EASTRON

SMART MINI POWER MONITER
SMART X203



USER MUNUAL 2013

Installation and Operation Instructions

Important Safety Information is contained in the Maintenance section. Familiarise yourself with this information before attempting installation or other procedures.

Symbols used in this document:



Risk of Danger: These instructions contain important safety information:
Read them before starting installation or servicing of the equipment



Caution: Risk of Electric Shock

1 Introduction

X203 single phase multifunction energy meter combines function of measurement,LCD display and communication.It can measures voltage,current,active power,reactive power.and supports MODBUS-RTU.
X203 has 4 DI and 2 DO,can realize switch signal monitoring and output function controlling.It can adopt to various of energy management system,transformer substation automation,distribution transformer network automation,community power monitoring,industry automation,smart distributor and switchgear.including electricity automation management of power plant and hydropower station

1.1 Unit Characteristics

The X203 can measure and display:

- Line voltage
- Line Frequency
- Power
- Active energy
- Reactive energy

The unit has password-protected set-up screens for:

- Changing password
- CT primary current
- PT

1.2 Current Transformer Primary Current

The unit can be configured to operate with CT primary current of between 1 and 9999A. Maximum CT primary current corresponds to a maximum input current to the unit of 5A.

1.3 RS485 Serial – Modbus RTU

This uses an RS485 serial port with Modbus RTU protocol to provide a means of remotely monitoring and controlling the X203.

2 Operation

X203 has two buttons and three modes.

Button  on the left side of operation panel

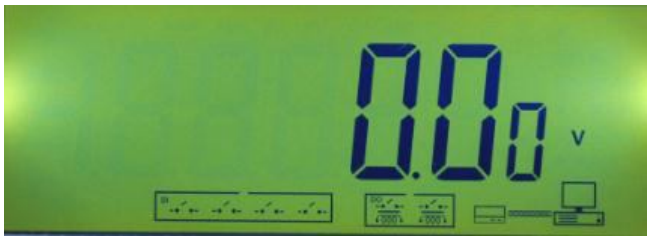
Button  on the right side of operation panel

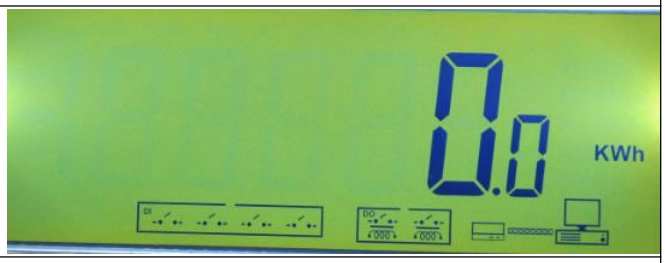
Mode A： Display mode
Setup mode has two sub-modes,one is parameter selection mode,another is parameter setup mode.
Mode B： Parameter selection mode(flash slowly),select parameter bits
Mode C： Parameter setup mode(flash quickly),modify parameter bits.

	Under display mode,it's "UP" button. Under parameter selection mode,it's "Left" and "Back" button. Under parameter setup mode,it's "—" and "Back" button.
	Under display mode,it's "DOWN" button. Under parameter selection mode,it's "Right" and "Enter" button. Under parameter setup mode,it's "+" and "Enter" button.

3 Display

Short press button  and  to view voltage,current,frequency,frequency factor,reactive power,reactive power,active energy and reactive energy.

Voltage	
Current	
Frequency	
Frequency factor	
Reactive power	

Active power	
Total power	
Active energy	
Reactive energy	
Version (need to enter setup interface)	

4 Setup

4.1 Enter setup interface

To enter set-up mode, pressing the  button for 3 seconds, until the password screen appears.



Setting up is password-protected so you must enter the correct password (default '1000') before processing. If an incorrect password is entered, the display will show: PASS Err

To exit setting-up mode, press repeatedly until the measurement screen is restored

Enter password setup interface,you will the following page 

If selected number flash quickly under parameter setup mode.Short press or to modify parameter information,then long press to enter parameter selection mode,modify parameter bits via short press or button.After set correct password(default 1000),long press to enter setup interface under parameter selection mode.

