

3000A/55V DC Power Supply System

(DJPG1.0553000440.06ASSLC0.12)

Technical Manual

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2、Controller usage of DC Power Supply

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3、Control theory drawing of DC Power Supply

1 Summary

The power supply system is specially designed for crystal furnace which is used for heating, the control adjuster adopt total digital design, mighty function; low voltage electric application adopt high quality product, credible performance; main transformer adopt five-core pole frame, voltage adjusted through primary side, distinct effect of energy saving; part of voltage adjusting、rectification adopt water-cooling mode. provide all kinds of fault alarm and function of stop-protecting automatically.

2 Technical parameter

2.1 input

- Rated voltage: 3AC440V ($\pm 10\%$)
- Rated frequency: 50/60Hz
- Rated capacity: about 225KVA
- Rated current: about 300A

2.2 output

- Rated capacity: 165Kw
- rated voltage: DC55V
- rated current: DC3000A

2.3 others

- load impedance of main power supply: $17.5m\Omega$
- current pulse rate: $\leq 4\%$ (rms)
- insulated impedance: $\geq 5M\Omega$
- insulated voltage endurance:
 - 1 minute with 2500V between primary side and secondary side of main loop.
 - 1 minute with 2500V between primary side of main loop and ground.
 - 1 minute with 1500V between secondary side of main loop and ground.
 - 1 minute with 1500V between control loop and ground.
- water flux: $\geq 20L/Min$
- water pressure: 0.2~0.6Mpa
- purified water
- Offer 3AC200V(10KVA) assistant power supply.

3 Working environment

- temperature: $0\sim 40^{\circ}\text{C}$
- humidity: 15%~85%
- location:
 - gas or steam contains no conductive dust and insulation damaging medium
 - no sharp vibration and impaction

- better ventilation

4 Brief introduction of system function & operation explanation

4.1 remote/local control

- remote/local operation is controlled by SA1
- SA1 turned to local control, remote control is invalid
- SA1 turned to remote control, local operation is invalid

4.2 start/stop control

- when local control, press RUN(SB1) to start power supply, press STOP(SB2) to stop power supply, remote stop is valid, remote start and remote given is invalid
- when remote control, remote start/stop and remote given is valid, local RUN、STOP 、given potentiometer is invalid

4.3 fault alarm & stop

- when overcurrent fault happens, alarm indication lamp HL4 and HL3 light, controller stops immediately
- when controller fault happens, alarm indication lamp HL3 light, controller stops immediately
- when overheat fault happens, alarm indication lamp HL6 and HL3 light, controller stops immediately
- when water flux is low, alarm indication lamp HL5 and HL3 light, controller stops after 5s delay

4.4 fault reset

When fault happens, corresponding fault indication lamp light, press RESET (SB3) to reset fault signal, fault indication lamp light off.

5 On-site installation

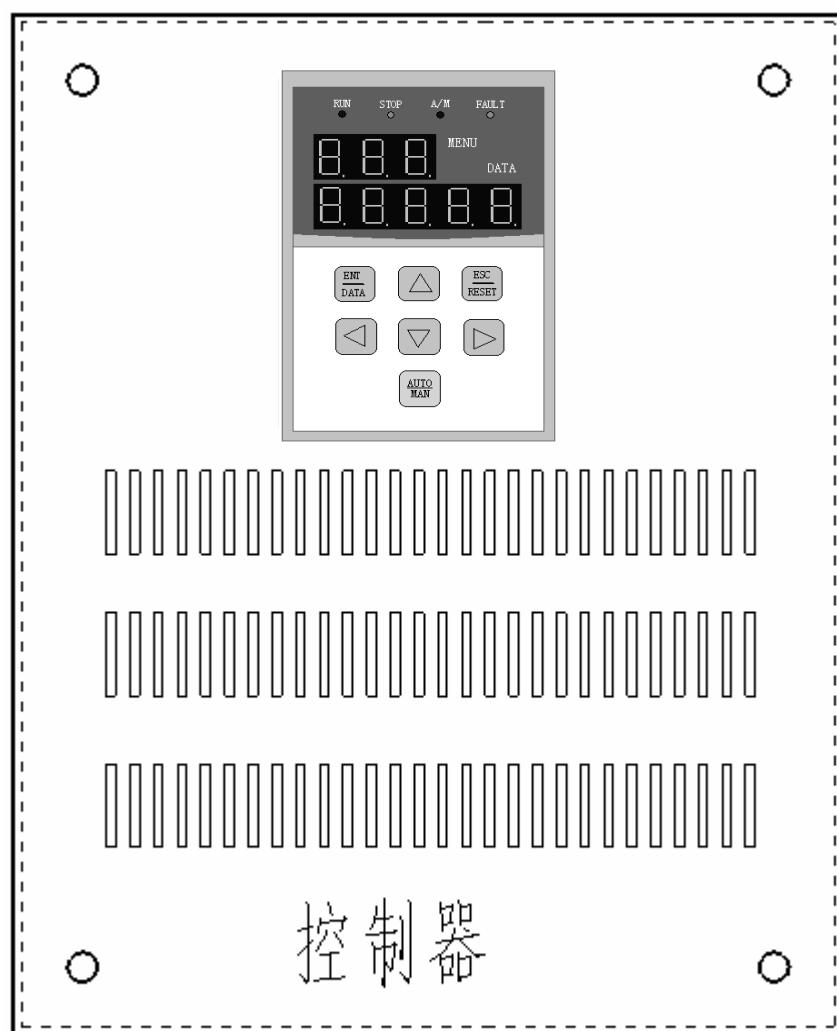
- mounting base must be ready according to overall dimension and mounting screws, then, device can be positioned, bolts can be buried, bolts can be tightened after cement is fixed.
- power entry lines (copper cables must be bigger than $\geq 150\text{mm}^2$) and output lines can be connected when device is fixed. Insulation and right connected must be confirmed before power is switched on.
- power is switched on after above all is ok, caution of personnel safety, inspecting that if power indication is right or not, including voltage, current, and power.

6 Usage & maintenance

- timely maintenance must be executed, connecting parts must be tightly, dust must be swept.
- when changing parts, element parameter such as voltage-endurance, current and dimension must be checked carefully, polarity must be right when wiring.

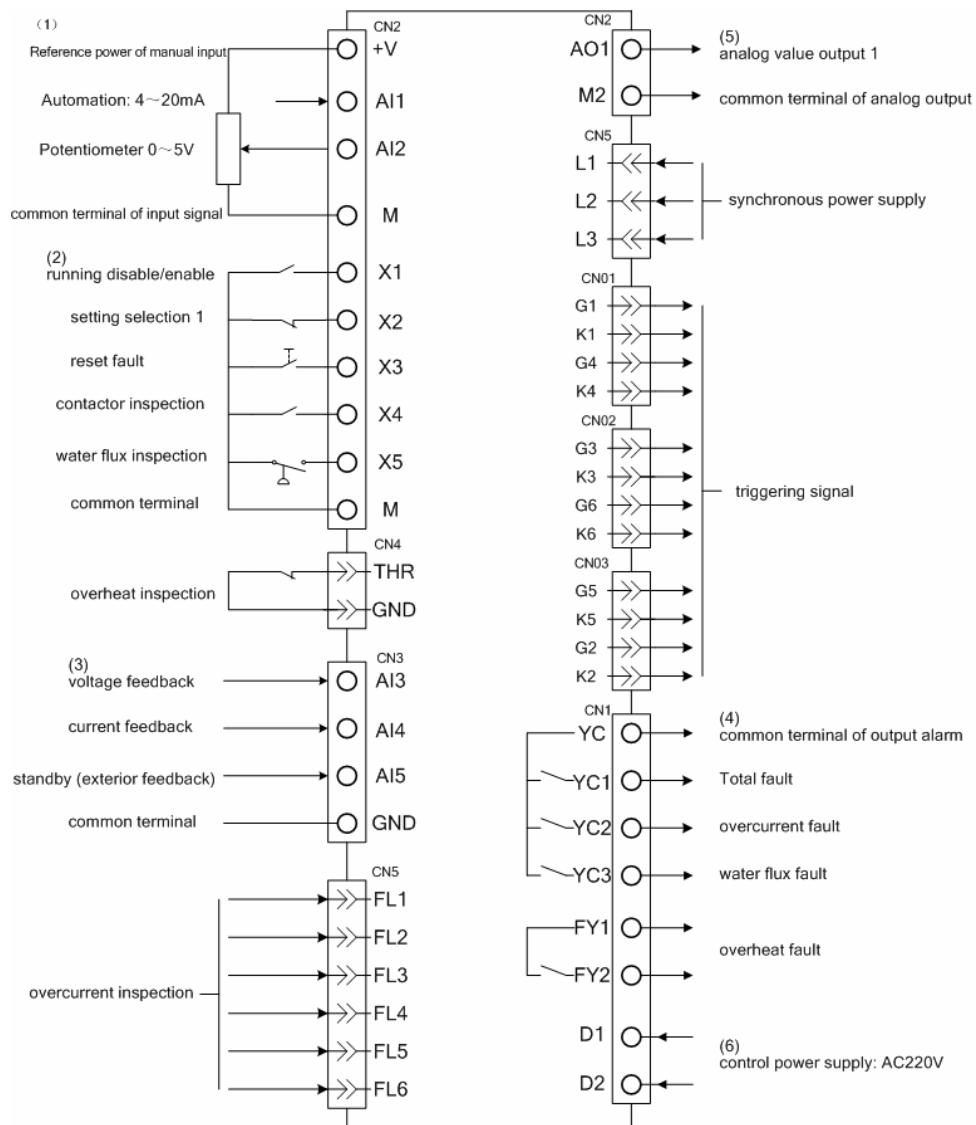
Power Controller with thyristor

User's manual



KZQ

1 basic connections



Terminal connection diagram on control board

(1) input of analog given signals

AI1、M: input 4~20mA current as exterior given.

AI2、M: input 0~5V voltage as local given.

(2) X1~X5、M: input ports of on-off value, realize the functions such as running control to controller, input signal switchover, reset fault, exterior fault 1 and exterior fault 2 etc.

(3) input of feedback signals

AI3、M: feedback of output voltage, output voltage is transferred to 0~10V and input.

AI4、M: feedback of output current, output current is transferred to 0~10V and input.

AI5、M: standby (exterior feedback)

(4) Y1、Y2、Y3、YC、FY1、FY2

output ports of relay, used as output of alarm signal.

(5) AO1、M2

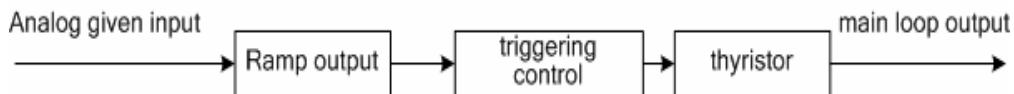
analog ouput port, output power is transferred as 0~20mA analog signal and input.

(6) D1、D2: control power supply (AC100~250V/0.5A , 50/60Hz)

2 control principle

2.1 open-loop control

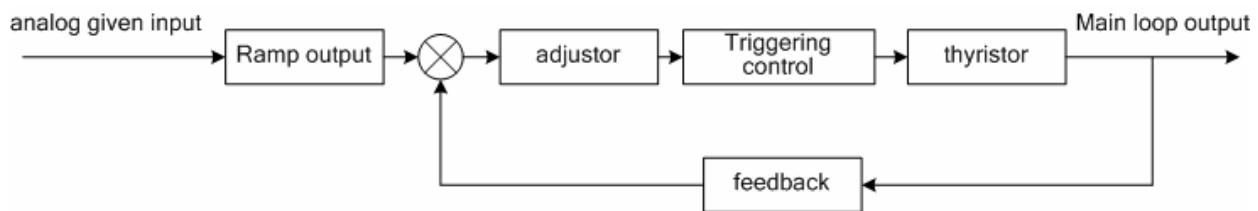
When open-loop control, controller needs no feedback signal from controlled subject, controller will directly controls triggering angle of thyristors according to given value. Signal when open-loop control directly comes from output after ramp.



logic drawing of open-loop control

2.2 close-loop control

When close-loop control, controlled signal is introduced as feedback value, execute PID adjusting to error signal to make output value goes to or equal to given value.



logic drawing of close-loop control

3 brief introduction of functions

3.1 two kinds of control mode

- open-loop control
control the output value directly according to given value. Under stop situation, set 2.14 as 1. Refer to logic function diagram 3
- close-loop control
make output equal to given value. Under stop situation, set 2.14 as 0. Refer to logic function diagram 3.

3.2 protection and alarm functions

- main loop power supply lost: alarm when main loop power supply isn't switched on or main loop power supply lost.
- overcurrent protection: stop outputting and then alarm when output current is bigger than 2 times of rated current.
- power frequency fault: stop outputting and then alarm when frequency is not 50Hz or 60Hz.
- overheat protection: stop outputting and alarm when temperature of thyristors or water-cooling windings are above 75°C.
- protection when flux of cooling-water is low: stop outputting and then alarm when flux of cooling-water is lower than given value.
- contactor fault and alarm: alarm when contactor isn't working during operation.

3.3 analog output

Output voltage, output current or output power is transferred to 4~20mA and output.

3.4 constant current

Parameter setting window, output mode is selected as constant current output:
2.14=0, 2.09=7.30.

Output current can be adjusted according to control signal and also can keep fixed through current feedback of load. Load current can be fixed when electric network voltage fluctuates or load impedance changes if there is abundant value of output voltage.

3.5 constant voltage

Parameter setting window, output mode is selected as constant voltage output:
2.14=0, 2.09=7.28.

Output voltage can be adjusted according to control signal and also can keep fixed through voltage feedback of load. Output can be fixed when electric network voltage fluctuates or load impedance changes if there is abundant value of input voltage.

3.6 constant power

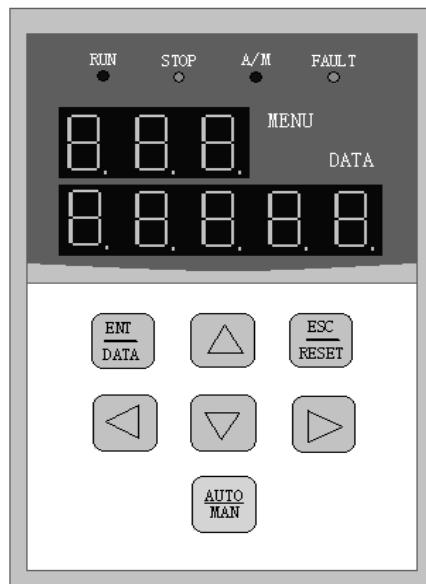
Parameter setting window, output mode is selected as constant power output:
2.14=0, 2.09=7.32.

Power signal can be got when load current is multiplied by load voltage through interior feedback, this power signal is taken as power feedback of power, if only there is abundant adjusting value of output voltage and current, output power of controller can be fixed when electric network fluctuates or load changes.

4 operation panel

4.1 operation panel

Parameters of controller can be set and states of controller can be inspected through operation panel, figure of operation panel is shown as bellow:



Reset fault: fault codes will display when controller faults happen, press “ESC/RESET” or exterior terminal (X3) to reset fault.

RUN: running indication light, lights always when controller operates.

STOP: stop indication light, lights always when controller faults happen or after stop.

FAULT: fault indication light, flashes when faults happen.

| Object | Name | Function explanation |
|--------|-----------------|---|
| | Enter | State switchover, enter into windows, extract data and confirm change |
| | Exit | Exit without save, used to reset fault after fault alarm |
| | Increase | Submenu switchover, change data (increase) |
| | Decrease | Submenu switchover, change data (decrease) |
| | Move lift | Main menu switchover, window moves left |
| | Move right | Main menu switchover, window moves right |
| | Digital display | Display running data, working condition and kinds of codes |
| | LED display | Display current working condition of controller (run, stop and fault) |

4.2 corresponding list of characters display

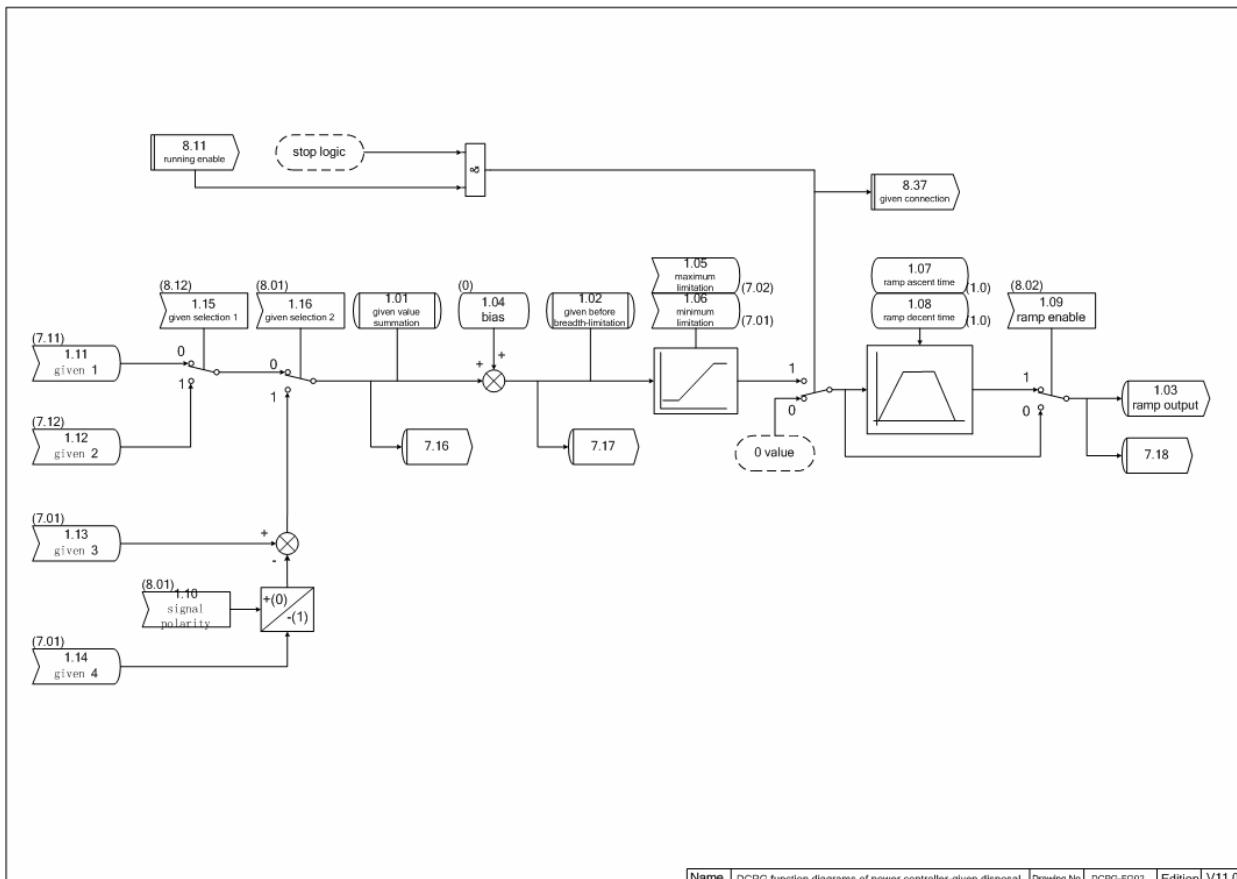
| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| □ | | 乙 | ☰ | ㄣ | ㄥ | ㄥ | ㄣ | 日 | ㄣ |
| A | B | C | D | E | F | G | H | I | J |
| 𠂇 | 𠂆 | 𠂅 | 𠂄 | 𠂃 | 𠂁 | 𠂉 | 𠂈 | 𠂊 | 𠂉 |
| K | L | M | N | O | P | Q | R | S | T |
| 𠂔 | 𠂎 | 𠂑 | 𠂏 | 𠂐 | 𠂒 | 𠂓 | 𠂔 | 𠂔 | 𠂔 |
| U | V | W | X | Y | Z | | | | |
| 𠂔 | 𠂔 | 𠂔 | 𠂔 | 𠂔 | 𠂔 | | | | |

Corresponding character list of 7 sects digital

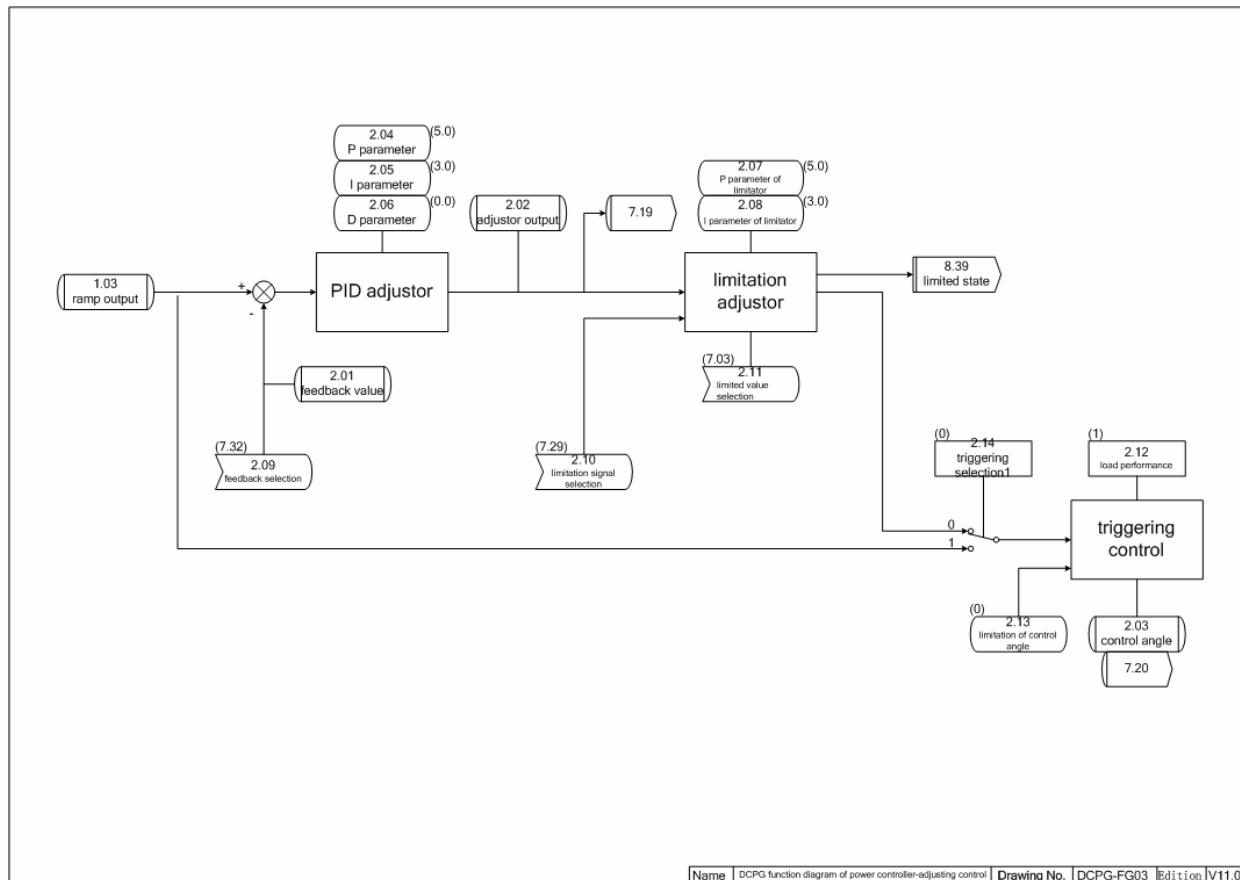
5 functional diagrams

| symbol | name | Explanation | Symbol | Name | Explanation |
|---------|---------------------------------------|--|--------------|--|---|
| (100.0) | read and write parameter | Parameter can be changed (maximum: 16 bytes), default setting is in bracket | (0) | Read and write parameter of on-off value | Changeable on-off value parameter, default setting is in bracket |
| | Read only parameter | Parameter can be read only (maximum: 16 bytes) | | Read only parameter of on-off value | read only on-off value parameter |
| (7.01) | Parameter connective switch | Indicate source of parameter, its value is connector selected by connective on-off value which is changed by address pointer, setting range=7***7**, default setting is in bracket | (8.01) | connective switch of on-off value | Indicate source of on-off value parameter, its value is connector selected by connective on-off value which is changed by address pointer, setting range=8***8**, default setting is in bracket |
| | connector of read only parameter | read only parameter (16 bytes), the value can be connected freely | | Connector of read only on-off value | Read only on-off value parameter, the value can be connected freely |
| (100.0) | Connector of read and write parameter | Changeable parameter (maximum: 16 bytes), the value can be connected freely | (0) | Connector of read and write on-off value | Changeable on-off value parameter, the value can be connected freely |
| | Interior logic | | [IN OUT E N] | signal strobe | |
| | AND logic | | | comparator | |
| | OR logic | | | | |
| | NOT logic | | | | |
| ⊗ | signal summation | | | exterior terminal | |

