

### LCD Tach/Hour Meter PT16F Series



**PT16F**

#### FEATURES

Type of working signal	Gasoline engine spark plug signal
Housing material	ABS black
Product size	80mm • 39.6mm • 20mm
Display window size	35.5mm*13.5mm
Working temperature	-20°C to 70°C
Waterproof rate	IP67
Weight	75g

ENM's PT16F is a LCD tachometer and hour meter combination with extra functions such as a job timer, service timer, and ability to set various firing patterns. The meter also keep track of the maximum RPM which can help in early detection of issue with engine. The meter works on gas powered engine with a spark plug. The unit have an IP67 rating which will protect against dust and water and will work in various environment.

#### SPECIFICATIONS

##### 1. Display:

- LCD display, viewing angle is 6'Clock.
- 6 digits display.
- Temperature range of LCD screen: -20°C-70°C

##### 2. Operation systems function:

- Dsp-1 display interface sequence: TOT>JOB>SVC>RPM Alert>MAX RPM>1P1R  
Dsp-2 interface display:  
Timing mode: TOT>JOB>SVC.  
RPM mode: RPM>RPM Alert>MAX RPM>1P1R.
- Default mode: dsp-1.

##### 3. RPM measuring function:

- Signal recognition: When tach hour meter detects the engine spark plug signal for more than 1s continuously, the LCD will display the current RPM of the engine.
- RPM range: 0-25000RPM; RPM accuracy: ±50RPM.
- RPM resolution: 10RPM.
- RPM refresh rate: 0.5s
- Alert RPM setting range: 0-25000RPM(Off by default).
- RPM warning reminder: RPM value and warning icon will flash.
- MAX RPM record method: when the current RPM value exceeds the record value twice continuously , the record value will be updated.
- Engine firing patterns: 1P1R, 1P2R, 2P1R, 3P1R, 3P2R, 4P1R, 5P2R, 6P1R, 8P1R.

##### 4. Timing function:

- When the unit pick up the engine signal continuously, the hourglass icon flashes or the LCD displays current RPM and start timing.
- Record total running hours and the timing range is 0-999999H, non-resettable;
- Record partial time and the timing range is 0-999999H, resettable;
- Timing accuracy: when the total hours range is 0-9999H59M, the timing accuracy is 1 min, when the total hours range is 10000-99999H, the timing accuracy is 0.1H; when the total hours range is 100000-999999M, the timing accuracy is 1H.

##### 5. Maintenance interval time function:

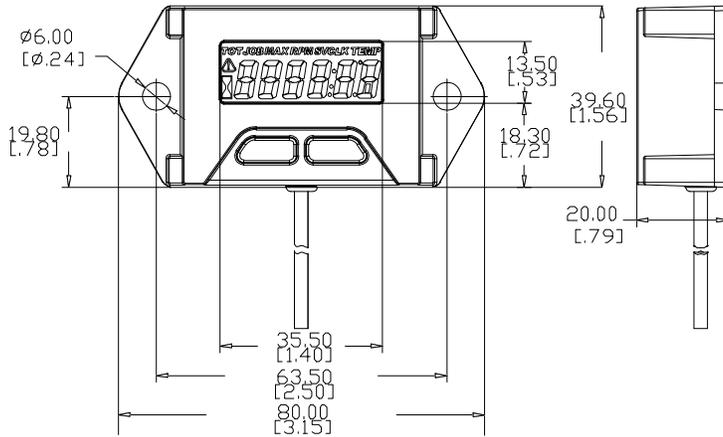
- One maintenance reminder which can be set to 0-2000H.
- It is countdown timer; the SVC icon will flash on LCD screen.

