



IEC 61036
IEC 1107

C500 Single-Phase Watt-hour Meter

*Product Description
Operating Instructions
Features and Technical Data
Maintenance Instructions
Diagrams and Figures*

Nanjing Blue Star Electrical Meter Research Institute

181 Hanzhongmen Street
Nanjing 210036, China

International Sales Tel: 86-25-86504148
Fax: 86-25-86601945

www.bluestarmeters.com
sales@bluestarmeters.com

TABLE OF CONTENTS

1. Features and Applications.....	3
1.1 Energy Metering.....	3
1.2 1.2 Data displaying.....	3
1.3 1.3 I/O interface.....	3
2. Operation Instructions.....	3
2.1 Running and display.....	3
2.1.1 Operation.....	3
2.1.2 Data display.....	4
2.2 Programming.....	5
3. Specifications and technical data.....	6
1.1 Specifications.....	6
1.2 Technical data.....	6
1.2.1 Power supply.....	6
4. Use, transportation and storage conditions.....	6
5. Warranty.....	6
6. Ordering.....	6

1. Features and Applications

Blue Star's C500 watt-hour meter meets the IEC 61036 (class 1.0S) standard for energy meters. The main features of C500 include none physical adjustment components, digital signal processing, digital filters, digital error correction, digital calibration, immunity to temperature fluctuation, and excellent stability. Due to its 12 times overload multiplier, A0 can record energy usage of extreme low load. It can precisely measure the voltage, current and power.

The basic function of C500 is single-phase active import and export energy metering.

Infrared communication protocol complies with IEC1107.

C500 Meter data processing functions include:

1.1 Energy Metering

1. Energy measurement via digital measuring chips in order to digitally verify the metering precision.
2. Active import and export energy metering through data provided by electrical energy measuring chips.
3. Export energy is added to import energy, and export Energy metering in independent register. Single rate energy for metering of active import and export energy.
4. Energy metering ranges from 0 – 9999999.9 kWh or 0 – 999999.99kWh.
5. One channel pulse output test: active energy verifying pulse, the breadth is 80ms.
6. Pulse indication for energy metering through one LEDs of high brightness indicating active energy on the left.

1.2 1.2 Data displaying

Data of energy mentioned above can be displayed on LCD. LCD is "multiplex screen of graphic matrix with paragraph style". Data are displayed with matrix English letters.

1.3 1.3 I/O interface

Passive pulse output interface with optical-coupling insulation.

2. Operation Instructions

2.1 Running and display

2.1.1 Operation

There are 2 modes after data processing unit powers up:

1. Running Mode: In this mode, B500 meter can perform TOU metering, demand calculating and load monitoring, and automatically display data at given time as programmed.
2. Programming mode: A0 will switch to this mode after holding reset button for 8 seconds. In this mode, LCD will display message “PRG”. It will only process energy counting, demand calculating and time-section switch only without handling other functions such as timing display or load monitoring. A0 will exit from this mode when reset button is pushed again, or exit automatically if no button was pushed for 4 minutes.

When data processing unit is running, LED will flash once an effective energy pulse is registered, no matter which mode it is in.

2.1.2 Data display

There are 2 types of data display modes:

- 1) Timing display: user can choose from 4 types of time intervals. The display is automatic and can be used for routine monitoring.
- 2) Inquiry display: User may continuously push button until the needed data is displayed. This can be used to check records in the meter.

Detailed descriptions of three types of data display modes are as following:

- 1) Timing display: This mode is effective once programmed. If the display interval is set to 15 minutes, B500 will display data at minute of 0, 5, 15, 30 or 45 hourly. It stops automatically after all specified data have been displayed. Display time for each piece of data can be set independently from 1 to 99 seconds. If it needs more time to display all the data within one interval, meter will skip one display and will display the data at the next display time.
- 2) Inquiry display: B500 will switch to this mode once display button is pushed. In this mode, display time of each data item extends sixty times longer. For example, if original display time is set as 8 seconds for each data, display time for the same data extends to 8 minutes now. Next data will be displayed once display button is pushed again. If display button is not pushed throughout the period when a data is displayed, meter will automatically switch to Timing Display Mode after data display finishes and will continue display of next data.

Display Explanation

Please see OBIS as reference.

Meter number	OBIS ID	1-0:0.0.0(1)
Current active import energy sum	OBIS ID	1-1:1.8.0
Current active export energy sum	OBIS ID	1-1:2.8.0

2.2 Programming

B500 can be programmed (namely parameter setting) through infrared port with handheld unit.

2.2.1 Password

Password is needed to program B500, reading does not need password. Password can not be modified. Password is set as “666666”, please keep it at the safety place.

