

testLQG

Design Description

Golam Gause Jaman

testLQG: Design Description

by Golam Gause Jaman

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Chapter 1. Model Version

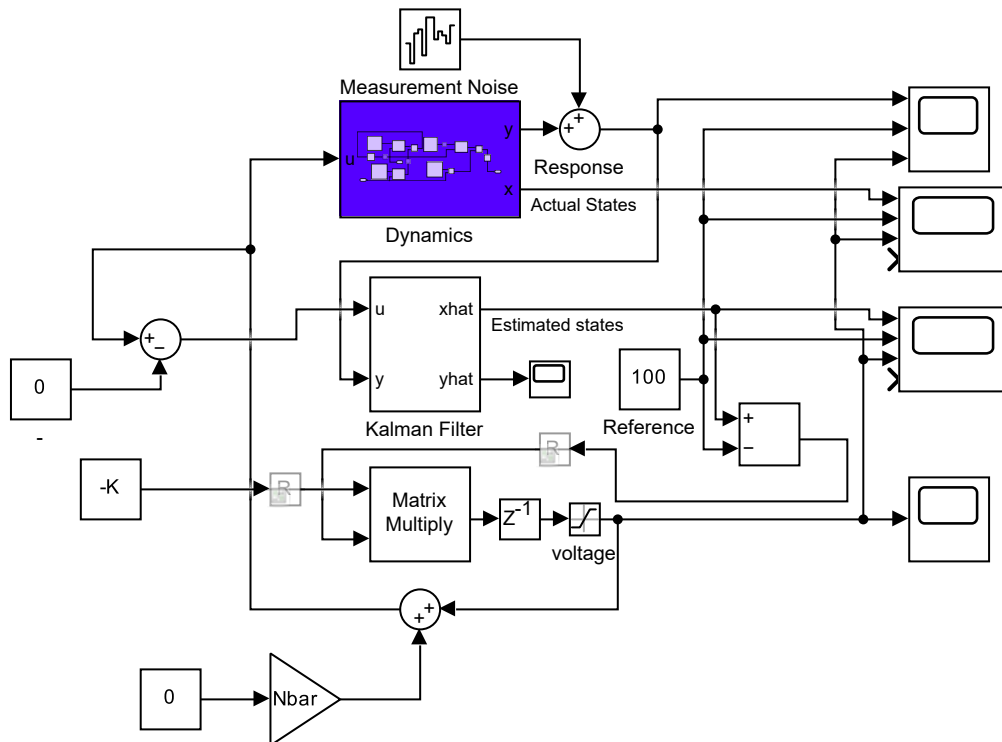
Version: 1.6

Last modified: Wed Oct 18 02:06:41 2023

Checksum: 2588114663 2480732850 3791302463 2028230669

Chapter 2. Root System

Figure 2.1. testLQG



Blocks

Parameters

"-" (Constant)

Table 2.1. "-" Parameters

Parameter	Value
Constant value	0
Interpret vector parameters as 1-D	on
Output minimum	[]
Output maximum	[]

Parameter	Value
Output data type	Inherit: Inherit from 'Constant value'
Lock output data type setting against changes by the fixed-point tools	off
Sample time	Ts
Frame period	inf

"Add" (Sum)

Table 2.2. "Add" Parameters

Parameter	Value
Icon shape	rectangular
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

"Constant1" (Constant)

Table 2.3. "Constant1" Parameters

Parameter	Value
Constant value	-K
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

Parameter	Value
Sample time	Ts
Frame period	inf

"Constant3" (Constant)

Table 2.4. "Constant3" Parameters

Parameter	Value
Constant value	0
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
Frame period	inf

"Delay1" (Delay)

Table 2.5. "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

"Gain1" (Gain)

Table 2.6. "Gain1" Parameters

Parameter	Value
Gain	Nbar
Multiplication	Element-wise($K \cdot u$)
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

"Kalman Filter" (SubSystem)

Table 2.7. "Kalman Filter" Parameters

Parameter	Value
ControllibblocksmaskPromptKFTimeDomain	Discrete-Time
ControllibblocksmaskPromptKFUseCurrentMeasurement	on
ControllibblocksmaskPromptKFModelSource	LTI State-Space Variable
ControllibblocksmaskPromptKFModelSourceVariable	test_ss
ControllibblocksmaskPromptKFSource	Dialog
ControllibblocksmaskPromptKFX0DT	[0]'
ControllibblocksmaskPromptKFUseGH	off
ControllibblocksmaskPromptKFQ	0.05
ControllibblocksmaskPromptKFTimeInvariantQ	on
ControllibblocksmaskPromptKFR	1
ControllibblocksmaskPromptKFTimeInvariantR	on
ControllibblocksmaskPromptKFN	0

Parameter	Value
ControllibblocksmaskPromptKFTimeInvariantN	on
ControllibblocksmaskPromptKFAddInputPort	on
ControllibblocksmaskPromptKFAddEnablePort	off
Simulinkblkprm_promptsDelayBlkExternalReset	None
ControllibblocksmaskPromptKFOutputEstimatedY	on
ControllibblocksmaskPromptKFOutputPZ	off

"Measurement Noise" (SubSystem)

Table 2.8. "Measurement Noise" Parameters

Parameter	Value
SimulinkmasksNoisePower_MP	[0.0001]
SimulinkmasksSampleTime_MP	Ts
SimulinkmasksSeed_MP	[23341]
SimulinkmasksInterpretVectorParametersAs1D_MP	on

"Product" (Product)

Table 2.9. "Product" Parameters

Parameter	Value
Number of inputs	2
Multiplication	Matrix(*)
Multiply over	All dimensions
Dimension	1
Require all inputs to have the same data type	off
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

"Reference" (Constant)

Table 2.10. "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
Frame period	inf

"Response" (Sum)

Table 2.11. "Response" 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

"Sum1" (Sum)**Table 2.12. "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 2.13. "Sum2" 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

"voltage" (Saturate)

Table 2.14. "voltage" 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

Block Execution Order

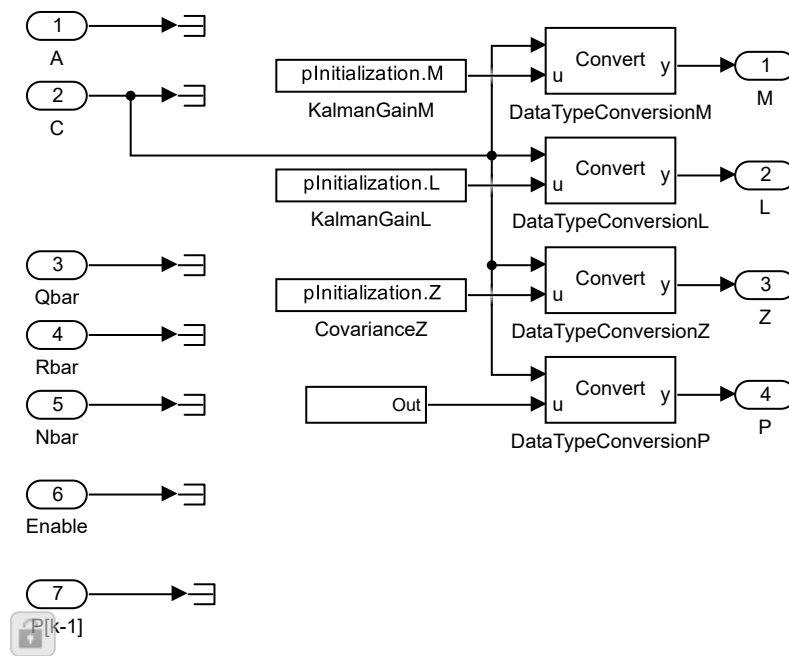
1. [A](#) (Constant)
2. [B](#) (Constant)
3. [C](#) (Constant)
4. [CovarianceZ](#) (Constant)
5. [KalmanGainL](#) (Constant)
6. [KalmanGainM](#) (Constant)
7. [isSqrtUsed](#) (Constant)
8. [D](#) (Constant)
9. [Enable](#) (Constant)
10. [X0](#) (Constant)
11. [ReshapeX0](#) (Reshape)
12. [White Noise](#) (RandomNumber)
13. [Output](#) (Gain)
14. [Constant3](#) (Constant)
15. [Delay](#) (Delay)
16. [Product2](#) (Product)
17. [Constant4](#) (Constant)
18. [Delay1](#) (Delay)
19. [voltage](#) (Saturate)
20. [Constant3](#) (Constant)
21. [Gain1](#) (Gain)
22. [Sum2](#) (Sum)
23. [Product3](#) (Product)
24. [Add1](#) (Sum)
25. [Saturation1](#) (Saturate)
26. [Response](#) (Sum)

