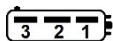
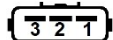
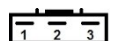
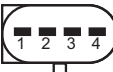
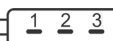
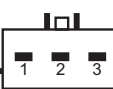


Coils


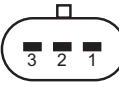
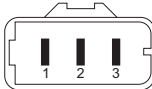
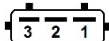
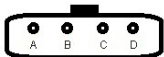
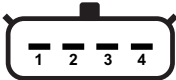
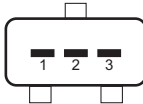
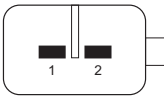


Individual and
Wasted spark

Individuals Coils

COD. Coil	Type	Used	Connector	Dwell	Pins Connection
Diamond FK0140 Diamond FK0186	Integrated Igniter	Subaru WRX		Dwell 3ms Dwell 5ms	Pin 1: Connected to an ignition output (gray wire) Pin 2: Battery negative Pin 3: Switched 12V from relay
Diamond FK0320	Integrated Igniter	Pajero 3.8 6G75 MiVec			Pin 1: Switched 12V from relay Pin 2: Connected to an ignition output (gray wire) Pin 3: Battery negative
Hitachi AIC3103G	Integrated Igniter *	Nissan 350 Z Infiniti G35/FX35			Pin 1: Connected to an ignition output (gray wire) Pin 2: Battery negative Pin 3: Switched 12V from relay
Audi/VW 06x 905 115 0 221 604 800 Hitachi CM11-201	Integrated Igniter	Audi A6, S3 – VW Bora, Golf, Passat 1.8 Turbo Audi R8		Dwell 2,80ms	Pin 1: Switched 12V from relay Pin 2: Battery negative Pin 3: Connected to an ignition output (gray wire) Pin 4: Power ground (engine head)
Bosch 0 22 905 100x	Integrated Igniter	VW VR6 – Golf, Passat			Pin 1: Battery negative Pin 2: Power ground (engine head) Pin 3: Switched 12V from relay Pin 4: Connected to an ignition output (gray wire)
Denso 099700-101 Denso 099700-115 Denso 099700-061 Hitachi CM11-109	Integrated Igniter *	Honda Fit			Pin 1: Connected to an ignition output (gray wire) Pin 2: Battery negative Pin 3: Switched 12V from relay
Denso 90919-022 ?? Final 27, 30, 36, 39 and 40	Integrated Igniter *	Toyota/Lexus V6 3.0			Pin 1: Battery negative Pin 2: Connected to an ignition output (gray wire) Pin 3: Not Used Pin 4: Switched 12V from relay
Hitachi CM11-202 Hanshin MCP3350 Hanshin MCP1330 Nissan 224891F00	Integrated Igniter *	Fiat Brava/Marea 1.8 Nissan Silvia S15 Nissan R34 (RB26DETT)			Pin 1 +: Switched 12V from relay Pin 2 B: Battery negative Pin 3 IB: Connected to an ignition output (gray wire)

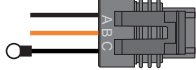
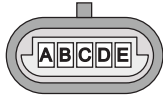

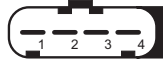
Individuals Coils

COD. Coil	Type	Used	Connector	Dwell	Pins Connection
Bosch 0 221 504 014 0 221 504 460	No internal igniter	Fiat Marea 2.0T, 2.4 Fiat Stilo Abarth 2.4 20V		Dwell 3,60ms Dwell 1,80ms	Pin 1: Ignition power (from SparkPRO or similar) Pin 2: Battery negative Pin 3: Switched 12V from relay
Bosch 0 221 504 024 0 221 504 039	No internal igniter	Fiat Punto/Linea 1.4 T-Jet 500X 1.6 09>14 / Argo 1.8HGT 2017> / Renegade 1.8			Pin 1: Battery negative Pin 2: Switched 12V from relay Pin 3: Ignition power (from SparkPRO or similar)
VW/Audi 058 905 105 Bosch 0 986 221 011	No internal igniter	All VW/Audi 1.8 20V Turbo BMW 328			Pin 1: Ignition power (from SparkPRO or similar) Pin 2: Battery negative Pin 3: Switched 12V from relay
Magneti Marelli BAE700AK	No internal igniter	Peugeot 306 and 405 2.016V Citroen Xantia e ZX 2.0 16V Maserati Coupé 3.2 32V		Dwell 2,50ms	Pin 1: Switched 12V from relay Pin 2: Battery negative Pin 3: Ignition power (from SparkPRO or similar)
129700-5150	No internal igniter	Honda CBR 1000		Dwell 1,80ms	Pin 1: Switched 12V from relay Pin 2: Ignition power (from SparkPRO or similar)
MSD PN 82558	No internal igniter	HEMI			Pin 1: Ignition power (from SparkPRO or similar) Pin 2: Not Used Pin 3: Switched 12V from relay
Toyota 90919-02205	No internal igniter	Toyota 2JZ, outros			Pin 1: Switched 12V from relay Pin 2: Ignition power (from SparkPRO or similar)
ACDelco 12611424	Integrated Igniter	Corvette LS1/LS2, Onix (turbo)		Dwell 4,5ms	Pin A: Power ground (engine head) Pin B: Battery negative Pin C: Connected to an ignition output (gray wire) Pin D: Switched 12V from relay
Denso 099700-218	Integrated Igniter	S10 2.5 Flex			Pin 1: Power ground (engine head) Pin 2: Battery negative Pin 3: Connected to an ignition output (gray wire) Pin 4: Switched 12V from relay
Bosch F 000 ZS0 104	Integrated Igniter	Gol Mi		Dwell 3,60ms	Pin 1: Power ground (engine head) Pin 2: Connected to an ignition output (gray wire) Pin 3: Switched 12V from relay
Renault 7700875000	No internal igniter Wire in serial association and use a SparkPRO-2	Renault engine 2.0 16V			Pin 1 Coil 1: Ignition power (from SparkPRO or similar) Pin 2 Coil 2: Switched 12V from relay Connect the pin 2 of coil 1 in the pin 1 of coil 2 (serial association) These coils work with 6V

