BTB ELECTRIC

Instructions for using

Power Factor Relay Z

Precautions before use

This manual is only for the personnel responsible for installation, maintenance and operation.

1. The sampling voltage corresponds to the sampling current one by one, and the phase sequence is the same.

2. The distribution sampling current terminals IA +, IA -, IB +, IB -, IC +, IC - must correspond to S1 and S2 of phase A, B and C primary current transformers one by one.

3. The sampling current ratio of primary current transformer must be set correctly. For example, if the ratio is 500:5, it is set to 100.

4. Correctly set the compensation current ratio of the primary current transformer in the compensation cabinet, for example, 500:5, then set it to 100.

5. It is necessary to set the capacitance and compensation type of each output node. (only JKGHY-D type, i.e. matching with composite switch)

For example, if the first output node corresponds to the three phase compensation type of 30kvar, it is set to 1 G-B 30kvar.

For example, if the second output node corresponds to the phase A of the split phase compensation type (0.25-15 3YN), it is set as 2 F-A 5kvar.

- The capacitor compensation type and capacity of each output node must be set

I. Overview

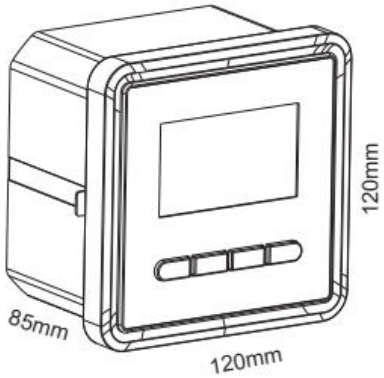
PFR-Z series is an integrated controller for reactive power compensation and distribution monitoring, which integrates data acquisition, communication, reactive power compensation, power grid parameter measurement, analysis and other functions. If RS-485 communication mode (PFR-Z) is adopted for this product, up to 32 sets of capacitor can be connected to the network. Or choose 12V voltage output control mode (PFR120), which can provide 12 steps

1.1 Model and meaning

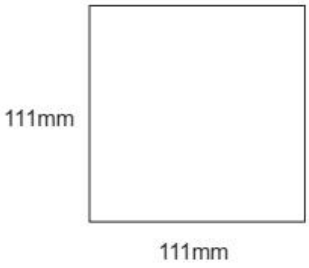
1		2	3
PFR	**-**	**Z**	**32**

1	Power Factor Relay
2	Z: used for smart capacitors; 8/12/6: used for common capacitors
3	20, 32 number of capacitor steps can be controlled

1.2 Overall dimension and opening dimension



External dimension:
120mm(W)×120mm(H)×85mm(D)



Dimension of mounting hole:
111mm(W)×111mm(H)

1.3 Normal working conditions, installation conditions and precautions

1. Ambient temperature: - 25℃ ~ 55℃
2. Altitude: ≤2000 m
3. Relative humidity: 20% ~ 90% at 40 ℃

1.4 Main technical parameters

1. Rated working voltage: 220 V ± 20%, frequency: 50 Hz;
2. Power consumption: ≤ 10va.
3. Analog quantity of sampling current: ≤ 5a, 50 Hz;
4. Input impedance of current analog quantity: ≤ 0.1 Ω ;
5. Sensitivity ≤ 200mA;
6. The operation error is less than ± 2.0% and the clock error is less than 1s / d;
7. Measurement accuracy: voltage, current, power factor 1.0 level, reactive power, active power accuracy higher than 2.0 level.
8. JKGHY-Z: RS485 communication controls 32 intelligent capacitors
9, protection level: IP30

II. Main features

1. It has LCD English display function and man-machine interface, which is convenient for measurement parameter display, control parameter setting and record query.

2. It has the functions of voltmeter, ammeter, power factor meter, capacitor switching status indicator (including three-phase voltage, current, power factor, reactive power, active power, voltage harmonic, current harmonic and zero sequence current measurement, capacitor switching status indication and alarm information).

3. It has the functions of manual switching and automatic control.

4. It has the function of running parameter setting and query.

5, 12, 16steps active output or RS485 communication control.

6, with standard RS-485 bus cascaded with other devices to achieve remote control, data reading, parameter setting and other functions.

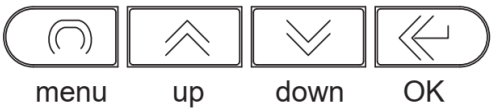
7. It has the function of on-line monitoring of reactive compensation capacitor state (this function module needs to be customized).

8, with USB interface, can download U disk, convenient for local data transcription. (this function module needs to be customized).