4.2 Set-up Entry Methods

1 Long press button 3 seconds to return previous menu.

2 Long press button 3 seconds to enter next menu or confirm your selection.

3 Press or button to adjust one value quick flash

4 Press or button to select data bits to adjust one value slow flash.

4.3 Set Do

1	Use and buttons to select the DO option. The screen will show the currently select DO.	

4.3.1 Set Do status

1	Under DO setup interface,long press  to enter right interface,set DO1 and DO2 status	
2	Long press  button,DO status flashes	
3	Short press  or  buttons to select on or off status of DO1 and DO2	
4	Long press  button,screen shows “OK”which means setup is successful.	
5	Long Press  button to exit the number setting routine and return to the Set-up menu. SET will be removed	

4.3.2 Set DO1 pulse type

1	Under  status,short press  to enter right interface,set relay output pulse type	
2	Short press  button to enter right interface,long press  button and “level” flashes	

3	Select pulse type as LEVEL or PULSE via or button	
4	Long press button to confirm pulse type selection.	
5	Long Press button to exit the number setting routine and return to the Set-up menu. SET will be removed	

4.3.3 Set DO1 pulse width

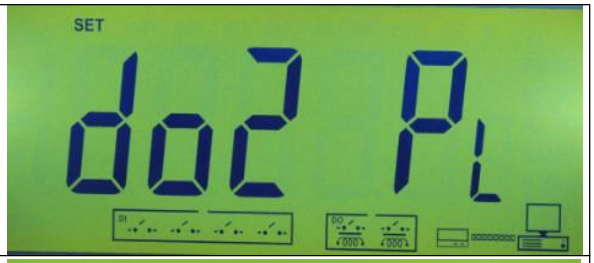
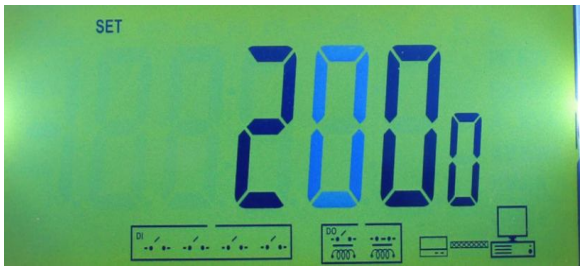
1	Under  status,short press button to enter right interface to set relay output 1's pulse width.	
2	Long press button to enter right interface, "1"flashes quickly.	
3	Modify parameter value via and button	
4	Long press button,parameter bits flashes slowly,move parameter bit via and button	

5	Long press button,selected data bit flashes quickly,modify selected parameter valve via and ,confirm the modification via long press button	
6	Long press button to confirm parameter setup.	
7	Long Press button to exit the number setting routine and return to the Set-up menu. SET will be removed	

4.3.4 Set DO2 pulse type

1	Under  status,short press button to enter right interface,set relay output 1's pulse type.	
2	Long press to enter right interface, "LEVEL" flashes	
3	Select pulse type as LEVEL or PULSE via and button	
4	Long press to confirm pulse type selection	
5	Long Press button to exit the number setting routine and return to the Set-up menu. SET will be removed	

4.3.5 Set DO2 pulse width

1	Under  status,short press  button to enter right interface to set relay output 1's pulse width.	
2	Long press  to enter right interface, "1"flashes quickly.	
3	Modify parameter value via  and  button.	
4	Long press  button,selected parameter bits flashes slowly,move parameter bits via  and  button.	
5	Long press  button,selected parameter flashes quickly,modify parameter bit value via  and  button.Long press  to confirm the modification and then parameter bits flashes slowly.	
6	Long press  button to confirm parameter setup.	
7	Long press  button to exit the number setting routine and return to the Set-up menu. SET will be removed	

4.4 Set communication parameter

4.4.1 Set address

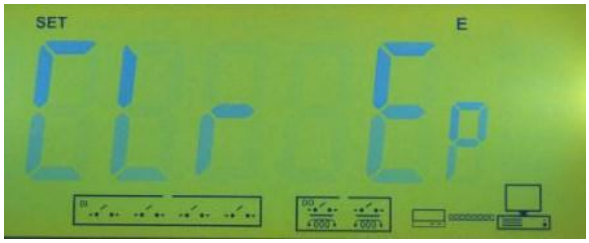
1	From the Set-up menu, use and buttons to select the address-set option.	
2	Long press to enter the address-set routine. The corresponding bit will fast-flash.means the bit's value can be adjust.then long press ,the corresponding bit will slow-flash,means bit can be adjust.	
3	On Completion of the address-set routine,when it is in the slow-flash situation and this bit's value is not be adjusted after latest select this bit,long press to return to the main set up menu.	

4.4.2 Baud rate

1	From the Set-up menu, use and buttons to select the Baud Rate option.	
2	Press to enter the selection routine. The current setting will flash.	
3	Use and buttons to choose Baud rate 1200、2400、4800、9600、19200、38400、115200	

4	On Completion of the entry procedure, press to confirm the setting .

4.5 Clear active power

1	From the Set-up menu, use and buttons to select the EP CLR option.	
2	Long press to execute the EP clear routine.	
3	On Completion of the EP CLR routine, long press to return to the main set up menu.	

