

pidTest

Design Description

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pidTest: Design Description

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Chapter 1. Model Version

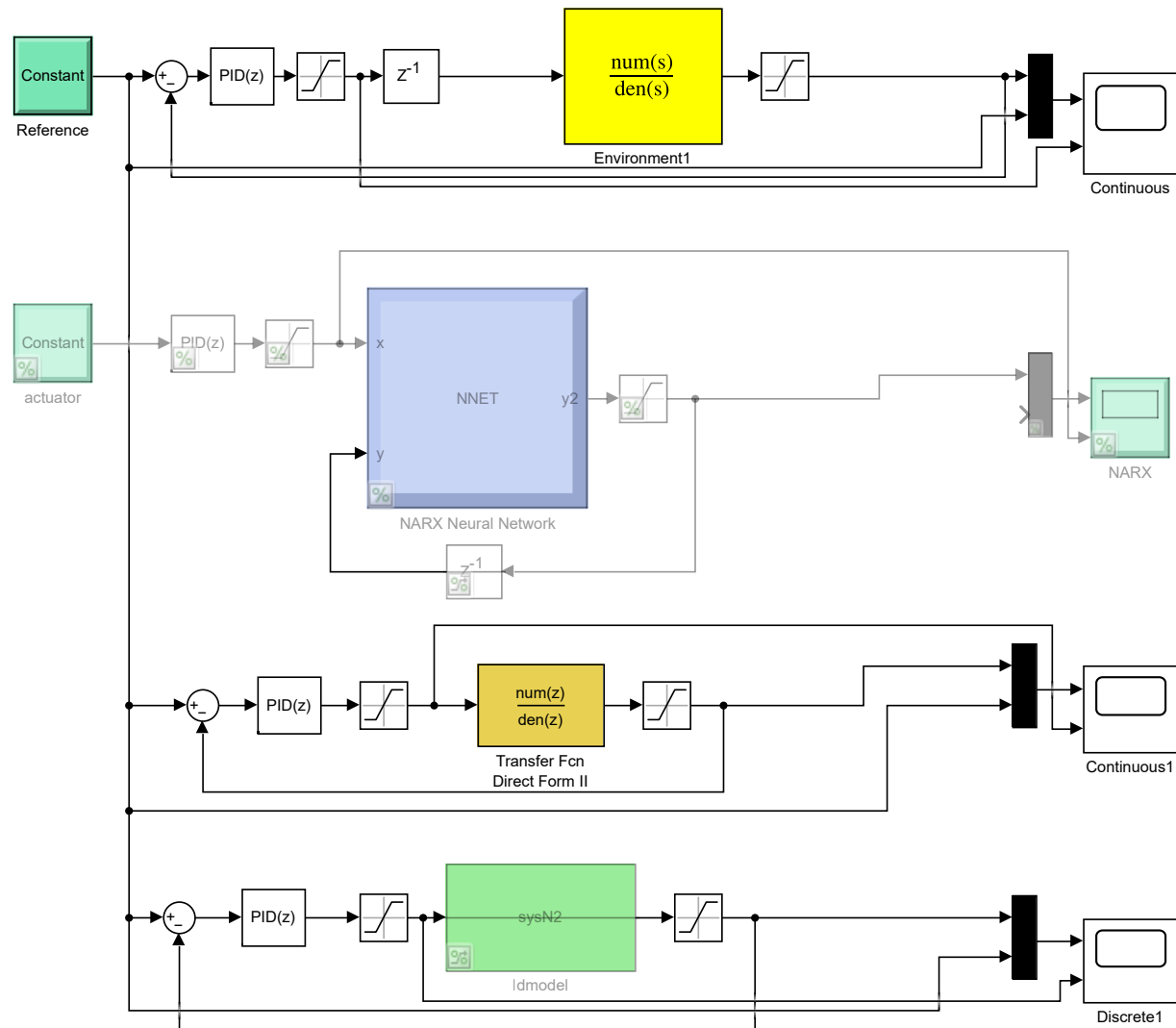
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Chapter 2. Root System

Figure 2.1. pid_



Blocks

Parameters

"Delay1" (Delay)

Table 2.1. "Delay1" Parameters

Parameter	Value
Delay length source	Dialog
Delay length	1
Delay upper limit	100
Initial condition source	Dialog
Initial condition	0
External reset	None
Show enable port	off
Prevent direct feedthrough	off
Diagnostic for delay length	None
Remove delay length check in generated code	off
Input processing	Elements as channels (sample based)
Use circular buffer for state	off
Sample time (-1 for inherited)	-1
State name must resolve to Simulink signal object	off

"Discrete PID Controller1" (SubSystem)

Table 2.2. "Discrete PID Controller1" Parameters

Parameter	Value
SimulinkmasksController_MP	PID
SimulinkmasksForm_MP	Parallel
SimulinkmasksTimeDomain_MP	Discrete-time
SimulinkmasksPIDBlockInTriggeredSubsystem_MP	off
SimulinkmasksSampleTime1ForInherited_MP	-1
SimulinkmasksIntegratorMethod_MP	Forward Euler
SimulinkmasksFilterMethod_MP	Forward Euler
SimulinkmasksSource_MP	internal
SimulinkmasksProportionalP_MP	0.0183992523785814
SimulinkmasksIntegralI_MP	2.28931045747947e-05
Use I*Ts (optimal for codegen)	off
SimulinkmasksDerivativeD_MP	0.69236418649706

Chapter 2. Root System

Parameter	Value
SimulinkmasksFilterCoefficientN_MP	0.0257149111109251
SimulinkmasksUseFilter_MP	on
SimulinkmasksPIDAutoTuningMethodSelect_MP	Transfer Function Based (PI D Tuner App)
SimulinkmasksEnableZerocrossingDetection_MP	on
SimulinkmasksSource_MP	internal
SimulinkmasksIntegrator_MP	0
SimulinkmasksFilter_MP	0
SimulinkmasksExternalReset_MP	none
SimulinkmasksIgnoreResetWhenLinearizing_MP	off
SimulinkmasksEnableTrackingMode_MP	off
SimulinkmasksTrackingCoefficientKt_MP	1
SimulinkmasksLimitOutput_MP	off
SimulinkmasksSource_MP	internal
SimulinkmasksUpperSaturationLimit_MP	inf
SimulinkmasksLowerSaturationLimit_MP	-inf
SimulinkmasksIgnoreSaturationWhenLinearizing_MP	off
SimulinkmasksAntiwindupMethod_MP	none
Simulinkblkprm_promptsIntegratorLimitOutput	off
SimulinkmasksUpperSaturationLimit_MP	inf
SimulinkmasksLowerSaturationLimit_MP	-inf
SimulinkmasksIntegerRoundingMode_MP	Floor
SimulinkmasksSaturateOnIntegerOverflow_MP	off
SimulinkmasksLockDataTypeAgainstFxpTools_MP	off
SimulinkmasksPPProductOutput_MP	Inherit: Inherit via internal rule
POutMin	[]
POutMax	[]
SimulinkmasksIProductOutput_MP	Inherit: Inherit via internal rule
IOutMin	[]
IOutMax	[]
SimulinkmasksDProductOutput_MP	Inherit: Inherit via internal rule
DOutMin	[]
DOutMax	[]

Chapter 2. Root System

Parameter	Value
SimulinkmasksNProductOutput_MP	Inherit: Inherit via internal rule
NOutMin	[]
NOutMax	[]
SimulinkmasksSumOutput_MP	Inherit: Inherit via internal rule
SumOutMin	[]
SumOutMax	[]
SimulinkmasksPParameter_MP	Inherit: Inherit via internal rule
PParamMin	[]
PParamMax	[]
SimulinkmasksIParameter_MP	Inherit: Inherit via internal rule
IParamMin	[]
IParamMax	[]
SimulinkmasksDParameter_MP	Inherit: Inherit via internal rule
DParamMin	[]
DParamMax	[]
SimulinkmasksNParameter_MP	Inherit: Inherit via internal rule
NParamMin	[]
NParamMax	[]
SimulinkmasksIntegratorOutput_MP	Inherit: Inherit via internal rule
IntegratorOutMin	[]
IntegratorOutMax	[]
SimulinkmasksFilterOutput_MP	Inherit: Inherit via internal rule
FilterOutMin	[]
FilterOutMax	[]
SimulinkmasksSumDOutput_MP	Inherit: Inherit via internal rule
SumDOutMin	[]
SumDOutMax	[]
SimulinkmasksAccumulatorOfSum_MP	Inherit: Inherit via internal rule

Parameter	Value
SimulinkmasksAccumulatorOfSumD_MP	Inherit: Inherit via internal rule
N Parameter constant output	Inherit: Inherit via back propagation
NCopyOutMin	[]
NCopyOutMax	[]
SimulinkmasksStateNameMustResolveToSimulinkSignalObject_MP	off
SimulinkmasksStateNameMustResolveToSimulinkSignalObject_MP	off

"Discrete PID Controller2" (SubSystem)

Table 2.3. "Discrete PID Controller2" Parameters

Parameter	Value
SimulinkmasksController_MP	PID
SimulinkmasksForm_MP	Parallel
SimulinkmasksTimeDomain_MP	Discrete-time
SimulinkmasksPIDBlockInTriggeredSubsystem_MP	off
SimulinkmasksSampleTime1ForInherited_MP	-1
SimulinkmasksIntegratorMethod_MP	Forward Euler
SimulinkmasksFilterMethod_MP	Forward Euler
SimulinkmasksSource_MP	internal
SimulinkmasksProportionalP_MP	0.0393130446962605
SimulinkmasksIntegralI_MP	0.000142416962335597
Use I*Ts (optimal for codegen)	off
SimulinkmasksDerivativeD_MP	-0.878408269640117
SimulinkmasksFilterCoefficientN_MP	0.0434637677726794
SimulinkmasksUseFilter_MP	on
SimulinkmasksPIDAutoTuningMethodSelect_MP	Transfer Function Based (PID Tuner App)
SimulinkmasksEnableZerocrossingDetection_MP	on
SimulinkmasksSource_MP	internal
SimulinkmasksIntegrator_MP	0
SimulinkmasksFilter_MP	0
SimulinkmasksExternalReset_MP	none
SimulinkmasksIgnoreResetWhenLinearizing_MP	off
SimulinkmasksEnableTrackingMode_MP	off

Chapter 2. Root System

Parameter	Value
SimulinkmasksTrackingCoefficientKt_MP	1
SimulinkmasksLimitOutput_MP	off
SimulinkmasksSource_MP	internal
SimulinkmasksUpperSaturationLimit_MP	inf
SimulinkmasksLowerSaturationLimit_MP	-inf
SimulinkmasksIgnoreSaturationWhenLinearizing_MP	off
SimulinkmasksAntiwindupMethod_MP	none
Simulinkblkprm_promptsIntegratorLimitOutput	off
SimulinkmasksUpperSaturationLimit_MP	inf
SimulinkmasksLowerSaturationLimit_MP	-inf
SimulinkmasksIntegerRoundingMode_MP	Floor
SimulinkmasksSaturateOnIntegerOverflow_MP	off
SimulinkmasksLockDataTypeAgainstFxpTools_MP	off
SimulinkmasksPPProductOutput_MP	Inherit: Inherit via internal rule
POutMin	[]
POutMax	[]
SimulinkmasksIProductOutput_MP	Inherit: Inherit via internal rule
IOutMin	[]
IOutMax	[]
SimulinkmasksDProductOutput_MP	Inherit: Inherit via internal rule
DOutMin	[]
DOutMax	[]
SimulinkmasksNProductOutput_MP	Inherit: Inherit via internal rule
NOutMin	[]
NOutMax	[]
SimulinkmasksSumOutput_MP	Inherit: Inherit via internal rule
SumOutMin	[]
SumOutMax	[]
SimulinkmasksPPParameter_MP	Inherit: Inherit via internal rule
PParamMin	[]
PParamMax	[]

Chapter 2. Root System

Parameter	Value
SimulinkmasksIPParameter_MP	Inherit: Inherit via internal rule
IParamMin	[]
IParamMax	[]
SimulinkmasksDParameter_MP	Inherit: Inherit via internal rule
DParamMin	[]
DParamMax	[]
SimulinkmasksNParameter_MP	Inherit: Inherit via internal rule
NParamMin	[]
NParamMax	[]
SimulinkmasksIntegratorOutput_MP	Inherit: Inherit via internal rule
IntegratorOutMin	[]
IntegratorOutMax	[]
SimulinkmasksFilterOutput_MP	Inherit: Inherit via internal rule
FilterOutMin	[]
FilterOutMax	[]
SimulinkmasksSumDOutput_MP	Inherit: Inherit via internal rule
SumDOutMin	[]
SumDOutMax	[]
SimulinkmasksAccumulatorOfSum_MP	Inherit: Inherit via internal rule
SimulinkmasksAccumulatorOfSumD_MP	Inherit: Inherit via internal rule
N Parameter constant output	Inherit: Inherit via back propagation
NCopyOutMin	[]
NCopyOutMax	[]
SimulinkmasksStateNameMustResolveToSimulinkSignalObject_MP	off
SimulinkmasksStateNameMustResolveToSimulinkSignalObject_MP	off

"Environment1" (TransferFcn)**Table 2.4. "Environment1" Parameters**

Parameter	Value
Numerator coefficients	[0.317083839607784 0.000521634142681 0.000189847434189 0.000000393885142]
Denominator coefficients	[1.000000000000000 0.009075547001992 0.000607241576411 0.000005460746852 0.000000003331245]
State Name (e.g., 'position')	"

"Mux" (Mux)**Table 2.5. "Mux" Parameters**

Parameter	Value
Number of inputs	2
Display option	bar

"Mux2" (Mux)**Table 2.6. "Mux2" Parameters**

Parameter	Value
Number of inputs	2
Display option	bar

"Mux3" (Mux)**Table 2.7. "Mux3" Parameters**

Parameter	Value
Number of inputs	2
Display option	bar

"PID Controller" (SubSystem)

Table 2.8. "PID Controller" Parameters

Parameter	Value
SimulinkmasksController_MP	PID
SimulinkmasksForm_MP	Parallel
SimulinkmasksTimeDomain_MP	Discrete-time
SimulinkmasksPIDBlockInTriggeredSubsystem_MP	off
SimulinkmasksSampleTime1ForInherited_MP	-1
SimulinkmasksIntegratorMethod_MP	Forward Euler
SimulinkmasksFilterMethod_MP	Forward Euler
SimulinkmasksSource_MP	internal
SimulinkmasksProportionalP_MP	0.0209976150417978
SimulinkmasksIntegralI_MP	0.000280681440296962
Use I*Ts (optimal for codegen)	off
SimulinkmasksDerivativeD_MP	0
SimulinkmasksFilterCoefficientN_MP	100
SimulinkmasksUseFilter_MP	on
SimulinkmasksPIDAutoTuningMethodSelect_MP	Transfer Function Based (PI D Tuner App)
SimulinkmasksEnableZerocrossingDetection_MP	on
SimulinkmasksSource_MP	internal
SimulinkmasksIntegrator_MP	0
SimulinkmasksFilter_MP	0
SimulinkmasksExternalReset_MP	none
SimulinkmasksIgnoreResetWhenLinearizing_MP	off
SimulinkmasksEnableTrackingMode_MP	off
SimulinkmasksTrackingCoefficientKt_MP	1
SimulinkmasksLimitOutput_MP	off
SimulinkmasksSource_MP	internal
SimulinkmasksUpperSaturationLimit_MP	inf
SimulinkmasksLowerSaturationLimit_MP	-inf
SimulinkmasksIgnoreSaturationWhenLinearizing_MP	on
SimulinkmasksAntiwindupMethod_MP	none
Simulinkblkprm_promptsIntegratorLimitOutput	off
SimulinkmasksUpperSaturationLimit_MP	inf

Chapter 2. Root System

Parameter	Value
SimulinkmasksLowerSaturationLimit_MP	-inf
SimulinkmasksIntegerRoundingMode_MP	Floor
SimulinkmasksSaturateOnIntegerOverflow_MP	off
SimulinkmasksLockDataTypeAgainstFxpTools_MP	off
SimulinkmasksPPProductOutput_MP	Inherit: Inherit via internal rule
POutMin	[]
POutMax	[]
SimulinkmasksIPProductOutput_MP	Inherit: Inherit via internal rule
IOutMin	[]
IOutMax	[]
SimulinkmasksDProductOutput_MP	Inherit: Inherit via internal rule
DOutMin	[]
DOutMax	[]
SimulinkmasksNProductOutput_MP	Inherit: Inherit via internal rule
NOutMin	[]
NOutMax	[]
SimulinkmasksSumOutput_MP	Inherit: Inherit via internal rule
SumOutMin	[]
SumOutMax	[]
SimulinkmasksPPParameter_MP	Inherit: Inherit via internal rule
PParamMin	[]
PParamMax	[]
SimulinkmasksIPParameter_MP	Inherit: Inherit via internal rule
IParamMin	[]
IParamMax	[]
SimulinkmasksDParameter_MP	Inherit: Inherit via internal rule
DParamMin	[]
DParamMax	[]
SimulinkmasksNParameter_MP	Inherit: Inherit via internal rule

Parameter	Value
NParamMin	[]
NParamMax	[]
SimulinkmasksIntegratorOutput_MP	Inherit: Inherit via internal rule
IntegratorOutMin	[]
IntegratorOutMax	[]
SimulinkmasksFilterOutput_MP	Inherit: Inherit via internal rule
FilterOutMin	[]
FilterOutMax	[]
SimulinkmasksSumDOutput_MP	Inherit: Inherit via internal rule
SumDOutMin	[]
SumDOutMax	[]
SimulinkmasksAccumulatorOfSum_MP	Inherit: Inherit via internal rule
SimulinkmasksAccumulatorOfSumD_MP	Inherit: Inherit via internal rule
N Parameter constant output	Inherit: Inherit via back propagation
NCopyOutMin	[]
NCopyOutMax	[]
SimulinkmasksStateNameMustResolveToSimulinkSignalObject_MP	off
SimulinkmasksStateNameMustResolveToSimulinkSignalObject_MP	off

"Reference" (Constant)

Table 2.9. "Reference" Parameters

Parameter	Value
Constant value	100
Interpret vector parameters as 1-D	on
Output minimum	[]
Output maximum	[]
Output data type	Inherit: Inherit from 'Constant value'
Lock output data type setting against changes by the fixed-point tools	off
Sample time	Ts

Parameter	Value
Frame period	inf

"Saturation" (Saturate)

Table 2.10. "Saturation" Parameters

Parameter	Value
Upper limit	10
Lower limit	0
Treat as gain when linearizing	on
Enable zero-crossing detection	on
Sample time (-1 for inherited)	-1
Output minimum	[]
Output maximum	[]
Output data type	Inherit: Same as input
Lock output data type setting against changes by the fixed-point tools	off
Integer rounding mode	Floor

"Saturation2" (Saturate)

Table 2.11. "Saturation2" Parameters

Parameter	Value
Upper limit	10
Lower limit	0
Treat as gain when linearizing	on
Enable zero-crossing detection	on
Sample time (-1 for inherited)	-1
Output minimum	[]
Output maximum	[]
Output data type	Inherit: Same as input
Lock output data type setting against changes by the fixed-point tools	off
Integer rounding mode	Floor

"Saturation3" (Saturate)**Table 2.12. "Saturation3" Parameters**

Parameter	Value
Upper limit	inf
Lower limit	0
Treat as gain when linearizing	on
Enable zero-crossing detection	on
Sample time (-1 for inherited)	-1
Output minimum	[]
Output maximum	[]
Output data type	Inherit: Same as input
Lock output data type setting against changes by the fixed-point tools	off
Integer rounding mode	Floor

"Saturation4" (Saturate)**Table 2.13. "Saturation4" Parameters**

Parameter	Value
Upper limit	inf
Lower limit	0
Treat as gain when linearizing	on
Enable zero-crossing detection	on
Sample time (-1 for inherited)	-1
Output minimum	[]
Output maximum	[]
Output data type	Inherit: Same as input
Lock output data type setting against changes by the fixed-point tools	off
Integer rounding mode	Floor

"Saturation6" (Saturate)**Table 2.14. "Saturation6" Parameters**

Parameter	Value
Upper limit	10

Parameter	Value
Lower limit	0
Treat as gain when linearizing	on
Enable zero-crossing detection	on
Sample time (-1 for inherited)	-1
Output minimum	[]
Output maximum	[]
Output data type	Inherit: Same as input
Lock output data type setting against changes by the fixed-point tools	off
Integer rounding mode	Floor

"Saturation7" (Saturate)

