



Service Manual

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Transfer Switch

1200–4000 Amps

OTPCE (Spec A–C)

OTPCF (Spec A–B)

OTPCG (Spec A–B)

OTPCJ (Spec A)

OTPCJ (Spec A)

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1. Introduction

ABOUT THIS MANUAL

This manual provides information necessary for operation of an OTPC automatic transfer switch (ATS). This transfer switch and it is equipped with PowerCommand® Control (PC) and it is capable of executing Open Transition with Sync Check, Programmed Transition, and Closed Transition transfer modes.

An **Open Transition with Sync Check Transfer Mode** executes an open transition when both sources of power are within specified tolerances of frequency, voltage, and relative phase difference. If both sources meet the tolerances, a fast transfer occurs.

A **Programmed Transition Transfer Mode** executes an open transition by disconnecting the load from the source of power, pausing in the neutral position of the transfer switch (between switched positions) to allow transient currents from the load to diminish, and then the load is switched to the other source.

A **Closed Transition Transfer Mode** executes a load transfer by momentarily paralleling both sources (a maximum of 100ms) before switching sources.

Refer to the schematic and wiring diagram package that was shipped with the ATS for specific information about its configuration.

Use normal and necessary safety precautions before starting any service procedure. Identify all hazards by referring to the Safety Precautions section and observe all warnings and cautions within the manual. Whenever you are troubleshooting, remember that the generator set, ATS, and utility power source are all interdependent.

TRANSFER SWITCH APPLICATIONS

Transfer switches are an essential part of a building's standby or emergency power system. Power Source 1 (Normal), commonly the utility line, is backed up by Power Source 2 (Emergency), often a generator set. The transfer switch automatically

switches the electrical load from one source to the other.

The load is connected to the common of the transfer switch (Figure 1-1). Under normal conditions, the load is supplied with power from Source 1 (illustrated as Normal). If Source 1 is interrupted, the load is transferred to Source 2 (Emergency). When Source 1 returns, the load is retransferred to Source 1. The transfer and retransfer of the load are the two most basic functions of the transfer switch.

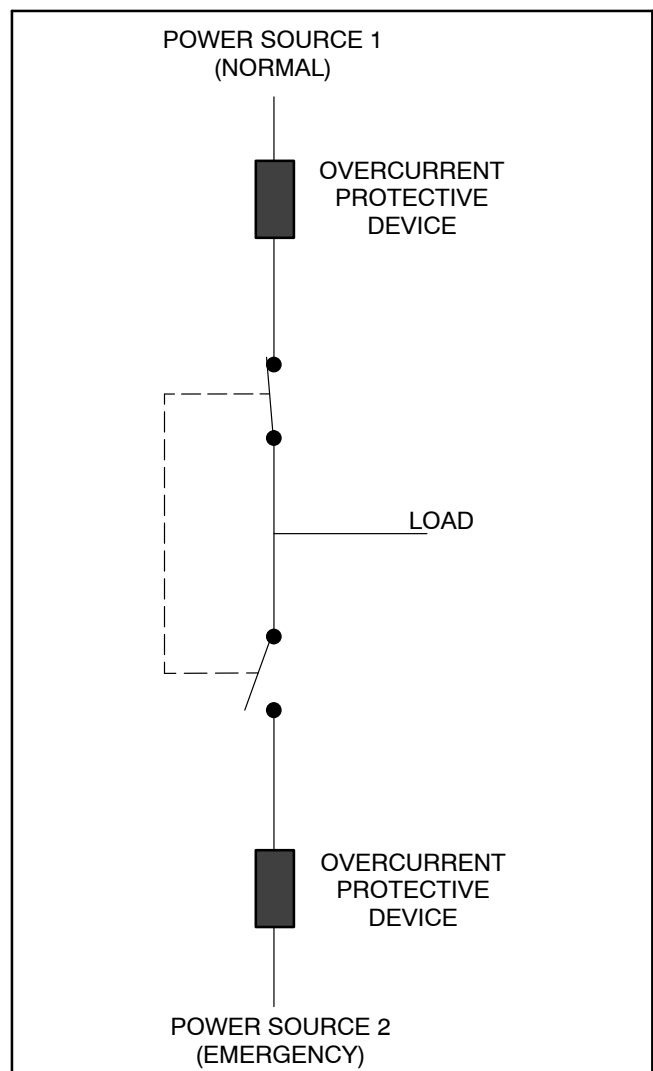


FIGURE 1-1. LOAD TRANSFER SWITCH (TYPICAL FUNCTION)

