

- Ⓟ BG Инструкция за монтаж и експлоатация
- Ⓟ EN Instruction for installation and use
- Ⓟ RO Instrucțiune de instalare și utilizare
- Ⓟ SRB Uputstvo za ugradnju i upotrebu
- Ⓟ HR Uputstvo za ugradnju i upotrebu
- Ⓟ BIH Uputstvo za ugradnju i upotrebu
- Ⓟ HU Szerelési és kezelési utasítás
- Ⓟ SLO Navodilo za vgradnjo in uporabo
- Ⓟ GR Οδηγος για την εγκατάσταση και τη χρήση
- Ⓟ MK Упатство за вградување и употреба
- Ⓟ SK Návod na montáž a používanie
- Ⓟ PL Instrukcja instalacji i użytkowania
- Ⓟ P Instrução para instalação e uso
- Ⓟ IT Istruzioni per l'installazione e l'uso

ELMARK
The Brand of Electricity

www.elmarkholding.eu

Automatic Transfer Switch Instruction Book

- Ⓟ BG Автоматично включване на резерва-серия EQ1
- Ⓟ EN Automatic transfer switch EQ1 series (ATS)
- Ⓟ RO Automat de anclansare EQ1
- Ⓟ SRB Automatski prekidač rezervnog napajanja EQ1
- Ⓟ HR Automatski prekidač rezervnog napajanja EQ1
- Ⓟ BIH Automatski prekidač rezervnog napajanja EQ1
- Ⓟ HU EQ1 Átkapcsoló automatika
- Ⓟ SLO Zasilno napajanje
- Ⓟ GR Ρελέ διακόπτες ισχύος EQ1
- Ⓟ MK Алтернативно вклучување на резервата на серијата EQ1
- Ⓟ SK Automatický prerušovač rezervného napájania EQ1
- Ⓟ PL Automatyczny przełącznik transferu serii EQ1 (ATS)
- Ⓟ P Interruptor automático de transferência série EQ1 (ATS)
- Ⓟ IT Infissi a LED

I、 General

With the rapid social progress and development, people's requirement of power supply reliability also improved. In many situations, we adopt double road independent power supply to ensure the stability of power supply. Thus,our company developed intelligent dual-power automatic switching system basing on the requirement of customers. It uses the most advanced microcomputer control system as core and is designed by electromagnetic compatibility. The biggest superiority of which is its anti interference capability and long time working stability. This product not only can switch between dual power sources, but also can detect two way, three-phase and four-wire voltage simultaneously. When error occurs at any of the phase, it transfer to the normal power automatically.

II 、 Application

Intelligent dual-power automatic switching(short called ATS) system applies to the dual power supply system with AC 50/60 Hz, rated voltage below 415V and rated current below 2000A. It enables the changeover between normal power (N) and emergency power (R). This product applies to the places where do not allow power outages like electric (power) systems, high-rise buildings, housing districts, airports, hospitals, etc

