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TMM Series

Multifunction Power Meter

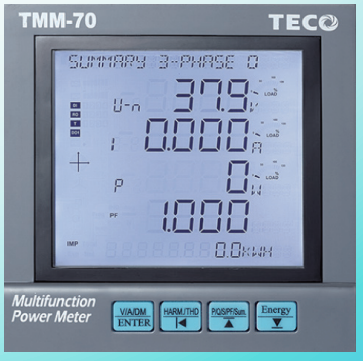
TMM- 10

TMM- 12D

TMM- 20

TMM- DT

TMM- 70



Contents

Panel-mounted Power Meter

DIN Rail-mounted Power Meter

Comparison

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For detailed specifications and wiring information for each model, please refer to the model-specific catalogue and user manual.

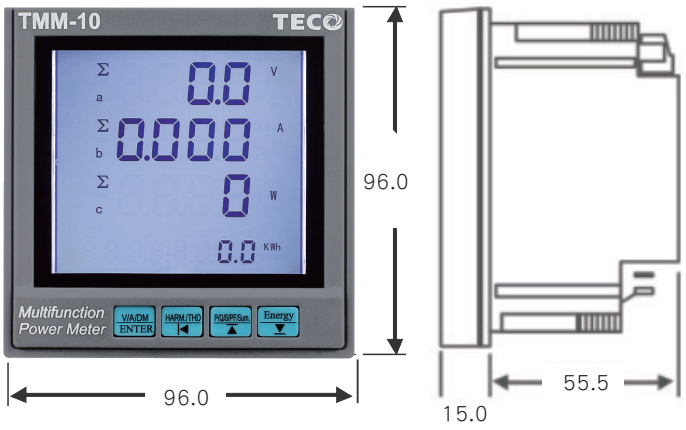
Measurement Functions		TMM-10	TMM-20	TMM-70	TMM-12D	TMM-DT
Mechanical Structure	Dimensions (mm)	96*96*70.5	96*96*71	96*96*79	72*58.7*87.5	199*118*77
	Weight	<400g	<400g	<450g	195g	600g
Mounting Method	Panel Mounting	●	●	●		
	DIN-Rail Mounting				●	●
Input	True RMS Measurement	●	●	●	●	●
	Sampling Rate: 128 Point / Cycle	●	●	●	●	
	Sampling Rate: 256 Point / Cycle					●
	Voltage: 20-400 VL-N / 35-600 VL-L	●			●	
	Voltage: 20-400 VL-N / 35-690 VL-L		●	●		●
	PT Primary Setting Range	100 – 1,200,000 V	100 – 500,000 V	100 – 1,200,000 V	100 – 1,200,000 V	100 V – 9,999 KV
	PT Secondary Setting Range	50-500 V	100 – 600 V	50 – 500 V	50 – 500 V	50 – 600 V
	CT Primary Setting Range (1-9,999A)	●	●	●	●	●
	CT Secondary Setting Range (5A)		●	●		
	CT Secondary Setting Range (1A / 5A / 333mV)	●			●	Main Circuit: 5A / 1A / 333 mV Branch Circuit: 333 mV
Power Quality	Three-phase Voltage and Current Unbalance	●		●	●	●
	Total Harmonic Distortion (THD)	●	●	●	●	●
	Individual Harmonic Content			2nd to 51st Harmonics		2nd to 31st Harmonics
Relay Output (RO)	2 × SPST (1a) 5A/250Vac ; 5A/30Vdc			●		
	4 × SPST (1a) 5A/250Vac ; 5A/30Vdc					●
Communication Function	RS-485	●	●	●	●	RS-485 & Ethernet
Time-of-Use (TOU) Tariff	1 – 4 Time Zones Can Be Set Per Year			●		●
External Control Input (ECI)	External Control Input Points			4 sets		2 sets
Data Log	Event Logging		●	●	●	
	Data Logging			●	●	●
	Parameter Data Storage		2KB FRAM	32KB FRAM & 2KB Flash	2MB Flash ROM	2MB Flash ROM
Energy Measurement	Apparent Power: Per-phase and Total Apparent Power	●	●	●	●	●
	Per-phase and total active power for main and branch circuits	●				●
	Active Power: Four-quadrant / Per-phase and Total Active Power		●	●	●	
	Per-phase and total reactive power for main and branch circuits	●				●
	Reactive Power: Four-quadrant / Per-phase and Total Reactive Power		●	●	●	
Accumulated Energy	Cost	●	●	●	●	●
CO_2 Emissions	Accumulated CO_2 Emissions	●	●	●	●	

TMM-10

Multifunction Power Meter 96*96

Dimensions

Unit: mm



Product Overview

The TECO TMM-10 Series multifunction power meter provides single-phase and three-phase measurement of major electrical parameters, delivering high stability, high accuracy, and intelligent communication capabilities suitable for industrial, building, and energy-management applications.

All models come standard with RS-485 (Modbus RTU) for real-time integration with energy management platforms. High-brightness LCD and AI intelligent wiring adjustment enable faster installation and configuration. CO_2 emission display further supports energy-saving and monitoring requirements.

This series is available in two models based on input type:
1. TMM-10 (0 – 1 A / 5 A current input): works with external current transformers (CTs), the most common configuration in distribution-panel measurement with high installation flexibility.
2. TMM-10-MV (0 – 333 mV voltage input): compatible with voltage-output or split-core CTs for cleaner wiring and higher safety.

With accurate measurement, intelligent connectivity, and high reliability, the TMM-10 Series is an ideal choice for building intelligent energy-management environments.

Product Features

1. Standard RS-485 (Modbus RTU) communication for integration with energy management systems and support for remote monitoring.
2. Provides accurate measurement of key electrical parameters, including voltage, current, power, power factor, frequency, and energy.
3. Supports 1P2W / 1P3W / 3P3W / 3P4W phase-line configurations.
4. 128-point-per-cycle sampling ensures stable and reliable measurement.
5. High-brightness LCD for clear readability under strong ambient light.
6. Equipped with AI intelligent wiring adjustment to speed up installation and setup (see note).
7. Built-in CO_2 emission display to support corporate sustainability management.
8. CE and FCC certified to ensure quality and safety.

Note:
Software-based wiring adjustment requires specific conditions.
Please refer to the operation manual.

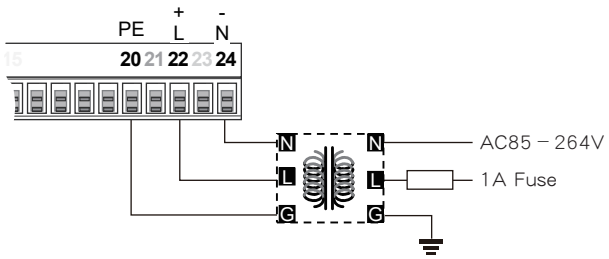
Product Application

- Energy monitoring for motor control panels.
- Energy monitoring for distribution panels.
- Energy management and electricity cost allocation systems.

