VRS SENSOR

Technical Spec

ECOTRONS LLC

COPY RIGHTS ECOTRONS

ALL RIGHTS RESERVED

Note: If you are not sure about any specific details, please contact us at info@ecotrons.com.

Product: **VRS sensor**

Type: **EVS02C**

Comment: All data given in this document are nominal values and might be subject of change at all time

Index	Page	Revision	Date	Note
1	----	**First Edition**	7.14.2014	V1.0
2	----	**Second Edition**	7.19.2014	V1.1
3	----	**Third Edition**	2.16.2017	V1.2

Table of Contents

1 Characteristic

2 Applications and Installation instructions

3 Diagnostics and Service (with Ecotrons EFI)

4 Appendixes: Mechanical CAD Drawing

General Description

This VRS sensor is Magneto electric induction type crankshaft sensor. It is triggered by magnetic medium or tooth.

And it Generates AC pulses instead of square waves.

1 Characteristic

1.1 Sensor picture

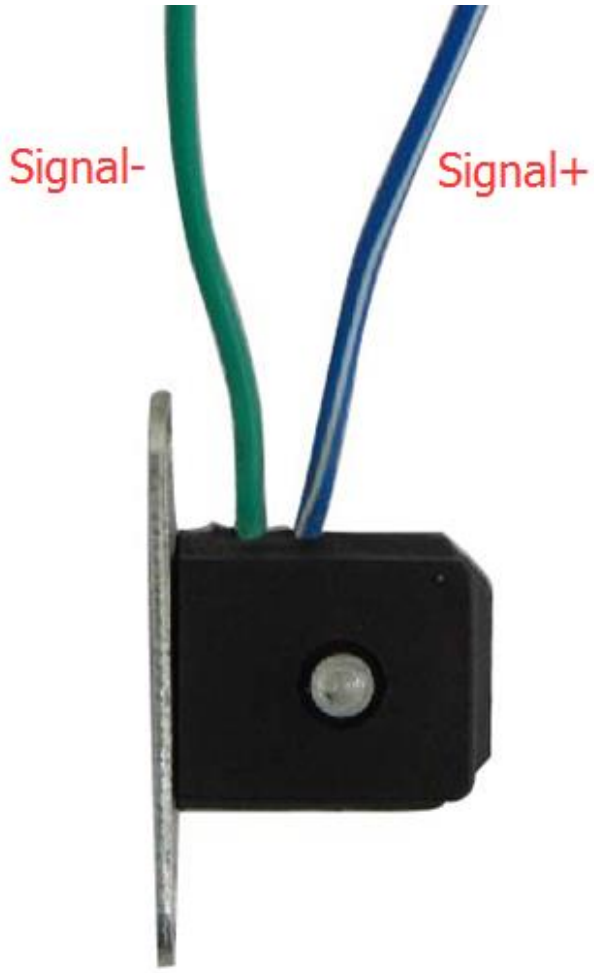


1.2 Electrical Characteristics

Maximum output voltage…… 16v
DC resistance …….. 225~275Ω
Inductance …….. 120~140mH
Operating temperature…….. -40~180 ^{o}C
Diameter of Sensing head…….5±0.2mm
Weight ……..….. 32g

1.3 Wire color and Pin-outs definitions

Copy rights ECOTRONS LLC



Signal +: Blue/white

Signal-: Green/white

2 Applications and Installation instructions

2.1 typical applications

The VRS sensor is usually used as crankshaft sensor to detect the position of crankshaft, and then the signal is used by ECU to control the ignition system.

