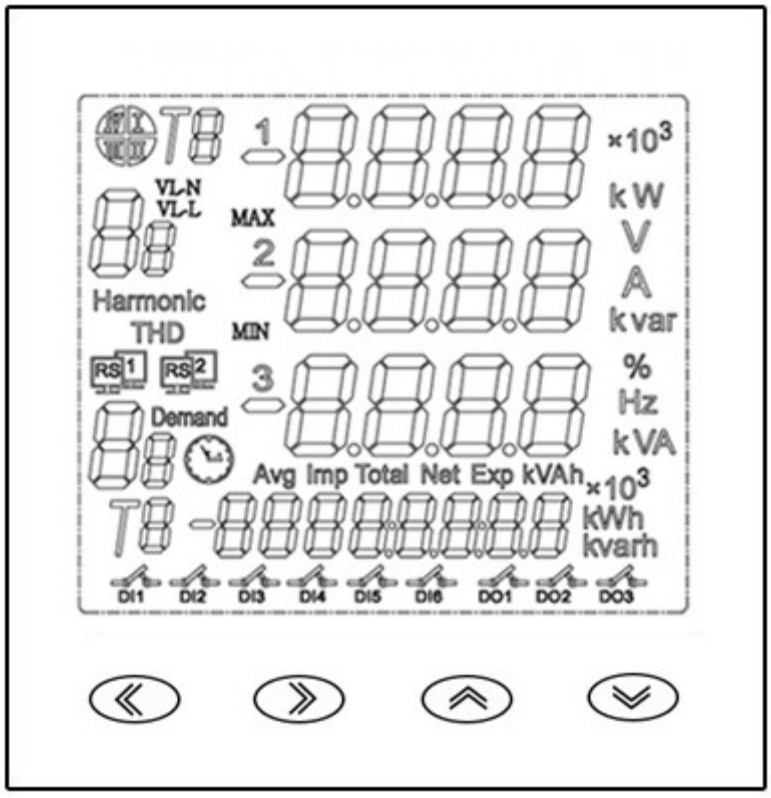
BJ194J-9SY Power Analyzer

User Manual

Version：3.0



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Read me

When you use BJ194J-9SY series Power Analyzer, be sure to read this user manual carefully, and be able to fully understand the implications, the correct guidance of operations in accordance with user manual, which will help you make better use of BJ194J-9SY series Power Analyzer, and help to solve the various problems at the scene.

1. Before the meter turning on the power supply, be sure that the power supply within the provisions of the instrument;

2. When installation, the current input terminal must non-open, voltage input terminals must Non-short circuit;

3. Communication terminal (RS232/RS485 or Ethernet) is strictly prohibited to impose on high pressure;

4. Be sure the instrument wiring consistent with the internal system settings;

5. When communicating with the PC, instrument communication parameters must be consistent with the PC.

- **Please read this user manual carefully**
- **Please save this document**

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1. - SUMMARIZE

BJ194J-9SY series Power Analyzer is a high-end multifunction power meter. It is the ideal choice for monitoring and measuring of power systems.

It can measure all of the power parameters in power grid:

Current,
Voltage,
Frequency,
Active power,
Reactive power,
Apparent power,
Energy (Active/Reactive),
Power factor,
*Current harmonics 2~63 times,
*Voltage harmonics 2~63 times,
Voltage and current THD%,
Harmonics factor
Voltage crest factor
Current K-factor
Multi- tariffs ratio.

And it can also transmit the parameter into 2 route relay output (2DO) and 4 route switch input (4DI), 2 route analog output (2AO). For transformers, generators, capacitor banks and motors of the distributed detection, automatic control system, on-line monitoring display. 194J provide max 50 lists event logging, real-time saving DI/DO acted events.

It can replace the traditional analog or many digital measurement instruments (such as ammeter, voltmeter, power meter, power factor meter, frequency meter, etc.) with the advantages of improving system reliability, making the on-site wiring convenient and reduce system cost.

With serial port, BJ194J-9SY Power Analyzer can connect with PC; and use Modbus to set programming and read the data. Based on this power meters, you can simply set up a monitoring system with the IPC and central software.

2. - APPLICATIONS

◆ All power parameter measurement;
◆ Power factor measurement and control;
◆ Energy Measurement;
◆ Replacing the three-phase power meter, three phase electricity transmitter;
◆ Transformers, generators, capacitors and electric motors distributed detection;
◆ Medium and low pressure systems;
◆ SCADA, EMS, DCS integrators.

3. - FEATURES

3.1. - Electricity Metering

By means of an internal microprocessor it simultaneously measures:

Parameter	Symbol	A-phase	B-phase	C-phase	Total/Avg
Single phase voltage	V	**x**	**x**	**x**	/
*Phase-phase voltage	V	**x**	**x**	**x**	/
Current	A	**x**	**x**	**x**	/
Frequency	Hz	/	/	/	**x**
Power factor	Cos Φ	**x**	**x**	**x**	**x**
Active power	W	**x**	**x**	**x**	**x**
Reactive power	Var	**x**	**x**	**x**	**x**
Apparent power	VA	**x**	**x**	**x**	**x**
Active energy	Wh	/	/	/	**x**
Reactive energy	Varh	/	/	/	**x**
Multi- tariffs ratio.Energy	Wh	/	/	/	**x**
Max demand(W/var/VA)	MAX	/	/	/	**x**
Voltage/frequncy deviation	---	/	/	/	**x**
Voltage/current unbalance	---	/	/	/	**x**
Individual harmonic current content (Up to the 63 th)	---	/	/	/	**x**

Notes: Phase-phase voltage is Uab, Ubc, Uca, voltage data determined by the different wiring
Available: **x:** Display and communications.
xx: Only can read in RS485 communication

The 194J-9SY delivers the visualization of parameters listed above by means of LCD type displays. In the main display area shows 4 power parameters, with other display area show the various parameters and state of meter on each page jump. For more details of measurement parameters please refer to the subsequent for displays introduction and RS485 communication instructions.

OTHER FEATURES

- Low-size (96 x 96 mm), panel-mounting meter.
- True R.M.S. measuring system.
- Instantaneous, maximum and minimum values of each measured parameter.
- Energy measurement (indication through a lighting led)
- RS-485 or Ethernet(optional) type communication to a PC.

3.2. - Specifications

1. - Reference standard:

Basic electricity: GB/T13850-1998 (IEC688-1992)

Active power: GB/T17215-2002 (IEC61036:2000)

Reactive power: GB/T17882-1999 (IEC61268:1995)

2- Accuracy standards

Parameter	Accuracy	A phase	B phase	C phase	All	Average
Voltage	0.5s	V1	V2	V3		VE
Current	0.5s	A1	A2	A3		AE
Active Power	0.5s	W1	W2	W3	W	
Reactive Power	0.5s	var1	var2	var3	var	
Apparent power	0.5s	VA1	VA2	VA3	VA	
Power Factor	0.5s	PF1	PF2	PF3	PF	
Active Energy	0.5s				Wh	
Reactive Energy	1s				varh	
Frequency	0.05s				Hz	

3. - Input

Voltage: Rated 400V (optional 100V)

Current: Rated 5A (optional 1A)

Frequency: 45-65Hz

4. - Load

Voltage: <0.1VA / phase (rated 220V)

Current: <0.4VA / phase (rated 5A)

5. - Overload

Current: 1.2 times rated continuous; 1 seconds for 10 times the rated

Voltage: 1.2 times the rated continuous; 10 seconds for 2 times the rated

6. - Dielectric strength

IEC 688 / IEC 255-3 (1989)

2kV AC RMS 1 minute, between input / output / case / power supply

7. - EMC Test

	standard	Test voltage
Electrostatic discharge immunity test:	IEC-61000-4-2 level 4	8Kv
Electrical fast transient burst immunity test	IEC61000-4-4 level 3	Input 1kV; Power supply 2kV
Surge (Shock) immunity test	IEC61000-4-5 level 4	common mode test voltage 4kV

8. - Work environment

Temperature: -20℃~ +60℃

Humidity: RH 20%～95%（No condensation）

9. - Protection

Panel: IP54

Case: IP20

10. - Storage Conditions

Temperature: -25℃～+70℃

Humidity: RH 20%～95%

11. - Working Power

AC 80-265V, 45-65Hz, DC 80-380V

DC 20-60V (Optional)

Maximum power consumption 6W

12. - Dimensions

L × W × H =96mm×96mm×71mm

13. - Installation hole size

L × W = (91+0.8mm) × (91+0.8mm)

4.- INSTALLATION AND START-UP

The manual you hold in your hand contains information and warnings that the user should respect in order to guarantee a proper operation of all the instrument functions and keep it in safety conditions. The instrument must not be powered on and used until its definitive assembly is on the cabinet's door.

If the instrument is not used as manufacturer's specifications, the protection of the instrument will be damaged.

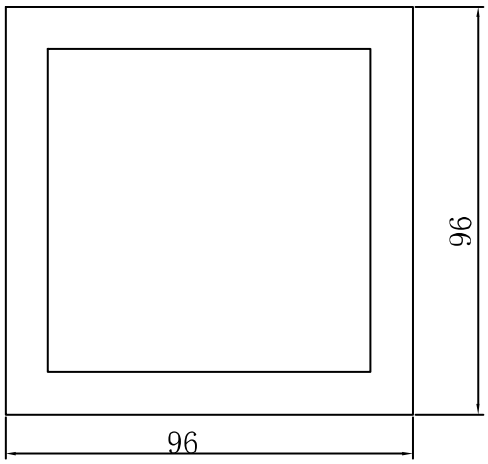
When any protection failure is suspected to exist (for example, it presents external visible damages),the instrument must be immediately powered off. In this case contact a qualified service representative.

4.1.- Installation

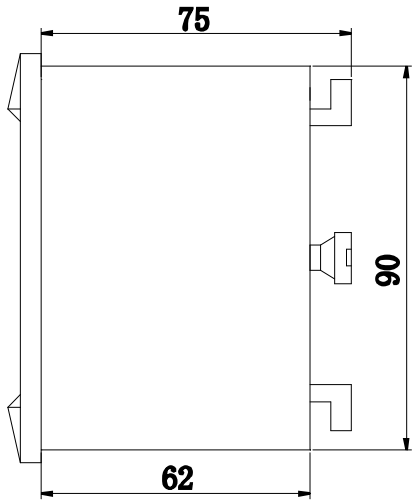
Mounting

Instrument is to be mounted on panel (cut-out *91+0.8 x 91+0.8 mm*). Keep all connections into the cabinet.

Note that with the instrument powered on, the terminals could be dangerous to touch and cover opening actions or elements removal may allow accessing dangerous parts. Therefore, the instrument must not be used until this is completely installed.



Front view



Side view

Notes:

Input signal: BJ194J using a separate acquisition calculate for each measurement channel, to ensure consistent in use, for different load forms, it's a variety of connection mode. Access wire shall be met: the current 2.5 square mm, voltage of 1.5 square millimeters.

A. Voltage input:

Input voltage should not exceed the rated input voltage products (100V or 400V),
Otherwise, you should use external CT. Suggest 1A fuse be installed in the voltage input side.

B. Current Input:

Standard input current is 5A, if greater than 5A should use external CT.
When the CT is connected with other instruments, make sure wiring methods be used in series.