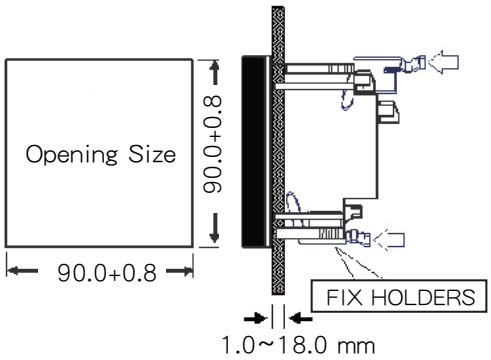
Panel Description

- Display Window:
  LCD 65(W) × 61(H) mm; white high-brightness backlight;
  blue characters remain clearly visible even under direct sunlight.
- Screen Saver Function:
  Backlight duration adjustable from 0 – 15 minutes;
  0 indicates always on.

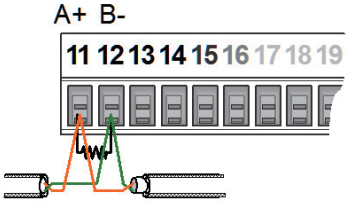
Power Supply Wiring Method



Mounting Method and Panel Cutout



RS-485 Communication Output



Maximum Cable Length: 1200m
Install a termination resistor on the far-end device as required, recommended value is 120 Ω / 0.5 W

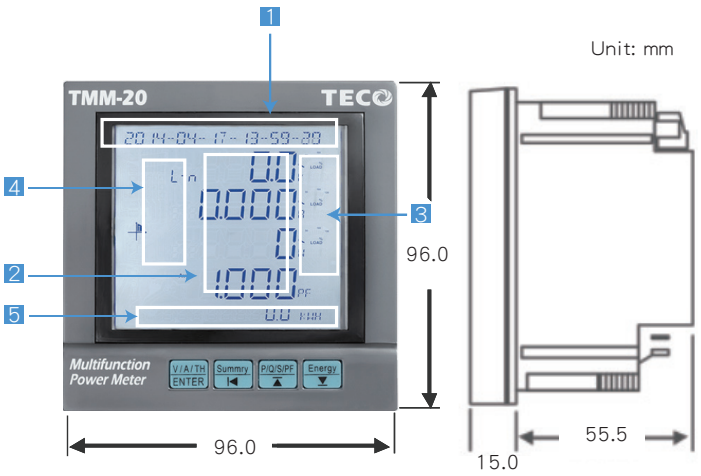
Technical Specifications

Function	Item	Description
Electrical Characteristics and Specifications	Dielectric Strength	AC 2.5 kV, 50 / 60 Hz, 1min; Between Input / Output / Power Supply / Enclosure
	Surge Withstand Voltage	AC ±4 kV, 1.2 / 50 μ s; Voltage Input / Power Supply
	Insulation Resistance	≥100MΩ @ 500Vdc
	EMC	EN 61326-1: 2013
		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
Input	Measurement Method	True RMS Measurement
	Sampling Rate	128 Points / Cycle
	Display Update Time	0.5 s
	Phase-Wire System	1P2W, 1P3W, 3P3W (1, 2, or 3 CT), and 3P4W (1 or 3 CT) Balanced / Unbalanced Systems: Configurable Via Front-panel Keys
	Input Range	Voltage Range: 20 – 400 VL-N; 35 – 600 VL-L
		PT Primary Setting Range: 100 – 1,200,000V; PT Secondary Setting Range: 50 – 500V
		Current: 5A / 1A / 333 mV
		CT Primary Setting Range: 1 – 9,999 A; CT Secondary Setting Range: 5A / 1A / 333 mV
	Maximum Current Overload Capacity	2 Times Rated Continuous; 20 Times Rated for 1 Second
	Input Burden	Voltage: <0.2 VA Current: <0.1 VA
RS-485 Communication Function	Communication Protocol	Modbus RTU Mode
	Communication Address	1~247
	Communication Baud Rate	1200 / 2400 / 4800 / 9600 / 19200 / 38400 / 57600 / 115200 bps
	Communication Port Response Time	<50ms (From Completion of Command Reception to Start of Data Transmission)
	Parity Check	None / Even / Odd
	Data Bits	8 Bits
	Stop Bits	1 or 2
	Cable Length	1200M max
	Termination Resistor	120~300 Ω / 0.25 W (typical:150 Ω)
Power Quality	Total Harmonic Distortion (THD)	Total Harmonic Distortion Percentage Values of Each Phase and the Average Voltage and Current
	Three-phase Unbalance	Three-phase Voltage and Current Unbalance
Operating Power Supply	Operating Power Supply	AC 85 – 264 V, 50 / 60 Hz
		DC 100 – 300 V
	Power Consumption	AC: ≦10 VA @ 230 V / DC: ≦3 W
Operating Environment	Operating Temperature	0 to 60℃
	Operating Humidity	5~95%RH, Non-condensing
	Temperature Coefficient	≤ 100 ppm/℃
	Storage Temperature	-10 to 70℃
	Protection Rating	Front Cover: IEC 529 (IP50), Enclosure: IP20
	Operating Altitude (Max)	Up to 2000m Above Sea Level
Mechanical Dimensions	Dimensions	96mm(W) x 96mm(H) x 70.5mm(L)
	Opening Size	90.8mm(W) x 90.8mm(H)
	Enclosure Material	Black PC (Flame-retardant)
	Mounting Method	Panel Mount
	Weight	< 400g
	Terminals	PA 66 (UL 94V-0)
		Voltage / Current Input Terminals: AWG 26 – 10 / 0.5 – 4.0 mm²
		Screw Torque: M3 / 8.0kgf.cm (Max)
		Other Input Terminals: AWG 28 – 16 / 0.5 – 1.5 mm²
		Screw Torque: M2 / 2.04 kgf.cm (Max)

TMM-20

Multifunction Power Meter 96*96

Dimensions



Product Overview

The TMM-20 Multifunction Power Meter provides high-precision measurement of electrical parameters including single-phase/three-phase voltage, current, power (active/reactive/apparent), power factor, frequency, and energy, and features an intuitive, easy-to-read display interface.

Featuring built-in RS-485 (Modbus RTU) communication, it integrates seamlessly with energy management systems, supporting remote monitoring and data transmission, making it suitable for commercial, industrial, and public facility applications.

It also provides tariff rate configuration and supports power-failure memory, enabling accurate electricity cost allocation and enhancing energy management efficiency.

With reliable measurement performance and flexible integration capability, the TMM-20 offers an effective and practical energy-monitoring solution for a wide range of distribution systems.

Product Features

1. Supports 1P2W / 1P3W / 3P3W / 3P4W phase-line measurements.
2. Provides precise measurement of voltage, current, frequency, P/Q/S, power factor, and energy.
3. CT input selectable between 1 A / 5 A.
4. 128-point-per-cycle sampling ensures stable and reliable measurement.
5. High-brightness LCD readable even under strong light.
6. Built-in AI auto-wiring function (note) for quick installation and setup.
7. Equipped with event logging and various I/O control functions.
8. CE certified.

