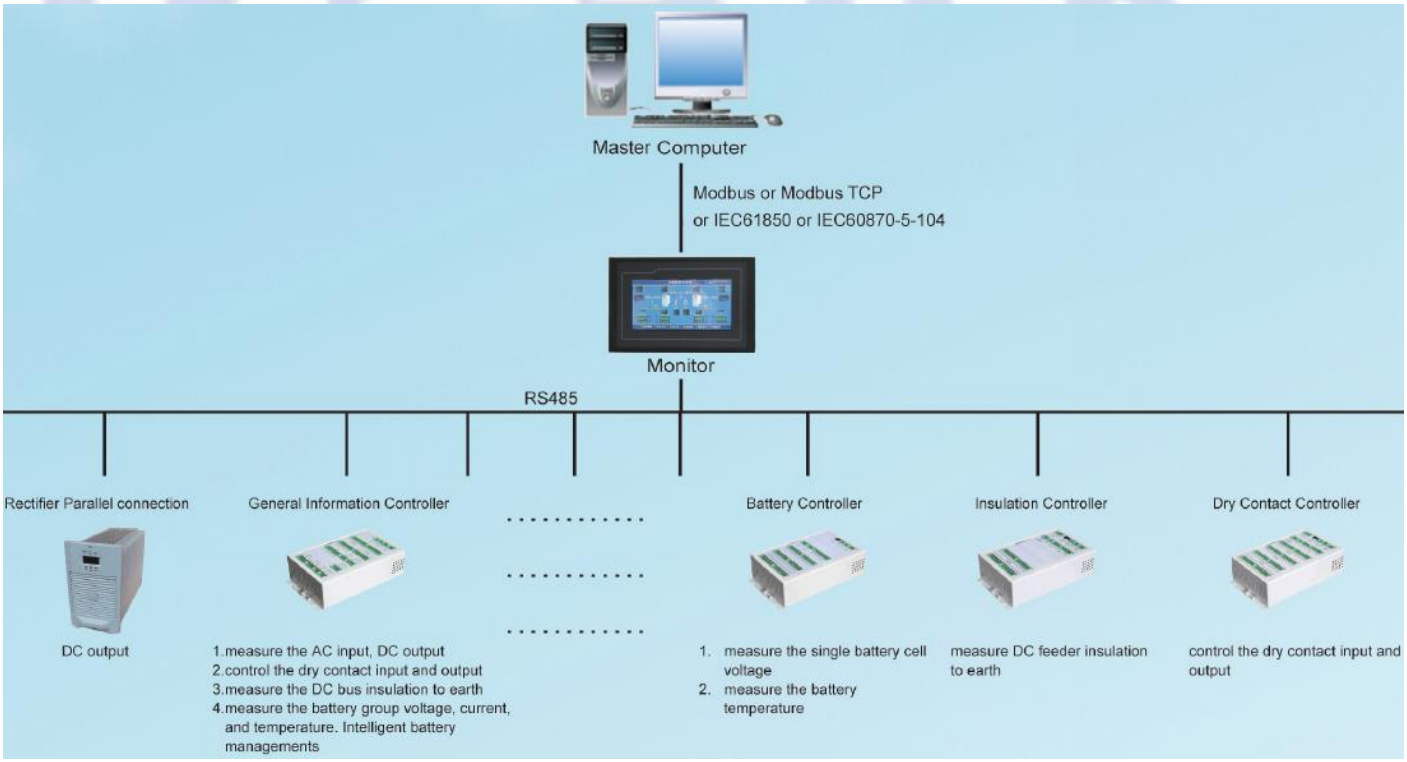
DC System Controllers



Chapter 1 Overview

Name	Model	Function summary
Monitor host	JK070	Color screen 800*480 pixels LCD, touch screen
ZHCL unit	ZHCL-2	Detects 1 AC voltage Detects 3 DC voltage, 2 current,1 temperature Detects 24 DI, provides 8 DO
ZHCL unit	ZHCL-3	Detects 2 AC voltage Detects 6 DC voltage, 4 current,2 temperature Detects 32 DI, provides 8 DO
DCXJ unit	DCXJ-19	Detects 19 battery cell voltage, 1 temperature
DCXJ unit	DCXJ-55	Detects 55 battery cell voltage, 2 temperature
JYJC unit	JYJC-64	Detects 2 bus insulation, 64 branch insulation
JYJC unit	JYJC-32	Detects 2 bus insulation, 32 branch insulation
KGL unit	KGL-64	Detects 64 DI, provides 8 DO

Table 1-1 specification table

1.1.1 ZHCL-2 unit

measure 1 AC voltage.
measure 3 DC voltage, 2 current,1 battery ambient temperature.
measure 24 DI, provides 8 group switch quantity output.
measure 1 DC bus insulation.
Can control 5/7 degree V-drop unit.
Applicable to 1 DC bus, 1 battery group, 1 group of chargers system.

1.1.2 ZHCL-3 unit

measure 2 AC voltage .
measure 6 DC voltage, 4 current, 2 battery ambient temperature.
measure 32 DI, provides 8 group switch quantity output.
measure 2 DC bus insulation.
Can control 5/7 degree V-drop unit.
Applicable in 2 DC bus, 2 battery group, 2 group of chargers system.
.

1.1.3 DCXJ-19 unit

measure 19 battery cells rated voltage 12V.
measure 1 battery ambient temperature

Being suitable for9/ 18 battery cells.

1.1.4 DCXJ-55 unit

measure 55 battery cells rated voltage 2V.
measure 2 battery ambient temperature
Being suitable for 54/108 battery cells.

1.1.5 JYJC-64 unit

measure 1 DC bus insulation
Examines 64 feeder insulation
Being suitable uses in the system which feeder quantity is more than 32.

1.1.6 JYJC-32 unit

measure 1 DC bus insulation
measure 32 feeder insulation
Being suitable in the system which feeder quantity is less than 32.

1.1.7 KGL-64 unit

measure 64 dry contact input.
Provide 8 dry contact output.

