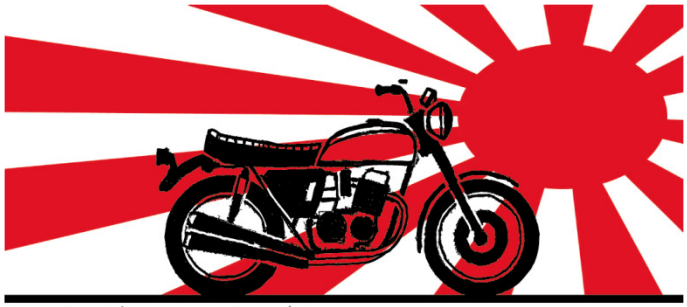

V1.90 Generic Dash Meter

Installation Manual

Rae-San

28/3/2019

Rae-San Generic Meter

Congratulations on your purchase of a new Dash setup for your motorcycle.

Your Kit should be as depicted in one of the pictures below-

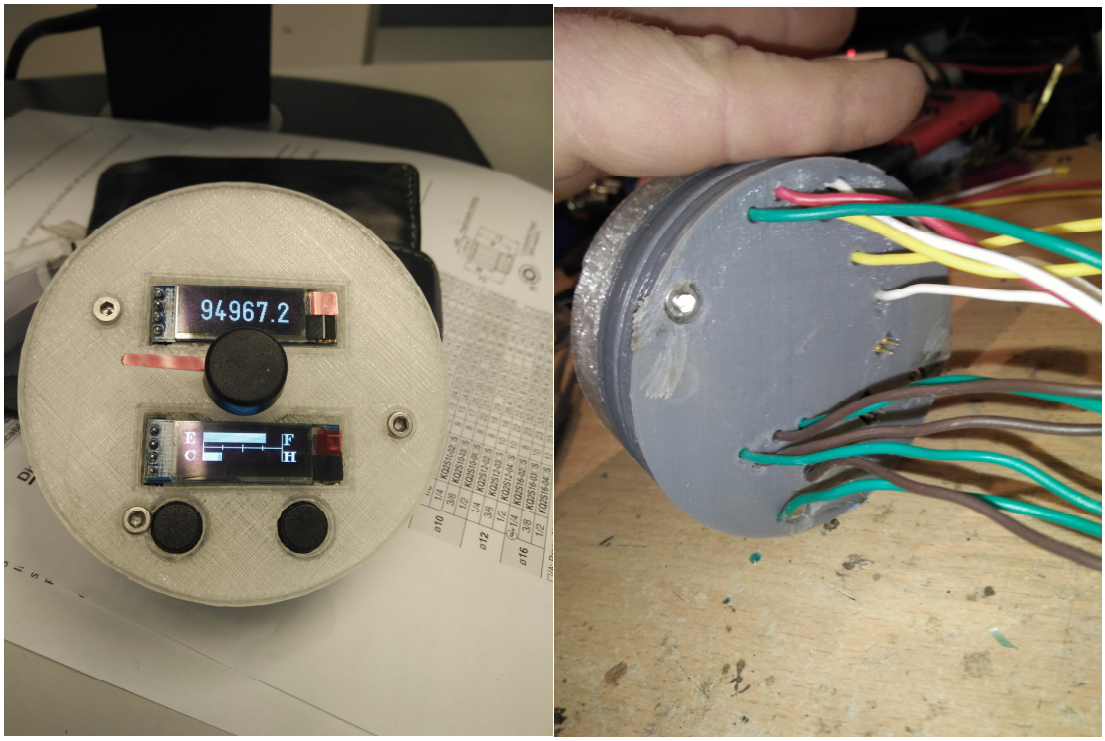

Image of kit with hall sensor / pressure sensor

Typically the kit will contain a number of items per gauge –

- The Gauge Electronics Assembly with Oled displays
- Housing Body
- Front spacer Ring
- Front plate template.

Additionally depending on the model ordered there may also be some of

- Piezo Pressure transducer module
- Clock and battery module
- Speedo pickup hall sensor adaptor
- Capacitive Fuel Sensor module

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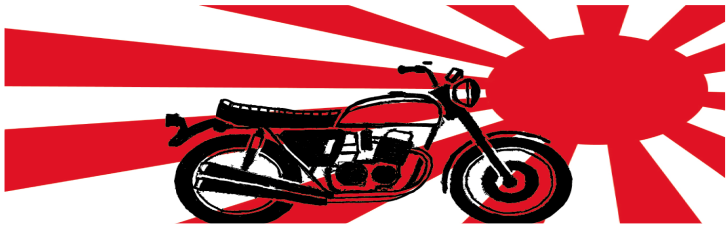
Modern Electronics For Vintage Motorcycles



The System

The Rae-San generic Meter is designed to provide the flexibility to allow you to upgrade the internal mechanism of your old gauge to a modern electronic one – but to keep as closely as possible the stock gauge appearance.

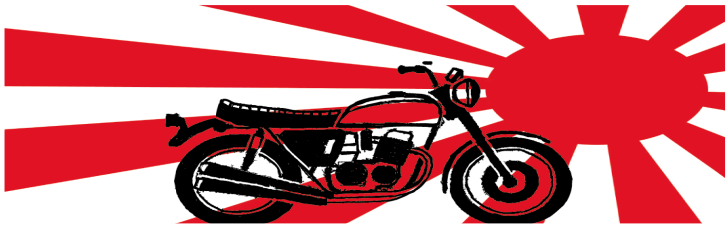
This is achieved through the re-use of the stock gauge housing, faceplate and needles.

The Rae-San gauge employs two circuit boards that stack together – these are housed in a set of 3d printed gauge bodies that are made to suit the size of gauge needed. In this way a single design is able to be used for 3”, 3 1/8, 3 3/8 and 4” gauge sizes..

All Rae-San meter versions provide features of:

- Measurement of Speedo, Engine Rpm, Fuel sensor, Voltage, Temperature
- Measurement of an additional quantity (oil pressure with optional sensor)
- Clock with optional clock module.
- External 2 button Interface. Provides for clock seting, mode and display selection and trip meter reset.
- One stepper motor driven needle quantity – either speed or tacho
- Dimmable display
- White LED backlight for meter face
- Software adjustable gauge and variable scaling for fuel, temperature, oil pressure speed and tacho
- Non linear gauge scaling adjustment.
- Odometer and tripmeter support in kmh / mph
- Adjustable wheel circumference
- Adjustable tacho pulse per rpm.
- Support for 4 complete different configuration sets (profiles)
- Support for 4 different display modes within each profile
- Gear Display indicator based on programmable ratios.
- Largely interactive configuration process that provides live display of values on gauge.
- Configuration and check modes accessible by button.

Modifications Required.
In order to fit the new gauge internals – it is necessary to open the old gauge up – this can be easy on some gauges and harder on others.
On the harder ones there is usually a rolled edge ring that needs to be carefully and gradually prised up with a small screwdriver to free the internals.
This will need to be carefully pushed or rolled back down at the end to re-seal the meter.



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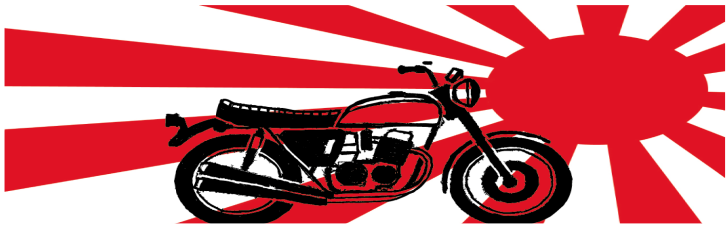


Configuration –setup

This will need to be done before the meter is sealed up into the instrument body – as connection to the mini usb socket on the side of the meter is needed.

There is provided a cut out in the instrument body to allow for access to the usb connector after assembly of the instrument. When inserted into the gauge body this is covered up – but it is only a two bolt operation to mount / unmount the instrument from the housing should access again be required.

Requirements

- ANSI serial terminal software – I use Putty generally – free and works well
- USB to MINI-USB cable
- 12V power supply for testing motor movement. – or on the bike.
- CH340 / Arduino Drivers if not recognised by your PC.