TRANSFER SWITCH FUNCTION

Automatic transfer switches, capable of automatic operation without operator intervention, perform the basic function of transferring the load to the available source. The controller monitors each source for allowable voltage and frequency range. Transfer switches may interact with any of the LON-WORKS[®] devices, such as:

- Genset
- Master Controller
- Annunciator Panel
- Circuit Breaker

The OTPC ATS supports utility-to-generator, utility-to-utility, and generator-to-generator applications.

UTILITY-TO-GENSET OPERATION

In utility-to-genset applications, the transfer switch performs the following functions:

1. Senses the interruption of the Source 1 power.
2. Sends a start signal to the generator set (Source 2).
3. Transfers the load to the Source 2.
4. Senses the return of Source 1.
5. Retransfers the load to Source 1.
6. Sends a stop signal to the generator set.

UTILITY-TO-UTILITY OPERATION

In utility-to-utility applications, the transfer switch performs the following functions:

1. Monitors the primary (Source 1) power.
2. Senses the interruption of the Source 1 power.
3. Transfers the load to the Source 2.
4. Senses the return of Source 1.
5. Retransfers the load to Source 1.

Level 2 controllers can control a two-utility configuration for prime power. One utility is designated the preferred source. The control automatically transfers the load between the two utilities and detects alarm conditions.

The operator can select either source as the preferred source (see Figure 1-2). The Preferred Source menu is included in the Test submenus (see Figure 4-17). The PC service tool can also be

used to designate either source as the preferred source.

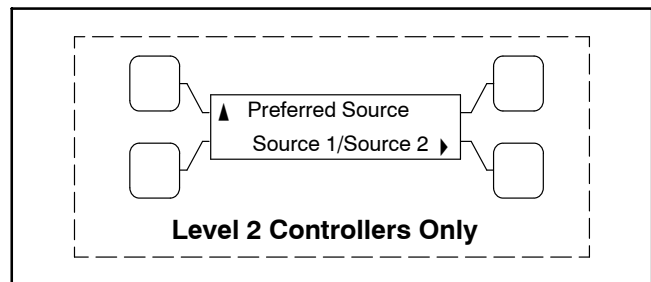


FIGURE 1-2. PREFERRED SOURCE SUBMENU

GENERATOR-TO-GENERATOR OPERATION

In genset-to-genset applications, there are two possible configurations, as shown in Figure 1-3.

- Prime Power – Two gensets provide all of the power (utility power is not available).
- Dual Standby – Two gensets are used to back up utility power.

In Prime Power genset-to-genset applications, the ATS performs the same as with utility-to-genset applications.

In Dual Standby gen-to-gen applications, the master and the slave ATSs perform the following functions.

1. The slave ATS begins connected to the preferred source (either genset A or B, but neither genset is operating yet) and monitors for the Stand-by Start signal from the master ATS (see Figure 1-3).
2. When the signal is received, the slave ATS starts the preferred genset.
3. If the preferred source voltage is acceptable, the slave ATS remains there and turns off the non-preferred genset. Otherwise, the slave ATS will transfer to the non-preferred source.
4. When the utility source returns on the master ATS, then it will transfer back to the utility and disables the Stand-by Start signal.
5. When the Stand-by Signal is disabled, the slave ATS turns off the operating genset (either genset A or B).

NOTE: The Test/Exercise function and Load Shed feature are not available in this configuration.

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