Before remove the current input connection, must be sure to disconnect the primary circuit or shorted secondary circuit of CT. In order to facilitate disassembly, please do not connect to CT directly, and the terminal block is suggested.

C. Please make sure that the input voltage and current corresponding to the same phase sequence, and the same direction; Otherwise, the Values and symbols will be wrong!! (Power and Energy)

The input network configuration of instrument depends on the CT number of the system:
in the condition of 2 CT, select the three-phase, three-lines two components;
in the condition of 3 CT, select the three-phase, four-lines three component mode.

Instrument connection mode, set of the instrument (programming input network NET) should be the same load wiring as measured wiring. Otherwise, the measurement instrument will lead to incorrect voltage or power.

In three-phase three-wire mode, the measurement and shows the line voltage;
In three-phase four-wire mode, the measurement and shows the phase voltage.

Auxiliary power:

BJ194J Series Power Analyzer with universal (AC / DC) power input, if not for a special statement, we provide the 220VAC/DC or 110VAC/DC power interface for standard products. Instruments limit work power supply: AC / DC: 80-270V, please ensure that the auxiliary power can match with BJ194J series meter to prevent damage to the product.

A. Suggest install 1A fuse in the fire line side.
B. For the areas with poor power quality, suggest install lightning surge suppressor and rapid burst suppressor to prevent lightning strikes.

4.2. - Connection Terminal

Upper connection terminal

15	16	50	49	48	47	60	59	58	2	1
AO-	AO+	RP-	RP+	AP-	AP+	GUD	RS485B	RS485A	Power supply	

*1. *Supply voltage input: 0 V*
*2. *Supply voltage input: 220 Va.c.*
58. RS-485 (+)
59. RS-485 (-)
60. RS-485 (GND)
47. Active energy pulse output (+)
48. Active energy pulse output (-)
49. Reactive energy pulse output (+)
50. Reactive energy pulse output (-)
16. Analog output (+)
15. Analog output (–)

Middle connection terminal

22	21	20	19	70	71	72	73	74
DO2		DO1		COM	DI1+	DI2+	DI3+	DI4+

20. Route 1 digital output (+)
19. Route 1 digital output (-)
22. Route 2 digital output (+)
21. Route 2 digital output (-)
*70. Digital input **COM** pin*
71. Route 1 digital input (+)
72. Route 2 digital input (+)
73. Route 3 digital input (+)
74. Route 4 digital input (+)

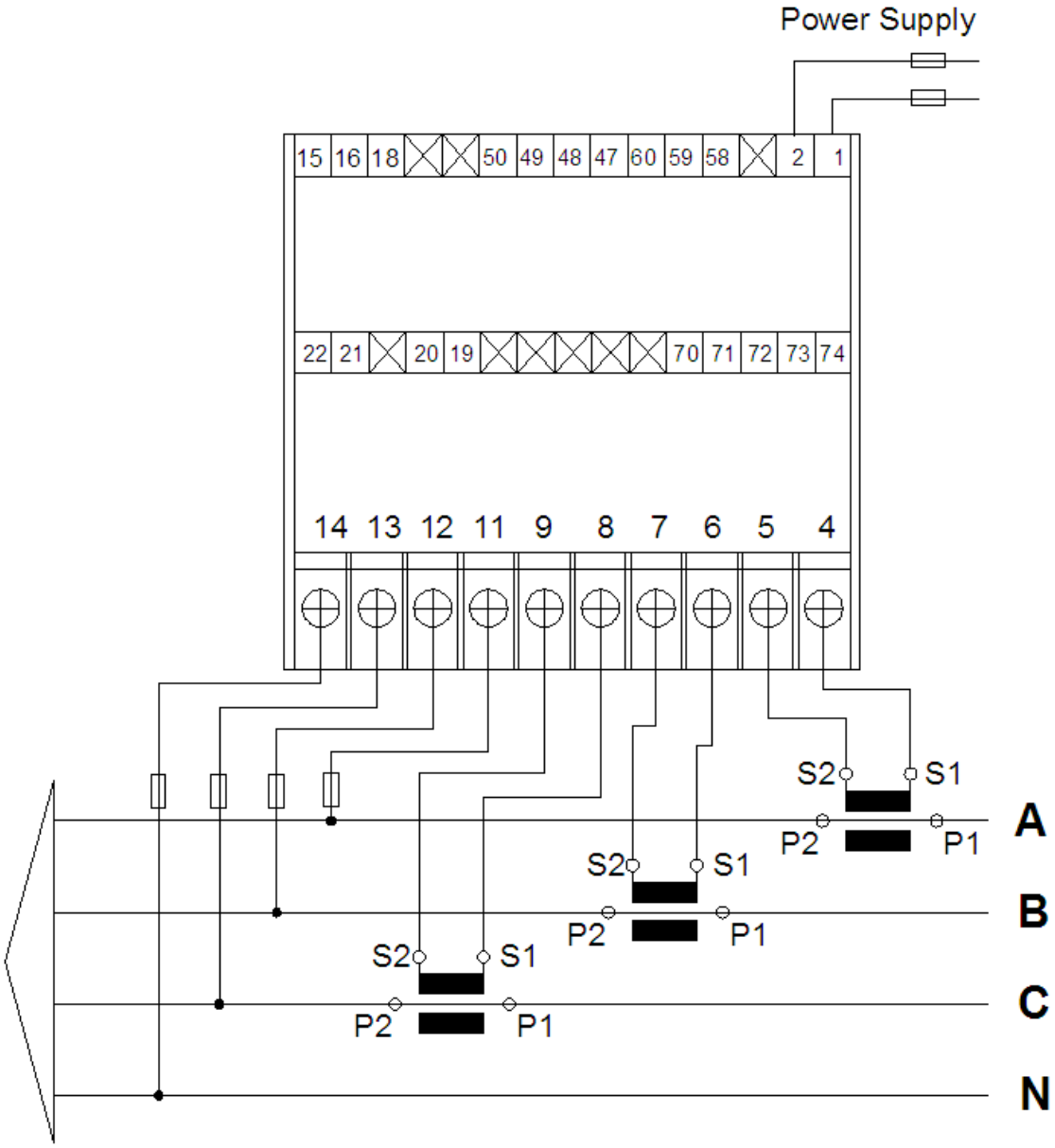
Lower connection terminal

14	13	12	11	9	8	7	6	5	4
Un	Uc	Ub	Ua	C-phase Current		B-phase Current		A-phase Current	

4. Current A-phase - S1 input
5. Current A-phase - S2 input
6. Current B-phase - S1 input
7. Current B-phase - S2 input
8. Current C-phase - S1 input
9. Current C-phase - S2 input
11. Voltage A-phase input
12. Voltage B-phase input
13. Voltage C-phase input
14. Neutral Voltage input

Notes: The terminal pin will change depends on customer order; please refer to the label on the meter!

4.3. - Connection Drawing



IMPORTANT REMARK!

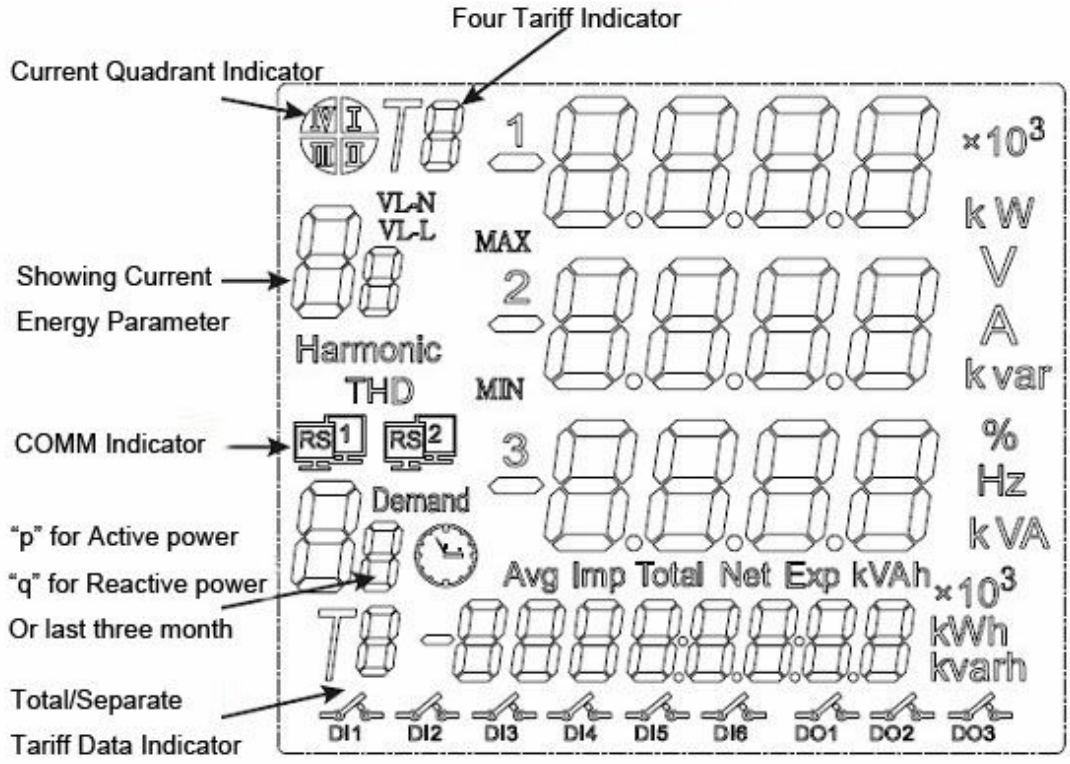
If power = -0.01 is shown for any of the phases and voltage and current are not zero for this phase, check out following points:

- Assure that A, B and C phases coincide in voltage and current.
- Correct polarity? Reverse the current transformer placed at this phase.

Note: This connection drawing is for reference only, the actual connecting terminal please refer to the label on the rear part.

5. SCREEN DISPLAY

5.1. - Panel Diagram



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Note: Please see detail instructions of "*" items at "**OPERATION MODE".**

6. - OPERATION MODE

When the 194J-9SY is powered up, the entire symbol will be on, and the meter starts to self-test. After some seconds, the meter is ready for operation and shows one of the available screens.

Parameters on display can be switched by pressing key  or  LCD shown on screen at any moment

When the key  is pressed, the screen CURRENT values of each phase are now showing.

Pressing again the key  , the screen will show the following parameters successively.

In setting menu, pressing  can move the setting cursor to left;
Pressing  can enter the number 0 ~ 9.

This key named "SET" key, pressing it can open the programming menu and return to previous menu.

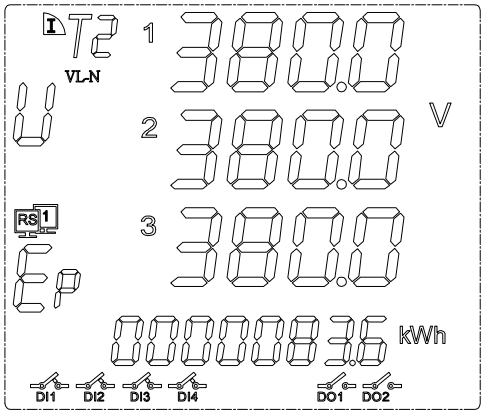
This key named “Enter” key, pressing this key you can exit it with saving any modification that you might have done, in menu operation press “Enter” key, and user can go to the next menu.

