

Pub_Sub_Husqvarna_Smartwatch

Design Description

Francesco Grella

Pub_Sub_Husqvarna_Smartwatch: Design Description

Francesco Grella

Data di pubblicazione 06-Mar-2018 21:52:32

Diritto d'autore © 2018

For Internal Distribution Only

Indice

Model Version	1
Root System	2
Blocks	2
Parameters	2
Block Execution Order	7
Subsystems	8
Blank Message	8
Blocks	8
Enabled Subsystem	9
Interface	10
Blocks	10
Block Execution Order	12
FIS Wizard	12
Blocks	12
Fuzzy Logic Controller	14
Blocks	14
Publisher	15
Blocks	15
Block Execution Order	17
Subscriber	17
Blocks	17
Block Execution Order	20
System Design Variables	21
Design Variable Summary	21
Requirements Traceability	23
System Model Configuration	24
Glossary	41
About this Report	42
Report Overview	42
Root System Description	42
Subsystem Descriptions	43
State Chart Descriptions	43

Lista delle figure

1. Pub_Sub_Husqvarna_Smartwatch	2
2. Pub_Sub_Husqvarna_Smartwatch/Blank Message	8
3. Pub_Sub_Husqvarna_Smartwatch/Subscriber/Enabled Subsystem	10
4. Pub_Sub_Husqvarna_Smartwatch/Fuzzy Logic Controller/FIS Wizard	12
5. Pub_Sub_Husqvarna_Smartwatch/Fuzzy Logic Controller	14
6. Pub_Sub_Husqvarna_Smartwatch/Publisher	15
7. Pub_Sub_Husqvarna_Smartwatch/Subscriber	17

Lista delle tabelle

1. "AngVel" Parameters	2
2. "Attenuation" Parameters	3
3. "Blank Message" Parameters	3
4. "Bus Assignment" Parameters	4
5. "Bus Selector" Parameters	4
6. "Display X" Parameters	4
7. "Display Y" Parameters	5
8. "Fuzzy Logic Controller" Parameters	5
9. "GainLinVel" Parameters	5
10. "Manual Switch" Parameters	6
11. "Publisher" Parameters	6
12. "Subscriber" Parameters	6
13. "Constant" Parameters	8
14. "Out" Parameters	9
15.	10
16.	10
17. "Enable" Parameters	11
18. "In1" Parameters	11
19. "Out1" Parameters	11
20. "In1" Parameters	12
21. "Out1" Parameters	13
22. "FIS Wizard" Parameters	14
23. "In1" Parameters	14
24. "Out1" Parameters	14
25. "In1" Parameters	16
26. "SignalSpecification" Parameters	16
27. "SinkBlock" Parameters	16
28. "Constant" Parameters	17
29. "Out1" Parameters	18
30. "Out2" Parameters	19
31. "SourceBlock" Parameters	19
32. Design Variables	21
33. Pub_Sub_Husqvarna_Smartwatch Configuration Set	24
34. Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components(1)	24
35. Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components(2)	25
36. Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components(3)	26
37. Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components(4)	28
38. Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components(5)	30
39. Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components(6)	32
40. Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components(7)	32
41. Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components(8)	33
42. Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components(9)	35
43. Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components(8).CodeCover- ageSettings	36
44. Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components(8).Componen- ts(1)	37
45. Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components(8).Componen- ts(2)	38

Model Version

Version: 1.29

Last modified: Tue Mar 06 21:51:57 2018

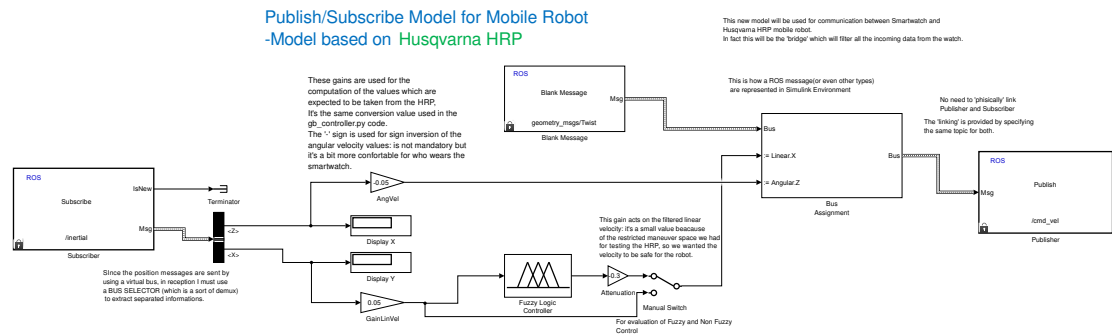
Checksum: 3657283596 353703034 2911201324 1307871170

