SHIMPO

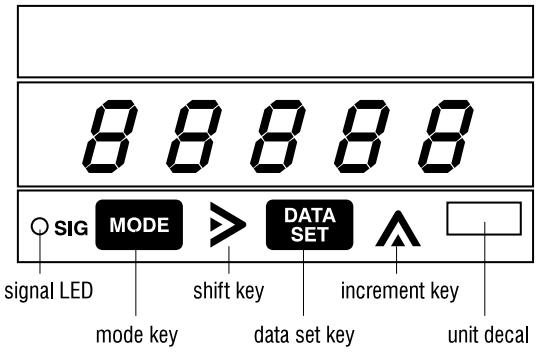
Panel Mount Tachometer
Model DT-5TP

Instruction Manual

Features

This microprocessor-controller digital tachometer can be used in any direct rpm application where no special gears or generators are required. Here are some of its outstanding features:

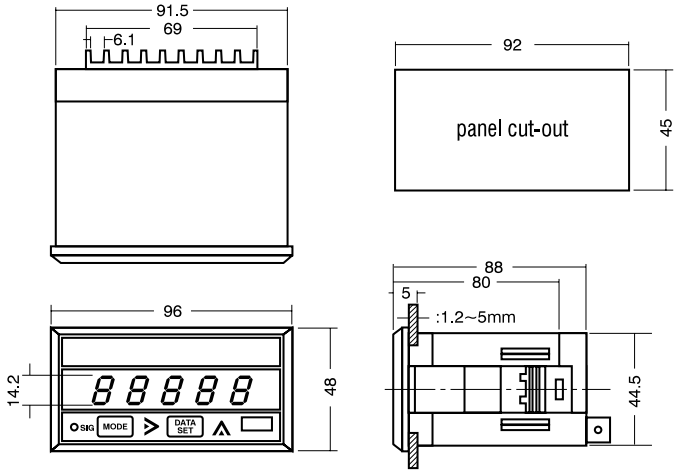
- Mounts easily — no brackets or screws required.
- Any AC line voltage between 85 and 264 (50/60 Hz) can power the unit.
- Parameters are easily set via front panel membrane switches.
- Parameter settings are stored in a nonvolatile memory.
- Pulses per revolution range is 1 - 9999.
- Signal LED on front panel.



Operational Precautions

- If the unit is used in a caustic environment, we suggest you use a NEMA 4X enclosure.
- Keep unit free of vibration and shock.
- When installing unit, keep power and sensor wires separate. Tie cable shield to terminal E (earth ground).
- After inserting wires, tighten terminal screws securely.

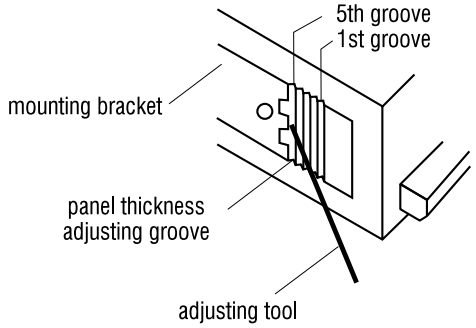
Dimensions (mm)



Installation

Our 1/8 DIN case design eliminates the need for brackets and screws for installation. With the tachometer in a level position, insert it into the panel cutout. Gently push the face of the unit until the front bezel locks into place. If the tachometer case is loose, adjust the integral bracket with the enclosed tool.

Mounting Bracket Adjustment

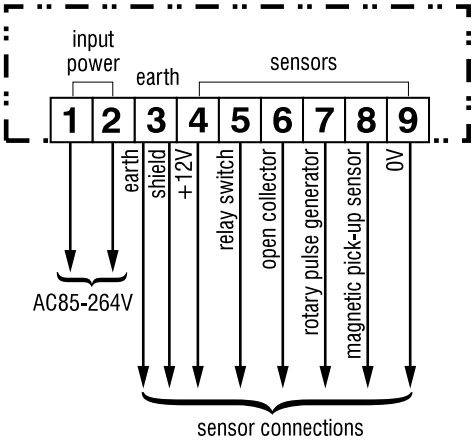


Thickness of Panel	Panel Thickness Adjusting Groove
1.2 – 1.6 mm	5th groove (factory setting)
1.8 – 2.5 mm	4th groove
2.8 – 3.6 mm	3rd groove
4.0 – 4.5 mm	2nd groove
5.0 mm	1st groove

Removing Unit

From the rear of the tachometer, alternately push the unit from the left and right. This will free it for easy removal.