Note:

Press key  or  in normal standby status, and the meter will show different data in main screen:

In the menu set mode, when changes the parameter and exit setting, the meter will ask to "SAVE", press  *exit without saving*
press  *save and exit.*

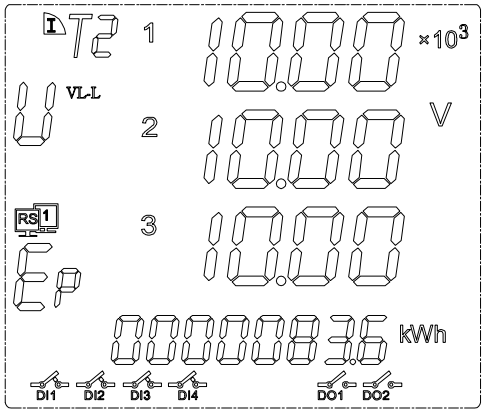
Screen 1: Displays the three phase voltage Ua, Ub, Uc;
As shown: Ua = 380.0V; Ub = 380.0V; Uc = 380.0V;



In the bottom character “Ep” show **total active energy** is 83.6KWh.

In other display area region show the system information:
DI1, DI2, DI3, DI4 in the close state;
DO1, DO2 in the open state;
Communication transceiver normal;

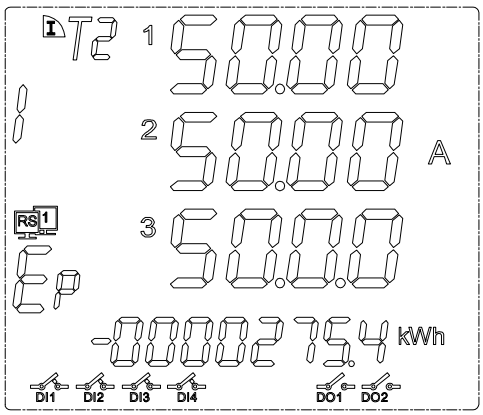
Note: Detail information for each symbol, please refer **chapter 5,** following sections as same



Note: in the high voltage measurement, X10^3 mean the showing voltage value multiplied by 1000, in the screen diagram mean the voltage is 10X1,000=10,000volt

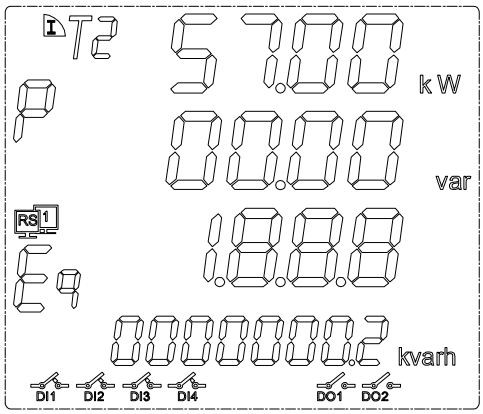
Screen 2: Display the three-phase current Ia, Ib, Ic.

In the bottom **Ep** shows **total negative active energy**.



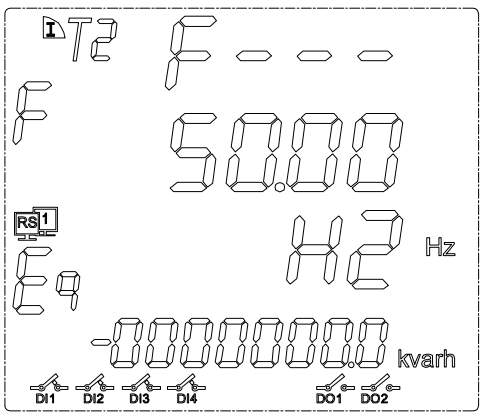
Screen 3: Display the total active power, total reactive power, and total factor.

In the bottom "**Eq**" shows **total active energy**.

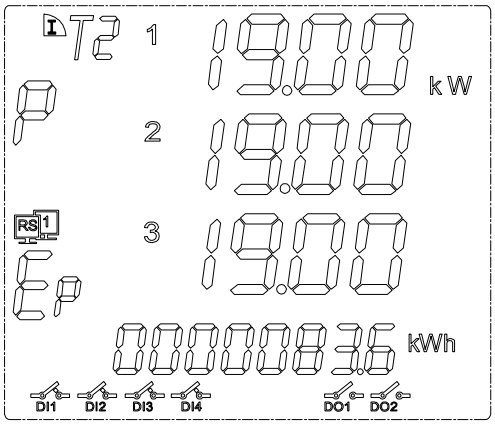


Screen 4: Display the frequency of a phase.

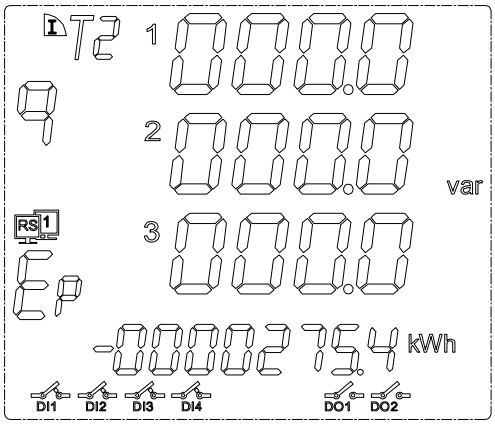
In the bottom "**Eq**" shows **total negative reactive energy**.



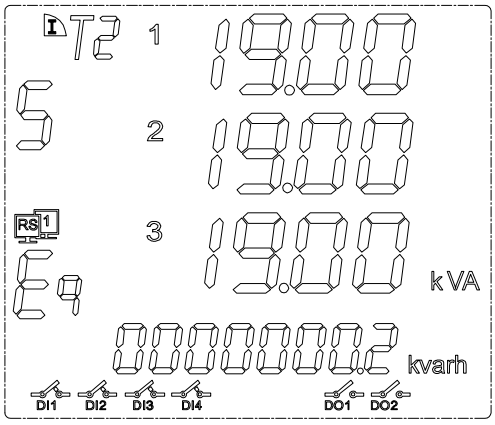
Screen 5: Display independent active phase. (only Three-phase 4 wire type)
In the bottom **Ep** shows **total active energy**



Screen 6: Display independent reactive phase. (only Three-phase 4 wire type)
In the bottom **Ep** shows **total negative active energy**.

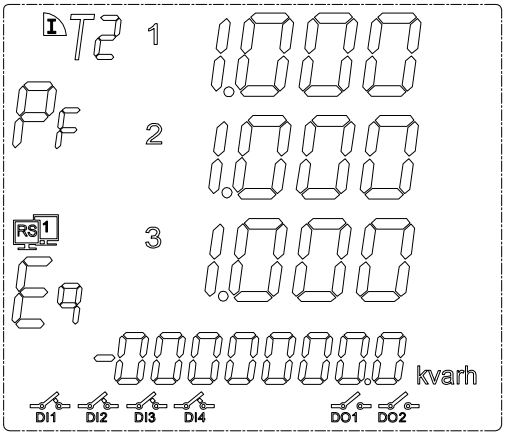


Screen 7: Display independent apparent phase. (only Three-phase 4 wire type)
In the bottom "**Eq**" shows **total active energy**.



Screen 8: Display independent power factor. (only Three-phase 4 wire type)

In the bottom "**Eq**" shows **total negative reactive energy**.

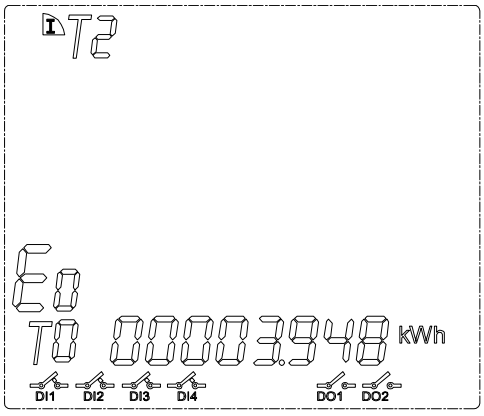


Screen 9: Display the 4 tariff energy data.

In the **top screen** "T1"~"T4" indicate current showing tariff.
In diagram show tariff_2

E0~E3 indicate the last three month
E0: Three month total energy data
E1: Current month energy
E2: Last month energy
E3: Month before last month energy

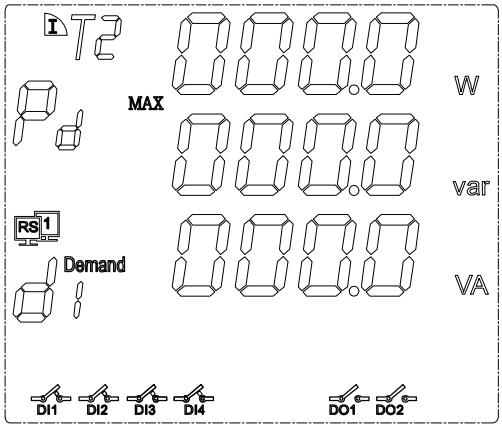
In the **bottom screen** "T1"~"T4" indicate the energy sum data in each tariff.



Note: Press key " " can switch show other energy data

Screen 10: Display maximum power demand.

Notes: use slip method, slip interval 1 minute, total of 15 minutes



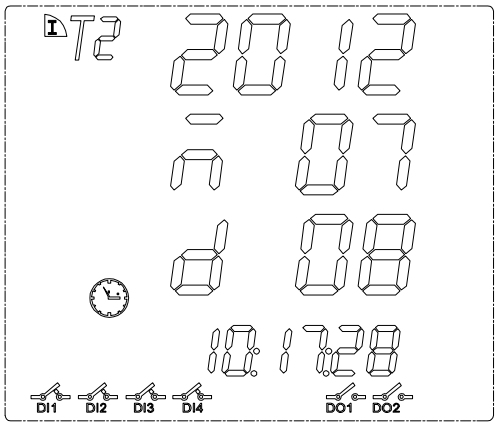
line 1 for active power

line 2 for reactive power

line 3 for apparent power

The lower left corner symbol "d1" mean display the current month's max demand power
"d2" for last month max demand power
"d3" for the month before last month max demand power

Screen 11: Display real-time clock,



line 1 shows year

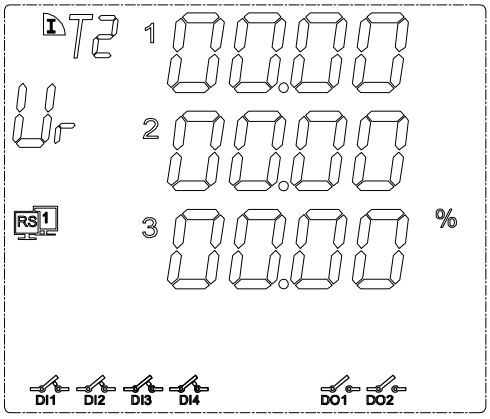
line 2 shows month

line 3 shows date

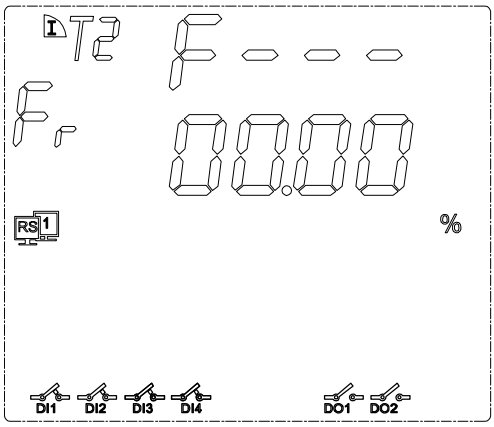
In the bottom line shows: Hour, minute and second.