Root System

Indice

Blocks	2
Parameters	2
Block Execution Order	7

Figura 1. Pub_Sub_Husqvarna_Smartwatch



Blocks

Parameters

"AngVel" (Gain)

Tabella 1. "AngVel" Parameters

Parameter	Value
Gain	-0.05
Multiplication	Element-wise(K.*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

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

"Attenuation" (Gain)

Tabella 2. "Attenuation" Parameters

Parameter	Value
Gain	-0.3
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

"Blank Message" (SubSystem)

Tabella 3. "Blank Message" Parameters

Parameter	Value
roboticsrobotslrosblockmaskMessageTypePrompt	geometry_msgs/Twist
SimulinkblkprmpromptsAllSrcBlksSampleTime	inf

"Bus Assignment" (BusAssignment)

Tabella 4. "Bus Assignment" Parameters

Parameter	Value
Signals that are being assigned	Linear.X,Angular.Z
	{ Linear , X Y Z } { Angular , X Y Z }

"Bus Selector" (BusSelector)

Tabella 5. "Bus Selector" Parameters

Parameter	Value
Output signals	LinearAcceleration.Z,LinearAcceleration.X
Output as bus	off
	OrientationCovariance AngularVelocityCovariance LinearAccelerationCovariance { Header , { Seq ; FrameId ; { FrameId_SL_Info , CurrentLength ReceivedLength } ; { Stamp , Sec Nsec } } } { Orientation , X Y Z W } { AngularVelocity , X Y Z } { LinearAcceleration , X Y Z }

Output Hierarchy:

1. *Bus Selector*
 1. <Z>
 2. <X>

"Display X" (Display)

Tabella 6. "Display X" Parameters

Parameter	Value
Format	short
Decimation	1
Floating display	off

"Display Y" (Display)

Tabella 7. "Display Y" Parameters

Parameter	Value
Format	short
Decimation	1
Floating display	off

"Fuzzy Logic Controller" (SubSystem)

Tabella 8. "Fuzzy Logic Controller" Parameters

Parameter	Value
FIS name (For a file, use quotes and file extension, e.- g., 'tipper.fis'.)	'LinVelDefinitivo.fis'

"GainLinVel" (Gain)

Tabella 9. "GainLinVel" Parameters

Parameter	Value
Gain	0.05
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

"Manual Switch" (ManualSwitch)

Tabella 10. "Manual Switch" Parameters

Parameter	Value
Allow the two inputs to differ in size (Results in variable-size output signal)	off
Sample time (-1 for inherited)	-1

"Publisher" (SubSystem)

Tabella 11. "Publisher" Parameters

Parameter	Value
roboticsrobotslroblockmaskTopicSourcePrompt	Select from ROS network
roboticsrobotslroblockmaskTopicPrompt	/cmd_vel
roboticsrobotslroblockmaskMessageTypePrompt	geometry_msgs/Twist
roboticsrobotslroblockmaskPublisherMsgQueuePrompt	1

"Subscriber" (SubSystem)

Tabella 12. "Subscriber" Parameters

Parameter	Value
roboticsrobotslroblockmaskTopicSourcePrompt	Select from ROS network
roboticsrobotslroblockmaskTopicPrompt	/inertial
roboticsrobotslroblockmaskMessageTypePrompt	sensor_msgs/Imu

Parameter	Value
roboticsrobotslrosblockmaskSampleTimePrompt	-1
roboticsrobotslrosblockmaskSubscriberMsgQueuePrompt	1