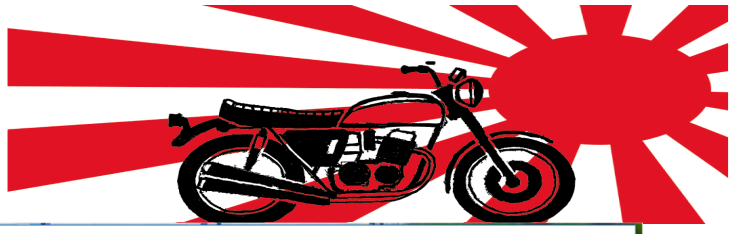
Settings

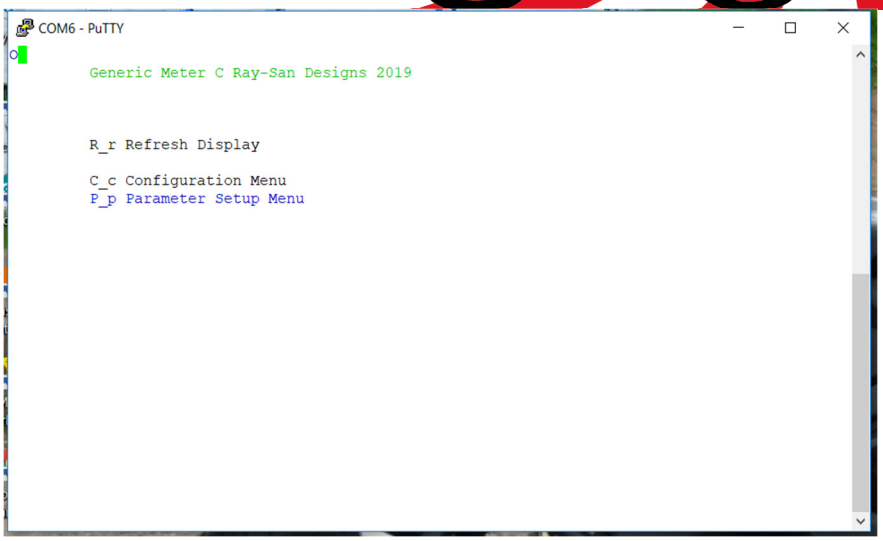
- Communication is 8 bits, No Parity, 1 Stop bit (8N1) and **NO FLOW CONTROL** (Off).
- The port will depend on your computer – so plug it in and check what port appears.
- **Configuration mode is entered by holding down button A and turning on the power – the Gauge reads the button states at power on and enters into configuration mode.**

Open a serial terminal session to the meter port -

You should be presented with the following screen – if you are greeted with a flashing “o” in the top left corner – hit the R key to “refresh” this will re-send the screen.

You should then see –

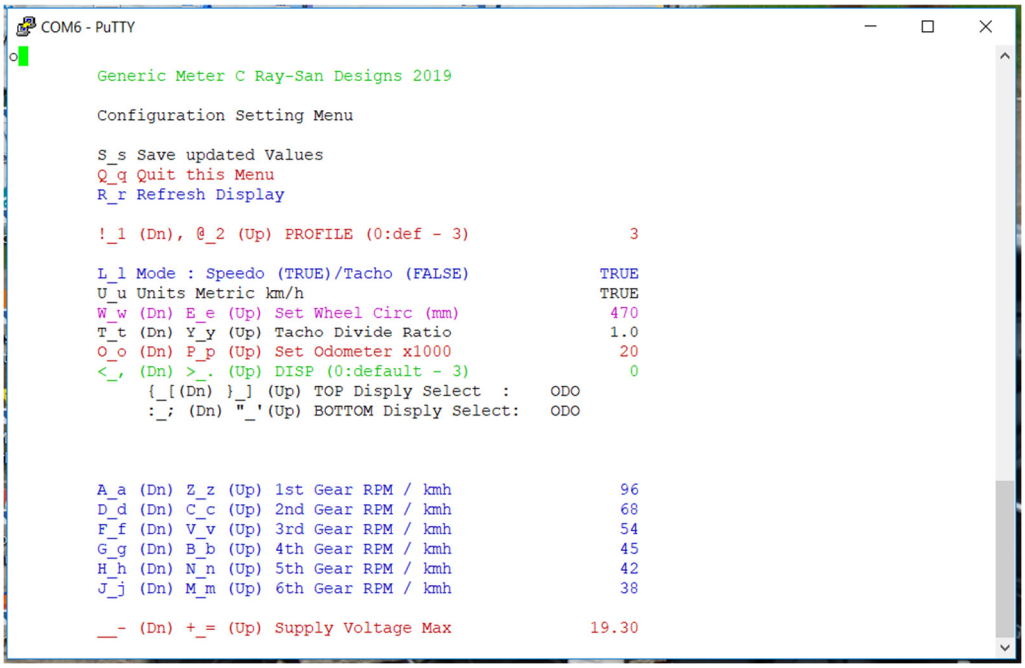




The menus are text driven and the Keys to use are at the start of each line – eg

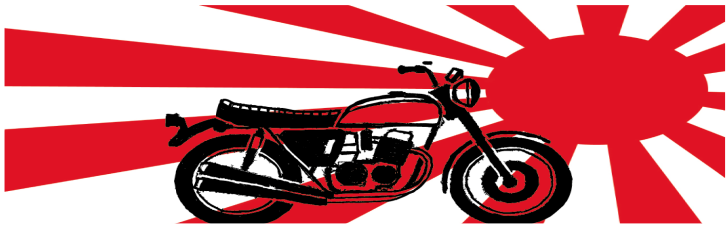
- R or r will refresh the display.
- C or c will enter the Configuration Menu
- P or p will enter the Parameter Menu.

Press “c” to enter the configuration menu.



Once Again

- R or r for refresh

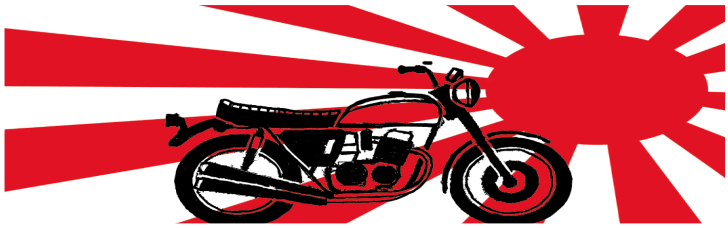


- Q or q to quit this menu back to the previous – note this does not save any changes
- S or s to save any changes to the EEPROM memory

Now the specific items –

The Key fields are shown as X_x, Y_y : the shifted version of the key is used for a big step, the lowercase for a single step up or down. The Shifted step is normally 10x the single step.

- **!_1 or @_2** : Select / change the profile number that is being edited and used. The profile that was selected when last saved is what becomes the default power up profile.
    - This allows for 4 completely different Gauge setups to be stored in the gauge in the case that you might move them between bike models or wish to experiment.
    - This relates to the values on the Parameters screen as well as those on the configuration screen.
- **L or l** :toggles the input mode that the **needle** should display – TRUE = Speedo, False = Tacho/RPM
- **U or u** : toggles the mode between metric (km/h) and imperial (Mph). This predominantly affects the Odometer and Tripmeter, as internally its calculated in metric.
- **W_w or E_e :** Increment or decrement the Wheel Circumference.
    - Note – this is in **mm** as this gives more accuracy in an easier to adjust format.
    - Note that this represents the ground distance travelled for one complete pulse from the speed sensor. This can widely vary from 1 pulse per revolution of the wheel – to many pulses per revolution. See the appendix for known or example values.
- **T_t or Y_y :** Increment or decrement the tacho pulse to RPM divider. This sets the ratio of pulses to the engine RPM. Usually this will be **1.0** for a wasted spark system. Values 0.5 to 3.0 are available
    - Wasted Spark – coil sense – 1.0
    - Non wasted spark – single coil sense- 0.5
    - Camshaft RPM sensor – 0.5 (as at ½ engine RPM)
- **O_o or P_p:** Set Odometer reading: Set the starting Odometer reading to the nearest 1000 km or miles.
    - Note this can only be set the first time – once the bike is operated the increased value is stored and any changes made in the configuration will be ignored.
    - Note – there is a reset procedure to override the odometer and allow it to be reset if you change the meter between bikes.
        - Set the odometer x1000 to 100.
        - Save the setting.
        - Power off the meter.
        - Power the meter while holding down Button A to enter configuration mode.
        - Connect the serial terminal and set the odometer X1000 to 0
        - Save the setting and Power Down.

