2000 MKIII SERIES
Tachometers

Model 2000T/DC

User Guide

Reliability, Guaranteed

Logitech Electronics Limited
e: sales@logitechelectronics.com
t: +44 (0)1952 820444
Design and Manufacture of Electronic Systems and Instrumentation. Supply of Sensors and Transducers
www.logitechelectronics.com
Lane End | Church Aston | Newport | Shropshire | TF10 9JJ | UK

Specification

Display	7 decade (or 6 decade and sign), 7-segment high brightness red LED, 10mm high	
Decimal point	Programmable via display	
Scaling	Programmable via display, retained in non-volatile memory	
Signal inputs	Protected to 100Vdc	
Standard sensitivity mode	From 90mV @ 10Hz, 170mV @ 10kHz	
High sensitivity mode	From 12mV @ 10Hz, 20mV @ 10kHz	
Frequency	50kHz maximum with single input (200Hz in Reed Mode) 30kHz maximum with dual inputs (200Hz in Reed Mode)	
Impedance	15kΩ minimum	
Accuracy	<0.01% with square wave at 1V peak	
Alarms	60Vdc maximum, sink of 150mA maximum	
Digital Output *("D" option only)*	Pulse to supply, internal 4.7kΩ pull-up to supply or sink of 150mA maximum	
Analogue Voltage & Current *("A" option only)*	User selectable as	0 - 5V, or 1 - 5V, or 0 - 10V, or 2 - 10V 0 - 20mA, or 4 - 20mA
Connections	Screw terminals on rear panel	
Power requirement **DC**	12 to 30Vdc via power connector or Vs and 0V terminals	
Temperature range	**Operating** **Storage**	-20°C to +70°C -20°C to +85°C
Dimensions	96 x 48 x 72mm (panel cut-out 92 x 43mm)	
Weight	150g	

General description

The 2000T MKIII SERIES Tachometers are 7-decade unsigned, or 6-decade signed, seven segment, high brightness red LED display instruments. They are built into half DIN (96 mm x 48 mm) panel mounting housings and operate on 12V-30Vdc power supplies, or from 110Vac/230Vac supply using the supplied power adapter.

Two signal inputs are available, Input A (IPa) and Input B (IPb). Each input can be independently set to operate in one of three modes: standard sensitivity, high sensitivity or reed switch. Each input also has an independent sensitivity setting, which the user can adjust electronically via the front panel.

The tachometer measures the input frequency on one or both inputs (depending on the mode selected), then scales this value according to the user set scaling factor. The result of this calculation is then displayed. By appropriate configuration of the scaling factor the unit can be configured to display speed for instance in m/s, mph, or RPM, or the frequency can be related to another measurement such as flow rate (e.g. litres/min) in the case of flow metering applications.

The display can operate in one of four modes: Frequency A, Frequency B, Ratio A/B, Ratio B/A. Each mode has independent settings and the active mode can be switched by the user during operation.

The 2000T MKIII has 2 configurable alarm outputs, which can be set to operate as either high or low alarms at the set scaled frequency thresholds.

2000T MKIII SERIES are available with factory fitted options, which must be specified when ordering. Additionally, **Logitech** will customise the programmed operating modes of these tachometers to suit specialised applications. Please contact our sales office to discuss this.

2000T MKIII SERIES Variants

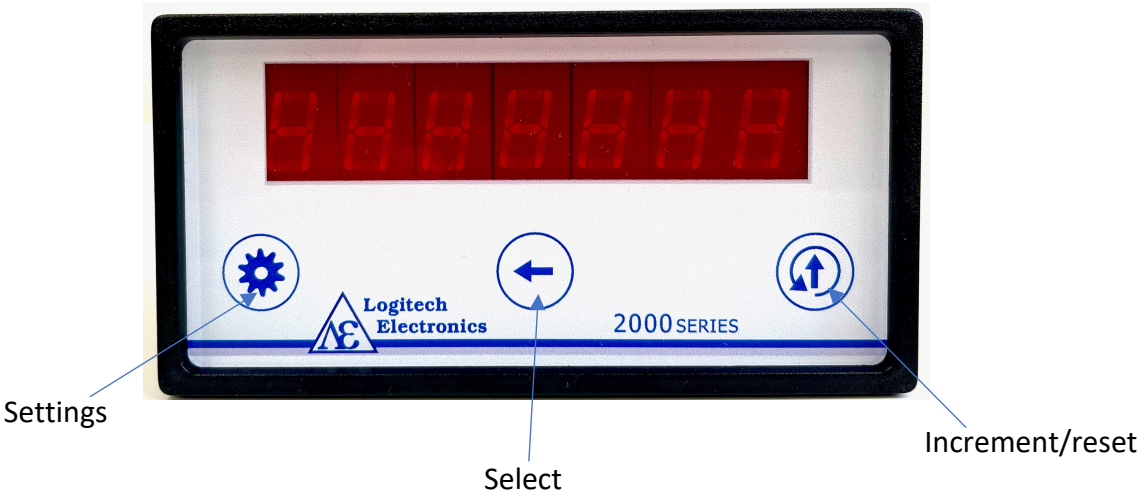
2000T - Standard 2000T MKIII Series Tachometer

