



User Manual

Portable Power Meter

with Data logger

Model: POM400

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Notices

Please read this user manual in full and carefully observe the notes and instructions before and during installation, operation and maintenance. The manufacturer cannot be held liable for any damage which occurs as a result of non-observance or noncompliance with this user manual.

Should the device be tampered with in any manner other than a procedure which is described and specified in this manual, the warranty is cancelled, and the manufacturer is exempt from liability.

The device is designed exclusively for the described application.

This user manual should be read carefully by the technician / qualified personnel and the end user. This manual should be kept with the power meter and made available to relevant personnel. In case of any obscurities or questions, regarding this manual or the product, please contact Compressed Air Alliance.

Note: The power logger must be maintained. Incorrect maintenance may void the warranty or result in incorrect measurement values, which can lead to wrong results.



Electrical Safety

Users should be suitably qualified, licensed and experienced to use this product. Incorrect use or installation could result in serious injury or death. Compressed Air alliance is not liable for any injury or incident occurring from using this product.

Using the Power Meter

- The power meter is not to be used in explosive areas.
- Do not exceed or undercut the permitted operating parameters.
- Do not exceed or undercut the permitted storage parameters.
- See Specifications section for permitted operating and storage parameters.

Note: any operation exceeding minimum or maximum permitted parameters can lead to malfunction and may lead to damage of the power meter or personal injury. It may also void the warranty.

Disposing of the Power Meter

Electronic devices are recyclable material and do not belong in the household waste. The power meter, accessories and its packing material must be disposed according to your local statutory requirements.

Portable Power Meter

The portable power meter and data logger measures current and voltage and reports real-time RMS values for all 3-phases and neutral. In addition, the power meter calculates power factor, real power, reactive power, and more.

Why should you monitor power?

Monitoring power can help you:

- Reduce operating and energy costs
- Improve understanding of energy usage (eg spikes, variation, usage)
- Identify phase and voltage issues
- Identify power factor and harmonic issues
- Compare and challenge your energy bill
- Improve efficiency and reduce waste
- Monitor individual equipment usage or sub system loads

This power meter is best suited to

- 3 phase or single phase measurements
- Where a portable solution is needed
- Temporary installations

Key Features

- Measure voltage, amps, frequency, power factor, real power, reactive power, apparent power and harmonics
- Built in display for easy reading and configuration
- 1 GB memory SD card, save up to 12 years of data
- Battery powered or 5V DC Power supply
- Can be used for sub metering individual equipment or sub loads
- Easy to install rogowski coil current transducers (optional)

Specifications

General Specifications

Power Meter Details		
Type	Portable data logger / power analyser	
Applications	Power analysis Data Log	
Mounting	NA – Handheld device	
Poles description	3PH4W 3PH3W 1PH2W (L-N) 1PH2W (L-L) 1PH3W (L-L-N)	
Sampling rate	8,000 samples per second	
Harmonic	51th in the mean time	
Dimensions	215 mm L x 130 mm W x 60 mm D	
Weight	850 grams (with accessories 2 kgs)	
Colour	Blue and White	
Installation Type	Temporary installation	
Contractual warranty	12 months	
Power		
Power supply	2 x 2900mAh PANASONIC lithium battery Working time: approx 10 hours Charging time: approx. 8 hours	
	5V DC power supply (adaptor included)	
Power consumption – screen at maximum brightness	2000mW	
Power consumption – screen at minimum brightness	1800mW	
Environmental Conditions		
Operating temperature	-25°C to +55°C	-13°F to +131°F
Storage temperature	-40°C to +85°C	-40°F to +185°F
Humidity rating	5% to 95% RH at 50°C (non-condensing)	

Pollution degree	2: Normally only nonconductive pollution occurs. Temporary conductivity caused by condensation is to be expected.	
Overtoltage category	III, for distribution systems up to 277/480VAC	
Dielectric withstand	As per IEC61010-1, Doubled insulated front panel display	
Altitude	3000m Max	
IP degree of protection	IP20 conforming to IEC 60629	
Input-current characteristics		
Primary current range	600A	0.5A to 720A
	3kA	0.5A to 3600A
	6kA	0.5A to 7200A
Measurement input range	1/2 ²⁵ mV - 707mV	
Permissible overload	2V for 10s/hours	
Wire diameter for terminals		
Current input	BNC connector	
Voltage input	Banana plug	
DC power supply	DC 5.5 x 2.1 plug	
Reset		
Minimum and maximum values	-	
Peak demand values	-	
Current demand calculation method	1 to 60 minutes	
Power demand calculation method	1 to 60 minutes	
Accessories		
Power demand calculation method	5pcs voltage clamp wires with banana plug (2 meters, 1.5mm ²)	
Adapter	85-265 AC to 5V DC adaptor (please specify your plug type) (default Europe plug)	
Remark	Rogowski coil not included	

Measurement Accuracy

Measurement accuracy	
Rated current (3 level selectable)	600A (0.5% from 6A to 720A)
	3000A (0.5% from 10A to 3600A)
	6000A (0.5% from 20A to 7200A)
Rogowski coil connect setting	600A MRC-36
	3,000A NRC-150 or Y-FCT-510
	6,000A NRC-200 or Y-FCT-800
CTs connect setting	Primary setting from 1A to 999999A
	Secondary setting from 0.001mV to 707mV
Voltage	0.2% from 5 to 600V
Power factor	±0.005
Active/Apparent Power	IEC62053-22 Class 0.5
Reactive power	IEC62053-21 Class 2
Frequency	0.01% from 45 to 65Hz
Active energy	IEC62053-22 Class 0.5s
Reactive energy	IEC62053-21 Class 2

Real Time Measuring

The following table lists the metering characteristics of the power meter for the real-time measurement

Characteristic	Description
Current	Per phase, neutral, and average of 3 phases
Voltage	L-L, L-N, and average of 3 phases, N-PE
Frequency	46 to 65 Hz
Active Power	Total and per phase (signed)
Reactive Power	Total and per phase (signed)
Apparent Power	Total and per phase (signed)
Power Factor (True)	Total and per phase 0.000 to 1 (signed)

Characteristic	Description
Angle	Voltage angle, Current angle
Current unbalance	Per phase, most unbalanced of 3 phases
Voltage unbalance	Most unbalanced of 3 phases

Data Record

The power meter records data to SD card, the following table lists data record of the power meter.

Record	Description
Record interval	1s to 9999s (default 1min)
Record format	csv
Record capacity	Store about 2.5K Bytes data each time Record up to 12 years of data (1min interval)
Record data	"Current Harmonic" file ITHD (%), IHD2 (%), IHD3 (%) ,,,, IHD51 (%) (Each phase)
	"Voltage Harmonic" file UTHD (%), UHD2 (%), UHD3 (%) ,,,, UHD51 (%) (Each phase)
	"Data Sheet" file Voltage (V); UTHD (%); Current (A); ITHD (%); Frequency (Hz); Power Factor; Current Demand (A); Current Peak Demand (A) & Date; (Each phase and Average)
	Active Power (W); Reactive Power (Var); Apparent Power (Va) Active Energy (Wh); Reactive Energy (Varh); Apparent Energy (Vah) (Each phase and Summary)
	Total Active Power Deamnd (W) Total Active Power Peak Deamnd (W) & Date Total Reactive Power Deamnd (Var) Total Reactive Power Peak Deamnd (Var) & Date Total Apparent Power Deamnd (Va) Total Apparent Power Peak Deamnd (Va) & Date

Port Definition

Port Number	Port Name	Port Function	Remarks
1	IA	A-phase current input	Current (I) Input
2	IB	B-phase current input	
3	IC	C-phase current input	
4	In	N-phase current input	
5	UN	N-phase voltage input	Voltage (V) input
6	UC	C-phase voltage input	
7	UB	B-phase voltage input	
8	UA	A-phase voltage input	
9	UE	PE-N-phase voltage input	
10	Power	POWER 5V DC	Power
11	USB Port	Download log data	Plug out(in) USB DISK
12	RJ45 Port	Mobus-TCP communication	Communication

Certificates

EMC	
Electrostatic discharge	Level IV (IEC61000-4-2)
Immunity to radiated fields	Level III (IEC61000-4-3)
Immunity to fast transients	Level IV (IEC61000-4-4)
Immunity to surge	Level IV (IEC61000-4-5)
Conducted immunity	Level III (IEC61000-4-6)
Immunity to power frequency magnetic fields	0.5mT (IEC61000-4-8)
Conducted and radiated emissions	Class B (EN55022)
Standard Compliance	
EN 62052-11, EN61557-12, EN 62053-21, EN 62053-22, EN 62053-23, EN 50470-1, EN 50470-3, EN 61010-1, EN 61010-2, EN 61010-031	