2.2 Installation instructions

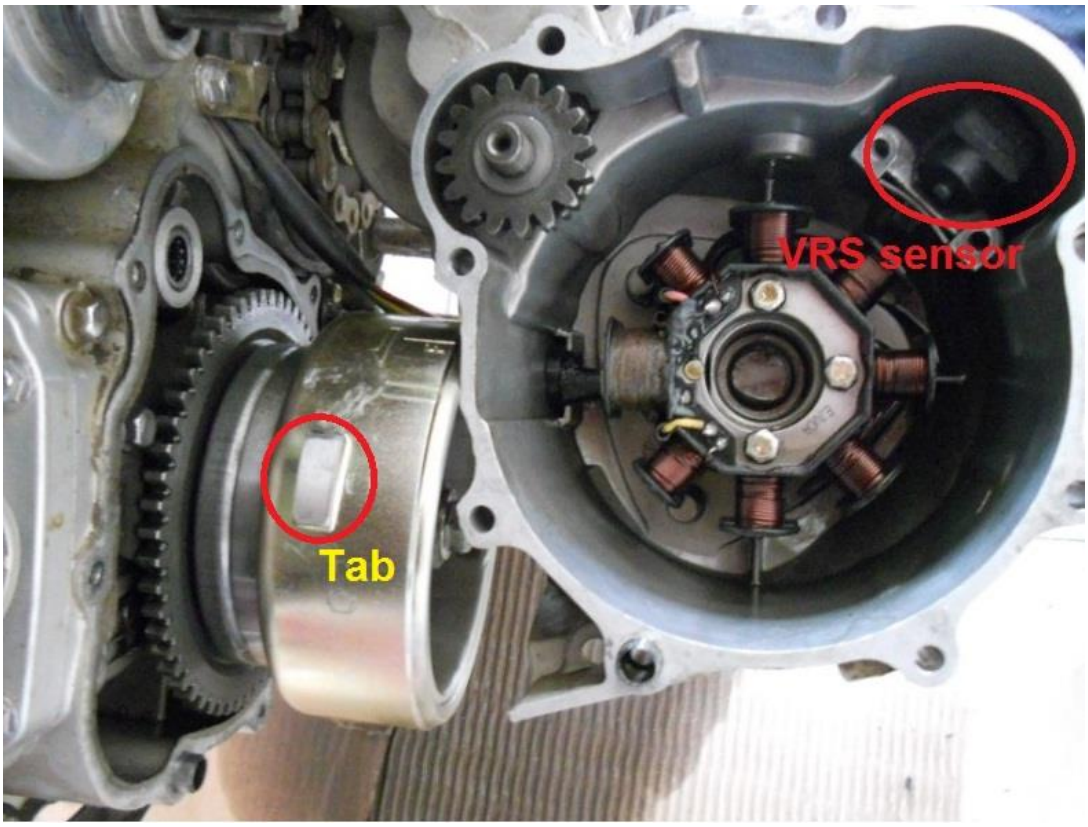
2.2.1 VRS sensor is used in CDI ignition system

For most engines, they need an ignition pick-up signal to trigger the CDI.

