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CHAPTER 12: OVERRIDE (SELECTOR) CONTROL

## Chapter 12: Override (Selector) Control

By Harold L. Wade

From *Basic and Advanced Regulatory Control: System Design and Application, 2nd Edition*

### OVERRIDE CONTROL

Override control, also called selector control, exists when one process variable is the controlling variable in normal operation. During abnormal operation, however, another process variable assumes control to prevent some safety, process, or equipment limit from being exceeded.

A key element of an override control strategy is a selector switch, implemented either as a hardware device or a software function block. Depending on how it's configured, this selector switch passes the higher or lower of several input signals to its output. There are several ways of using selector switches in a control strategy. One is to select the higher or lower of several measurement signals to be passed on as the process variable to a feedback controller. For example, the highest of several process temperatures may be selected automatically to become the controlling temperature. As process conditions change, the location of the highest temperature may change also. The selector switch assures that, regardless of process conditions, the controlling point is the highest of the measured temperatures.

Placing a selector switch in the measurement side of a controller, though perhaps important from the vantage point of a particular process application, poses very little technical challenge for the control engineer. If each of the process sensors responds in a similar way to changes in the controller output, then the transition from one sensor to another will be virtually imperceptible.

There are also selectors which select the middle of three inputs. These are used primarily in high-criticality applications, where the failure...

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Control valves or proportional valves are power-operated devices used to modify fluid flow or pressure rate in a process system.

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Flow switches are devices that monitor flow and send a trip signal to other devices, like a pump, for protection. These switches can be used for the measurement of gases, liquids, and steam.

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Electric valve actuators mount on valves which, in response to a signal, automatically move to a desired position using an outside power source. Single-phase or three-phase AC or DC motors drive a combination of gears to generate the desired torque level.

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HVAC controllers are used to monitor and control heating, ventilation and air conditioning (HVAC) systems in buildings. They monitor indoor environmental factors such as temperature and humidity, and control heating and cooling to maintain desired levels.

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[Chapter 13: Control for Interacting Process Loops](http://www.globalspec.com/reference/54034/203279/chapter-13-control-for-interacting-process-loops) (http://www.globalspec.com/reference/54034/203279/chapter-13-control-for-interacting-process-loops)

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OVERVIEW Control loops are said to interact when movement of the final control element of one loop affects not only its own process variable but the process variable of one or more additional control...

[Chapter 7.5.5 - Control Paradigms: Selector Control \(http://www.globalspec.com/reference/13566/179909/chapter-7-5-5-control-paradigms-selector-control\)](http://www.globalspec.com/reference/13566/179909/chapter-7-5-5-control-paradigms-selector-control)

Selector Control Selector control can be viewed as the inverse of split range control. In split range there is one measured signal and several actuators. In selector control there are many measured...

[Chapter 7.9 - Control Paradigms: System Structuring \(http://www.globalspec.com/reference/13570/179909/chapter-7-9-control-paradigms-system-structuring\)](http://www.globalspec.com/reference/13570/179909/chapter-7-9-control-paradigms-system-structuring)

In this section we illustrate how complex control systems can be built from simple components by using the paradigms we have discussed. The problem is quite complex. It involves selection of measured...

[Chapter 4: Model Predictive Control \(http://www.globalspec.com/reference/71851/203279/chapter-4-model-predictive-control\)](http://www.globalspec.com/reference/71851/203279/chapter-4-model-predictive-control)

4-1 Introduction Because Model Predictive Control (MPC) uses an experimental model it can create a future trajectory of the process response based on multiple measured process inputs. Unknown...

[Chapter 9: Process Control \(http://www.globalspec.com/reference/59461/203279/chapter-9-process-control\)](http://www.globalspec.com/reference/59461/203279/chapter-9-process-control)

Control Systems Automatic control is required (1) for precise control of the process to produce more uniform and high quality product, (2) for processes which are too rapid for manual control and (3)...

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