



A Group CBS Company

USERS MANUAL

RSK-P11

Chicken Switch® P11 Remote Operator for Square D P-Frame Breakers



Distance *is* Safety®

WHAT STANDS
BETWEEN YOU
AND ARC-FLASH
DANGER?

WE DO.

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User's Manual for the following RSK model:

RSK-P11 (US Patent D730,844)

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1.0 Introduction

The P11 is designed to remotely operate the OPEN and CLOSE handle on a P-Frame Square D breaker. It is not designed to operate any other type of breaker.

The P11 is offered in two basic models – a wireless version (P11-W) and a cabled version (P11-30C). The advantage of the wireless version is that there are no cables to deal with which makes it more convenient to use. The cabled version is offered because some customers prefer cable operated equipment. A 50-foot cable is also available as an upgraded (P11-50C). Items should be included in with your P11:

P11-W	P11-30C (or P11-50C)
P11-W Actuator with battery pre-installed	P11-30C or P11-50C Actuator with battery pre-installed
RTL-1 Handheld transmitter with battery	RCL-1 Handheld controller pre-installed
Instruction Manual	30-foot cable (50-foot optional)
Carrying case	Instruction Manual Carrying Case

2.0 Safety Information

DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- This equipment must only be installed by qualified personnel.
- Only use this equipment after reading and understanding all of the instructions contained in this manual.
- Follow electrical safe work practices. See NFPA 70E or CSA Z462

FAILURE TO FOLLOW THESE INSTRUCTIONS COULD RESULT IN DEATH OR SERIOUS INJURY

2.1 Arc-blast Hazards

The hazards associated with electrical arc-blasts are well documented. Studies conducted by numerous industries and professional organizations have sought to quantify the intensity of arc blast, the risks to personnel, and various methodologies for mitigating the risks.

Without a doubt, increasing the distance between the arc and a human is the single greatest favorable factor in reducing injuries. Remote operation of electrical equipment is not a cure-all, but rather one more tool available for protecting workers while they are performing electrical switching.

Using the P11 remote operating device may not negate the need for additional personal protective measures. The user is ultimately responsible for evaluating each situation to determine if additional protective measures are needed.

2.2 Battery Hazards

The P11 is battery powered from a custom battery that is installed within the actuator. The total maximum voltage is less than 24VDC. Although this is below the recognized threshold for a shock hazard, there can significant energy stored in the battery pack. Care must be taken to properly handle the battery pack.

The battery pack may be of the Lithium or Alkaline type.

The type of battery in your P11 can be determined by the label on the side of the battery. Care must be taken when handling the battery and federal regulations must be followed for disposal and shipping of the batteries. Do not ship damaged lithium batteries. Please contact CBSArcSafe at the address in Section 8.0 if you need more information on the battery pack.

WARNING

THIS EQUIPMENT MAY CONTAIN PRIMARY LITHIUM OR ALKALINE CONTAINING BATTERIES

- All Federal and State regulations must be followed for disposal, transport, and shipment of the batteries and equipment.
- Do NOT attempt to recharge the batteries.

2.3 Magnet Hazards

DANGER

THIS EQUIPMENT UTILIZES A POWERFUL MAGNETS TO HOLD IT ON YOUR SWITCHGEAR

Care must be taken to prevent injury when handling the equipment.

The magnets that are used on the P11 to hold it on the switchgear produces strong magnetic fields. Care must be taken when handling the P11. The following steps should be followed to assure safe handling:

- The magnets needs to be kept at a safe distance from all magnetic storage devices, electronics, credit cards, etc.
- The P11 should be stored with the magnet in the "raised" position. If left in the "lowered" position and brought close to ferromagnetic materials, there will be a sudden and powerful attraction that could present a pinch hazard or equipment damage.
- Do not use the P11 if the magnets have been damaged.
- Always keep the bottom of the magnet free of debris and rust. If needed, use the sticky side of a piece of tape to remove small metal debris for the magnet.

2.4 Pinch Point Hazards



DANGER

THIS EQUIPMENT HAS MOVING PARTS THAT PRESENT PINCH POINT HAZARDS

Care must be taken to prevent injury when handling the equipment.

The P11 is a motorized device with moving parts that will produce the opportunity for pinch point hazards. In order to protect against a pinch point injury, the following precautions should be followed.

