Pazon

IGNITIONS WITH THE 7½ YEAR WARRANTY

Smart-Fire™

BMW R1100/R1150/S/GS TWIN

HIGH-PERFORMANCE IGNITION SYSTEM

12 VOLT

SYSTEM TYPE: PDBMWR1100

SMART-FIRE APPLICATIONS

- **BMW R1100/R1150/S/GS HORIZONTALLY OPPOSED TWIN & SIMILAR MACHINES WITH CONVERSION FROM ORIGINAL BOSCH MOTRONIC ENGINE MANAGEMENT SYSTEM TO CARBURETTORS, RETAINING ORIGINAL BMW TIMING SENSORS & IGNITION COIL**

FEATURES

- **HIGH-POWER DIGITAL IGNITION MODULE (FULLY ENCAPSULATED)**
- **FULLY PROGRAMMED IGNITION TIMING & COIL ENERGY CONTROL: IGNITION ADVANCE CURVE IS MAPPED TO SUIT THE BMW R1100/R1150 ENGINE WITH CARBURETTORS**
- **ABILITY TO TUNE YOUR ENGINE FOR MAXIMUM PERFORMANCE**
- **MODULE INCLUDES STATIC TIMING LIGHT, FOR EASY SETTING OF IGNITION TIMING**
- **USER-PROGRAMMABLE REV.LIMITER BUTTON**
- **ELECTRONIC TACHOMETER SIGNAL OUTPUT**
- **SECURITY/KILL SWITCH CONTROL INPUT**
- **COMPATIBLE WITH ORIGINAL BMW TIMING SENSORS**
- **COMPATIBLE WITH ORIGINAL BMW/BOSCH DUAL O/P DIGITAL IGNITION COIL OR THE PAZON DIGITAL DUAL O/P COIL**
- **WASTED SPARK SYSTEM FOR SIMPLICITY**
- **FOR RACING , HIGHLY TUNED OR MULTI-PLUG APPLICATIONS: SPECIAL ADVANCE CURVES & REV-LIMITERS AVAILABLE**
- **COVERED BY MANUFACTURER'S 7½ YEAR WARRANTY**
- **MODULE SIZE(mm): 90 LONG x 65 WIDE (95 INC. MOUNTING BRACKETS) x 30 DEEP, WEIGHT: 400g (INC. WIRES)**

IGNITION SYSTEM COMPRISES:

- **IGNITION MODULE (ALUMINIUM HOUSING WITH MOUNTING BRACKETS & WIRING)**
- **MODULE FIXING SCREWS, WASHERS & NUTS**
- **CRIMP TERMINAL CONNECTORS & INSULATORS**
- **LARGE & SMALL CABLE TIE-STRAPS**

FITTING INSTRUCTIONS

WARNING: THIS SYSTEM PRODUCES VERY HIGH VOLTAGES, ALWAYS SWITCH OFF BEFORE WORKING ON THE SYSTEM.

IMPORTANT NOTES:

BEFORE FITTING, PLEASE READ THESE INSTRUCTIONS CAREFULLY, INCLUDING THE NOTICE ON PAGE 12.

This system is designed to work only with the original Bosch digital ignition coil or Pazon's own dual digital coil (IC12/IC22), with a primary resistance of 0.5-0.6 ohms. 5K resistor plug caps, resistor spark plugs or resistor h.t. leads should be used with this system. Attempting to run the system with insufficient resistance will result in excessive radio frequency interference (r.f.i.), which may cause bad running, misfiring and loss of ignition. Carbon fibre (resistive) h.t. leads can be used, but we recommend copper or steel cored h.t. lead for maximum reliability & spark energy. This ignition is a wasted spark system (as per original system), i.e. both plugs fire at the same time.

These instructions are a general guide for installing the system to various machines and therefore it may be necessary to modify the length or routing of some wires in order to complete the installation. All connections should be made using good quality crimped or soldered connections; twisted wires will not give satisfactory operation. Wiring should be trimmed to the correct length, excess wire should not be coiled up as this can affect the correct running of the ignition system. If electric welding is to be carried out, the ignition module should be disconnected and removed from the machine.

The following instructions assume that you have performed the conversion from fuel injection to carburettors.