Wiring Diagrams

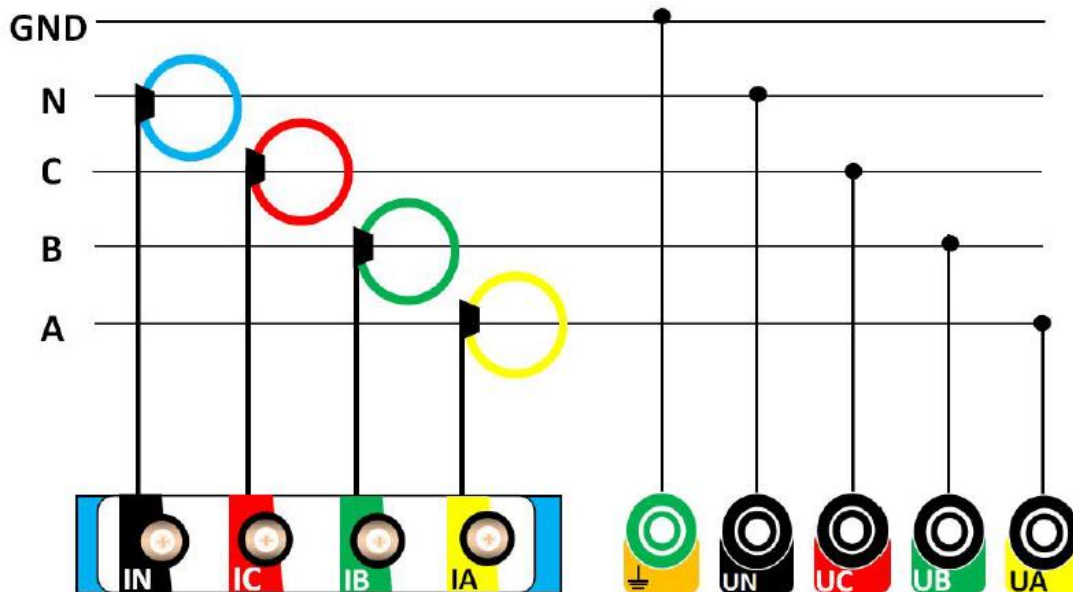
Notes:

Rcoil* : Rogowski coil secondary output voltage can not be over 333mV rms.

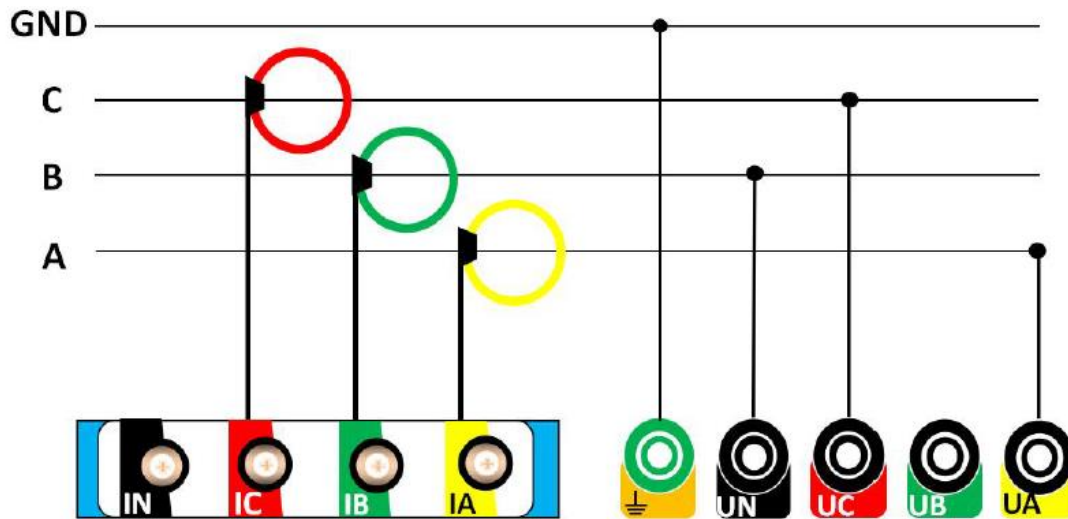
CT^ : CT must be voltage output, secondary output can not be over 333mV rms.



