



ATS-125A(250A,630A)-4P-di

1-3 Phase, 230/400VAC, 50/60Hz

Automatic Transfer Switch

Short description

This changeover switch is a microprocessor based PC class device designed to transfer loads automatically and manually from one power source to another in a wide variety of 1-3 phase applications.

The unit monitors 3-phase normal and reserve source voltages, sends remote start command to the generating set and performs changeover switching between those 2 sources connecting the load circuits to a power source having voltage and frequency within preset limits.

Device has a manual load switch lever, a manual/auto mode switch and a mechanical locking switch.

Inputs and outputs: fire linkage control, generator remote start, external indicators.

The front panel leds provide information about mains and generator power availability as well as a current switch position.

The device display control panel shows device current state and source voltages and frequencies and can be placed on the switch front side or in a distance of 1-3 meters from the device via standard Ethernet cable.

Power source voltage/frequency limits, transfer/start/stop delays, generator exerciser schedule and transfer modes are front panel configurable.

Note: The delays apply in case if the device is connected to 24VDC auxiliary power supply only.



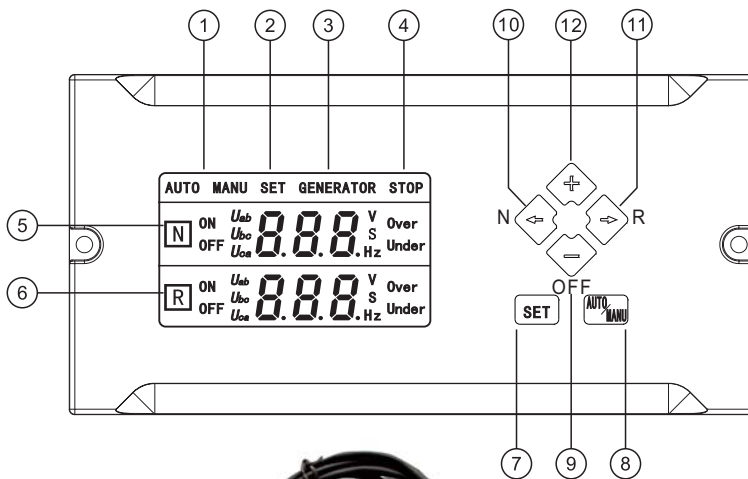
Features

- High density silver-alloy contacts providing thousands operating cycles at 100% rated load;
- Bridge type double break design not requiring special SCPD and matching AC-33B requirements;
- Optimized magnetic blow-out arc extinguish system allowing to reach 10le capacity;
- Multi-mode operation including manual transfer, automatic transfer with/without autorecovery and generator control under various configuration settings;
- 3 working positions: main power ON - backup power OFF; main power OFF - backup power ON; main and backup power OFF;
- Microprocessor controlled operations;
- Reliable mechanical interlock and electric interlock;
- "Zero Position" technology. Device can be set to Zero Position under emergency situations with two way power supply cut off meeting the fire fighting linkage requirements;
- Singleness motor drive providing smooth, reliable, low noise operation;
- Driving motor energized during switching operations only and having outstanding energy saving;
- Mechanical interlock, making sure that the Normal power and Reserve Power sources work without interference;
- Distinct ON and OFF positions and activity indicators;
- Electromechanical integration design with accurate changeover adopting an advanced logical control technology and high anti-interference ability;
- Easy installation using control circuit plug type terminal connections.

Characteristics

Automatic Transfer Switch model:		125A-4P-di	250A-4P-di	630A-4P-di
Poles		3/4	3/4	3/4
Rated working current (A) Ie		16-125	140-250	315-630
Rated working voltage (V) Ue		400		
Rated insulation voltage (V)Ui		800		
Rated impulse withstand voltage (KV) Uimp		8		
Use category		AC-33B		
Rated short time withstand current(KA, rms)Icw		10KA (200mS)	10KA (200mS)	25KA (200mS)
Rated short circuit making capacity (KA peak)Icm		20KA	30KA	50KA
Rated limit short circuit current (KA)Iq		120KA		
Rated control power supply voltage (V) Us		230V/50Hz		
Contact transfer time (s)		1.5	1.8	2
Operation cycles	no electricify	8500	7000	3000
	with electricify	1500	1000	1000
	Total	10000	8000	4000
Outline size (mm) WxDxH		245×130×122	295×175×175	430×272×228
Weight (kg)		5	10	20

