5. Set communication class parameters

Communication parameters include: Modbus address, baud rate, parity bit, stop bit.

SEt / Conn / L-01	After entering the "Parameter Setting Menu" screen, select the L-01 setting screen (as shown in the figure below), and then press button 4 for 3 second to enter the communication parameter setting screen.The factory password is"0000"
SEt / Addr / 001 / L-0101	Modbus address setting range: 001 to 247, default is 001.Press button 4 for 3 second to enter the setting state, and the digit of the setting becomes the flashing state.Click button 1 to return to the previous level setup menu.
SEt / Addr / 001 / L-0101	lick button 2 or 3 to increase or decrease the number of set bits.Click button 4 can be moved the set bits to the right.Press button 4 for 3 second to confirm the setting. The power meter will save the setting value and exit the setting state.Click button 1 to exit the setting state without saving the setting parameters.
SEt / bAUd / 96 / L-0102	Baud rate can be set: 1200, 2400, 4800, 9600, 19200, 38400 bps, default is 9600bps.Press button 4 for 3 second to enter the setting state, and the digit of the setting becomes the flashing state.Click button 1 to return to the previous level setup menu.
SEt / bAUd / 96 / L-0102	Click button 2 or 3 to select the baud rate.Press button 4 for 3 second to confirm the setting. The power meter will save the setting value and exit the setting state.Click button 1 to exit the setting state without saving the setting parameters.
SEt / PArI / nonE / L-0103	Parity bit can be set: None, Even, Odd, default is None.Press button 4 for 3 second to enter the setting state, and the character of the setting becomes the flashing state.Click button 1 to return to the previous level setup menu.
SEt / PArI / nonE / L-0103	Click button 2 or 3 to select the parity bit.Press button 4 for 3 second to confirm the setting. The power meter will save the setting value and exit the setting state.Click button 1 to exit the setting state without saving the setting parameters.
SEt / StoP / 1 / L-0104	Stop bit can be set: 1 or 2, default is 1.Press button 4 for 3 second to enter the setting state, and the digit of the setting becomes the flashing state. Click button 1 to return to the previous level setup menu.Note: The stop bit can only be set to 2 if the check bit is equal to None.
SEt / StoP / 1 / L-0104	Click button 2 or 3 to select the stop bit.Press button 4 for 3 second to confirm the setting. The power meter will save the setting value and exit the setting state.Click button 1 to exit the setting state without saving the setting parameters.

5.2Set CT class parameters ▼

SEt / SyS / L-02	After entering the "Parameter Setting Menu" screen, select the L-02 setting screen (as shown in the figure below), and then press button 4 for 3 second to enter the CT parameter setting screen.
SEt / CtPrA / L-0201	Select the L-02.01 setting screen (as shown in the figure below), and then press button 4 for 3 second to enter the CT class parameters setting screen.
SEt / Ct1 / 0005 / L-020101	CT1 setting range: 1 to 9999A, default is 5A.Press button 4 for 3 second to enter the setting state, and the digit of the setting becomes the flashing state.Click button 1 to return to the previous level setup menu.
SEt / Ct1 / 0005 / L-020101	Click button 2 or 3 to increase or decrease the number of set bits.Click button 4 can be moved the set bits to the right.Press button 4 for 3 second to confirm the setting. The power meter will save the setting value and exit the setting state.Click button 1 to exit the setting state without saving the setting parameters.
SEt / Ct2 / 5 / L-020102	CT2 can be set: 1A or 5A, default is 5A.Press button 4 for 3 second to enter the setting state, and the digit of the setting becomes the flashing state.Click button 1 to return to the previous level setup menu.
SEt / Ct2 / 5 / L-020102	Click button 2 or 3 to select the CT2.Press button 4 for 3 second to confirm the setting. The power meter will save the setting value and exit the setting state.Click button 1 to exit the setting state without saving the setting parameters.