Block Execution Order

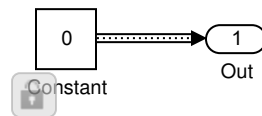
Subsystems

Indice

Blank Message	8
Blocks	8
Enabled Subsystem	9
Interface	10
Blocks	10
Block Execution Order	12
FIS Wizard	12
Blocks	12
Fuzzy Logic Controller	14
Blocks	14
Publisher	15
Blocks	15
Block Execution Order	17
Subscriber	17
Blocks	17
Block Execution Order	20

Blank Message

Figura 2. Pub_Sub_Husqvarna_Smartwatch/Blank Message



Blocks

Parameters

"Constant" (Constant)

Tabella 13. "Constant" Parameters

Parameter	Value
Constant value	0
Interpret vector parameters as 1-D	on
Output minimum	[]
Output maximum	[]
Output data type	Bus: SL_Bus_Pub_Sub_Husqvarna_Smartwatch_geometry_msgs_Twist

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

"Out" (Output)

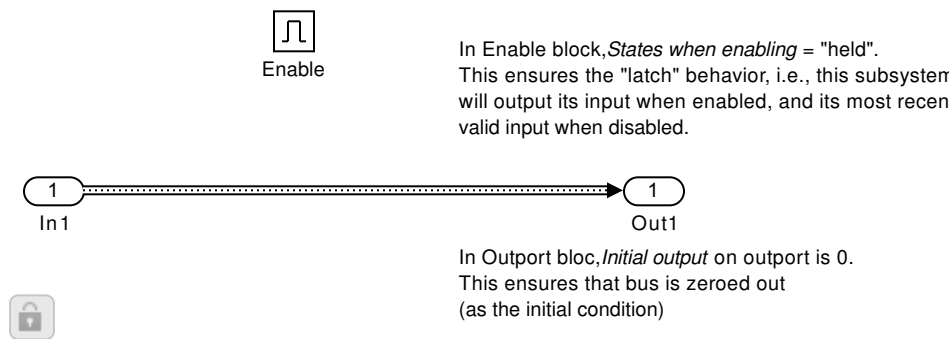
Tabella 14. "Out" Parameters

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

Enabled Subsystem

Checksum: 2381218102 3239776943 1949736050 928158798

Figura 3. Pub_Sub_Husqvarna_Smartwatch/Subscriber/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.

Tabella 15.

Description:
Data Type:
Width: 0
Dimensions:

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.

Tabella 16.

Description:
Data Type:
Width: 0
Dimensions:

Blocks

Parameters

"Enable" (EnablePort)**Tabella 17. "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

"In1" (Inport)**Tabella 18. "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

"Out1" (Outport)**Tabella 19. "Out1" Parameters**

Parameter	Value
Port number	1
Icon display	Port number
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
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	0
MustResolveToSignalObject	off

Block Execution Order

FIS Wizard

Figura 4. Pub_Sub_Husqvarna_Smartwatch/Fuzzy Logic Controller/FIS Wizard



Blocks

Parameters

"In1" (Inport)

Tabella 20. "In1" Parameters

Parameter	Value
Port number	1

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

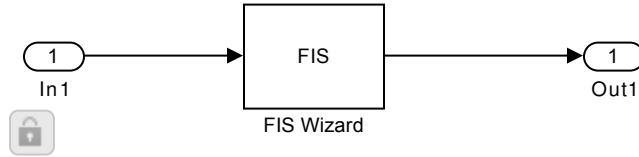
"Out1" (Outport)

Tabella 21. "Out1" Parameters

Parameter	Value
Port number	1
Icon display	Port number
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
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

Fuzzy Logic Controller

Figura 5. Pub_Sub_Husqvarna_Smartwatch/Fuzzy Logic Controller



Blocks

Parameters

"FIS Wizard" (SubSystem)

Tabella 22. "FIS Wizard" Parameters

Parameter	Value
FIS structure	[]

"In1" (Inport)

Tabella 23. "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

"Out1" (Outport)