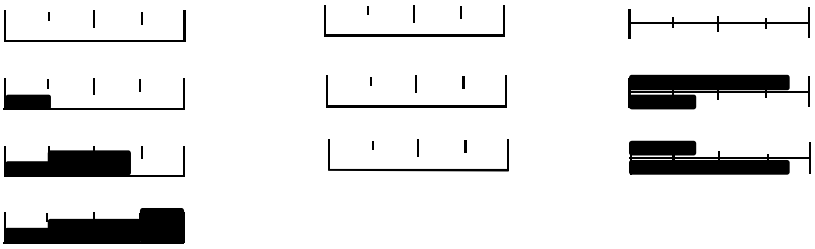


- Power the meter while holding down Button A to enter configuration mode.
- Connect the serial terminal.
- Configure to the value desired and save.

- **<_, or >_. :** Select the display option to be configured: There are 4 display sets that can be defined (for each profile). Display set 0 is the power on default. 1,2,3 -> 0 are selected by pushing button B. each push changes to the next display set the cycle repeats. This is useful to access other display options that are no normally needed but might occasionally be useful, or if you are using a single gauge and need to access the other displays.
- For each Display slot – the upper and lower display can be defined
  - **:_; or "_' :** change the upper display for this slot
  - **{_[or }_] :** change the lower display for this slot.

  The displays can be cycled through in the order:
  ODOmeter, TRIPmeter, TEMPerature, FUEL level, PRESSure, CLOCK + gear, VOLTS + gear, T+F (Temp & Fuel), T+P (Temp & Pressure), F+P (Fuel & Pressure), SPEED (numerical), RPM (numerical)

  The Displays are represented below –
  NOTE – the system will show the actual display on the gauge when changing the display settings to show you what it looks like with the current sensed values.



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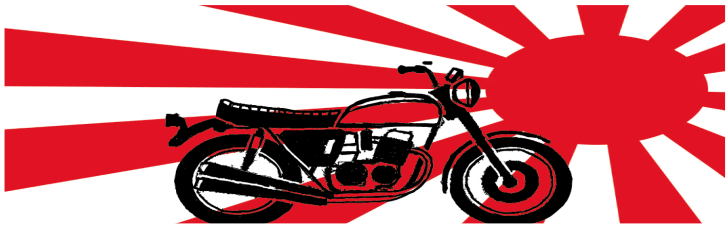


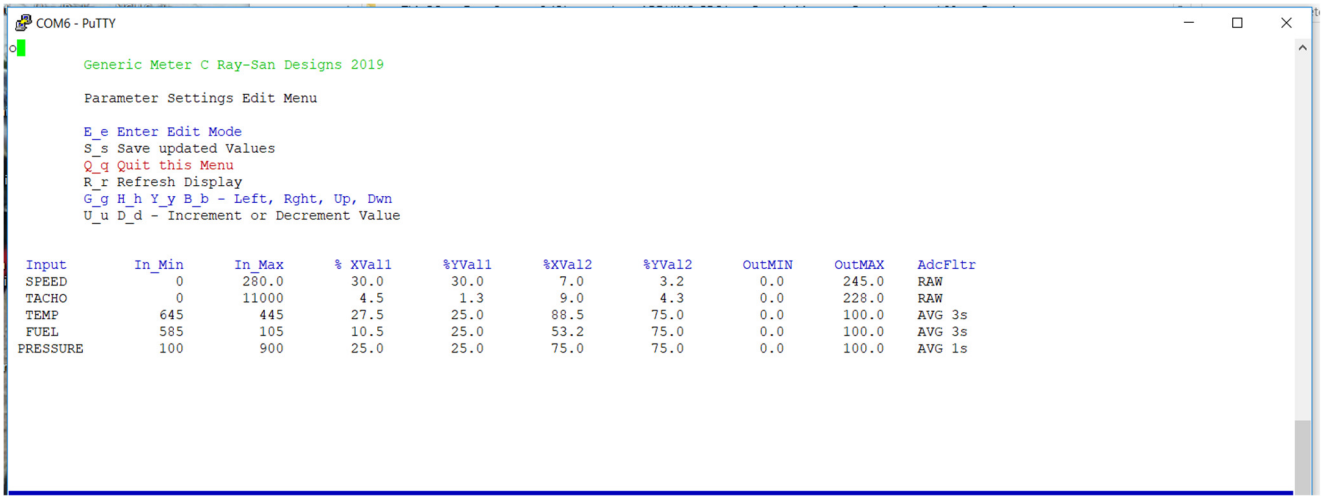
Gear Ratio setting. The gear ratio is expressed as the RPM / speed in km/h. The gauge measures both and uses this to work out the gear number to display. As an example a bike might be doing 3000 rpm at 60km/h in third gear – this would equate to a setting for third gear of 3200/60 = 53.33. A setting of 53 or 54 would be appropriate.

- **A_a or Z_z :** First Gear ratio
- **D_d or C_c :** Second Gear ratio.
- **F_f or V_v :** Third Gear ratio.
- **G_g or B_b :** Fourth Gear ratio.
- **H_h or N_n :** Fifth Gear ratio.
- **J_j or M_m :** Sixth Gear ratio.

- **__- or +_= :** Set the voltage divider value. This is normally about 19.5 volts to give the correct reading – it is a calibration that allows for variation in the internal devices and allows for compensation of the bikes wiring losses. The easiest way to set it – is to measure the supply voltage with a multimeter , have the Gauge set to display a voltage (via the display selection earlier) and then adjust the value so as to display the correct voltage. Calibration done.

Parameters – Setup

Next from the top level menu – press the P button to enter the parameter configuration page.



Once again there are the standard keys

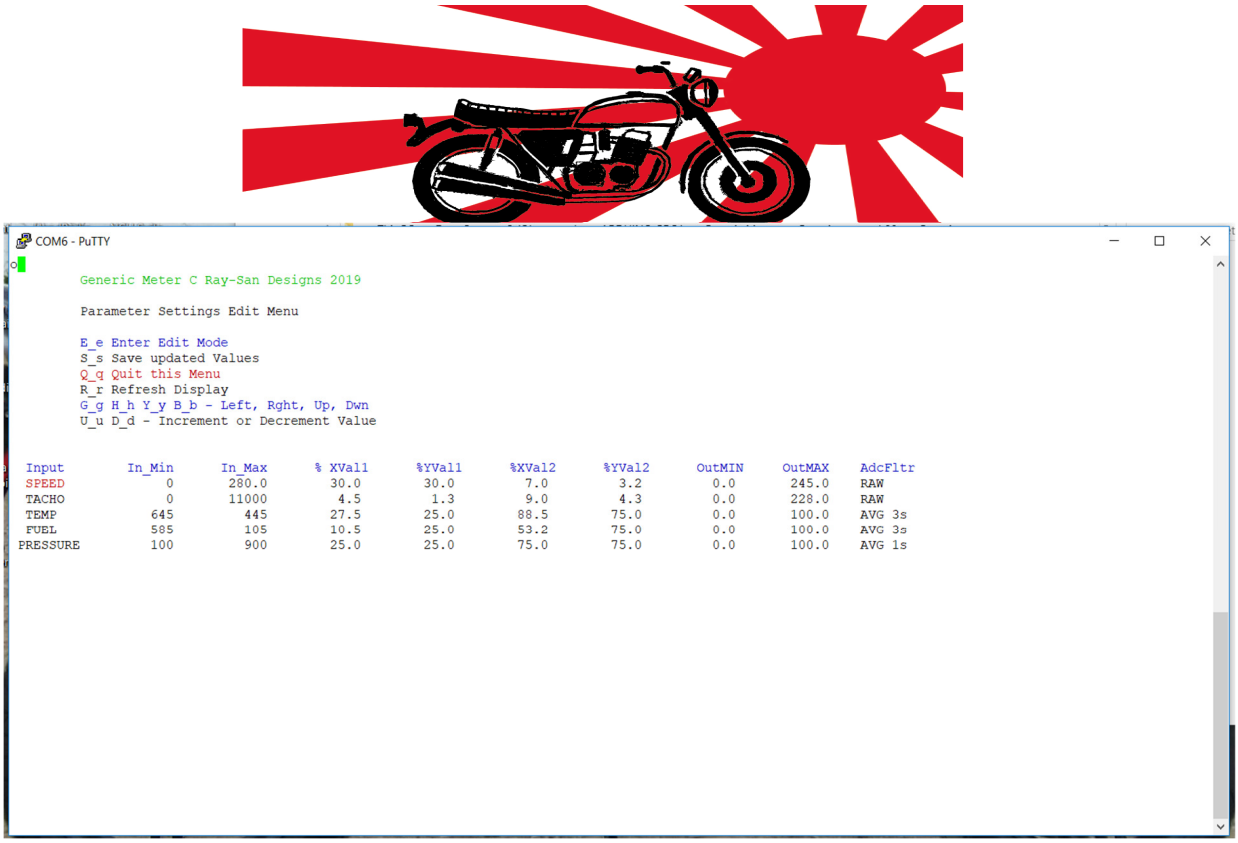
- S and s for saving the changes
- Q and q to exit the menu back to the top level
- R and r to refresh the display