2000TX - 2000T MKIII Series Tachometer with optional extra features, where X can be one or more of the following:

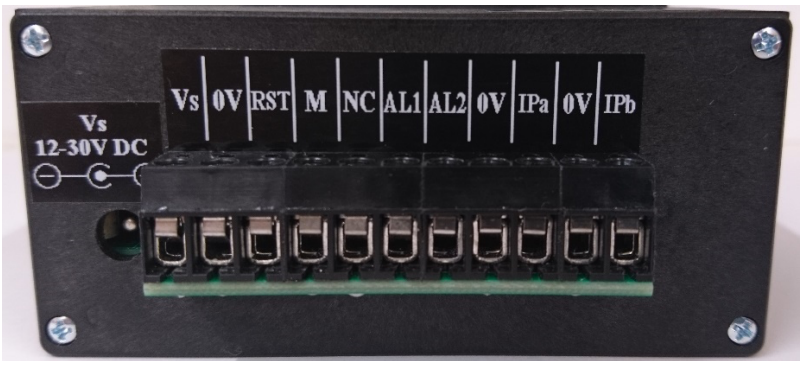
- **A** - Analogue Voltage/Current Output
- **D** - Digital Output (pulse to Vs)
- **L** - Latching alarm outputs
- **IF** - RS232 output
- **USB** - USB connectivity (see “2000USB Software User Guide”)

Front Panel

The panel has three touch switches: settings, select and increment/reset.



Rear panel terminals



The image above shows the rear panel of a standard 2000T MKIII instrument. The actual terminals available on the rear panel will vary depending on the model. Below are the definitions of each of the terminals that may be present. Refer to the terminal labels on the instrument and match these with the functions below.

Vs = Supply voltage, passed through from power connector, or apply 12-30Vdc to power unit).

0V = 0V/ground passed through from power connector or connect to 0V if powering unit from rear terminals.

RST = Reset input. Used to reset the latching alarms on "L" models and to release the settings lock on all 2000T models. Connect to 0V to activate the reset.

M = Mode change input. Used to toggle between active modes (all modes with a scaling factor not equal to zero). Connect to 0V momentarily to change to the next configured mode.

AL1 = Alarm Output 1. The alarm direction and threshold are user set.

AL2 = Alarm Output 2. The alarm direction and threshold are user set.

IPa = Signal Input A. Input type (standard, high sensitivity or reed switch) & sensitivity user set, independently of channel B.

IPb = Signal Input B. Input type (standard, high sensitivity or reed switch) & sensitivity user set, independently of channel A.

Ao = Analogue output. The type and range of the analogue output is determined by the user selected option (setting A OUT).

Do = Digital output. As standard this will provide a pulse to Vs at a scaled frequency, determined by the user set division factor (setting D OUT).

NC = No connection.

Programming the instrument

Calculated Result

The result will be calculated according to the options and values selected for the mode, calculation, scaling factor and offset, which are described in detail below. The equation for this will be as follows:

CALC:	Frequency A mode:	Frequency B mode:
MUL	$D = (R_A \times S_A) + O_A$	$D = (R_B \times S_B) + O_B$
DIV	$D = \frac{R_A}{S_A} + O_A$	$D = \frac{R_B}{S_B} + O_B$

	A/B mode:	B/A mode:
MUL	$D = \frac{R_A \times S_{A/B}}{R_B} + O_{A/B}$	$D = \frac{R_B \times S_{B/A}}{R_B} + O_{B/A}$
DIV	$D = \frac{R_A}{R_B \times S_{A/B}} + O_{A/B}$	$D = \frac{R_B}{R_A \times S_{B/A}} + O_{B/A}$

Where:

D is the displayed value.

S is the scaling factor for the mode.

R is the rate (frequency) of the input signal on IPa and/or IPb.

O is the offset for the mode.

The value D calculated according to the equations above will be shown on the display with each update. Where this manual refers to the scaled frequency value, it is this result that is considered (e.g. alarm outputs, analogue output).

Choice of CALC setting

In most cases the 2000T has sufficient digits to accurately represent the scaling factor whether it is multiplicative or reciprocal, and the calculation can be chosen based on preference. However, in the case of very small numbers (where most of the entered digits would be zero), greater accuracy can be obtained by inverting the scaling factor and changing the calculation type. Flowmeter K-factors are an example of when this can be a useful approach. With the

unit in division mode, the K-factor can be entered as the scaling factor directly, and the display would give a readout in litres per second.