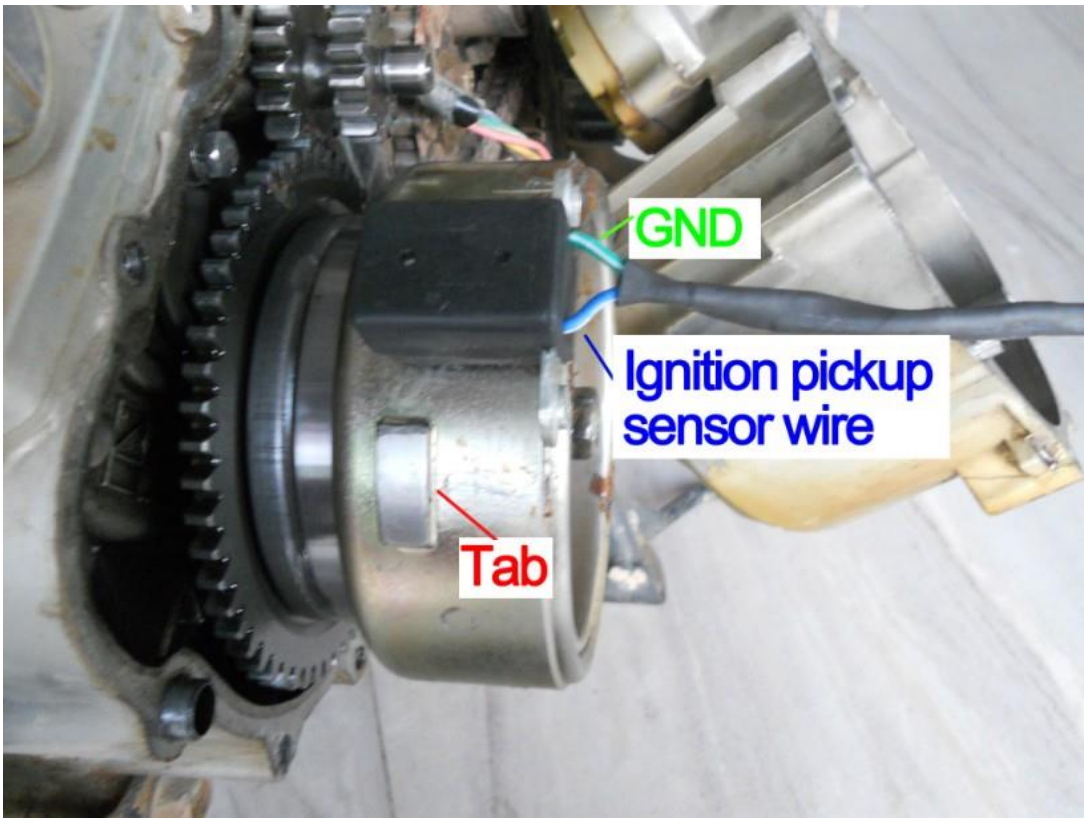
And there is a tab on the flywheel, when the bolt pass through the VRS sensor, the VRS sensor will be triggered and produce a signal.