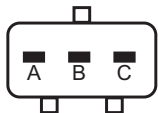
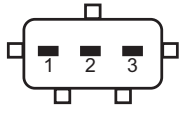

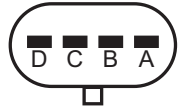
Individual Coils

COD. Coil	Type	Used	Connector	Dwell	Pins Connection
Bosch 0 221 604 014	Integrated Igniter	Nissan Sentra			Pin 1: Connected to an ignition output (gray wire) Pin 2: Battery negative Pin 3: Switched 12V from relay
30520-R1A-A01	Integrated Igniter *	New Civic			Pin 1: Switched 12V from relay Pin 2: Battery negative Pin 3: Connected to an ignition output (gray wire)
BOSCH 0 221 504 470 0 221 504 100	No internal igniter	BMW X1/X5/M5/118/120/320 E46/E39/E38/Z3/Z4/Z8			Pin 1: Ignition power (from SparkPRO or similar) Pin 2: Chassis ground Pin 3: Switched 12V from relay
Delphi (GN10331)	Integrated Igniter	C30 / C70 / S40 / S60 / V50 / V60 / V70 / XC60 / XC70			Pin 1: Connected to an ignition output (gray wire) Pin 2: Not Used Pin 3: Power ground (engine head) Pin 4: Switched 12V from relay
Denso 10R 035444	Integrated Igniter *	Toyota Camry 2.4			Pin 1: Switched 12V from relay Pin 2: Battery negative Pin 3: Connected to an ignition output (gray wire) Pin 4: Power ground (engine head)
Bosch 0 221 604 104	Integrated Igniter	Captiva / Omega australiano V6 3.6			Pin A: Power ground (engine head) Pin B: Battery negative Pin C: Connected to an ignition output (gray wire) Pin D: Switched 12V from relay
Bosch 9 810 972 380	Integrated Igniter	Peugeot 2008 1.6 THP			Pin 1: Connected to an ignition output (gray wire) Pin 2: Battery negative Pin 3: Switched 12V from relay
Magneti Marelli B10068MM	No internal igniter	Captiva 2.4			Pin 1: Power ground (engine head) Pin 2: Battery negative Pin 3: Ignition power (from SparkPRO or similar) Pin 4: Switched 12V from relay
12137710874	Integrated Igniter	BMW S1000RR / HP4 / G310R			Pin 1: Switched 12V from relay Pin 2: Battery negative Pin 3: Connected to an ignition output (gray wire)
Hitachi	Integrated Igniter	Nissan R35 GTR		Dwell 4,40ms	Pin 1: Connected to an ignition output (gray wire) Pin 2: Battery negative Pin 3: Switched 12V from relay

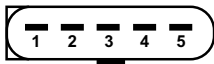
Individual Coils

COD. Coil	Type	Used	Connector	Dwell	Pins Connection
Racing CDI FuelTech	No internal igniter	FuelTech *Used with FTSPARK Only			Pin A: Orange/Black - Ground FTSPARK (COIL -) Pin B: Orange - +12 pulse FTSPARK (COIL +) Pin C: Power ground (engine head)
Smart FuelTech	Integrated Igniter	FuelTech		Dwell 5ms	Pin A: Connected to an ignition output (gray wire) Pin B: Battery negative Pin C: Power ground (engine head) Pin D: Battery negative Pin E: Switched 12V from relay
VW 030905110B VW 030905110D	Integrated Igniter *	VW Go/Voyage G6		Dwell 2,8ms	Pin 1: Battery negative Pin 2: Connected to an ignition output (gray wire) Pin 3: Power ground (engine head) Pin 4: Switched 12V from relay
VW 04E905110E VW 04E905110M Marelli BI0078MM BOSCH 0 986 221 057	Integrated Igniter *	UP TSI 2016 /- Golf Jetta 1.4 TSI 2014 /-		Dwell 2,8ms	Pin 1: Battery negative Pin 2: Connected to an ignition output (gray wire) Pin 3: Power ground (engine head) Pin 4: Switched 12V from relay

Wasted spark Coils

COD. Coil	Type	Used	Connector	Dwell	Pins Connection
Bosch #4 Cylinder (#3 wires) F 000 Z S0 213 F 000 Z S0 222 0 221 503 011	No internal igniter	Celta, Corsa, Gol Flex, Meriva, Montana, Fiat Linea 1.9 16V			Pin 1a (A): Ignition power (from SparkPRO - Green wire #2) Pin 15 (B): Switched 12V from relay Pin 1b (C): Ignition power (from SparkPRO - Green wire #1)
Bosch #4 Cylinder (#3 wires) F 000 ZS0 203 F 000 ZS0 205	No internal igniter	Astra, Kadett, Ipanema, Vectra 8V, Zafira			Pin 1: Ignition power (from SparkPRO - Green wire #1) Pin 2: Switched 12V from relay Pin 3: Ignition power (from SparkPRO - Green wire #2)
47905104 19005212 1208307 (6 wires – 4 channel)	No internal igniter (Individual cylinder triggering)	Fiat Stilo 1.8 16V GM Meriva 1.8 16V GM Zafira 1.8 e 2.0 16V			Pin A – cil. 3: Ignition power (from SparkPRO - Green wire #3) Pin B – cil. 2: Ignition power (from SparkPRO - Green wire #2) Pin C – cil. 1: Ignition power (from SparkPRO - Green wire #1) Pin D – cil. 4: Ignition power (from SparkPRO - Green wire #4) Pin E: Battery negative Pin F: Switched 12V from relay
Bosch F 000Z S0103	No internal igniter (two outputs)	Fiat Palio, Siena, Uno 1.0 , 1.5, 1.6, Tempra 2 .0			Pin 1: Ignition power (from SparkPRO - Green wire #1) Pin 2: Switched 12V from relay
Bosch 6 Cylinder 0 221 503 008	No internal igniter	GM Omega 4.1			Pin 1: Ignition power (from SparkPRO - Green wire #1 cyl 1 and 6) Pin 2: Ignition power (from SparkPRO - Green wire #2 cyl 5 and 2) Pin 3: Ignition power (from SparkPRO - Green wire #1 cyl 3 and 4) Pin 4: Switched 12V from relay
Delphi 4 Cylinder Rounded	Integrated Igniter	GM Corsa MPFI (98 until 2002)		Dwell 2,0ms at 14V 2,1ms at 12V 2,4ms at 11,5V	Pin A: Gray #2 (Cylinder #2 and #3) Pin B: Gray #1 (Cylinder #1 and #4) Pin C: Battery negative Pin D: Switched 12V from relay
Delphi 4 Cylinder (Square)	Integrated Igniter	GM Corsa MPFI (98 until 2002)		Dwell 2,0ms at 14V 2,1ms at 12V 2,4ms at 11,5V	Pin 1: Switched 12V from relay Pin 2: Battery negative Pin 3: Gray #1 (Cylinder #1 and #4) Pin 4: Gray #2 (Cylinder #2 and #3)
Diamond FC0020	No internal igniter	Pajero 3.5 a partir de 2002 MPI			Pin 1: Ignition power (from SparkPRO - Green wire #1) Pin 2: Switched 12V from relay
Bosch 6 Cylinder 0 221 503 008	No internal igniter	Ford V6			Pin 1: Ignition power (from SparkPRO - Green wire #1) Pin 2: Ignition power (from SparkPRO - Green wire #3) Pin 3: Ignition power (from SparkPRO - Green wire #2) Pin 4: Switched 12V from relay

