Multi-Functional Power Meter

DPM-C520 / DPM-C520W / DPM-C320

Operation Manual

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DPM-C520/C520W/C320 Operation Manual

Revision History

Version	Revision	Date
1st	The first version was published.	2019/05/15
2nd	Renew title as DPM-C520/C520W/C320 Operation Manual. Add new contents concerning DPM-C320.	2020/05/06

DPM-C520/C520W/C320 Operation Manual

Table of Contents

1

Chapter 1 Product Introduction

Table of Contents

1.1 Preface

Thank you for choosing this product. This manual provides installation instructions for the DPM-C520/C520W/C320 power meter (DPM-C520W is WiFi edition power meter). The multifunction power meter DPM-C520/C520W/C320 is an obvious choice for any application in terms of power monitoring and control for sectors such as power system, industrial mining supply company, and public facility. Before using the meter, read this manual carefully to ensure proper use of this meter. After reading the manual, keep it in a convenient location for quick reference.

Before you finish reading this manual, observe the following notes.

- The installation environment must be free of water vapor, corrosive and flammable gas.
- Follow the instructions on the diagram in this manual for wiring the device.
- Grounding must be performed correctly and properly according to provisions for related electric work regulations currently effective in the country.
- Do not disassemble the meter or alter its wiring when the power is on.
- When the power is on, do not touch the terminal area to avoid electric shock.

If you still experience issues when using the device, please contact your distributor or our customer service center. As the product is updated and improved, changes to the specifications will be included in the newest version of the manual which you can get by contacting your distributor or downloading it from the Delta Electronics website (http://www.delta.com.tw/ia/).

1.2 Overview

- **DPM-C520**

- **DPM-C520W**

- DPM-C320

1.3 Safety Precautions

- **Installation Notes**

- Install the power meter according to instructions on the manual. Use appropriate personal protective equipment (PPE) and follow safe electrical work practices.
- Only qualified electrical workers should install this equipment. Such work should be performed only after reading the entire set of installation instructions.
- Operate the power meter according to instructions on the manual. Neglecting fundamental installation requirements may lead to personal injury as well as damage to electrical equipment or other property.
- This equipment should be installed in a suitable insulated and fireproof enclosure.

- **Operation Notes**

- DO NOT work alone.
- Before performing visual inspections, tests, or maintenance on this equipment, disconnect all electric power sources.
- Always use a properly rated voltage sensing device to confirm that power is off.
- Replace all devices, doors and covers before turning on power to this equipment.
- Carefully inspect the work area for tools and objects that may have been left inside the equipment.

- **Operation Notes**

- Never short the secondary of a Power Transformer (PT).
- Never open circuit a Current Transformer (CT)
- Ensure that the CT secondary winding is fixed securely on the equipment. It may damage the equipment if the secondary winding becomes loose during operation.
- When used with CTs, make sure the CTs are UL2808 listed in America and Canada and meet or exceed the accuracy specifications for IEC61869-2 class or accepted by authority having jurisdiction (AHJ) in other areas.

- **Wiring Notes**

- When the measured current is higher than the rated specification for the device, consider using an external current transformer (CT).
- When the measured voltage is higher than the rated specification for the device, consider using an external potential transformer (PT) (line voltage: 35 to 690V AC L-L or phase voltage: 20 to 400V AC L-N, 3P4W-690Y400 Vac / 3P3W-600 Vac).
- Connect only one cord to one plug on the quick connector.
- For the device is accidently unplugged, check the connecting cord and restart.

- **Maintenance and Inspection Notes**

- While cleaning the equipment, be sure to unplug all external power sources first. Use a dry cloth to clean the equipment's exterior. DO NOT open the equipment or touch the wiring inside to prevent personal injury as well as damage to electrical equipment or other property. DO NOT use aerosol sprays, solvents, or abrasives.

MEMO

2

Chapter 2 Specifications

Table of Contents

2.1 Electrical characteristics

Measurement Accuracy					
Electric quantities	**Voltage, current**	± 0.5%	**Electric energy**	**Real power**	± 0.5%
	Real power, reactive power, apparent power	± 0.5%		**Reactive power**	± 0.5%
Power factor		± 0.5%	**Total Harmonic Distortion for Current**		± 1%
Real power demand		± 0.5%	**Total Harmonic Distortion for Voltage**		± 1%
Reactive power demand		± 0.5%	**Frequency**		± 0.5%
Apparent power demand		± 0.5%	**Harmonic**		± 1%

Input		
Voltage Connection	1PH2W, 1 CT	3PH3W, Δ connection, 3 CT, 2 PT
	1PH3W, 2 CT	3PH4W, Y connection, 3 CT, No PT
	3PH3W, Δ connection, 3 CT, No PT	3PH4W, Y connection, 3 CT, 3 PT
	3PH3W, Δ connection, 2 CT, No PT	3PH4W, Y connection, 2 CT, 3 PT
Rated Voltage	1. Line voltage：35 to 690 VAC (L-L) Phase voltage：20 to 400 VAC (L-N) 2. Y connection (3P4W)： 400 Vac (line-to-neutral) / 690 Vac (line-to-line) 3. Δ connection (3P3W)： 600 Vac (line-to-line) 4. MEASUREMENT CAT III	
Rated Current	1 A / 5 A	
Range of Current Measurement	20mA ~ 5A (Starting to measure is 20mA)	
Frequency	50 / 60 Hz	
Alarm	Set up multi-level alarms	10 multi-level alarms
Maximum / Minimum Values	15/15	The value of Max./Min., Date & Time

Input		
Power	Operating range	DPM-C520 / DPM-C520W： 100 ~ 240 VAC (maximum power: 4.6 W) OVERVOLTAGE CAT III
		DPM-C320： 100 ~ 240 VAC (maximum power: 4.6 W) OVERVOLTAGE CAT II
Frequency	Operating frequency	50/60 Hz
Communication	RS-485 port	Modbus-RTU
		Baud rate 9600 / 19200 / 38400 bps
Mechanical Characteristics	Dimension (W x H x D)	1. DPM-C520 / DPM-C520W： 96 * 96 * 95.4 mm 2. DPM-C320： 72 * 72 * 98 mm
	IP Degree of Protection	1. IP54 (front display), IP20 (meter body) 2. Certificated by ETC 3. Indoor Use / Dry Location
Environment	Ambient operating temperature	1. DPM-C520 / DPM-C520W： -20 °C ~ +70°C (-4°F ~ +158°F) 2. DPM-C320： -20 °C ~ +50°C (-4°F ~ +122°F)
	Storage temperature	1. DPM-C520 / DPM-C520W： -30 °C ~ +80 °C (-22°F ~ +176°F)： 2. DPM-C320： -30 °C ~ +60°C (-22°F ~ +140°F)
	Relative Humidity	5 ~ 95% RH
	Altitude	Below 2000 meters

*Meet the requirements of IEC62053-22 with accurate range: 50mA~

Display	
Screen Type	LCD
Backlight	Orange (DPM-C520、DPM-C520W) Blue (DPM-C320)

Electromagnetic Compatibility	
Electrostatic Discharge	IEC 61000-4-2
Immunity to Radiated Fields	IEC 61000-4-3
Immunity to Fast Transients	IEC 61000-4-4
Immunity to Impulse Waves	IEC 61000-4-5
Conducted Immunity	IEC 61000-4-6
Immunity to Magnetic Fields	IEC 61000-4-8
Immunity to Voltage Dips	IEC 61000-4-11
Radiated Emissions	FCC Part 15 Class A, EN55011 Class A
Conducted Emissions	FCC Part 15 Class A, EN55011 Class A
Harmonics Emissions	IEC 61000-3-2
Flicker Emissions	IEC 61000-3-3

2.2 Communications Specifications

Communications		
DPM-C520 / DPM-C320		**DPM-C520W**
RS-485	Modbus-RTU	Modbus-RTU
Baud rate	9600 / 19200 / 38400 bps	9600 / 19200 / 38400 bps
Wi-Fi	NA	Modbus-TCP

2.3 Operating the Display

1. DPM-C520 / DPM-C520W：

A	Time	**H**	UP key
B	Title	**I**	DOWN key
C	Load percentage	**J**	NEXT key
D	Item	**K**	Submenu
E	Pulse light	**L**	Unit
F	Fault light	**M**	Value
G	BACK key		

Button	Basic Mode	Setting Mode
BACK Key	Go to Menu or return to the previous screen	Return to the previous screen without saving the current setting
UP Key	Select item or page	Decrement / Increment the number*
DOWN Key	Select item or page	Decrement / Increment the number*
NEXT Key	Go to setting mode	Go to setting mode and go to the next setting

*** For DPM-C520W: FW V1.0008 or earlier versions and DPM-C520: FW V1.0004 or earlier versions:**

The UP key is used for **decrementing** the number in the setting mode.

The DOWN key is used for **incrementing** the number in the setting mode.

*** For DPM-C520W: FW V1.0010 or later versions and DPM-C520: FW V1.0006 or later versions:**

The UP key is used for **incrementing** the number in the setting mode.

The DOWN key is used for **decrementing** the number in the setting mode.

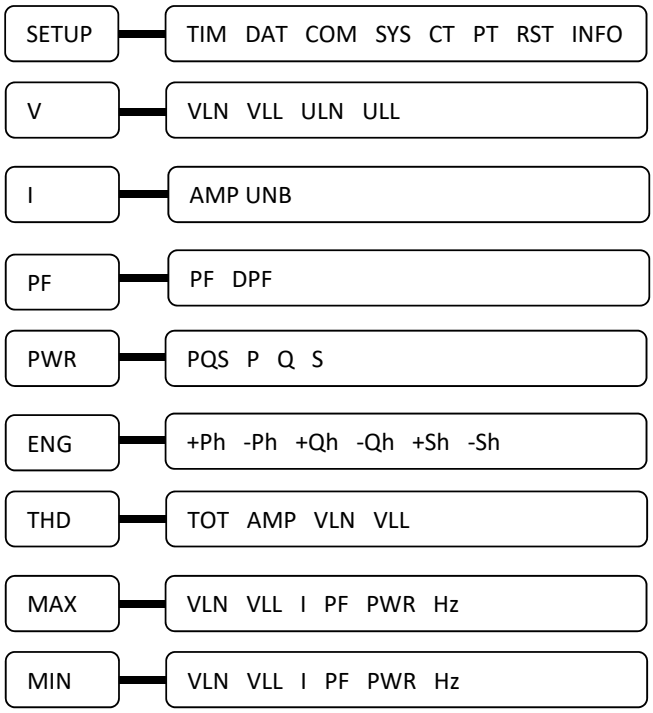
2. DPM-C320：

Homepage-parameter display:

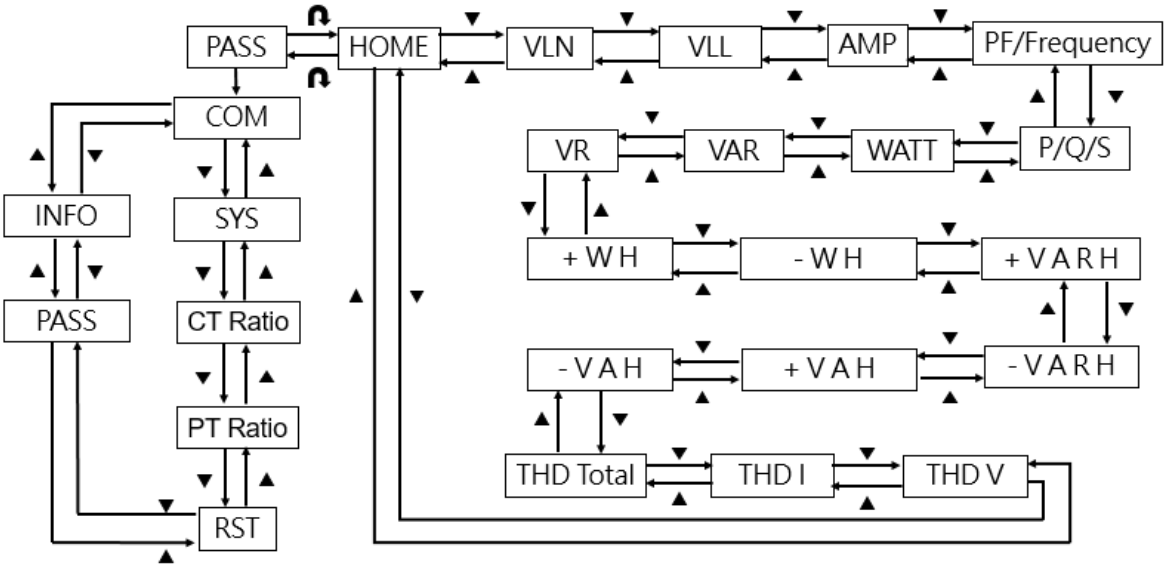
Parameters	Content Display
V	Line Voltage：1P3L、3P3L
	Phase Voltage：1P2L、3P4L
I	Iavg
P	Ptotal

2.3.1 Menu Tree

1. DPM-C520 / DPM-C520W：



2. DPM-C320：

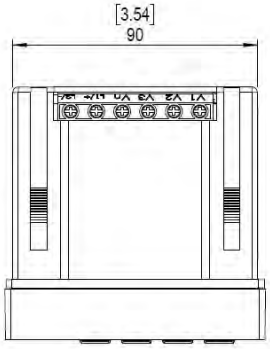


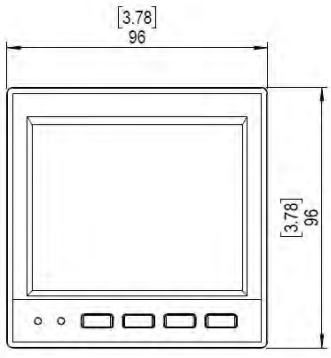
AMP	Ampere	**PWR**	Power
ALA	Alarm	**Q**	Reactive Power
BD	Baud Rate	**RST**	Reset
COM	Communication	**S**	Apparent Power
CT	Current Transformer	**SYS**	System Values
DAT	Date	**THD**	Total Harmonic Distortion
DEF	Default Value	**TIM**	Time
DPF	Displacement Power Factor	**V**	Voltage
ENG	Energy	**VLN**	Phase Voltage
FW	Firmware Version	**VLL**	Line Voltage
Hz	Hertz	**VT**	Total Voltage Harmonic Distortion
I	Current	**UNB**	Unbalance Current
ID	Communication Station no.	**ULN**	Unbalance Phase Voltage
INF	Information of Meter	**ULL**	Unbalance Line Voltage
IT	Total Current Harmonic Distortion	**+Ph**	Positive Active Energy

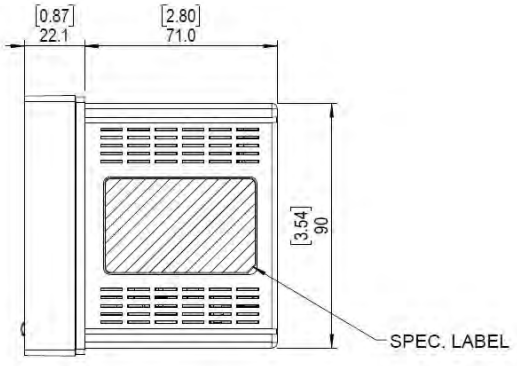
MAX	Maximum	**-Ph**	Negative Active Energy
MD	Meter Model	**+Qh**	Positive Reactive Energy
MIN	Minimum	**-Qh**	Negative Reactive Energy
P	Active power	**+Sh**	Positive Apparent Power
PF	Power Factor	**-Sh**	Negative Apparent Power
PQS	Active Power, Reactive Power, Apparent Power	**485 ON**	Disable Wi-Fi Function
PR	Parity	**485 OFF**	Enable Wi-Fi Function
PT	Potential Transformer		