Calculating a scaling factor

The scaling factor is often most easily calculated by considering the maximum input frequency expected and by deciding what the display should read at this frequency. The scaling factor can then be determined from the appropriate calculated result equation.

A few common examples are given below for reference:

D is the displayed value in the desired units
R_A is the measured frequency in pulses per second (Hz)
S_A is the required scaling factor

Gear in RPM:

$$D = (R_A \times S_A)$$

$$S_A = \frac{60}{N}$$ where N is the number of teeth on the target gear.

Flowmeter in litres per minute (lpm):

$$D = \frac{R_A}{S_A}$$

$$S_A = \frac{K}{60}$$ where K is the flowmeter K-factor in pulses per litre.

Vehicle speed e.g. km per hour, miles per hour:

$$D = (R_A \times S_A)$$

$$S_A = \frac{60 \times 60 \times \Delta s}{N}$$ where Δs is the distance travelled per rotation of the target gear.
N is the number of teeth on the target gear.

The scaling factor range is 0.000001 to 9999999 (unsigned) or -999999 to 999999 (signed) and it may be necessary to round off the calculated value to fit within this range. When setting the scaling factor it is important to ensure that with the decimal point position selected, there are enough digits to display the maximum value for the application. Otherwise, the number of decimal places will need to be reduced or the display units altered, with the scaling factor adjusted accordingly.

Setting an Offset

The 2000T tachometer has an OFFSET facility that can be either positive or negative. It is a very useful addition to the scaling factor and can be used to display percentage difference between A and B, or show the deviation from a nominal value.

For example: If the nominal frequency on Input A is 1000 Hz, by setting the scaling factor to 1 and the OFFSET to -1000, the display will show the deviation from 1000 Hz.

Another use of the OFFSET is in the display of percentage difference between signal A and signal B. One of the signals is chosen as the reference (say signal A).

The percentage difference is given by: $\frac{B-A}{A} \times 100$

which simplifies to: $(\frac{B}{A} \times 100) - 100$

Thus, by setting the mode to read ratio B/A with a scaling factor of 100 and an offset of –100, the percentage difference between A and B will be displayed.

Please note that the function of the 7th decade (7 DISP) must be set to sign in order to set negative offset values.

Decimal Places

The decimal point position can be user set for each mode and adjusted to either increase or reduce the number of decimal places displayed. The result will automatically be rounded to the set number of decimal places. Alarms and other outputs will however always use the calculated result and not the rounded display value.

The number of decimal places is altered in the settings menu (DISP DP). When doing so, it is important to ensure that the maximum possible display value can be displayed in the remaining digits. The display will read HIGH when the result is larger than can be displayed with the current settings.

Update Time

The update time determines the rate at which the frequency calculation is performed and that the display (and analogue output on “A” models) are updated. The user can select between a number of options for this: 100ms, 250ms, 500ms, 1000ms (1s), 3000ms (3s).

Wait Time

Provided that a pulse has been detected within the configured update time, the display will update at this configured interval as described above. The wait time determines the

additional time (in seconds) for which the unit will wait to receive a pulse, before setting the calculated frequency to zero. This setting is independent of the update time. The wait time can be user set anywhere between 1s and 20s. If the wait time is set to 0, the unit will not wait beyond the configured update time.

Alarm Outputs

The 2000T MK3 has two configurable alarm outputs. Both outputs are NPN (switch to 0V on activation), with a maximum voltage of 60Vdc and sink current of 150mA.

When configured as a high alarm (HI), the alarm will be activated when the scaled frequency (for the active mode) is greater than, or equal to, the programmed value.

When configured as a low alarm (LO), the alarm is activated when the scaled frequency (for the active mode) is less than, or equal to, the programmed value.

The alarm outputs automatically reset when the value shown on the scaled frequency no longer meets the selected criteria.

If specified at time of ordering (type “L”), a 2000T can be supplied with a latching facility for the alarm outputs. Resetting the outputs is then performed by grounding the reset terminal (RST) on the rear panel or reset via the front panel.

Mode Selection

The 2000T tachometer will operate in any one of four modes, each of which has independent settings. The four modes are:

1. Frequency A (FREQ A)

2. Frequency B (FREQ B)

3. Ratio Frequency A / Frequency B (A/B)

4. Ratio Frequency B / Frequency A (B/A)

It is possible to configure any or all of these modes. If more than one mode has been configured, the user can switch between these modes at any time. In order to do so, either momentarily connect the mode terminal “M” to 0V, or switch the mode via the front panel as described below. It is recommended to install a momentary push switch for this purpose, if mode changes will be required. In order for a mode to be selectable, its scaling factor must be set to a non-zero value in the settings menu. The mode switch will then change between all configured modes in the above order.