Wasted spark Coils

COD. Coil	Type	Used	Connector	Dwell	Pins Connection
Sagem 96358648	No internal igniter	Peugeot 1.4			Pin 1: Ignition power (from SparkPRO - Green wire #1) Pin 2: Ignition power (from SparkPRO - Green wire #2) Pin 3: Battery negative Pin 4: Switched 12V from relay
Bosch 4 Cylinder (4 Wires) 032 905 106 B/D F000ZS0210	Integrated Igniter	VW Golf, Bora, Audi A3 and A4, Seat Ibiza and Córdoba			Pin 1: Gray #1 (Cylinder #1 and #4) Pin 2: Switched 12V from relay Pin 3: Gray #2 (Cylinder #2 and #3) Pin 4: Battery negative
Eldor – 4 Cylinder (6 wires – 4 channel) 06A 905 097 06A 905 104	Integrated Igniter (Individual cylinder triggering)	Bora, New Beetle, Polo			Pin 1: Battery negative Pin 2: Gray #4 (Cylinder #4) Pin 3: Gray #3 (Cylinder #3) Pin 4: Gray #2 (Cylinder #2) Pin 5: Gray #1 (Cylinder #1) Pin 6: Switched 12V from relay
VW V6 078 905 104	Integrated Igniter	Audi A4 2.8 V6 Audi A6 / Passat 2.8 V6 ****			Pin 1: Switched 12V from relay Pin 2: Power ground (engine head) Pin 3: Gray #1 (Cylinder #1 and #4) Pin 4: Gray #2 (Cylinder #2 and #5) Pin 5: Gray #3 (Cylinder #3 and #6)
Coil GM 94702536 DELPHI CE20131	Integrated Igniter	GM Agile 1.4			Pin A: Gray #2 (Cylinder #2 and #3) Pin B: Gray #1 (Cylinder #1 and #4) Pin C: Battery negative Pin D: Power ground (engine head) Pin E: Switched 12V from relay
Eldor 8200 702 693	No internal igniter	Renault Clio e March			Pin A: Ignition power (from SparkPRO - Green wire #2) Pin B: Switched 12V from relay Pin C: Switched 12V from relay Pin D: Ignition power (from SparkPRO - Green wire #1)