2.4 Dimensions

- **DPM-C520 (Front)**

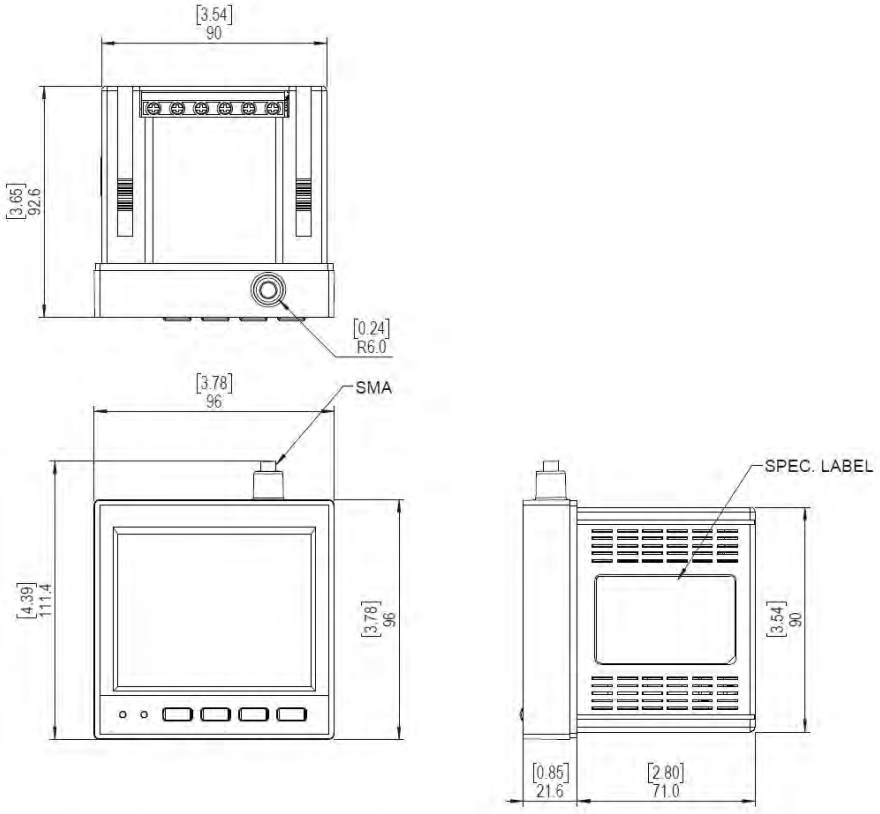




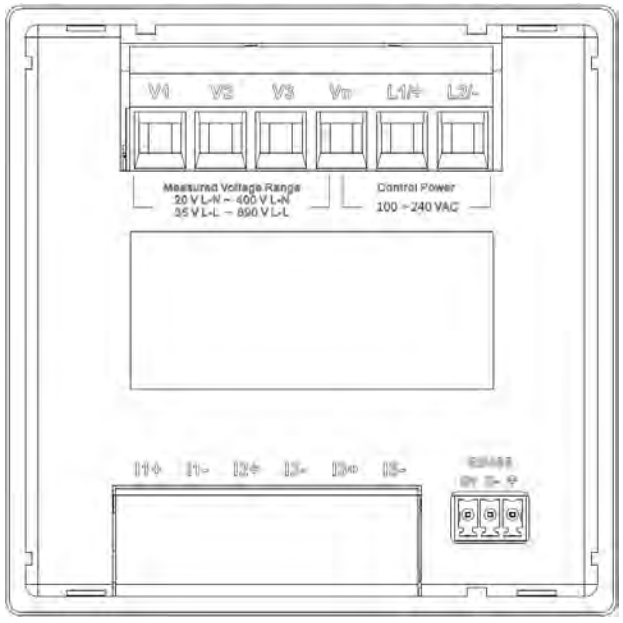


Unit: mm

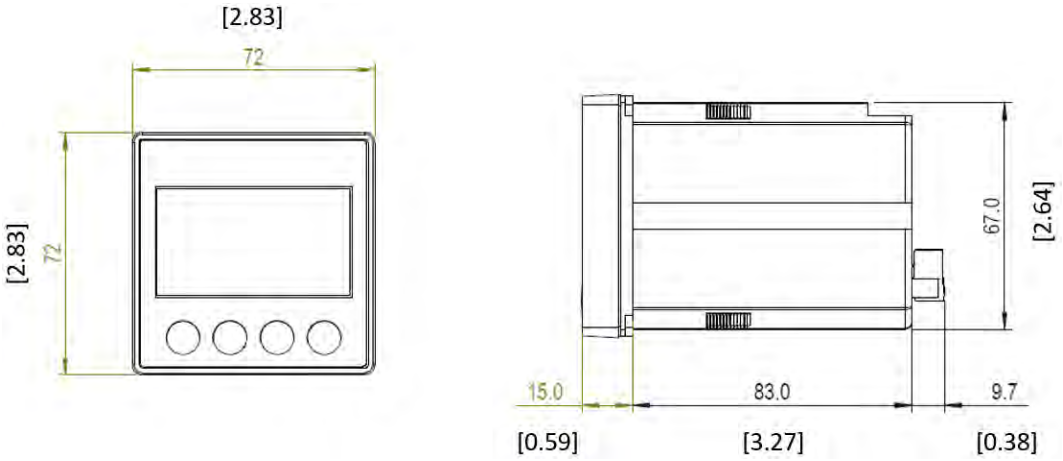
- **DPM-C520W (Front)**



- **DPM-C520 / C520W (Back)**

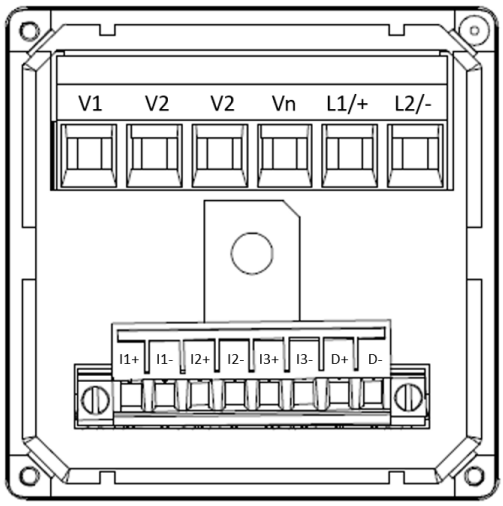


- **DPM-C320 (Front)**



Unit: mm

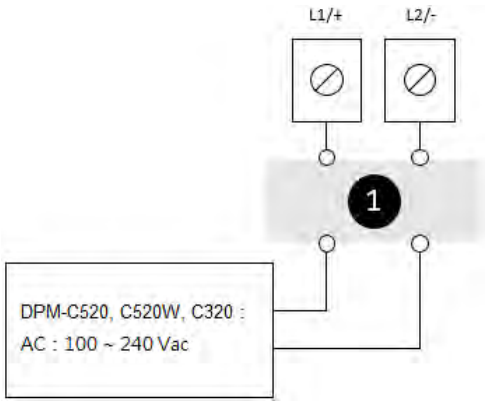
- **DPM-C320 (Back)**



Function	PIN	VOLTAGE	CURRENT
Rated voltage	V1	1. Line voltage : 35 to 690 VAC (L-L) Phase voltage : 20 to 400 VAC (L-N) 2. Y connection (3P4W) : 400 Vac (line-to-neutral) / 690 Vac (line-to-line) 3. Δ connection (3P3W) : 600 Vac (line-to-line)	-
	V2		
	V3		
	Vn		

Function	PIN	VOLTAGE	CURRENT
Control power	L1/+	100 ~ 240 Vac	400 mA MAX
	L2/-		
Function	**PIN**	**VOLTAGE**	**CURRENT**
Rated current	I1+	-	1A ~ 5A
	I1-		
	I2+		
	I2-		
	I3+		
	I3-		
RS-485	D+	-7 ~ +12 VDC	-
	D-		
	⏚		

- **Wiring Descriptions**



❶250 mA fuse:

※ Either positive or negative charge can be used on L1/+ and L2/-. When using a neutral wire for AC power, you need to connect the neutral wire to the L2/-.

※ Always use a fuse on L1/+. When using an ungrounded neutral wire to connect to the power, use a fuse on L2/-. If you are using a Power Transformer (PT) or a Current Transformer (CT), use fuses on the primary and secondary windings.

※ The rated voltage / current of the fuse, breaker, and device should be the same to prevent damage to electrical equipment or other property.

MEMO

3

Chapter 3 Installation

Table of Contents

3.1 Installation

3.1.1 Installation Environment

Keep the product in the shipping carton before installation. Store the product properly when it is not to be used for an extended period of time to retain the warranty coverage. Some storage suggestions are listed below.

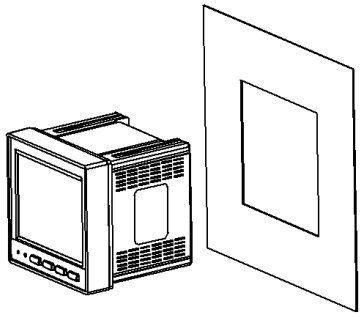
- Store the power meter in a clean, dry, and controlled environment.
- DPM-C520 / DPM-C520W store in an ambient temperature range of -30–80°C (-22–176°F).
- DPM-C320 store in an ambient temperature range of -30–60°C (-22–140°F).
- Store in a relative humidity range of 5–95%, non-condensing.
- Do not store the product in a place subjected to corrosive gases or liquids.
- Place the product on a solid and durable surface.
- Do not mount the product near heat-radiating elements; or in a location subjected to corrosive gases, liquids, airborne dust or metallic particles; or where it can be subjected to high levels of electromagnetic radiation.

3.1.2 Installation Notes

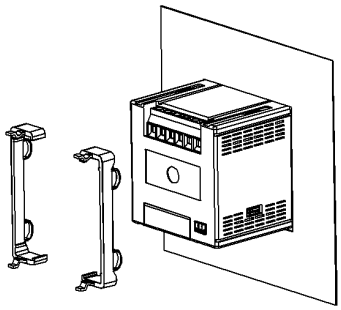
- Follow the instruction when installing the product to prevent equipment breakdown.
- To increase the cooling efficiency, install the product with sufficient space between adjacent objects and baffles and walls to prevent poor heat dissipation.
- The maximum panel thickness should be 4.0 mm.

Installation Steps

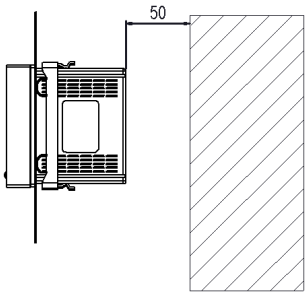
Step 1: Before installing the power meter, open the square hole on the metal plate.



Step 2: Push the meter into the hole and then slide the securing bracket in to the metal plate.

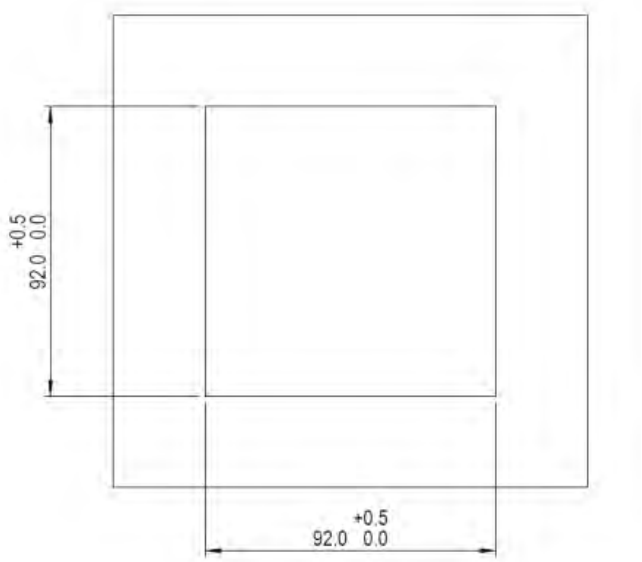


Step 3: Allow 50 mm (2 inches) of clearance at the back of the meter for heat dissipation.



- **Mounting Hole Dimensions**

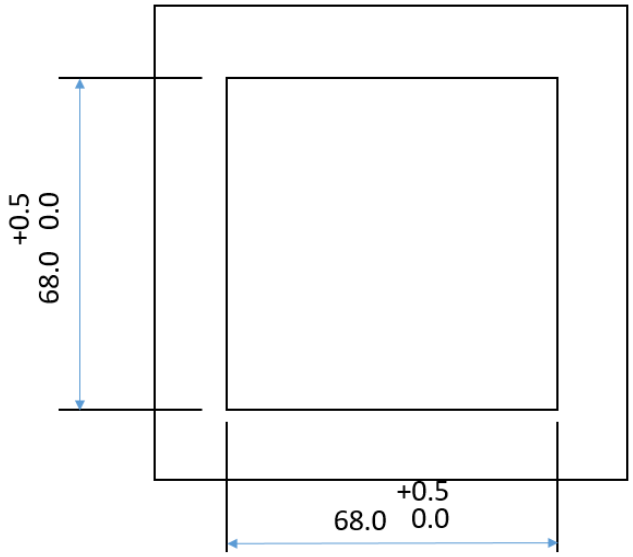
1. DPM-C520 / DPM-C520W：



Panel Hole
Thickness : 0.8~4.0mm

Unit: mm

2. DPM-C320：



Panel Hole
Thickness: 0.8~4.0mm

Unit: mm

3.2 Basic Checks

Items	Contents
General Check	■ Regularly check for mounting looseness where the power meter and device are connected. ■ Prevent foreign objects, such as oil, water, or metal powder entering the device through the ventilation holes. Prevent drill shavings or other debris entering the power meter. ■ If the power meter is installed at a location with harmful gas or dust, prevent those materials from entering the power meter.
Pre-operation Check (not supplied with power)	■ Insulate the connections at the wiring terminals. ■ Communications wiring should be done properly to prevent abnormal operations. ■ Check for the presence of conducive and flammable objects, such as screws or metal pieces in the power meter. ■ If electronic devices near to the power meter experience electromagnetic interference, take steps to reduce the electromagnetic interference. ■ Check for the correct voltage level for the power supplied to the power meter.
Pre-running Check (supplied with power)	■ Check if the power indicator light is lit. ■ Check if communication between every device is normal. ■ If there is any abnormal response from the power meter, contact your distributor or our customer service center.

3.3 Wiring

3.3.1 Wiring Diagrams

- To avoid electric shock, do not change the wiring when the power is on.
- Install a breaker switch on the power cord for the meter because there is no power switch on the power meter.
- When the measured voltage is higher than the rated specification for the device, it is necessary to use an external potential transformer (PT).
- When the measured current is higher than the rated specification for the device, it is necessary to use an external current transformer (CT).
- That could be installed in panel boards or switchgears shall comply with the following：
  a) Always open or disconnect circuit from power-distribution system (or service) of building before installing or servicing current transformers.
  b) Restrict installation of current transformer in an area where it would block ventilation openings.
  c) Restrict installation of current transformer in an area of breaker arc venting.
  d) Not suitable for Class 2 wiring methods “and” Not intended for connection to Class 2 equipment.
  e) Secure current transformer and route conductors so that they do not directly contact live terminals or bus.

The following table shows the recommended wiring materials.

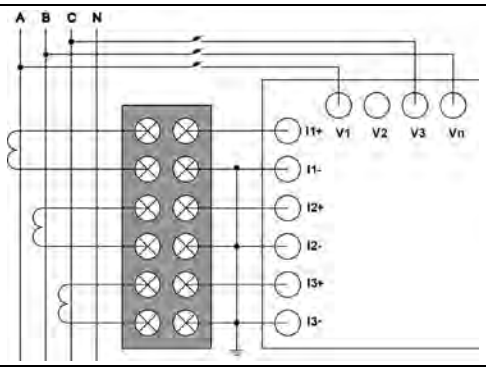
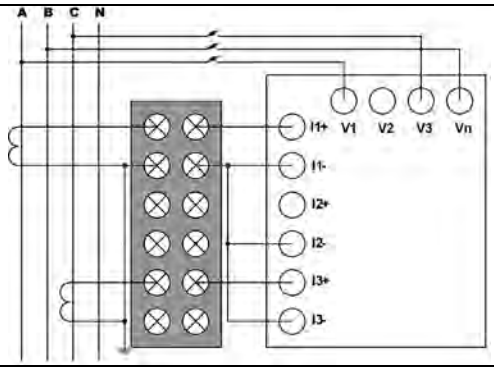
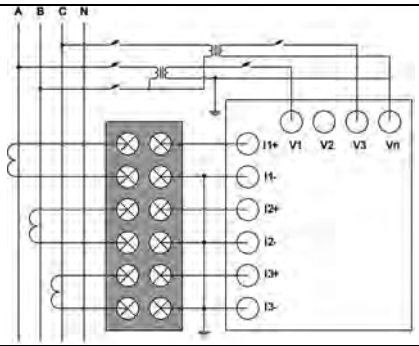
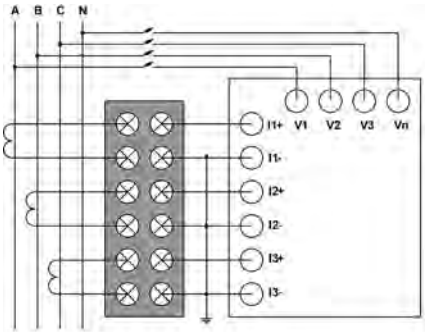
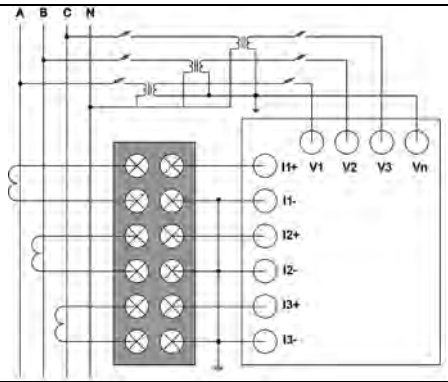
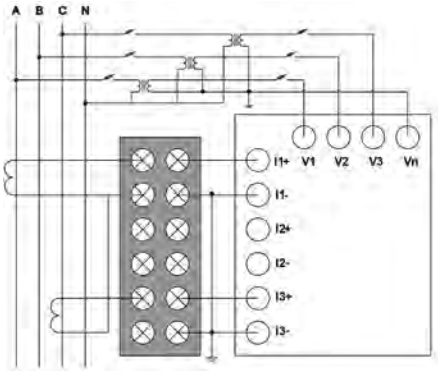
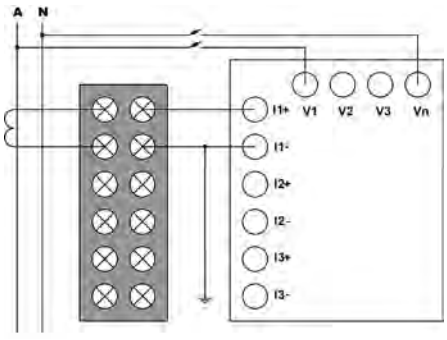
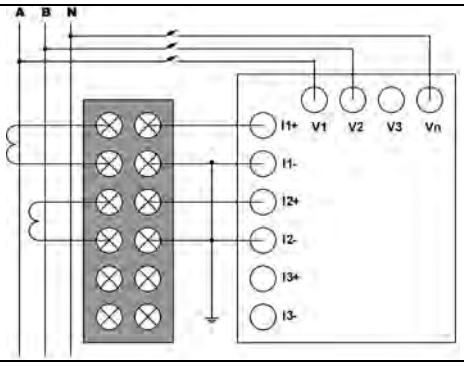
1. DPM-C520 / DPM-C520W：

Connecting Terminals	Wire Diameters	Screw Turning Torque	Wire heat resistance
Operating Power	AWG 10–22	5.0 kgf-cm (0.5 N·m)	> 70°C
Voltage Measurement	AWG 10–22	5.0 kgf-cm (0.5 N·m)	> 70°C
Current Measurement	AWG 10–22	8.0 kgf-cm (0.8 N·m)	> 70°C
RS-485	AWG 14–24	2.0 kgf-cm (0.2 N·m)	> 70°C

2. DPM-C320：

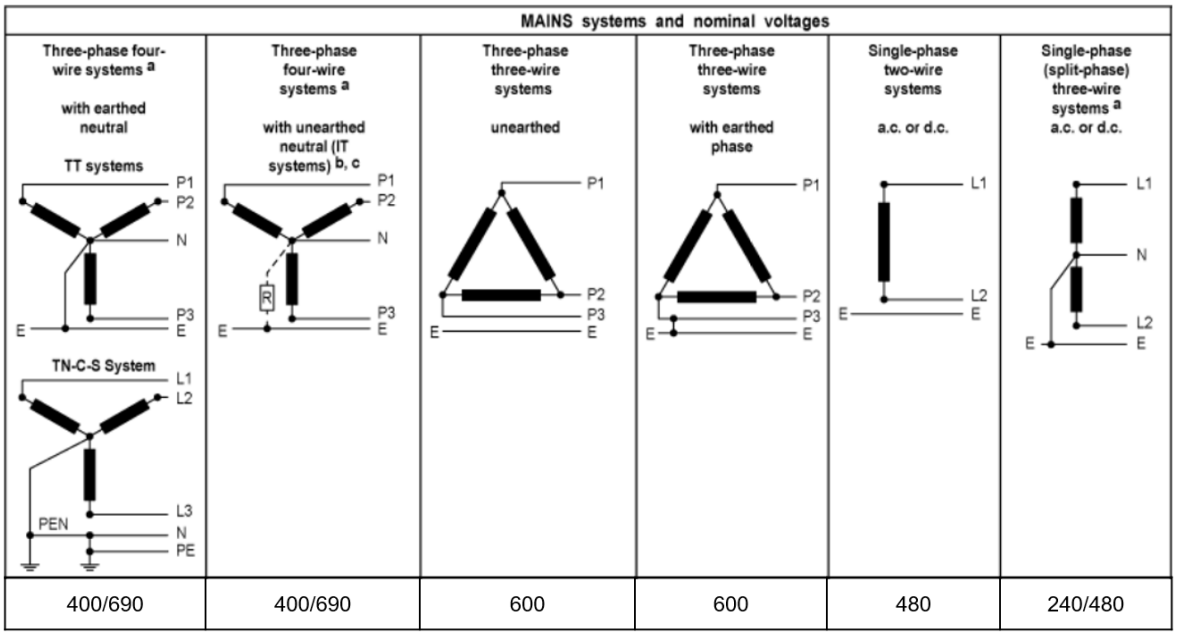
Connecting Terminals	Wire Diameters	Screw Turning Torque	Wire heat resistance
Operating Power	AWG 10–22	5.0 kgf-cm (0.5 N·m)	> 70°C
Voltage Measurement	AWG 10–22	5.0 kgf-cm (0.5 N·m)	> 70°C
Current Measurement	AWG 12–22	5.0 kgf-cm (0.5 N·m)	> 70°C
RS-485	AWG 12–24	5.0 kgf-cm (0.5 N·m)	> 70°C

- **Connection Diagrams**

3PH3W, Δ connection, 3 CT, No PT	3PH3W, Δ connection, 2 CT, No PT
	
3PH3W, Δ connection, 3 CT, 2 PT	**3PH4W, Y connection, 3 CT, No PT**
	
3PH4W, Y connection, 3 CT, 3 PT	**3PH4W, Y connection, 2 CT, 3 PT**
	
1PH2W, 1 CT	**1PH3W, 2 CT**
	

The following table lists the symbols used in the diagram.

