



Throttle Position Sensor (TPS) Calibration

Document Version	1	Release Date	05 march 2019
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Application information	Generic
Vehicle	Not Applicable
Model	Not Applicable
Year of manufacture	Not Applicable
PowerTRONIC application	All PowerTRONIC ECUs, from firmware version F.3.x onward

Note:

- Read through all instructions before installation and use.
- Ensure that the bike is switched off and the key is out of the ignition before proceeding with the installation.
- Some parts of the bikes might be hot/sharp and may cause burns/cuts. Proceed with extreme caution or wait until the bike has cooled down. Always wear safety gloves.
- When the installation is complete, make sure to secure the wiring loom away from the movable parts or components which tends to heat up during the normal operation of the vehicle at any chance.
- PowerTRONIC is intended for motorsport use on a closed course, please check with your local laws before using this product. Race Dynamics / PowerTRONIC is not liable for consequences arising out of using the product.

Support

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Throttle position sensor (TPS) calibration would be required for the PowerTRONIC to optimally detect the throttle percentage. We recommend that you complete the throttle calibration after installing the PowerTRONIC for smoother running of the bike.

TPS Calibration Procedure:

- 1. Download and Install R-Tune software. (Refer R-Tune installation manual)
- 2. With the PowerTRONIC connected to your bike, use the USB cable and connect it to a Windows based PC through R-Tune Software.

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3. Select the appropriate com port number. Refer Figure below

				Map Des	cription		CON	13		~ 2	I		RPM
p	0						Ĵ	Con	nect		Discon	nected	
ttck	Quick S	hift (Config	Calib	Tab	Graph	Dia	ıls F	irmware	ŝ			Throttle Position
1000	4500	5000	5500	6000	6500	7000	7500	8000	8500	9000	9500	10000	
	0	0	0	0	0	0	0	0	0	0	0	0	Injector Ref Load
	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	Load Input
	0	0	0	0	0	0	0	0	0	0	0	0	Load Input %
	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	RPM Extend
	0	0	0	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	CoProcessor Present
	0	0	0	0	0	0	0	0	0	0	0	0	

(To check your com port number, go to **Device Manager**, Select **Ports (COM & LPT)** and note the number on the **Silicon labs CP210x USB to UART Bridge**. Refer figure)





4. Click on Connect.

P P	owerTRON	IIC R-Tune	3.0.5.3																			– a ×
Fi	le Tool:	Help									_		Map Des	cription		COM	3		~ 0			RPM
F	Powe		onic	7				Active N	/lap	0						Û	Con	nect		Discon	nected	
	Eucl1	lar	ition1	Fuel2		nition?	Tro S	on Tr	o Attek	Ouide S	bift	Config	Calib	Tab	Graph	Dia						
	ruen	L EOO	11000	L 1500		12500	12000	1 2500	L 4000		15000	LEEOO	Leono	100		17500	1 2000	Too	10000	10500	110000	Throttle Position
⊳	100%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	200	0	0	0	
	93%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	Injector Ref Load
	86%																					
	80%	0			0		0		0	0			0	0			0				0	Loodland
	66%	0																				
	60%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	53%																					Load Input %
	46%	0	0		0	0	0			0	0		0	0	0	0	0	0		0	0	
	33%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	RPM Extend
	26%	0								0			0	0				0			0	
	20%	0																				0.0
	13%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Coprocessor Present
	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	
																						Crank Signal Type
-							_		ंत								1		_	_	_	
F	FC [%] :		. 0.0 🗘		2. 0.0	•	3. 0	0 ≑		0.0 ≑		TC [dg] :		0 ≑		0 ≑		3. 0	•	4. 0	÷	Noise Capture
			Or	iginal Inj f	PW F	uel Trim (%) lg	nition Adv	(deg)		njector D	uty (%)		Injector	Status	Ignition	Status	Tractic	on Status	TrcRP	M Status	
	Culi	dor 1							_													Stock Fuel Cut
	Cym	ider-1																				
	Cylii	nder-2																				Stock Ian Cut
	Cylin	nder-3																				
Γ	Cylin	nder-4																				
							La sura															Traction Counter
	Send	Red	eive	Burn	Lock	c + Burn	Statu	IS :														