Screen 12: Display voltage deviation

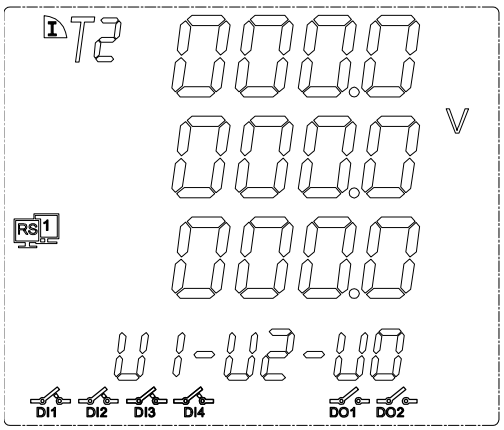
show three phase voltage deviation, unit %



Screen 13: Display voltage deviation, unit %



Screen 14: Display the voltage unbalance

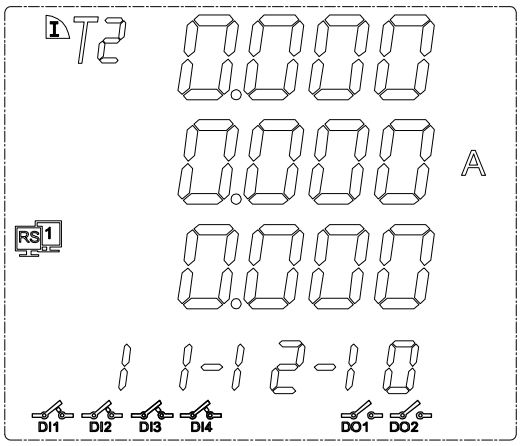


line 1 for positive sequence voltage

line 2 for negative sequence voltage

line 3 for zero-sequence voltage

Screen 15: Display the current unbalance

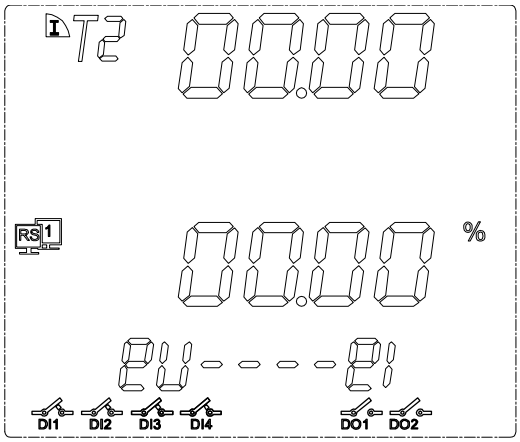


line 1 for positive sequence current

line 2 for negative sequence current

line 3 for zero-sequence current

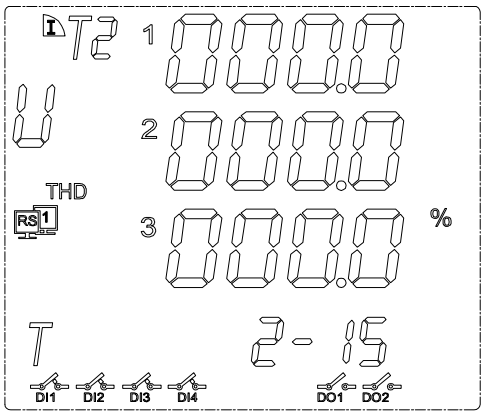
Screen 16: Display the voltage & current unbalance



line 1 show eU

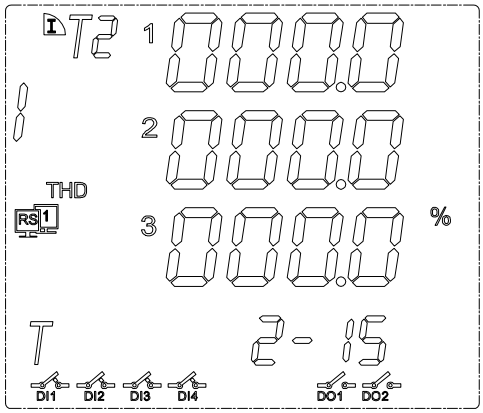
line 3 show eI

Screen 17: Display voltage THD%



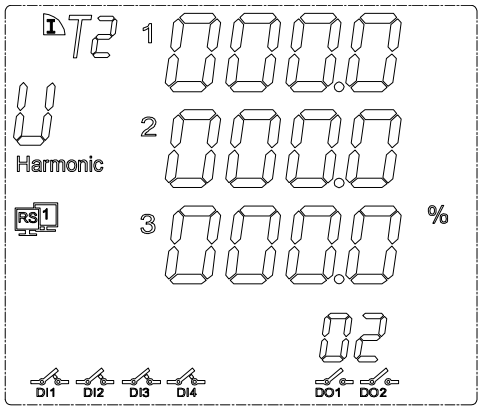
press ⌄⌄ can show the 2~63* times voltage harmonic distortion
tOhd (total odd harmonic distortion)
tEhd (total even harmonic distortion)
tHFF (telephone harmonic form factor)
CF (crest factor).

Screen 18: Display current THD%

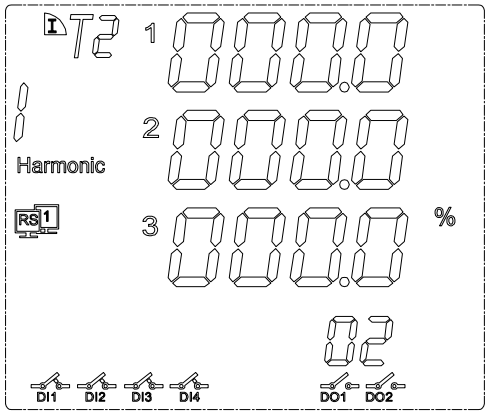


press ⌄⌄ can show the 2~63* times harmonic distortion
tOhd (total odd harmonic distortion)
tEhd (total even harmonic distortion)
tHFF (telephone harmonic form factor)
CF (crest factor).

Screen 19: Display individual voltage harmonic data
press ⌄ can show the 2~63* times data.



Screen 20: Display individual current harmonic data
press ⌄ can show the 2~63* times data.



Notes: not all the 194J can display 63 time harmonic data, please contact Blue Jay Sales team for more details

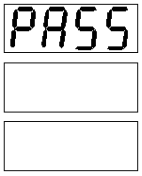
7. - SETUP PROCEDURE

The SETUP procedure of the BJ194J-9SY is performed by means of several SETUP options. Once into the SETUP, use the keyboard to select different options and enter required variables:

7.1.- Input Password

A 4-figure password is required to be entered (in case that in case that the meter will work without permission.)

At normal display mode, press  to enter the programming mode, meter display

Meter display “  ”,

Ask for the password. Press  to input the password number, from “0~9”. Press  to move the cursor . After password switch press  to confirm the input.

If password is correct, meter can enter next setting.

Notes: the default password is 0001.

7.2. - Input Signal Selection

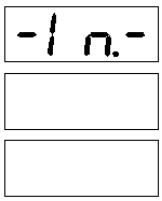
Press  , return to level 1 menu.

In this section, user will set:.

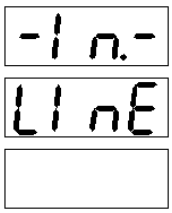
1. Input net mode;
2. Voltage measure range;
3. Current measure range;
4. Voltage transformation ratio;
5. Current transformation ratio.

7.2.1.- Choice the input net mode

In level 1 menu, use  and  to choose item “-IN-”, and the meter shows like this:

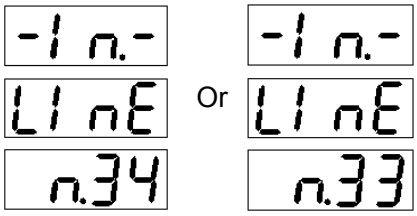


then press  , enter the level 2 menu, choose “LINE”, meter shows:



Then press  again, enter the level 3 menu.

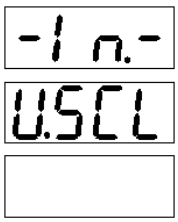
Use  and  to select the right wiring mode, meter shows like this:



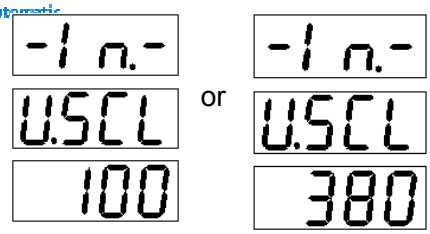
Note: Selecting the wiring mode must match with actual wiring, or the reading data will go wrong.

7.2.2.- Voltage measure range

In level 1 menu of “-IN-”
Choose item “U.SCL”, and the meter shows like this:



then press  , enter the level 3 menu, user can see the voltage range:

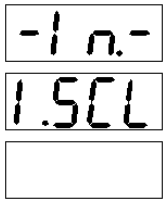


100V: Maximum measured value is 100V
380V: Maximum measured value is 380V

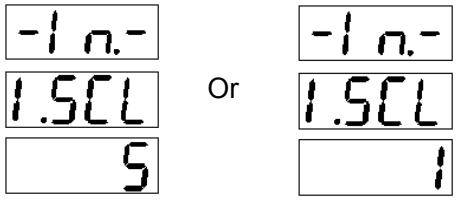
Note: A different range will affect the accuracy of measurements. If the accuracy is 0.5.
Select 100V range, means the minimum scale value is 0.5V (100 x 0.5%);
Select 380V range, means the minimum scale value is 1.9V (380 x 0.5%).

7.2.3.- Current measure range

In level 1 menu of "-IN-".
Choose "I.SCL", meter shows like this:



then press , enter the level 3 menu, user can see the current range:

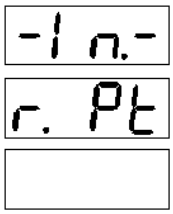


5A: Maximum measured value is 5A.
1A: Maximum measured value is 1A.

Note: Select a different range will affect the accuracy of measurements, if the accuracy is 0.5.
Select 1A range, means the minimum scale value is 0.005A (1 x 0.5%);
Select 5A range, means the minimum scale value is 0.025A (5 x 0.5%).

7.2.4- Voltage transformation ratio

In level 1 menu of "-IN-".
Choose item "r.PT" , meter shows like this:



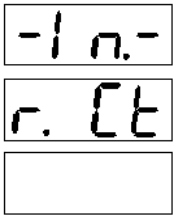
then press , enter the level 3 menu, allowing us to set the current transformer.

Press to input the number, from “0~9”. Press to move the cursor. After password switch press to confirm the input, value is 1~9999.