Tabella 24. "Out1" Parameters

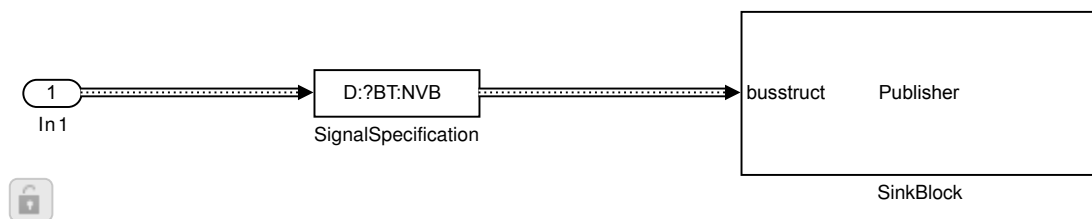
Parameter	Value
Port number	1
Icon display	Port number

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
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

Publisher

Checksum: 3318360163 17194077 2247719045 3335114031

Figura 6. Pub_Sub_Husqvarna_Smartwatch/Publisher



Blocks

Parameters

"In1" (Inport)**Tabella 25. "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

"SignalSpecification" (SignalSpecification)**Tabella 26. "SignalSpecification" Parameters**

Parameter	Value
Minimum	[]
Maximum	[]
Data type	Bus: SL_Bus_Pub_Sub_Husqvarna_Smartwatch_geometry_msgs_Twist
Lock output data type setting against changes by the fixed-point tools	on
Require nonvirtual bus	on
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

"SinkBlock" (MATLABSystem)**Tabella 27. "SinkBlock" Parameters**

Parameter	Value
Topic to publish to	/cmd_vel
Message type of topic	geometry_msgs/Twist

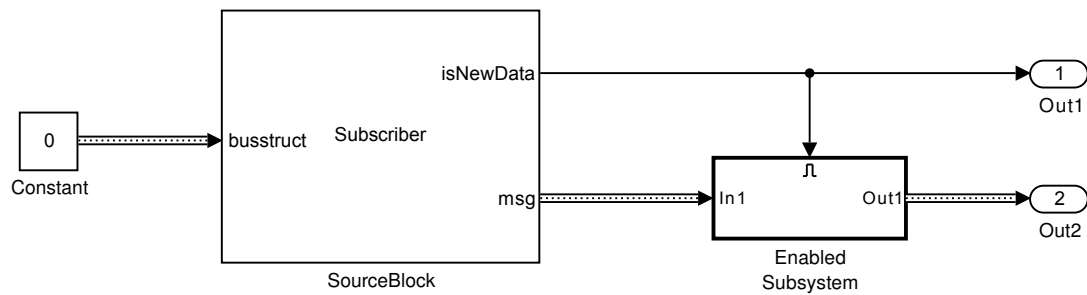
Parameter	Value
Length of publish queue	messageQueueLength
Simulink Bus Name for message type	SL_Bus_Pub_Sub_Husqvarna_Smartwatch_geometry_msgs_Twist
Name of Simulink model	Pub_Sub_Husqvarna_Smartwatch
Simulink Block Identifier	Pub_Pub_Sub_Husqvarna_Smartwatch_8
Simulate using	Interpreted execution

Block Execution Order

Subscriber

Checksum: 2675421875 1845881433 2944651414 685126237

Figura 7. Pub_Sub_Husqvarna_Smartwatch/Subscriber



If IsNewData is false, the Msg output of the MATLAB System block will be a zeroed-out bus. So use an Enabled subsystem to hold the most-recent valid output.