3. Product index

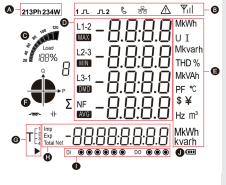
Technical parameter		
Applicable network		Single-phase two-wire, two-phase three-wire, three-phase three-wire, three-phase four-wire
Auxiliary power supply		85 ~ 270 Vac / 120 ~ 380 Vdc
Input-Voltage	Rate voltage	230 Vac (L-N) / 400 Vac (L-L)
	Measured range	30 to 350 Vac (L-N), 30 to 660 Vac (L-L)
	PT primary	30 to 600000
	Impedance	1MΩ
	Frequency range	45 to 65 Hz
	Overload capacity	2*Un for 1 second
Input-Current	CT2 (Secondary)	1A or 5A Optional: 100mA, 100mV
	CT1 (Primary)	1 to 9999 A
	Measured range	0.003 to 6 A, basic current (Ib) is 5A
	Impedance	<0.01 ohm
	Overload capacity	120A for 0.5 second
	Burden	<0.06VA at 6A
Pulse output	Interface type	Open collector optocoupler
	Pulse output type	Import/export/total active energy, Import/export/total reactive energy (Configurable)
	Pulse constant	Per pulse equal 0.001/0.01/0.1/1/10/100/1000 kWh/kvarh (Configurable)
	Pulse width	60/100/200 milliseconds (Configurable), default is 100milliseconds
Enviro-nment	Temperature	Operating temperature: -25℃~70℃, Store: -40℃~80℃
	Humidity	≤90%RH, No condensation, no corrosive gas place
	Altitude	≤2000m

4. Display

4.1Key Description ▼

1 U/I Esc	Click:1. In the setting screen or auxiliary screen: exit or return to the previous screen.2. In the main display screen: page turning for parameters such as voltage and current. Press 3 second:Under the main display screen: enter the auxiliary display screen.
2 PF/HZ ▲	1. In the main display screen: view the power factor, maximum demand. 2. In the setting screen or auxiliary screen: scroll up to display the page or the increasing number.
3 P ▼	1. In the main display screen: view the power information. 2. In the setting screen or auxiliary screen: scroll down to display the page or the decreasing number.
4 E ↵	Click:1. In the main display screen: view energy data and system time.2. In the setting screen: right move the setting cursor.Press 3 second:1. In the main display screen: enter the setting mode.2. In the auxiliary display screen: confirm the auxiliary information to be viewed and enter the specific display screen.3. In the setting screen: enter the setting state or carry out confirmation operation.

4.2Start interface ▼



A: The power grid type icon represents the current measurement type of the power meter.
B: The status indicator icon for the power meter.
C: Bar graph for power indication.
D: Measured values.
E: An icon of a unit of measurement data.
F: Quadrant indicator icon indicating the quadrant of the current load.
G: Multi tariff icon indicating the tariff segment to which the current energy. represents the tariff number displayed as the running tariff segment.
For example: The figure on the left represents that the tariff 2 (T2) segment is running, and the accumulated energy will be counted into the corresponding energy area of tariff 2 (T2).
H: Energy data display area of the power meter.
I: An icon of digital I/O status for the power meter.
J: The battery status icon of the power meter indicates the state of the battery.

KIM ELECTRIC

Multifunctional power instrument

KMF010

http://kimelectric.kr

User Manualv1.1

- The company reserves the right to modify the product specifications described in this manual without notice.
- Before placing an order, please consult our company for the latest specifications of this product.

1.Product overview

KMF010 series products can support in the 1P2W, 2P3W, 3P3W and 3P4W grid environment analysis of electric power parameter measurement, and at the same time providing SOE function, is suitable for real time power monitoring and control system, the energy consumption management system, industrial monitoring site using a variety of applications such as environment, has the multi-function, high stability and long life characteristics.

KMF010 series products can support external voltage transformer (PT) and current transformer (CT) access, the maximum current up to 9999A, the maximum voltage up to 600kV. This series of products with RS485 communication interface, baud rate maximum support 38400bps, supporting Modbus, DLT645 communication protocols. It can easily realize the function of remote data read, and adopt the design of large-screen LCD and touch-sensitive key, which can easily carry out the local view and set operation of various parameters. The product has the function of password protection, which ensures the data security of the product.

