<Read the operating manual carefully before installation>

Automatic Transfer Switch

Operating Manual

Suggest send the instruction to final user

No.ZXS1GNCN22051606

CONTENT

1. Overview

This series of double power automatic transfer switch is suitable for automatic transfer between two power sources in emergency power supply system with rated working voltage of 400V and below, rated frequency of 50Hz and rated current of 16A to 3200A, to ensure continuous, safe and reliable operation of important loads (such as fire fighting load). It is widely used in hospitals, shopping malls, banks, chemical industry, high-rise buildings, military facilities, fire protection and other important places where power cuts are not allowed.

This product conforms to GB/T 14048.11-2016 Low-voltage switchgear and controlgear-part 6-1: multi-functional electrical switch appliances-switching device, conforms to "GB 50045-1995 high-rise civil building fire code", 2005 revision, "GB 5006-2014 Code for Fire Protection in Building Design", "GB 51309-2018 Standard for Fire Emergency Lighting and Evacuation Indication System", "GB 17945-2010 Fire Emergency Lighting and Evacuation Indication System", "GB 51348-2019 Electrical Design Standards for Civil Buildings, etc.

2. Performance and characteristics

☐ With overvoltage, undervoltage and open phase switching function.

☐ The main loop adopts double breakpoint horizontal pull structure, connected and broken reliably;

☐ In line with the requirements of the isolation switch standard, with clear on-off position indication and padlock, reliable isolation function;

☐ There is a disconnect position (disconnect the common and standby power supply at the same time), to meet the requirements of fire linkage;

☐ Four operating functions: emergency manual operation, electric remote control operation, automatic control state emergency disconnect operationAutomatic control operation.

3. Normal working conditions

☐The operating ambient temperature ranges from -5℃ ~ +40℃, and the average temperature within 24 hours does not exceed +35℃. The ambient temperature ranges from -25℃ ~ +55℃, and can reach +70℃ in a short time (within 24 hours).

☐The elevation of the installation site shall not exceed 2000m.

☐The relative humidity of the air at the installation site should not exceed 50% when the ambient air temperature is +40℃. The relative humidity can be higher at a lower temperature. For example, when the average minimum temperature of the wettest month is +20℃, the average maximum relative humidity of that month can reach 90%. Appropriate measures should be taken to prevent condensation caused by temperature change.

☐Pollution Class 3 (there is conductive pollution, or the dry non-conductive pollution becomes conductive due to condensation

☐ATSE can be installed vertically or horizontally in the cabinet. Special orders are required for special requirements.

☐Product shell protection grade is IP20

☐Overvoltage class

- Main circuit Class III
- Control and auxiliary circuits Class II.

☐Conversion controller and auxiliary circuit installation class: II.

4. Model and its meaning

☐ ☐ ☐ - 100 ☐ / ☐ ☐ R ☐

- Split controller type:
  Y-701 type(LED indicator light controller)
  Y-702 type (LCD liquid product display control brush)
  Y-703 type (LCD liquid product display control brush)
- Working mode
  R: self-throw self-restore
  S: self-throw non self-restore or mutual standby
  T:Tape communication
  Note: factory default self-throw self-restore
- Rated current
- Poles: 3P, 4P
- Product code
  GN: three-phase sampling intelligent type
  GNF: three-phase sampling type
- Frame size: 100,160,250,630,1600,3200
- Design number
- PC double power automatic switch
- Enterprise code

5. Main technical parameters

Frame size	100	160	250	630	1600	3200
Rated operating current Ie (A)	16,20,25,32,40 50,63,80,100	125,160	200,225,250	315,350,400 500,630	800,1000 1250,1600	2000,2500 3200
Rated insulation voltage	690V			800V	1000V	
Rated impulse withstand voltage	8KV			12KV		
Rated working voltage	AC400V/50Hz					
Use category	AC-33B	AC-33iB				
Rated short circuit making capacity	8KA	17KA		26KA	67.5KA	105KA
Rated short time withstand current	5kA/30ms	10kA/60ms		12.6kA/60ms	32kA/60ms	50kA/60ms
Switching time	2.5s			1.2s/2.5s	1.2s	1.8s 2.4s

