

## Description

APM Series remote I/O module is primarily designed for use in data collection and discrete system. APM series modules provide fine liability and maintenance efficiency so as to optimise industrial measurement and monitoring.

For metering functional signals, such as, temperature, voltage, current, and power parameter of AC/DC. In addition, various modules for digital input and output are available to intergrate into system according to user's needs.

Standard with RS-485 Modbus RTU communication interface, and Ethernet or WiFi Modbus RTU communication is optional to be added to the existed network.

The multi-loops and compact design of modules maximizes the space use and achieves high-density metering loops. APM series modules with LED indication are able to make intelligent monitoring and troubleshooting. And the Push-in termination design could save time for wiring and maintaining.



## Features

- Embedded expanding connecting points inside the modules, actively connect the power supply and the communication ports of the modules in parallel, to provide a more efficient and flexible installation.
- Elastic and simple installation that doesn't have to work in sequential order saves time for equipment maintaining and system expanding.
- DIP switches of front panel make easy setting for communication.
- LED indication for Power, system and importing status provides a convenient way to monitor system operation, troubleshooting and maintaining.
- Push-in terminal block makes wiring work safer, with more liability and less time for cabling.
- Detachable terminal block design allows pre-wired cable, and is able to exchange the module in system without removing the existed wiring so as to optimize system repair and maintenance.
- Single-row termination design and the pin assignment diagram for quickly port matching.
- 17.5mm(w) slim, impact module design allows high-density assembling in a small cabinet or limited space.
- I/O modules could be the isolated block to protect the host from direct damage.
- 18~36 VDC wide voltage power supply for more flexible application and safty.
- With diverse communication interface for different working request.
- CE certificated.

## Applications

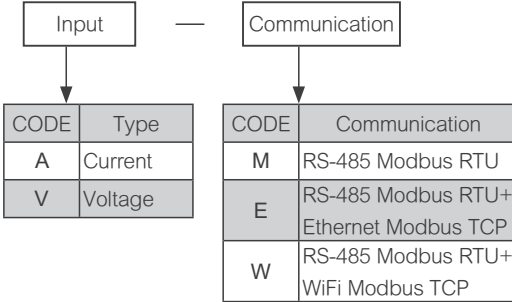
- Remote data management
- Monitoring manufacturing process
- Industrial manufacturing control
- Energy management
- Security system
- Public transportation system
- Building automation system
- Auto-testing system
- Digital control

## Selection Guide

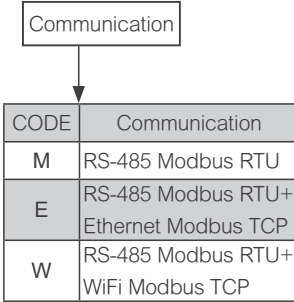
MODEL	Metering Category
APM-PR-08	8 loops DC signal, voltage / current
APM-TC-08	8 loops temperature signal, thermocouple
APM-TR-06	6 loops temperature signal, PT100 / PT1000

**Ordering Information**

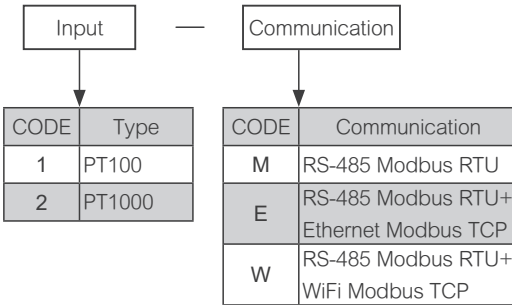
**APM-PR-08**



**APM-TC-08**



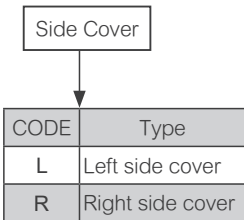
**APM-TR-06**



APM-Series

Optional Accessory

**APM-COV**



## ■ Technical Specification

### APM-PR (DC Voltage / Current)

Type	Measurement Range				Input Resistance
Voltage	±1V	±5V	±10V	0~5V	1MΩ
	1~5V	0~10V			
Current	±20 mA	0~10mA	0~20mA	4~20mA	60Ω

Resolution: 0.00 / 0.000 / 0.0000  
 Accuracy:  $\leq \pm 0.1\%$  of F.S.  $\pm 1$  count  
 Refresh rate: 10Hz

### APM-TC (Thermocouple)

Type	Measurement Range	Input Resistance
K	-270.0°C ~1372.0°C / -238.0 °F ~2501.6 °F	200KΩ
J	-200.0°C ~1200.0°C / -238.0 °F ~2192.0 °F	
E	-270.0°C ~1000.0°C / -238.0 °F ~1832.0 °F	
T	-270.0°C ~400.0°C / -238.0 °F ~752.0 °F	
R	0.0°C ~1700.0°C / 32.0 °F ~3092.0 °F	
S	0.0°C ~1768.0°C / 32.0 °F ~3214.0 °F	
B	0.0°C ~1820.0°C / 1112.0 °F ~3308.0 °F	
N	-200.0°C ~1300.0°C / -238.0 °F ~2372.0 °F	

