

User's Manual of Automatic Reclosing Power Protector





Product brief introduction

Overview

Automatic reclosing power protector is an intelligent product making use of the mechanical automation principle and high voltage automatic reclosing controller technology. It provides a solution to instant breakdown resulting the power supply cannot be recovered automatically after the switch power failure, and by real time monitoring to the power supply circuit's voltage, current, electric leakage, etc., it provides branching protection to the equipment and the line. It provides stable and reliable power supply to equipment, prolonging the equipment service life, improving the network service quality and reduce network maintenance costs. This product is applicable to single phase main power line with AC 50Hz or 60Hz and rated current within 63A. When the circuit has faults such as electric leakage, over current, short circuit, over-voltage or low voltage, the automatic reclosing power protector can cut off the power supply circuit quickly, after breakdown recovered, it automatically reclose for sending the power supply, no need for man-made switch on, ensuring the power supply safety and continuity of the equipment and the circuit.

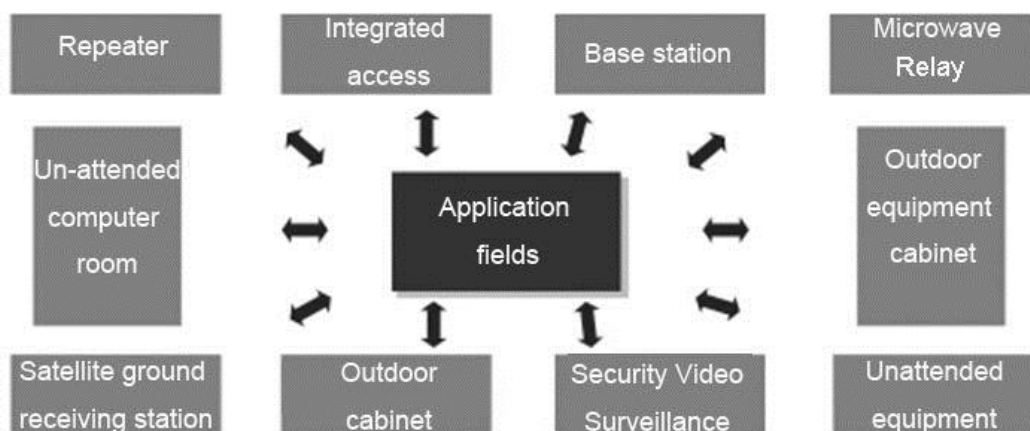
1) This product is compliant to:

GB6829 - 1995 China national standards for general requirements of residual current action protector;

GB16917.1 - 2003 China national standards for household or similar purpose residual current breaker for operation (RCBO) with protection from over-current;

Standards from China Telecom Guangdong Company, Technical Requirements and Testing Method for PHS Base Station Purpose Automatic Reclosing Electric Leakage Protection Switch

2) Main application scope








3) Function characteristics:

a. Anti-lightning protection function can have multi-layer protection to



- equipment, reducing the damage rate, prolonging customer's equipment service life.
- b. The checking before reclosing avoids damage to faulty equipment by twice reclosing of the power supply, with safety guarantee to power supply environment;
 - c. For compensation type steady voltage output with efficiency 90% above, it is applicable for the case with bad voltage changes within AC85 V-AC300V
 - d. The product adopts leading rail installation with convenient installation and maintenance. By breakdown dry contact output, you can monitor breakdown information at any time.
 - e. With perfect over-current, over-voltage, under-voltage, electric leakage, short-circuit protection function, it insures the safety of electricity using environment, equipment and human body;
 - f. It adopts mechanical switch and automatic reclosing controller technology to guarantee the product stability, reliability, low breakdown rate;
 - g. Accurately and quickly identify and insulate permanent breakdown, remove instant breakdown, quickly recover by itself the power supply, guarantee the normal network operation.