- NEVER TURN THE P11 ON WHILE HOLDING IT IN YOUR HANDS.
- Install the P11 actuator on the switchgear door prior to turning it ON.
- Once the P11 is turned ON, do not touch or bring body parts near the actuator.
- Turn OFF the P11 actuator prior to removing it from the switchgear door.
- Do NOT attempt to turn the P11 actuator ON unless it is installed and ready to use.

Additionally, the magnets used to hold the P11 actuator on the switchgear door could present a pinch hazard. To prevent an injury the follow procedures should be followed:

- Only move the magnet to the “lowered” position when it is firmly against the metal surface of the switchgear door.
- Moving the magnet to the “lowered” position prior to installing the P11 could cause a quick uncontrollable attraction to ferromagnetic materials in close proximity and present a serious pinch point injury.
- Store the P11 actuator with the magnets in the “raised” position.

2.5 Radio Frequency

The wireless version of the P11 uses a radio transmitter and receiver to communicate. The transmitter and receiver operate in the 2.4GHz frequency band and is low power at 1mW. These are commercially available radios that have agency certification through the manufacturer. They are certified with the following agency approvals:

United States – FCC

FCC ID: OUR-XBEE

The enclosed device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (i.) this device may not cause harmful interference and (ii.) this device must accept any interference received, including interference that may cause undesired operation.

Canada – IC

IC: 4214A-XBEE

3.0 Battery Information



WARNING

THIS EQUIPMENT USES A CUSTOM DESIGNED BATTERY PACK

DO NOT attempt to modify the battery pack or to install a battery pack not approved for use in the P11. Doing so could cause equipment damage, fire, or personal injury.

P11 Actuator Battery

The P11 is powered from a custom battery pack that has been pre-installed in the actuator. It consists of 15 single cell AA batteries connected in series to produce a nominal voltage of 22.5VDC. There are also two additional single cell AA batteries connected in series to produce a nominal voltage of 3.0VDC. The 17 total cells are packaged within the one replaceable battery pack. The 22.5VDC output is fused in the middle of the string to limit the current to 4.0 amps.

The two following battery types are offered with RSK-ABL3:

Lithium/Iron Disulfide – this battery pack has been tested to 1,500+ operations before needing to be replaced. The individual cells have an advertised shelf life of 10-20 years depending upon the storage temperature. The advantage to this battery is that it is long lasting and will not require replacement as often as an alkaline battery. The disadvantages are that there are regulations that in certain circumstances could prevent shipping or transporting them by air freight and internationally. See Federal 49 CFR 173.185 and IATA regulations for additional information for shipping and transporting Lithium batteries. See Section 7.0 for additional specifications.

Alkaline – this battery pack has a life of approximately 750+ operations before needing to be replaced. The individual cells have an advertised shelf life of one year, which is the disadvantage of this battery. The advantage is that it can be easily shipped by air or internationally.

The type of battery installed in your P11 could be either the Lithium/Iron Disulfide type or the Alkaline depending on which type was ordered. The type of battery installed in your P11 can be identified by the label on the side of the battery.

Both types of battery packs are custom designed to work with the P11 and are only available through CBSArcSafe. Use only approved battery packs. CBSArcSafe can provide assistance to assure that you order the correct battery. See Section 9.0 for information to contact CBSArcSafe.

RTL-1 Remote Transmitter

The RTL-1 is a remote transmitter used with the wireless version of the P11. It is powered by a 9VDC battery. Replace this battery as needed with a commercially available 9VDC battery. An alkaline type is recommended, but not required.

RCL-1 Remote Controller

The RCL-1 is a remote controller used with the cabled version of the P11. It is powered from the P11 actuator through the cable and does not contain a battery.

3.1 Removing and Replacing the Battery in the P11 Actuator

The P11 actuator requires a custom battery. Do not attempt to use a non-approved battery. To obtain a replacement battery, see Section 3.0 for detailed information. To replace the battery, complete the following steps:

STEP 1: Using Phillips screwdriver, remove four screws from battery cover plate.



STEP 2: Remove battery cover.



STEP 3: Disconnect battery at connector.



STEP 4: Remove battery.



STEP 5: Insert new battery and plug new battery into the connector. NOTE: The end of the battery where the leads exit should be on top towards the cover.