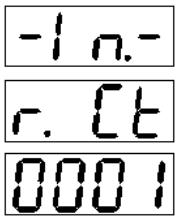
Note: The input values represent the voltage transformer (primary side voltage) / (secondary side voltage).
Secondary side voltage is 100V or 380V; user set it at section **7.2.2**

7.2.5. - Current transformation ratio

In level 1 menu of “-IN-”.
Choose the item “r.CT”, meter shows like this:



then press , enter the level 3 menu, allowing us to set the current transformer.



Press to input the number, from “0~9”. Press to move the cursor. After password switch press to confirm the input, value is 1~9999.

Note: The input values represent the current transformer (primary side voltage) / (secondary side current) .
Secondary side current is 1A or 5A, user set it at section **7.2.3**

7.3. - Communication Preferences

Press , return to level 1 menu.

In this section, user will set:

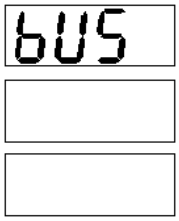
1. Meter communication address;
2. Baud rate;
3. Communication format.

Note: Not all the meter have communication function, please make sure your purchase meter first, if no communication mode, you can skip this section.

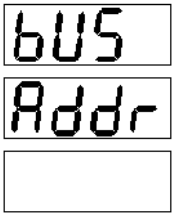
7.3.1. - Meter communication address setting

One or some BJ194…meter can be connected to a P.C. With this system we can get all the parameters in one central point of reading. The BJ194..., has a serial RS-485 or RS-232 type output (according to the model). If we connect more than one device to the same communication line (RS-485), we have to assign to each of them a different code or direction (from 1 to 247), since the P.C. needs the identification of every measuring point.

In level 1 menu, choose the item “bus”, the meter shows like this:



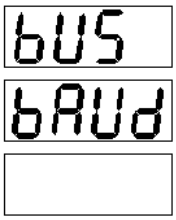
Then press , enter the level 2 menu, choose the item “Addr”, the meter shows like this:



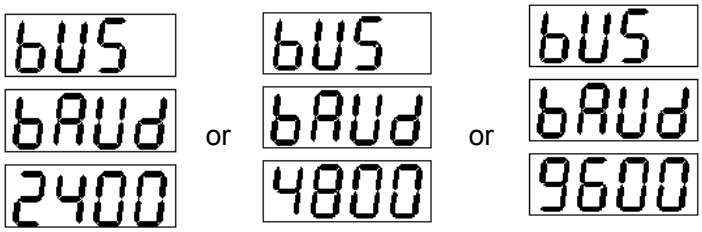
Press to input the number, from “0~9”. Press to move the cursor. After password, press to confirm the input, value is 1~9999.

7.3.2.- Communication Baud rate setting

In level 1 menu of “bus”.
Choose item “BAUD”, and the meter shows like this:

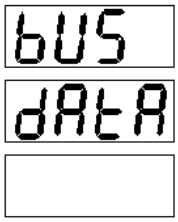


Then press , enter the level 3 menu, allowing us to set the Baud rate 2400, 4800 or 9600.

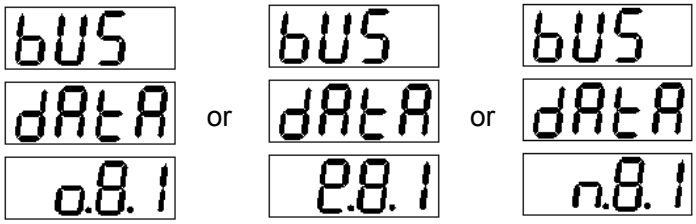


7.3.3.- Choose communication format

In level 1 menu of “bus”.
Choose item “data”, and the meter shows like this:



Then press , enter the level 3 menu, allowing us to set the communication data format. **(Factory setting n.8.1)**



7.4. - Digital Output Setting

Press , return to level 1 menu.

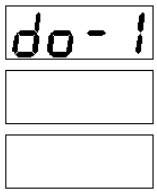
In this section, user will set:

1. Digital output type;
2. Output delay;
3. Choose the electrical parameter;
4. Set the alarm value
5. Set the hysteresis value

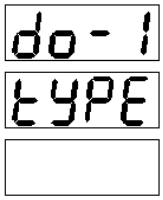
Note: If the meter have more than one channel digital output, you can set the DO-2,DO-3…as the following step, please select the appropriate output settings in the level 1 menu,.

7.4.1. - Output type

In level 1 menu, use and to choose item “DO-1”, and the meter shows like this:

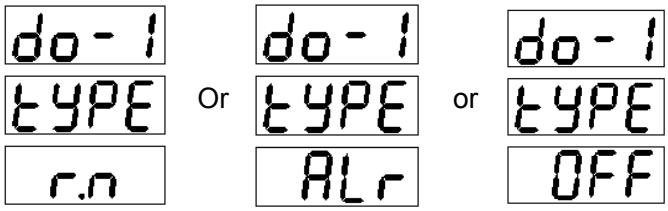


then press , enter the level 2 menu, choose “TYPE”. The meter shows:



then press again, enter the level 3 menu.

Use and to select the output type, meter shows like this:



r.n: Mean remote control mode, there have ***pulse*** and ***level*** output mode, more detail refer chapter **7.4.2**.

Host inquiry:

01	05	00 01	FF 00	DD FA
Address	Code	Relay address	Relay value (FF00:close; 0000: open)	CRC

Slave answer

01	05	00 01	FF 00	DD FA
Address	Code	Relay address	Relay value (FF00:close; 0000: open)	CRC

RS485 communication please refer to RS485 protocol document.

ALr: Mean directly alarm mode
OFF: Mean the relay will not work

7.4.2. - Set output delay

In level 1 menu of “DO-1”.

Choose item “DELY”, and the meter shows like this:

Then press , enter the level 3 menu, user can set the delay value:

Press to input the number, from “0~9”. Press to move the cursor. After password switch press to confirm the input, value is 1~9999. **(Default 0010)**

Note: The setting of relay value is indicating the width pulse output; value “0000” is for level output. The setting value resolution is 100ms, which means “0001” is 100ms, “9999” means 999.9s. **0 for level output, 1~9999 for pulse output**

7.4.3. - Choose the electrical parameter

In level 1 menu of “DO-1”.

Choose item “PArA”, meter shows like this:

then press , enter the level 3 menu, user can choose the output parameter:

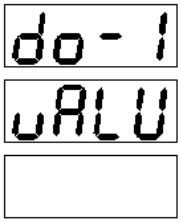
Note: There are two alarm mode, indicate with “**XX-H**” and “**XX-L**”,
“**XX-H**” mean the rising edge alarm;
“**XX-L**” mean the falling edge alarm;

Example: “IA-H” mean when the A-phase current is rising to a certain value then output alarm.
“I3-H” mean when one phase of A, B, C phase current is rising to a certain value then output alarm.
“PS-L” mean when Three-phase total power is falling to a certain value then output alarm.

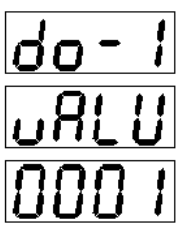
7.4.4. - Set the alarm value

In level 1 menu of “DO-1”.

Choose item “VALU”; meter shows like this:



then press , enter the level 3 menu, user can set the alarm value:



Press  to input the number, from “0~9”. Press  to move the cursor. After password switch press  to confirm the input, value is 1~9999. **(Default 5500)**

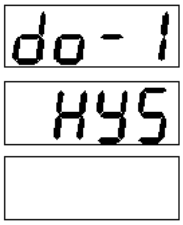
Note: Alarm value is about the secondary side value (such as AC100V, AC5A).

Voltage unit is 0.1V;	Reactive power unit is 0.1VAR;
Current unit is 0.001A;	Power factor Is 0.001;
Active power unit is 0.1W;	Frequency 0.01HZ;

7.4.5. - Set the hysteresis value

In level 1 menu of “DO-1”.

Choose item “HYS”, meter shows like this:



then press  , enter the level 3 menu, and user can set the alarm value:

Press  to input the number, from “0~9”. Press  to move the cursor. After password switch press  to confirm the input, value is 1~9999. **(Default 0050)**

Hysteresis value is for cancel alarm status

Formula: **X=A x Y**

A for alarm value(rising edge / falling edge)

Y for Hysteresis value

Only the difference between DO setting parameter value and real-time monitor value is greater than value **X** that can cancel the alarm

Example: Alarm value 3.700A; hysteresis value 0.03; Rising edge alarm; Measured value is 3.700A then relay action, output alarm; When measured value is bellow 3.700-3.700*0.03=3.589A, the alarm will be cancel.

7.5. - Analog Output Setting

Press , return to level 1 menu.

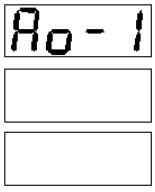
In this section, user will set:

1. Analog output type;
2. Choose the electrical parameter;
3. Set the zero value for transmission output;
4. Set the full scale value for transmission output.

Note: If the meter have more than one channel analog output, you can set the AO-2,AO-3…as the following steps, please select the appropriate output settings in the level 1 menu,.

7.5.1. - Output type

In level 1 menu, use and to choose item “DO-1”, meter shows like this:



then press , enter the level 2 menu, choose “LINE”, meter shows:

then press again, enter the level 3 menu.

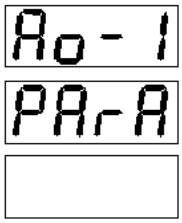
Use and to select the output type, meter shows like this:

Note: output type can choose 12~20mA,4~20mA,0~20mA (default is 12~20mA)

7.5.2. - Choose the electrical parameter

In level 1 menu of “AO-1”.

Choose item “PArA”, meter shows like this:



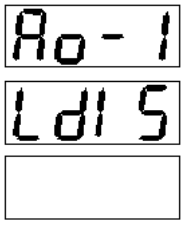
then press , enter the level 3 menu, user can choose the output parameter:

Note: The analog parameter can set Ia, Ib, Ic, Ua, Ub, Uc, P, Q, H, F; default is UA.

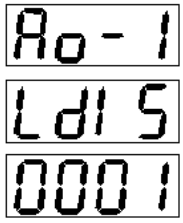
7.5.3. - Set the low value for transmission output

In level 1 menu of “AO-1”.

Choose item “LDIS”, meter shows like this:



then press , enter the level 3 menu, user can set the low value:



Press to input the number, from “0~9”. Press to move the cursor. After password switch press to confirm the input, value is 1~9999. **(Default 0000)**

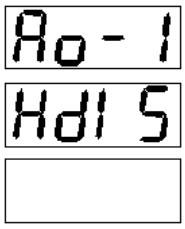
Note: Alarm value is about the secondary side value (such as AC100V, AC5A).

Voltage unit is 0.1V;	Reactive power unit is 0.1VAR;
Current unit is 0.001A;	Power factor Is 0.001;
Active power unit is 0.1W;	Frequency 0.01HZ;

7.5.4. - Set the full scale value for transmission output.

In level 1 menu of “AO-1”.

Choose item “HDIS”, meter shows like this:



then press , enter the level 3 menu, user can set the full scale value:

Press to input the number, from “0~9”. Press to move the cursor. After password switch press to confirm the input, value is 1~9999. **(Default 5000)**

Note: Alarm value is about the secondary side value (such as AC100V, AC5A).

Voltage unit is 0.1V;	Reactive power unit is 0.1VAR;
Current unit is 0.001A;	Power factor Is 0.001;
Active power unit is 0.1W;	Frequency 0.01HZ;

7.5.5. - Example of analog output.