2.Characteristics

1.Multi-function parameter measurement, providing voltage, current, active power, reactive power, apparent power, power factor, phase Angle, etc.
2.Provides a variety of analytical parameters, such as total harmonic distortion (THD) and Individual harmonic distortion (IHD) of voltage/current, voltage/current unbalance factor, voltage crest factor, current K factor, etc. The Sub-harmonic component is maximum supported to the 31rd.
3.Provide a variety of statistical data and local storage functions, such as two-way power, four-quadrant power, demand, maximum/minimum value and other statistical data. Provide monthly electricity consumption statistics for the last 12 months and daily electricity consumption statistics for the last 31 days.
4.External current transformers of output types such as 5A/100mV/100mA are supported, and direct access of Rogowski coil is also supported. With the current transformer reverse connection correction function.
5.Support external voltage transformer access, input voltage minimum support 30V.
6.Embedded installation, product panel size is 96*96mm.
7.Plug and pull type connection mode, convenient construction connection.
8.Liquid crystal display with backlit, backlight lighting time adjustable.
9.LCD refresh time is 1 second, support manual or automatic scroll display (configurable).
10.Two pulse optocoupler output interfaces are pulse 1 and pulse 2 respectively. The output parameter can be set for pulse 1, while the fixed pulse 2 represents the total active energy of the secondary side, which cannot be set.
11.Support RS485 communication function, baud rate up to 38400bps, support Modbus RTU, MBus protocol.

5.3 Set PT class parameters ▼

SEt SYS L-02	1. After entering the "Parameter Setting Menu" screen, select the L-02 setting screen (as shown in the figure below), and then press button 4 for 3 second to enter the PT parameter setting screen.
SEt Pt PArA L-0202	2. Select the L-02.02 setting screen (as shown in the figure below), and then press button 4 for 3 second to enter the PT class parameters setting screen.
SEt Pt1 00 0230 L-020201	PT1 setting range: 30 to 600000V, default is 230V.Press button 4 for 3 second to enter the setting state, and the digit of the setting becomes the flashing state.Click button 1 to return to the previous level setup menu.
SEt Pt1 00 0230 L-020201	Click button 2 or 3 to increase or decrease the number of set bits.Click button 4 can be moved the set bits to the right.Press button 4 for 3 second to confirm the setting. The power meter will save the setting value and exit the setting state.Click button 1 to exit the setting state without saving the setting parameters.
SEt Pt2 230 L-n L-020202	PT2 setting range: 30 to 600V, default is 230V.Press button 4 for 3 second to enter the setting state, and the digit of the setting becomes the flashing state.Click button 1 to return to the previous level setup menu.
SEt Pt2 230 L-n L-020202	Click button 2 or 3 to increase or decrease the number of set bits.Click button 4 can be moved the set bits to the right.Press button 4 for 3 second to confirm the setting. The power meter will save the setting value and exit the setting state.Click button 1 to exit the setting state without saving the setting parameters.