6. Switch structure description

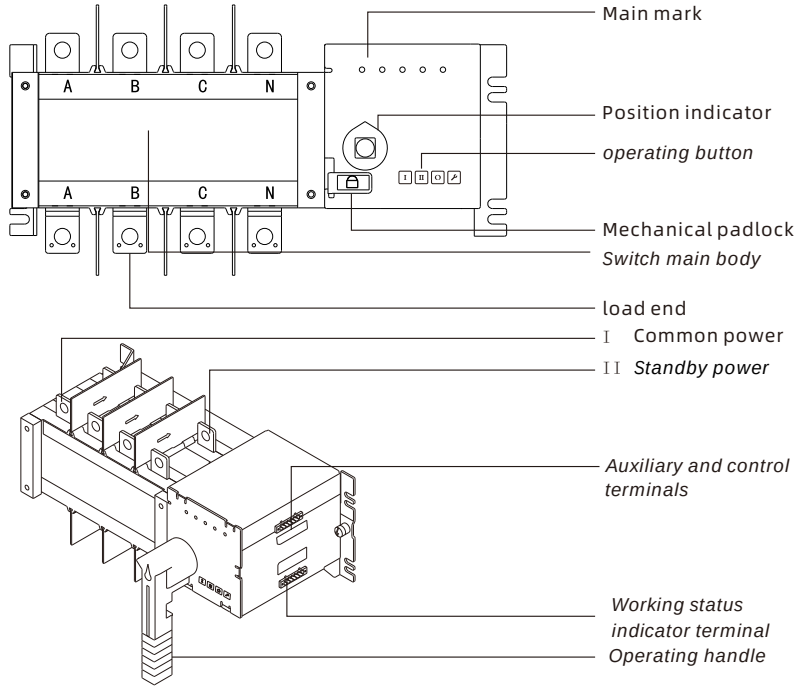


Figure 2

① Operation button: The operation button is used to control the switch in the manual state, and is used to switch the hand/automatic state. You can also use this button if you want to change the working mode of the product.

② Operating handle: When using the operating handle to operate the switch, the power supply of the main circuit must be cut off or the operating button must be in the manual state.

③ Mechanical padlock: when maintenance, first use the operating handle to make the switch in the state of "O off" state, then pull up the mechanical hang.

④ Position indication: mark the working position of the switch (I common use, O power off, II standby).

7. Appearance and installation dimensions

☐ 16A~250A Installation size (two in and one out)

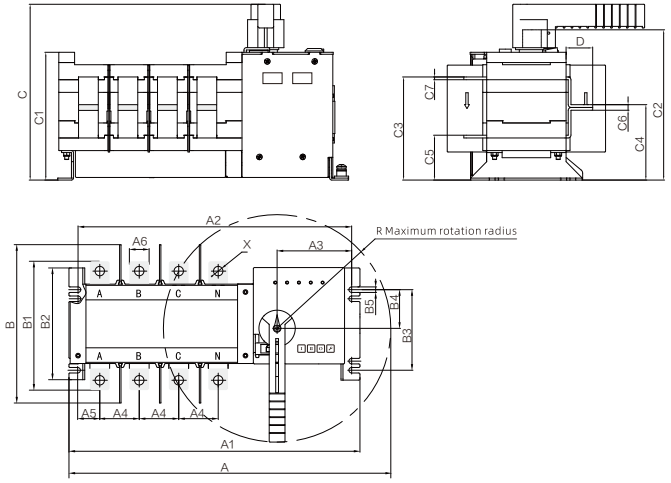


Figure 3

☐ 400A~630A Installation size (two in and one out)