1. For safety, disconnect the battery (preferably both terminals).
2. Remove the fuel tank to gain access to the existing ignition system & wiring.
3. The connections to the ignition coil should remain in place, unless you are removing the wiring harness & completely rewiring the machine (please see wiring section). These terminals are marked +15 and –1 (the wires are normally coloured green and black, respectively). The coil earth is a short thick black wire.
4. Disconnect all connectors & sensor inputs to the Bosch Motronic control unit. Remove the unit from the machine.
5. Fit the new Pazon ignition module in a convenient place, ideally in place of the original control unit. The module can be orientated in any position, but this should be onto a flat surface, if possible. Secure the unit by the mounting flanges using the two M5 bolts, washers & nuts. Alternatively, the mounting flanges can be removed by slackening the bracket securing screws and sliding the brackets out of the dovetail slots. The module can then be mounted using large tie-straps, with a small sheet of rubber between the case & the frame.

WIRING *(PLEASE SEE WIRING SCHEMATIC ON PAGE 7)*

1. Connect the wires from the ignition module to the BMW timing sensor as follows:

MODULE		SENSOR	FUNCTION
WHITE-BLACK	⇨	BROWN	SENSOR –V
WHITE-RED	⇨	RED	SENSOR +V
VIOLET-RED	⇨	ORANGE	SIGNAL OUT

   Cut off the original six-way plug connector from the timing sensors. Cut the wires to length, strip the insulation from the ends and make the connections using either individual male & female crimps (supplied) or by using a multi-way plug & socket. Soldering the connections is recommended for reliability. The silver and black wires on the original six-way plug are not used and can be covered with insulating tape.
2. Temporarily disconnect the black wire from the —1 terminal of the ignition coil (unless the wiring harness has been removed from the machine).
3. The remaining wires from the ignition module should be connected to the bike electrics as follows:

   BLACK ⇨ BATTERY NEGATIVE TERMINAL (EARTH)
   VIOLET ⇨ IGNITION COIL —1 TERMINAL
   RED ⇨ +12 VOLTS VIA KILL SWITCH

   Fit a ring terminal to the black wire and connect to the battery negative terminal or to a good earth on the frame.
   Fit a piggyback female spade terminal and insulator to the violet wire and connect to the –1 terminal on the ignition coil.
   The red wire connects to the 15a (Green-Red) wire side of the kill switch.
4. Reconnect the wire removed in step 2, by pushing onto the spare terminal on the black wire piggyback connector (fitted in step 3). Also see next step.
5. Terminal #19 on the disconnected Motronic multi-way connector has two black wires. One connects to the ignition coil —1 terminal, the other connects to the tachometer —1 terminal. If you have removed the original wiring harness you will need to run a new feed wire from the —1 terminal of the ignition coil to the —1 terminal on

the tachometer, otherwise the tachometer will not give a positive reading.

6. The **ORANGE** wire is an IGNITION INHIBIT input.
   This can be connected to a grounding kill switch/lanyard or a hidden security switch. If not required, place insulating tape over the end of the wire to prevent accidental shorting out.
7. The **GREY** wire is an alternative tacho output signal for driving an electronic tachometer, if fitted. This is a 12 volt output and provides 1 pulse per engine revolution (1 pulse/rev). If your tacho requires a different pulse rate, contact Pazon Ignitions. Connect to the tacho signal input terminal/wire. If you have a mechanical tacho, an inductive pickup tacho (e.g. Scitsu) or no tacho, then leave unconnected; cut short the wire & and insulate the wire end.
8. Any remaining wires which may be present on the ignition module are for factory use and should remain unconnected and insulated, as supplied.
9. There are two hall-effect sensors fitted to the BMW. This system uses the top one for ignition timing, the bottom sensor is not used. The bottom sensor output wire is coloured black and is not used.