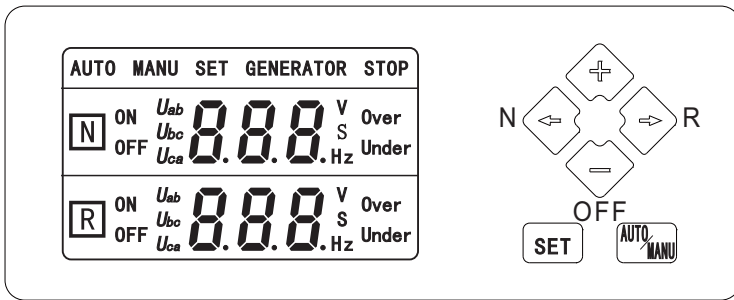
Device controls



Display controls and indicators

- 1: Operation mode;
- 2: Setting status;
- 3: Generator start signal activity;
- 4: Fire linkage input activity (ATS stops when fire linkage input active);
- 5: Normal (main) power data indication zone;
- 6: Reserve power data indication zone;
- 7: Setting mode button;
- 8: Auto/Manual transfer mode selection button (in the work mode) and Save/Escape button(in the setting mode);
- 9: OFF button (in the manual control mode) and the value decrease button (in the setting mode);
- 10: Normal power transfer button (in the manual control mode) and a page up button (in the setting mode);
- 11: Reserve power transfer button (in the manual control mode) and a page up button (in the setting mode);
- 12. "+" button: the value increase button (in the setting mode); the time query menu entrance (click and hold); start/stop generator test button (in the manual mode); stop generator exerciser button (during the exerciser time).