- 27. [Reference](#) (Constant)
- 28. [Scope](#) (Scope)
- 29. [Scope1](#) (Scope)
- 30. [Reshapey](#) (Reshape)
- 31. [MemoryX](#) (Delay)
- 32. [EnabledSubsystem](#)
 - 1. [Product](#) (Product)
 - 2. [Add1](#) (Sum)
 - 3. [Product2](#) (Product)
- 33. [Add](#) (Sum)
- 34. [Reshapexhat](#) (Reshape)
- 35. [Scope2](#) (Scope)
- 36. [Product](#) (Product)
- 37. [Reshapeyhat](#) (Reshape)
- 38. [Scope3](#) (Scope)
- 39. [Scope4](#) (Scope)
- 40. [_](#) (Constant)
- 41. [Add](#) (Sum)
- 42. [Constant1](#) (Constant)
- 43. [Constant1](#) (Constant)
- 44. [Product](#) (Product)
- 45. [Constant2](#) (Constant)
- 46. [Product1](#) (Product)
- 47. [Add](#) (Sum)
- 48. [SqrtUsedFcn](#)
 - 1. [SFunction](#) (S-Function)
- 49. [A\[k\]*xhat\[k|k-1\]](#) (Product)
- 50. [Sum1](#) (Sum)
- 51. [Reshapeu](#) (Reshape)
- 52. [B\[k\]*u\[k\]](#) (Product)
- 53. [MeasurementUpdate](#)
 - 1. [C\[k\]*xhat\[k|k-1\]](#) (Product)
 - 2. [D\[k\]*u\[k\]](#) (Product)
 - 3. [Add1](#) (Sum)
 - 4. [Sum](#) (Sum)
 - 5. [Product3](#) (Product)
- 54. [Add](#) (Sum)
- 55. [Reshape](#) (Reshape)
- 56. [Product](#) (Product)

Chapter 3. Subsystems

CalculatePL

Figure 3.1. testLQG/Kalman Filter/CalculatePL



Blocks

Parameters

"A" (Inport)

Table 3.1. "A" Parameters

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

Parameter	Value
Data type	Inherit: auto

"C" (Inport)

Table 3.2. "C" Parameters

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

"CovarianceZ" (Constant)

Table 3.3. "CovarianceZ" Parameters

Parameter	Value
Constant value	pInitialization.Z
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	inf
Frame period	inf

"DataTypeConversionL" (SubSystem)

Table 3.4. "DataTypeConversionL" Parameters

Parameter	Value
SimulinkmasksInputAndOutputToHaveEqual_MP	Real World Value
SimulinkmasksIntegerRoundingMode_MP	Floor
SimulinkmasksSaturateToMaxOrMinWhenOverflowsOccur_MP	off

"DataTypeConversionM" (SubSystem)

Table 3.5. "DataTypeConversionM" Parameters

Parameter	Value
SimulinkmasksInputAndOutputToHaveEqual_MP	Real World Value
SimulinkmasksIntegerRoundingMode_MP	Floor
SimulinkmasksSaturateToMaxOrMinWhenOverflowsOccur_MP	off

"DataTypeConversionP" (SubSystem)

Table 3.6. "DataTypeConversionP" Parameters

Parameter	Value
SimulinkmasksInputAndOutputToHaveEqual_MP	Real World Value
SimulinkmasksIntegerRoundingMode_MP	Floor
SimulinkmasksSaturateToMaxOrMinWhenOverflowsOccur_MP	off

"DataTypeConversionZ" (SubSystem)

Table 3.7. "DataTypeConversionZ" Parameters

Parameter	Value
SimulinkmasksInputAndOutputToHaveEqual_MP	Real World Value
SimulinkmasksIntegerRoundingMode_MP	Floor
SimulinkmasksSaturateToMaxOrMinWhenOverflowsOccur_MP	off

"Enable" (Inport)

Table 3.8. "Enable" Parameters

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

"Ground" (SubSystem)**Table 3.9. "Ground" Parameters**

Parameter	Value
Simulinkblkprm_promptsUNIFIEDDATATYPE	single
Simulinkblkprm_promptsSigSpecDims	1

"KalmanGainL" (Constant)**Table 3.10. "KalmanGainL" Parameters**

Parameter	Value
Constant value	pInitialization.L
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	inf
Frame period	inf

"KalmanGainM" (Constant)**Table 3.11. "KalmanGainM" Parameters**

Parameter	Value
Constant value	pInitialization.M
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	inf
Frame period	inf

"L" (Outport)**Table 3.12. "L" 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)	-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	off

"M" (Outport)**Table 3.13. "M" Parameters**

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]

Parameter	Value
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 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	off

"Nbar" (Inport)

Table 3.14. "Nbar" Parameters

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

"P" (Outport)

Table 3.15. "P" Parameters

Parameter	Value
Port number	4
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	off

"P[k-1]" (Inport)

Table 3.16. "P[k-1]" Parameters

Parameter	Value
Port number	7
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	-1
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"Qbar" (Inport)**Table 3.17. "Qbar" Parameters**

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

"Rbar" (Inport)**Table 3.18. "Rbar" Parameters**

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

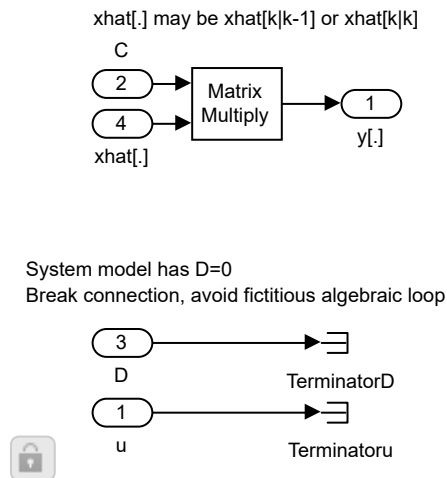
"Z" (Outport)**Table 3.19. "Z" Parameters**

Parameter	Value
Port number	3
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)	-1
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	off

CalculateYhat

Figure 3.2. testLQG/Kalman Filter/CalculateYhat



Blocks

Parameters

"C" (Inport)**Table 3.20. "C" Parameters**

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

"D" (Inport)**Table 3.21. "D" Parameters**

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

"Product" (Product)**Table 3.22. "Product" Parameters**

Parameter	Value
Number of inputs	2
Multiplication	Matrix(*)
Multiply over	All dimensions
Dimension	1
Require all inputs to have the same data type	off
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

Parameter	Value
Integer rounding mode	Floor
Saturate on integer overflow	off
Sample time (-1 for inherited)	-1

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

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

"xhat[.]" (Inport)**Table 3.24. "xhat[.]" Parameters**

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

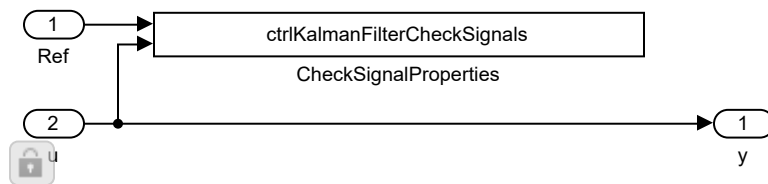
"y[.]" (Outport)**Table 3.25. "y[.]" Parameters**

Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]

Parameter	Value
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 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	off

checku

Figure 3.3. testLQG/Kalman Filter/checku



Blocks

Parameters

"CheckSignalProperties" (S-Function)**Table 3.26. "CheckSignalProperties" Parameters**

Parameter	Value
S-function name	ctrlKalmanFilterCheckSignals
S-function parameters	parentBlockPath,portName,isContinuousTime,pInitialization.Ts,Ns,Nu,Nw,Ny
S-function modules	"