- Note:
  Software-based wiring adjustment requires specific conditions. Please refer to the operation manual.

Product Application

- Energy monitoring for motor control panels and distribution panels.
- Energy management and electricity cost allocation systems.
- Power quality monitoring.

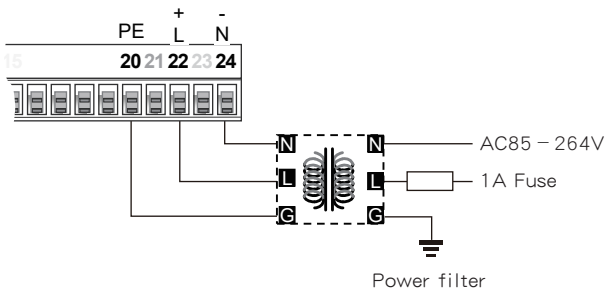
Panel Description

- Display Window:
  LCD 65(W) × 61(H) mm; white high-brightness backlight; blue characters remain clearly visible even under direct sunlight.
- Screen Saver Function:
  Backlight duration adjustable from 1 – 15 minutes or always on.
- Displayed Content:

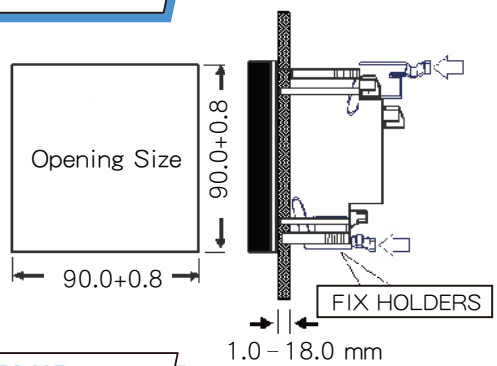
1	parameter name
2	measured values for voltage, current, power, demand, power factor, unbalance, max/min values, etc.
3	units of measured values
4	1, 2, 3 indicate the three phases; 1-2, 2-3, 3-1 indicate line-to-line values
5	display of energy values and units; display of date and time

- Up to five energy parameters can be displayed simultaneously.
- Bar graph indicates load percentage.
- Perpetual calendar for date and time.
- IND indicates inductive load and CAP indicates capacitive load.
- Load quadrant display function.
- Four selectable home screens based on routine viewing needs.

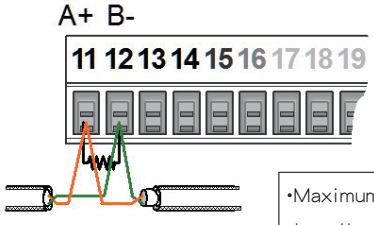
Power Supply Wiring Method



Mounting Method and Panel Cutout



RS-485 Communication Output



•Maximum Cable Length: 1200m
•Install a termination resistor on the far-end device as required, recommended value is 120 Ω / 0.5 W

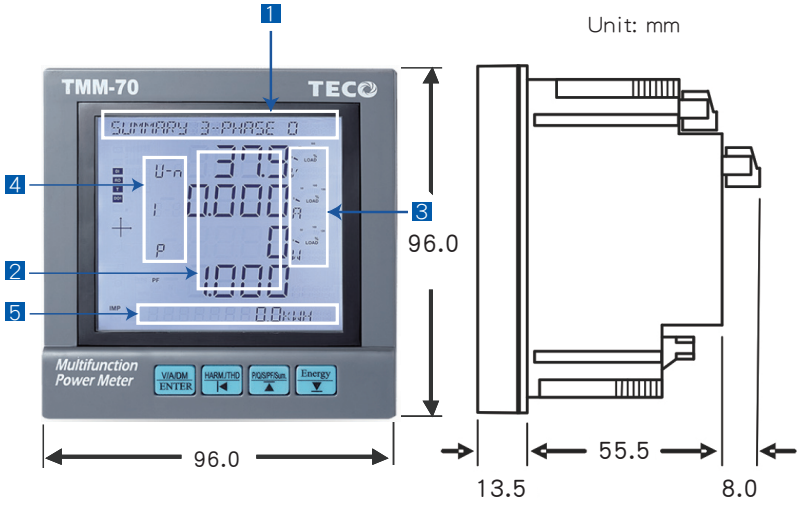
Technical Specifications

Function	Item	Description
Electrical Characteristics and Specifications	Dielectric Strength	AC 2.5 kV, 50 / 60 Hz, 1min ; Between Input / Output / Power Supply / Enclosure
	Surge Withstand Voltage	AC ±4 kV, 1.2 / 50 μ s ; Between Voltage Input / Current Input / Power Supply
	Insulation Resistance	≥100 MΩ @ 500 Vdc
	EMC	EN IEC 61326-1: 2021
		EN 55011: 2016 / A2: 2021
		EN IEC 61000-3-2: 2019+A1: 2021
		EN 61000-3-3: 2013+A2: 2021
		IEC 61000-4-2: 2008
		IEC 61000-4-3: 2020
		IEC 61000-4-4: 2012
		IEC 61000-4-5: 2014 / A1: 2017
		IEC 61000-4-6: 2013 / COR1: 2015
		IEC 61000-4-8: 2009
		IEC 61000-4-11:2020 / COR1: 2020
	Safety(LVD)	EN 61010-1: 2010 / A1: 2019 / AC: 2019-04
Input	Measurement Method	True RMS Measurement
	Sampling Rate	128 Points / Cycle
	Display Update Time	0.5s
	Phase-Wire System	1P2W, 1P3W, 3P3W (1, 2, or 3 CT), and 3P4W (1 or 3 CT) Balanced / Unbalanced Systems: Configurable Via Front-panel Keys
	Input Range	Voltage Range: 20 – 400 VL-N; 35 – 690 VL-L
		PT Primary Setting Range: 100~500,000V; PT Secondary Setting Range: 100 – 600V
		Current: 1A / 5 A
		CT Primary Setting Range: 1~9,999 A; CT Secondary Setting Range: 1A and 5A selectable
	Maximum Current Overload Capacity	2 Times Rated Continuous; 20 Times Rated for 1 Second
	Input Burden	Voltage: <0.2 VA Current: <0.1 VA
RS-485 Communication Function	Communication Protocol	Modbus RTU Mode
	Communication Address	1~247
	Communication Baud Rate	1200 / 2400 / 4800 / 9600 / 19200 / 38400 / 57600 / 115200 bps
	Communication Port Response Time	<50 ms (From Completion of Command Reception to Start of Data Transmission)
	Parity Check	None / Even / Odd
	Data Bits	8 Bits
	Stop Bits	1 or 2
	Cable Length	1200M max
Power Quality	Total Harmonic Distortion (THD)	Total Harmonic Distortion Percentage Values of Each Phase and the Average Voltage and Current
Event Logging	Event Logging	Records Events and Timestamps When Abnormalities Occur
	Parameter Data Storage	2KB FRAM
Operating Power Supply	Operating Power Supply	AC 85 – 264 V, 50 / 60 Hz
		DC 100 – 300 V
	Power Consumption	AC: ≦10 VA @ 230 V / DC: ≦3 W
Operating Environment	Operating Temperature	0 to 60℃
	Operating Humidity	5~95%RH, Non-condensing
	Temperature Coefficient	≤ 100 ppm/℃
	Storage Temperature	-10 to 70℃
	Protection Rating	Front Cover: IEC 529 (IP50), Enclosure: IP20
	Operating Altitude (Max)	Up to 2000m Above Sea Level
Mechanical Dimensions	Dimensions	96mm(W) x 96mm(H) x 70.5mm(L)
	Opening Size	90.8mm(W) x 90.8mm(H)
	Enclosure Material	Black ABS (Flame-retardant)
	Mounting Method	Panel Mount
	Weight	< 400g
	Terminals	PA 66 (UL 94V-0)
		Voltage / Current Input Terminals: AWG 26 – 10 / 0.5 – 4.0 mm²
		Screw Torque: M3 / 8.0 kgf.cm (Max)
		Other Input Terminals: AWG 28 – 16 / 0.5 – 1.5 mm²
		Screw Torque: M2 / 2.04 kgf.cm (Max)