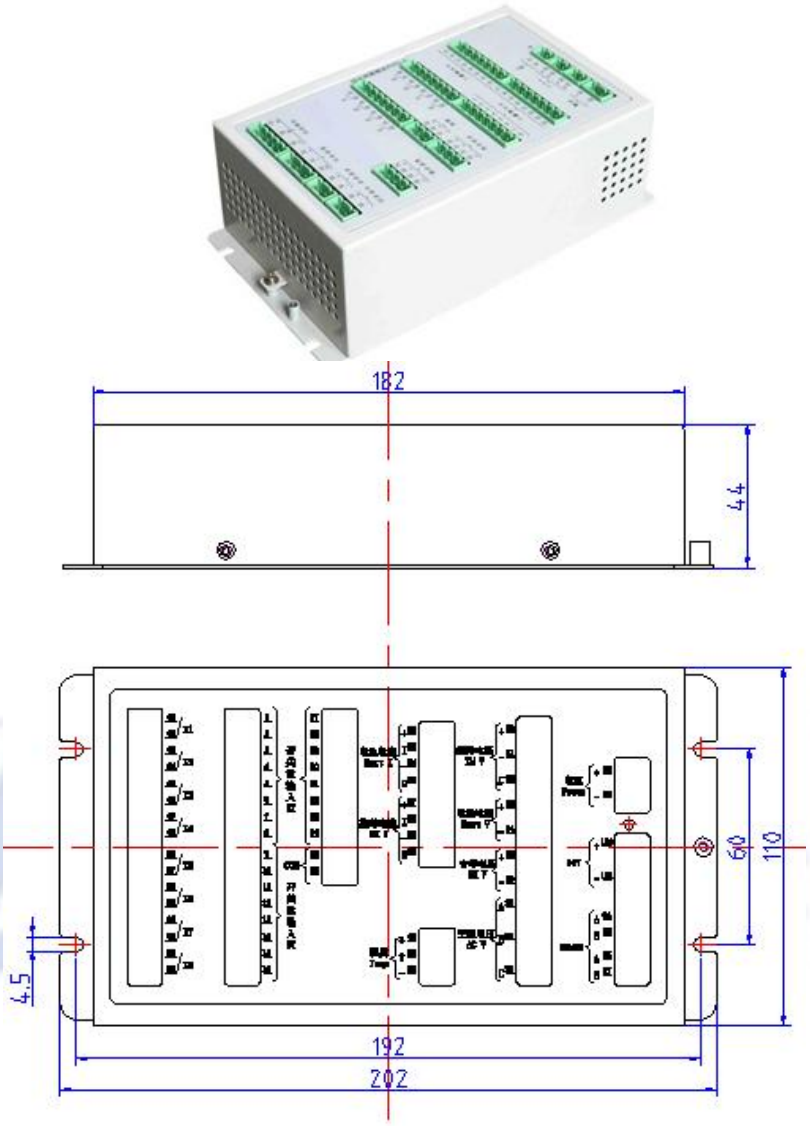
Chapter 2： ZHCL-2 unit

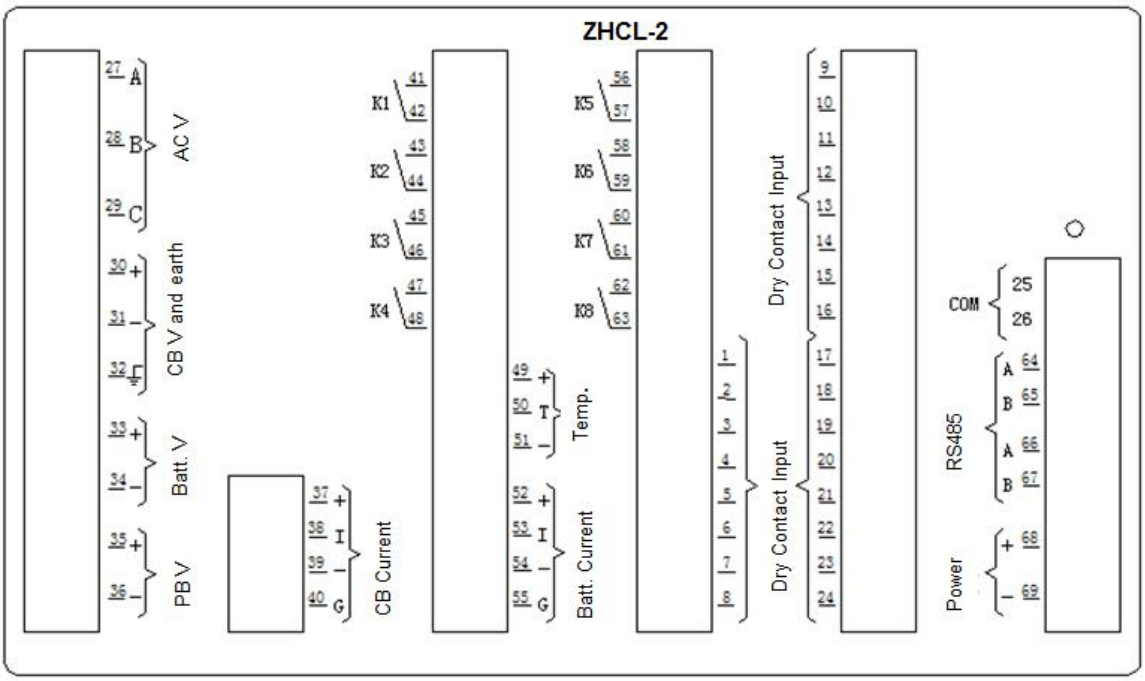
2.1 Overview

ZHCL-2 unit measures necessary data, and transfers it to monitor JK070 by RS485.

- AC measure： measure one AC input
- DC measure： measure 3 DC voltage，2 current，1 battery ambient temperature，1 DC bus insulation.
- Dry contact input： measure 24 dry contact input.
- Dry contact output：measure 8 dry contact output, K1、K2、K3 can be used to control V-drop unit.

2.2 Interface Explanation

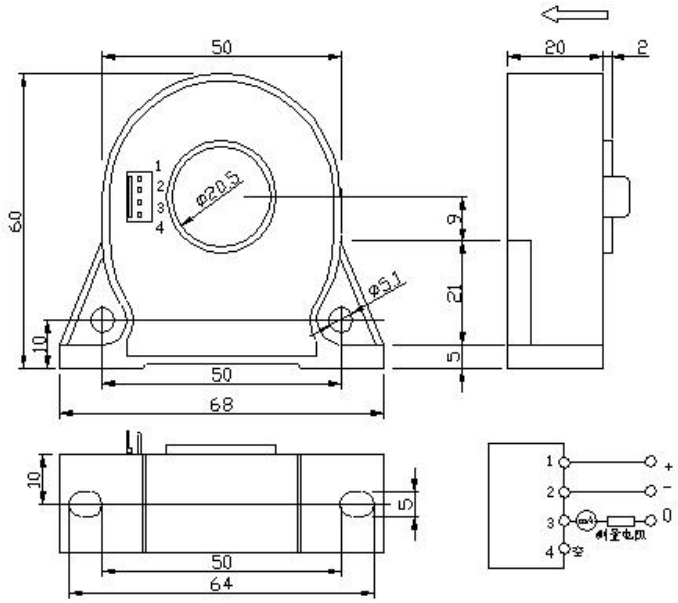




Identify	Description	
Dry contact input	1	# 1 dry contact input
	…	…
	24	# 24 dry contact input
COM	common port for dry contact input	
K1	Dry contact output 1, Capacity AC250V/5A，DC30V/5A.	
…	…	
K8	Dry contact output 8, Capacity AC250V/5A，DC30V/5A.	
AC V	AC voltage. Range：0~500VAC； measure precision≤±1.0%.	
CB V	DC Control bus voltage. Range ： 0~300VDC ； measure precision≤±0.5%. Pin #32: earth, measure the DC bus insulation resistance to earth.	
PB V	DC controlling bus voltage. Range ： 0~300VDC ； measure precision≤±0.5%.	
Batt. V	Battery voltage. Range：0~300VDC；measure precision≤±0.5%.	
CB current	DC Control bus current sensor. Range ： 0~100A.measure precision≤±1%.	
Batt current	Battery current sensor. Range：0~±100A.measure precision≤±1%.	
Temp.	Battery ambinet temperature sensor. Range：-10℃~+100℃.measure precision≤±3℃.	
RS485	RS485 interface.	
Power	Power input，Range：90~300VDC.	