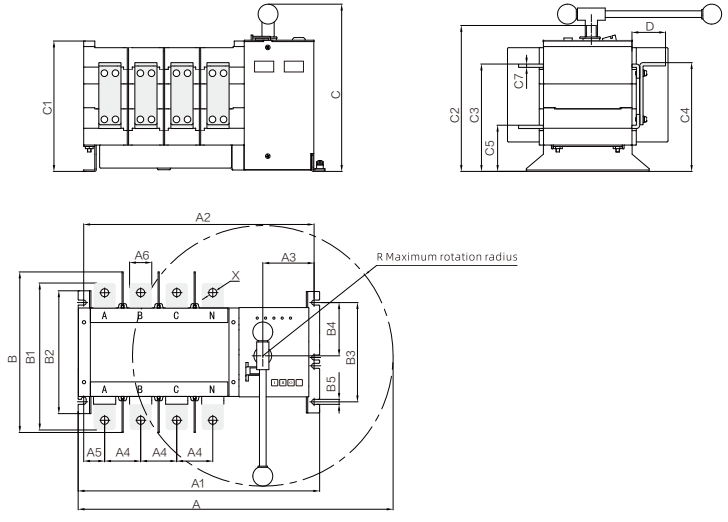
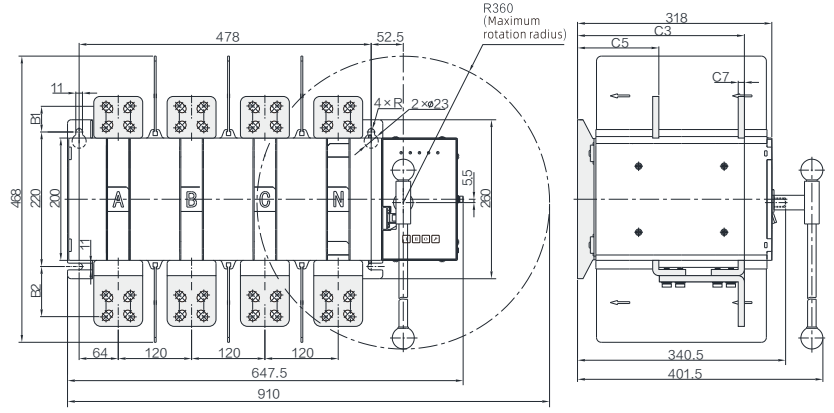


Figure 4

☐ 16A~630A mounting size (two in and one out)

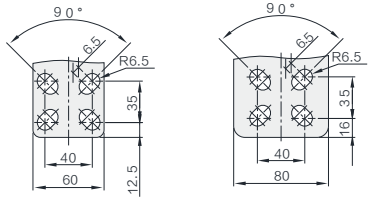
Specifications	Shape and mounting dimension																						
	A	A1	A2	A3	A4	A5	A6	B	B1	B2	B3	B4	B5	C	C1	C2	C3	C4	C5	C6	C7	D	X	R
16-100A	268	260	241	96	30	12	14	145.5	110.5	103	84	44	7	170	118	143	92	67.5	40.5	5	2.5	22.5	6.7	115
125-160A	344	304	283.5	94.5	36	19.3	20	185.5	140	127.5	102	49	7	223	163	187	129	94	56.5	7	3.5	30	9	144
200-250A	408	368.5	347	94.5	50	28	25	200.5	163	141.5	102	49	7	223	162	186	130.5	97	56.5	7	3.5	34	11	144
400/3P	510	375.5	355.5	92.5	65	38	32	289.5	248.5	221.5	179	96	9	303	235	266.5	192.5	193	82.5	-	5	52	11	235
400/4P	570	435.5	415.5	92.5	65	38	32	289.5	248.5	221.5	179	96	9	303	235	266.5	192.5	193	82.5	-	5	52	11	235
630/3P	510	375.5	355.5	92.5	65	38	40	289.5	265	221.5	179	96	9	303	235	266.5	193.5	196	83.3	-	6	60.5	12.5	235
630/4P	570	435.5	415.5	92.5	65	38	40	289.5	265	221.5	179	96	9	303	235	266.5	193.5	196	83.3	-	6	60.5	12.5	235

☐ 1000~1600A mounting size (two in and one out)



Specifications	Shape and mounting dimension				
	B1	B2	C3	C5	C7
1000A	41.5	65.5	272	132	8
1250A	42	74	272	132	8
1600A	42	82	273	133	10

Note: The shell frame tripole product is only less N pole on the basis of four poles, and the installation size is consistent with that of four poles.