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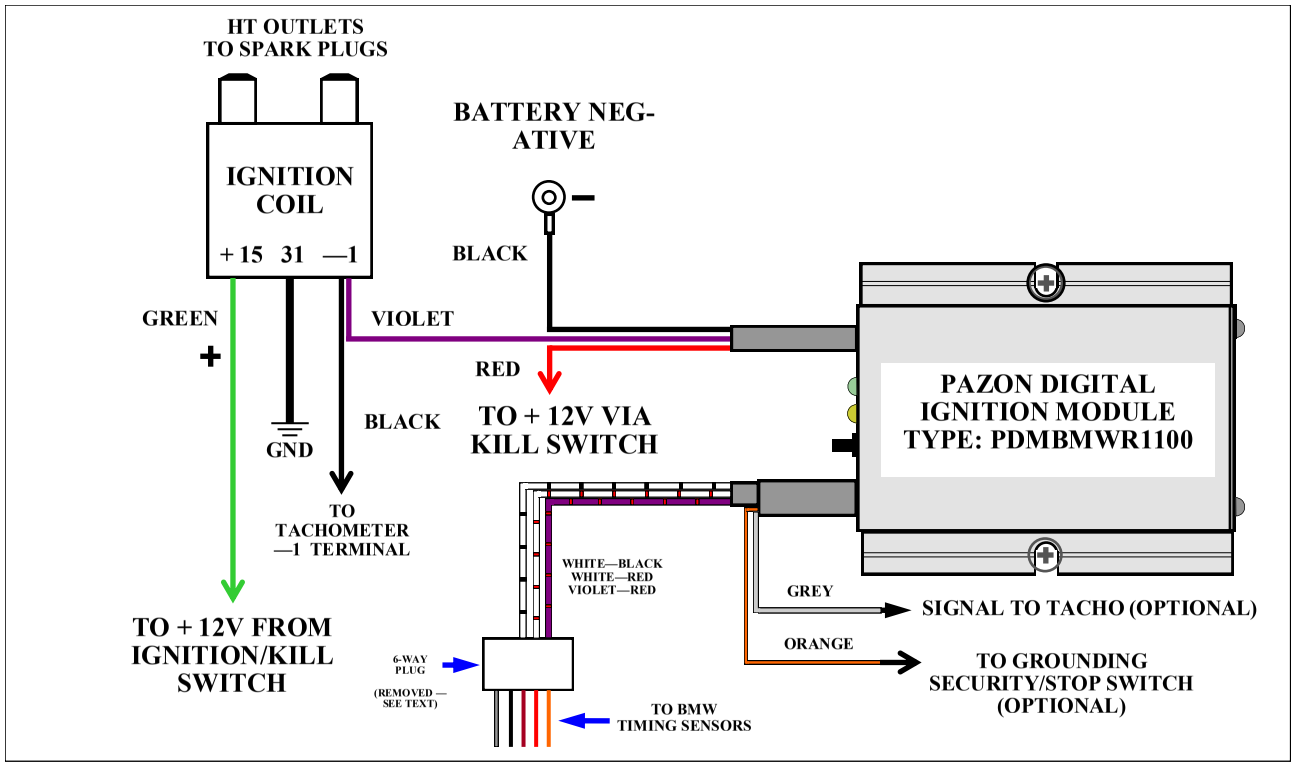
WARNING: TURN OFF/DISCONNECT THE BATTERY
BEFORE WORKING ON THE SYSTEM
HIGH VOLTAGES CAN KILL



Ignition timing

1. Remove the small rubber cover on the clutch bell housing, just inside the right throttle body.
2. With the help of an assistant, place the transmission into 5th gear and rotate the engine by moving the rear wheel. At the same time observe the timing marks on the flywheel with the aid of a bright light. You should see the following marks:

   OT Top Dead Centre
   Z Full Advance
   S Static / initial advance mark (6°)

3. Reconnect the battery. For best results when using a strobe timing light, we recommend using a separate battery for powering the strobe.
4. Warm the engine and, using a white light strobe pointing through the timing inspection hole, observe where the static timing is occurring. With the engine at idle (below 1200 rpm) the advance should be very close to the “S” mark. If so, there is no need to adjust the timing. If the timing needs adjusting, proceed as follows, otherwise replace the rubber cover (removed in step 1). The ignition installation is complete.
5. Remove the black cover on the front of the engine, to expose the alternator, drive pulleys & belt.
6. The ignition hall timing sensors are mounted on a timing plate; they are hidden behind the lower pulley (crankshaft driven). The timing plate is secured with three screws and can be moved clockwise (cw) & counterclockwise (ccw) in three slotted holes.
   To adjust the timing, first stop the engine & turn the ignition off. Loosen the three timing plate screws. To advance the ignition timing, tap the timing plate in a counter clockwise (ccw) direction; to retard the timing, tap the timing plate in a clockwise (cw) direction. Tighten the three screws & recheck the timing.
   The digital ignition module features a yellow led (light emitting diode), which can be used to assist with static timing, as follows:

   - Set the engine to TDC (OT mark on the flywheel)
   - Move the timing plate slowly from side to side, the yellow led will turn on & off at the TDC reference point on the timing baffle (inside of the lower crankshaft pulley)

- Note: the yellow led turns on at the maximum advance reference (45° BTDC) & off at TDC (below 300 rpm crankshaft speed)

7. Refit the front engine cover.
8. Refit the flywheel inspection rubber cover.
9. Installation is complete.

MODULE FUNCTIONS

The Pazon ignition module has two leds (light emitting diodes) on the front, where the wires exit.