Resolution: 0.1°C  
 Accuracy:  $\leq \pm 0.2\%$  of F.S.  $\pm 1$  count  
 Condensation point:  $\leq \pm 0.5^\circ\text{C}$  @ 0~60°C  
 Refresh Rate: 10Hz

### APM-TR (PT100Ω / PT1000Ω)

Range	Measurement Range	Input Resistance
Range 1	-200.00°C ~300.00 / -328.00 °F ~572.00 °F	1MΩ
Range 2	PT100: -200.0°C ~800.0°C / -328.0 °F ~ 1472.0 °F	
	PT1000: -200.0°C ~600.0°C / -328.0 °F ~1112.0 °F	

Resolution: 0.01°C / 0.1°C  
 Accuracy:  $\leq \pm 0.1\%$  of F.S.  $\pm 1$  count  
 Refresh Rate: 10Hz

### Power Supply

Power supply: DC 10~60V  
 Power consumption: <1W

### RS-485 Communication

Protocol: Modbus RTU mode  
 Address: 1-31  
 Baud rate: 1200 / 2400 / 4800 / 9600 / 19200 / 38400 / 57600 / 115200 bps  
 Parity: N,8,1 / N,8,2 / O,8,1 / E,8,1  
 Distance: 1200M max  
 (To set up address, baud rate and parity via DIP switch)

### Ethernet (Optional)

Network interface: 10/100M BASE-TX, RJ45 connector  
 Protocol: Modbus TCP

### WiFi (Optional)

Standard: IEEE 802.11 b/g/n  
 Protocol: Modbus TCP  
 Antenna connector: SMA Female

### Environmental Conditions

Operating Temp.: -10~70°C  
 Humidity rating: 5~95% RH, Non-condensing  
 Temp. coefficient:  $\leq 100\text{PPM} / ^\circ\text{C}$  (0~60 °C)  
 Storage Temp.: -25~85°C  
 Degree of protection: IP 20  
 Operating altitude(maximum): 2000m above sea-level

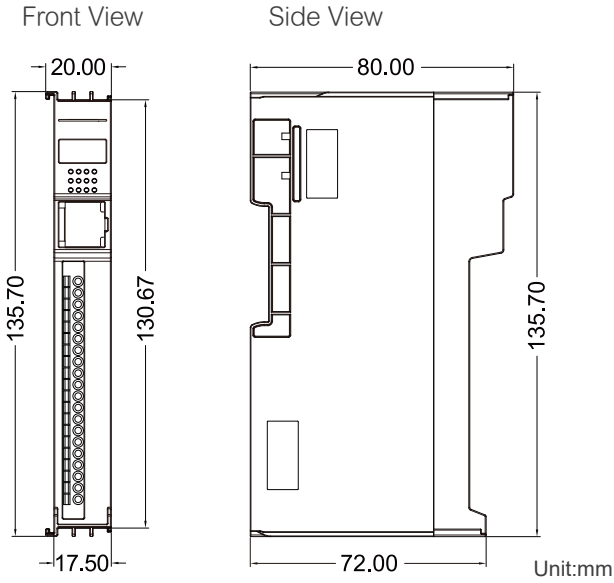
### Mechanical Structure

Dimensions: 20.0mm x 80.0mm x 135.7mm  
 Material: PC (with fire-retardant)  
 Wire terminal: Push in, plug-in termination  
 AWG 28~16 / 0.2~1.5mm<sup>2</sup>  
 Mounting: 35mm DIN rail  
 Weight: 100g

### Safety

Isolation: AC 2.5KV · 50 / 60Hz, 1min.  
 Between Power / Input / Output / Case  
 Insulation resistance:  $\geq 100\text{M}\Omega$  @ 500Vdc  
 EMC: EN 61326-1:2013  
 CISPR11 CISPR11 Class A  
 EN61000-3-2:2014  
 EN61000-3-3:2013  
 IEC61000-4-2:2008  
 IEC61000-4-3:2006+A1:2007+A2:2010  
 IEC61000-4-4:2012  
 IEC61000-4-5:2005  
 IEC61000-4-6:2013  
 IEC61000-4-8:2009  
 IEC61000-4-11:2004  
 Safety(LVD): EN 61010-1:2010  
 FCC: FCC part 15, subpart B, Class A