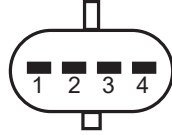
**IMPORTANT**

**** These Coils need 1K Pull Up resistor of the positive wire for the signals to spark and have Integrated Igniter.

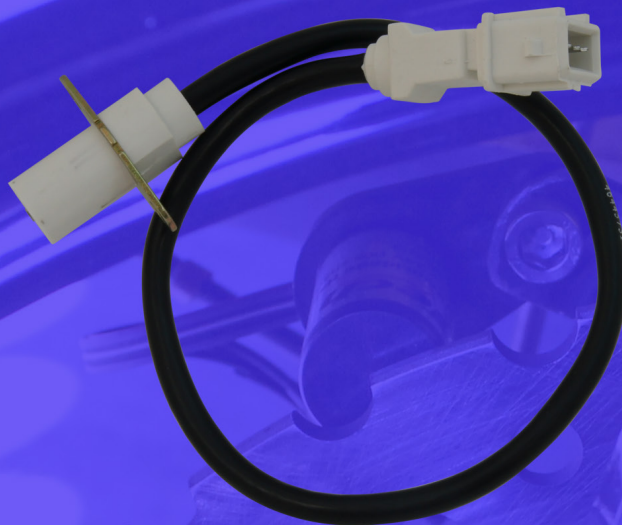
Wasted spark Coils

COD. Coil	Type	Used	Connector	Dwell	Pins Connection
Coil Delphi 55228006	No internal igniter Individual cylinder triggering	FIAT Uno Fire Evo 1.4			Pin 1: Switched 12V from relay Pin 2: Cyl #1 Ignition power (from SparkPRO - Green wire #1) Pin 3: Cyl #2 Ignition power (from SparkPRO - Green wire #2) Pin 4: Cyl #3 Ignition power (from SparkPRO - Green wire #3) Pin 5: Cyl #4 Ignition power (from SparkPRO - Green wire #4) Pin 6: Battery negative
2526118a	No internal igniter	Xsara picasso 2.0 e Peugeot 307			Pin 1: Ignition power (from SparkPRO - Green wire #1) Pin 2: Ignition power (from SparkPRO - Green wire #2) Pin 3: Not Used Pin 4: Switched 12V from relay
BMW	No internal igniter	318ti compact 94/00			Pin 1: Ignition power (from SparkPRO - Green wire #4) Pin 2: Switched 12V from relay Pin 3: Power ground (engine head) Pin 4: Not used Pin 5: Ignition power (from SparkPRO - Green wire #1) Pin 6: Ignition power (from SparkPRO - Green wire #3) Pin 7: Ignition power (from SparkPRO - Green wire #2)
2526182b	No internal igniter	Peugeot 206 1.6 16V			Pin 1: Ignition power (from SparkPRO - Green wire #1) Pin 2: Ignition power (from SparkPRO - Green wire #2) Pin 3: Power ground (engine head) Pin 4: Switched 12V from relay
021905106	Integrated Igniter	Passat VR6, Golf VR6 93 until 97			Pin 1: Power ground (engine head) Pin 2: Gray #1 (Cylinder #1 and #6) Pin 3: Gray #3 (Cylinder #4 and #3) Pin 4: Gray #2 (Cylinder #2 and #5) Pin 5: Switched 12V from relay
9800251580 9674680380	No internal igniter	Peugeot 308 1.6 16V			Pin 1: Power ground (engine head) Pin 2: Switched 12V from relay Pin 3: Ignition power (from SparkPRO or similar)
BOSCH 0 221 603 451	Integrated Igniter	GM Agile / Montana 1.4 8V Flex 2009/ -			Pin A: Gray #2 (Cylinder #2 and #3) Pin B: Gray #1 (Cylinder #1 and #4) Pin C: Battery negative Pin D: Power ground (engine head) Pin E: Switched 12V from relay

Wasted spark Coils

COD. Coil	Type	Used	Connector	Dwell	Pins Connection
Bosch 0 221 503 011 GM: 90506102 Lucas: DMB824	No internal igniter	Vectra 2.0 16V 96/ - Vectra 2.0 16V SFI 96/ - Vectra 99 > 02			Pin 1 (C): Ignition power (from SparkPRO - Green wire #1) Pin 2 (C): Ignition power (from SparkPRO - Green wire #2) Pin 3 (B+): Switched 12V from relay Pin 4 (B+): Switched 12V from relay

RPM Sensor



Hall and VR

RPM Sensor

This sensor is responsible for reading the signal from a Crank trigger and can be used as rpm, CAM sync sensor, speed, among others.

There are two types, Hall effect sensors and VR sensors.

Type Hall sensors:

They are sensors that have three wires, one signal wire and the other two supply and negative.

The signal generated by the sensor is a square wave as shown in figure (A). It is essential that all edges are the same and have the same distance between them, otherwise the loss of the rpm signal may occur.

Inductive Sensors:

They are sensors that generally have 2 wires, a signal wire and a negative wire, this type of sensor does not require power, and are widely used in current vehicle engines.

There are some models of inductive sensors with 3 wires in this case the third wire is a mesh that is used to eliminate possible noise, which causes loss of the rpm signal.


They are capable of generating a voltage signal in the shape of a solenoid as shown in figure (B).

How to identify if the sensor is Type Hall or VR

- 1- Use multimeter on the 2K Ω scale;
- 2 - Measurement between Pins 1 and 2/1 and 3/2 and 3;
- 3 - Between a pair of pins, a value between 400 and 1000 Ω must be found;
- 4 - Change the tips of the position multimeter and measure again the Pins that obtained resistance, the value must be the same found in step 3;
- 5 - If you get a different value when inverting the tips, the sensor is from the Type Hall;

Test to find the electrical connections for Hall sensor

Now that you have found that the sensor is Hall effect, use this test to find the correct sensor connections.

- 1 - Use multimeter in diode measurement mode; 
- 2 - Place the tips on the sensor pins;
- 3 - Perform the measurement between Pins 1 and 2/1 and 3/2 and 3;
- 4 - Invert the tips and measure again between all the Pins;
- 5 - When the multimeter marks around 0.600V, the red tip will be on the Pin that must be connected to the battery negative and the black tip on the sensor signal Pin. The third Pin must be linked to the switched 12V;

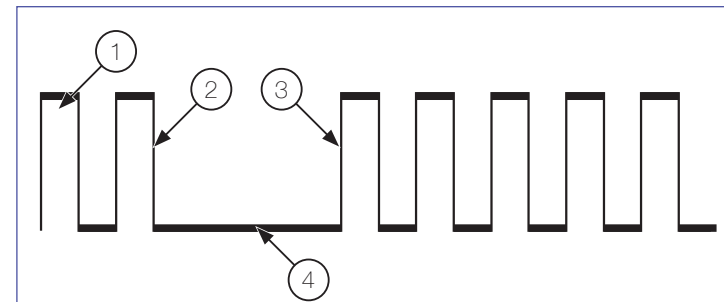


Figure (A). Hall sensor signal obtained with oscilloscope

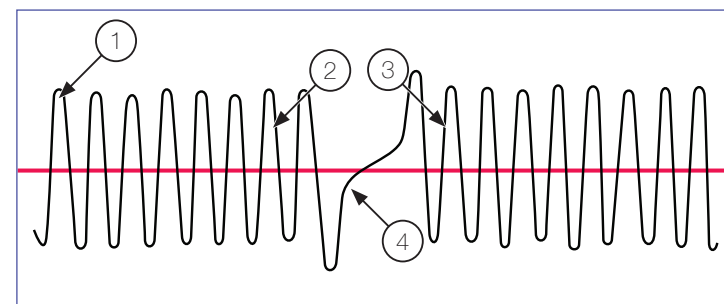


Figure (B.) VR sensor signal obtained with oscilloscope

Legend

- 1 - Teeth
- 2 - Falling edge
- 3 - Rise edge
- 4 - Gap (fault point)