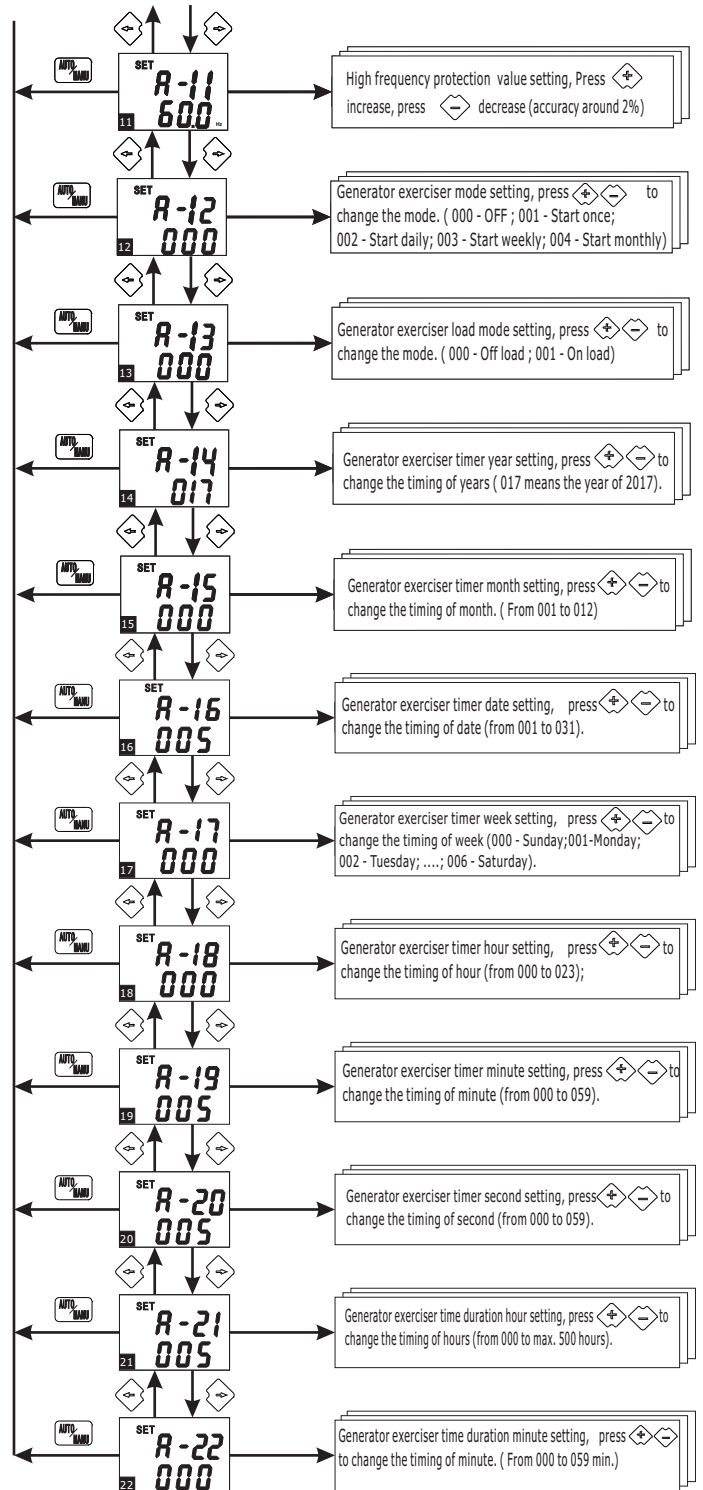
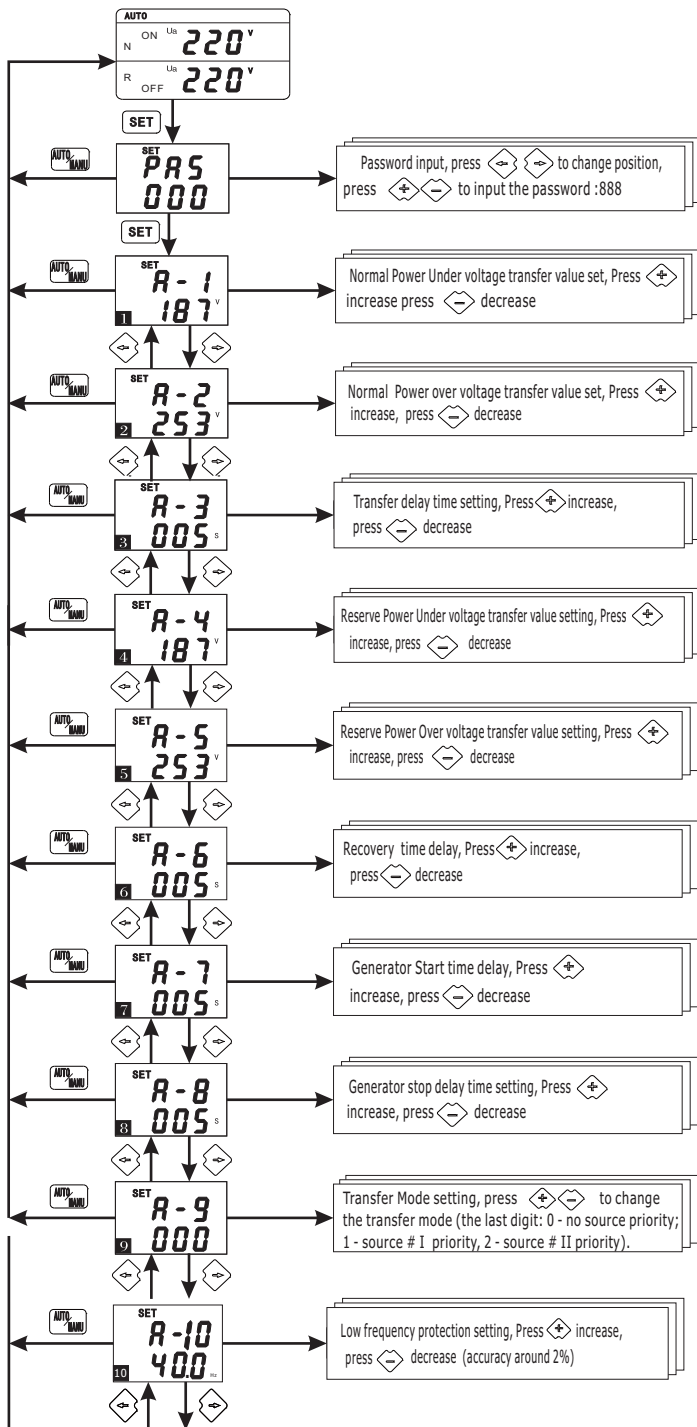
External display controller