Table 2.15. "Saturation7" Parameters

Parameter	Value
Upper limit	inf
Lower limit	0
Treat as gain when linearizing	on
Enable zero-crossing detection	on
Sample time (-1 for inherited)	-1
Output minimum	[]
Output maximum	[]
Output data type	Inherit: Same as input
Lock output data type setting against changes by the fixed-point tools	off
Integer rounding mode	Floor

"Sum" (Sum)

Table 2.16. "Sum" Parameters

Parameter	Value
Icon shape	round
List of signs	+-
Sum over	All dimensions
Dimension	1
Output minimum	[]

Parameter	Value
Output maximum	[]
Output data type	Inherit: Inherit via internal rule
Accumulator data type	Inherit: Inherit via internal rule
Require all inputs to have the same data type	off
Lock data type settings against changes by the fixed-point tools	off
Integer rounding mode	Floor
Saturate on integer overflow	off
Sample time (-1 for inherited)	-1

"Sum1" (Sum)

Table 2.17. "Sum1" Parameters

Parameter	Value
Icon shape	round
List of signs	+-
Sum over	All dimensions
Dimension	1
Output minimum	[]
Output maximum	[]
Output data type	Inherit: Inherit via internal rule
Accumulator data type	Inherit: Inherit via internal rule
Require all inputs to have the same data type	off
Lock data type settings against changes by the fixed-point tools	off
Integer rounding mode	Floor
Saturate on integer overflow	off
Sample time (-1 for inherited)	-1

"Sum2" (Sum)

Table 2.18. "Sum2" Parameters

Parameter	Value
Icon shape	round
List of signs	+-
Sum over	All dimensions

Parameter	Value
Dimension	1
Output minimum	[]
Output maximum	[]
Output data type	Inherit: Inherit via internal rule
Accumulator data type	Inherit: Inherit via internal rule
Require all inputs to have the same data type	off
Lock data type settings against changes by the fixed-point tools	off
Integer rounding mode	Floor
Saturate on integer overflow	off
Sample time (-1 for inherited)	-1

"Transfer Fcn Direct Form II" (SubSystem)

Table 2.19. "Transfer Fcn Direct Form II" Parameters

Parameter	Value
SimulinkmasksNumeratorCoefficients_MP	[0 0.3876 -1.1616 1.1608 -0.3868]
SimulinkmasksDenominatorCoefficientsExcludingLead_MP	[-3.9880 5.9649 -3.9658 0.9889]
SimulinkmasksInitialCondition_MP	25.0
SimulinkmasksIntegerRoundingMode_MP	Floor
SimulinkmasksSaturateToMaxOrMinWhenOverflowsOccur_MP	off

Block Execution Order

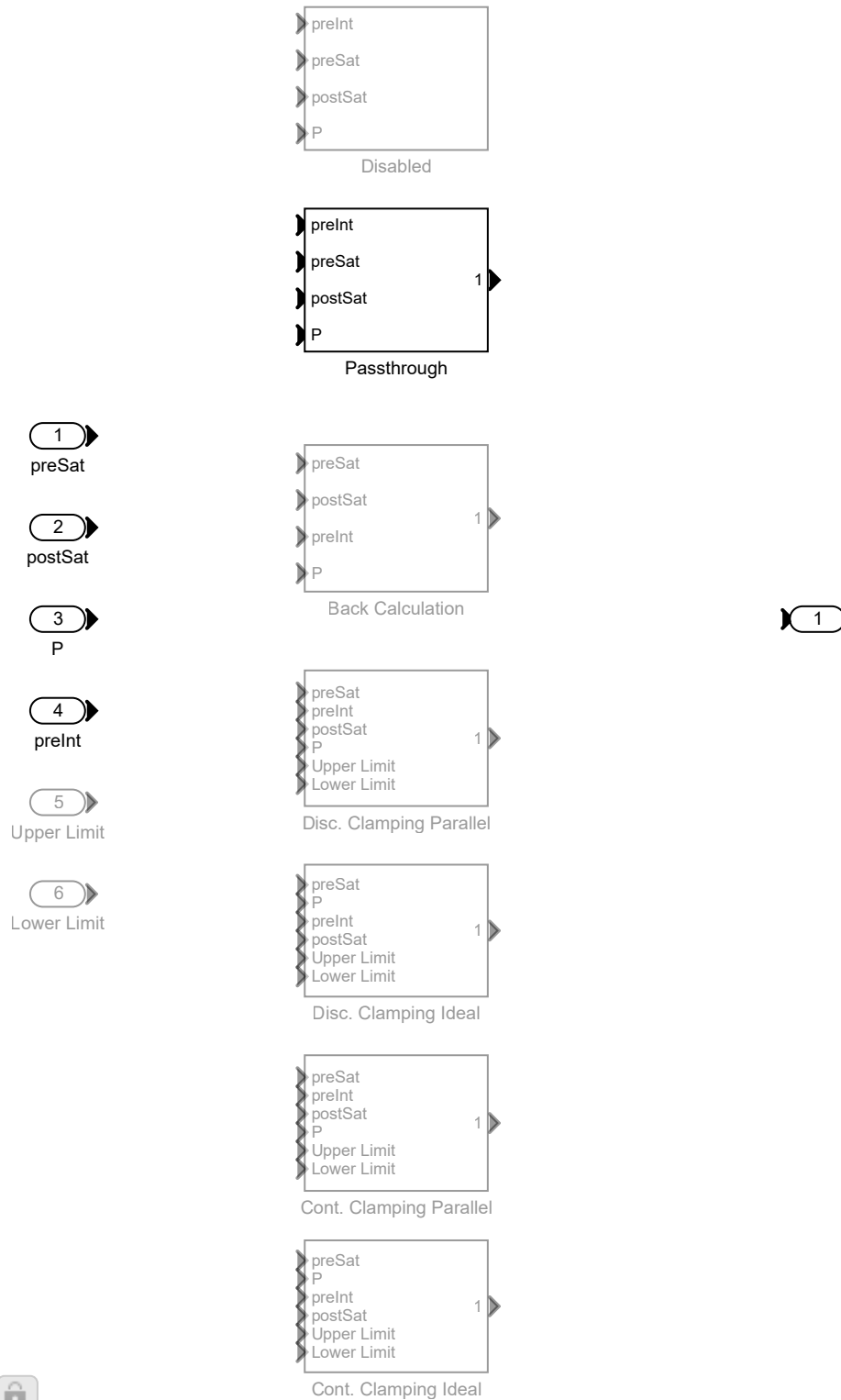
1. [Environment1](#) (TransferFcn)
2. [Saturation3](#) (Saturate)
3. [Reference](#) (Constant)
4. [Sum](#) (Sum)
5. [Proportional Gain](#) (Gain)
6. [Integrator](#) (DiscreteIntegrator)
7. [Derivative Gain](#) (Gain)
8. [Filter](#) (DiscreteIntegrator)
9. [SumD](#) (Sum)
10. [Filter Coefficient](#) (Gain)
11. [Sum](#) (Sum)
12. [Saturation](#) (Saturate)
13. [Continuous](#) (Scope)
14. [Integrator](#) (DiscreteIntegrator)
15. [Filter](#) (DiscreteIntegrator)
16. [Tapped Delay](#) (S-Function)

17. [DenCoef](#) (Gain)
18. [<< Synthesized Atomic Subsystem For Alg Loop 1 Task 0 >>](#)
 1. [Derivative Gain](#) (Gain)
 2. [SumD](#) (Sum)
 3. [Filter Coefficient](#) (Gain)
 4. [Proportional Gain](#) (Gain)
 5. [Sum](#) (Sum)
 6. [Saturation2](#) (Saturate)
 7. [Sum](#) (Sum)
 8. [TmpSignal ConversionAtNumCoefInport1](#) (SignalConversion)
 9. [NumCoef](#) (Gain)
 10. [Saturation4](#) (Saturate)
 11. [Sum2](#) (Sum)
19. [Continuous1](#) (Scope)
20. [Integrator](#) (DiscreteIntegrator)
21. [Filter](#) (DiscreteIntegrator)
22. [<< Synthesized Atomic Subsystem For Alg Loop 2 Task 0 >>](#)
 1. [Derivative Gain](#) (Gain)
 2. [SumD](#) (Sum)
 3. [Filter Coefficient](#) (Gain)
 4. [Proportional Gain](#) (Gain)
 5. [Sum](#) (Sum)
 6. [Saturation6](#) (Saturate)
 7. [Saturation7](#) (Saturate)
 8. [Sum1](#) (Sum)
23. [Discrete1](#) (Scope)
24. [Delay1](#) (Delay)
25. [Integral Gain](#) (Gain)
26. [Integral Gain](#) (Gain)
27. [Integral Gain](#) (Gain)

Chapter 3. Subsystems

Anti-windup

Figure 3.1. pid_/Discrete PID Controller1/Anti-windup



Blocks

Parameters

"Lower Limit" (Inport)

Table 3.1. "Lower Limit" Parameters

Parameter	Value
Port number	6
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Out1" (Outport)

Table 3.2. "Out1" Parameters

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outport is virtual	off
Source of initial output value	Dialog
Output when disabled	held

Parameter	Value
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

"P" (Inport)**Table 3.3. "P" Parameters**

Parameter	Value
Port number	3
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"postSat" (Inport)**Table 3.4. "postSat" Parameters**

Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"preInt" (Inport)**Table 3.5. "preInt" Parameters**

Parameter	Value
Port number	4
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime

Parameter	Value
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"preSat" (Inport)

Table 3.6. "preSat" Parameters

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

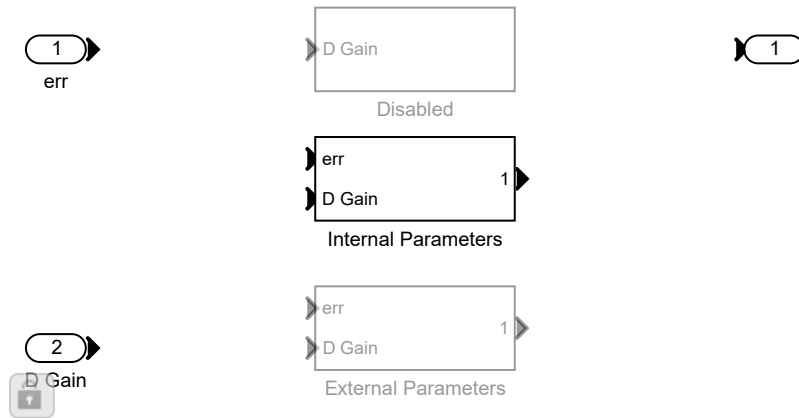
"Upper Limit" (Inport)

Table 3.7. "Upper Limit" Parameters

Parameter	Value
Port number	5
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

D Gain

Figure 3.2. pid_/Discrete PID Controller1/D Gain



Blocks

Parameters

"D Gain" (Inport)

Table 3.8. "D Gain" Parameters

Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"err" (Inport)

Table 3.9. "err" Parameters

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime

Parameter	Value
Minimum	[]
Maximum	[]
Data type	Inherit: auto

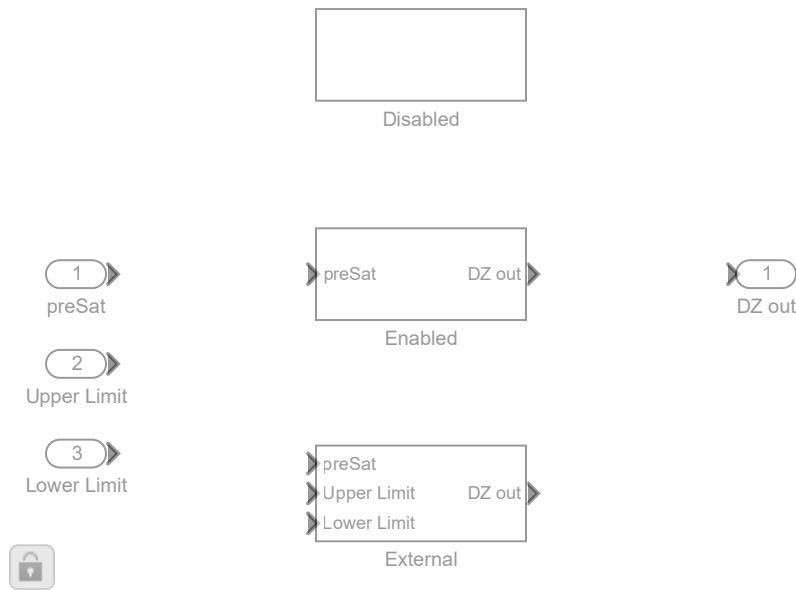
"Out1" (Outport)

Table 3.10. "Out1" Parameters

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

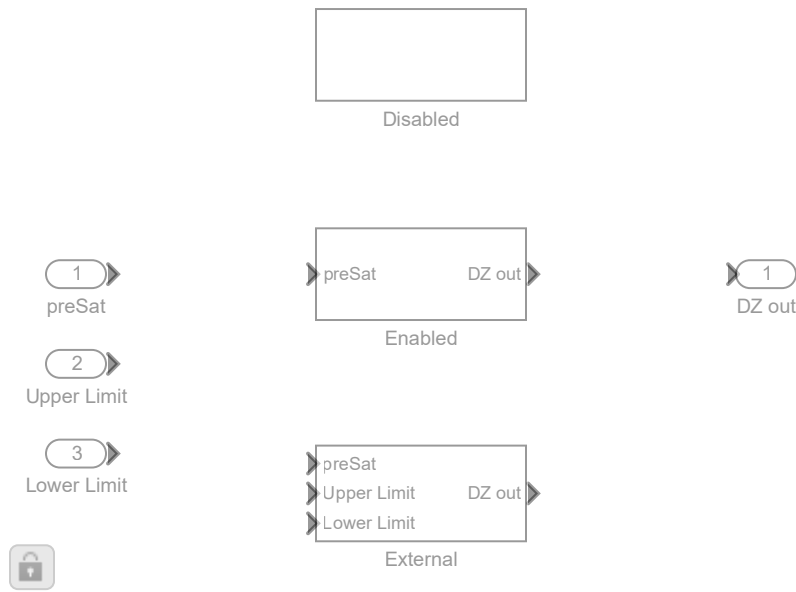
Dead Zone

Figure 3.3. pid_/Discrete PID Controller1/Anti-windup/Cont. Clamping Ideal/Dead Zone



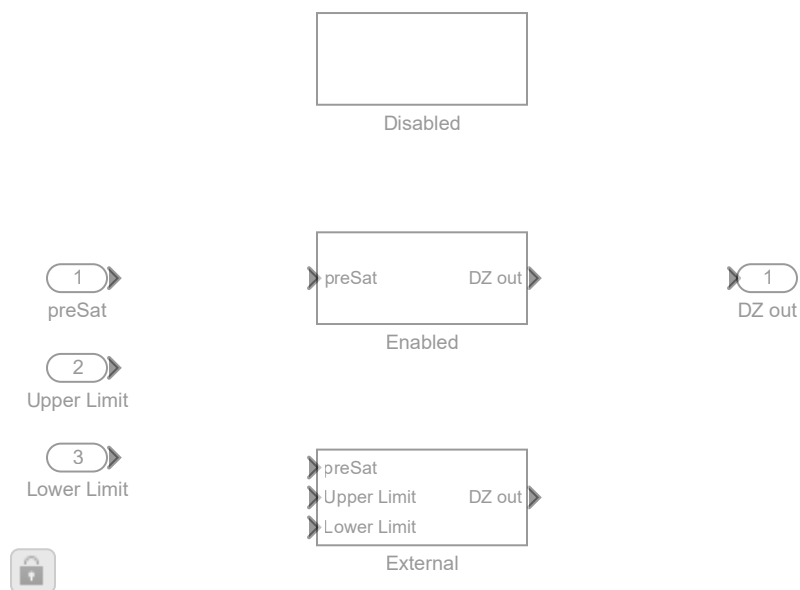
Dead Zone

Figure 3.4. pid_/Discrete PID Controller1/Anti-windup/Cont. Clamping Parallel/Dead Zone



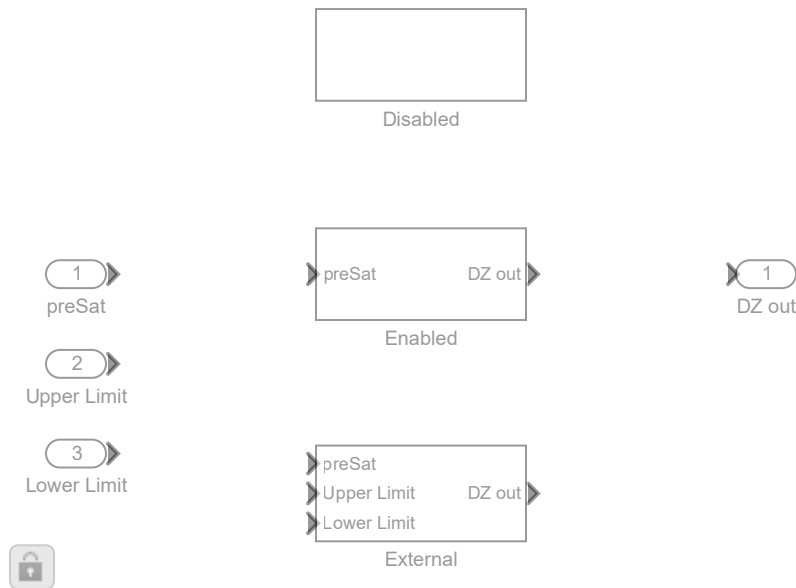
Dead Zone

Figure 3.5. pid_/Discrete PID Controller1/Anti-windup/Disc. Clamping Ideal/Dead Zone



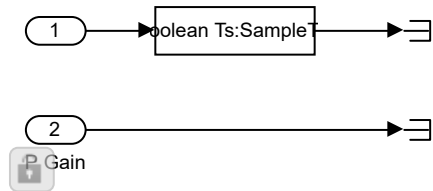
Dead Zone

Figure 3.6. pid_/Discrete PID Controller1/Anti-windup/Disc. Clamping Parallel/Dead Zone



Disabled

Figure 3.7. pid_/Discrete PID Controller1/Ideal P Gain Fdbk/Disabled



Blocks

Parameters

"In1" (Inport)**Table 3.11. "In1" Parameters**

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"P Gain" (Inport)**Table 3.12. "P Gain" Parameters**

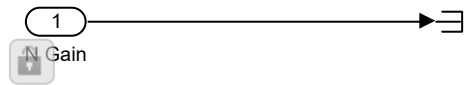
Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Signal Specification1" (SignalSpecification)**Table 3.13. "Signal Specification1" Parameters**

Parameter	Value
Minimum	[]
Maximum	[]
Data type	boolean
Lock output data type setting against changes by the fixed-point tools	off
Require nonvirtual bus	off
Unit (e.g., m, m/s ² , N*m)	inherit
Dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime

Disabled

Figure 3.8. pid_/Discrete PID Controller1/N Copy/Disabled



Blocks

Parameters

"N Gain" (Inport)

Table 3.14. "N Gain" Parameters

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

Disabled

Figure 3.9. pid_/Discrete PID Controller1/P Copy/Disabled

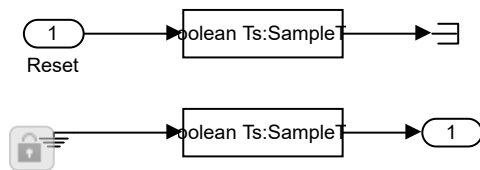


Blocks

Parameters

"P Gain" (Inport)**Table 3.15. "P Gain" Parameters**

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

Disabled**Figure 3.10. pid_/Discrete PID Controller1/Reset Signal/Disabled****Blocks****Parameters****"Out1" (Outport)****Table 3.16. "Out1" Parameters**

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off

Parameter	Value
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outputport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

"Reset" (Inport)

Table 3.17. "Reset" Parameters

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit; auto

"Signal Specification" (SignalSpecification)

Table 3.18. "Signal Specification" Parameters

Parameter	Value
Minimum	[]
Maximum	[]
Data type	boolean
Lock output data type setting against changes by the fixed-point tools	off
Require nonvirtual bus	off

Parameter	Value
Unit (e.g., m, m/s ² , N*m)	inherit
Dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime

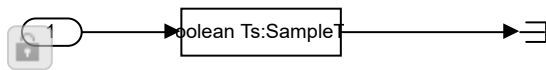
"Signal Specification1" (SignalSpecification)

Table 3.19. "Signal Specification1" Parameters

Parameter	Value
Minimum	[]
Maximum	[]
Data type	boolean
Lock output data type setting against changes by the fixed-point tools	off
Require nonvirtual bus	off
Unit (e.g., m, m/s ² , N*m)	inherit
Dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime

Disabled

Figure 3.11. pid_/Discrete PID Controller1/Saturation Fdbk/Disabled



Blocks

Parameters

"In1" (Inport)