Symbol	⏚	⊂	▮	3|⊂	⌇
Description	Grounding	Current transformer	Terminal block	Voltage transformer	Fuse



Rated value：

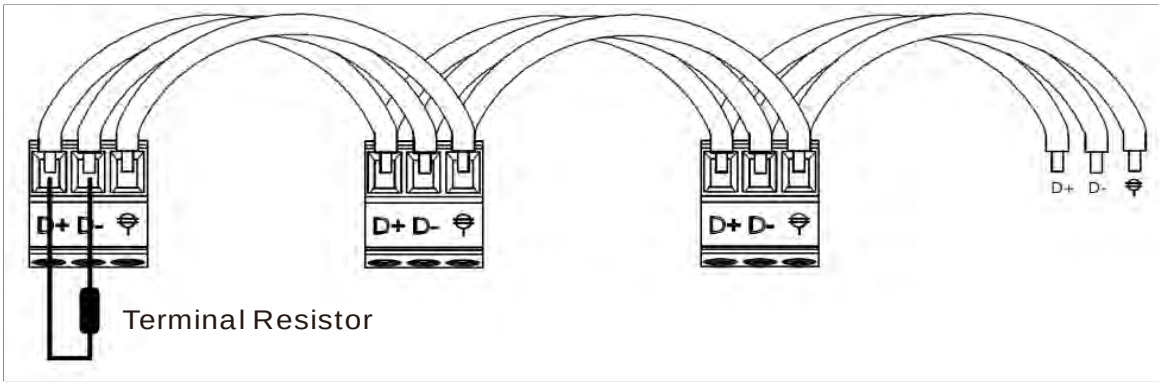
1. Y (3p4w)：400/690 Vac
2. Δ (3p3w)：600 Vac
3. Single Phase：240/480 Vac

3.3.2 Communication Characteristics

Communications Specifications:

Max. Communication Distance	1200 m	**Baud Rate**	9600, 19200, 38400 bps
Max. Connection Number	32	**Data Length**	8-bits
Communication Protocols	Modbus RTU	**Parity**	None, Odd, Even
Function Code	03, 06, 10	**Stop Bits**	1

- Use shielded twisted-pair cables for RS485 communication. When connecting multiple devices in series, use the wiring method in the following diagram.



- Connect the D+ communication terminal for all devices on the same twisted pair cable. Connect the D- terminals on the other twisted pair cable. Ground the cable shield. Install a terminal resistor on the terminal device as shown.
- Use cables with a diameter of 14–24 AWG.

Wi-Fi Communications Specifications:

Max. Communication Distance	300 m (depending on quality of service in wireless communication)	**Standards**	IEEE 802.11 b/g/n
Max. Connection Number	255 (depending on the access point (AP))	**Data Length**	8-bits
Communication Protocols	Modbus TCP	**Parity**	None, Odd, Even
Function Code	03, 06, 10	**Stop Bits**	1-bit

MEMO

4

Chapter 4 Operation

Table of Contents

4.1 General Operation

1. Use UP and DOWN keys to switch among setting pages.
2. You can go back to HOME page by using BACK or INDEX (DPM-C520 / DPM-C520W) keys.
   Note 1: use BACK key in HOME page to enter the setting page.

4.1.1 Setting Menu

- HOME page (HOME):
  Voltage values measured by the power meter, including total voltage (VT), total current (IT), total power (PT), total positive active energy (ET). (DPM-C520 / DPM-C520W)
  Voltage values measured by the power meter, including total voltage (V), total current (I), total power (P). (DPM-C320)
- Phase voltage (VLN): phase voltage values measured by the power meter, including phase A voltage (AN), phase B voltage (BN), phase C voltage (CN) and average phase voltage (T).
- Line voltage (VLL): line voltage values measured by the power meter, including A-B line voltage (AB), B-C line voltage (BC), C-A line voltage (CA), and average line voltage (T).
- Electric current page (AMP): electric current measured by the power meter, including phase A current (A), phase B current (B), phase C current (C) and average current (T).
- Power factor page (PF): power factors measured by the power meter, including power factors of phase A (A), phase B (B), phase C(C), total power factor (T) and frequency (Hz).
- Active power, reactive power, and apparent power page (PQS): values measured by the power meter, including total active power (PT), total reactive power (QT), and total apparent power (ST).
- Active power page (WATT): active power value measured by the power meter, including active power of phase A (A), phase B (B), phase C (C) and total active power (T).
- Reactive power page (VAR): reactive power value measured by the power meter, including reactive power of phase A (A), phase B (B), phase C (C) and total reactive power (T).
- Apparent power page (VA): apparent power value measured by the power meter, including apparent power of phase A (A), phase B (B), phase C (C) and total apparent power (T).
- Positive active energy page (+WH): positive active energy measured by the power meter, including positive active energy (PH).
- Reversed active energy page (-WH): reversed active energy measured by the power meter, including reversed active energy (PH).
- Positive reactive energy page (+VARH): positive reactive energy measured by the power meter, including positive reactive energy (QH).
- Reversed reactive energy page (-VARH): reversed reactive energy measured by the power meter, including reserved reactive energy (QH).
- Positive apparent energy page (+VAH): positive apparent energy measured by the power meter, including positive apparent energy (SH).

- Reversed apparent energy page (-VAH): reversed apparent energy measured by the power meter, including reserved apparent energy (SH).
- Total harmonic distortion of current page (THD I): current harmonic distortion measured by the power meter, including harmonic distortion for phase A current (A), harmonic distortion for phase B current (B), harmonic distortion for phase C current (C) and total harmonic distortion for current (T).
- Total harmonic distortion of voltage page (THD V): voltage harmonic distortion measured by the power meter, including harmonic distortion for phase A voltage (A), harmonic distortion for phase B voltage (B), harmonic distortion for phase C voltage (C) and total harmonic distortion for voltage (T).

4.2 DPM-C520 / DPM-C520W Setups

4.2.1 Unlock the Setting

- Steps:
  1. Press BACK key to enter the setting page.
  2. Press UP and DOWN keys at the same time for 5 seconds to unlock the setting.
  3. When you see the setting option TIM & DAT, it means you have unlocked the setting page.

Note 1: press BACK key to leave the setting page and go to HOME page.

4.2.2 Time Setup (TIM)

- **Time:** Present power meter time; the time format includes the hour and minute.
- Steps:
  1. Press BACK key to enter the setting page.
  2. Press UP and DOWN keys at the same time for 5 seconds to unlock the setting.
  3. Press NEXT key to see the setting option TIM & DAT.
  4. Press UP key to enter the time (TIM) setting page.
  5. When the option (HH) starts blinking, you can use UP and DOWN keys to select the number of the hour.
  6. Press NEXT key to confirm the setting.
  7. When the option (MM) starts blinking, you can use UP and DOWN keys to select the number of the minute.
  8. Press NEXT key to confirm the setting.

Note: You can go back to the previous setting item by pressing BACK key anytime, whether you have completed or canceled the setting.

4.2.3 Date Setup (DAT)

- **Date:** Present power meter date; the date format includes the last two digits of the year, month, date and day.
- Steps:
  1. Press BACK key to enter the setting page.
  2. Press UP and DOWN keys at the same time for 5 seconds to unlock the setting.
  3. Press NEXT key to see the setting option TIM & DAT.
  4. Press DOWN key to enter the date (DAT) setting page.
  5. When the option (YY) starts blinking, you can use UP and DOWN keys to select the number of the year.
  6. Press NEXT key to confirm the setting.
  7. When the option (MM) starts blinking, you can use UP and DOWN keys to select the number of the month.
  8. Press NEXT key to confirm the setting.
  9. When the option (DD) starts blinking, you can use UP and DOWN keys to select the number of the date.
  10. Press NEXT key to confirm the setting.

Note: You can go back to the previous setting item by pressing BACK key anytime, whether you have completed or canceled the setting.

4.2.4 Communication Setup (COM)

- Address (ID): device ID; its address setting range is 1-254 (default: 1).
- Baud Rate (BR): transmission speed; the setting options are 9600 kbps (default), 19200 and 38400 bps.
- Parity setting (PA): odd and even checking bit for communication; the setting options are None (8n1), Even (8E1), and Odd (8o1); default: None (8n1).
- Steps:
  1. Press BACK key to enter the setting page.
  2. Press UP and DOWN keys at the same time for 5 seconds to unlock the setting.
  3. Press NEXT key to see the setting option COM & SYS.
  4. Press UP key to enter the communication (COM) setting page.
  5. Use UP and DOWN keys to select the device ID. (one digit at a time; hundreds digit➔ tens digit ➔ units digit)
  6. Press NEXT key to confirm the setting and start to set the next device ID.
  7. Repeat steps 5-6 till you complete the settings of the 3 digit device ID. Press NEXT key to set up the baud rate.
  8. When the option starts blinking, you can use UP and DOWN keys to select the baud rate you need.

9. Press NEXT key to confirm the setting and start to set the next setting, parity.
10. When the option starts blinking, you can use UP and DOWN keys to select the parity you need.
11. Press NEXT key to confirm the setting.

Note: You can go back to the previous setting item by pressing BACK key anytime, whether you have completed or canceled the setting.

4.2.5 System Setup (SYS)

- Wiring methods (WR): options are one-phase two-wire (1PH2W), one-phase three-wire (1PH3W), three-phase three-wire (3PH3W), and three-phase four-wire (3PH4W); default: three-phase four-wire.
- Number of current transformers (CT): options are 1, 2 and 3; default: 3.
- Number of potential transformers (PT): options are 0, 2 and 3; default: 3.
- Steps:
  1. Press BACK key to enter the setting page.
  2. Press UP and DOWN keys at the same time for 5 seconds to unlock the setting.
  3. Press NEXT key to see the setting option COM & SYS.
  4. Press DOWN key to enter the system (SYS) setting page.
  5. Use UP and DOWN keys to select the wiring method.
  6. Press NEXT key to confirm the setting and start to set the next setting, the number of current transformers (CT).
  7. When the option starts blinking, you can use UP and DOWN keys to select the number of current transformers you need.
  8. Press NEXT key to confirm the setting and start to set the next setting, the number of potential transformers (PT).
  9. When the option starts blinking, you can use UP and DOWN keys to select the number of potential transformers you need.
  10. Press NEXT key to confirm the setting.

Note: You can go back to the previous setting item by pressing BACK key anytime, whether you have completed or canceled the setting.

4.2.6 Current Transformer Setup (CT)

- Ampere for the primary-side current transformer: ranging from 1 to 9999 A; default: 5 A.
- Ampere for the secondary-side current transformer: options are 1 and 5 A; default 5 A.
- Steps:
  1. Press BACK key to enter the setting page.
  2. Press UP and DOWN keys at the same time for 5 seconds to unlock the setting.
  3. Press NEXT key to see the setting option CT & PT.

4. Press UP key to enter the current transformer (CT) setting page.
5. Use UP and DOWN keys to select the number for the primary-side current transformer.
6. Press NEXT key to confirm the setting and start to set the next number for the primary-side current transformer.
7. Repeat steps 5-6 till you complete the settings of the 4 digit number for the primary-side current transformer. Press NEXT key to set up the secondary-side current transformer.
8. When the option starts blinking, you can use UP and DOWN keys to select the number of the secondary-side current transformer.
9. Press NEXT key to confirm the setting.

Note: You can go back to the previous setting item by pressing BACK key anytime, whether you have completed or canceled the setting.

4.2.7 Potential Transformer Setup (PT)

- Voltage for the primary-side potential transformer: ranging from 1 to 9999 V; default: 1 V.
- Voltage for the secondary-side potential transformer: ranging from 1 to 9999 V; default: 1 V.
- Steps:
  1. Press BACK key to enter the setting page.
  2. Press UP and DOWN keys at the same time for 5 seconds to unlock the setting.
  3. Press NEXT key to see the setting option CT & PT.
  4. Press DOWN key to enter the potential transformer (PT) setting page.
  5. Use UP and DOWN keys to select the number for the primary-side potential transformer.
  6. Press NEXT key to confirm the setting and start to set the next number for the primary-side potential transformer.
  7. Repeat steps 5-6 till you complete the settings of the 5 digit number for the primary-side potential transformer. Press NEXT key to set up the secondary-side potential transformer.
  8. When the option starts blinking, you can use UP and DOWN keys to select the number of the secondary-side potential transformer.
  9. Press NEXT key to confirm the setting and start to set the next number for the primary-side potential transformer.
  10. Repeat steps 5-6 till you complete the settings of the 4 digit number for the primary-side potential transformer.
  11. Press NEXT key to confirm the setting.

Note: You can go back to the previous setting item by pressing BACK key anytime, whether you have completed or canceled the setting.

4.2.8 Reset Setup (RST)

- **Default (DEF):** Restore all the settings back to the defaults (including wireless settings).
- **Energy (ENG):** Reset all the accumulated energy values and automatic energy values.
- **MaxMin (MM):** Clear all maximum values and minimum value logs.
- **Alarm (ALA):** Clear all the detected alarm logs.
- Steps:
    1. Press BACK key to enter the setting page.
    2. Press UP and DOWN keys at the same time for 5 seconds to unlock the setting.
    3. Press NEXT key to see the setting option RST & INF.
    4. Press UP key to enter the reset (RST) setting page.
    5. Use UP and DOWN keys to select the reset options (DEF, ENG, MM and ALA).
    6. Press NEXT key to confirm the setting.

Note: You can go back to the previous setting item by pressing BACK key anytime, whether you have completed or canceled the setting.

4.2.9 Meter Information (INF)

- **Model Name (MD):** C520 or C520W
- **Firmware Version (FW):** 1.XXXX
- **Date (DT):** Firmware release date YYYY.MM.DD
- Steps:
    1. Press BACK key to enter the setting page.
    2. Press UP and DOWN keys at the same time for 5 seconds to unlock the setting.
    3. Press NEXT key to see the setting option RST & INF.
    4. Press DOWN key to enter see the information (INF) page.

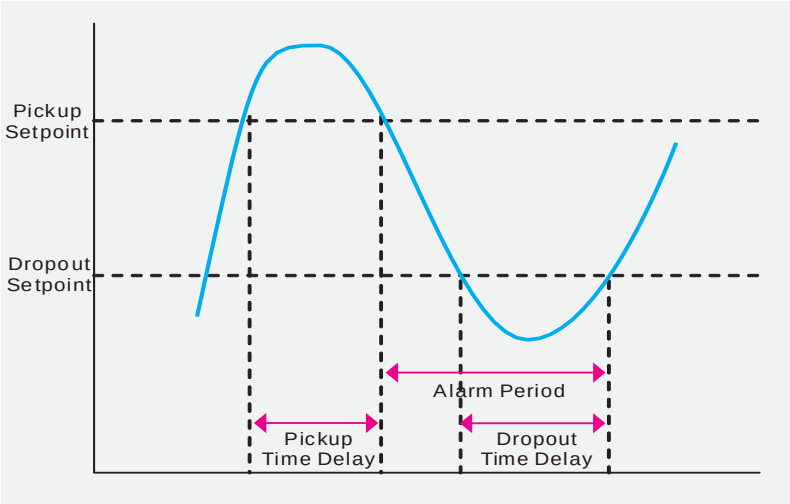
Note: You can go back to the previous setting item by pressing BACK key anytime, whether you have completed or canceled the setting.

4.2.10 Wi-Fi Setup (485 ON/OFF) only available for DPM-C520W

- Wi-Fi: When 485 is ON, Wi-Fi function is disabled. When 485 is OFF, Wi-Fi function is enabled.
- Steps:
    1. Press BACK key to enter the setting page.
    2. See 485 ON or 485 OFF on the screen.
    3. Press NEXT key for 3 seconds to switch from 485 ON to 485 OFF.