4.6 Clear reactive power

1	From the Set-up menu, use and buttons to select the EQ CLR option.	
2	Long press to execute the EQ clear routine.	
3	On Completion of the EQ CLR routine, long press to return to the main set up menu.	

4.7 Set PT1

1	From the Set-up menu, use  and  buttons to select the PT1-SET option.	
2	Long press  to enter the PT1-SET routine. The corresponding bit will fast-flash.means the bit's value can be adjust.then long press  ,the corresponding bit will slow-flash,means bit can be adjust.	
3	On Completion of the PT1-SET routine,when it is in the slow-flash situation and this bit's value is not be adjusted after latest select this bit,long press  to return to the main set up menu.	

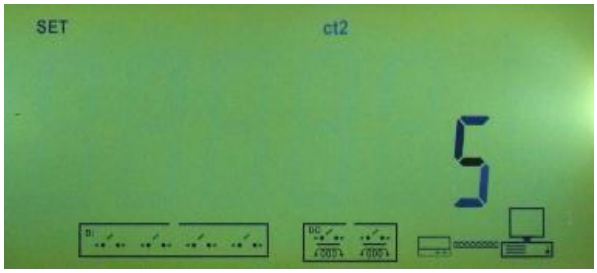
4.8 Set PT2

1	From the Set-up menu, use  and  buttons to select the PT2-SET option.	
2	Long press  to enter the PT2-SET routine. The corresponding bit will fast-flash.means the bit's value can be adjust.then long press  ,the corresponding bit will slow-flash,means bit can be adjust.	
3	On Completion of the PT2-SET routine,when it is in the slow-flash situation and this bit's value is not be adjusted after latest select this bit,long press  to return to the main set up menu.	

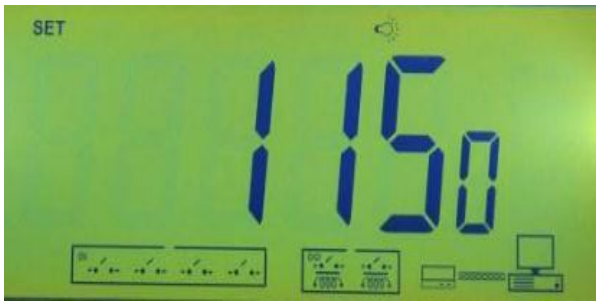
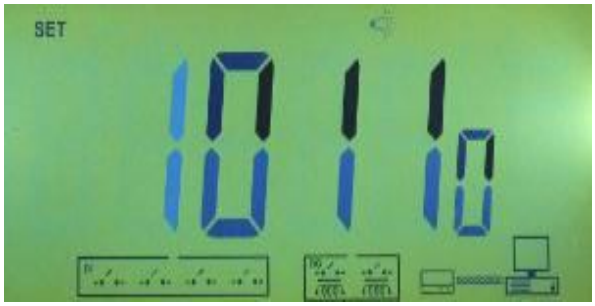
4.9 Set CT1

1	From the Set-up menu, use  and  buttons to select the CT1-SET option.	
2	Long press  to enter the CT1-SET routine. The corresponding bit will fast-flash.means the bit's value can be adjust.then long press  ,the corresponding bit will slow-flash,means bit can be adjust.	
3	On Completion of the CT1-SET routine,when it is in the slow-flash situation and this bit's value is not be adjusted after latest select this bit,long press  to return to the main set up menu.	

4.10 Set CT2

1	From the Set-up menu, use  and  buttons to select the CT2-SET option.	
2	Long press  to enter the CT2-SET routine. The corresponding bit will fast-flash.means the bit's value can be adjust.then long press  ,the corresponding bit will slow-flash,means bit can be adjust.	
3	On Completion of the CT2-SET routine,when it is in the slow-flash situation and this bit's value is not be adjusted after latest select this bit,long press  to return to the main set up menu.	

4.11 Set backlight

1	From the Set-up menu, use  and  buttons to select the back-light option.	
2	Long press  to enter the back-light routine. The corresponding bit will fast-flash.means the bit's value can be adjust.then long press  ,the corresponding bit will slow-flash,means bit can be adjust.	
3	On Completion of the back-light routine,when it is in the slow-flash situation and this bit's value is not be adjusted after latest select this bit,long press  to return to the main set up menu.	

