

ATNSX

CB Class Automatic Transfer Switching Equipment

User's Manual



Tel: (86-22) 2374 8888
Fax: (86-22) 2374 8826
Hot line: 400 810 1315
Website: <http://www.wgats.com>
Add: No.11, Hi-Tech Chuang Xin No. 6 Rd, Hua Yuan Industrial
Development Area (Outside Outer Ring), Binhai New Area,
Tianjin P.R.China
Post Code: 300392

Due to changes in standards and materials, the characteristics given in the texts and images in this document can be considered as binding upon us only after confirmation by our operation departments.



This document has been printed on recycled paper.

H0430X 2015.03.16 Copyright Reserved

Schneider
Electric

Dear Users :

Thank you for your selection of our ATNSX product. For your safety and correctly application, Please read this manual carefully before installation, connection, operation and maintenance

The signature followed will be used in this manual for your attention on some danger, Simplify process and key operation.

▲ Caution mark , to warn you that incorrect operation may cause people injury or unrecovery damage to the equipment.

⚠: Key operation, to inform you that incorrect operation may cause controller to work in abnormal state.

☞: Offer some other information and simplify operating process.

Caution:

This equipment should only be mounted by professionals. The manufacturer shall not be held responsible for any failure to not comply with the instructions given in this manual.

Table 6 Common Troubleshooting

Fault	Fault Diagnose		Fault Removing
ATNSX is powered on but doesn't work well	Source indicator on the controller is off	Voltage Picking up wire fall off from input terminal of breaker	Well connected the wire
		To 3 Poles ATNSX , the zero wire hasn't been connected to zero terminal	
		The related fuse is broken	
	Source indicator is lighting on	"Automatic /manual operation switch" on the manual position	Push the switch to Automatic position
		The Controller's delay time is maxinal	Adjust the dealy time or wait for the delay time
	Source indicator is flickering	The voltage of related power source is abnormal or the wire connection is not well	Maintain the power source or wire connection
		Buzzer alarm , that means neutral Pole (or terminal) is wrong connect-ed with phase pole	Modify the wrong connection
	Breaker tripped indicator lights up		The related breaker is tripped , when the current failure have been removed, re-trip the breaker manu-ally, and press the Reset button
	Automatic operation indicator or Local forced operation indicator flickers		Both of the two power source are failure, check and remove the fail-ure

Contents

1. Check-up before using	1
1.1 Check after opening the package box	1
1.2 Operation Environment	1
1.3 Operation Voltage	2
2. Installation and Operation	2
2.1 Dielectric Test	2
2.2 Structure of ATNSX	2
2.2.1 ATNSX with A type Controller	2
2.2.2 ATNSX with B type Controller	3
2.3 Form and Installation Dimensions	4
2.4 Connection	6
2.5 Controller	8
2.5.1 Main Function	8
2.5.2 A type Controller	10
2.5.3 B type Controller	11
2.6 Operation	17
3. Maintenance and common troubleshooting	18

position , which will cut off the electrical controlling circuit , then to insert the Handle and press it to bottom , after that you can rotate the handle to close the breaker and choose the power source you want . The manual operation just for maintenance or emergency

⚠: When breaker is tripped (tripped light is on)for overload or short circuit , first to remove the failure, then re-trip the breaker manually , push the “Automatic / manual operation switch ” to “Auto” position and press the Reset button, then the controller will recovery to normal running state

⚠: After manual operation , if you want return to automatic operation state, please take out the handle and push the “Automatic /manual operation switch” on “Auto” position ,then press the Reset button

⚠ Don't plug in or took out the terminal when power is on

⚠ Don't close the breaker manually when both power source are fault

3. Maintenance and common troubleshooting

■ Maintenance

To assure the reliability of ATNSX , please have routine source change-over test in fixed interval (every 3 month is preferred) . It will benefit to continuity of power supply to important loads.

■ Common Troubleshooting

When you find ATNSX works in abnormal state, please press the Reset button first to see whether the fault could be removed, then to check whether the state of main circuit and Voltage picking up wire is normal and well connected . The table 6 is useful for fault diagnose and removing. After checking refer to the table , if you still can't remove the fault , please contact our company or local service department .