4.2.11 Alarm Setup

- Alarm: Options are Enable and Disable (default).
- Pickup: When the meter exceeds the Pickup value (default: 0), it triggers the alarm.
- Dropout: When the meter is below the Dropout value (default: 0), the alarm is disabled.
- Use RS-485 Modbus communication to set up the alarm, pickup and dropout. Refer to section 5.1 Overview of Parameters (Modbus: 0x1F~0B8) for more details.



4.2.12 Parameter Grouping Setup

- All electricity data can be combined as a parameter group that allows master controllers to access. This function reduces reading time as well as enhances real-time data accessibility of the master controllers
- Transmission setting: The to-be-read measured parameter address is written in the consecutive Modbus addresses. The starting address is from 0x100 to 0x18B and the factory default is 0xFFFF.
- Steps:

  Use the function code 0x06 (single writing) or 0x10 (multiple writings) to write parameter-related Modbus address in Modbus addresses 0x50C~0x515 consecutively. And after calculation, the values will be stored in Modbus addresses 0x600~0x609. Use the function code 0x03 (multiple readings) to read the values in Modbus addresses 0x600~0x609.
- Example:

  If you need the measured parameters of average phase voltage (Modbus addresses 0x106~0x107), you can use the function code 0x06 (single writing) or 0x10 (multiple writings) to write the Modbus address 0x106 in 0x50C and the Modbus address 0x107 in 0x50D. The order matters; thus the parameter-related Modbus addresses in 0x50C and 0x50D are not interchangeable. After calculation, the value is stored in 0x600 for 0x106 and in 0x601 for 0x107. Use the function code 0x03 (multiple readings) to read the Modbus addresses 0x600~0x601. And after IEEE754 conversion, you can have values of the average phase voltage. See the table below for a quick understanding on the setting.

If you need the measured parameters of average phase current (Modbus addresses 0x126~0x127), you can use the function code 0x06 (single writing) or 0x10 (multiple writings) to write the Modbus address 0x126 in 0x50E and the Modbus address 0x127 in 0x50F. The order matters; thus the parameter-related Modbus addresses in 0x50E and 0x50F are not interchangeable. After calculation, the value is stored in 0x602 for 0x126 and in 0x603 for 0x127. Use the function code 0x03 (multiple readings) to read the Modbus addresses 0x602~0x603. And after IEEE 754 conversion, you can have values of the average phase voltage.

See the table below for a quick understanding on the setting.

Use Function Codes to WRITE Parameters in Modbus address and store values in Modbus add.		
Function Codes	**WRITE Parameters in Modbus address**	**Values stored in**
0x06 (single) or 0x10 (multiple)	0x106 (average phase voltage) in 0x50C	0x600
	0x107 (average phase voltage) in 0x50D	0x601
	0x126 (average phase current) in 0x50E	0x602
	0x127(average phase current) in 0x50F	0x603

Use Function Code to READ Parameters From Modbus add.			**Values obtained**
Function Code	**Read Parameters From Modbus address**	**IEEE 754 conversion**	
0x03	0x106 (average phase voltage) from 0x600		average phase voltage
	0x107 (average phase voltage) from 0x601		average phase voltage
	0x126 (average phase current) from 0x602		average phase current
	0x127 (average phase current) from 0x603		average phase current

4.3 DPM-C320 Setups

4.3.1 Communication Setup (COM)

- Address (ID): device ID; its address setting range is 1-254 (default: 1).
- Baud Rate (BR): transmission speed; the setting options are 9600 kbps (default), 19200 and 38400 bps.
- Parity setting (PA): odd and even checking bit for communication; the setting options are None (8n1), Even (8E1), and Odd (8o1); default: None (8n1).
- Steps:
  1. Press BACK key then input password to see the setting option COM.
  2. Use UP and DOWN keys to select the device ID. (one digit at a time; hundreds digit➔ tens digit ➔ units digit)
  3. Press NEXT key to confirm the setting and start to set the next device ID.
  4. Repeat steps 5-6 till you complete the settings of the 3 digit device ID. Press NEXT key to set up the baud rate.
  5. When the option starts blinking, you can use UP and DOWN keys to select the baud rate you need.
  6. Press NEXT key to confirm the setting and start to set the next setting.
  7. Press NEXT key to confirm the setting.

  Note: You can go back to the previous setting item by pressing BACK key anytime, whether you have completed or canceled the setting.

4.3.2 System Setup (SYS)

- Wiring methods (WR): options are one-phase two-wire (1PH2W), one-phase three-wire (1PH3W), three-phase three-wire (3PH3W), and three-phase four-wire (3PH4W); default: three-phase four-wire.
- Number of current transformers (CT): options are 1, 2 and 3; default: 3.
- Number of potential transformers (PT): options are 0, 2 and 3; default: 3.
- Steps:
  1. Press BACK key then input password to see the setting option COM.
  2. Use UP and DOWN keys to enter the system (SYS) setting page.
  3. Use UP and DOWN keys to select the wiring method.
  4. Press NEXT key to confirm the setting.

Note: You can go back to the previous setting item by pressing BACK key anytime, whether you have completed or canceled the setting.

4.3.3 Current Transformer Setup (CT)

- Ampere for the primary-side current transformer: ranging from 1 to 9999 A; default: 5 A.
- Ampere for the secondary-side current transformer: options are 1 and 5 A; default 5 A.

- Steps:
    1. Press BACK key then input password to see the setting page.
    2. Use UP and DOWN keys to enter the system (CT) setting page.
    3. Use UP and DOWN keys to select the number for the primary-side current transformer.
    4. When the option starts blinking, you can use UP and DOWN keys to select the number of the secondary-side current transformer.
    5. Press NEXT key to confirm the setting.

Note: You can go back to the previous setting item by pressing BACK key anytime, whether you have completed or canceled the setting.

4.3.4 Potential Transformer Setup (PT)

- Voltage for the primary-side potential transformer: ranging from 1 to 9999 V; default: 1 V.
- Voltage for the secondary-side potential transformer: ranging from 1 to 9999 V; default: 1 V.
- Steps:
    1. Press BACK key then input password to see the setting page.
    2. Press UP and DOWN keys to enter the potential transformer (PT) setting page.
    3. Use UP and DOWN keys to select the number for the primary-side potential transformer.
    4. Press NEXT key to confirm the setting and start to set the next number for the primary-side potential transformer.
    5. When the option starts blinking, you can use UP and DOWN keys to select the number of the secondary-side potential transformer.
    6. Press NEXT key to confirm the setting.

Note: You can go back to the previous setting item by pressing BACK key anytime, whether you have completed or canceled the setting.

4.3.5 Reset Setup (RST)

- **Default (dEF):** Restore all the settings back to the defaults (including wireless settings).
- **Energy (PH):** Reset all the accumulated energy values and automatic energy values.
- **Alarm (ALA):** Clear all the detected alarm logs.
- Steps:
    1. Press BACK key then input password to see the setting page.
    2. Press UP and DOWN keys to see the setting option RST.
    3. Use UP and DOWN keys to select the reset options (dEF, PH and ALA).
    4. Press NEXT key to confirm the setting.

Note: You can go back to the previous setting item by pressing BACK key anytime, whether you have completed or canceled the setting.

4.3.6 Meter Information (INF)

- **Model Name (MD):** C320
- **Firmware Version (FW):** 1.XXXX
- **Date (DT):** Firmware release date MM.DD
- Steps:
  1. Press BACK key then input password to see the setting page.
  2. Press UP and DOWN keys to see the setting option INF.

Note: You can go back to the previous setting item by pressing BACK key anytime, whether you have completed or canceled the setting.

4.3.7 Parameter Grouping Setup

- All electricity data can be combined as a parameter group that allows master controllers to access. This function reduces reading time as well as enhances real-time data accessibility of the master controllers
- Transmission setting: The to-be-read measured parameter address is written in the consecutive Modbus addresses. The starting address is from 0x100 to 0x18B and the factory default is 0xFFFF.
- Steps:

  Use the function code 0x06 (single writing) or 0x10 (multiple writings) to write parameter-related Modbus address in Modbus addresses 0x50C~0x515 consecutively. And after calculation, the values will be stored in Modbus addresses 0x600~0x609. Use the function code 0x03 (multiple readings) to read the values in Modbus addresses 0x600~0x609.
- Example:

  If you need the measured parameters of average phase voltage (Modbus addresses 0x106~0x107), you can use the function code 0x06 (single writing) or 0x10 (multiple writings) to write the Modbus address 0x106 in 0x50C and the Modbus address 0x107 in 0x50D. The order matters; thus the parameter-related Modbus addresses in 0x50C and 0x50D are not interchangeable. After calculation, the value is stored in 0x600 for 0x106 and in 0x601 for 0x107. Use the function code 0x03 (multiple readings) to read the Modbus addresses 0x600~0x601. And after IEEE754 conversion, you can have values of the average phase voltage. See the table below for a quick understanding on the setting.

  If you need the measured parameters of average phase current (Modbus addresses 0x126~0x127), you can use the function code 0x06 (single writing) or 0x10 (multiple writings) to write the Modbus address 0x126 in 0x50E and the Modbus address 0x127 in 0x50F. The order matters; thus the parameter-related Modbus addresses in 0x50E and 0x50F are not interchangeable. After calculation, the value is stored in 0x602 for 0x126 and in 0x603 for 0x127. Use the function code 0x03 (multiple readings) to read the Modbus addresses 0x602~0x603. And after IEEE 754 conversion, you can have values of the average phase voltage.

See the table below for a quick understanding on the setting.

Use Function Codes to WRITE Parameters in Modbus address and store values in Modbus add.		
Function Codes	**WRITE Parameters in Modbus address**	**Values stored in**
0x06 (single) or 0x10 (multiple)	0x106 (average phase voltage) in 0x50C	0x600
	0x107 (average phase voltage) in 0x50D	0x601
	0x126 (average phase current) in 0x50E	0x602
	0x127(average phase current) in 0x50F	0x603

Use Function Code to READ Parameters From Modbus add.			**Values obtained**
Function Code	**Read Parameters From Modbus address**		
0x03	0x106 (average phase voltage) from 0x600	**IEEE 754 conversion**	average phase voltage
	0x107 (average phase voltage) from 0x601		average phase voltage
	0x126 (average phase current) from 0x602		average phase current
	0x127 (average phase current) from 0x603		average phase current

4.3.8 Language

- Press NEXT key long time to switch language.

4.4 Wi-Fi Setup (only available for DPM-C520W)

4.4.1 Wi-Fi Specification

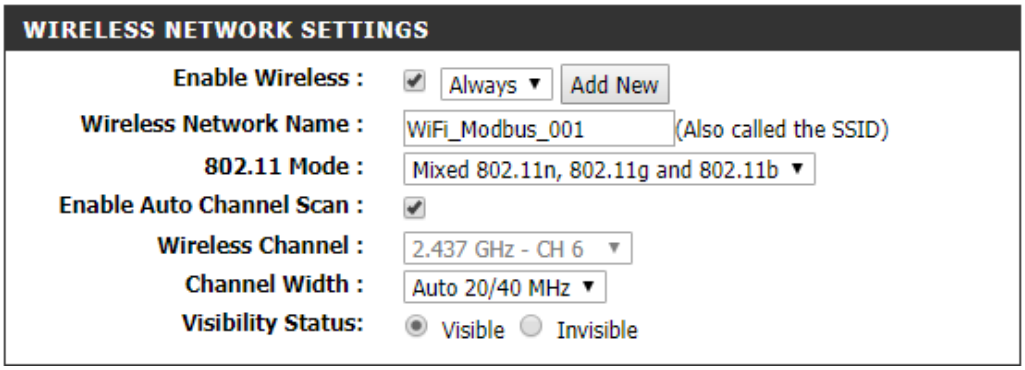
Max. Communication Distance	300 m	**Standards**	IEEE 802.11 b/g/n
Function code	03, 06, 10	**Data Length**	8-bits
Communication Protocols	Modbus TCP		

4.4.2 Wireless Access Point (AP) Setup

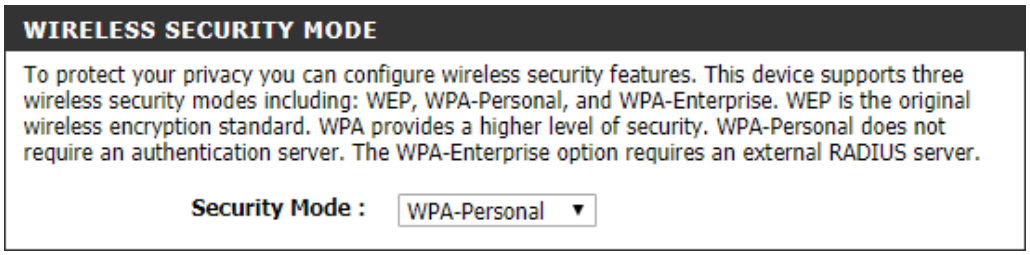
The below example uses D-Link DIR-619L as its AP.

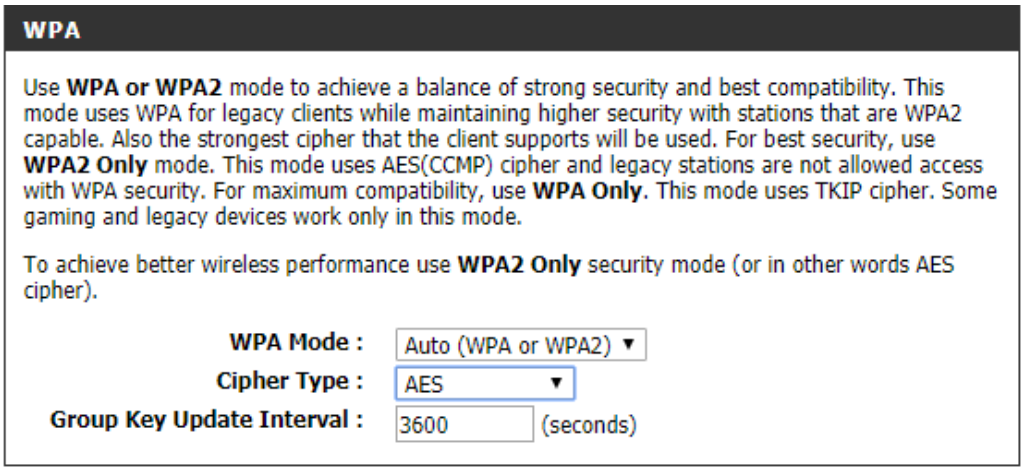
1. Router mode: AP

2. Wireless Network Name (SSID): WiFi_Modbus_001

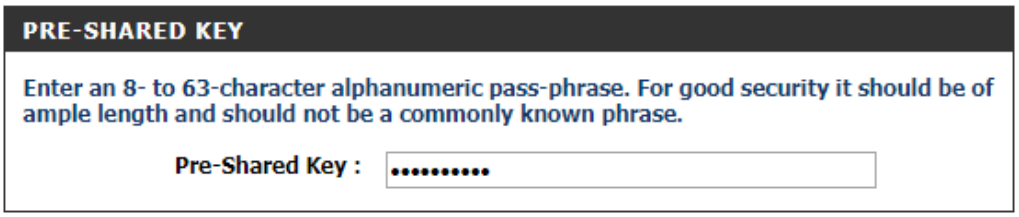


3. Security Mode: WPA/WPA2



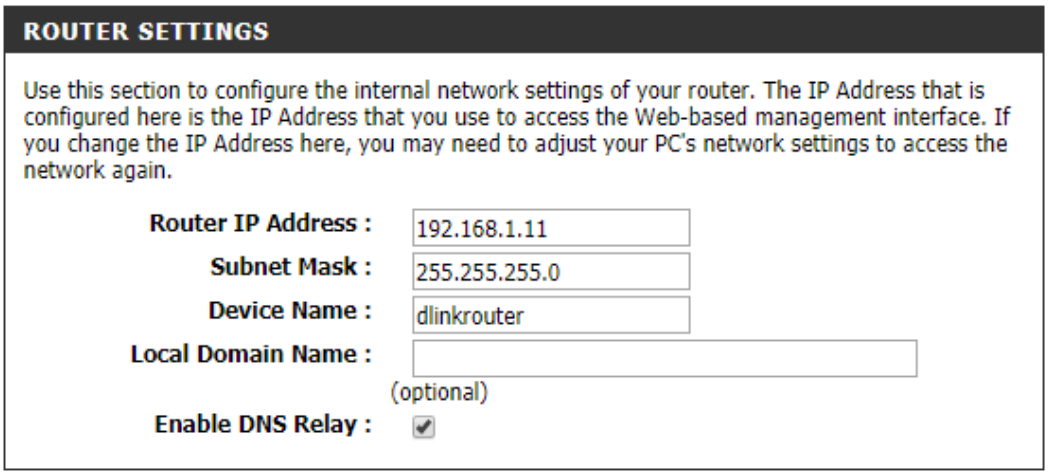


4. Password of AP password (for WPA2) = "1234567890"

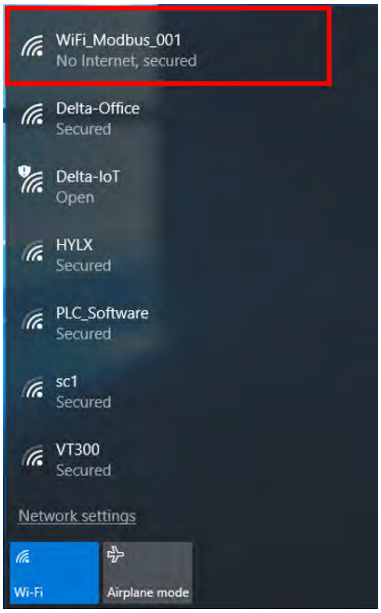


5. IP address of AP: 192.168.1.XXX

(Be sure the IP address stays in the same network, 192.168.**1**.XXX; after reset, some AP changes its IP address section to 192.168.**0**.XXX.) In this example, we use 192.168.1.11 as the IP address of the router.