Now there are some extra keys –

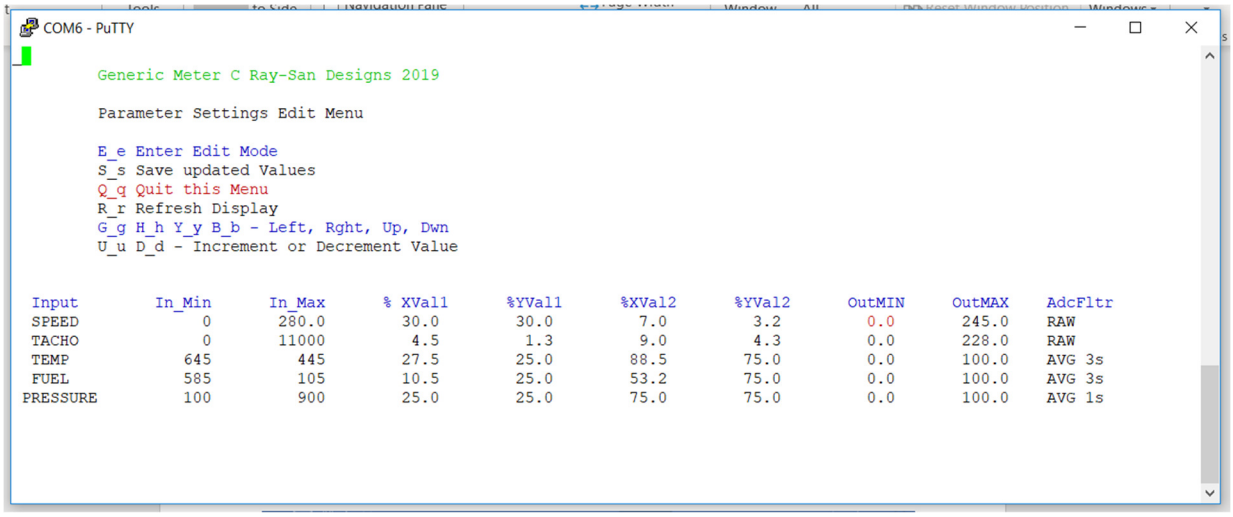
- E or e E – Enter edit mode – this allows changing the values in the table.
  - The value currently selected for edit is shown in **RED.**
- G or g (move Left), H or h (move Right), Y or y(move Up), B or b(move Down). These allow moving around the selection of the value to be edited.
- Note the key layout is like a arrow keypad but with letters.
- **U**(+10) **u**(+1) or **D**(-10) or **d**(-1) to increment or decrement the selected values.

Note : These values are interactive – when you are editing the Needl and displays will actually move to / display the value being edited and show you the output value setting.

Once you enter edit mode the screen should appear as below.



Here you can see that the SPEEDO is selected.

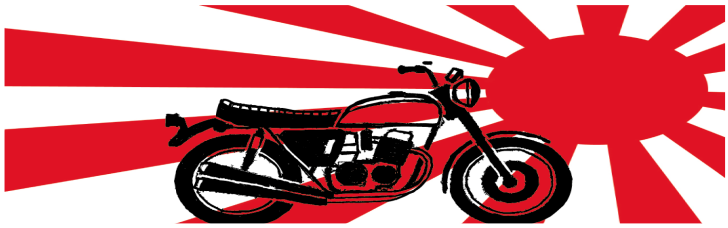


Once changes are made S should be used to save them to the EEPROM. This will exit from Edit mode and the RED selection will disappear.

Parameters – meanings

The previous section dealt with the navigation of setting the parameter values – but now we need to look at what the parameters mean and control.

There are 4 sets of parameters for Speedo, Tacho, Temperature and Fuel measurement gauges.



These parameters are used to adjust for the differences in sensors and importantly for the differences in gauge faces – and adjust for any non-linear scales.

Input

This is just the input type and is not changeable.

For each parameter as selected in this menu , the current measured value is displayed on the bottom display on the gauge. Top Gauge shows the graphic display illustrating the current settings. For Speed and Tacho – the needle is moved to the position rather than the graphic. This is only done for the current mode of the gauge – if it is set to Tacho – it will show the tacho setting on the gauge needle, if set to speedo – the speedo settings.

In_Min

Speedo : fixed at 0 km/h.
Tacho : fixed at 0 Rpm.

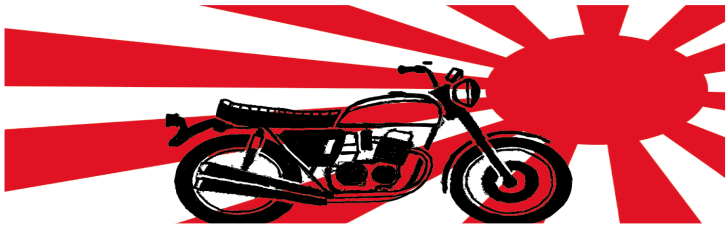
For Temp, Fuel and Oil Pressure : Adc input value (0 – 1023) at the **minimum** for the measured quantity. Not for a a decreasing sensor such as temperature or often fuel – this will be higher than the max value below – the MIN and MAX refer to the quantity being measured.

In_Max

This is the value of the quantity at the MaxAngle. So for speed it might be 240 m/h @ 300 degrees if in metric – or 200 Mph @ 300 degrees in imperial.

Speedo: The maximum value on the gauge face in km/h – or mph for imperial
Tacho: The maximum value on the gauge face in RPM.

For Temp, Fuel and Oil Pressure : Adc input value (0 – 1023) at the **maximum** for the measured quantity. Not for a a decreasing sensor such as temperature or often fuel – this will be lower than the max value above – the MIN and MAX refer to the quantity being measured.



OUTMin

Speedo: Angle in degrees of the minimum km/h or mp/h. **USUALLY 0.0**
Tacho: Angle in degrees of the minimum rpm. **USUALLY 0.0**

Note – the needle will move as the parameter is adjusted – so it is easy to line up.

For Temp, Fuel and Oil Pressure : These values are fixed at 0.0% for the Output MIN and 100.0% for the Output MAX as these are displayed on the graphic displays.

OUTMax

Speedo: Angle in degrees of the maximum km/h or mp/h.
Tacho: Angle in degrees of the maximim rpm.

Note – the needle will move as the parameter is adjusted – so it is easy to line up.

For Temp, Fuel and Oil Pressure : These values are fixed at 0.0% for the Output MIN and 100.0% for the Output MAX as these are displayed on the graphic displays.