The green led functions as follows:

- Turns on to show a successful power-up condition of the module
- When the engine stops turning (with the ignition switched on) the green led will turn off & on two seconds after the engine has stopped turning, indicating that the module has successfully reset

The yellow led is used for two functions:

- Static timing assist. Below 300 rpm, the led turns on at the start of the timing baffle cut-out & turns off at the end of the cut-out (TDC reference), see timing section.
- Function button pressed indicator. Flashes during setting/resetting of rev-limiter, see page 10

REV-LIMITER

USE OF THIS FUNCTION IS AT YOUR OWN RISK, SINCE IT IS POSSIBLE TO SET THE REV-LIMITER TO BEYOND THE DESIGNED UPPER RPM LIMIT FOR YOUR ENGINE.

The **Smart-Fire** ignition module features a function button that enables the user to set/reset the ignition rev-limiter. Unless specified when purchasing the system, the rev-limiter is not preset, allowing your engine to rev to its maximum (unrestricted).

To Set the Rev-Limiter

To accurately set the rev-limiter you will need a rev-counter/tachometer to monitor the engine rpm. Rev the engine to one-half the desired rev-limit rpm, press & hold the function button for a minimum 3 seconds. The ignition module will take a snapshot of the engine rpm at the instant the button is pressed, therefore it is not essential to maintain a precise rpm whilst the button is pressed. The yellow indicator led on the module will flash 5 times. Release the button. The rev-limiter is now set. When your engine reaches the preset rpm the ignition will turn off the ignition coil, cutting all sparks. Thus, the engine rpm will fall and, once below the rev-limit setting, ignition will resume.

The minimum rev-limiter setting is 3000 rpm (i.e. set with the engine running at 1500 rpm).

To Reset the Rev-Limiter

To reset (disable) the ignition rev-limiter, press & hold the function button for a minimum of 3 seconds, with the engine below 1500 rpm (or stationary). The yellow indicator led on the module will flash 5 times. Release the button. The rev-limiter is now reset.

The rev-limiter setting is retained in the ignition module memory & will be recalled when the ignition is turned on.

