

Inspection Recommendations

Table of Contents

Introduction	2	Safety Precautions	5
Qualified Persons	2	Overview	6
Read this Instruction Sheet	2	General	6
Retain this Instruction Sheet	2	Micro-AT® Source-Transfer Control	6
Proper Application	2	Pad-Mounted Gear Equipped with	
Warranty.....	3	Micro-AT Control	7
Warranty Qualifications	3	Inspection Procedures	7
Safety Information	4	Enclosure and Components in High-Voltage	
Understanding Safety-Alert Messages	4	Compartments	10
Following Safety Instructions.....	4		
Replacement Instructions and Labels	4		



Introduction

Qualified Persons

WARNING

Only qualified persons knowledgeable in the installation, operation, and maintenance of overhead and underground electric distribution equipment, along with all associated hazards, may install, operate, and maintain the equipment covered by this publication. A qualified person is someone trained and competent in:

- The skills and techniques necessary to distinguish exposed live parts from nonlive parts of electrical equipment
- The skills and techniques necessary to determine the proper approach distances corresponding to the voltages to which the qualified person will be exposed
- The proper use of special precautionary techniques, personal protective equipment, insulated and shielding materials, and insulated tools for working on or near exposed energized parts of electrical equipment

These instructions are intended only for such qualified persons. They are not intended to be a substitute for adequate training and experience in safety procedures for this type of equipment.

Read this Instruction Sheet

NOTICE

Thoroughly and carefully read this instruction sheet and all materials included in the product's instruction handbook before installing or operating source-transfer PME Pad-Mounted Gear. Become familiar with the Safety Information and Safety Precautions on pages 4 and 5. The latest version of this publication is available online in PDF format at sandc.com/en/contact-us/product-literature/.

Retain this Instruction Sheet

This instruction sheet is a permanent part of source-transfer PME-Pad-Mounted Gear. Designate a location where users can easily retrieve and refer to this publication.

Proper Application

WARNING

The equipment in this publication is only intended for a specific application. The application must be within the ratings furnished for the equipment. Ratings for source-transfer PME Pad-Mounted Gear are listed in the ratings table in Specification Bulletin 665-31. Ratings for this gear are listed on the ratings label on the interior of the doors (right-hand door only for double door models.)

Warranty

The warranty and/or obligations described in S&C's Price Sheet 150, "Standard Conditions of Sale—Immediate Purchasers in the United States," (or Price Sheet 153, "Standard Conditions of Sale—Immediate Purchasers Outside the United States"), plus any special warranty provisions, as set forth in the applicable product-line specification bulletin, are exclusive. The remedies provided in the former for breach of these warranties shall constitute the immediate purchaser's or end user's exclusive remedy and a fulfillment of the seller's entire liability. In no event shall the seller's liability to the immediate purchaser or end user exceed the price of the specific product that gives rise to the immediate purchaser's or end user's claim. All other warranties, whether express or implied or arising by operation of law, course of dealing, usage of trade or otherwise, are excluded. The only warranties are those stated in Price Sheet 150 (or Price Sheet 153), and THERE ARE NO EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. ANY EXPRESS WARRANTY OR OTHER OBLIGATION PROVIDED IN PRICE SHEET 150 (OR PRICE SHEET 153) IS GRANTED ONLY TO THE IMMEDIATE PURCHASER AND END USER, AS DEFINED THEREIN. OTHER THAN AN END USER, NO REMOTE PURCHASER MAY RELY ON ANY AFFIRMATION OF FACT OR PROMISE THAT RELATES TO THE GOODS DESCRIBED HEREIN, ANY DESCRIPTION THAT RELATES TO THE GOODS, OR ANY REMEDIAL PROMISE INCLUDED IN PRICE SHEET 150 (OR PRICE SHEET 153).