Blocks

Parameters

"Constant" (Constant)

Tabella 28. "Constant" Parameters

Parameter	Value
Constant value	0
Interpret vector parameters as 1-D	off

Parameter	Value
Output minimum	[]
Output maximum	[]
Output data type	Bus: SL_Bus_Pub_Sub_Husqvarna_Smartwatch_sensor_msgs_Imu
Lock output data type setting against changes by the fixed-point tools	on
Sample time	sampleTime
Frame period	inf

"Out1" (Outport)

Tabella 29. "Out1" Parameters

Parameter	Value
Port number	1
Icon display	Port number
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
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

"Out2" (Outport)**Tabella 30. "Out2" Parameters**

Parameter	Value
Port number	2
Icon display	Port number
Minimum	[]
Maximum	[]
Data type	Inherit: auto
Lock output data type setting against changes by the fixed-point tools	on
Output as nonvirtual bus in parent model	off
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

"SourceBlock" (MATLABSystem)**Tabella 31. "SourceBlock" Parameters**

Parameter	Value
Topic to subscribe to	/inertial
Message type of topic	sensor_msgs/Imu
Length of subscribe callback queue	messageQueueLength

Parameter	Value
Simulink Bus Name for message type	SL_Bus_Pub_Sub_Husqvarna_Smartwatch_sensor_msgs_Imu
Name of Simulink model	Pub_Sub_Husqvarna_Smartwatch
Simulink Block Identifier	Sub_Pub_Sub_Husqvarna_Smartwatch_19
Simulate using	Interpreted execution

Block Execution Order

System Design Variables

Indice

Design Variable Summary 21

Design Variable Summary

Tabella 32. Design Variables

Variable Name	Parent Blocks	Size	Bytes	Class	Value
SL_Bus_Pub_Sub_Husqvarna_Smartwatch_Quaternion_3yc041	Subscriber [6]	1x1	280	Simulink-.Bus	< Simulink.Bus>
SL_Bus_Pub_Sub_Husqvarna_Smartwatch_geometry_msgs_Twist	Blank Message [3] Publisher [6]	1x1	532	Simulink-.Bus	< Simulink.Bus>
SL_Bus_Pub_Sub_Husqvarna_Smartwatch_geometry_msgs_Vector3	Blank Message [3] Publisher [6] Subscriber [6]	1x1	224	Simulink-.Bus	< Simulink.Bus>
SL_Bus_Pub_Sub_Husqvarna_Smartwatch_ros_time_Time	Subscriber [6]	1x1	168	Simulink-.Bus	< Simulink.Bus>
SL_Bus_Pub_Sub_Husqvarna_Smartwatch_sensor_msgs_Imu	Subscriber [6]	1x1	1294	Simulink-.Bus	< Simulink.Bus>

Variable Name	Parent Blocks	Size	Bytes	Class	Value
SL_Bus_Pub_Sub_Husqvarna_Smartwatch_std_msgs_Header	Subscriber [6]	1x1	818	Simulink-.Bus	< Simulink.Bus>
SL_Bus_-ROSVariableLengthArrayInfo	Subscriber [6]	1x1	166	Simulink-.Bus	< Simulink.Bus>

Requirements Traceability

Pub_Sub_Husqvarna_Smartwatch does not contain requirements traceability links.

System Model Configuration

Source: Model
Source Name: Pub_Sub_Husqvarna_Smartwatch

Tabella 33. Pub_Sub_Husqvarna_Smartwatch Configuration Set

Property	Value
Description	
Components	[Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components(1) [24], Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components(2) [25], Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components(3) [26], Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components(4) [27], Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components(5) [30], Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components(6) [32], Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components(7) [32], Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components(8) [33], Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components(9) [35]]
Name	Configuration
SimulationMode	normal
ConfigType	Model

Tabella 34. Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components [24](1)

Property	Value
Name	Solver
Description	
Components	
StartTime	0.0
StopTime	inf
AbsTol	auto
FixedStep	auto
InitialStep	auto
MaxNumMinSteps	-1
MaxOrder	5
ZcThreshold	auto

ConsecutiveZCsStepRelTol	10*128*eps
MaxConsecutiveZCs	1000
ExtrapolationOrder	4
NumberNewtonIterations	1
MaxStep	auto
MinStep	auto
MaxConsecutiveMinStep	1
RelTol	1e-3
SolverMode	SingleTasking
EnableMultiTasking	off
EnableConcurrentExecution	off
ConcurrentTasks	off
Solver	VariableStepAuto
SolverName	VariableStepAuto
SolverType	Variable-step
SolverJacobianMethodControl	auto
ShapePreserveControl	DisableAll
ZeroCrossControl	UseLocalSettings
ZeroCrossAlgorithm	Nonadaptive
SolverResetMethod	Fast
PositivePriorityOrder	off
AutoInsertRateTranBlk	off
SampleTimeConstraint	Unconstrained
InsertRTBMode	Whenever possible
SampleTimeProperty	