Product main technical parameters

Model Technology	TELSUN-AR CP-6A	TELSUN-AR CP-10A	TELSUN-AR CP-16A	TELSUN-A RCP-32A	TELSUN-AR CP-63A
					
working voltage (VAC)	85~300	85~300	85~300	85~300	85~300
Rated loading current (A)	6	10	16	32	63
Over-current action current (A)	6	10	16	32	63
Over-current action time (s)	2	2	2	2	2
short circuit action current (A)	25	50	50	50	100
short circuit action time (ms)	30				
electric leakage action current (mA)	30 can be adjusted based on customer demands				
electric leakage non-action current (mA)	15 can be adjusted based on customer demands				
electric leakage action	30				



time (ms)		
Over-voltage action voltage (V)		270±10V can be adjusted based on customer demands
Under-voltage action voltage (V)		100±10V
Over-voltage or under-voltage action time (ms)		<100
Reclosing allowed loading impedance (Ω)		>5
Reclosing interval time 1 (s)		30 can be adjusted based on customer demands
Reclosing interval 2 (m)		30 can be adjusted based on customer demands
Reclosing interval 3 (h)		1 can be adjusted based on customer demands
Reclosing reset time (s)		5
permanent breakdown insulation (lock)		Available
Telecom port (RS232 or 485)		can be selected or not selected based on customer demands
Breakdown dry contact output		can be selected or not selected based on customer demands
Anti-lightning		can be selected or not selected based on customer demands
power consumption (W)		<1
working temperature (°C)	Indoor type	-40~85
	Outdoor type	-40~85
Storage temperature (°C)		-20~55
Relative humidity (%)		10%~90%
Installation size (mm)	Indoor type	90L*98W*66H
	Outdoor type	152L*116W*98H
Installation way	Indoor type	Rail installation
	Outdoor type	Pole-holding installation



Main function illustration

a. Protection from short-circuit

When the circuit has short circuit, if it keeps on 0.5 seconds, it will burn and destroy the circuit. If you can cut off the power supply quickly within 0.1 seconds, you can avoid the accident. Automatic reclosing power protector breaks the power within 0.03 seconds when the current is 5 times over the rated current to ensure the safety of equipment.

Electric leakage protection

When the circuit occurs electric leakage or human electric shock, the automatic reclosing power protector cut off the power within 0.03 seconds, ensuring human body safety.

Protection from over-current

If the circuit is over-loaded, the electric wire gets much heat, it may cause fire. When the current is 1.1 times over the rated current, the automatic reclosing power protector will monitor this current's continuous time and size; If the continuous time is over 2 seconds, or more than 50A during this period, the automatic reclosing power protector will cut the power and implement protection

Protection from under-voltage or over-voltage

If the voltage is too high, it easily makes the equipment burnt, when the supply voltage is higher than 280V, the automatic reclosing power protector will cut off the power for protection. When the voltage recovers, the automatic reclosing power protector recovers automatically. The high voltage is too dangerous, and the low voltage leads to fire easily, when the supply voltage is lower than 100V, the automatic reclosing power protector power cut off the power for protection; When the voltage recovers, the automatic reclosing power protector works for normal power supply.

Power supply switch on/power loss switch off

When the main power is cut off, it breaks off the input and output circuit automatically to avoid instant peak or abnormal voltage causing the equipment burnt. When the main power is on again, it shall have delayed reclosing, the equipment will be restarted frequently due to unsteady power supply

Checking before the reclosing

Check the circuit before the automatic reclosing power protector recloses, if the circuit has short-circuit or serious electric leakage, it will be locked without reclosing and alarms; If the customer do not repair in time and breakdown has not been removed, then it cannot reclose for the power supply.

Automatic reclosing

When the circuit occurs breakdown, the automatic reclosing power protector will switch off immediately; After breakdown removed, if the circuit is still safe, the automatic reclosing power protector will automatically reclose for



switch-on; For permanent breakdown, if it continuously recloses for three times/eight times without success, the power protector switches off without reclosing and alarm. Instant breakdown does not have the concept of reclosing times.

