
Normal
Replacement
Schneider Electric
Compact ATNSX
N
R
Reset
OFF
LOAD

ATNSX Automatic Transfer Switch

General

The brand-new ATNSX, following the excellent quality of ATS from Schneider Electric, ensures the power continuity and safety to the utmost capacity, as well as optimizes the electric energy management. ATNSX adopts Multi 9 small circuit breaker or Compact NSX Molded Case Circuit Breaker (MCCB), with current level of 1-630A. Its integrated design has increased its reliability greatly. In addition, a standard trip is installed, which provides effective protection when there is a failure. The multiple mechanical and electrical interlocks totally ensure the transfer reliability.

ATNSX provides multiple operation modes, such as automatic change and automatic recovery, automatic change and manual recovery, standby for each other, manual control, etc. The isolated power module of ATNSX can improve the voltage withstand level.

Two types of ATNSX controllers with powerful functions provide customers with more choices.

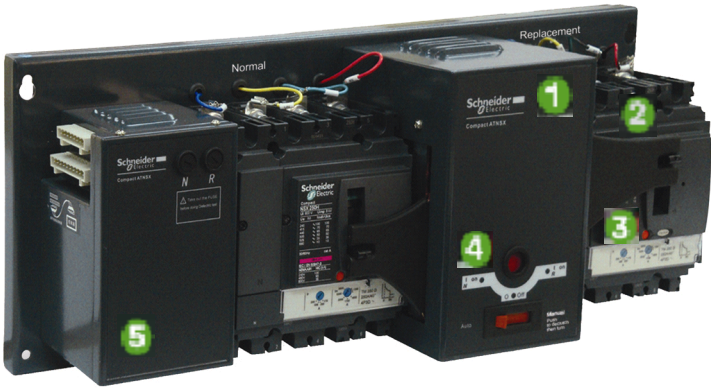
Type A Controller (built-in): supports the transfer between two commercial power sources, with adjustable transfer delay time.

Type B Controller (external): besides the functions of Type A Controller, supports the transfer between commercial power source and generator, with parameter settings and displays on controller panel and with communication function as an option.

ATNSX meets IEC and GB standards, and passes CCC certification and EMC (Electromagnetic compatibility) testing.

Construction of ATNSX Automatic Transfer Switch

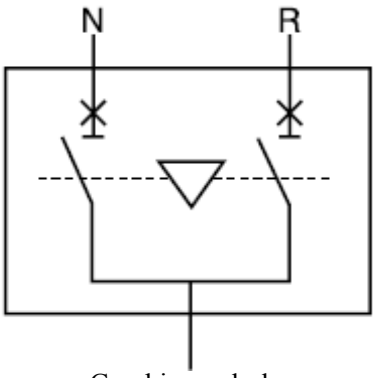
Multiple operation modes and multiple interlocks of the brand-new ATNSX ensure the reliable transfer between power sources.



1 Electric operating mechanism
2 Terminal
3 Trip
4 Interlock switch for selection of manual/automatic operation mode
5 Isolated power module

External Intelligent Controller (Type B)

Standard and Selection



Graphic symbol

Applicable Standards

ATNSX Automatic Transfer Switch and its accessories meet the following standards and international codes:
IEC60 947-1: General Rules
IEC60 947-2: Circuit Breakers
IEC60 947-3: Switches, disconnectors, switch-disconnectors and fuse-combination units
IEC60 947-5: Control circuit devices and switching elements
IEC60 947-6-1: Automatic transfer switch
GB/T 14048.11: Automatic Transfer Switching Equipment

Environment-resistant Capacity

ATNSX Automatic Transfer Switch meets the environmental requirements in the following standards:
IEC/CN 60068-2-30: Damp heat environment, equipment not in operation; relative humidity 95% at 55℃ (humid and hot climate).
IEC/CN 60068-2-52: Salt mist; KB testing severity level 2.
IEC/CN 60068-2-56: Damp heat environment, equipment in operation; 48h, environment category C2.
Therefore, they can be used in every area all over the world.

Pollution Degree

ATNSX is certified to operate in an environment with pollution degree III. This pollution degree is defined in the industrial environment articles of IEC60947 standard.

Ambient Temperature

ATNSX Automatic Transfer Switch is applicable to the temperature range from -25℃ to 55℃. When the temperature is 40℃ above (65℃ above for motor protection), derating shall be considered and storage temperature from -50℃ to 85℃ shall be used.

Protection Grade

IP20

Utilization Category

AC33B

Guideline for Selection

ATNSX	160	N*	3P	TMD	100	A	AC220	X
Model of Automatic Transfer Switch	Frame current 63/100/160/250/400/630	Breaking capacity N/F/H	Number of poles 3P/4P (2P is only for 63A below)	Trip TMD/Mic2.2/ Mic2.3 C/D: applicable to 63A below	Rated current 63:1, 2, 4, 6, 10, 16, 20, 25, 32, 40, 50, 63 100/160/250/ 400/630	Controller A: Built-in basic controller; B: External intelligent controller	Control voltage AC220V (can be omitted)	Additional functions X: fire fighting linkage (for Type A) T: communication (for Type B)

* According to different current level, N/F/H represents different breaking capacity.

For details, please refer to the following technical parameter sheet.

Order Information

1. ATNSX provides products with standard configuration.

2. For special needs on ATNSX, Schneider Electric can provide customized products, which include:

- ATNSX with communication option or fire fighting linkage option.
- High-end application of ATNSX, with Micrologic 5/6 A or E electronic trip unit and Micrologic MA/1.3-M/2-M/6E-M/G trip unit for customization.
- ATNSX of other special types.

3. For customized types of ATNSX, please contact LV Power Distribution Marketing Department of Schneider Electric prior to place an order.

Product Characteristics

Automatic Transfer Switch				ATNSX63		ATNSX100		
Actuating circuit breaker				C65		NSX100		
Electric characteristics								
Rated current (A)	In			63		100		
Rated insulation voltage (V)	Ui			440		800		
Rated operating voltage (V)	Ue	AC50/60Hz		400		690		
Ultimate breaking capacity				N	H	F	N	H
(KA effective value)	Icu	AC50/60Hz	220/240V	-	-	85	90	100
			380/415V	6	10	36	50	70
			440V	-	-	35	50	65
			500V	-	-	25	36	50
			525V	-	-	22	35	35
			660/690V	-	-	8	10	10
Service breaking capacity	Ics	%Icu		100%		100%		
Category of application				AC33B		AC33B		
Open position indication				■		■		
Isolating function				■		■		
Number of poles (The number of poles for normal power source must be same to that for standby power source.)				2,3,4		3,4		
Operating temperature				-25℃ to +55℃				
Life								
Mechanical life				6600		6600		
Control characteristics								
Controller			Basic type (A)	■		■		
			Intelligent type (B)	■		■		
Control voltage				AC220V		AC220V		
Shortest transfer time				2s		2s		
Protection								
Overload protection			Long delay	■		■		
Short-circuit protection			Short delay	□		□		
			Transient	■		■		
Installation and connection								
Fixed/board front connection				■		■		

: Optional function

** The maximum operating voltage can be up to 500V.

	ATNSX160			ATNSX250			ATNSX400			ATNSX630		
	NSX160			NSX250			NSX400			NSX630		
	160			250			400			630		
	800			800			800			800		
	690			690			690			690		
	F	N	H	F	N	H	F	N	H	F	N	H
	85	90	100	85	90	100	40	85	100	40	85	100
	36	50	70	36	50	70	36	50	70	36	50	70
	35	50	65	35	50	65	30	42	65	30	42	65
	30	36	50	30	36	50	25	30	50	25	30	50
	22	35	35	22	35	35	20	22	35	20	22	35
	8	10	10	8	10	10	10	10	20	10	10	20
	100%			100%			100%			100%**		
	AC33B			AC33B			AC33B			AC33B		
	■			■			■			■		
	■			■			■			■		
	3,4			3,4			3,4			3,4		
	-25°C to +55°C											
	6600			6600			4400			3300		
	■			■			■			■		
	■			■			■			■		
	AC220V			AC220V			AC220V			AC220V		
	2s			2s			3s			3s		
	■			■			■			■		
	□			□			■			■		
	■			■			■			■		
	■			■			■			■		

The electric characteristics are in accordance with IEC60947-6 and EN60947-6.