5.4 Set system class parameters ▼

SEt SYS L-02	1. After entering the "Parameter Setting Menu" screen, select the L-02 setting screen (as shown in the figure below), and then press button 4 for 3 second to enter the system class parameter setting screen.
SEt SYS tYPE L-0203	The system type supported by the power meter includes the five types: 1P2W 3CT, 2P3W 2CT, 3P3W 2CT, 3P4W 3CT, 3P3W 3CT.Press button 4 for 3 second to enter the setting state, and the character of the setting becomes the flashing state.Click button 1 to return to the previous level setup menu.
SEt SYS 3P4 3Ct L-0203	The corresponding relationship between the character of the setting option and the actual measurement wire type is shown in Table 1 below.Note: To set the character of the option and the corresponding relationship of the system type, please refer to Table 4-1.
SEt SYS CnCt L-0204	Setting system current direction correction，Press button 4 for 3 second to enter the next level setting menu.Click button 1 to return to the previous level setup menu.
SYS CnCt PH-1 Frd L-020401	L1 current direction correction can be set: forward or reverse, default is forward.Click button 3 to scroll down to the Settings screen of L2.Press button 4 for 3 second to enter the setting state, and the character of the setting becomes the flashing state.Click button 1 to return to the previous level setup menu.
SYS CnCt PH-1 Frd L-020401	Click button 2 or 3 to select the current direction.Press button 4 for 3 second to confirm the setting. The power meter will save the setting value and exit the setting state.Click button 1 to exit the setting state without saving the setting parameters. Note: Frd represents forward, rEU represents reverse.
SYS CnCt PH-3 Frd L-020403	L3 current direction correction can be set: forward or reverse, default is forward.Click button 2 to scroll up to the Settings screen of L2.Press button 4 for 3 second to enter the setting state, and the character of the setting becomes the flashing state.Click button 1 to return to the previous level setup menu.
SYS CnCt PH-3 Frd L-020403	Click button 2 or 3 to select the current direction.Press button 4 for 3 second to confirm the setting. The power meter will save the setting value and exit the setting state.Click button 1 to exit the setting state without saving the setting parameters. Note: Frd represents forward, rEU represents reverse.

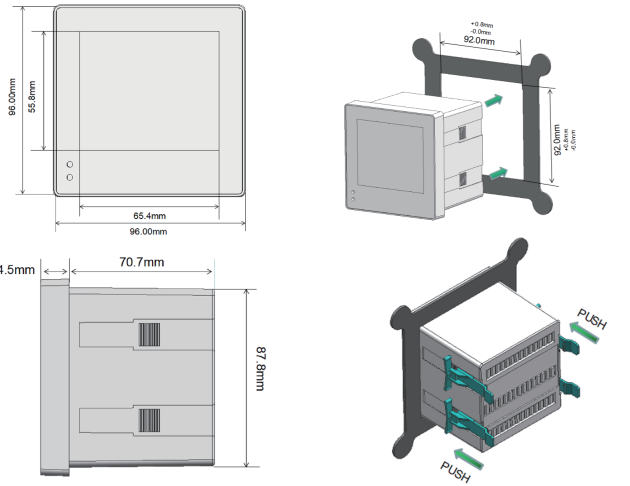
5.5 Set pulse output class parameters ▼

SEt PULS L-03	After entering the "Parameter Setting Menu" screen, select the L-03 setting screen (as shown in the figure below), and then press button 4 for 3 second to enter the pulse output class parameter setting screen.
SEt PULS oUt L-0301 kvarh	The type of energy represented by the pulse output.Options that can be set: total active energy, import active energy, export active energy, total reactive energy, import reactive energy, export reactive energy, default is total reactive energy. Press button 4 for 3 second to enter the setting state, and the character of the setting becomes the flashing state.Click button 1 to return to the previous level setup menu.
SEt PULS oUt L-0301 kvarh	Click button 2 or 3 to select the pulse output type.Press button 4 for 3 second to confirm the setting. The power meter will save the setting value and exit the setting state.Click button 1 to exit the setting state without saving the setting parameters.Note: To set the character of the option and the corresponding relationship of the pulse output type, please refer to Table 4-2.
SEt PULS rAtE 001 L-0302	Pulse output rate can be set: 0.001, 0.01, 0.1, 1, 10, 100, 1000, default is 0.01.Press button 4 for 3 second to enter the setting state, and the character of the setting becomes the flashing state.Click button 1 to return to the previous level setup menu.Note: Digital representation of pulse output rate: how much kWh/ kVARh is each pulse. Example: Setting the pulse output rate to 0.1 means that each output pulse is equal to 0.1kwh /kvarh.
SEt PULS rAtE 001 L-0302	Click button 2 or 3 to select the pulse output rate.Press button 4 for 3 second to confirm the setting. The power meter will save the setting value and exit the setting state.Click button 1 to exit the setting state without saving the setting parameters.
SEt PULS tiME 100 L-0303	The pulse output width represents the effective duration of the pulse output.Options that can be set: 60, 100, 200, unit is ms, default is 100ms.Press button 4 for 3 second to enter the setting state, and the digit of the setting becomes the flashing state.Click button 1 to return to the previous level setup menu.
SEt PULS tiME 100 L-0303	Click button 2 or 3 to select the pulse output width.Press button 4 for 3 second to confirm the setting. The power meter will save the setting value and exit the setting state.Click button 1 to exit the setting state without saving the setting parameters.