Breakdown alarm

While above-mentioned protective power-off occurs, different red indicator is on to indicate corresponding breakdown type

Breakdown dry contact

When the breakdown protection case occurs, the dry contact is connected through; If the power supply output is normal, the dry contact is disconnected. Monitoring collector judges the power supply circumstance via the dry contact.

RS232 telecom port

Automatic reclosing power protector uploads the working status and receives data via the RS232 ports at real time.

Product descriptions

The upper left of the product is the power supply input end

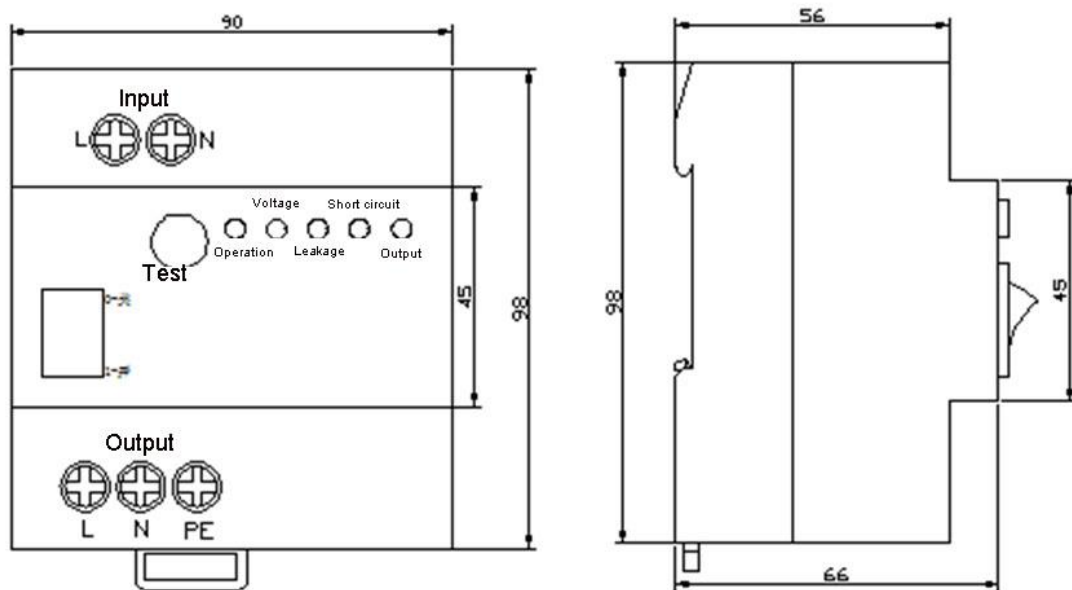
The lower left of the product is the power supply output end

The front-panel indicator is used for the product operation status indication

The experimental button of the product front-panel is used for checking or inspection

The switch in the product front-panel is used as manual switch for man-made switch off or reclosing, it is also the switch of the product power supply switch on/off.

1) Product outlook



2) The indicator and its functions

There are five indicators in the power protector indicator board, from left to right, they are for operation, voltage, electric leakage, short circuit and output.



Operation- The indicator is in green, it is secondly flashing in operation status

Voltage- The indicator is in red, the indication has secondly flashing, it means the main power is in under-voltage status; When the indicator is always on, it means the main power is in over-voltage status; When the indicator has quick flashing, it means the input voltage has breakdown and is in power-off status

Power leakage- The indicator is in red, the indicator is always on, it means output loop has electric leakage; If the indicator has quick flashing, it means the loop has already leakage.

Short circuit- Indicator is in red, the indicator is always on, it meant the over-current or short circuit breakdown; if the indicator has quick flashing, it means the output loop has over-current or the short circuit breakdown and it is in power-off status.