Controller

Type A Controller (built in electric operating module)

Type B Controller (external intelligent type)

Controller	A (Built-in)	B (External)
3 operating positions		
Normal power source on	■	■
Standby power source on	■	■
Two power sources off	■	■
Automatic operation		
Monitor normal power source and automatic transfer	■ (Detection for phase loss and voltage loss on three phases)	■ (Detection for phase loss, under-voltage, over-voltage, and voltage loss on three phases)
Monitor standby power source and automatic transfer	-	■ (Detection for phase loss, under-voltage, over-voltage, and voltage loss on three phases)
Generator control	-	■
Fire fighting signal (DC24V) switching “non-priority load”	□	■
Automatic change and automatic recovery	■	■
Automatic change but no automatic recovery	■	■
Standby for each other	■	■
Test		
Via test button or control key on controller panel	-	■
Display		
Operating state indication of circuit breaker: close and open	■	■
Normal power source indication and standby power source indication	■	■
Failure tripping indication	■	■
Setting parameter indication	-	■
Other functions		
Transfer delay	0s, 5s, 15s, 30s, accuracy ≤ 5%	0-255s continuously adjustable
Recovery delay	0s, 5s, 15s, 30s, accuracy ≤ 5%	0-255s continuously adjustable
Protection function against neutral line from connection to phase line (alarm)	■	■
Breaking function after transfer signal is sent for 5s	■	■
Communication option	-	□ Modbus
Control voltage	AC220V 50/60Hz	AC220V 50/60Hz

■: Standard configuration
□: Optional function
-: Without this function

Type A Controller

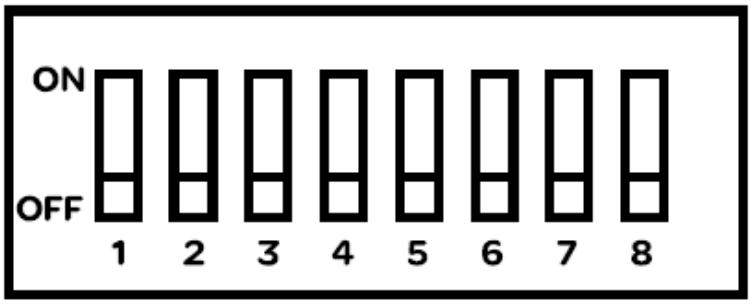
Type A Controller
(Built in electric operating module)

Type A Controller is built in the automatic transfer switch, to monitor the two power sources and control the ATNSX transfer action.

Control voltage
AC220V 50/60 Hz

Operation
- Two-positions switch
  - o Automatic operation
  - o Manual operation
- Delay setting and functions of top DIP switch
  - o Transfer delay t1: 0, 5, 15, 30s
  - o Recovery delay t2: 0, 5, 15, 30s
  - o Operation mode setting

t1: The time delay prior to Q_N opening action, when the "operating" power voltage U_N is disappeared.
t2: The time delay prior to Q_R opening action, when the "operating" power voltage U_N is recovered.



Transfer delay setting				Recovery delay setting				Operating state setting		
1	2	3	Delay time (s)	4	5	6	Delay time (s)	7	8	Operating state
OFF	OFF	OFF	0	OFF	OFF	OFF	0	OFF	OFF	Automatic change and automatic recovery
ON	OFF	OFF	5	ON	OFF	OFF	5	ON	OFF	Standby for each other
ON	ON	OFF	15	ON	ON	OFF	15	ON	ON	Automatic change, but no automatic recovery
ON	ON	ON	30	ON	ON	ON	30			

Indicator lights
- N normal power source indicator light (yellow): On – The normal power source is normal. Flashing – The normal power source is in failure (wiring failure/loss of phase/over-voltage/under-voltage)
- R Standby power source indicator light (yellow): On – The standby power source is normal. Flashing – The standby power source is in failure (wiring failure/loss of phase/over-voltage/under-voltage)
- NF normal power source ON indicator light (green): On – The normal power source is switched on.
- RF standby power source ON indicator light (green): On – The standby power source is switched on.
- N tripping indicator light (red): On – Tripping alarm of normal power source.
- R tripping indicator light (red): On – Tripping alarm of standby power source.

Type B Controller

Type B Controller (External intelligent type)

Type B Controller is an external type, capable of operating from outside of the cabinet.

- According to the status of the operating power source, it decides whether to transfer to another power source or not.
- Control of generator unit.
- Fire fighting linkage function.
- Manually forced transfer action by button.

Control voltage

AC220V 50/60Hz

Operation

- Two-positions switch
  - o Automatic operation
  - o Manual operation
- Delay setting
  - o Transfer time: 0-255s continuously adjustable
  - o Recovery time: 0-255s continuously adjustable

