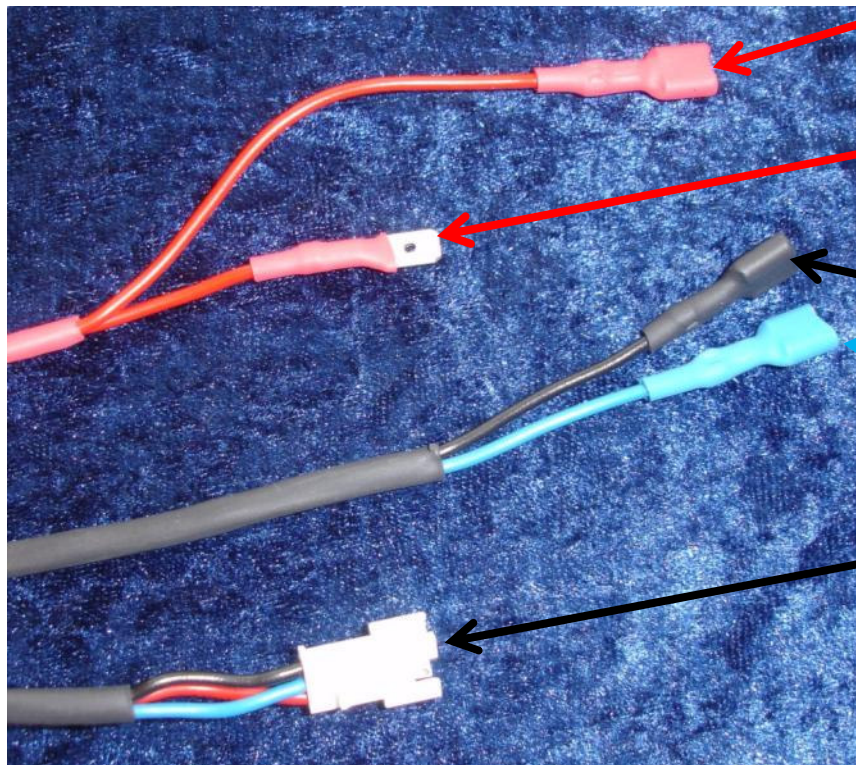
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DMMAH Connections



The torque module for ALLTRAX controllers and Hall throttle sensor, labeled as DMMAH has the following interfaces :



Power Supply to Controller

- Red jack

Modul Power Supply 48 V

- Red plug

Module Outputs

- Black jack (ground)
- Blue jack (signal)

Module inputs (triple plug)

- Black cable (ground)
- Blue cable (signal)
- Red cable (Hall sensor supply)

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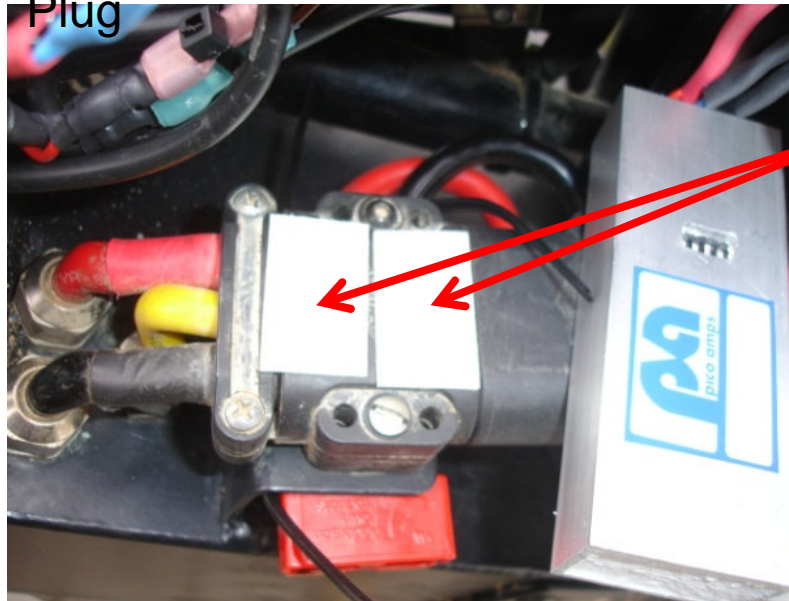
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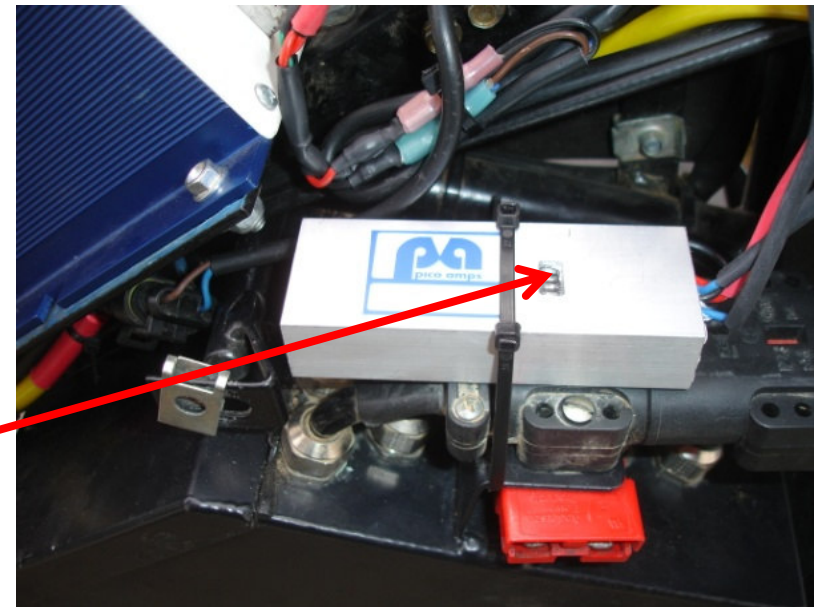
Mounting the Torque Module