**Warranty
Qualifications**

The standard warranty contained in the seller's standard conditions of sale (as set forth in Price Sheet 150) does not apply to source-transfer PME Pad-Mounted Gear where fuse units, fuse-unit end fittings, holders, refill units, or switch blades of other than S&C manufacture are used in conjunction with S&C SME Mountings. Nor does it apply to S&C source-transfer PME Pad-Mounted Gear where other than Fault Fiter® Electronic Power Fuses, S&C Switch Blades, or the current-limiting fuses listed in Table 2 of S&C Information Bulletin 660-50 are used in conjunction with Fault Fiter Electronic Power Fuse Mountings and S&C Holders designed therefore, or when current-limiting fuses are applied other than as set forth under the "Recommended Voltage Ratings" section of S&C Information Bulletin 660-50.

The seller's standard warranty does not apply to major components not of S&C manufacture, such as remote terminal units and communication devices, including hardware, software, resolution of protocol-related matters, and notification of upgrades or fixes for those devices.

Safety Information

Understanding Safety-Alert Messages

Several types of safety-alert messages may appear throughout this instruction sheet and on labels and tags attached to the product. Become familiar with these types of messages and the importance of these various signal words:

DANGER

“DANGER” identifies the most serious and immediate hazards that will likely result in serious personal injury or death if instructions, including recommended precautions, are not followed.

WARNING

“WARNING” identifies hazards or unsafe practices that can result in serious personal injury or death if instructions, including recommended precautions, are not followed.

CAUTION

“CAUTION” identifies hazards or unsafe practices that can result in minor personal injury if instructions, including recommended precautions, are not followed.

NOTICE

“NOTICE” identifies important procedures or requirements that can result in product or property damage if instructions are not followed.

Following Safety Instructions

If any portion of this instruction sheet is unclear and assistance is needed, contact the nearest S&C Sales Office or S&C Authorized Distributor. Their telephone numbers are listed on S&C’s website sandc.com, or call the S&C Global Support and Monitoring Center at 1-888-762-1100.

NOTICE

Read this instruction sheet thoroughly and carefully before installing source-transfer PME Pad-Mounted Gear.



Replacement Instructions and Labels

If additional copies of this instruction sheet are required, contact the nearest S&C Sales Office, S&C Authorized Distributor, S&C Headquarters, or S&C Electric Canada Ltd.

It is important that any missing, damaged, or faded labels on the equipment be replaced immediately. Replacement labels are available by contacting the nearest S&C Sales Office, S&C Authorized Distributor, S&C Headquarters, or S&C Electric Canada Ltd.

⚠ DANGER



Source-transfer Pad-Mounted Gear operates at high voltage. Failure to observe the precautions below will result in serious personal injury or death.

Some of these precautions may differ from your company's operating procedures and rules. Where a discrepancy exists, follow your company's operating procedures and rules.