Display

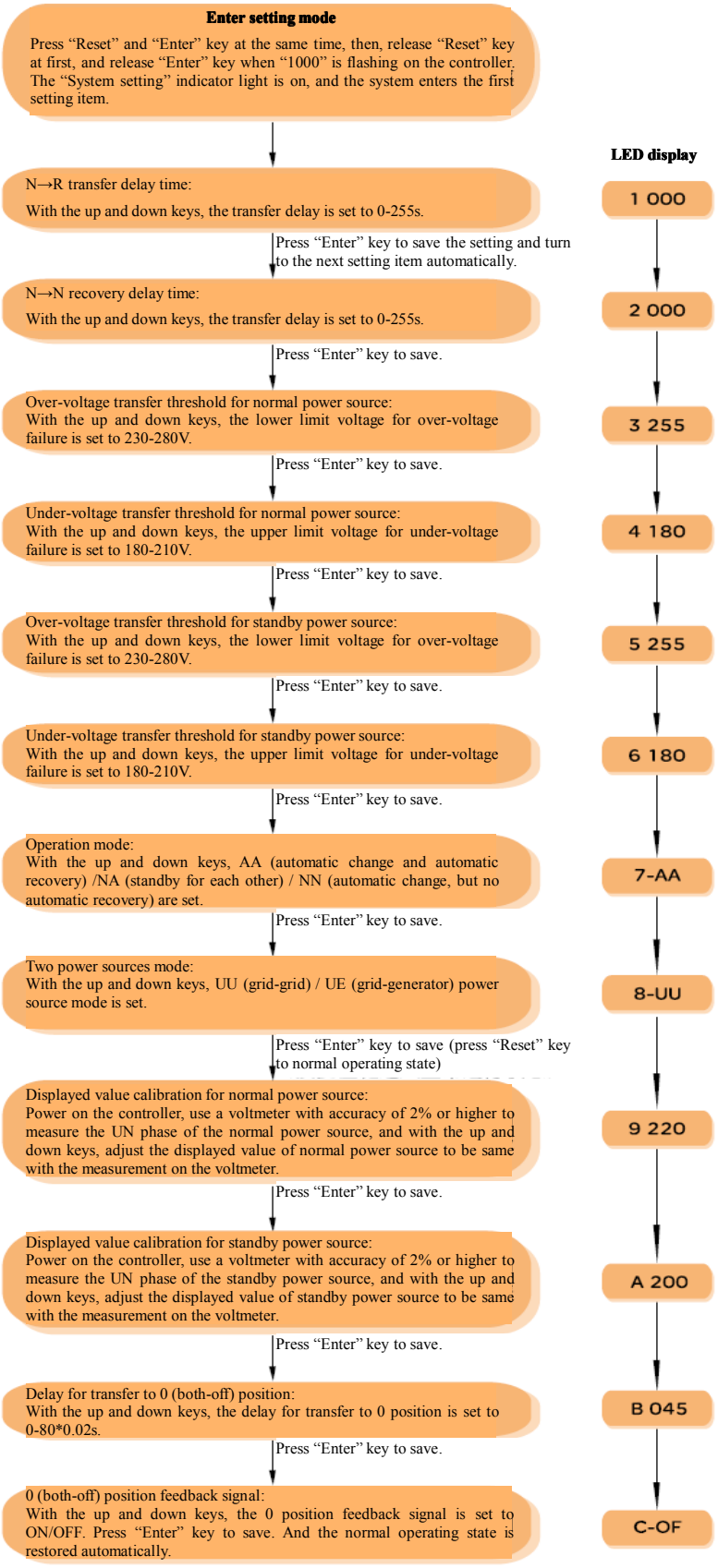
- LED display
  - o U(V) light on – automatically and circularly display the phase voltages of normal power source and standby power source.
  - o U_N light on – LED displays the phase voltage of normal power source.
  - o U_R light on – LED displays the phase voltage of standby power source.
  - o t(s) light on – LED displays the countdown of delay time setting.
- N normal power source indicator light (yellow): On – The normal power source is normal.
  Flashing – The normal power source is in failure (wiring failure/loss of phase/over-voltage/under-voltage)
- R Standby power source indicator light (yellow): On – The standby power source is normal.
  Flashing – The standby power source is in failure (wiring failure/loss of phase/over-voltage/under-voltage)
- NF normal power source ON indicator light (green): On – The normal power source is switched on.
- RF standby power source ON indicator light (green): On – The standby power source is switched on.
- N tripping indicator light (red): On – Tripping alarm of normal power source.
- R tripping indicator light (red): On – Tripping alarm of standby power source.
- Fire fighting indicator light: On – A fire alarm signal is received.
- Automatic indicator light: On – The controller is working in automatic mode.
  Flashing – Both power sources in automatic mode are in failure.
- Control indicator light: On – The controller is working in manual remote control mode.
  Flashing – Both power sources in remote control mode are in failure.
- Operation indicator light: On – The controller is in normal operation.
- System setting light: On – The controller is in parameter setting state.

Operator keypad

- Reset key
  - o Controller reset
- Enter key
  - o Operating state – transfer key for automatic mode (corresponding to automatic indicator light)/ remote control mode (corresponding to remote control indicator light)
  - o Setting mode – key for confirmation (save the setting data automatically, while turn to the next setting item)
- " ↑ " key (Non)
  - o In manual remote control mode – normal power source switched on
  - o In setting mode – increasing key (data is increased progressively)
- " ↓ " key (Ron)
  - o In manual remote control mode – standby power source switched on
  - o In setting mode – decreasing key (data is decreased progressively)
- "OFF" key
  - o In manual remote control mode – When there is no tripping alarm, it place the N/R switch in stop position; when there is tripping alarm, re-trip.

Type B Controller

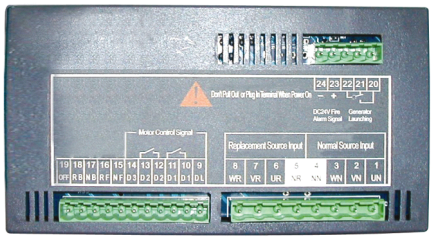
Parameter Setting



Note: The user can set 1-8 items according to demands. 9-c items are for factory calibration, therefore, except by professional technical maintenance personnel, they are not allowed for modification.