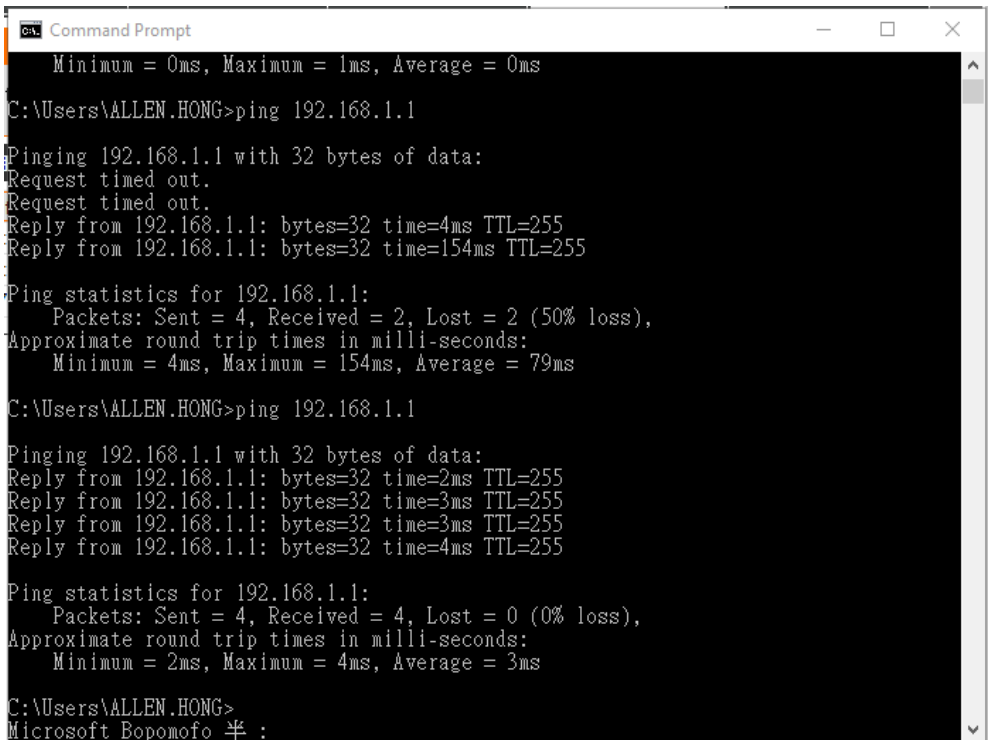


6. After the settings are complete, you can see the AP connection is established.

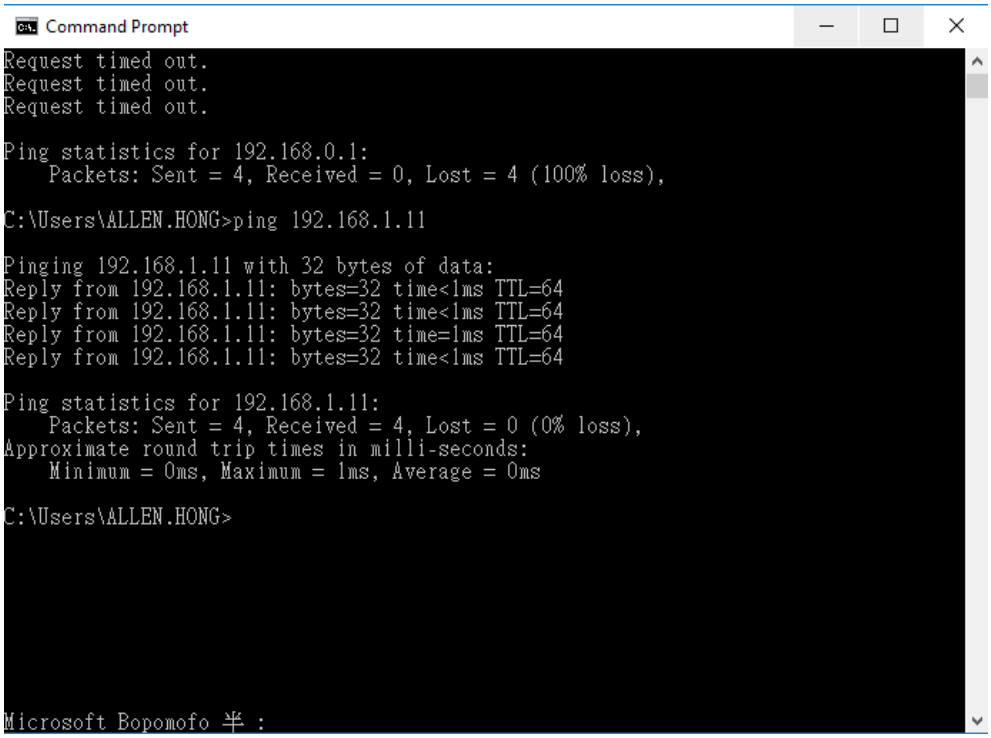


7. Use DPM-C520W to check the connection. Default IP address: 192.168.1.1; Slave ID: 1.

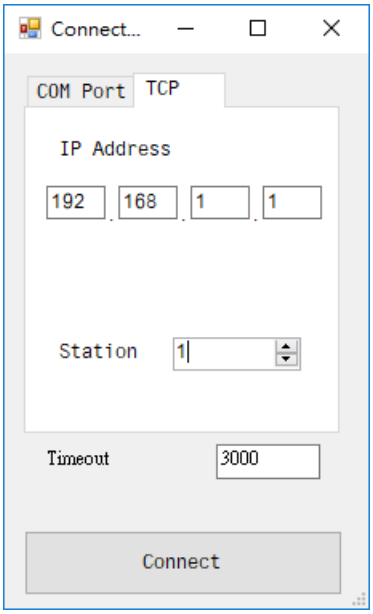
- Open the Command Prompt to ping IP: 192.168.1.1 and from the transmission you can determine the connection is successful.



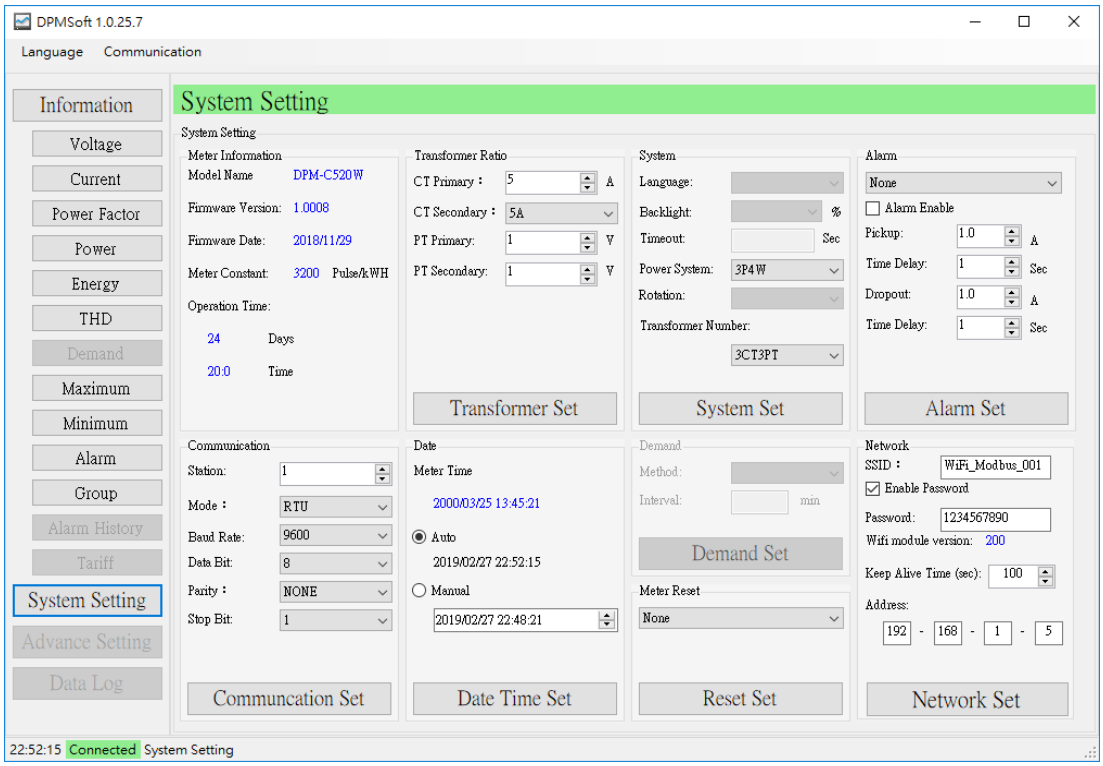
- Open the Command Prompt to ping IP: 192.168.1.11 (router) and from the transmission you can determine the connection is successful.



- Use DPMSoft to set up the meter IP address and ID that is connected to the router.

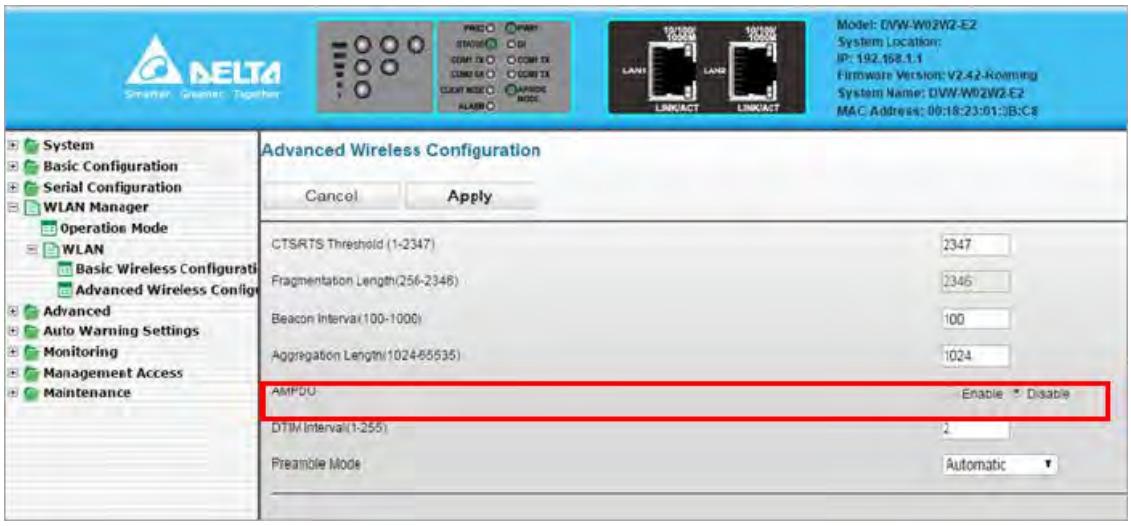


- Click “System Setting” button to check if the connection is successful.



8. If the router you are using is with AMPDU function, you need to disable this function. Otherwise, you can only use IEEE 802.11 b/g but not 802.11 b/g/n.

   The example below uses Delta router DVW-W02W2-E2 to demonstrate how to disable AMPDU.



4.4.3 Advanced Wi-Fi Setup

Use DPMSoft to set up the router that DPM-C520W is going to connect, for example router's SSID and password. And after that you can use the specific information to search for the router that DPM-C520W can connect to.

- **Setting points:**

1. Use Ethernet cable to connect to your PC and router to avoid unreliable connection and packet lost during transmission.

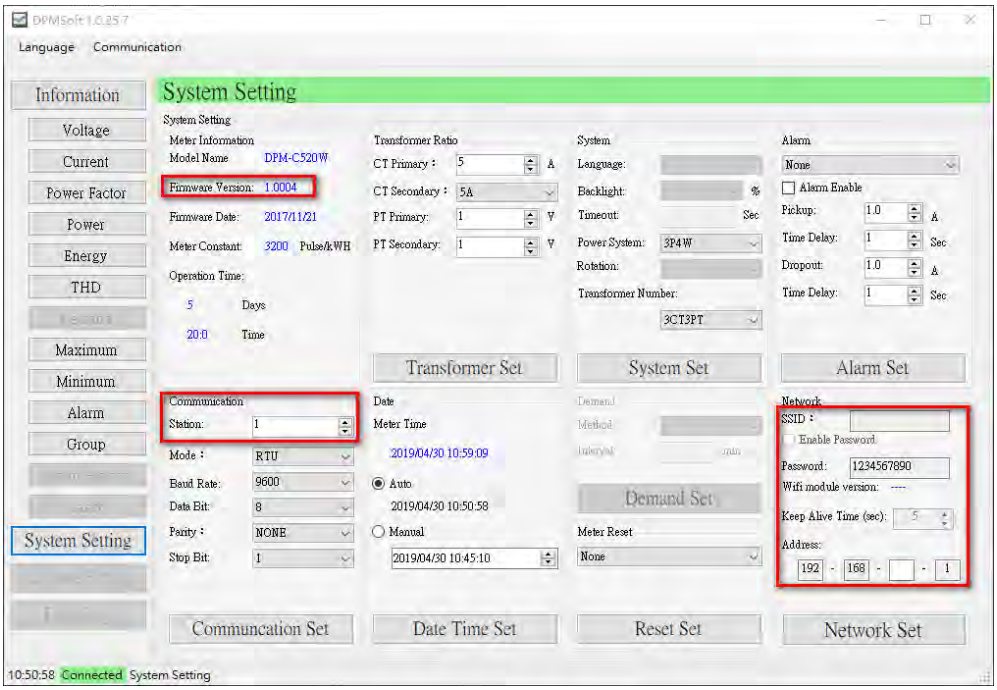
2. In DPMSoft, the settings for data transmission are shown below.
   Transmission Time: 2 seconds per data
   Timeout: 3 seconds
   Failure: after 3 attempts

   If data transmission fails, you need to search and try connecting to DPM-C502W again.
   If you are using other meter-monitoring software, it is suggested to set the same settings for data transmission.

3. Network settings

Firmware Version	SSID	Router Password	IP Address	Keep Alive Time
V1.0008 or previous versions	N/A	N/A	192.168.X.X	N/A
V1.0008 (V1.0008 included) or later	1~32 characters	8~16 characters (optional)	AAA.BBB.XXX.YYY (range: 1~255)	5~9999 sec
Default values	WiFi_Modbus_001	1234567890	192.168.1.1	100 sec

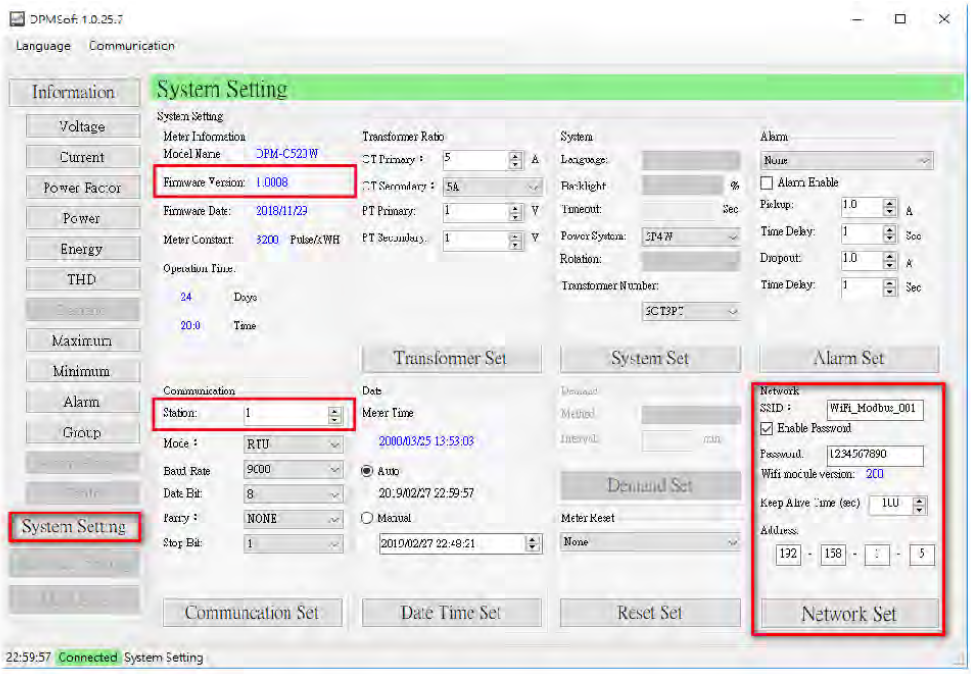
4. Station number setting
   For V1.0008 or previous versions:
   Once you enter the station number, the station shows in the later section of the IP address.
   For example, if you enter **1** in the field of the station, the IP address is 192.168.1.**1**.



For V1.0008 (V1.0008 included) or later:

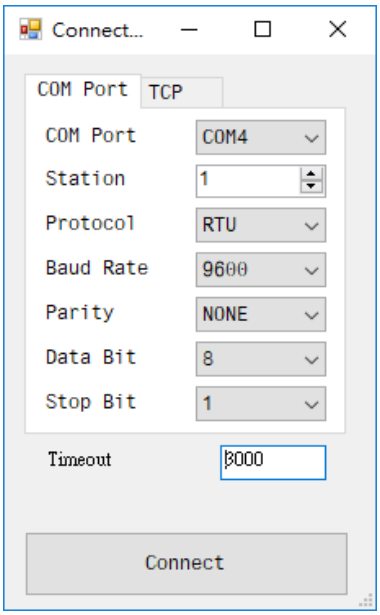
Once you enter the station number, the station does NOT reflect on the IP address.

For example, if you enter **1** in the field of the station, the IP address is 192.158.1.**5**.