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

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

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

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

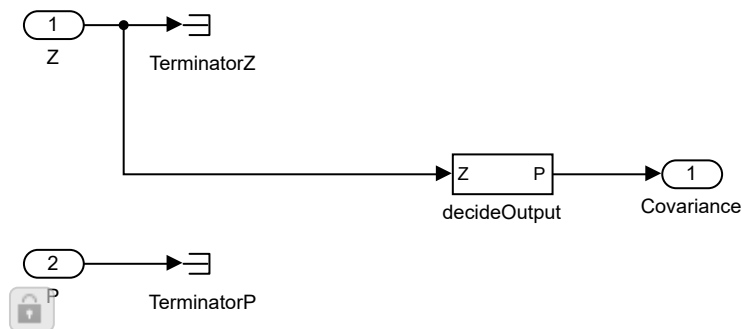
"y" (Outport)**Table 3.29. "y" Parameters**

Parameter	Value
Port number	1

Parameter	Value
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)	-1
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	off

CovarianceOutputConfigurator

Figure 3.4. testLQG/Kalman Filter/CovarianceOutputConfigurator



Blocks

Parameters

"Covariance" (Output)

Table 3.30. "Covariance" 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)	-1
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	off

"P" (Inport)

Table 3.31. "P" Parameters

Parameter	Value
Port number	2

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

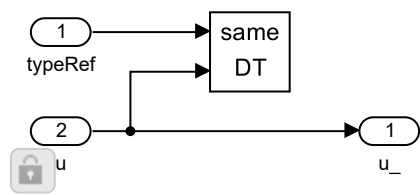
"Z" (Inport)

Table 3.32. "Z" Parameters

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

DataTypeConversionA

Figure 3.5. testLQG/Kalman Filter/DataTypeConversionA



Blocks

Parameters

"Data Type Duplicate" (DataTypeDuplicate)**Table 3.33. "Data Type Duplicate" Parameters**

Parameter	Value
Number of input ports	2

"typeRef" (Inport)**Table 3.34. "typeRef" Parameters**

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

"u" (Inport)**Table 3.35. "u" Parameters**

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

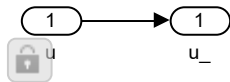
"u_" (Outport)**Table 3.36. "u_" Parameters**

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)	-1
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	off

DataTypeConversionEnable

Figure 3.6. testLQG/Kalman Filter/DataTypeConversionEnable



Blocks

Parameters

"u" (Inport)**Table 3.37. "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

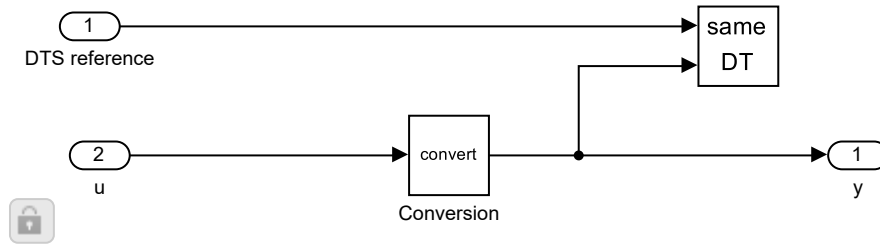
"u_" (Outport)**Table 3.38. "u_" Parameters**

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)	-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

Parameter	Value
Interpret vector parameters as 1-D	off

DataTypeConversionL

Figure 3.7. testLQG/Kalman Filter/CalculatePL/DataTypeConversionL



Blocks

Parameters

"Conversion" (DataTypeConversion)

Table 3.39. "Conversion" 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

"Data Type Duplicate" (DataTypeDuplicate)**Table 3.40. "Data Type Duplicate" Parameters**

Parameter	Value
Number of input ports	2

"DTS reference" (Inport)**Table 3.41. "DTS reference" Parameters**

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

"u" (Inport)**Table 3.42. "u" Parameters**

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

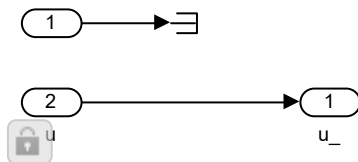
"y" (Outport)**Table 3.43. "y" Parameters**

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)	-1
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

DataTypeConversionu

Figure 3.8. testLQG/Kalman Filter/DataTypeConversionu



Blocks

Parameters

"In1" (Inport)**Table 3.44. "In1" Parameters**

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

"u" (Inport)**Table 3.45. "u" Parameters**

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

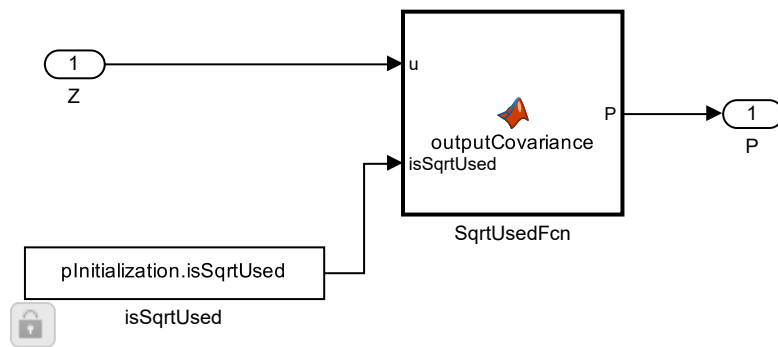
"u_" (Outport)**Table 3.46. "u_" Parameters**

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)	-1
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	off

decideOutput

Figure 3.9. testLQG/Kalman Filter/CovarianceOutputConfigurator/decideOutput



Blocks

Parameters

"isSqrtUsed" (Constant)

Table 3.47. "isSqrtUsed" Parameters

Parameter	Value
Constant value	pInitialization.isSqrtUsed

Parameter	Value
Interpret vector parameters as 1-D	off
Output minimum	[]
Output maximum	[]
Output data type	boolean
Lock output data type setting against changes by the fixed-point tools	off
Sample time	inf
Frame period	inf

"P" (Outport)

Table 3.48. "P" 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)	-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

"SqrtUsedFcn" (MATLAB Function)**Table 3.49. SqrtUsedFcn Function Properties**

Property	Value
Update Method	INHERITED
Sample Time	-1
Support variable-size arrays	1
Saturate on integer overflow	1
Treat these inherited Simulink signal types as fi objects	Fixed-point
MATLAB Function block fimath	Same as MATLAB Default
Input fi math	fimath(...)
Description	

Table 3.50. SqrtUsedFcn Argument Summary

Name	Scope	Port	Data Type	Size
u	Input	1	double	1
P	Output	1	double	1
isSqrtUsed	Input	2	boolean	1

SqrtUsedFcn Function Script

```

function P = outputCovariance(u,isSqrtUsed)

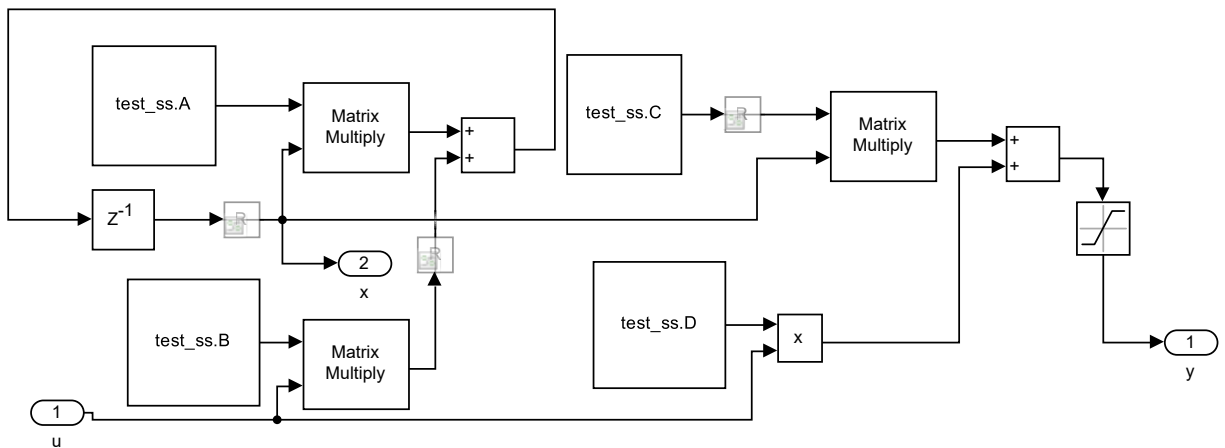
    % Determine if the Square-Root algorithm was used
    if isSqrtUsed
        P = u*u.';
    else
        P = u;
    end
end