The CDI-unit gets the signal, and then it works and then triggers the spark plug to fire.

And our ECU also read the signal, to control the ignition and fuel injection. If ECU doesn't read the VRS signal, it will not work.



Copy rights ECOTRONS LLC



Note: the signal + wire (Blue/white) from VRS sensor is connected to orange wire (CKP) from ECU harness.
And the signal – wire (Green/white) from VRS sensor is connected to negative of battery.

Measure the signal + wire and signal – wire output with oscilloscope
Note: Signal+: CH1 (yellow)
Signal –: CH2 (Blue)

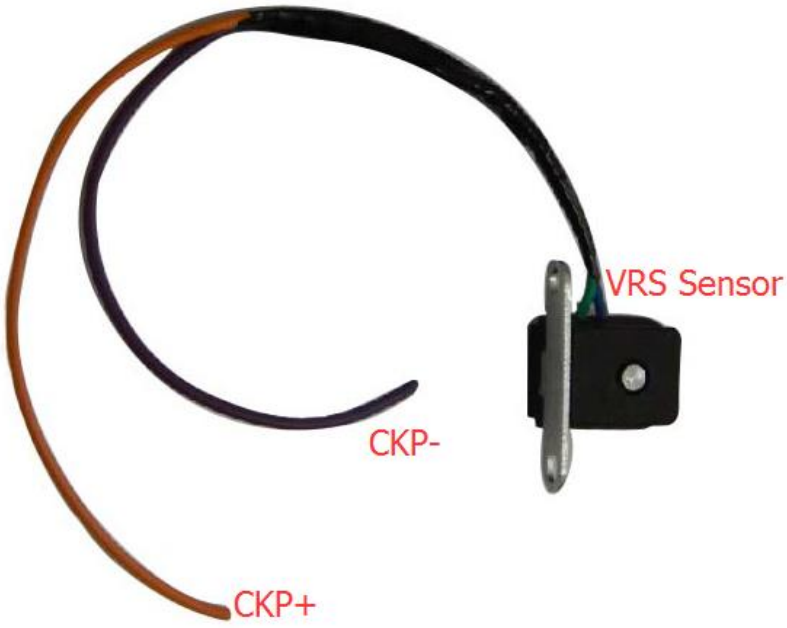
Copy rights ECOTRONS LLC



2.2.2 VRS sensor is used to detect multi-tooth trigger wheel.

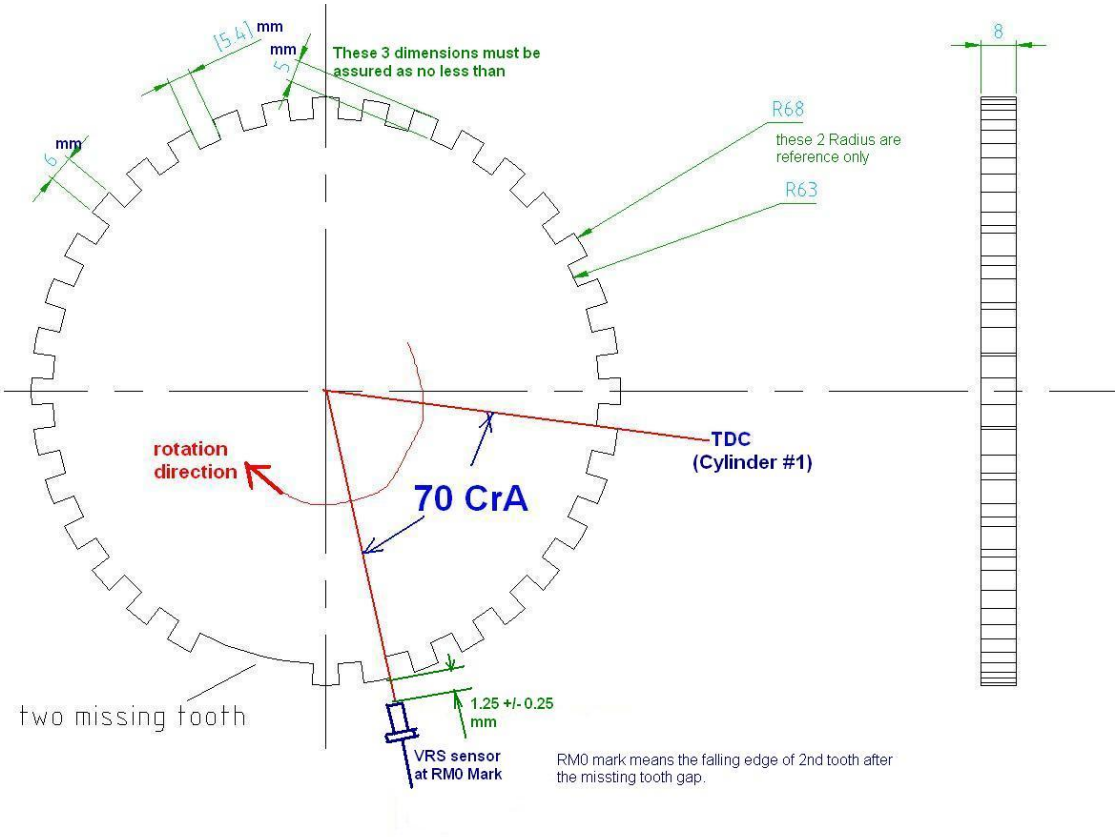
Copy rights ECOTRONS LLC





Note: the signal + wire (Blue/white) from VRS sensor is connected to orange wire (CKP+) from ECU harness.
And the signal – wire (Green/white) from VRS sensor is connected to purple wire (CKP-) from ECU harness

Copy rights ECOTRONS LLC



Note: the VRS sensor need be installed 50-80 degrees before TDC, and the missing tooth should be at 80-110 degrees before TDC. See above picture as a reference.

The metal sensing element (sensor head) needs to align well with the multi-tooth wheel.