4.12 Set round-display time

1	From the Set-up menu, use  and  buttons to select the round-display option.	
2	Long press  to enter the round-display routine. The corresponding bit will fast-flash.means the bit's value can be adjust.then long press  ,the corresponding bit will slow-flash,means bit	

	can be adjust.	
3	On Completion of the round-display routine,when it is in the slow-flash situation and this bit's value is not be adjusted after latest select this bit,long press  to return to the main set up menu.	
4	Return to display mode,long press left button to enter round-display	

4.13 Set password

1	From the Set-up menu, use  and  buttons to select the password option.	
2	Long press  to enter the password routine. The corresponding bit will fast-flash.means the bit's value can be adjust.then long press  ,the corresponding bit will slow-flash,means bit can be adjust.	
3	On Completion of the password routine,when it is in the slow-flash situation and this bit's value is not be adjusted after latest select this bit,long press  to return to the main set up menu.	

5 Specifications

5.1 Electronic parameter

Wiring Input	1phase 2wire
Rated Input Voltage	176~264V AC (L-N)
Frequency Range	45~66Hz
Rated Input Current	Nominal 5A
CT Primary	1~9999A (programmable for any value)
CT secondary	1A or 5A
PT primary	20V to 50KV(programmable for any value)

PT secondary	20~280V AC
Burden	0.5 VA@5A per phase
Measurement	Total Active Energy (kWh) Total Reactive Energy (KVARH) Active Power (kW) Reactive Power (KVARH) Apparent Power (KVA) Power Factor Voltage (V) Current (A) Frequency (Hz)

5.2 Accuracy

Current and Voltage	Class 0.2
Power	Class 0.5
Power factor	±0.2°
Active Energy	Class 1
Reactive Energy	Class 2

5.3Reference Conditions of Influence Quantities

Influence Quantities are variables that affect measurement errors to a minor degree. Accuracy is verified under nominal value (within the specified tolerance) of these conditions.

Ambient temperature	23°C ±1°C
Input waveform	50 or 60Hz ±2%
Input waveform	Sinusoidal (distortion factor < 0·005)
Auxiliary supply voltage	Nominal ±1%
Auxiliary supply frequency	Nominal ±1%
Auxiliary supply waveform (if AC)	Sinusoidal (distortion factor < 0·05)
Magnetic field of external origin	Terrestrial flux

5.4Environment

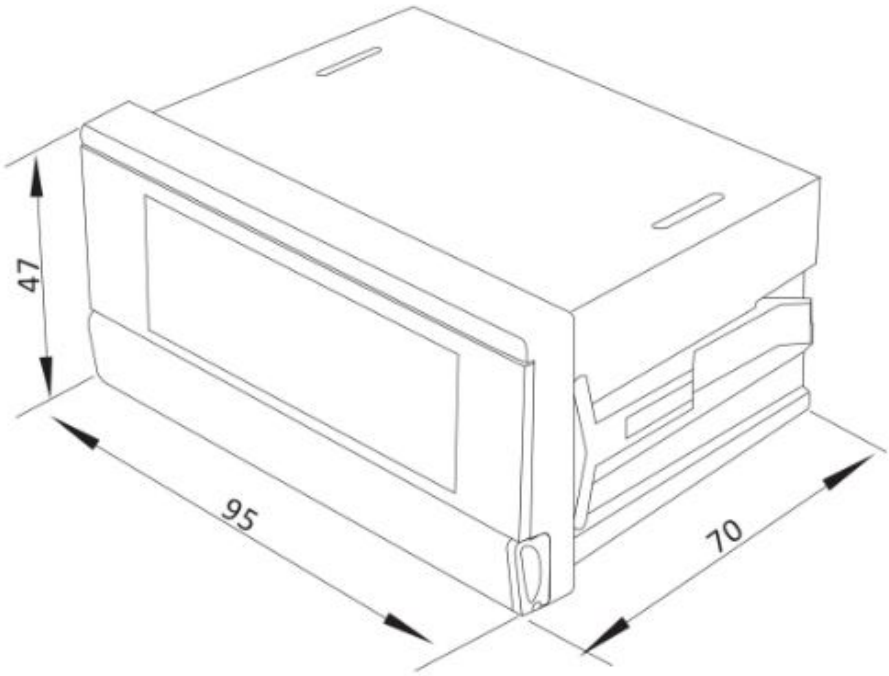
Operating temperature	-25°C to +55°C*
Storage temperature	-40°C to +70°C*
Relative humidity	0 to 90%, non-condensing
Altitude	Up to 2000m
Warm up time	1 minute
Vibration	10Hz to 50Hz, IEC 60068-2-6, 2g
Shock	30g in 3 planes

*Maximum operating and storage temperatures are in the context of typical daily and seasonal variation.

5.5 Mechanics

DIN rail dimensions	72 x 94.5 mm (WxH) per DIN 43880
Mounting	DIN rail (DIN 43880)
Sealing	IP20 (minimum)
Material	Self-extinguishing UL 94 V-0

6 Dimension diagram



7 Wiring diagram