Factory default value settings

Normal power under voltage transfer value: 187V
 Normal power Over voltage transfer value: 253V
 Reserve power under voltage transfer value: 187V
 Reserve power Over voltage transfer value: 253V
 Transfer delay time: 5 sec
 Recovery delay time: 5 sec
 Generator start delay time : 5 sec
 Generator stop delay time: 5 sec
 Transfer Mode: Power Grid - Power Grid

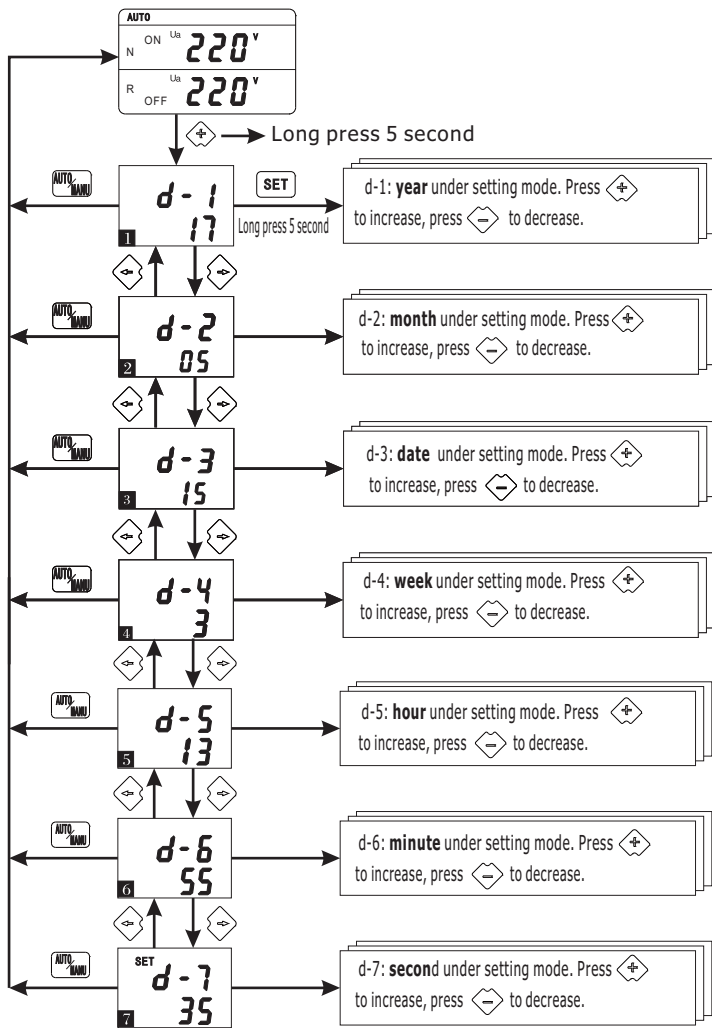
Settings menu



Key-press instruction

When controller is working, press Set button on the LCD display front panel. Under the setting menu, press "←" or "→" button to scrol the setting items. Press "↑" or "↓" button to modify item value settings. Press "AUTO/MANU" button to exit the setting menu.

Time and date setting



1 or 3 Phase Power Source Settings

Press and release the SET button.

When you see "A-1", press and hold the SET button again for 4 seconds until you see "E-1".

Use the arrow buttons to scroll down the menu until you reach "E-2" value.

Set "E-2" value to 000 for 1 phase mode or to 001 for 3 phase mode.

Click on the "Auto/Man" button 2 times to exit the menu.

50/60Hz Frequency Settings

Press and release the SET button.