Set analog output:

TYPE 4-20mA;	**LdIS** 0000;
PARA select Ia;	**HdIS** 5000

This mean when A-phase current is 0.000A output 4mA, current is 5.000A output 20mA;

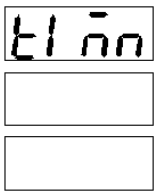
7.6. - Time and Date Setting

Press , return to level 1 menu.

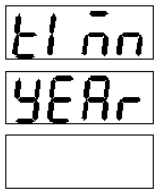
In this section, user will set the meter system time, which will affect the function of Muti-tariff:

7.6.1. - Set year

In level 1 menu, use and to choose item “TIME”, meter shows like this:



then press , enter the level 2 menu；choose “YEAR”, meter show:



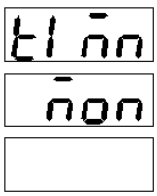
then press again, enter the level 3 menu.

Use and to select the year, setting value from 00-99:

7.6.2. - Set month

In level 1 menu of “TIME”.

Choose item “MON”, meter shows like this:



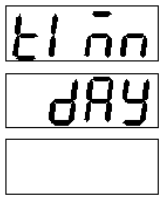
then press again, enter the level 3 menu.

Use and to select the month, with setting value from 1-12:

7.6.3. - Set week day

In level 1 menu of “TIME”.

Choose item “DAY”, meter shows like this:



then press  again, enter the level 3 menu.

Use  and  to select the day, with setting value from 1-31:

7.6.4. - Set date

In level 1 menu of “TIME”.

Choose item “DATE”, meter shows like this:

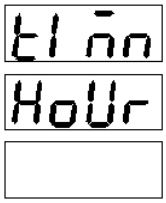
then press  again, enter the level 3 menu.

Use  and  to select the week day, with setting value from 1-7:

7.6.5. - Set hour

In level 1 menu of “TIME”.

Choose item “HOUR”, meter shows like this:



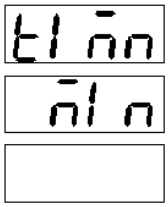
then press  again, enter the level 3 menu.

Use  and  to select the hour, setting value from 00-23:

7.6.6. - Set minute

In level 1 menu of “TIME”.

Choose item “MIN”, meter shows like this:



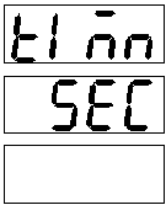
then press  again, enter the level 3 menu.

Use  and  to select the minute, with setting value from 00-59:

7.6.7. - Set second

In level 1 menu of “TIME”.

Choose item “SEC”, meter shows like this:



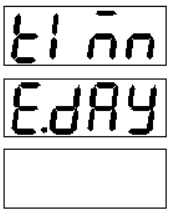
then press  again, enter the level 3 menu.

Use  and  to select the second, setting value from 00-59:

7.6.8. - Set billing date

In level 1 menu of “TIME”.

Choose item “E.DAY”, meter shows like this:



then press  again, enter the level 3 menu. Meter will show:

Use ≪ and ≫ to select the billing date:

Note: Default value is 0101, mean the billing date is At 1:00 on the 1st of each month.

So the setting value max is 3123, which means each month 31st, 23:00

Date : time

7.7. - Muti-tariff Setting

Press ⋀⋀ , return to level 1 menu.

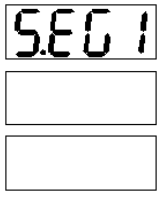
In this section, user will set:

1. Billing segment setting;
2. Ttariff setting

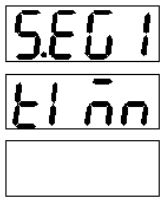
Note: BJ-194J contains 12 billing segments, with the billing segment 1 setting method in this manual.

7.7.1. - Set the billing time of segment 1

In level 1 menu, use ≪ and ≫ to choose item “S.EG1”, and the meter shows like this:



Then press ⋁⋁ , enter the level 2 menu, choose “TIME”. The meter shows:



Then press ⋁⋁ again, entering the level 3 menu.

Use ⟪ and ⟫ to select the billing date.

Note: Default value is 0000, which means the billing date is at 00:00 on each day.

min : sec

Segment 1 is for the muti-tariff starting time!!

7.7.2. - Choose the segment 1 billing tariff

Note:

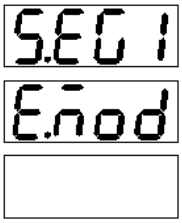
BJ194J provides 3 months of energy data; use ***"Sharp" "Peak" "Flat" "Valley"*** (**T1~T4**)to calibrate the total energy data. Users can get monthly energy data from panel display or RS485(RS485 data refer to **Communication protocol**), and calculate their energy cost.

.

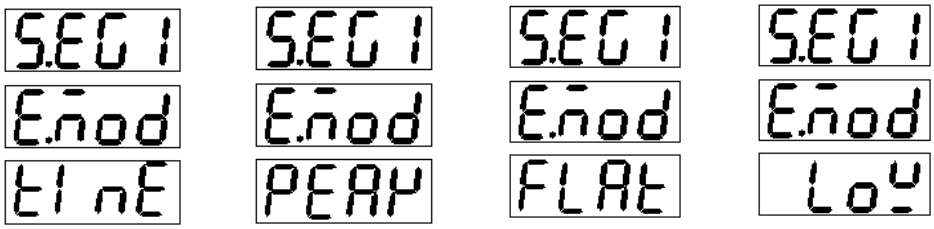
You can set up 12 billing segment in one day. The segment 1 setting steps are as follows, and other segment setting method is the same.

In level 1 menu of "S.EG1".

Choose item "E.Mod", meter shows like this:



then press ⟫ , enter the level 3 menu, user can choose the billing mod:



Note: Above mean: Sharp, Peak, Flat, Valley.

7.8. - System Setting

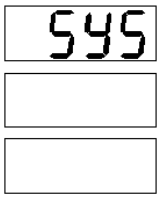
Press , return to level 1 menu.

In this section, user will set:

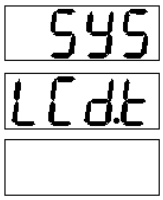
1. Backlight time of the LCD;
2. Clear energy counters;
3. Set display mode;
4. Change the password

7.8.1. - Set the LCD backlight time

In level 1 menu, use and to choose item “SYS”, meter shows like this:



then press , enter the level 2 menu, choose “LCd.t”, meter show:



then press again, enter the level 3 menu, Use and to select the value

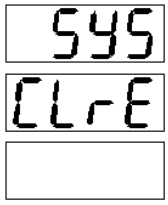
Note: Minimum step is 1 minute, 0005 for 5 minutes, which means if not any operation in 5 minutes, the backlight will turn off

Set value > 1000, the backlight always on;
Set value = 0000, the backlight always off.

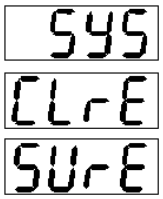
7.8.2. - Clear energy counters

In level 1 menu of “SYS”.

Choose item “CLr.E”, meter shows like this:



then press again to confirm clear all the energy data, meter display:



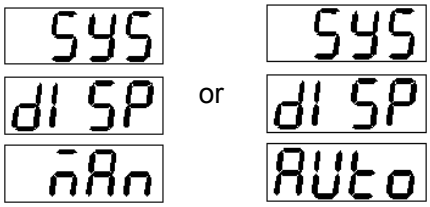
And then press again, to save the operation and exit.
Press without save and exit.

7.8.3. - Set display mode

In level 1 menu of “SYS”.

Choose item “dISP”, meter shows like this:

then press , enter the level 3 menu, user can choose the display mode:

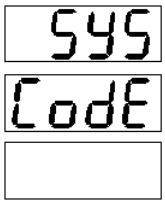


Note: Man means the screen display will change by press and
Auto means the screen display will change in every 10 sec.

7.8.4. - Change the password

In level 1 menu of “SYS”.

Choose item “CodE”, meter shows like this:



then press  again, enter the level 3 menu.
Use  and  to input the new password:

Note: *Please do not change the password, If necessary, please contact Blue Jay technical !!*

7.9. – Menu Structure

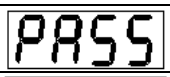
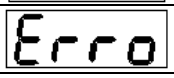
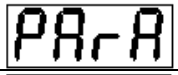
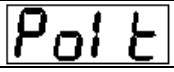
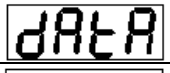
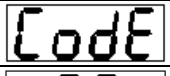
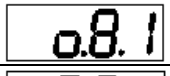
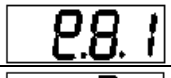
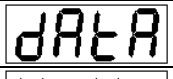
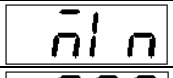
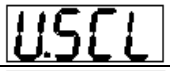
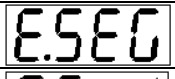
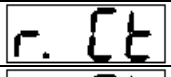
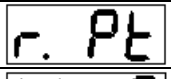
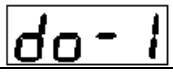
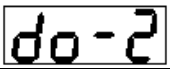
level 1	Level 2	Level 3	Description
(System setting) **SYS**	(LCD backlight time) **LCd.t**	0000~1000	Factory default is 0005
	(Clear energy counters) **CLr.E**		Unrecoverable for Clear data
	(Display mode) **dISP**	Manual or Automatic	Factory default is manual
	(Change the password) **CodE**	0000~9999	Default is 0001
(Signal input) **-IN-**	(Net) **Lin.e**	N.3.4, N.3.3, N.1	Select the input signal network measurement
	(Voltage Range) **U.SCL**	100V, 220V, 380V	Select the range of measured voltage signal
	(Current Range) **I.SCL**	5A and 1A	Select the range of measured current signal
	(Voltage transformation ratio) **R.PT**	1-9999	Setting voltage signal transformation ratio = 1 / 2 scale
	(Current transformation ratio) **R.CT**	1-9999	Setting current signal transformation ratio = 1 / 2 scale
(Communication Parameters) **bUS**	(Address) **ADDR**	1-247	Instrument address range 1-247
	(Communication speed) **BAUD**	4800~9600	Default is 4800
	Protocol **DATA**	o.8.1; e.8.1; n.8.1	Factory default communication mode for the word (**n.8.1**)
(Digital output setting) **DO-1**	(Output type) **TYPE**	**r.n, Alr, OFF**	Default is **Alr**
	(Set output delay) **DELY**	0000~9999	Default is 0010
	Choose the electrical parameter **PArA**	**I3-H, PS-H...U3-H**	Default is I3-H
	(Set the alarm value) **VALU**	0000~9999	Default is 0050
	hysteresis value **HYS**	4800~9600	Default is 4800

(Analog Output Setting) **AO-1**	(Output type) **TYPE**	**12.20, 4-20, 0-20**	Default is 12.20
	Choose the electrical parameter **PArA**	**UA,UB,UC…FR**	Default is UA
	(low value for transmission output) **LdIS**	0000~9999	Default is 0000
	full scale value for transmission output **HdIS**	0000~9999	Default is 5000
(Time setting) **TIME**	(Year) **YEAR**	00~99	Default is 20XX
	(Month) **MON**	1~12	
	(Week day) **DAY**	1~7	
	(Date) **DATE**	1~31	
	(Hour) **HOUR**	00~23	
	(Minute) **MIN**	00~59	
	(Second) **SEC**	00~59	
	(Dilling date) **E.dAy**	0101~3123	Default is 0101

level 1	Level 2	Level 3	Level 4	Description
(Muti-tariff Setting) **E.SEG**	(Billing date of segment 1) **S.EG1**	Billing time of segment 1 (**TIME**)	**Default 0000**	
		Segment 1 billing tarfiff (**E.Mod**)	(Sharp) **TinE** (Peak) **PEAK** (Flat) **FLAt** (Valley) **LOW**	
	…	…	**…**	
	…	**…**	**…**	
	(Billing date of segment 12) **S.EG12**	Billing time of segment 12 (**TIME**)	**Default 0000**	
		Segment 1 billing tarfiff (**E.Mod**)	(Sharp) **TinE** (Peak) **PEAK** (Flat) **FLAt** (Valley) **LOW**	

Note: Not all 194J series power analyzer have the complete menu settings, Please confirm your purchased power analyzer has the corresponding extension module. Without the module, the corresponding part of the menu is not valid.