For Quantya EVO1 we recommend to place the Module onto the Batterie Plug



Place double sided glue strips on top of the battery plug



Place the Module thus to have the switches centered on the battery plug

Finally apply a cable strap for safety

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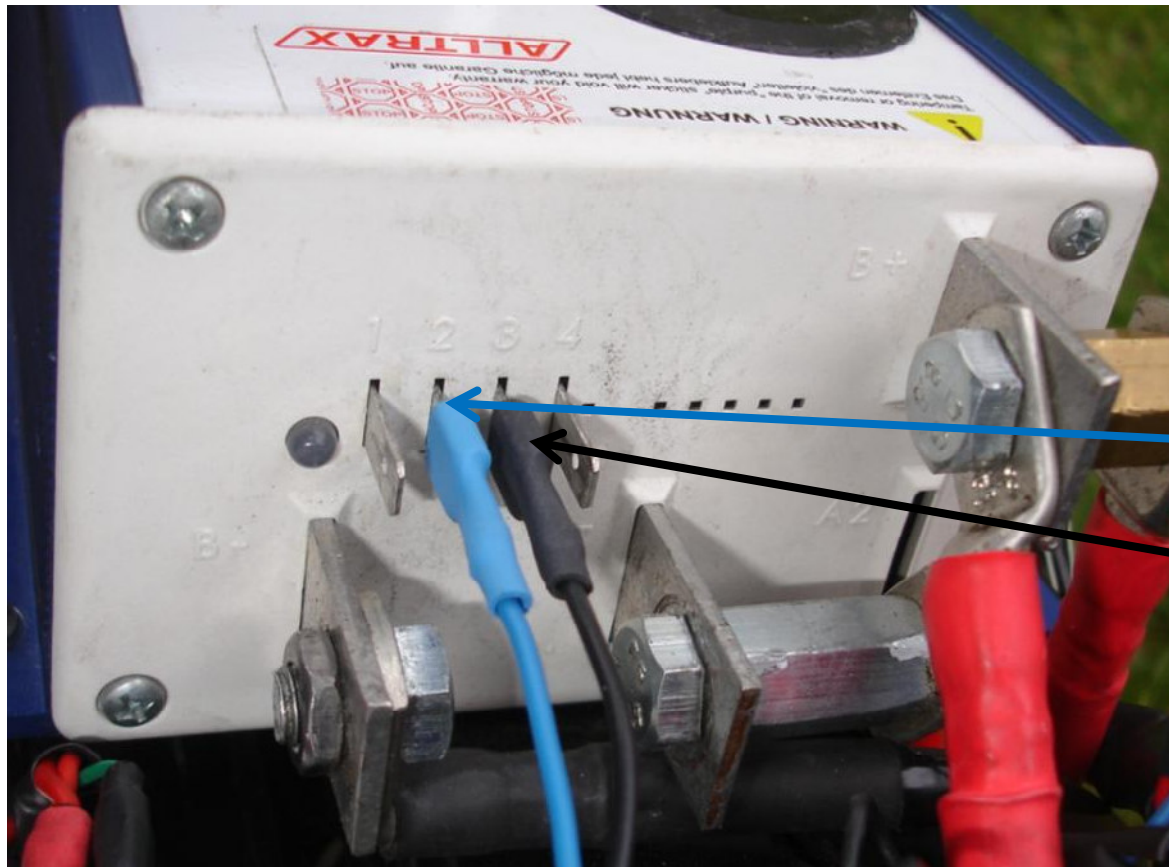
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Torque Module Outputs