Table 3.20. "In1" Parameters

Parameter	Value
Port number	1

Parameter	Value
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

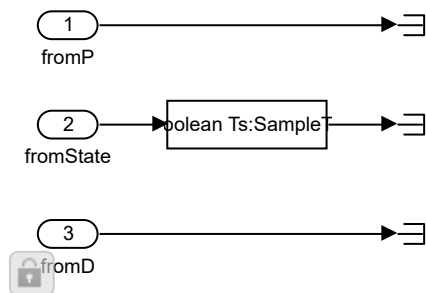
"Signal Specification1" (SignalSpecification)

Table 3.21. "Signal Specification1" Parameters

Parameter	Value
Minimum	[]
Maximum	[]
Data type	boolean
Lock output data type setting against changes by the fixed-point tools	off
Require nonvirtual bus	off
Unit (e.g., m, m/s^2, N*m)	inherit
Dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime

Disabled

Figure 3.12. pid_/Discrete PID Controller1/Sum Fdbk/Disabled



Blocks

Parameters

"fromD" (Inport)**Table 3.22. "fromD" Parameters**

Parameter	Value
Port number	3
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"fromP" (Inport)**Table 3.23. "fromP" Parameters**

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

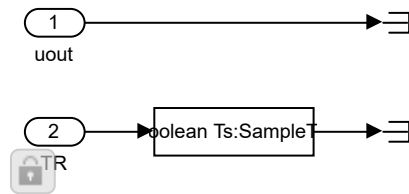
"fromState" (Inport)**Table 3.24. "fromState" Parameters**

Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Signal Specification1" (SignalSpecification)**Table 3.25. "Signal Specification1" Parameters**

Parameter	Value
Minimum	[]
Maximum	[]
Data type	boolean
Lock output data type setting against changes by the fixed-point tools	off
Require nonvirtual bus	off
Unit (e.g., m, m/s^2, N*m)	inherit
Dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime

Disabled

Figure 3.13. pid_/Discrete PID Controller1/Tracking Mode/Disabled

Blocks

Parameters

"Signal Specification1" (SignalSpecification)**Table 3.26. "Signal Specification1" Parameters**

Parameter	Value
Minimum	[]
Maximum	[]
Data type	boolean
Lock output data type setting against changes by the fixed-point tools	off

Parameter	Value
Require nonvirtual bus	off
Unit (e.g., m, m/s ² , N*m)	inherit
Dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime

"TR" (Inport)**Table 3.27. "TR" Parameters**

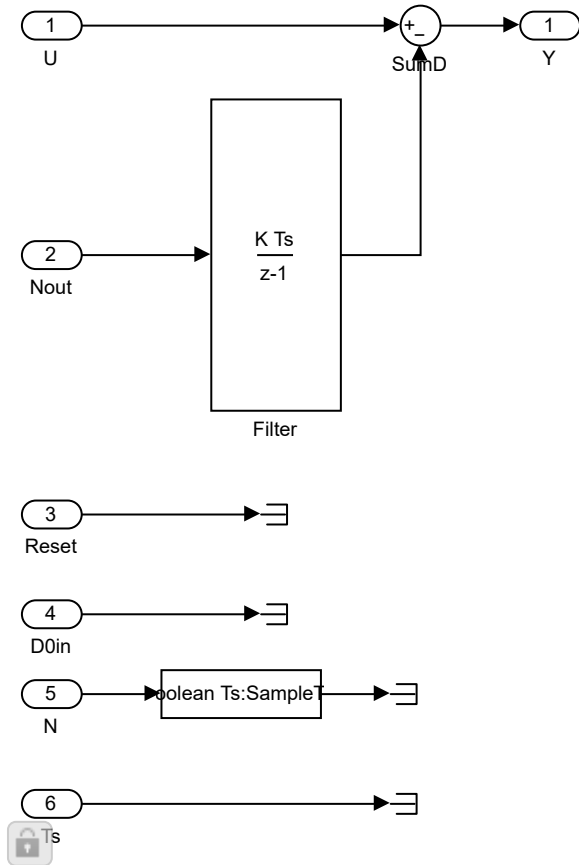
Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"uout" (Inport)**Table 3.28. "uout" Parameters**

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

Disc. Forward Euler Filter

Figure 3.14. pid_/Discrete PID Controller1/Filter/Disc. Forward Euler Filter



Blocks

Parameters

"D0in" (Inport)

Table 3.29. "D0in" Parameters

Parameter	Value
Port number	4
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]

Parameter	Value
Maximum	[]
Data type	Inherit: auto

"Filter" (DiscreteIntegrator)

Table 3.30. "Filter" Parameters

Parameter	Value
Integrator method	Integration: Forward Euler
Gain value	1.0
External reset	none
Initial condition source	internal
Initial condition	InitialConditionForFilter
Sample time (-1 for inherited)	SampleTime
Output minimum	FilterOutMin
Output maximum	FilterOutMax
Output data type	Inherit: Inherit via internal rule
Lock output data type setting against changes by the fixed-point tools	off
Integer rounding mode	Floor
Saturate on integer overflow	off
Limit output	off
Upper saturation limit	inf
Lower saturation limit	-inf
Show saturation port	off
Show state port	off
Ignore limit and reset when linearizing	off
State name must resolve to Simulink signal object	off

"N" (Inport)

Table 3.31. "N" Parameters

Parameter	Value
Port number	5
Port dimensions (-1 for inherited)	-1

Parameter	Value
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Nout" (Inport)**Table 3.32. "Nout" Parameters**

Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Reset" (Inport)**Table 3.33. "Reset" Parameters**

Parameter	Value
Port number	3
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Signal Specification2" (SignalSpecification)**Table 3.34. "Signal Specification2" Parameters**

Parameter	Value
Minimum	[]
Maximum	[]
Data type	boolean
Lock output data type setting against changes by the fixed-point tools	off

Parameter	Value
Require nonvirtual bus	off
Unit (e.g., m, m/s ² , N*m)	inherit
Dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime

"SumD" (Sum)

Table 3.35. "SumD" Parameters

Parameter	Value
Icon shape	round
List of signs	+/-
Sum over	All dimensions
Dimension	1
Output minimum	SumDOutMin
Output maximum	SumDOutMax
Output data type	Inherit: Inherit via internal rule
Accumulator data type	Inherit: Inherit via internal rule
Require all inputs to have the same data type	off
Lock data type settings against changes by the fixed-point tools	off
Integer rounding mode	Floor
Saturate on integer overflow	off
Sample time (-1 for inherited)	-1

"Ts" (Inport)

Table 3.36. "Ts" Parameters

Parameter	Value
Port number	6
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"U" (Inport)**Table 3.37. "U" Parameters**

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

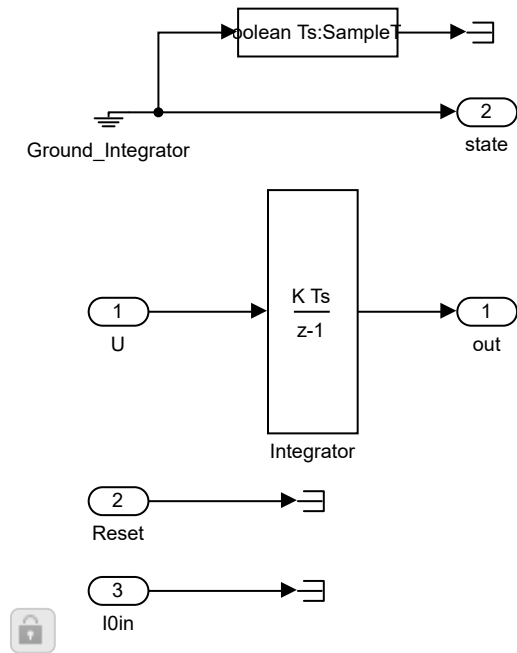
"Y" (Outport)**Table 3.38. "Y" Parameters**

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is disconnected	off
Constant value	0

Parameter	Value
Interpret vector parameters as 1-D	on

Discrete

Figure 3.15. pid_/Discrete PID Controller1/Integrator/Discrete



Blocks

Parameters

"I0in" (Inport)

Table 3.39. "I0in" Parameters

Parameter	Value
Port number	3
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Integrator" (DiscreteIntegrator)**Table 3.40. "Integrator" Parameters**

Parameter	Value
Integrator method	Integration: Forward Euler
Gain value	1.0
External reset	none
Initial condition source	internal
Initial condition	InitialConditionForIntegrator
Sample time (-1 for inherited)	SampleTime
Output minimum	IntegratorOutMin
Output maximum	IntegratorOutMax
Output data type	Inherit: Inherit via internal rule
Lock output data type setting against changes by the fixed-point tools	off
Integer rounding mode	Floor
Saturate on integer overflow	off
Limit output	off
Upper saturation limit	UpperIntegratorSaturationLimit
Lower saturation limit	LowerIntegratorSaturationLimit
Show saturation port	off
Show state port	off
Ignore limit and reset when linearizing	off
State name must resolve to Simulink signal object	off

"out" (Outport)**Table 3.41. "out" Parameters**

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off

Parameter	Value
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

"Reset" (Inport)

Table 3.42. "Reset" Parameters

Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Signal Specification1" (SignalSpecification)

Table 3.43. "Signal Specification1" Parameters

Parameter	Value
Minimum	[]
Maximum	[]
Data type	boolean
Lock output data type setting against changes by the fixed-point tools	off

Parameter	Value
Require nonvirtual bus	off
Unit (e.g., m, m/s ² , N*m)	inherit
Dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime

"state" (Output)

Table 3.44. "state" Parameters

Parameter	Value
Port number	2
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outputport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

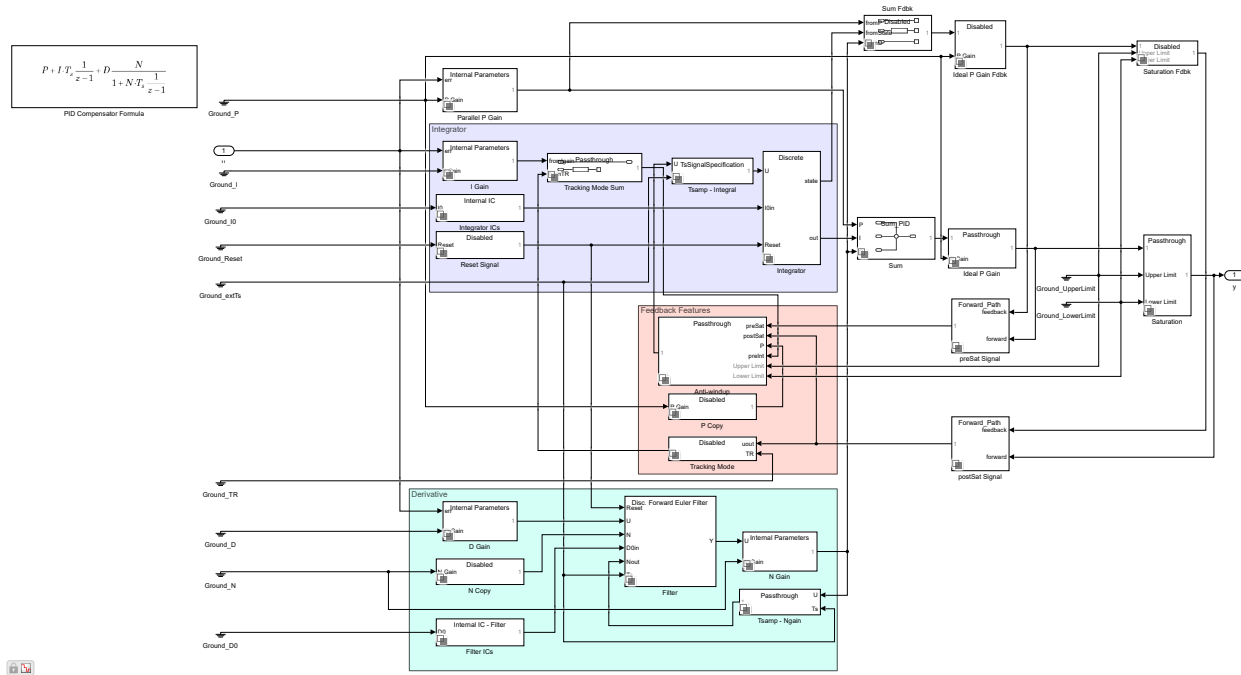
"U" (Inport)

Table 3.45. "U" Parameters

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

Discrete PID Controller1

Figure 3.16. pid_/Discrete PID Controller1



Blocks

Parameters

"u" (Inport)**Table 3.46. "u" Parameters**

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"y" (Outport)**Table 3.47. "y" Parameters**

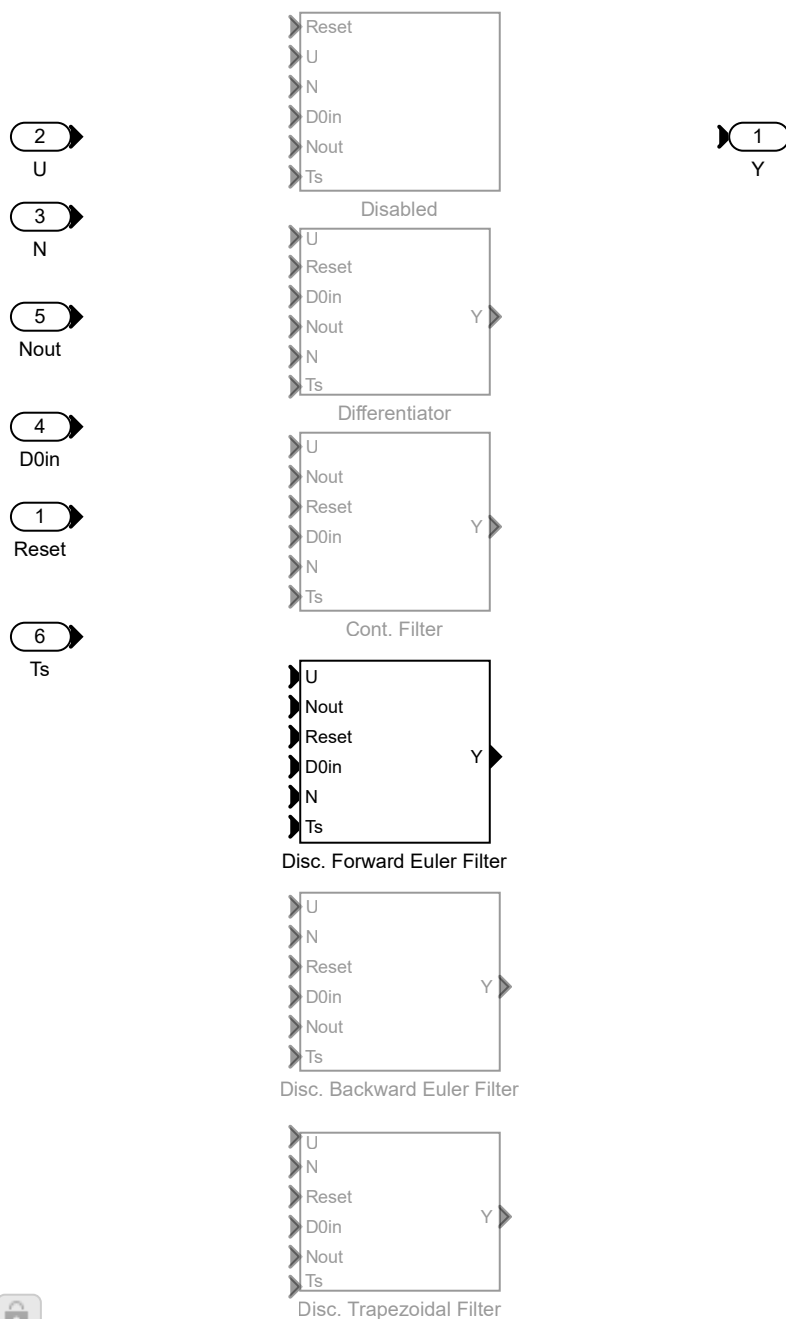
Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0

Chapter 3. Subsystems

Parameter	Value
Interpret vector parameters as 1-D	on

Filter

Figure 3.17. pid_/Discrete PID Controller1/Filter



Blocks

Parameters

"D0in" (Inport)

Table 3.48. "D0in" Parameters

Parameter	Value
Port number	4
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"N" (Inport)

Table 3.49. "N" Parameters

Parameter	Value
Port number	3
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Nout" (Inport)

Table 3.50. "Nout" Parameters

Parameter	Value
Port number	5
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Reset" (Inport)**Table 3.51. "Reset" Parameters**

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Ts" (Inport)**Table 3.52. "Ts" Parameters**

Parameter	Value
Port number	6
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"U" (Inport)**Table 3.53. "U" Parameters**

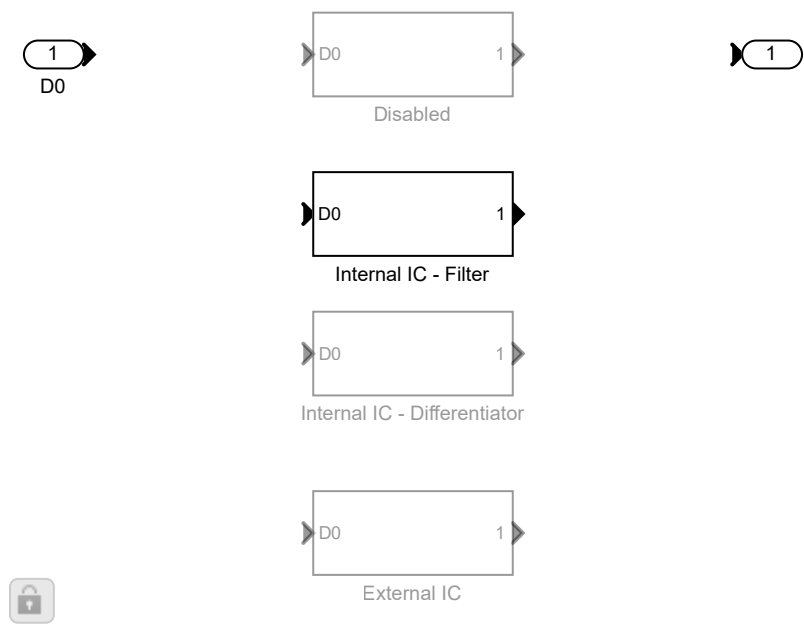
Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Y" (Outport)**Table 3.54. "Y" Parameters**

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

Filter ICs

Figure 3.18. pid_/Discrete PID Controller1/Filter ICs



Blocks

Parameters

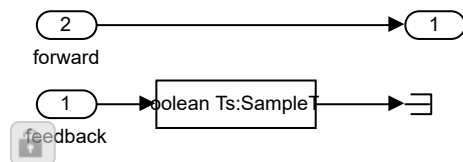
"D0" (Inport)

Table 3.55. "D0" Parameters

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Out1" (Outputport)**Table 3.56. "Out1" Parameters**

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s^2, N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outputport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

Forward_Path**Figure 3.19. pid_/Discrete PID Controller1/postSat Signal/Forward_Path**

Blocks

Parameters

"feedback" (Inport)

Table 3.57. "feedback" Parameters

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"forward" (Inport)

Table 3.58. "forward" Parameters

Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Out1" (Outport)

Table 3.59. "Out1" Parameters

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto

Parameter	Value
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

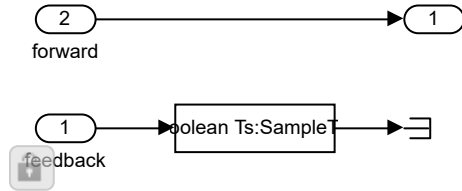
"Signal Specification1" (SignalSpecification)

Table 3.60. "Signal Specification1" Parameters

Parameter	Value
Minimum	[]
Maximum	[]
Data type	boolean
Lock output data type setting against changes by the fixed-point tools	off
Require nonvirtual bus	off
Unit (e.g., m, m/s ² , N*m)	inherit
Dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime

Forward_Path

Figure 3.20. pid_/Discrete PID Controller1/preSat Signal/Forward_Path



Blocks

Parameters

"feedback" (Inport)

Table 3.61. "feedback" Parameters

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"forward" (Inport)

Table 3.62. "forward" Parameters

Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Out1" (Outputport)**Table 3.63. "Out1" Parameters**

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outputport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