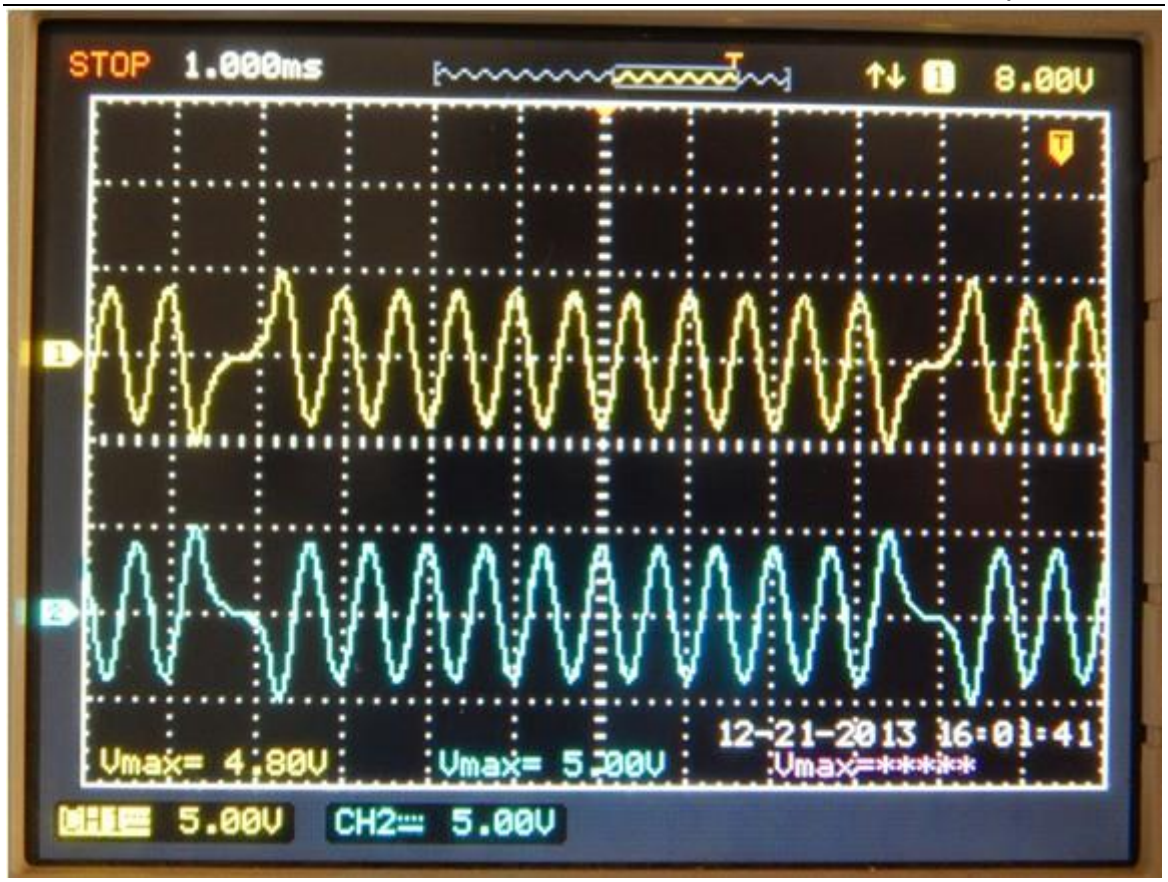
And the tooth width need be bigger than the sensing head, if the sensing head of VRS is much bigger than the tooth, the signal will not be correct, and ECU will not get the correct tooth signal.

Measure the signal + wire and signal – wire output with oscilloscope (12-1 tooth-wheel)

Note: Signal+: CH1 (yellow)

Signal –: CH2 (Blue)