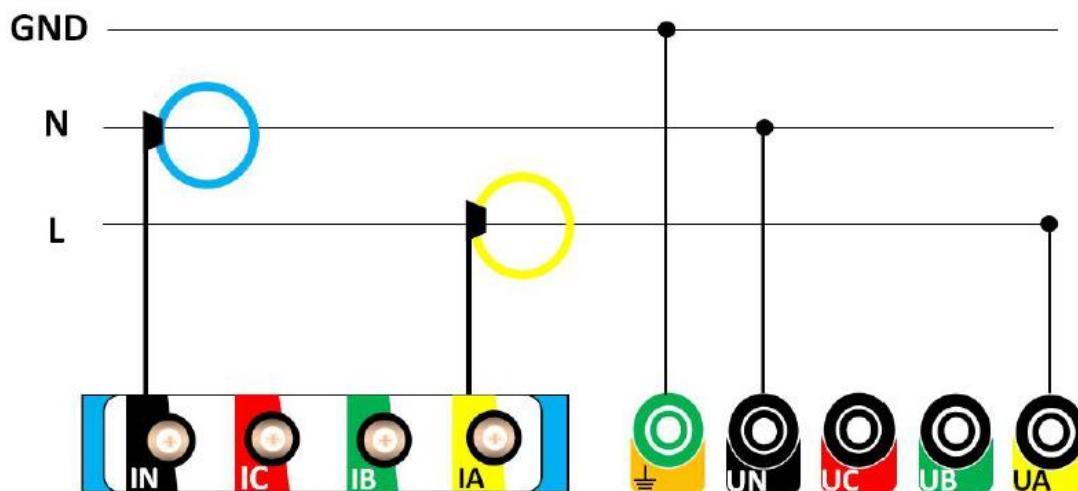
3PH4W



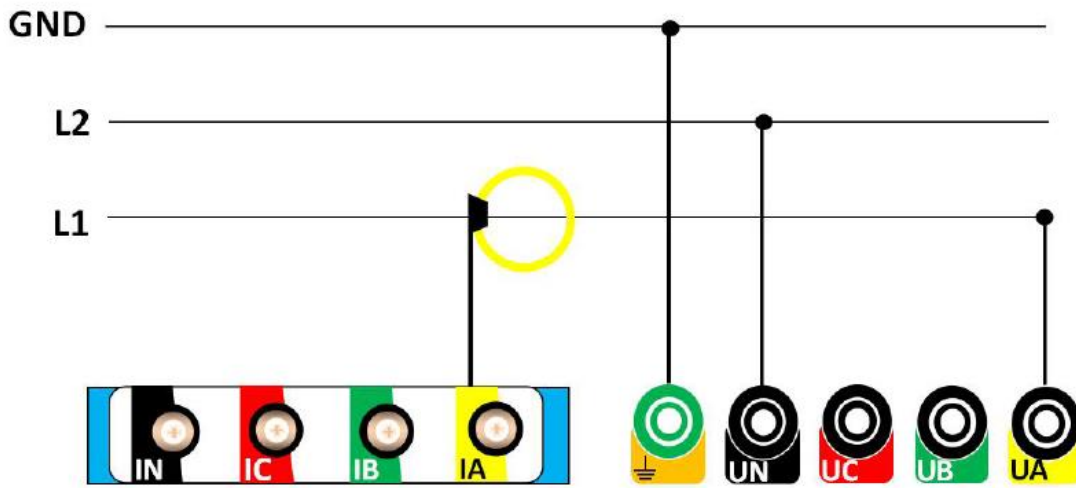
3PH3W



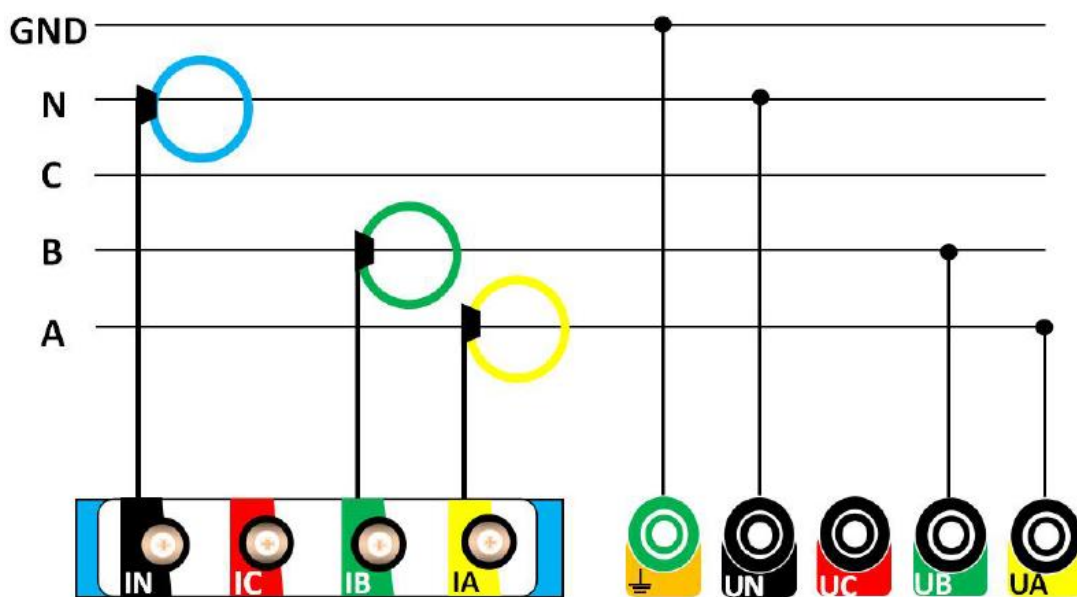
1P2W L-N



1P2W L-L



1P3W L-L-N



Connection Points



Current and voltage input



Battery



Power, USB Disk, RJ45 port

Meter Operation

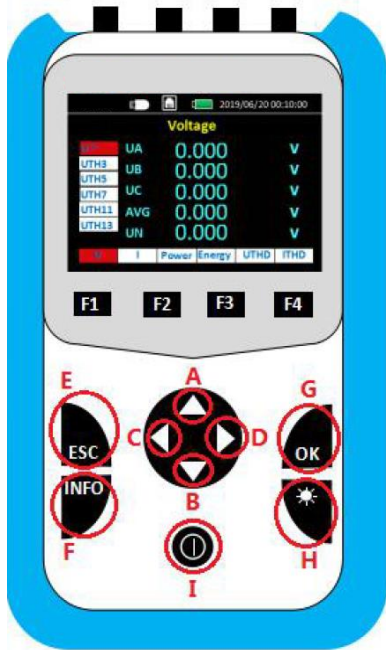
Configuration Mode (Default Settings)

The power meter features a panel with TFT LCD, a graphic display, and contextual menu buttons for accessing the information required to operate the power meter and modify parameter settings. The Navigation menu allows you to display, configure, and reset parameters.

The default factory settings are listed in the following table

Characteristic	Factory Settings
Wire	3PH4W 50 Hz
Current	Rcoil 600A 50mV/kA@50H
Voltage	DIRECT
Record	Switch: Disable Period: 60s
LAN	DHCP: Disable IP: 192.168.1.10 Netmask: 192.168.1.5 Gateway: 192.168.1.1
Harmonic	H1 = 3 H2 = 5 H3 = 7 H4 = 9 H5 = 11
Password (Low)	1000
Data / Time	-
Demand	Method: sliding block; Interval: 15 minutes
Reset	-
Fn	F1: Wire F2: Current F3: Record F4: Fn

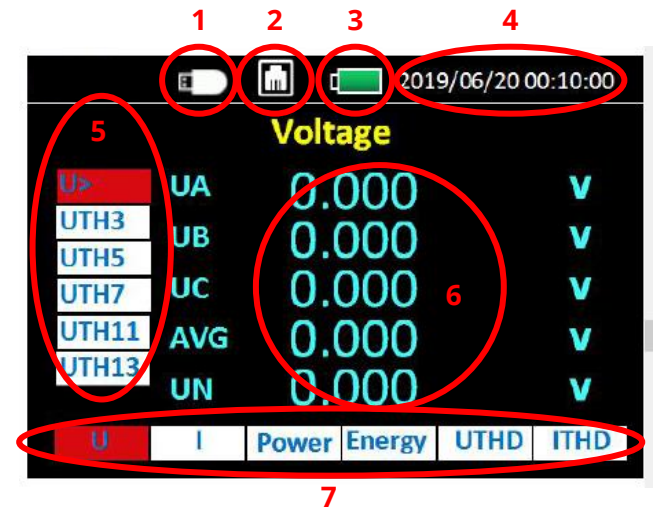
Device Navigation



Ref	Function	Comment
A	Up	Move cursor up
B	Down	Move cursor down
C	Left	Move cursor left
D	Right	Move cursor right
E	Esc	return to previous menu or enter Menu
F	INFO	enter information to check series or firmware version
G	OK / Enter	Switch to secondary interface*
H	Light	Background light switch, 5 brightness levels
I	Power	ON/OFF, long press 3s after a buzzing sound.

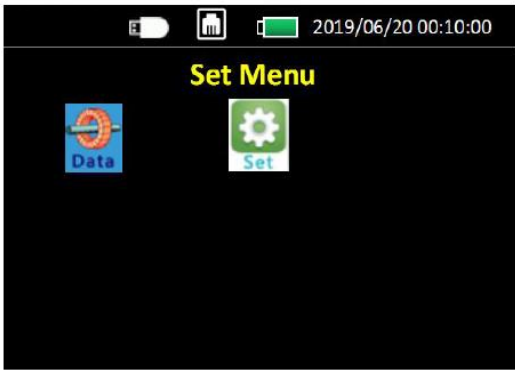
*** Note:** after entering the secondary interface, pressing “Left” or “Right” won’t change the measurement type on the bottom of the screen. You will need to return to the main screen to measurement types (ie to move from voltage to current).

Interface Navigation



Ref	Function
1	USB Status
2	RJ45 Connection Status
3	Battery Status
4	Data & Time
5	Secondary Menu Options vary depending on the measurement option selected. Press the “Up” or “Down” buttons until you reach your desired measurement. Press “OK” to access the data.
6	Measurement Data
7	Measurement Options From left to right: Voltage (U), Current (I), Power, Energy, Voltage harmonic (UTHD), Current harmonic (ITHD) Press the “Left” or “Right” buttons until you reach your desired measurement. Press “OK” to access the data.

Main Menu

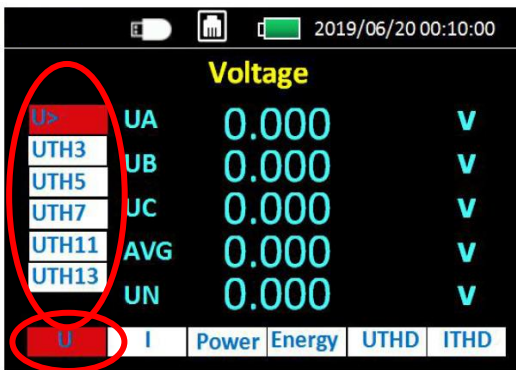


Main Menu options:

Data: view data

Set: Set system settings, eg time/date, password, LAN

Voltage (U) – Main Interface



Press the “Up” or “Down” buttons until you reach your desired measurement. Press “OK” to access the data.

Voltage options (main interface), from top to bottom :

U>: Voltage RMS value (data on Secondary Interface, see below)

UTH3: X times Voltage harmonic RMS value

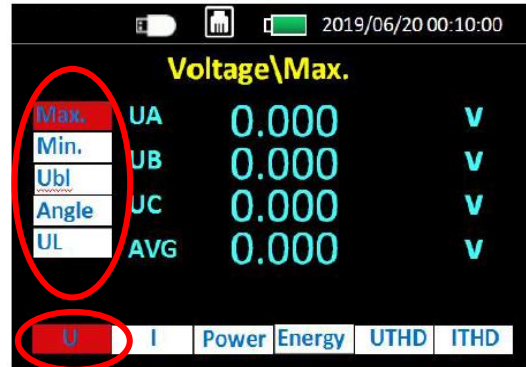
UTH5: Y times Voltage harmonic RMS value

UTH7: Z times Voltage harmonic RMS value

UTH11: A times Voltage harmonic RMS value

UTH13: B times Voltage harmonic RMS value

Voltage RMS - Secondary Interface



To switch to Voltage RMS (secondary interface):

- On the Voltage main interface screen, select **U>**, then press “OK”

Press the “Up” or “Down” buttons until you reach your desired measurement. Press “OK” to access the data.