800~ 1000A　　1250~ 1600A

Figure 5

☐ 2000A~3200A mounting size (two in and one out)

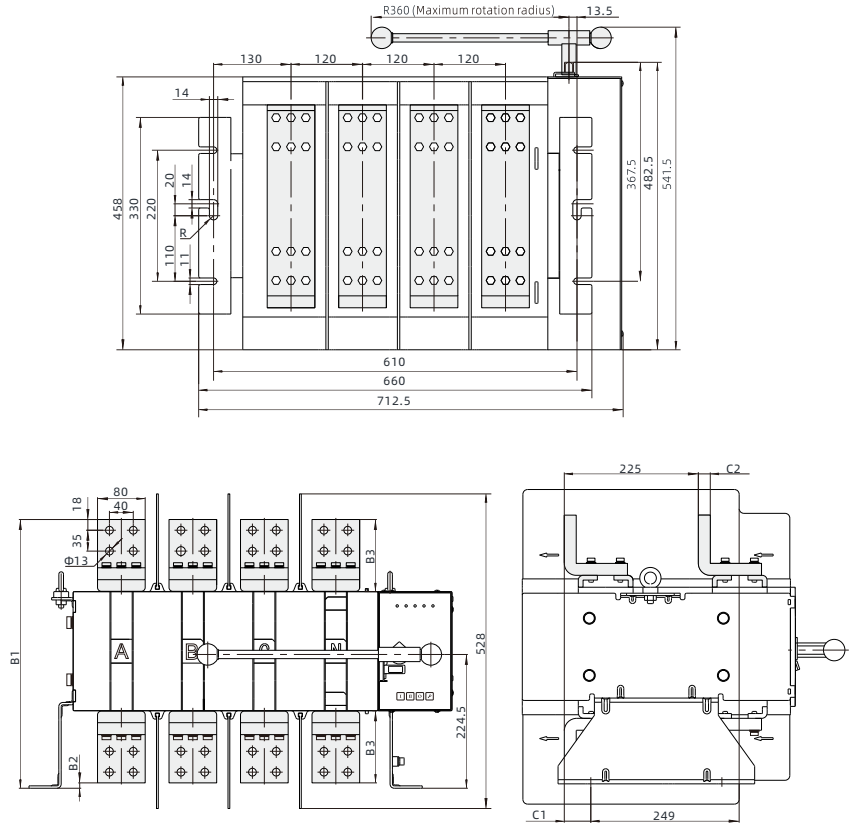


Figure 6

Specifications	Shape and mounting dimension				
	B1	B2	B3	C1	C2
2000A	441	19	111	34.5	10
2500A	446	14	116	39.5	15
3200A	451	9	121	44.5	20

Note: The shell frame tripole product is only less N pole on the basis of four poles, and the installation size is consistent with that of four poles.

8. Use method

8.1. GN Panel description

8.1.1 button instruction

☐The "I" button controls the switch to the I power closing position in manual state. The "O" button controls the switch to the power off position in the manual state, that is, power supplies I and II are disconnected, and the switch load is not out. The "II" button controls the switch to the II power closing position in the manual state. The key is a manual/automatic switch button, and the panel indicator lights up when the switch is in the automatic state.

8.1.2 Indicator description

☐Common power indicator: the common three-phase voltage is in the normal range, the indicator is on; When the phase is missing, the indicator light extinguish; When any phase overvoltage (overvoltage set value 270V), the indicator light flashes quickly; When any phase undervoltage (undervoltage Set to 165V), the indicator blinks slowly.

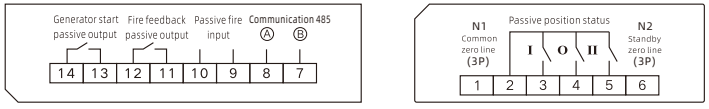
☐Standby power indicator: The standby three-phase voltage is within the normal range, the indicator is on; When the phase is missing, the indicator light is off. When any phase overvoltage (overvoltage set value 270V), the indicator light flashes quickly; When any phase undervoltage (undervoltage Set to 165V), the indicator blinks slowly.

☐Common closing indicator: common power supply is closed, and the indicator is on.

☐ Standby closing indicator: Standby power is closed and the indicator is on. When the switch is in the dual position, the common closing indicator and the standby closing indicator are off.

☐Automatic/Manual indicator: In the automatic state, the indicator is on, and in the manual state, the indicator is off.

8.2 Use method of GN single phase sampling basic auxiliary terminal



☐ Ports 9 and 10 are passive inputs for fire protection. When short-circuiting, the product performs the fire protection linkage function.