TMM-70

Multifunction Power Meter 96*96

Dimensions



Product Overview

The TMM-70 Multifunction Power Quality Analyzer provides high-precision measurement for both single-phase and three-phase systems, covering key electrical parameters such as voltage, current, power, and energy, and supports 2nd to 51st harmonic analysis. It is suitable for energy monitoring and power quality management.

Built-in 4 digital inputs, 1 relay output, and RS-485 (Modbus RTU) allow seamless integration with energy management systems.
Supports TOU billing and 2 MB Flash long-term logging, and can display cumulative electricity cost and CO_2 emissions to improve energy management efficiency. Also equipped with a software-based wiring correction function to reduce on-site setup time.

With high-precision measurement and comprehensive communication and analysis functions, the TMM-70 provides a stable and reliable professional tool for energy management and power quality monitoring.

Product Features

1. Supports multiple phase-line systems with precise measurement of voltage, current, power, and energy.
2. Built-in AI auto-wiring function (Note) for simplified installation and setup.
3. High-brightness LCD readable even under sunlight.
4. Supports up to the 51st harmonic analysis to ensure power quality.
5. Built-in data logging and event tracking for long-term storage.
6. Supports TOU (Time-of-Use) billing to reduce energy costs.

- Note:
  Software-based wiring adjustment requires specific conditions.
  Please refer to the operation manual.

Product Application

- Energy monitoring for motor control panels.
- Energy monitoring for distribution panels.
- Energy management and electricity cost allocation systems.
- Power anomaly event log.
- Power quality analysis.

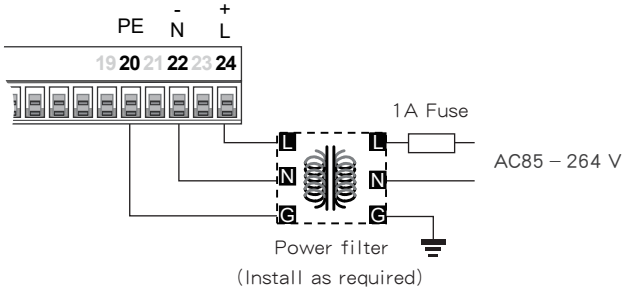
Panel Description

- Display Window:
  LCD 65(W) × 61(H) mm; white high-brightness backlight;
  blue characters remain clearly visible even under direct sunlight.
- Screen Saver Function:
  Backlight duration adjustable from 0 – 15 minutes; 0 indicates always on.
- Displayed Content:

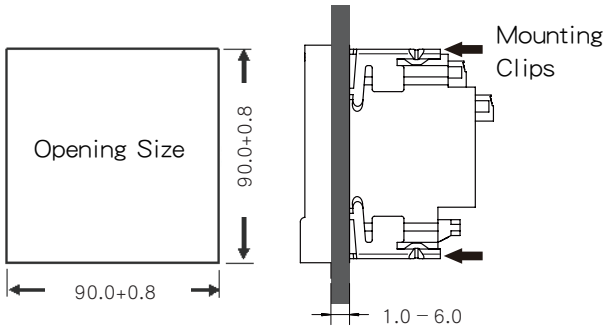
1	parameter name
2	measured values for voltage, current, power, demand, power factor, unbalance, max/min values, etc.
3	units of measured values
4	1, 2, 3 indicate the three phases; 1-2, 2-3, 3-1 indicate line-to-line values
5	display of energy values and units; display of date and time

- Up to five energy parameters can be displayed simultaneously.
- Bar graph indicates load percentage.
- Perpetual calendar for date and time.
- IND indicates inductive load and CAP indicates capacitive load.
- Load quadrant display function.
- Seven selectable home screens based on routine viewing needs.

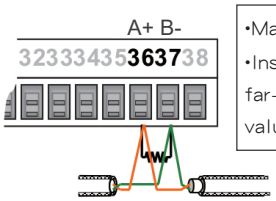
Power Supply Wiring Method



Mounting Method and Panel Cutout



RS-485 Communication Output



•Maximum Cable Length: 1200m
•Install a termination resistor on the far-end device as required, recommended value is 120 Ω / 0.5 W

