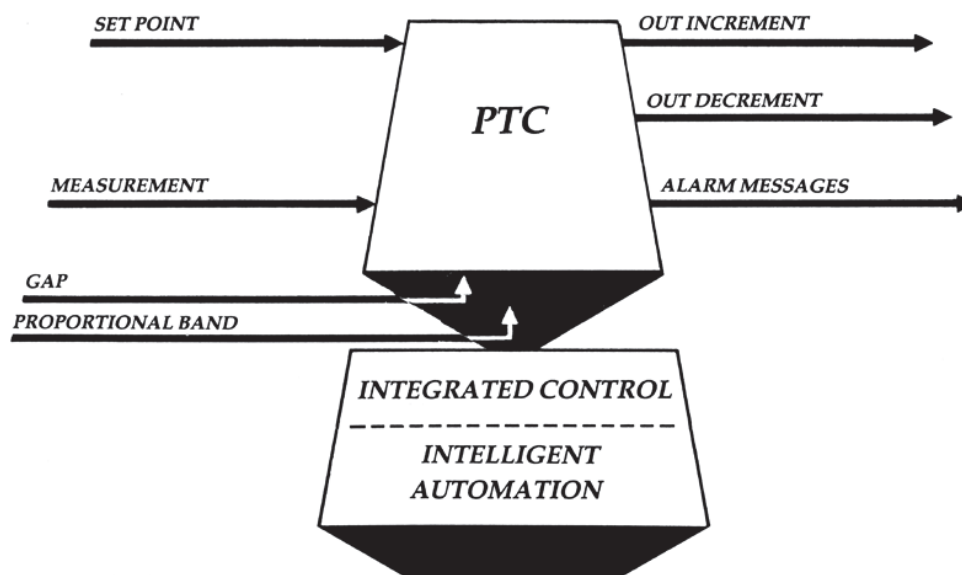


Proportional Time Controller (PTC) Block



The Proportional Time Controller (PTC) block is a proportional time on-off controller for controlling tri-state or bi-state control applications.

OVERVIEW

The PTC block provides two Boolean outputs for controlling tri-state final operator devices such as dual-switch contactors, bi-directional motor-driven actuators. Either of the two outputs may be used for bi-state on-off control applications requiring only one output for controlling devices such as solenoid valves or electric heater elements.

For each output, the duration of “on” time over each controlling period is proportional to the deviation between the set point and the measurement. The controlling period is the time interval between successive output pulses and is established by an adjustable repeat timer parameter. With this technique, the controller operates as a linear proportional-only controller whose gain is adjusted by the proportional band setting.

Each output operates independently as a function of the sense of the deviation. Out increment is operational if the deviation is negative, and out decrement is operational if the deviation is positive. For tri-state operation, an adjustable gap band centered about zero deviation creates a dead zone region. While the deviation is within this zone, the two outputs remain inoperative.

For applications requiring combinations of proportional, integral, and derivative control action, a Proportional-Integral-Derivative (PID) block may be used to drive PTC block in a cascade arrangement, with PTC block configured as either a controller (positioner) or a signal converter.