2.6 Operation

ATNSX is easy to operate , To customer, you just need to connect the wiring of input side (power source side) and output side(load side), and adjust the parameter according to chapter 2.5.2(for A type controller) or chapter 2.5.3(for B type controller), if the default value does not fit for your requirement . Of course the adjustment operation can be omitted if you accept the default value. Then to check whether the “Automatic /manual operation switch” is on“ Auto” position , if no, change it to “ Auto “ position , After powering on the ATNSX can work automatically .

■ Automation Operation

To choose “ Self-transfer and Self return ” work mode as an example. After assembling all the wiring of input side and output side according to the correspond Figure of Chapter 2.4 replacement side. When everything is ready, including the wiring is well connected , the “Automatic / manual operation switch” is on “Auto ” position, controller is pre-setted on “ Self-transfer and Self return ” recovery mode . After powering on , if the normal source is ok , ATNSX will work on normal position , otherwise ATNSX will transfer to replacement position (when replacement source is ok) , when the normal source power recovery , ATNSX will return to normal position after preset return time delay.

■ Local forced operation (only for ATNSX with B type controller)

When either source power is ok and “Automatic / manual operation switch” on “Auto ” position . You can press the “↵” button to switch the operation mode between two kind of electrical operation “ Automatic operation mode “ and “ Local forced operation mode” . In the “ Local forced operation mode” (the Local Forced operation indicator will light up) , you can press the “ ▲ (Non)” key to close the normal side breaker when normal power is OK. Press the “ ▼ (Ron)” key to close the replacement side breaker when replacement power is normal. or press “ OFF ” key to open two breaker and make ATNSX work on “ OFF ” position when either normal or replacement power is OK.

■ Manual Operation

Push the “Automatic / manual operation switch ” to “ Manual ”

1. Check-up before using

1.1 Check after opening the package box

When receive the ATNSX automatic transfer switching equipment (ATSE) you ordered , please check the item followed before your installation.

- Check whether the ATSE is intact , and there is no any man-made damage or transport damage
- Check whether the voltage picking up wire connect with the breaker terminal and no wire falling
- Check whether all the accessory is available (refer to Table 1)

If some problem is found, Please contact us.

Table 1 List of accessory

Item	Qty.	Note
Certificate Card	1	_____
User's manual	1	_____
Handle	1	For manual operation in emergency
Fuse	2	Standby for broken failure
Connecting wiring	2	Only for B type ATNSX
Separated Controller	1	Only for B type ATNSX

1.2 Operation Environment

- The altitude of installing Location shouldn't be higher than 2000m
- Environment tolerance: ATNSX could be used in a temperature range from -5℃ to 40℃ .
- Pollution Class : III
- Protection Class: IP20

1.3 Operation Voltage

ATNSX can work well in a wide range from 85% to 110% of rated voltage, when the voltage is detected out of this range (or pre-set range for B type Controller). Please use it in the limit range of operation voltage.

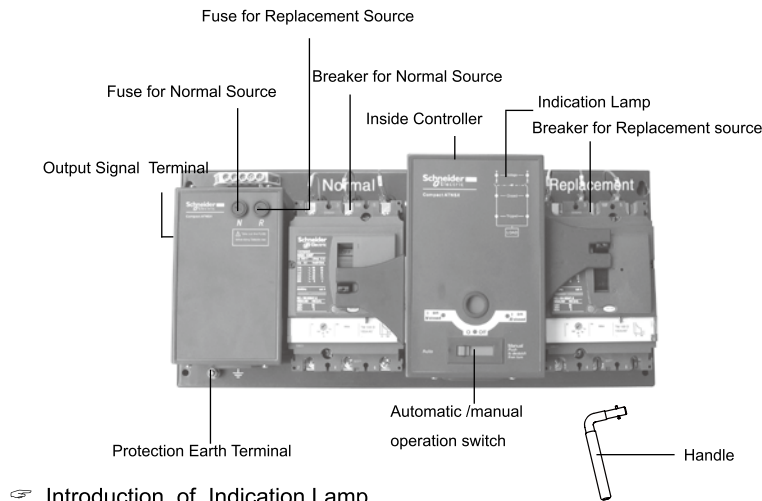
2. Installation and Operation

2.1 Dielectric Test

⚡: The product have passed the dielectric test before it is output from manufacture . If you want to redo it , please take out the fuse to avoid electronic component damage .