```


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

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

Dynamics

Figure 3.10. testLQG/Dynamics

Blocks

Parameters

"Add" (Sum)**Table 3.52. "Add" Parameters**

Parameter	Value
Icon shape	rectangular
List of signs	++

Parameter	Value
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

"Add1" (Sum)**Table 3.53. "Add1" Parameters**

Parameter	Value
Icon shape	rectangular
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

"Constant1" (Constant)**Table 3.54. "Constant1" Parameters**

Parameter	Value
Constant value	test_ss.A

Parameter	Value
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
Frame period	inf

"Constant2" (Constant)

Table 3.55. "Constant2" Parameters

Parameter	Value
Constant value	test_ss.B
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
Frame period	inf

"Constant3" (Constant)

Table 3.56. "Constant3" Parameters

Parameter	Value
Constant value	test_ss.C
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
Frame period	inf

"Constant4" (Constant)**Table 3.57. "Constant4" Parameters**

Parameter	Value
Constant value	test_ss.D
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
Frame period	inf

"Delay" (Delay)**Table 3.58. "Delay" 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

"Product" (Product)**Table 3.59. "Product" Parameters**

Parameter	Value
Number of inputs	2
Multiplication	Matrix(*)
Multiply over	All dimensions
Dimension	1
Require all inputs to have the same data type	off
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

"Product1" (Product)**Table 3.60. "Product1" Parameters**

Parameter	Value
Number of inputs	2
Multiplication	Matrix(*)
Multiply over	All dimensions
Dimension	1
Require all inputs to have the same data type	off
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

"Product2" (Product)**Table 3.61. "Product2" Parameters**

Parameter	Value
Number of inputs	2
Multiplication	Matrix(*)
Multiply over	All dimensions
Dimension	1
Require all inputs to have the same data type	off
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

"Product3" (Product)**Table 3.62. "Product3" Parameters**

Parameter	Value
Number of inputs	2
Multiplication	Element-wise(.*)
Multiply over	All dimensions
Dimension	1
Require all inputs to have the same data type	off
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

"Saturation1" (Saturate)**Table 3.63. "Saturation1" 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

"u" (Inport)**Table 3.64. "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

"x" (Outport)**Table 3.65. "x" Parameters**

Parameter	Value
Port number	2
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)	-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

"y" (Outport)

Table 3.66. "y" Parameters

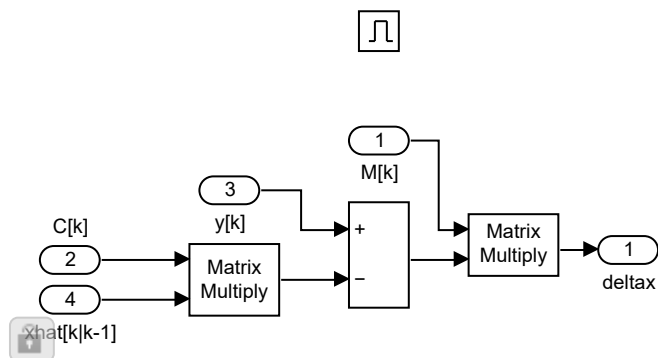
Parameter	Value
Port number	1
Icon display	Port number
Output function call	off
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	off
Output as nonvirtual bus in parent model	off
Bus virtuality	inherit
Data mode	inherit
Unit (e.g., m,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

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

Enabled Subsystem

Checksum: 1772980083 3260449061 2965569859 1839382176

Figure 3.11. testLQG/Kalman Filter/UseCurrentEstimator/Enabled Subsystem



Interface

Input Signals

The following tables describe external signals used to compute the subsystem's inputs. The name of the input signal is the name of the input port that accepts the signal. The number in angle brackets is the number of the input port. A dimension of [1 1] indicates a scalar signal.

Table 3.67. Input Signals

Signal Name	Block	Description	Data Type	Width	Dimensions
	testLQG/Kalman Filter/UseCurrentEstimator/		double	1	1x1

Signal Name	Block	Description	Data Type	Width	Dimensions
	Enabled Subsystem/C[k]				
	testLQG/Kalman Filter/UseCurrentEstimator/Enabled Subsystem/M[k]		double	1	1x1
	testLQG/Kalman Filter/UseCurrentEstimator/Enabled Subsystem/xhat[k k-1]		double	1	1x1
	testLQG/Kalman Filter/UseCurrentEstimator/Enabled Subsystem/y[k]		double	1	1x1

Output Signals

The following tables describe the signals output by this system. The name of the output signal is the name of the signal's parent block, i.e., the block that computes the signal. The number in angle brackets is the number of the port that emits the signal.

Table 3.68. Output Signals

Signal Name	Block	Description	Data Type	Width	Dimensions
	testLQG/Kalman Filter/UseCurrentEstimator/Enabled Subsystem/Product2		double	1	1x1

Blocks

Parameters

"Add1" (Sum)**Table 3.69. "Add1" Parameters**

Parameter	Value
Icon shape	rectangular
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

"C[k]" (Inport)**Table 3.70. "C[k]" Parameters**

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

"deltax" (Outport)**Table 3.71. "deltax" 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)	-1
Ensure outputport is virtual	off
Source of initial output value	Dialog
Output when disabled	reset
Initial output	0
MustResolveToSignalObject	off
Specify output when source is unconnected	off
Constant value	0
Interpret vector parameters as 1-D	off

"Enable" (EnablePort)

Table 3.72. "Enable" Parameters

Parameter	Value
States when enabling	held
Propagate sizes of variable-size signals	Only when enabling
Show output port	off
Enable zero-crossing detection	on
Port dimensions	1
Sample time	-1
Minimum	[]
Maximum	[]
Data type	double
Interpolate data	on

"M[k]" (Inport)**Table 3.73. "M[k]" Parameters**

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

"Product" (Product)**Table 3.74. "Product" Parameters**

Parameter	Value
Number of inputs	2
Multiplication	Matrix(*)
Multiply over	All dimensions
Dimension	1
Require all inputs to have the same data type	off
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

"Product2" (Product)**Table 3.75. "Product2" Parameters**

Parameter	Value
Number of inputs	2
Multiplication	Matrix(*)
Multiply over	All dimensions

Parameter	Value
Dimension	1
Require all inputs to have the same data type	off
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

"xhat[k|k-1]" (Inport)

Table 3.76. "xhat[k|k-1]" Parameters

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

"y[k]" (Inport)

Table 3.77. "y[k]" Parameters

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

Block Execution Order

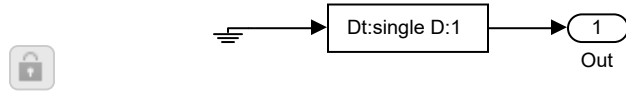
1. [Product](#) (Product)

2. [Add1](#) (Sum)
3. [Product2](#) (Product)

Ground

Figure 3.12. testLQG/Kalman Filter/CalculatePL/Ground

Specification is to avoid underspecified data type warnings in the code generation process



Blocks

Parameters

"Out" (Outport)

Table 3.78. "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
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 outputport is virtual	off
Source of initial output value	Dialog
Output when disabled	held
Initial output	[]