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5. Click on *Receive* and navigate to the *Config* tab of the R-Tune software.

re PowerTRONI	IC R-Tune	3.0.5.3																			- • ×
File Tools	Help											Map Des	cription		COM	5		~ 0			RPM
Powe	הידה	onic	7			4	Active M	lap	2						Ĵ	Disco	nnect		Conne	ected	500
Fuel1	lgr	nition1	Fuel2	lgı	nition2	Trn Se	en Tri	n Attck	Quick S	h <mark>it</mark> (Config	alib	Tab	Graph	Dia	ls F	irmware				Throttle Position
D 100%	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	15500	6000	6500	7000	7500	8000	8500	9000	9500	10000	26
93%	0	0																		0	Injector Ref Load
86%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
80%	0 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
66%																0				0	Throttle Position
60%													0							0	Lood Input %
53% 46%													0							0	Load input %
40%									0				0					0		0	
33%													0							0	RPM Extend
20%													0				0			0	No
13%	0	0																		0	CoProcessor Present
6%													0							0	CKP Decode
0%																	0			0	Crank Signal Type
-	_		_			_		-										_	_		250
FTC [%] :		. 0.0 🗘		2. 0.0	-	3. 0.	0 ≑		0.0 ≑		TC [dg] :		0 ≑		0 🗧		3. 0	÷	4. 0		Noise Capture
		Or	riginal Inj F	PW F	uel Trim	(%) Igr	ition Adv	(deg)		njector D	uty (%)		Injector	Status	Ignition	Status	Tractio	n Status	TrcRP	M Status	30
Cylin	dor-1		0.000		0		0						NO		NO					0	Stock Fuel Cut
Culin	dor 2		0.000		0		0						NO_	910	NO	-510			-	0	ON
Cylin	der-2		0.000		0		0						NO		NO				-	0	Stock Ign Cut
Cylin	der-3		0.000		-		-						NU		NU	_51G	-		-	0	ON
Cylin	der-4		0.000		0		0						NO	SIG	NO	SIG					Traction Counter
Send	Rea	eive	Burn	Lock	c + Burn	Statu	s:Conne	ected to	ECU											- ₩	0





, include					_				COM4	~	<u> </u>	RPM
owerTROF			Activ	e Map	2				U Di	sconnect	Connected	500
Fuel1 Ignition	n <mark>1 Fuel</mark> 2	Ignition2	Trn Sen	Trn Attck	Quick Shift	Config	Calib Tab	Graph	Dials	Firmware		Throttle Posi
lg	nition Selection :	Coil Over Plug		~				Load	Input Channel :	Throttle Position	~	10
	Fuel Multiplier :	Fuel table X1		~					Min Load :	20	Auto Calibrate	Injector Ref L
	OEM Inj Type :	Regular Pulse		~					Max Load :	135	Hato calorate	0
Ignition N	loise Filter (ms) :	0.20										Load Inpu
Injection N	loise Filter (ms) :	0.20										Throttle Pos
Traction	Control Config :	Spark Signal C	yinder I	~								Load Input
Standalone Trig	ger Load Index :	11	0	~								0
Standalone Mod	e Trigger RPM :	9600										RDM Evter
	Limiter at RPM ;	12000										No
	CKP Trigger :	150										CoDragancer D
M Index												CKP Deco
1 2	3 4	5 6	7	8 9	10	11	12 13	14	15 16	17 18	19 20	Crank Signal
500 1500	2500 3500	4500 550	0 6500	7500 8	200 9000	9500	10000 10500	11000	11500 1200	0 12500 1300	0 13500 14000	Not Prese
C[%]: 1.0	0 🗧 2.	0.0 ÷	3. 0.0 🗧		0.0 ≑	ITC [dg] :	1. 0	÷ 2	. 0 ÷	3. 0 🗧	4. 0 韋	Noice Capt
	Original Inj Pw	Fuel Inm (S	(6) Ignition	Adv(deg)	Injecto	or Duty (%)	Inje	ector Status	Ignition Stat	tus Traction Sta	itus TICRPM Status	Shareh Evel (
Cylinder-1	0.000							NO_SIG	NO_SIG		0	
Cylinder-2	0.000							NO_SIG	NO_SIG		0	
Cylinder-3	0.000							NO_SIG	NO_SIG		0	Stock Ign C
Cylinder-4	0.000							NO_SIG	NO_SIG		0	
												Traction Cou