When you see "A-1", press and hold the SET button again for 4 seconds until you see "E-1".

Use the arrow buttons to scroll down the menu until you reach "E-4" value.

Set "E-4" value to 000 for 60HZ or to 001 for 50HZ settings.

Click on the "Auto/Man" button 2 times to exit the menu.

Ph-N or Ph-Ph Voltage Display Settings

Press and release the SET button.

When you see "A-1", press and hold the SET button again for 4 seconds until you see "E-1".

Use the arrow buttons to scroll down the menu until you reach "E-3" value.

Set "E-3" value to 000 for Ph-N voltage display or to 001 for Ph-Ph voltage display.

Click on the "Auto/Man" button 2 times to exit the menu.

NOTE: E-3" value must be set to 001 for 120/208VAC device version.

Generator exerciser settings

The generator exerciser function needs the auxiliary power supply (16VDC-24VDC) to be connected and current time and date settings configured after it using time query and setting menu.

By default, the generator exerciser timer settings (parameters A-12 - A-22) are not configured.

To cancel the exerciser during the generator exerciser duration time, change the switch mode to manual and press any button.

Controller functions

Under/over-voltage detection: Controller monitors configured under/over voltage values of normal and reserve power supply phases. When the under/over voltage is detected for one of the power supplies, the device controller automatically starts the load transfer to another power supply. When the power supply voltage is recovered, the controller will transfer the load circuits back (auto-recovery mode) or continues monitoring the power supplies (without auto-recovery).

Transfer delay: When the normal (main) power supply voltage is abnormal and reserve (backup) power supply voltage is normal, the controller switches to another power supply after the transfer delay counted. This delay value helps to avoid frequent load transfers in case if the voltage recovers very quickly.

Recovery delay: This delay is activated before switching the load to normal (main) power supply when phase voltages are recovered while the load circuits are powered via the reserve power source. It helps to insure that the normal power source voltage is stable before switching the loads there.

Generator start delay: It helps to avoid frequent genset starts due to short time power issues. When main power faults, the delay starts counting, and after the delay time is over, the generator start signal is activated.

(Note: this delay could be activated only if the auxiliary 24VDC power supply is connected to the ATS switch)