RPM Sensor

Sensor	Type	Used	Connecting the injection sensor pins Old line FT250 to FT400	Connecting the injection Power FT ECU FT450 / FT500 / FT500LITE / FT550 / FT600
Bosch 3 Wires	VR	Chevrolet Omega 2.0 Gasolina and 3.0, Corsa 16V/GSi, Tigra, Fiat Marea 5 Cylinder, Citroën ZX 2.0, Xantia 2.0, Peugeot 306 2.0 16V, Peugeot 405MI Fiat Linea 1.9 16V	Pin 1: Battery negative Pin 2: white wire (Shielded cable) Pin 3: Shield (Shielded cable)	Pin 1: white wire (black shielded cable 2 ways) Pin 2: Red wire (black shielded cable 2 ways) Pin 3: shield (black shielded cable 2 ways)
Bosch 3 Wires	VR	Chevrolet Corsa 8V MPFI, Omega 2.2, 4.1 and 2.0 (álcool), S10 2.2, Silverado, Astra, Kadett MPFI, Vectra, Calibra, VW Golf, Passat, Alfa 164 3.0, Montana 1.4 (06 until 08)	Pin 1: white wire (Shielded cable) Pin 2: Battery negative Pin 3: Shield (Shielded cable)	Pin 1: Red wire (black shielded cable 2 ways) Pin 2: white wire (black shielded cable 2 ways) Pin 3: shield (black shielded cable 2 ways)
Ford 2 Wires	VR	Ford Zetec, Ranger V6	Pin 1: white wire (Shielded cable) Pin 2: Shield (Shielded cable)	Pin 1: Red wire (black shielded cable 2 ways) Pin 2: white wire (black shielded cable 2 ways)
Fiat 2 Wires	VR	Fiat Punto/Fiat 500 1.4 Turbo	Pin 1: white wire (Shielded cable) Pin 2: Shield (Shielded cable)	Pin 1: Red wire (black shielded cable 2 ways) Pin 2: white wire (black shielded cable 2 ways)
Siemens 2 Wires	VR	Renault Clio, Scénic	Pin 1: white wire (Shielded cable) Pin 2: Shield (Shielded cable)	Pin A: Red wire (black shielded cable 2 ways) Pin B: white wire (black shielded cable 2 ways)
Fiat 464.457.31 Marelli 4820171010	VR	Fiat Palio, Uno, Strada, Siena 1.0 – 1.5 8V MPI	Pin +: white wire (Shielded cable) Pin -: Battery negative Pin S: Shield (Shielded cable)	Pin +: Red wire (black shielded cable 2 ways) Pin -: white wire (black shielded cable 2 ways) Pin S: shield (black shielded cable 2 ways)
Delphi 3 Wires	Hall	GM S10 4.3 V6	Pin A: Switched 12V Pin B: Battery negative Pin C: white wire (Shielded cable)	Pin A: Switched 12V Pin B: Battery negative Pin C: Red wire (black shielded cable 2 ways)
Fiat motor E-TorQ 1.8 16V	Hall	Fiat motor E-TorQ 1.8 16V	Pin 1: Battery negative Pin 2: white wire (Shielded cable) Pin 3: 5V (FT green/red wire)	Pin 1: Battery negative Pin 2: Red wire (black shielded cable 2 ways) Pin 3: 5V (FT green/red wire)
VW TotalFlex/Gol Gti Hyundai Tucson 2.0 16V	Hall	All VW AP TotalFlex Hyundai Tucson 2.0 16V	Pin 1: 5V (FT green/red wire) Pin 2: white wire (Shielded cable) Pin 3: Battery negative	Pin 1: 5V (FT green/red wire) Pin 2: Red wire (black shielded cable 2 ways) Pin 3: Battery negative
Denso (Suzuki bikes)	VR	Suzuki Hayabusa and Suzuki SRAD	Pin 1: white wire (Shielded cable) Pin 2: Shield (Shielded cable)	Pin 1: Red wire (black shielded cable 2 ways) Pin 2: white wire (black shielded cable 2 ways)
Mitsubishi 1.6 16V (2 teeth)	Hall	Mitsubishi Colt and Lancer	Pin 1: Black: Battery negative Pin 2: Brown: white wire (Shielded cable) Pin 3: Red: 5V (FT green/red wire)	Pin 1: Black: Battery negative Pin 2: Brown: Red wire (black shielded cable 2 ways) Pin 3: Red: 5V (FT green/red wire)

Sensores de rotação

Sensor	Type	Used	Connecting the injection sensor pins Old line FT250 to FT400	Connecting the injection Power FT ECU FT450 / FT500 / FT500LITE / FT550 / FT600
GM	Hall	S10 2.5 (2015)	Pin 1: 5V (FT green/red wire) Pin 2: Battery negative Pin 3: white wire (Shielded cable)	Pin 1: 5V (FT green/red wire) Pin 2: Battery negative Pin 3: Red wire (black shielded cable 2 ways)
Nissan	Hall	350Z (2003) Engine VQ35	Pin 1: Switched 12V Pin 2: white wire (Shielded cable) Pin 3: Battery negative	Pin 1: Switched 12V Pin 2: Red wire (black shielded cable 2 ways) Pin 3: Battery negative
Bosch 3 Wires	Hall	BMW 323 95-99 E36	Pin 1: Battery negative Pin 2: white wire (Shielded cable) Pin 3: 5V (FT green/red wire)	Pin 1: shield (black shielded cable 2 ways) Pin 2: Red wire (black shielded cable 2 ways) Pin 3: 5V (FT green/red wire)
BMW	Hall	BMW 328 (95-97)	Pin 1: 5V (FT green/red wire) Pin 2: white wire (Shielded cable) Pin 3: Battery negative	Pin 1: 5V (FT green/red wire) Pin 2: Red wire (black shielded cable 2 ways) Pin 3: shield (black shielded cable 2 ways)
BMW	VR	BMW 325 (Vanos 24 - 92-97)	Pin 1: white wire (Shielded cable) Pin 2: Shield (Shielded cable)	Pin A: Red wire (black shielded cable 2 ways) Pin B: white wire (black shielded cable 2 ways)
VW/Audi 20V 3 wires Bosch – 0261210148	VR	Audi A3 1.8 20V VW Golf 1.8 20V/Golf 1.6, 2.0/Bora 2.0	Pin 1: Battery negative Pin 2: Shield (Shielded cable) Pin 3: white wire (Shielded cable)	Pin 1: shield (black shielded cable 2 ways) Pin 2: white wire (black shielded cable 2 ways) Pin 3: Red wire (black shielded cable 2 ways)
Denso 3 Wires	Hall	Honda Civic Si	Pin 1: 5V (FT green/red wire) Pin 2: Shield (Shielded cable) Pin 3: white wire (Shielded cable)	Pin 1: 5V (FT green/red wire) Pin 2: shield (black shielded cable 2 ways) Pin 3: Red wire (black shielded cable 2 ways)
Honda	Hall	Accord V6 2003 > 2007	Pin 1: Shield (Shielded cable) Pin 2: white wire (Shielded cable) Pin 3: Switched 12V Pin 4: Shield (Shielded cable) Pin 5: Not Used Pin 6: Switched 12V	Pin 1: shield (black shielded cable 2 ways) Pin 2: Red wire (black shielded cable 2 ways) Pin 3: Switched 12V Pin 4: shield (black shielded cable 2 ways) Pin 5: Not Used Pin 6: Switched 12V
GM	Hall	Motor LS2 - (L98)	Pin 1: white wire (Shielded cable) Pin 2: Battery negative Pin 3: 5V (FT green/red wire)	Pin 1: Red wire (black shielded cable 2 ways) Pin 2: Battery negative Pin 3: 5V (FT green/red wire)