III、 Standard

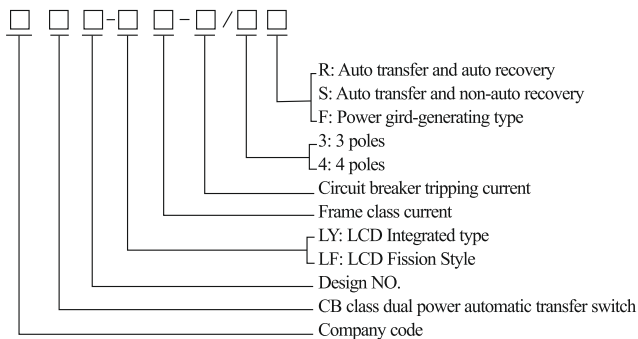
3.1 IEC60947-1 General Rule

3.2 IEC60948-61 (1998) Automatic Transfer Switch Electrical Appliances

3.3 IEC947.2

3.4 GB/T14048.11

IV、Product Model and Meanings



V、Scope of Application

- 5.1 The air temperature should not be more than 40℃ and below -10℃
- 5.2 Installation sites: Altitude below 2000m
- 5.3 Class of pollution: 3. The around air should not have explosion danger, corrode metal components, conductive dusts and gas or liquid which may effect the insulation.
- 5.4 Atmosphere condition: relative air humidity should not be more than 50% when the max temperate reaches to 40℃. It does not allow a relative high humidity at a relative low temperate.
The average temperate should below 25℃ in the wet month, in which the max relative air humidity should not be more than 90%.
- 5.5 If the above conditions can be satisfied, the problem should be settled together with users and manufacturers jointly.

VI、 Structure and Function

6.1 Structure

6.1.1 ATS system is made up of controller and ontology device.

6.1.2 Intelligent device is made up of positive and inverse motor, circuit break, mechanical interlock, air plug, terminals, etc. All of the accessories are installed on one metal plate.

6.1.3 This Intelligent dual-power automatic switching system has the function of dual chain safeguard. It ensures the guarantee of safety and stability.

6.2 Function

The automatic controller detects dual voltage simultaneously. It judges the voltage over 270VAC as over-voltage and the voltage below 70%~85% of rated voltage as under-voltage. Microcomputer analysis and process the result automatically and send the orders of switch-on, switch-off, electricity generation, uninstall or alert. The above detection result displays on the controller panel for the purpose of finding reasons. The functions of intelligent controller can be divided into three: auto change and auto recovery applications between electrical nets; auto transfer and non-auto recovery applications between electrical nets; electrical net to generator applications between electrical net and generator.

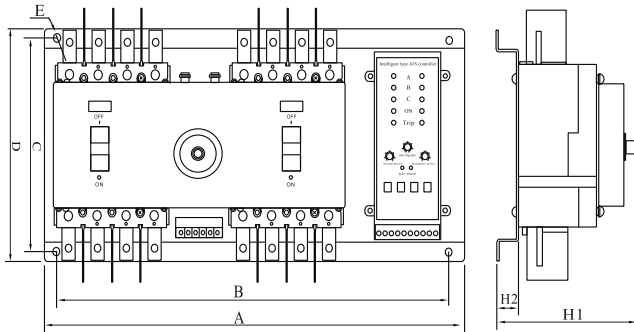
6.2.1 Auto transfer and auto recovery applications between electrical nets
It switches to normal power when the two-way powers are normal. It switches to emergency power with delay when faults occur in normal power. The delay time can be setting from 0.5s to 30s. After the fault is settled, normal power recovers with delay. The delay time can also be setting form 0.5s to 30s.

6.2.2 Auto transfer and non-auto recovery applications between electrical nets.
The primary power is normal power when the two-way powers are normal. It switches to emergency power with delay when faults occur in normal power. The delay time can be setting from 0.5s to 30s. After the faults are settled, it will not switch to normal power until faults occur in emergency power. The delay time can also be setting form 0.5s to 90s.

6.2.3 Electrical net to generator

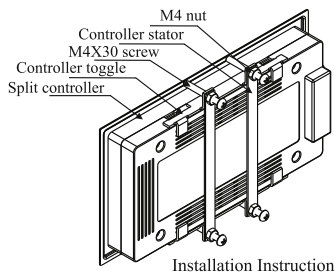
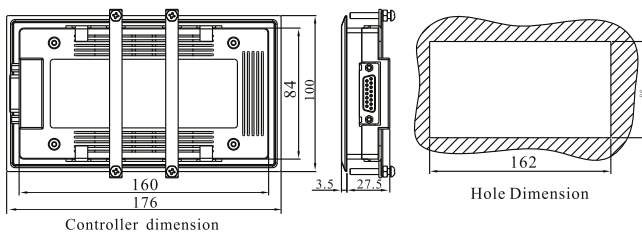
The controller detects the normal power and generator power. When the normal power is normal, the generator will not start. Or, this intelligent system will send a starting order (switch off) to the generator. When the generator starts, and the generator voltage is normal, it will switch to generator power supply automatically with delay. When the electrical net recovers, the intelligent system switches off to normal power supply with delay, and sends a stop signal.