Connections



1&2 Line voltage input. AC voltage must be between 85 and 264 volts.

3 Earth ground. Connect all cable shielding to this terminal.

4 12 VDC 50mA max. This sensor power supply is for any sensor that requires external power

5 Switch closure input. To be used with a relay or solenoid. The input frequency must be less than 20Hz.

6 For use with open collector sensors. Connect the sensor's signal output wire. No need for an external pull-up resistor.

7 Terminal to accept signals from rotary encoders or pulse generators.

8 Standard input terminal for magnetic pick-ups and proximity switches.

9 Signal ground or common.

Sensors

Shimpo offers a large selection of sensors to meet you application needs. The chart below shows the optimum sensor to use when designing your system. Please call us for more information.

SENSOR	FREQUENCY TYPE	TERMINAL NUMBERS	FREQUENCY OR RPM RANGE	OPERATION TEMPERATURE
RE1B–60C	Rotary Pulse Generator	3, 4, 7, 9,	0–5000 rpm	+14° F to +122° F
RE1B–600C		3, 4, 7, 9,	0–3000 rpm	+14° F to +122° F
RE1B–1000C		3, 4, 7, 9,	0–1800 rpm	+14° F to +122° F
BI2–S12	Proximity Switch	4, 6, 9,	0–2 KHz	-13° F to +158° F
DJ2–G	Proximity Switch	4, 8,	0–1 KHZ	-4° F to +140° F
SE–G	Proximity Gear Sensor	3, 4, 7, 9,	0–8KHz	-4° F to +158° F
RS220H	Retro Reflective Sensor	3, 4, 7, 9,	0–500 Hz	+14° F to +140° F
MCS–625		3, 4, 6, 9,	0–250 Hz	-22° F to +120° F
3030AN	Magnetic Pick-up	3, 8, 9,	Min. 5 l/s with 16 pitch gear .005" clearance	-100° F to +225° F
MP–10		3, 8, 9,	Min. 1 l/s with 12 pitch gear .005" clearance	-40° F to +221° F
3070A*		8, 9,		-100° F to +200° F
Switch Closure	Relay or Solenoid	5, 9,	<20 Hz	

* explosion proof

Mode Selections

The DT-5TP operates in two modes. Mode 1 is programmed when setting up rpm applications, and mode 5 is for diagnostic testing:

Mode	Function	Application
1	Rate measurement	Direct rpm measurements
5	Self test	Diagnostic test of LED display and input circuitry

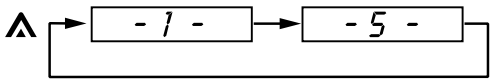
Setting Modes

0

1. Apply any voltage between 85–264 VAC (50/60Hz) to terminals 1 and 2. The display will show 0.

-1-

2. Press **mode** and **data set** keys for at least 5 seconds. 1 will then appear.
3. Press the **increment** key to select the desired mode. The display will shift between mode 1 and mode 5.



4. Press **mode** key to activate mode 1 or mode 5.

Mode 1: Rate Measurement

The DT-5TP can directly measure any rotational rate speed. The two parameters listed below may need to be changed during system set-up.

Parameter	Function	Factory Setting	Range
1	Pulses per revolution of sensing system	1p/r	1–9999
2	Decimal point	none	0–4th place

Setting Parameters

Parameter 1: Pulses per Revolution of Sensing Gear

Here is how to change the parameter from 1 to 60 pulses per revolution ("p/r"):

MODE 1----

1. Set unit to **mode 1**.

0001

(factory setting)

0001

2. Press **mode** key.

0001

3. Press **shift** key to select the desired digit.

0061

4. Press the **increment** key 6 times.

0061

5. Press **shift** key.

0060

6. Press the **increment** key 9 times.

Parameter 1 is now set for 60p/r.

Parameter 2: Decimal Point

MODE 2----

1. Press **mode** key.

00000.

0000.0

2. Press **shift** key to select position of decimal point.

DATA SET 0

Parameter settings are now complete. Press **data set** key to begin counting.

Mode 5: Self Test

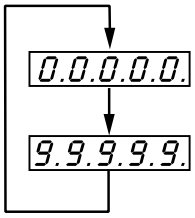
This mode lets you check the LED display and input circuitry.