CAM Sensors



Hall and VR

CAM Sensors

Sensor	Type	Used	Connecting the injection sensor pins for FT250 to FT400	Connecting the injection Power FT ECU FT450 / FT500 / FT500LITE / FT550	Connecting the injection Power FT ECU FT600
Bosch 3 Wires	Hall	Chevrolet Astra 16V, Calibra, Vectra, Ômega 4.1, Zafira 6V, Citroën ZX 2.0, Xantia 2.0, Peugeot 306 2.0 16V, 05MI, Hyundai Tucson 2.0 16V, Fiat Marea 5 Cylinder all VW/ Audi 1.8 20V	Pin 1: 5V (FT green/red wire) Pin 2: Green/Yellow wire Pin 3: Battery negative	Pin 1: 5V (FT green/red wire) Pin 2: white wire (Shielded cable) 1 via Pin 3: Negative sensors	Pin 1: 5V (FT green/red wire) Pin 2: Red wire (gray shielded cable) Pin 3: Negative for sensors (FT green/black)
Bosch 3 Wires	Hall	Chevrolet Vectra 16V (97 em diante) Fiat Punto T-Jet, Fiat 500 Fiat E-TorQ1.8 16V and 1.4 Turbo	Pin 1: Battery negative Pin 2: Green/Yellow wire Pin 3: 5V (FT green/red wire)	Pin 1: Negative sensors Pin 2: shield (black shielded cable 1 way) Pin 3: 5V (FT green/red wire)	Pin 1: Negative for sensors (FT green/black) Pin 2: Red wire (gray shielded cable) Pin 3: 5V (FT green/red wire)
Bosch 3 Wires	Hall	Chevrolet Corsa 16V, Tigra	Pin 1: 5V (FT green/red wire) Pin 2: Green/Yellow wire Pin 3: Battery negative	Pin 15: 5V (FT green/red wire) Pin 6: shield (black shielded cable 1 way) Pin 17: Negative sensors	Pin 15: 5V (FT green/red wire) Pin 6: Red wire (gray shielded cable) Pin 17: Negative for sensors (FT green/black)
Delphi CAM sensor	Hall	GM S10 4.3 V6	Pin 1: Battery negative Pin 2: Green/Yellow wire Pin 3: 5V (FT green/red wire)	Pin A: Negative sensors Pin B: shield (black shielded cable 1 way) Pin C: 5V (FT green/red wire)	Pin A: Negative for sensors (FT green/black) Pin B: Red wire (gray shielded cable) Pin C: 5V (FT green/red wire)
Bosch 3 Wires	VR	Alfa 164 6 Cylinder	Pin 1: Battery negative Pin 2: Green/Yellow wire Pin 3: 5V (FT green/red wire)	Pin 1: shield (black shielded cable 1 way) Pin 2: white wire (black shielded cable 1 way) Pin 3: shield (black shielded cable 1 way)	Pin 1: White wire (gray shielded cable) Pin 2: Red wire (gray shielded cable) Pin 3: Shield (gray shielded cable)
Ford 2 Wires	VR	Ford Zetec, Ranger V6	Pin 1: Green/Yellow wire Pin 2: Battery negative	Pin 1: white wire (black shielded cable 1 way) Pin 2: shield (black shielded cable 1 way)	Pin 1: Red wire (gray shielded cable) Pin 2: White wire (gray shielded cable)
Denso (Suzuki bikes)	VR	Suzuki Hayabusa and Suzuki SRAD	Pin 1: Green/Yellow wire Pin 2: Battery negative	Pin 1: white wire (black shielded cable 1 way) Pin 2: shield (black shielded cable 1 way)	Pin 1: Red wire (gray shielded cable) Pin 2: White wire (gray shielded cable)
3 wires (close the small hole with an adhesive)	Optical	Mitsubishi 1.6 16V	Pin 1 - Black: Battery negative Pin 2 - WH/RD: Green/Yellow wire Pin 3- RD: 5V (FT green/red wire)	Pin 1: Black: shield (black shielded cable 1 way) Pin 2: WH/RD: white wire (black shielded cable 1 way) Pin 3: RD:5V (FT green/red wire)	Pin 1: Black: White wire (gray shielded cable) Pin 2: WH/RD: Red wire (gray shielded cable) Pin 3: RD:5V (FT green/red wire)
Denso 3 Wires	Hall	Honda Civic Si	Pin 1: 5V (FT green/red wire) Pin 2: Battery negative Pin 3: Green/Yellow wire	Pin 1: 5V (FT green/red wire) Pin 2: Negative sensors Pin 3: shield (black shielded cable 1 way)	Pin 1: 5V (FT green/red wire) Pin 2: Negative for sensors (FT green/black) Pin 3: Red wire (gray shielded cable)
Bosch 3 Wires	Hall	Gol 1.0 8V - EA111 / Gol 1.0 16V Turbo	Pin 1: 5V (FT green/red wire) Pin 2: Green/Yellow wire Pin 3: Battery negative	Pin 1: 5V (FT green/red wire) Pin 2: shield (black shielded cable 1 way) Pin 3: Negative sensors	Pin 1: 5V (FT green/red wire) Pin 2: Red wire (gray shielded cable) Pin 3: Negative for sensors (FT green/black)