Tabella 35. Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components [24](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
SaveCompleteFinalSimState	off
SaveFormat	Dataset
SaveOutput	on
SaveState	off
SignalLogging	on
DSMLogging	on
InspectSignalLogs	off
SaveTime	on
ReturnWorkspaceOutputs	off
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]

Tabella 36. Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components [24](3)

Property	Value
Name	Optimization
Description	
Components	
BlockReduction	on
BooleanDataType	on
ConditionallyExecuteInputs	on
DefaultParameterBehavior	Tunable
InlineParams	off
UseDivisionForNetSlopeComputation	off
UseFloatMulNetSlope	off
DefaultUnderspecifiedDataType	double

UseSpecifiedMinMax	off
InlineInvariantSignals	off
OptimizeBlockIOStorage	on
BufferReuse	on
GlobalBufferReuse	on
GlobalVariableUsage	None
StrengthReduction	off
AdvancedOptControl	
EnforceIntegerDowncast	on
ExpressionFolding	on
BooleansAsBitfields	off
BitfieldContainerType	uint_T
EnableMemcpy	on
MemcpyThreshold	64
PassReuseOutputArgsAs	Structure reference
PassReuseOutputArgsThreshold	12
FoldNonRolledExpr	on
LocalBlockOutputs	on
RollThreshold	5
StateBitsets	off
DataBitsets	off
ActiveStateOutputEnumStorageType	Native Integer
UseTempVars	off
ZeroExternalMemoryAtStartup	on
ZeroInternalMemoryAtStartup	on
InitFltsAndDblsToZero	off
NoFixptDivByZeroProtection	off
EfficientFloat2IntCast	off
EfficientMapNaN2IntZero	on
LifeSpan	auto
EvaledLifeSpan	Inf
MaxStackSize	Inherit from target
BufferReusableBoundary	on
SimCompilerOptimization	off
AccelVerboseBuild	off
OptimizeBlockOrder	off
OptimizeDataStoreBuffers	on
BusAssignmentInplaceUpdate	on

Tabella 37. Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components [24](4)

Property	Value
Name	Diagnostics
Description	
Components	
RTPrefix	error
ConsistencyChecking	none
ArrayBoundsChecking	none
SignalInfNanChecking	none
SignalRangeChecking	none
ReadBeforeWriteMsg	UseLocalSettings
WriteAfterWriteMsg	UseLocalSettings
WriteAfterReadMsg	UseLocalSettings
AlgebraicLoopMsg	warning
ArtificialAlgebraicLoopMsg	warning
SaveWithDisabledLinksMsg	warning
SaveWithParameterizedLinksMsg	warning
CheckSSInitialOutputMsg	on
UnderspecifiedInitializationDetection	Simplified
MergeDetectMultiDrivingBlocksExec	error
CheckExecutionContextRuntimeOutputMsg	off
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
InvalidFcnCallConnMsg	error
FcnCallInpInsideContextMsg	error
SignalLabelMismatchMsg	none
UnconnectedInputMsg	warning
UnconnectedOutputMsg	warning
UnconnectedLineMsg	warning
UseOnlyExistingSharedCode	error
SFcnCompatibilityMsg	none
FrameProcessingCompatibilityMsg	error
UniqueDataStoreMsg	none
BusObjectLabelMismatch	warning
RootOutportRequireBusObject	warning
AssertControl	UseLocalSettings
Echo	
EnableOverflowDetection	off
AllowSymbolicDim	on
ModelReferenceIOMsg	none
ModelReferenceVersionMismatchMessage	none
ModelReferenceIOMismatchMessage	none
ModelReferenceCSMismatchMessage	none
ModelReferenceSimTargetVerbose	off
UnknownTsInhSupMsg	warning
ModelReferenceDataLoggingMessage	warning
ModelReferenceSymbolNameMessage	warning
ModelReferenceExtraNoncontSigs	error
StateNameClashWarn	none