MODE / DATA SET — display: - 1 -

1. After disconnecting sensor, press **mode** and **data set** keys for five seconds.

display: - 5 -

2. Press **increment** key until display shows mode 5.



3. Press **mode** key to test display segments and decimal points.

MODE — display: 1000

4. Press **mode** key. The display will show 1000 and the signal LED will flash.

display: 0

5. Press the **data set** key. The unit is now ready for counting.

Specifications

Model	**DT-5TP**
Mode	**Rate Measurement**
Display Range	**0.0000–9.9999 0.000–99.999 0.00–999.99 0.0–9999.9 0–99999**
Measuring range	**10–99999 rpm (at 1p/r), 0.2–30000 rpm (at 60p/r)**
Display period	**1 sec. (1 p/r input 60 rpm or over) 1–6 sec. (1 p/r input 10–60 rpm)**
Display	**Red LED (0.56" or 14.2 mm high)**
Time base	**Controlled by a 4.194304 MHz crystal**
Accuracy	**±0.008% ± 1 digit**
Measuring system	**CPU controlled**
Input no. of p/r	**1–9999 (programmable)**
Input signal characteristics	**Sine wave–max frequency 10 KHz Square wave–max frequency 30 KHz Open collector–max frequency 30 KHz Contact closure–max frequency 20 Hz**
Input signal amplitude	**Sine wave (0.3–30 VP–P) Square wave LO: 0–1.5 V, HI 4–30 V**
Input impedance	**Approx. 10 k ohms**
Voltage output	**12 VDC ±5% (50 mA max) to power sensors**
Ambient temperature	**32°–113° F (0°–45° C)**
Power consumption	**1W**
Voltage requirements	**85–264 VAC (50/60Hz)**
Dimensions	**3.46"L x 1.88"H x 3.78"W (88L x 48H x 96W mm), includes bezel, fit 1/8 DIN cutout**
Weight	**0.55 lbs (250g)**

Error Codes

Display	Type of Error	What to Do
EE-02	Internal memory	Press **data set** key. Interrupt power at terminals 1 and 2.
EE-03	Memory recall	1. Press **data set** key. 2a. Press **increment** key. Display should show 11111 2b. Press **data set** key. Display should show 22222 2c. Press **shift** key. Display should show 33333 2d. Press **mode** key. Display should show 44444 and reset to 0. If display goes to 11111 or 22222 and locks up, turn power off and on again and repeat above steps.

SHIMPO

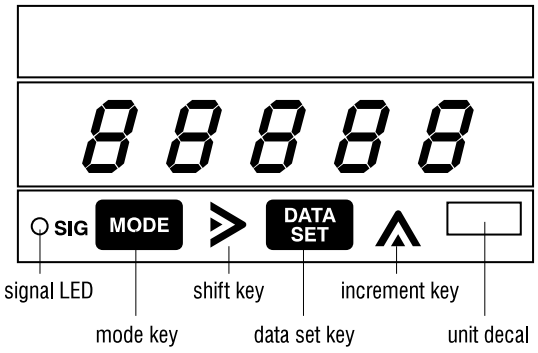
Panel Mount Tachometer
Model DT-5TP (VDC)

Instruction Manual

Features

This microprocessor-controller digital tachometer can be used in any direct rpm application where no special gears or generators are required. Here are some of its outstanding features:

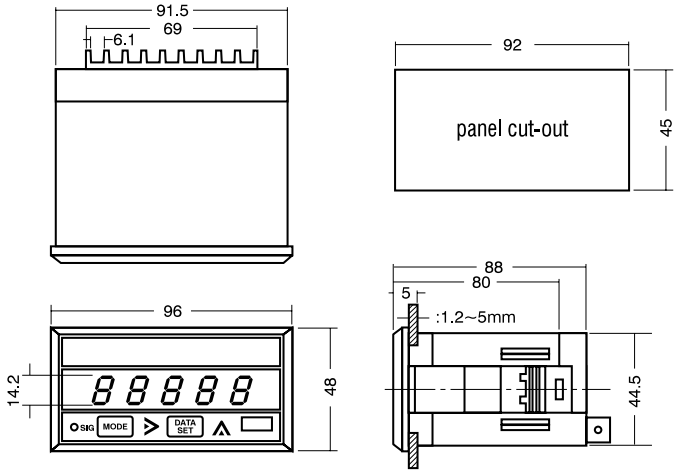
- Mounts easily — no brackets or screws required.
- Any DC line voltage between 9 and 35 VDC can power the unit.
- Parameters are easily set via front panel membrane switches.
- Parameter settings are stored in a nonvolatile memory.
- Pulses per revolution range is 1 - 9999.
- Signal LED on front panel.