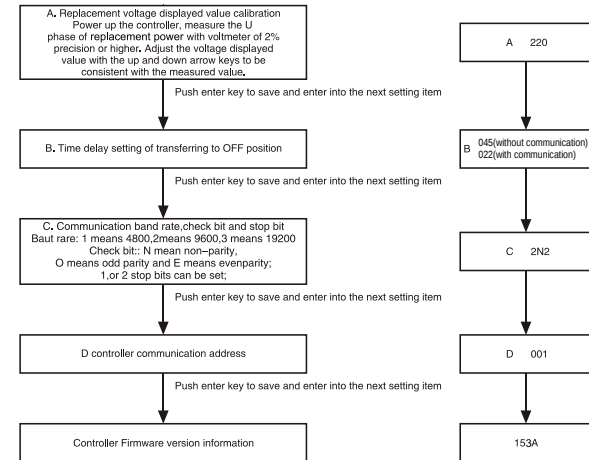
2.2 Structure of ATNSX

2.2.1 ATNSX with A type Controller



☞ Introduction of Indication Lamp

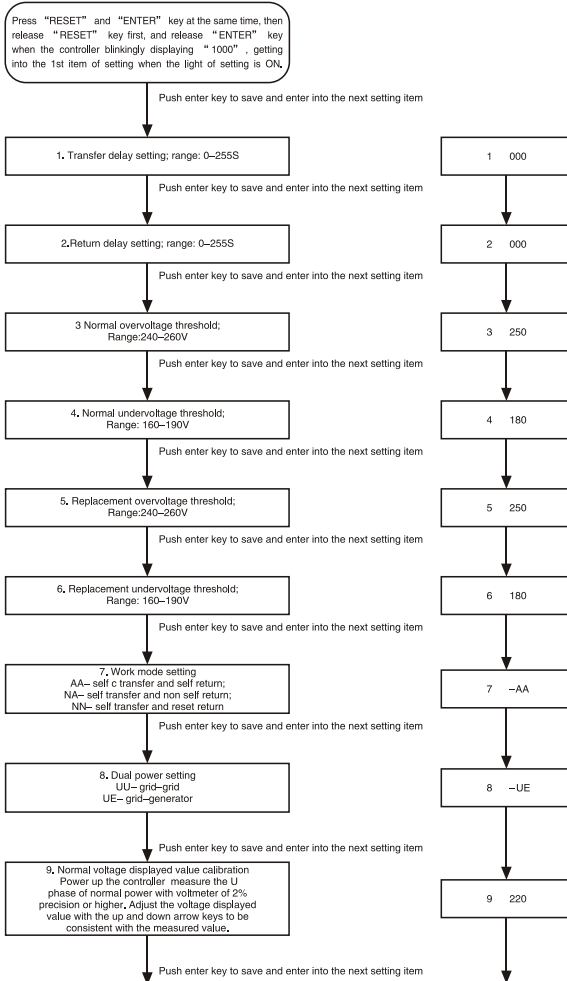
- ☐ N (Normal power source) Indicator (Yellow LED):
- Light up — Voltage of normal power source is ok ;
- Flickery — there is voltage failure for normal power source



☞: Overvoltage return value= $\max\{\text{Overvoltage transferring presetting value}-20, 230\}$;
 Undervoltage return value= $\min\{\text{undervoltage transferring presetting value}+20, 200\}$;
 ☞: Each item value can be set via ▲ ▼ key excluding firmware version, Item C,D are only for the products with communication.
 ⚡: Don't change Time delay setting of transferring to OFF position . Otherwise, may cause failing transferring to OFF position.