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

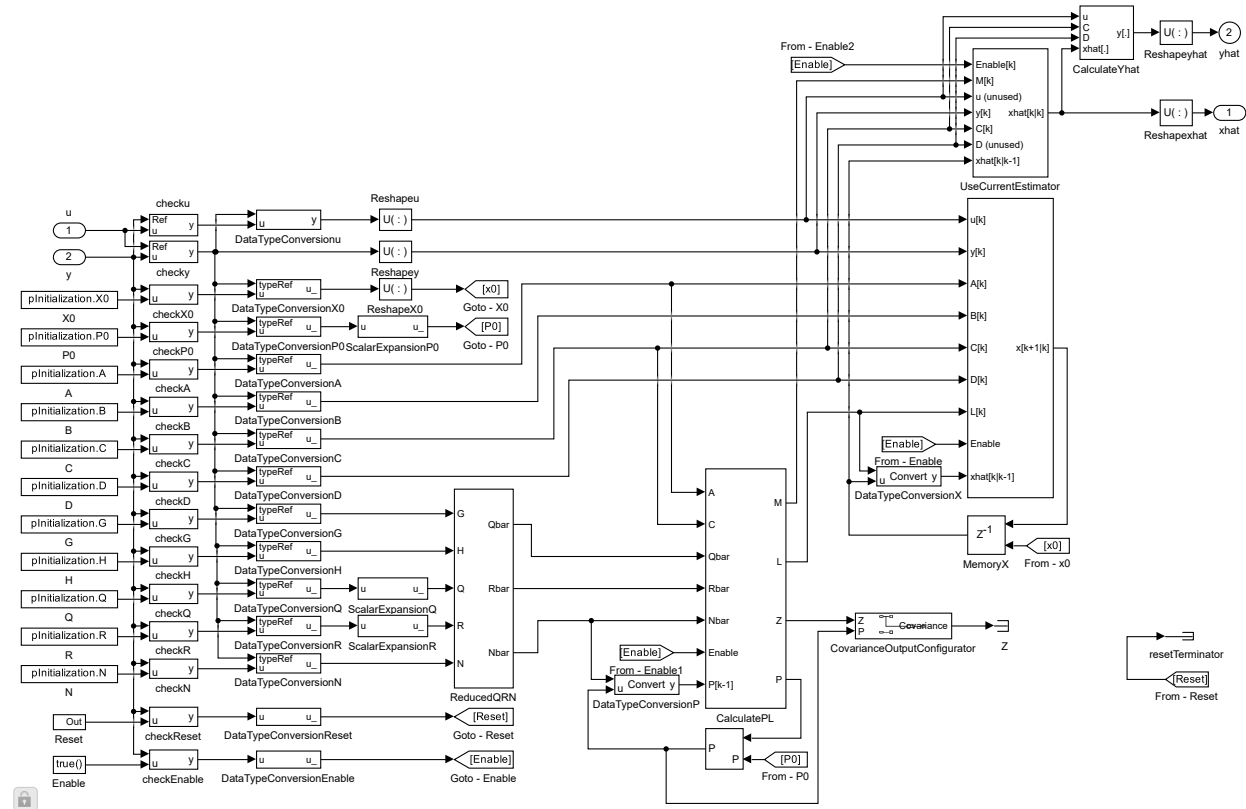
"Signal Specification" (SignalSpecification)

Table 3.79. "Signal Specification" Parameters

Parameter	Value
Minimum	[]
Maximum	[]
Data type	single
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)	-1

Kalman Filter

Figure 3.13. testLQG/Kalman Filter



Blocks

Parameters

"A" (Constant)

Table 3.80. "A" Parameters

Parameter	Value
Constant value	pInitialization.A
Interpret vector parameters as 1-D	off
Output minimum	[]
Output maximum	[]
Output data type	Inherit: Inherit via back pro pagation

Parameter	Value
Lock output data type setting against changes by the fixed-point tools	off
Sample time	inf
Frame period	inf

"B" (Constant)

Table 3.81. "B" Parameters

Parameter	Value
Constant value	pInitialization.B
Interpret vector parameters as 1-D	off
Output minimum	[]
Output maximum	[]
Output data type	Inherit: Inherit via back propagation
Lock output data type setting against changes by the fixed-point tools	off
Sample time	inf
Frame period	inf

"C" (Constant)

Table 3.82. "C" Parameters

Parameter	Value
Constant value	pInitialization.C
Interpret vector parameters as 1-D	off
Output minimum	[]
Output maximum	[]
Output data type	Inherit: Inherit via back propagation
Lock output data type setting against changes by the fixed-point tools	off
Sample time	inf
Frame period	inf

"checku" (SubSystem)**Table 3.83. "checku" Parameters**

Parameter	Value
Sample time	pInitialization.Ts
Number of states	pInitialization.Ns
Number of inputs	pInitialization.Nu
Number of process noise inputs	pInitialization.Nw
Number of outputs	pInitialization.Ny

"checky" (SubSystem)**Table 3.84. "checky" Parameters**

Parameter	Value
Sample time	pInitialization.Ts
Number of states	pInitialization.Ns
Number of inputs	pInitialization.Nu
Number of process noise inputs	pInitialization.Nw
Number of outputs	pInitialization.Ny

"D" (Constant)**Table 3.85. "D" Parameters**

Parameter	Value
Constant value	pInitialization.D
Interpret vector parameters as 1-D	off
Output minimum	[]
Output maximum	[]
Output data type	Inherit: Inherit via back propagation
Lock output data type setting against changes by the fixed-point tools	off
Sample time	inf
Frame period	inf

"DataTypeConversionP" (SubSystem)**Table 3.86. "DataTypeConversionP" Parameters**

Parameter	Value
SimulinkmasksInputAndOutputToHaveEqual_MP	Real World Value
SimulinkmasksIntegerRoundingMode_MP	Floor
SimulinkmasksSaturateToMaxOrMinWhenOverflowsOccur_MP	off

"DataTypeConversionX" (SubSystem)**Table 3.87. "DataTypeConversionX" Parameters**

Parameter	Value
SimulinkmasksInputAndOutputToHaveEqual_MP	Real World Value
SimulinkmasksIntegerRoundingMode_MP	Floor
SimulinkmasksSaturateToMaxOrMinWhenOverflowsOccur_MP	off

"Enable" (Constant)**Table 3.88. "Enable" Parameters**

Parameter	Value
Constant value	true()
Interpret vector parameters as 1-D	on
Output minimum	[]
Output maximum	[]
Output data type	boolean
Lock output data type setting against changes by the fixed-point tools	off
Sample time	inf
Frame period	inf

"From - Enable" (From)**Table 3.89. "From - Enable" Parameters**

Parameter	Value
Goto tag	Enable
Icon display	Tag

"From - Enable1" (From)**Table 3.90. "From - Enable1" Parameters**

Parameter	Value
Goto tag	Enable
Icon display	Tag

"From - Enable2" (From)**Table 3.91. "From - Enable2" Parameters**

Parameter	Value
Goto tag	Enable
Icon display	Tag

"From - P0" (From)**Table 3.92. "From - P0" Parameters**

Parameter	Value
Goto tag	P0
Icon display	Tag

"From - Reset" (From)**Table 3.93. "From - Reset" Parameters**

Parameter	Value
Goto tag	Reset
Icon display	Tag

"From - x0" (From)**Table 3.94. "From - x0" Parameters**

Parameter	Value
Goto tag	x0
Icon display	Tag

"G" (Constant)**Table 3.95. "G" Parameters**

Parameter	Value
Constant value	pInitialization.G
Interpret vector parameters as 1-D	off
Output minimum	[]
Output maximum	[]
Output data type	Inherit: Inherit via back propagation
Lock output data type setting against changes by the fixed-point tools	off
Sample time	inf
Frame period	inf

"Goto - Enable" (Goto)**Table 3.96. "Goto - Enable" Parameters**

Parameter	Value
Tag	Enable
Icon display	Tag
Tag visibility	local

"Goto - P0" (Goto)**Table 3.97. "Goto - P0" Parameters**

Parameter	Value
Tag	P0
Icon display	Tag
Tag visibility	local

"Goto - Reset" (Goto)**Table 3.98. "Goto - Reset" Parameters**

Parameter	Value
Tag	Reset

Parameter	Value
Icon display	Tag
Tag visibility	local

"Goto - X0" (Goto)**Table 3.99. "Goto - X0" Parameters**

Parameter	Value
Tag	x0
Icon display	Tag
Tag visibility	local

"H" (Constant)**Table 3.100. "H" Parameters**

Parameter	Value
Constant value	pInitialization.H
Interpret vector parameters as 1-D	off
Output minimum	[]
Output maximum	[]
Output data type	Inherit: Inherit via back propagation
Lock output data type setting against changes by the fixed-point tools	off
Sample time	inf
Frame period	inf

"MemoryX" (Delay)**Table 3.101. "MemoryX" Parameters**

Parameter	Value
Delay length source	Dialog
Delay length	1
Delay upper limit	100
Initial condition source	Input port
Initial condition	0.0

