

## POSITIVE CONTROL SYSTEM

### Description

The Positive Control System (PCS) is a sophisticated time delay network that provides highly dependable, adjustable control of automatic transfer switches and switchgear requiring similar control. Four plug-in solid-state and/or pneumatic controlled time delay relays provide any combination of four time delay functions; TDR, Time Delay to Return (Normal); TDE, Time Delay to Emergency; ODR, Outage Delay Relay; and EMT, Engine Maintained Timer.

Starting contacts are rated 10 amperes. Each ON DELAY timer includes two colored indicating lights which display the operation of the timer. Time Delays are available over a wide selection of ranges.

### FEATURES

Components are mounted on a printed circuit board to provide a compact, rugged design.

Solid state time delay relays and sealed control relays assure dependable operation even in severe operating environments.

UL-listed components have average projected electrical life of over 1,000,000 cycles.

Plug-in components simplify maintenance and reduce downtime.

The PCS provides optimum flexibility of transfer switch control.

All adjustments are easily accessible.

All Positive Control Systems are compatible with Lake Shore Start-Masters.

The normally open dry start contact provides a convenient interface to almost any engine starting control.

- **FOUR TIME DELAY FUNCTIONS**
- **NINE SYSTEM CONFIGURATIONS**



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## POSITIVE CONTROL SYSTEM

### TIME DELAY FUNCTIONS

TDR	Time Delay to Return - Provides a delay after the return of Normal power before retransferring the load from the Emergency source. This feature allows Normal voltage to stabilize and ensures against the premature return when the Normal power grid is potentially unbalanced.
TDE	Time Delay to Emergency - Provides a delay after the engine has started before transferring the load to the Emergency source. This feature allows voltage to stabilize at the Emergency source to protect against initial wide fluctuations and can provide a brief warm-up period before loading the engine.
ODR	Outage Delay Relay - Provides an adjustable delay after a failure of the Normal source before initiating an Engine-Start signal to allow for temporary short duration fluctuations in voltage. This feature prevents unnecessary starting of the engine.
EMT	Engine Maintained Timer - Provides a time delay after retransferring the load to the Normal source before shutting down the engine. This feature allows the engine to run under no-load conditions for cooling before shutdown to prevent against thermal and mechanical shocks.

### TIME DELAY RANGES

Each time on delay relay (TDR, TDE, EMT) contains five selectable range settings. This allows the relay to be set accurately from .02 seconds to 30 minutes. The off delay relay (ODR) is supplied with an adjustable range of 5 to 10 seconds, although other delays are available.

### SYSTEM CONFIGURATIONS

The Positive Control System is available in the following configurations:

Configuration	Ordering Number
TDR + ODR + TDE + EMT	P1
TDR + ODR + EMT	P2
TDR = ODR + TDE	P3
TDR = TDE + EMT	P4
TDR + ODR	P5
TDR + TDE	P6
TDR + EMT	P7
TDR	P8
No time delay relays	P9