Table 3-1 ZHCL-2 Interface Explanation

2.3 Current Sensor



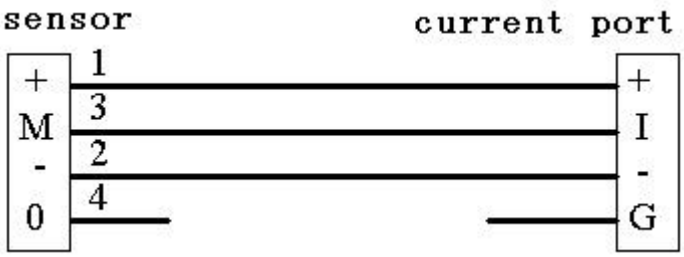


Figure 3-1 Current Sensor Wiring schematic

2.4 Temperature Sensor

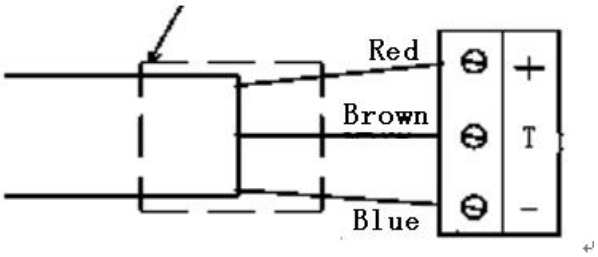


Figure 3-2 temp Sensor Wiring schematic

2.5 Dry Contact Input

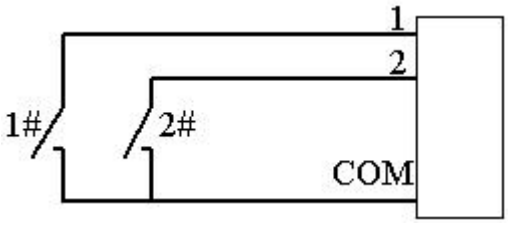


Figure 3-3 Dry Contact input Wiring schematic

2.6 Dry Contact Output

ZHCL-2 offers 8 relay output，capacity AC250V/5A，DC30V/5A，.K1、K2、K3 can be used to control V-drop unit.

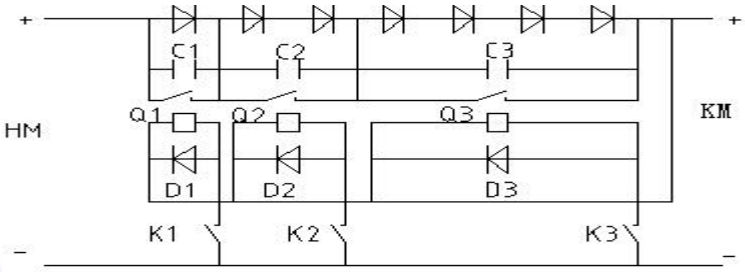


Figure 3-4: to control the 7 degree V-drop Wiring schematic

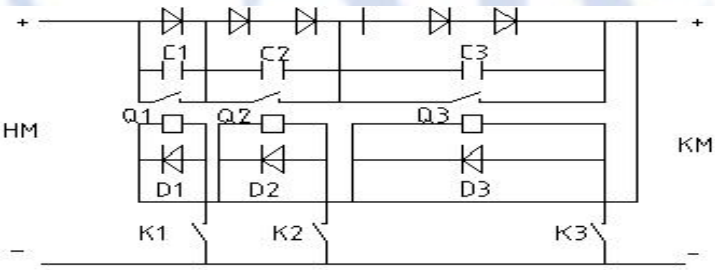


Figure 3-5: to control the 5 degree V-drop Wiring schematic

2.7 Notes

1. ZHCL-2 unit collect AC voltage and DC voltage, these signalsl are strong, and easily interfered, so they should be separated and can not be with other data cable to prevent interference.
2. When there is other insulation measuring device in the system, should disconnect the pin #32 earth.
3., check the current sensor wiring carefully. If you found the current sensor temperatures are high, you should immediately disconnect the power supply, check the wiring.
4. The power supply for current sensor can not be used for other equipment.
5. if there is battery controller DCXJ-19 or DCXJ-55 unit, the temperature sensors should be used in DCXJ-19 or DCXJ-55 unit.