Parameter	Value
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)	pInitialization.Ts
State name must resolve to Simulink signal object	off

"N" (Constant)

Table 3.102. "N" Parameters

Parameter	Value
Constant value	pInitialization.N
Interpret vector parameters as 1-D	off
Output minimum	[]
Output maximum	[]
Output data type	Inherit: Inherit via back propagation
Lock output data type setting against changes by the fixed-point tools	off
Sample time	inf
Frame period	inf

"P0" (Constant)

Table 3.103. "P0" Parameters

Parameter	Value
Constant value	pInitialization.P0
Interpret vector parameters as 1-D	on
Output minimum	[]
Output maximum	[]
Output data type	Inherit: Inherit via back propagation

Parameter	Value
Lock output data type setting against changes by the fixed-point tools	off
Sample time	inf
Frame period	inf

"Q" (Constant)

Table 3.104. "Q" Parameters

Parameter	Value
Constant value	pInitialization.Q
Interpret vector parameters as 1-D	off
Output minimum	[]
Output maximum	[]
Output data type	Inherit: Inherit via back propagation
Lock output data type setting against changes by the fixed-point tools	off
Sample time	inf
Frame period	inf

"R" (Constant)

Table 3.105. "R" Parameters

Parameter	Value
Constant value	pInitialization.R
Interpret vector parameters as 1-D	off
Output minimum	[]
Output maximum	[]
Output data type	Inherit: Inherit via back propagation
Lock output data type setting against changes by the fixed-point tools	off
Sample time	inf
Frame period	inf

"Reset" (SubSystem)**Table 3.106. "Reset" Parameters**

Parameter	Value
Simulinkblkprm_promptsUNIFIEDDATATYPE	boolean
Simulinkblkprm_promptsSigSpecDims	1

"Reshapeu" (Reshape)**Table 3.107. "Reshapeu" Parameters**

Parameter	Value
Output dimensionality	1-D array
Output dimensions	[1,1]

"ReshapeX0" (Reshape)**Table 3.108. "ReshapeX0" Parameters**

Parameter	Value
Output dimensionality	1-D array
Output dimensions	[1,1]

"Reshapexhat" (Reshape)**Table 3.109. "Reshapexhat" Parameters**

Parameter	Value
Output dimensionality	1-D array
Output dimensions	[1,1]

"Reshapey" (Reshape)**Table 3.110. "Reshapey" Parameters**

Parameter	Value
Output dimensionality	1-D array
Output dimensions	[1,1]

"Reshapeyhat" (Reshape)**Table 3.111. "Reshapeyhat" Parameters**

Parameter	Value
Output dimensionality	1-D array
Output dimensions	[1,1]

"u" (Inport)**Table 3.112. "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

"X0" (Constant)**Table 3.113. "X0" Parameters**

Parameter	Value
Constant value	pInitialization.X0
Interpret vector parameters as 1-D	off
Output minimum	[]
Output maximum	[]
Output data type	Inherit: Inherit via back propagation
Lock output data type setting against changes by the fixed-point tools	off
Sample time	inf
Frame period	inf

"xhat" (Outport)**Table 3.114. "xhat" 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)	-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	off

"y" (Inport)**Table 3.115. "y" Parameters**

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

Parameter	Value
Data type	Inherit: auto

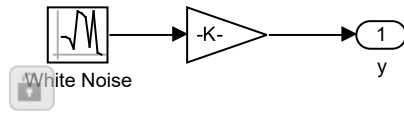
"yhat" (Outport)

Table 3.116. "yhat" 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)	-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

Measurement Noise

Figure 3.14. testLQG/Measurement Noise



Blocks

Parameters

"Output" (Gain)

Table 3.117. "Output" Parameters

Parameter	Value
Gain	$\sqrt{\text{Cov}}/\sqrt{\text{Ts}(1)}$
Multiplication	Element-wise($K.*u$)
Parameter minimum	[]
Parameter maximum	[]
Parameter data type	Inherit: Same as input
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
Saturate on integer overflow	on
Sample time (-1 for inherited)	-1

"White Noise" (RandomNumber)

Table 3.118. "White Noise" Parameters

Parameter	Value
Mean	0
Variance	1
Seed	seed

Parameter	Value
Sample time	Ts
Interpret vector parameters as 1-D	on

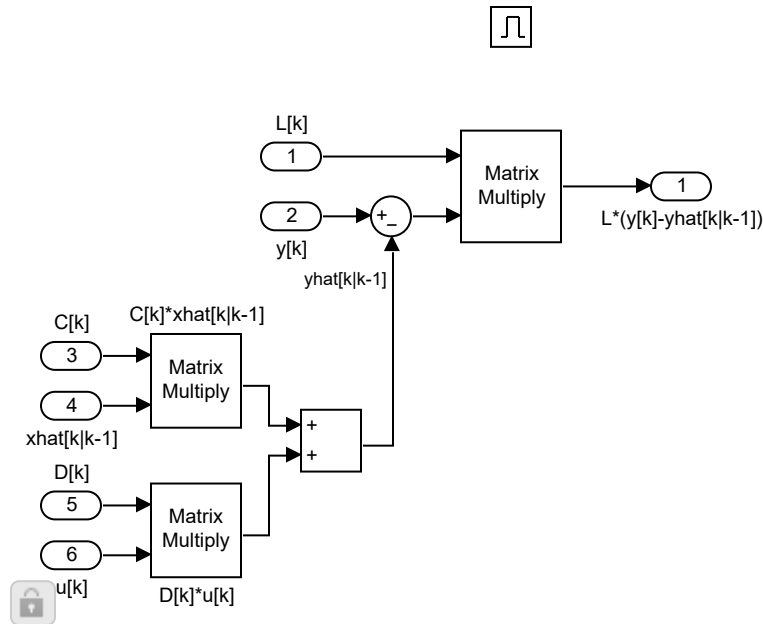
"y" (Output)

Table 3.119. "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)	-1
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

MeasurementUpdate

Checksum: 481285369 440489901 3295309353 135311443

Figure 3.15. testLQG/Kalman Filter/Observer/MeasurementUpdate

Interface

Input Signals

The following tables describe external signals used to compute the subsystem's inputs. The name of the input signal is the name of the input port that accepts the signal. The number in angle brackets is the number of the input port. A dimension of [1 1] indicates a scalar signal.

Table 3.120. Input Signals

Signal Name	Block	Description	Data Type	Width	Dimensions
	testLQG/Kalman Filter/Observer/MeasurementUpdate/C[k]		double	1	1x1
	testLQG/Kalman Filter/Observer/MeasurementUpdate/D[k]		double	1	1x1
	testLQG/Kalman Filter/Observer/MeasurementUpdate/L[k]		double	1	1x1
	testLQG/Kalman Filter/Observer/MeasurementUpdate/y[k]		double	1	1x1

Signal Name	Block	Description	Data Type	Width	Dimensions
	er/MeasurementUpdate/u[k]				
	testLQG/Kalman Filter/Observer/MeasurementUpdate/xhat[k k-1]		double	1	1x1
	testLQG/Kalman Filter/Observer/MeasurementUpdate/y[k]		double	1	1x1

Output Signals

The following tables describe the signals output by this system. The name of the output signal is the name of the signal's parent block, i.e., the block that computes the signal. The number in angle brackets is the number of the port that emits the signal.