The active mode can also be changed from the front panel. In run mode, press the select button. The current mode will be displayed for a period of 2s. Pressing select again while the mode is displayed, will switch to the next active mode. If no other modes are configured, the current mode will continue to be displayed.

Output Options

Analogue Output

“A” models are configured with an analogue output terminal, labelled “Ao” on the rear terminals. The analogue output can be set to be either voltage or current. The output modes are selectable as:

Voltage: 0 - 5V, 1 - 5V, 0 - 10V or 2 - 10V
Current: 0 - 20mA or 4 - 20mA

In addition to selecting the type and range of the output, the reference and full-scale values must also be set. Scaled frequency values at or below the reference will be set to the lowest output value in the selected range. Scaled frequency values at or above the full-scale value will be set to the maximum value in the selected range. In between the reference and full-scale values, the analogue output will be set linearly according to the reference, full-scale and scaled frequency value.

Digital Output

“D” models are configured with a digital output terminal. This digital frequency divider provides a scaled frequency square wave output. The scaling factor can be set anywhere between 0 (output off) and 1 (output equal to input frequency). For example, if set to 0.5 the frequency of the digital output will be equal to half of the frequency of the input signal. In Frequency A and Frequency B mode the digital output provides a divided version of the respective channel. In A/B mode the frequency on Input A determines that of the digital output and in B/A this is determined by Input B.

The digital output provides a pulse to supply (Vs) with a 4.7kΩ pull-up resistor and can sink up to 150mA.

Changing Settings

On first power up from factory settings, the unit will enter set mode. Set Mode can also be accessed after initial configuration by holding the settings button ✸ and then with this held, pressing the increment touch button ↑.

In set mode press the settings button to move on to the next setting, select ← to move between digits or increment ↑ to modify the value.

Hold the settings touch button ✸ and then with this held press increment ↑ at any time to update the settings and return to Run Mode.

Text highlighted in red below shows what will appear on the display. Settings will typically be displayed in the order below, though the available settings will vary depending on the selected instrument.

A setting can be skipped by pressing settings ✸ when either the title or the setting value is displayed. Once all settings have been stepped through or skipped, the unit will return to setting 1. The unit will remain in set mode until run mode is entered as described above.

Each mode has an independent set of settings and after the mode is selected, the set values will be applied to that mode only. The exceptions to this are the input type (INPUT) which is available in Frequency A and Frequency B mode only and set the input type for that channel, and the lock (LOCKED) which locks the settings for all modes when set to YES.

The settings will be displayed and can be altered as follows:

1. **MODE** – Set frequency mode [Default A]
   Press increment ↑ to select from the below options.
   FREQ A = Frequency A
   FREQ B = Frequency B
   A/B = Ratio A/B
   B/A = Ratio B/A
   Press settings ✸ or select ← to move to the next setting.

2. **7 DISP** – Set function of 7th display [Default DIGIT]
   Press increment ↑ to change between from the below options.
   DIGIT = Display is 7 digits (unsigned)
   SIGN = Display is 6 digits & sign
   Press settings ✸ or select ← to move to the next setting.

3. **INPUT** – Set input mode [Default STD]
   Available in FREQ A or FREQ B mode and sets the input type for that channel only. The selected input type will also be applied to that channel in ratio mode.
   Press increment ↑ to change between from the below options.
   STD = Standard sensitivity (from 100mV)
   HI SENS = High sensitivity (from 10mV)
   REED = Reed switch (max. input frequency 200Hz)
   Press settings ✸ or select ← to move to the next setting.

4. **CALC** – Set calculation mode [Default MUL]
   Press increment ↑ to change between the below options.
   DIV = Divide by scaling factor
   MUL = Multiply by scaling factor
   Press settings ✸ or select ← to move to the next setting.

5. **SCALE** - Set scaling factor. [Default 0]
   Enter the scaling factor to be applied to the measured frequency value. Depending on the calculation mode selected the measured frequency will either be multiplied or divided by this value.
   Press select ← to select digit and increment ↑ to change value. In unsigned mode, after cycling through all seven digits the decimal point position can be altered by pressing increment ↑. In signed mode, after cycling through all six digits, all digits will flash and the sign can be toggled by pressing increment ↑. Press select ← once the sign is set to then set the decimal point position.
   For the mode to be viewable via the mode select button, the scaling factor must have a non-zero value.
   Set all digits to 0 on all four frequency modes to restore default settings (the position of the decimal point does not matter when performing a restore to default).
   Press settings ✸ at any time to move to the next setting.