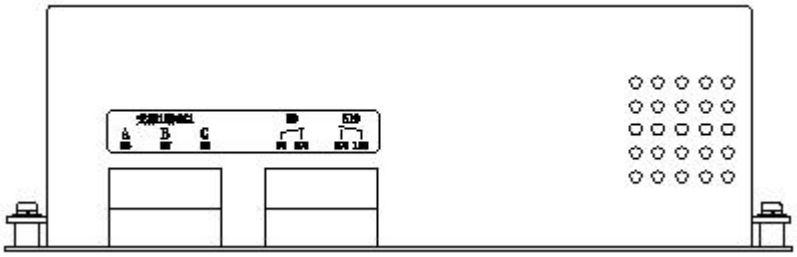
Chapter:3： ZHCL-3 unit

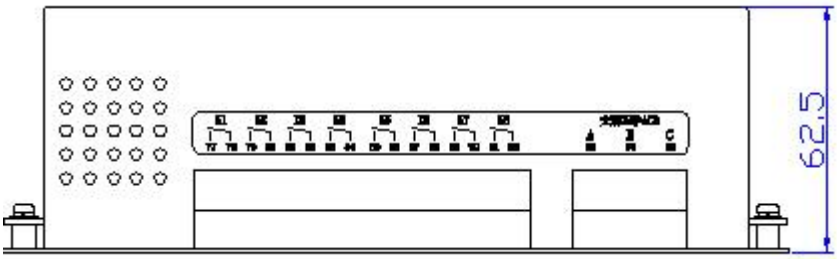
3.1 Overview

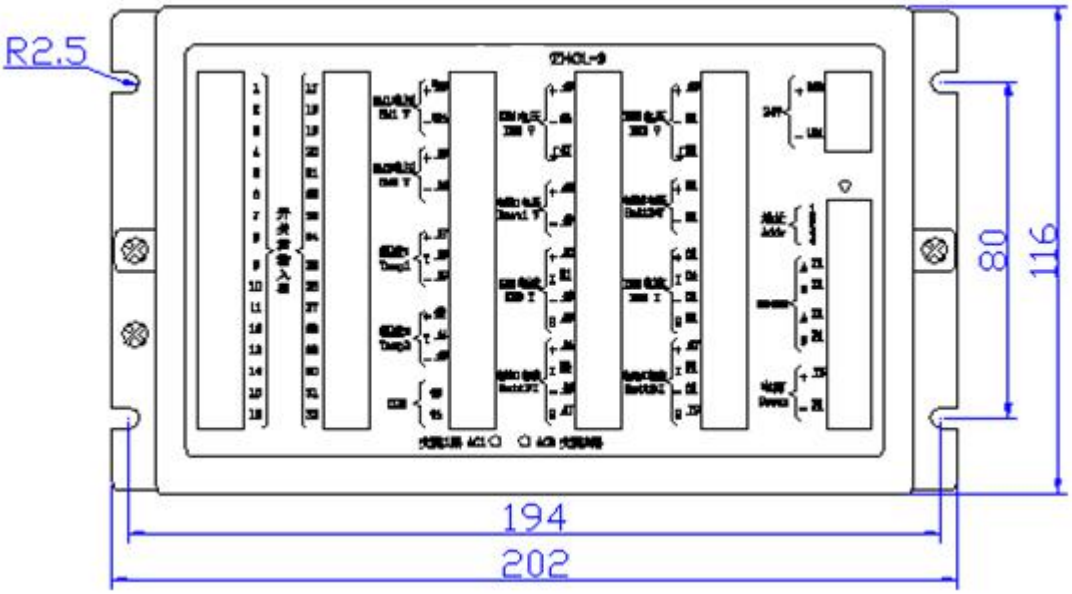
ZHCL-3 unit measures necessary data, and transfers it to monitor JK070 by RS485.

- AC measure： measure two AC input
- DC measure： measure 6 DC voltage，4 current，2 battery ambient temperature，2 DC bus insulation.
- Dry contact input： measure 32 dry contact input.
- Dry contact output：measure 8 dry contact output, K1、K2、K3 can be used to control V-drop unit.

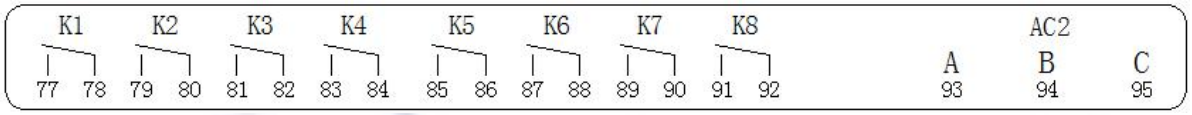
3.2 Interface Explanation

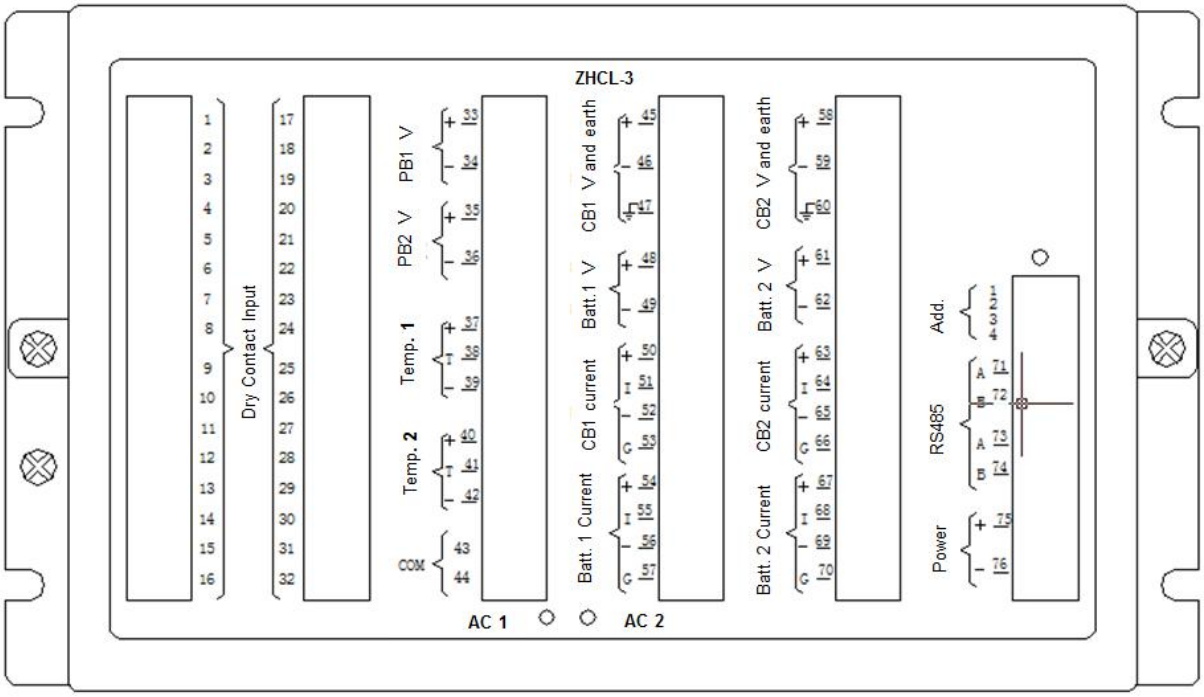






ZHCL-3 assembly drawing see figure 3-1.





Identify	Description	
Dry contact	1	#1 dry contact input

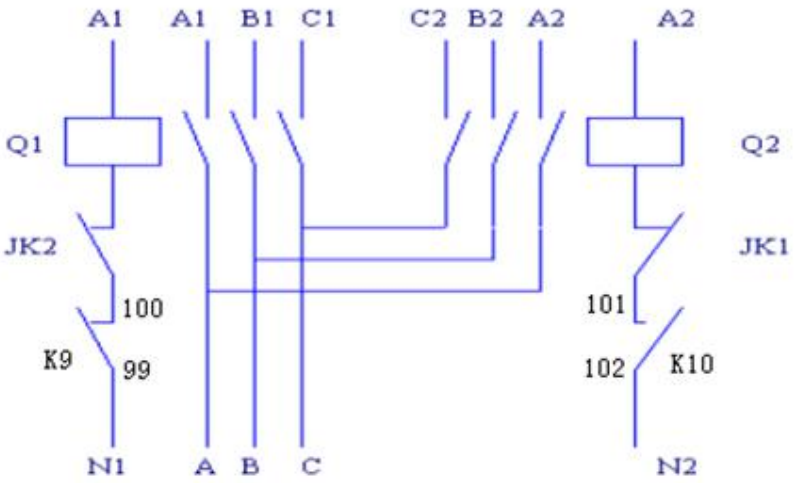
input	…	…
	32	# 32 dry contact input
COM	common port for dry contact input	
K1	Dry contact output 1, Capacity AC250V/5A，DC30V/5A.	
…	…	
K8	Dry contact output 8, Capacity AC250V/5A，DC30V/5A.	
K9	AC 1 ATS switch control. Capacity AC250V/5A，DC30V/5A.	
K10	AC 2 ATS switch control. Capacity AC250V/5A，DC30V/5A.	
AC1	AC1 voltage.	Range：0~500VAC；measure precision≤±1.0%.
AC2	AC2 voltage.	
CB1 V	DC Control bus 1 voltage.	Range：0~300VDC；measure precision≤±0.5%.
PB1 V	DC Switching bus 1 voltage.	
Batt1 V	Battery 1 voltage	
CB2 V	DC Control bus 2 voltage.	
PB2 V	DC Switching 2 voltage.	
Batt2 V	Battery 2 voltage	
CB1 current	DC Control bus 1 current sensor	Range：0~100A. measure precision≤±1%
BATT1 current	Battery 1 current sensor	
CB2 current	DC Control bus 2 current sensor	
Batt2 current	Battery 2 current sensort	
Temp1	Battery 1 ambient temperature	Range：-10℃~+100℃. measure precision≤±3℃.
Temp2	Battery 2 ambient temperature	
Addr	ZHCL-3 unit address，ON position is 0，reverse position is 1.	
RS485	RS485 interface.	
Power	Power input，Range：90~300VDC.	