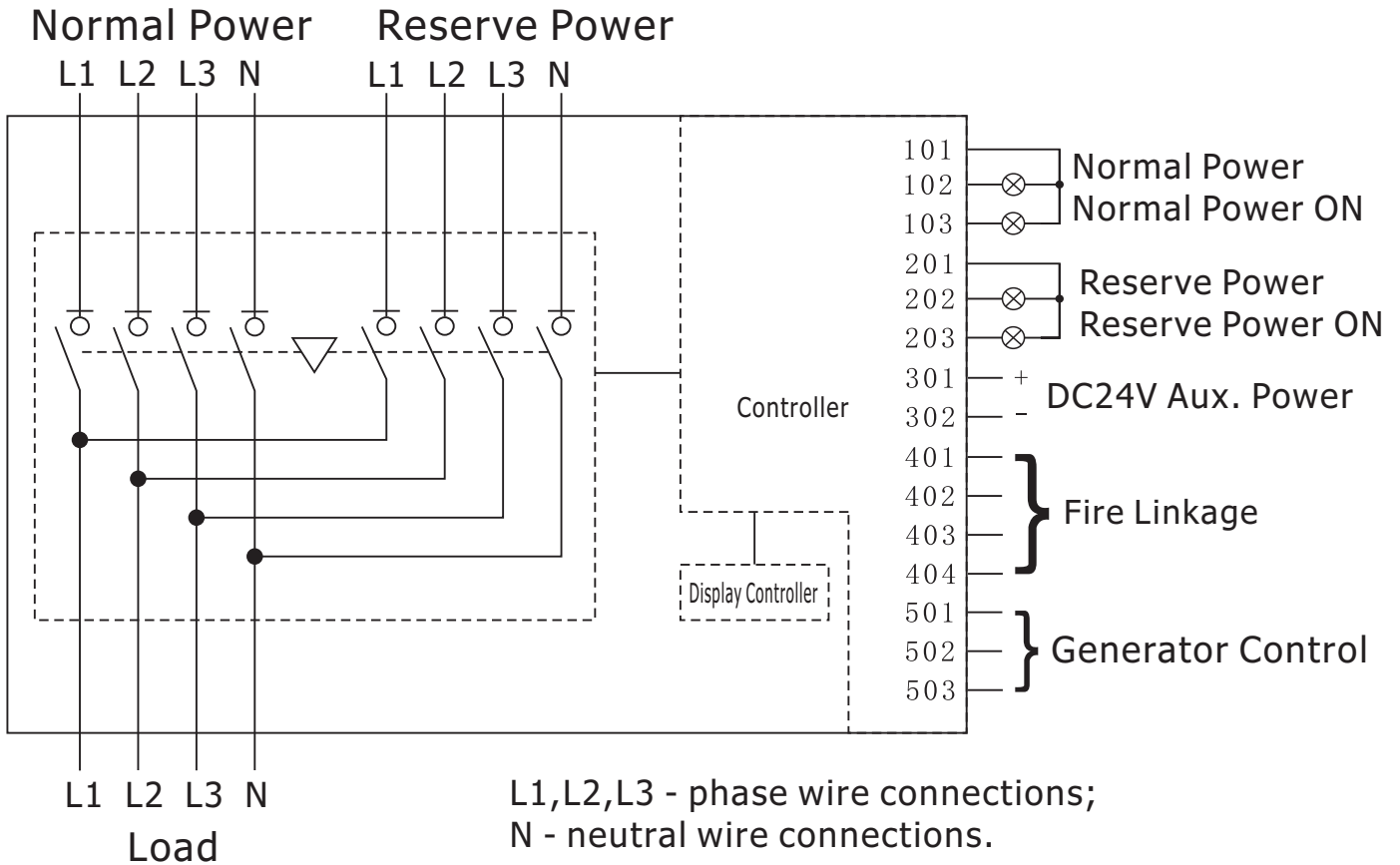
Generator stop delay: This delay helps to remain the generator running in the hot backup state after the load is switched to the normal power supply. The generator stop signal is activated after this delay to avoid genset restarts due to the main power supply instability.

High/low frequency protection: it is adjustable within $\pm 20\%$ range for the power supply phase frequency.

Generator exerciser timer: (daily, weekly and monthly timer setting).

Transfer modes: Power grid - Power grid (with autorecovery), Power grid - Power grid (without autorecovery), Power grid - Generator.

Device connection



CONTROLLER TERMINAL CONNECTIONS

101 - 103 : Normal Power external Indicator outputs (Active AC230V 0.5A)

- 101 - Indicator common neutral line
- 102 - Normal power indicator signal output
- 103 - Normal power ON signal output

201 - 203 Reserve power external indicator outputs (Active AC230V/0.5A)

- 201 - Indicator common neutral line
- 202 - Reserve power indicator signal output
- 203 - Reserve power ON signal output