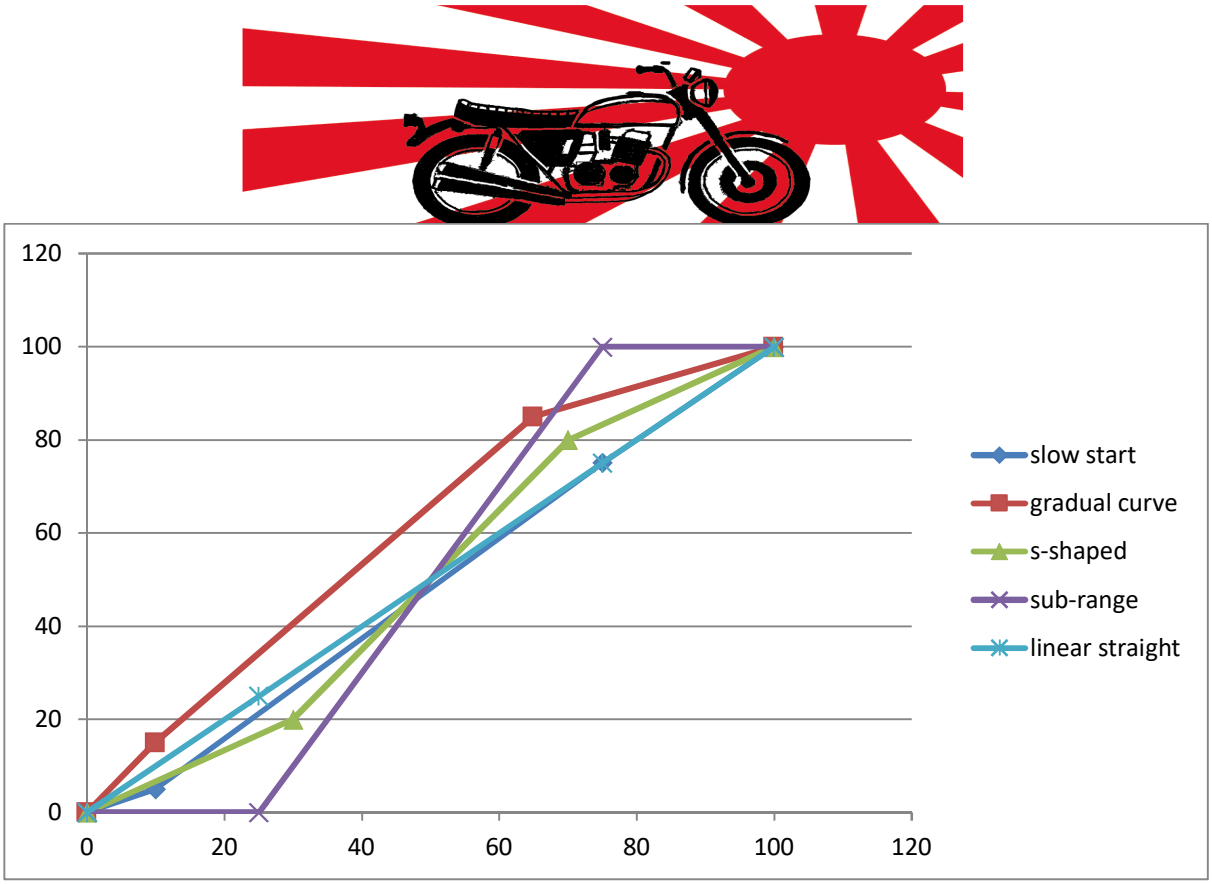
%X1,%YVal1; %X2,%YVal2

These parameters control the linearity of the scale between minimum and maximum. They map the input reading % to an output reading % that is displayed on the meter scale.

The start point is always 0%,0% and the final point is always 100%,100%. In between are 2 movable points that control the curve used. The chart below shows a few examples. The % values use the defined In_Min and In_Max to set the 0% to 100% range.

Examples:

	%x1	%y1	%x2	%y2
slow start	10	5	75	75
gradual curve	10	15	65	85
s-shaped	30	20	70	80
sub-range	25	0	75	100
linear straight	25	25	75	75



Generally the curves will be linear or a slow start type of curve as often the speedo or tacho has a region at the bottom where it doesn't respond – eg tacho below 500rpm and speedo below 10km/h.

By setting the points appropriately the electronics will map to the markings to correctly display the value.

The sub range curve is useful to map a sensor - fuel or temperature that has a narrower range of variation to the full meter range.

Known configurations can be found in the appendix.

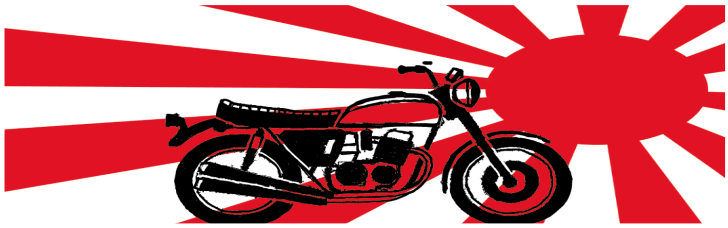
As a starting point – just setting the max angle and maximum values and leaving the defaults for the rest should be quite close to correct.

When setting these points – the gauge needle or the grap[hic meter will display the Y (output %) value as it is adjusted.

AdcFilter

This is a setting that controls how the measured value is processed. For the most part the sensors will be set to RAW or FILTERS 1s or FILTER 3. The Settings and behaviours are.

RAW : No filtering or averaging is used – the latest measurement goes straight to the displays.
AVG 1s : The input value is averaged over a rolling 1s (10 samples)and the result goes to the displays.
AVG 3s : The input value is averaged over a rolling 3s (30 samples)and the result goes to the displays.
AVG 6s : The input value is averaged over a rolling 6s (60 samples)and the result goes to the displays.
PK_LOW_3s : The samples are passed through a fast attack slow decay filter to capture the lowest



value hold it with a slow decay: This is used to capture a pulsed sensor value where the minimum value needs to be measured - such as a temperature sensor.
PK_LOW_6s : Same as above but with a 6s decay time.
PK_HIGH_3s : The samples are passed through a fast attack slow decay filter to capture the higest value hold it with a slow decay: This is used to capture a pulsed sensor value where the maximum value needs to be measured .
PK_HIGH_6s : Same as above but with a 6s decay time.

For Speedo and Tacho

For the Speedo and Tacho – the AdcFilter is fixed to raw as no filtering occurs on the pulse measurement values.

For Temp, Fuel and Oil Pressure

The value can be set to any of the above types as appropriate. The Average 1s should be suitable for most analogue sensors. The other options are used when dealing with pulsed sensors or PWM outputs from ECUs.

Example Calculation of Settings

Lets look at an example to make things hopefully a bit clearer.

Speedo Example

Firstly its a Speedo - its got cut-outs for the odometer and trip meter - they don't concern us here.

What is of interest is the Angle between 0km/h (or mph) and the Last marking - 200 km/h

Ideally measure the angle with a protractor - it looks to be about 240 degrees.

Now look at the 10km per hour mark on the speedo - its not evenly spaced between the 0 and the 20 marks - everything is evenly spaced above 10km/h though. This means we need to do a little correction at the bottom of the speedo range to match the dial.

So we need to estimate where the 10km/h mark is -

If it was evenly spaced it would be at 240 degrees / 200km/h * 10km/h = 12 degrees.

It looks to be about 1/2 that so say 6 degrees - or measure with the protractor.

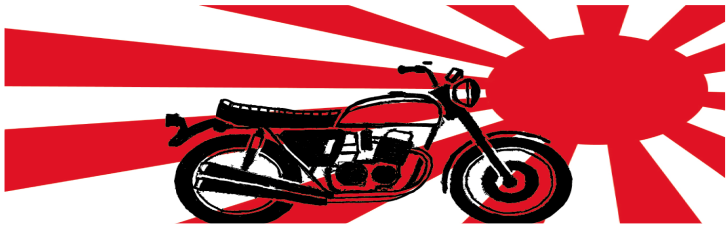
For the correction we need to convert this to percentages - so the 10km/h is 10/200 *100 = 5% of "full range"; but it is only at 6degrees => 6/240 * 100 = 2.5% of the angle.