1. **QUALIFIED PERSONS.** Access to pad-mounted gear must be restricted only to qualified persons. See the "Qualified Persons" section on page 2
2. **SAFETY PROCEDURES.** Always follow safe operating procedures and rules.
3. **PERSONAL PROTECTIVE EQUIPMENT.** Always use suitable protective equipment, such as rubber gloves, rubber mats, hard hats, safety glasses, and flash clothing in accordance with safe operating procedures and rules.
4. **SAFETY LABELS.** Do not remove or obscure any of the "NOTICE," "CAUTION," "WARNING," or "DANGER" labels.
5. **KEY INTERLOCKS.**
 - If optional key interlocks were furnished, they must be in place.
 - Check the operating sequence of key interlocks to verify proper sequencing.
 - After the pad-mounted gear is installed, either: (1) destroy the extra set of keys or (2) make them accessible only to qualified persons. This will maintain the integrity of the key-interlock scheme.
 - Key interlocks are not security locks and are not substitutes for padlocks.
6. **HIGH-VOLTAGE ISOLATION.** Switch operators and controls are isolated from high voltage in grounded, metal-enclosed compartments. Access to these components is controlled by padlockable covers, which incorporate a nonremovable manual handle. Other low-voltage components, such as meters, selector switches, toggle switches, etc., are similarly isolated.
7. **OPENING DOORS.** Do not force doors open. Forcing a door open can damage the latching mechanism. If optional key interlocks are provided, correctly position the interlocks so the doors can be opened.
8. **CLOSING AND LOCKING DOORS.**
 - Doors must be securely closed and latched, with padlocks in place at all times unless work is being performed inside the enclosure.
 - Mini-Rupter® Switches have switch-operating-shaft access covers located on the sides of the pad-mounted gear enclosure. They must be closed and padlocked at all times unless the switches are being operated.
 - Do not close a door on a TransFuser™ Mounting in the **Open** position with a fuse in the mounting. The door will strike the fuse pull-ring, which will interfere with door closing. The door may be closed if the fuse is removed from the mounting.
9. **ENERGIZED TERMINALS.** Always assume both sets of power terminals on any Mini-Rupter Switch or fuse are energized unless proved otherwise by test, by visual evidence of open-circuit conditions on both sets of terminals, or by observing that both sets of terminals are grounded.
10. **BACKFEED.** Mini-Rupter Switches and fuses may be energized by backfeed.
11. **DE-ENERGIZING, TESTING, AND GROUNDING.** Before touching any device that is to be inspected, replaced, serviced, or repaired in the high-voltage compartments, always disconnect Mini-Rupter Switches and fuses from all power sources (including backfeed), test for voltage, and properly ground.
12. **TESTING.** Test for voltage on both sets of power terminals of any Mini-Rupter Switch or fuse using proper high-voltage test equipment before touching any device that is to be inspected, replaced, serviced, or repaired in the high-voltage compartments.
13. **GROUNDING.**
 - Make sure the pad-mounted gear enclosure is properly grounded to the station or facility ground.
 - After the gear has been completely disconnected from all sources of power and tested for voltage, install suitable grounding cables in all compartments before touching any device that is to be inspected, replaced, serviced, or repaired in the high-voltage compartments.
14. **SWITCH POSITION.**
 - Always confirm the **Open/Close** position of Mini-Rupter Switches by visually observing the position of the switch blades.
 - Switches may be energized by backfeed.
 - Switches may be energized in any position.
15. **MAINTAINING PROPER CLEARANCE.** Always maintain proper clearance from energized components.
16. **FUSE STORAGE.**
 - Always store fuses in a clean, dry location.
 - Do not store end-fittings, holders, interrupting modules, or fuses in termination compartments unless the unit is equipped with the optional fuse-storage feature (catalog number suffix "-E1," "-E2," or "-E3").

General

This publication contains inspection and maintenance recommendations for source-transfer PME Pad-Mounted Gear equipped with the Micro-AT control.

To successfully complete the inspection procedures involving the Micro-AT Source-Transfer Control, the gear must be energized with adequate voltage available on both power sources. S&C recommends this inspection be performed at least every year. See Table 1 on page 7.

S&C generally recommends the pad-mounted gear enclosure and components located in high-voltage compartments be inspected six months to a year after installation and then every five years thereafter to ensure continued proper performance of the gear. Each user's own experience as well as environmental conditions at the installation will determine whether more or less frequent inspections are required. See Table 2 on page 10.

A partial visual inspection of the gear for general cleanliness, and to confirm proper alignment and condition of the barriers and terminators, may be performed with the gear energized, if permitted by the user's own operating practices and provided standard precautionary practices are followed. Such visual inspections also may be performed when the gear is visited for other reasons. However, the more detailed inspection and maintenance procedures outlined in this publication may only be completed when the unit is completely de-energized and grounded.

If maintenance is required beyond the scope of this publication or if replacement parts are necessary, contact the nearest S&C Sales Office. Have the complete catalog number of the gear and date of shipment (as shown on the nameplate) available for reference.

Micro-AT® Source-Transfer Control

The Micro-AT control uses an advanced electronic microprocessor to perform specific control operations, as directed by settings programmed into the control at the factory and in the field. These settings are entered into the control by means of a keypad on the front panel, and a liquid-crystal display is provided for their review.

NOTICE

When following the inspection procedures involving the Micro-AT control, decouple both switch operators from their associated Mini-Rupter® Switches. Switching operations will result in temporary service interruptions if the operators are coupled.

Refer to S&C Instruction Sheet 665-610 for operating instructions regarding fusing and switching and for instructions on decoupling the switch operators from the Mini-Rupter Switches. For field programming and operation of the Micro-AT control, refer to S&C Instruction Sheet 515-500. For instructions regarding operation of the optional **Test Panel** feature, refer to S&C Instruction Sheet 515-505. For Micro-AT control troubleshooting, refer to S&C Instruction Sheet 515-520.