Technical Specifications

Function	Item	Description
Input	Measurement Method	True RMS Measurement
	Sampling Rate	128 Points / Cycle
	Display Update Time	0.5s
	Phase-Wire System	1P2W, 1P3W, 3P3W (1, 2, or 3 CT), and 3P4W (1 or 3 CT) Balanced / Unbalanced Systems: Configurable Via Front-panel Keys
	Input Range	Voltage Range: 20 – 400 VL-N; 35 – 690 VL-L
		PT Primary Setting Range: 100 – 1,200,000V; PT Secondary Setting Range: 50 – 500V
		Current: 1A / 5A
		CT Primary Setting Range: 1~9,999A; CT Secondary Setting Range: 1A / 5A
	Maximum Current Overload Capacity	2 Times Rated Continuous; 20 Times Rated for 1 Second
	Input Burden	Voltage: <0.2 VA Current: <0.1 VA
Power Quality	Total Harmonic Distortion (THD)	Total Harmonic Distortion Percentage Values of Each Phase and the Average Voltage and Current
	Individual Harmonic Content	Voltage and Current 2nd – 51st Harmonic Components, Including Odd and Even Harmonics; Display can Switch to Show 3rd – 15th Odd Harmonics for Voltage and Current
	Three-phase Unbalance	Three-phase Voltage and Current Unbalance
Relay Function (RO)	Output Contacts	Two SPST (1a) contacts, 5A/250 Vac, 5A/30 Vdc, common-point mode
	Operation Modes	Hi / Lo / Hi.Hold / Lo.Hold / RO / OFF
	Set Operating Point	Supports 36 energy and demand parameters
	Operating Parameters	Start Delay / Start Deadband / Operate Delay / Reset Delay / Operate Gap
	Deadband	0 – 9,999 Counts
	Start Delay Time	0:00.0 – 9(M): 59.9(S)
	Operate Delay Time	0:00.0 – 9(M):59.9(S)
	Reset Delay Time	0:00.0 – 9(M): 59.9(S)
	Operate Gap	0 – 9999 Counts
Demand	Calculation Method	Fixed-block / Sliding-block Calculation
	Calculation Interval	Configurable 1 – 60 min
	Demand Record	Maximum and minimum values, with timestamps
Digital Input (DI)	Input Mode	4 Input Points
		Switch Contact or Open-Collector (O.C.) Input
	Function	Configurable as Demand Reset / Maximum Demand Reset / DI / Energy Value Reset / Max – Min Value Reset / Relay Reset
	Debounce Time	Configurable 0 – 99 (×8 ms)
Pulse Output (DO)	Output Electrical Rating	One open-collector (O.C.) output: 30 Vdc, 30 mA (max)
	Output Frequency	1000 Hz (max)
	Pulse Divider Function	1 – 9999 (1 Pulse = 0.1 kWh; when set to 100, 1 Pulse = 10.0 kWh)
	Pulse Width	0 – 5000ms; 0 indicates duty cycle 50%
	Corresponding Parameter	Input Active Energy / Output Active Energy / Input Reactive Energy / Output Reactive Energy / Calibration Pulse
	Verification Pulse Output	3200 Pulse / 1kWh Duty cycle 50%
Time-of-Use (TOU) Function	Four Time Zones	Each year can include 1 – 4 time zones
	Eight Time Periods	Each time zone can include 1 – 8 periods
		Each time period can be assigned to peak, mid-peak, off-peak, or shoulder tariffs
	TOU Energy Parameters	Accumulated import and export active and reactive energy, total apparent energy, and the maximum demand of current and power for each tariff and total values for the current and previous month.
	Special Day Settings	Special-date schedules and tariff settings can be configured individually for five years or set uniformly for five consecutive years
Data Logging	Data Logging	Logs preset or specified data based on the configured interval; interval range 1 to 32767; interval units may be set to day, hour, minute, or second
	Event Logging	Records the events and timestamp when an abnormal occurs
	Parameter Data Storage	32 KB FRAM and 2 MB Flash, no battery life concerns
RS-485 Communication Function	Communication Protocol	Modbus RTU Mode
	Communication Address	1 – 247
	Communication Baud Rate	1200 / 2400 / 4800 / 9600 / 19200 / 38400 / 57600 / 115200 bps
	Communication Port Response Time	≤50ms (From Completion of Command Reception to Start of Data Transmission)
	Parity Check	None / Even / Odd
	Data Bits	8 Bits
	Stop Bits	1 or 2
	Cable Length	1200M max

Technical Specifications

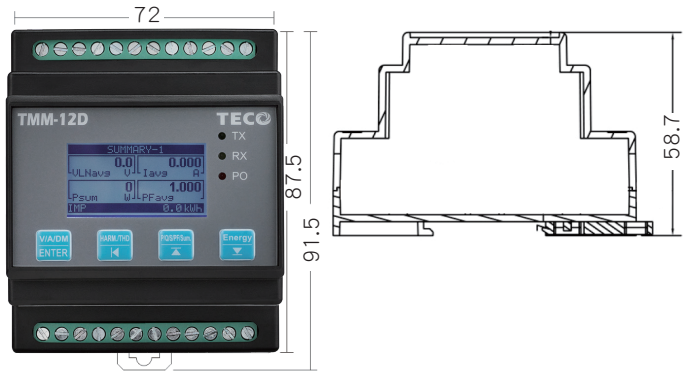
Function	Item	Description
Operating Environment	Operating Temperature	0 to 60°C
	Operating Humidity	5 – 95% RH, Non-Condensing
	Temperature Coefficient	≤100 ppm/°C
	Storage Temperature	-10 to 70°C
	Protection Rating	Front Cover: IP50; enclosure: IP20
	Operating Altitude (Max)	Up to 2000 m above sea level
Operating Power Supply	Operating Power Supply	AC 85 – 264 V, 50 / 60 Hz
	Power Consumption	AC: ≤ 10 VA @ 230 V / DC: ≤ 3 W
Mechanical Dimensions	Dimensions	96mm(W) x 96mm(H) x 77mm(L)
	Opening Size	90.8mm(W) x 90.8mm(H)
	Enclosure Material	Black ABS (flame-retardant)
	Mounting Method	Panel Mount
	Weight	< 450g
	Terminals	PA 66 (UL 94V-0)
		Voltage / current input terminals: AWG 26 – 10 / 0.5 – 4.0 mm²
		Screw Torque: M3 / 8.0 kgf.cm (Max)
		Other input terminals: AWG 28 – 16 / 0.5 – 1.5 mm²
		Screw Torque: M2 / 2.04 kgf.cm (Max)
Electrical Characteristics and Specifications	Dielectric Strength	AC 2.5 kV, 50 / 60 Hz, 1 min, between input / output / power supply / enclosure
	Surge Withstand Voltage	AC ±4 kV, 1.2 / 50 μ s; between voltage input / current input / power supply
	Insulation Resistance	≥100 MΩ @ 500Vdc
	EMC	EN61326-1: 2013
		EN55011: 2009 + A1: 2010
		EN61000-3-2: 2014
		EN61000-3-3: 2013
		IEC61000-4-2: 2008
		IEC61000-4-3: 2010
		IEC61000-4-4: 2012
		IEC61000-4-5: 2014
		IEC61000-4-6: 2013
		IEC61000-4-8: 2009
		IEC61000-4-11: 2004
	Safety(LVD)	EN 61010-1: 2010
Energy Accuracy	Active Energy	Class 0.5S (IEC 62053-22:2003 compliant)
	Reactive Energy	Class 2 (IEC 62053-23:2003 compliant)

TMM-12D

DIN Rail-mounted Power Meter 72*87.5

Dimensions

Unit: mm



Product Overview

The TMM-12D Series is designed around high-accuracy measurement and smart communication. It supports single-phase and three-phase measurement of major electrical parameters (voltage, current, power, power factor, frequency, and energy) and comes standard with RS-485 (Modbus RTU) for seamless integration with energy management platforms and real-time remote monitoring.

Beyond basic measurement functions, the series also provides advanced capabilities such as CO2 emission conversion, demand and maximum demand, phase-angle analysis, event logging, and data logging, meeting the needs of power-quality analysis and energy-use management.

This series is available in two models based on input type:
1.TMM-12D (0 – 1 A / 5 A current input): works with traditional CTs for stable measurement and broad applicability.
2.TMM-12D-MV (333 mV voltage input): compatible with voltage-output or split-core CTs, allowing non-interruptive installation and providing high safety, suitable for retrofitting existing distribution panels.

With precise measurement, intelligent communication, and carbon-management capabilities, the TMM-12D Series is an ideal choice for enterprises building intelligent, low-carbon energy-monitoring systems.