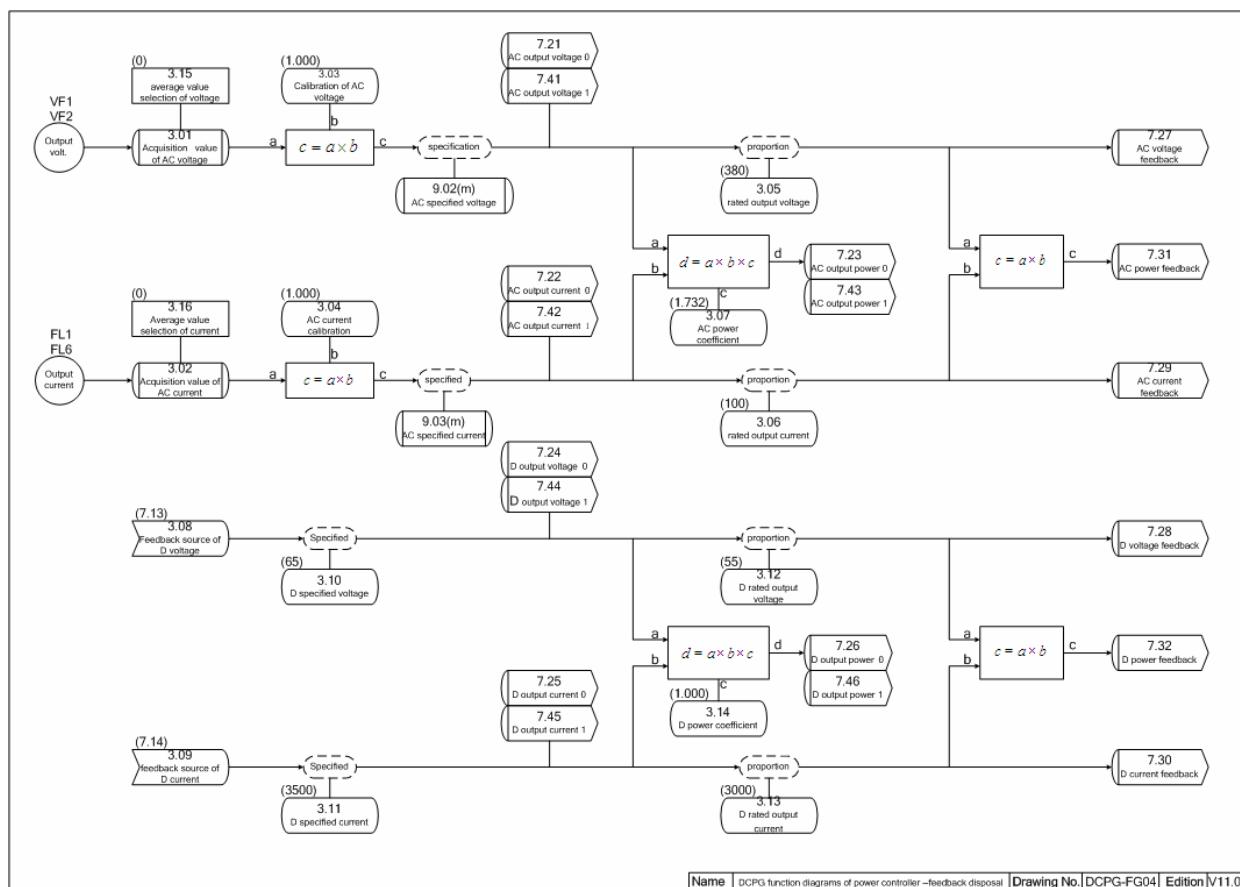
Name DCPG function diagram of power controller--symbol explanation Drawing No. DCPG-FG01 Edition V11.0



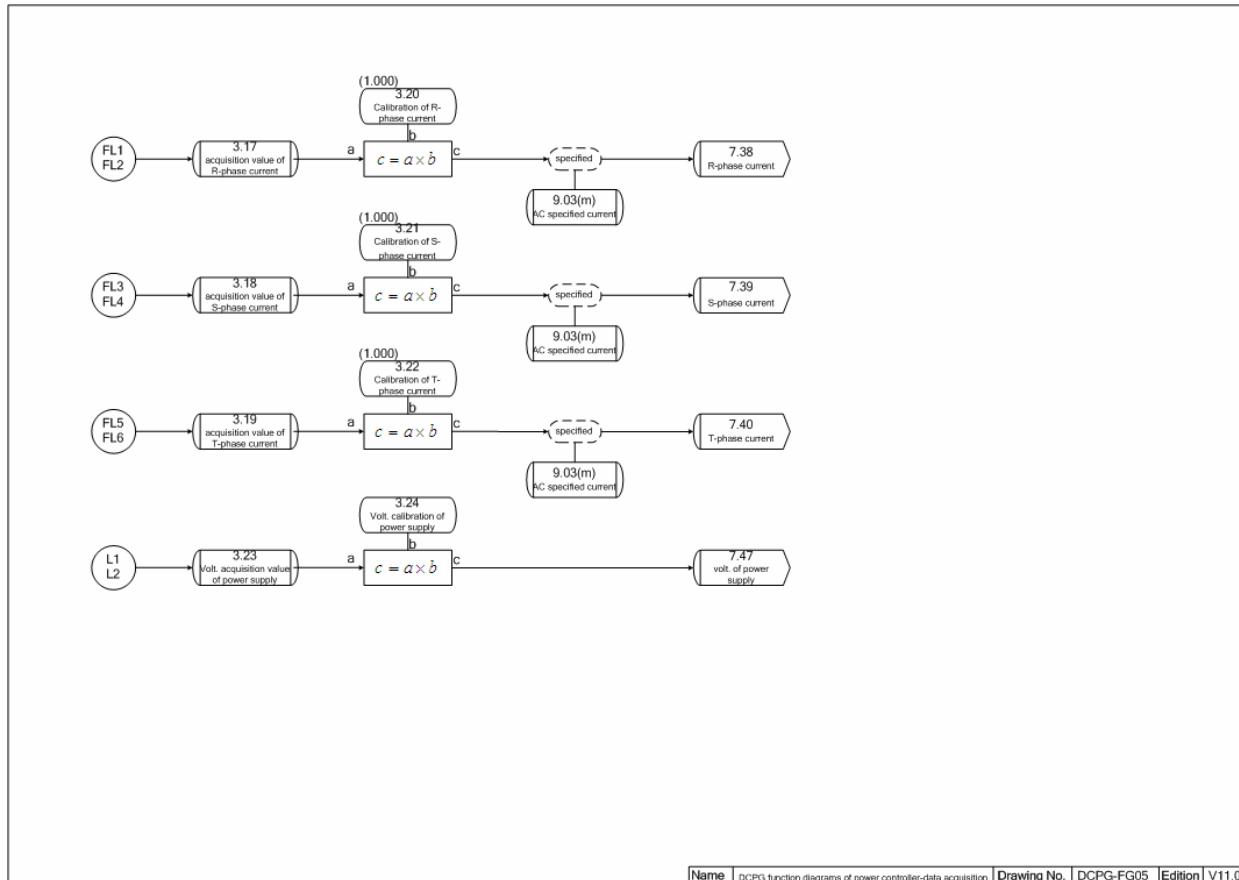
Name DCPG function diagrams of power controller-given disposal Drawing No. DCPG-FG02 Edition V11.0



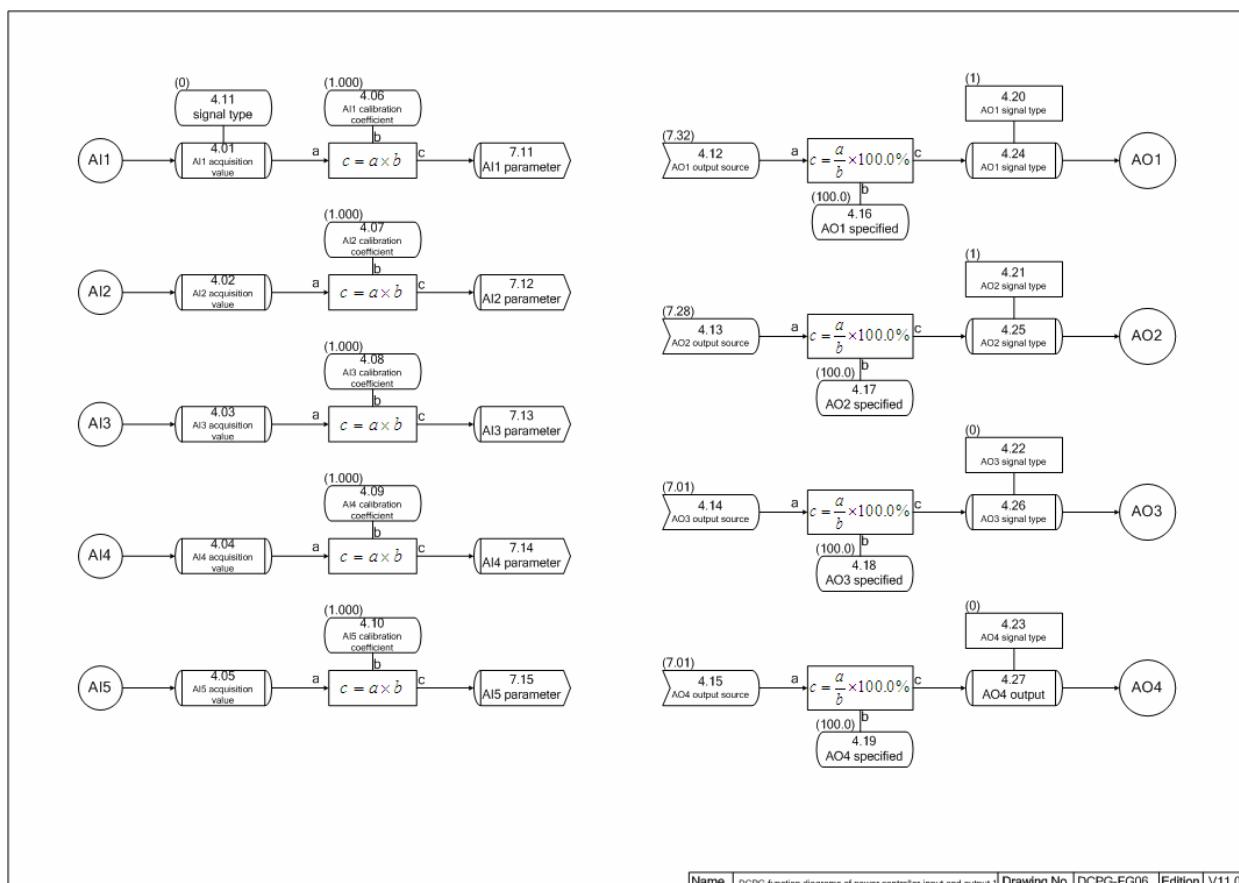
Name | DCPG function diagram of power controller-adjusting control | Drawing No. | DCPG-FG03 | Edition | V11.0



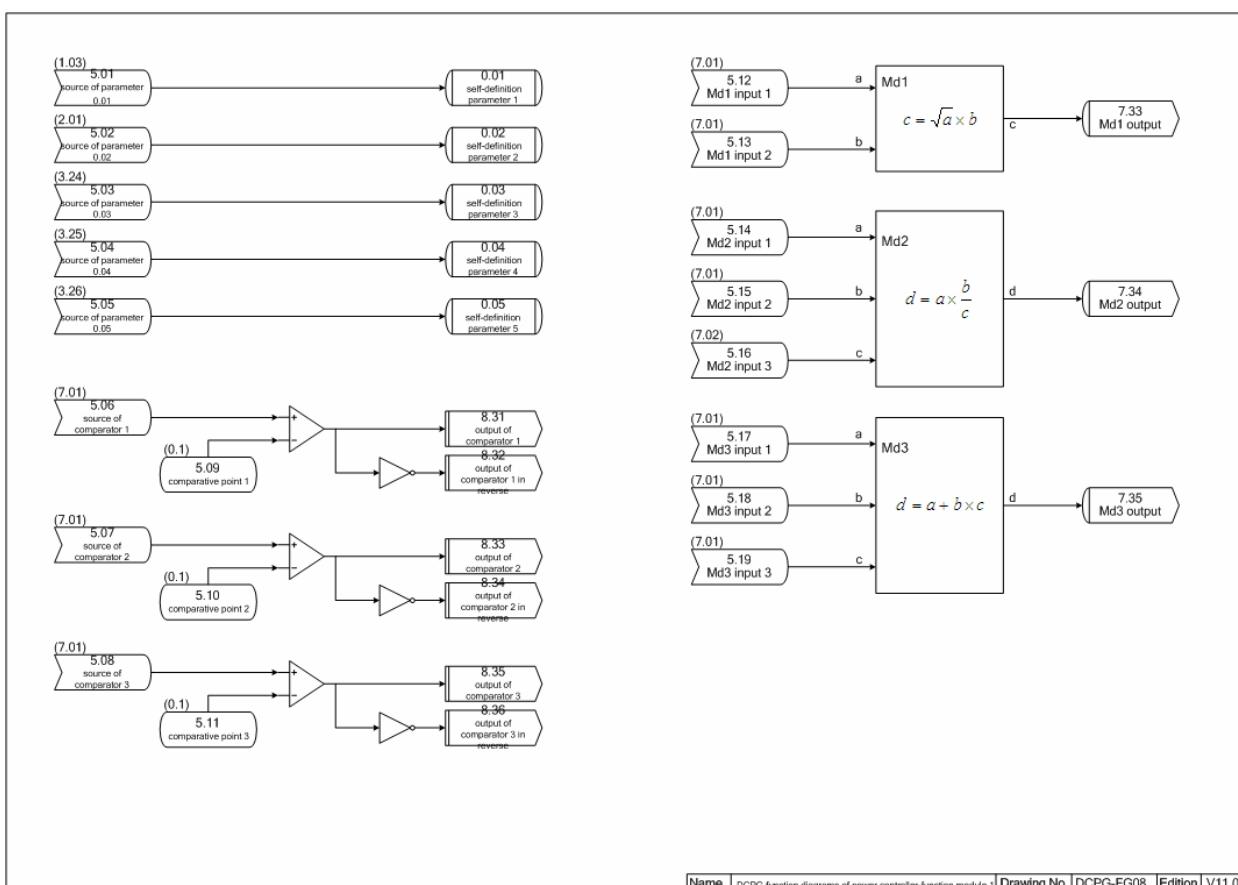
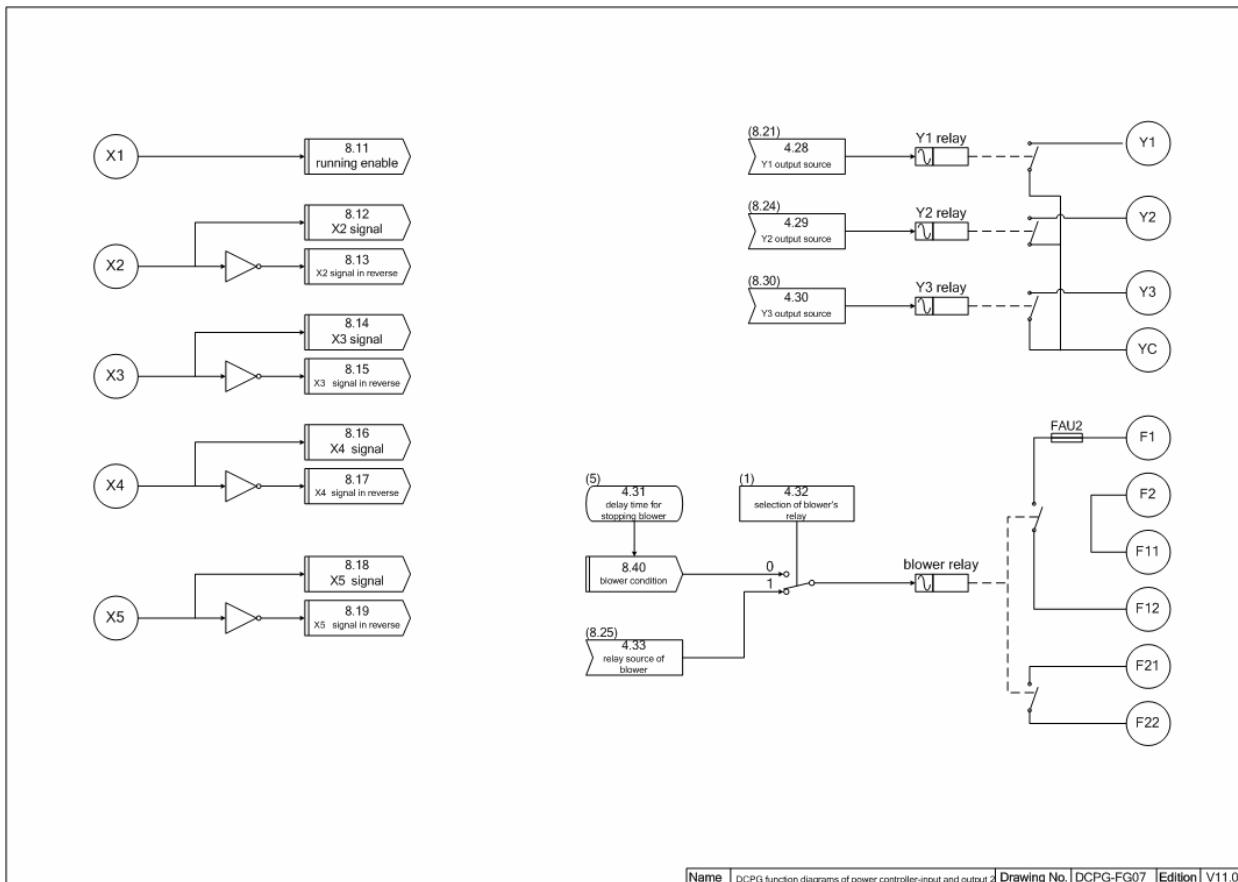
Name | DCPG function diagrams of power controller - feedback disposal | Drawing No. | DCPG-FG04 | Edition | V11.0

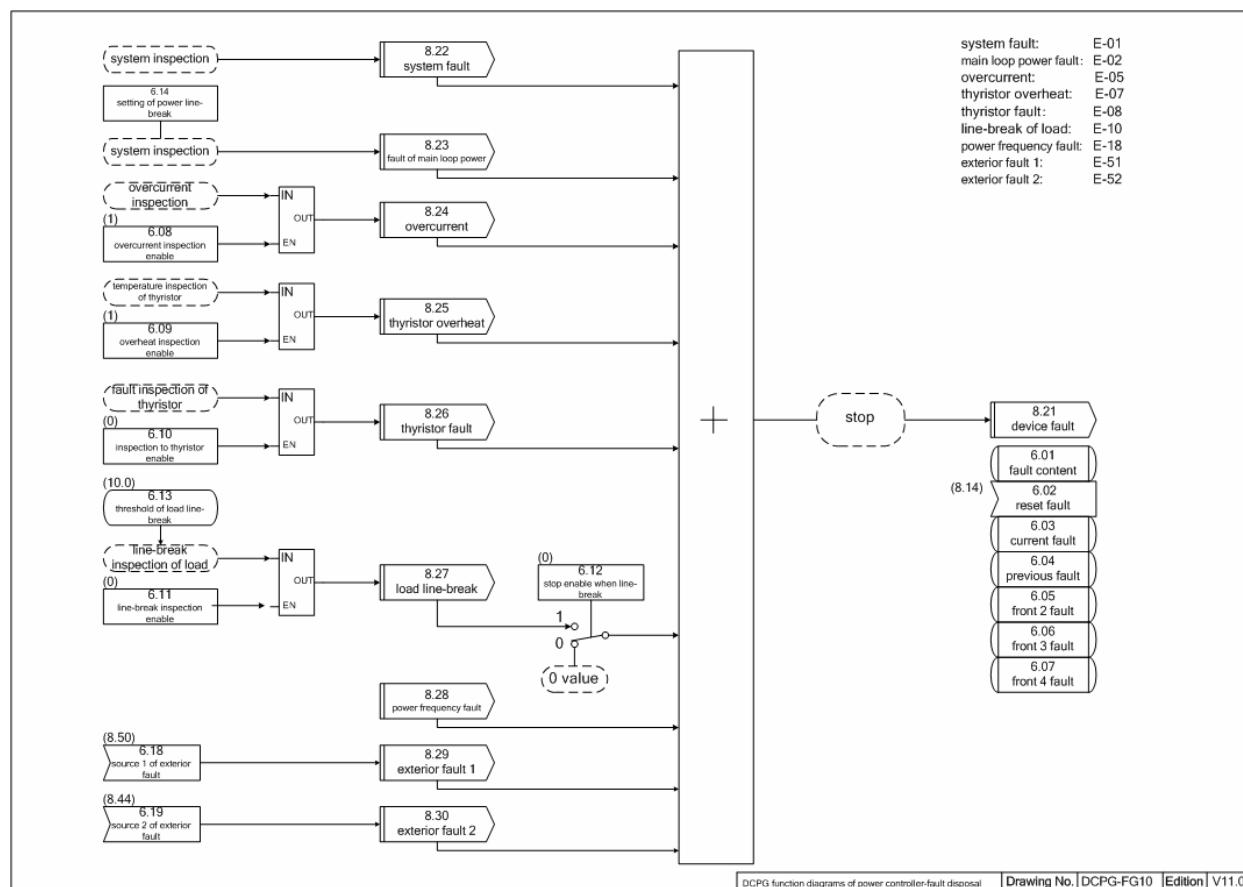
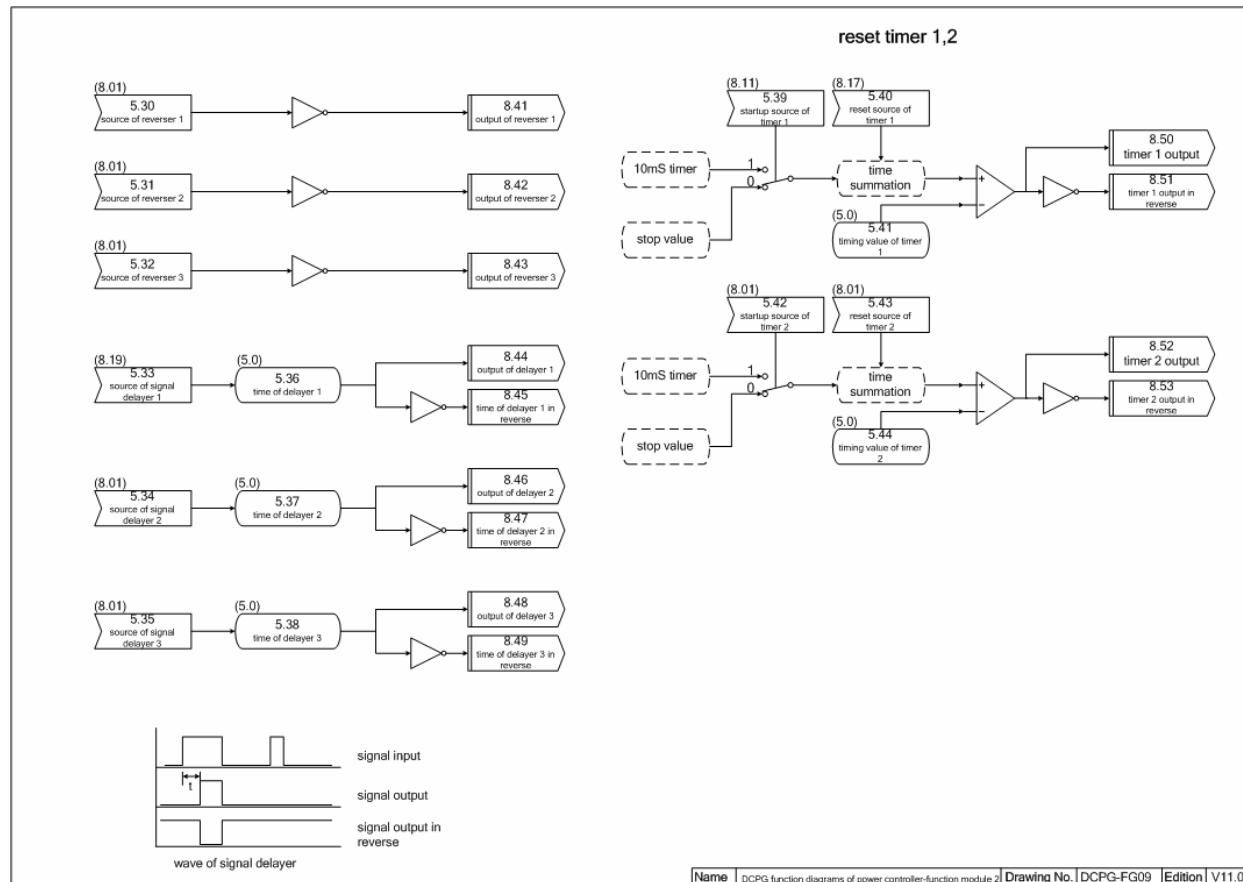