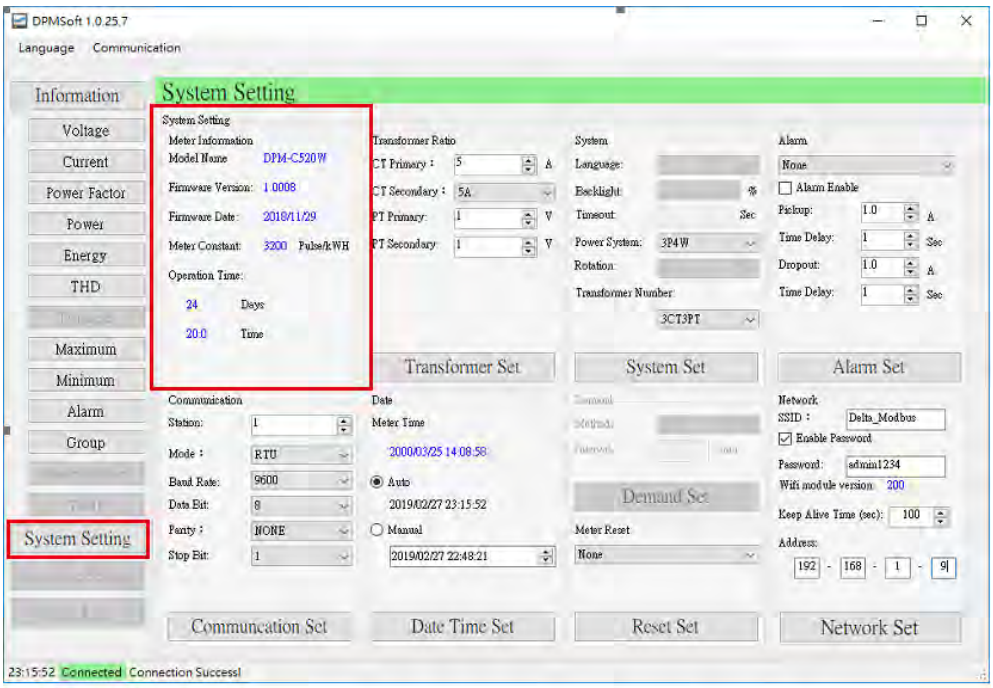


- **Steps:**

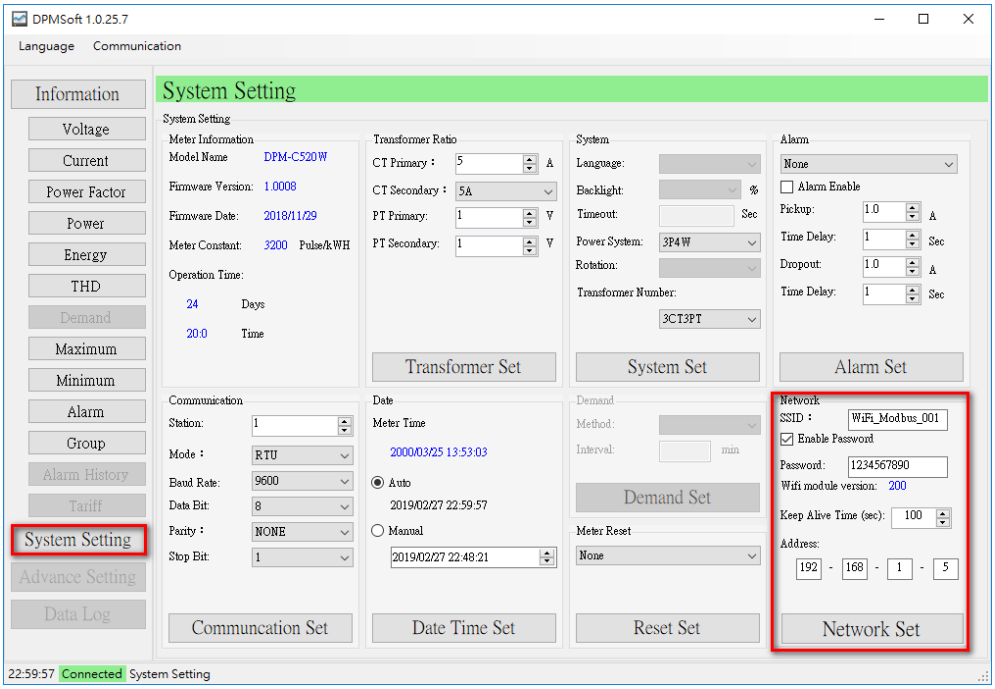
1. Use DPMSoft to set up RS485 COM Port and connect to DPM-C520W.



2. Once DPM-C520W is connected, you can find the meter information after clicking “System Setting” button.



3. Set up the Network on the same setting page.



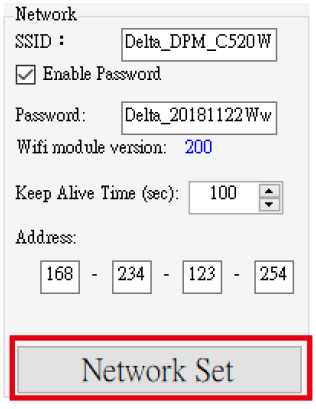
Set the router and the meter; see the example below.

SSID: Delta_DPM_C520W

Password: Delta_20181122Ww (optional)

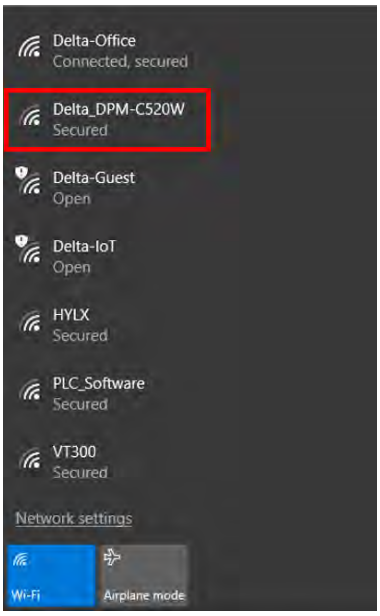
IP address of the Meter: 168.234.123.254

You can click the “Network Set” button to save the network settings.

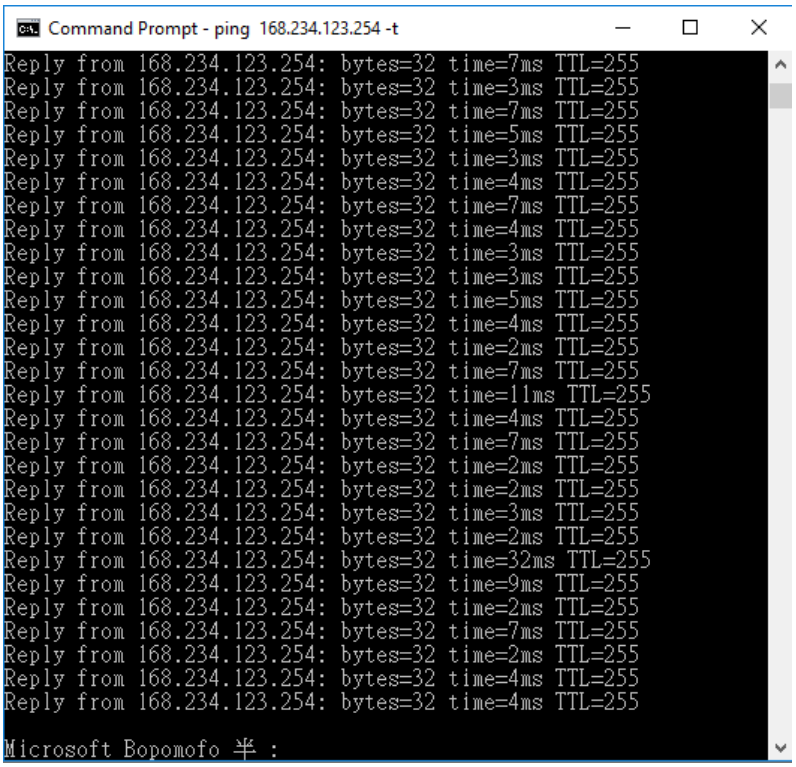


4. After setting, make sure the DPM-C520W is in Wi-Fi mode (485 OFF). See section 4.2.10 for more details on Wi-Fi mode.

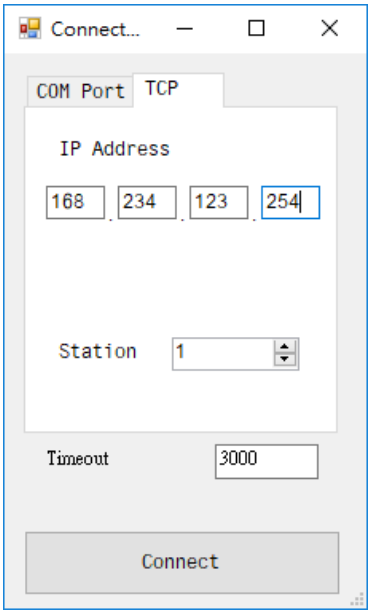
5. Use Wi-Fi to connect to the router “Delta_DPM-C520W”.



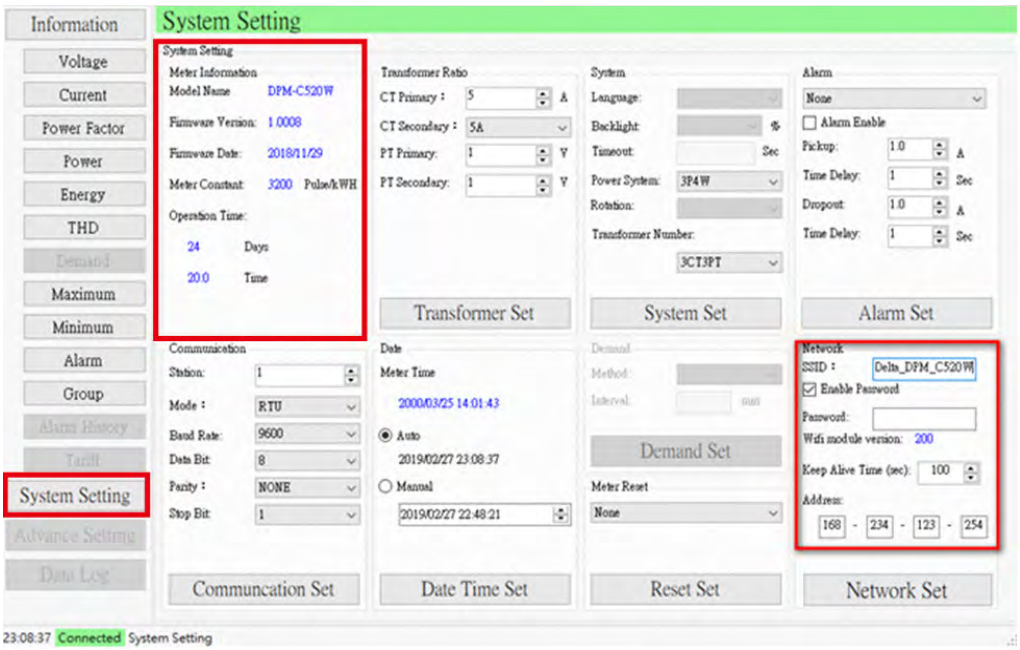
6. Use your PC and open the Command Prompt to ping meter IP: 168.234.123.254. From the transmission you can determine if the connection is successful.



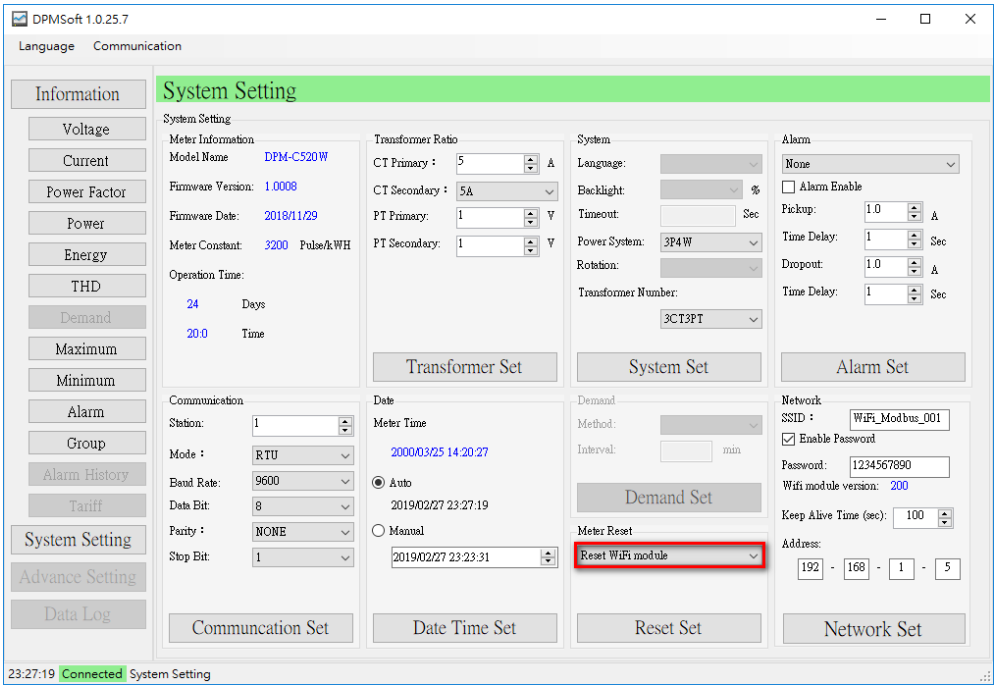
7. Open DPMSoft again and use IP address to connect to the meter.



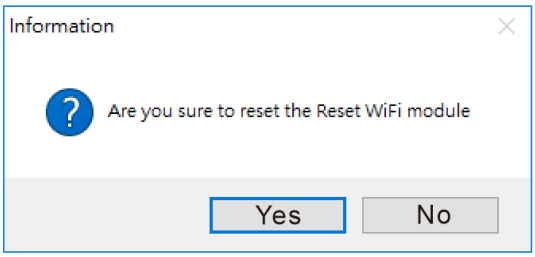
8. Once DPM-C520W is connected, you can find the meter information after clicking “System Setting” button.



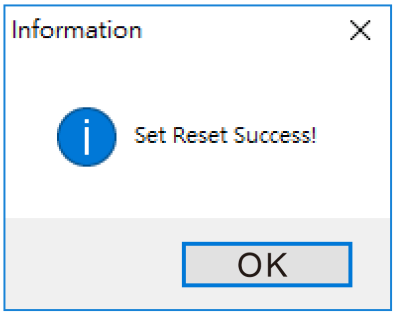
9. If there is any modification on the settings of SSID, Password and IP address, you need to click the “Reset Wi-Fi module” button or to turn off and then turn on the power meter to have the modifications reflected on the power meter.



After you click the “Reset Wi-Fi module” button, a confirmation prompts up to make sure you really want to reset the module.



And after the reset is done, a message stating “Set Reset Success!” appears.



4.5 Power Analysis Values

4.5.1 Total Harmonic Distortion Measurement

The total harmonic distortion (THD) is a measurement of the harmonic distortion and is defined as the ratio between the power of the harmonic frequencies above the base frequency and the power of the base frequency. The total harmonic distortions for current/voltage are calculated using the following formula.

Total Harmonic Distortion for Current	$THD_I = \frac{1}{\lvert I_{fund} \rvert} \sqrt{\sum_{n=2}^{31} \lvert I_{n.Harm} \rvert^2}$
Total Harmonic Distortion for Voltage	$THD_U = \frac{1}{\lvert U_{fund} \rvert} \sqrt{\sum_{n=2}^{31} \lvert U_{n.Harm} \rvert^2}$

MEMO

5

Chapter 5 Parameters and Functions

Table of Contents

5.1 Overview of Parameters

Modbus Address		Item	Range	Data Type	Unit	Data Size (byte)	Read (R) / Write (W)
Hex	Modicom Format						
0. System Parameters: 0001 – 00FF							
1	40002	Present date	Year: 00–99 Month: 1–12	byte	Year, Month	2	R/W
2	40003		Date: 1–31 Week: Sun–Sat	byte	Date, Week	2	R/W
3	40004	Present time	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R/W
4	40005		Second: 00–59	word	Second	2	R/W
5	40006	Meter Constant	3200	uint	P/kWh	2	R
6	40007	Meter Model	0: None 2: DMP–C520 5: DMP–C520W 11：DPM-C320	word		2	R
7	40008	Total running time of the meter	Day: 0–65535	uint	Day	2	R
8	40009		Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
9	40010	Firmware version	0.0000 – 9.9999	uint		2	R
A	40011	Firmware release date	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
B	40012		Date: 1–31	word	Date	2	R
C	40013	Reserved					
D	40014	Power system configuration	0: 3φ4W 1: 3φ3W 2: 1φ2W 3: 1φ3W	word		2	R/W
E	40015	Primary CT (A)	1 – 9999	uint	A	2	R/W

F	40016	Secondary CT (A)	0: 1A 1: 5A	word	A	2	R/W
10	40017	Primary PT	1 – 9999	uint	V	2	R/W
11	40018	Secondary PT	1 – 9999	uint	V	2	R/W
12	40019	Transformer quantities	0: 3CT3PT 1: 3CT2PT 2: 3CT0PT 3: 2CT3PT 4: 2CT2PT 5: 2CT0PT 6: 1CT3PT 7: 1CT2PT 8: 1CT0PT	word		2	R/W
13	40020	Reserved					
14	40021	Timeout	1 – 99	word	Second	2	R/W
15	40022	Reserved					
16	40023	Baud Rate	0: 9600 1: 19200 2: 38400	word	bps	2	R/W
17	40024	Communication mode	0: WiFi Mode (available for DPM-C520W) 1: 485 Mode	word		2	R/W
18	40025	Data bit	0: 8	word	bit	2	R/W
19	40026	Stop bit	0: None 1: Even 2: Odd	word		2	R/W
1A	40027	Stop bit	0: 1	word	bit	2	R/W
1B	40028	Modbus address	0 – 254	word		2	R/W
1C	40029	Reset	0: None 1: Reset to factory default 2: Reset energy value 3: Reset alarm	word		2	W

			4: Reset max./min. values 5: Reset SSID, PWD, IP to factory default (available for DPM-C520W) 6: Reset wireless module (available for DPM-C520W)				
Alarm – Over Current							
1F	40032	Alarm enable	0: Disable 1: Enable	word		2	R/W
20	40033	Pickup setpoint (current value exceeding this value triggers alarm)	0.000 – 99999.999	float	A	4	R/W
21	40034						
22	40035	Reserved					
23	40036	Dropout setpoint (current value below this value clears alarm)	0.000 – 99999.999	float	A	4	R/W
24	40037						
Alarm – Over Voltage L–L							
34	40053	Alarm enable	0: Disable 1: Enable	word		2	R/W
35	40054	Pickup setpoint (line voltage value exceeding this value triggers alarm)	0.000 – 99999.999	float	V	4	R/W
36	40055						
37	40056	Reserved					
38	40057	Dropout setpoint (line voltage value below this value clears alarm)	0.000 – 99999.999	float	V	4	R/W
39	40058						
3A	40059	Reserved					
Alarm – Under Voltage L–L							
3B	40060	Alarm enable	0: Disable 1: Enable	word		2	R/W