Product Features

1. RS-485 (Modbus RTU) communication supporting real-time monitoring and system integration.
2. 115,200 bps high-speed transmission with <0.1% error for accurate and reliable data.
3. AI intelligent wiring detection that automatically identifies wiring direction to speed up installation. (Note)
4. MTBF > 60,000 hours for stable long-term operation.
5. CE and FCC certified to ensure safety and quality.
6. Built-in CO2 emission calculation for energy-saving and carbon-reduction management.

- Note:
  Software-based wiring adjustment requires specific conditions. Please refer to the operation manual.

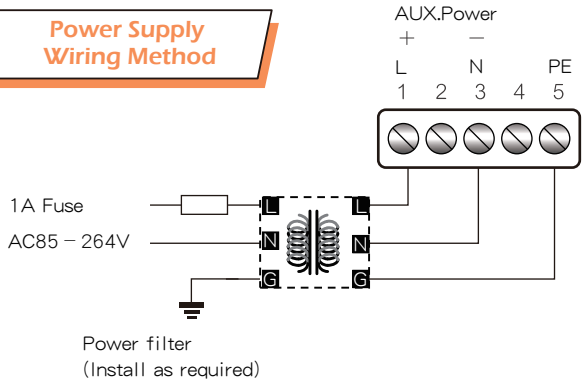
Product Application

- Energy monitoring for motor control panels and distribution panels.
- Plant-wide energy management and electricity-cost allocation systems.
- Power-quality monitoring and analysis.

Panel Description

- **Display Window:** 128×64 dot-matrix LCD with white backlight
- **Backlight Duration:** Adjustable from 0 to 15 minutes
- **LED Indicators:** TX and RX for communication; PO for pulse output

Power Supply Wiring Method



Power filter
(Install as required)

Terminal Wiring Diagram

Pulse Output

RS-485 Communication Output

Maximum Cable Length: 1200 m
Install a termination resistor on the far-end device as required; recommended value is 120 Ω / 0.5 W

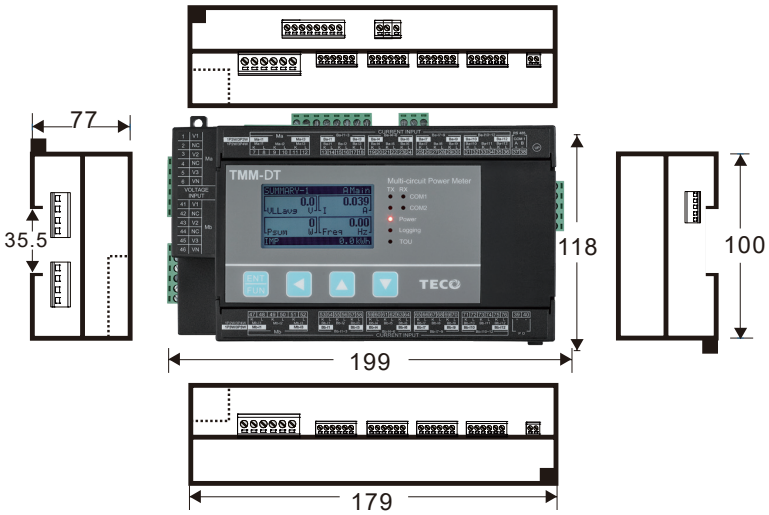
Technical Specifications

Function	Item	Description	
Electrical Characteristics and Specifications	Dielectric Strength	AC 2.5 kV, 50 / 60 Hz, 1min; Between Input / Output / Power Supply / Enclosure	
	Insulation Resistance	≥100 MΩ @ 500 Vdc	
	EMC	EN IEC 61326-1: 2021	EN IEC 61000-3-2: 2019 + A1: 2021
		EN 55011:2016/A2: 2021	EN 61000-3-3: 2013 + A2: 2021
		IEC 61000-4-2: 2008	IEC 61000-4-3: 2020
		IEC 61000-4-4: 2012	IEC 61000-4-5: 2014 / A1: 2017
		IEC 61000-4-6: 2013 / COR1: 2015	IEC 61000-4-8: 2009
		IEC 61000-4-11:2020 / COR1: 2020	
	Safety(LVD)	EN 61010-1:2010 / A1: 2019 / AC: 2019-04	
Input	Measurement Method	True RMS Measurement	
	Sampling Rate	128 Points / Cycle	
	Display Update Time	0.5s	
	Phase-Wire System	1P2W, 1P3W, 3P3W (1, 2, or 3 CT), and 3P4W (1 or 3 CT) balanced/unbalanced systems, configurable via meter keypad	
	Input Range	Voltage Range: 20 – 400 VL-N; 35 – 600 VL-L	
		PT Primary Setting Range: 100 – 1,200,000V; PT Secondary Setting Range: 50 – 500V	
		Current: 5A / 1A / 333 mV	
		CT Primary Setting Range: 1~9,999A; CT Secondary Setting Range: 5A / 1A / 333 mV	
	Maximum Current Overload Capacity	2 × rated continuous; 20 × rated for 1 second	
	Input Burden	Voltage: <0.2 VA ; Current: <0.1 VA	
RS-485 Communication Function	Communication Protocol	Modbus RTU Mode	
	Communication Address	1~247	
	Communication Baud Rate	2400 / 4800 / 9600 / 19200 / 38400 / 57600 / 115200 bps	
	Communication Port Response Time	<50 ms (From Completion of Command Reception to Start of Data Transmission)	
	Parity Check	None / Even / Odd	
	Data Bits	8 Bits	
	Stop Bits	1 or 2	
	Cable Length	1200M max	
Power Quality	Total Harmonic Distortion (THD)	Total Harmonic Distortion Percentage Values of Each Phase and the Average Voltage and Current	
	Three-Phase Unbalance	Three-phase voltage and current unbalance	
Data Logging	Data Logging	Records preset or designated data according to the configured interval. The interval can be set from 1 to 32767, and the unit can be day, hour, minute, or second.	
	Event Logging	Records Events and Timestamps When Abnormalities Occur	
	Parameter Data Storage	2 MB Flash ROM	
Operating Power Supply	Operating Power Supply	AC 85 – 264V, 50 / 60 Hz	
		DC 100 – 300V	
	Power Consumption	AC: ≦5 VA @ 230 V / DC: ≦2 W	
Operating Environment	Operating Temperature	0 to 60℃	
	Operating Humidity	5 – 95% RH, Non-condensing	
	Temperature Coefficient	≤100 ppm/℃	
	Storage Temperature	-10 to 70℃	
	Protection Rating	IP20	
	Operating Altitude (Max)	Up to 2000m Above Sea Level	
Mechanical Dimensions	Dimensions	72 mm (W) × 58.7 mm (H) × 87.5 mm (L)	
	Enclosure Material	Black ABS (Flame-retardant)	
	Mounting Method	DIN-Rail Mounting	
	Weight	195g	
	Terminals	PA66 (UL 94V-0)	
		AWG: 28 – 12 / 0.2 – 2.5 mm²	
		Screw Torque: M2.5 / 5.202 kgf.cm (Max)	
Pulse Output	Output Electrical Rating	One Open-Collector Output: 30 Vdc, 30 mA (Max)	
	Output Frequency	1000 Hz (max)	
	Pulse Divider Function	1 – 9,999 (1 Pulse=0.1 kWh; Set 100, 1 Pulse=10.0 kWh)	
	Pulse Width	0 – 5000ms, 0 = duty cycle 50%	
	Corresponding Parameter	Input Active Energy / Output Active Energy / Input Reactive Energy / Output Reactive Energy	
	Verification Pulse Output	1600 Pulse / 1 kWh, Duty Cycle 50%	
Demand	Calculation Method	Fixed-Block / Sliding-Block Calculation	
	Calculation Interval	Configurable from 1 – 60 min	