##### 6. Turn-on/turn-off function:

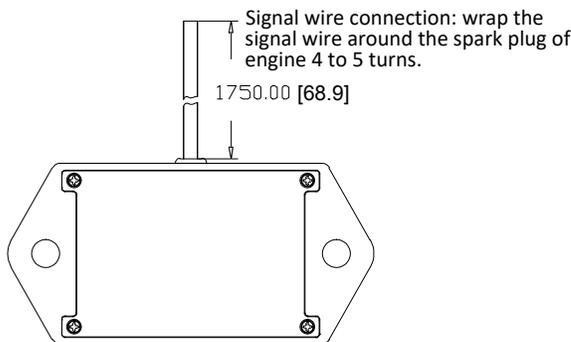
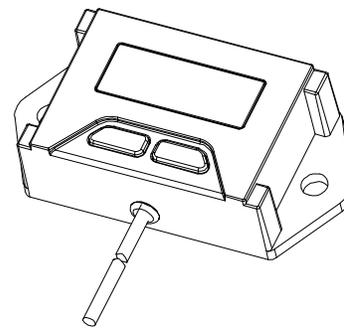
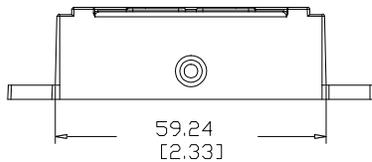
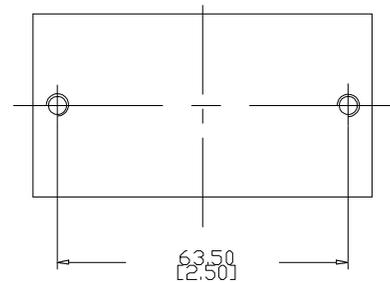
- Operation: press the "MENU" button and the "SET" button simultaneously on the main interface, the LCD will display OFF and LCD display will be shut down.
- Turn-on method: press any button or detect the continuous engine signals for 8s, the LCD display will be activated.

##### 7. Internal battery:

- Battery type: CR2450, capacity: 540mAh



MOUNTING HOLES LOCATOR



7 SEGMENTS DIMENSIONS

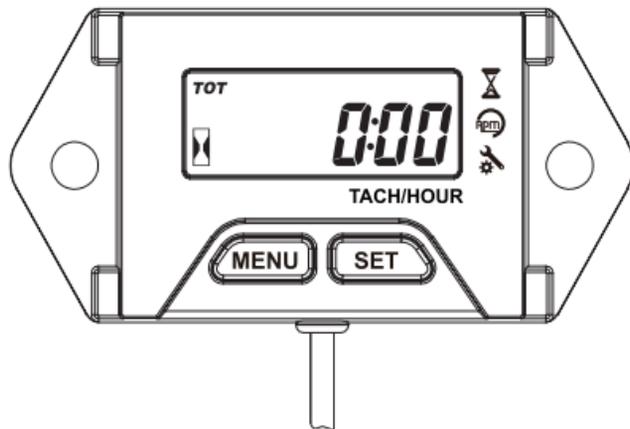
2021 ENM Co.®

LIMITED WARRANTY

ENM Company products are warranted to the consumer to be free from defects in material and workmanship for a period of 1 year. All ENM products which fall within the warranty period due to defects in material or workmanship will be repaired or replaced, at ENM's option, without charge to the consumer when returned with proof of purchase to any authorized ENM dealer in the United States, transportation charges prepaid, provided there is no evidence of improper installation, tampering, or other abuse. All implied warranties, including any implied warranty of merchantability or fitness for a particular purpose, shall be limited in duration to the express warranty period specified above. ENM disclaims any liability for consequential damages due to breach of any written or implied warranty on its products.

# OPERATING INSTRUCTION

•  
Self Powered Digital Tach / Maintenance / Hour Meter



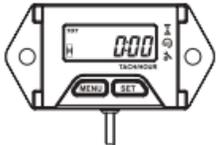
<b>Product Accessories List</b>	-----	①
<b>Product Installation</b>	-----	①
<b>Product Operation</b>	-----	③
<b>Specifications</b>	-----	⑨
<b>Dimension</b>	-----	⑩

Please read and understand the following notices carefully, and correctly install and operate the product before using.



1. Please make sure to refer to the installation instructions in the operating instructions to avoid damage caused by installation errors.
2. The product included the battery inside and can not be replaced, do not disassemble or replace the battery by yourself.
3. Do not pull the wiring when using it to prevent falling off or poor contact happened.
4. Please install the product in a proper location to avoid the possibility of this product being hit and prevent damage to the product.
5. The product has certain waterproof function, but can not be used in deep water or soaked in rain for a long time.
6. Please use the product at the specified temperature, high temperature environment may cause damage to the product.