☐ Port 11,12 is the feedback signal output after the product performs the fire linkage function, a group of passive signal dry contacts.

☐ Port 13,14 is the generator start signal. Connect this port to the generator controller to realize the generator start and stop control.

☐ Working neutral line input of the three-pole product: port 1 is the normal neutral line, port 6 is the standby neutral line.

☐ Ports 2 and 3 are "I commonly used" position indicator signals, passive output; 2, 4 port for the "power off" position indicator signal, passive output; Port 2 and port 5 are "II standby" position indication signals, passive output.

☐ With communication products, ports 7 and 8 are 485 communication ports, 7 is B (-),8 is A (+), (This function is optional for customers).

8.3. GNF split type wiring and auxiliary terminal usage

☐ Insert one end of the configured connection harness into the corresponding port of the dual power body terminal and the other end into the corresponding port of the controller in line sequence.

☐ Working neutral line input of the three-pole product: port 1 is the normal neutral line, port 6 is the standby neutral line.

☐ Ports 2 and 3 are "I Common" position indicators with passive output.

☐ Ports 2 and 4 are "Power Off" position indicator signals, passive output.

☐ Ports 2 and 5 are "II Standby" position indicators with passive output.

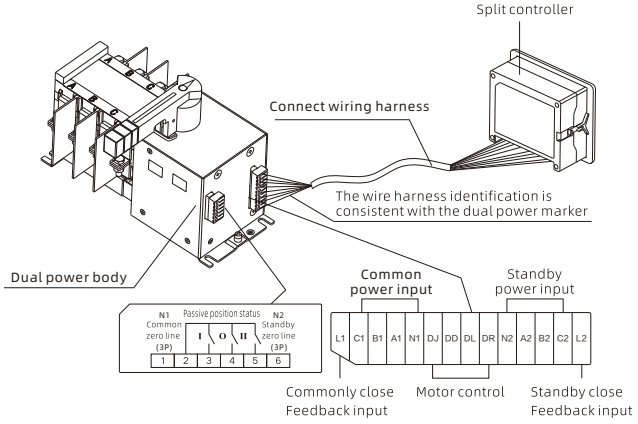


Figure 7

■ Controller description

Y-701 type
(LED indicator light controller)

Y-702 type
(LCD controller)

Y-703 type
(LCD controller)

☐ Controller function

Product model	Y-701	Y-702	Y-703
Installation	Split type		
Display mode	Indicator light	LCD	LCD
Rated duty	Interrupted work system		
Self-throw self-restore	●	●	●
Self-throw non self-restore or complementary	●	●	●
Route II priority	●	●	●
Motor start function	●	●	●
Common power detection	Four-phase detection, three - phase voltage over-voltage detection		
Standby power detection	Four-phase detection, three - phase voltage over-voltage detection		
Passive fire input	●	●	●
DC9-36V Active fire input DC9-36V	●	●	●
Conversion delay adjustable	●	●	●
Voltage real-time display	○	●	●
Common and standby electrical indication	●	●	●
Common and standby overvoltage and undervoltage adjustable	○	●	●
Generator start and stop time adjustable	○	●(F/F1)	●(F/F1)
Programmable outlet	○	●	●
RS485 communication function	○	●(Optional)	●(Optional)
Frequency monitoring	○	○	●
phase sequence detection	○	○	●

Note : ● it has this function. ○it has no this function

☐ Function introduction

A. Self-switching and self-restore: in case of power failure or failure (phase loss, over-voltage and long-term voltage) of the common power supply, ATS will be automatically converted to the standby switch, and ATS will be automatically converted to the common power supply after the restoration of the common power supply.

B. Self-switching without self-restore: When the common power supply is abnormal, the ATS switches to the standby mode,the switch will not be converted to the common use if the common use is restored, and the standby will not be converted to the common use if the standby fails, only manual conversion is allowed.

C. Mutual backup: When the common power supply is abnormal, the ATS switches to the standby mode, the switch will not be converted to common use if the common use is restored, but when the backup fails, the ATS will be converted to common use.

D. Double switching power failure: when in an instruction to the output, ATS can't complete the transformation task within the allotted time, the controller will stop the output instructions, and all the Y-701 will into running water detection, in the form of Y-702 will double jump, according to the press after the "automatic/manual switch button" to cancel failure marks.