Table 3.121. Output Signals

Signal Name	Block	Description	Data Type	Width	Dimensions
	testLQG/Kalman Filter/Observer/MeasurementUpdate/Product3		double	1	1x1

Blocks

Parameters

"Add1" (Sum)

Table 3.122. "Add1" 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	off
Integer rounding mode	Floor
Saturate on integer overflow	off
Sample time (-1 for inherited)	-1

"C[k]" (Inport)**Table 3.123. "C[k]" Parameters**

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

"C[k]*xhat[k | k-1]" (Product)**Table 3.124. "C[k]*xhat[k | k-1]" Parameters**

Parameter	Value
Number of inputs	2
Multiplication	Matrix(*)
Multiply over	All dimensions
Dimension	1
Require all inputs to have the same data type	off
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

Parameter	Value
Sample time (-1 for inherited)	-1

"D[k]" (Inport)**Table 3.125. "D[k]" Parameters**

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

"D[k]*u[k]" (Product)**Table 3.126. "D[k]*u[k]" Parameters**

Parameter	Value
Number of inputs	2
Multiplication	Matrix(*)
Multiply over	All dimensions
Dimension	1
Require all inputs to have the same data type	off
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

"Enable" (EnablePort)**Table 3.127. "Enable" Parameters**

Parameter	Value
States when enabling	held
Propagate sizes of variable-size signals	Only when enabling
Show output port	off
Enable zero-crossing detection	on
Port dimensions	1
Sample time	-1
Minimum	[]
Maximum	[]
Data type	double
Interpolate data	on

"L*(y[k]-yhat[k|k-1])" (Outport)**Table 3.128. "L*(y[k]-yhat[k|k-1])" 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)	-1
Ensure outport is virtual	off
Source of initial output value	Dialog
Output when disabled	reset

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

"L[k]" (Inport)**Table 3.129. "L[k]" Parameters**

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

"Product3" (Product)**Table 3.130. "Product3" Parameters**

Parameter	Value
Number of inputs	2
Multiplication	Matrix(*)
Multiply over	All dimensions
Dimension	1
Require all inputs to have the same data type	off
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 3.131. "Sum" 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

"u[k]" (Inport)**Table 3.132. "u[k]" Parameters**

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

"xhat[k|k-1]" (Inport)**Table 3.133. "xhat[k|k-1]" Parameters**

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

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

"y[k]" (Inport)

Table 3.134. "y[k]" Parameters

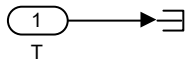
Parameter	Value
Port number	2
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	-1
Minimum	[]
Maximum	[]
Data type	Inherit: auto

Block Execution Order

1. [C\[k\]*xhat\[k|k-1\]](#) (Product)
2. [D\[k\]*u\[k\]](#) (Product)
3. [Add1](#) (Sum)
4. [Sum](#) (Sum)
5. [Product3](#) (Product)

MemoryP

Figure 3.16. testLQG/Kalman Filter/MemoryP



Blocks

Parameters

"P" (Inport)

Table 3.135. "P" Parameters

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

"P_" (Outport)

Table 3.136. "P_" 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)	-1
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	off

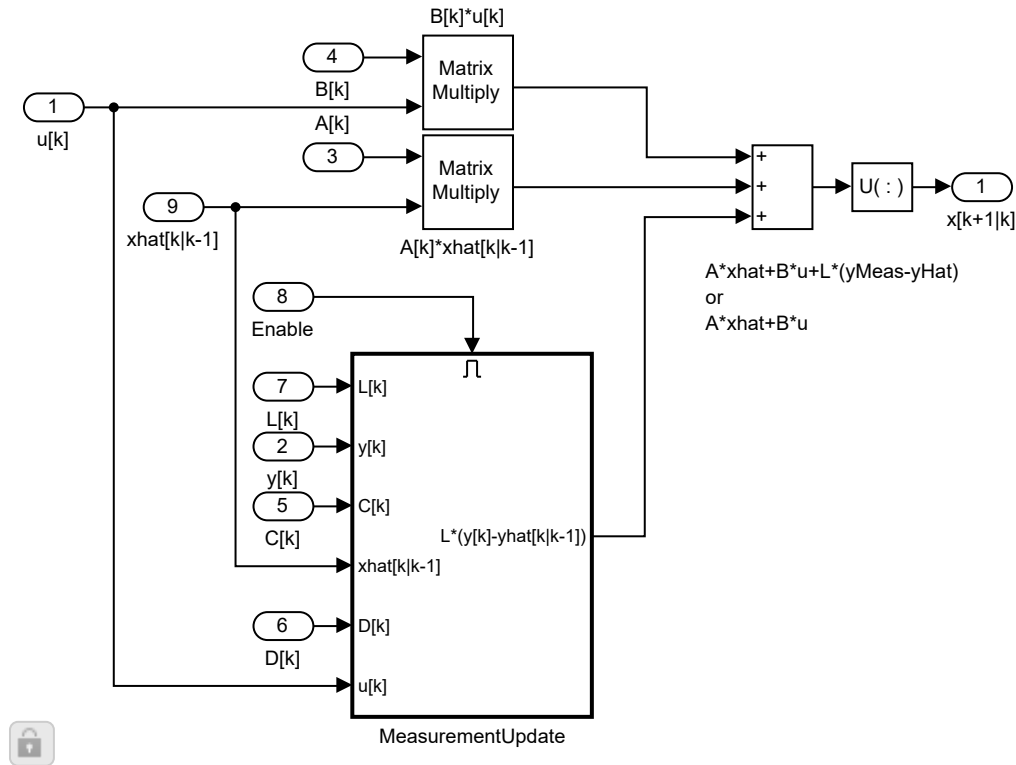
"T" (Inport)

Table 3.137. "T" Parameters

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

Observer

Figure 3.17. testLQG/Kalman Filter/Observer



Blocks

Parameters

"A[k]" (Inport)

Table 3.138. "A[k]" Parameters

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

"A[k]*xhat[k|k-1]" (Product)**Table 3.139. "A[k]*xhat[k|k-1]" Parameters**

Parameter	Value
Number of inputs	2
Multiplication	Matrix(*)
Multiply over	All dimensions
Dimension	1
Require all inputs to have the same data type	off
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

"Add" (Sum)**Table 3.140. "Add" Parameters**

Parameter	Value
Icon shape	rectangular
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

"B[k]" (Inport)**Table 3.141. "B[k]" Parameters**

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

"B[k]*u[k]" (Product)**Table 3.142. "B[k]*u[k]" Parameters**

Parameter	Value
Number of inputs	2
Multiplication	Matrix(*)
Multiply over	All dimensions
Dimension	1
Require all inputs to have the same data type	off
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

"C[k]" (Inport)**Table 3.143. "C[k]" Parameters**

Parameter	Value
Port number	5
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	pInitialization.Ts

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

"D[k]" (Inport)**Table 3.144. "D[k]" Parameters**

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

"Enable" (Inport)**Table 3.145. "Enable" Parameters**

Parameter	Value
Port number	8
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	pInitialization.Ts
Minimum	[]
Maximum	[]
Data type	Inherit: auto

"L[k]" (Inport)**Table 3.146. "L[k]" Parameters**

Parameter	Value
Port number	7
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	pInitialization.Ts
Minimum	[]
Maximum	[]

Parameter	Value
Data type	Inherit: auto

"Reshape" (Reshape)**Table 3.147. "Reshape" Parameters**

Parameter	Value
Output dimensionality	1-D array
Output dimensions	[1,1]

"u[k]" (Inport)**Table 3.148. "u[k]" Parameters**

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

"x[k+1 | k]" (Outport)**Table 3.149. "x[k+1 | k]" 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)	pInitialization.Ts
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	off

"xhat[k|k-1]" (Inport)

Table 3.150. "xhat[k|k-1]" Parameters

Parameter	Value
Port number	9
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	pInitialization.Ts
Minimum	[]
Maximum	[]
Data type	Inherit: auto

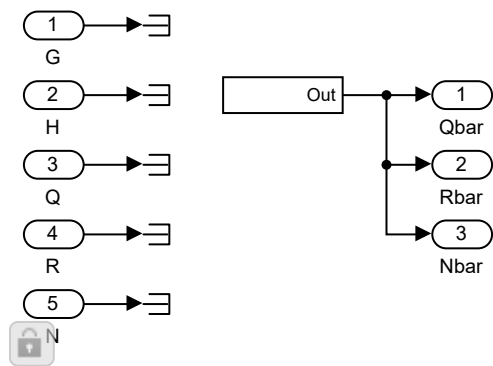
"y[k]" (Inport)

Table 3.151. "y[k]" Parameters

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

ReducedQRN

Figure 3.18. testLQG/Kalman Filter/ReducedQRN



Blocks

Parameters

"G" (Inport)

Table 3.152. "G" Parameters

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

"Ground" (SubSystem)

Table 3.153. "Ground" Parameters

Parameter	Value
Simulinkblkprm_promptsUNIFIEDDATATYPE	single
Simulinkblkprm_promptsSigSpecDims	1