TMM- DT

DIN Rail-mounted Power Meter 199*118

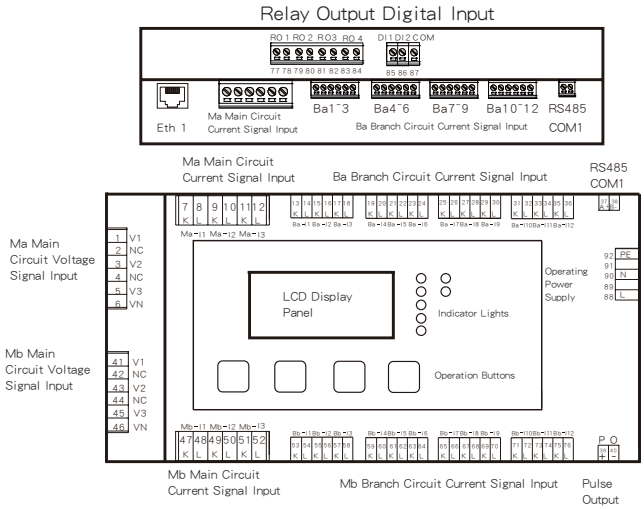
Dimensions



Product Application

- Sub-metered electricity usage for commercial buildings and rental apartments.
- Multi-circuit monitoring for factories, warehouses, and mechanical-electrical rooms.
- Electricity monitoring for department stores, exhibition halls, and temporary booths.

Terminal Wiring Diagram



Product Overview

The TMM-DT Series multi-circuit power meter is built with a high-efficiency microprocessor and high-resolution AD technology to provide real-time, high-accuracy multi-circuit measurement. With built-in dual main circuits, it supports 30 single-phase circuits or 10 three-phase circuits, offering installation flexibility and cost efficiency.

Standard dual communication with RS-485 (Modbus RTU) plus Ethernet (Modbus TCP) enables fast integration of multiple devices and the creation of flexible network architectures. Additional features include built-in I/O terminals, LCD display, demand and TOU time-of-use billing, and 2 MB data logging memory to help users monitor energy usage and long-term consumption trends.

This series is available in two models based on input type:

1. TMM-DT (1 A / 5 A current input): works with traditional CTs for stable and reliable measurement.
2. TMM-DT-MV (333 mV voltage input): works with voltage-output or split-core CTs, allowing installation without power shutdown and offering high safety for retrofitting existing distribution panels.

With precise measurement, flexible communication, and multi-circuit integration capabilities, the TMM-DT Series helps enterprises build a more efficient and intelligent energy-monitoring environment within limited panel space.

Product Features

1. Communication Integration:
   - Standard RS-485 plus Ethernet for connecting multiple devices and integrating with monitoring platforms.
2. Multi-Circuit Measurement:
   - Supports 30 single-phase circuits or 10 three-phase circuits.
   - Branch circuits can be freely assigned, and dual-source busbars can be monitored.
3. Energy Analysis:
   - Provides THD harmonic analysis, long-term data logging (2 MB), and TOU time-of-use billing.
4. Operation and Control:
   - User-friendly LCD interface; built-in DI/DO for alarms and control.
   - Supports external HMI for real-time monitoring.
5. Installation Design:
   - DIN-rail mount with compact dimensions; supports 333 mV split-core CT installation without power interruption.
   - CE certified and suitable for CAT III environments.

Technical Specifications

Function	Item	Description	
Electrical Characteristics and Specifications	Dielectric Strength	AC 2.5 kV, 50 / 60 Hz, 1min ; Between Input / Output / Power Supply / Enclosure	
	Surge Immunity	AC ±4 kV, 1.2 / 50 μ s; voltage input / power supply CNS14676-5	
	Insulation Resistance	≥100 MΩ @ 500 Vdc	
	EMC	EN61326-1: 2013	EN55011: 2016
		EN61000-3-2: 2014	EN61000-3-3: 2013
		IEC61000-4-2: 2008	IEC61000-4-8: 2009
		IEC61000-4-4: 2012	
		IEC61000-4-6: 2013 / COR1: 2015	
		IEC61000-4-11: 2004 / A1: 2017	
		IEC61000-4-3: 2006 + A1: 2007 + A2: 2010	
		IEC61000-4-5: 2014 + A1: 2017	
	Safety(LVD)	EN 61010-1: 2010 + A1: 2019	
Input	Measurement Method	True RMS Measurement	
	Sampling Rate	256 Points / Cycle	
	Number of Input Channels	Two independent main-circuit voltage and current inputs; 8 three-phase current circuits or 24 single-phase current circuits	
	Display Update Time	0.5s	
	Phase-Wire System	1P2W, 1P3W, 3P3W (1, 2, or 3CT), and 3P4W (1 or 3CT) balanced / unbalanced systems	
	Input Range	Voltage Range: 20 – 400 VL-N; 35 – 690 VL-L	
		PT Primary Setting Range: 100 – 9999 kV; PT Secondary Setting Range: 50 – 600V	
		Current: Main-circuit Input: 5A / 1A / 333 mV; Branch-circuit Input: 333 mV	
		CT Primary Setting Range: 1 – 9999A; CT Secondary Setting Range: 5A / 1A / 333 mV	
	Maximum Current Overload Capacity	2 × rated continuous; 20 × rated for 1 second	