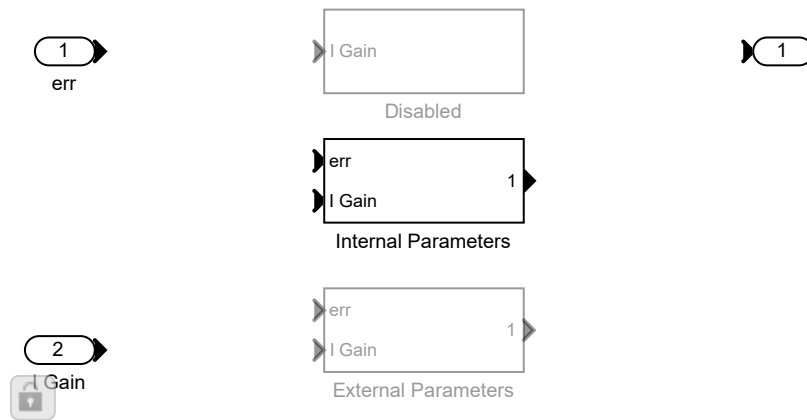
"Signal Specification1" (SignalSpecification)**Table 3.64. "Signal Specification1" Parameters**

Parameter	Value
Minimum	[]
Maximum	[]
Data type	boolean
Lock output data type setting against changes by the fixed-point tools	off
Require nonvirtual bus	off

Parameter	Value
Unit (e.g., m, m/s^2, N*m)	inherit
Dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime

I Gain

Figure 3.21. pid_/Discrete PID Controller1/I Gain



Blocks

Parameters

"err" (Inport)

Table 3.65. "err" Parameters

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit; auto

"I Gain" (Inport)**Table 3.66. "I Gain" Parameters**

Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

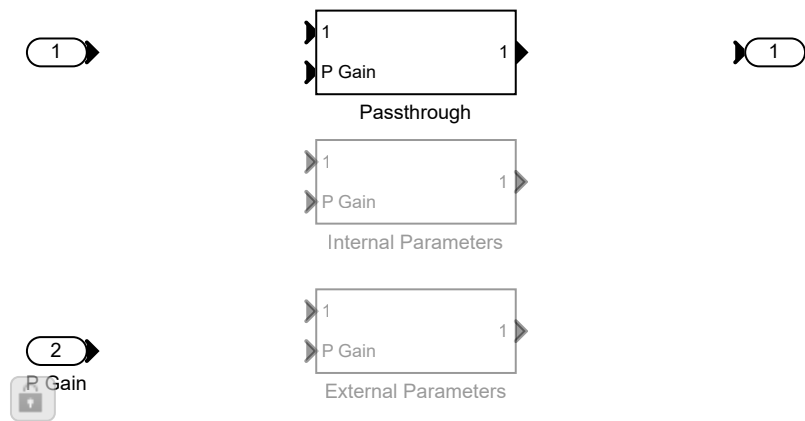
"Out1" (Outport)**Table 3.67. "Out1" Parameters**

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is disconnected	off
Constant value	0

Parameter	Value
Interpret vector parameters as 1-D	on

Ideal P Gain

Figure 3.22. pid_/Discrete PID Controller1/Ideal P Gain



Blocks

Parameters

"In1" (Inport)

Table 3.68. "In1" Parameters

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Out1" (Output)**Table 3.69. "Out1" Parameters**

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

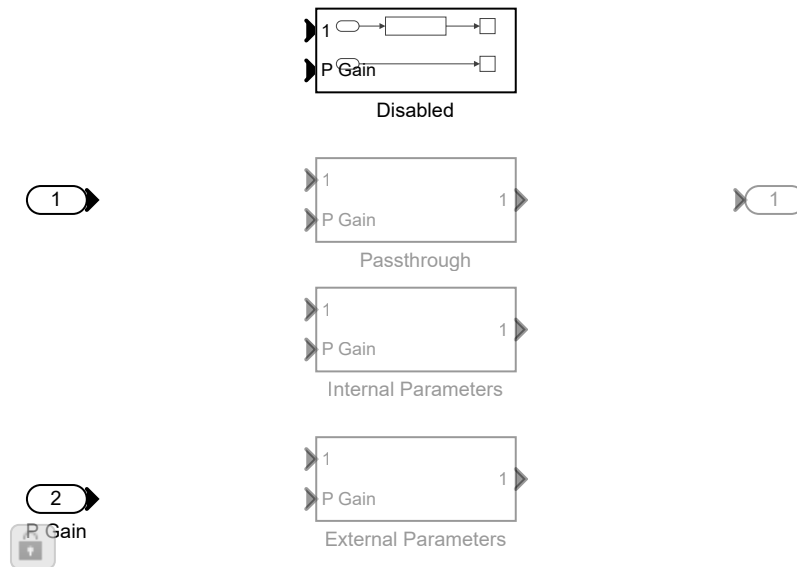
"P Gain" (Inport)**Table 3.70. "P Gain" Parameters**

Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]

Parameter	Value
Data type	Inherit: auto

Ideal P Gain Fdbk

Figure 3.23. pid_/Discrete PID Controller1/Ideal P Gain Fdbk



Blocks

Parameters

"In1" (Inport)

Table 3.71. "In1" Parameters

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Out1" (Output)**Table 3.72. "Out1" Parameters**

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

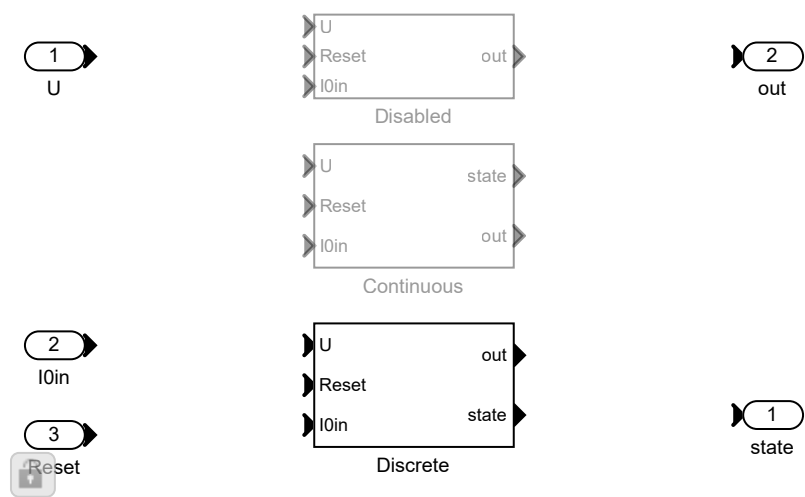
"P Gain" (Inport)**Table 3.73. "P Gain" Parameters**

Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]

Parameter	Value
Data type	Inherit: auto

Integrator

Figure 3.24. pid_/Discrete PID Controller1/Integrator



Blocks

Parameters

"I0in" (Inport)

Table 3.74. "I0in" Parameters

Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"out" (Outport)**Table 3.75. "out" Parameters**

Parameter	Value
Port number	2
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

"Reset" (Inport)**Table 3.76. "Reset" Parameters**

Parameter	Value
Port number	3
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]

Parameter	Value
Data type	Inherit: auto

"state" (Outport)

Table 3.77. "state" Parameters

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

"U" (Inport)

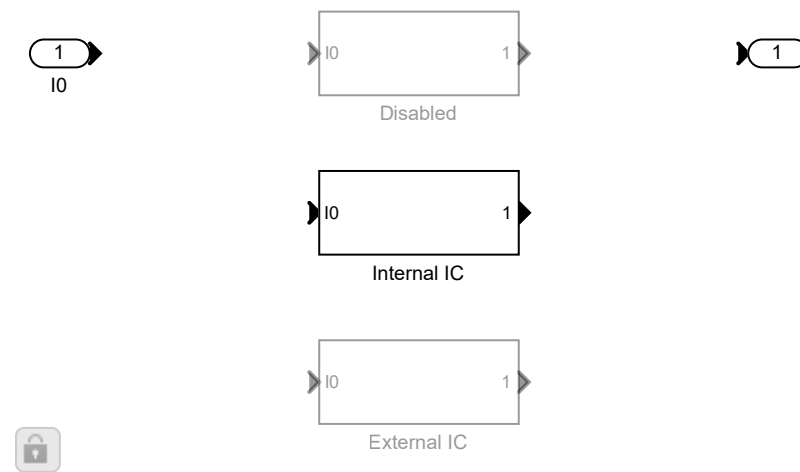
Table 3.78. "U" Parameters

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1

Parameter	Value
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

Integrator ICs

Figure 3.25. pid_/Discrete PID Controller1/Integrator ICs



Blocks

Parameters

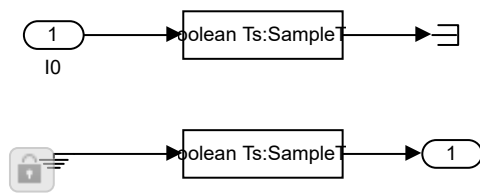
"I0" (Inport)

Table 3.79. "I0" Parameters

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Out1" (Outputport)**Table 3.80. "Out1" Parameters**

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s^2, N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outputport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

Internal IC**Figure 3.26. pid_/Discrete PID Controller1/Integrator ICs/Internal IC**

Blocks

Parameters

"I0" (Inport)

Table 3.81. "I0" Parameters

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Out1" (Outport)

Table 3.82. "Out1" Parameters

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outport is virtual	off
Source of initial output value	Dialog
Output when disabled	held

Parameter	Value
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

"Signal Specification" (SignalSpecification)

Table 3.83. "Signal Specification" Parameters

Parameter	Value
Minimum	[]
Maximum	[]
Data type	boolean
Lock output data type setting against changes by the fixed-point tools	off
Require nonvirtual bus	off
Unit (e.g., m, m/s ² , N*m)	inherit
Dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime

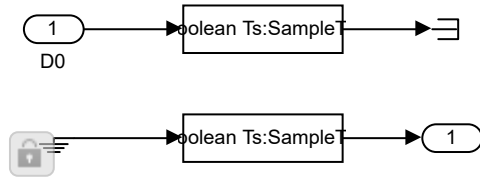
"Signal Specification1" (SignalSpecification)

Table 3.84. "Signal Specification1" Parameters

Parameter	Value
Minimum	[]
Maximum	[]
Data type	boolean
Lock output data type setting against changes by the fixed-point tools	off
Require nonvirtual bus	off
Unit (e.g., m, m/s ² , N*m)	inherit
Dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime

Internal IC - Filter

Figure 3.27. pid_/Discrete PID Controller1/Filter ICs/Internal IC - Filter



Blocks

Parameters

"D0" (Inport)

Table 3.85. "D0" Parameters

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Out1" (Outport)

Table 3.86. "Out1" Parameters

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off

Parameter	Value
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outputport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

"Signal Specification" (SignalSpecification)

Table 3.87. "Signal Specification" Parameters

Parameter	Value
Minimum	[]
Maximum	[]
Data type	boolean
Lock output data type setting against changes by the fixed-point tools	off
Require nonvirtual bus	off
Unit (e.g., m, m/s ² , N*m)	inherit
Dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime

"Signal Specification1" (SignalSpecification)

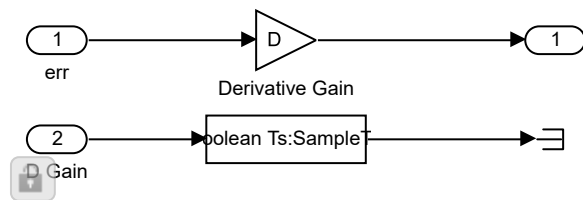
Table 3.88. "Signal Specification1" Parameters

Parameter	Value
Minimum	[]
Maximum	[]

Parameter	Value
Data type	boolean
Lock output data type setting against changes by the fixed-point tools	off
Require nonvirtual bus	off
Unit (e.g., m, m/s^2, N*m)	inherit
Dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime

Internal Parameters

Figure 3.28. pid_/Discrete PID Controller1/D Gain/Internal Parameters



Blocks

Parameters

"D Gain" (Inport)

Table 3.89. "D Gain" Parameters

Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Derivative Gain" (Gain)**Table 3.90. "Derivative Gain" Parameters**

Parameter	Value
Gain	D
Multiplication	Element-wise(K.*u)
Parameter minimum	DParamMin
Parameter maximum	DParamMax
Parameter data type	Inherit: Inherit via internal rule
Output minimum	DOutMin
Output maximum	DOutMax
Output data type	Inherit: Inherit via internal rule
Lock output data type setting against changes by the fixed-point tools	off
Integer rounding mode	Floor
Saturate on integer overflow	off
Sample time (-1 for inherited)	-1

"err" (Inport)**Table 3.91. "err" Parameters**

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Out1" (Outport)**Table 3.92. "Out1" Parameters**

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off

Parameter	Value
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure output is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

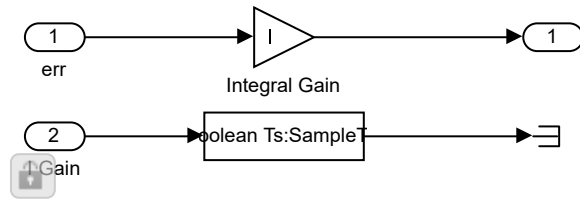
"Signal Specification" (SignalSpecification)

Table 3.93. "Signal Specification" Parameters

Parameter	Value
Minimum	[]
Maximum	[]
Data type	boolean
Lock output data type setting against changes by the fixed-point tools	off
Require nonvirtual bus	off
Unit (e.g., m, m/s ² , N*m)	inherit
Dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime

Internal Parameters

Figure 3.29. pid_/Discrete PID Controller1/I Gain/Internal Parameters



Blocks

Parameters

"err" (Inport)

Table 3.94. "err" Parameters

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"I Gain" (Inport)

Table 3.95. "I Gain" Parameters

Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Integral Gain" (Gain)**Table 3.96. "Integral Gain" Parameters**

Parameter	Value
Gain	I
Multiplication	Element-wise(K.*u)
Parameter minimum	IParamMin
Parameter maximum	IParamMax
Parameter data type	Inherit: Inherit via internal rule
Output minimum	IOutMin
Output maximum	IOutMax
Output data type	Inherit: Inherit via internal rule
Lock output data type setting against changes by the fixed-point tools	off
Integer rounding mode	Floor
Saturate on integer overflow	off
Sample time (-1 for inherited)	-1

"Out1" (Outport)**Table 3.97. "Out1" Parameters**

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s^2, N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime

Parameter	Value
Ensure output is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

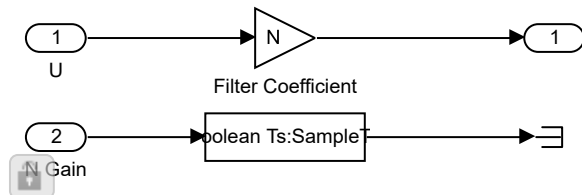
"Signal Specification" (SignalSpecification)

Table 3.98. "Signal Specification" Parameters

Parameter	Value
Minimum	[]
Maximum	[]
Data type	boolean
Lock output data type setting against changes by the fixed-point tools	off
Require nonvirtual bus	off
Unit (e.g., m, m/s^2, N*m)	inherit
Dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime

Internal Parameters

Figure 3.30. pid_/Discrete PID Controller1/N Gain/Internal Parameters



Blocks

Parameters

"Filter Coefficient" (Gain)**Table 3.99. "Filter Coefficient" Parameters**

Parameter	Value
Gain	N
Multiplication	Element-wise(K.*u)
Parameter minimum	NParamMin
Parameter maximum	NParamMax
Parameter data type	Inherit: Inherit via internal rule
Output minimum	NOutMin
Output maximum	NOutMax
Output data type	Inherit: Inherit via internal rule
Lock output data type setting against changes by the fixed-point tools	off
Integer rounding mode	Floor
Saturate on integer overflow	off
Sample time (-1 for inherited)	-1

"N Gain" (Inport)**Table 3.100. "N Gain" Parameters**

Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Out1" (Outport)**Table 3.101. "Out1" Parameters**

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off

Parameter	Value
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure output is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

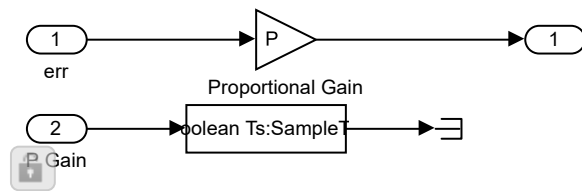
"Signal Specification1" (SignalSpecification)

Table 3.102. "Signal Specification1" Parameters

Parameter	Value
Minimum	[]
Maximum	[]
Data type	boolean
Lock output data type setting against changes by the fixed-point tools	off
Require nonvirtual bus	off
Unit (e.g., m, m/s ² , N*m)	inherit
Dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime

"U" (Inport)**Table 3.103. "U" Parameters**

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

Internal Parameters**Figure 3.31. pid_/Discrete PID Controller1/Parallel P Gain/Internal Parameters****Blocks****Parameters****"err" (Inport)****Table 3.104. "err" Parameters**

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Out1" (Output)**Table 3.105. "Out1" Parameters**

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

"P Gain" (Inport)**Table 3.106. "P Gain" Parameters**

Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]

Parameter	Value
Data type	Inherit: auto

"Proportional Gain" (Gain)

Table 3.107. "Proportional Gain" Parameters

Parameter	Value
Gain	P
Multiplication	Element-wise(K.*u)
Parameter minimum	PParamMin
Parameter maximum	PParamMax
Parameter data type	Inherit: Inherit via internal rule
Output minimum	POutMin
Output maximum	POutMax
Output data type	Inherit: Inherit via internal rule
Lock output data type setting against changes by the fixed-point tools	off
Integer rounding mode	Floor
Saturate on integer overflow	off
Sample time (-1 for inherited)	-1

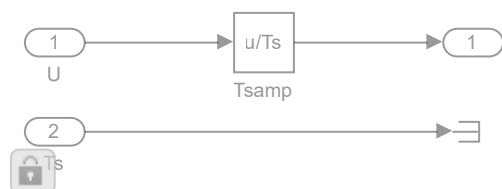
"Signal Specification" (SignalSpecification)

Table 3.108. "Signal Specification" Parameters

Parameter	Value
Minimum	[]
Maximum	[]
Data type	boolean
Lock output data type setting against changes by the fixed-point tools	off
Require nonvirtual bus	off
Unit (e.g., m, m/s ² , N*m)	inherit
Dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime

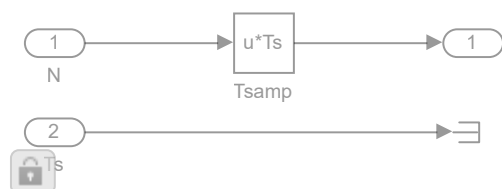
Internal Ts

Figure 3.32. pid_/Discrete PID Controller1/Filter/Differentiator/Tsamp/Internal Ts



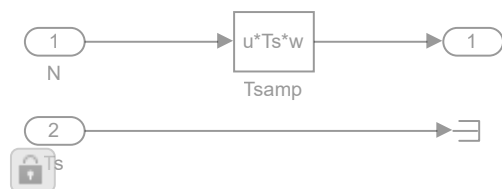
Internal Ts

Figure 3.33. pid_/Discrete PID Controller1/Filter/Disc. Backward Euler Filter/Tsamp/Internal Ts



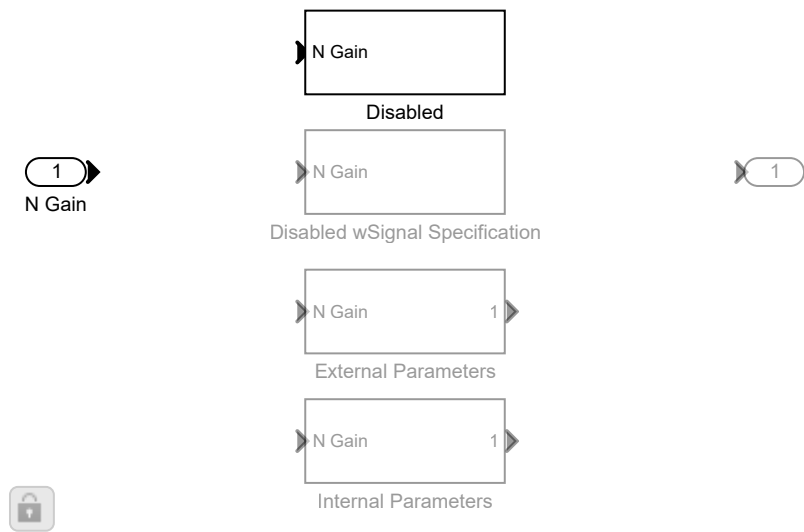
Internal Ts

Figure 3.34. pid_/Discrete PID Controller1/Filter/Disc. Trapezoidal Filter/Tsamp/Internal Ts



N Copy

Figure 3.35. pid_/Discrete PID Controller1/N Copy



Blocks

Parameters

"N Gain" (Inport)