"H" (Inport)**Table 3.154. "H" Parameters**

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

"N" (Inport)**Table 3.155. "N" Parameters**

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

"Nbar" (Outport)**Table 3.156. "Nbar" Parameters**

Parameter	Value
Port number	3
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)	pInitialization.Ts
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	off

"Q" (Inport)

Table 3.157. "Q" Parameters

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

"Qbar" (Outputport)

Table 3.158. "Qbar" 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)	pInitialization.Ts
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	off

"R" (Inport)

Table 3.159. "R" Parameters

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

"Rbar" (Outport)

Table 3.160. "Rbar" Parameters

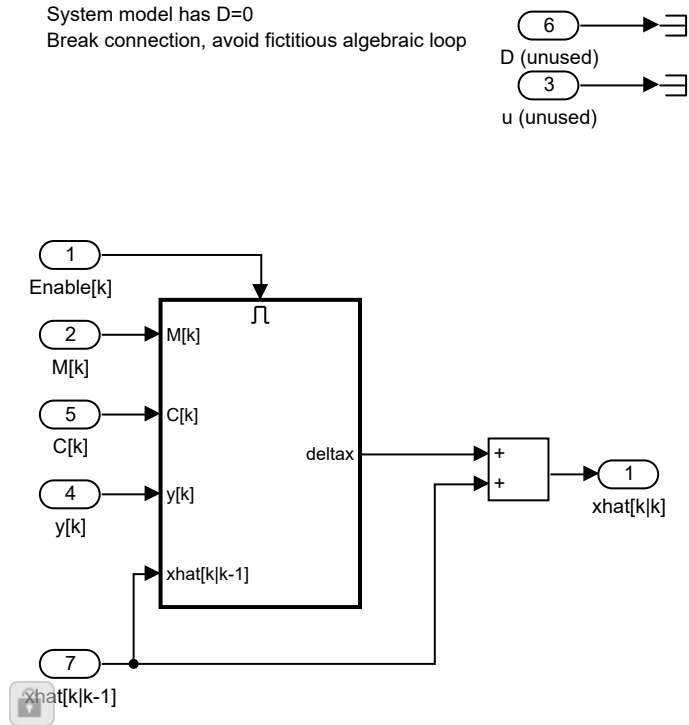
Parameter	Value
Port number	2
Icon display	Port number
Output function call	off
Minimum	[]

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Parameter	Value
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)	pInitialization.Ts
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	off

UseCurrentEstimator

Figure 3.19. testLQG/Kalman Filter/UseCurrentEstimator



Blocks

Parameters

"Add" (Sum)

Table 3.161. "Add" Parameters

Parameter	Value
Icon shape	rectangular
List of signs	++
Sum over	All dimensions
Dimension	1
Output minimum	[]
Output maximum	[]
Output data type	Inherit: Inherit via internal rule

Parameter	Value
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

"C[k]" (Inport)**Table 3.162. "C[k]" Parameters**

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

"D (unused)" (Inport)**Table 3.163. "D (unused)" Parameters**

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

"Enable[k]" (Inport)**Table 3.164. "Enable[k]" Parameters**

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

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

"M[k]" (Inport)**Table 3.165. "M[k]" Parameters**

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

"u (unused)" (Inport)**Table 3.166. "u (unused)" Parameters**

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

"xhat[k|k-1]" (Inport)**Table 3.167. "xhat[k|k-1]" Parameters**

Parameter	Value
Port number	7
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	pInitialization.Ts
Minimum	[]

Parameter	Value
Maximum	[]
Data type	Inherit: auto

"xhat[k|k]" (Outport)**Table 3.168. "xhat[k|k]" 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)	pInitialization.Ts
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	off

"y[k]" (Inport)**Table 3.169. "y[k]" Parameters**

Parameter	Value
Port number	4

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Parameter	Value
Port dimensions (-1 for inherited)	-1
Sample time (-1 for inherited)	pInitialization.Ts
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
K	Constant1 Constant1	1x1	8	double	0.7745
Nbar	Gain1	1x1	8	double	-1.6293
Nu	Kalman Filter	1x1	8	double	-2.6653
Ts	- Constant1 Constant3 Constant1 Constant2 Constant3 Constant4 Measurement Noise Reference	1x1	8	double	1.2279
test_ss	Constant1 Constant2 Constant3 Constant4 Constant1 Constant2 Constant3 Constant4 Kalman Filter	1x1	1354	ss	<ss>

Design Variable Details

K. 0.7745

Used by Blocks:

- [testLQG/Constant1](#)

Resolved in: base workspace

Nbar. -1.6293

Used by Blocks:

- [testLQG/Gain1](#)

Resolved in: base workspace

Ts. 1.2279

Used by Blocks:

- [testLQG/-](#)
- [testLQG/Constant1](#)
- [testLQG/Constant3](#)
- [testLQG/Dynamics/Constant1](#)
- [testLQG/Dynamics/Constant2](#)
- [testLQG/Dynamics/Constant3](#)
- [testLQG/Dynamics/Constant4](#)
- [testLQG/Measurement Noise](#)
- [testLQG/Reference](#)

Resolved in: base workspace

Table 4.2. test_ss

Property	Value
A	0.9963
B	0.5000
C	0.7476
D	0
E	
Scaled	false
StateName	{}
StatePath	{}
StateUnit	{}
InternalDelay	
InputDelay	0
OutputDelay	0
InputName	{}
InputUnit	{}
InputGroup	test_ss.InputGroup
OutputName	{}
OutputUnit	{}
OutputGroup	test_ss.OutputGroup
Notes	
UserData	
Name	
Ts	1.2279

TimeUnit	seconds
SamplingGrid	test_ss.SamplingGrid

test_ss.InputGroup (struct,)

Note: this object has no unfiltered properties.

test_ss.OutputGroup (struct,)

Note: this object has no unfiltered properties.

test_ss.SamplingGrid (struct,)

Note: this object has no unfiltered properties.

Used by Blocks:

- [testLQG/Dynamics/Constant1](#)
- [testLQG/Dynamics/Constant2](#)
- [testLQG/Dynamics/Constant3](#)
- [testLQG/Dynamics/Constant4](#)
- [testLQG/Kalman Filter](#)

Resolved in: base workspace

Chapter 5. Requirements

testLQG does not contain requirements traceability links.

Chapter 6. System Model Configuration

Source: Model
Source Name: testLQG

Table 6.1. testLQG Configuration Set

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

Table 6.2. testLQG Configuration Set.Components(1)

Property	Value
Name	Solver
Description	
Components	
StartTime	0.0
StopTime	100
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. testLQG 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. testLQG Configuration Set.Components(3)

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

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DefaultParameterBehavior	Tunable
InlineParams	off
UseDivisionForNetSlopeComputation	off
GainParamInheritBuiltInType	off
UseFloatMulNetSlope	off
InheritOutputTypeSmallerThanSingle	off
DefaultUnderspecifiedDataType	double
UseSpecifiedMinMax	off
InlineInvariantSignals	off
OptimizeBlockIOStorage	on
BufferReuse	on
ReuseModelBlockBuffer	on
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. testLQG 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	none
UnconnectedOutputMsg	none
UnconnectedLineMsg	none
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. testLQG 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. testLQG Configuration Set.Components(6)

Property	Value
Name	Model Referencing
Description	

Components	
UpdateModelReferenceTargets	IfOutOfDateOrStructuralChange
EnableRefExpFcnMdlSchedulingChecks	off
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. testLQG 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. testLQG Configuration Set.Components(8)

Property	Value
Name	Code Generation
Description	Generic Real-Time Target
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	testLQG 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	20.02.1
DLArmComputeArch	unspecified
DLLearnablesCompression	None
Components	[testLQG Configuration Set.Components(8).Components(1), testLQG Configuration Set.Components(8).Components(2)]

Table 6.10. testLQG 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. testLQG Configuration Set.Components(10)

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

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

Property	Value
TopModelCoverage	off
ReferencedModelCoverage	off
CoverageTool	None

Table 6.13. testLQG 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. testLQG 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	{SSE2}
OptimizeReductions	off
IsSLRRTTarget	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	testLQG
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\nnonerror 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

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

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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 testLQG 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.