## Product Accessories List

<b>1</b> product*1 	<b>2</b> double-sided tape*1 	<b>3</b> paper card*1 
<b>4</b> user manual*1 	<b>5</b> cable tie*2 	

## Product Installation

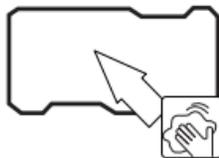
This product can be directly installed with double-sided tape or screwed, the installation method is as follows:

### 1. Double-sided tape installation:



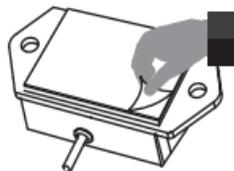
a) Clean properly the surfaces.

**Note:** Make sure the surface is flat and the oil is clean enough.



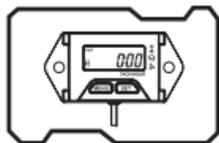
b) Stick the double-sided tape on the back of the product.

**Note:** Before pasting the double-sided tape, please make sure the back of the product is clean and tidy, without moisture or grease.



c) Remove protection from double-sided tape.

**Note:** When removing the double-sided tape protector, make sure that the double-sided tape is not exposed to water or oil on both sides.



d) Fix the tach hour meter in a proper position.

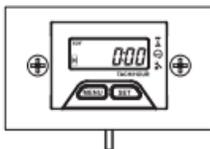
**Note:** Before pasting the double-sided tape, please confirm that the pasted place is clean and tidy, no moisture or oil.

**Proper position requirement:** No moisture, no grease, is a plane, no violent vibration, and the temperature not exceed 125°F.

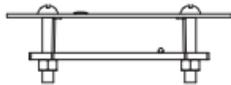
## 2. Screw installation:



surface mount



panel mount



- The design allows for either a flush panel mount or surface mount.
- Choose a location where the pick-up wire (included) will reach the meter to the spark plug.
- Install with screws as the below diagram.

**Note:** Proper position requirement: no moisture, no grease, is a plane, no violent vibration, and the temperature not exceed 125°F. Do not drill into gas tank, engine crankcase or oil reservoir frames.

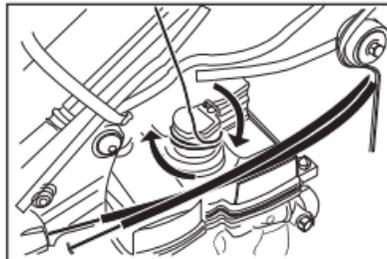
## 3. Signal wire installation.

**A** Red signal wire connection: Wrap the red signal wire around the spark plug, wrap it 4 to 5 turns, and fasten it with a cable tie to ensure it is effectively fixed and will not loosen. (If the connection is not strong, the tachometer will get insufficient signal, then the RPM and hour values will be inaccurate.)

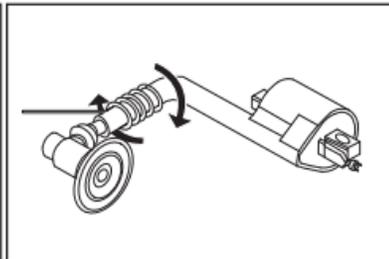


- For traditional ignition modes, wrap red signal wire 4 to 5 turns tightly around the engine spark plug wire.
- For "pencil coil" ignition, wrap red signal wire around the plastic coil above the spark plug.
- The spark plug signal generated by different engine types has the difference of strength and weakness. By adjusting the turns of winding, the appropriate adjustment can be made to improve the accuracy of the RPM and timing data. This is a skill that different degree spark plug signal that allows the induction wire to acquire.

Under normal condition, if the RPM is a little low, you can increase the winding turns, if the RPM is a little high, you can reduce the winding turns. For example, wrap 6-10 turns, if the RPM is a little high, you can reduce the winding turns. For example, wrap 2-4 turns, if the RPM is a little low, you can increase the winding turns.

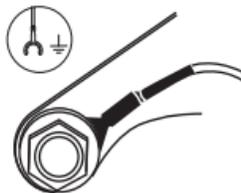


4 stroke installation, wrap pickup wire around head of coil.



2 stroke installation, wrap pickup wire around spark plug lead.

**B Black signal wire connection:** The black wire is the ground wire, which helps the meter to obtain a stable RPM.



Connect the black shielded wire's terminal to the ground, the connection place can be the metal casing, frame, ground or chassis of the engine.

**C The test after the connection:** Start the engine, the LCD of the tach hour meter displayed the RPM and timing, which means the connection is correct. If the RPM is inaccurate, please refer to clause **A** to adjust the turns of the winding, or set the type of the engine (more information will be provided in the following instructions).