6. **DISP DP** – Set display decimal point position [Default 1DP]
   Select the number of decimal points to display the scaled frequency value to. The decimal point position can be altered by pressing increment ↑. This limits the range of values that can be displayed. The unit will display "high" when the calculated value is greater than can be displayed on the number of digits available. Remaining settings (other than scaling factors) will also be limited to this number of decimal places.
   Press settings ✸ or select ← to move to the next setting.
   NOTE: This setting is now independent of the scaling factor value, e.g. a setting of 1 decimal place does not require the scaling factor to be multiplied by 10.

7. **OFFSET** – Set the offset to be added to the scaled frequency [Default 0]
   Refer to page X for details on the offset.
   Press select ← to select digit and increment ↑ to change value.
   In signed mode, after cycling through all six digits, all digits will flash and the sign can be toggled by pressing increment ↑.
   The number of decimal places is limited by the DISP DP setting.
   Press settings ✸ at any time to move to the next setting.

8. **ALARM 1** – Set alarm output 1 direction and threshold value
   Press increment ↑ to select from the below options.
   HI = High alarm (output switched to 0V when scaled frequency value ≥ value)
   LO = Low alarm (output switched to 0V when scaled frequency value ≤ value)
   Press select ← or settings ✸ once the alarm type is selected, to then set the alarm value.
   Enter the scaled frequency value below which the low alarm will be activated.
   Press select ← to select digit and increment ↑ to change value. The decimal point position is locked to the display value set under DISP DP.
   In signed mode, after cycling through all six digits, all digits will flash and the sign can be toggled by pressing increment ↑.
   Press settings ✸ at any time to move to the next setting.

9. **ALARM 2** – Set alarm output 2 direction and threshold value
   This is configured by following the same process as for ALARM 1.

10. **A OUT** – Set the analogue output mode [Default OFF]
    Press increment ↑ to select from the below options. One of these output modes must be selected in order for the rate controller to function.
    OFF = Analogue output off
    V 0TO5 = 0V to 5V
    V 1TO5 = 1V to 5V
    V 0TO10 = 0V to 10V
    V 2TO10 = 2V to 10V
    I 0TO20 = 0mA to 20mA
    I 4TO20 = 4mA to 20mA
    If one of the voltage output modes is selected the analogue voltage output will be on terminal “Ao”.
    If one of the current output modes is selected, the analogue current output will be on terminal “Ao”.
    Press settings ✸ or select ← to move to the next setting.

11. **A REF** – Set the reference (minimum) scaled frequency value for the analogue output. [Default 0]
    Enter the displayed (scaled) value, below which the analogue output will be at the minimum for the selected voltage/current range.
    Press select ← to select digit and increment ↑ to change value.
    In signed mode, after cycling through all six digits, all digits will flash and the sign can be toggled by pressing increment ↑.
    The number of decimal places is limited by the DISP DP setting.
    Press settings ✸ at any time to move to the next setting.

12. **A FULL** – Set the full scale (maximum) value for the analogue output. [Default 0]
    Enter the displayed (scaled) value, above which the analogue output will be at the maximum for the selected voltage/current range.
    Press select ← to select digit and increment ↑ to change value.
    In signed mode, after cycling through all six digits, all digits will flash and the sign can be toggled by pressing increment ↑.
    The number of decimal places is limited by the DISP DP setting.
    Press settings ✸ at any time to move to the next setting.

13. **D OUT** – Set the digital frequency divider factor. [Default 0]
    This can be set anywhere between 0 (digital output off) and 1 (digital output frequency equal to the input frequency). Values greater than 1 will be set to 1 automatically.
    Press select ← to select digit and increment ↑ to change value.
    After cycling through all digits the decimal point position can be altered by pressing increment ↑.
    Press settings ✸ at any time to move to the next setting.

14. **WAIT** – Set the wait time in seconds [Default 1]
    Set the wait time in seconds that the unit will wait to receive a pulse on the active input(s) before displaying zero (or the offset value if this has been set).
    This setting can be anywhere between 0 and 20.
    Press increment ↑ to change value.
    Press settings ✸ or select ← to move to the next setting.

15. **UPDATE** – Set the display & analogue output update time [Default 1000MS]
    Press increment ↑ to select from the below options. One of these output modes must be selected in order for the rate controller to function.
    100 MS = 100ms (0.1s)
    250 MS = 250ms (0.25s)
    500 MS = 500ms (0.5s)
    1000 MS = 1000ms (1s)
    3000 MS = 3000ms (3s)
    Press settings ✸ or select ← to move to the next setting.