Type B Controller

Communication Function

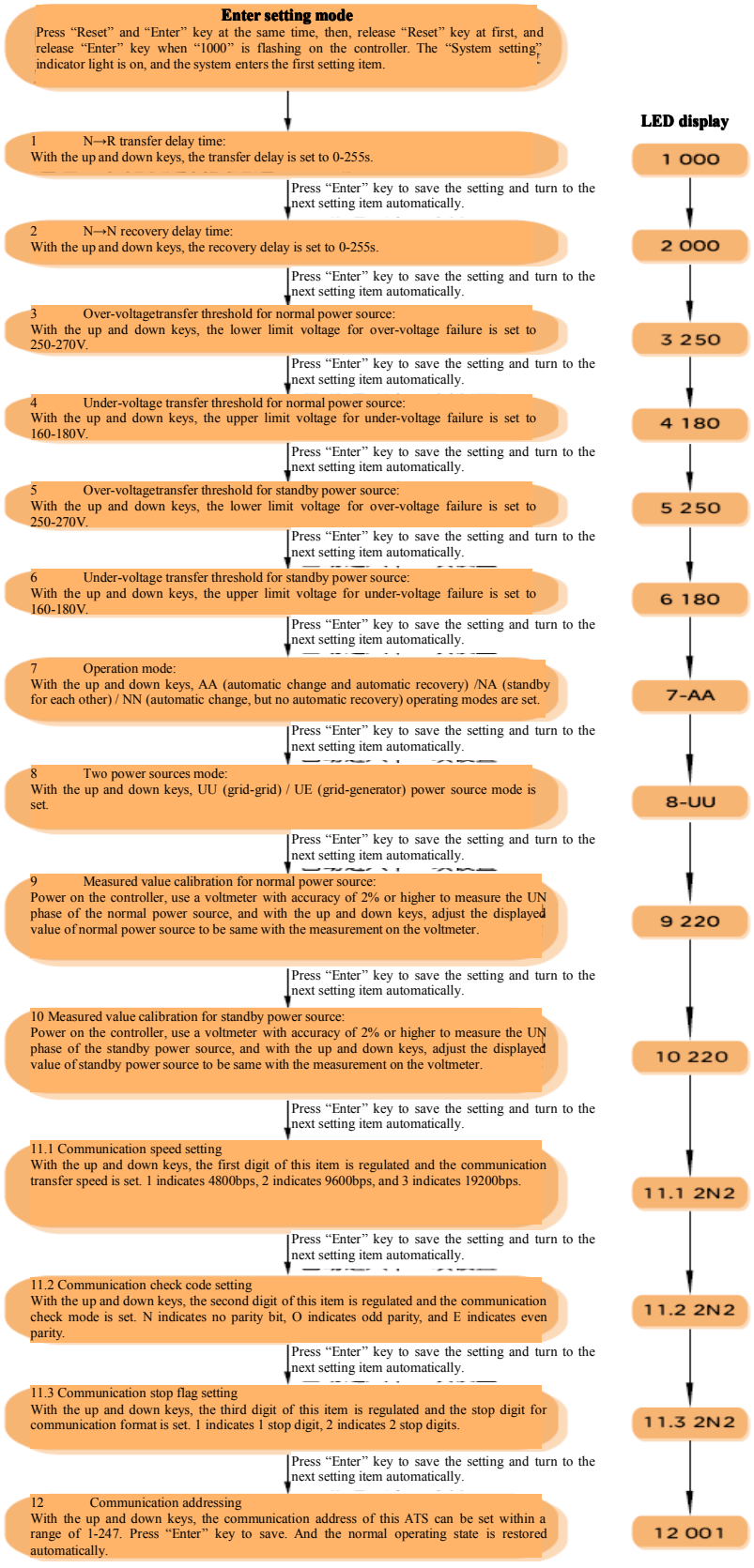


Communication module terminal of Type B Controller

Introduction of Communication Function

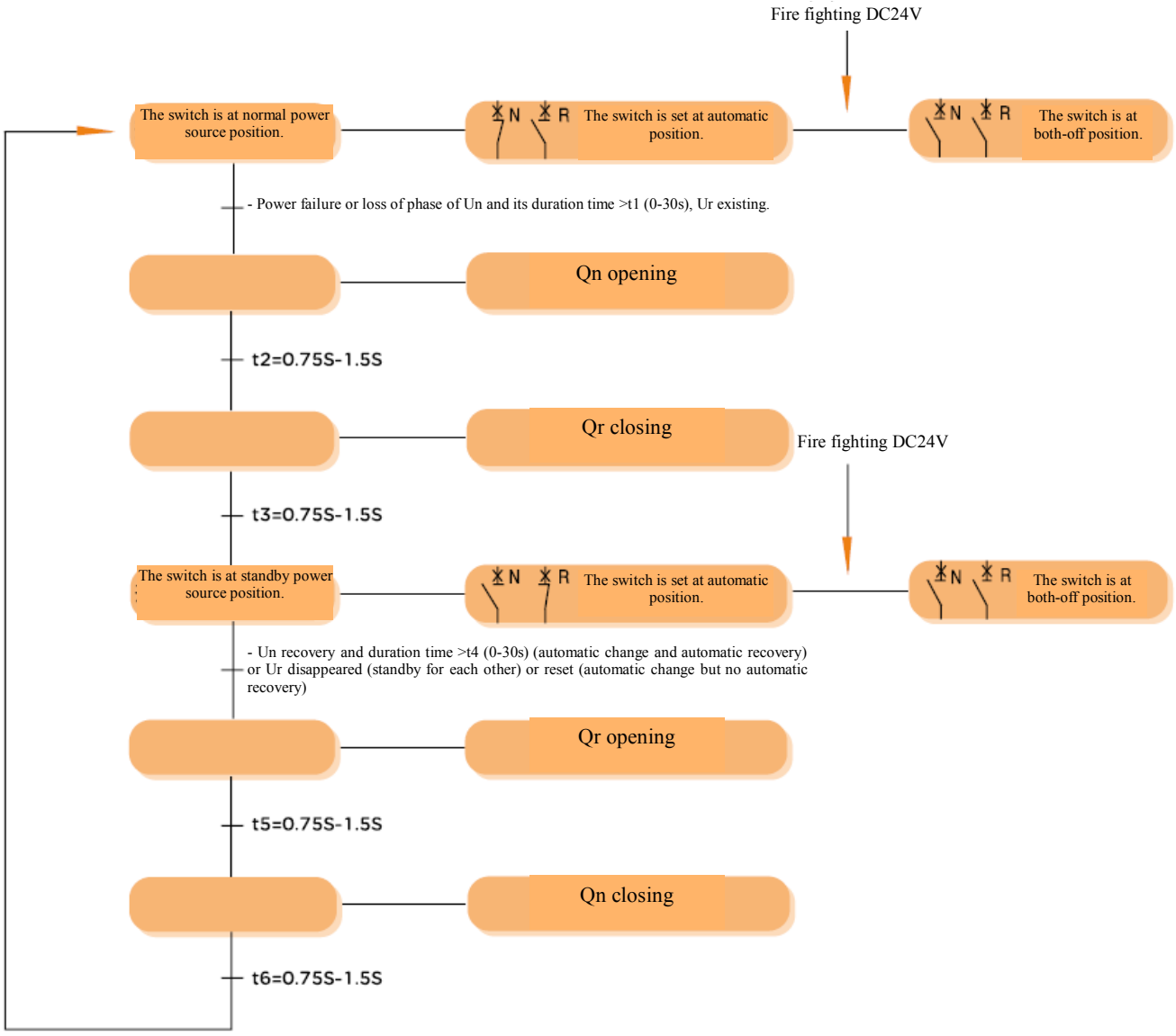
ATNSX B Type can be equipped with Modbus communication module that can effectively transfer information and data with SCADA system, DCS system or monitoring system compatible with Modbus. With monitoring system, “Four Remote” operations are carried out to automatic transfer switch, i.e. remote signaling, remote measuring, remote control and remote regulating.

- Remote signaling: automatically transfer the operating position of the switch and the failure state of circuit breaker.
- Remote measuring: voltages of normal and standby power sources.
- Remote control: remote control for automatic transfer switch, changing between three operation positions, i.e. normal power source/ standby power source/ both-off.
- Remote regulating: remote display and regulation of parameters such as under-voltage range, over-voltage range, transfer delay, recovery delay parameters, operation modes, etc.