Output- The indicator is in green, when the output light is always on, it means the equipment is in normal output status, please watch for power use to avoid electric shock! When the output light is off, it means the equipment is in disconnection status (i.e., there is no output)

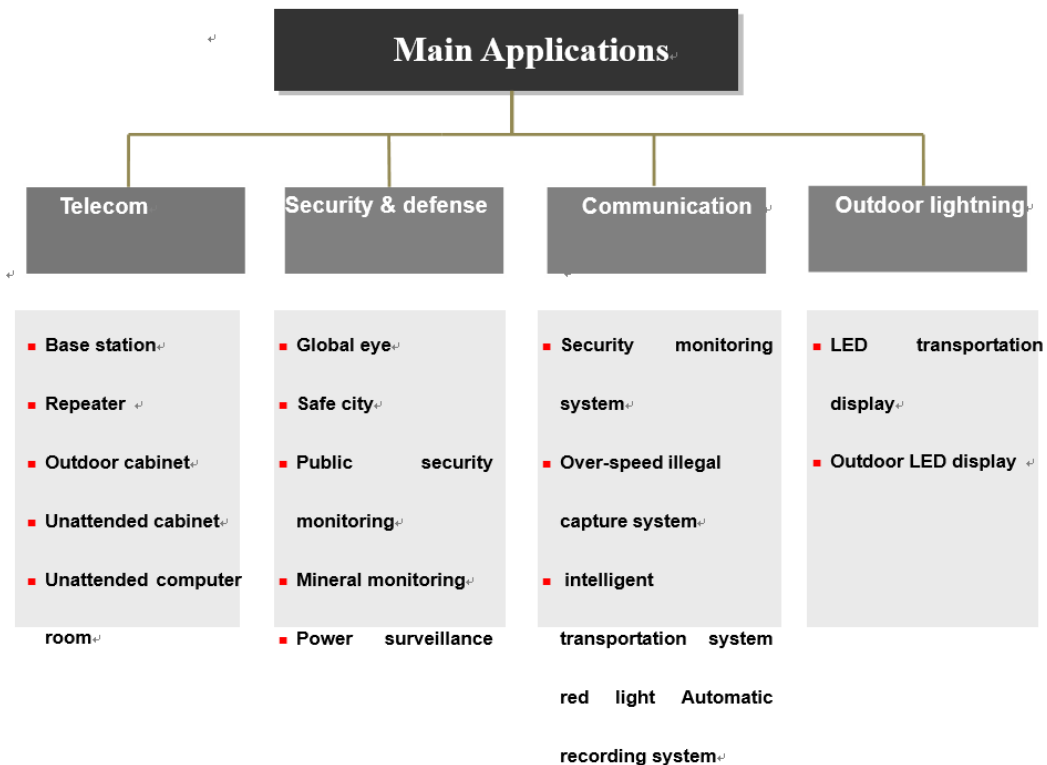
Product Applications field

Along with national comprehensive strength, the people living continuously is improved, thus it puts forward higher requirements for infrastructure facilities such as telecom, security & defense, transportation, cyber city, etc.. For example: Fiber in copper withdraw equipment, base station equipment, public monitoring equipment and intelligence transportation equipment, etc.. It also requires these equipment 24-hour working uninterruptedly in outdoors environment with high or low temperature, with complicated power supply circumstance, easily get surge or lightning interference. But as the outdoors working environment is bad, the equipment get easily faults such as aging, equipment damage, switch-off by circuit breaker (the electric leakage circuit breaker), etc. and the breakdown rate is high. The outdoors equipment different installation location are dispersed, e.g., street, building top, mountain summit, tunnel, village, electric line pole, etc., if the equipment has breakdown, the maintenance work is increased. For providing solution to unattended equipment's breakdown high rate and maintenance difficulty, we develop TELSUN-ARPC series automatic reclosing power protector to address to this needs.

TELSUN-ARPC single phase series product has protection from over-voltage, under-voltage, over-current, short circuit, electric leakage, etc. and automatic reclosing power supply function, it makes the equipment working more safe and reliable. It is with various specifications such as 6A, 10A, 16A, 32A, 50 A, 63A, etc., it is applied in power supply circuit within 63A.