Technical Specifications

Function	Item	Description
Power Quality	Total Harmonic Distortion (THD)	Total Harmonic Distortion Percentage of Each Phase and the Average Voltage and Current (Fundamental and RMS)
	Individual Harmonic Content	Harmonic content of voltage and current from the 2nd to the 31st order, including odd and even harmonics
	Three-Phase Unbalance	Three-phase voltage and current unbalance
Demand	Calculation Method	Fixed-Block / Sliding-Block Calculation
	Calculation Interval	Configurable from 1 – 60 min
Relay output	Relay Output Contacts	4 sets SPST (1a); 5 A / 250Vac; 5 A / 30 Vdc
	Relay Output Mode	Alarm / DO
	Relay Operation Modes	Hi / Lo / Hi Hold / Lo Hold
	Alarm Settings	Each relay supports 12 alarm conditions; each condition can reference 34 circuits and 12 parameters
Digital Input	Input Contacts	Two sets of switch contacts or shared-point mode open-collector inputs
	Function Settings	Configurable as General DI / Demand Reset / Max Demand Reset / Energy Reset / Max-Min Reset / Relay Reset
	Debounce Time	Configurable 0 – 99 (×8 ms)
Pulse Output	Output Electrical Rating	One Open-Collector Output: 30 Vdc, 30 mA (Max)
	Output Frequency	40Hz (Max)
	Pulse Output Mapping	Active or reactive energy of any circuit
	Verification Pulse Output	3200 pulses / kWh; duty cycle 50%; assignable to any circuit's active or reactive
Data Logging	Record Settings	Records designated parameters according to the configured interval; interval range 1 – 32767; interval unit selectable (day, hour, minute, second)
	Parameter Data Storage	2 MB Flash ROM
RS-485 Communication Function	Communication Protocol	Modbus RTU Mode
	Communication Address	1~247
	Communication Baud Rate	2400 / 4800 / 9600 / 19200 / 38400 / 57600 / 115200 bps
	Communication Port Response Time	<50 ms (From Completion of Command Reception to Start of Data Transmission)
	Parity Check	None / Even / Odd
	Data Bits	8 Bits
	Stop Bits	1 or 2
	Cable Length	1200M max
Ethernet	Network Interface	10/100M BASE-TX, RJ45 connector
	Communication Protocols	Modbus TCP
Time-of-Use (TOU) Function	Four Time Zones	Up to 1 – 4 time zones per year
	Eight Time Periods	Each time zone supports 1 – 8 time periods; each period can be assigned peak, part-peak, off-peak, or flat rate
	TOU Energy Parameters	Accumulated import active energy, import reactive energy, total apparent energy for each circuit under each tariff and total values for the current and previous month, plus the maximum demand of current and power for the main circuits within the current month
	Special Day Settings	Individual configuration for special dates and time periods for five years, or a single special-date setting applied across five years
Operating Environment	Operating Temperature	0 to 60℃
	Operating Humidity	5~95%, Non-condensing
	Temperature Coefficient	≤100 ppm/℃
	Storage Temperature	-10 to 70℃
	Protection Rating	IP20
	Operating Altitude (Max)	Up to 2000m Above Sea Level
Operating Power Supply	Operating Power Supply	AC 85 – 264 V, 50 / 60 Hz; DC 100 – 300 V
	Power Consumption	AC: 15 VA / DC: 5 W
Mechanical Dimensions	Dimensions	199 mm (L) × 118 mm (W) × 77 mm (H)
	Enclosure Material	Black ABS (Flame-retardant)
	Mounting Method	35mm DIN-rail mounting (EN50022)
	Weight	600g
	Terminals	Voltage / Main-circuit Current / Operating Power / DI / RO / PO
		Input Terminals: AWG 28 – 12 / 0.08 – 3.31 mm²
		Screw Torque: M2.5 / 5.202 kgf•cm (Max)
		Branch-circuit current and RS-485 input terminals: AWG 28 – 14 / 0.08 – 2.08 mm²
		Screw torque: M2 / 2.04 kgf•cm (Max)

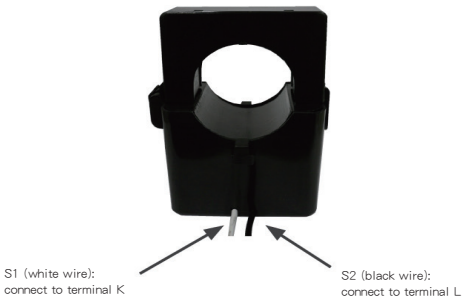
Split-Core Clip-On Type

Current Transformer

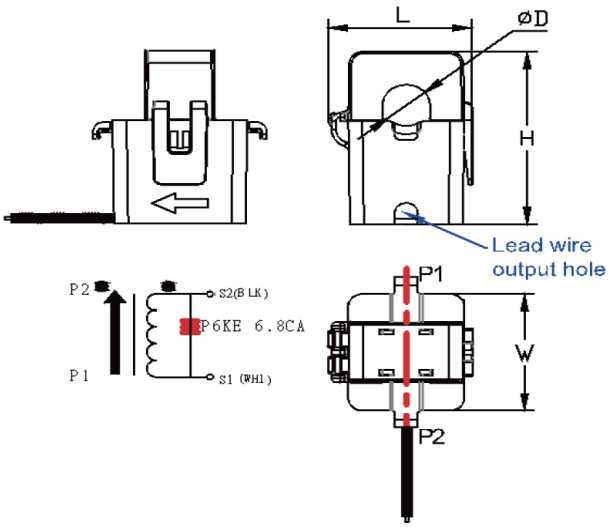
Specifications

Model No.	Primary Measured Current (A)	Secondary Output (A) / (mV)	Accuracy (% F.S.)	Burden Capacity (VA)	Weight (g)	Aperture (mm)		L (mm)	W (mm)	H (mm)	Cable Length (mm)	Series
FATC-OA24R0100-25F	100	5(A)	3.0	2.5	205	24Φ	24.0	51.2	47.0	70.2	2000	OA
FATC-OA35R0200-25B	200		1.0		375	35Φ	35.0	65.8	51.2	83.5		
FATC-OA35R0300-25B	300		1.0		375	35Φ	35.0	65.8	51.2	83.5		
FATC-OA50R0400-25B	400		1.0		655	50Φ	50.0	95.2	48.5	109.5		
FATC-OA50R0600-25B	600		1.0		655	50Φ	50.0	95.2	48.5	109.5		
FATC-OA50R1000-25B	1000		1.0		655	50Φ	50.0	95.2	48.5	109.5		
FATC-OV10RV005-33B	5	333(mV)	1.0	N/A	60	10Φ	10.0	30.8	28.8	42.8		OV
FATC-OV16RV060-33A	60		0.5		100	16Φ	16.0	37.8	33.9	49.0		
FATC-OV16RV100-33A	100		0.5		100	16Φ	16.0	37.8	33.9	49.0		
FATC-OV24RV200-33A	200		0.5		100	24Φ	24.0	53.3	40.2	70.0		
FATC-OV35RV300-33A	300		0.5		205	35Φ	35.0	65.8	42.8	83.5		
FATC-OV35RV400-33A	400		0.5		375	35Φ	35.0	65.8	42.8	83.5		
FATC-OV35RV600-33A	600		0.5		375	35Φ	35.0	65.8	42.8	83.5		

Wiring Instructions



Dimensions (mm)



2025.11.

Main Global Operations

business to business to sustainability

TECO Westinghouse

1995
Texas Austin | US

Motovario S.p.A

2015
Formigine | Italy

Wuxi

2004
Wuxi | China

Headquarter

1956
Taipei | Taiwan

TECO Mexico S.A.

2023
Ciénega de Flores | Mexico

TEMICO

2023
Bangalore | India

Vietnam

2019
Binh Duong | Vietnam

Malaysia

1988
Johor Bahru | Malaysia

Production Sales Office R & D Center

TECO

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TECO 智慧能源事業群 Intelligence Energy

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