First connect the module output jacks to the controller pins.



Important:

Pins connections may not be swapped

- Blue jack to Pin 2
- Black jack to Pin 3

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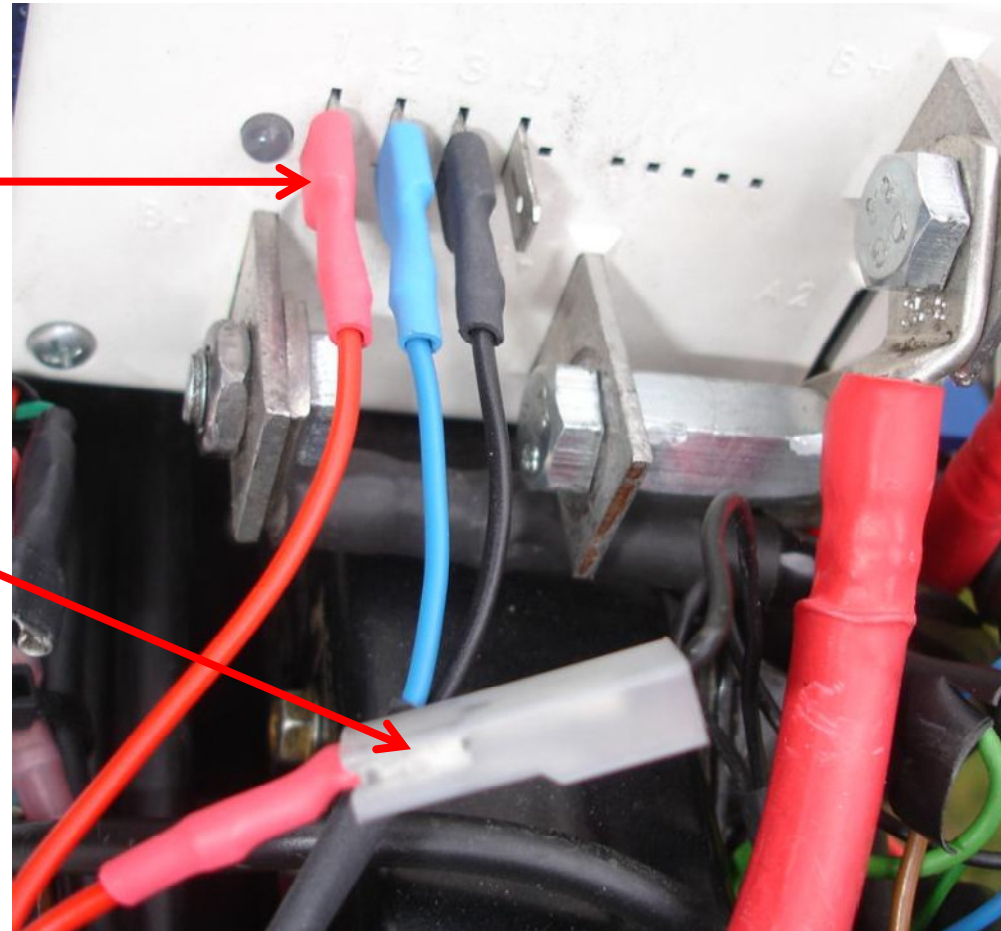
Torque module power supply



Next step is to connect power supply to module and controller.

Plug the red jack of the module
on pin 1 of the controller.

Connect red module plug with
the jack providing 48 V from the
ignition key.