16. **LOCKED** – Lock settings [Default NO]
    Once locked is set to yes, upon entering run mode the values of all settings are maintained but cannot be altered without first performing an unlock.
    Press increment ↑ to change between from the below options.
    NO = Not locked, all settings are accessible in the set menu.
    YES = Locked, the set menu and sensitivity adjustment can no longer be accessed without unlocking via the reset terminal.
    Press settings ✸ or select ← to return to the mode setting.

Setting the Sensitivity [Default 50]

The sensitivity can only be altered in Frequency A mode or Frequency B mode, and this will set the sensitivity value for the respective input only. Press and hold the settings button ✸, then press the select ← button to enter sensitivity mode The display will show SENS and then the current value is displayed. Sensitivity ranges from 0 (least sensitive) to 63 (most sensitive). If the lock has been activated in the settings menu, the display will instead show "LOCKED", and the unit must first be unlocked following the "Unlock the Settings" procedure below to adjust the sensitivity

Press select ← to reduce the value or increment ↑ to increase it. After 2s of neither button being touched the unit will apply the selected sensitivity value and return to run mode. It is recommended that the sensitivity level is set only as high as necessary to obtain a steady signal. This minimises the risk of detecting spurious signals.

Viewing the Settings

The current values of all settings can be viewed at any time in run mode. To do so, press and release the settings button ✸. The display will show DISPSET and will then display the title and current value of each setting in order. To skip over a setting, press the settings button ✸. The display will automatically return to run mode once all settings have been displayed. Press and hold settings ✸ then press increment ↑ to immediately return to run mode at any time.

Unlocking the Settings

Once the settings have been locked, the set menu and sensitivity adjustment can no longer be accessed. To remove the lock and enable access to all unit settings, an unlock must be performed. To do so, connect the reset input to ground and then power on the unit. The set menu and sensitivity adjustment can be accessed while the reset input is grounded. Upon entering set mode, the lock will be released (LOCKED set to NO). Select YES from the LOCKED setting to re-activate the settings lock.

Setting the Sensitivity

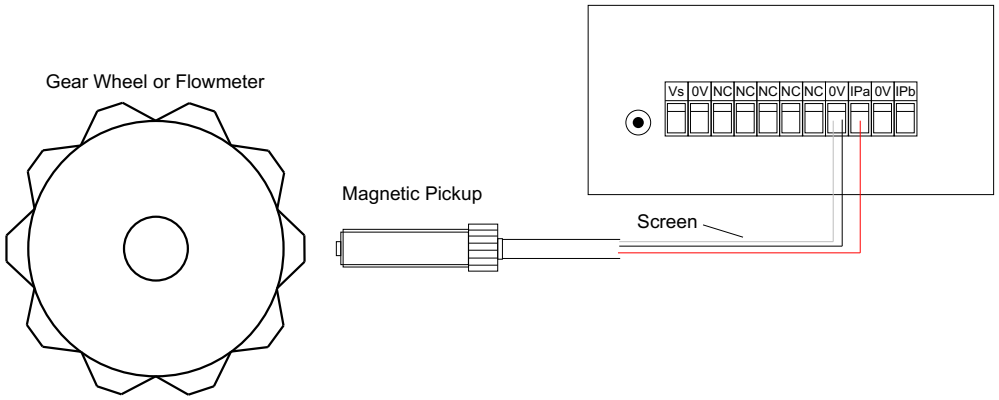
The sensitivity can only be altered in Frequency A mode or Frequency B mode, and this will set the sensitivity value for the respective input only. Press and hold the settings button ✸, then press the select ← button to enter sensitivity mode The display will show SENS and then the current value is displayed. Sensitivity ranges from 0 (least sensitive) to 63 (most sensitive). If the lock has been activated in the settings menu, the display will instead show “LOCKED”, and the unit must first be unlocked following the “Unlock the Settings” procedure below to adjust the sensitivity

Press select ← to reduce the value or increment ↑ to increase it. After 2s of neither button being touched the unit will apply the selected sensitivity value and return to run mode. It is recommended that the sensitivity level is set only as high as necessary to obtain a steady signal. This minimises the risk of detecting spurious signals.