Voltage RMS options (on the secondary interface), from top to bottom :

Max.: Voltage Maximum value

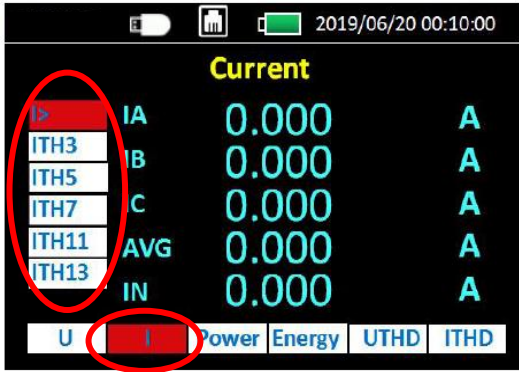
Min.: Voltage Minimum value

Angle: Voltage Unbalance degree

UL: Line Voltage value

Press “ESC” to return to the previous menu

Current (I) – Main Interface



Press the “Up” or “Down” buttons until you reach your desired measurement. Press “OK” to access the data.

Current (I) options (main interface), from top to bottom :

I>: Current RMS value (data on secondary Interface, see below)

ITH3: X times current harmonic RMS value

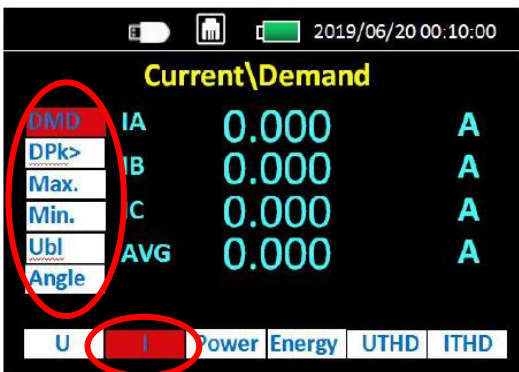
ITH5: Y times current harmonic RMS value

ITH7: Z times current harmonic RMS value

ITH11: A times current harmonic RMS value

ITH13: B times current harmonic RMS value

Current RMS - Secondary Interface



To switch to Current RMS (secondary interface):

- On the Current (I) main interface screen, select **I>**, then press “OK”

Current RMS options (secondary interface), from top to bottom :

EMD: Current demand

DPK>: Current Maximum demand (data on third interface, see below)

Max.: Current Maximum value

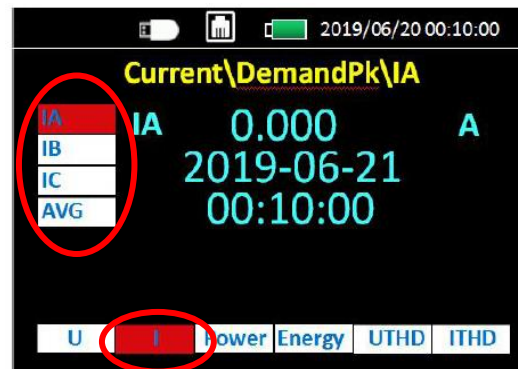
Min.: Current Minimum value

Ubl: Current unbalance degree

Angle: Current angle

Press “ESC” to return to the previous menu

Current Max Demand - Third Interface



To switch to Current Max Demand (third interface):

- On the Current RMS (secondary interface screen), select **DPK>**, then press “OK”

Current Max Demand options (third interface), from top to bottom :

IA: Phase A Current Maximum demand

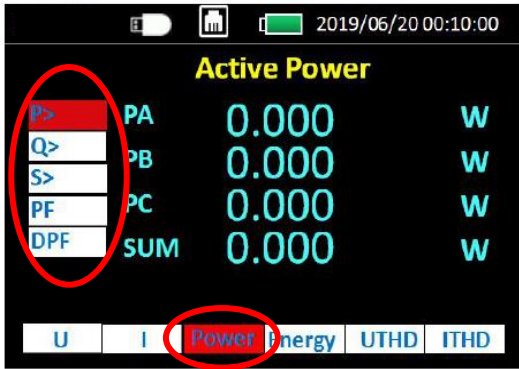
IB: Phase B Current Maximum demand

IC: Phase C Current Maximum demand

AVG: Total Average Current Maximum demand

Press “ESC” to return to the previous menu

Power – Main Interface

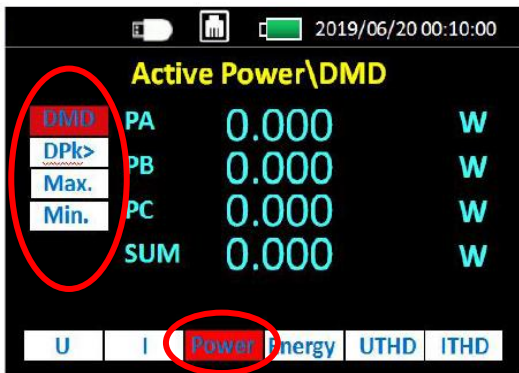


Power options (main interface), from top to bottom:

- P>**: Active Power (Secondary interface)
- Q>**: Reactive Power (Secondary interface)
- S>**: Apparent Power (Secondary interface)
- PF**: Power Factor
- DPF**: Fundamental Power Factor

For secondary interfaces, select **P>**, or **Q>** or **S>** then press "OK"

Active Power – Secondary Interface



To switch to Active Power (secondary interface):

- On the Power main interface screen, select **P>**, then press "OK"

Active Power options (secondary interface), from top to bottom:

DMD: Active Power Demand

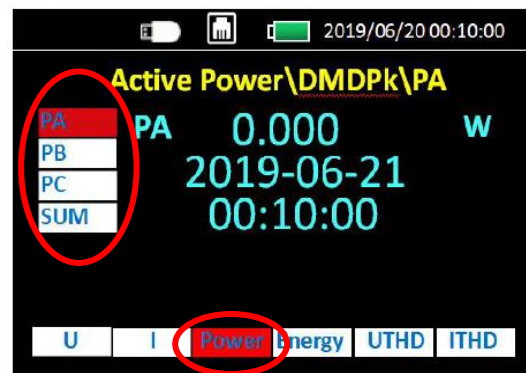
DPk>: Active Power Maximum Demand (data on third Interface, see below)

Max.: Active Power Maximum Value

Min.: Active Power Minimum Value

Press "ESC" to return to the previous menu

Active Power Maximum Demand – Third Interface



To switch to Active Power Maximum Demand (third interface):

- On the Power secondary interface screen, select **DPk>**, then press "OK"

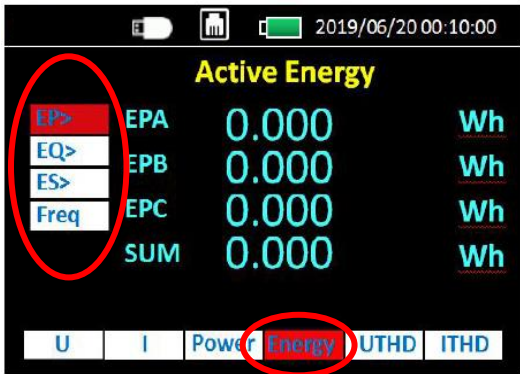
Active Power Maximum Demand options (third interface), from top to bottom:

- PA**: Phase A Active Power Maximum Demand
- PB**: Phase B Active Power Maximum Demand
- PC**: Phase C Active Power Maximum Demand
- SUM**: Total phase Active Power Maximum Demand

Press "ESC" to return to the previous menu

Note: Secondary and Third interfaces for Reactive Power (Q>) and Apparent Power (S>) are similar to above.

Energy – Main Interface



Press the “Up” or “Down” buttons until you reach your desired measurement. Press “OK” to access the data.