Table 3.109. "N Gain" Parameters

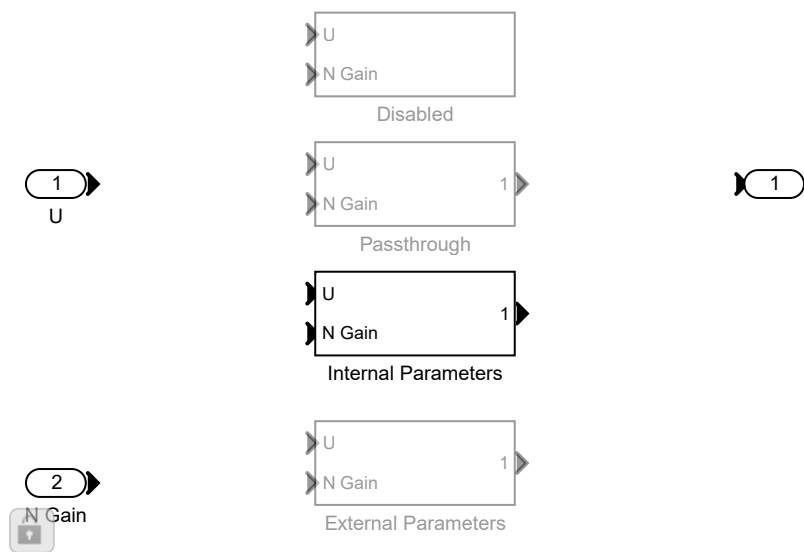
Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Out1" (Output)**Table 3.110. "Out1" Parameters**

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

N Gain

Figure 3.36. pid_/Discrete PID Controller1/N Gain



Blocks

Parameters

"N Gain" (Inport)

Table 3.111. "N Gain" Parameters

Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Out1" (Output)**Table 3.112. "Out1" Parameters**

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

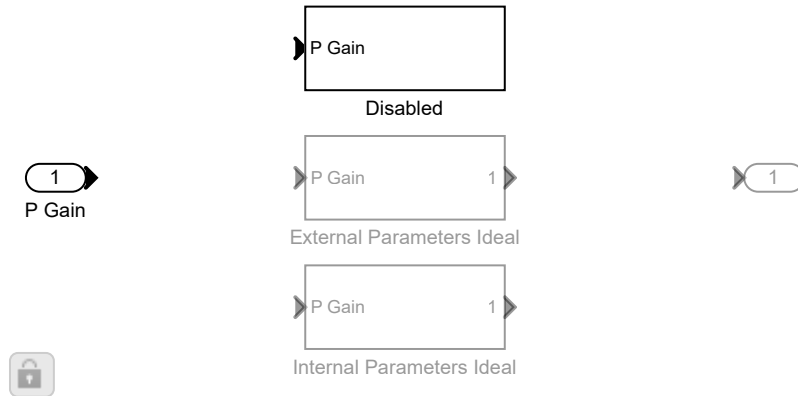
"U" (Inport)**Table 3.113. "U" Parameters**

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]

Parameter	Value
Data type	Inherit: auto

P Copy

Figure 3.37. pid_/Discrete PID Controller1/P Copy



Blocks

Parameters

"Out1" (Outputport)

Table 3.114. "Out1" Parameters

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s^2, N*m)	inherit

Parameter	Value
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure output is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

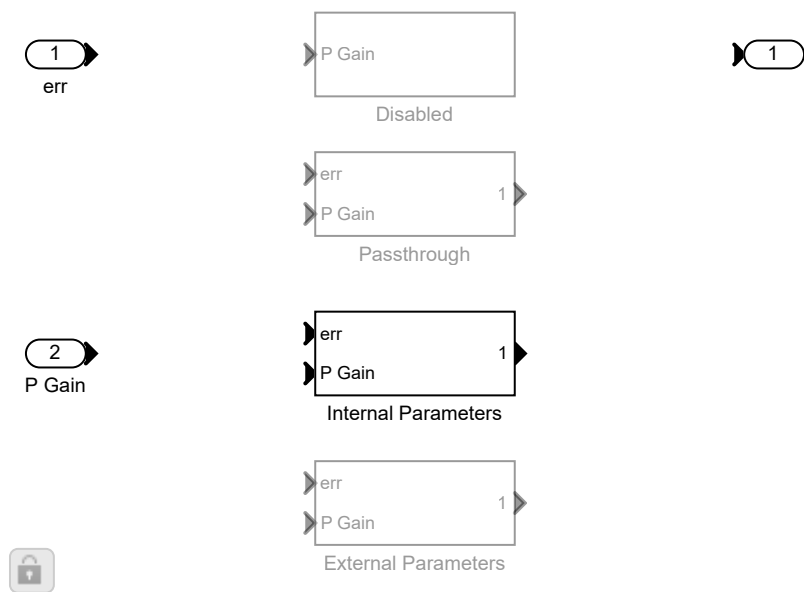
"P Gain" (Inport)

Table 3.115. "P Gain" Parameters

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

Parallel P Gain

Figure 3.38. pid_/Discrete PID Controller1/Parallel P Gain



Blocks

Parameters

"err" (Inport)

Table 3.116. "err" Parameters

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Out1" (Output)**Table 3.117. "Out1" Parameters**

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

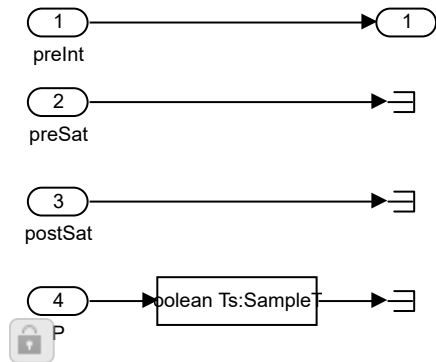
"P Gain" (Inport)**Table 3.118. "P Gain" Parameters**

Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]

Parameter	Value
Data type	Inherit: auto

Passthrough

Figure 3.39. pid_/Discrete PID Controller1/Anti-windup/Passthrough



Blocks

Parameters

"Out1" (Outputport)

Table 3.119. "Out1" Parameters

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s^2, N*m)	inherit
Port dimensions (-1 for inherited)	-1

Parameter	Value
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure output is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

"P" (Inport)**Table 3.120. "P" Parameters**

Parameter	Value
Port number	4
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"postSat" (Inport)**Table 3.121. "postSat" Parameters**

Parameter	Value
Port number	3
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"preInt" (Inport)**Table 3.122. "preInt" Parameters**

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"preSat" (Inport)**Table 3.123. "preSat" Parameters**

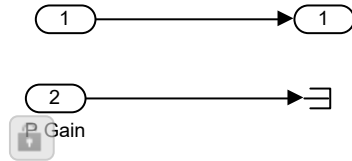
Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Signal Specification2" (SignalSpecification)**Table 3.124. "Signal Specification2" Parameters**

Parameter	Value
Minimum	[]
Maximum	[]
Data type	boolean
Lock output data type setting against changes by the fixed-point tools	off
Require nonvirtual bus	off
Unit (e.g., m, m/s ² , N*m)	inherit
Dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime

Passthrough

Figure 3.40. pid_/Discrete PID Controller1/Ideal P Gain/Passthrough



Blocks

Parameters

"In1" (Inport)

Table 3.125. "In1" Parameters

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Out1" (Outputport)

Table 3.126. "Out1" Parameters

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off

Parameter	Value
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outputport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

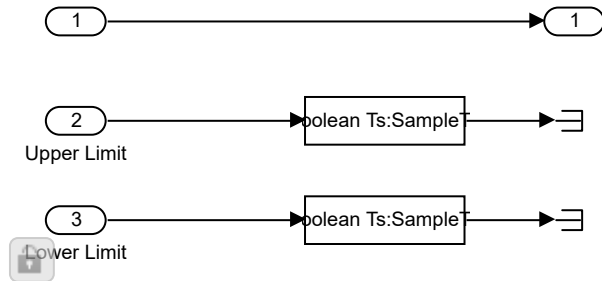
"P Gain" (Inport)

Table 3.127. "P Gain" Parameters

Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit; auto

Passthrough

Figure 3.41. pid_/Discrete PID Controller1/Saturation/Passthrough



Blocks

Parameters

"In1" (Inport)

Table 3.128. "In1" Parameters

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Lower Limit" (Inport)

Table 3.129. "Lower Limit" Parameters

Parameter	Value
Port number	3
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Out1" (Outputport)**Table 3.130. "Out1" Parameters**

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

"Signal Specification" (SignalSpecification)**Table 3.131. "Signal Specification" Parameters**

Parameter	Value
Minimum	[]
Maximum	[]
Data type	boolean
Lock output data type setting against changes by the fixed-point tools	off
Require nonvirtual bus	off

Parameter	Value
Unit (e.g., m, m/s ² , N*m)	inherit
Dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime

"Signal Specification1" (SignalSpecification)

Table 3.132. "Signal Specification1" Parameters

Parameter	Value
Minimum	[]
Maximum	[]
Data type	boolean
Lock output data type setting against changes by the fixed-point tools	off
Require nonvirtual bus	off
Unit (e.g., m, m/s ² , N*m)	inherit
Dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime

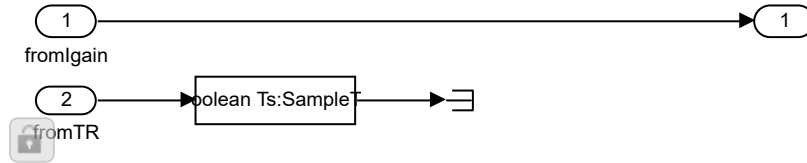
"Upper Limit" (Inport)

Table 3.133. "Upper Limit" Parameters

Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

Passthrough

Figure 3.42. pid_/Discrete PID Controller1/Tracking Mode Sum/Passthrough



Blocks

Parameters

"fromIgain" (Inport)

Table 3.134. "fromIgain" Parameters

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"fromTR" (Inport)

Table 3.135. "fromTR" Parameters

Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Out1" (Outputport)**Table 3.136. "Out1" Parameters**

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outputport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

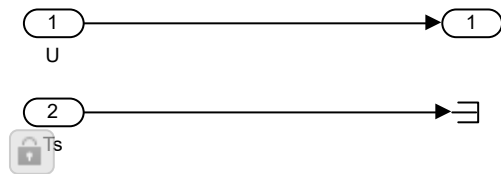
"Signal Specification" (SignalSpecification)**Table 3.137. "Signal Specification" Parameters**

Parameter	Value
Minimum	[]
Maximum	[]
Data type	boolean
Lock output data type setting against changes by the fixed-point tools	off
Require nonvirtual bus	off

Parameter	Value
Unit (e.g., m, m/s ² , N*m)	inherit
Dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime

Passthrough

Figure 3.43. pid_/Discrete PID Controller1/Tsamp - Ngain/Passthrough



Blocks

Parameters

"Out1" (Outputport)

Table 3.138. "Out1" Parameters

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit

Parameter	Value
Sample time (-1 for inherited)	SampleTime
Ensure output is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

"Ts" (Inport)**Table 3.139. "Ts" Parameters**

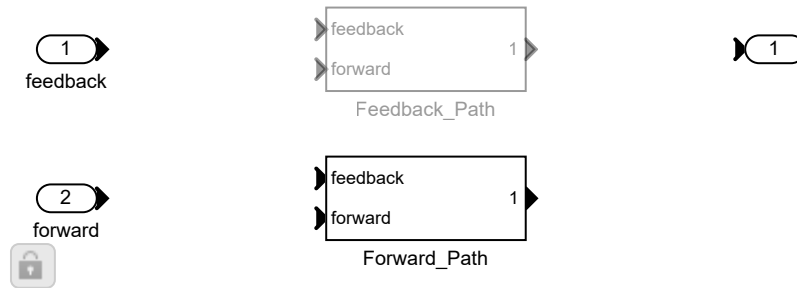
Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"U" (Inport)**Table 3.140. "U" Parameters**

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

postSat Signal

Figure 3.44. pid_/Discrete PID Controller1/postSat Signal



Blocks

Parameters

"feedback" (Inport)

Table 3.141. "feedback" Parameters

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"forward" (Inport)

Table 3.142. "forward" Parameters

Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]

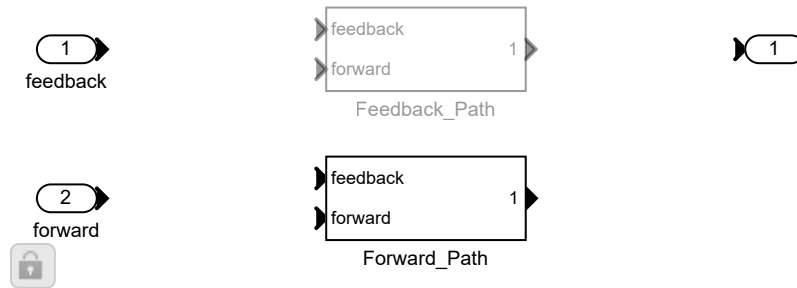
Parameter	Value
Data type	Inherit: auto

"Out1" (Outport)**Table 3.143. "Out1" Parameters**

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

preSat Signal

Figure 3.45. pid_/Discrete PID Controller1/preSat Signal



Blocks

Parameters

"feedback" (Inport)

Table 3.144. "feedback" Parameters

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"forward" (Inport)

Table 3.145. "forward" Parameters

Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]

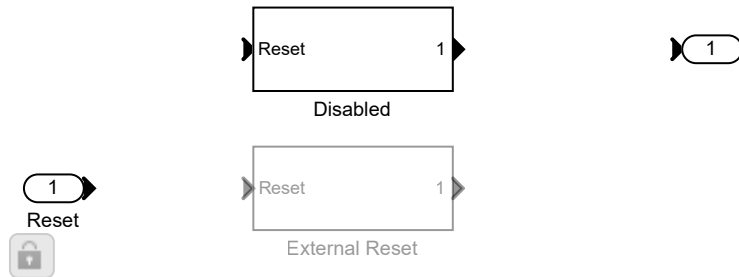
Parameter	Value
Data type	Inherit: auto

"Out1" (Outport)**Table 3.146. "Out1" Parameters**

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

Reset Signal

Figure 3.46. pid_/Discrete PID Controller1/Reset Signal



Blocks

Parameters

"Out1" (Output)

Table 3.147. "Out1" Parameters

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s^2, N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outputport is virtual	off
Source of initial output value	Dialog
Output when disabled	held

Parameter	Value
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

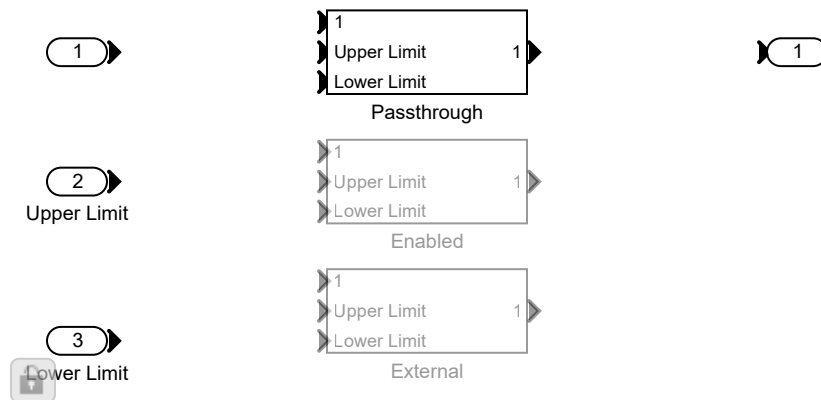
"Reset" (Inport)

Table 3.148. "Reset" Parameters

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

Saturation

Figure 3.47. pid_/Discrete PID Controller1/Saturation



Blocks

Parameters

"In1" (Inport)**Table 3.149. "In1" Parameters**

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Lower Limit" (Inport)**Table 3.150. "Lower Limit" Parameters**

Parameter	Value
Port number	3
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Out1" (Outport)**Table 3.151. "Out1" Parameters**

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit

Parameter	Value
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure output is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

"Upper Limit" (Inport)

Table 3.152. "Upper Limit" Parameters

Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

Saturation Fdbk

Blocks

Parameters

"In1" (Inport)

Table 3.153. "In1" Parameters

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Lower Limit" (Inport)

Table 3.154. "Lower Limit" Parameters

Parameter	Value
Port number	3
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Out1" (Outport)

Table 3.155. "Out1" Parameters

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto

Parameter	Value
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

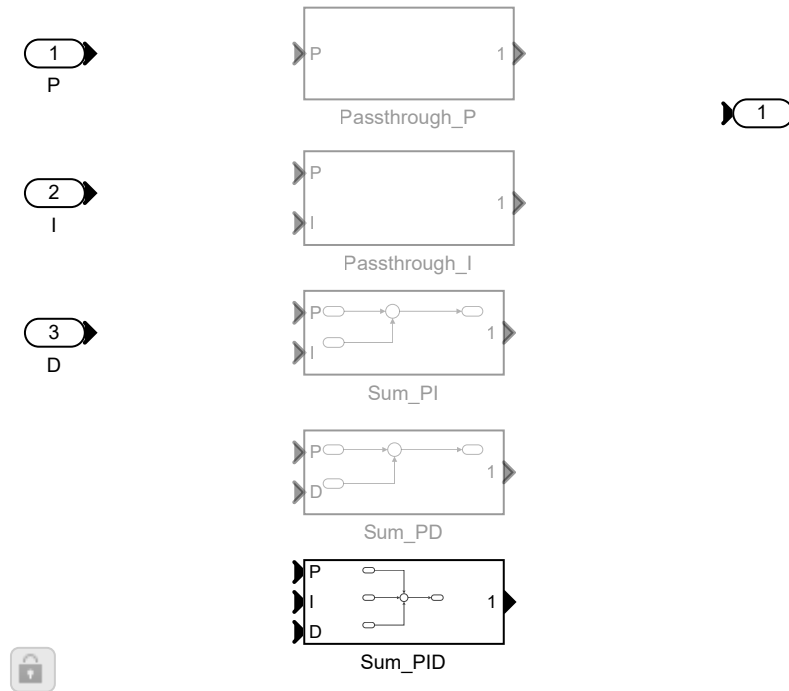
"Upper Limit" (Inport)

Table 3.156. "Upper Limit" Parameters

Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

Sum

Figure 3.50. pid_/Discrete PID Controller1/Sum



Blocks

Parameters

"D" (Inport)

Table 3.157. "D" Parameters

Parameter	Value
Port number	3
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"I" (Inport)**Table 3.158. "I" Parameters**

Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Out1" (Outport)**Table 3.159. "Out1" Parameters**

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is disconnected	off
Constant value	0

Parameter	Value
Interpret vector parameters as 1-D	on

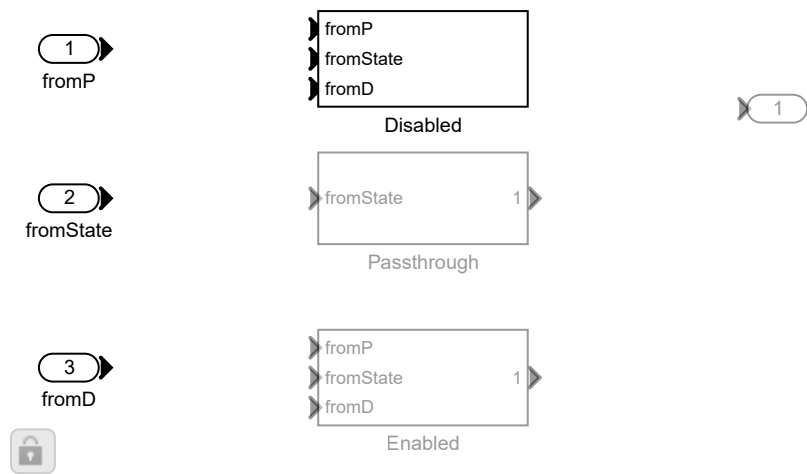
"P" (Inport)

Table 3.160. "P" Parameters

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

Sum Fdbk

Figure 3.51. pid_/Discrete PID Controller1/Sum Fdbk



Blocks

Parameters

"fromD" (Inport)**Table 3.161. "fromD" Parameters**

Parameter	Value
Port number	3
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"fromP" (Inport)**Table 3.162. "fromP" Parameters**

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"fromState" (Inport)**Table 3.163. "fromState" Parameters**

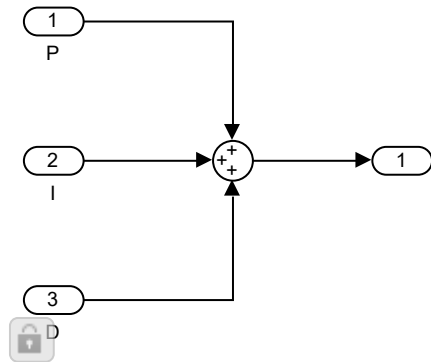
Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Out1" (Output)**Table 3.164. "Out1" Parameters**

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

Sum_PID

Figure 3.52. pid_/Discrete PID Controller1/Sum/Sum_PID



Blocks

Parameters

"D" (Inport)

Table 3.165. "D" Parameters

Parameter	Value
Port number	3
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"I" (Inport)

Table 3.166. "I" Parameters

Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]