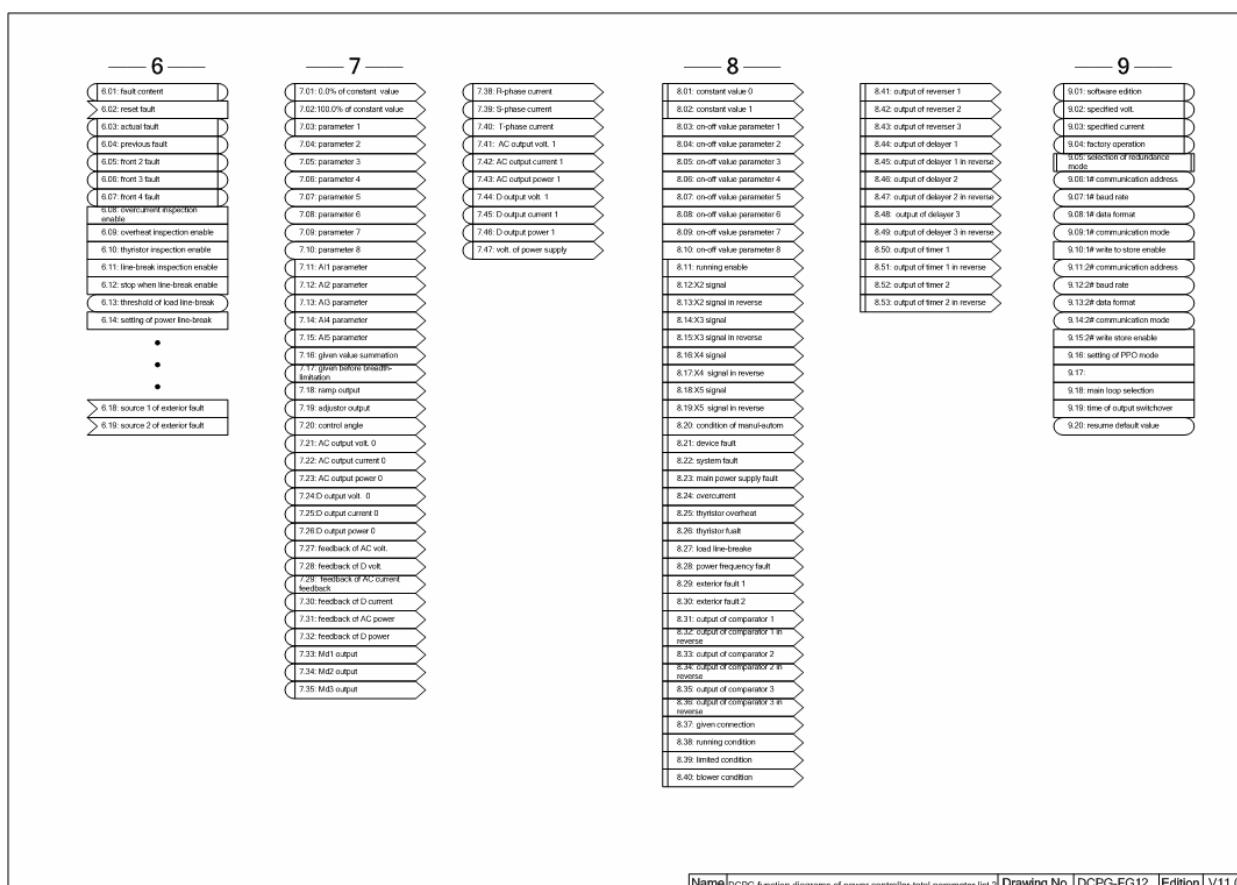
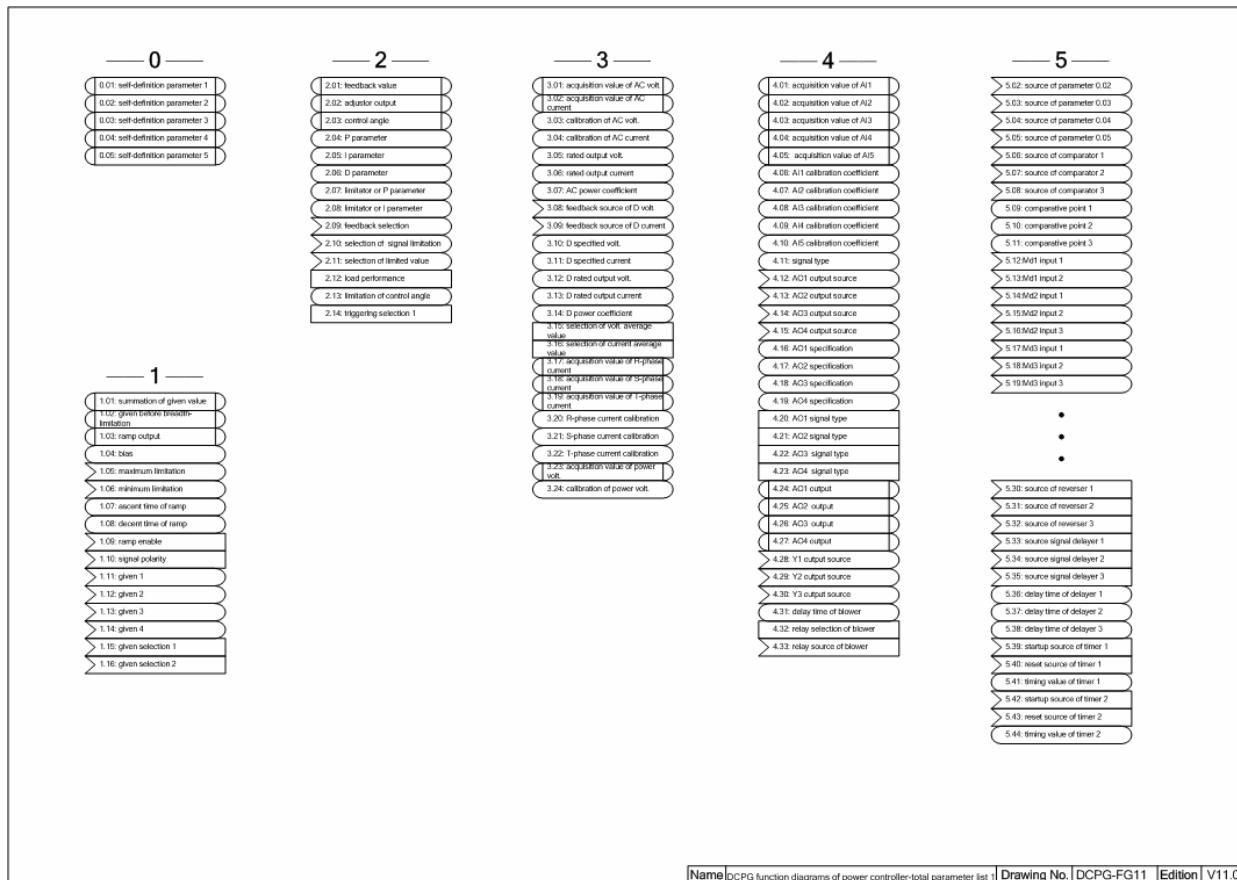
Name | DCPG function diagrams of power controller-data acquisition | Drawing No. | DCPG-FG05 | Edition | V11.0

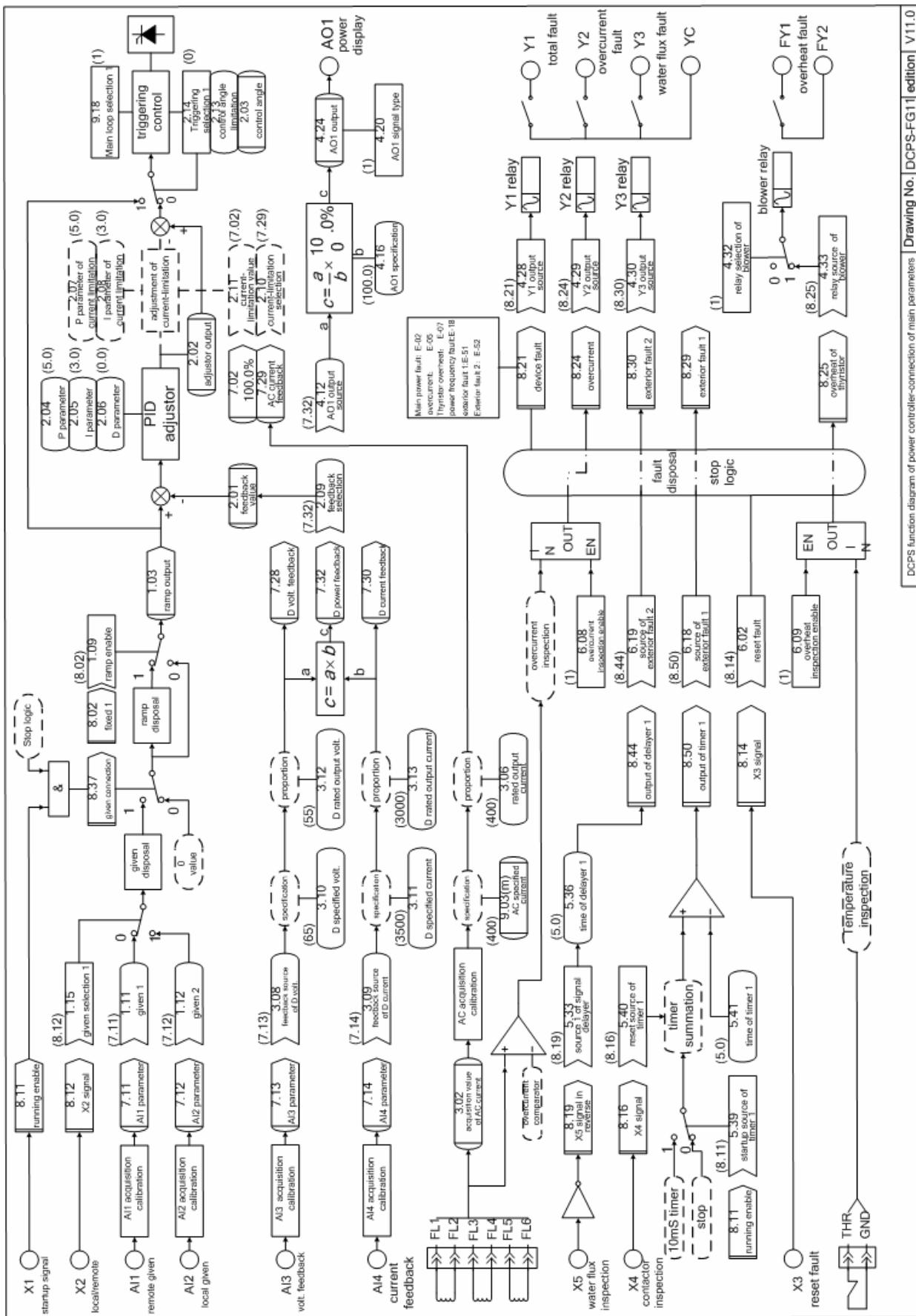


Name | DCPG function diagrams of power controller-input and output | Drawing No. | DCPG-FG06 | Edition | V11.0









6 lists of functional parameter

Keypad attribution: describe attribution that parameter can be changed by keypad.

R: read only, parameter can not be changed.

R/W: both read and write, parameter can be changed.

T: read and write, parameter can be changed when stop.

X: setting of code 1 is valid, parameter can be changed.

Y: setting of code 2 is valid, parameter can be changed.

Z: setting of code 3 is valid, parameter can be changed.

Communication attribution: describe attribution that parameter can be changed by communication.

R: read only, parameter can't be changed, parameter can be read only through communication.

R/W: both read and write, can be changed and parameter can be read and written through communication.

T: read and write, parameter can be changed when stop, parameter can be changed through communication.

T: read and write, parameter can be changed when stop, parameter can be read through communication. Can be changed when stop.

Resume attribution: describe attribution that resume default value to parameter.

A: resume level one default value. Code setting is valid, resume default value which attribution is "A".

B: resume level two default value. Code setting is valid, resume default value which attribution is "A" and "B"

C: resume level two default value. Code setting is valid, resume default value which attribution is "A", "B" and "C".

| parameter No. | name | range | default | keypad attribution | communication attribution | resume attribution | | | | |
|-------------------------------------|---------------------------------|--------------------------------|---------|--------------------|---------------------------|--------------------|--|--|--|--|
| Parameter menu 0: general parameter | | | | | | | | | | |
| 0.01 | Self-definition parameter 1 | Be relative to setting of 5.01 | - | R | R | A | | | | |
| 0.02 | Self-definition parameter 2 | Be relative to setting of 5.02 | | | | | | | | |
| 0.03 | Self-definition parameter 3 | Be relative to setting of 5.03 | | | | | | | | |
| 0.04 | Self-definition parameter 4 | Be relative to setting of 5.04 | | | | | | | | |
| 0.05 | Self-definition parameter 5 | Be relative to setting of 5.05 | | | | | | | | |
| Parameter menu 1: given disposal | | | | | | | | | | |
| 1.01 | Given value summation | -200.0%~200.0% | - | R | R | A | | | | |
| 1.02 | Given before breadth-limitation | -200.0%~200.0% | - | | | | | | | |
| 1.03 | Ramp output | 0~100.0% | - | | | | | | | |
| 1.04 | Bias | -50.0%~50.0% | 0.0 | | R/W | | | | | |
| 1.05 | Maximum limitation | 7.01~7.** | 7.02 | | R | | | | | |
| 1.06 | Minimum limitation | 7.01~7.** | 7.01 | R/W | | | | | | |
| 1.07 | Ramp ascent time | 0.0~600.0S | 1.0S | | | | | | | |
| 1.08 | Ramp decent time | 0.0~600.0S | | | | | | | | |

| | | | | | | |
|---|---------------------------------|------------------------|-------|-----|-----|---|
| 1.09 | Ramp enable | 8.01~8.** | 8.02 | R/W | R | A |
| 1.10 | Signal polarity | 8.01~8.** | 8.01 | | | |
| 1.11 | Given 1 | 7.01~7.** | 7.11 | | | |
| 1.12 | Given 2 | 7.01~7.** | 7.12 | | | |
| 1.13 | Given 3 | 7.01~7.** | 7.01 | | | |
| 1.14 | Given 4 | 7.01~7.** | 7.01 | | | |
| 1.15 | Given selection 1 | 8.01~8.** | 8.12 | | | |
| 1.16 | Given selection 2 | 8.01~8.** | 8.01 | | | |
| Parameter menu 2: adjustment control | | | | | | |
| 2.01 | Feedback value | 0.0~200.0% | - | R | R | A |
| 2.02 | Adjustor output | 0.0~100.0% | | | | |
| 2.03 | Control angle | 0.0°~180.0° | | | | |
| 2.04 | P parameter | 0.1~200.0 | 5.0 | R/W | R/W | A |
| 2.05 | I parameter | 0.1~200.0 | 3.0 | | | |
| 2.06 | D parameter | 0.0~200.0 | 0.0 | | | |
| 2.07 | P parameter of limitator | 0.1~200.0 | 5.0 | | | |
| 2.08 | I parameter of limitator | 0.1~200.0 | 3.0 | | | |
| 2.09 | Feedback selection | 7.27~7.32 | 7.32 | T | R | A |
| 2.10 | Selection of limited signal | 7.27~7.32 | 7.30 | | | |
| 2.11 | Selection of limited value | 7.02~7.** | 7.03 | | | |
| 2.12 | Load performance | 0、1 | 1 | | | |
| 2.13 | Control angle limitation | 0.0°~120.0° | 0.0 | R/W | R/W | A |
| 2.14 | Triggering selection 1 | 0、1 | 0 | T | R | |
| Parameter menu 3: feedback disposal | | | | | | |
| 3.01 | Acquisition value of AC volt. | 0.0~120.0% | - | R/W | R | A |
| 3.02 | Acquisition value of AC current | 0.0~120.0% | - | | | |
| 3.03 | Calibration of AC volt. | 0.500~1.500 | 1.000 | | | |
| 3.04 | Calibration of AC current | 0.500~1.500 | 1.000 | T | R | B |
| 3.05 | Rated output volt. | 1~AC specified volt. | 380 | | | |
| 3.06 | Rated output current | 1~AC specified current | 400 | | | |
| 3.07 | AC power coefficient | 0.100~5.000 | 1.732 | | | |
| 3.08 | Feedback source of D volt. | 7.11~7.** | 7.13 | | | |
| 3.09 | Feedback source of D current | 7.11~7.** | 7.14 | T | R | A |
| 3.10 | D specified volt. | 5~32000V | 65 | | | |
| 3.11 | D specified current | 5~32000A | 3500 | | | |

| | | | | | | |
|------|--------------------------------------|-------------|-------|-----|---|---|
| 3.12 | D rated output volt. | 5~32000V | 55 | | | |
| 3.13 | D rated output current | 5~32000A | 3000 | | | |
| 3.14 | D power coefficient | 0.100~5.000 | 1.000 | | | |
| 3.17 | Acquisition value of R-phase current | 0.0~120.0% | - | | | |
| 3.18 | Acquisition value of S-phase current | 0.0~120.0% | - | R | R | A |
| 3.19 | Acquisition value of T-phase current | 0.0~120.0% | - | | | |
| 3.20 | R-phase current calibration | 0.500~1.500 | 1.000 | | | |
| 3.21 | S-phase current calibration | 0.500~1.500 | 1.000 | R/W | | B |
| 3.22 | T-phase current calibration | 0.500~1.500 | 1.000 | | R | |
| 3.23 | Acquisition value of power volt. | 0~600 | - | R | | A |
| 3.24 | Calibration of power volt. | 0.500~1.500 | 1.000 | R/W | | B |

Parameter menu 4: input & output

| | | | | | | |
|------|-----------------------------|-------------|-------|-----|---|---|
| 4.01 | AI1 acquisition value | 0~100.0% | | | | |
| 4.02 | AI2 acquisition value | 0~100.0% | | | | |
| 4.03 | AI3 acquisition value | 0~100.0% | - | R | R | A |
| 4.04 | AI4 acquisition value | 0~100.0% | | | | |
| 4.05 | AI5 acquisition value | 0~100.0% | | | | |
| 4.06 | AI1 calibration coefficient | 0.100~1.500 | 1.000 | | | |
| 4.07 | AI2 calibration coefficient | 0.100~1.500 | 1.000 | | | |
| 4.08 | AI3 calibration coefficient | 0.100~1.500 | 1.000 | | | B |
| 4.09 | AI4 calibration coefficient | 0.100~1.500 | 1.000 | R/W | R | |
| 4.10 | AI5 calibration coefficient | 0.100~1.500 | 1.000 | | | |
| 4.11 | Signal type | 0、1 | 0 | | | A |
| 4.12 | AO1 output source | 7.01~7.** | 7.32 | | | |
| 4.13 | AO2 output source | 7.01~7.** | 7.01 | | | |
| 4.14 | AO3 output source | 7.01~7.** | 7.01 | | | |
| 4.15 | AO4 output source | 7.01~7.** | 7.01 | | | |
| 4.16 | AO1 specification | 0.1~32000 | 100.0 | | | |
| 4.17 | AO2 specification | 0.1~32000 | 100.0 | R/W | R | A |
| 4.18 | AO3 specification | 0.1~32000 | 100.0 | | | |
| 4.19 | AO4 specification | 0.1~32000 | 100.0 | | | |
| 4.20 | AO1 signal type | 0、1 | 1 | | | |
| 4.21 | AO2 signal type | 0、1 | 0 | | | |
| 4.22 | AO3 signal type | 0、1 | 0 | | | |
| 4.23 | AO4 signal type | 0、1 | 0 | | | |

| | | | | | | |
|------|---------------------------|------------|------|-----|---|---|
| 4.24 | AO1 output | 0.0~120.0% | - | R | R | A |
| 4.25 | AO2 output | 0.0~120.0% | - | | | |
| 4.26 | AO3 output | 0.0~120.0% | - | | | |
| 4.27 | AO4 output | 0.0~120.0% | - | | | |
| 4.28 | Y1 output source | 8.01~8.** | 8.21 | R/W | R | A |
| 4.29 | Y2 output source | 8.01~8.** | 8.24 | | | |
| 4.30 | Y3 output source | 8.01~8.** | 8.30 | | | |
| 4.31 | Delay timeof blower | 0~60min | 5 | | | |
| 4.32 | Relay selection of blower | 0、1 | 1 | | | |
| 4.33 | Relay source of blower | 8.01~8.** | 8.25 | | | |

Parameter menu 5: functional module

| | | | | | | |
|------|----------------------------|-----------|------|-----|---|---|
| 5.01 | Source of parameter 0.01 | 1.01~9.20 | 1.03 | R/W | R | A |
| 5.02 | Source of parameter 0.02 | 1.01~9.20 | 2.01 | | | |
| 5.03 | Source of parameter 0.03 | 1.01~9.20 | 7.24 | | | |
| 5.04 | Source of parameter 0.04 | 1.01~9.20 | 7.25 | | | |
| 5.05 | Source of parameter 0.05 | 1.01~9.20 | 7.26 | | | |
| 5.06 | Source of comparator 1 | 7.01~7.** | 7.01 | R/W | R | A |
| 5.07 | Source of comparator 2 | 7.01~7.** | 7.01 | | | |
| 5.08 | Source of comparator 3 | 7.01~7.** | 7.01 | | | |
| 5.09 | Comparative point1 | 0.1~30000 | 0.1 | R/W | R | A |
| 5.10 | Comparative point2 | 0.1~30000 | 0.1 | | | |
| 5.11 | Comparative point3 | 0.1~30000 | 0.1 | | | |
| 5.12 | Md1 input 1 | 7.01~7.** | 7.01 | R/W | R | A |
| 5.13 | Md1 input 2 | 7.01~7.** | 7.01 | R/W | R | A |
| 5.14 | Md2 input 1 | 7.01~7.** | 7.01 | R/W | R | A |
| 5.15 | Md2 input 2 | 7.01~7.** | 7.01 | | | |
| 5.16 | Md2 input 3 | 7.01~7.** | 7.02 | | | |
| 5.17 | Md3 input 1 | 7.01~7.** | 7.01 | R/W | R | A |
| 5.18 | Md3 input 2 | 7.01~7.** | 7.01 | | | |
| 5.19 | Md3 input 3 | 7.01~7.** | 7.01 | | | |
| 5.30 | Source of reverser 1 | 8.01~8.** | 8.01 | R/W | R | A |
| 5.31 | Source of reverser 2 | 8.01~8.** | 8.01 | | | |
| 5.32 | Source of reverser 3 | 8.01~8.** | 8.01 | | | |
| 5.33 | Source of signal delayer 1 | 8.01~8.** | 8.19 | R/W | R | A |
| 5.34 | Source of signal delayer 2 | 8.01~8.** | 8.01 | | | |

| | | | | | | |
|------|----------------------------|------------|------|-----|-----|---|
| 5.35 | Source of signal delayer 3 | 8.01~8.** | 8.01 | | | |
| 5.36 | Delay time of delayer 1 | 0.0~300.0S | 5.0 | | | |
| 5.37 | Delay time of delayer2 | 0.0~300.0S | 5.0 | R/W | R/W | A |
| 5.38 | Delay time of delayer 3 | 0.0~300.0S | 5.0 | | | |
| 5.39 | Startup source of timer 1 | 8.01~8.** | 8.11 | | R | |
| 5.40 | Reset source of timer 1 | 8.01~8.** | 8.16 | R/W | R/W | A |
| 5.41 | timing value of timer 1 | 0.0~300.0S | 1.0 | | | |
| 5.42 | Startup source of timer 2 | 8.01~8.** | 8.01 | | R | |
| 5.43 | Reset source of timer 2 | 8.01~8.** | 8.01 | R/W | R/W | A |
| 5.44 | timing value of timer 1 | 0.0~300.0S | 5.0 | | R/W | |

Parameter menu 6: fault disposal

| | | | | | | |
|------|--------------------------------|------------|------|-----|-----|---|
| 6.01 | Fault content | 0~99 | - | R | R | |
| 6.02 | Reset fault | 8.01~8.** | 8.14 | R/W | R/W | |
| 6.03 | Latest fault | | - | | | |
| 6.04 | Previous fault | | - | | | A |
| 6.05 | Front 2 fault | 0~99 | - | R | R | |
| 6.06 | Front 3 fault | | - | | | |
| 6.07 | Front 4 fault | | - | | | |
| 6.08 | Overcurrent inspection enable | 0、1 | 1 | | | |
| 6.09 | Overheat inspection enable | 0、1 | 1 | | | |
| 6.10 | Thyristor inspection enable | 0、1 | 0 | | | |
| 6.11 | Line-break inspection enable | 0、1 | 0 | | | |
| 6.12 | Stop enable when line-break | 0、1 | 0 | R/W | R | A |
| 6.13 | Threshold when load line-break | 0.0~100.0% | 10.0 | | | |
| 6.14 | Setting when power line-break | 0、1、2 | 1 | | | |
| 6.18 | Source of exterior fault 1 | 8.01~8.** | 8.50 | | | |
| 6.19 | Source of exterior fault 2 | 8.01~8.** | 8.44 | | | |