Applicable instruction sheets, drawings, and wiring diagrams are in an envelope entitled the "Installation and Operation Information Kit," which is located in Compartment 1.

Pad-Mounted Gear Equipped with Micro-AT Control

Table 1. Inspection Procedures for Pad-Mounted Gear Equipped with Micro-AT Control①

Item	Procedures
Switch operators	<ol style="list-style-type: none"> 1. Place the MANUAL/AUTOMATIC operation selector switch on the Micro-AT control in Manual mode and decouple both operators from their associated Mini-Rupter Switches. <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="text-align: center; background-color: #0070C0; color: white; margin: 0;">NOTICE</p> <p style="margin: 0;">Switching operations will result in temporary service interruptions if the operators are coupled.</p> </div> <ol style="list-style-type: none"> 2. Open the preferred-source operator by pressing the appropriate <Open> key. After opening, the operator should recharge in less than 35 seconds. 3. Close the alternate-source operator by pressing the appropriate <Close> key. This operator should also recharge in less than 35 seconds. 4. Each switch operator should go through five or more power-operated operations unless normal operating duty provides equal or greater exercise. 5. Return both operators to their original positions (preferred Closed, alternate Open).
Clock	<ol style="list-style-type: none"> 1. Press the <Time> menu key on the Micro-AT control. Then, press the <Last> key. The "HH:MM:SS" (hour:minute:second) item will appear on the display. If necessary, reset the time as directed below. 2. To reset the time, first press the <Change> key. After that, press each digit of the access-code number, and the <Enter> key. Press the number keys corresponding to the desired value, and press the <Enter> key again.
Lamp, display, and keypad	<ol style="list-style-type: none"> 1. Press the <Test> menu key on the Micro-AT control. Then, press the <Next> key. "TEST LAMPS" will appear on the display. Press the <Enter> key, and confirm that the lamps on the control flash a total of five times. 2. Press the <Next> key again. "TEST DISPLAY" will appear on the display. Press the <Enter> key, and confirm all dot segments comprising the characters of the display alternately appear black and then disappear a total of five times. 3. Press the <Next> item key again. This time, "TEST KEYPAD" will appear on the display. Press the <Enter> key. Now, individually press all of the keys on the control, and verify the value or name of each key pressed appears on the display. When finished, press the <Quit> key.

① If the source-transfer pad-mounted gear being inspected does not operate as indicated in these inspection recommendations, refer to the Micro-AT control troubleshooting guide, S&C Instruction Sheet 515-520. If further assistance is needed, contact the nearest S&C Sales Office.

Have the complete catalog number of the gear, date of shipment (as shown on the nameplate), operating characteristics, and voltage-, current-, and time-related operating parameters available for reference.

TABLE CONTINUED ►

Table 1. Inspection Procedures for Pad-Mounted Gear Equipped with Micro-AT Control^①—Continued