3. Specifications and technical data

1.1 Specifications

1.2 Technical data

1.2.1 Power supply

Meter type	Current (mA)	Power consumption (VA)	Power (W)
220V (transformer)	<5	<1	<0.7
110V (transformer)	<4	<0.8	<0.5

4. Use, transportation and storage conditions

- Same requirements as indoor meters.
- The number of piling layers should not exceed five in original package.
- Moisture absorbent must be provided inside sealed package.
- It is strictly forbidden to store the meter in the environment of high temperature or dense moisture for long period of time. Humidity and temperature requirement should strictly comply with article 8.2.3 of DL/T 614-1997 standard (0 - 40 °C, <85% RH, and no erosive substance).

5. Warranty

The product will be repaired or replaced free of charge within 18 months if technical data do not comply with the standards when the product has been used properly according to the manufacturer's manual and the seal remains intact.

6. Ordering

Meter types and specifications must be specified in the orders. Either pulse output or data output should be specified. If data output is selected, whether two-line or four-line connection pattern should be specified.

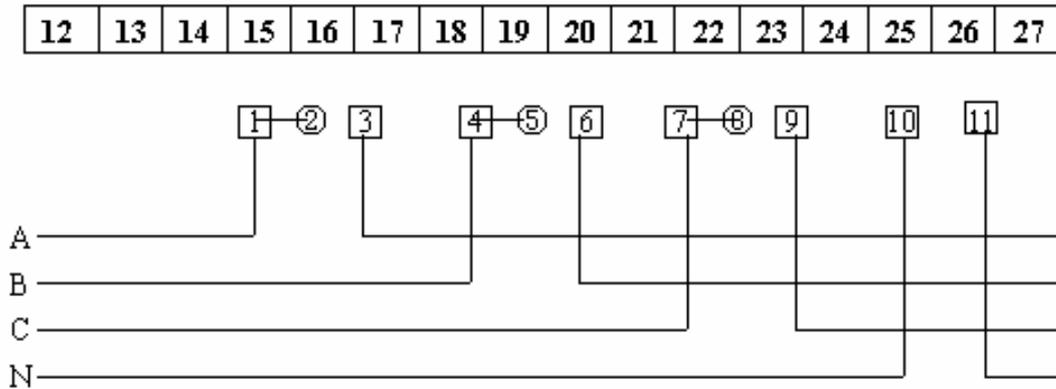
Appendix A: Warning and Error Information

ERR 2	Error Info	
	0000 0001	Clock 's Oscillator Error
	0000 0010	Read/Write Clock Error
	0000 0100	Read/Write EEPROM Error
	0000 1000	Read /Write Cs5460A Error
	0001 0000	CPU Program Error
	0010 0000	reserved
	0100 0000	Low Battery Voltage
	1000 0000	SPI Read or Write Error
ERR 1	Warning Info	
	0000 0001	Over Voltage
	0000 0010	Under Voltage
	0000 0100	Phase Voltage Loss
	0000 1000	Phase failure
	0001 0000	Current Reversal
	0010 0000	Energy Reversal
	0100 0000	Missing Current
	1000 0000	Phase Sequence Reversal

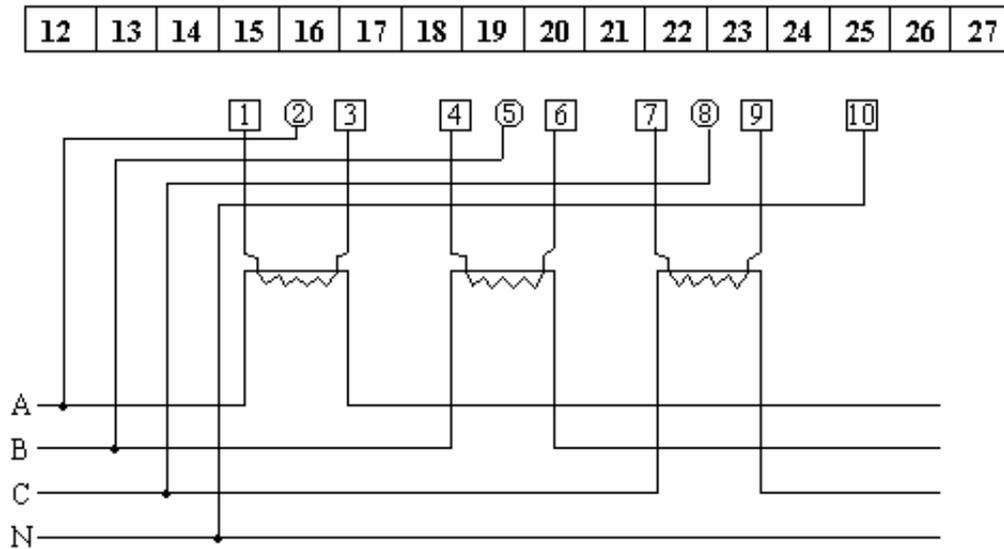
Attention: Every Event of Warning or Error Use One Number, if Missing Voltage and Over Voltage, Display "0000 0101".