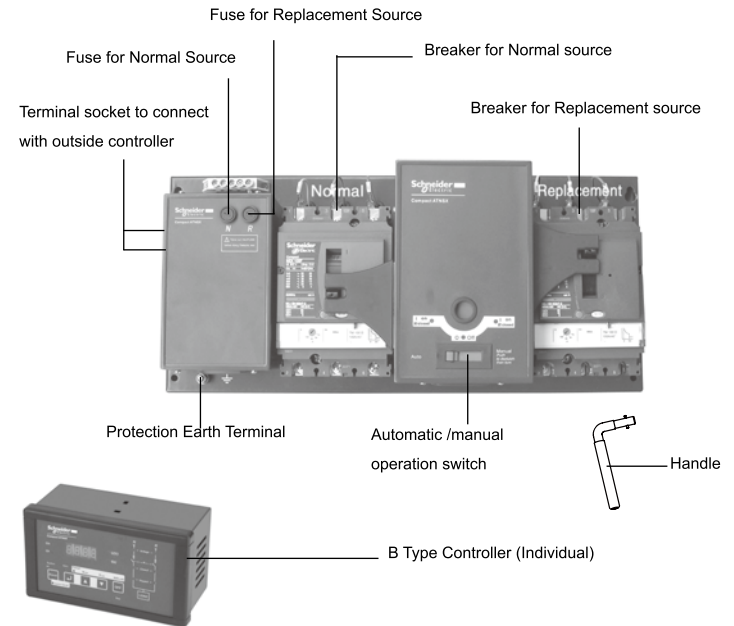
default parameter setting (except item 9&A base on actual voltagevalue,last item may be different.)

⚡: For parameters from 1-8 , you can adjust freely according the your requirement ; but parameters from 9-D are adjusted only by our service people



- ☐ R (Replacement power source) Indicator (Yellow LED):
Light up — Voltage of replacement power source is ok ;
Flickery — there is voltage failure for replacement power source
- ☐ N breaker indicator (Green LED) : Light up — Normal source breaker is closed
- ☐ R breaker indicator (Green LED) : Light up —Replacement source breaker is closed
- ☐ N breaker tripped indicator (Red LED) : Light up — Normal source breaker is tripped for current fault
- ☐ R breaker tripped indicator (Red LED) : Light up —Replacement source breaker is tripped for current fault

2.2.2 ATNSX with B type Controller



2.3 Form and Installation Dimensions

- For form and dimension of ATNSX, please refer to the Fig.2 , Fig. 3 and Table 2
- For form and dimension of B type controller(Individual), please refer to the Fig.1

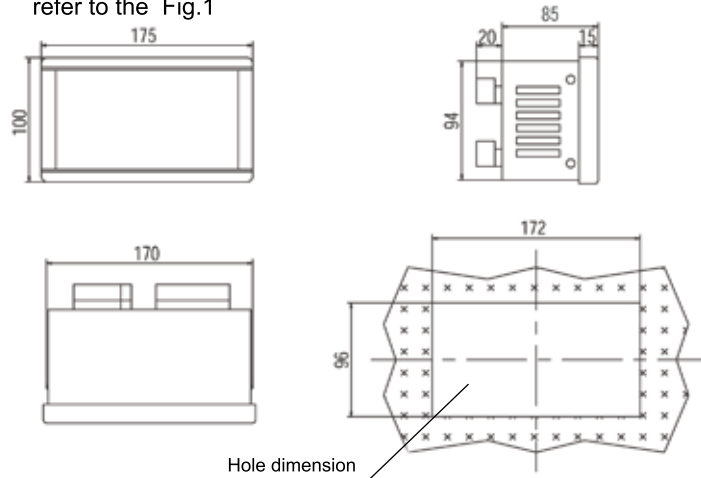


Fig. 1 Form of B type controller and Hole dimension

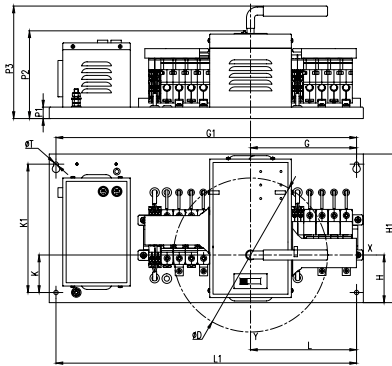


Fig. 2 ATNSX63

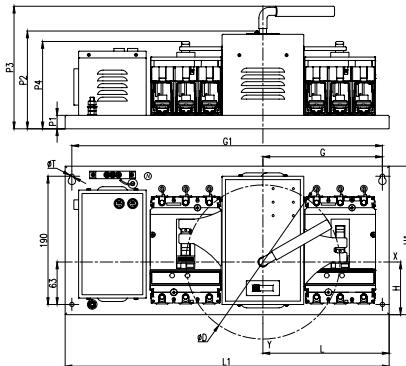


Fig. 3 ATNSX 100/ 160 / 250 / 400/ 630

in local forced operation mode

- ☐ Running indicator: lights up—controller is in normal operation state
- ☐ System setting indicator: lights up—controller is in state of parameter setting