## Product Operation

### 1. Product operating system introduction

a) In order to meet the usage habits of different users, the program of this product has 2 sets of use systems (just like after the WINDOWS system can be used on the apple computer, the user can switch to use the WINDOWS system and the IOS system), respectively, DSP-1 and DSP-2, the default system of the product is DSP-1.

b) The difference between DSP-1 and DSP-2 is that the display mode is different. All functions of DSP-1 are directly displayed, while the function of DSP-2 distinguishes between time module and RPM module. These two modules can be called separately for display.

The functions of DSP-1 and DSP-2 are shown as the following diagram:

#### DSP-1



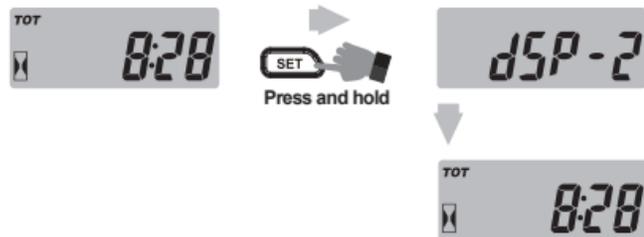
#### DSP-2



### 2. Selection of product system.

- Push "MENU" button continuously until display the "TOT" (interface).
- Press and hold "MENU" button continuously until display the "DSP-1" or "DSP-2" icon, release the "MENU" button, and it will automatic return to "TOT" interface, and you have selected the system needed in this way. (Note: "DSP-1" and "DSP-2" is cyclely selection.)

## DSP-1 to DSP-2



### 3. The function and operation under the DSP-1 system

- ① **RPM** ---- Typical RPM display during operation of the engine
  - a) When the tach hour meter detect the engine spark plug signal for more than 1s continuously, the LCD will display the current RPM of the engine.
  - b) The RPM will be refreshed every 0.5s.
  - c) The RPM can be programmed for different pulses per revolution; Different programming setting will get different RPM; Please follow the instructions in section 2 below to programming setting for accurate programming.



- ② **Programmable firing patterns** ---- Determined the amount of pluses(sparks) per engine revolution. This product provides 9 programmable firing patterns, which can be selected according to the corresponding relationship in the table below.

Engine firing patterns	Engine type	Spark plug firing and engine rotate laps	RPM Capacity
1P1R	4 stroke 2 cylinder	1 spark per revolution	25000
	2 stroke 1 cylinder		
1P2R	4 stroke 1 cylinder	1 spark 2 revolution	25000
2P1R	4 stroke 4 cylinder	2 spark per revolution	12500
	2 stroke 2 cylinder		
3P1R	4 stroke 6 cylinder	3 spark per revolution	8000
	2 stroke 3 cylinder		
3P2R	4 stroke 3 cylinder	3 spark 2 revolution	16000
4P1R	4 stroke 8 cylinder	4 spark per revolution	6250
5P2R	4 stroke 5 cylinder	5 spark 2 revolution	10000
6P1R	4 stroke 12 cylinder	6 spark per revolution	4000
	2 stroke 6 cylinder		
8P1R	4 stroke 16 cylinder	8 spark per revolution	3125

**Note:** Some 4 stroke 1 cylinder engine is 1P1R, the setting is the same way as the 2 stroke 1 cylinder engine.

### 3 To set the tachometer. (Spark plug firing revolution)

- a) Press the "MENU" button 5 times until display shows "1P1r" icon.  
(The factory default setting is "1P1r", if it has been set before, the firing pattern will be displayed the one that set before)



- b) Press and hold the "SET" button until display shows "1P1r" icon start flashing, release and press "SET" button or "MENU" button to toggle through all engine firing patterns setting.
- c) Stop at correct firing pattern setting for your engine.
- d) Wait for 10 seconds and display will return to "TOT" total hours.  
(Tachometer is now ready to use)



**Note:** If the obtained RPM is not accurate, for example, the RPM is half of the actual RPM, you can adjust it by programming the firing patterns.

### 4 MAX RPM---- Display the maximum RPM recorded during the last period of operation.



- a) **To view MAX RPM:** Press the "MENU" button for 4 times until display shows the "MAX RPM".