VII. A.T.S Outline dimension and installation



Dimension Specification	A		D	B		C	H1	H2	E
	3P	4P		3P	4P				
Q1-63	380	405	250	340	365	230	<160	25	9
Q1-100	405	435	250	365	395	230	<170	25	9
Q1-225	450	480	250	410	440	230	<190	25	9
Q1-400	570	620	330	510	560	300	<230	25	11
Q1-630	680	740	330	620	680	300	<230	25	11
Q1-800	750	820	330	690	760	300	<230	25	11

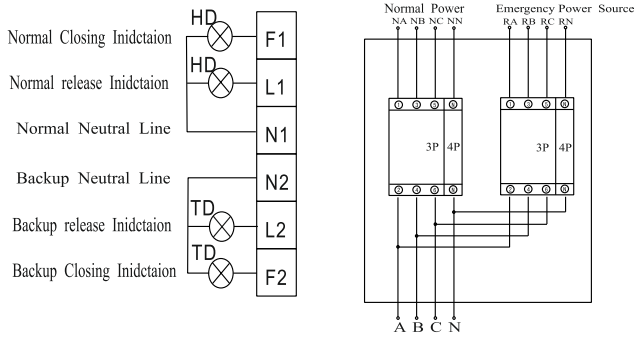
VIII、Fission type intelligent controller outline dimension



IX、Technical parameters

Type	Q1-63/100/225	Q1-400	Q1-630
Mechanical life	5000	3000	2500
Electrical life	1000	1000	500
Rated working	ongoing working		
Over-voltage switch-over figure	270VAC(unadjustable, factory settled)		
Scope of under-voltage adjust	(70%~85%)Ue continuing adjust		
Contacts conversion time	≤4s		
Operation time delay t1	0.5~30s continuing adjust		
Return time delay t2	0.5~30s continuing adjust		

X、Installation and wiring diagram

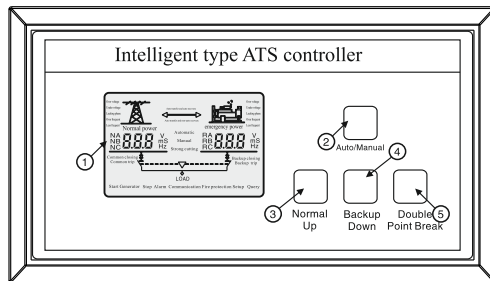


Note: This diagram applies to three-phase fore-wire. When using three-phase three-wire system, the neutral line of normal power connect to wiring board N1, Neutral line of emergency power connect to wiring board N2

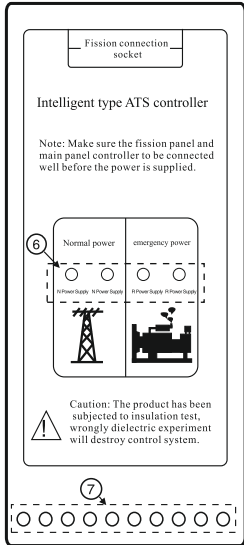
HD normal power circumscribed state index AC220V/1A (Customer-provided)

TD emergency power circumscribed state index AC220V/1A (Customer-provided)

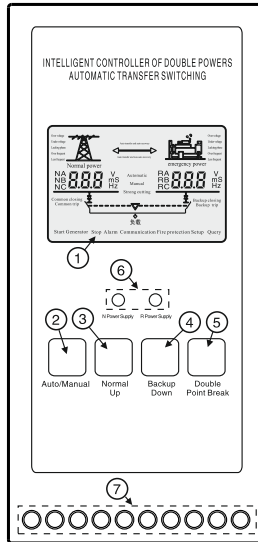
XI、Intelligent Controller panel distribution and instruction



Spilt intelligent control panel



(Fission type controller panel)



(Integral type controller panel)

Sequence number description:

1. LCD

Indicate three phase Voltage of common use and back up power supply and various switching state;

2. Automatic/ manual button

Common use: Switch over button automatically and manually. Setup Mode: Save button and Exit menu.