Energy options (main interface), from top to bottom:

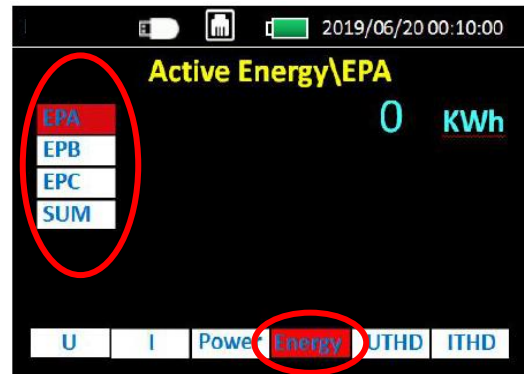
EP>: Active Energy (data on secondary Interface, see below)

EQ>: Reactive Energy (data on secondary Interface, see below)

ES>: Apparent Energy (data on secondary Interface, see below)

Freq: Frequency

Active Energy – Secondary Interface



To switch to Active Power (secondary interface):

- On the Energy main interface screen, select **EP>**, then press “OK”

Press the “Up” or “Down” buttons until you reach your desired measurement. Press “OK” to access the data.

Active Energy options (secondary interface), from top to bottom:

EPA: Phase A - Active Energy in kWh (total 9 bits)

EPB: Phase B - Active Energy in kWh (total 9 bits)

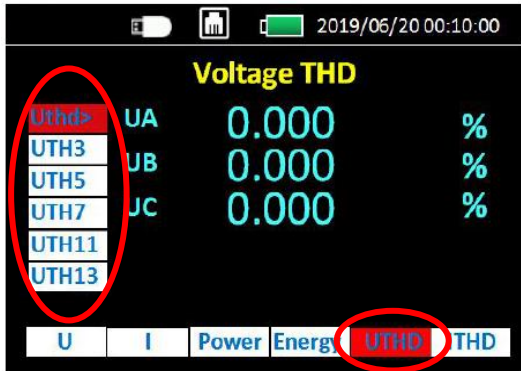
EPC: Phase C - Active Energy in kWh (total 9 bits)

SUM: Total phase - Active Energy in kWh (total 9 bits)

Press “ESC” to return to the previous menu

Note: Secondary interface for Reactive Energy (EQ>) and Apparent Energy (ES>) is similar to above.

Voltage Harmonics – Main Interface



Press the “Up” or “Down” buttons until you reach your desired measurement. Press “OK” to access the data.

Voltage Harmonic options (main interface), from top to bottom :

Uthd>: Total Voltage harmonic percent (data on secondary Interface, see below)

UTH3: X times Voltage harmonic percent

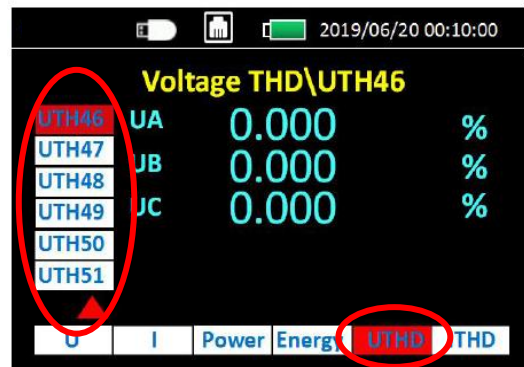
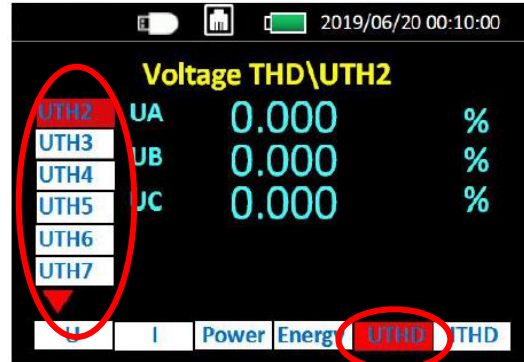
UTH5: Y times Voltage harmonic percent

UTH7: Z times Voltage harmonic percent

UTH11: A times Voltage harmonic percent

UTH13: B times Voltage harmonic percent

Total Voltage Harmonic % – Secondary Interface



To switch to Total Voltage Harmonic Percent (secondary interface):

- On the Voltage Harmonics main interface screen, select **Uthd>**, then press “OK”

2 to 51 Total Voltage Harmonic Percent options (secondary interface), from top to bottom :

UTH2: 2 times Voltage harmonic percent

UTH3: 3 times Voltage harmonic percent

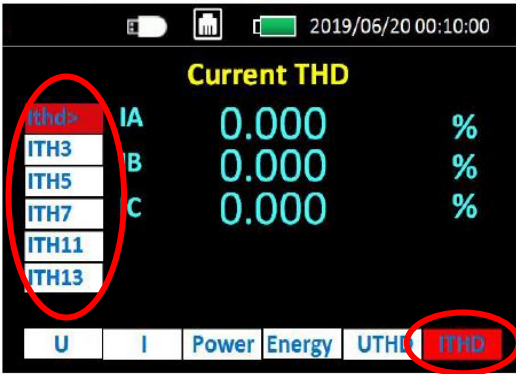
UTH4: 4 times Voltage harmonic percent

.....

UTH51: 51 times Voltage harmonic percent

Press “ESC” to return to the previous menu

Current Harmonics – Main Interface



Press the “Up” or “Down” buttons until you reach your desired measurement. Press “OK” to access the data.

Current Harmonic options (main interface), from top to bottom :

Ithd>: Total Current harmonic percent (data on secondary Interface, see below)

ITH3: X times Current harmonic percent

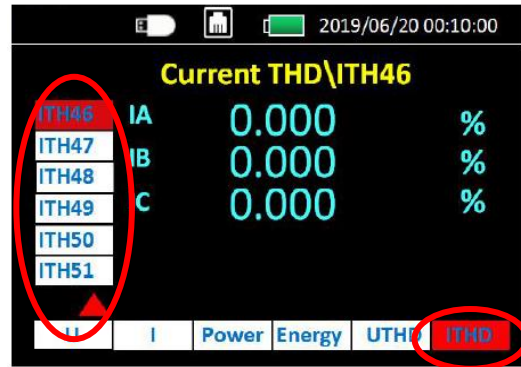
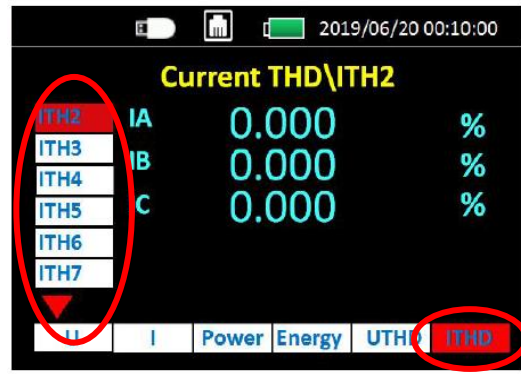
ITH5: Y times Current harmonic percent

ITH7: Z times Current harmonic percent

ITH11: A times Current harmonic percent

ITH13: B times Current harmonic percent

Total Current Harmonic % – Secondary Interface



To switch to Total Current Harmonic Percent (secondary interface):

- On the Current Harmonics main interface screen, select **Ithd>**, then press “OK”

2 to 51 Total Current Harmonic Percent options (secondary interface), from top to bottom :

UTH2: 2 times Current harmonic percent

UTH3: 3 times Current harmonic percent

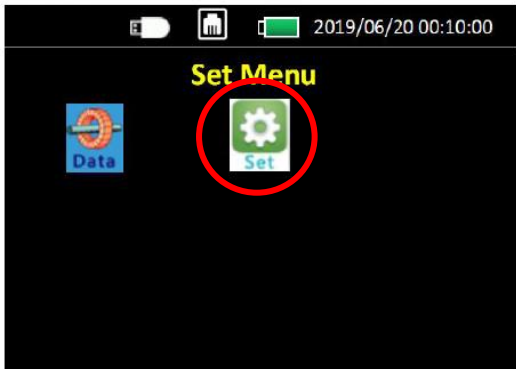
UTH4: 4 times Current harmonic percent

.....

UTH51: 51 times Current harmonic percent

Press “ESC” to return to the previous menu

System Settings



To access the system settings, select “Set” from the Main Menu.

The default **password** is **1000**.