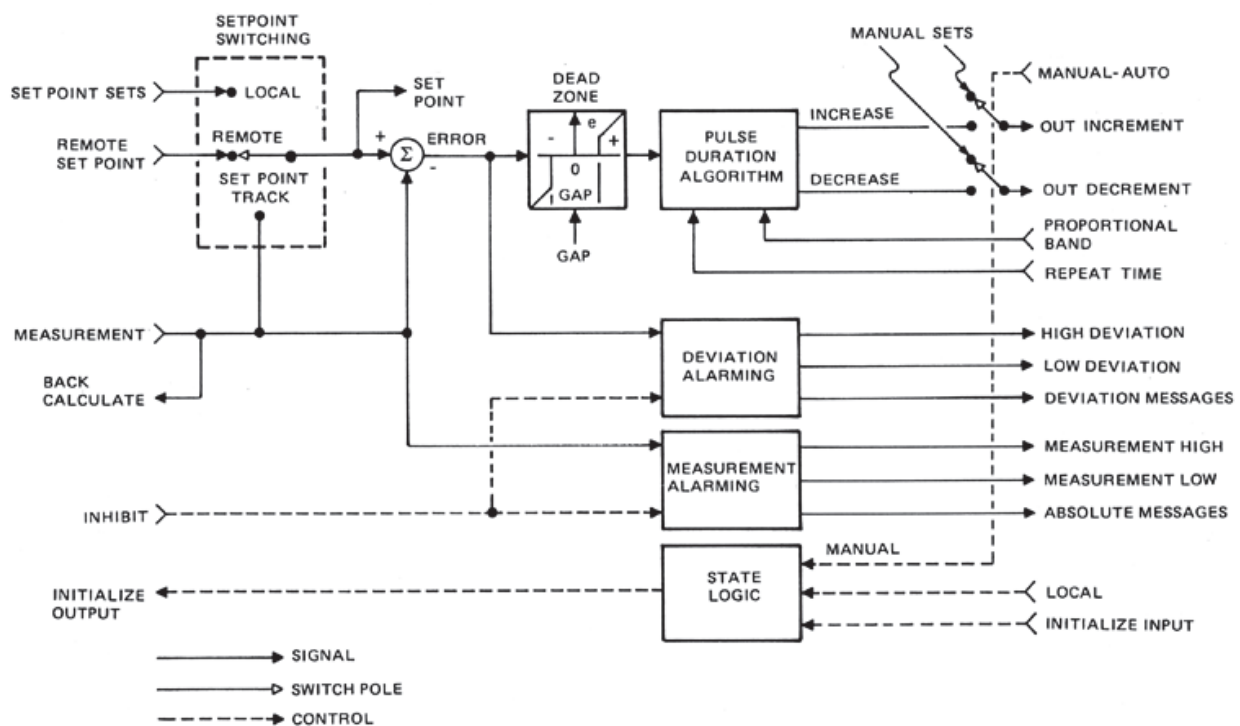


Figure 1. PTC Signal Flow Block Diagram

STANDARD FEATURES

- ▶ Automatic cascade handling that includes:
 - Initialization input/output connection parameters that provide proper coordination and initialization of cascade schemes
 - Back calculation of the reference or set point input for the up-stream block to provide bumpless cascade operation when the cascade is open loop
- ▶ Manual/Auto control of the outputs, which can be initiated by either a host process or another block
- ▶ Local/Remote set point source selection
- ▶ Bad inputs detection and handling

OPTIONS

- ▶ Set point tracking of the measurement signal allows bumpless return to automatic control when the block or any downstream block returns to normal operation
- ▶ Manual override forces the block to manual if either the measurement is off scan, disconnected, or bad. Return to automatic control requires external intervention
- ▶ Absolute alarming of the measurement
- ▶ Deviation alarming of the set point - measurement error signal
- ▶ Manual alarming allows all configured alarm options to be operational in manual

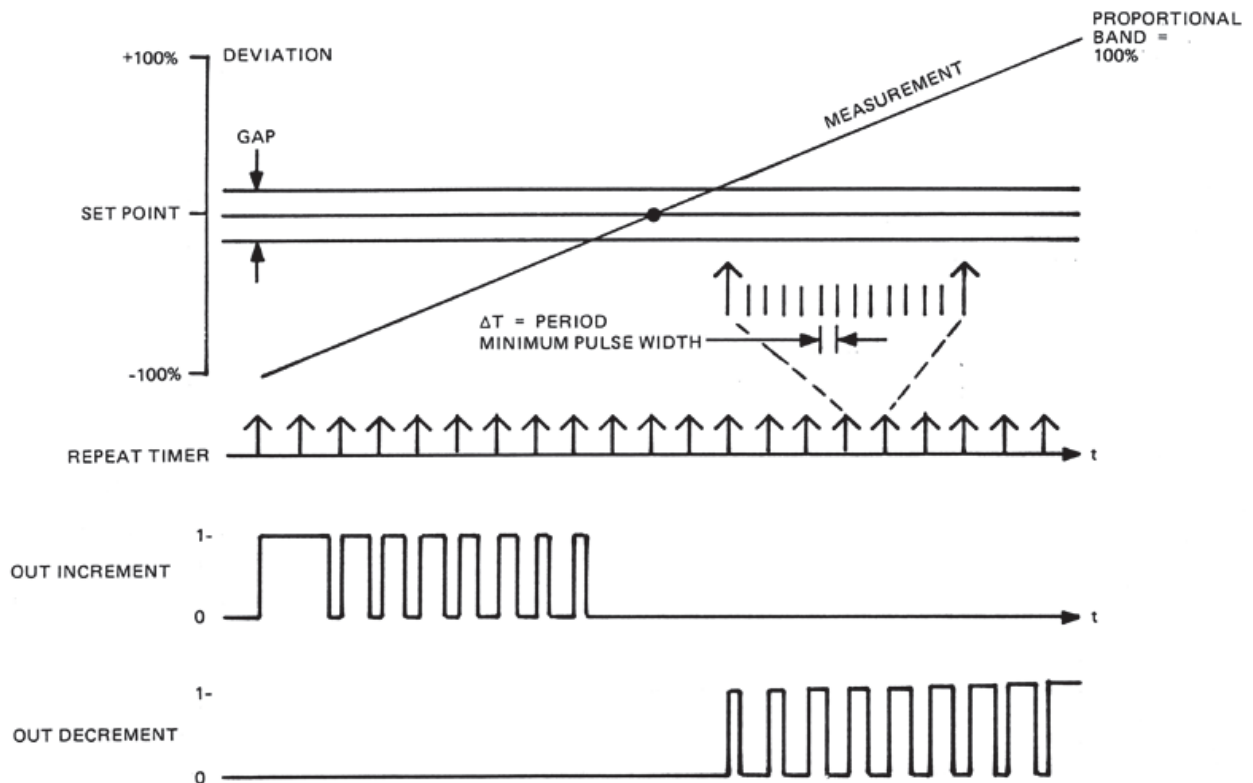


Figure 2. Pulse Duration Algorithm Timing Diagram

ADDITIONAL FEATURES

- ▶ Delayed alarming. A configurable timer delays alarm detection or return-to-normal messages for a specific alarm to reduce the number of alarm messages generated when a block parameter crosses back and forth over an alarm limit.
- ▶ Quality Status output parameter provides a single source for the block's value record status, block status, and alarm status.