6. Select *Throttle Position* from the *Load Input Channel* drop down.

7. Click on *Auto Calibrate*. Follow the on screen instructions, Refer Figures below.

PowerTRONIC R-Tune 3.0.5.3												
File Tools Help							Map Descri	otion	COM4	~ 1	2	RPM
PowerTRONIC			Acti	ve Map	2				Ç Di:	sconnect	Connected	500
Fuel1 Ignition1	Fuel2	Ignition2	Trn Sen	Trn Attck	Quick Shift	Config	Calib Tal	o Graph	Dials	Firmware		Throttle Position
Ignition S	election :	Coil Over Plug	1	~				Load	Input Channel :	Throttle Position	~	10
Fuel M	Multiplier :	Fuel table X1		~					Min Load :	20	Auto Calibrate	Injector Ref Load
OEM	Inj Type :	Regular Pulse		~					Max Load :	135	Auto calibrate	0
Ignition Noise Fi	lter (ms) :	0.20										Load Input
Injection Noise Fi	iter (ms) :	0.20										Throttle Position
RPM chann	el select :	Spark Signal Cy	linder 1	~								Lood Input %
Standalone Trigger Los	ed Index :	1 raction Disable	•	~								Load input %
Standalone Mode Trigger Los	aer RPM :	9600										DDM Creard
Limiter	at RPM ;	12000		_								RPM Extend
СКР	Trigger :	150										
RPM Index												CoProcessor Present
1 2 3	4	5 6	7	8	9 10	111	12 13	14	15 16	17 18	19 20	CKP Decode
▶ 500 1500 2500	3500	4500 550	0 6500	7500 8	1500 9000	9500	10000 105	00 11000	11500 12000	12500 13000	13500 14000	Crank Signal Type
FTC [%]: 1. 0.0 ਦ	2	0.0 ≑	3. 0.0	4.[0.0	ITC [da] :	1.0	-	2 0	3. 0 😫	4. 0 📑	Not Present
												Noise Capture
Orig	inal Inj PW	Fuel Trim (9	6) Ignition	Adv(deg)	Injecto	or Duty (%)		njector Status	Ignition State	us Traction Statu	s TrcRPM Status	0
Cylinder-1	0.000							NO_SIG	NO_SIG		0	Stock Fuel Cut
Cylinder-2	0.000							NO_SIG	NO_SIG		0	ON
Cylinder-3	0.000							NO_SIG	NO_SIG		0	Stock Ign Cut
Cylinder-4	0.000	0		0				NO SIG	NO SIG		0	ÓN
										_		Traction Counter
Send Receive	Burn	Lock + Burn	Status:Re	ead succes	sfull							0