Current: Configuration Current sensor & Rated current

Voltage: Configuration voltage sensor ratio

Record: Storage and download setting

LAN: MDOBUS TCP setting

Harmonic: Harmonic times setting

Password: Password change setting

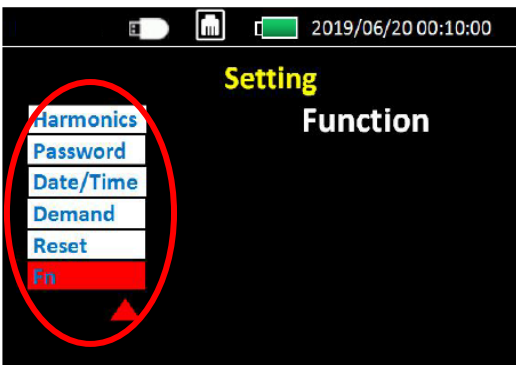
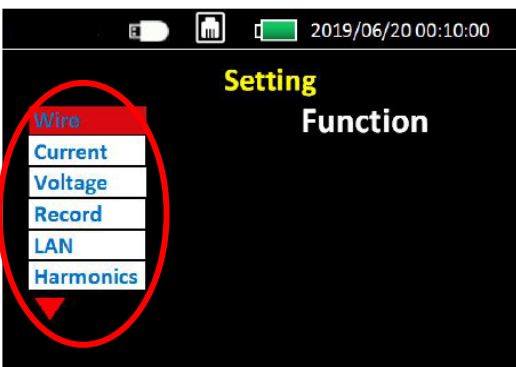
Date/Time: Date/Time change setting

Demand: Demand setting

Reset: Reset Energy/Min/Max value

Fn: F1 F2 F3 F4 KeyRocket setting

System Settings

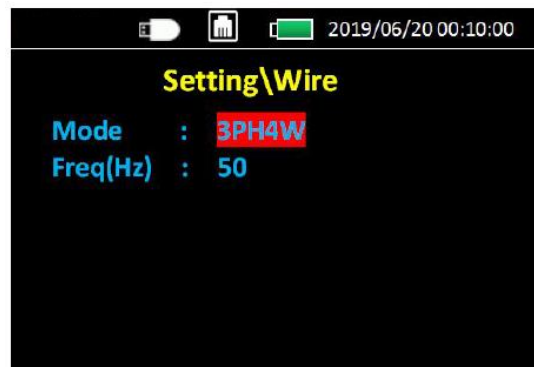


Press the “Up” or “Down” buttons to move between options. Press “OK” to access the secondary interface.

System Setting options, from top to bottom:

Wire: Wiring setting

Set > Wire



Press “OK” to move the desired option. Press Up or Down to change the value.

Wire options:

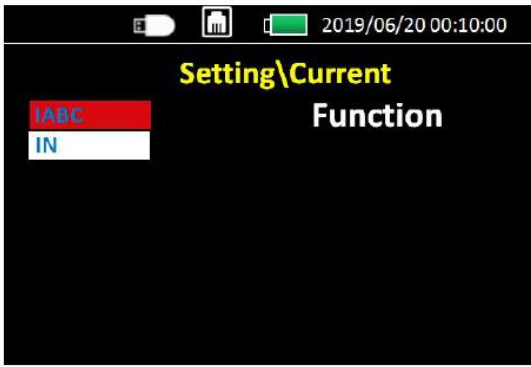
Mode: wiring type, select from:

- 3PH4W three phase 4 wire
- 3PH3W three phase 3 wire
- 1PH2W_LL single phase 2 wire L_L type
- 1PH2W_LN single phase 2 wire L_N type
- 1PH3W_LL single phase 3 wire L_L_N type

Freq: Frequency

Press “ESC” to return to the previous menu

Set > Current



Change the current sensor.

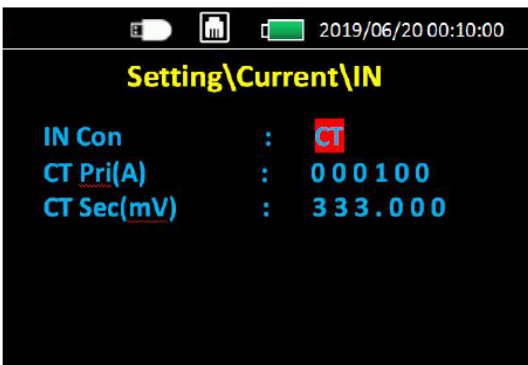
Press the “Up” or “Down” buttons to move between options. Press “OK” to access the secondary interface.

Current sensor options:

IABC: setting Phase A, B, C Current sensor

IN: setting Phase N Current sensor

Set > Current > IABC (or IN)



Change the settings for the current sensor.

Press the “OK” to cycle between settings. Press the “Up” or “Down” buttons to change the highlighted number. Press the “Left” or “Right” buttons to move the next (previous) number. Press “OK” to move to the next setting.

Current settings options:

IABC Con or **IN Con:** select the current input type. Choice of:

- “Rcoil” or
- “CT”

If selecting RCoil, the Rogowski coil must be connect directly (no integrator connector)

Note: If you select “Rcoil” in the “IABC Con” and “IN Con” setting, then the interface will show Rogowski coil rated current selection.

If you select “CTCon”, the interface will show CT primary and secondary

FSA: Rated Current selection. Choice of:

- 600A or
- 3kA or
- 6kA

Coil: (if Rcoil is selected in IABC Con or IN Con) each Rated current corresponding to one ratio of Rogowski coil (this setting can’t be changed)

- 600A - 50mV/kA@50Hz
- 3kA - 85mV/kA@50Hz
- 6kA - 50mV/kA@50Hz

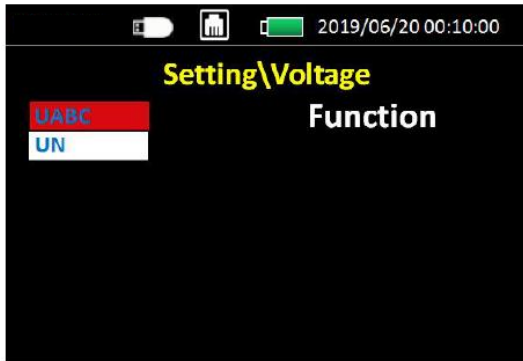
CT: (if CT is selected in IABC Con or IN Con) 333mV Current Transformer connect

CT Pri(A): CT Primary Rated Current A Value

CT Sec(mV): CT Secondary Rated output mV value

Note: You must save your changes before you leave the “IABC” or “IN” setting screen. Press “Ok” to save changes.

Set > Voltage



Change the voltage settings.

Press the “Up” or “Down” buttons to move between options. Press “OK” to access the secondary interface.

Voltage options:

UABC: setting Phase A, B, C Voltage sensor

UN: setting Phase N Voltage sensor

Set > Voltage > UABC (or UN)



Change the settings for the voltage sensor.

Press the “OK” to cycle between settings. Press the “Up” or “Down” buttons to change the highlighted number. Press the “Left” or “Right” buttons to move the next (previous) number. Press “OK” to move to the next setting.

Voltage settings options:

UABC Con or **UN Con:** select the voltage input type. Choice of:

- “DIRECT”, ie voltage is directly connected to the power meter or
- “VT”, ie voltage is connected via a voltage transformer

If you choose “DIRECT”, the VT ratio setting options will not be displayed.

If you choose, “VT”, the following options will be displayed:

VT Pri(V): Voltage sensor primary output value

VT Sev(V): Voltage sensor secondary value

Press “ESC” to return to the previous screen

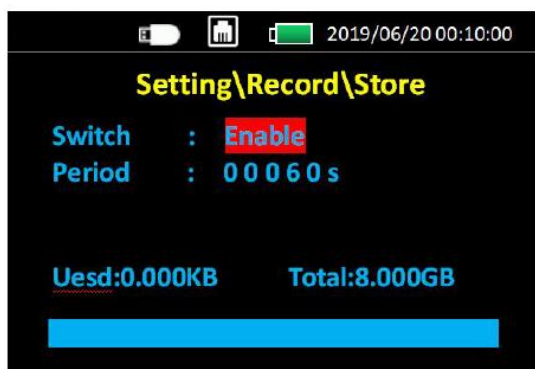
Set > Record



Set options for recording and downloading data.

Press the “Up” or “Down” buttons to move between options. Press “OK” to access the secondary interface.

Set > Record > Record



Press “OK” to move the desired option. Press Up or Down to change the value.

Data recording options:

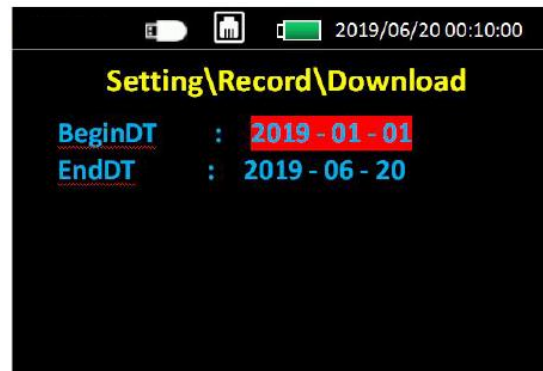
Switch: choose between “Enable” or “Disable” record function

- Enable: start record function
- Disable: stop record function.