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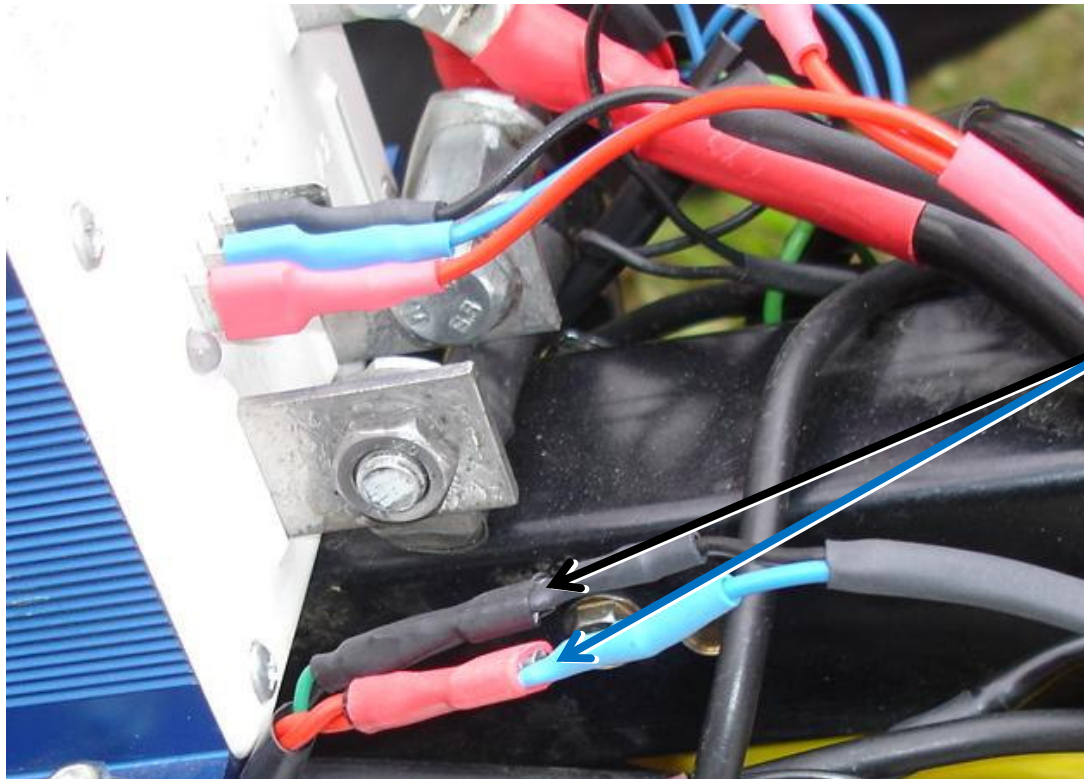
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DMMAP inputs



Finally connect DMMAP to the potentiometer throttle



Connect the module input plugs to

- Throttle jacks
- or
- Jacks of a mapping switch

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DMMAH inputs



Finally connect DMMAH to the Hall throttle



Connect the triple plug of the module inputs to

- Throttle jack

or



- jack of a mapping switch

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Overview on Cabling



Overview on complete cabling with DMMAP



Opening in the tank cover allows access to the switches



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Settings of ALLTRAX Controller



Caution:

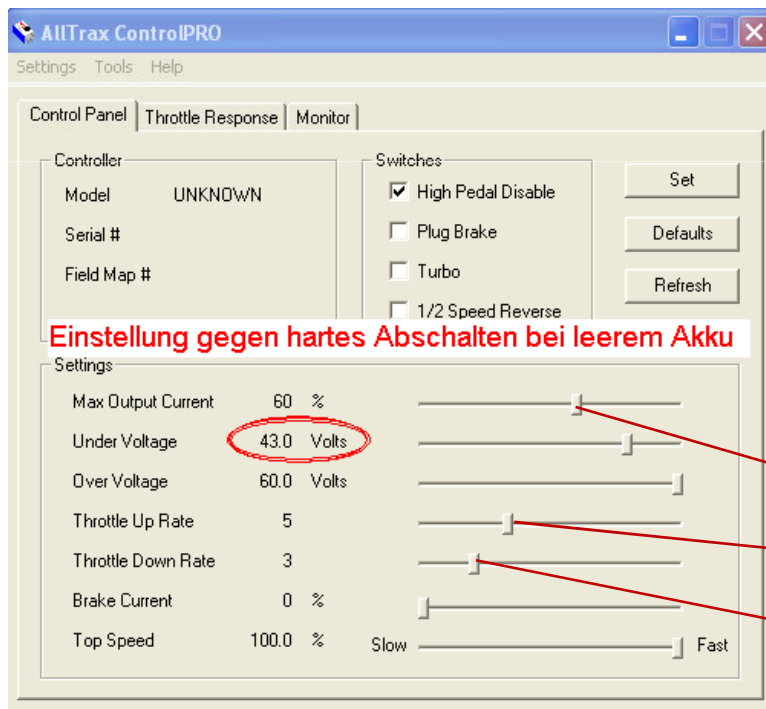
The ALLTRX controller software may hang-up as a result of possible communication errors in the interface between PC and controller. In this state the controller will not be able to control the motor any longer. The reset of the controller can only be done by ALLTRAX.