Parameter menu 7: parameter connector

| | | | | | | |
|------|--------------------------|-------------|-------|-----|-----|---|
| 7.01 | 0.0% of constant value | 0.0% | 0.0 | | | |
| 7.02 | 100.0% of constant value | 100.0% | 100.0 | R | R | A |
| 7.03 | Parameter 1 | 0.0~3200.0% | 120.0 | R/W | R/W | A |
| 7.04 | Parameter 2 | 0.0~3200.0% | 0.0 | | | |
| 7.05 | Parameter 3 | 0.0~3200.0% | 0.0 | | | |
| 7.06 | Parameter 4 | 0.0~3200.0% | 0.0 | | | |
| 7.07 | Parameter 5 | 0.0~3200.0% | 0.0 | | | |

| | | | | | | |
|------|---------------------------------|----------------|-----|---|---|---|
| 7.08 | Parameter 6 | 0.0~3200.0% | 0.0 | | | |
| 7.09 | Parameter 7 | 0.0~100.0% | 0.0 | | | |
| 7.10 | Parameter 8 | 0.0~100.0% | 0.0 | | | |
| 7.11 | AI1 parameter | 0.0~150.0% | - | | | |
| 7.12 | AI2 parameter | 0.0~150.0% | - | | | |
| 7.13 | AI3 parameter | 0.0~150.0% | - | R | R | A |
| 7.14 | AI4 parameter | 0.0~150.0% | - | | | |
| 7.15 | AI5 parameter | 0.0~150.0% | - | | | |
| 7.16 | Given value summation | -200.0%~200.0% | - | | | |
| 7.17 | Given before breadth-limitation | -200.0%~200.0% | - | | | |
| 7.18 | Ramp output | 0.0~100.0% | - | R | R | A |
| 7.19 | Adjustor output | 0.0~100.0% | - | | | |
| 7.20 | Control angle | 0.0°~180.0° | - | | | |
| 7.21 | AC output voltage 0 | 0~900V | - | | | |
| 7.22 | AC output current 0 | 0~32000A | - | R | R | A |
| 7.23 | AC output power 0 | 0~32000kW | - | | | |
| 7.24 | D output voltage 0 | 0~32000V | - | | | |
| 7.25 | D output current 0 | 0~32000A | - | R | R | A |
| 7.26 | D output power 0 | 0~32000kW | - | | | |
| 7.27 | Feedback of AC volt. | 0.0~200.0% | - | | | |
| 7.28 | Feedback of D volt. | 0.0~200.0% | - | | | |
| 7.29 | Feedback of AC current | 0.0~200.0% | - | R | R | A |
| 7.30 | Feedback of D current | 0.0~200.0% | - | | | |
| 7.31 | Feedback of AC power | 0.0~200.0% | - | | | |
| 7.32 | Feedback of D power | 0.0~200.0% | - | | | |
| 7.33 | Md1 output | 0.0~3200.0 | - | | | |
| 7.34 | Md2 output | 0.0~3200.0 | - | R | R | A |
| 7.35 | Md3 output | 0.0~3200.0 | - | | | |
| 7.38 | R-phase current | 0~32000 | - | | | |
| 7.39 | S-phase current | 0~32000 | - | R | R | A |
| 7.40 | T-phase current | 0~32000 | - | | | |
| 7.41 | AC output volt. 1 | 0.0~900.0V | - | R | R | A |
| 7.42 | AC output current 1 | 0.0~3200.0A | - | | | |
| 7.43 | AC output power 1 | 0.0~3200.0kW | - | | | |
| 7.44 | D output volt. 1 | 0.0~3200.0V | - | | | |

| | | | | | | |
|--|-----------------------------------|--------------|---|---|---|---|
| 7.45 | D output current 1 | 0.0~3200.0A | - | | | |
| 7.46 | D output power 1 | 0.0~3200.0kW | - | | | |
| 7.47 | Volt. of power supply | 0~900V | - | R | R | A |
| Parameter menu 8: on-off value connector | | | | | | |
| 8.01 | Constant value 0 | 0 | 0 | R | R | A |
| 8.02 | Constant value 1 | 1 | 1 | | | |
| 8.03 | On-off value parameter 1 | 0、1 | 0 | | | |
| 8.04 | On-off value parameter 2 | 0、1 | 0 | | | |
| 8.05 | On-off value parameter 3 | 0、1 | 0 | | | |
| 8.06 | On-off value parameter 4 | 0、1 | 0 | | | |
| 8.07 | On-off value parameter 5 | 0、1 | 0 | | | |
| 8.08 | On-off value parameter 6 | 0、1 | 0 | | | |
| 8.09 | On-off value parameter 7 | 0、1 | 0 | | | |
| 8.10 | On-off value parameter 8 | 0、1 | 0 | | | |
| 8.11 | Running enable | 0、1 | - | | | |
| 8.12 | X2 signal | 0、1 | - | | | |
| 8.13 | X2 signal in reverse | 0、1 | - | | | |
| 8.14 | X3 signal | 0、1 | - | | | |
| 8.15 | X3 signal in reverse | 0、1 | - | R | R | A |
| 8.16 | X4 signal | 0、1 | - | | | |
| 8.17 | X4 signal in reverse | 0、1 | - | | | |
| 8.18 | X5 signal | 0、1 | - | | | |
| 8.19 | X5 signal in reverse | 0、1 | - | | | |
| 8.21 | Device fault | 0、1 | - | | | |
| 8.22 | System fault | 0、1 | - | | | |
| 8.23 | main power supply lost | 0、1 | - | | | |
| 8.24 | overcurrent | 0、1 | - | | | |
| 8.25 | Thyristor overheat | 0、1 | - | R | R | A |
| 8.26 | Thyristor fault | 0、1 | - | | | |
| 8.27 | Load line-break | 0、1 | - | | | |
| 8.28 | Power frequency fault | 0、1 | - | | | |
| 8.29 | Exterior fault 1 | 0、1 | - | - | - | |
| 8.30 | Exterior fault 2 | 0、1 | - | - | - | |
| 8.31 | Output of comparator 1 | 0、1 | - | R | R | A |
| 8.32 | Output of comparator 1 in reverse | 0、1 | - | | | |

| | | | | | | |
|------|-----------------------------------|-----|---|---|---|---|
| 8.33 | Output of comparator 2 | 0、1 | - | | | |
| 8.34 | Output of comparator 2 in reverse | 0、1 | - | | | |
| 8.35 | Output of comparator 3 | 0、1 | - | | | |
| 8.36 | Output of comparator 3 in reverse | 0、1 | - | | | |
| 8.37 | Given connection | 0、1 | - | R | R | A |
| 8.38 | Running condition | 0、1 | - | | | |
| 8.39 | Limited condition | 0、1 | - | R | R | A |
| 8.40 | Blower condition | 0、1 | - | | | |
| 8.41 | Output of reverser 1 | 0、1 | - | | | |
| 8.42 | Output of reverser 2 | 0、1 | - | R | R | A |
| 8.43 | Output of reverser 3 | 0、1 | - | | | |
| 8.44 | Output of delayer 1 | 0、1 | - | | | |
| 8.45 | Output of delayer 1 in reverse | 0、1 | - | | | |
| 8.46 | Output of delayer 2 | 0、1 | - | | | |
| 8.47 | Output of delayer 2 in reverse | 0、1 | - | R | R | A |
| 8.48 | Output of delayer 3 | 0、1 | - | | | |
| 8.49 | Output of delayer 3 in reverse | 0、1 | - | | | |
| 8.50 | Output of timer 1 | 0、1 | - | | | |
| 8.51 | Output of timer 1 in reverse | 0、1 | - | R | R | A |
| 8.52 | Output of timer 2 | 0、1 | - | | | |
| 8.53 | Output of timer 2 in reverse | 0、1 | - | | | |

Parameter menu 9: comprehensive parameter

| | | | | | | | |
|------|---------------------------|---|---------------|-----|---|---|--|
| 9.01 | Software edition | - | **.* | R | R | A | |
| 9.02 | AC specified volt. | 100~500V | 500V | | | | |
| 9.03 | AC specified current | - | see nameplate | X | | B | |
| 9.04 | Factory operation | - | - | Y | | C | |
| 9.06 | 1 # communication address | 1~247 | 1 | | | | |
| 9.07 | 1# baud rate | 2400、4800、9600、19200、38400、57600、115.2k | 9600 | R/W | | | |
| 9.08 | 1# data format | 8n2、8e1、8o1 | 8e1 | | | | |
| 9.09 | 1 # communication mode | 0、1 | 0 | | | | |
| 9.10 | Communication storage | 0、1 | 0 | | | | |
| 9.11 | 2 # communication address | 1~247 | 1 | R/W | R | A | |
| 9.12 | 2# baud rate | 2400、4800、9600、19200、38400、57600、115.2k | 9600 | | | | |

| | | | | | | |
|------|----------------------|-------------|------|-----|---|---|
| 9.13 | 2# data format | 8n2、8e1、8o1 | 8e1 | | | |
| 9.17 | reserved | - | - | - | - | - |
| 9.18 | Main loop selection | 0、1、2、3、4 | 0 | X | R | B |
| 9.19 | reserved | - | - | - | - | - |
| 9.20 | Resume default value | 0~9999 | 1000 | R/W | R | A |
| 9.21 | Function selection | 0、1 | 0 | Z | | C |

Parameter menu A: auxiliary parameter

| | | | | | | | |
|------|--|-----------|------|---|---|---|--|
| A.01 | Real time acquisition value of AI1 | 0~4095 | - | R | R | A | |
| A.02 | AI1 lower limit (4-20mA) | 0~2000 | 860 | | | | |
| A.03 | AI1upper limit (4-20mA) | 3000~4095 | 4093 | C | | | |
| A.04 | AI1 lower limit (0-5V) | 0~2000 | 30 | | | | |
| A.05 | AI1 upper limit (0-5V) | 3000~4095 | 4093 | | | | |
| A.06 | Real time acquisition value of AI2 | 0~4095 | - | R | | A | |
| A.07 | AI2 lower limit | 0~2000 | 30 | C | | | |
| A.08 | AI2 upper limit | 3000~4095 | 4093 | | | | |
| A.09 | Real time acquisition value of AI3 | 0~4095 | - | R | | A | |
| A.10 | AI3 lower limit | 0~2000 | 30 | C | | | |
| A.11 | AI3 upper limit | 3000~4095 | 4093 | | | | |
| A.12 | Real time acquisition value of AI4 | 0~4095 | - | R | | A | |
| A.13 | AI4 lower limit | 0~2000 | 30 | C | | | |
| A.14 | AI4 upper limit | 3000~4095 | 4093 | | | | |
| A.15 | Real time acquisition value of AI5 | 0~4095 | - | R | | A | |
| A.16 | AI5 lower limit | 0~2000 | 30 | C | | | |
| A.17 | AI5 upper limit | 3000~4095 | 4093 | | | | |
| A.21 | AI1-AI2 filter coefficient | 0~9 | 5 | Y | | | |
| A.22 | AI3-AI5 filter coefficient | 0~9 | 5 | | | | |
| A.23 | filter coefficient of volt.feedback | 0~9 | 5 | | | | |
| A.24 | filter coefficient of current feedback | 0~9 | 5 | | | | |

7 parameter explanation and function introduction

7.1 parameter explanation

parameter menu 0: general parameter

parameters 0.01~0.05 can be set as display menu of general parameter, can be self-defined according to local requirement.

| | | | | | |
|-------------|--------------------------------|---------|---|---------------|---|
| 0.01 | self-definition parameter 1 | keypad | R | communication | R |
| range | Be relative to setting of 5.01 | default | | - | |

Default display content of 0.01 is content of 1.03, display content of this menu can be changed by changing value of 5.01, and default value of 5.01 is 1.03.

| | | | | | |
|-------------|--------------------------------|---------|---|---------------|---|
| 0.02 | self-definition parameter 2 | keypad | R | communication | R |
| range | Be relative to setting of 5.02 | default | | - | |

Default display content of 0.02 is content of 2.01, display content of this menu can be changed by changing value of 5.02, and default value of 5.01 is 2.01.

| | | | | | |
|-------------|--------------------------------|---------|---|---------------|---|
| 0.03 | self-definition parameter 3 | keypad | R | communication | R |
| range | Be relative to setting of 5.03 | default | | - | |

Default display content of 0.03 is content of 7.24, display content of this menu can be changed by changing value of 5.03, and default value of 5.01 is 7.24.

| | | | | | |
|-------------|--------------------------------|---------|---|---------------|---|
| 0.04 | self-definition parameter 4 | keypad | R | communication | R |
| range | Be relative to setting of 5.04 | default | | - | |

Default display content of 0.04 is content of 7.25, display content of this menu can be changed by changing value of 5.04, and default value of 5.04 is 7.25.

| | | | | | |
|-------------|--------------------------------|---------|---|---------------|---|
| 0.05 | self-definition parameter 5 | keypad | R | communication | R |
| range | Be relative to setting of 5.05 | default | | - | |

Default display content of 0.05 is content of 7.26, display content of this menu can be changed by changing value of 5.05, and default value of 5.05 is 7.26.

Parameter menu 1: given disposal

Signal setting selects parameter connector to set setting signal source through parameter connective switches 1.11, 1.12, 1.13, 1.14

To realize selection and calculation in group through setting to parameter switch (setting selection.)

Parameter connective parameter 1.11 is connected to one of changeable parameter connector parameter1~parameter 8 (7.03~7.10), change selected parameter connector value changed by communication to realize communication setting.

Changing value of 1.07, 1.08 to adjust ramp time of setting signal to realize soft start and stop.

| | | | | | |
|-------------|-----------------------|---------|---|---------------|---|
| 1.01 | Given value summation | keypad | R | communication | R |
| range | -200.0%~200.0% | default | | - | |

Result after signal of given1~give 4 is selected and processed

| | | | | | |
|-------------|---------------------------------|---------|---|---------------|---|
| 1.02 | Given before breadth-limitation | keypad | R | communication | R |
| range | -200.0%~200.0% | default | | - | |

Given value before being sent into breadth-limitator.

| | | | | | |
|-------------|-------------|---------|---|---------------|---|
| 1.03 | Ramp output | keypad | R | communication | R |
| range | 0.0~100.0% | default | - | | |

Given value after being processed by ramp.

| | | | | | |
|-------------|--------------|---------|-----|---------------|-----|
| 1.04 | Bias | keypad | R/W | communication | R/W |
| range | -50.0%~50.0% | default | 0.0 | | |

Compensate for signal which roots in summation of setting value.

| | | | | | |
|-------------|--------------------|---------|------|---------------|---|
| 1.05 | Maximum limitation | keypad | R/W | communication | R |
| range | 7.01~7.** | default | 7.02 | | |

Parameter connective switch which is used to set source of limited value of maximum given signal, any data that is bigger than data connected by this connector will be limited, default value is 7.02(100.0% of constant value), namely, 100.0% is maximum limited value.

| | | | | | |
|-------------|--------------------|---------|------|---------------|---|
| 1.06 | Minimum limitation | keypad | R/W | communication | R |
| range | 7.01~7.** | default | 7.01 | | |

Parameter connective switch which is used to set source of limited value of minimum give signal, any data that is smaller than data connected by this connector will be limited, default value is 7.01(0.0% of constant value), namely, 0.0% is minimum limited value.

| | | | | | |
|-------------|------------------|---------|-----|---------------|-----|
| 1.07 | Ramp ascent time | keypad | R/W | communication | R/W |
| range | 0.0~600.0S | default | 1.0 | | |

Set required time when given signal ascends from 0 to 100.0%, namely, when ramp enable is valid, signal before ramp process breaks from 0 to 100.0%, ramp output reaches 100.0% according to ramp ascent time.

| | | | | | |
|-------------|------------------|---------|-----|---------------|-----|
| 1.08 | Ramp decent time | keypad | R/W | communication | R/W |
| range | 0.0~600.0S | default | 1.0 | | |

Set required time when given signal descends from 100.0% to 0, namely, when ramp enable is valid, signal before ramp process breaks from 100.0% to 0, ramp output reaches 0 according to ramp descent time.

| | | | | | |
|-------------|-------------|---------|------|---------------|---|
| 1.09 | Ramp enable | keypad | R/W | communication | R |
| range | 8.01~8.** | default | 8.02 | | |

On-off value connective switch, set ramp as enable or disable, ramp enable when condition of connected on-off value connector is 1, data after breadth-limitation is sent to 1.03(ramp output) during ramp ascent and descent period. Data after breadth-limitation when ramp disable will be directly sent to 1.03 (ramp output).

| | | | | | |
|-------------|-----------------|---------|------|---------------|---|
| 1.10 | Signal polarity | keypad | R/W | communication | R |
| range | 8.01~8.** | default | 8.01 | | |

On-off value connective switch, set operation mode between signals of given3 (1.13) and given 4 (1.14). Operation mode is that given 4 subtracted from given 3 when condition of connected on-off value connector is 0. Operation mode is that given 3 plus given 4 when condition of connected on-off value connector is 1.

| | | | | | |
|-------------|-----------|---------|------|---------------|---|
| 1.11 | Given 1 | keypad | R/W | communication | R |
| range | 7.01~7.** | default | 7.11 | | |

Parameter connective switch. Set signal source of given 1.

| | | | | | |
|-------------|-----------|---------|-----|---------------|---|
| 1.12 | Given 2 | keypad | R/W | communication | R |
| range | 7.01~7.** | default | | 7.12 | |

Parameter connective switch. Set signal source of given 2.

| | | | | | |
|-------------|-----------|---------|-----|---------------|---|
| 1.13 | Given 3 | keypad | R/W | communication | R |
| range | 7.01~7.** | default | | 7.01 | |

Parameter connective switch. Set signal source of given 3.

| | | | | | |
|-------------|-----------|---------|-----|---------------|---|
| 1.14 | Given 4 | keypad | R/W | communication | R |
| range | 7.01~7.** | default | | 7.01 | |

Parameter connective switch. Set signal source of given 4.

| | | | | | |
|-------------|-------------------|---------|-----|---------------|---|
| 1.15 | Given selection 1 | keypad | R/W | communication | R |
| range | 8.01~8.** | default | | 8.12 | |

| | | | | | |
|-------------|-------------------|---------|-----|---------------|---|
| 1.16 | Given selection 2 | keypad | R/W | communication | R |
| range | 8.01~8.** | default | | 8.01 | |

1.15 And 1.16 are on-off value connective switches. Set different on-off value connector or change condition of connected on-off value connector. Set signal source of given value summation (1.01).

Parameter menu 2: adjustment control

Open-loop control, constant output voltage, constant output current, constant output power, power control and LZ control etc., these functions can be set by above menu, control signal roots in ramp output and output value, reasonable selection of combination function can achieve every control flexibly.

| | | | | | |
|-------------|----------------|---------|---|---------------|---|
| 2.01 | Feedback value | keypad | R | communication | R |
| range | 0.0~200.0% | default | | - | |

Size of feedback value

| | | | | | |
|-------------|-----------------|---------|---|---------------|---|
| 2.02 | Adjustor output | keypad | R | communication | R |
| range | 0.0~100.0% | default | | - | |

Output value of PID adjustor

| | | | | | |
|-------------|---------------|---------|---|---------------|---|
| 2.03 | Control angle | keypad | R | communication | R |
| range | 0.0°~180.0° | default | | - | |

Control angle of thyristor is 180° when total shut down of thyristors, 0° when total on.

| | | | | | |
|-------------|-------------|---------|-----|---------------|-----|
| 2.04 | P parameter | keypad | R/W | communication | R/W |
| range | 0.1~200.0 | default | | 5.0 | |

Proportional giant of PID adjustor, multiply error by proportional giant gives correctional value.

Increasing the parameter is to increase system damp and fasten system dynamic response speed, for certain load, too big parameter may cause instability of system, the optimized value is the maximum possible value when system starts entering into instability.

| | | | | | |
|-------------|-------------|---------|-----|---------------|-----|
| 2.05 | I parameter | keypad | R/W | communication | R/W |
| range | 0.1~200.0 | default | | 3.0 | |

Integral giant of PID adjustor, multiply error by integral giant gives correctional value.

This correctional value ensures no-error of system, increasing this parameter is to enlarge

system resume rate after being disturbed, system goes to vibration instead of rapidly resume.

| | | | | | |
|-------------|-------------|---------|-----|---------------|-----|
| 2.06 | D parameter | keypad | R/W | communication | R/W |
| range | 0.0~200.0 | default | | 0.0 | |

Differential gain of PID adjustor, multiply error by differential gain gives correctional value, with damp effect.

The optimized performance is to match the 3 parameters of PID.

| | | | | | |
|-------------|--------------------------|---------|-----|---------------|-----|
| 2.07 | P parameter of limitator | keypad | R/W | communication | R/W |
| range | 0.1~200.0 | default | | 5.0 | |

| | | | | | |
|-------------|--------------------------|---------|-----|---------------|-----|
| 2.08 | I parameter of limitator | keypad | R/W | communication | R/W |
| range | 0.1~200.0 | default | | 3.0 | |

Set P, I parameters of limitator. It automatically enters into current limitation condition if load current exceeds current-limitation value when constant voltage or constant power control, adjusting P,I to let controller output stably after entering into limitation condition.

| | | | | | |
|-------------|--------------------|---------|---|---------------|---|
| 2.09 | Feedback selection | keypad | T | communication | R |
| range | 7.27~7.32 | default | | 7.32 | |

Parameter connective switch, select feedback source of PID adjustor, default is D power feedback (7.32)

Change this parameter to realize control functions such as constant voltage, constant current or constant power.

| | | | | | |
|-------------|-----------------------------|---------|---|---------------|---|
| 2.10 | Selection of limited signal | keypad | T | communication | R |
| range | 7.27~7.32 | default | | 7.30 | |

Parameter connective switch, select feedback signal source of limited adjustor, feedback signal is represented as percentage.

| | | | | | |
|-------------|----------------------------|---------|---|---------------|---|
| 2.11 | Selection of limited value | keypad | T | communication | R |
| range | 7.02~7.** | default | | 7.03 | |

Parameter connective switch, select source of limited value, data is represented as percentage. It is connected to 7.03 as default (120.0%), if correction of limited value through keypad or communication is required, it can be connected to parameter 1~parameter 8 (7.03~7.10) of changeable parameter connector to change its value, namely, to change limited value.

| | | | | | |
|-------------|------------------|---------|---|---------------|---|
| 2.12 | Load performance | keypad | T | communication | R |
| range | 0、1 | default | | 1 | |

0: resistance load, used to drive resistance load (such as resistance heater)

1: inductance load, used to drive inductance load (such as transformer)

| | | | | | |
|-------------|--------------------------|---------|-----|---------------|-----|
| 2.13 | Control angle limitation | keypad | R/W | communication | R/W |
| range | 0.0°~120.0° | default | | 0.0 | |

Limits the minimum control angle of thyristor, switch-on angle range of thyristor is 0°~180°, namely, totally switch on when limited value of control angle is 0°, switch-on angle of thyristor is limited between 0°~60° when limited value of control angle is 120°.

| | | | | | |
|-------------|------------------------|---------|---|---------------|---|
| 2.14 | Triggering selection 1 | keypad | T | communication | R |
| range | 0、1、2、3 | default | | 0 | |

0: close-loop control. Phase-shift triggering control mode, triggering signal of thyristor roots in output of current-limitation adjustor, used to constant voltage, current and power.

1: open-loop control, phase-shift triggering control mode, triggering signal roots in ramp output

(1.03), this mode has no current limitation, handle with care.

Parameter menu 3: feedback disposal

AC voltage feedback signal brought from VF1 and VF2 are sent to parameter connector after calibration and setting. AC current feedback signal acquired from inner current transformer are sent to parameter connector, power signal acquired from AC current and voltage feedback signal are sent to parameter connector after calculation.

Control system can be placed at the primary side of transformer when using, but voltage, current or power of transformer second side must be constant, to achieve this, voltage, current and power processing software module used for exterior feedback are set, results are sent to parameter connector, called by adjustment control module.

| | | | | | |
|-------------|-------------------------------|---------|---|---------------|---|
| 3.01 | Acquisition value of AC volt. | keypad | R | communication | R |
| range | 0.0~120.0% | default | | - | |

Acquisition value of AC voltage feedback signal, it is introduced through VF1 and VF2.

| | | | | | |
|-------------|---------------------------------|---------|---|---------------|---|
| 3.02 | Acquisition value of AC current | keypad | R | communication | R |
| range | 0.0~120.0% | default | | - | |

Acquisition value of AC current feedback signal, it is introduced through FL1~FL4.

| | | | | | |
|-------------|-------------------------|---------|-----|---------------|---|
| 3.03 | Calibration of AC volt. | keypad | R/W | communication | R |
| range | 0.500~1.500 | default | | 1.000 | |

Executing calibration to acquisition value of AC voltage (3.01).

| | | | | | |
|-------------|---------------------------|---------|-----|---------------|---|
| 3.04 | Calibration of AC current | keypad | R/W | communication | R |
| range | 0.500~1.500 | default | | 1.000 | |

Executing calibration to acquisition value of AC current.

| | | | | | |
|-------------|------------------------|---------|---|---------------|---|
| 3.05 | Rated output volt. | keypad | T | communication | R |
| range | 1~AC specified voltage | default | | 380V | |

Set maximum regular working voltage based on load, deviding AC output voltage (7.21) by rated output voltage (3.05) gives AC voltage feedback 7.27 (percentage).

| | | | | | |
|-------------|----------------------|---------|---|---------------|---|
| 3.06 | Rated output current | keypad | T | communication | R |
| range | 1~specified current | default | | 见铭牌 | |

Set maximum regular working current depending on load, dividing AC output current (7.22) by rated output current (3.06) gives AC current feedback 7.29 (percentage).

| | | | | | |
|-------------|----------------------|---------|---|---------------|---|
| 3.07 | AC power coefficient | keypad | T | communication | R |
| range | 0.100~5.000 | default | | 1.732 | |

Set calibration coefficient of power, AC output voltage (7.21) measures output line-voltage, AC output current (7.22) measures line-current, multiply by coefficient 1.732 gives actual output power when executing power operation.

| | | | | | |
|-------------|----------------------------|---------|---|---------------|---|
| 3.08 | Feedback source of D volt. | keypad | T | communication | R |
| range | 7.11~7.** | default | | 7.13 | |

Parameter connective switch, specially designed for exterior voltge feedback, exterior voltage feedback is transferred to DC0~10V, sent into analog input terminals AI1~AI5, during data acquisition, calibration and sent into parameter connector, exterior feedback is connected to feedback process module through this parameter connective switch.

| | | | | | |
|-------------|------------------------------|---------|---|---------------|---|
| 3.09 | Feedback source of D current | keypad | T | communication | R |
| range | 7.11~7.** | default | | 7.14 | |

Parameter connective switch, specially designed for exterior current feedback, exterior current feedback is transferred to DC0~10V, sent into analog input terminal AI1~AI5, during data acquisition, calibration and sent into parameter connector, exterior feedback is connected to feedback process module through this parameter connective switch.

| | | | | | |
|-------------|-------------------|---------|---|---------------|---|
| 3.10 | D specified volt. | keypad | T | communication | R |
| range | 5~32000V | default | | 65V | |

Set specified voltage from exterior voltage feedback, it means that when data of parameter connector connected by D voltage feedback source (3.08) is 100.0%, corresponding voltage is displayed after specified operation in 7.24.

| | | | | | |
|-------------|---------------------|---------|---|---------------|---|
| 3.11 | D specified current | keypad | T | communication | R |
| range | 5~32000A | default | | 3500A | |

Set specified current from exterior voltage feedback, it means that when data of parameter connector connected by D current feedback source (3.09) is 100.0%, corresponding current is displayed after specified operation in 7.25.

| | | | | | |
|-------------|----------------------|---------|---|---------------|---|
| 3.12 | D rated output volt. | keypad | T | communication | R |
| range | 5~32000V | default | | 55V | |

Set maximum regular working voltage of exterior loop, transferred 7.24 (D output voltage) into value which is proportional with 3.12 (D rated output voltage), sent into parameter connector (D voltage feedback), adjusted when exterior voltage feedback is fixed.

| | | | | | |
|-------------|------------------------|---------|---|---------------|---|
| 3.13 | D rated output current | keypad | T | communication | R |
| range | 5~32000A | default | | 3000A | |

Set maximum regular working current of exterior loop, transferred 7.25 (D output current) into value which is proportional with 3.13 (D rated output current), sent into parameter connector (D current feedback), adjusted when exterior current feedback is fixed.

| | | | | | |
|-------------|---------------------|---------|---|---------------|---|
| 3.14 | D power coefficient | keypad | T | communication | R |
| range | 0.100~5.000 | default | | 1.000 | |

Calibration coefficient of power when exterior feedback, for instance, exterior feedback is acquired from 3-phase current, this coefficient may be 1.732 or 3 according to feedback connection method, this coefficient can be 1 when exterior feedback is acquired from direct current.

| | | | | | |
|-------------|----------------------------------|---------|-----|---------------|---|
| 3.15 | Selection of volt. average value | keypad | R/W | communication | R |
| range | 0、1 | default | | 0 | |

Select measuring method of voltage acquisition and display.