■ Operational Keyboard

- ☐ Reset Key: controller reset, to return to normal source side in Reset return working mode or when controller is abnormal
- ☐ Enter Key: In Running state —operation mode switch key between automatic operation mode and local forced operation mode; In System setting state —key of confirmation , when you press it the parameter you set is saved in memory and step into next parameter setting item
- ☐ ▲ Up Key(Non): In local forced operation mode—press it to command to supply power with normal power source; In System setup state —Press to increase the number you set
- ☐ ▼ Down Key(Ron): In local forced operation mode—press it to command to supply power with replacement power source; In System setup state —Press to decrease the number you set
- ☐ OFF Key: In local forced operation mode—press it to command to open both of two breaker and no power supply to load, ATNSX work in off position

■ Electrical operation and manual operation switching

- ☐ Electrical operation mode : push the “manual /electrical operation switch” to “Automatic” position
- ☐ manual operation mode : push the “manual /electrical operation switch” to “Automatic” position , and it will make the electrical circuit to be open

■ Parameter setting procedure

- ☞: In the parameter setting procedure , if the following parameter items needn't to be adjusted , you can press Reset button to go back to running state directly after press Enter button to save the last setting.
- ☞: In the procedure above, the number inside rectangle provide the

■ Introduction of Digital LED Display and Indication Lamp

☐ Digital LED display

U(V) Indicator: light up – digital LED automatically and alternatively display phase voltage of normal source and replacement source

Un Indicator: light up – digital LED display the phase voltage of normal power source

Ur Indicator: lights up – digital LED display the phase voltage of replacement power source

t(s) Indicator: lights up -digital LED display countdown of pre-set time delay remained.

☐ N (Normal power source) Indicator for normal source(Yellow LED): Light up — Voltage of normal power source is ok ;

Flickery — there is voltage failure for normal power source

☐ R (Replacement power source) Indicator for replacement source(Yellow LED): Light up — Voltage of replacement power source is ok ; Flickery — there is voltage failure for replacement power source

☐ N breaker indicator (Green LED) : Light up — Normal source breaker is closed

☐ R breaker indicator (Green LED) :Light up —Replacement source breaker is closed

☐ N breaker tripped indicator (Red LED) :Light up — Normal source breaker is tripped for current fault

☐ R breaker tripped indicator (Red LED) : Light up —Replacement source breaker is tripped for current fault

☐ Fire protection indicator: light up— fire alarm signal has been received

☐ Automatic operation indicator: Light up—controller works in automatic operation mode; Flickery —Both power supplies have fault in automatic operation mode

☐ Local Forced operation indicator: Light up—controller works in Local Forced operation mode ; Flickery —Both power supplies have fault

Table 2 Form and installation dimension of ATNSX

Dimension Type	Form Dimension(mm)											installation dimension (mm)		
	D	G(3P/4P)	H	H1	K	L(3P/4P)	L1(3P/4P)	P1	P2	P3	P4MAX	G1(3P/4P)	K1	T
ATNSX63	162	160	70.5	220	55.5	170	460	17	130	161	—	440	190	6.5
ATNSX100	162	177/212	78	220	63	187/222	480/550	20	145	176	131	460/530	190	6.5
ATNSX160	162	177/212	78	220	63	187/222	480/550	20	145	176	131	460/530	190	6.5
ATNSX250	162	177/212	78	220	63	187/222	480/550	20	145	176	131	460/530	190	6.5
ATNSX400	280	242/287	97	285	82	257/302	610/710	20	180	232	188	580/670	255	9
ATNSX630	280	242/287	97	285	82	257/302	610/710	20	180	232	188	580/670	255	9