301 - 302 Auxiliary power supply 15-24VDC inputs

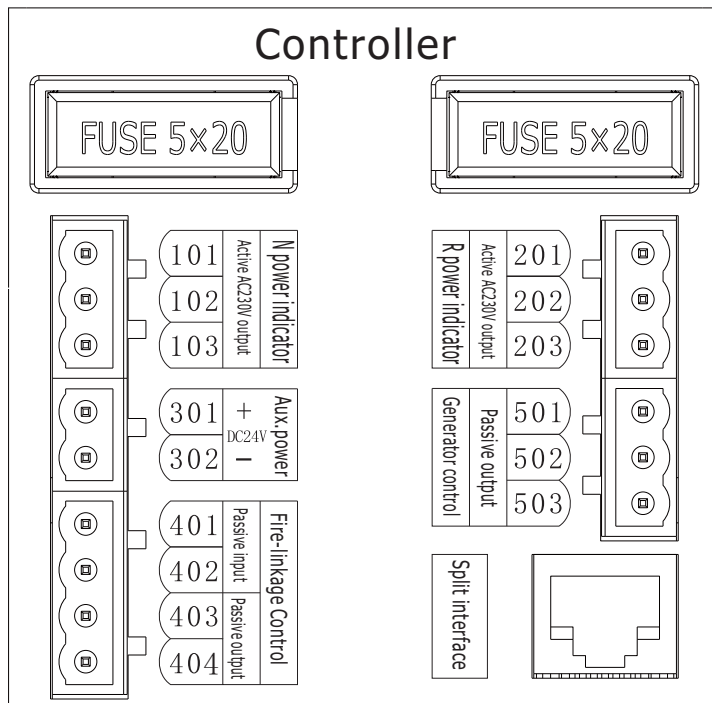
- 301 - "+" input
- 302 - "-" input

401 - 404 Fire linkage control signal inputs and feedback signal outputs

- 401, 402 - Fire linkage signal passive inputs
- 403, 404 - Feedback signal outputs (active when ATS transfer is in OFF position)

501 - 503 - Generator remote start control signal outputs

- 501 - Control signal NO point
- 502 - Control signal common point
- 503 - Control signal NC point



Notes:

When the fire-fighting equipment output signal is active (closed), it means that the Load circuits is powered by whether via Normal or Reserve power source.

When the fire linkage inputs are active, the ATS will switch to OFF position disconnecting LOAD from power sources.

To re-activate the device, the fire-fighting signal must be removed and the Manual/Auto button must be pressed once. So, the ATS will return to normal operation.

Working Conditions

- Ambient temperature: -5°C– +40°C; 24 hours average - not more than +35°C;
- Atmospheric conditions: humidity not more than 50% at max. +40°C. Max. monthly humidity 90%. Higher humidity is allowed at lower temperatures. It should take special treatment for the occasionally condensation due to the temperature variation.
- Altitude: Not more than 2000m
Pollution Class: The installation site environment pollution Class 3
- Use category: AC-33IB

EMC Compatibility

General requirement: B class (common use)

Transmit Test:

- Radio Frequency Transmission Test: as per EN55011
- Radio-frequency radiation Transmit test: as per EN55011

Anti-interference Test

- Static Discharge: air discharge class 4; contact discharge class 3 as per IEC61000-4-2
- Radio-frequency electromagnetic field: Class 3 as per IEC61000-4-3 and IEC61000-4-6
- Fast transient pulse group: Class 4 as per IEC61000-4-4
- Surge: Class 4 as per IEC61000-4-5
- Short time voltage drop and voltage off: passed

Standards conformity

- IEC60947-1(2001) (Low voltage switchgear and control gear, part one: General Rules)
- IEC60947-3(2005) (Low voltage switchgear and control gear, switch, isolator and combined fuse switch etc)
- IEC60947-6-1 (2005) (Low voltage switchgear and control gear multi-function switch: auto transfer switch etc.)
- GB/T14048.1-2006 (Low voltage switchgear and control gear, part one: General Rules)
- GB14048.3-2008 (Low voltage switchgear and control gear, switch, isolator and combined fuse switch etc)
- GB14048.11-2008 (Low voltage switchgear and control gear multi-function switch: auto transfer switch etc.)

Transportation and Storage Conditions

- During the transportation should not be exposed to rain and snow
- Storage ambient temperature should between -25°C– +55°C
- Relative humidity - not more than 95% (under 25°C)

Common faults and troubleshooting

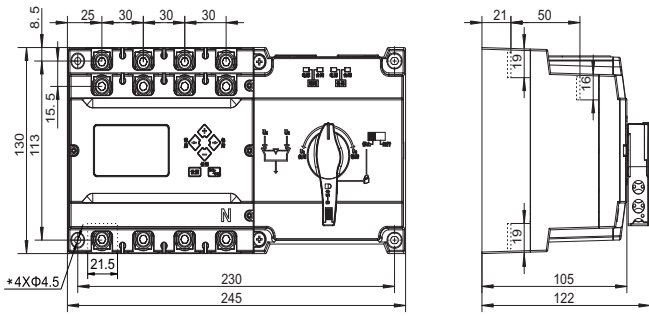
Fault Condition	Possible fault reasons	Action
Controller display does not work after power is turned ON	Bad contact of input terminals	Ensure that input connections are tighten and reliable
	Controller Fuse Failure	Replace the fuse
Controller display shows missed phase(s)	Phase wire bad contact	Fix the connection issue
	Phase voltage is lower than preset under-voltage value	Check the phase voltages and change the preset value
Controller display works, but ATS does not work	Controller is in the OFF position	Turn the switch to a working position