0: average value, 1: virtual value

| | | | | | |
|-------------|------------------------------------|---------|-----|---------------|---|
| 3.16 | Selection of current average value | keypad | R/W | communication | R |
| range | 0、1 | default | | 0 | |

Select measuring method of current acquisition and display.

0: average value, 1: virtual value

| | | | | | |
|-------------|--------------------------------------|---------|---|---------------|---|
| 3.17 | Acquisition value of R-phase current | keypad | R | communication | R |
| range | 0.0~120.0% | default | | - | |

| | | | | | |
|-------------|--------------------------------------|---------|---|---------------|---|
| 3.18 | Acquisition value of S-phase current | keypad | R | communication | R |
| range | 0.0~120.0% | default | - | | |

| | | | | | |
|-------------|--------------------------------------|---------|---|---------------|---|
| 3.19 | Acquisition value of T-phase current | keypad | R | communication | R |
| range | 0.0~120.0% | default | - | | |

3.17~3.19 respectively display percentage of R,S,T phase input current.

| | | | | | |
|-------------|-----------------------------|---------|-------|---------------|---|
| 3.20 | R-phase current calibration | keypad | R/W | communication | R |
| range | 0.500~1.500 | default | 1.000 | | |

| | | | | | |
|-------------|-----------------------------|---------|-------|---------------|---|
| 3.21 | S-phase current calibration | keypad | R/W | communication | R |
| range | 0.500~1.500 | default | 1.000 | | |

| | | | | | |
|-------------|-----------------------------|---------|-------|---------------|---|
| 3.22 | T-phase current calibration | keypad | R/W | communication | R |
| range | 0.500~1.500 | default | 1.000 | | |

3.20~3.32 respectively set calibration coefficient of R,S,T phase input current.

| | | | | | |
|-------------|----------------------------------|---------|---|---------------|---|
| 3.23 | Acquisition value of power volt. | keypad | R | communication | R |
| range | 0~600 | default | - | | |

Acquisition value of main loop input voltage.

| | | | | | |
|-------------|----------------------------|---------|-------|---------------|---|
| 3.24 | Calibration of power volt. | keypad | R/W | communication | R |
| range | 0.500~1.500 | default | 1.000 | | |

Parameter menu 4: input and output

5 channels analog input: acquiring signal of terminals AI1~AI5, result after calibration and process are sent to parameter connector, ready to be connected by parameter connective switch.

4 channels analog output: connected data are processed and sent out through AO1~AO4 analog output.

3 channels relay output: select relay output through switch-value connective switch.

delaying to stop fans control.

| | | | | | |
|-------------|-----------------------|---------|---|---------------|---|
| 4.01 | AI1 acquisition value | keypad | R | communication | R |
| range | 0~100.0% | default | - | | |

Acquisition value of analog input AI1, 0~5V/0~10V /0~20mA /1~5V/4~20mA input correspond to 0~100.0% (selection of input signal please refer to chapter 3.6.2 and parameter 4.11)

Code-dialing switch SW1-1 decides whether current input or voltage input, when current input, sampling resistance is brought in, transfer 0~20mA current signal into 0~5V, or transfer 4~20mA into 1~5V, otherwise, disconnect sampling resistance.

Code-dialing Switch SW1-2 decides input is 0~5V(1~5V) or 0~10V.

4.11 decides signal is 0~5V (0~10V) or 1~5V

| | | | | | |
|-------------|-----------------------|---------|---|---------------|---|
| 4.02 | AI2 acquisition value | keypad | R | communication | R |
| range | 0~100.0% | default | - | | |

Acquisition value of analog input AI2, 0~5V/0~10V corresponds to 0~100.0% (selection of input signal refer to chapter 3.6.2)

| | | | | | |
|-------------|----------------------|---------|---|---------------|---|
| 4.03 | A3 acquisition value | keypad | R | communication | R |
| range | 0~100.0% | default | - | | |

| | | | |
|-------|----------|---------|---|
| range | 0~100.0% | default | - |
|-------|----------|---------|---|

Acquisition value of analog input AI3, 0~10V corresponds to 0~100.0%

| | | | | | |
|-------------|-----------------------|---------|---|---------------|---|
| 4.04 | AI4 acquisition value | keypad | R | communication | R |
| range | 0~100.0% | default | - | | |

Acquisition value of analog input AI4, 0~10V corresponds to 0~100.0%

| | | | | | |
|-------------|-----------------------|---------|---|---------------|---|
| 4.05 | AI5 acquisition value | keypad | R | communication | R |
| range | 0~100.0% | default | - | | |

Acquisition value of analog input AI5, 0~10V corresponds to 0~100.0%

| | | | | | |
|-------------|-----------------------------|---------|-------|---------------|---|
| 4.06 | AI1 calibration coefficient | keypad | R/W | communication | R |
| range | 0.100~1.500 | default | 1.000 | | |

Calibrate acquisition value of AI1, result (AI1 acquisition value ×AI1 calibration coefficient) is sent to parameter connector.

| | | | | | |
|-------------|-----------------------------|---------|-------|---------------|---|
| 4.07 | AI2 calibration coefficient | keypad | R/W | communication | R |
| range | 0.100~1.500 | default | 1.000 | | |

Calibrate acquisition value of AI2, result (AI2 acquisition value ×AI2 calibration coefficient) is sent to parameter connector.

| | | | | | |
|-------------|-----------------------------|---------|-------|---------------|---|
| 4.08 | AI3 calibration coefficient | keypad | R/W | communication | R |
| range | 0.100~1.500 | default | 1.000 | | |

Calibrate acquisition value of AI3, result (AI3 acquisition value ×AI3 calibration coefficient) is sent to parameter connector

| | | | | | |
|-------------|------------------------------|---------|-------|---------------|---|
| 4.09 | AI41 calibration coefficient | keypad | R/W | communication | R |
| range | 0.100~1.500 | default | 1.000 | | |

Calibrate acquisition value of AI4, result (AI4 acquisition value ×AI4 calibration coefficient) is sent to parameter connector

| | | | | | |
|-------------|-----------------------------|---------|-------|---------------|---|
| 4.10 | AI5 calibration coefficient | keypad | R/W | communication | R |
| range | 0.100~1.500 | default | 1.000 | | |

Calibrate acquisition value of AI5, result (AI5 acquisition value ×AI5 calibration coefficient) is sent to parameter connector

| | | | | | |
|-------------|-------------|---------|-----|---------------|---|
| 4.11 | Signal type | keypad | R/W | communication | R |
| range | 0、1 | default | 1 | | |

Set type of AI1 input signal

0: 4~20mA/1~5V; 1: 0~20mA/0~5V/0~10V。

| | | | | | |
|-------------|-------------------|---------|------|---------------|---|
| 4.12 | AO1 output source | keypad | R/W | communication | R |
| range | 7.01~7.** | default | 7.32 | | |

Set analog output signal source of AO1 port, default value is 7.32 (D power feedback)

| | | | | | |
|-------------|-------------------|---------|------|---------------|---|
| 4.13 | AO2 output source | keypad | R/W | communication | R |
| range | 7.01~7.** | default | 7.01 | | |

Set analog output signal source of AO2 port, default value is 7.01, namely, output I is zero.

| | | | | | |
|-------------|-------------------|--------|-----|---------------|---|
| 4.14 | AO3 output source | keypad | R/W | communication | R |
|-------------|-------------------|--------|-----|---------------|---|

| | | | | | |
|-------|-----------|---------|------|--|--|
| range | 7.01~7.** | default | 7.01 | | |
|-------|-----------|---------|------|--|--|

Set analog output signal source of AO3 port, default value is 7.01, namely, output I is zero.

| | | | | | |
|-------------|-------------------|---------|------|---------------|---|
| 4.15 | AO4 output source | keypad | R/W | communication | R |
| range | 7.01~7.** | default | 7.01 | | |

Set analog output signal source of AO4 port, default value is 7.01, namely, output I is zero.

| | | | | | |
|-------------|-------------------|---------|-------|---------------|---|
| 4.16 | AO1 specification | keypad | R/W | communication | R |
| range | 0.1~32000 | default | 100.0 | | |

Calibrate signal of AO1 output source, decimal digits of specified value are matched automatically with data connected by AO1 output source.

| | | | | | |
|-------------|---------------------|---------|-------|---------------|---|
| 4.17 | AO1 specification 2 | keypad | R/W | communication | R |
| range | 0.1~32000 | default | 100.0 | | |

Calibrate signal of AO2 output source, decimal digits of specified value are matched automatically with data connected by AO2 output source.

| | | | | | |
|-------------|---------------------|---------|-------|---------------|---|
| 4.18 | AO1 specification 3 | keypad | R/W | communication | R |
| range | 0.1~32000 | default | 100.0 | | |

Calibrate signal of AO3 output source, decimal digits of specified value are matched automatically with data connected by AO3 output source

| | | | | | |
|-------------|-------------------|---------|-------|---------------|---|
| 4.19 | AO4 specification | keypad | R/W | communication | R |
| range | 0.1~32000 | default | 100.0 | | |

Calibrate signal of AO4 output source, decimal digits of specified value are matched automatically with data connected by AO4 output source.

| | | | | | |
|-------------|-----------------|---------|-----|---------------|---|
| 4.20 | AO1 signal type | keypad | R/W | communication | R |
| range | 0、1 | default | 0 | | |

0: 0~100.0% of 4.24 parameter corresponds to 4~20mA output

1: 0~100.0% of 4.24 parameter corresponds to 0~20mA output

| | | | | | |
|-------------|-----------------|---------|-----|---------------|---|
| 4.21 | AO2 signal type | keypad | R/W | communication | R |
| range | 0、1 | default | 0 | | |

0: 0~100.0% of 4.25 parameter corresponds to 4~20mA output

1: 0~100.0% of 4.25 parameter corresponds to 0~20mA output

| | | | | | |
|-------------|-----------------|---------|-----|---------------|---|
| 4.22 | AO3 signal type | keypad | R/W | communication | R |
| range | 0、1 | default | 0 | | |

0: 0~100.0% of 4.26 parameter corresponds to 4~20mA output

1: 0~100.0% of 4.26 parameter corresponds to 0~20mA output.

| | | | | | |
|-------------|-----------------|---------|-----|---------------|---|
| 4.23 | AO4 signal type | keypad | R/W | communication | R |
| range | 0、1 | default | 0 | | |

0: 0~100.0% of 4.27 parameter corresponds to 4~20mA output

1: 0~100.0% of 4.27 parameter corresponds to 0~20mA output

| | | | | | |
|-------------|------------|---------|---|---------------|---|
| 4.24 | AO1 output | keypad | R | communication | R |
| range | 0.0~120.0% | default | - | | |

Proportional value of AO1 output signal

| | | | | | |
|-------------|------------|--------|---|---------------|---|
| 4.25 | AO2 output | keypad | R | communication | R |
|-------------|------------|--------|---|---------------|---|

| | | | |
|-------|------------|---------|---|
| range | 0.0~120.0% | default | - |
|-------|------------|---------|---|

Proportional value of AO2 output signal

| | | | | | |
|-------------|------------|---------|---|---------------|---|
| 4.26 | AO3 output | keypad | R | communication | R |
| range | 0.0~120.0% | default | - | | |

Proportional value of AO3 output signal

| | | | | | |
|-------------|------------|---------|---|---------------|---|
| 4.27 | AO4 output | keypad | R | communication | R |
| range | 0.0~120.0% | default | - | | |

Proportional value of AO4 output signal

| | | | | | |
|-------------|------------------|---------|------|---------------|---|
| 4.28 | Y1 output source | keypad | R/W | communication | R |
| range | 8.01~8.** | default | 8.21 | | |

Set signal source which is used to drive Y1 relay.

Default: total fault.

| | | | | | |
|-------------|------------------|---------|------|---------------|---|
| 4.29 | Y2 output source | keypad | R/W | communication | R |
| range | 8.01~8.** | default | 8.24 | | |

Set signal source which is used to drive Y2 relay.

Default: overcurrent fault

| | | | | | |
|-------------|------------------|---------|------|---------------|---|
| 4.30 | Y3 output source | keypad | R/W | communication | R |
| range | 8.01~8.** | default | 8.30 | | |

Set signal source which is used to drive Y3 relay.

Default: exterior fault 2

| | | | | | |
|-------------|----------------------|---------|-----|---------------|---|
| 4.31 | Delay time of blower | keypad | R/W | communication | R |
| range | 0~60min | default | 5 | | |

Set delay time of blower, blower automatically starts when controller runs, blower stops after delay time. (Unit: minute)

| | | | | | |
|-------------|---------------------------|---------|-----|---------------|---|
| 4.32 | Relay selection of blower | keypad | R/W | communication | R |
| range | 0、1 | default | 0 | | |

Select singal source which is used to drive blower relay.

0: driving signal roots in blower condition (8.40)

1: driving signal roots in parameter condition which is connected by 4.33

| | | | | | |
|-------------|------------------------|---------|------|---------------|---|
| 4.33 | Relay source of blower | keypad | R/W | communication | R |
| range | 8.01~8.** | default | 8.25 | | |

On-off value connective switch, this is used to set signal source of driving blower relay when 4.32 is set to 1.

Parameter menu 5: function module

Parameter setting of common parameter units.

3 channels comparator module: Select comparative source by parameter connective switch, compare with corresponding point, result is sent to switch-value connector.

3 operation modules: select input source by parameter connective switch, operation result is sent to parameter connector.

| | | | | | |
|-------------|--------------------------|--------|-----|---------------|---|
| 5.01 | Source of parameter 0.01 | keypad | R/W | communication | R |
|-------------|--------------------------|--------|-----|---------------|---|

| | | | | | |
|-------|-----------|---------|------|--|--|
| range | 1.01~9.20 | default | 1.03 | | |
|-------|-----------|---------|------|--|--|

| | | | | | |
|-------------|--------------------------|---------|------|---------------|---|
| 5.02 | Source of parameter 0.02 | keypad | R/W | communication | R |
| range | 1.01~9.20 | default | 2.01 | | |

| | | | | | |
|-------------|--------------------------|---------|------|---------------|---|
| 5.03 | Source of parameter 0.03 | keypad | R/W | communication | R |
| range | 1.01~9.20 | default | 7.24 | | |

| | | | | | |
|-------------|--------------------------|---------|------|---------------|---|
| 5.04 | Source of parameter 0.04 | keypad | R/W | communication | R |
| range | 1.01~9.20 | default | 7.25 | | |

| | | | | | |
|-------------|--------------------------|---------|------|---------------|---|
| 5.05 | Source of parameter 0.05 | keypad | R/W | communication | R |
| range | 1.01~9.20 | default | 7.26 | | |

Parameter connective switch, 5.01~5.05 are used to set parameter source of common parameter 0.01~0.05.

| | | | | | |
|-------------|------------------------|---------|------|---------------|---|
| 5.06 | Source of comparator 1 | keypad | R/W | communication | R |
| range | 7.01~7.** | default | 7.01 | | |

Parameter connective switch, used to set signal source of comparator 1.

| | | | | | |
|-------------|------------------------|---------|------|---------------|---|
| 5.07 | Source of comparator 2 | keypad | R/W | communication | R |
| range | 7.01~7.** | default | 7.01 | | |

Parameter connective switch, used to set signal source of comparator 2.

| | | | | | |
|-------------|------------------------|---------|------|---------------|---|
| 5.08 | Source of comparator 3 | keypad | R/W | communication | R |
| range | 7.01~7.** | default | 7.01 | | |

Parameter connective switch, used to set signal source of comparator 3.

| | | | | | |
|-------------|---------------------|---------|-----|---------------|---|
| 5.09 | Comparative point 1 | keypad | R/W | communication | R |
| range | 0.1~30000 | default | 0.1 | | |

Set comparative point of comparator 1, when data of parameter connector connected by comparator 1 ≥ comparative point 1, comparator 1 outputs 1, decimal digits of comparative point will automatically match with data connected by source of comparator 1.

| | | | | | |
|-------------|---------------------|---------|-----|---------------|---|
| 5.10 | Comparative point 2 | keypad | R/W | communication | R |
| range | 0.1~30000 | default | 0.1 | | |

Set comparative point of comparator 2, when data of parameter connector connected by comparator 2 ≥ comparative point 2, comparator 2 outputs 1, decimal digits of comparative point will automatically match with data connected by source of comparator 2

| | | | | | |
|-------------|---------------------|---------|-----|---------------|---|
| 5.11 | Comparative point 3 | keypad | R/W | communication | R |
| range | 0.1~30000 | default | 0.1 | | |

Set comparative point of comparator 3, when data of parameter connector connected by comparator 3 ≥ comparative point 3, comparator 3 outputs 1, decimal digits of comparative point will automatically match with data connected by source of comparator 3

| | | | | | |
|-------------|-------------|---------|------|---------------|---|
| 5.12 | Md1 input 1 | keypad | R/W | communication | R |
| range | 7.01~7.** | default | 7.01 | | |

Parameter connective switch, used to set input 1 data source of functional module 1.

| | | | | | |
|-------------|-------------|---------|-----|---------------|---|
| 5.13 | Md1 input 2 | keypad | R/W | communication | R |
| range | 7.01~7.** | default | | 7.01 | |

| | | | | | |
|-------------|-------------|---------|-----|---------------|---|
| 5.14 | Md2 input 1 | keypad | R/W | communication | R |
| range | 7.01~7.** | default | | 7.01 | |

Parameter connective switch, used to set input 1 data source of functional module 2

| | | | | | |
|-------------|-------------|---------|-----|---------------|---|
| 5.15 | Md2 input 2 | keypad | R/W | communication | R |
| range | 7.01~7.** | default | | 7.01 | |

Parameter connective switch, used to set input 2 data source of functional module 2

| | | | | | |
|-------------|-------------|---------|-----|---------------|---|
| 5.16 | Md2 input 3 | keypad | R/W | communication | R |
| range | 7.01~7.** | default | | 7.02 | |

Parameter connective switch, used to set input 3 data source of functional module 2

| | | | | | |
|-------------|-------------|---------|-----|---------------|---|
| 5.17 | Md3 input 1 | keypad | R/W | communication | R |
| range | 7.01~7.** | default | | 7.01 | |

Parameter connective switch, used to set input 1 data source of functional module 3

| | | | | | |
|-------------|-------------|---------|-----|---------------|---|
| 5.18 | Md3 input 2 | keypad | R/W | communication | R |
| range | 7.01~7.** | default | | 7.01 | |

Parameter connective switch, used to set input 2 data source of functional module 3

| | | | | | |
|-------------|-------------|---------|-----|---------------|---|
| 5.19 | Md3 input 3 | keypad | R/W | communication | R |
| range | 7.01~7.** | default | | 7.01 | |

Parameter connective switch, used to set input 3 data source of functional module 3

| | | | | | |
|-------------|----------------------|---------|-----|---------------|---|
| 5.30 | Source of reverser 1 | keypad | R/W | communication | R |
| range | 8.01~8.** | default | | 8.01 | |

| | | | | | |
|-------------|----------------------|---------|-----|---------------|---|
| 5.31 | Source of reverser 2 | keypad | R/W | communication | R |
| range | 8.01~8.** | default | | 8.01 | |

| | | | | | |
|-------------|----------------------|---------|-----|---------------|---|
| 5.32 | Source of reverser 3 | keypad | R/W | communication | R |
| range | 8.01~8.** | default | | 8.01 | |

5.30~5.32 are on-off value connective switches, used to set input signal source of reverser 1, 2 and 3.

| | | | | | |
|-------------|--------------------------|---------|-----|---------------|---|
| 5.33 | Source of signal delay 1 | keypad | R/W | communication | R |
| range | 8.01~8.** | default | | 8.19 | |

| | | | | | |
|-------------|--------------------------|---------|-----|---------------|---|
| 5.34 | Source of signal delay 2 | keypad | R/W | communication | R |
| range | 8.01~8.** | default | | 8.01 | |

| | | | | | |
|-------------|--------------------------|---------|-----|---------------|---|
| 5.35 | Source of signal delay 3 | keypad | R/W | communication | R |
| range | 8.01~8.** | default | | 8.01 | |

5.33~5.35 are on-off value connective switches, used to set signal source of signal delay 1, 2 and 3.

and 3.

| | | | | | |
|-------------|-------------------------|---------|-----|---------------|-----|
| 5.36 | Delay time of delayer 1 | keypad | R/W | communication | R/W |
| range | 0.0~300.0S | default | | 5.0 | |

| | | | | | |
|-------------|-------------------------|---------|-----|---------------|-----|
| 5.37 | Delay time of delayer 2 | keypad | R/W | communication | R/W |
| range | 0.0~300.0S | default | | 5.0 | |

| | | | | | |
|-------------|-------------------------|---------|-----|---------------|-----|
| 5.38 | Delay time of delayer 3 | keypad | R/W | communication | R/W |
| range | 0.0~300.0S | default | | 5.0 | |

5.36~5.38 are used to set delay time of signal delayer 1, 2 and 3. When condition connected by delayer is 1, output 1 after delay time, when condition is 0, delay output will be reset to 0 immediately.

| | | | | | |
|-------------|---------------------------|---------|-----|---------------|---|
| 5.39 | Startup source of timer 1 | keypad | R/W | communication | R |
| range | 8.01~8.** | default | | 8.11 | |

On-off value connective switch, used to set startup signal source of reset timer 1. When connected condition of on-off value connector is 1, reset timer 1 starts, timer 1 begins timing as a unit of 10mS. When reset signal is invalid, timer 1 outputs 1 when timing value reaches timing value of timer 1.

| | | | | | |
|-------------|-------------------------|---------|-----|---------------|---|
| 5.40 | Reset source of timer 1 | keypad | R/W | communication | R |
| range | 8.01~8.** | default | | 8.16 | |

On-off value connective switch, timing value of reset timer 1 is 0 when connected condition is 1, at the same time, timer 1 outputs 0.

| | | | | | |
|-------------|-------------------------|---------|-----|---------------|-----|
| 5.41 | Reset source of timer 1 | keypad | R/W | communication | R/W |
| range | 0.0~300.0S | default | | 5.0 | |

Set timing value of reset timer 1.

| | | | | | |
|-------------|---------------------------|---------|-----|---------------|---|
| 5.42 | timing value of timer 1 | keypad | R/W | communication | R |
| range | Startup source of timer 2 | default | | 8.01 | |

The same as 5.39

| | | | | | |
|-------------|-------------------------|---------|-----|---------------|---|
| 5.43 | Reset source of timer 2 | keypad | R/W | communication | R |
| range | 8.01~8.** | default | | 8.01 | |

The same as 5.40

| | | | | | |
|-------------|-------------------------|---------|-----|---------------|-----|
| 5.44 | timing value of timer 2 | keypad | R/W | communication | R/W |
| range | 0.0~300.0S | default | | 5.0 | |

The same as 5.41

Parameter menu 6: fault disposal

Display fault contents, history fault notes and fault screen etc.

| | | | | | |
|-------------|---------------|---------|---|---------------|---|
| 6.01 | Fault content | keypad | R | communication | R |
| range | 0~99 | default | | - | |

Actual fault code, automatically jumps to the parameter when controller fault happens.

As for 7-sect code display, display “—” when no fault, fault content read by communication is 0, display “E—**” when fault happens, fault content read by communication is **.

| | | | | | |
|-------------|-------------|--------|-----|---------------|---|
| 6.02 | Reset fault | keypad | R/W | communication | R |
|-------------|-------------|--------|-----|---------------|---|

| | | | | | |
|-------|------------|---------|------|--|--|
| range | 8.01~8. ** | default | 8.14 | | |
|-------|------------|---------|------|--|--|

On-off value connective switch, used to set signal source of reset fault, it can be connected to exterior on-off value connector, reset the fault through exterior terminal when fault happens.