Table 4-1 ZHCL-3 Interface Explanation

3.3 AC 1 and AC2 ATS switching control

ZHCL-3 AC measure the voltage of three-phase three-wire mode .AC voltage connect to AC voltage measurement port directly , without via other conversion. "AC 1" "AC 2" ports are the ports for AC voltage measurement. "K9" "K10" ports are connection ports for AC switching control ATS.

The working concept as below:



A1 B1 C1: AC1 input
Q1: AC contact of AC1
JK1: NC for Q1

A2 B2 C2: AC2 input
Q2: AC contact of AC2
JK2: NC for Q2

Figure 4-1 AC control schematic

while AC power on,，K9、JK2 is NC contact，The Q1 coil with AC，Q1 close, AC1 start working, when Q1 close, JK1 open, it will realize the AC interlocks
when AC1 is off, K9 will open, . Q1 coil power off, Q1 will open, AC1 is out. At the same time JK1 close. After 4~6 seconds, if AC1 is ok, K10 will close, Q2 coil power on, Q2 will close, AC2 start working. When Q2 close, JK2 will open.

3.4 Current Sensor

See figure 3-1.

3.5 Temperature Sensor

See figure 3-2. (the same with ZHCL-2 unit)

3.6 Dry contact input

See figure 3-3.(the same with ZHCL-2 unit)

3.7 Dry contact output

See figure 3-5, figure 3-6. (the same with ZHCL-2 unit)

3.8 Notes

1. When using AC1 and AC2 switching control, K9 should control AC 1 switch, and K10 control AC2 switch. Can not reverse.
2. If there is only one AC input in the system, the AC voltage should be connected to AC 1 port.
3. ZHCL-3 unit collect AC voltage and DC voltage, these signalsl are strong, and easily interfered, so they should be separated and can not be with other data cable to prevent interference.
4. When there is other insulation measuring device in the system, should disconnect the pin #47 and #60 earth.
5. check the current sensor wiring carefully. If you found the current sensor temperatures are high, you should immediately disconnect the power supply, check the wiring.
6. The power supply for current sensor can not be used for other equipment.
7. if there is battery controller DCXJ-19 or DCXJ-55 unit, the temperature sensors should be used in DCXJ-19 or DCXJ-55 unit.

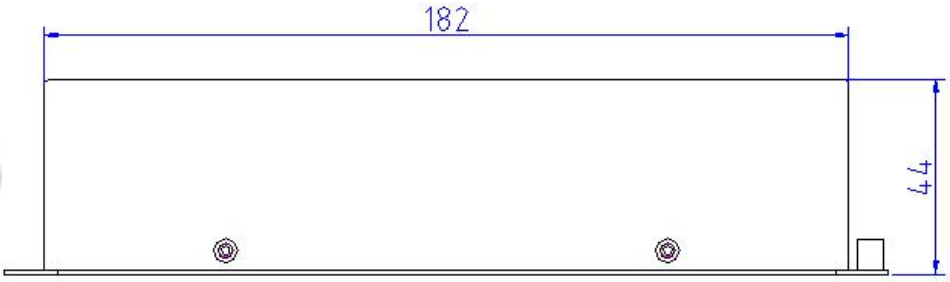
Chapter:4： Battery Controller DCXJ-19 UNIT

4.1 Overview

DCXJ-19 unit measures the battery cell voltage, temperature, and transfers the data to the monitor JK070 by RS485.

- Measures 19 cell’s voltage (12V).
- Measures 1 battery ambient temperature.

4.2 Interface Explanation



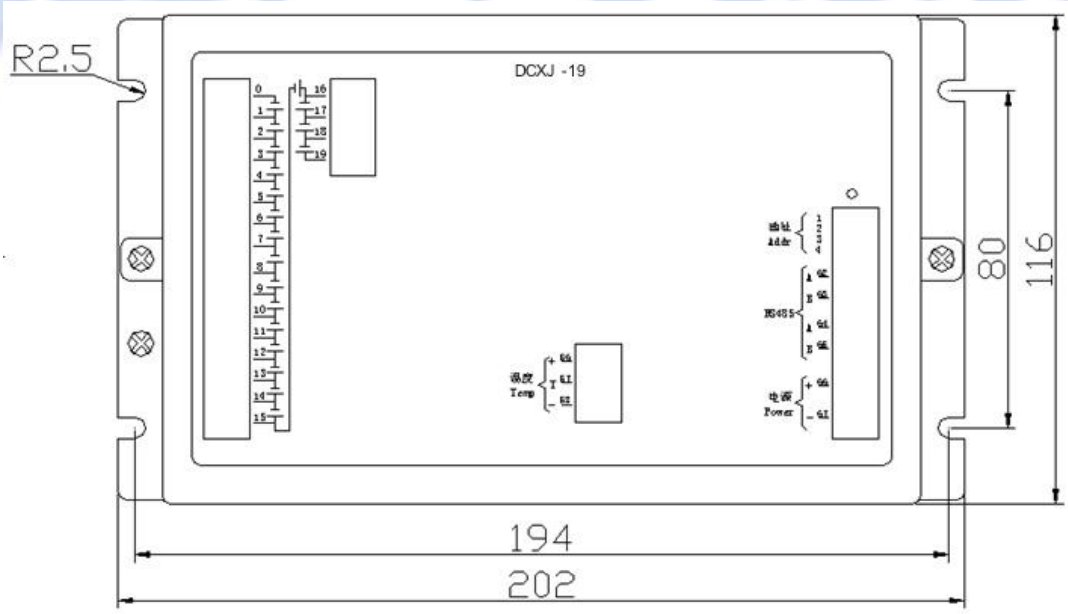


Figure 5-1 DCXJ-19 Assembly drawing

Identify	Description

0	#1 cell negative. (battery's negative)	Range：0~17V.
1	#1 cell positive. （ #2 cell negative ）	
2	#2 cell positive. （ #3 cell negative ）	
…	…	
19	#19 cell positive. （battery's positive）	
Temp1	Temperature sensor 1 interface	Range：-10℃~+100℃.
Temp2	Temperature sensor 2 interface	
Addr	Unit address，ON position is 0，reverse position is 1..	
RS485	RS485 interface.	
Power	Power supply，range 90~300VDC.	