So to set this up:

- S_Ang (start angle) = 0.0 degrees - as we will align the needle on zero
- MaxAng (max angle) = 240.0 degrees - don't worry - the needle will drive past full scale if you go faster than the scale - is just to setup
- MaxVal(Max value) - 200.0 as we need to know what the full scale is. - the gauge will drive past full scale if you are doing more than full scale speeds - its just a reference point.
- %X1, %Y1Val : now as noted above the scale is not linear at the bottom end so we need to put a correction value in. As we calculated earlier the 10km/h point is the scale change - and it lies at the value of 5% of speed and 2.5% of dial movement. Easy we set the point %X1=5.0 and %Y1Val=2.5. The starting point of 0,0 and end points of 100,100 % are fixed.
- %X2,%Y2Val: as the remainder of the speedo is equally spaced (linear) then we don't need another correction point to be set - but we need to provide values - so pick a point between X1 and 100% - lets say 80%, and we set Y to match @ 80% - so %X2=80.0 and %Y2Val=80.0.
- Done.
- Note the Tacho is very similar - the same process can be followed.

Fuel Sensor Example

Ok - lets look at a bit trickier example. Fuel sensors are notoriously inaccurate - as the tank has a wierd shape usually - We can actually use the corrections to make the fuel gauge read more accurately.



Theres no needle to worry about for the fuel and temperature sensors so the angles don't mean anything - but the correction values do.

So lets assume we take the tank off the bike when its empty - and then hook a multimeter to the sensor to measure the resistance.

We then start with an empty tank - :

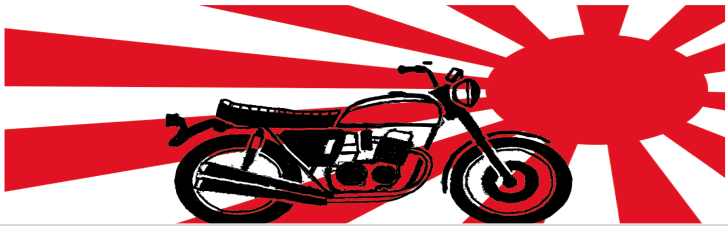
- with volume empty - we measure the resistance as 100 ohm
- The reading starts to change once we've added 1.5l
- When the level gets mostly over the tunnel in the tank - its say 6l and 60ohm
- When its getting near full and the tank starts to narrow - its 16l and 10 ohms
- When we get to 18l the resistance and is 5 ohms
- When it gets to 19l the resistance stops changing and is 3 ohms - until full at 20l

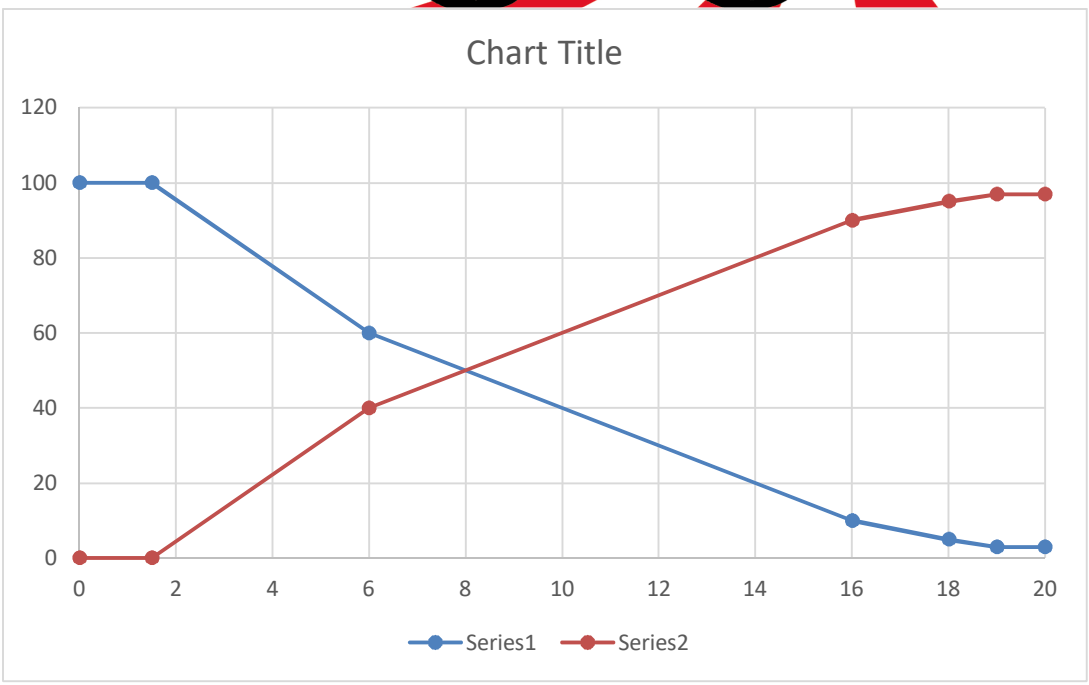
The table below shows the measumentd and the converted percentages

Volume	Ohms	100-ohms	%(100-ohm)	%full
0	100	0	0	0
1.5	100	0	0	7.5
6	60	40	40	30
16	10	90	90	80
18	5	95	95	90
19	3	97	97	95
20	3	97	97	100

Below shows the measurements and the 100 ohms (max R) - value which represents the fuel value.

As can be seen its not perfectly straight. We can remedy some of this . we cant do anything about the less than 1.5 l or over 18 litres (empty and full) as the sensor doesn't respond in these regions, but we can straighten out the rest.





Temp Sensor Example

Installation – CX500 example

Here is shown an example installation – in this case it's the dash of the earlier cx500.

Here the original arrangement is speedo on the left with odo and trip meters. On the right is the tacho and in the middle is the temp gauge.

As the temp gauge is staying – we will set up the left gauge as speedo with odo and trip the same as the original.

The right side will still be the tacho but we have extra displays that can be assigned. In this case the top display will be set to indicate system voltage and gear selection and the bottom to indicate fuel level – lets pretend we swapped in a GL or euro style tank with a fuel sender (10 – 100 ohm)

So that would look like the picture below – which shows

Odometer at 11011.9, trip at 10.8, voltage at 12.1V, gear 0 (since replaced with letter N) and a full fuel tank as the bar goes all the way from E to F.

Note that additional cut-outs have been made in the tacho faceplate to provide for the displays in the tacho.

Now the process to get from the starting position to the end follows a number of steps.

- Remove the gauges from the housing
- Dismantle the gauges - can be tricky.
- Carefully remove the needle - set aside for re-use.
- Remove screws and faceplate - set aside for re-use.
- Remove the mechanical gauge internals.
- Assemble the Rae-San Gauge assembly
    - Mask and cut the faceplate if required - use the included template for the holes.
    - Mount the faceplate
    - Mount the Needle - power up the gauge so it resets to Zero - then push the needle on so that it reads 0.
- Power up the gauge on the bench and configure appropriately
- Assemble the gauge into the housing - feed the wires though the back.
    - If desiring to provide access to the usb port - a hole will need to be made in the instrument “bucket” at the appropriate point
- If using the clock module this should be placed in the rear of the gauge before putting the gauge assembly in.
- Put the gauge front back on.
- Check the needle is not touching the glass at any point
- Re-seal the gauge -patience is required.
- Re-assemble the gauges into the housing
- Wiring - connections will need to be made to the existing harness connectors.

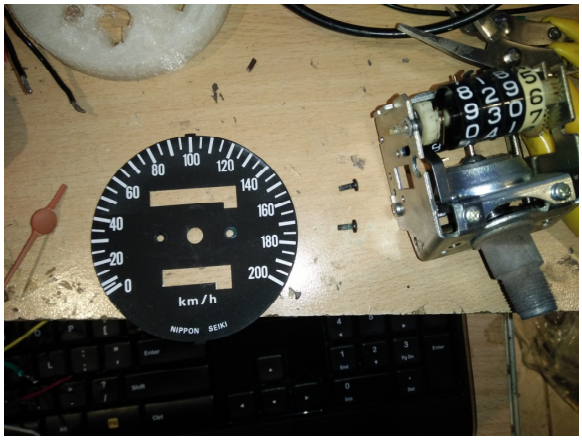
Photographic Illustration of Process

Both of the examples below show the gauges being built re-using the original gauge housing. This is an easlier version of the kit which has now had some additional refinement. The kit now provides a new housing to replace the original as it has a usb port cutout in the side and locating lugs. It also provides threaded screw mounts to allow for simple installation in the original mounting positions.