STEP 6: Place the battery cover over the wires and battery. The cover should easily go all the way into the recessed area without forcing. If it doesn't, check the arrangement of the battery leads. They may be tangled up or wedged under the connector.



STEP 7: Replace battery cover.



3.2 Replacing the Battery in Wireless Remote Transmitter

The RTL-1 remote transmitter uses a standard 9V battery. See Section 3.0 for additional information on the 9VDC battery to be used.

To replace the battery, complete the following steps:

- Remove the battery cover on the back of the transmitter.
- Replace the battery.
- Re-install the battery cover.

4.0 Use and Operation of the P11

IMPORTANT—Before using the P11 for the first time on a given breaker, a determination must be made as to whether anti-rotation studs are required to be installed on the switchgear door. See Section 4.1 for more information.

4.1 Requirements for Anti-Rotation Studs

Depending on the configuration of your specific switchgear, anti-rotation studs may need to be installed on your switchgear door prior to using the P11. The P11 is designed so as not to require anti-rotation studs as long as the breaker perimeter protrudes through the door by at least ½".

VERIFY THAT YOUR BREAKER PROTRUDES BY AT LEAST ½" OR HAS THE ANTI-ROTATION STUDS INSTALLED.

If the door protrudes less than ½", **DO NOT ATTEMPT TO USE THE P11 OR IT MAY SLIP OFF THE BREAKER WHICH COULD CAUSE DAMAGE TO YOUR BREAKER AND/OR THE P11.** If anti-rotation studs are required to be installed, see Section 5.0 – Installing Anti-Rotation Studs on Switchgear Door.

For use without anti-rotation studs, the breaker must protrude at least ½" through the switchgear door.



4.2 Installing the P11 on the Switchgear Door

STEP 1: Prior to installing the P11 actuator, the switchgear door must be tightly shut and bolted.



STEP 2: Verify that there are no nameplates that will interfere with the P11 mounting flush against the door. Attention should be given around the perimeter of the breaker, including the area around the where the magnets and anti-rotation tags are located.

THE MAGNETS MUST BE FIRMLY AGAINST THE DOOR FOR THE P11 TO STAY ATTACHED DURING OPERATION.

STEP 3: Prior to installing the P11 actuator, verify that all four magnets are in the “raised” position.



STEP 4: The arm on the P11 must be manually pre-positioned to match the breaker handle position so that the arm will engage the breaker handle. **WITH THE P11 POWERED OFF**, manually rotate the arm on the P11 to approximately match the position of the breaker operating handle.



STEP 5: Position the P11 over the breaker while at the same time verifying that the P11 arm is engaging the breaker handle. If anti-rotation studs are required, the P11 should also be engaged with the studs. See Section 4.1 for more detail.



When properly installed, the rollers on the P11 arm must straddle the breaker handle

STEP 6: Engage the magnets by flipping the magnet levers to lower them against the switchgear door. All four magnets must be firmly against the door. There can be no obstructions such as nameplates that would prevent the magnets from contacting directly with the door.



STEP 7: For the wireless model, move onto Step 8. For cabled models, connect the cable between the actuator and hand-held unit.

STEP 8: The P11 is installed and ready to operate the breaker.



4.3 Operating the P11

STEP 1: Press the WAKE button to power up the actuator.



STEP 2: While standing at a safe distance, press and hold the ENABLE button on the hand-held controller. The yellow light should illuminate. Then press and hold the button corresponding to the handle direction that is desired (OFF or ON). Both the ENABLE button and the OFF or ON button must be held simultaneously until the full stroke of the operating handle is complete. The P11 arm will stop when the OFF or ON button is released and remain that position.

NOTE: The actuator will power itself OFF after a couple minutes of no use. If it does power down, turn it back on by pressing the WAKE button.



STEP 3: When completed with operating the P11, power the actuator OFF by pressing the SLEEP button.



4.4 Removing the P11

STEP 1: Verify that the actuator is powered OFF by pressing the SLEEP button. **DO NOT ATTEMPT TO REMOVE THE ACTUATOR WITH THE POWER ON AS THIS COULD CAUSE A PINCH POINT INJURY.**

STEP 2: While firmly holding the actuator with one hand, disengage all four magnets by using your other hand to flip the magnet levers to raise the magnets. Move the actuator away from the switchgear door.