Enter setting mode
Press "Reset" and "Enter" key at the same time, then, release "Reset" key at first, and release "Enter" key when "1000" is flashing on the controller. The "System setting" indicator light is on, and the system enters the first setting item.
LED display
1 N→R transfer delay time:
With the up and down keys, the transfer delay is set to 0-255s.
1 000
Press "Enter" key to save the setting and turn to the next setting item automatically.
2 N→N recovery delay time:
With the up and down keys, the recovery delay is set to 0-255s.
2 000
Press "Enter" key to save the setting and turn to the next setting item automatically.
3 Over-voltagetransfer threshold for normal power source:
With the up and down keys, the lower limit voltage for over-voltage failure is set to 250-270V.
3 250
Press "Enter" key to save the setting and turn to the next setting item automatically.
4 Under-voltage transfer threshold for normal power source:
With the up and down keys, the upper limit voltage for under-voltage failure is set to 160-180V.
4 180
Press "Enter" key to save the setting and turn to the next setting item automatically.
5 Over-voltagetransfer threshold for standby power source:
With the up and down keys, the lower limit voltage for over-voltage failure is set to 250-270V.
5 250
Press "Enter" key to save the setting and turn to the next setting item automatically.
6 Under-voltage transfer threshold for standby power source:
With the up and down keys, the upper limit voltage for under-voltage failure is set to 160-180V.
6 180
Press "Enter" key to save the setting and turn to the next setting item automatically.
7 Operation mode:
With the up and down keys, AA (automatic change and automatic recovery) /NA (standby for each other) / NN (automatic change, but no automatic recovery) operating modes are set.
7-AA
Press "Enter" key to save the setting and turn to the next setting item automatically.
8 Two power sources mode:
With the up and down keys, UU (grid-grid) / UE (grid-generator) power source mode is set.
8-UU
Press "Enter" key to save the setting and turn to the next setting item automatically.
9 Measured value calibration for normal power source:
Power on the controller, use a voltmeter with accuracy of 2% or higher to measure the UN phase of the normal power source, and with the up and down keys, adjust the displayed value of normal power source to be same with the measurement on the voltmeter.
9 220
Press "Enter" key to save the setting and turn to the next setting item automatically.
10 Measured value calibration for standby power source:
Power on the controller, use a voltmeter with accuracy of 2% or higher to measure the UN phase of the standby power source, and with the up and down keys, adjust the displayed value of standby power source to be same with the measurement on the voltmeter.
10 220
Press "Enter" key to save the setting and turn to the next setting item automatically.
11.1 Communication speed setting
With the up and down keys, the first digit of this item is regulated and the communication transfer speed is set. 1 indicates 4800bps, 2 indicates 9600bps, and 3 indicates 19200bps.
11.1 2N2
Press "Enter" key to save the setting and turn to the next setting item automatically.
11.2 Communication check code setting
With the up and down keys, the second digit of this item is regulated and the communication check mode is set. N indicates no parity bit, O indicates odd parity, and E indicates even parity.
11.2 2N2
Press "Enter" key to save the setting and turn to the next setting item automatically.
11.3 Communication stop flag setting
With the up and down keys, the third digit of this item is regulated and the stop digit for communication format is set. 1 indicates 1 stop digit, 2 indicates 2 stop digits.
11.3 2N2
Press "Enter" key to save the setting and turn to the next setting item automatically.
12 Communication addressing
With the up and down keys, the communication address of this ATS can be set within a range of 1-247. Press "Enter" key to save. And the normal operating state is restored automatically.
12 001

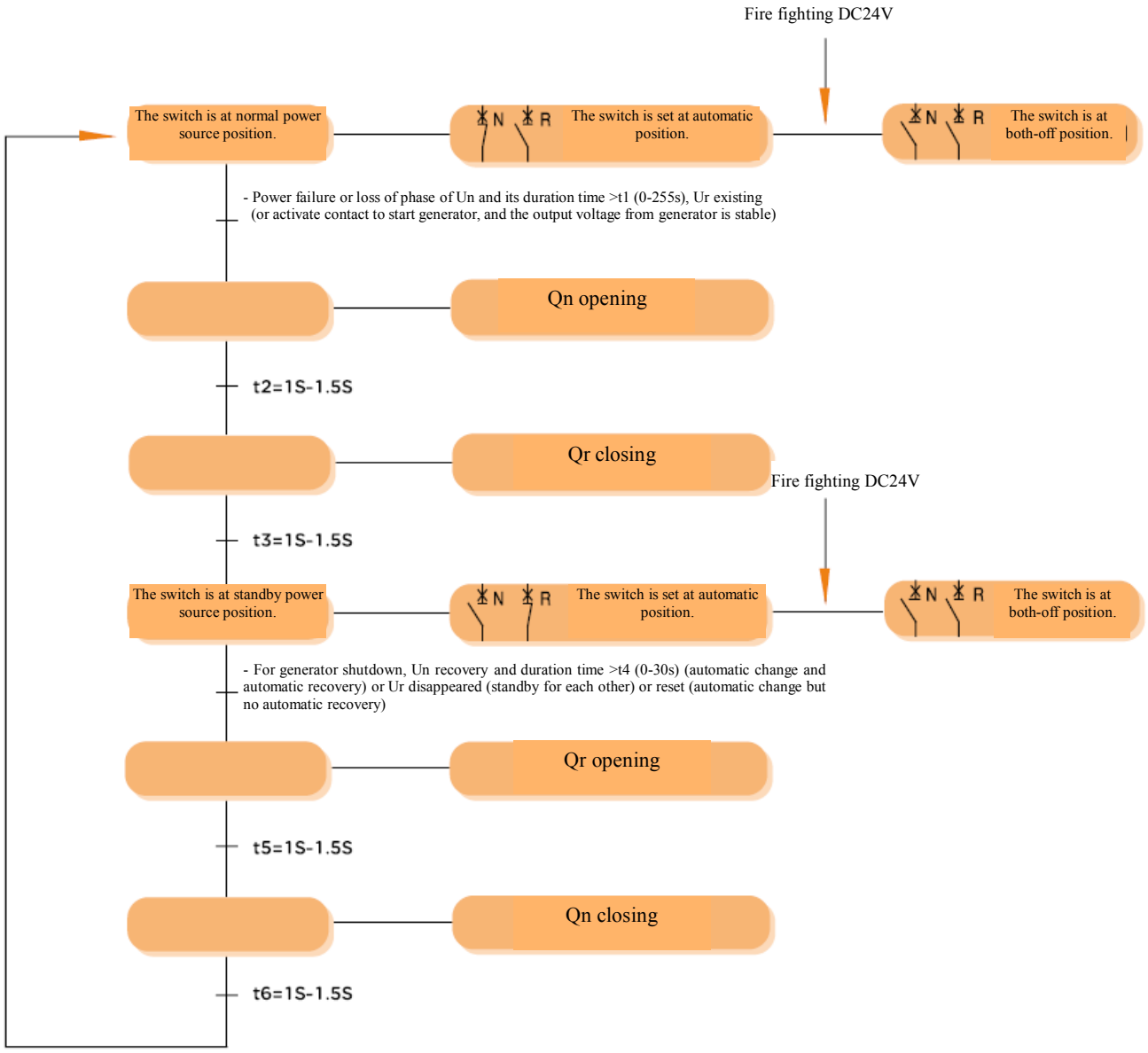
Action Sequence

Type A Controller



Action Sequence

Type B Controller



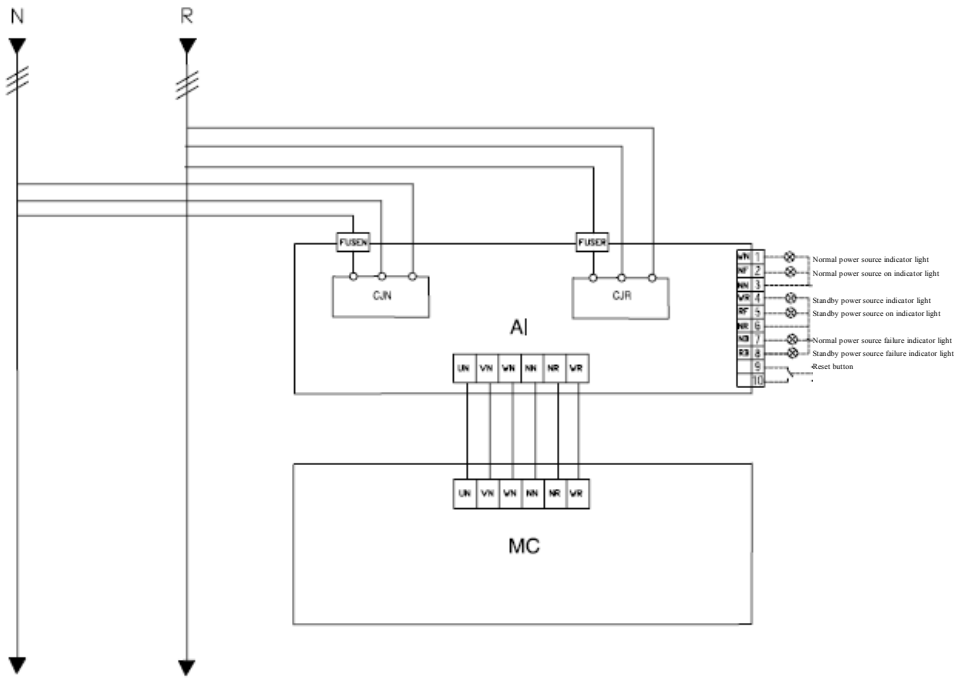
Electrical Diagram

Type A Controller
Installation and Wiring

Automatic Transfer Switch with Type A Controller

Symbols
FUSEN: Overcurrent protection fuse for normal power source
FUSER: Overcurrent protection fuse for standby power source
CJN: Isolation contactor for normal power source
CJR: Isolation contactor for standby power source
AI: Auxiliary interface unit
MC: Main control unit

Note: The drawing shows that the circuit is power-off. All elements are at "open" position.