☐ Y-701 controller settings

a.self-throw and self-reply, self-throw and non-self-reply and Route ii priority
in the automatic state, press and hold the "A power closing "and" B power closing "buttons to enter the setting. After entering the setting, click the "A power closing" button to switch between the three working modes, and click the "automatic/manual" button to save and exit the setting.

Self-throw self-restore mode

Self-throw non self-restore mode
or complementary

Route II priority mode

☐ Y-702 controller settings

a. Parameter setting menu

Click and press the button of "automatic/manual" for ten times continuously to enter the parameter setting menu, the parameter code is still displayed, click and press the menu of "A power ON" to turn down, and the menu of "B power ON" to turn up.

b. Parameter setting menu

Click "automatic/manual" button again to enter or exit the parameter modification menu, and the parameter code flashes. Click "A power ON" to increase the parameter, and click "B power ON" to reduce the parameter.

C. Save and exit:

Click "automatic/manual" button again to enter or exit the parameter modification menu, and the parameter code A, click "A power ON "to increase the parameter, click "B power ON" to decrease the parameter.

d. Parameter code, range, and default values for Y-702

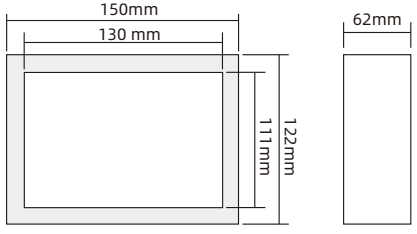
No.	Code parameters	Parameter name	Scope	Factory default
1	U270	Common overvoltage threshold	200-300	280
2	u165	Common undervoltage threshold	100-200	180
3	n270	Standby overvoltage threshold	200-300	280
4	n165	Standby undervoltage threshold	100-200	180
5	⌜	Delay time witching to the common	0-240	1
6	⌝	Delay time witching to the standby	0-240	1
7	q	Generator start time	0-240	5
8	d	Generator shutdown time	0-240	5
9	P	Backlight brightness adjustmentATS	0-10	8
10	E	ATS operating mode	0=Self- throw self- restore 1=Self-throw non self-restore mode or complementary 2=Route II priority mode	0
11	□	Programmable outlet F1	0-8	0
12	J	Local address	1-32	1
13	b	Baud rate	1=2400, 2=4800 3=9600, 4=19200	3
14	H	Factory data reset	(0- 3) 3=Restore factory value	0

Note: please note that when H=003 is pressed to confirm to restore the factory default value, it will restore all the original data, including the sampling coefficient of the common and standby power voltage. After recovery, the voltage data collected by the controller may be ±10V different from the actual normal input voltage.

e.Y-702 definition of programmable output F/F1:

Programmable outlet	Setting range (0-8)	Default output
F/F1	0=start generator normally closed output 1=fire control feedback output 2=abnormal output of common power supply 3= abnormal output of standby power 4= output in automatic state 5= output in manual state 6= output when ATS switch fails 7= output in normal close state 8= output in standby close state	0

☐ Controller outline and installation size



Hole size: 130mm*111mm

Overall size: 150mm*122mm

☐ Y-703 controller settings

a. Enter into the parameter setting Menu

In the main interface, press "⚙" key to enter the parameter browsing menu, parameter Code static display, click "▼" scroll down the menu, click "▲" turn up the menu.

b. Modifying Parameters

Find out the parameter you want to modify, click "⚙" enter the parameter modification mode.At this time, the parameter starts to blink. Click "▲" the value increases, click "▼"

the value decreases , After setting the parameters,click "⚙" to save the parameters.

c. Exit Settings:

No matter in the menu browsing interface or parameter setting interface, click "↩" to exit the setting state and return to the main interface, not confirmed modification parameters

are not saved.