7.10.- Display Character instructions

	User passwords		System parameter settings
	Input error		Choose Setted parameter
	User settings menu		The corresponding parameters
	Communication settings menu		Set the alarm value
	Shows scal input value		Show Low alarm setting
	Set the decimal point		Show High alarm setting
	Communication parameter setting		System password
	Metter address setting		Year
	Baud rate		Month
	8 data bits, 1 stop bit, even parity		Week day
	8 data bits, 1 stop bit, odd parity		Date
	8 data bits, 1 stop bit, no parity		Hour
	Confirm the change		Minute
	Input voltage range selection		Second
	Input current range selection		Tariff segment
	Set CT ratio		Tariff
	Set PT ratio		Sharp
	Select phase		Peak
	Route 1 switch output settings		Flat
	Route 2 switch output settings		Valley
			Billing day

8.- PULSE OUTPUT

BJ-194J power analyzer provides 2 routes pulse output for the total active energy and total reactive energy.

The host/PLC/DI module can cumulative the data of both the active and reactive power energy sent by the pulse from optocoupler relay.

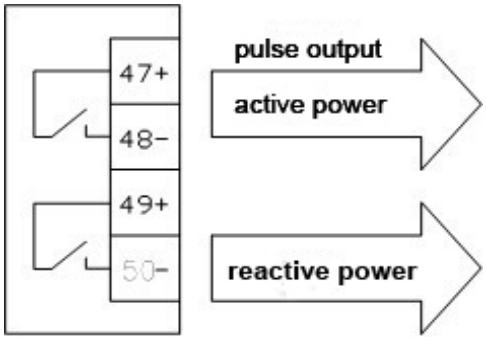
1). Electrical specification: voltage VCC ≤ 48V, Iz ≤ 50mA.

2). Pulse: 5000 imp / kWh, pulse upto 80ms.
This means: When the meter detect 1 kWh, the meter output 5000 pulse

Note: 1 kWh energy is for *secondary side energy data*, if there have PT and CT accessed; primary side energy data is “1 kWh ×PT ratio× CT ratio”.

For example: In measure time “T”, the received total pulse is “N”,
Primary side input of voltage is 10Kv
Primary side input of current is 400A.
Secondary side measurement range is 100V and 5A.

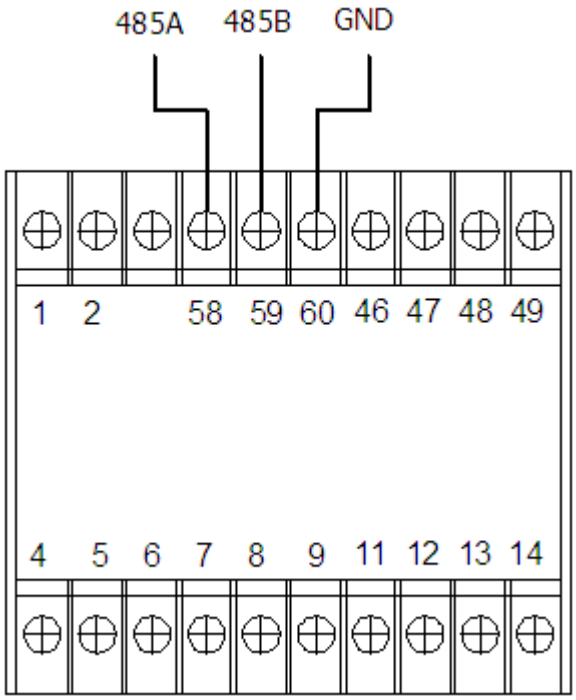
In the time “T”, energy accumulated is : N/5000 × 100 × 80



9.- COMMUNICATION INTERFACE

9.1.- Connection for the RS485 BUS

The composition of the RS-485 cabling must be carried out with a meshed screen cable (minimum 3 wire), diameter of not less than 0.5mm^2, with a maximum distance of 1,200 m between the BJ194… and the master unit. This Bus may connect a maximum of 32 BJ194…



Note:

1. For communication with the master unit, customers can choose the RS-232 to RS-485 converter to use

2. Full range of BJ-194Q… meter RS485 PIN number is 58,59,60

3. Due to product modifications or custom requirements, the interface pin place may be change. For details, please refer to product label on the rear board

9.2.- MODBUS © protocol

Modbus RTU Frame Format:

Address code	**1 BYTE**	*Slave device address **1-247***
Function code	**1 BYTE**	*Indicates the function codes like read coils / inputs*
Data code	**4 BYTE**	*Starting address, high byte* *Starting address, low byte* *Number of registers, high byte* *Number of registers, low byte*
Error Check code	**2 BYTE**	*Cyclical Redundancy Check (**CRC**)*

:

MODBUS FUNCTIONS

Code:	**Meaning:**	**Description:**
FUNCTION 03	Reading of n Words	*This function permits to read all the electrical parameters of the BJ194…series.*
FUNCTION 16	Preset Multiple Registers	*Write value in to the relevant register*

Notes: Blue Jay Default disable the write function, if want change configuration via RS485, please contact Blue Jay Sales Team before your order.

9.3. - Register address table

9.3.1- Basic Power Data—Primary Side

Address	Data	Byte mode		Instruction
0x00	Ua	float	2	Phase to Line Voltage, Unit: V
0x02	Ub	float	2	
0x04	Uc	float	2	
0x06	Uab	float	2	Phase to Phase Voltage, Unit: V
0x08	Ubc	float	2	
0x0a	Uca	float	2	
0x0c	Ia	float	2	Three phase Current, Unit: A
0x0e	Ib	float	2	
0x10	Ic	float	2	
0x12	Pa	float	2	Individual phase active power, Unit: kW
0x14	Pb	float	2	
0x16	Pc	float	2	
0x18	P∑	float	2	Total active power, Unit: kW
0x1a	Qa	float	2	Individual phase reactive power, Unit: kVar
0x1c	Qb	float	2	
0x1e	Qc	float	2	
0x20	Q∑	float	2	Total reactive power, Unit: kVar
0x22	reversed	/	/	
0x24	reversed	/	/	
0x26	reversed	/	/	
0x28	S∑	float	2	Total apparent power, Unit: kVA
0x2a	reversed	/	/	
0x2c	reversed	/	/	
0x2e	reversed	/	/	
0x30	cosQ	float	2	Total power factor, 0~1.000
0x32	FR	float	2	Frequency, Unit:0.01Hz
0x34	Ep+	float	2	Positive active energy, Unit: kWh
0x36	Ep-	float	2	Negative active energy, Unit: kWh
0x38	Eq+	float	2	Inductive reactive power, Unit: kVarh
0x3a	Eq-	float	2	Capacitive reactive power

9.3.2 - Basic Power Data—Secondary Side

Address	Data	Byte mode		Instruction
0x100	Ua	int	1	Phase to Line Voltage, Unit: 0.1V
0x101	Ub	int	1	
0x102	Uc	int	1	
0x103	Uab	int	1	Phase to Phase Voltage, Unit: 0.1V

0x104	Ubc	int	1	
0x105	Uca	int	1	
0x106	Ia	int	1	Three phase Current, Unit: 0.001A
0x107	Ib	int	1	
0x108	Ic	int	1	
0x109	Pa	int	1	Individual phase active power, Unit: W
0x10a	Pb	int	1	
0x10b	Pc	int	1	
0x10c	P∑	int	1	Total active power, Unit: W
0x10d	Qa	int	1	Individual phase reactive power, Unit: Var
0x10e	Qb	int	1	
0x10f	Qc	int	1	
0x110	Q∑	int	1	Total reactive power, Unit: Var
0x111	reversed	/	/	
0x112	reversed	/	/	
0x113	reversed	/	/	
0x114	S∑	int	1	Total apparent power, Unit: VA
0x115	reversed	/	/	
0x116	reversed	/	/	
0x117	reversed	/	/	
0x118	cosQ	int	1	Total power factor, 0~1.000
0x119	FR	int	1	Frequency, Unit:0.01Hz
0x11a	Ep+	int	2	Positive active energy, Unit: Wh
0x11c	Ep-	int	2	Negative active energy, Unit: Wh
0x11e	Eq+	int	2	Inductive reactive power, Unit:Varh
0x120	Eq-	int	2	Capacitive reactive power

9.3.3- Meter status data

Address	Data	Byte mode		Instruction
0x200	DO	int	1	Digital output: Bit 0~1 show channel 1and channel 2 status 0 for open, 1 for closed
0x201	DI	int	1	Digital input: Bit 0~3 show channel 1 to channel 4 status 0 for open, 1 for closed
0x20A	TIME.year	int	1	Internal RTC real time clock: Year - Month - Day - Time - minutes - seconds
0x20B	TIME.month	int	1	
0x20C	TIME.date	int	1	
0x20D	TIME.hour	int	1	
0x20E	TIME.minute	int	1	
0x20F	TIME.second	int	1	
0x210	TIME.day	int	1	

9.3.4- Advanced electrical parameter

Address	Data	Byte mode		Instruction
0x300	Pde	float	2	Present active power demand, Unit: W
0x302	Qde	float	2	Present reactive power demand, Unit: var
0x304	Sde	float	2	Present apparent power demand, Unit: var
0x306	Pdmax	float	2	active power demand in this month
0x308	Qdmax	float	2	reactive power demand in this month
0x30a	Sdmax	float	2	apparent power demand in this month
0x30c		float	2	active power demand in last month
0x30e		float	2	reactive power demand in last month
0x310		float	2	apparent power demand in last month
0x312		float	2	active power demand in month before last month
0x314		float	2	reactive power demand in month before last month
0x316		float	2	apparent power demand in month before last month
0x318-0x31F		float	2	reversed
0x320		float	2	positive sequence voltage in primary side
0x322		float	2	negative sequence voltage in primary side
0x324		float	2	zero sequence voltage in primary side
0x326		float	2	positive sequence current in primary side
0x328		float	2	negative sequence current in primary side
0x32A		float	2	zero sequence current in primary side
0x32C		float	2	percentage of negative sequence voltage
0x32E		float	2	percentage of negative sequence current
0x330		float	2	A phase voltage deviation
0x332		float	2	B phase voltage deviation
0x334		float	2	C phase voltage deviation
0x336		float	2	Frequency deviation