■ 2 poles product of ATNSX 63 has the same demission with 3 poles product

2.4 Connection

- Notice for connection:
 - State indication of Normal power source, Replacement power Source ,breaker closed and breaker failure trip are provided. For ATNSX with A type controller, these signal (with Power)are provided to customer by output terminal,you can use these output signal according Fig.4—Fig.6

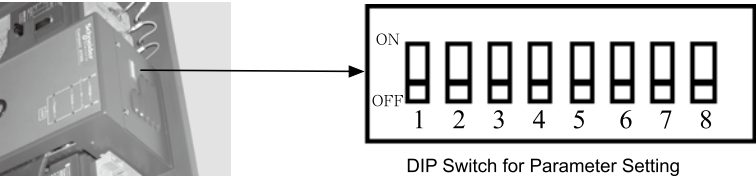


Table 5 Operation Parameter Setting of A Type Controller

Setting of Transfer time delay				Setting of Return time delay				Setting of Recovery mode		
1	2	3	Time delay(s)	4	5	6	Time delay(s)	7	8	Recovery mode
OFF	OFF	OFF	0	OFF	OFF	OFF	0	OFF	OFF	Self-transfer and Self-return
ON	OFF	OFF	5	ON	OFF	OFF	5	ON	OFF	Self-transfer and Fault-return
ON	ON	OFF	15	ON	ON	OFF	15	ON	ON	Self-transfer and Reset-return
ON	ON	ON	30	ON	ON	ON	30			

☞ Please preset the DIP switch before powering up

2.5.3 B type Controller

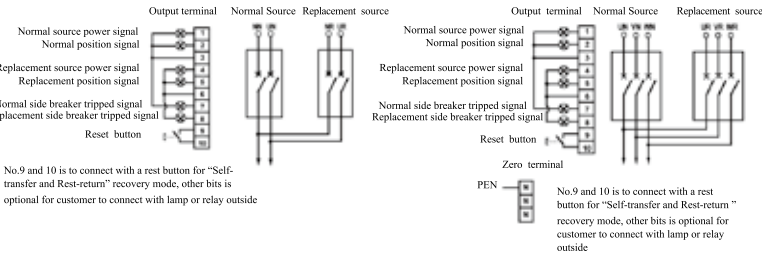


Fig.4 Two Poles ATNSX with A type Controller

Fig.5 Three Poles ATNSX with A type Controller

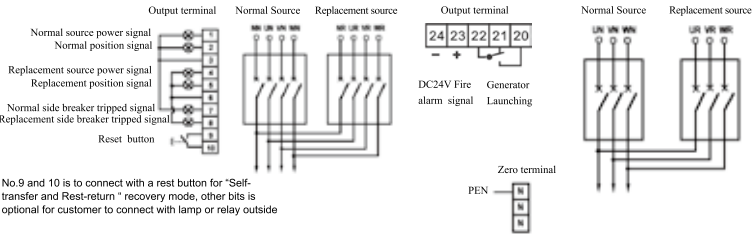
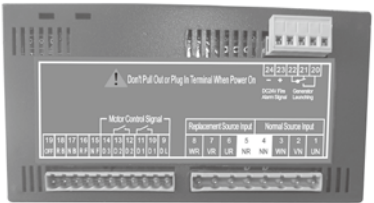


Fig.6 Four Poles ATNSX with A type Controller

Fig.7 Three Poles ATNSX with B type Controller



Notes:

- ① Power is supplied to the controller through isolation module, If the working voltage is consistent with rated voltage , ATNSX can be used directly, but if not an equal isolation transformer is needed
- ② In manual operation mode, the electrical circuit is cut off and all automatic function is not available
- ③ Normal source has high priority to Replacement Source, when both power supply is ok , ATNSX work on normal side, If voltage deviation of normal source is detected , ATNSX will transfer to Replacement side and supply with replacement source (when replacement source is ok) . When normal source is recovery, ATNSX will return to normal side automatically, the transfer time delay and return time delay is adjustable
- ④ Normal source and replacement source has same priority. The source powered up firstly is work side, when the voltage deviation of working source is detected , ATNSX will transfer to other side
- ⑤ Normal source has high priority to Replacement Source, when both power supply is ok, ATNSX work on normal side, If voltage deviation of normal source is detected , ATNSX will transfer to Replacement side and supply with replacement source(when replacement source is ok) . ATNSX won't return to normal side until manually press the reset button , even normal source recovery