CAM Sensors

Sensor	Type	Used	Connecting the injection sensor pins Old line FT250 to FT400	Connecting the injection Power FT ECU FT450 / FT500 / FT500LITE / FT550	Connecting the injection Power FT ECU FT600
Hyundai	Hall	i30, Tucson, Elantra, Sportage (2006 a 2012 - all 2.0 16V)	Pin 1: 5V (FT green/red wire) Pin 2: Green/Yellow wire Pin 3: Battery negative	Pin 1: 5V (FT green/red wire) Pin 2: white wire (black shielded cable 1 way) Pin 3: Negative sensors	Pin 1: 5V (FT green/red wire) Pin 2: Red wire (gray shielded cable) Pin 3: Negative for sensors (FT green/black)
BMW 550582A	Hall	BMW 325i, 325is, 525i M3 (1992 a 1995)	Pin 1: 5V (FT green/red wire) Pin 2: Green/Yellow wire Pin 3: Battery negative	Pin 1: 5V (FT green/red wire) Pin 2: white wire (black shielded cable 1 way) Pin 3: Negative sensors	Pin 1: 5V (FT green/red wire) Pin 2: Red wire (gray shielded cable) Pin 3: Negative for sensors (FT green/black)
BMW***	VR	BMW 320i, 323i, 328i (95-97) E36 BMW 520i, 523i, 528i (96-97) E39	Pin 1: Green/Yellow wire Pin 2: Battery negative	Pin 1: white wire (black shielded cable 1 way) Pin2: shield (black shielded cable 1 way)	Pin 1: Red wire (gray shielded cable) Pin 2: White wire (gray shielded cable)

*** Not recommended

TPS SENSOR



TPS Sensor

Sensor	Used	Connecting the injection sensor pins for FT250 to FT400	Connecting the injection Power FT ECU FT450 / FT500 / FT500LITE / FT550 / FT600
037.907.385Q	TPS VW fluxo cruzado	Pin 1: 5V (FT green/red wire) Pin 2: Orange wire Pin 3: Battery negative	Pin 1: 5V (FT green/red wire) Pin 2: White input Pin 3: Battery negative
PF2C / PF6C	Elba, Fiorino, Palio, Siena, Tempra, Uno, Gol, Logus, Parati, Santana, Pointer, Escort, Verona, Versailles	Pin 1: Battery negative Pin 2: 5V (FT green/red wire) Pin 3: Orange wire	Pin 1: Battery negative Pin 2: 5V (FT green/red wire) Pin 3: White input
PF5C (Inverse)	Palio, Siena, Tempra, Clio, Megane, Gol, Parati, Polo, Quantum, Saveiro,	Pin 1: Battery negative Pin 2: 5V (FT green/red wire) Pin 3: Orange wire	Pin 1: Battery negative Pin 2: 5V (FT green/red wire) Pin 3: White input
DELPHI ICD00122	Omega 4.1, Astra, Blazer 2.2 e 2.4, kadett, Ipanema, S10	Pin 1: Battery negative Pin 2: 5V (FT green/red wire) Pin 3: Orange wire	Pin 1: Battery negative Pin 2: 5V (FT green/red wire) Pin 3: White input
Toyota	Corolla, Trueno (engine 4AGE)	Pin 1: 5V (FT green/red wire) Pin 2: Orange wire Pin 4: Battery negative	Pin 1: 5V (FT green/red wire) Pin 2: White input Pin 3: Battery negative
Toyota	Motor 2JZ	Pin 1: 5V (FT green/red wire) Pin 2: Orange wire Pin 3: Not Used Pin 4: Battery negative	Pin 1: 5V (FT green/red wire) Pin 2: White input Pin 3: Not Used Pin 4: Battery negative
06A 133063S	Audi, Golf 1.8 20v , 150cv, Bora, Gol 1.0 Turbo	Pin 4: 5V (FT green/red wire) Pin 5: Orange wire Pin 7: Battery negative	Pin 4: 5V (FT green/red wire) Pin 5: White input Pin 7: Battery negative
CTS:4089 RENAULT:7700431918 RENAULT:8200139460 DS2200	TPS CLIO adaptation throttle	---	Pin 1 and 2: White input (signals 0,3 > 2,3V and 0,6 > 4,6V) Pin 3 and 6: 5V (FT green/red wire) Pin 4 and 5: Battery negative

To check which is the correct connection of the TPS sensor, it is necessary to perform the procedure described below:

- 1 - With a multimeter on the 20K Ω scale;
- 2 - Measurement between Pins 1 and 2/1 and 3/2 and 3, opening and closing the Throttle;
- 3 - Check which was the combination of Pins that there was NO change in the measured value with the butterfly open and closed;
- 4 - In the Pins that did NOT change, they will be the positive and negative of the sensor;
- 5 - The remaining Pin turn on the TPS signal;

IDLE ACTUADOR



PWM
and
Stepper motor


Idle actuator PWM

Sensor	Car / Frequency	Actuator Image	Connecting the ECU PowerFT FT450	Connecting the ECU PowerFT FT500 / FT500LITE / FT550 e FT600
Bosch: 0280140516 / 0280140559 GM: 90271799 Fiat: 7766481 VW: 037906457E / 037906457F Volvo: 3450181	Kombi, Golf, Vectra, Omega, Alfa Romeo, Tempra, Volvo (2 PINS) Frequency PWM: 100Hz		Pin 1: Switched 12V Pin 2: Blue #5 output from ECU Output configuration: Active at 0V	Pin 1: Yellow Output from ECU Pin 2: Battery negative Output configuration: Active at 12V
BMW: 13411247197 BMW: 13411433627 Bosch: 0280140549 Bosch: 0280140519	BMW (2 PINS) Frequency PWM: 100Hz		Pin 1: Switched 12V Pin 2: Blue #5 output from ECU Output configuration: Active at 0V	Pin 1: Yellow Output from ECU Pin 2: Battery negative Output configuration: Active at 12V
Bosch: 0280140545 BMW: 13411738545 / 13411738981 BMW: 13411744713	BMW (3 PINS) ** Frequency PWM: 100Hz It works by closing the actuator as it acts on both sides.		Pin 1: Blue #5 output from ECU Pin 2: Switched 12V Output configuration: Active at 12V	Pin 1: Battery negative Pin 2: Yellow Output from ECU Output configuration: Active at 0V
Fiat: 7789627 Volkswagen: 60811197 Bosch: 280140553	Marea (3 PINS) ** Frequency PWM: 300Hz It works by closing the actuator as it acts on both sides.		Pin 1: Blue #5 output from ECU Pin 2: Switched 12V Output configuration: Active at 12V	Pin 1: Battery negative Pin 2: Yellow Output from ECU Output configuration: Active at 0V