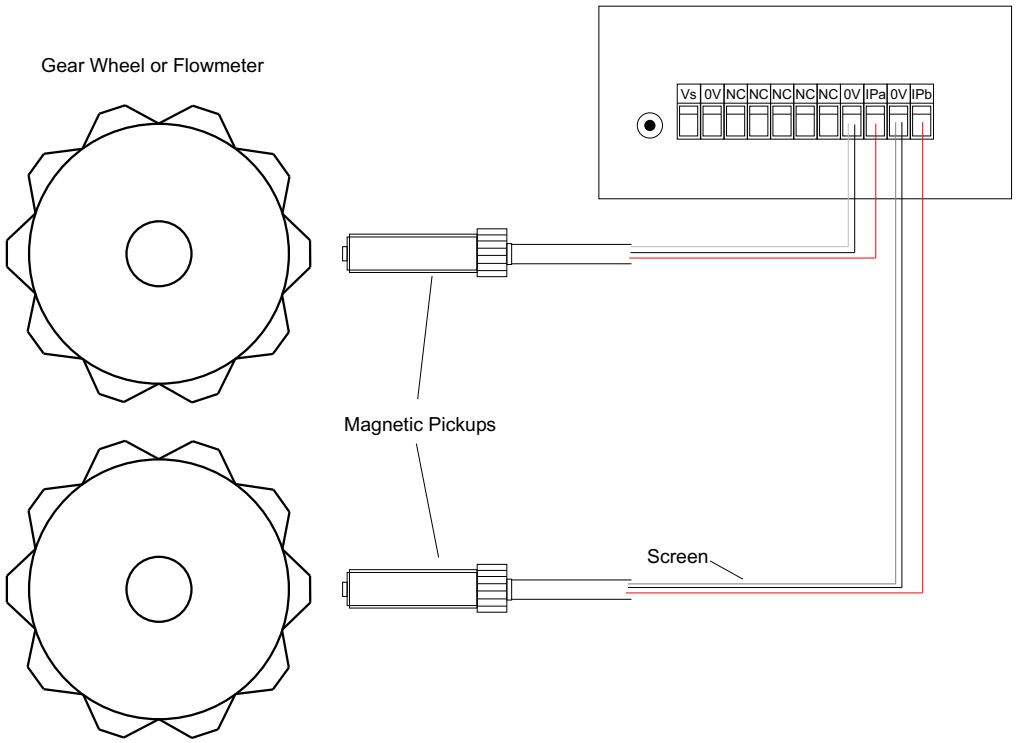
Variable Reluctance Magnetic Pickups

Set input type (INPUT) to standard sensitivity (STD) or high sensitivity (HS) depending on target diameter and rotational speed. Connect the cable screen and one of the two wires from the magnetic pickup to the common 0V terminals (shown as the black wire below). Connect the other wire from the magnetic pickup to the input. Adjust sensitivity to ensure that the correct value displayed at the minimum rotational speed. Either IPa or IPb can be used for single channel operation.

Single Channel Operation

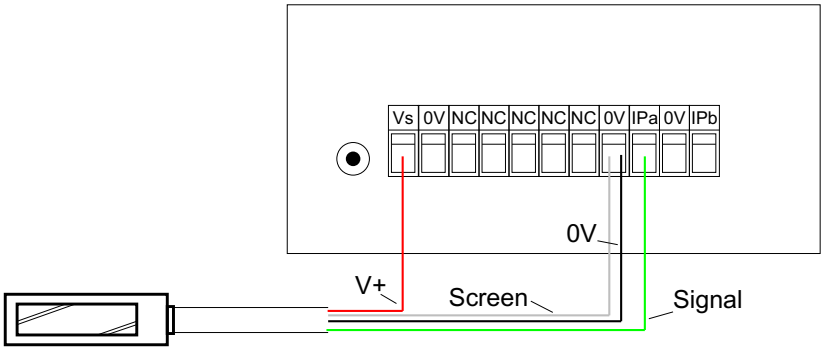


Dual Channel (Ratio) Operation



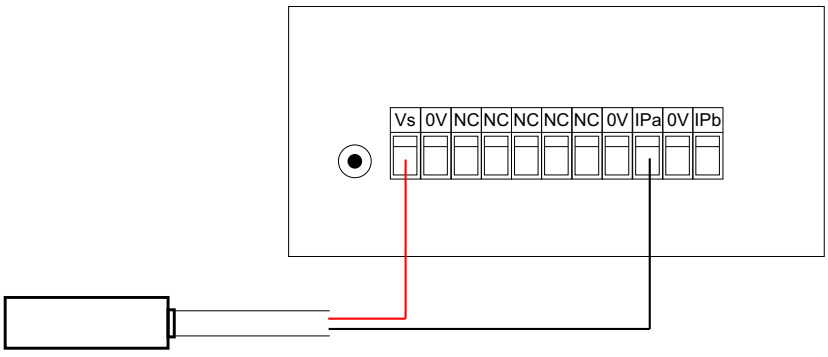
Electronic Sensors and Rotary Encoders

Set input type (INPUT) to standard sensitivity (STD). The sensor/encoder can be supplied from the Vs terminal, provided that the sensor is rated to operate at this voltage. The sensor/encoder's 0V connection should be made to any of the common 0V terminals, along with the cable screen if this is not connected to 0V at the sensor/encoder end. The signal can be connected to either IPa or IPb for single channel operation.