- Remove the gauges from the housing

- Dismantle the gauges - can be tricky.

- Carefully remove the needle - set aside for re-use.
- Remove screws and faceplate - set aside for re-use.
- Remove the mechanical gauge internals.



- Assemble the Rae-San Gauge assembly
    - Mask and cut the faceplate if required - use the included template for the holes.
    - Mount the faceplate
    - Mount the Needle - power up the gauge so it resets to Zero - then push the needle on so that it reads 0.

- Power up the gauge on the bench and configure appropriately via the usb terminal.

- Assemble the gauge into the housing - feed the wires though the back.
    - If desiring to provide access to the usb port - a hole will need to be made in the intrument “bucket” at the appropriate point

- If using the clock module this should be placed in the rear of the gauge before putting the gauge assembly in.
- Put the gauge front back on.
- Check the needle is not touching the glass at any point

- Re-seal the gauge -patience is required.
- Re-assemble the gauges into the housing

- Wiring - connections will need to be made to the existing harness connectors.

Installation – VF750 Magna example

This installation shows a different gauge setup that is typical of more bikes and would be similar to that for a cx 500 custom, a cb750 or any other bike with the usual twin gauge + status light setup.

- Remove the gauges from the housing

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- Dismantle the gauges - can be tricky.

- Carefully remove the needle - set aside for re-use.
- Remove screws and faceplate - set aside for re-use.
- Remove the mechanical gauge internals.

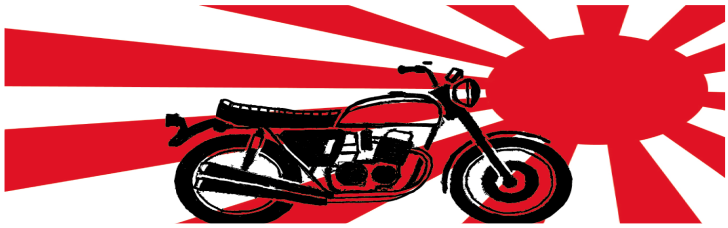
- Assemble the Rae-San Gauge assembly
    - Mask and cut the faceplate if required - use the included template for the holes.
    - Mount the faceplate
    - Mount the Needle - power up the gauge so it resets to Zero - then push the needle on so that it reads 0.

- Power up the gauge on the bench and configure appropriately
- Assemble the gauge into the housing - feed the wires though the back.
    - If desiring to provide access to the usb port - a hole will need to be made in the instrument “bucket” at the appropriate point

- If using the clock module this should be placed in the rear of the gauge before putting the gauge assembly in.
- Put the gauge front back on.
- Check the needle is not touching the glass at any point
- Re-seal the gauge -patience is required.

- Re-assemble the gauges into the housing

Wiring - connections will need to be made to the existing harness connectors.



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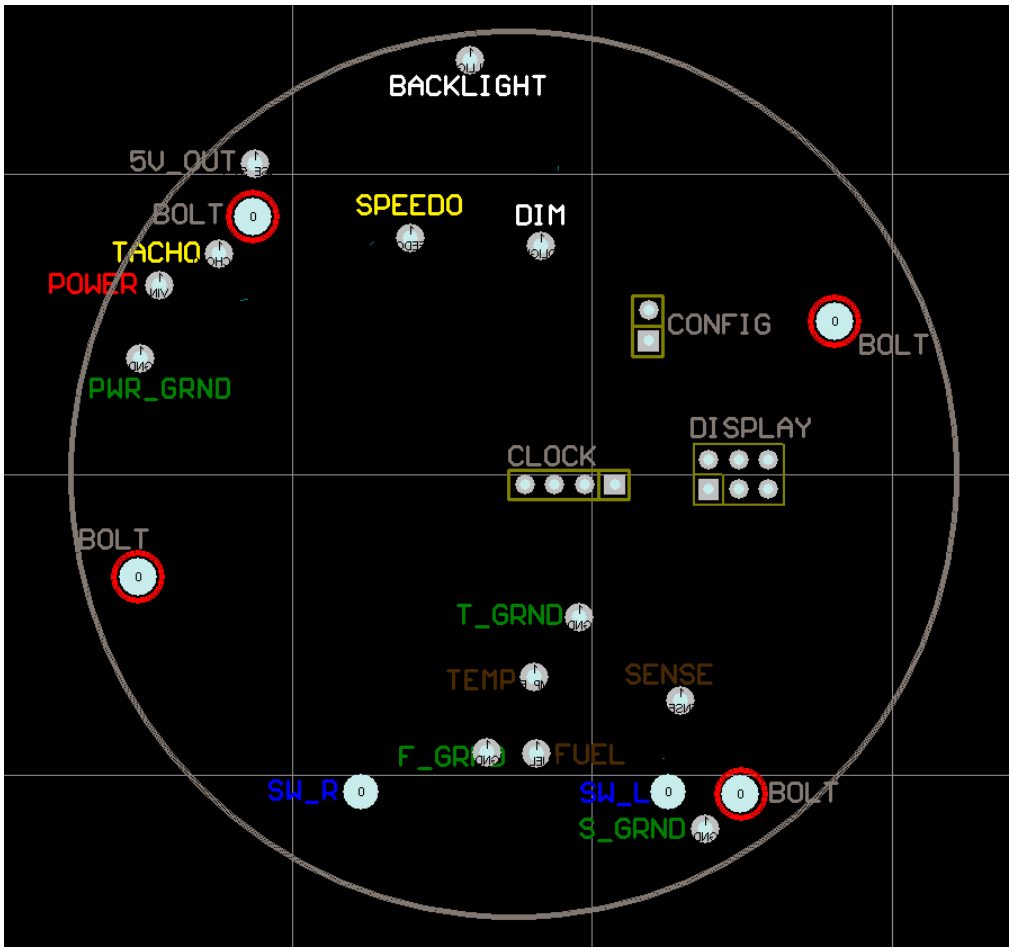
Wire Colours for the Gauge.

Shown below is a diagrammatic view from the rear of the gauge to indicate the wires and their colours.



Wire colour	Wire Function
POWER - RED	+12V power in – switched power from the bike
POWER_GRND -GREEN	GROUND connection – POWER GROUND for gauge and backlights.
T_GRND -GREEN	TEMP Sense Ground -
F_GRND - GREEN	Fuel Sensor Ground
S_GRND - GREEN	Pressure Sense Ground

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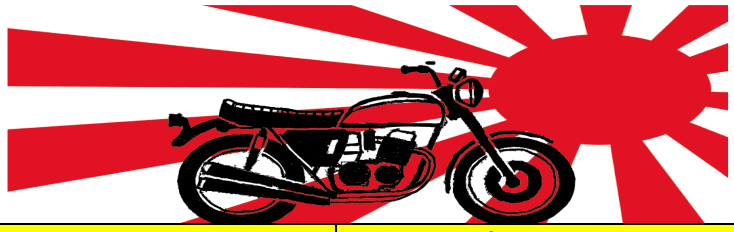


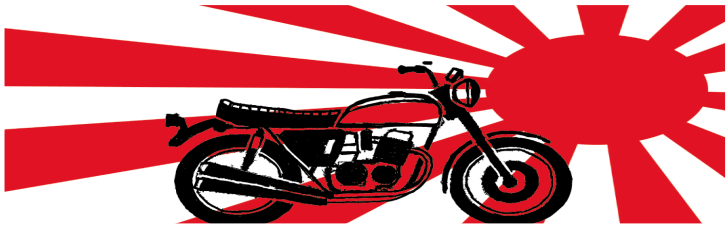
TACHO	Tacho Input from 12V coil
SPEEDO	Speedo input from Hall sensor
FUEL - BROWN	Fuel Sensor
TEMP - BROWN	Temperature Sensor
SENSE - BROWN	Pressure / Other Sensor
BACKLIGHT- WHITE	Backlight Power- turns on illumination - connect to taillight power
DIM - WHITE	DIM SENSE Connect to High Beam indicator or lights on
5V_OUT - BLACK	5V power to Pressure Sensor and or Hall Sensor as required.
SW_L - BLUE	SWITCH INPUT LEFT – ground senses Trip reset (2s) / meter reset (5s)
SW_R-BLUE	SWITCH INPUT RIGHT – ground senses Change Display mode (<2s) Clock Set Mode (5s)

CONFIG	Putting this jumper on inverts the display gauges so the usb port can be accessed on the other side of the gauge and the displays still read correctly.
CLOCK	Connector for the battery backed clock option
DISPLAY	Configures the display formats for Fuel, temp and pressure graphics

The Wires are fitted with push in pins and two 6 pin connectors are provided to make for a more standard hookup -

The connector housings are not pre-fitted due to the need to usually get the wires though the instrument housing.