Press "ESC/RESET" to reset fault, write 1 to this unit under communication mode can also reset fault.

| | | | | | |
|-------------|--------------|---------|---|---------------|---|
| 6.03 | Latest fault | keypad | R | communication | R |
| range | 0~99 | default | | - | |

| | | | | | |
|-------------|----------------|---------|---|---------------|---|
| 6.04 | Previous fault | keypad | R | communication | R |
| range | 0~99 | default | | - | |

| | | | | | |
|-------------|---------------|---------|---|---------------|---|
| 6.05 | Front 2 fault | keypad | R | communication | R |
| range | 0~99 | default | | - | |

| | | | | | |
|-------------|---------------|---------|---|---------------|---|
| 6.06 | Front 3 fault | keypad | R | communication | R |
| range | 0~99 | default | | - | |

| | | | | | |
|-------------|---------------|---------|---|---------------|---|
| 6.07 | Front 4 fault | keypad | R | communication | R |
| range | 0~99 | default | | - | |

Record lastest one and front 4 faults.

| | | | | | |
|-------------|----------------------|---------|-----|---------------|---|
| 6.08 | Front 3 fault enable | keypad | R/W | communication | R |
| range | 0、1 | default | | 1 | |

0: cancel overcurrent inspection. 1: enable overcurrent inspection

| | | | | | |
|-------------|------------------------------|---------|-----|---------------|---|
| 6.09 | Overcurrent inspectin enable | keypad | R/W | communication | R |
| range | 0、1 | default | | 1 | |

0: cancel thyristor temperature inspection. 1: enable thyristor temperature inspection.

| | | | | | |
|-------------|-----------------------------|---------|-----|---------------|---|
| 6.10 | Thyristor inspection enable | keypad | R/W | communication | R |
| range | 0、1 | default | | 0 | |

0: cancel thyristor fault inspection. 1: enable thyristor fault inspection.

| | | | | | |
|-------------|------------------------------|---------|-----|---------------|---|
| 6.11 | Line-break inspection enable | keypad | R/W | communication | R |
| range | 0、1 | default | | 0 | |

0: cancel line-break inspection of load. 1: enable line-break inspection of load.

| | | | | | |
|-------------|-----------------------------|---------|-----|---------------|---|
| 6.12 | Stop enable when line-break | keypad | R/W | communication | R |
| range | 0、1 | default | | 0 | |

0: alarm without non-stop when load line-break. 1: alarm and stop when load line-break.

| | | | | | |
|-------------|--------------------------------|---------|-----|---------------|---|
| 6.13 | Threshold when load line-break | keypad | R/W | communication | R |
| range | 0.0~100.0% | default | | 10.0 | |

Set threshold current when load line-break, this value is percentage of rated current. rated current value is required to set correctly for inspecting line-break condition of load.

| | | | | | |
|-------------|-------------------------------|---------|-----|---------------|---|
| 6.14 | Setting when power line-break | keypad | R/W | communication | R |
| range | 0、1、2 | default | | 0 | |

0: alarm and stop output immediately when power supply fault happens.

- 1: alarm and stop output after a while when power supply fault happens.
- 2: stop output but not alarm when power supply fault happens, automatically resume output after power supply is regular.

| | | | | | |
|-------------|----------------------------|---------|-----|---------------|---|
| 6.18 | Source of exterior fault 1 | keypad | R/W | communication | R |
| range | 8.01~8.** | default | | 8.50 | |

| | | | | | |
|-------------|----------------------------|---------|-----|---------------|---|
| 6.19 | Source of exterior fault 2 | keypad | R/W | communication | R |
| range | 8.01~8.** | default | | 8.44 | |

6.18、6.19 are parameter connective switches, used to set signal source of exterior fault 1 and 2, when connected data is 1, stop and alarm.

Parameter menu 7: parameter connector

Parameter connector menus (maximum data is 16-bits). Parameter connective switch can be connected to one parameter items of the menus, corresponding parameters in parameter connector are sent to point where are parameter connective switch, the same as that signal in parameter connector are connected to connected point by leads in analog circuit.

| | | | | | |
|-------------|------------------------|---------|---|---------------|---|
| 7.01 | 0.0% of constant value | keypad | R | communication | R |
| range | - | default | | 0.0 | |

Constant value, unchangeable

| | | | | | |
|-------------|--------------------------|---------|---|---------------|---|
| 7.02 | 100.0% of constant value | keypad | R | communication | R |
| range | - | default | | 100.0 | |

Constant value, unchangeable

| | | | | | |
|-------------|-------------|---------|-----|---------------|-----|
| 7.03 | Parameter 1 | keypad | R/W | communication | R/W |
| range | 0.0~3200.0% | default | | 120.0 | |

| | | | | | |
|-------------|-------------|---------|-----|---------------|-----|
| 7.04 | Parameter 2 | keypad | R/W | communication | R/W |
| range | 0.0~3200.0% | default | | 0.0 | |

| | | | | | |
|-------------|-------------|---------|-----|---------------|-----|
| 7.05 | Parameter 3 | keypad | R/W | communication | R/W |
| range | 0.0~3200.0% | default | | 0.0 | |

| | | | | | |
|-------------|-------------|---------|-----|---------------|-----|
| 7.06 | Parameter 4 | keypad | R/W | communication | R/W |
| range | 0.0~3200.0% | default | | 0.0 | |

| | | | | | |
|-------------|-------------|---------|-----|---------------|-----|
| 7.07 | Parameter 5 | keypad | R/W | communication | R/W |
| range | 0.0~3200.0% | default | | 0.0 | |

| | | | | | |
|-------------|-------------|---------|-----|---------------|-----|
| 7.08 | Parameter 6 | keypad | R/W | communication | R/W |
| range | 0~3200.0% | default | | 0.0 | |

| | | | | | |
|-------------|-------------|---------|-----|---------------|-----|
| 7.09 | Parameter 7 | keypad | R/W | communication | R/W |
| range | 0.0~100.0% | default | | 0.0 | |

| | | | | | |
|-------------|-------------|--------|-----|---------------|-----|
| 7.10 | Parameter 8 | keypad | R/W | communication | R/W |
| | | | | | |

| | | | | | |
|-------|------------|---------|-----|--|--|
| range | 0.0~100.0% | default | 0.0 | | |
|-------|------------|---------|-----|--|--|

7.03~7.10 are settable parameter connectors, used to set parameter freely, also can be applied to parameter setting under communication control. for instance: to control data of “given 1” through communication, set 1.11=7.03, data of “given 1” can be controlled by communication changing value of 7.03.

| | | | | | |
|-------|---------------|---------|---|---------------|---|
| 7.11 | AI1 parameter | keypad | R | communication | R |
| range | 0.0~150.0% | default | | - | |

Analog input AI1 is sent to this parameter unit after being acquired and calibrated.

| | | | | | |
|-------|---------------|---------|---|---------------|---|
| 7.12 | AI2 parameter | keypad | R | communication | R |
| range | 0.0~150.0% | default | | - | |

Analog input AI2 is sent to this parameter unit after being acquired and calibrated.

| | | | | | |
|-------|---------------|---------|---|---------------|---|
| 7.13 | AI3 parameter | keypad | R | communication | R |
| range | 0.0~150.0% | default | | - | |

Analog input AI3 is sent to this parameter unit after being acquired and calibrated.

| | | | | | |
|-------|---------------|---------|---|---------------|---|
| 7.14 | AI4 parameter | keypad | R | communication | R |
| range | 0.0~150.0% | default | | - | |

Analog input AI4 is sent to this parameter unit after being acquired and calibrated.

| | | | | | |
|-------|---------------|---------|---|---------------|---|
| 7.15 | AI5 parameter | keypad | R | communication | R |
| range | 0.0~150.0% | default | | - | |

Analog input AI5 is sent to this parameter unit after being acquired and calibrated.

| | | | | | |
|-------|-----------------------|---------|---|---------------|---|
| 7.16 | Given value summation | keypad | R | communication | R |
| range | -200.0%~200.0% | default | | - | |

The same as data of 1.01

| | | | | | |
|-------|-----------------------|---------|---|---------------|---|
| 7.17 | Given before breadth- | keypad | R | communication | R |
| range | -200.0%~200.0% | default | | - | |

The same as data of 1.02

| | | | | | |
|-------|-------------|---------|---|---------------|---|
| 7.18 | Ramp output | keypad | R | communication | R |
| range | 0.0~100.0% | default | | - | |

The same as data of 1.03

| | | | | | |
|-------|-----------------|---------|---|---------------|---|
| 7.19 | Adjustor output | keypad | R | communication | R |
| range | 0.0~100.0% | default | | - | |

The same as data of 2.02

| | | | | | |
|-------|---------------|---------|---|---------------|---|
| 7.20 | Control angle | keypad | R | communication | R |
| range | 0°~180° | default | | - | |

The same as data of 2.03

| | | | | | |
|-------|---------------------|---------|---|---------------|---|
| 7.21 | AC output voltage 0 | keypad | R | communication | R |
| range | 0~900V | default | | - | |

| | | | | | |
|------|---------------------|--------|---|---------------|---|
| 7.22 | AC output current 0 | keypad | R | communication | R |
|------|---------------------|--------|---|---------------|---|

| | | | | | |
|-------|----------|---------|---|--|--|
| range | 0~32000A | default | - | | |
|-------|----------|---------|---|--|--|

| | | | | | |
|-------|-------------------|---------|---|---------------|---|
| 7.23 | AC output power 0 | keypad | R | communication | R |
| range | 0~32000kW | default | - | | |

7.21~7.23 are AC output voltage, current and power connector. displayed value are actual value of voltage, current and power.

| | | | | | |
|-------|--------------------|---------|---|---------------|---|
| 7.24 | D output voltage 0 | keypad | R | communication | R |
| range | 0~32000V | default | - | | |

| | | | | | |
|-------|--------------------|---------|---|---------------|---|
| 7.25 | D output current 0 | keypad | R | communication | R |
| range | 0~32000A | default | - | | |

| | | | | | |
|-------|------------------|---------|---|---------------|---|
| 7.26 | D output power 0 | keypad | R | communication | R |
| range | 0~32000kW | default | - | | |

7.24~7.26 are D output voltage, current and power connector. displayed value are actual value of voltage, current and power.

| | | | | | |
|-------|----------------------|---------|---|---------------|---|
| 7.27 | Feedback of AC volt. | keypad | R | communication | R |
| range | 0.0~200.0% | default | - | | |

| | | | | | |
|-------|---------------------|---------|---|---------------|---|
| 7.28 | Feedback of D volt. | keypad | R | communication | R |
| range | 0.0~200.0% | default | - | | |

| | | | | | |
|-------|------------------------|---------|---|---------------|---|
| 7.29 | Feedback of AC current | keypad | R | communication | R |
| range | 0.0~200.0% | default | - | | |

| | | | | | |
|-------|-----------------------|---------|---|---------------|---|
| 7.30 | Feedback of D current | keypad | R | communication | R |
| range | 0.0~200.0% | default | - | | |

| | | | | | |
|-------|----------------------|---------|---|---------------|---|
| 7.31 | Feedback of AC power | keypad | R | communication | R |
| range | 0.0~200.0% | default | - | | |

| | | | | | |
|-------|---------------------|---------|---|---------------|---|
| 7.32 | Feedback of D power | keypad | R | communication | R |
| range | 0.0~200.0% | default | - | | |

7.27~7.32 are parameter connectors of feedback value, data format is percentage, refer to menu of "feedback disposal"

| | | | | | |
|-------|------------|---------|---|---------------|---|
| 7.33 | Md1 output | keypad | R | communication | R |
| range | 0.0~3200.0 | default | - | | |

Output of power module Md1

| | | | | | |
|-------|------------|---------|---|---------------|---|
| 7.34 | Md2 output | keypad | R | communication | R |
| range | 0.0~3200.0 | default | - | | |

Output of power module Md2

| | | | | | |
|-------|------------|---------|---|---------------|---|
| 7.35 | Md3 output | keypad | R | communication | R |
| range | 0.0~3200.0 | default | - | | |

Output of power module Md3

| | | | | | |
|-------------|-----------------|---------|---|---------------|---|
| 7.38 | R-phase current | keypad | R | communication | R |
| range | 0~32000 | default | | - | |

| | | | | | |
|-------------|-----------------|---------|---|---------------|---|
| 7.39 | S-phase current | keypad | R | communication | R |
| range | 0~32000 | default | | - | |

| | | | | | |
|-------------|-----------------|---------|---|---------------|---|
| 7.40 | T-phase current | keypad | R | communication | R |
| range | 0~32000 | default | | - | |

| | | | | | |
|-------------|-------------------|---------|---|---------------|---|
| 7.41 | AC output volt. 1 | keypad | R | communication | R |
| range | 0.0~900.0V | default | | - | |

| | | | | | |
|-------------|---------------------|---------|---|---------------|---|
| 7.42 | AC output current 1 | keypad | R | communication | R |
| range | 0.0~3200.0A | default | | - | |

| | | | | | |
|-------------|-------------------|---------|---|---------------|---|
| 7.43 | AC output power 1 | keypad | R | communication | R |
| range | 0.0~3200.0kW | default | | - | |

7.41~7.43 are AC output voltage, current and power connector, displayed value are actual value of voltage, current and power.

| | | | | | |
|-------------|------------------|---------|---|---------------|---|
| 7.44 | D output volt. 1 | keypad | R | communication | R |
| range | 0.0~3200.0V | default | | - | |

| | | | | | |
|-------------|--------------------|---------|---|---------------|---|
| 7.45 | D output current 1 | keypad | R | communication | R |
| range | 0.0~3200.0A | default | | - | |

| | | | | | |
|-------------|------------------|---------|---|---------------|---|
| 7.46 | D output power 1 | keypad | R | communication | R |
| range | 0.0~3200.0kW | default | | - | |

| | | | | | |
|-------------|-----------------------|---------|---|---------------|---|
| 7.47 | Volt. of power supply | keypad | R | communication | R |
| range | 0~900V | default | | - | |

Parameter menu 8; on-off value connector

Switch-value connector menus. Switch-value connective switch can be connected to one parameter items of the menus, corresponding state in switch-value connector are sent to point where are switch-value connective switch, the same as that signal in switch-value connector are connected to connected point by leads in analog circuit.

| | | | | | |
|-------------|------------------|---------|---|---------------|---|
| 8.01 | Constant value 0 | keypad | R | communication | R |
| range | 0 | default | | 0 | |

Constant value, unchangeable

| | | | | | |
|-------------|------------------|---------|---|---------------|---|
| 8.02 | Constant value 1 | keypad | R | communication | R |
| range | 1 | default | | 1 | |

Constant value, unchangeable

| | | | | | |
|-------------|--------------------------|--------|-----|---------------|-----|
| 8.03 | On-off value parameter 1 | keypad | R/W | communication | R/W |
| | | | | | |

| | | | | | |
|-------|-----|---------|---|--|--|
| range | 0、1 | default | 0 | | |
|-------|-----|---------|---|--|--|

| | | | | | |
|-------------|--------------------------|---------|-----|---------------|-----|
| 8.04 | On-off value parameter 2 | keypad | R/W | communication | R/W |
| range | 0、1 | default | 0 | | |

| | | | | | |
|-------------|--------------------------|---------|-----|---------------|-----|
| 8.05 | On-off value parameter 3 | keypad | R/W | communication | R/W |
| range | 0、1 | default | 0 | | |

| | | | | | |
|-------------|--------------------------|---------|-----|---------------|-----|
| 8.06 | On-off value parameter 4 | keypad | R/W | communication | R/W |
| range | 0、1 | default | 0 | | |

| | | | | | |
|-------------|--------------------------|---------|-----|---------------|-----|
| 8.07 | On-off value parameter 5 | keypad | R/W | communication | R/W |
| range | 0、1 | default | 0 | | |

| | | | | | |
|-------------|--------------------------|---------|-----|---------------|-----|
| 8.08 | On-off value parameter 6 | keypad | R/W | communication | R/W |
| range | 0、1 | default | 0 | | |

| | | | | | |
|-------------|--------------------------|---------|-----|---------------|-----|
| 8.09 | On-off value parameter 7 | keypad | R/W | communication | R/W |
| range | 0、1 | default | 0 | | |

| | | | | | |
|-------------|--------------------------|---------|-----|---------------|-----|
| 8.10 | On-off value parameter 8 | keypad | R/W | communication | R/W |
| range | 0、1 | default | 0 | | |

8.03 ~ 8.10 are on-off value connectors, used as communication control, for instance:
Communication controls “given selection 1”, set 1.15 as 8.03, change value of 8.03 by communication to control “given selection 1”.

| | | | | | |
|-------------|----------------|---------|---|---------------|---|
| 8.11 | Running enable | keypad | R | communication | R |
| range | 0、1 | default | - | | |

0: disconnect port X1 and M, running is forbidden.

1: connect port X1 and M, running is permitted.

| | | | | | |
|-------------|-----------|---------|---|---------------|---|
| 8.12 | X2 signal | keypad | R | communication | R |
| range | 0、1 | default | - | | |

0: disconnect port X1 and M

1: connect X2 and M.

| | | | | | |
|-------------|----------------------|---------|---|---------------|---|
| 8.13 | X2 signal in reverse | keypad | R | communication | R |
| range | 0、1 | default | - | | |

Reverse 8.12 signal

| | | | | | |
|-------------|-----------|---------|---|---------------|---|
| 8.14 | X3 signal | keypad | R | communication | R |
| range | 0、1 | default | - | | |

0: disconnect port X3 and M

1: connect X3 and M.

| | | | | | |
|-------------|----------------------|---------|---|---------------|---|
| 8.15 | X3 signal in reverse | keypad | R | communication | R |
| range | 0、1 | default | - | | |

Reverse 8.14 signal

| | | | | | |
|-------------|-----------|---------|---|---------------|---|
| 8.16 | X4 signal | keypad | R | communication | R |
| range | 0、1 | default | | - | |

0: disconnect port X4 and M

1: connect X4 and M

| | | | | | |
|-------------|----------------------|---------|---|---------------|---|
| 8.17 | X4 signal in reverse | keypad | R | communication | R |
| range | 0、1 | default | | - | |

Reverse 8.16 signal

| | | | | | |
|-------------|-----------|---------|---|---------------|---|
| 8.18 | X5 signal | keypad | R | communication | R |
| range | 0、1 | default | | - | |

0: disconnect port X5 and M

1: connect X5 and M

| | | | | | |
|-------------|----------------------|---------|---|---------------|---|
| 8.19 | X5 signal in reverse | keypad | R | communication | R |
| range | 0、1 | default | | - | |

Reverse 8.18 signal

| | | | | | |
|-------------|--------------------------------|---------|---|---------------|---|
| 8.20 | condition of "auto/manual" key | keypad | R | communication | R |
| range | 0、1 | default | | - | |

Display status of keypad "AOTO/MAN", press once, 8.20=1, again 8.20=0, in some location where requies to control auto/man given, link 1.15 to 8.20 to realize switchover.

| | | | | | |
|-------------|--------------|---------|---|---------------|---|
| 8.21 | Device fault | keypad | R | communication | R |
| range | 0、1 | default | | - | |

Set 1 when fault happens

| | | | | | |
|-------------|--------------|---------|---|---------------|---|
| 8.22 | System fault | keypad | R | communication | R |
| range | 0、1 | default | | - | |

| | | | | | |
|-------------|------------------------|---------|---|---------------|---|
| 8.23 | main power supply lost | keypad | R | communication | R |
| range | 0、1 | default | | - | |

| | | | | | |
|-------------|-------------|---------|---|---------------|---|
| 8.24 | overcurrent | keypad | R | communication | R |
| range | 0、1 | default | | - | |

| | | | | | |
|-------------|--------------------|---------|---|---------------|---|
| 8.25 | Thyristor overheat | keypad | R | communication | R |
| range | 0、1 | default | | - | |

| | | | | | |
|-------------|-----------------|---------|---|---------------|---|
| 8.26 | Thyristor fault | keypad | R | communication | R |
| range | 0、1 | default | | - | |

| | | | | | |
|-------------|-----------------|---------|---|---------------|---|
| 8.27 | Load line-break | keypad | R | communication | R |
| range | 0、1 | default | | - | |

| | | | | | |
|-------------|-----------------------|--------|---|---------------|---|
| 8.28 | Power frequency fault | keypad | R | communication | R |
| range | | | | | |

| | | | |
|-------|-----|---------|---|
| range | 0、1 | default | - |
|-------|-----|---------|---|

8.21~8.28 are connectors of fault status. 0: No fault. 1: fault

| | | | | | |
|-------------|------------------------|---------|---|---------------|---|
| 8.31 | Output of comparator 1 | keypad | R | communication | R |
| range | 0、1 | default | - | | |

| | | | | | |
|-------------|-----------------------------------|---------|---|---------------|---|
| 8.32 | Output of comparator 1 in reverse | keypad | R | communication | R |
| range | 0、1 | default | - | | |

| | | | | | |
|-------------|------------------------|---------|---|---------------|---|
| 8.33 | Output of comparator 2 | keypad | R | communication | R |
| range | 0、1 | default | - | | |

| | | | | | |
|-------------|-----------------------------------|---------|---|---------------|---|
| 8.34 | Output of comparator 2 in reverse | keypad | R | communication | R |
| range | 0、1 | default | - | | |

| | | | | | |
|-------------|------------------------|---------|---|---------------|---|
| 8.35 | Output of comparator 3 | keypad | R | communication | R |
| range | 0、1 | default | - | | |

| | | | | | |
|-------------|-----------------------------------|---------|---|---------------|---|
| 8.36 | Output of comparator 3 in reverse | keypad | R | communication | R |
| range | 0、1 | default | - | | |

| | | | | | |
|-------------|------------------|---------|---|---------------|---|
| 8.37 | Given connection | keypad | R | communication | R |
| range | 0、1 | default | - | | |

0: given signal is disconnected, value being sent to ramp disposal is 0.