- b) **To reset MAX RPM:** Press and hold the "SET" button until display shows RPM "000000" start flashing, MAX RPM is reset.



### 5 Alert RPM ---- The setting value of the warning reminder. When the RPM of the engine during the operation exceeds the set value, the meter will flash to remind.

#### Programming alert RPM :

- a) Press the "MENU" button for 3 times until display shows "RPM" icon and alert RPM numerical value.



Press the button 3 times



Press and hold the button for 2S



b) Press and hold the "SET" button until display shows "RPM" icon and alert RPM numerical value starts flashing.

c) Press "SET" or "MENU" button until you get desired alert RPM numerical value, release the button, the LCD will flash for 10 seconds and return to "TOT" (total hours).

d) If the alert RPM numerical value is set to OFF, which means that the alert RPM function is closed.



## 6 TOT---- Total hours of operation.

- This is always displayed when engine is off. (DSP-1 SYSTEM)
- Total hours can not reset.
- The total hours max value is 999999; When the total hours range is 0.0-9999hours59min, the timing accuracy is 1min; When the total hours range is 9999hours59min-99999.9hours, the timing accuracy is 0.1H; When the total hours exceeds 99999.9hours, the timing accuracy is 1H.
- When the total hours exceeds 999999hours, the timing will restart from 0.



(1234Hours 56Minutes)

## 7 JOB---- Hours of operation since the timer was reset.



Press the button once



To view "JOB" time: Press the "MENU" button once.

To reset "JOB" time: Press and hold the "SET" button until display shows "0000:00" starts flashing, then release the "SET" button, the "JOB" display will reset to "0:00", and you will begin to record the next job interval.

Press and hold the button for 2S



## 8 SVC --- Maintenance interval time. **Note:** Timing is countdown.



Press the button twice



When the maintenance interval time is reached, and the LCD display will flashing, and press the "SET" or "MENU" button to clear the status, the next maintenance interval time starts timing.



Press and hold the button for 2S



### Programming SVC time:

- Press the "MENU" button twice until display shows "SVC" icon and maintenance interval time.
- Press and hold the "SET" button until display shows "SVC" icon and maintenance interval time starts flashing.
- Press "SET" or "MENU" button until you get desired hours, release the button, the LCD will flash for 10 seconds and return to "TOT" (total hours).
- When the maintenance interval time is reached 0, the "SVC" icon will flash. The SVC time setting range is 0-2000H. If the SVC is set to OFF, which means the SVC function is closed.

## 4. The function and operation under the DSP-2 system.

### 1 The selection of the hours mode and RPM mode.

- When entering the DSP-2 system, the first entry is the hours mode.
- At the hours mode interface, press and hold the "MENU" button until display the icon "RPM" and "0" on the screen, which means enter into the RPM mode; Similarly, at the RPM mode interface, press and hold the "MENU" button to enter into the hours mode.



Press and hold the button



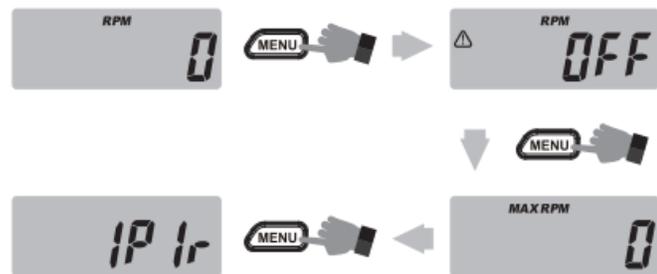
### 2 The function circulation of the hours mode.

- Hours mode contains TOT function, JOB function, SVC function
- The use and settings of the TOT function, JOB function, and SVC function are the same as described in DSP-1.



### 3 The function circulation of the RPM mode.

- RPM mode contains RPM function, alert RPM function, MAX RPM function, firing patterns choice.
- The usage and setting of the RPM function, alert RPM function, MAX RPM function, and firing patterns choice is the same way as described in DSP-1.



### 5. Other

#### 1 To shut down LCD display.

- Press the "MENU" button and the "SET" button at the same time until the "OFF" icon displayed on the screen, then release the button and the LCD display will shut down automatically.
- Once detect the continuous engine signals within 8 seconds, or press the "MENU" or "SET" button again, the LCD screen will be displayed.
- When LCD screen is closed, the historical data will be retained and will not be cleared.