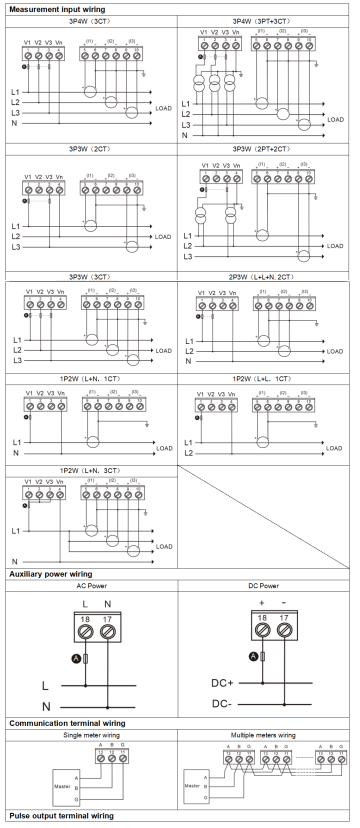
5.6 Set demand class parameters ▼

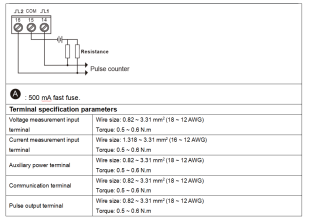
SEt dnd L-04	After entering the "Parameter Setting Menu" screen, select the L-04 setting screen (as shown in the figure below), and then press button 4 for 3 second to enter the demand class parameter setting screen.
SEt dnd nEHd SLid L-0401	Demand calculation method can be set: fix block interval and sliding block interval, default is sliding block interval.Press button 4 for 3 second to enter the setting state, and the character of the setting becomes the flashing state.Click button 1 to return to the previous level setup menu.
SEt dnd nEHd SLid L-0401	Click button 2 or 3 to select the demand calculation method.Press button 4 for 3 second to confirm the setting. The power meter will save the setting value and exit the setting state. Click button 1 to exit the setting state without saving the setting parameters. Note: Frd represents forward, rEU represents reverse.
SEt dit 60 L-0402	Demand interval period can be set: 0, 5, 8, 10, 15, 30, 60, unit is minute, default is 60 minutes.Press button 4 for 3 second to enter the setting state, and the digit of the setting becomes the flashing state.Click button 1 to return to the previous level setup menu. Note: 1. If the demand interval period is set to 0 minutes, then the demand is updated every second.2. If you need to set other values between 0 and 60 minutes, use the communication command to do so.
SEt dit 60 L-0402	Click button 2 or 3 to select the demand interval period.Press button 4 for 3 second to confirm the setting. The power meter will save the setting value and exit the setting state.Click button 1 to exit the setting state without saving the setting parameters.
SEt SLid tiME 1 L-0403	Sliding time setting range: 1 to (demand interval period), unit is minutes, default is 1 minute.Press button 4 for 3 second to enter the setting state, and the digit of the setting becomes the flashing state.Click button 1 to return to the previous level setup menu.Note: This setting menu will only be displayed if the demand calculation method is set to sliding block interval.
SEt SLid tiME 01 L-0403	Click button 2 or 3 to increase or decrease the number of set bits.Click button 4 can be moved the set bits to the right.Press button 4 for 3 second to confirm the setting. The power meter will save the setting value and exit the setting state.Click button 1 to exit the setting state without saving the setting parameters.