1: given is connected

| | | | | | |
|-------------|-------------------|---------|---|---------------|---|
| 8.38 | Running condition | keypad | R | communication | R |
| range | 0、1 | default | - | | |

0: controller stops

1: controller operates

| | | | | | |
|-------------|-------------------|---------|---|---------------|---|
| 8.39 | Limited condition | keypad | R | communication | R |
| range | 0、1 | default | - | | |

0: not limited 1: enter into limitation condition.

| | | | | | |
|-------------|------------------|---------|---|---------------|---|
| 8.40 | Blower condition | keypad | R | communication | R |
| range | 0、1 | default | - | | |

0: blower stops 1: blower runs

| | | | | | |
|-------------|----------------------|---------|---|---------------|---|
| 8.41 | Output of reverser 1 | keypad | R | communication | R |
| range | 0、1 | default | - | | |

| | | | | | |
|-------------|----------------------|---------|---|---------------|---|
| 8.42 | Output of reverser 2 | keypad | R | communication | R |
| range | 0、1 | default | - | | |

| | | | | | |
|-------------|----------------------|---------|---|---------------|---|
| 8.43 | Output of reverser 3 | keypad | R | communication | R |
| range | 0、1 | default | - | | |

| | | | | | |
|-------------|--------------------------------|---------|---|---------------|---|
| 8.44 | Output of delayer 1 | keypad | R | communication | R |
| range | 0、1 | default | | - | |
| 8.45 | Output of delayer 1 in reverse | keypad | R | communication | R |
| range | 0、1 | default | | - | |

| | | | | | |
|-------------|---------------------|---------|---|---------------|---|
| 8.46 | Output of delayer 1 | keypad | R | communication | R |
| range | 0、1 | default | | - | |

| | | | | | |
|-------------|--------------------------------|---------|---|---------------|---|
| 8.47 | Output of delayer 2 in reverse | keypad | R | communication | R |
| range | 0、1 | default | | - | |

| | | | | | |
|-------------|---------------------|---------|---|---------------|---|
| 8.48 | Output of delayer 1 | keypad | R | communication | R |
| range | 0、1 | default | | - | |

| | | | | | |
|-------------|--------------------------------|---------|---|---------------|---|
| 8.49 | Output of delayer 3 in reverse | keypad | R | communication | R |
| range | 0、1 | default | | - | |

| | | | | | |
|-------------|-------------------|---------|---|---------------|---|
| 8.50 | Output of timer 1 | keypad | R | communication | R |
| range | 0、1 | default | | - | |

| | | | | | |
|-------------|------------------------------|---------|---|---------------|---|
| 8.51 | Output of timer 1 in reverse | keypad | R | communication | R |
| range | 0、1 | default | | - | |

| | | | | | |
|-------------|-------------------|---------|---|---------------|---|
| 8.52 | Output of timer 2 | keypad | R | communication | R |
| range | 0、1 | default | | - | |

| | | | | | |
|-------------|------------------------------|---------|---|---------------|---|
| 8.53 | Output of timer 2 in reverse | keypad | R | communication | R |
| range | 0、1 | default | | - | |

Parameter menu 9: comprehensive parameter

| | | | | | |
|-------------|------------------|---------|---|---------------|---|
| 9.01 | Software edition | keypad | R | communication | R |
| range | - | default | | 11.* | |

Edition number of software

| | | | | | |
|-------------|--------------------|---------|---|---------------|---|
| 9.02 | AC specified volt. | keypad | R | communication | R |
| range | 100～500V | default | | 500 | |

Specification of voltage relevant with hardware, namely, corresponding voltage value when data of AC voltage acquisition value calibrated by AC voltage is 100.0%. (unit: V)

| | | | | | |
|-------------|----------------------|---------|---|---------------|---|
| 9.03 | AC specified current | keypad | X | communication | R |
| range | - | default | | 见铭牌 | |

Specification of current relevant with hardware, namely, corresponding current value when data of AC current acquisition value calibrated by AC current is 100.0%. (unit: A)

| | | | | | |
|-------------|-------------------|---------|---|---------------|---|
| 9.04 | Factory operation | keypad | Y | communication | R |
| range | - | default | | - | |

Reserved by factory

| | | | | | |
|-------------|--------------------------|---------|-----|---------------|---|
| 9.06 | 1# communication address | keypad | R/W | communication | R |
| range | 1~247 | default | | 1 | |

Set address of 1# communication interface

| | | | | | |
|-------------|---|---------|-----|---------------|---|
| 9.07 | 1# baud rate | keypad | R/W | communication | R |
| range | 2400、4800、9600、19200、38400、57600、115.2k | default | | 9600 | |

Set baud rate of 1# communication interface

| | | | | | |
|-------------|----------------|---------|-----|---------------|---|
| 9.08 | 1# data format | keypad | R/W | communication | R |
| range | 8n2、8e1、8o1 | default | | 8e1 | |

Set data format of 1# communication interface

| | | | | | |
|-------------|-----------------------|---------|-----|---------------|---|
| 9.09 | 1# communication mode | keypad | R/W | communication | R |
| range | 0、1 | default | | 0 | |

0: RTU communication mode 1: online with power distribution

| | | | | | |
|-------------|-----------------------|---------|-----|---------------|-----|
| 9.10 | Communication storage | keypad | R/W | communication | R/W |
| range | 0、1 | default | | 0 | |

Data which is written into through communication will be stored in RAM, lost when power off. Set this parameter unit to 1 by keypad or communication, data inner RAM will be written into E²PROM, valid when next time power on.

| | | | | | |
|-------------|--------------------------|---------|-----|---------------|---|
| 9.11 | 2# communication address | keypad | R/W | communication | R |
| range | 1~247 | default | | 2 | |

Set address of 2# communication interface

| | | | | | |
|-------------|---|---------|-----|---------------|---|
| 9.12 | 2# baud rate | keypad | R/W | communication | R |
| range | 2400、4800、9600、19200、38400、57600、115.2k | default | | 9600 | |

Set baud rate of 2# communication interface

| | | | | | |
|-------------|----------------|---------|-----|---------------|---|
| 9.13 | 2# data format | keypad | R/W | communication | R |
| range | 8n2、8e1、8o1 | default | | 8e1 | |

Set data format of 2# communication interface

| | | | | | |
|-------------|---------------------------------------|---------|---|---------------|---|
| 9.17 | inspection setting of power frequency | keypad | T | communication | R |
| range | 0、1 | default | | 0 | |

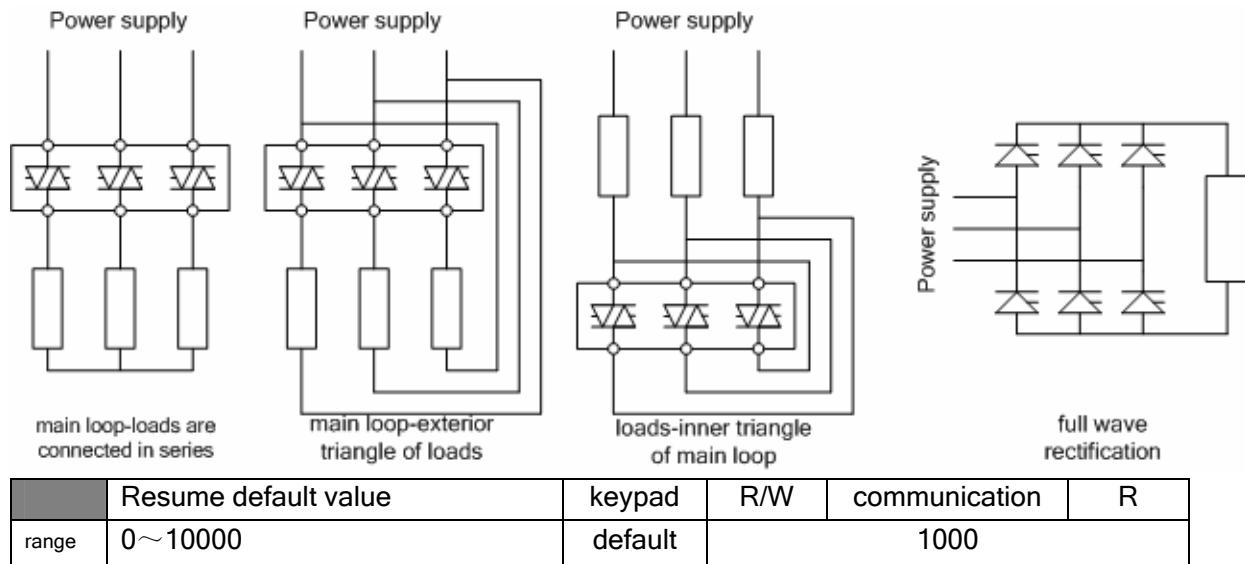
0: real-time frequency inspection.

1: begin inspecting frequency when running, no more inspection after that.

| | | | | | |
|-------------|---------------------|---------|---|---------------|---|
| 9.18 | Main loop selection | keypad | X | communication | R |
| range | 0、1、2、3、4 | default | | 0 | |

0: in series. 1: triangle with star-node. 2: sub-loop triangle.

3: full-bridge rectification. 4: 12 pulse wave.



Function 1: resume default value

Set 1234, resume default value with “A” attribution menus after pressing “ENT/DATA” and confirm.

| | | | | | |
|-------------|--------------------|---------|---|---------------|---|
| 9.21 | Function selection | keypad | Z | communication | R |
| range | 0、1 | default | | 0 | |

Reservation

Parameter menu A: auxiliary parameter

| | | | | | |
|-------------|------------------------------------|---------|---|---------------|---|
| A.01 | Real time acquisition value of AI1 | keypad | R | communication | R |
| range | 0~4095 | default | | - | |
| A.02 | AI1 lower limit (4-20mA) | keypad | X | communication | R |
| range | 0~2000 | default | | 860 | |
| A.03 | AI1upper limit (4-20mA) | keypad | X | communication | R |
| range | 3000~4095 | default | | 4093 | |
| A.04 | AI1 lower limit (0-5V) | keypad | X | communication | R |
| range | 0~2000 | default | | 30 | |
| A.05 | AI1 upper limit (0-5V) | keypad | X | communication | R |
| range | 3000~4095 | default | | 4093 | |

Input signal calibration of input from AI1 analog input port, let input minimum when corresponding given is 0.0%, maximum to 100.0% by set upper and lower limited value of input signal.

| | | | | | |
|-------------|------------------------------------|---------|---|---------------|---|
| A.06 | Real time acquisition value of AI2 | keypad | R | communication | R |
| range | 0~4095 | default | | - | |
| A.07 | AI2 lower limit | keypad | X | communication | R |
| range | 0~2000 | default | | 30 | |
| A.08 | AI2 upper limit | keypad | X | communication | R |
| range | 3000~4095 | default | | 4093 | |

Input signal calibration of input from AI2 nalog input port, let input minimum when corresponding given is 0.0%, maximum to 100.0% by set upper and lower limited value of input signal.

| | | | | | |
|-------------|------------------------------------|---------|---|---------------|---|
| A.09 | Real time acquisition value of AI3 | keypad | R | communication | R |
| range | 0~4095 | default | | - | |

| | | | | | |
|-------------|-----------------|---------|---|---------------|---|
| A.10 | AI3 lower limit | keypad | X | communication | R |
| range | 0~2000 | default | | 30 | |
| A.11 | AI3 upper limit | keypad | X | communication | R |
| range | 3000~4095 | default | | 4093 | |

Input signal calibration of input from AI3analog input port, let input minimum when corresponding given is 0.0%, maximum to 100.0% by set upper and lower limited value of input signal

| | | | | | |
|-------------|------------------------------------|---------|---|---------------|---|
| A.12 | Real time acquisition value of AI4 | keypad | R | communication | R |
| range | 0~4095 | default | | - | |
| A.13 | AI4 lower limit | keypad | X | communication | R |
| range | 0~2000 | default | | 30 | |
| A.14 | AI4 upper limit | keypad | X | communication | R |
| range | 3000~4095 | default | | 4093 | |

Input signal calibration of input from AI4analog input port, let input minimum when corresponding given is 0.0%, maximum to 100.0% by set upper and lower limited value of input signal

| | | | | | |
|-------------|------------------------------------|---------|---|---------------|---|
| A.15 | Real time acquisition value of AI5 | keypad | R | communication | R |
| range | 0~4095 | default | | - | |
| A.16 | AI5 lower limit | keypad | X | communication | R |
| range | 0~2000 | default | | 30 | |
| A.17 | AI5 upper limit | keypad | X | communication | R |
| range | 3000~4095 | default | | 4093 | |

Input signal calibration of input from AI5analog input port, let input minimum when corresponding given is 0.0%, maximum to 100.0% by set upper and lower limited value of input signal

| | | | | | |
|-------------|--|---------|---|---------------|---|
| A.21 | AI1-AI2 filter coefficient | keypad | Y | communication | R |
| range | 0~9 | default | | 5 | |
| A.22 | AI3-AI5 filter coefficient | keypad | Y | communication | R |
| range | 0~9 | default | | 5 | |
| A.23 | filter coefficient of volt.feedback | keypad | Y | communication | R |
| range | 0~9 | default | | 5 | |
| A.24 | filter coefficient of current feedback | keypad | Y | communication | R |
| range | 0~9 | default | | 5 | |

Set filter coefficient of analog input and feedback signal, used by factory.

7.2 Usage of connector

Majority output variables and important calculating value in function modules are shown as “connector” format. They can be named as “parameter connector” by parameters which are connected and cited by other function modules, every “parameter connector” has its address (parameter no.). It requires to name connected parameter as “parameter connector switch”, and set source of parameters. Setting contents of “parameter connector switch” are address of “parameter connector” (parameter no.), values of “parameter connector” are sent to corresponding position of “parameter connector switch”, for instance, if a “parameter connector” is connected by several “parameter connector switch”, the data will be sent to each position of “parameter connector switch” at the same time.

Following is introduction of “parameter connector” 7.01. “parameter connector” 7.01 is 0.0% of constant value, be connected in many modules, figure 7-1 is default setting , value of 7.01 is sent to position of 1.13, 1.14 and 4.15.

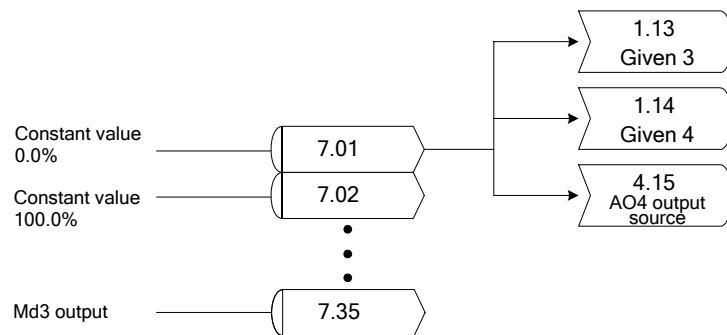


Figure 7-1 Parameter connection sketch map

Majority switch-value output and important switch signals in function modules are shown as switch-value “connector” format. They can be named as “switch-value connector” by state which is connected and cited by other function modules, every “switch-value connector” has its address (parameter no.). It requires to name connected state as “switch-value connector switch”, and set source of state. Setting contents of “switch-value connector switch” are address of “switch-value connector” (parameter no.), values of “switch-value connector” are sent to corresponding position of “switch-value connector switch”, for instance, if a “switch-value connector” is connected by several “switch-value connector switch”, the data will be sent to each position of “switch-value connector switch” at the same time.

Following is introduction of “parameter connector” 8.01. “parameter connector” 8.01 is of constant value 0, be connected in many modules, figure 7-2 is default setting , value of 8.01 is sent to position of 5.34 and 1.35.

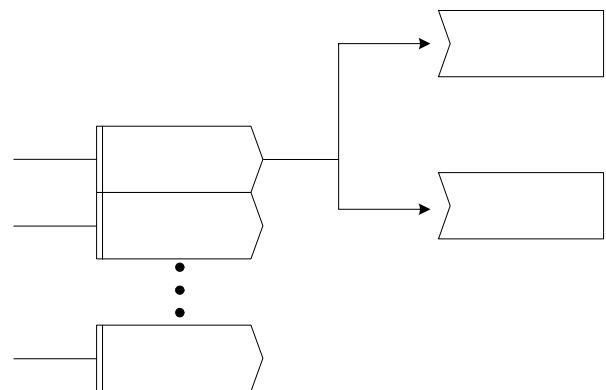


Figure 7-2 Switch-value connection sketch map

Constant value 0

8.01

Constant value 1

8.02

output of delay 2
in reverse

8.53

8 malfunctions and disposal

The power supply system has many kinds of fault protecting function, controller will protect automatically and display corresponding fault code when fault. User can confirm the fault range according to fault code and make the corresponding decision.

Firstly check that the FUSE FAU1 of power supply which is on the control panel melted down or not if there is no display on display panel. The fault code and processing methods when fault in controller are shown as follow:

| phenomena | fault name | troubleshooting |
|-------------------|----------------------------|---|
| output unsteadily | | adjust dynamic parameter of PID |
| E-01 | system fault | check/replace control board |
| E-02 | fault of main power supply | check connection of power supply and interconnection |
| E-05 | overcurrent | load is too heavy or short circuit |
| E-07 | overheat | bad heat-dispersion of power components, severe overload of output |
| E-18 | network frequency fault | check power supply |
| E-51 | exterior fault 1 | default as contactor fault, contactor is disconnection when running |
| E-52 | exterior fault 2 | default as water flux fault, water flux or pressure is insufficient |

直流电源系统控制原理图

(CONTROL THEORY DRAWINGS OF DC POWER SUPPLY SYSTEM)

DJPG1.0553000440.06ASSLC0.12

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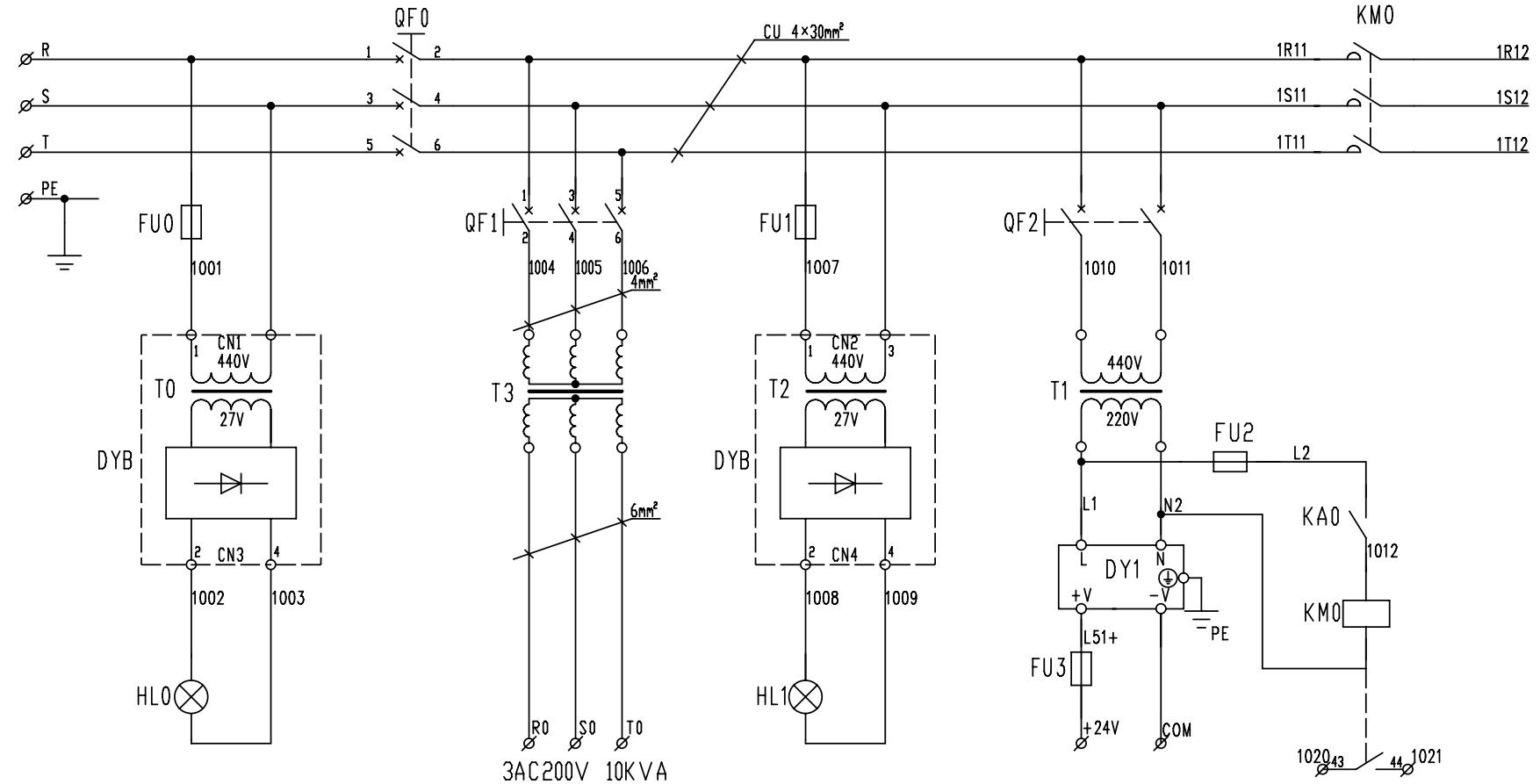
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1 2 3 4 5 6 7 8

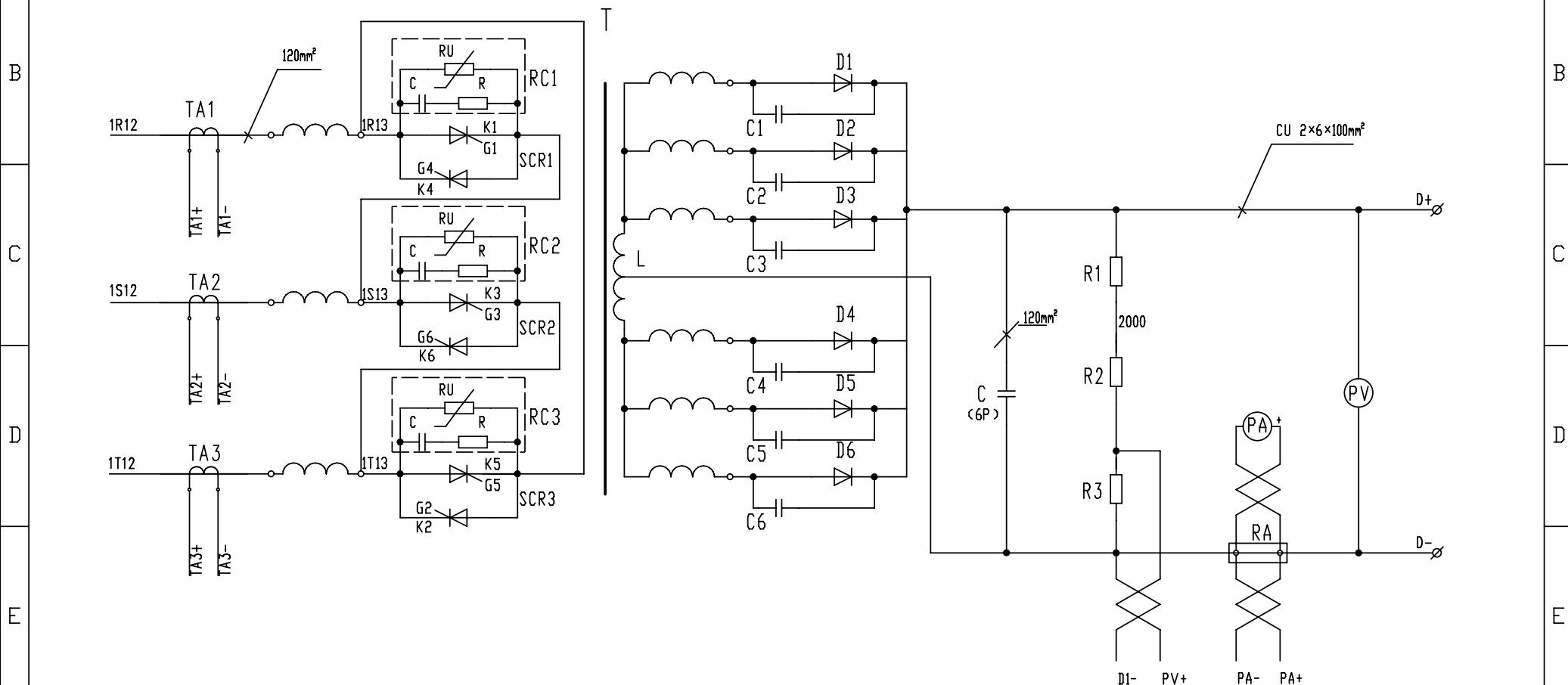
| 中文 | 主电源 | 主断路器 | 辅助电源 | 合闸指示 | 控制电源 | 主接触器 |
|---------|------------|----------------|-----------------|------------------|---------------|----------------|
| ENGLISH | MAIN POWER | MAIN CONTACTOR | ASSISTANT POWER | POWER ON DISPLAY | CONTROL POWER | MAIN CONTACTOR |



| | | | | | | | | | |
|------------|--|--|---|---------|------------------------|-------------|-----------------------------|--------|----|
| 设计 Design | | |  英杰电气有限公司 Injet Electric Co., Ltd | 项目名称 | 直流电源系统 | 图号 | DJP1.0553000440.06ASSLC0.12 | | |
| 审核 Check | | | | Project | DC POWER SUPPLY SYSTEM | Diagram No. | | | |
| 批准 Approve | | | | 图名 | 电源主回路 I | 页: | 1 | 共: | 13 |
| | | | | Diagram | POWER MAIN LOOP I | Page: | | Total: | |

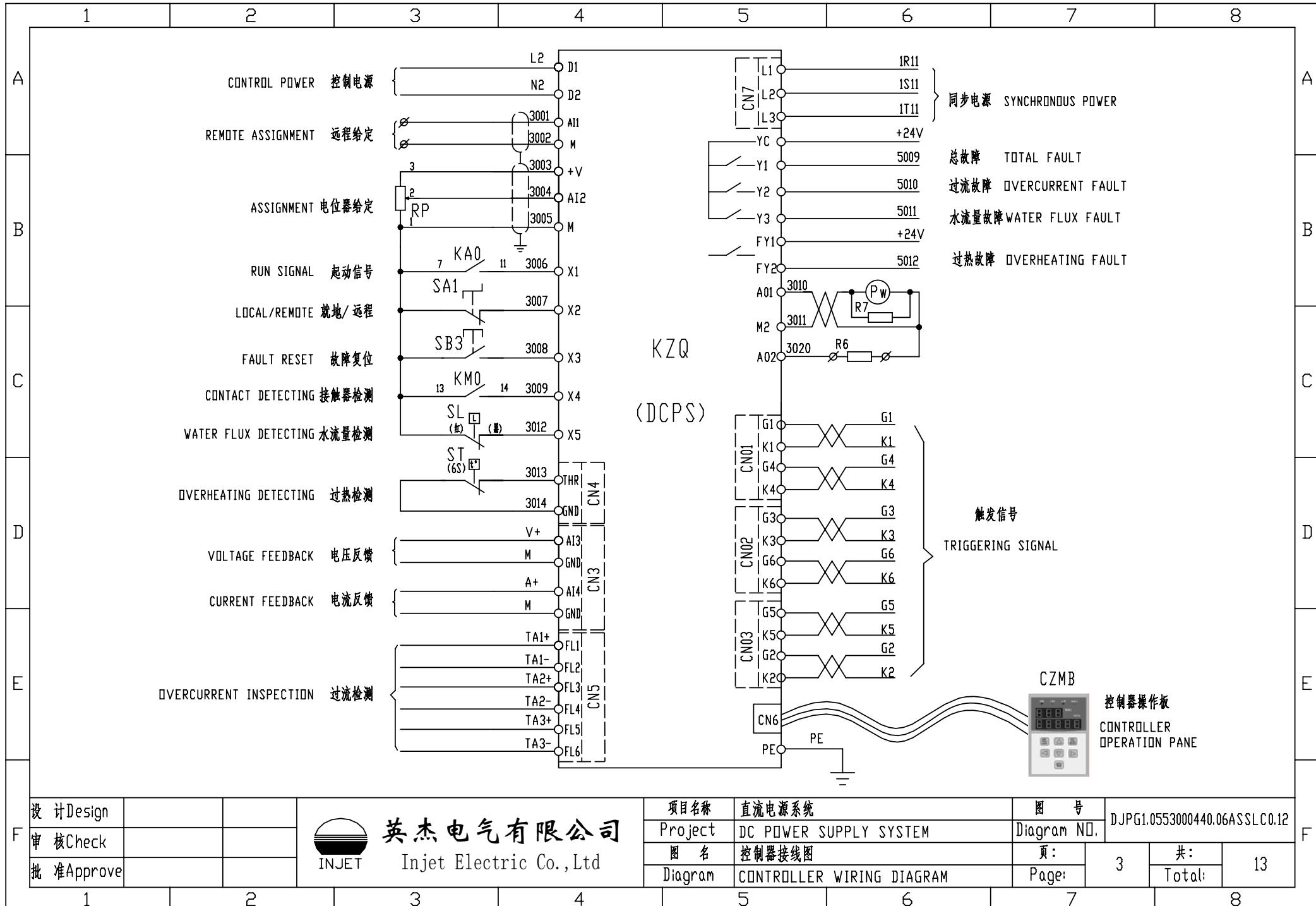
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|

| A | 电流检测 CURRENT INSPECTION | 整流变压器 COMMUTATING TRANSFORMER | 整流部分(D) COMMUTATING PART | 滤波电容 FILTER CAPACITOR | 分压电阻 DIVIDER RESISTANCE | 分流器 DIVERTER | 输出电压 OUTPUT VOLTAGE |
|---|----------------------------|----------------------------------|-----------------------------|--------------------------|----------------------------|-----------------|------------------------|
|---|----------------------------|----------------------------------|-----------------------------|--------------------------|----------------------------|-----------------|------------------------|