9. It has the function of historical data storage and Statistics (including switching records, maximum value records, event records, alarm records, segmented power factor statistics, parameters before and after compensation, maximum and minimum load values, maximum and minimum compensation values). It can store the operation data list and 255 switching records and operation event records in the last half year. (this function module needs to be customized).

10. Can provide alarm passive output function (this function module needs to be customized)

III. Button function



Menu button:

1. Automatic operation interface: press the “menu” key to enter the main menu;

2. Main menu interface: press the “menu” key to return to the automatic operation interface;

3. Secondary menu interface: press the “menu” key to return to the main menu;

Up key:

1. Parameter setting interface: press the “up” key to modify the corresponding item;

2. Manual switching interface: press the “up” key to input the corresponding serial number capacitor;

3. Automatic operation interface: press “up” key to switch parameter interface in sequence;

Down key:

1. Parameter setting interface: press the “down” key to modify the corresponding item content;

2. Manual switching interface: press the “down” key to cut off the corresponding serial number capacitor;

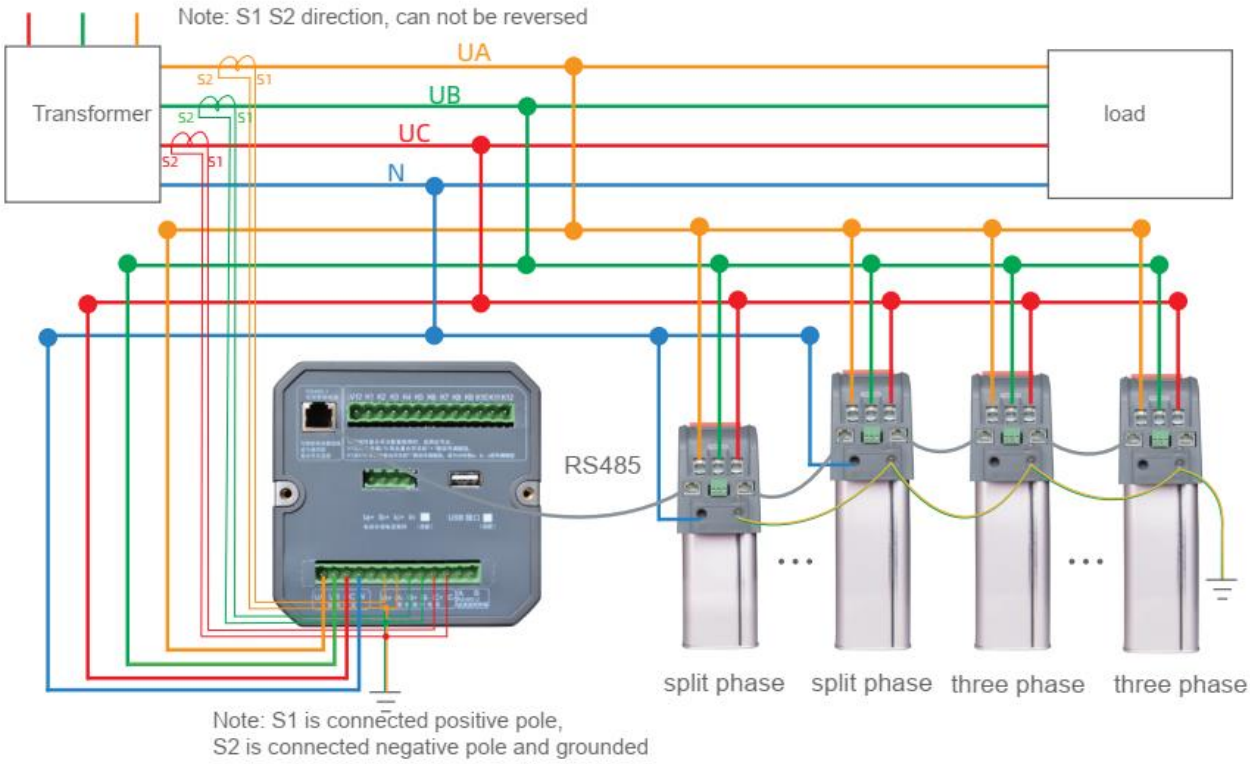
3. Automatic operation interface: press “down” key to switch parameter interface in reverse order;

OK key:

1. Main menu interface: press “OK” to enter the secondary menu;

2. Second level menu interface: press “OK” key to select various contents;

IV. Wiring diagram



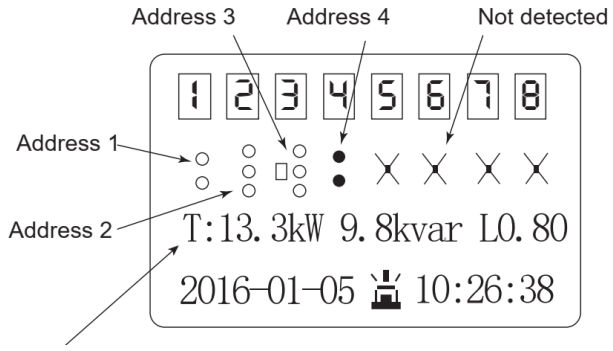
Note:

The ratio must be setted manually. The control mode must be selected locally (except remote operation). The current ratio is setted to the sampling primary current transformer ratio, for example: 1000/5, set it to 200. The compensation ratio is setted to the sampling primary current transformer of compensation cabinet ratio. For example: 500/5, set it to 100.