Item	Procedures
Transfer on loss of source and return of source	<ol style="list-style-type: none"> 1. While still in the Text menu, press the <Next> item key one more time. “ENABLE TEST KEYS” will appear on the display. Press the <Change> key. Then, select the On option by pressing the <Enter> key. The test keys are now enabled for 15 minutes. 2. Place the MANUAL/AUTOMATIC operation selector switch in Automatic mode. 3. If the Micro-AT control has been programmed for automatic return: <ol style="list-style-type: none"> a. Simulate a prolonged loss of preferred-source voltage by pressing and holding in the <Loss of Voltage> key for the left source or right source, as appropriate. Verify the time to initiate transfer is the same as the loss-of-source time delay programmed into the control for the preferred source. Also confirm the associated SOURCE VOLTAGE lamp extinguishes. Also verify the switch operator targets correctly indicate an Open or Closed position. b. Release the <Loss of Voltage> key to simulate a return of the preferred-source voltage. Verify the time to initiate back transfer is the same as the return-of-source time delay programmed into the control. Confirm the associated SOURCE VOLTAGE lamp relights. Again, verify the switch operator targets' positions. 4. If the Micro-AT control has been programmed for hold return: <ol style="list-style-type: none"> a. Simulate a prolonged loss of preferred-source voltage by pressing and holding in the <Loss of Voltage> key for the left source or right source, as appropriate. Verify the time to initiate transfer is the same as the loss-of-source time delay programmed into the control for the preferred source. Also confirm the associated SOURCE VOLTAGE lamp extinguishes. Also verify the switch operator targets correctly indicate an Open or Closed position. b. Release the <Loss of Voltage> key to simulate a return of the preferred-source voltage, and wait a sufficient length of time to verify back transfer does not occur. Confirm the associated SOURCE VOLTAGE lamp relights. c. Simulate a loss of alternate-source voltage by pressing and holding in the <Loss of Voltage> key for the left source or right source, as appropriate. Verify the time to initiate back transfer is the same as the loss-of-source time delay programmed into the control for the alternate source. Confirm the associated SOURCE VOLTAGE lamp extinguishes, and then release the <Loss of Voltage> key. Again, verify the switch operator targets' position. d. Return the MANUAL/AUTOMATIC operation selector switch to Manual mode.
Optional Overcurrent Lockout feature	<ol style="list-style-type: none"> 1. If the test keys are not enabled, press the <Test> menu key. Then, press the <Last> item key. “ENABLE TEST KEYS” will appear on the display. Press the <Change> key, and select “On” by pressing the <Enter> button. The test keys are now enabled for 15 minutes. 2. Place the MANUAL/AUTOMATIC operation selector switch on the Micro-AT control in Automatic mode, and simulate a fault cleared by feeder fuses by momentarily pressing the <Overcurrent> key for the preferred source. Verify the LOCKOUT lamp lights for a period of time equal to the lockout-reset time delay programmed into the Micro-AT control. 3. Simulate a lockout resulting from a fault cleared by a source-side protective device. To accomplish this, press the <Overcurrent> key for the preferred source and confirm the LOCKOUT lamp lights. Then, press and hold in the associated <Loss of Voltage> key. Release the <Loss of Voltage> key when the preferred-source operator opens, and verify the alternate-source operator remains open and locked out. 4. Return the MANUAL/AUTOMATIC operation selector switch to Manual mode, and press the <Reset> key to cancel the Lockout condition. Confirm the LOCKOUT lamp extinguishes. Then, close the preferred-source operator by pressing the appropriate Close pushbutton
Event log	<ol style="list-style-type: none"> 1. Press the <Event> menu key. Then, press the <Next> item key. The date, time, and event ID for the last control operation will appear on the display. Confirm that the event ID on the display is “218” (enter manual-software). Press the “←” key to view the earlier event, and confirm that the event ID on the display is “11” (local to manual-control). 2. To view the event IDs for earlier or later control operations, press the “←” or “→” key, respectively. The event IDs that appear on the display will vary depending on system conditions and programming of the Micro-AT control. 3. When no additional items are to be reviewed, press the <Quit> key. Confirm the “EVENT” lamp extinguishes.
Before leaving the gear	<ol style="list-style-type: none"> 1. So the Micro-AT control is ready for automatic operation when leaving the site, perform the following: <ol style="list-style-type: none"> a. Press the <Quit> key. b. With the MANUAL/AUTOMATIC operation selector switch in Manual mode, recouple both operators to their associated Mini-Rupter Switches. c. Place the MANUAL/AUTOMATIC operation selector switch in Automatic mode. d. Confirm both SOURCE VOLTAGE lamps and the “READY” lamp are lit. (If the “READY” lamp is not lit, refer to the display on the control. When not being used to show menu information, this display shows messages explaining why the lamp is not lit.) e. Close and padlock all doors

^① If the source-transfer pad-mounted gear being inspected does not operate as indicated in these inspection recommendations, refer to the Micro-AT control troubleshooting guide, S&C Instruction Sheet 515-520. If further assistance is needed, contact the nearest S&C Sales Office.

Have the complete catalog number of the gear, date of shipment (as shown on the nameplate), operating characteristics, and voltage-, current-, and time-related operating parameters available for reference.

