

# Simulation of a PID Control Loop in Simulink

File: Ch12\_PID\_Simulink.m

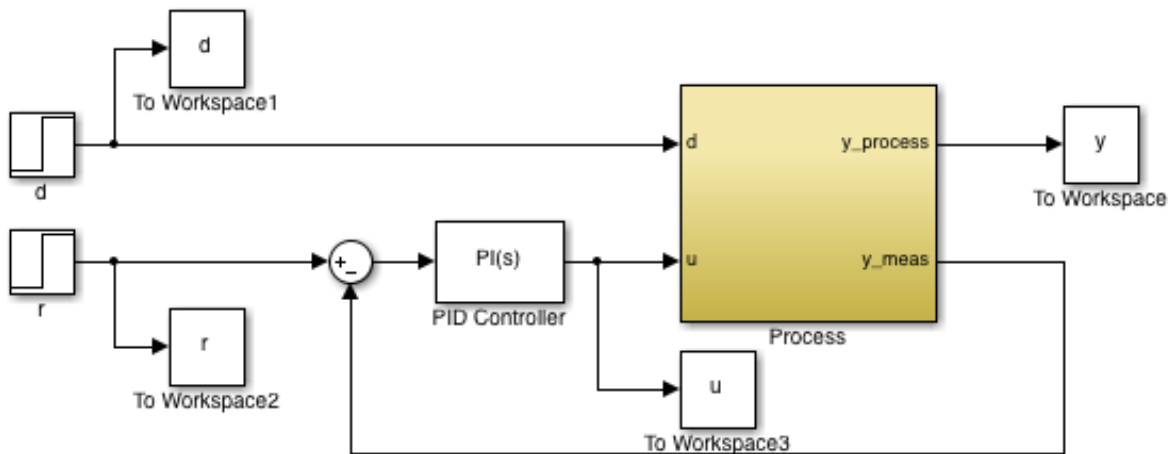
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## Simulink Model

Ch12\_PID\_Simulink\_Model

### SEMD Example 11.4 with Measurement Time Delay



To use:  
Start the simulation from the Simulation menu  
Plot data from Matlab command window.

## Running the Simulink Model from a Script

```
sim('Ch12_PID_Simulink_Model')
```

## Display Results

```
LW = 'LineWidth';  
lw = 2;  
  
subplot(311);  
plot(r, 'r', LW, lw);  
hold on  
plot(y, LW, lw)  
hold off
```

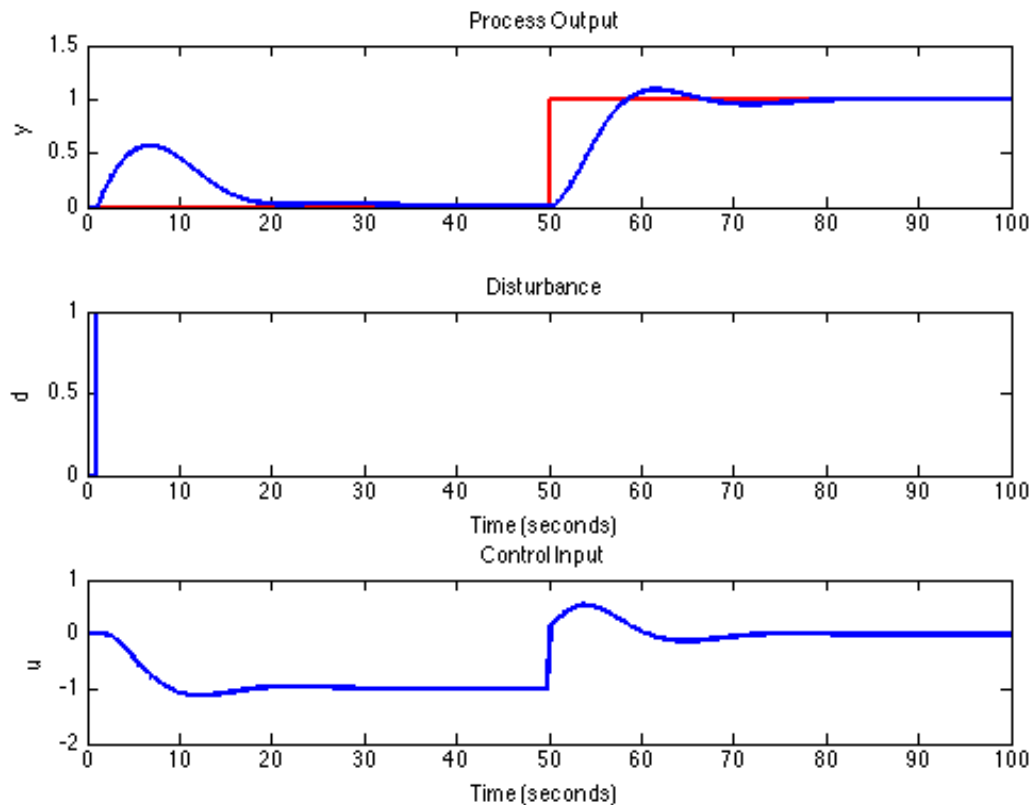
```

title('Process Output')
ylabel('y');

subplot(312);
plot(d,LW,lw)
title('Disturbance')
ylabel('d');

subplot(313);
plot(u,LW,lw);
title('Control Input');
ylabel('u')

```



## Exercises

1. Open the PID Controller block and adjust the parameters. Find controller parameters to reduce the impact of disturbance changes.
2. Modify the process model to include a +10% measurement error. That is, the measured process output is 110% of the actual process output. What is the effect on disturbance rejection and setpoint tracking?