6.Outline dimension and installation diagram



7.Wiring diagram





*. Parameter setting

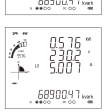
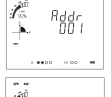
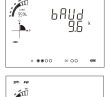
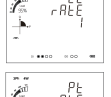
1 Display example of measurement data ▼

	A display screen for three-phase L-N voltage.Example: L1-N voltage = 230.0V L2-N voltage = 230.0V L3-N voltage = 230.0V
	A display screen for three-phase L-L voltage.Example: L1-2 voltage = 400.0V L2-3 voltage = 400.0V L3-1 voltage = 400.0V
	A display screen for three-phase current and neutral current.Example: L1 current = 5.001A L2 current = 5.002A L3 current = 5.000A Neutral current = 0.001A
	A display screen for three-phase L-N voltage THD.Example: L1 voltage THD = 4.06% L2 voltage THD = 3.98% L3 voltage THD = 4.12%
	A display screen for three-phase L-L voltage THD.Example: L1-2 voltage THD = 4.06% L2-3 voltage THD = 3.98% L3-1 voltage THD = 0.00%
	A display screen for three-phase current THD.Example: L1 current THD = 4.06% L2 current THD = 4.05% L3 current THD = 4.04%
	Voltage and current phase sequence display screen Note: 1. U 123 represents the phase sequence of the voltage. 123 represents forward sequence, 321 represents reverse sequence. 2. I 321 represents the phase sequence of the current. 123 represents forward sequence, 321 represents reverse sequence.
	Total power factor and frequency display screen Example: Total power factor = 0.503 Frequency = 50.02Hz
	Three - phase power factor display screen Example: L1 power factor = 0.506 L2 power factor = 0.502 L3 power factor = 0.501
	Max.demand of three-phase and neutral current display screen Example: Max.Demand of L1 current = 5.002A Max.Demand of L2 current = 5.003A Max.Demand of L3 current = 5.000A Max.Demand of neutral current = 0.002A
	Max.demand of total active/reactive/apparent power display screen Example: Max.Demand of total active power = 1.560 kW Max.Demand of total reactive power = 2.867 kvar Max.Demand of total apparent power = 3.197 kVA
	Per phase active power display screen Example: L1 active power = 0.551 kW L2 active power = 0.548 kW L3 active power = 0.550 kW
	Per phase reactive power display screen Example: L1 reactive power = 0.952 kvar L2 reactive power = 0.944 kvar L3 reactive power = 0.948 kvar
	Per phase apparent power display screen Example: L1 apparent power = 1.100 kVA L2 apparent power = 1.096 kVA L3 apparent power = 1.082 kVA
	Total active/reactive/apparent power display screen Example: Total active power = 1.649 kW Total reactive power = 2.844 kvar Total apparent power = 3.278 kVA

2 Options for auxiliary display screen ▼

	Per phase measurement class display option
	Max./Min.value class display option
	Sub-harmonic component of voltage display option
	Sub-harmonic component of current display option
	Extended information class display option

3 Display example of auxiliary display screen ▼

	L1 active power, L1-N voltage, L1 current and L1 active energy display screen
	L2 active power, L2-N voltage, L2 current and L2 active energy display screen
	L3 active power, L3-N voltage, L3 current and L3 active energy display screen
	L1 active power, L1-N voltage, L1 current and L1 reactive energy display screen
	L2 active power, L2-N voltage, L2 current and L2 reactive energy display screen
	L3 active power, L3-N voltage, L3 current and L3 reactive energy display screen
	Max.value of per phase L-N voltage
	Max.value of per phase L-L voltage
	Max.value of per phase and neutral current
	Max.value of per phase active power
	Max.value of per phase reactive power
	Max.value of per phase apparent power
	Max.value of per total active/reactive/apparent power
	Min.value of per phase L-N voltage
	Min.value of per phase L-L voltage
	Min.value of per phase and neutral current
	Min.value of per phase active power
	Min.value of per phase reactive power
	Min.value of per phase apparent power
	Min.value of per total active/reactive/apparent power
	Modbus address
	Baud rate
	Parity bit
	Ratio of current transformer (CT)
	Ratio of voltage transformer (PT)
	The screen lights all LCD segments and can be used as a display LCD check.