Action Sequence

Input

U_N, V_N, W_N: Phase voltage of normal power source

UR: Phase voltage of standby power source

Output

Q_N: Circuit breaker for normal power source

Q_R: Circuit breaker for standby power source

Transfer time

t1: Delay time after the voltage of normal power source disappeared and prior to Q_N opening

t2: Opening process time of normal power source

t3: Closing process time of standby power source

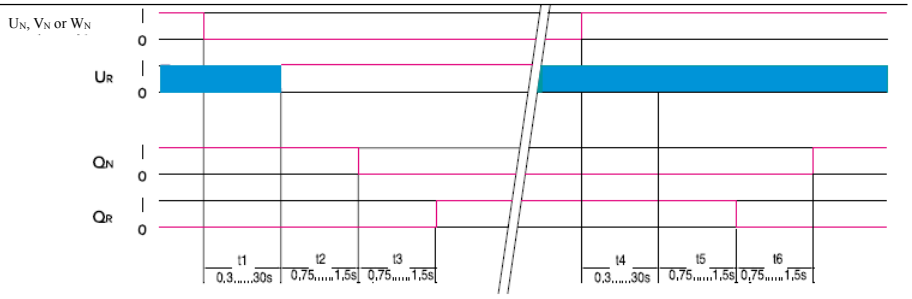
t4: Delay time after the recovery of normal power source and prior to Q_R opening

t5: Opening process time of standby power source

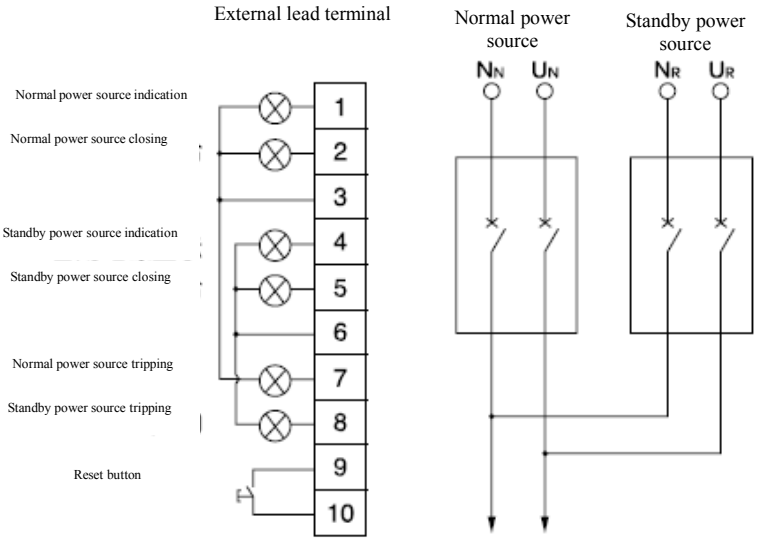
t6: Closing process time of normal power source

Legend

- I position: Power source is normal or circuit is closed.
- O position: Power source is in failure or circuit is opened.
- : Ineffective I or O
- : Real-time state

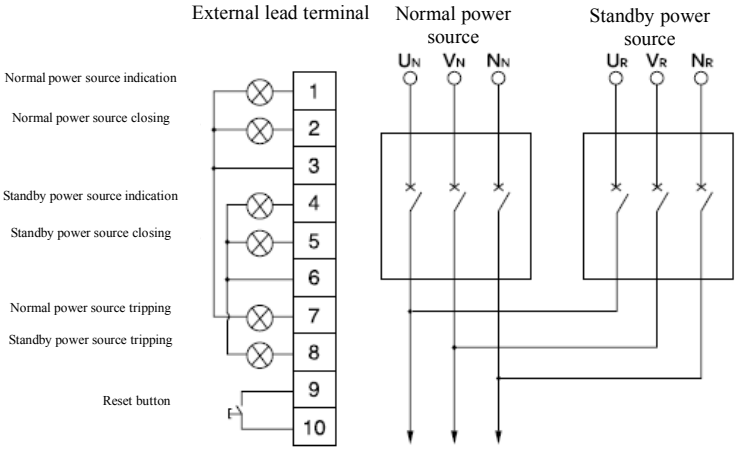


Wiring Diagram of Level 2 with Type A Switch



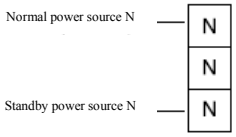
Reset button is used in the mode of automatic change but no automatic recovery. The user can select its external lead according to needs.

Wiring Diagram of Level 3 with Type A Controller Switch

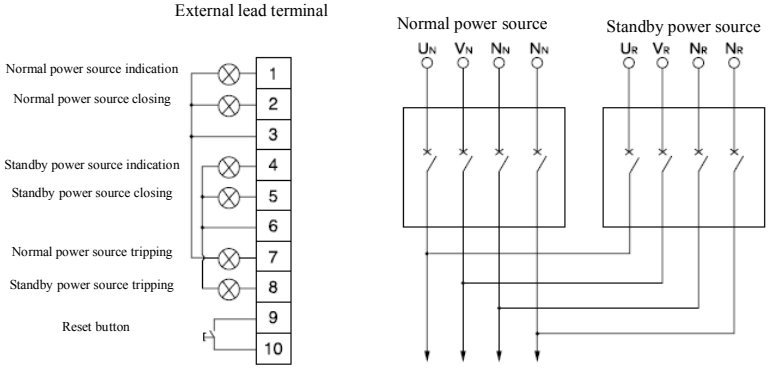


Reset button is used in the mode of automatic change but no automatic recovery. The user can select its external lead according to needs.

Neutral line terminal



Wiring Diagram of Level 4 with Type A Controller Switch



Reset button is used in the mode of automatic change but no automatic recovery. The user can select its external lead according to needs.

