

Automatic Transfer Switch Option Closed Transition Transfer (CTT)

Introduction

Closed Transition Transfer allows the automatic transfer switch to transfer between sources without interruption of power to the load. This is accomplished by synchronizing the two sources prior to transfer; performing a “**make before break**” transfer.

Upon closure of the oncoming source, the source from which power is being transferred is disconnected; the actual time the sources are paralleled is typically less than 100 milliseconds.

The closed transition or “**make before break**” transfer is possible only if both power sources are available and synchronized. If either of the sources are not available, the transfer switch reverts to an open transition or “**break before make**” transfer arrangement. Closed Transition Transfer is available on Dual Motor Operator and Insulated Case automatic transfer switches.

Features

Closed Transition Automatic Transfer Switches are provided with the following features regardless of the selected transfer mode:

- Electrical Interlock Only
- Millisecond timers to ensure paralleling time is minimal
- Cross Tripping devices as backup to normal transfer means
- Reverse Power Relays for both sources to prevent back feeding Synchronizing relay
- Synchronize Fail Timer (SFT) - This timer is adjustable from 0.0 to 60.0 minutes and is FACTORY SET to 10 sec.
- Sync Check Relay (SCR)
- Reverse Power Relays - (RPRN) for Normal Power and (RPRE) for Emergency Power

Microprocessor Operation (Option CTT)

Closed Transition Transfer passively monitors and compares the frequency and phase angle of the power sources. When the alternate source's frequency and phase angle are within preset limits of the normal source, the sources will be paralleled and the alternate source will be disconnected within acceptable time limits. Again, the average time that the two sources are paralleled is under 100 milliseconds.

When offering closed transition transfer as an automatic transfer switch option, we feel that additional protective features should be added to ensure safety to the operator and equipment. Without exception, we provide all closed transition transfer switches with Reverse Power Relays on both sources. In addition, we provide an internal timer, which will trip the emergency source if both sources are paralleled for more than an acceptable time. As further redundant protection we will cross trip the normal switch if the emergency switch fails to properly open.

The Synchronize Fail Timer (SFT) timer is initiated once the closed transition is called for and will be reset upon completion of the transfer. The HMI Screen will display the following while waiting for the source to synchronize.

AUTO - EXERCISE w/LOAD
Awaiting Synchronization

Should the timer time out before the transfer is made, the HMI display will show the following and the trouble contacts will change state.

AUTO - EXERCISE w/LOAD
TROUBLE: SFT Timed Out

This is not considered a fault mode; therefore the automatic operation of the transfer switch will not be terminated. However, as long as both sources are available, and the sync check relay has detected a match in the phase angles of those two sources, the transfer will not be completed.

The operator can clear this message by using the following instructions on the HMI input.

1. Press “Enter”
2. Select “Clear Trouble”
3. Press “Enter” to finalize the selection.
4. Microprocessor controller will then resume normal operation.

The operator can also program the MP7650 to continue to try for a closed transition transfer or to do an open transition transfer when this timer times out. This also “Drops Out” the trouble relay to annunciate that this transfer switch requires attention.

As a safeguard, the Closed Transition Transfer Option provides a sync check relay (SCR) and a reverse power relays (RPRN and RPRE) for each source. In the event that both sources might be left in the closed position due to some form of a malfunction, the reverse power relays will sense a reverse power flow condition, if present, and trip/cross trip both sources. This will energize the trouble relay. The HMI panels will then display the following message along with the appropriate reverse power pilot light.

TROUBLE - Revers Power
08:24 Fri APR, 2016

If this is a molded case ATS that is tripped open by the Reverse Power Relays, the electromechanical controls will then be locked out. After this point, operator intervention is required to resume automatic operation.

If this is an insulated case ATS that has been instructed to “OPEN” by the Reverse Power Relays, the transfer switch will continue to operate as an open transition transfer switch.



Contact Information
p:800.225.0141
f:440.232.5644

sales@lake-shore-electric.com
www.lake-shore-electric.com

Global Headquarters
Lake Shore Electric
205 Willis Street
Bedford, OH 44146

Electromechanical Operation (Option 36)

Closed Transition Transfer passively monitors and compares the frequency and phase angle of the power sources. When the alternate source's frequency and phase angle are within preset limits of the normal source, the sources will be paralleled and the alternate source will be disconnected within pre-set time limits.

As a safeguard, the Closed Transition Transfer Option provides a sync check relay (SCR) and a reverse power relays (RPRN and RPRE) for each source. In the event that both sources might be left in the closed position due to some form of a malfunction, the reverse power relays will sense a reverse power flow condition, if present, and trip/cross trip both sources. In the event that the ATS is tripped open by the Reverse Power Relays, the electromechanical controls will then be locked out. After this point, regardless of the style of the ATS, operator intervention is required to resume automatic operation.

Recommendations

Where applications require extended or active paralleling operation, soft loading/unloading, utility peak shaving or distributed generation, Lake Shore Automatic Transfer Switches and Switchgear can be tailored to meet those needs. Please consult the factory for further information.

As in all applications which involve parallel operation with a utility grid, it is advised that the specific utility be consulted for prior approval on this type of application. Each utility has its own requirements and guidelines to be followed, such as additional protective relays. Please contact the Lake Shore Electric factory for products to meet such additional needs.

Order Guide

Part Number Examples:

1. MCDA30400CMSA/CTT - Molded Case ATS, 3 pole, 400 Amp, 277/480Vac, **12Vdc Microprocessor Controls**, 35kAIC @ 480Vac, NEMA 1 Wall Mount Enclosure with Option CTT.
2. MCDA30400CESA/36 - Molded Case ATS, 3 pole, 400 Amp, 277/480Vac, **Electromechanical Controls**, 35kAIC @ 480Vac, NEMA 1 Wall Mount Enclosure with Option 36.
3. ICFA32000CMSF/CTT - Insulated Case ATS, 3 pole, 2000 Amp, 277/480Vac, **12Vdc Microprocessor Controls**, 65kAIC @ 480Vac, NEMA 3R Free Standing Enclosure with Option CTT.
4. ICFA32000CESF/36 - Insulated Case ATS, 3 pole, 2000 Amp, 277/480Vac, **Electromechanical Controls**, 65kAIC @ 480Vac, NEMA 3R Free Standing Enclosure with Option 36.



Contact Information

p:800.225.0141
f:440.232.5644

sales@lake-shore-electric.com
www.lake-shore-electric.com

Global Headquarters

Lake Shore Electric
205 Willis Street
Bedford, OH 44146