Copy rights ECOTRONS LLC

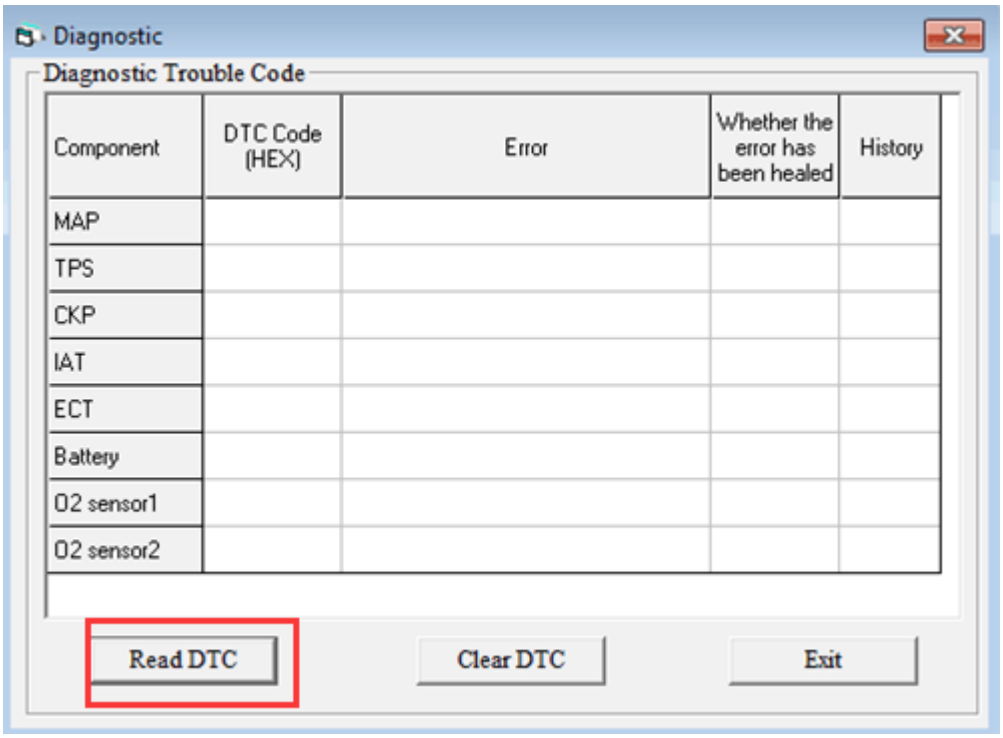


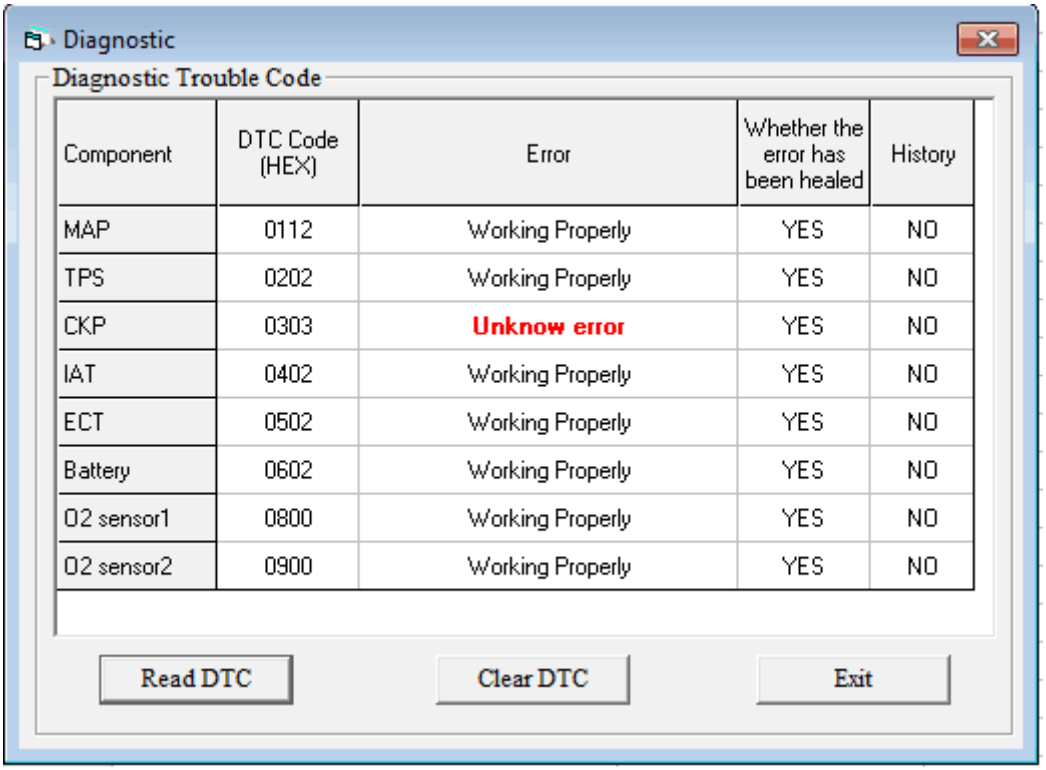
3 Diagnostics and Service (with Ecotrons EFI)

If you crank the engine to start, but the engine can't go to start and the Mil-lamp is on.

You use the EcoCAL to read the DTC code, and it reports CKP error:

Go to menu->Diagnostics->ECU Diagnostics





This Error shows that you need re-check the CKP wire connections and make sure that all ground wires are connected to the negative of 12V battery well.

Copy rights ECOTRONS LLC

Note: If you have other problems, please contact us, **support @ecotrons.com**
http://www.ecotrons.com

4 Appendixes: Mechanical CAD Drawing