Parameter	Value
Maximum	[]
Data type	Inherit: auto

"Out1" (Output)

Table 3.167. "Out1" Parameters

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outputport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

"P" (Inport)

Table 3.168. "P" Parameters

Parameter	Value
Port number	1

Parameter	Value
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

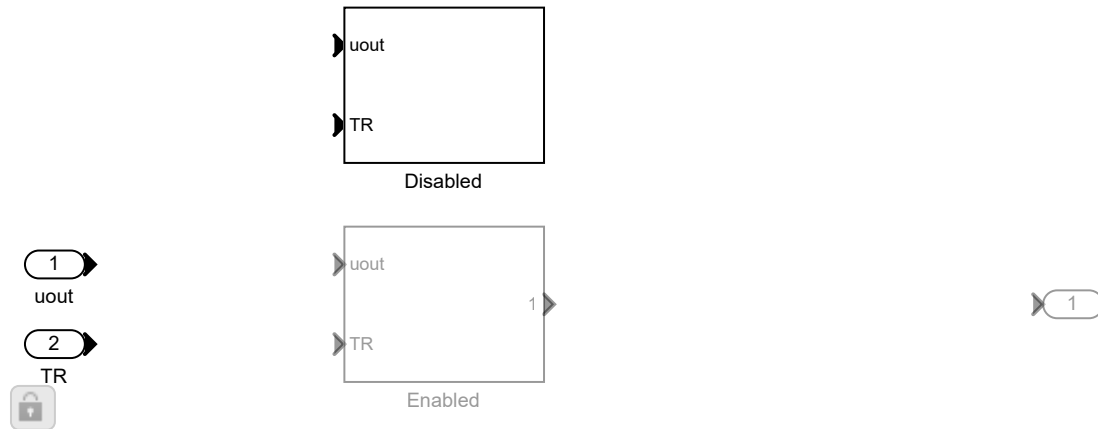
"Sum" (Sum)

Table 3.169. "Sum" Parameters

Parameter	Value
Icon shape	round
List of signs	+++
Sum over	All dimensions
Dimension	1
Output minimum	SumOutMin
Output maximum	SumOutMax
Output data type	Inherit: Inherit via internal rule
Accumulator data type	Inherit: Inherit via internal rule
Require all inputs to have the same data type	off
Lock data type settings against changes by the fixed-point tools	off
Integer rounding mode	Floor
Saturate on integer overflow	off
Sample time (-1 for inherited)	-1

Tracking Mode

Figure 3.53. pid_/Discrete PID Controller1/Tracking Mode



Blocks

Parameters

"Out1" (Outport)

Table 3.170. "Out1" Parameters

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s^2, N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime

Parameter	Value
Ensure output is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

"TR" (Inport)

Table 3.171. "TR" Parameters

Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

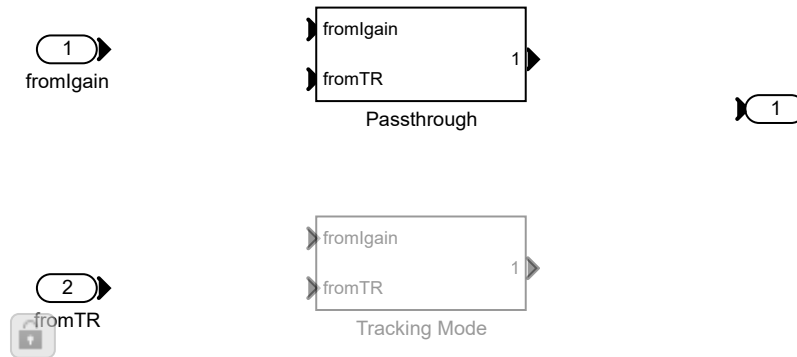
"uout" (Inport)

Table 3.172. "uout" Parameters

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

Tracking Mode Sum

Figure 3.54. pid_/Discrete PID Controller1/Tracking Mode Sum



Blocks

Parameters

"fromIgain" (Inport)

Table 3.173. "fromIgain" Parameters

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"fromTR" (Inport)

Table 3.174. "fromTR" Parameters

Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]

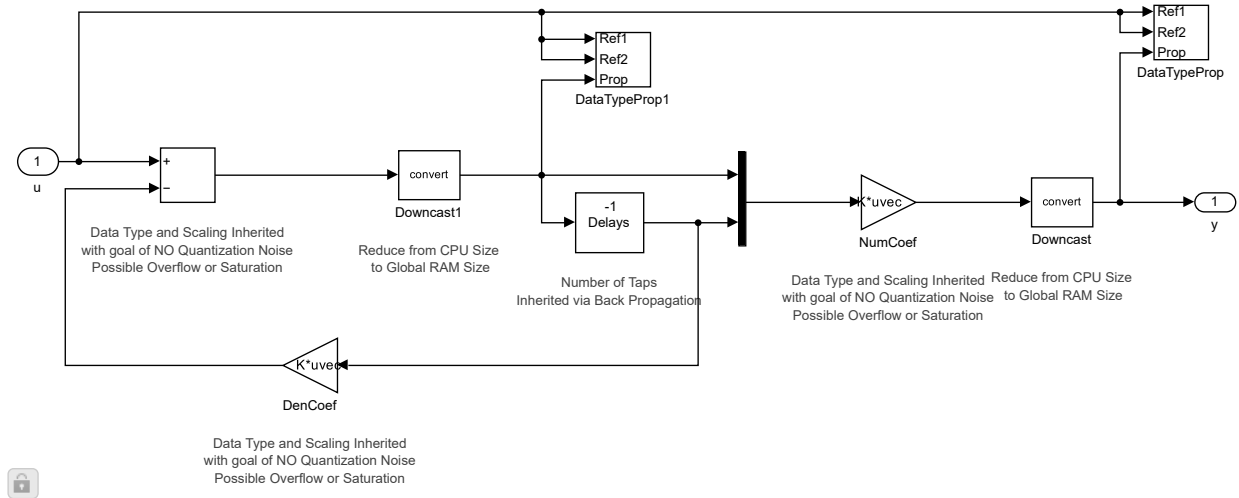
Parameter	Value
Maximum	[]
Data type	Inherit: auto

"Out1" (Outport)**Table 3.175. "Out1" Parameters**

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

Transfer Fcn Direct Form II

Figure 3.55. pid_/Transfer Fcn Direct Form II



Blocks

Parameters

"DataTypeProp" (S-Function)

Table 3.176. "DataTypeProp" Parameters

Parameter	Value
Simulinkmasksx1PropagatedDataType_MP	Inherit via propagation rule
Simulinkmasksx11IfAnyReferenceInputIsDoubleOutputIs_MP	double
Simulinkmasksx12IfAnyReferenceInputIsSingleOutputIs_MP	single
Simulinkmasksx13IsSigned_MP	IsSigned1 or IsSigned2
Simulinkmasksx141NumberOfBitsBase_MP	max([NumBits1 NumBits2])
Simulinkmasksx142NumberOfBitsMultiplicativeAdjustment_MP	1
Simulinkmasksx143NumberOfBitsAdditiveAdjustment_MP	0
Simulinkmasksx144NumberOfBitsAllowableFinalValues_MP	1:128
Simulinkmasksx2PropagatedScaling_MP	Inherit via propagation rule
Simulinkmasksx211SlopeBase_MP	min([Slope1 Slope2])
Simulinkmasksx212SlopeMultiplicativeAdjustment_MP	OutputSlopeMult
Simulinkmasksx213SlopeAdditiveAdjustment_MP	0

Parameter	Value
Simulinkmasksx221BiasBase_MP	Bias1
Simulinkmasksx222BiasMultiplicativeAdjustment_MP	0
Simulinkmasksx223BiasAdditiveAdjustment_MP	0

"DataTypeProp1" (S-Function)

Table 3.177. "DataTypeProp1" Parameters

Parameter	Value
Simulinkmasksx1PropagatedDataType_MP	Inherit via propagation rule
Simulinkmasksx11IfAnyReferenceInputIsDoubleOutputIs_MP	double
Simulinkmasksx12IfAnyReferenceInputIsSingleOutputIs_MP	single
Simulinkmasksx13IsSigned_MP	IsSigned1 or IsSigned2
Simulinkmasksx141NumberOfBitsBase_MP	max([NumBits1 NumBits2])
Simulinkmasksx142NumberOfBitsMultiplicativeAdjustment_MP	1
Simulinkmasksx143NumberOfBitsAdditiveAdjustment_MP	0
Simulinkmasksx144NumberOfBitsAllowableFinalValues_MP	1:128
Simulinkmasksx2PropagatedScaling_MP	Inherit via propagation rule
Simulinkmasksx211SlopeBase_MP	min([Slope1 Slope2])
Simulinkmasksx212SlopeMultiplicativeAdjustment_MP	OutputSlopeMult2
Simulinkmasksx213SlopeAdditiveAdjustment_MP	0
Simulinkmasksx221BiasBase_MP	Bias1
Simulinkmasksx222BiasMultiplicativeAdjustment_MP	0
Simulinkmasksx223BiasAdditiveAdjustment_MP	0

"DenCoef" (Gain)

Table 3.178. "DenCoef" Parameters

Parameter	Value
Gain	DenCoefVec
Multiplication	Matrix(K*u) (u vector)
Parameter minimum	[]
Parameter maximum	[]
Parameter data type	Inherit: Inherit via internal rule
Output minimum	[]

Parameter	Value
Output maximum	[]
Output data type	Inherit: Inherit via internal rule
Lock output data type setting against changes by the fixed-point tools	off
Integer rounding mode	Floor
Saturate on integer overflow	off
Sample time (-1 for inherited)	-1

"Downcast" (DataTypeConversion)

Table 3.179. "Downcast" Parameters

Parameter	Value
Output minimum	[]
Output maximum	[]
Output data type	Inherit: Inherit via back propagation
Lock output data type setting against changes by the fixed-point tools	on
Input and output to have equal	Real World Value (RWV)
Integer rounding mode	Floor
Saturate on integer overflow	off
Sample time (-1 for inherited)	-1

"Downcast1" (DataTypeConversion)

Table 3.180. "Downcast1" Parameters

Parameter	Value
Output minimum	[]
Output maximum	[]
Output data type	Inherit: Inherit via back propagation
Lock output data type setting against changes by the fixed-point tools	on
Input and output to have equal	Real World Value (RWV)
Integer rounding mode	Floor
Saturate on integer overflow	off
Sample time (-1 for inherited)	-1

"Mux" (Mux)**Table 3.181. "Mux" Parameters**

Parameter	Value
Number of inputs	2
Display option	bar

"NumCoef" (Gain)**Table 3.182. "NumCoef" Parameters**

Parameter	Value
Gain	NumCoefVec
Multiplication	Matrix(K*u) (u vector)
Parameter minimum	[]
Parameter maximum	[]
Parameter data type	Inherit: Inherit via internal rule
Output minimum	[]
Output maximum	[]
Output data type	Inherit: Inherit via internal rule
Lock output data type setting against changes by the fixed-point tools	off
Integer rounding mode	Floor
Saturate on integer overflow	off
Sample time (-1 for inherited)	-1

"Sum" (Sum)**Table 3.183. "Sum" Parameters**

Parameter	Value
Icon shape	rectangular
List of signs	+ -
Sum over	All dimensions
Dimension	1
Output minimum	[]
Output maximum	[]

Parameter	Value
Output data type	Inherit: Inherit via internal rule
Accumulator data type	Inherit: Inherit via internal rule
Require all inputs to have the same data type	off
Lock data type settings against changes by the fixed-point tools	on
Integer rounding mode	Floor
Saturate on integer overflow	off
Sample time (-1 for inherited)	-1

"Tapped Delay" (S-Function)

Table 3.184. "Tapped Delay" Parameters

Parameter	Value
SimulinkmasksInitialCondition_MP	vinit
SimulinkmasksSampleTime_MP	-1
SimulinkmasksNumberOfDelays_MP	-1
SimulinkmasksOrderOutputVectorStartingWith_MP	Newest
SimulinkmasksIncludeCurrentInputInOutputVector_MP	off

"u" (Inport)

Table 3.185. "u" Parameters

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	-1
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"y" (Outport)

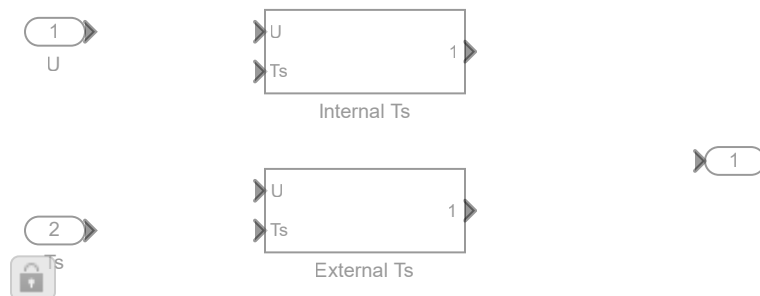
Table 3.186. "y" Parameters

Parameter	Value
Port number	1
Icon display	Port number

Parameter	Value
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s^2, N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	-1
Ensure outport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

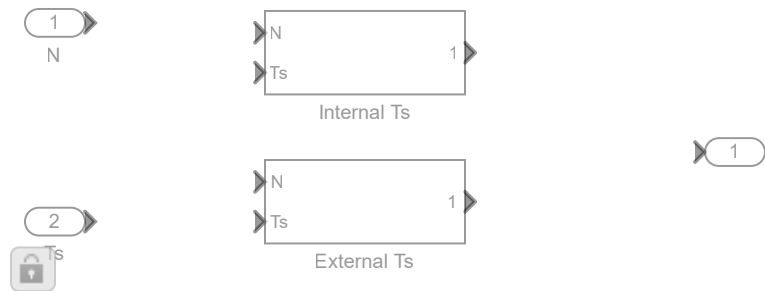
Tsamp

Figure 3.56. pid_/Discrete PID Controller1/Filter/Differentiator/Tsamp



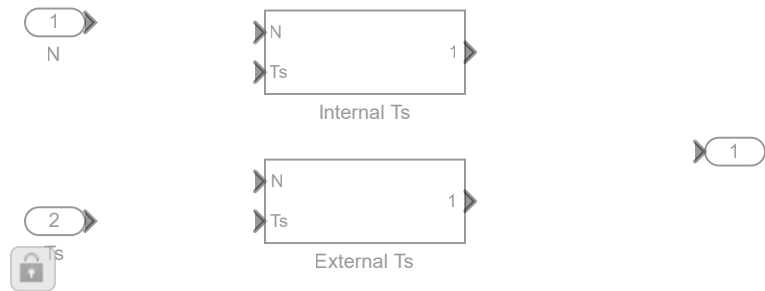
Tsamp

Figure 3.57. pid_/Discrete PID Controller1/Filter/Disc. Backward Euler Filter/Tsamp



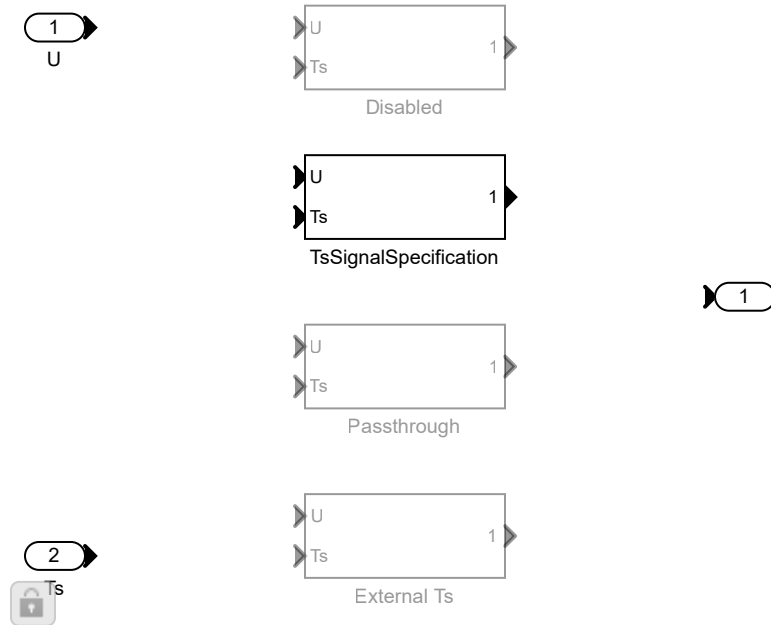
Tsamp

Figure 3.58. pid_/Discrete PID Controller1/Filter/Disc. Trapezoidal Filter/Tsamp



Tsamp - Integral

Figure 3.59. pid_/Discrete PID Controller1/Tsamp - Integral



Blocks

Parameters

"Out1" (Outputport)

Table 3.187. "Out1" Parameters

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit

Parameter	Value
Data mode	inherit
Unit (e.g., m, m/s ² , N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure output is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

"Ts" (Inport)

Table 3.188. "Ts" Parameters

Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

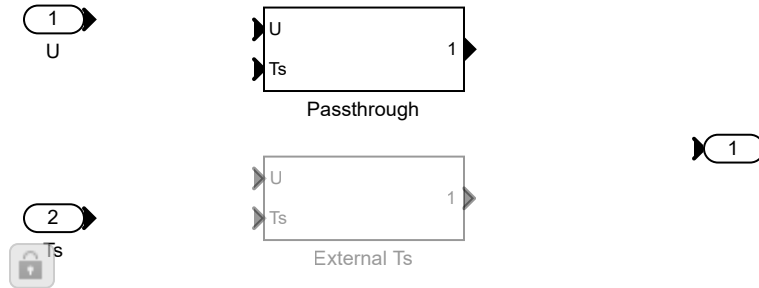
"U" (Inport)

Table 3.189. "U" Parameters

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

Tsamp - Ngain

Figure 3.60. pid_/Discrete PID Controller1/Tsamp - Ngain



Blocks

Parameters

"Out1" (Outport)

Table 3.190. "Out1" Parameters

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m, m/s^2, N*m)	inherit
Port dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime
Ensure outport is virtual	off
Source of initial output value	Dialog
Output when disabled	held

Parameter	Value
Initial output	[]
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

"Ts" (Inport)**Table 3.191. "Ts" Parameters**

Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"U" (Inport)**Table 3.192. "U" Parameters**

Parameter	Value
Port number	1
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

Parameter	Value
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	on

"Signal Specification" (SignalSpecification)

Table 3.194. "Signal Specification" Parameters

Parameter	Value
Minimum	[]
Maximum	[]
Data type	boolean
Lock output data type setting against changes by the fixed-point tools	off
Require nonvirtual bus	off
Unit (e.g., m, m/s ² , N*m)	inherit
Dimensions (-1 for inherited)	-1
Variable-size signal	Inherit
Sample time (-1 for inherited)	SampleTime

"Ts" (Inport)

Table 3.195. "Ts" Parameters

Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"U" (Inport)

Table 3.196. "U" Parameters

Parameter	Value
Port number	1

Chapter 3. Subsystems

Parameter	Value
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	SampleTime
Minimum	[]
Maximum	[]
Data type	Inherit: auto

Chapter 4. System Design Variables

Design Variable Summary

Table 4.1. Design Variables

Variable Name	Parent Blocks	Size	Bytes	Class	Value
D	Discrete PID Controller1 Discrete PID Controller2 PID Controller	1x1	8	double	0
P	Discrete PID Controller1 Discrete PID Controller2 PID Controller	1x1	8	double	0.6091
Ts	Reference	1x1	8	double	1.2279

Design Variable Details

Ts. 1.2279

Used by Blocks:

- [pid_/Reference](#)

Resolved in: base workspace

Chapter 5. Requirements

pid_ does not contain requirements traceability links.