Suggested pinouts are as below -



Male 6 pin Sensors Connector

	LUG	
POWER	BACKLIGHT	BUTTON A
GROUND	DIM	BUTTON B

Speedo/ Hall connector

5V_OUT	
SPEEDO	**LUG**
S_GRND	

Female 6 pin Connector

	LUG	
SPEEDO	SENSE_GRND	TACHO
FUEL	TEMP	PRESSURE

Mating connectors and pins are included in the kit.

Jumper Settings

There are three jumpers on the rear of the unit that are used to configure the display modes for the Fuel, Temperature and Pressure

The speedometer / tachometer selection for the needle movement and the meter scaling is controlled through the software interface by the USB cable.

The Single jumper is used to configure the gauge into a left- or right-handed display option to allow for the USB port to face outward.

The default displays configurations are :

Jumper Settings

Jumper	Jumper Off	Jumper On
1	Fuel Display Stepped	Fuel Display Solid Bar
2	Temp Display Stepped	Temp Display Solid Bar
3	Pressure Display Stepped	Pressure Display Solid Bar

Operation

Changing Display mode

A short press of Button A will change the current display to the next defined display of the set. Each push will advance it to the next display.

Resetting the trip meter

A medium (xsecond) push of Button B when the trip meter is displayed will reset the tripmeter to Zero

Setting the Clock.

In order to set the clock the clock must be displayed on one of the displays.

A long press of Button x (x seconds) will enter clock setting mode.

Default Configuration

When shipped the gauge will have data loaded in the 4 profiles

Profile 0

Parameters

Type	In_Min	In_Max	%Xval1	%YVal1	%Xval2	%YVal2	OutMin	OutMax	AdcFilter
SPEEDO									
TACHO									
TEMP									
FUEL									
PRESSURE									

Configuration

Type	Profile #	Speedo / Tacho	Metric	Wheel Circ	Tach Div	Odo	Display	Ist Gear	2nd Gear	3rd Gear	4th Gear	5th Gear	6th Gear	Volt Max
Value	0	Speedo	True	470	1.0	000000		96	68	54	45	42	38	19.00
Display0							Odo Trip							
Display 1							Odo Clock							
Display 2							Fuel Temp							
Display 3							T+F Clock							

Profile 1

Parameters

Type	In_Min	In_Max	%Xval1	%YVal1	%Xval2	%YVal2	OutMin	OutMax	AdcFilter
SPEEDO									
TACHO									
TEMP									
FUEL									
PRESSURE									

Configuration

Type	Profile #	Speedo / Tacho	Metric	Wheel Circ	Tach Div	Odo	Display	Ist Gear	2nd Gear	3rd Gear	4th Gear	5th Gear	6th Gear	Volt Max
Value	0	Speedo	True	470	1.0	000000		96	68	54	45	42	38	19.00
Display0							Odo Trip							
Display 1							Odo Clock							
Display 2							Fuel Temp							
Display 3							T+F Clock							

Profile 2

Parameters

Type	In_Min	In_Max	%Xval1	%YVal1	%Xval2	%YVal2	OutMin	OutMax	AdcFilter
SPEEDO									
TACHO									
TEMP									
FUEL									
PRESSURE									

Configuration

Type	Profile #	Speedo / Tacho	Metric	Wheel Circ	Tach Div	Odo	Display	Ist Gear	2nd Gear	3rd Gear	4th Gear	5th Gear	6th Gear	Volt Max
Value	0	Speedo	True	470	1.0	000000		96	68	54	45	42	38	19.00
Display0							Odo Trip							
Display 1							Odo Clock							
Display 2							Fuel Temp							
Display 3							T+F Clock							

Profile 3

Parameters

Type	In_Min	In_Max	%Xval1	%YVal1	%Xval2	%YVal2	OutMin	OutMax	AdcFilter
SPEEDO									
TACHO									
TEMP									
FUEL									
PRESSURE									

Configuration

Type	Profile #	Speedo / Tacho	Metric	Wheel Circ	Tach Div	Odo	Display	Ist Gear	2nd Gear	3rd Gear	4th Gear	5th Gear	6th Gear	Volt Max
Value	0	Speedo	True	470	1.0	000000		96	68	54	45	42	38	19.00
Display0							Odo Trip							
Display 1							Odo Clock							
Display 2							Fuel Temp							
Display 3							T+F Clock							

Appendix – example / known settings

VF750F - special case as shown - but the meters give an idea

Type	In_Min	In_Max	%Xval1	%YVal1	%Xval2	%YVal2	OutMin	OutMax	AdcFilter
SPEEDO									
TACHO									
TEMP									
FUEL									
PRESSURE									

VF750 Magna

Left Gauge - speedo

Type	In_Min	In_Max	%Xval1	%YVal1	%Xval2	%YVal2	OutMin	OutMax	AdcFilter
SPEEDO									
TACHO									
TEMP									
FUEL									
PRESSURE									

Right Gauge - Tacho

Type	In_Min	In_Max	%Xval1	%YVal1	%Xval2	%YVal2	OutMin	OutMax	AdcFilter
SPEEDO									
TACHO									
TEMP									
FUEL									
PRESSURE									

CX 500

Left Gauge - speedo

Type	In_Min	In_Max	%Xval1	%YVal1	%Xval2	%YVal2	OutMin	OutMax	AdcFilter
SPEEDO									
TACHO									
TEMP									
FUEL									
PRESSURE									

Right Gauge - Tacho

Type	In_Min	In_Max	%Xval1	%YVal1	%Xval2	%YVal2	OutMin	OutMax	AdcFilter
SPEEDO									
TACHO									
TEMP									
FUEL									
PRESSURE									

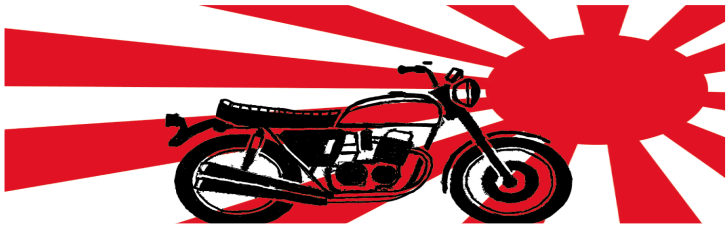
CB 750

Left Gauge - speedo

Type	In_Min	In_Max	%Xval1	%YVal1	%Xval2	%YVal2	OutMin	OutMax	AdcFilter
SPEEDO									
TACHO									
TEMP									
FUEL									
PRESSURE									

Right Gauge - Tacho

Type	In_Min	In_Max	%Xval1	%YVal1	%Xval2	%YVal2	OutMin	OutMax	AdcFilter
SPEEDO									
TACHO									
TEMP									
FUEL									
PRESSURE									



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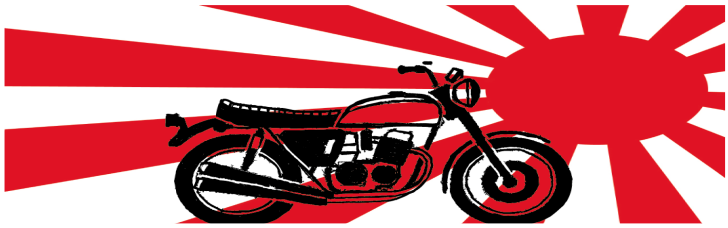

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