d. Y-703 Parameter codes, ranges, and default values

Serial number	code	Parameter Name	Set range	Factory Default
1	U1H	Main power over voltage threshold	200-300V	270
2	U1L	Main power under voltage threshold	100-200V	165
3	U2H	Standby power over voltage threshold	200-300V	270
4	U2L	Standby power under voltage threshold	100-200V	165
5	F1H	Main power frequency upper limit setting	50.0-75.0Hz	55.0
6	F1L	Main power frequency lower limit setting	40.0-60.0Hz	45.0
7	F2H	Standby power frequency upper limit setting	50.0-75.0Hz	55.0
8	F2L	Standby power frequency lower limit setting	40.0-60.0Hz	45.0
9	C1	The delay time of transfering to the main power	0-240s	1
10	C2	The delay time of transferring to the standby power	0-240s	1
11	C3	Start generator time delay	0-240s	5
12	C4	Stop generator time delay	0-240s	5
13	d	Start generator mode setting	0: Start the generator when priority power is abnormal 1:Start the generator when main power is abnormal 2:Start the generator when the standby power is abnormal	0
14	Lcd	Backlight brightness adjustment	0-10	8
15	E	Operation mode of TSE	0:self-input and self-recover (main power priority) 1:self-input without self-recover 2:self-input and self-recover (standby power priority)	0
16	O1	Programmable relay1	0-8(The details to see Table 5)	0
17	O2	Programmable relay2		6
18	J	Communication: local address	1-32	1
19	b	Communication: the baud rate	1: 2400 2: 4800 3: 9600 4: 19200	3
20	P	Phase sequence detection	0:Function off 1:Function on note: this function alarms only and does not convert alarms when the internal buzzer rings	0
21	F	Abnormal frequency transfer	0:off 1:on	0
22	H	Factory data reset	3:Restore factory defaults,others invalid	0

Note: Please note that all Table 4 data will be restored to default values when H=003 is pressed to restore factory defaults

e. The definition of programmable relay:

programmable relay	Setting range (0 to 8)	The default output
Output 1 is normally closed type Output port 2 is norm ally open type	0 = start generator output 1=fire output feedback 2=main power abnormal output 3=standby power abnormal output 4= automatic state output 5 = manual state output 6 = TSE transfer failure output 7 =main power closing state output 8=standby power closing state output	output 1, the default value is 0 output 2, the default value is 6

f. Check the running time and transfer times

☐ View menu

under the main interface, press and hold "⮌" button more than 3 seconds, enter the query interface, parameter code static display, click "▲" scroll down the code, click "▼" scroll up the code.

Code C01: total run time, the unit for hours.

Code C02t: total transfer times, every conversion count value plus 1 (including manual /automatic transformation, fault transformation, the return of self-input and self-recover).

Code C03: accumulative failure transformation times, due to main power failure transfer to standby power, or because of standby power failure transfer back to main power, every conversion count value plus one.

☐ Check the parameters

Find the code you want to fix and check, click on the "🔧" button, enter the view mode, In this case, the 6 digits are displayed as parameter values. Click again "🔧" button to exit the view mode, return back to code display.

☐ Exit:

Click on the "⮌" button, you can exit the query condition, back to the main interface.

g. Check the failure record

☐ Enter into view menu

Under the main interface, press "🔧" more than 3 seconds, enter the query interface, parameter code static display, click "▼" scroll down the code, click "▲" scroll up the code.

Code E01: The latest fault record

Code E02: The latest secondary fault record

⋮

Code E10: tenth fault record

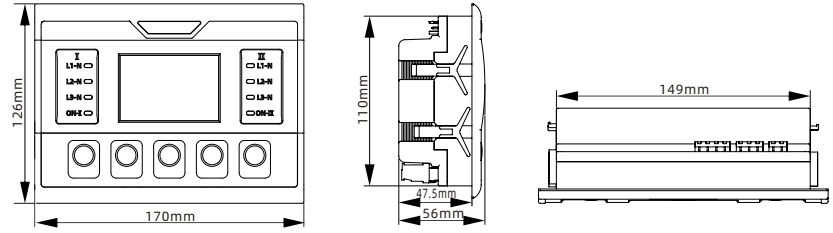
☐ check the record specific parameters

Find the record code you need, click on the "🔧" button, enter the view mode, this mode to view the fault activity, normal power and standby power, ABC three line voltage and the action of power frequency, the query data available plus/minus key to browse each phase voltage. Click "🔧" button to return to the interface of code.

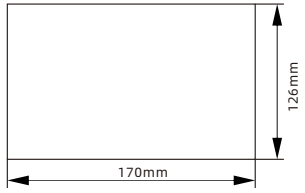
☐ Exit:

Click on "⮌" to exit the query condition, back to the main interface.