3. Common use/ up button

Common use: Switch over to commonly used power button when manual operation;

Setup mode: roll-up menu button and parameter-add button

4. Common use/ down button

Common use: Switch over to backup power button when manual operation;

Setup mode: roll-down menu button and parameter-reduce button

5. Duplex button

Common use: Duplex button when manual operation;

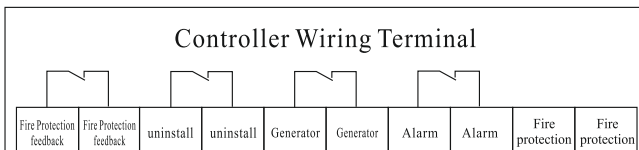
Setup mode: press button when enter into set up mode and Modify mode.

6. State indication

The indication of commonly used [ower and back up power, and indication of commonly used switch on and back up switch on.

7. Control wiring terminal of signal;

■ Wiring terminal of controller



2.The inner part of the uninstall terminal is a normally closed contact.

In the power net to generator mode, the normal power works normally.

However, if the generator do not started, the unstaill terminal will send the unstaill command to break secondary load and start the generator.

3.The inner part of the generate terminal is a normally closed contact.

When errors occur in the main power, generate terminal will send generating command.

Note: The terminals only work when the controller is power net to generator.

4.Fire control terminal provides alerting function to customers. When

the fire control terminal is connecting, the automatic transfer switch divides automatically and cut the power supply. After dual dividing is finished, the fire control feedback terminal returns a connecting signal to fire control central.

5.The inner part of the alert terminal is a normally closed contact. It sends alert order when circuit break switches off because of load current flow or short circuit.

XII、 Voltage's Checking

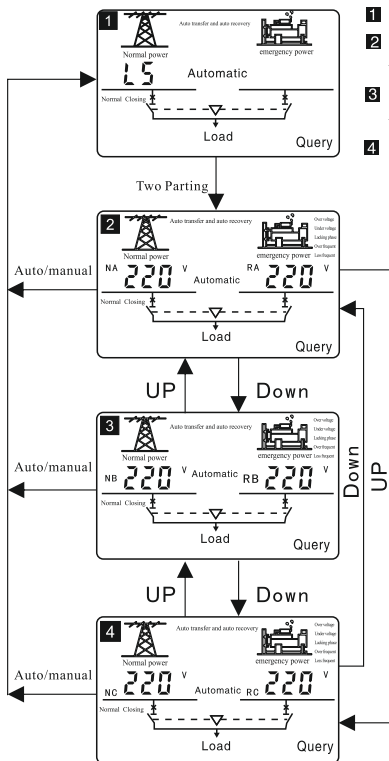
The controller will show the three phase voltage of commonly used power and back up power in turn. If need to check the voltage, please check as the following method:

①. How to enter in and button press instruction:

Press the duplex button about 3 second when the voltage is shown in turn normally which can enter into checking men. Press the duplex button on checking menu state which will enter into voltage check state,, press the down button which will show next phase voltage, press the up button which will show last phase voltage, press automatic/manul button which will return to checking menu, if press the automatic/manual button again which will back to normal interface(show three phases voltage in turen)