9.3.5- Multi- tariffs ratio data

Address	Data	Byte mode		Instruction
0x400	Cumulative_tol(Total)	long	2	The total energy
0x402	Cumulative_T1(Sharp)	long	2	The total sharp energy
0x404	Cumulative_T2(Peak)	long	2	The total peak energy
0x406	Cumulative_T3(Flat)	long	2	The total flat energy
0x408	Cumulative_T4(Vally)	long	2	The total valley energy
0x40a	Current_tol(Total)	long	2	Total energy of this month
0x40c	Current_T1(Sharp)	long	2	Sharp energy of this month
0x40e	Current_T2(Peak)	long	2	Peak energy of this month
0x410	Current_T3(Flat)	long	2	Flat energy of this month
0x412	Current_T4(Vally)	long	2	Valley energy of this month
0x414	Last_tol(Total)	long	2	Total energy of last month

0x416	Last_T1(Sharp)	long	2	Sharp energy of last month
0x418	Last_T2(Peak)	long	2	Peak energy of last month
0x41a	Last_T3(Flat)	long	2	Flat energy of last month
0x41c	Last_T4(Vally)	long	2	Valley energy of last month
0x41e	Prior_tol(Total)	long	2	Total energy of the month before last month
0x420	Prior_T1(Sharp)	long	2	Sharp energy of the month before last month
0x422	Prior_T2(Peak)	long	2	Peak energy of the month before last month
0x424	Prior_T3(Flat)	long	2	Flat energy of the month before last month
0x426	Prior_T4(Vally)	long	2	Valley energy of the month before last month

9.3.6- THD and Individual harmonic (Max 15 times)

Address	Data	Byte mode		Instruction
0x500	THDUa	int	1	A-phase Voltage THD, unit 0.1%
0x501	THDUb	int	1	B-phase Voltage THD
0x502	THDUc	int	1	C-phase Voltage THD
0x503	THDia	int	1	A-phase Current THD, unit 0.1%
0x504	THDib	int	1	B-phase Current THD
0x505	THDic	int	1	C-phase Current THD
0x508-0x545	HUa	int	62	A phase voltage harmonic content ratio for 2 to 63 times, unit 0.1%
0x548-0x585	HUb	int	62	B phase voltage harmonic content ratio for 2 to 63 times, unit 0.1%
0x588-0x5c5	HUc	int	62	C phase voltage harmonic content ratio for 2 to 63 times, unit 0.1%
0x5c8-0x605	HIa	int	62	A phase current harmonic content ratio for 2 to 63 times, unit 0.1%
0x608-0x645	HIb	int	62	B phase current harmonic content ratio for 2 to 63 times, unit 0.1%
0x648-0x685	HIc	int	62	C phase current harmonic content ratio for 2 to 63 times, unit 0.1%
0x688	TOHDUa	int	1	A phase voltage total odd harmonic distortion, unit 0.1%
0x689	TOHDUb	int	1	B phase voltage total odd harmonic distortion, unit 0.1%
0x68a	TOHDUc	int	1	C phase voltage total odd harmonic distortion, unit 0.1%
0x68b	TEHDUa	int	1	A phase voltage total even harmonic distortion, unit 0.1%
0x68c	TEHDUb	int	1	B phase voltage total even harmonic distortion, unit 0.1%
0x68d	TEHDUc	int	1	C phase voltage total even harmonic distortion, unit 0.1%
0x68e	THFFUa	int	1	A phase voltage telephone harmonic form factor, unit 0.1%
0x68f	THFFUb	int	1	B phase voltage telephone harmonic form factor, unit 0.1%

0x690	THFFUc	int	1	C phase voltage telephone harmonic form factor, unit 0.1%
0x691	CFUa	int	1	A phase voltage crest factor, unit 0.001
0x692	CFUb	int	1	B phase voltage crest factor, unit 0.001
0x693	CFUc	int	1	C phase voltage crest factor, unit 0.001
0x694	TOHDIa	int	1	A phase current total odd harmonic distortion, unit 0.1%
0x695	TOHDIb	int	1	B phase current total odd harmonic distortion, unit 0.1%
0x696	TOHDIc	int	1	C phase current total odd harmonic distortion, unit 0.1%
0x697	TEHDIa	int	1	A phase current total even harmonic distortion, unit 0.1%
0x698	TEHDIb	int	1	B phase current total even harmonic distortion, unit 0.1%
0x699	TEHDIc	int	1	C phase current total even harmonic distortion, unit 0.1%
0x69a	KFIa	int	1	A phase current K factor, unit 0.01
0x69b	KFIb	int	1	B phase current K factor, unit 0.01
0x69c	KFIc	int	1	C phase current K factor, unit 0.01

9.3.7- SOE record (Max 50 list)

Address	Data	Byte mode		Instruction
0X700-0X7F9	SOE_1~50	int	1	Byte 0: Fault channel Byte 1: Fault event Byte 2,3: Fault value Byte 4: Fault time: Year Byte 5: Fault time: Month Byte 6: Fault Time: Day Byte 7: Fault time: Time Byte 8: Fault time: Minute Byte 9: Fault time: Seconds

Byte 0	Byte 1	
1:DI1	100:Remote control	
2:DI2	101:UA upper alarm	132:UA lower alarm
3:DI3	102:UB upper alarm	133:UB lower alarm
4:DI4	103:UC upper alarm	134:UC lower alarm
5:DI5	104:UAB upper alarm	135:UAB lower alarm
6:DI6	105:UBC upper alarm	136:UBC lower alarm
101:DO1	106:UCA upper alarm	137:UCA lower alarm
102:DO2	107:UA/UB/UC upper alarm	138:UA/UB/UC lower alarm
103:DO3	108:IA upper alarm	139:IA lower alarm
104:DO4	109:IB upper alarm	140:IB lower alarm
	110:IC upper alarm	141:IC lower alarm
	111:IA/IB/IC3 upper alarm	142:IA/IB/IC3 lower alarm
	112:PA upper alarm	143:PA lower alarm
	113:PB upper alarm	144:PB lower alarm
	114:PC upper alarm	145:PC lower alarm
	115:total active power upper alarm	146:total active power lower alarm
	116:QA upper alarm	147:QA lower alarm
	117:QB upper alarm	148:QB lower alarm
	118:QC upper alarm	149:QC lower alarm
	119:total reactive power upper alarm	150:total reactive power lower alarm

	120:SA upper alarm	151:SA lower alarm
	121:SB upper alarm	152:SB lower alarm
	122:SC upper alarm	153:SC lower alarm
	123:total apparent power upper alarm	154:total apparent power lower alarm
	124:total power factor upper alarm	155:total power factor lower alarm
	125:frequency upper alarm	156:frequency lower alarm
	126:DI1 close alarm	157:DI1 open alarm
	127:DI2 close alarm	158:DI2 open alarm
	128:DI3 close alarm	159:DI3 open alarm
	129:DI4 close alarm	160:DI4 open alarm
	130:DI5 close alarm	161:DI5 open alarm
	131:DI6 close alarm	162:DI6 open alarm

Note:

1. Not all of the data above can be read by RS485, the reading address will be unsuccessful

2. The data can be read out depends on your multi-function meter model, please refer to the corresponding product manual before build your software.

3. Some software has different definitions of the start bit of register address, there will be offset, please add 1 for the right address. To get more info, please contact technical support **tech@cqbluejay.com**

4. Blue Jay provide BOS1000 software for small measurement network and customer testing, it can connect max 32pcs of power meter, user can free to download this software on Blue Jay online site: **www.cqbluejay.com**

9.4.- Example

Host to Slave inquiry

Addr	**Fun**	**Data Address (high)**	**Data Address (low)**	**Data Number (high)**	**Data number (low)**	**CRC16 (low)**	**CRC16 (high)**
0CH	03H	00H	00H	00H	06H	C4H	D5H

PC user ask upload UA, UB, UC, IA, IB, IC

Slave to Host answer

Addr	**Fun**	**Byte count**	**Data1 high**	**Data1 low**	**Data2 high**	**Data2 low**	**Data3 high**	**Data3 low**
0CH	03H	0CH	03H	E8H	03H	E9H	03H	E8H
Data4 high	**Data4 low**	**Data5 high**	**Data5 low**	**Data6 high**	**Data6 low**	**CRC16 low**	**CRC1 6 high**	
13H	84H	13H	88H	13H	8AH	A6H	D6H	

Show the data:

UA=3E8H (100.0)
UB=3E9H (100.1)
UC=3E7H (99.9)
IA=1384H (4.996)
IB=1388H (5.000)
IC=138AH (5.002)

Notes:

1. User can write register data for meter testing and remote control the meter

2. When the write is unsuccessful, no return data from the slave, in this addition, user can send write inquiry again

10. - SAFETY CONSIDERATIONS

All installation specification described at the previous chapters named: **INSTALLATION AND STARTUP, INSTALLATION MODES and SPECIFICATIONS.**

Note that with the instrument powered on, the terminals could be dangerous to touching and cover opening actions or elements removal may allow accessing dangerous parts. This instrument is factory-shipped at proper operation condition.

11. - MAINTENANCE

The 194J does not require any special maintenance. No adjustment, maintenance or repairing action should be done when the instrument is open and powered on, should those actions are essential, high-qualified operators must perform them.

Before any adjustment, replacement, maintenance or repairing operation is carried out, the instrument must be disconnected from any power supply source.

When any protection failure is suspected to exist, the instrument must be immediately put out of service. The instrument's design allows a quick replacement in case of any failure.

12. - TECHNICAL SERVICE

FAQ's

1. The BJ-194J Power Analyzer, once cabled and connected is seen to give a correct voltage and current reading, but shows negative values for active power (generation).

This is an error with the cabling for the current transformer secondary; the direction of the transformer current has to be respected as shown in the connection diagram. The current transformers have a two face primary; the current must pass from P1 to P2 giving the result in secondary (S1 and S2) of 5 amps.

The error stems from:

a). The current transformers have been incorrectly installed. As a result it gives the direction of the current as passing from P2 to P1; to resolve this problem, the current transformer does not have to be dismantled and installed again, but the transformer secondary (S1 and S2) just has to be inverted.

b). The connection of the current secondary in the current transformers have been incorrectly connected; to resolve this problem just connect the S1 transformer secondary to the S1 on the meter and the S2 on the current transformer to the S2 on the meter

2. The BJ-194J, once cabled and connected, is seen to give an incoherent Power factor and CosΦ reading (-0.01 or similar).

This is again a current transformer and voltage phase connection error phase A, must correspond to the current transformer installed in phase A; phase B, must correspond to the current transformer installed in phase B; and phase C, must correspond to the current transformer installed in phase C.

This connection is clearly shown on the back of the analyzer.

3. The BJ-194J is measuring in average voltage and is displaying the secondary voltage (for example 110 volts).
Ensure that the voltage Transformer ratio has been correctly set (see section on **chapter7**).

4. The BJ-194J does not correctly display the current reading. It shows values varying between 0 to 5 amps of current.
Ensure that the Transformer ratio has been correctly set; once correctly set the current measurement shall be shown correctly (see section on **chapter7**).

For any inquiry about the instrument performance or any failure,
contact to Blue Jay's technical service.

Blue Jay - After-sales service

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