STEP 3: Disconnect cable (for cabled versions only) and return components to carrying



5.0 Installing Anti-Rotation Studs on Switchgear Door

If your breaker does not protrude at least 1/2" through the switchgear door, you will need to install anti-rotation studs (See Section 4.1 for more information). A template has been included with your P11 to aid with installing the pins in the correct location. Five sets of pins have been included (enough for five breakers). Contact CBSArcSafe if more pins are required for additional breakers.

Complete the following steps to install the pins:

STEP 1: The studs will be installed in the approximate locations, as shown.



STEP 2: Place the template over the breaker. If the breaker is recessed, it may be necessary to tape the template in place. Care must be taken to assure that the template is aligned with the breaker opening. Be sure the side of the template labeled "UP" is at the top of the breaker as shown.



STEP 3: Carefully mark the two holes.



STEP 4: Prepare to drill for the studs.

DRILLING MUST BE DONE WITH THE DOOR OPEN. EXPOSED ENERGIZED COMPONENTS WILL LIKELY BE PRESENT AND CAN PRESENT A SHOCK HAZARD. IN SOME CASE'S, IT MAY BE NECESSARY TO DE-ENERGIZE THE SWITCHGEAR. FOLLOW ALL REQUIRED SAFETY STANDARDS AND YOUR COMPANY'S PROCEDURES WHEN PERFORMING THIS WORK.

STEP 5: Using a ¼" drill bit, and WITH THE DOOR OPEN, carefully drill the two holes that were marked in Step #3.

STEP 6: Install the screw/stud with a phillips screwdriver and tighten firmly.

STEP 7: The completed installation should be as shown in the picture below.



6.0 Storage

The P11 is provided with a heavy duty carrying case that can be used to conveniently store the actuator and its necessary components. The carrying case and complete unit should be stored in a clean and cool environment.

The hand-held controller has a built-in magnet that allows it to be held on a magnetic surface. This can be useful as a way to place it out of the way until the P11 is has been attached to your switchgear.

7.0 Troubleshooting

SYMPTOM	SOLUTION
The LED on the Wake button flashes and then the unit shuts down.	The battery in the P11 is low and must be replaced.
The RTL-1 wireless transmitter won't activate the P11.	The problem could be caused if the transmitter is outside the 50-foot range. It is possible the problem could be due to a low battery in the RTL-1. Try replacing the battery.
The LED on the Wake button shuts off after a couple of minutes.	This is normal. The P11 will power down if not used within a couple of minutes in order to preserve the battery. Press the Wake button again to turn it back on.



8.0 Specifications

Voltage	P11 – 22.5VDC and 3.0VDC (custom designed battery available in Lithium or Alkaline. See Section 3.0 for more details. RTL1 – 9VDC
Lithium Battery (when supplied)	17 cells, (each cell is Ultimate Lithium Energizer L91) Output Voltage – 22.5VDC and 3.0VDC Battery net weight – 0.27kg Lithium Disulfide (Li/FeS ₂) content – less than 17g total Operating and Storage Temperature -40F to 140F (-40C to 60C) Shelf Life 20 years at 21C Designation (per cell) ANSI 15-LF, IEC-FR14505 (FR6) See Section 3.0 for additional information
Magnets	Four magnets, each rated @55.1 lbs force, 12,600 gauss
Wireless Transmitter (P11-W version only)	Operating frequency 2.4Ghz, 1mW output. 50-foot range (line of sight). Transmitter and actuator are paired so that the transmitter can only operate the actuator that has been paired with it. Pairing is factory programmed and is not user programmable.
Projected Life	10,000+ operations
Carrying case	Manufactured by Pelican with the following features: Lightweight Strong HPX® Resin Shell Press & Pull Latches O-ring waterproof seal Double-layered, Soft-grip Handle Telescoping handle Two rugged in-line polyurethane wheels Two Pad lockable Hasps Vortex® pressure equalizing valve Impact absorbing corners Chemical resistant, corrosion resistant, airtight, watertight, dustproof, crushproof Exterior Dimensions 24.60" x 19.70" x 11.70" (L x W x H)
Weight	P11 Actuator – 13.0lbs / 5.9kg Complete Kit with carrying case – 31lbs / 14.1kg

9.0 Contacting the Manufacturer

For any questions, repairs, or parts replacement please contact the manufacturer using any of the methods below.

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