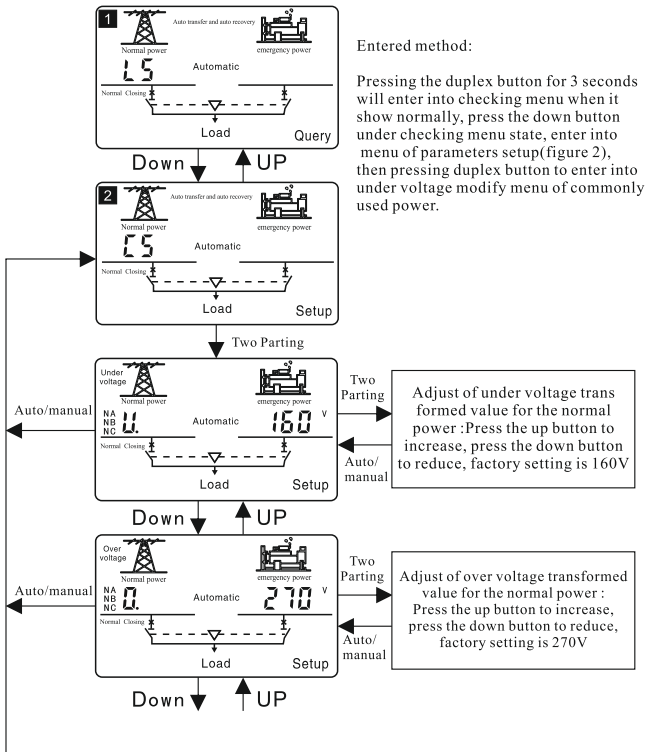
② Interface instruction :

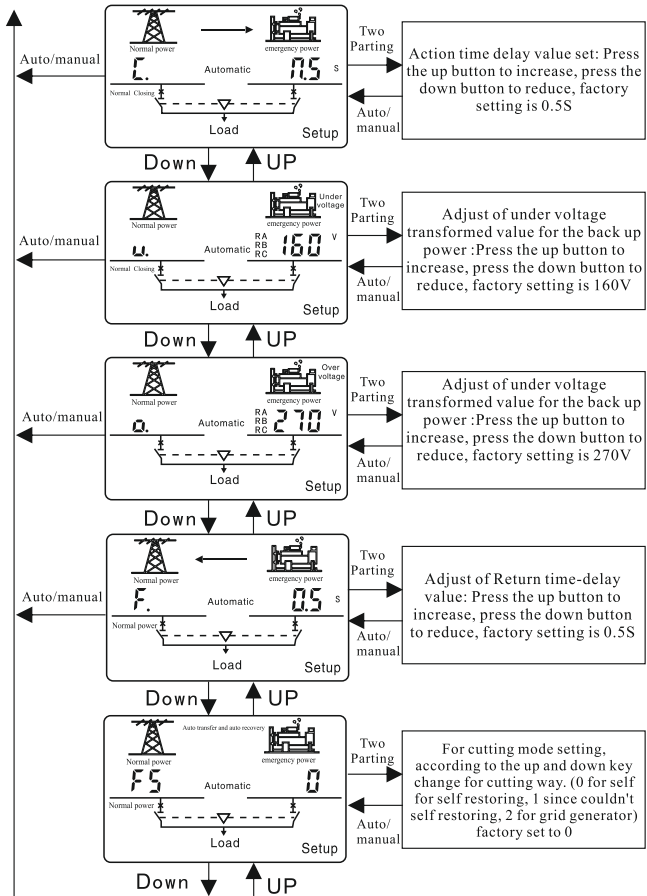
- ❶ Checking menu
- ❷ Commonly used power and back up power A phase voltage
- ❸ Commonly used power and back up power B phase voltage
- ❹ Commonly used power and back up power C phase voltage