3C	40061	Pickup setpoint (line voltage value below this value triggers alarm)	0.000 – 99999.999	float	V	4	R/W
3D	40062						
3E	40063	Reserved					
3F	40064	Dropout setpoint (line voltage value exceeding this value clears alarm)	0.000 – 99999.999	float	V	4	R/W
40	40065						
41	40066	Reserved					
Alarm – Over Voltage L–N							
42	40067	Alarm enable	0: Disable 1: Enable	word		2	R/W
43	40068	Pickup setpoint (phase voltage value exceeding this value triggers alarm)	0.000 – 99999.999	float	V	4	R/W
44	40069						
45	40070	Reserved					
46	40071	Dropout setpoint (phase voltage value below this value clears alarm)	0.000 – 99999.999	float	V	4	R/W
47	40072						
48	40073	Reserved					
Alarm – Under Voltage L–N							
49	40074	Alarm enable	0: Disable 1: Enable	word		2	R/W
4A	40075	Pickup setpoint (phase value below this value triggers alarm)	0.000 – 99999.999	float	V	4	R/W
4B	40076						
4C	40077	Reserved					
4D	40078	Dropout setpoint (phase voltage value	0.000 – 99999.999	float	V	4	R/W

4E	40079	exceeding this value clears alarm)					
Alarm – Over Active Power							
5E	40095	Alarm enable	0: Disable 1: Enable	word		2	R/W
5F	40096	Pickup setpoint (total active power value exceeding this value triggers alarm)	0.000 – 99999.999	float	kW	4	R/W
60	40097						
61	40098	Reserved					
62	40099	Dropout setpoint (total active power value below this value clears alarm)	0.000 – 99999.999	float	kW	4	R/W
63	40100						
64	40101	Reserved					
Over Reactive Power							
65	40102	Alarm enable	0: Disable 1: Enable	word		2	R/W
66	40103	Pickup setpoint (total reactive power value exceeding this value triggers alarm)	0.000 – 99999.999	float	kVAR	4	R/W
67	40104						
68	40105	Reserved					
69	40106	Dropout setpoint (total reactive power value below this value clears alarm)	0.000 – 99999.999	float	kVAR	4	R/W
6A	40107						
6B	40108	Reserved					
Alarm – Over Apparent Power							
6C	40109	Alarm enable	0: Disable 1: Enable	word		2	R/W
6D	40110	Pickup setpoint (total apparent power value	0.000 – 99999.999	float	kVA	4	R/W

6E	40111	exceeding this value triggers alarm)					
6F	40112	Reserved					
70	40113	Dropout setpoint (total apparent power value below this value clears alarm)	0.000 – 99999.999	float	kVA	4	R/W
71	40114						
72	40115	Reserved					
Alarm – Over Frequency							
AB	40172	Alarm enable	0: Disable 1: Enable	word		2	R/W
AC	40173	Pickup setpoint (frequency value exceeding this value triggers alarm)	0.0000 – 99.9999	float	Hz	4	R/W
AD	40174						
AE	40175	Reserved					
AF	40176	Dropout setpoint (frequency value below this value clears alarm)	0.0000 – 99.9999	float	Hz	4	R/W
B0	40177						
B1	40178	Reserved					
Alarm – Under Frequency							
B2	40179	Alarm enable	0: Disable 1: Enable	word		2	R/W
B3	40180	Pickup setpoint (frequency value below this value triggers alarm)	0.0000 – 99.9999	float	Hz	4	R/W
B4	40181						
B5	40182	Reserved					
B6	40183	Dropout setpoint (frequency value exceeding this value, alarm cleared)	0.0000 – 99.9999	float	Hz	4	R/W
B7	40184						
B8	40185	Reserved					

1. Meter Parameters: 0100 – 01FF							
100	40257	Phase A voltage	0.000 – 99999.999	float	V	4	R
101	40258						
102	40259	Phase B voltage	0.000 – 99999.999	float	V	4	R
103	40260						
104	40261	Phase C voltage	0.000 – 99999.999	float	V	4	R
105	40262						
106	40263	Average phase voltage	0.000 – 99999.999	float	V	4	R
107	40264						
108	40265	A–B line voltage	0.000 – 99999.999	float	V	4	R
109	40266						
10A	40267	B–C line voltage	0.000 – 99999.999	float	V	4	R
10B	40268						
10C	40269	C–A line voltage	0.000 – 99999.999	float	V	4	R
10D	40270						
10E	40271	Average line voltage	0.000 – 99999.999	float	V	4	R
10F	40272						
110	40273	Phase A voltage unbalance	0.00 – 99.99	float	%	4	R
111	40274						
112	40275	Phase B voltage unbalance	0.00 – 99.99	float	%	4	R
113	40276						
114	40277	Phase C voltage unbalance	0.00 – 99.99	float	%	4	R
115	40278						
116	40279	Phase voltage unbalance	0.00 – 99.99	float	%	4	R
117	40280						
118	40281	A–B line voltage unbalance	0.00 – 99.99	float	%	4	R
119	40282						
11A	40283	B–C line voltage unbalance	0.00 – 99.99	float	%	4	R
11B	40284						
11C	40285	C–A line voltage unbalance	0.00 – 99.99	float	%	4	R
11D	40286						

11E	40287	Line voltage unbalance	0.00 – 99.99	float	%	4	R
11F	40288						
120	40289	Phase A current	0.000 – 99999.999	float	A	4	R
121	40290						
122	40291	Phase B current	0.000 – 99999.999	float	A	4	R
123	40292						
124	40293	Phase C current	0.000 – 99999.999	float	A	4	R
125	40294						
126	40295	Three–phase average current	0.000 – 99999.999	float	A	4	R
127	40296						
128	40297	Neutral line current	0.000 – 99999.999	float	A	4	R
129	40298						
12A	40299	Phase A current unbalance	0.00 – 99.99	float	%	4	R
12B	40300						
12C	40301	Phase B current unbalance	0.00 – 99.99	float	%	4	R
12D	40302						
12E	40303	Phase C current unbalance	0.00 – 99.99	float	%	4	R
12F	40304						
130	40305	Current unbalance	0.00 – 99.99	float	%	4	R
131	40306						
132	40307	Total power factor	-0.00000 – 1.00000 (positive: lag; negative: lead)	float		4	R
133	40308						
134	40309	Power factor of phase A	-0.00000 – 1.00000 (positive: lag; negative: lead)	float		4	R
135	40310						
136	40311	Power factor of phase B	-0.00000 – 1.00000 (positive: lag; negative: lead)	float		4	R
137	40312						
138	40313	Power factor of phase C	-0.00000 – 1.00000 (positive: lag; negative: lead)	float		4	R
139	40314						
13A	40315	Total displacement power factor	-0.00000 – 1.00000 (positive: lag; negative: lead)	float		4	R
13B	40316						
13C	40317	Total displacement	-0.00000 – 1.00000	float		4	R

13D	40318	power factor of phase A	(positive: lag; negative: lead)				
13E	40319	Total displacement power factor of phase B	-0.00000 – 1.00000 (positive: lag; negative: lead)	float		4	R
13F	40320						
140	40321	Total displacement power factor of phase C	-0.00000 – 1.00000 (positive: lag; negative: lead)	float		4	R
141	40322						
142	40323	Frequency	0.0000 – 99.9999	float	Hz	4	R
143	40324						
144	40325	Total instantaneous active power	0.000 – 99999.999	float	kW	4	R
145	40326						
146	40327	Instantaneous active power of phase A	0.000 – 99999.999	float	kW	4	R
147	40328						
148	40329	Instantaneous active power of phase B	0.000 – 99999.999	float	kW	4	R
149	40330						
14A	40331	Instantaneous active power of phase C	0.000 – 99999.999	float	kW	4	R
14B	40332						
14C	40333	Total instantaneous reactive power	0.000 – 99999.999	float	kVAR	4	R
14D	40334						
14E	40335	Instantaneous reactive power of phase A	0.000 – 99999.999	float	kVAR	4	R
14F	40336						
150	40337	Instantaneous reactive power of phase B	0.000 – 99999.999	float	kVAR	4	R
151	40338						
152	40339	Instantaneous reactive power of phase C	0.000 – 99999.999	float	kVAR	4	R
153	40340						
154	40341	Instantaneous apparent power	0.000 – 99999.999	float	kVA	4	R
155	40342						
156	40343	Instantaneous	0.000 – 99999.999	float	kVA	4	R

157	40344	apparent power of phase A					
158	40345	Instantaneous apparent power of phase B	0.000 – 99999.999	float	kVA	4	R
159	40346						
15A	40347	Instantaneous apparent power of phase C	0.000 – 99999.999	float	kVA	4	R
15B	40348						
15C	40349	Active energy of three - phase delivered	0x00000000 – 0xFFFFFFFF	unit	kWh	4	R
15D	40350						
15E	40351	Active energy of three - phase received	0x00000000 – 0xFFFFFFFF	unit	kWh	4	R
15F	40352						
160	40353	Reactive energy of three - phase delivered	0x00000000 – 0xFFFFFFFF	unit	kVARh	4	R
161	40354						
162	40355	Reactive energy of three - phase received	0x00000000 – 0xFFFFFFFF	unit	kVARh	4	R
163	40356						
164	40357	Apparent energy of three - phase delivered	0x00000000 – 0xFFFFFFFF	unit	kVAh	4	R
165	40358						
166	40359	Apparent energy of three - phase received	0x00000000 – 0xFFFFFFFF	unit	kVAh	4	R
167	40360						
173	40372						
174	40373	Total harmonic distortion for phase A current	0.000 – 999.999	float	%	4	R
175	40374						
176	40375	Total harmonic distortion for phase B current	0.000 – 999.999	float	%	4	R
177	40376						
178	40377	Total harmonic distortion for phase C current	0.000 – 999.999	float	%	4	R
179	40378						
17A	40379	Total harmonic	0.000 – 999.999	float	%	4	R

17B	40380	distortion for neutral line current					
17C	40381	Total harmonic distortion for phase A voltage	0.000 – 999.999	float	%	4	R
17D	40382						
17E	40383	Total harmonic distortion for phase B voltage	0.000 – 999.999	float	%	4	R
17F	40384						
180	40385	Total harmonic distortion for phase C voltage	0.000 – 999.999	float	%	4	R
181	40386						
182	40387	Total harmonic distortion for phase A–B voltage	0.000 – 999.999	float	%	4	R
183	40388						
184	40389	Total harmonic distortion for phase B–C voltage	0.000 – 999.999	float	%	4	R
185	40390						
186	40391	Total harmonic distortion for phase C–A voltage	0.000 – 999.999	float	%	4	R
187	40392						
188	40393	Total harmonic distortion for current	0.000 – 999.999	float	%	4	R
189	40394						
18A	40395	Total harmonic distortion for voltage	0.000 – 999.999	float	%	4	R
18B	40396						
2. Maximum: 0200 – 02FF							
200	40513	Maximum A–B line voltage	0.000 – 99999.999	float	V	4	R
201	40514						
202	40515	Date of maximum A–B line voltage	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
203	40516		Date: 1–31	word	Date	2	R
204	40517	Time of maximum A–B line voltage	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
205	40518		Second: 00–59	word	Second	2	R

206	40519	Maximum B–C line voltage	0.000 – 99999.999	float	V	4	R
207	40520						
208	40521	Date of maximum B–C line voltage	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
209	40522		Date: 1–31	word	Date	2	R
20A	40523	Time of maximum B–C line voltage	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
20B	40524		Second: 00–59	word	Second	2	R
20C	40525	Maximum C–A line voltage	0.000 – 99999.999	float	V	4	R
20D	40526						
20E	40527	Date of maximum C–A line voltage	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
20F	40528		Date: 1–31	word	Date	2	R
210	40529	Time of maximum C–A line voltage	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
211	40530		Second: 00–59	word	Second	2	R
212	40531	Maximum phase A voltage	0.000 – 99999.999	float	V	4	R
213	40532						
214	40533	Date of maximum phase A voltage	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
215	40534		Date: 1–31	word	Date	2	R
216	40535	Time of maximum phase A voltage	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
217	40536		Second: 00–59	word	Second	2	R
218	40537	Maximum phase B voltage	0.000 – 99999.999	float	V	4	R
219	40538						
21A	40539	Date of maximum phase B voltage	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
21B	40540		Date: 1–31	word	Date	2	R
21C	40541	Time of maximum phase B voltage	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R

21D	40542		Second: 00–59	word	Second	2	R
21E	40543	Maximum phase C voltage	0.000 – 99999.999	float	V	4	R
21F	40544						
220	40545	Date of maximum phase C voltage	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
221	40546		Date: 1–31	word	Date	2	R
222	40547	Time of maximum phase C voltage	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
223	40548		Second: 00–59	word	Second	2	R
224	40549	Maximum phase A current	0.000 – 99999.999	float	A	4	R
225	40550						
226	40551	Date of maximum phase A current	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
227	40552		Date: 1–31	word	Date	2	R
228	40553	Time of maximum phase A current	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
229	40554		Second: 00–59	word	Second	2	R
22A	40555	Maximum phase B current	0.000 – 99999.999	float	A	4	R
22B	40556						
22C	40557	Date of maximum phase B current	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
22D	40558		Date: 1–31	word	Date	2	R
22E	40559	Time of maximum phase B current	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
22F	40560		Second: 00–59	word	Second	2	R
230	40561	Maximum phase C current	0.000 – 99999.999	float	A	4	R
231	40562						
232	40563	Date of maximum phase C current	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
233	40564		Date: 1–31	word	Date	2	R

234	40565	Time of maximum phase C current	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
235	40566		Second: 00–59	word	Second	2	R
236	40567	Maximum neutral line current	0.000 – 99999.999	float	A	4	R
237	40568						
238	40569	Date of maximum neutral line current	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
239	40570		Date: 1–31	word	Date	2	R
23A	40571	Time of maximum neutral line current	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
23B	40572		Second: 00–59	word	Second	2	R
23C	40573	Maximum frequency value	0.0000 – 99.9999	float	Hz	4	R
23D	40574						
23E	40575	Date of maximum frequency value	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
23F	40576		Date: 1–31	word	Date	2	R
240	40577	Time of maximum frequency value	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
241	40578		Second: 00–59	word	Second	2	R
242	40579	Maximum total power factor	0.00000 – 1.00000	float		4	R
243	40580						
244	40581	Date of maximum total power factor	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
245	40582		Date: 1–31	word	Date	2	R
246	40583	Time of maximum total power factor	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
247	40584		Second: 00–59	word	Second	2	R
248	40585	Maximum total active power	0.000 – 99999.999	float	kW	4	R
249	40586						
24A	40587	Date of maximum total active power	Year: 00–99 Month: 1–12	byte	Year, Month	2	R

24B	40588		Date: 1–31	word	Date	2	R
24C	40589	Time of maximum total active power	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
24D	40590		Second: 00–59	word	Second	2	R
24E	40591	Maximum total reactive power	0.000 – 99999.999	float	kVAR	4	R
24F	40592						
250	40593	Date of maximum total reactive power	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
251	40594		Date: 1–31	word	Date	2	R
252	40595	Time of maximum total reactive power	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
253	40596		Second: 00–59	word	Second	2	R
254	40597	Maximum total apparent power	0.000 – 99999.999	float	kVA	4	R
255	40598						
256	40599	Date of maximum total apparent power	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
257	40600		Date: 1–31	word	Date	2	R
258	40601	Time of maximum total apparent power	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
259	40602		Second: 00–59	word	Second	2	R
3. Minimum: 0300 – 03FF							
300	40769	Minimum A–B line voltage	0.000 – 99999.999	float	V	4	R
301	40770						
302	40771	Date of minimum A–B line voltage	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
303	40772		Date: 1–31	word	Date	2	R
304	40773	Time of minimum A–B line voltage	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
305	40774		Second: 00–59	word	Second	2	R
306	40775	Minimum B–C line voltage	0.000 – 99999.999	float	V	4	R
307	40776						

308	40777	Date of minimum B–C line voltage	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
309	40778		Date: 1–31	word	Date	2	R
30A	40779	Time of minimum B–C line voltage	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
30B	40780		Second: 00–59	word	Second	2	R
30C	40781	Minimum C–A line voltage	0.000 – 99999.999	float	V	4	R
30D	40782						
30E	40783	Date of minimum C–A line voltage	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
30F	40784		Date: 1–31	word	Date	2	R
310	40785	Time of minimum C–A line voltage	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
311	40786		Second: 00–59	word	Second	2	R
312	40787	Minimum phase A voltage	0.000 – 99999.999	float	V	4	R
313	40788						
314	40789	Date of minimum phase A voltage	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
315	40790		Date: 1–31	word	Date	2	R
316	40791	Time of minimum phase A voltage	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
317	40792		Second: 00–59	word	Second	2	R
318	40793	Minimum phase B voltage	0.000 – 99999.999	float	V	4	R
319	40794						
31A	40795	Date of minimum phase B voltage	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
31B	40796		Date: 1–31	word	Date	2	R
31C	40797	Time of minimum phase B voltage	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
31D	40798		Second: 00–59	word	Second	2	R
31E	40799	Minimum phase C	0.000 – 99999.999	float	V	4	R

31F	40800	voltage					
320	40801	Date of minimum phase C voltage	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
321	40802		Date: 1–31	word	Date	2	R
322	40803	Time of minimum phase C voltage	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
323	40804		Second: 00–59	word	Second	2	R
324	40805	Minimum phase A current	0.000 – 99999.999	float	A	4	R
325	40806						
326	40807	Date of minimum phase A current	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
327	40808		Date: 1–31	word	Date	2	R
328	40809	Time of minimum phase A current	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
329	40810		Second: 00–59	word	Second	2	R
32A	40811	Minimum phase B current	0.000 – 99999.999	float	A	4	R
32B	40812						
32C	40813	Date of minimum phase B current	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
32D	40814		Date: 1–31	word	Date	2	R
32E	40815	Time of minimum phase B current	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
32F	40816		Second: 00–59	word	Second	2	R
330	40817	Minimum phase C current	0.000 – 99999.999	float	A	4	R
331	40818						
332	40819	Date of minimum phase C current	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
333	40820		Date: 1–31	word	Date	2	R
334	40821	Time of minimum phase C current	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
335	40822		Second: 00–59	word	Second	2	R

336	40823	Minimum neutral line current	0.000 – 99999.999	float	A	4	R
337	40824						
338	40825	Date of minimum neutral line current	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
339	40826		Date: 1–31	word	Date	2	R
33A	40827	Time of minimum neutral line current	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
33B	40828		Second: 00–59	word	Second	2	R
33C	40829	Minimum frequency value	0.0000 – 99.9999	float	Hz	4	R
33D	40830						
33E	40831	Date of minimum frequency value	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
33F	40832		Date: 1–31	word	Date	2	R
340	40833	Time of minimum frequency value	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
341	40834		Second: 00–59	word	Second	2	R
342	40835	Minimum total power factor	0.00000 – 1.00000	float		4	R
343	40836						
344	40837	Date of minimum total power factor	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
345	40838		Date: 1–31	word	Date	2	R
346	40839	Time of minimum total power factor	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
347	40840		Second: 00–59	word	Second	2	R
348	40841	Minimum total active power	0.000 – 99999.999	float	kW	4	R
349	40842						
34A	40843	Date of minimum total active power	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
34B	40844		Date: 1–31	word	Date	2	R
34C	40845	Time of minimum total active power	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R