To keep this risk as low as possible we recommend:

- Use only high quality armed USB/RS232 interface cable (e.g. „Go Port Authority 2“ or comparable cable).
- Unplug the power cord of your notebook during communication with controller

During communication with controller:

- Do not switch off the controller
- Do not load the battery of the vehicle
- Do not operate welding stations nearby



- Current limitation depending on applied Tuning Kit
- Set UpRate to a value of 5 or larger
- Set Down Rate to a value of UpRate+1 or larger

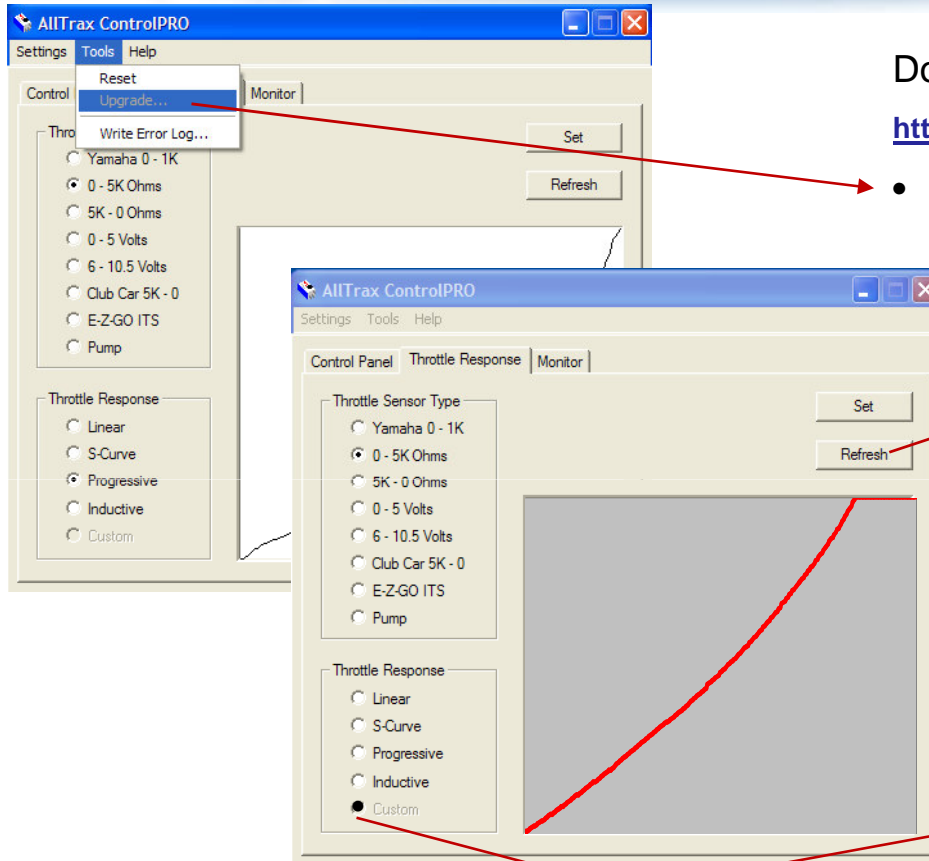
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Throttle curve within ALLTRAX Controller



Download the optimized throttle curve from the WEB

http://www.automotive.picoamps.de/doc/throttlecurve_module.hex

- Transfer throttle curve from PC to Controller

- Read back the throttle curve for verification; if necessary switch off controller and software, remove main power plug from Battery and wait 10 sec. Switch on again and retry.

- Leave „Custom“ activated selecting a default curve will delete the transferred curve

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Torque Module Switches



Switches

- 1
- 2
- 3
- 4

off ← → on

switch setting

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Combination of Switches



All switches can be combined without restrictions

Setting	Switch combination			Time constant
	1	2	3	
				[s]
0	off	off	off	0,2
1	on	off	off	0,7
2	off	on	off	1,2
3	on	on	off	1,7
4	off	off	on	2,3
5	on	off	on	2,8
6	off	on	on	3,3
7	on	on	on	3,8

Safety Instructions:

Switch settings must be changed in power down mode only.