**NOTE**

** Actuator at rest remains open. Use the close pin and invert the logic in the software.

Idle actuator PWM

Sensor	Car / Frequency	Actuator Image	Connecting the ECU PowerFT FT450	Connecting the ECU PowerFT FT500 / FT500LITE / FT550 e FT600
FORD: 938F9F71AC / AB VW: 0269980493	Ford, VW (2 PINS) * Frequency PWM: 300Hz If connected in reverse, it will damage the ECU output.		Pin 1: Blue #5 output from ECU Pin 2: Switched 12V Output configuration: Active at 0V	Pin 1: Battery negative Pin 2: Yellow Output from ECU Output configuration: Active at 12V
SKU: LC574600 GM: 574600	Vectra (2 PINS) *** Frequency PWM: 300Hz It works by closing the actuator as it acts on both sides.		Pin 1: Switched 12V Pin 2: Blue #5 output from ECU Output configuration: Active at 12V	Pin 1: Yellow Output from ECU Pin 2: Battery negative Output configuration: Active at 0V

**IMPORTANT**

* Pay attention to polarity, if connected in reverse it will damage the module output.




**NOTE**

*** Actuator at rest remains open. If it turns on with reversed polarity, it inverts the logic in the software.

Idle - Step motor

Sensor	Car / Frequency	Actuator Image	Connecting the ECU FT500	Connecting the ECU FT550	Connecting the ECU FT600
GM: 93.214.071 Fiat: 17108187 Bosch: F.000.99M.187 Delphi: ICD00124 Siemens: AT08187R	Blazer, Celta, Corsa, Kadett, Monza, Omega, Tigra, Palio, Strada Number of steps: 210		Pin A: Yellow2 Pin B: Yellow4 Pin C: Yellow1 Pin D: Yellow3	Pin A: Yellow1 Pin B: Yellow3 Pin C: Yellow2 Pin D: Yellow4	Pin A: Yellow1 Pin B: Yellow3 Pin C: Yellow2 Pin D: Yellow4
Bosch: F.000.99M.150 0279980491 026906247A	Gol, Parati, Saveiro Number of steps: 260		Pin A: Yellow4 Pin B: Yellow3 Pin C: Yellow2 Pin D: Yellow1	Pin A: Yellow4 Pin B: Yellow1 Pin C: Yellow3 Pin D: Yellow2	Pin A: Yellow2 Pin B: Yellow3 Pin C: Yellow1 Pin D: Yellow4
.027998049 40430102 05150R	Gol, Parati, Saveiro 2002 em diante Number of steps: 190		Pin A: Yellow4 Pin B: Yellow3 Pin C: Yellow2 Pin D: Yellow1	Pin A: Yellow4 Pin B: Yellow1 Pin C: Yellow3 Pin D: Yellow2	Pin A: Yellow2 Pin B: Yellow3 Pin C: Yellow1 Pin D: Yellow4
MTE: 7427 Ford: 2S6A9F715BA Ford: 2S6A9F715BB	Fiesta / Ecosport Number of steps: 175 / 245		Pin A: Yellow1 Pin B: Yellow3 Pin C: Yellow4 Pin D: Yellow2	Pin A: Yellow4 Pin B: Yellow2 Pin C: Yellow1 Pin D: Yellow3	Pin A: Yellow4 Pin B: Yellow2 Pin C: Yellow1 Pin D: Yellow3
	GM 350 / 305 1993 Number of steps: need a test		Pin A: Yellow4 Pin B: Yellow2 Pin C: Yellow3 Pin D: Yellow1	Pin A: Yellow3 Pin B: Yellow1 Pin C: Yellow4 Pin D: Yellow2	Pin A: Yellow3 Pin B: Yellow1 Pin C: Yellow4 Pin D: Yellow2

Others sensors

Sensor	Model	Actuator Image	Connecting the ECU PowerFT FT450	Connecting the ECU PowerFT FT550 / FT600
MAP sensor/ Pan vacuum	DS1740		Pin 1: 5V (FT green/red wire) Pin 2: Battery negative Pin 3: White input	Pin 1: 5V (FT green/red wire) Pin 2: Sensor ground (green/black wire) Pin 3: White input
Speed Sensor	DS2509		Pin 1: Switched 12V Pin 2: White input Pin 3: Battery negative	Pin 1: Switched 12V Pin 2: White input Pin 3: Sensor ground (green/black wire)
Flex Fuel	GM - 13577429 / 94 /79 AEM - 30-2200 Continental 1924000086		Pin 1: Switched 12V (VCC) Pin 2: Battery negative (GND) Pin 3: White input (OUT)	Pin 1: Switched 12V (VCC) Pin 2: Sensor ground (green/black wire) (GND) Pin 3: White input (OUT)

Idle actuator - **Not compatibles**

Sensor	Car / Frequency	Actuator Image	Connecting the ECU FT500	Connecting the ECU FT550	Connecting the ECU FT600
MTE: 7432 Bosch: 0132008600 Bosch: 0132008602 GM: 90531999	Vectra / Astra (4 pins)		---	---	---
06A 133 063S	Audi/Golf 1.8 20v /150cv / Bora / Gol 1.0 Turbo Only TPS value		---	---	---