⚠ WARNING

When access to high-voltage compartments is required, it should be restricted to qualified persons who observe the following procedures:

- Adhere to prescribed safety rules at all times.
- Make sure fuses, Mini-Rupter Switches, their mechanisms, and any other devices are disconnected from all power sources and grounded before that device is inspected, serviced, or repaired.
- Discharge all stored-energy switch operators by using the manual operating handle.
- Always assume both sets of terminals on any Mini-Rupter Switch or fuse are energized unless proven otherwise by test, by visual evidence of open-circuit conditions on both terminal ends, or by grounding.
- All voltage sensors must be disconnected when external voltage is used to test any secondary-side wiring or devices to avoid energizing the high-voltage conductors through the voltage sensors. To disconnect the voltage sensors, transfer the input plug from the input receptacle to the shorting receptacle.
- Test for voltage. Qualified persons should make sure they have and know how to operate the correct test equipment for determining the voltage on both sets of terminals on any fuse or interrupter switch.
- After the gear has been completely disconnected from all sources of power and tested, properly connect suitable grounding leads to both sides of the equipment (to the incoming and outgoing phases of the equipment to be maintained).
- When the equipment to be inspected is not of S&C manufacture, follow instructions supplied by the manufacturer of the equipment.
- Make sure the enclosure is properly grounded to the station or facility ground. No equipment should be returned to service unless such grounds are properly made.

NOTE: Occasionally, low-voltage components may require maintenance. The maintenance of low-voltage components isolated from high-voltage compartments may be performed under the safety rules for equipment rated 600 Volts or less. If maintenance is to be performed on devices connected to the secondary of a voltage sensor, short-circuit the secondary connections. A separate drawing will be provided with any replacement part explaining how to properly short-circuit the secondary connections.

When returning the equipment to service, the following procedures should be observed:

- Make sure fuses (or switch blades in lieu of fuses) are closed and securely latched.
- Make sure any grounding means are removed before energizing the associated Mini-Rupter Switch or fuse.
- Close each door permitting access to high voltage and make sure the associated door-latching mechanisms are securely latched before energizing the circuit or operating any switching device.
- Make sure the input plug is in the input receptacle.
- Make sure the Mini-Rupter Switches are in the correct **Open** or **Closed** positions as dictated by the electric power system design.
- Padlock all doors before leaving the installation site, even momentarily. Observe this procedure even in those cases where the gear is accessible only to qualified persons.

Enclosure and Components in High-Voltage Compartments

NOTICE

Do not use industrial-strength cleaning solutions (e.g., Formula 409®, Simple Green®) or lubricants containing solvents. Solvent vapors can attack arc-compressor components and fuse pull-rings, resulting in reduced interrupting performance or weakened parts. NYE Rheolube 368 (available in small ¼ oz. tubes from S&C) is the only approved lubricant.

Table 2. Inspection and Maintenance Procedures for the Enclosure and for Components in High-Voltage Compartments^①

Item	Procedures
Exercise Mini-Rupter Switches	1. Exercise the Mini-Rupter Switches and check all blades for proper opening and closing.
Inspect fuses	1. Open and close fuses to ensure proper latching. Refer to the applicable S&C Instruction Sheet for fuse-handling instructions. 2. Inspect the fuse contact surfaces for signs of galling and overheating, as evidenced by distorted or discolored contacts.● Minor imperfections can be burnished out. Clean contacts and apply a thin layer of lubricant, as necessary.
Inspect key interlock and door latching mechanisms	1. Verify proper functioning of key interlocks, if furnished. 2. Verify proper operation of the door latching mechanisms.
Touch up exterior	1. To maintain the original integrity of the finish, clean the exterior of the gear and touch up scratches and abrasions using S&C touch-up finish and red-oxide primer, available in aerosol spray cans. See Table 15 in S&C Specification Bulletin 665-31 for catalog number information used for ordering.

^① If maintenance is required beyond the scope of this publication or if replacement parts are necessary, contact the nearest S&C Sales Office. Have the complete catalog number of the gear and date of shipment (as shown on the nameplate) available for reference.

● There may be discoloration of copper or copper-alloy surfaces caused by oxidation. This, however, does not indicate overheating.