Operational Precautions

- If the unit is used in a caustic environment, we suggest you use a NEMA 4X enclosure.
- Keep unit free of vibration and shock.
- When installing unit, keep power and sensor wires separate. Tie cable shield to terminal E (earth ground).
- After inserting wires, tighten terminal screws securely.

Dimensions (mm)



Installation

Our 1/8 DIN case design eliminates the need for brackets and screws for installation. With the tachometer in a level position, insert it into the panel cutout. Gently push the face of the unit until the front bezel locks into place. If the tachometer case is loose, adjust the integral bracket with the enclosed tool.

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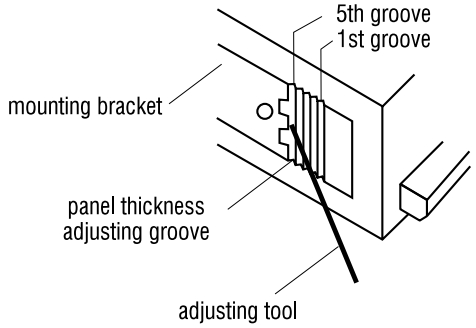

Thickness of Panel	Panel Thickness Adjusting Groove
1.2 – 1.6 mm	5th groove (factory setting)
1.8 – 2.5 mm	4th groove
2.8 – 3.6 mm	3rd groove
4.0 – 4.5 mm	2nd groove
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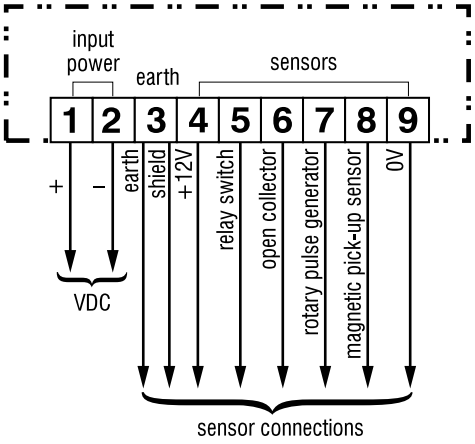
Removing Unit

From the rear of the tachometer, alternately push the unit from the left and right. This will free it for easy removal.

Connections



1&2 DC input terminals. Power required: 9–35 VDC, 1W.

3 Earth ground. Connect all cable shielding to this terminal.

4 12 VDC 50mA max. This sensor power supply is for any sensor that requires external power

5 Switch closure input. To be used with a relay or solenoid. The input frequency must be less than 20Hz.

6 For use with open collector sensors. Connect the sensor's signal output wire. No need for an external pull-up resistor.

7 Terminal to accept signals from rotary encoders or pulse generators.

8 Standard input terminal for magnetic pick-ups and proximity switches.

9 Signal ground or common.

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SENSOR	FREQUENCY TYPE	TERMINAL NUMBERS	FREQUENCY OR RPM RANGE	OPERATION TEMPERATURE
RE1B–60C **RE1B–600C** **RE1B–1000C**	Rotary Pulse Generator	3, 4, 7, 9, 3, 4, 7, 9, 3, 4, 7, 9,	0–5000 rpm 0–3000 rpm 0–1800 rpm	+14° F to +122° F +14° F to +122° F +14° F to +122° F
BI2–S12 **DJ2–G** **SE–G**	Proximity Switch Proximity Switch Proximity Gear Sensor	4, 6, 9, 4, 8, 3, 4, 7, 9,	0–2 KHz 0–1 KHZ 0–8KHz	-13° F to +158° F -4° F to +140° F -4° F to +158° F
RS220H **MCS–625**	Retro Reflective Sensor	3, 4, 7, 9, 3, 4, 6, 9,	0–500 Hz 0–250 Hz	+14° F to +140° F -22° F to +120° F
3030AN **MP–10** **3070A***	Magnetic Pick-up	3, 8, 9, 3, 8, 9, 8, 9,	Min. 5 l/s with 16 pitch gear .005" clearance Min. 1 l/s with 12 pitch gear .005" clearance	-100° F to +225° F -40° F to +221° F -100° F to +200° F
Switch Closure	Relay or Solenoid	5, 9,	<20 Hz	