Table 5-1 DCXJ-19 Interface Explanation

4.3 Wiring schematic

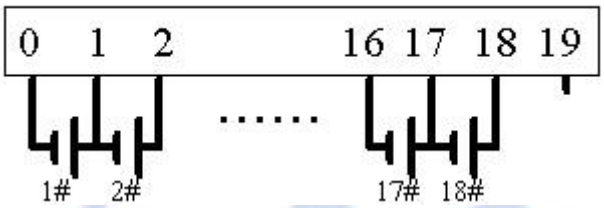


Figure 5-2 DCXJ-19 Wiring schematic

		1	2	3	4
Group 1	1#	0	0	0	0
Group 2	3#	0	0	1	0

Table 5-2 DXCJ-19 address table

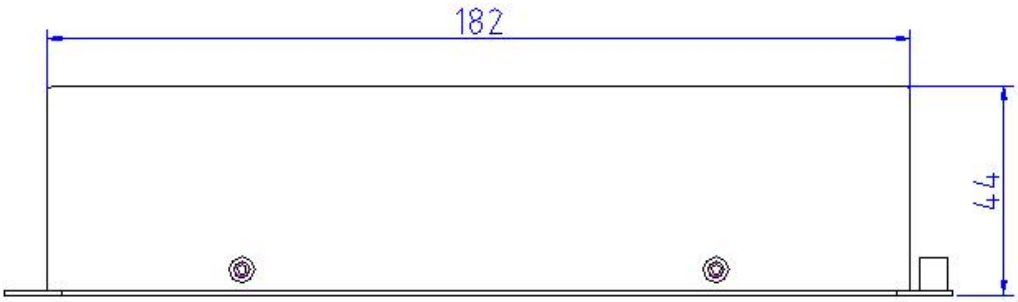
Chapter:5： Battery controller DCXJ-55 UNIT

5.1 Overview

DCXJ-55 unit measures battery cell's voltage, temperature, and transfers the data to monitor JK070 by RS485.

- Measures 55 cell's voltage (2V).
- Measures 2 battery ambient temperature

5.2 Interface Explanation



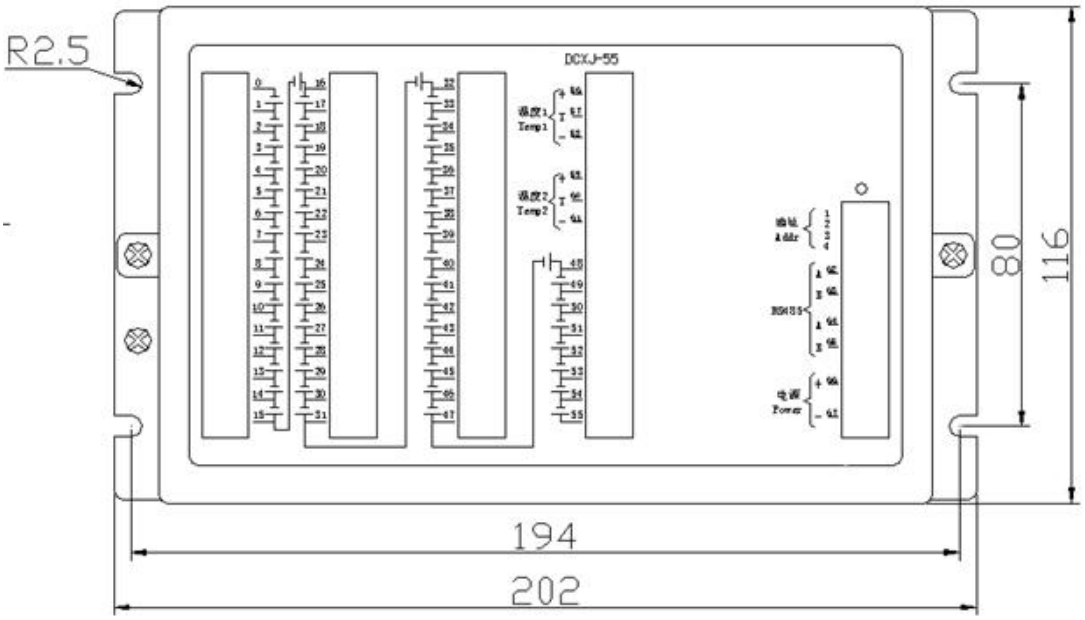


Figure 6-1 DCXJ-55 Assembly drawing

Identify	Description	
0	#1 cell negative.(battery's negative)	Range：0~4V.
1	#1 cell positive.（ #2 cell negative ）	
2	#2 cell positive.（ #3 cell negative ）	
…	…	
55	#55 cell positive. battery's positive）	
Temp1	Temperature sensor 1 interface	Range：-10℃~+100℃.
Temp2	Temperature sensor 2 interface	
Addr	Unit address，ON position is 0，reverse position is 1..	
RS485	RS485 interface.	
Power	Power supply，range 90~300VDC.	

Table 6-1 DCXJ-55 Interface Explanation

5.3 Wiring schematic

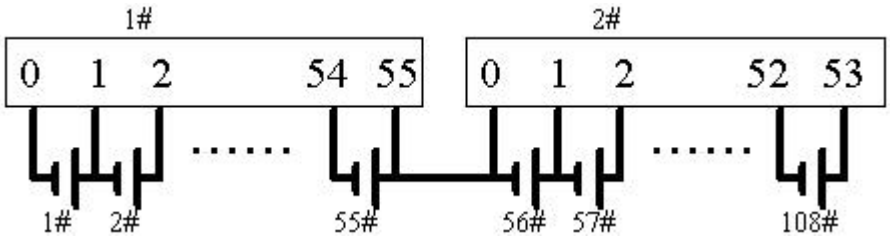


Figure 6-2 DCXJ-55 Wiring schematic

		1	2	3	4
Group1	1#	0	0	0	0
	2#	0	0	0	1
Group2	3#	0	0	1	0
	4#	0	0	1	1

Table 6-2 DXCJ-55 address table

Chapter:6 ： Insulation controller JYJC-64 UNIT

6.1 Overview

JYJC-64 unit measures 2 DC bus insulation to earth、64 feeder insulation, and transfers the data to the DC system monitor JK070 or insulation monitor JY070 by RS485.

- Measures 2 DC bus insulation to earth.
- Measures 64 feeder insulation to earth.
- Measure cycle：≤60S.