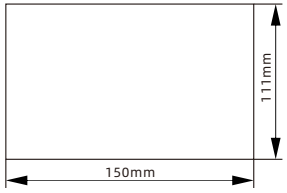
h. Outline and installation dimension



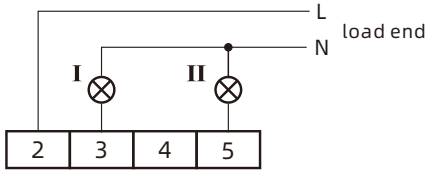
Panel size: 170mm*126mm



Hole size: 150mm*111mm



☐ Integrated (split) type external closing indicating wiring diagram



9. Correct installation method of switch

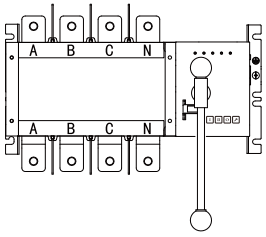


Figure 8 Right

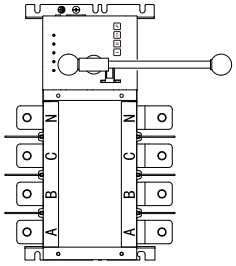


Figure 9 Right

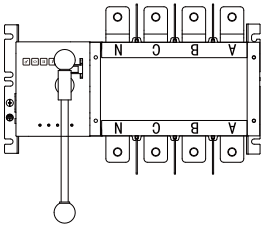


Figure 10 Right

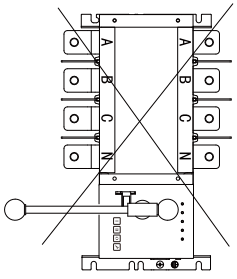


Figure 11 Incorrect

10. Switch wiring instructions

1. See figure 1, figure 2 for primary wiring.
2. This series of dual-power transfer switches have built-in sampling lines, so customers do not need to sample from the main circuit.
3. This series of dual power switch is two-in and one-out by default. If the customer needs two-in and two-out, it can be customized.
4. The closing indicator terminal of this series of dual power transfer switch is passive dry node, which can be used by customers according to their needs position feedback.
5. The standard connection harness of GN3F series dual-power transfer switch is 2m, and the customer can make remarks according to the need when placing an orderLonger.

11. Common faults and troubleshooting

Fault	Reason	Processing method
Cannot transfer automatically	The neutral line is not connected for 3 poles	Corresponding position connection
	Abnormal voltage and open phase	Check and repair power supply
	The split-type controller connector is loose	Re-fit tight
	Wrong connection of common and standby power	Correct. Re-access correctly
	The product is in manual position	As for automatic position
	The mechanical padlock is lifted or not in place	**Check and put in place**

Common faults and troubleshooting methods that may be encountered in the process of debugging or use should be operated according to the above table. If the fault cannot be eliminated, please timely contact our after-sales service.

12. Switch debugging description

1. The installation and debugging of the product shall be carried out by professionals and those who are familiar with the switch equipment operations.
2. The corresponding protection and preventive measures should be considered before debugging. The connection mode of the switch main loop must make the lead wire free from any pressure or strong action.
3. Before debugging, check whether the switch is not damaged or has any other harmful environmental impact, and check whether the wire head should be loose during transportation; Clean up dirt, especially on the surface of insulation.
4. When connecting the primary circuit, it should be noted that the phase sequence of the main and standby power must be consistent; when connecting the secondary control circuit, it should be operated strictly in accordance with the instructions; when the switch is installed, it must be well grounded.
5. After the product is installed, the power will be turned off. Take out the special operating handle supporting the product and turn it from the usual to the standby, and then from the standby to the three cycles in common use.
6. check the wiring and secondary loop at a time, after confirmed, the products are in a common location, were used and the standby power supply, and then disconnect common power supply, the product after a delay the transformation to the standby power, restore common power supply, then after time delay shall be returned to the common power supply (except since couldn't from complex), three loop operation and each time interval of more than 20s.

13. Ordering Information

Users should provide the following detailed information when ordering:
*Users should indicate the product model, current specifications, number of poles, and other information when placing an order.
*If there are special installation conditions, users must provide corresponding technical information or negotiate with our company.