Reed Switch

Set input type (INPUT) to reed switch (REED). Connect one switch terminal to the supply voltage (Vs) and the other to the input terminal IPa or IPb for single channel operation. The maximum frequency is limited to 200Hz. Adjust the sensitivity until the correct value is displayed at the maximum frequency of operation.

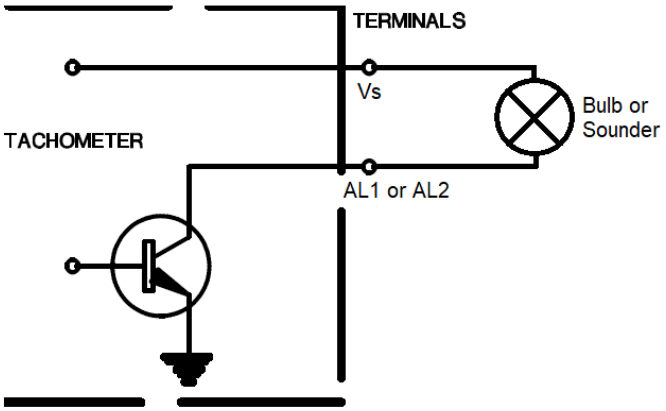


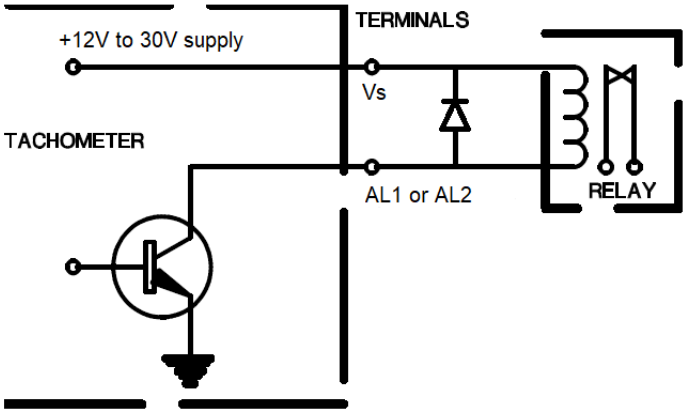
Alarm Connections

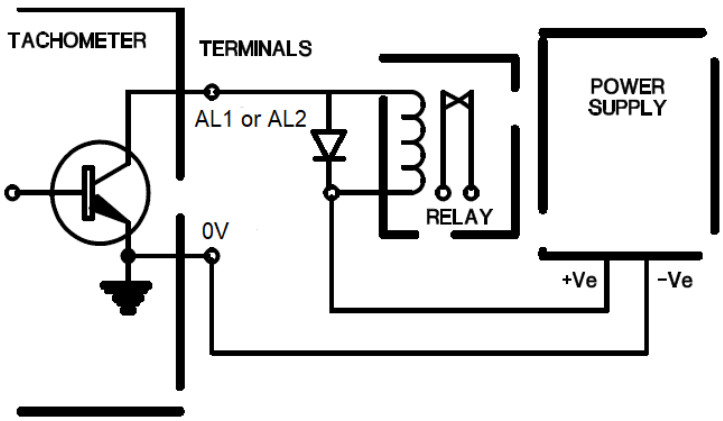
Example alarm configurations are shown below.

NOTE: Switching Relays.

If the relay module does not have integrated back EMF suppression, it is essential that a diode is connected across the coil as shown in the diagrams.







Electro-Magnetic Precautions

A great deal of noise immunity has been designed into the product in accordance with the EMC directive 2014/30/EU, the Electromagnetic Compatibility Regulations 2016, BS EN IEC 61000-6-2 and BS EN IEC 61000-6-4.

However, it is still vital to use good EMC (Electro-Magnetic Compatibility) techniques on installation of both this and other associated electronic equipment and sensors in order to ensure reliable operation.

It is important to note that if used with systems that radiate high levels of harmonic noise such as DC Drives, AC Inverters and Servo Drives then the levels of imposed interference can greatly exceed that of the European Standards.

In such cases it is important to ensure that mains leads are routed as far as possible from all cables carrying power to such equipment and that the supply should, if viable, be taken from a clean source. Where this is not possible, it is advisable to use a good quality mains filter mounted as close to the instrument as possible, ensuring that the cable between the filter and the instrument is kept separate from any cables carrying high levels of current or any fast-switching transients.

All signal connections to the instrument should be made using a screened lead with the screen connected to ground/0V at one end only.

Warranty

2000T MKIII SERIES Tachometers carry a two-year warranty that is only valid where there is no damage caused by accident, negligence, misapplication, or repairs/modifications attempted by unauthorised personnel. The warranty only extends to the original user.

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