2.5.2 A type Controller

■ Mode switchover between Automatic (Electrical) / Manual operation

☐Automatic operation: put "Automatic /manual operation switch" on "Auto" position

■ Setting of transfer time delay and working mode(recovery mode), please adjust the position of DIP switch refer to Table 5

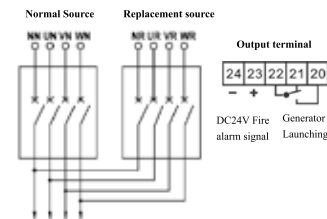


Fig.8 Four Poles ATNSX with B type Controller

- ⚡: For ATNSX with B type controller, a group of potential-free Contact (terminal 20,21,22) is provided to start generator, you can connect it into generator start circuit. A fire alarm signal input terminal (23,24) is also provided , when a DC24V fire alarm signal input into the terminal, the ATNSX will transfer to OFF position, and cut power supply of load. you can use these output signal according Fig.7-Fig.8
- ⚡: The generator launching is valid only in UE mode. Normal close contact 22 connects common contact 21 when Normal power failure or Replacement switch close while Normal close contact 22 disconnects common contact 21 when Normal Power is normal and Normal switch close (except pushing down Reset button or manual operation).Normal open contact 20 is opposite to the normal close contact 22.
- ⚡: The phase sequence connected to normal source breaker and replacement source breaker should be consistent, and for 3 poles ATNSX the zero line should be connected to Zero terminal
- ⚡ The protection earth line should be well connected to assure safety of operator

Table 3 Electrical parameter of output terminal

Terminal Name	Controller Type	Rated Voltage	Rated Current
Terminal for Indication Lamp	A	220VAC	1A
Fire alarm Input terminal	B	24VDC	—
Generator startup terminal (potential-free contact)	B	250VAC/30VDC	3A

* It means rated load capacity for potential-free contact

2.5 Controller

2.5.1 Main Function

ATNSX decide to perform power supply switchover or not based on whether voltage of Power supply is normal and the pre-set working mode. The main function of ATNSX is up to its controller, we provide two kind of controller A type and B type, the function of both controller can be refer to Table 4

Table 4 Function List of ATNSX CB class ATS

Controller	A (Internal)	B(External and individual)
Rated operational Voltage ^①	220VAC	220VAC
Rated Frequency	50/60Hz	50/60Hz
3 working positions		
Normal Position	■	■
Replacement Position	■	■
OFF Position	■	■
3 operational modes		
Automatic Operation	■	■
Local Forced Operation		■
Manual Operation ^②	■	■
Automatic Operation		
Normal source Voltage detection and automatic changeover	■ (Phase failure、power loss detection)	■ (Phase failure、power loss、under-Voltage、over-voltage detection)
Replacement source Voltage detection and automatic changeover		■ (Phase failure、power loss、under -Voltage、over-voltage detection)
Generator Control		■
DC24V fire protection signal input to switch to OFF position	□	■

Self-transfer and Self-return ^③	■	■
Self-transfer and Fault-return ^④	■	■
Self-transfer and Rest-return ^⑤	■	■
Local Forced Operation		
Forced work on Normal Position		■
Forced work on Replacement Position		■
Forced work on OFF Position		■
Test		
With local forced operation button		■
Indication		
Circuit breaker status indication (open or closed)	■	■
Normal source and Replacement source indicator	■	■
Tripped indicator	■	■
Pre-set Parameter Display		■
Other Function		
Transfer Time Delay	0s、5s、15s、30s	0-255s (1s as a step)
Return transfer Time Delay	0s、5s、15s、30s	0-255s (1s as a step)
Protection and alarm for wrong connection of phase wire with Neutral pole	■	■
Time limit for changeover process (5s self -protection for motor)	■	
Modbus Communication		□

■ Standard Function □ Optional function