Electrical Diagram

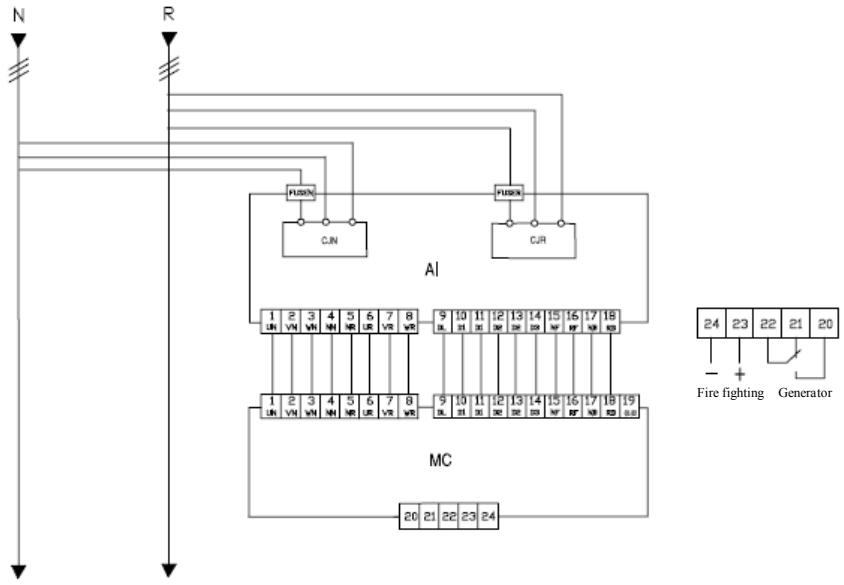
Type B Controller
Installation and Wiring

Automatic Transfer Switch with Type B Controller

Symbols

FUSEN: Overcurrent protection fuse for normal power source
FUSER: Overcurrent protection fuse for standby power source
CJN: Isolation contactor for normal power source
CJR: Isolation contactor for standby power source
AI: Auxiliary interface unit
MC: Main control unit

Note: The drawing shows that the circuit is power-off. All elements are at "open" position.

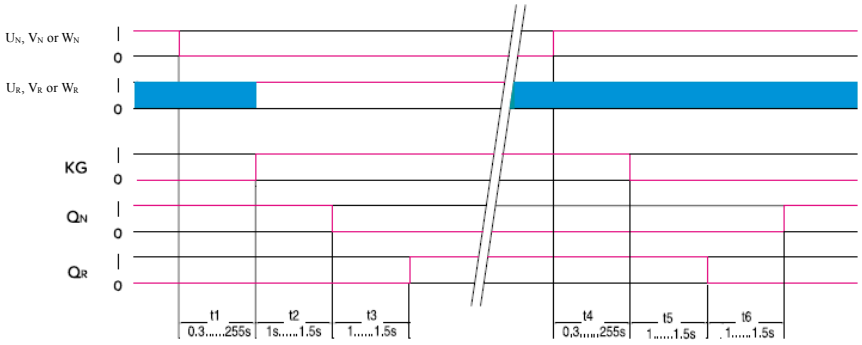


Action Sequence

Input
U_N, V_N, W_N: Phase voltage of normal power source
UR: Phase voltage of standby power source

Output
Q_N: Circuit breaker for normal power source
Q_R: Circuit breaker for standby power source

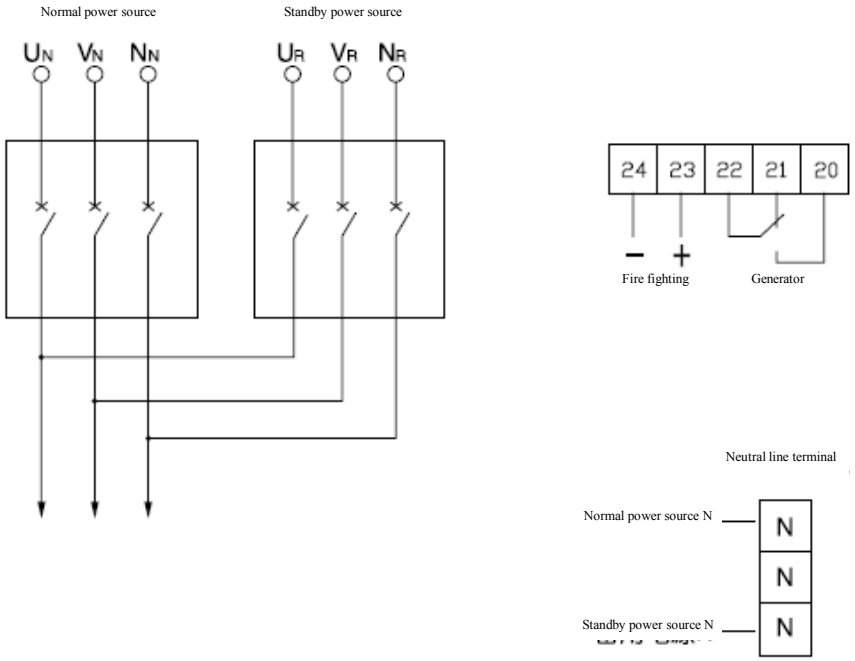
Transfer time
t1: Delay time after the voltage of normal power source disappeared and prior to Q_N opening
t2: Opening process time of normal power source
t3: Closing process time of standby power source
t4: Delay time after the recovery of normal power source and prior to Q_R opening
t5: Opening process time of standby power source
t6: Closing process time of normal power source



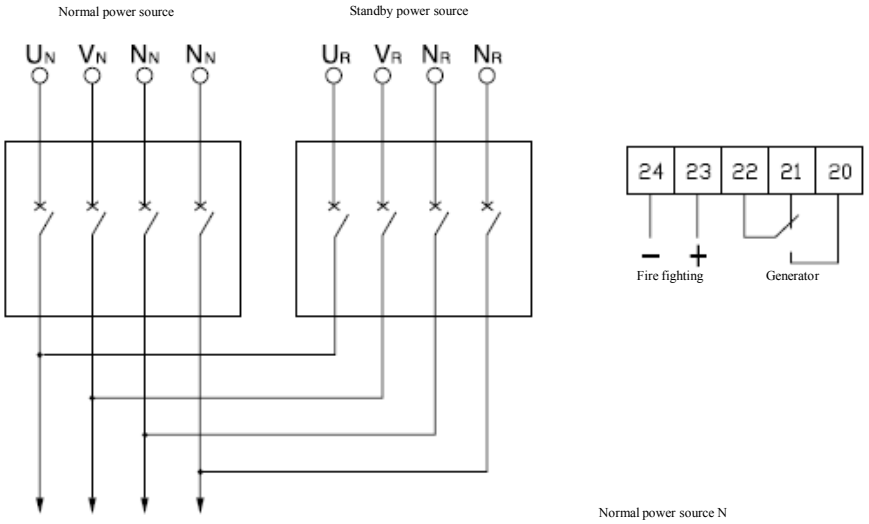
Legend

- I position: Power source is normal or circuit is closed.
- O position: Power source is in failure or circuit is opened.
- : Ineffective I or O
- : Real-time state