Period: set the record interval time (from 1s to 99999s, default 60s)

Press “ESC” to return to the previous screen

Set > Record > Download



Press the “OK” to cycle between settings. Press the “Up” or “Down” buttons to change the highlighted number. Press the “Left” or “Right” buttons to move the next (previous) number. Press “OK” to move to the next setting.

Download options:

BeginDT: Beginning date setting

EndDT: Ending date setting

After setting time, press “OK” to download data to USB-DISK



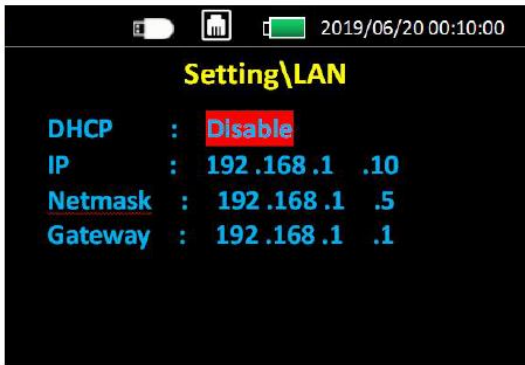
‘White’ means SD card has been inserted.



‘Green’ means data is being downloaded. When the download is complete, the icon disappears.

Press “ESC” to return to the previous screen

Set > LAN



Configuration LAN for MODBUS-TCP.

Press the “OK” to cycle between settings. Press the “Up” or “Down” buttons to change the highlighted option / number. Press the “Left” or “Right” buttons to move the next (previous) number. Press “OK” to move to the next setting.

DHCP: Choose between “Enable” or “Disable”

- “Enable” The router automatically gives an IP address
- “Disable” You can set the IP address

Press “ESC” to return to the previous screen

Set > Password

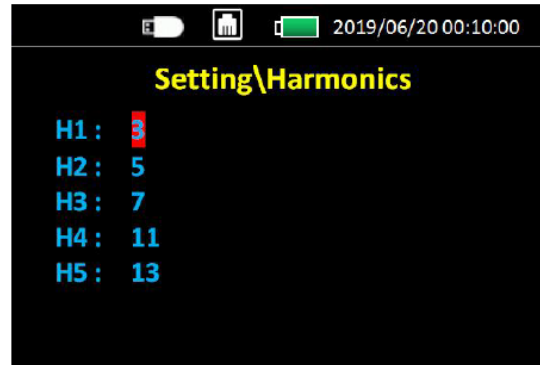


The default **password** is **1000**.

If you would like to change the password, Press the “Up” or “Down” buttons to change the highlighted number. Press the “Left” or “Right” buttons to move the next (previous) number.

Press “ESC” to return to the previous screen

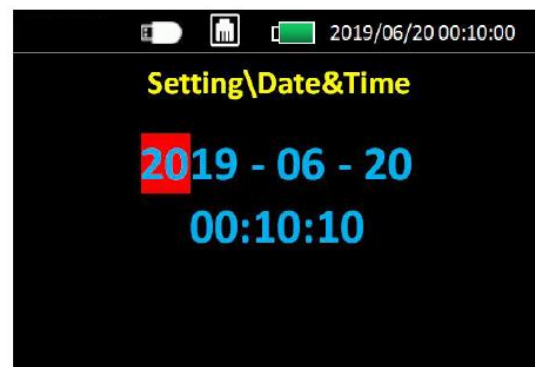
Set > Harmonics



You can measure 5 different harmonic values for current or voltage. Setting times range from 2 to 51.

Press the “OK” to cycle between settings. Press the “Up” or “Down” buttons to change the highlighted number.

Set > Date / Time

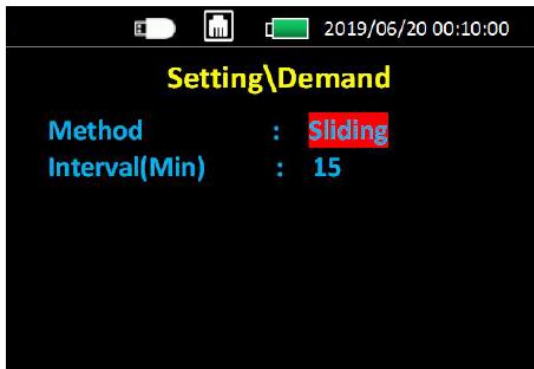


Set the system Date & Time

Press the “OK” to cycle between settings. Press the “Up” or “Down” buttons to change the highlighted number. Press the “Left” or “Right” buttons to move the next (previous) number. Press “OK” to move to the next setting.

Press “ESC” to return to the previous screen

Set > Demand



Set the Demand Calculation Methods (sSee Appendix for more information).

Press the “OK” to cycle between settings. Press the “Up” or “Down” buttons to change the highlighted option / number.

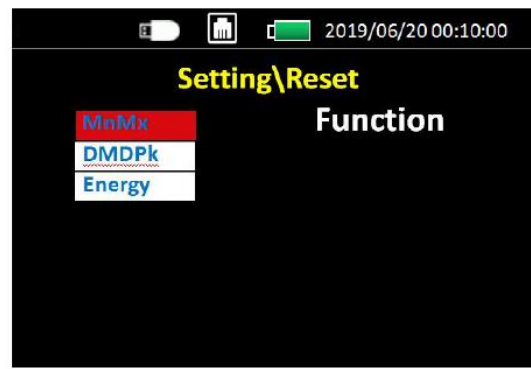
Demand options:

Method: choose between “Sliding” or “Fixed”

- Sliding: Time sliding mode
- Fixed: Time fixed mode

Interval(Min): from 1 to 60 minutes

Set > Reset



Reset values to default settings.

Press the “Up” or “Down” buttons to cycle through options. Press the “OK” to reset the values.

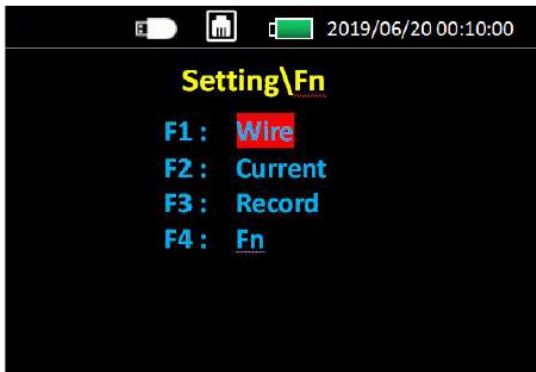
You can reset:

MnMx: Reset Minimum/Maximum value

DMDPk: Reset Maximum Demand value

Energy: Reset Energy

Set > Fn

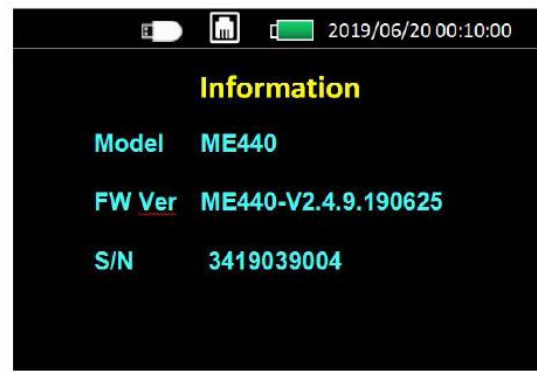


Fn is shortcut key for F1 F2 F3 F4.

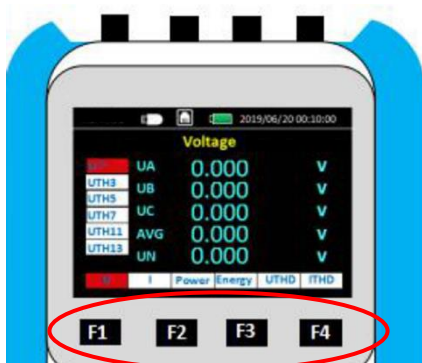
When you press F1 on the power Meter (see picture below), the display will take you to that setting.

Press the "OK" to cycle between settings. Press the "Up" or "Down" buttons to change the highlighted option / number.

Information



View the power meter's.