Appendix B: Connect Figure

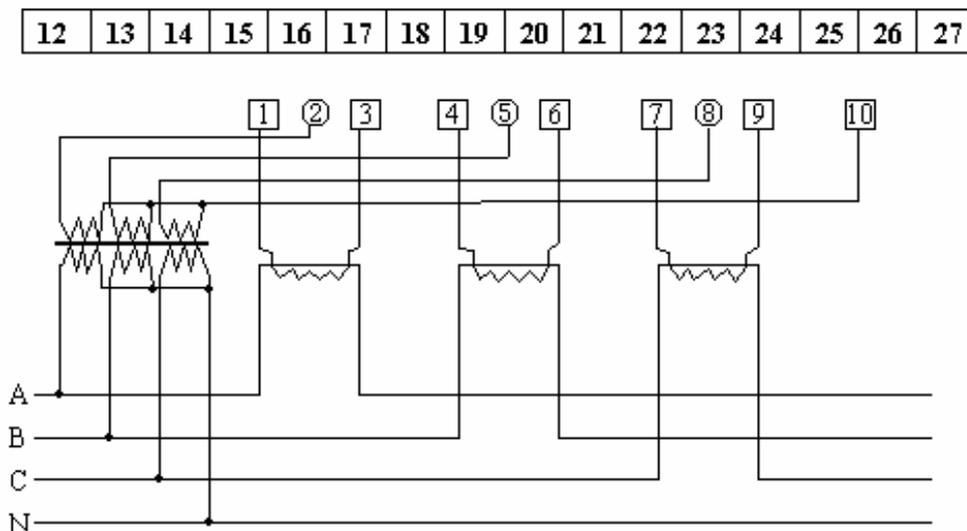
3 Phase 4 Wire Direct connection



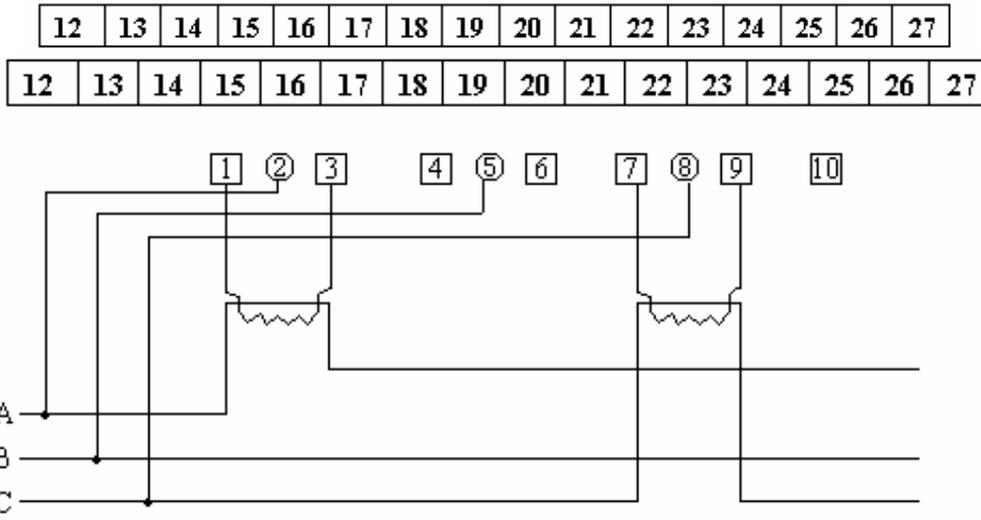
Connection through current transformer



Connection through current transformer and voltage transformer



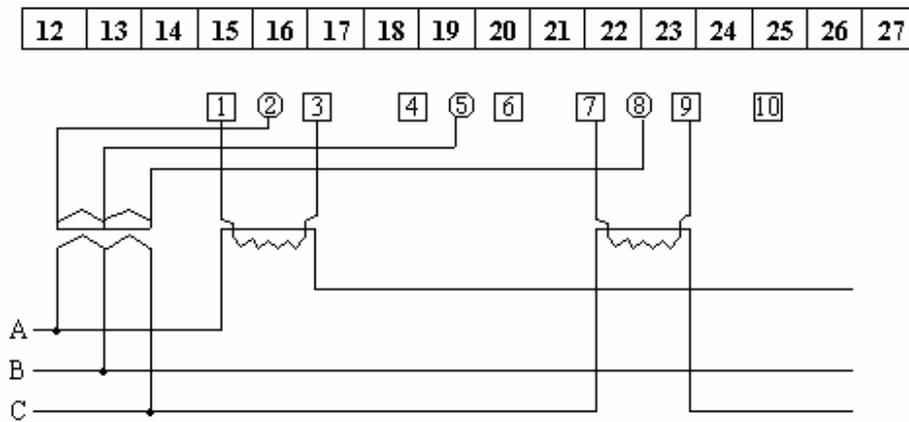
3 Phase 3 Wire Direct connection

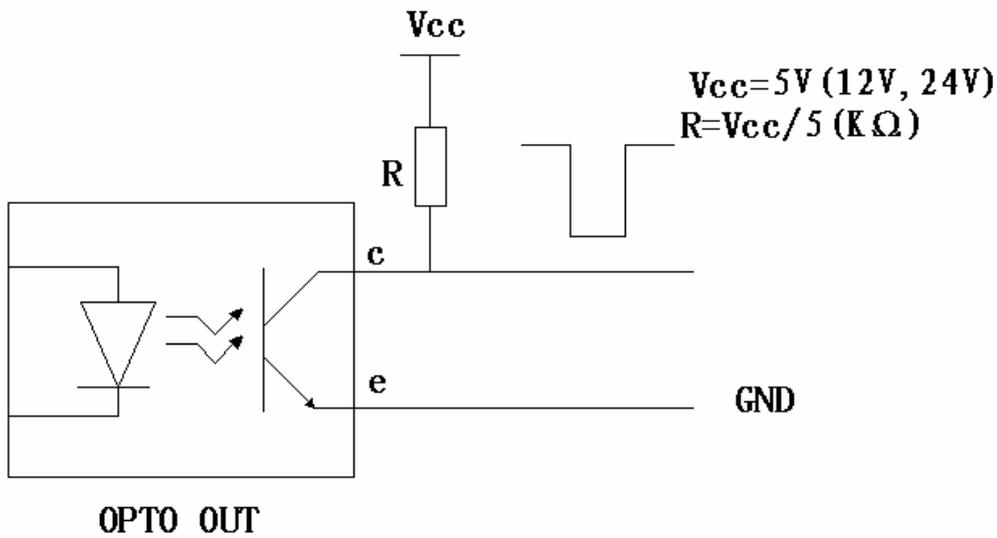