*** explosion proof**

Mode Selections

The DT-5TP operates in two modes. Mode 1 is programmed when setting up rpm applications, and mode 5 is for diagnostic testing:

Mode	Function	Application
1	Rate measurement	Direct rpm measurements
5	Self test	Diagnostic test of LED display and input circuitry

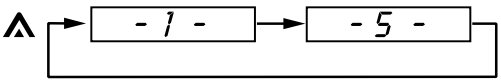
Setting Modes

0

1. Apply any voltage between 9–35 VDC to terminals 1 and 2. The display will show 0.

-1-

2. Press **mode** and **data set** keys for at least 5 seconds. 1 will then appear.
3. Press the **increment** key to select the desired mode. The display will shift between mode 1 and mode 5.



4. Press **mode** key to activate mode 1 or mode 5.

Mode 1: Rate Measurement

The DT-5TP can directly measure any rotational rate speed. The two parameters listed below may need to be changed during system set-up.

Parameter	Function	Factory Setting	Range
1	Pulses per revolution of sensing system	1p/r	1–9999
2	Decimal point	none	0–4th place

Setting Parameters

Parameter 1: Pulses per Revolution of Sensing Gear

Here is how to change the parameter from 1 to 60 pulses per revolution ("p/r"):

MODE 1----

1. Set unit to **mode 1**.

0001

(factory setting)

0001

2. Press **mode** key.

0001

3. Press **shift** key to select the desired digit.

0061

4. Press the **increment** key 6 times.

0061

5. Press **shift** key.

0060

6. Press the **increment** key 9 times.

Parameter 1 is now set for 60p/r.

Parameter 2: Decimal Point

MODE 2----

1. Press **mode** key.

00000.

0000.0

2. Press **shift** key to select position of decimal point.

DATA SET 0

Parameter settings are now complete. Press **data set** key to begin counting.

Mode 5: Self Test

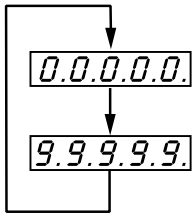
This mode lets you check the LED display and input circuitry.

MODE / DATA SET - 1 -

1. After disconnecting sensor, press **mode** and **data set** keys for five seconds.

⋀ - 5 -

2. Press **increment** key until display



shows mode 5.

3. Press **mode** key to test display segments and decimal points.

MODE 1000

4. Press **mode** key. The display will show 1000 and the signal LED will flash.

0

5. Press the **data set** key. The unit is now ready for counting.

Specifications

Model	**DT-5TP (VDC)**
Mode	**Rate Measurement**
Display Range	**0.0000–9.9999 0.000–99.999 0.00–999.99 0.0–9999.9 0–99999**
Measuring range	**10–99999 rpm (at 1p/r), 0.2–30000 rpm (at 60p/r)**
Display period	**1 sec. (1 p/r input 60 rpm or over) 1–6 sec. (1 p/r input 10–60 rpm)**
Display	**Red LED (0.56" or 14.2 mm high)**
Time base	**Controlled by a 4.194304 MHz crystal**
Accuracy	**±0.008% ± 1 digit**
Measuring system	**CPU controlled**
Input no. of p/r	**1–9999 (programmable)**
Input signal characteristics	**Sine wave–max frequency 10 KHz Square wave–max frequency 30 KHz Open collector–max frequency 30 KHz Contact closure–max frequency 20 Hz**
Input signal amplitude	**Sine wave (0.3–30 VP–P) Square wave LO: 0–1.5 V, HI 4–30 V**
Input impedance	**Approx. 10 k ohms**
Voltage output	**12 VDC ±5% (50 mA max) to power sensors**
Ambient temperature	**32°–113° F (0°–45° C)**
Power consumption	**1W**
Voltage requirements	**9–35 VDC**
Dimensions	**3.46"L x 1.88"H x 3.78"W (88L x 48H x 96W mm), includes bezel, fit 1/8 DIN cutout**
Weight	**0.55 lbs (250g)**

Error Codes

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