## ■ Dimensions



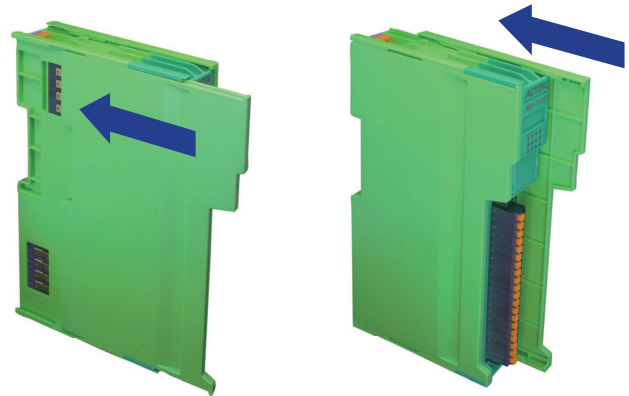
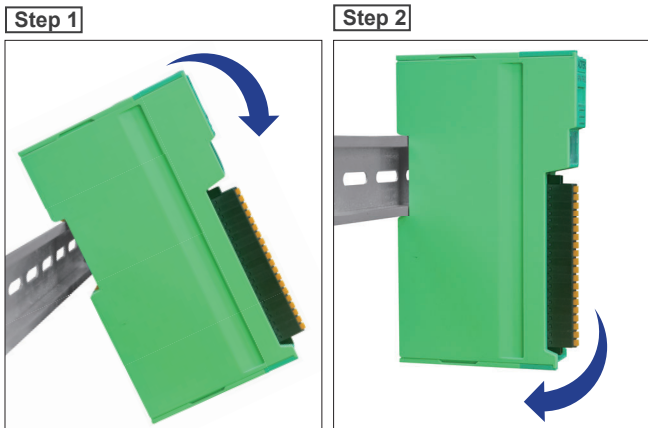
## ■ Installation

Din-rail Mounting

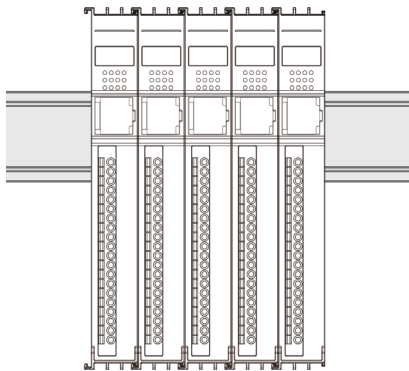
Left Side Cover

Right Side Cover

APM-Series



## ■ Multi-module Connection



← Modules expanding up to 31 pcs →

Modules expanding limit: Up to 31 pcs (max)

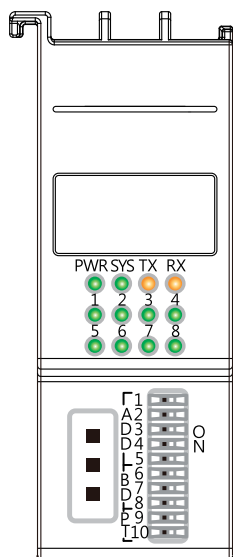
Multi-Module power supply:

When several modules connect in parallel, the power input of each module will combine as one connection. Therefore, it's easy to energize the whole module group in parallel by importing power supply to any one of the modules.

Multi-Module RS-485 communication

When several modules connect in parallel, the RS-485 port of each module will combine as one connection. RS-485 communication could be imported from each port of both ends of the module group. For RS-485 communication exporting wiring, please choose the end-side module other than the importing module. Please do not wire the modules in between to avoid unstable RS-485 communication.

## Front Panel Indication and DIP Switch



### LED Indication:

PWR: Power LED

SYS: System LED

TX / RX: Communication LED

1~8: Import status LED

### DIP Switch:

Address:

Switch	ON	OFF
SW1	1	0
SW2	2	0
SW3	4	0
SW4	8	0
SW5	16	0

Address = SW1 + SW2 + SW3 + SW4 + SW5

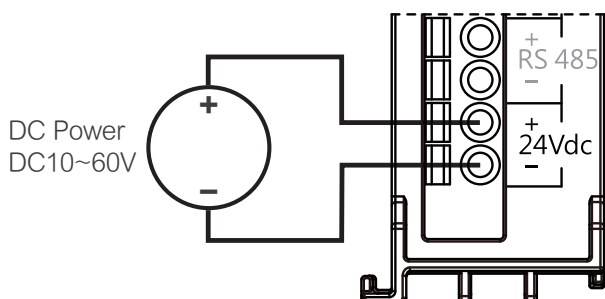
Baud rate:

bps	SW6	SW7	SW8
1200			
2400	ON		
4800		ON	
9600	ON	ON	
19200			ON
38400	ON		ON
57600		ON	ON
115200	ON	ON	ON

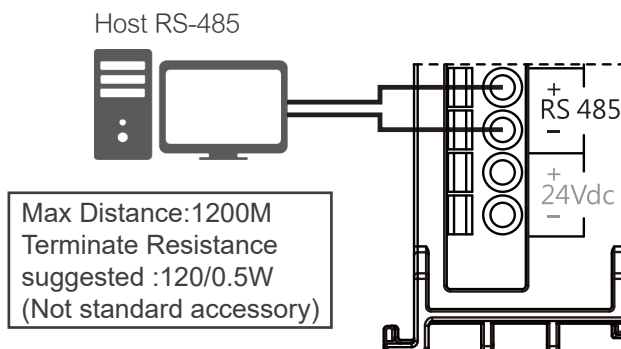
Parity:

Parity	SW9	SW10
N,8,1		
N,8,2	ON	
O,8,1		ON
E,8,1	ON	ON

## Power Connection



## RS-485 Communication



## Terminal Block

APM-PR	APM-TC	APM-TR
<p>mV / V</p>	<p>T / C</p>	<p>PT100Ω / PT1000Ω</p>
<p>mA</p>		