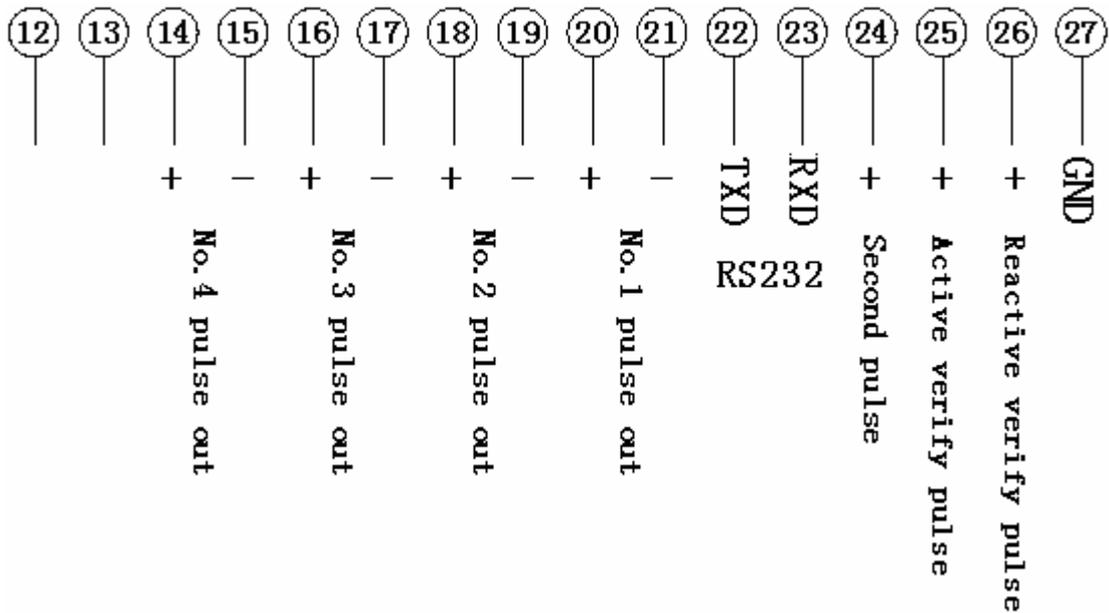


Connection through current transformer

Connection through current transformer and voltage transformer

Output Define





- NO.1 Pulse Output : Active import energy
- NO.2 Pulse Output : Active export energy
- NO.3 Pulse Output : Reactive import energy
- NO.4 Pulse Output : Reactive export energy

RXD : PC send data to meter
 TXD : Meter send data to PC