6.2 Interface Explanation

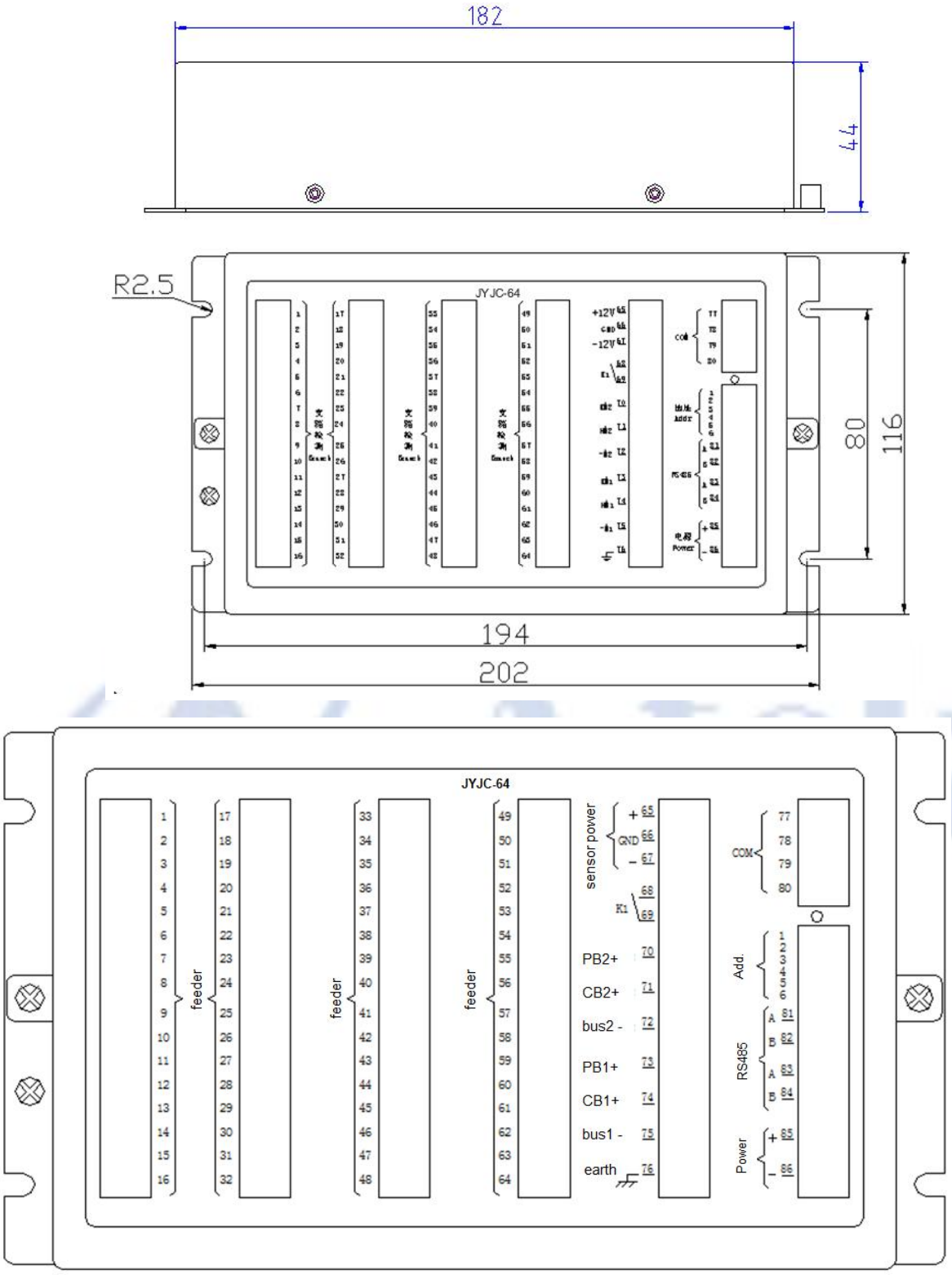


Figure 7-1 JYJC-64 Assembly drawing

Identify	Description

1	#1 feeder sensor port	
……	……	
64	#64 feeder sensor port	
Sensor power	+12V	feeder sensor power supply +12V
	GND	feeder sensor power supply GND
	-12V	feeder sensor power supply -12V
K1	Fault alarm dry contact output NO type relay. NO Capacity AC250V/5A， DC30V/5A， recommended capacity less than DC220V/50mA.	
CB2	DC Control bus 2 positive	
PB2	DC switching bus 2 positive	
-M2	DC Bus 2 negative	
CB1	DC Control bus 1 positive	
PB1	DC switching bus 1 positive	
-M1	DC Bus 1 negative	
⏚	Earth	
COM	JYJC-64 parallel operation interface.	
Addr	JYJC-64 working mode and address，ON position is 0，reverse position is 1..	
RS485	RS485 interface.	
Power	Power supply，range 90~300VDC.	

Table 7-1 JYJC-64 Interface Explanation

6.3 Parallel operation interface

When use 2 JYJC-64，should connect COM port of the 2 JYJC-64 unit.

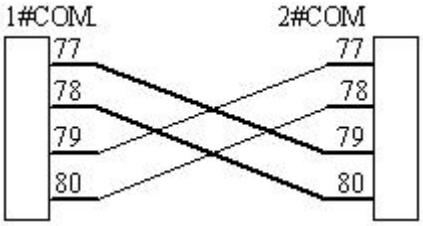
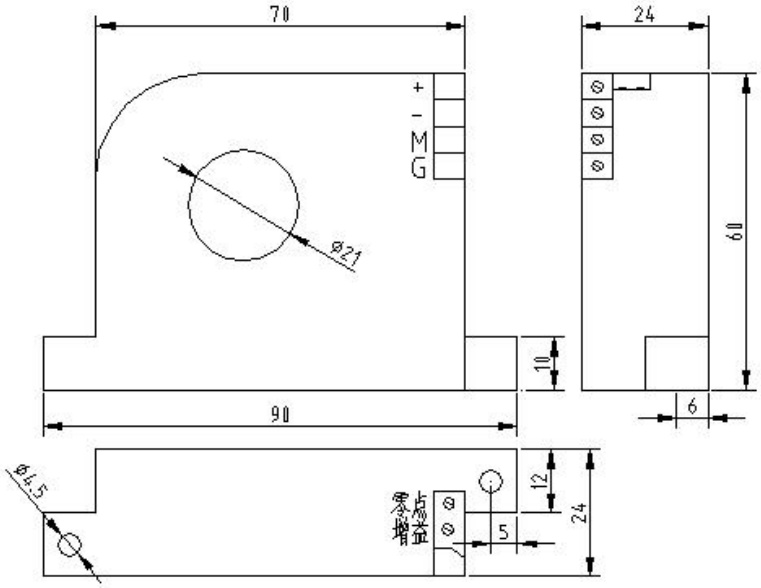


Figure 7-2 parallel operation mode

6.4 Feeder insulation current sensor



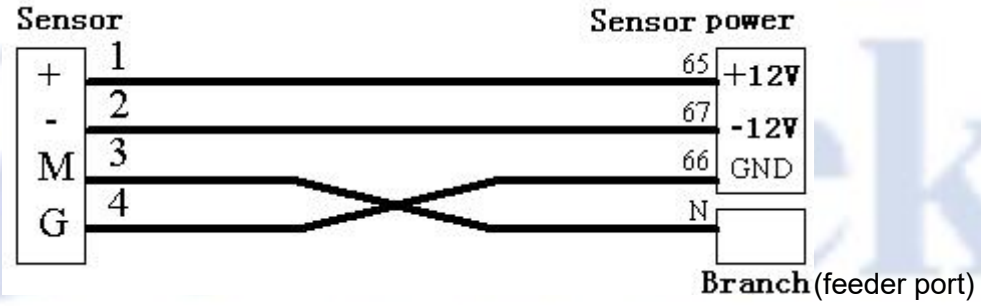


Figure 7-3 Feeder Sensor Wiring schematic

Chapter 7： Insulation controller JYJC-32 UNIT

7.1 Overview

JYJC-32 can measures 1 DC bus insulation、32 feeder insulation, and transfer the data to the DC system monitor JK070 or insulation monitor JY070 by RS485.