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Recommended switch settings



Setting	Description and Application
0	Suitable for short transmission factors and/or high grip levels
1	
2	
3	
4	Suitable for long transmission factors and/or low grip levels
5	
6	
7	

It is up to the driver to find the suitable settings according his own needs.

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Torque Module Filter



Filter for damping of throttle response and distortions by matured throttles (spikes)



Off state for switch 4
Very weak damping
Time constante 1 msec
Very fast throttle response

On state for switch 4
Medium damping
Time constante 100 msec
Moderate throttle response

Switch 4 can be combined with all other switches 1 to 3.

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DMMAP mapping function



DMMAP: A parallel resistor to the throttle potentiometer can be used to reduce the torque without loss of maximum speed. By a mapping switch such a resistor can be activated on demand.

Principle: smaller resistor value → smaller torque or stronger reduction
larger resistor value → larger torque

Mapping switch

Throttle



DMMAP

Inputs

Safety warnings regarding resistor value

Do only use resistors with **tolerance of 1%**

When using **DMMA0001 to DMMA0026** the resistor value **must not be smaller than 10 kOhm**.

When using modules **DMMA with larger series numbers than 026**

or modules **DMMAP with larger series numbers than 035** the resistor value **must not be smaller than 6.8 kOhm**.

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DMMAH mapping function



DMMAH: A series resistor to the throttle hall sensor can be used to reduce the torque without loss of top speed. By a mapping switch such a resistor can be activated on demand.

Principle: Larger resistor value → smaller torque or stronger reduction
Smaller resistor value → larger torque

Mapping switch



A resistor value between 0 and 3.3 kohms will reduce the torque whereas the top speed still remains at maximum level.

With larger values also the top speed will be reduced, e.g. with a value of 6.8 kOhms the top speed will be reduced by 30%.

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Solving Problems of Controller



Problem or failure	Solution
New throttle curve can't be read back to PC or "ControllerPro" software is no longer responding	Close Software, switch off controller, unplug main power connector to Battery Wait 10 sec Reconnect Battery cabel, switch on controller ALLTRAX, start the software
LED on controller blinks red in intervals	Check for error details in the error code table of the controller manual from ALLTRAX
LED on controller shows permanent red All controller settings can be changed but control of the motor does not work	Controller software is in hang-up mode caused by a communication error on the programming interface Reset can only be done by ALLTRAX !!
Delayed throttle response	Up- / Down- Rate values too small; No optimized throttle curve activated

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Solving Problems of DMMAP or DMMAH



Problem or failure of DMMAP	Solution
Motor is switched of at full throttle but working fine slightly below	Full throttle resistance value to large (above 5.6 kOhms) Remove the screws in the throttle housing and turn the case of the potentiometer to get smaller values.
Immediately after power on the motor starts turning although the throttle is zero or closed.	Offset resistance of throttle apart from zero and too large. Remove the screws in the throttle housing and turn the case of the potentiometer to get smaller values, e.g. fairly below 100 ohms

Problem or failure of DMMAH	Solution
Full throttle not possible	Hall sensor damaged or housing broken Wrong Hall sensor type
Immediately after power on the motor starts turning although the throttle is zero or closed.	Hall sensor damaged or housing broken, renew hall throttle

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Safety Instructions for DMMA



The DMMA-Module must not be used without the following additional safety measures:

- Install an wrist coupled emergency plug or switch in series to the ignition key

Defects in electronic devices cannot be completely avoided. Under certain conditions such a defect may cause an output signal of the DMMA-module which is equivalent to “throttle active” signals. This may lead to unwanted acceleration of the vehicle and in worst case to accidents.

Safety Instructions for Mounting the DMMA

- All contacts to other surfaces carrying electrical signals, especially to the high current pins of the controller must be avoided under all conditions.
- If covers are mounted take care that no mechanical stress is applied to the module or the connected cables. Bending of the module might mechanically damage the module and causes risk of making contact to the high current pins.
- Take care of sufficient isolations on cables and connectors.
- Take care of good electrical contacts of all connectors. Loose or corrosive connectors must be exchanged immediately.

For additional safety instructions please refer to:

http://www.automotive.picoamps.de/doc/safety_instructions_electrical_vehicles.pdf

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