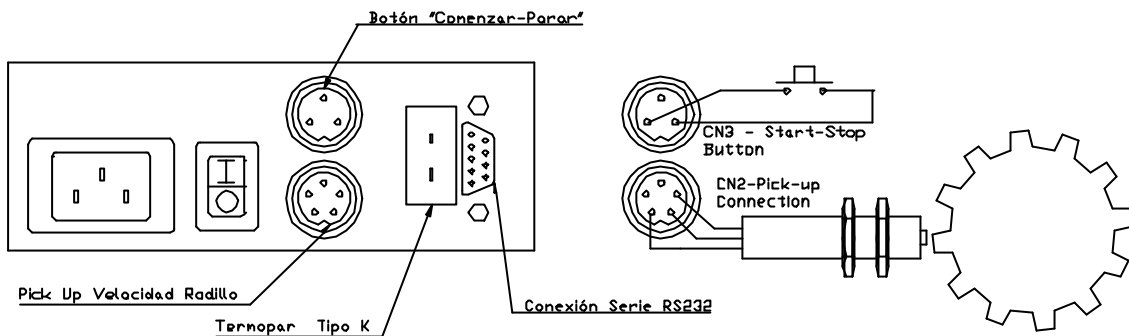


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# Installation Manual

## SmartPower SP-1

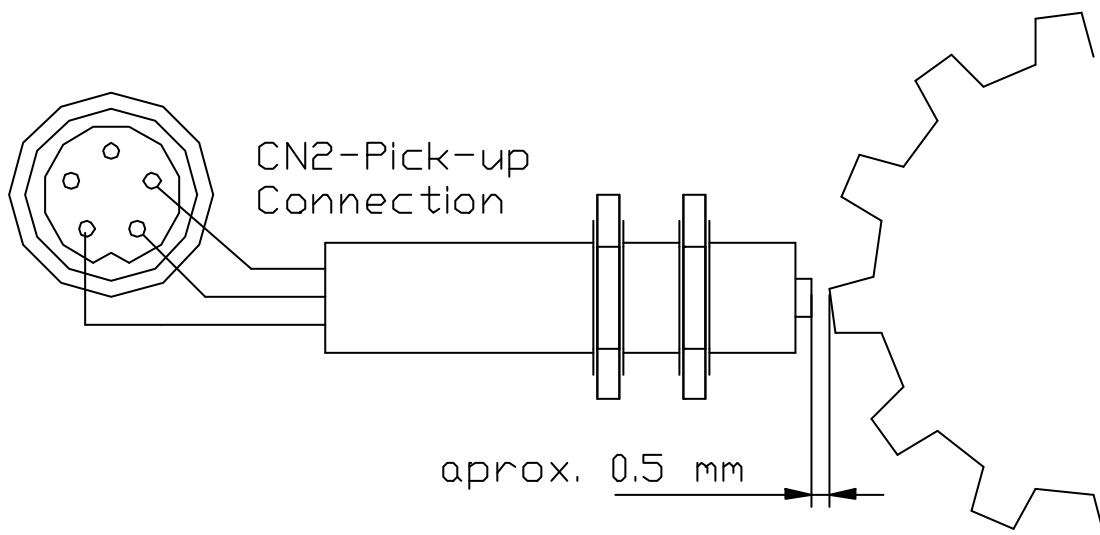
### 1. Module connections.



#### 1.1 Connecting roller sensor (digital PICK UP)

Pickup should be mounted perpendicular to the teeth as shown in the picture. Distance between teeth and pickup should be 0.5 mm (0.2 inch) (WARNING: toothed gear should be perfectly centered, else it could collision with pickup and could damage it.)

Speed at teeth should be greater than 250 m/s so the the module functions correctly, i.e. with a 275 mm diameter gear, pickup starts to cath pulses at 100 RPM, so the module does not shows any reading if you moves the roller with the hand.



#### 1.2 Connecting RPM engine clamp

RPM engine clamp is easily placed at any point of the high voltage cable that connects the spark with the ignition coil.

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### **1.3 Connecting thermocouple type K**

Thermocouple is able to measure temperature between 40°C and 1000°C, the sensor can be placed at the exhaust curve, approximately at 15 centimeters from the exhaust port. To screw the sensor, a socket should be welded (with argentum) at exhaust. Thermocouple should be placed with its end at the center of the exhaust.

A little difference in the position of the sensor causes big differences in the readings, so the installation of sensor should be done carefully in the same position each time it is placed, so the readings can be compared at different sessions.

### **1.4 Connecting GROUND cable**

Ground cable will connect the yellow terminal at the rear of the SP1 module with the chassis of the dynamometer. Connection between the rounded terminal with the dynamometer should be done with a screw so the contact will be ok.

### **1.5 Connecting the button “Start/Stop TEST”**

Start/Stop button should be placed with the other controls of the dynamometer, such as starter button, brake button, etc, so you can easily handle throttle and start/stop button.

## **2 Eliminating sources of noise**

Ignition engine system can generate strong electromagnetic interferences in the electronic equipment and the computer that can affect the readings. To minimize the effect of this interferences some recommendations are shown below:

Spark must have a **5 Kohm resistance spark plug** to avoid the strong interferences at the cables that it will generate in its absence.

Roller and button cable must be placed as separated as possible from the ignition engine system (ignition coil, spark cable, etc)

When mounting engine RPM clamp in the module, this cable must be placed as far as possible from the other sensor cables, you should not join RPM clamp cable with the other sensor cables.