V. Main menu description

Automatic running	Displayed separately: 1 address 1~32 corresponding capacitor corresponding capacitor working state, whole active power,whole reactive power, whole power factor, current time, power grid alarm; 2 voltage, current, power factor, zero sequence current; 3 reactive power, active power; 4 voltage distortion, current distortion, capacitor compensation current, etc. The 1 ~ 4 interface is switched by the “Up” or “Down” button
Parameter settings	Operation parameter setting: 1 Communication address, current ratio, compensation ratio, current polarity 2 Input threshold, cut-off threshold, sub-section point, switching delay; 3 Overvoltage protection, undervoltage protection, voltage hysteresis, undercurrent protection; 4 voltage U harmonics, current I harmonics, control mode, sampling mode, etc. Note: The current ratio must be setted manually. The control mode must be selected locally (except remote operation). 1 current ratio, compensation ratio, that is, set to the sampling primary current transformer of compensation cabinet ratio Example: 500/5, set it to 100. *** When sampling mode selects single phase, only sampled by phase A current
Manual switching	Manual control: 1. address 1~32 corresponding capacitors 2 Press the “setting” button to enter the capacitor corresponding to the current address, 3 After entering, display seperately the compensation mode, temperature, and Alarm (x means normal operation; √ means capacitor failure), capacity 4 Press the “Up” button to input sequentially, press the “Down” button to cut off sequentially.
Record query	Query separately: 1 switching record, alarm record, maximum &minium record, section record, data list,download record , etc. 2 Enter the current record, press the “Up” or “Down” button to display the details of this record or next record
Voltage harmonics	Display three-phase 3rd -21st voltage harmonics
Current harmonics	Display three-phase 3rd -21st current harmonics

VI. Art operation interface description



Address 1 three phase compensation 2 sets

Address 2 split-compensation 3 sets

Address 3 mixed-compensation 4 sets

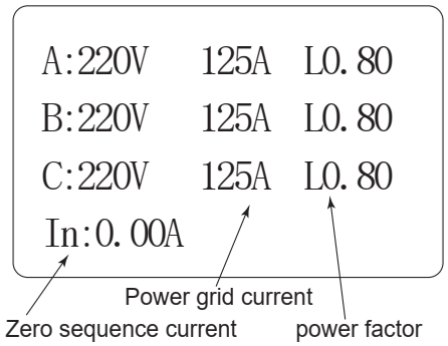
Address 4 three phase compensation 2 sets are putted in

When it appears, please check if voltage, current and haromics are abnormal

Total active power:13.3KW

Total reactive power:9.8kvar

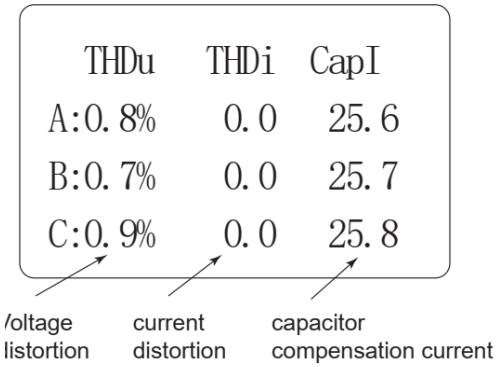
Total power factor 0.8(L:Inductive C:Capacitive)



Zero sequence current

Power grid current

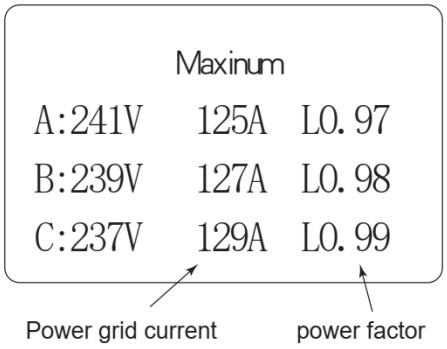
Power factor



Voltage distortion

Current distortion

Capacitor compensation current



Maxinum & mininum record interface (data is valid when customizing storage functions)

Power grid current

Power factor

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