- Measures 1 DC bus insulation.
- Measures 32 feeder insulation.

- Measure cycle：≤40S.

7.2 Interface Explanation

Identify	Description	
1	#1 feeder sensor port	
……	……	
32	#2 feeder sensor port	
Sensor power	+12V	feeder sensor power supply +12V
	GND	feeder sensor power supply GND
	-12V	feeder sensor power supply -12V
K1	Fault alarm dry contact output NO type relay. NO Capacity AC250V/5A，DC30V/5A，recommended capacity less than DC220V/50mA.	
CB2	DC Control bus 2 positive	
PB2	DC switching bus 2 positive	
-M2	DC Bus 2 negative	
CB1	DC Control bus 1 positive	
PB1	DC switching bus 1 positive	
-M1	DC Bus 1 negative	
⏚	Earth	
COM	JYJC-32 parallel operation interface.	
Addr	JYJC-32 working mode and address，ON position is 0，reverse position is 1	
RS485	RS485 interface.	
Power	Power input，range: 90~300VDC.	

Table 8-1 JYJC-32 Interface Explanation

Others see chapter 7, all the same parameter with JYJC-64.

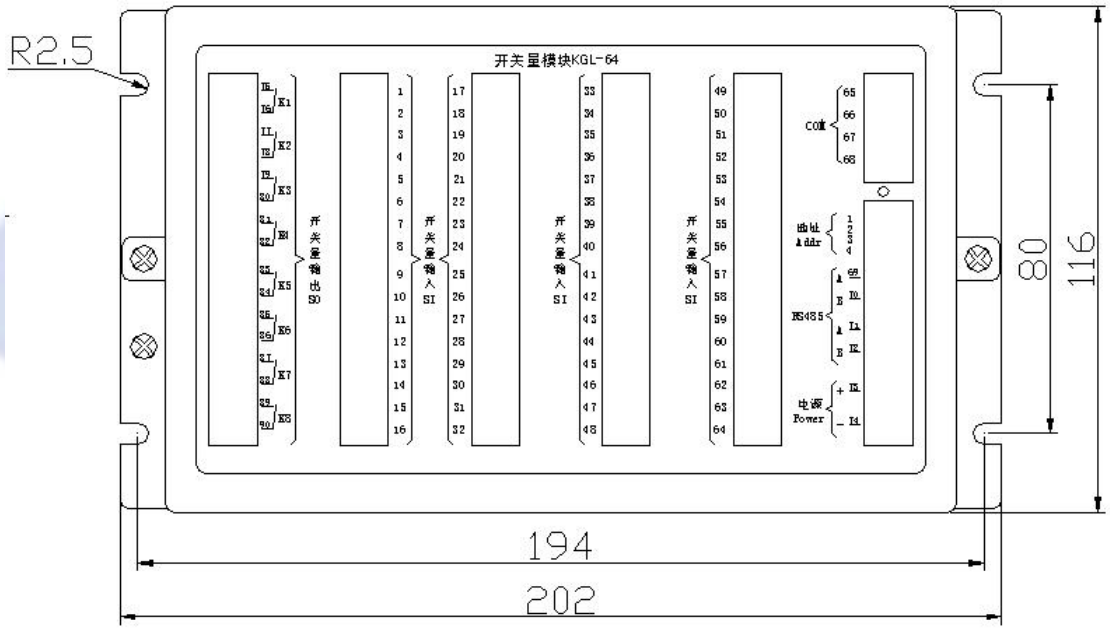
Chapter 8: Dry contact controller KGL-64 UNIT

8.1 Overview

KGL-64 unit measures the system dry cotnact signal, and transfers the data to the DC system monitor JK070 or insulation monitor JY070 by RS485.

- Measure 64 dry contact input from the DC system.
- Offer 8 dry contact output to other devices.

8.2 Interface Explanation



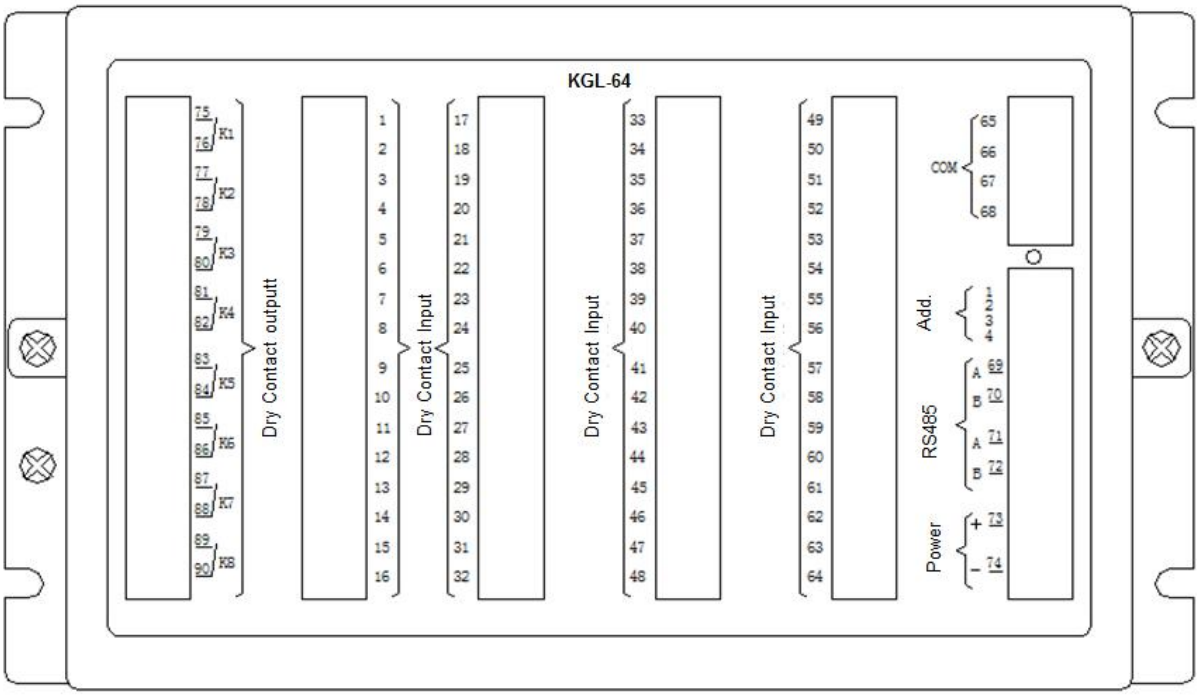


Figure 9-1 KGL-64 Assembly drawing

Identify	Description
1	#1 dry contact input
…	…
64	#2 dry contact input
COM	common port for dry contact input
K1	Dry contact output 1, Capacity AC250V/5A，DC30V/5A. recommended capacity less than DC220V/50mA.
…	…
K8	Dry contact output 8, Capacity AC250V/5A，DC30V/5A. recommended capacity less than DC220V/50mA.
Addr	KGL-64 parallel address，ON position is 0，reverse position is 1..
RS485	RS485 interface
Power	Power input，range: 90~300VDC.

Table 9-1 KGL-64 Interface Explanation