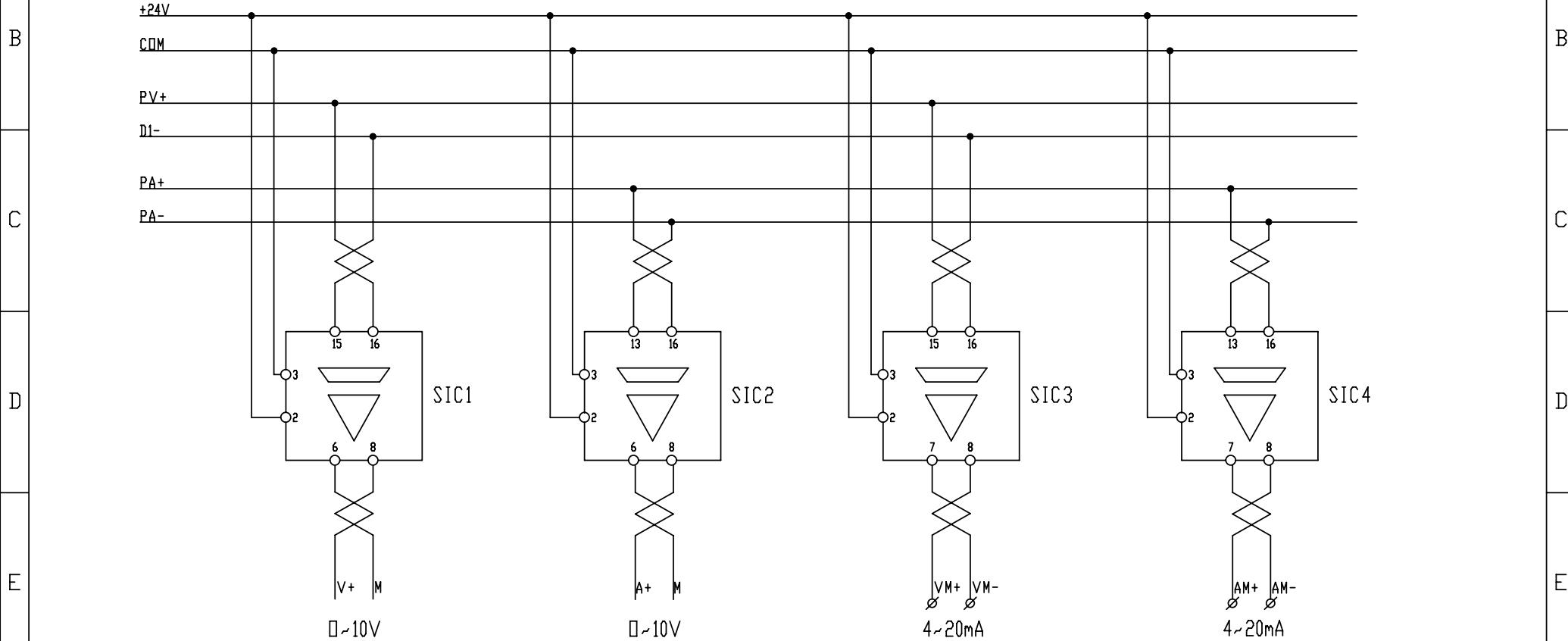


| | | | | | | | |
|------------|--|--|---|---------|------------------------|-------------|----------------------------|
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| 审核 Check | | | | Project | DC POWER SUPPLY SYSTEM | Diagram NO. | |
| 批准 Approve | | | | 图名 | 电源主回路II | 页: | 2 |
| | | | | Diagram | POWER MAIN LOOP II | 共: | 13 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|

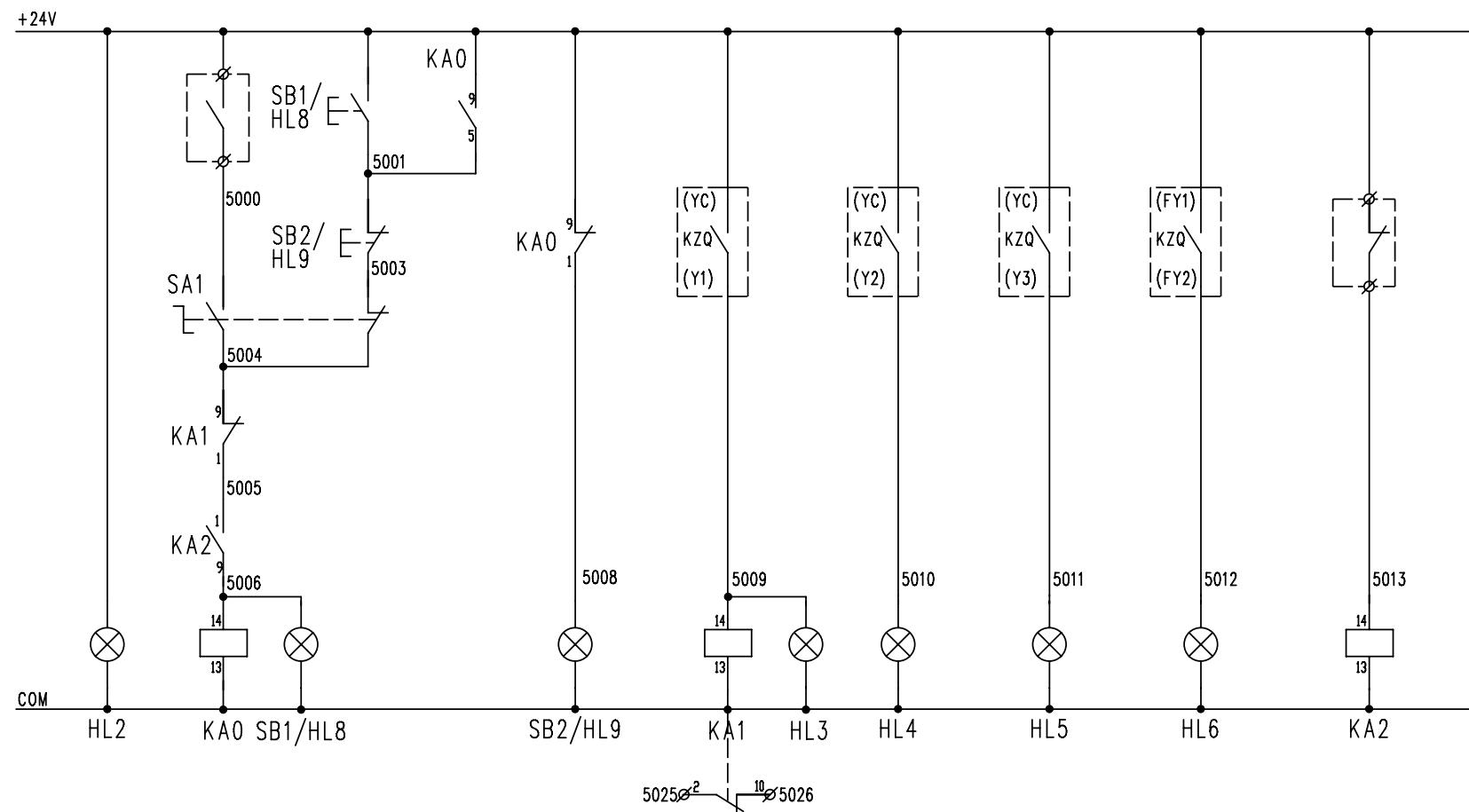


| | | | | | | |
|---|---------------|-----------------------------|-----------------------------|---------------------------|---------------------------|---|
| A | 中文 ENGLISH | 电压反馈信号 V.SIGNAL FEEDBACK | 电流反馈信号 C.SIGNAL FEEDBACK | 输出电压信号 OUTPUT V.SIGNAL | 输出电流信号 OUTPUT C.SIGNAL | A |
|---|---------------|-----------------------------|-----------------------------|---------------------------|---------------------------|---|

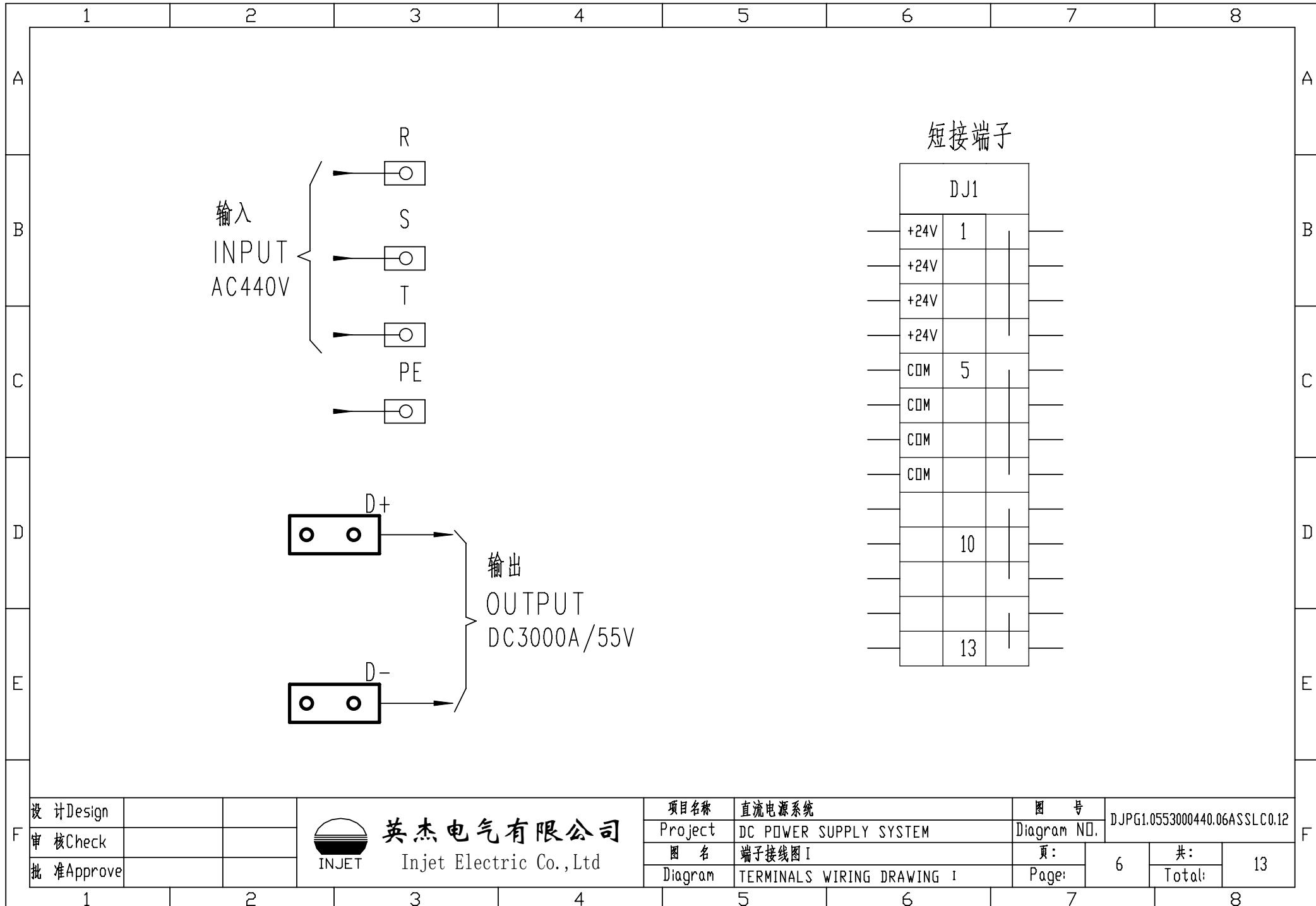


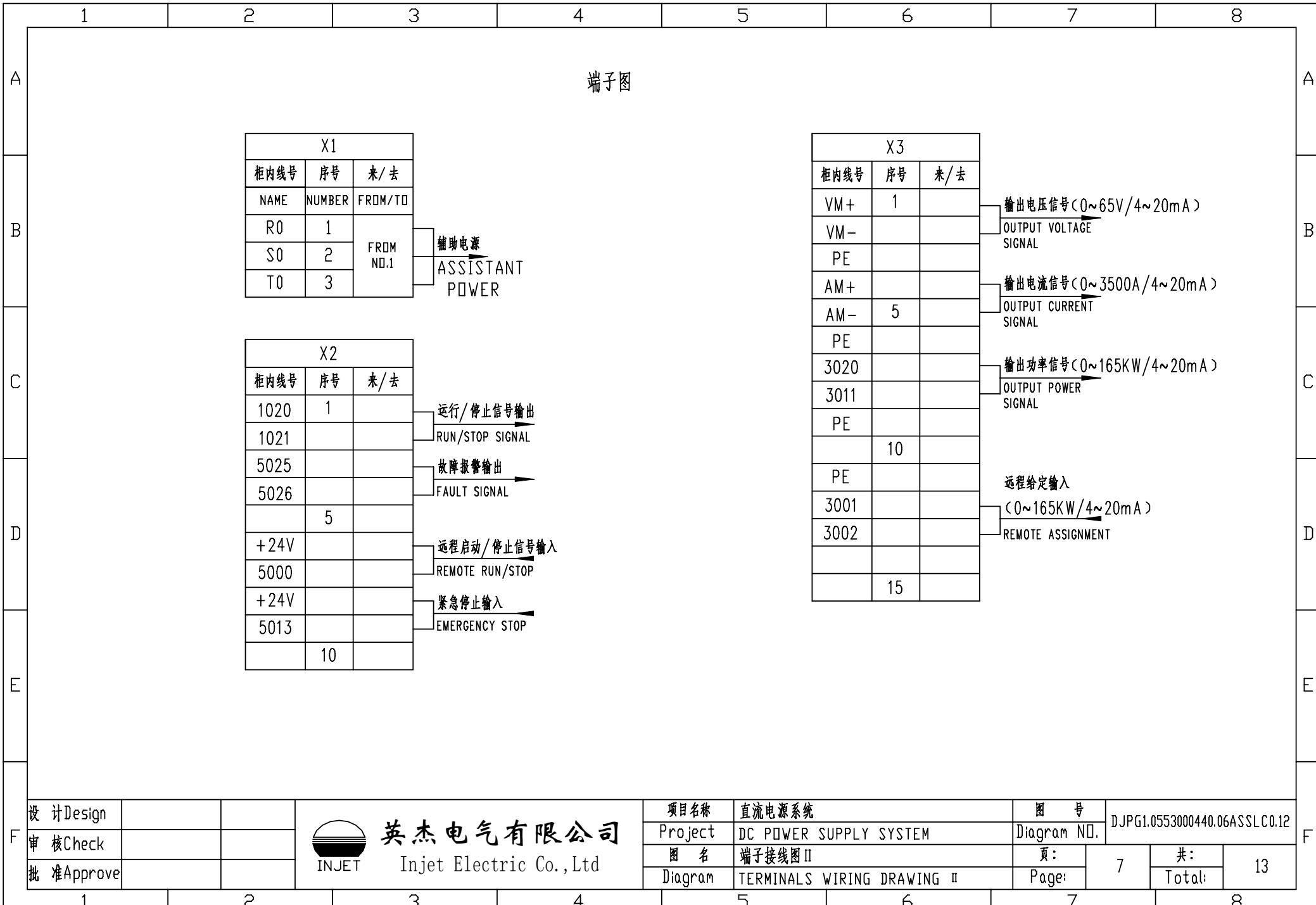
| | | | | | | | | | |
|------------|--|--|--|---------|----------------------------------|-------------|----------------------------|----|----|
| 设计 Design | | | 英杰电气有限公司 INJET Injet Electric Co., Ltd | 项目名称 | 直流电源系统 | 图号 | DJP1.055300440.06ASSLC0.12 | | |
| 审核 Check | | | | Project | DC POWER SUPPLY SYSTEM | Diagram NO. | | | |
| 批准 Approve | | | | 图名 | 信号转换接线图 | 页: | 4 | 共: | 13 |
| | | | | Diagram | SIGNAL CONVERTING WIRING DRAWING | Page: | Total: | | |

| 远程起停 | 就地起停 | 停止指示 | 控制器故障 | 过流故障 | 水流量故障 | 过热故障 | 紧急停止 |
|----------------------|---------------------|-----------------|---------------------|----------------------|---------------|----------------------|-------------------|
| REMOTE START/STOP | LOCAL START/STOP | STOP DISPLAY | CONTROLLER FAULT | OVERCURRENT FAULT | FLUX FAULT | FAULT OVERHEATING | EMERGENCY STOP |

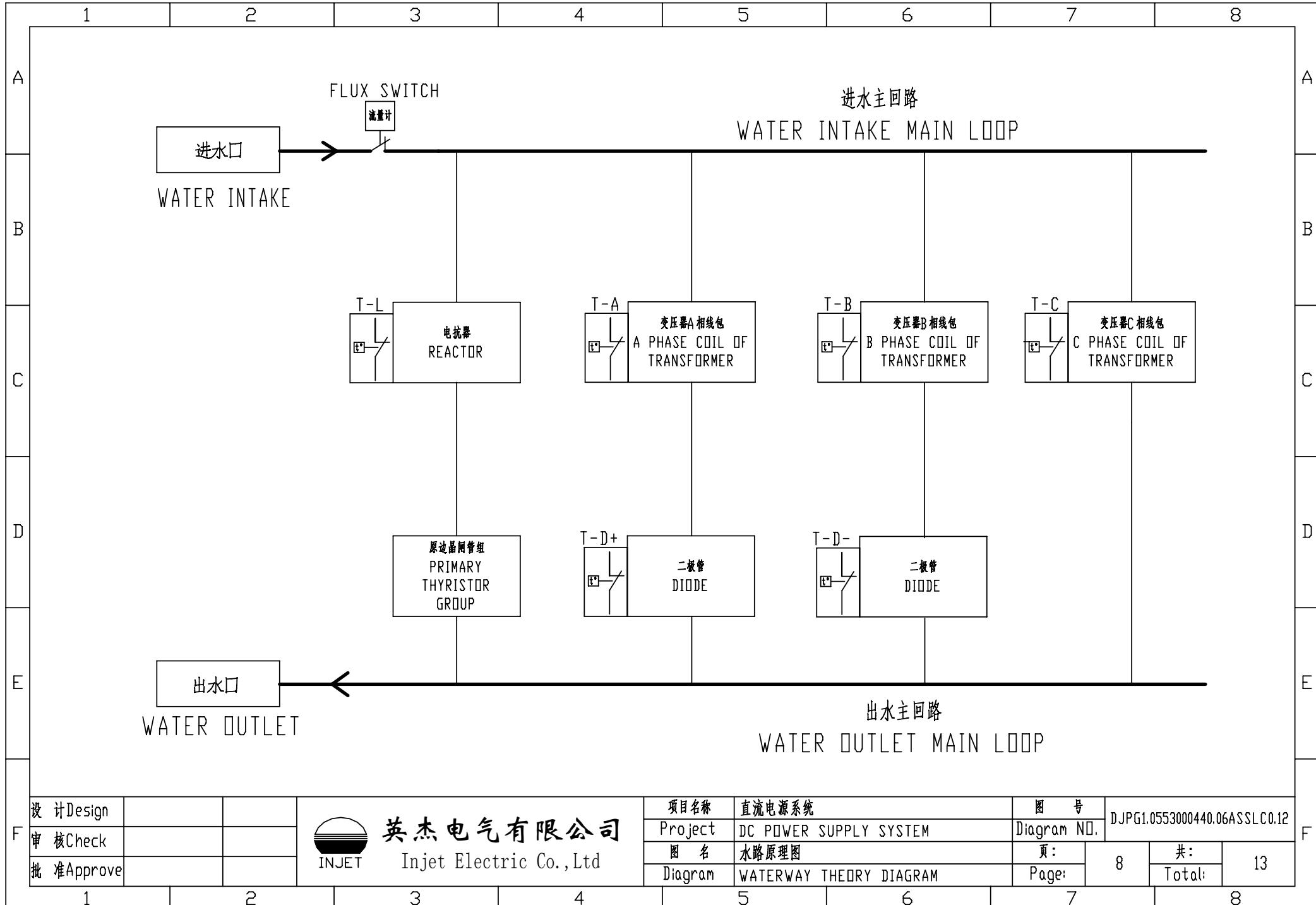


| | | | | | | | | | |
|------------|---|---|--|---------|------------------------|-------------|-----------------------------|--------|----|
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| 审核 Check | | | | Project | DC POWER SUPPLY SYSTEM | Diagram NO. | | | |
| 批准 Approve | | | | 图名 | 控制回路原理图 | 页: | 5 | 共: | 13 |
| | | | | Diagram | CONTROL THEORY LOOP | Page: | | Total: | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | |





| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|



A

B

C

D

E

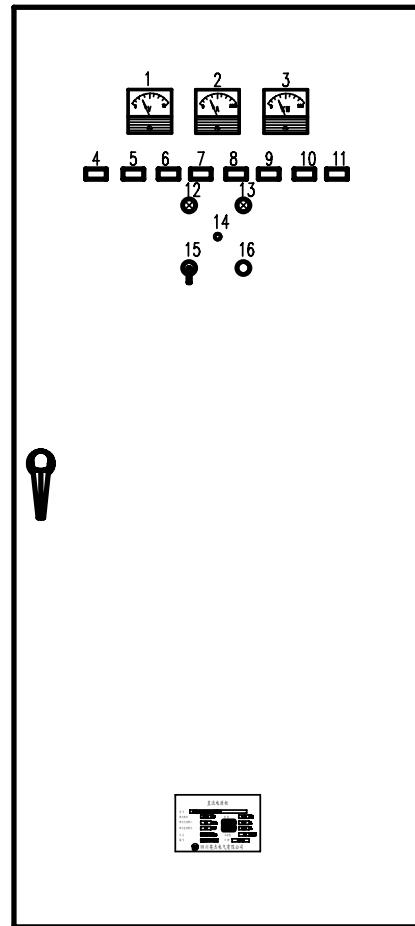
A

B

C

D

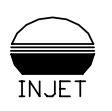
E



| 序号 | 名称 | 铭牌内容 | 元件号 |
|----|--------|--------------------|---------|
| 1 | 输出电压 | | PV |
| 2 | 输出电流 | | PA |
| 3 | 输出功率 | | PW |
| 4 | 电源 | 电源 Power | HL0 |
| 5 | *主回路电源 | 主回路电源 Main power | HL1 |
| 6 | *控制电源 | 控制电源 Control power | HL2 |
| 7 | *控制器故障 | 控制器故障 Contr. fault | HL3 |
| 8 | *过流 | 过流 Overcurrent | HL4 |
| 9 | *水量低 | 水量低 Water fault | HL5 |
| 10 | *过热 | 过热 Overheat | HL6 |
| 11 | *备用 | 备用 Spare | HL7 |
| 12 | 运行 | 运行 RUN | SB1/HL8 |
| 13 | 停止 | 停止 STOP | SB2/HL9 |
| 14 | 给定 | | RP |
| 15 | 控制选择 | 本地 外接 LOCAL REMOTE | SA1 |
| 16 | 复位 | 复位 RESET | SB3 |

| | | | | | | | | | |
|------------|--|--|---|---------|------------------------|-------------|-------------------------------|--------|----|
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| 批准 Approve | | | | 图名 | 面板布置图 | 页: | 9 | 共: | 13 |
| | | | | Diagram | PANE LAYOUT | Page: | | Total: | |

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| 设计 Design | | | | 项目名称 Project | 直流电源系统 DC POWER SUPPLY SYSTEM | 图号 Diagram NO. | DJPG1.055300440.06ASSLC0.12 |
| 审核 Check | | | | 图名 Diagram | 元件明细表 I ELEMENT LIST I | 页: Page: | 共: Total: |
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| 设计 Design | | | | 项目名称 Project | 直流电源系统 DC POWER SUPPLY SYSTEM | 图号 Diagram NO. | DJPG1.055300440.06ASSLC0.12 |
| 审核 Check | | | | 图名 Diagram | 元件明细表 II ELEMENT LIST II | 页: Page: | 共: Total: |
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| 设计 Design | | | | 项目名称 Project | 直流电源系统 DC POWER SUPPLY SYSTEM | 图号 Diagram NO. | DJPG1.055300440.06ASSLC0.12 |
| 审核 Check | | | | 图名 Diagram | 元件明细表III ELEMENT LIST III | 页: Page: | 共: Total: |
| 批准 Approve | | | | | | 12 | 13 |
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| 设计 Design | | | | 项目名称 Project | 直流电源系统 DC POWER SUPPLY SYSTEM | 图号 Diagram NO. | DJPG1.055300440.06ASSLC0.12 |
| 审核 Check | | | | 图名 Diagram | 元件明细表 IV ELEMENT LIST IV | 页: Page: | 共: Total: |
| 批准 Approve | | | | | | 13 | 13 |
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