Function (Fn) Keys

Warranty and Help

Warranty

Compressed Air Alliance provides a 12-month warranty for all Power Meters. The warranty covers material and workmanship under the stated operating conditions from the date of delivery. Please report any findings immediately and within the warranty time.

If faults occur during the warranty period Compressed Air Alliance will repair or replace the defective unit, without charge. The warranty covers the device only, it does not cover other services such as labour to remove or reinstall the instrument, transport and packing. Warranty repairs or replacements do not extend the original period of warranty.

The following damage is excluded from this warranty:

- Improper use and non-adherence to the user manual.
- Use of unsuitable accessories.
- External influences (e.g. damage caused by vibration, damage during transportation, excess heat or moisture).

The warranty is cancelled when one of the following situations occurs:

- The user opens the measurement instrument without a direct request written in this manual.
- Repairs or modifications are undertaken by third parties or unauthorised persons.
- The serial number has been changed, damaged or removed.

Other claims, especially damage occurring on the outside of the instrument (eg dents, marks), are not included unless responsibility is legally binding.

Need help?

You can contact Compressed Air Alliance via:

- Phone (Australia): 1300 558 526
- E-mail: sales@compressedairalliance.com
- Website: www.compressedairalliance.com

Appendix – Technical Information

Modbus RS485

Communication	
Transmission mode	RJ45 port
Communication protocol	MODBUS RTU
Settings	
IP address	Configurable (default 192.168.1.5)
Port No.	502

Minimum/Maximum Values

When any one-second real-time reading reaches its highest or lowest value, the power meter saves the minimum and maximum values in its nonvolatile memory. From the power meter display, you can:

- view all min./max. values since the last reset and the reset date and time
- reset min./max. values

All running min./max. values are arithmetic minimum and maximum values. For example, the minimum phase A-N voltage is the lowest value in the range from 0 to 999.9GV that has occurred since last reset of the min./max. values.

The power meter provides time stamping for all minimum/maximum values.

The following table lists the minimum and maximum values stored in the power meter.

Characteristic	Description
Current	Per phase and average
Voltage	Per phase and average
Active Power	Per phase and total
Reactive Power	Per phase and total
Apparent Power	Per phase and total

Demand Readings

The power meter provides the following demand readings.

Characteristic	Description
Current	Per phase and average
Active, reactive, apparent power	Per phase and total
Peak Demand Values	
Current	Per phase and average
Active, reactive, apparent power	Per phase and total

Demand Calculation Methods

Power demand is the energy accumulated during a specified period divided by the length of the period.

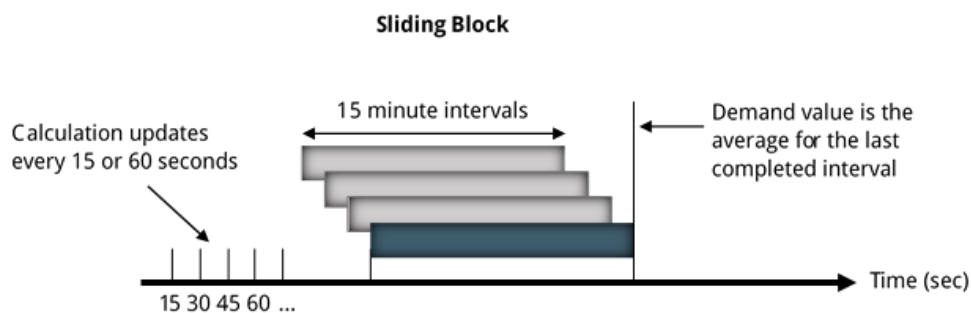
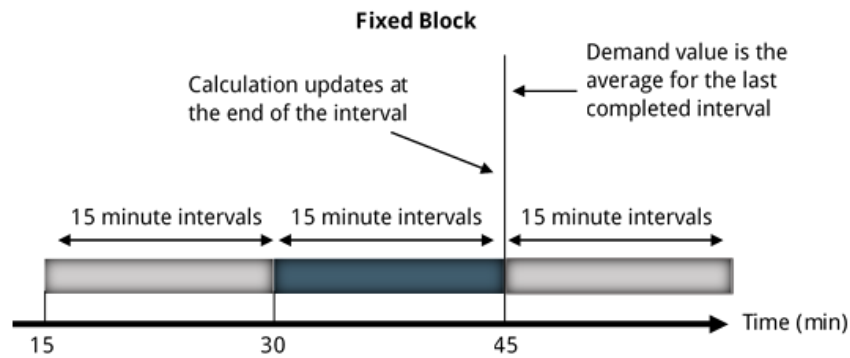
Current demand is calculated using arithmetical integration of the current RMS values during a time period, divided by the length of the period. How the power meter performs this calculation depends on the selected method. To be compatible with electric utility billing practices, the power meter provides block interval power/current demand calculations.

For **block interval demand** calculations, you select a block of time (interval) that the power meter uses for the demand calculation and the mode the meter uses to handle the interval. Two different modes are possible:

- Fixed block - Select an interval from 1 to 60 minutes (in 1 minute increments). The power meter calculates and updates the demand at the end of each interval.
- Sliding block - Select an interval from 1 to 60 minutes (in 1 minute increments).
 - For demand intervals less than 15 minutes, the value is updated every 15 seconds.
 - For demand intervals of 15 minutes and greater, the demand value is updated every 60 seconds.

The power meter displays the demand value for the last completed interval.

The following figures illustrate the 2 ways to calculate demand power using the block method. For illustration purposes, the interval is set to 15 minutes.



Peak Demand

In nonvolatile memory, the power meter maintains a maximum operating demand value called peak demand. The peak is the highest value (absolute value) for each of these readings since the last reset.

You can reset peak demand values from the power meter display. You should reset peak demand after changes to basic power meter setup such as power system configuration.

Energy Readings

The power meter calculates and stores Per phase and total energy values for active, reactive, and apparent energy. You can view energy values from the display. The resolution of the energy value automatically changes from kWh to MWh to GWh (kVAh to MVARh to GWh).

The energy values automatically reset to 0 when it reaches the limit of 999.9GWh, 999.9GVAh, or 999.9GVARh.

The following table lists the energy readings from the power meter.

Characteristic	Description
Active energy	0 to 999.9 GWh Auto reset to 0 in case of over limit
Reactive energy	0 to 999.9 GVARh Auto reset to 0 in case of over limit
Apparent energy	0 to 999.9 GVAh Auto reset to 0 in case of over limit

Power Quality Analysis Values

The power quality analysis values use the following abbreviations:

- Fundamental phase current rms: I_1
- Fundamental phase voltage rms: V_1
- RMS of up to three harmonics of phase current: $I_x, I_y, I_z, x, y, z = 2, 3, \dots, N$
- RMS of up to three harmonics of phase voltage: $V_x, V_y, V_z, x, y, z = 2, 3, \dots, N$
- Total harmonic distortion of the phase current

$$(THD)_I = \frac{\sqrt{I^2 - I_1^2}}{I_1}$$

- Total harmonic distortion of the phase voltage

$$(THD)_V = \frac{\sqrt{V^2 - V_1^2}}{V_1}$$

- Harmonic distortion of up to three harmonics on the phase current

$$HD_{I_x} = \frac{I_x}{I_1}, x = 2, 3, \dots, N$$

$$HD_{I_y} = \frac{I_y}{I_1}, y = 2, 3, \dots, N$$

$$HD_{I_z} = \frac{I_z}{I_1}, z = 2, 3, \dots, N$$

- Harmonic distortion of up to three harmonics on the phase voltage

$$HD_{V_x} = \frac{V_x}{V_1}, x = 2, 3, \dots, N$$

$$HD_{V_y} = \frac{V_y}{V_1}, y = 2, 3, \dots, N$$

$$HD_{V_z} = \frac{V_z}{V_1}, z = 2, 3, \dots, N$$

Total harmonic distortion (THD) provides a measure of the total distortion present in a waveform. THD is the ratio of harmonic content to the fundamental and provides a general indication of the quality of a waveform. THD is calculated for both voltage and current.

The following table lists the power quality values of the power meter.

Characteristic	Description
THD	Total,2,3,4,5,,,,,51 (51 times) Per phase current (percentage value)
	X,Y,Z,A,B (5 times each time) Per phase current (rms value)
	Total,2,3,4,5,,,,,51 (51 times) Per phase voltage (percentage value)
	X,Y,Z,A,B (5 times each time) Per phase voltage (rms value)