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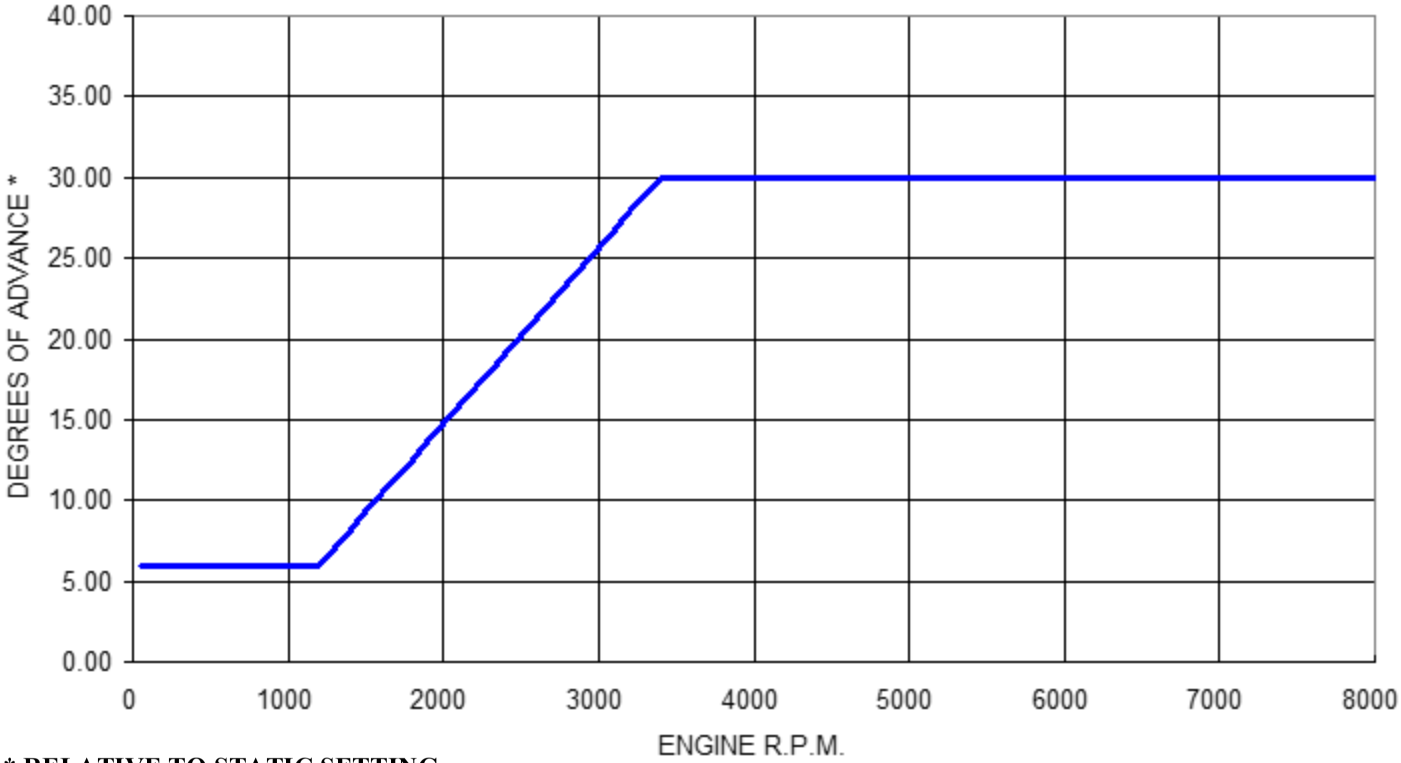
Smart-Fire Ignition Timing
BMW R1100/R1150/S/GS TWIN



*** RELATIVE TO STATIC SETTING**

MIN. CRANKING SPEED: 150 RPM **MAP030**

Terms & Conditions and Warranty

- Use of this product indicates your acceptance of this notice.
- The product design, firmware & literature is Copyright © PAZON IGNITIONS LTD. 2005-2024, and is protected under international copyright, trademark & treaty provisions.
- To provide the best ignition systems possible, Pazon Ignitions Ltd. reserves the right to alter and improve the specifications of its products without prior notice.

Ignition Systems

- Pazon Ignitions warrants to the original purchaser that the Pazon Ignition System be free from defects in workmanship & parts under normal use for a period of 7½ years from date of purchase.

Ignition Spares

- Spares are defined as item(s) not purchased as part of a complete ignition system. Pazon Ignitions warrants to the original purchaser that these item(s) be free from defects in workmanship & parts under normal use for a period of one year from date of purchase.
- Ignition coils will only be covered by the warranty if it can be proved that the fault is due to a manufacturing fault within the coil.

Limitation of Liability

- In no event shall Pazon Ignitions' liability related to the product exceed the purchase price actually paid for the product.
- Neither PAZON nor its suppliers shall in any event be liable for any damages whatsoever arising out of or related to the use or inability to use the product, including but not limited to the direct, indirect, special, incidental or consequential damages, or other pecuniary loss.
- This warranty will be void if the product or parts have been altered, damaged, abused or installed incorrectly.
- This warranty will be void if parts supplied by Pazon Ignitions are used with other makes of ignition. Your statutory rights are not affected.

Warranty Claims

- To make a claim under warranty, the product must be returned to Pazon Ignitions or its authorized representative, with a copy of your receipt (or evidence of date and place of purchase), within the warranty period.
- Include a detailed description of the problem and why you believe there is a fault within the ignition system.
- The system must be returned postage paid. Proof of posting is not proof or receipt, therefore we recommend using a recorded mail service.
- Upon receipt we will thoroughly test the returned items and repair or replace any items found to be faulty and covered by the warranty.
- Please allow seven working days from receipt of the returned parts before contacting us, to allow sufficient time for a thorough test and evaluation.
- PLEASE CONTACT PAZON IGNITIONS FOR RETURN INSTRUCTIONS.

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