Main application fields of automatic reclosing power protector



Classic cases

1. Telecom application cases

As the telecom equipment mostly is installed on the building top, mountain summit, mountain halfway or the iron tower. The stations are dispersed, and the installation positions are outstanding, so the station voltage is complicated and changeable, and tends to be harassed by surge and lightning easily. These instant interruption usually makes the electric leakage circuit breaker switches off, becoming permanent breakdown, making the base station equipment stop work due to the power failure, making maintenance difficult and the waste of resources and economic loss. The intelligent supervision protector gives a solution to above problems.



Case 1: XPON, ONU equipment



Power: 200 W
Main unit: FTTB-03X
Rated voltage: 220V AC
Product model: TELSUN-ARPC-32A

Case 2: PHS base station



PHS base station is with small coverage area and many sites, mostly they are installed at the building top of residence building and the business building, it selects the local main power supply, in the thunder-storm season it exists the problem that it is difficult for maintenance after the electric leakage protector switches off, and the maintenance work is reduced greatly after choosing automatic reclosing power protector.

Power: 200 W
Rated voltage: 220V AC
Main unit: for ZTE CS28
Product model: TELSUN-ARPC-10A



Case 3: GSM, CDMA,3G base station equipment



Power: 3000 W
Rated voltage: 220V AC
Main unit is GSM+3G base station
Product model: TELSUN-ARPC-32A

Case 4: base station equipment such as wireless repeater, fiber optic repeater, repeater etc.



Power: 200 W*2
Rated voltage: 220V AC
Main unit is the repeater remote unit and office unit
Product model: TELSUN- ARPC-16A (outdoors type)

Case 5: China Tietong GPON cabinet



Load down power: <100 W
Rated voltage: 220V AC



Product model: TELSUN-ARPC-6A

2. Intelligent transportation application cases

Intelligent transportation system front end equipment for security exit, speed-exceeding illegal capture, red light automatic recording etc. is installed in outdoors power pole. Due to the dispersed sites, special installation position, difficult maintenance, we frequently have the interruption by changeable voltage, electric leakage or surge, thunder and lightning to cause the electric leakage circuit breaker switch off the power to become permanent breakdown, making the front end equipment cannot work. Based on the actual demands of the city transportation, our automatic reclosing power protector (intelligent transportation product free from maintenance) is integrated effectively with the system engineering technology, and it is used in the whole transportation management system, thus to establish the overall, real-time, accurate, effective intelligent control and management transportation system.

Case 1: Main unit video capture system



Power<200 W

Rated voltage: 220V AC

Product model: TELSUN-ARPC-10A

Case 2: 2011 Year Shenzhen 26th Summer College Sports Meet



Power<200 W

Rated voltage: 220V AC

Product model: TELSUN-ARPC-10A



3. Security and defense application case

In order for the government sections to control city public area conditions, strengthen the social public order control, efficiently and accurately curb the criminals, handle quickly abrupt and public affairs, promote the city modernization management level, we have set up a great deal of video surveillance sites and management platform. Because peaceful city security and defense video network surveillance is very important and related to the social public order, and the installation quantity is huge but most of the installation environment is fierce, the power supply circuit is complicated, the reclosing leakage protector is adopted to guarantee supervision the network long-term stable working and safe power using, reduce the power failure time.