Installation, Usage and Maintenance

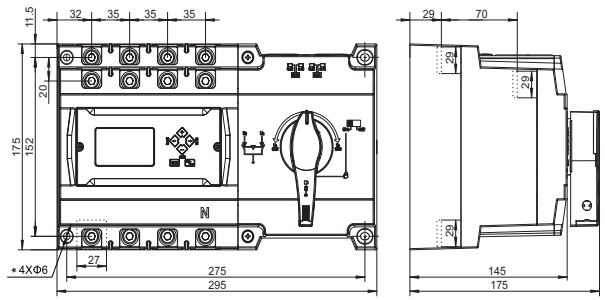
- This device requires professional installation and maintenance.
- Product wiring should be done strictly as per input wiring mark.
- The device must be reliable earthed to avoid any injuries, fire, explosions and equipment damage.
- Voltmeter must be used to check that the power sources are disconnected before installation.
- Periodically make normal inspection, test manual- and automatic transfer modes to insure that the device works normally.
- Periodically make a maintenance, clear out the dust and check product insulation quality.

Outline Drawing Size

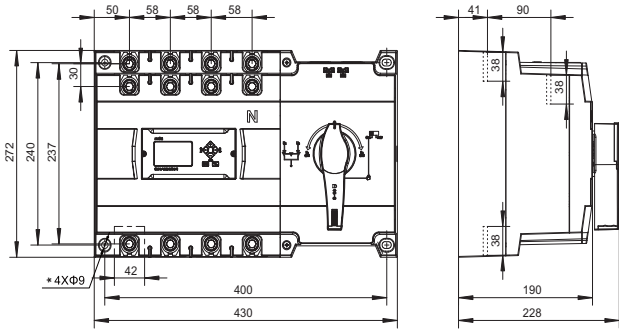
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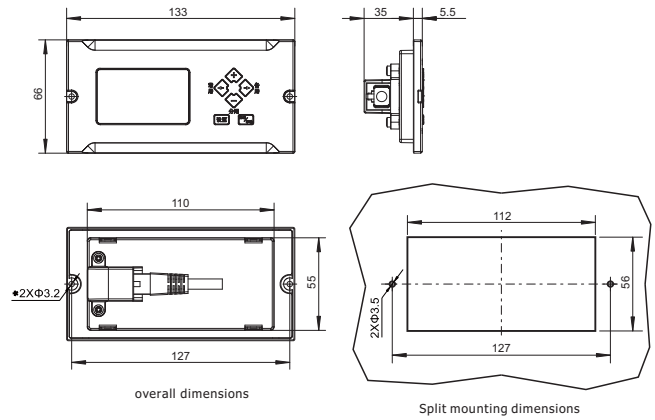
4PRO ATS-250A-4P-di



4PRO ATS-630A-4P-di

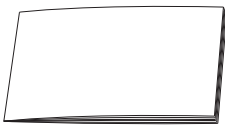


Display controller outline and split mounting dimensions



Accessories

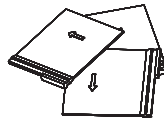
Number	Name	Quantity	Notes
(1)	User manual	1 piece	
(2)	RJ-45 Connector	1 piece	
(3)	Clapboard	1 set	
(4)	2m RJ45 cable	1 piece	
(5)	Continental Terminals	1 piece	
(6)	Continental Terminals	1 pcs each	



(1)



(2)



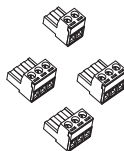
(3)



(4)



(5)



(6)

Note:

- If any accessories are missing or damaged, please contact the manufacturer.
- Keep the instructions manual for the future use.