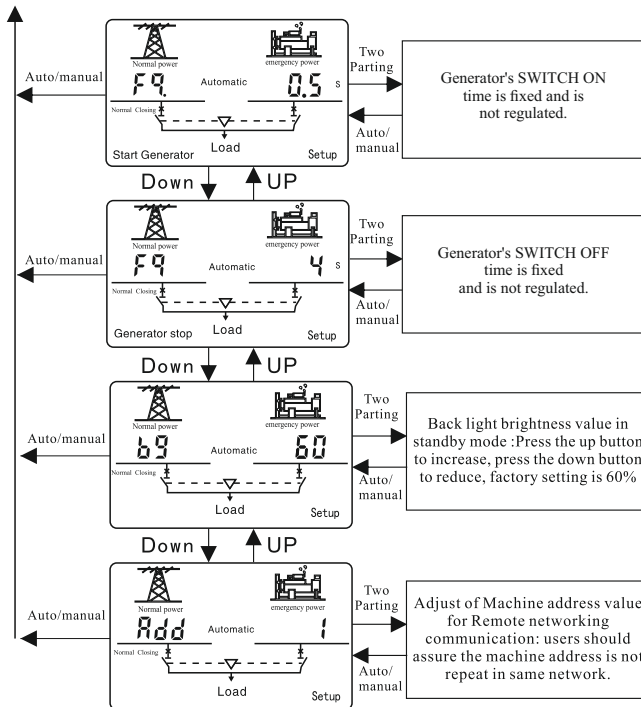
Parameter Modify

In order of convenience of the users, some normally used parameters are supplied for the users to modify when the controller is developed and designed. These parameters have been set up when the switches are shipped out of factory, if the users want to modify the parameters, please according to the following instruction:





⚠ Commands U. O. / u. o. are for emergency voltages and it is not desirable / recommended to change!



■ Calibration of the shown voltage

The shown voltage of the controller has been calibrated before shipping out of the factory, so the users do not need to calibrate it, but you can calibrate according to the following methods once in a particular case:

■ Error code

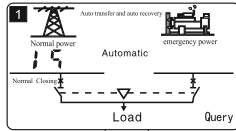
- E-1: Indicate the breaker on the side of normal power is tripped.
- E-1: Indicate the breaker on the side of normal power is tripped.
- E-3: Indicate Machine or mechanism failure which cause switching does not work or take long time to work
- E-4: The failure of the wrongly checking the mechanism position

■ Other attentions

The device should have a routine inspection and maintain according to the requirements of the fuse protectors and the electrical operating mechanism.

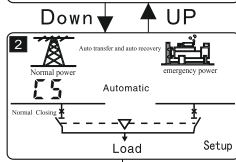
Long-time unused products should be notice of moist, dusty. The product shall be tested according to the above mentioned content before putting into operation.

This product can be repaired, exchanged and returned repaired in a year. During the period of the three guarantees, customers should adjust, use and maintain according to the product instruction. However, if the problem is caused not due to the quality, our factory is not responsible for repairing, exchanging and returning.

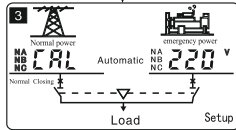


Enter into method and button instruction:

Press duplex button for 3 seconds to enter into checking menu when the controller is working (figure 1), press down button entering into setup menu on checking menu state(figure 2), then press down button for 7 seconds to enter into Voltage calibration menu(figure 3), adjust the normal and backup voltage to be same as the shown voltage, when the voltage is stable, press the automatic/ manual button to exit, the calibration of the shown voltage is finished.



Two Parting



Normal use and back up input voltage value: press up button will increase, press down button will reduce.

XII、 Fault Analysis

The switch and the electronic operation mechanism do not work when they are starting, please check the connection of the fuse and the cable. The three phase power and neutral wire must be connected well, the fasten screws on the cable end must be fastened well.

Each phase voltage is normal when the power is ON, but board indicate there is under voltage, over voltage, open phase, please check the power is working normally.

The controller has power after being connected, but the electronic operation mechanism does not work, please check the two fuses in the device of main body are cut off because the current of the electronic operation mechanism is too much, try to replace the fuse.