Wiring Diagram of Level 3 with Type B Controller Switch



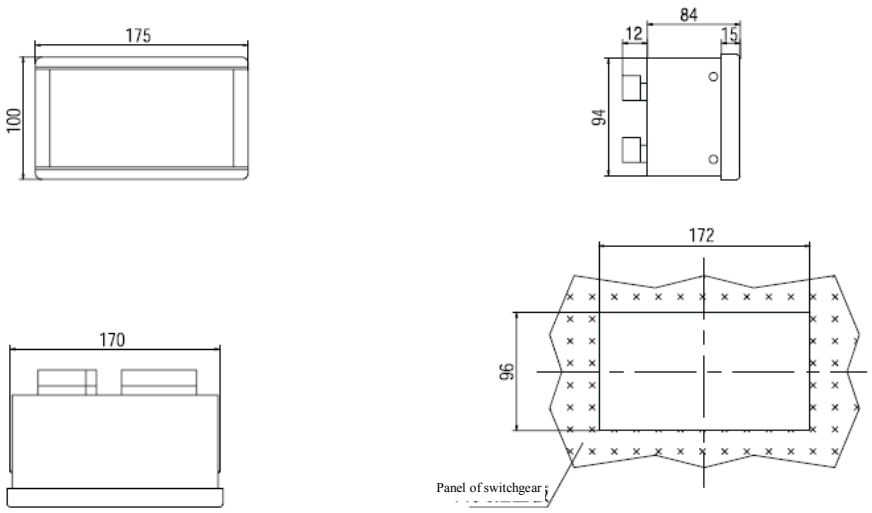
Wiring Diagram of Level 4 with Type B Controller Switch



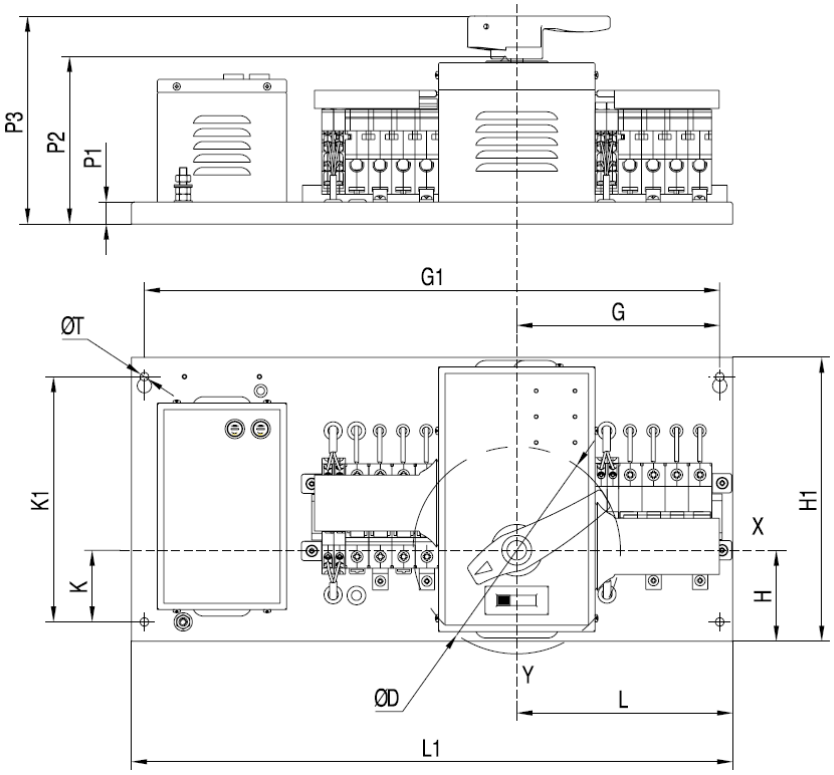
Electrical Diagram

Type B Controller
Installation and Wiring

Dimension of Type B Controller



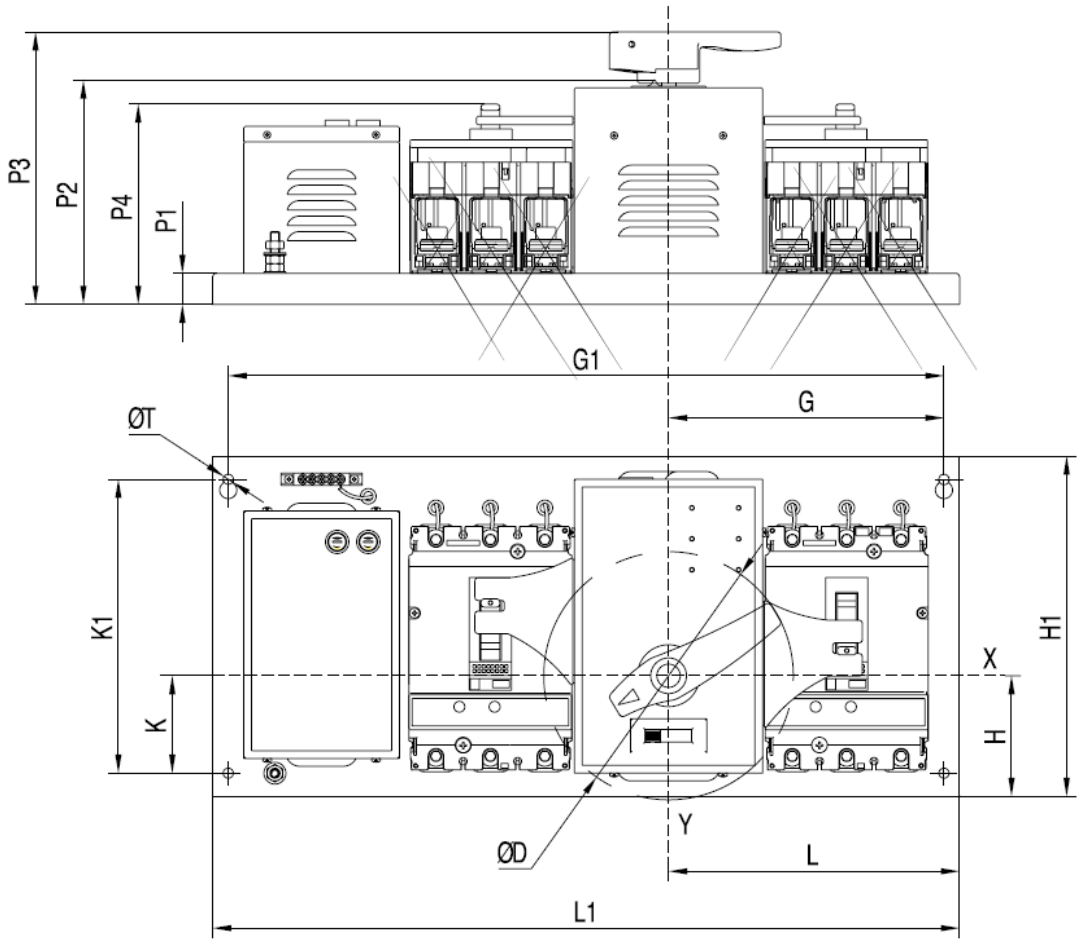
ATNSX63



mm	D	G	G1	H	H1	K	K1	L	L1	P1	P2	P3	P4MAX	T
ATNSX63N/H (with Type A or B controller)	162	160	440	70.5	220	55.5	190	170	460	17	130	161	-	6.5

- 2P, 3P and 4P products are in same size.
- The handle is not fixed.

ATNSX100/160/250/400/630



mm	D	G	G1	H	H1	K	K1	L	L1	P1	P2	P3	P4MAX	T
ATNSX 100/160/250 F/N/H 3P	162	177	460	78	220	63	190	187	480	20	145	176	131	6.5
ATNSX 100/160/250 F/N/H 4P	162	212	530	78	220	63	190	222	550	20	145	176	131	6.5
ATNSX 400/630 N/H 3P	280	242	580	97	285	82	255	257	610	20	180	232	188	9
ATNSX 400/630 N/H 4P	280	287	670	97	285	82	255	302	710	20	180	232	188	9

- The handle is not fixed.