Chapter 6. System Model Configuration

Source: Model

Source Name: pid_

Table 6.1. pid_ Configuration Set

Property	Value
Description	
Components	[pid_ Configuration Set.Components(1) , pid_ Configuration Set.Components(2) , pid_ Configuration Set.Components(3) , pid_ Configuration Set.Components(4) , pid_ Configuration Set.Components(5) , pid_ Configuration Set.Components(6) , pid_ Configuration Set.Components(7) , pid_ Configuration Set.Components(8) , pid_ Configuration Set.Components(9) , pid_ Configuration Set.Components(10)]
Name	Configuration

Table 6.2. pid_ Configuration Set.Components(1)

Property	Value
Name	Solver
Description	
Components	
StartTime	0.0
StopTime	5000
AbsTol	auto
AutoScaleAbsTol	on
FixedStep	auto
InitialStep	auto
MaxOrder	5
ZcThreshold	auto
ConsecutiveZCsStepRelTol	10*128*eps
MaxConsecutiveZCs	1000
ExtrapolationOrder	4
NumberNewtonIterations	1
MaxStep	auto

MinStep	auto
MaxConsecutiveMinStep	1
RelTol	1e-3
EnableMultiTasking	off
AllowMultiTaskInputOutput	off
ConcurrentTasks	off
SolverName	VariableStepAuto
SolverType	Variable-step
SolverJacobianMethodControl	auto
DaesscMode	auto
ShapePreserveControl	DisableAll
ZeroCrossControl	UseLocalSettings
ZeroCrossAlgorithm	Nonadaptive
SolverResetMethod	Fast
PositivePriorityOrder	off
AutoInsertRateTranBlk	off
SampleTimeConstraint	Unconstrained
InsertRTBMode	Whenever possible
SampleTimeProperty	
DecoupledContinuousIntegration	off
MinimalZcImpactIntegration	off
ODENIntegrationMethod	ode3
EnableFixedStepZeroCrossing	off
MaxZcPerStep	2
MaxZcBracketingIterations	10

Table 6.3. pid Configuration Set.Components(2)

Property	Value
Name	Data Import/Export
Description	
Components	
Decimation	1
ExternalInput	[t, u]
FinalStateName	xFinal
InitialState	xInitial
LimitDataPoints	off

MaxDataPoints	1000
LoadExternalInput	off
LoadInitialState	off
SaveFinalState	off
SaveOperatingPoint	off
SaveFormat	Dataset
SaveOutput	on
SaveState	off
SignalLogging	on
DSMLogging	on
StreamToWks	on
InspectSignalLogs	off
SaveTime	on
ReturnWorkspaceOutputs	on
StateSaveName	xout
TimeSaveName	tout
OutputSaveName	yout
SignalLoggingName	logsout
DSMLoggingName	dsmout
OutputOption	RefineOutputTimes
OutputTimes	[]
ReturnWorkspaceOutputsName	out
Refine	1
LoggingToFile	off
DatasetSignalFormat	timeseries
LoggingFileName	out.mat
LoggingIntervals	[-inf, inf]

Table 6.4. pid_ Configuration Set.Components(3)

Property	Value
Name	Optimization
Description	
Components	
BlockReduction	on
BooleanDataType	on
ConditionallyExecuteInputs	on

Chapter 6. System Model Configuration

DefaultParameterBehavior	Tunable
InlineParams	off
UseDivisionForNetSlopeComputation	off
GainParamInheritBuiltInType	off
UseFloatMulNetSlope	off
InheritOutputTypeSmallerThanSingle	off
DefaultUnderspecifiedDataType	double
UseSpecifiedMinMax	off
InlineInvariantSignals	off
OptimizeBlockIOStorage	on
BufferReuse	on
ReuseModelBlockBuffer	off
GlobalBufferReuse	on
GlobalVariableUsage	None
StrengthReduction	off
AdvancedOptControl	
ExpressionFolding	on
BooleansAsBitfields	off
BitfieldContainerType	uint_T
BitwiseOrLogicalOp	Same as modeled
EnableMemcpy	on
MemcpyThreshold	64
PassReuseOutputArgsAs	Structure reference
PassReuseOutputArgsThreshold	12
LocalBlockOutputs	on
RollThreshold	5
StateBitsets	off
DataBitsets	off
ActiveStateOutputEnumStorageType	Native Integer
ZeroExternalMemoryAtStartup	on
ZeroInternalMemoryAtStartup	on
InitFltsAndDblsToZero	off
NoFixptDivByZeroProtection	off
EfficientFloat2IntCast	off
EfficientMapNaN2IntZero	on
LifeSpan	auto

EvaledLifeSpan	Inf
ClockResolution	-1
MaxStackSize	Inherit from target
BufferReusableBoundary	on
RemoveLocalVariableInitialization	on
SimCompilerOptimization	off
AccelVerboseBuild	off
OptimizeBlockOrder	off
OptimizeDataStoreBuffers	on
BusAssignmentInplaceUpdate	on
DifferentSizesBufferReuse	off
UseRowMajorAlgorithm	off
OptimizationLevel	level2
OptimizationPriority	Balanced
OptimizationCustomize	on
LabelGuidedReuse	off
MultiThreadedLoops	off
DenormalBehavior	GradualUnderflow
EfficientTunableParamExpr	off

Table 6.5. pid Configuration Set.Components(4)

Property	Value
Name	Diagnostics
Description	
Components	
RTPrefix	error
ConsistencyChecking	none
ArrayBoundsChecking	none
SignalInfNanChecking	none
StringTruncationChecking	error
SignalRangeChecking	none
ReadBeforeWriteMsg	UseLocalSettings
WriteAfterWriteMsg	UseLocalSettings
WriteAfterReadMsg	UseLocalSettings
AlgebraicLoopMsg	warning
ArtificialAlgebraicLoopMsg	warning

SaveWithDisabledLinksMsg	warning
SaveWithParameterizedLinksMsg	warning
CheckSSInitialOutputMsg	on
UnderspecifiedInitializationDetection	Simplified
MergeDetectMultiDrivingBlocksExec	error
SignalResolutionControl	UseLocalSettings
BlockPriorityViolationMsg	warning
MinStepSizeMsg	warning
TimeAdjustmentMsg	none
MaxConsecutiveZCsMsg	error
MaskedZcDiagnostic	warning
IgnoredZcDiagnostic	warning
SolverPrmCheckMsg	none
InheritedTsInSrcMsg	warning
MultiTaskDSMMsg	error
MultiTaskCondExecSysMsg	error
MultiTaskRateTransMsg	error
SingleTaskRateTransMsg	none
TasksWithSamePriorityMsg	warning
SigSpecEnsureSampleTimeMsg	warning
CheckMatrixSingularityMsg	none
IntegerOverflowMsg	warning
Int32ToFloatConvMsg	warning
ParameterDowncastMsg	error
ParameterOverflowMsg	error
ParameterUnderflowMsg	none
ParameterPrecisionLossMsg	warning
ParameterTunabilityLossMsg	warning
FixptConstUnderflowMsg	none
FixptConstOverflowMsg	none
FixptConstPrecisionLossMsg	none
UnderSpecifiedDataTypeMsg	none
UnnecessaryDatatypeConvMsg	none
VectorMatrixConversionMsg	none
FcnCallInpInsideContextMsg	error
SignalLabelMismatchMsg	none

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UnconnectedInputMsg	warning
UnconnectedOutputMsg	warning
UnconnectedLineMsg	warning
UseOnlyExistingSharedCode	error
SFcnCompatibilityMsg	none
FrameProcessingCompatibilityMsg	error
UniqueDataStoreMsg	none
BusObjectLabelMismatch	warning
RootOutportRequireBusObject	warning
AssertControl	UseLocalSettings
AllowSymbolicDim	on
ModelReferenceIOMsg	none
ModelReferenceVersionMismatchMessage	none
ModelReferenceIOMismatchMessage	none
UnknownTsInhSupMsg	warning
ModelReferenceDataLoggingMessage	warning
ModelReferenceNoExplicitFinalValueMsg	none
ModelReferenceSymbolNameMessage	warning
ModelReferenceExtraNoncontSigs	error
StateNameClashWarn	none
OperatingPointInterfaceChecksumMismatchMsg	warning
NonCurrentReleaseOperatingPointMsg	error
PregeneratedLibrarySubsystemCodeDiagnostic	warning
SubsystemReferenceDiagnosticForUnitTest	error
InitInArrayFormatMsg	warning
StrictBusMsg	ErrorLevel1
BusNameAdapt	WarnAndRepair
NonBusSignalsTreatedAsBus	none
SFUnusedDataAndEventsDiag	warning
SFUnexpectedBacktrackingDiag	error
SFInvalidInputDataAccessInChartInitDiag	warning
SFNoUnconditionalDefaultTransitionDiag	error
SFTransitionOutsideNaturalParentDiag	warning
SFUnreachableExecutionPathDiag	warning
SFUndirectedBroadcastEventsDiag	warning
SFTransitionActionBeforeConditionDiag	warning

SFOutputUsedAsStateInMooreChartDiag	error
SFTemporalDelaySmallerThanSampleTimeDiag	warning
SFSelfTransitionDiag	warning
SFExecutionAtInitializationDiag	warning
IntegerSaturationMsg	warning
AllowedUnitSystems	all
UnitsInconsistencyMsg	warning
AllowAutomaticUnitConversions	on
RCSCRenamedMsg	warning
RCSCObservableMsg	warning
ForceCombineOutputUpdateInSim	off
UnderSpecifiedDimensionMsg	none
DebugExecutionForFMUViaOutOfProcess	off
ArithmeticOperatorsInVariantConditions	error
VariantConditionMismatch	none
InheritVATfromSVC	warning
VariantConfigNotUsedByTopModel	warning
ParamWriterValidationControl	UseLocalSettings

Table 6.6. pid Configuration Set.Components(5)

Property	Value
Name	Hardware Implementation
Description	
Components	
ProdBitPerChar	8
ProdBitPerShort	16
ProdBitPerInt	32
ProdBitPerLong	32
ProdBitPerLongLong	64
ProdBitPerFloat	32
ProdBitPerDouble	64
ProdBitPerPointer	64
ProdBitPerSizeT	64
ProdBitPerPtrDiffT	64
ProdLargestAtomicInteger	Char
ProdLargestAtomicFloat	Float

ProdIntDivRoundTo	Zero
ProdEndianess	LittleEndian
ProdWordSize	64
ProdShiftRightIntArith	on
ProdLongLongMode	off
ProdHWDeviceType	Intel->x86-64 (Windows64)
TargetBitPerChar	8
TargetBitPerShort	16
TargetBitPerInt	32
TargetBitPerLong	32
TargetBitPerLongLong	64
TargetBitPerFloat	32
TargetBitPerDouble	64
TargetBitPerPointer	32
TargetBitPerSizeT	32
TargetBitPerPtrDiffT	32
TargetLargestAtomicInteger	Char
TargetLargestAtomicFloat	None
TargetShiftRightIntArith	on
TargetLongLongMode	off
TargetIntDivRoundTo	Undefined
TargetEndianess	Unspecified
TargetWordSize	32
TargetPreprocMaxBitsSint	32
TargetPreprocMaxBitsUint	32
TargetHWDeviceType	Specified
TargetUnknown	off
ProdEqTarget	on
UseEmbeddedCoderFeatures	on
UseSimulinkCoderFeatures	on
HardwareBoardFeatureSet	EmbeddedCoderHSP

Table 6.7. pid Configuration Set.Components(6)

Property	Value
Name	Model Referencing
Description	

Components	
UpdateModelReferenceTargets	IfOutOfDateOrStructuralChange
EnableRefExpFcnMdlSchedulingChecks	on
CheckModelReferenceTargetMessage	error
EnableParallelModelReferenceBuilds	off
ParallelModelReferenceErrorOnInvalidPool	on
ParallelModelReferenceMATLABWorkerInit	None
ModelReferenceNumInstancesAllowed	Multi
PropagateVarSize	Infer from blocks in model
ModelDependencies	
ModelReferencePassRootInputsByReference	on
ModelReferenceMinAlgLoopOccurrences	off
PropagateSignalLabelsOutOfModel	on
SupportModelReferenceSimTargetCustomCode	off
UseModelRefSolver	off

Table 6.8. pid_Configuration Set.Components(7)

Property	Value
Name	Simulation Target
Description	
Components	
SimCustomSourceCode	
SimCustomHeaderCode	
SimCustomInitializer	
SimCustomTerminator	
SimReservedNameArray	
SimUserSources	
SimUserIncludeDirs	
SimUserLibraries	
SimUserDefines	
SimCustomCompilerFlags	
SimCustomLinkerFlags	
SFSimEnableDebug	off
SFSimEcho	on
SimCtrlC	on
SimIntegrity	on

SimUseLocalCustomCode	on
SimParseCustomCode	on
SimAnalyzeCustomCode	off
SimDebugExecutionForCustomCode	off
SimGenImportedTypeDefs	off
CompileTimeRecursionLimit	50
EnableRuntimeRecursion	on
EnableImplicitExpansion	on
MATLABDynamicMemAlloc	on
MATLABDynamicMemAllocThreshold	65536
LegacyBehaviorForPersistentVarInContinuousTime	off
CustomCodeFunctionArrayLayout	
DefaultCustomCodeFunctionArrayLayout	NotSpecified
CustomCodeUndefinedFunction	FilterOut
CustomCodeGlobalsAsFunctionIO	off
DefaultCustomCodeDeterministicFunctions	None
CustomCodeDeterministicFunctions	
SimHardwareAcceleration	generic
SimTargetLang	C
GPUAcceleration	off
SimGPUMallocThreshold	200
SimGPUStackLimitPerThread	1024
SimGPUErrorChecks	off
SimGPUCustomComputeCapability	
SimGPUCompilerFlags	
SimDLTargetLibrary	mkl-dnn
SimDLAutoTuning	on

Table 6.9. pid_ Configuration Set.Components(8)

Property	Value
Name	Code Generation
Description	
SystemTargetFile	grt.tlc
EmbeddedCoderDictionary	
HardwareBoard	None
ShowCustomHardwareApp	off

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ShowEmbeddedHardwareApp	off
TLCOptions	
GenCodeOnly	off
MakeCommand	make_rtw
GenerateMakefile	on
PackageGeneratedCodeAndArtifacts	off
PackageName	
TemplateMakefile	grt_default_tmf
PostCodeGenCommand	
GenerateReport	off
RTWVerbose	on
RetainRTWFile	off
ProfileTLC	off
TLCDebug	off
TLCCoverage	off
TLCAssert	off
BuiltinFFTWCallback	off
RTWUseLocalCustomCode	on
RTWUseSimCustomCode	off
CustomSourceCode	
CustomHeaderCode	
CustomInclude	
CustomSource	
CustomLibrary	
CustomDefine	
CustomBLASCallback	
CustomLAPACKCallback	
CustomFFTCallback	
CustomInitializer	
CustomTerminator	
Toolchain	Automatically locate an installed toolchain
BuildConfiguration	Faster Builds
CustomToolchainOptions	
IncludeHyperlinkInReport	off
LaunchReport	off
PortableWordSizes	off

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CreateSILPILBlock	None
CodeExecutionProfiling	off
CodeExecutionProfileVariable	executionProfile
CodeProfilingSaveOptions	SummaryOnly
CodeProfilingInstrumentation	off
CodeStackProfiling	off
CodeStackProfileVariable	stackProfile
CodeCoverageSettings	pid_Configuration Set.Components(8).CodeCoverageSettings
SILPILDebugging	off
DataTypeReplacement	CoderTypedefs
CoderTypedefsCompatibility	off
TargetLang	C
GenerateGPUCode	None
HalideCodeGeneration	off
GenerateTraceInfo	off
GenerateTraceReport	off
GenerateTraceReportSl	off
GenerateTraceReportSf	off
GenerateTraceReportEml	off
GenerateWebview	off
GenerateCodeMetricsReport	off
GenerateCodeReplacementReport	off
RTWCompilerOptimization	off
ObjectivePriorities	
RTWCustomCompilerOptimizations	
CheckMdlBeforeBuild	Off
GPUKernelNamePrefix	
GPUDeviceID	-1
GPUMallocMode	discrete
GPUMallocThreshold	200
GPUEnableMemoryManager	off
GPUStackLimitPerThread	1024
GPUcuBLAS	on
GPUcuSOLVER	on
GPUcuFFT	on
GPUErrorChecks	off

GPUComputeCapability	3.5
GPUCustomComputeCapability	
GPUCompilerFlags	
GPUMaximumBlocksPerKernel	0
DLTargetLibrary	none
DLAutoTuning	on
DLArmComputeVersion	19.05
DLArmComputeArch	unspecified
DLLearnablesCompression	None
Components	[pid_Configuration Set.Components(8).Components(1) , pid_Configuration Set.Components(8).Components(2)]

Table 6.10. [pid_Configuration Set.Components\(9\)](#)

Property	Value
Description	Simulink Coverage Configuration Component
Components	
Name	Simulink Coverage
CovEnable	off
CovScope	EntireSystem
CovIncludeTopModel	on
RecordCoverage	off
CovPath	/
CovSaveName	covdata
CovCompData	
CovMetricSettings	dwe
CovFilter	
CovHTMLOptions	
CovNameIncrementing	off
CovForceBlockReductionOff	on
CovEnableCumulative	on
CovSaveCumulativeToWorkspaceVar	off
CovSaveSingleToWorkspaceVar	off
CovCumulativeVarName	covCumulativeData
CovCumulativeReport	off
CovSaveOutputData	on
CovOutputDir	slcov_output/\$ModelName\$

CovDataFileName	\$ModelName\$_cvdata
CovReportOnPause	on
CovModelRefEnable	off
CovModelRefExcluded	
CovExternalEMLEnable	on
CovSFcnEnable	on
CovBoundaryAbsTol	1.0000e-05
CovBoundaryRelTol	0.0100
CovUseTimeInterval	off
CovStartTime	0
CovStopTime	0
CovMetricStructuralLevel	Decision
CovMetricLookupTable	off
CovMetricSignalRange	off
CovMetricSignalSize	off
CovMetricObjectiveConstraint	off
CovMetricSaturateOnIntegerOverflow	off
CovMetricRelationalBoundary	off
CovLogicBlockShortCircuit	off
CovUnsupportedBlockWarning	on
CovMcdcMode	Masking
CovExcludeInactiveVariants	off

Table 6.11. pid Configuration Set.Components(10)

Property	Value
Description	HDL Coder custom configuration component
Components	
Name	HDL Coder

Table 6.12. pid Configuration Set.Components(8).CodeCoverageSettings

Property	Value
TopModelCoverage	off
ReferencedModelCoverage	off
CoverageTool	None

Table 6.13. pid_Configuration Set.Components(8).Components(1)

Property	Value
Name	Code Appearance
Description	
Components	
ForceParamTrailComments	off
GenerateComments	on
CommentStyle	Auto
IgnoreCustomStorageClasses	on
IgnoreTestpoints	off
MaxIdLength	31
ShowEliminatedStatement	off
OperatorAnnotations	off
SimulinkDataObjDesc	off
SFDataObjDesc	off
MATLABFcnDesc	off
MangleLength	1
SharedChecksumLength	8
CustomSymbolStrGlobalVar	\$R\$N\$M
CustomSymbolStrType	\$N\$R\$M_T
CustomSymbolStrField	\$N\$M
CustomSymbolStrFcn	\$R\$N\$M\$F
CustomSymbolStrFcnArg	rt\$I\$N\$M
CustomSymbolStrBlkIO	rtb_ \$N\$M
CustomSymbolStrTmpVar	\$N\$M
CustomSymbolStrMacro	\$R\$N\$M
CustomSymbolStrUtil	\$N\$C
CustomSymbolStrEmxType	emxArray_ \$M\$N
CustomSymbolStrEmxFcn	emx\$M\$N
CustomUserTokenString	
CustomCommentsFcn	
DefineNamingRule	None
DefineNamingFcn	
ParamNamingRule	None
ParamNamingFcn	
SignalNamingRule	None

SignalNamingFcn	
InsertBlockDesc	off
InsertPolySpaceComments	off
SimulinkBlockComments	on
BlockCommentType	BlockPathComment
StateflowObjectComments	off
MATLABSourceComments	off
EnableCustomComments	off
InternalIdentifier	Shortened
InlinedPrmAccess	Literals
ReqsInCode	off
UseSimReservedNames	off
ReservedNameArray	
EnumMemberNameClash	error

Table 6.14. pid_Configuration Set.Components(8).Components(2)

Property	Value
Name	Target
Description	
Components	
IsERTTarget	off
TargetLibSuffix	
TargetPreCompLibLocation	
TargetLangStandard	C99 (ISO)
CodeReplacementLibrary	None
UtilityFuncGeneration	Auto
MultiwordTypeDef	System defined
MultiwordLength	2048
DynamicStringBufferSize	256
GenerateFullHeader	on
InferredTypesCompatibility	off
ExistingSharedCode	
GenerateSampleERTMain	off
GenerateTestInterfaces	off
ModelReferenceCompliant	on
ParMdlRefBuildCompliant	on

CompOptLevelCompliant	on
ConcurrentExecutionCompliant	on
IncludeMdlTerminateFcn	on
CombineOutputUpdateFcns	on
CombineSignalStateStructs	off
GroupInternalDataByFunction	off
SuppressErrorStatus	off
IncludeFileDelimiter	Auto
ERTCustomFileBanners	off
SupportAbsoluteTime	on
LogVarNameModifier	rt_
MatFileLogging	on
MultiInstanceERTCode	off
CodeInterfacePackaging	Nonreusable function
PurelyIntegerCode	off
SupportNonFinite	on
SupportComplex	on
SupportContinuousTime	on
SupportNonInlinedSFcns	on
RemoveDisableFunc	off
RemoveResetFunc	off
SupportVariableSizeSignals	off
ParenthesesLevel	Nominal
CastingMode	Nominal
ModelStepFunctionPrototypeControlCompliant	off
CPPClassGenCompliant	on
GRTInterface	off
GenerateAllocFcn	off
UseToolchainInfoCompliant	on
GenerateSharedConstants	on
LUTObjectStructOrderExplicitValues	Size,Breakpoints,Table
LUTObjectStructOrderEvenSpacing	Size,Breakpoints,Table
ArrayLayout	Column-major
UnsupportedSFcnMsg	error
ERTHeaderFileRootName	\$R\$E
ERTSourceFileRootName	\$R\$E