7.1 Turn the key to ignition on, Engine kill switch positioned on but do not necessarily start the engine.

File Tools Help	,							Map Description	ı	COM4	~	٥	RPM
PowerT	aonic)			Activ	е Мар	2) Dis	sconnect	Connected	500
Fuel1 lo	gnition1	Fuel2	Ignition2	Trn Sen	Trn Attck	Quick Shift.	Config	Calib Tab	Graph	Dials	Firmware		Throttle Position
	Ignition S	election :	Coil Over									~	26
	Fuel N	Aultiplier :	Fuel table		Auto	Load Ca	libration	THROT	TLE POS	SITION		uto Calibrate	Injector Ref Load
	OEM	Inj Type :	Regular F	0	art the a			Throttle in					0
lg 	nition Noise Fil	ter (ms) :	0.20	51	an ine e	ngine and	iet it idie,	i nrottie in	zero/idie	position			Load Input
irije	RPM channe	el select :	Spark Sir										Throttle Position
	Traction Contro	l Config :	Traction										Load Input %
Standalo	one Trigger Loa	ad Index :	11										5
Standalo	one Mode Trigg	er RPM :	9600										RPM Extend
	Limiter	at RPM ;	12000										No
	СКР	Trigger :	150										CoProcessor Present
RPM Index													CKP Decode
1 2 ▷ 500 1!	2 3 500 2500	3500	4500		Ra	aw Value						19 20 13500 14000	Crank Signal Type
				MAX :	26	MIN: 20	Liv	9: 26					Not Present
FTC [%] :	1. 0.0 ÷		0.0 ÷									4. 0 ≑	Noise Capture
	Origi	nal Inj PW	/ Fuel ⁻		OK			Cancel				TrcRPM Status	2
Cylinder-1		0.000	Sta	tus : Auto Cali	brating							7	Stock Fuel Cut
Cylinder-2		0.000	0	1	0				IO SIG	NO SIG		0	ON
Cylinder-3		0.000	0		0				IO SIG	NO SIG		0	Stock Ign Cut
Cylinder-4		0.000	0		0				IO SIG	NO SIG		0	ON
ojimaci 4				_									Traction Counter
Send R	eceive E	Burn	Lock + Burn	Status:Se	nt to ECU								0

7.2 Rotate the throttle to full position and back to zero/idle position. Do this twice.

PowerTRONIC R-Tune 3.0.5.3				- 🗆 ×
File Tools Help		Map Description COM4		RPM
(PowerTRONIC)	Active Map 2	Discor	nnect Connected	500
Fuel1 Ignition1 Fuel2 Ignition2	Trn Sen Trn Attck Quick Shift. Co	nfig Calib Tab Graph Dials Fi	rmware	Throttle Position
Ignition Selection : Coil Over			~ ·	26
Fuel Multiplier : Fuel table	Auto Load Calibra	tion : THROTTLE POSITION	uto Calibrate	Injector Ref Load
OEM Inj Type : Regular F		and we can be as a set of a set of the	sto calibrate	0
Ignition Noise Filter (ms) : 0.20	Start the engine and let it	idie, Throttle in zero/idle position		Load Input
BPM channel select : Spark Sic				Throttle Position
Traction Control Config : Traction	Rotate the Throttle to full open p	osition and go back to zero/idle positi	ion.	Load Input %
Standalone Trigger Load Index : 11				5
Standalone Mode Trigger RPM : 9600				RPM Extend
Limiter at RPM ; 12000				No
CKP Trigger : 150				CoProcessor Present
RPM Index				CKP Decode
1 2 3 4 5 ▷ 500 1500 2500 3500 4500	Raw Value		19 20 13500 14000	Crank Signal Type
	MAX: 179 MIN: 25	Live : 26		Not Present
FTC [%]: 1. 0.0 😴 2. 0.0 🗘			4. 0 🜩	Noise Capture
Original Inj PW Fuel	OK	Cancel	TrcRPM Status	2
Cylinder-1 0.000 Sta	tus : Auto Calibrating		7	Stock Fuel Cut
Cylinder-2 0.000 0	0	NO SIG NO SIG	0	ON
Cylinder-3 0.000 0	0	NO SIG NO SIG	0	Stock Ign Cut
Cylinder-4 0.000 0	0	NO SIG NO SIG	0	ON
				Traction Counter
Send Receive Burn Lock + Burn	Status:Sent to ECU			0





7.3 After this you will see a dialog box, saying Auto Calibration Completed. Click OK.



8. Once the calibration is complete, save the values by clicking on *Send* option and then turn the bike off and then click *Burn* to save the changes on the PowerTRONIC ECU.

---/End of Document/---