34D	40846		Second: 00–59	word	Second	2	R
34E	40847	Minimum total reactive power	0.000 – 99999.999	float	kVAR	4	R
34F	40848						
350	40849	Date of minimum total reactive power	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
351	40850		Date: 1–31	word	Date	2	R
352	40851	Time of minimum total reactive power	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
353	40852		Second: 00–59	word	Second	2	R
354	40853	Minimum total apparent power	0.000 – 99999.999	float	kVA	4	R
355	40854						
356	40855	Date of minimum total apparent power	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
357	40856		Date: 1–31	word	Date	2	R
358	40857	Time of minimum total apparent power	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
359	40858		Second: 00–59	word	Second	2	R
4. Alarm：0400 – 04FF							
400	41025	Alarm status of over current	0: Cleared 1: Triggered	word		2	R
401	41026	Alarm times of over current	1–255	word	Times	2	R
402	41027	Alarm date of over current	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
403	41028		Date: 1–31	word	Date		
404	41029	Alarm time of over current	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
405	41030		Second: 00–59	word	Second		
412	41043	Alarm status of over line voltage	0: Cleared 1: Triggered	word		2	R
413	41044	Alarm times of over line voltage	1–255	word	Times	2	R

414	41045	Alarm date of over line voltage	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
415	41046		Date: 1–31	word	Date		
416	41047	Alarm time of over line voltage	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
417	41048		Second: 00–59	word	Second		
418	41049	Alarm status of under line voltage	0: Cleared 1: Triggered	word		2	R
419	41050	Alarm times of under line voltage	1–255	word	Times	2	R
41A	41051	Alarm date of under line voltage	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
41B	41052		Date: 1–31	word	Date		
41C	41053	Alarm time of under line voltage	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
41D	41054		Second: 00–59	word	Second		
41E	41055	Alarm status of over phase voltage	0: Cleared 1: Triggered	word		2	R
41F	41056	Alarm times of over phase voltage	1–255	word	Times	2	R
420	41057	Alarm date of over phase voltage	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
421	41058		Date: 1–31	word	Date		
422	41059	Alarm time of over phase voltage	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
423	41060		Second: 00–59	word	Second		
424	41061	Alarm status of under voltage	0: Cleared 1: Triggered	word		2	R
425	41062	Alarm times of under phase voltage	1–255	word	Times	2	R
426	41063	Alarm date of under phase voltage	Year: 00–99 Month: 1–12	byte	Year, Month	2	R

427	41064		Date: 1–31	word	Date		
428	41065	Alarm time of under phase voltage	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
429	41066		Second: 00–59	word	Second		
436	41079	Alarm status of over active energy	0: Cleared 1: Triggered	word		2	R
437	41080	Alarm times of over active energy	1–255	word	Times	2	R
438	41081	Alarm date of over active energy	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
439	41082		Date: 1–31	word	Date		
43A	41083	Alarm time of over active energy	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
43B	41084		Second: 00–59	word	Second		
43C	41085	Alarm status of over reactive energy	0: Cleared 1: Triggered	word		2	R
43D	41086	Alarm times of over reactive energy	1–255	word	Times	2	R
43E	41087	Alarm date of over reactive energy	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
43F	41088		Date: 1–31	word	Date		
440	41089	Alarm time of over reactive energy	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
441	41090		Second: 00–59	word	Second		
442	41091	Alarm status of over apparent power	0: Cleared 1: Triggered	word		2	R
443	41092	Alarm times of over apparent power	1–255	word	Times	2	R
444	41093	Alarm date of over apparent power	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
445	41094		Date: 1–31	word	Date		

446	41095	Alarm time of over apparent power	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
447	41096		Second: 00–59	word	Second		
478	41145	Alarm status of over frequency	0: Cleared 1: Triggered	word		2	R
479	41146	Alarm times of over frequency	1, 255	word	Times	2	R
47A	41147	Alarm date of over frequency	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
47B	41148		Date: 1–31	word	Date		
47C	41149	Alarm time of over frequency	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
47D	41150		Second: 00–59	word	Second		
47E	41151	Alarm status of under frequency	0: Cleared 1: Triggered	word		2	R
47F	41152	Alarm times of under frequency	1–255	word	Times	2	R
480	41153	Alarm date of under frequency	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
481	41154		Date: 1–31	word	Date		
482	41155	Alarm time of under frequency	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
483	41156		Second: 00–59	word	Second		
5. Advanced Settings: 0500 – 05FF							
50C	41293	Setting group 1	0x100 – 0x18B	word		2	R/W
50D	41294	Setting group 2	0x100 – 0x18B	word		2	R/W
⋮	⋮	⋮	0x100 – 0x18B	word		2	R/W
515	41302	Setting group 10	0x100 – 0x18B	word		2	R/W
552	41363	Reset energy date	Year: 00–99 Month: 1–12	byte	Year, Month	2	R
553	41364	Reset energy date	Date: 1–31	word	Date	2	R

554	41365	Reset energy time	Hour: 00–23 Minute: 00–59	byte	Hour, Minute	2	R
555	41366	Reset energy time	Second: 00–59	word	Second	2	R
6. Parameter Group: 0600 – 06FF							
600	41537	Read data from group 1				2	R
601	41538	Read data from group 2					
⋮	⋮	⋮					
609	41546	Read data from group 10					
7. WiFi settings: F200 – F2FF (only available for DPM-C520W with FW V1.0008 or later)							
F200	101953	WiFi Module version	0 – 65535	word		2	R/W
F201	101954	Keep alive time	5 – 9999 Default: 10	word	Second	2	R/W
F202	101955	Reserved					
F203	101956	Reset wireless module	0: No action 1: Reset wireless module	word		2	R/W
F204	101957	IP address: AAA.BBB.XXX.YYY	AAA: 0 – 255 BBB: 0 – 255 XXX: 0 – 255 YYY: 0 – 255	word		2	R/W
F205	101958	IP address: AAA.BBB.XXX.YYY		word		2	R/W
F206	101959	IP address: AAA.BBB.XXX.YYY		word		2	R/W
F207	101960	IP address: AAA.BBB.XXX.YYY		word		2	R/W
F208	101961	SSID_1	High/low: 0x21 – 0x7E	byte		2	R/W
F209	101962	SSID_2	High/low: 0x21 – 0x7E	byte		2	R/W
F20A	101963	SSID_3	High/low: 0x21 – 0x7E	byte		2	R/W
F20B	101964	SSID_4	High/low: 0x21 – 0x7E	byte		2	R/W

F20C	101965	SSID_5	High/low: 0x21 – 0x7E	byte		2	R/W
F20D	101966	SSID_6	High/low: 0x21 – 0x7E	byte		2	R/W
F20E	101967	SSID_7	High/low: 0x21 – 0x7E	byte		2	R/W
F20F	101968	SSID_8	High/low: 0x21 – 0x7E	byte		2	R/W
F210	101969	SSID_9	High/low: 0x21 – 0x7E	byte		2	R/W
F211	101970	SSID_10	High/low: 0x21 – 0x7E	byte		2	R/W
F212	101971	SSID_11	High/low: 0x21 – 0x7E	byte		2	R/W
F213	101972	SSID_12	High/low: 0x21 – 0x7E	byte		2	R/W
F214	101973	SSID_13	High/low: 0x21 – 0x7E	byte		2	R/W
F215	101974	SSID_14	High/low: 0x21 – 0x7E	byte		2	R/W
F216	101975	SSID_15	High/low: 0x21 – 0x7E	byte		2	R/W
F217	101976	SSID_16	High/low: 0x21 – 0x7E	byte		2	R/W
F218	101977	SSID_17	String ending character: 0x0000	word		2	R/W
F219	101978	Password_1	High/low: 0x21 – 0x7E	byte		2	R/W
F21A	101979	Password_2	High/low: 0x21 – 0x7E	byte		2	R/W
F21B	101980	Password_3	High/low: 0x21 – 0x7E	byte		2	R/W
F21C	101981	Password_4	High/low: 0x21 – 0x7E	byte		2	R/W
F21D	101982	Password_5	High/low: 0x21 – 0x7E	byte		2	R/W
F21E	101983	Password_6	High/low: 0x21 – 0x7E	byte		2	R/W
F21F	101984	Password_7	High/low: 0x21 – 0x7E	byte		2	R/W
F220	101985	Password_8	High/low: 0x21 – 0x7E	byte		2	R/W
F221	101986	Password_9	String ending character: 0x0000	word		2	R/W

MEMO

6

Chapter 6 Error Codes

Table of Contents

6.1 Error Codes

When an error occurs during operation, the power monitor sends an error code through Modbus. The following table lists the error codes and causes.

Error Code	Name	Description
0x01	Illegal function	Incorrect function code
0x02	Illegal data address	Incorrect data address to read or write
0x03	Illegal data value	Incorrect data format (for example, data length)
0x04	Slave device failure	Slave cannot execute the command.

6.2 Alarm Types

The power meter supports 10 types of alarms. You can activate the alarm in the registers 0x1F–0xB7. When an alarm is triggered, the data (such as alarm type and alarm triggered time) are stored in registers 0x400–0x483. The following table lists the details and descriptions for the alarm types.

Number	Alarm Type	Description
1	Over Current	The measured current exceeds the setting value.
2	Over Voltage LL	The measured line voltage exceeds the setting value.
3	Under Voltage LL	The measured line voltage is below the setting value.
4	Over Voltage LN	The measured phase voltage exceeds the setting value.
5	Under Voltage LN	The measured phase voltage is below the setting value.
6	Over Active power	The measured total active power exceeds the setting value.
7	Over Reactive Power	The measured total reactive power exceeds the setting value.
8	Over Apparent Power	The measured total apparent power exceeds the setting value.
9	Over Frequency	The measured frequency exceeds the setting value.
10	Under Frequency	The measured frequency is below the setting value.

Appendix A Accessories

Table of Contents

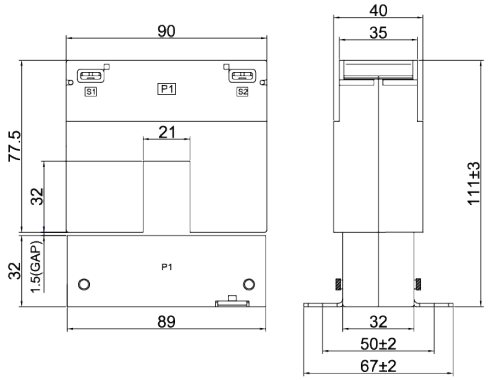
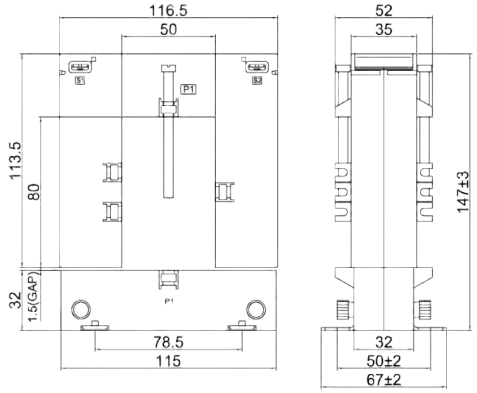
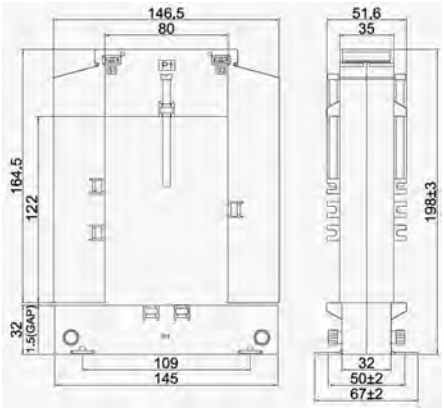
When measured current is higher than the rated specification for the device, use of an external current transformer (CT) is necessary.

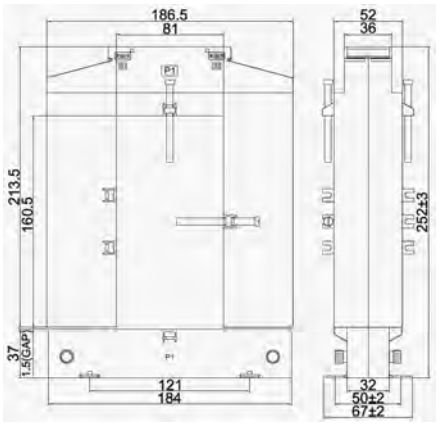
A.1 DCT1000 Series

Electromagnetic Compatibility: CE-marking, IEC61869-2.

Model Number	Measurement Accuracy	Primary Current	Secondary Current	Rated Burden (VA)	External Dimension*1 (mm)	Size of Opening*1 (mm)
DCT-S301C	1.0%	100 A	5 A	1.5	90 x 40 x 111	21 x 32
DCT-S211C	0.5%	200 A	5 A	1		
DCT-S221C	0.5%	300 A	5 A	1.5		
DCT-S231C	0.5%	400 A	5 A	2.5		
DCT-S241C	0.5%	500 A	5 A	2.5	116.5 x 52 x 147	50 x 80
DCT-S251C	0.5%	600 A	5 A	2.5		
DCT-S261C	0.5%	750 A	5 A	2.5		
DCT-S271C	0.5%	1000 A	5 A	5		
DCT-S281C	0.5%	1500 A	5 A	7.5	146.5 x 51.6 x 198	80 x 122
DCT-S291C	0.5%	2000 A	5 A	10	186.5 x 52 x 252	81 x 160.5
DCT-S2A1C	0.5%	2500 A	5 A	15		
DCT-S2B1C	0.5%	3000 A	5 A	20		

*1: See the following table for detailed information on the external dimensions and sizes of opening.

<table>
<tr><th>Model Number</th><th colspan="2">Dimension (mm)</th></tr>
<tr><td>DCT-S301C
DCT-S211C
DCT-S221C
DCT-S231C</td><td>External Dimension:
90 x 40 x 111
Size of Opening: 21 x 32
  </td><td> 
</td></tr>
<tr><td>DCT-S241C
DCT-S251C
DCT-S261C
DCT-S271C</td><td>External Dimension: 116.5
x 52 x 147
Size of Opening: 50 x 80
  </td><td> 
</td></tr>
<tr><td>DCT-S281C</td><td>External Dimension: 146.5
x 51.6 x 198
Size of Opening: 80 x 122
  </td><td> 
</td></tr>
</table>

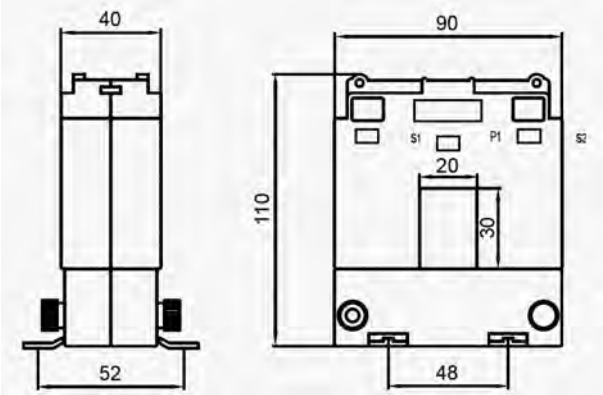
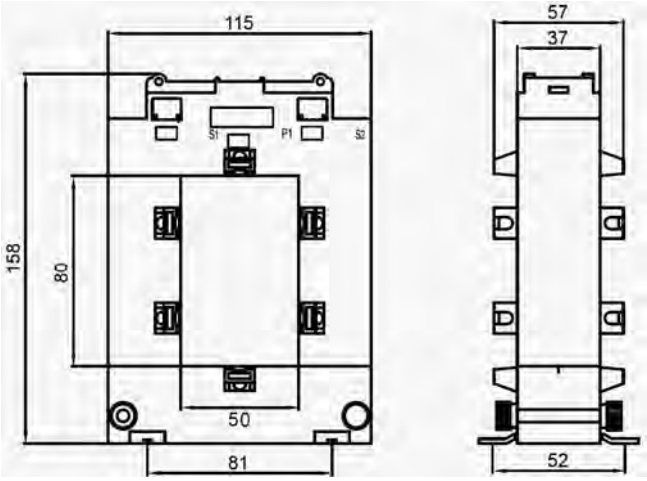
Model Number	Dimension (mm)	
DCT-S291C	External Dimension: 186.5 x 52 x 252 Size of Opening: 81 x 160.5 	
DCT-S2A1C		
DCT-S2B1C		

A.2 DCT2000 Series

Electromagnetic Compatibility: UL, UL2808.

Model Number	Measurement Accuracy	Primary Current	Secondary Current	Rated Burden (VA)	External Dimension*1 (mm)	Size of Opening*1 (mm)
DCT-S201B	1.0%	100 A	5 A	1	90 x 40 x 110	20 x 30
DCT-S211B	0.5%	200 A	5 A	1		
DCT-S221B	0.5%	300 A	5 A	1.5		
DCT-S231B	0.5%	400 A	5 A	1.5	115 x 57 x 158	50 x 80
DCT-S241B	0.5%	500 A	5 A	2.5		
DCT-S251B	0.5%	600 A	5 A	2.5		
DCT-S261B	0.5%	750 A	5 A	2.5		
DCT-S2C1B	0.5%	800 A	5 A	3.75		
DCT-S271B	0.5%	1000 A	5 A	5		

*1: See the following table for detailed information on the external dimensions and sizes of opening.

<table>
<tr><th>Model Number</th><th colspan="2">Dimension (mm)</th></tr>
<tr><td>DCT-S201B
DCT-S211B
DCT-S221B</td><td>External Dimension:
90 x 40 x 110
Size of Opening:
20 x 30
  </td><td> 
</td></tr>
<tr><td>DCT-S231B
DCT-S241B
DCT-S251B
DCT-S261B
DCT-S2C1B
DCT-S271B</td><td>External Dimension:
115 x 57 x 158
Size of Opening:
50 x 80
  </td><td> 
</td></tr>
</table>

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