Case 1: Foshan peaceful city surveillance



Fully-loaded power: <100W
Rated voltage: 220V AC
Product model: TELSUN-ARPC-10A

Case 2: Peace city video surveillance equipment in security and defense network



Fully-loaded power: <100W
Rated voltage: 220V AC
Product model: TELSUN-ARPC-10A



Case 3: Guangzhou Zengcheng peaceful city video surveillance



Load down power: <100 W
Rated voltage: 220V AC
Main unit: China Unicom terminal box
Product model: TELSUN-ARPC-10A

Case 4: Changsha public security surveillance



Power: <100 W
Rated voltage: 220V AC
Product model: TELSUN-ARPC-10A

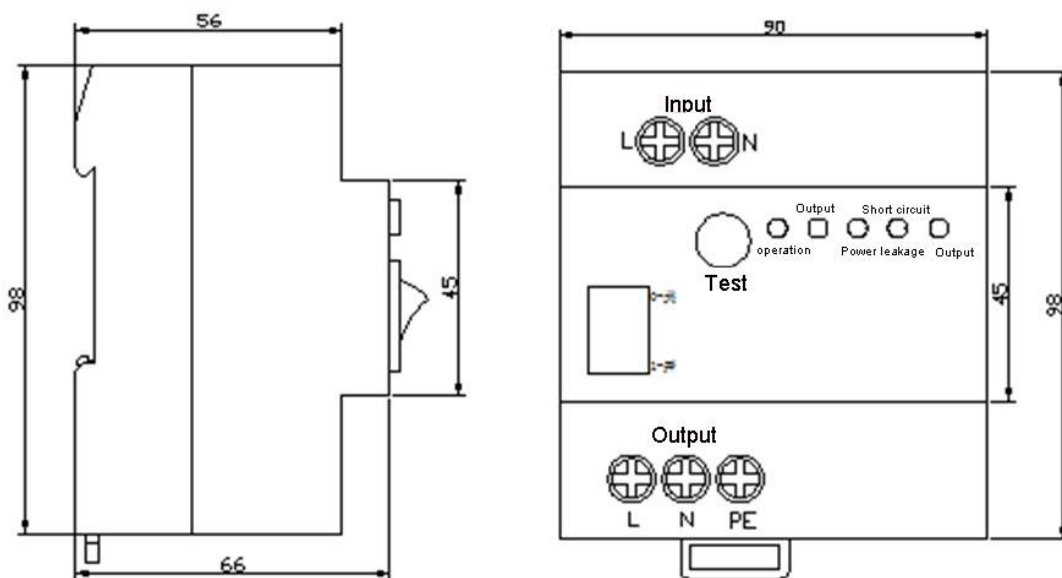
Product Installation and Maintenance

Installation regulations

- Install the protector on the wall or in the main unit, avoid direct rain or sun light;
- The protector output end shall be installed downwards to avoid rain drops in the terminal contact;
- Distinguish the zero line and live line of AC220V power, and access to the protector of the power supply input end;
- The protector power output is connected to the loading equipment's input end
- The protector can replace the existing leakage circuit breaker for installation, we shall remove the installed leakage protection switch;



- f. If 10 seconds after the power supply switches on, the red light is on, it indicates that line has corresponding faults, after disconnecting for 10 seconds, and then switch on, if still don't switch on for power transmission, it shows that the line leakage current exceeds the set value, or line exists over-current or short-circuit, you should turn off all loading immediately and identify the reasons for troubleshooting and power transmission.
- g. As per the product panel identification, we access 220V single-phase power supply, equipment power line and grounding line, pay special attention to the input and output end cannot be reversed.
- h. The protector output line to the electrical equipment must be with dedicated live line or zero line, they cannot be connected with other power lines, avoiding cross power supply with other switches.



Installation size

Maintenance and precautions

- a. The protector is installed on the wall or in the main unit, avoid direct sunlight or rain;
- b. In the transportation, storage and use, it shall not be affected by the rain or snow, shall avoid the sunlight, no wet hands operation;
- c. After three times unsuccessful automatic reclosing, please check the electrical equipment and wiring, after troubleshooting we enable reclosing for power supply;
- d. Regularly check leakage protection function, in the power switch-on status, press the self-test button once to check whether the equipment operation is normal;
- e. When carrying on the operation feature tests, you shall use the national relevant department approved special testing instrument, it is strictly prohibited from the method of short circuit to test device to avoid the risk of electric shock to the people.