ERTDataFileRootName	\$R_data
InstructionSetExtensions	{None}
OptimizeReductions	off
IsSLRRTarget	off
ExtMode	off
ExtModeStaticAlloc	off
ExtModeTesting	off
ExtModeAutomaticAllocSize	on
ExtModeMaxTrigDuration	10
ExtModeStaticAllocSize	1000000
ExtModeTransport	0
ExtModeMexFile	ext_comm
ExtModeMexArgs	
ExtModeIntrfLevel	Level1
RTWCAPISignals	off
RTWCAPIParams	off
RTWCAPISates	off
RTWCAPIRootIO	off
MultiInstanceErrorCode	Error

Table 6.15. HDL Coder

Property	Value
HDLSubsystem	pid_
Workflow	Generic ASIC/FPGA
TargetPlatform	
ReferenceDesign	
ReferenceDesignPath	
CoeffPrefix	coeff
DownToArrayIndexing	off
BooleanVectorDownTo	on
InputType	std_logic_vector
OutputType	Same as input type
ScalarizePorts	off
ScalarizedPortIndexing	Zero-based
SamplesPerCycle	1
InputFIFOSize	10

OutputFIFOSize	10
DelaySizeThreshold	10000
CoeffMultipliers	Multiplier
ResetType	Asynchronous
FIRAdderStyle	linear
MultiplierInputPipeline	0
MultiplierOutputPipeline	0
FoldingFactor	1
NumMultipliers	-1
OptimizeForHDL	off
TimingControllerPostfix	_tc
OptimizeTimingController	on
TimingControllerArch	default
CastBeforeSum	on
TCCounterLimitCompOp	>=
CheckHDL	off
EnablePrefix	enb
ClockEnableInputPort	clk_enable
ClockEnableOutputPort	ce_out
ClockInputPort	clk
ClockEdge	Rising
ResetInputPort	reset
SimulatorFlags	
HDLCompileFilePostfix	_compile.do
HDLCompileInit	vlib %s\n
HDLCompileTerm	
HDLCompileVerilogCmd	vlog %s %s\n
HDLCompileVHDLCmd	vcom %s %s\n
EnableForGenerateLoops	on
HDLMapFilePostfix	_map.txt
HDLMapSeparator	
HDLSimCmd	vsim -voptargs=+acc %s.%s\n
HDLSimFilePostfix	_sim.do
HDLSimProjectFilePostfix	_init.do
HDLSimInit	onbreak resume\nonerror resume\n
HDLSimProjectCmd	project addfile %s\n

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HDLSimProjectTerm	project compileall\n
HDLSimProjectInit	project new . %s work\n
HDLSimTerm	run -all\n
HDLSimViewWaveCmd	add wave sim:%s\n
HDLSynthTool	None
HDLSynthCmd	
HDLSynthFilePostfix	
HDLSynthInit	
HDLSynthLibCmd	
HDLSynthLibSpec	
HDLSynthTerm	
ReservedWordPostfix	_rsvd
BlockGenerateLabel	_gen
VHDLLibraryName	work
UseSingleLibrary	off
VHDLArchitectureName	rtl
ClockProcessPostfix	_process
ComplexImagPostfix	_im
ComplexRealPostfix	_re
EntityConflictPostfix	_block
InstancePrefix	u_
InstancePostfix	
InstanceGenerateLabel	_gen
OutputGenerateLabel	outputgen
PackagePostfix	_pkg
SplitEntityArch	off
SplitMooreChartStateUpdate	on
SplitEntityFilePostfix	_entity
SplitArchFilePostfix	_arch
VectorPrefix	vector_of_
ClockInputs	Single
TriggerAsClock	off
AsyncResetPort	off
ConditionalizePipeline	off
InferControlPorts	off
UseRisingEdge	off

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ProjectFolder	
TargetDirectory	hdlsrc
TargetSubdirectory	Model
EDAScriptGeneration	on
AddInputRegister	on
AddOutputRegister	on
AddPipelineRegisters	off
PipelinePostfix	_pipe
InputPort	filter_in
OutputPort	filter_out
FracDelayPort	filter_fd
Name	filter
RemoveResetFrom	None
ResetAssertedLevel	Active-high
ReuseAccum	off
ScaleWarnBits	3
SerialPartition	-1
DALUTPartition	-1
DARadix	2
CoefficientSource	Internal
CoefficientMemory	Registers
InputComplex	off
AddRatePort	off
InputDataType	
GenerateHDLCode	on
GenerateModel	on
GenerateTB	off
GenerateCEGenModel	off
ObfuscateGeneratedHDLCode	off
GenerateRecordType	off
Traceability	off
RuntimeReport	off
ResourceReport	off
OptimizationReport	off
ErrorCheckReport	on
HDLGenerateWebview	off

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IPCoreReport	off
Recommendations	off
RequirementComments	on
EnableComments	on
ModelName	
Backannotation	off
HierarchicalDistPipelining	off
PreserveDesignDelays	off
AllowDelayDistribution	on
AcquireDesignDelaysForEMLOptimizations	off
ClockRatePipelining	on
CRPWithoutFlattening	on
CRPDelayBalancingIterLimit	10
AdaptivePipelining	off
LUTMapToRAM	on
CloneModules	on
MinDelaysRequiredAtLocalMultirateOutput	1
ClockRatePipelineOutputPorts	off
BalanceClockRateOutputPorts	off
CriticalPathEstimation	off
TimingDatabaseDirectory	
StaticLatencyPathAnalysis	off
shareequalwl	on
sharedmulsign	Signed
MultiplierPromotionThreshold	0
RoutingFudgeFactor	0.5000
OptimizationCompatibilityCheck	off
NumCriticalPathsEstimated	1
CriticalPathEstimationFile	criticalPathEstimated
SLPAFile	staticLatPathAnalysis
SLPALoopsFile	staticLatLoops
SLPABackEdgeFile	staticLatLoopBackEdge

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SLPAGMMapMATFile	staticLatGMMMap
HardwarePipeliningCharacterizationFile	
HardwarePipeliningParamWarning	0
HighlightFeedbackLoops	on
HighlightFeedbackLoopsFile	highlightFeedbackLoop
HighlightClockRatePipeliningDiagnostic	on
HighlightClockRatePipeliningFile	highlightClockRatePipelining
HighlightRemovedDeadBlocks	on
DistributedPipeliningBarriers	on
DistributedPipeliningBarriersFile	highlightDistributedPipeliningBarriers
HighlightDelayAbsorptionDiagnostic	on
HighlightDelayAbsorptionDiagnosticFile	highlightDelayAbsorption
HighlightLUTPipeliningDiagnostic	on
HighlightLUTPipeliningDiagnosticFile	highlightLUTPipeliningDiagnostic
SetLUTPipeliningOffScriptFile	setLUTPipelineOffScript
BlocksWithNoCharacterizationFile	highlightCriticalPathEstimationOffendingBlocks
AXIStreamingTransformFeatureControl	off
AXIInterface512BitDataPortFeatureControl	off
SerializerRatioThreshold	8192
RetimingCP	off
RetimingCPFile	highlightRetimingCP
ClearHighlightingFile	clearhighlighting
FunctionallyEquivalentRetiming	on
DistributedPipeliningPrecision	-1

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DistributedPipelining	off
UseSynthesisEstimatesForDistributedPipelining	off
DistributedPipeliningPriority	Numerical Integrity
PipelineDistributionPriority	Numerical Integrity
RetimingDetails	on
CriticalPathDetails	off
SignalNamesMangling	off
GuidedRetiming	off
LatencyConstraint	0
ReduceMatchingDelays	on
OptimizeBusDelayBalancing	on
OptimizationData	
CPGuidanceFile	
CPAnnotationFile	
OptimizeMdlGen	on
OptimizeHDLIP	off
MulticyclePathInfo	off
MulticyclePathConstraints	off
FloatingPointTargetConfiguration	
GenerateTargetComps	on
NativeFloatingPoint	off
FPToleranceValue	1.0000e-07
FPToleranceStrategy	DEFAULT
nfpLatency	DEFAULT
nfpDenormals	DEFAULT
UseFloatingPoint	off
sschdlMatrixProductSumCustomLatency	-1
AlteraBackwardIncompatibleSinCosPipeline	off
FamilyDevicePackageSpeed	
ToolName	
SynthesisToolChipFamily	
SynthesisToolDeviceName	
SynthesisToolPackageName	

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SynthesisToolSpeedValue	
SynthesisTool	
SynthesisProjectAdditionalFiles	
SimulationLibPath	
XilinxSimulatorLibPath	
AdderSharingMinimumBitwidth	0
MultiplierSharingMinimumBitwidth	0
MultiplyAddSharingMinimumBitwidth	0
ShareAdders	off
ShareMultipliers	on
ShareMultiplyAdds	on
ShareMATLABBlocks	on
ShareAtomicSubsystems	on
ShareCounterSerDes	off
UniqueGlobalSchedulingCounters	on
ShareFloatingPointIPs	on
PipelinedSharing	on
EnableFPGAWorkflow	off
FPGAWorkflowParameters	
GainMultipliers	Multiplier
ProductOfElementsStyle	linear
UserComment	
CustomFileHeaderComment	
CustomFileFooterComment	
DateComment	on
SafeZeroConcat	on
SumOfElementsStyle	linear
TargetLanguage	VHDL
TreatRatesAsHardwareRates	off
Oversampling	1
Verbosity	1
TestBenchName	filter_tb

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MultifileTestBench	off
IgnoreDataChecking	0
TestBenchPostfix	_tb
TestBenchDataPostfix	_data
TestBenchStimulus	
TestBenchUserStimulus	
TestBenchFracDelayStimulus	
TestBenchCoeffStimulus	
TestBenchRateStimulus	
ForceClockEnable	on
MinimizeClockEnables	off
MinimizeGlobalResets	off
GenerateValidSignalInterface	off
StabilizeInputsForAperiodicRate	on
NoResetInitializationMode	InsideModule
NoResetInitScript	noresetinitscript.tcl
ComplexMulElaboration	MultiplyAddBlock
FlattenBus	off
TestBenchClockEnableDelay	1
ForceClock	on
ClockHighTime	5
ClockLowTime	5
HoldTime	2
InputDataInterval	0
ForceReset	on
ErrorMargin	4
HoldInputDataBetweenSamples	on
InitializeTestBenchInputs	off
ResetLength	2
TestBenchReferencePostFix	_ref
GenerateValidationModel	off
RAMMappingThreshold	256
IOThreshold	5000
TreatIOThresholdAs	Error

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MapPipelineDelaysToRAM	off
RemoveRedundantCounters	on
ReplaceUnitDelayWithIntegerDelay	on
ConcatenateDelays	on
MergeDelaysOnFanouts	on
FoldDelaysToConstant	on
RAMArchitecture	WithClockEnable
RAMStyleAttributeName	
UseMatrixTypesInEML	on
InlineMATLABBlockCode	off
SubsystemReuse	Atomic only
InlineHDLCode	off
MaskParameterAsGeneric	off
InlineSubsystems	on
StringTypeSupport	off
DeleteUnusedBlocks	on
DeleteUnusedBlocksUnderMask	off
DeleteUnusedPorts	on
BalanceDelays	on
BalanceDelaysControlsFeedbackLoops	on
DelayAbsorption	on
TargetFrequency	0
ExtraEffortMargin	1
MaxOversampling	Inf
MaxComputationLatency	1
MultiplierPartitioningThreshold	Inf
TreatDelayBalancingFailureAs	Error
TransformDelaysWithControlLogic	on
TransformNonZeroInitValDelay	on
DelayElaborationLimit	20
TapDelayNoElab	on
GenerateCoSimBlock	off

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HDLCodeCoverage	off
GenerateHDLTestBench	on
GenerateCoSimModel	None
GenerateSVDPITestBench	None
SimulationTool	Mentor Graphics ModelSim
CoSimModelSetup	CosimBlockAndDut
SynthesisOnDirective	
SynthesisOffDirective	
LoopUnrolling	off
InlineConfigurations	on
UseAggregatesForConst	off
UseVerilogTimescale	on
Timescale	`timescale 1 ns / 1 ns
VerilogFileExtension	.v
SystemVerilogFileExtension	.sv
VHDLFileExtension	.vhd
CodeGenerationOutput	GenerateHDLCode
GeneratedModelName	
GeneratedModelNamePrefix	gm_
ValidationModelNameSuffix	_vnl
LayoutStyle	Default
UseDotLayout	off
ShowCodeGenPIR	off
SerializeModel	0
SerializeIO	0
AutoRoute	on
AutoPlace	on
InterBlkHorzScale	1.7000
InterBlkVertScale	1.2000
CustomDotPath	
HighlightAncestors	on
HighlightColor	cyan
InitializeBlockRAM	on
InitializeRealPort	off
MapVectorPortToStream	off
UseFileIOInTestBench	on

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TurnkeyWorkflow	off
AlteraWorkflow	off
GenerateFILBlock	off
CoSimLibPostfix	_cosim
TestBenchInitializeInputs	off
MinimizeIntermediateSignals	off
GenerateCodeInfo	off
GatewayoutWithDTC	off
IncrementalCodeGenForTopModel	off
HDLWFSmartbuild	on
HDLCodingStandard	None
HDLCodingStandardCustomizations	
ReferenceDesignParameter	
HDLLintTool	None
HDLLintInit	
HDLLintTerm	
HDLLintCmd	
ModulePrefix	
DetectBlackBoxNameCollision	Warning
PIRTC	on
UsePipelinedToolboxFunctions	on
savepirtoscript	off
ConcatenateHDLModules	off
ML2PIR	off
OptimBetweenMATLABAndSimulink	off
EnableTestpoints	off
BalanceDelaysForTestpoints	on
GenDUTPortForTunableParam	on
BalanceDelaysForTunableParam	on
TraceabilityStyle	Line Level
TraceabilityProcessing	off

TreatRealsInGeneratedCodeAs	Error
TreatBalanceDelaysOffAs	Error
EnumEncodingScheme	default
CompileStrategy	CompileAll
BuildToProtectModel	off
OptimizeConstants	on
OptimizeFixedPointConstants	off
FrameToSampleConversion	off
InputProcessingOrder	RowMajor
HDLDTO	off
UseArrangeSystem	off
TriggerAsClockWithoutSyncRegisters	on
CompactSwitch	off
SimIndexCheck	off
ScheduleZeroProtection	on
DeploymentSettings	

Chapter 7. Glossary

Atomic Subsystem. A subsystem treated as a unit by an implementation of the design documented in this report. The implementation computes the outputs of all the blocks in the atomic subsystem before computing the next block in the parent system's block execution order (sorted list).

Block Diagram. A Simulink block diagram represents a set of simultaneous equations that relate a system or subsystem's inputs to its outputs as a function of time. Each block in the diagram represents an equation of the form $y = f(t, x, u)$ where t is the current time, u is a block input, y is a block output, and x is a system state (see the Simulink documentation for information on the functions represented by the various types of blocks that make up the diagram). Lines connecting the blocks represent dependencies among the blocks, i.e., inputs whose current values are the outputs of other blocks. An implementation of a design described in this document computes a root or atomic system's outputs at each time step by computing the outputs of the blocks in an order determined by block input/output dependencies.

Block Parameter. A variable that determines the output of a block along with its inputs, for example, the gain parameter of a Gain block.

Block Execution Order. The order in which Simulink evaluates blocks during simulation of a model. The block execution order determined by Simulink ensures that a block executes only after all blocks on whose outputs it depends are executed.

Checksum. A number that indicates whether different versions of a model or atomic subsystem differ functionally or only cosmetically. Different checksums for different versions of the same model or subsystem indicate that the versions differ functionally.

Design Variable. A symbolic (MATLAB) variable or expression used as the value of a block parameter. Design variables allow the behavior of the model to be altered by altering the value of the design variable.

Enumeration Type. Enumerated data is data that is restricted to a finite set of values. An enumerated data type is a MATLAB® class that defines a set of enumerated values. Each enumerated value consists of an enumerated name and an underlying integer which the software uses internally and in generated code.

Signal. A block output, so-called because block outputs typically vary with time.

Virtual Subsystem. A subsystem that is purely graphical, i.e., is intended to reduce the visual complexity of the block diagram of which it is a subsystem. An implementation of the design treats the blocks in the subsystem as part of the first nonvirtual ancestor of the virtual subsystem (see Atomic Subsystem).

Chapter 8. About this Report

Report Overview

This report describes the design of the pidTest system. The report was generated automatically from a Simulink model used to validate the design. It contains the following sections:

Model Version. Specifies information about the version of the model from which this design description was generated. Includes the model checksum, a number that indicates whether different versions of the model differ functionally or only cosmetically. Different checksums for different versions indicate that the versions differ functionally.

Root System. Describes the design's root system.

Subsystems. Describes each of the design's subsystems.

Design Variables. Describes system design variables, i.e., MATLAB variables and expressions used as block parameter values.

Enumeration Type. Describes the enumeration types used by this model.

System Model Configuration. Lists the configuration parameters, e.g., start and stop time, of the model used to simulate the system described by this report.

Requirements. Shows design requirements associated with elements of the design model. This section appears only if the design model contains requirements links.

Glossary. Defines Simulink terms used in this report.

Root System Description

This section describes a design's root system. It contains the following sections:

Diagram. Simulink block diagram that represents the algorithm used to compute the root system's outputs.

Description. Description of the root system. This section appears only if the model's root system has a Documentation property or a Doc block.

Interface. Name, data type, width, and other properties of the root system's input and output signals. The number of the block port that outputs the signal appears in angle brackets appended to the signal name. This section appears only if the root system has input or output ports.

Blocks. This section has two subsections:

- **Parameters.** Describes key parameters of blocks in the root system. This section also includes graphical and/or tabular representations of lookup table data used by lookup table blocks, i.e., blocks that use lookup tables to compute their outputs.
- **Block Execution Order.** Order in which blocks must be executed at each time step in order to ensure that each block's inputs are available when it executes.

State Charts. Describes state charts used in the root system. This section appears only if the root system contains Stateflow blocks.

Subsystem Descriptions

This section describes a design's subsystems. Each subsystem description contains the following sections:

Checksum. This section appears only if the subsystem is an atomic subsystem. The checksum indicates whether the version of the model subsystem used to generate this report differs functionally from other versions of the model subsystem. If two model checksums differ, the corresponding versions of the model differ functionally.

Diagram. Simulink block diagram that graphically represents the algorithm used to compute the subsystem's outputs.

Description. Description of the subsystem. This section appears only if the subsystem has a Documentation property or contains a Doc block.

Interface. Name, data type, width, and other properties of the subsystem's input and output signals. The number of the block port that outputs the signal appears in angle brackets appended to the signal name. This section appears only if the subsystem is atomic and has input or output ports.

Blocks. Blocks that this subsystem contains. This section has two subsections:

- **Parameters.** Key parameters of blocks in the subsystem. This section also includes graphical and/or tabular representations of lookup table data used by lookup table blocks, blocks that use lookup tables to compute their outputs.
- **Block Execution Order.** Order in which the subsystem's blocks must be executed at each time step in order to ensure that each block's inputs are available when the block executes. This section appears only if the subsystem is atomic. Note: in Acrobat(PDF) reports, the number in square brackets next to the block name is a hyperlink to the block parameter table. The number has no model significance.

State Charts. Describes state charts used in the subsystem. This section appears only if the root system contains Stateflow blocks.

State Chart Descriptions

This section describes the state machines used by Stateflow blocks to compute their outputs, i.e., Stateflow blocks. Each state machine description contains the following sections:

Chart. Diagram representing the state machine.

States. Describes the state machine's states. Each state description includes the state's diagram and diagrams and/or descriptions of graphical functions, Simulink functions, truth tables, and MATLAB functions parented by the state.

Transitions. Transitions between the state machine's states. Each transition description specifies the values of key transition properties. Appears only if a transition has properties that do not appear on the chart.

Junctions. Transition junctions. Each junction description specifies the values of key junction properties. Appears only if a junction has properties that do not appear on the chart.

Events. Events that trigger state transitions. Each event description specifies the values of key event properties.

Data. Data types and other properties of the Stateflow block's inputs, outputs, and other state machine data.

Targets. Executable implementations of the state machine used to compute the outputs of the corresponding Stateflow block.

MATLAB Supporting Functions. List of functions invoked by MATLAB functions defined in the chart.