SimStateInterfaceChecksumMismatchMsg	warning
SimStateOlderReleaseMsg	error
InitInArrayFormatMsg	warning
StrictBusMsg	ErrorLevel1
BusNameAdapt	WarnAndRepair
NonBusSignalsTreatedAsBus	none
SFUnusedDataAndEventsDiag	warning
SFUnexpectedBacktrackingDiag	error
SFInvalidInputDataAccessInChartInitDiag	warning
SFNoUnconditionalDefaultTransitionDiag	error
SFTransitionOutsideNaturalParentDiag	warning
SFUnconditionalTransitionShadowingDiag	warning
SFUnreachableExecutionPathDiag	warning
SFUndirectedBroadcastEventsDiag	warning
SFTransitionActionBeforeConditionDiag	warning
SFOutputUsedAsStateInMooreChartDiag	error
SFTemporalDelaySmallerThanSampleTimeDiag	warning
SFUnconditionalPathOutOfParentDiag	warning
SFSelfTransitionDiag	warning
SFExecutionAtInitializationDiag	warning
SFMachineParentedDataDiag	warning
SFUnreachableStateOrJunctionDiag	warning
SFDanglingTransitionDiag	warning
IntegerSaturationMsg	warning
AllowedUnitSystems	all
UnitsInconsistencyMsg	warning
AllowAutomaticUnitConversions	on

Tabella 38. Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components [24](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
TargetTypeEmulationWarnSuppressLevel	0
TargetPreprocMaxBitsSint	32
TargetPreprocMaxBitsUint	32
TargetHWDeviceType	Specified
TargetUnknown	off
ProdEqTarget	on
UseEmbeddedCoderFeatures	on
UseSimulinkCoderFeatures	on

Tabella 39. Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components [24](6)

Property	Value
Name	Model Referencing
Description	
Components	
UpdateModelReferenceTargets	IfOutOfDateOrStructuralChange
SkipRefExpFcnMdlSchedulingOrderCheck	off
EnableRefExpFcnMdlSchedulingChecks	on
CheckModelReferenceTargetMessage	error
EnableParallelModelReferenceBuilds	off
ParallelModelReferenceErrorOnInvalidPool	on
ParallelModelReferenceMATLABWorkerInit	None
ModelReferenceNumInstancesAllowed	Multi
PropagateVarSize	Infer from blocks in model
ModelDependencies	
ModelReferencePassRootInputsByReference	on
ModelReferenceMinAlgLoopOccurrences	off
PropagateSignalLabelsOutOfModel	on
SupportModelReferenceSimTargetCustomCode	off

Tabella 40. Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components [24](7)

Property	Value
Name	Simulation Target
Description	
Components	
SimCustomSourceCode	
SimCustomHeaderCode	
SimCustomInitializer	
SimCustomTerminator	
SimReservedNameArray	
SimUserSources	
SimUserIncludeDirs	
SimUserLibraries	

SimUserDefines	
SFSimEnableDebug	off
SFSimOverflowDetection	on
SFSimEcho	on
SimBlas	on
SimCtrlC	on
SimExtrinsic	on
SimIntegrity	on
SimUseLocalCustomCode	off
SimParseCustomCode	on
SimBuildMode	sf_incremental_build
SimDataInitializer	
SimGenImportedTypeDefs	off
CompileTimeRecursionLimit	50
EnableRuntimeRecursion	on
MATLABDynamicMemAlloc	on
MATLABDynamicMemAllocThreshold	65536
CustomSymbolStrEMXArray	nothing
CustomSymbolStrEMXArrayFcn	nothing

Tabella 41. Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components [24](8)

Property	Value
Name	Code Generation
SystemTargetFile	grt.tlc
HardwareBoard	None
TLCOptions	
CodeGenDirectory	
GenCodeOnly	off
MakeCommand	make_rtw
GenerateMakefile	on
PackageGeneratedCodeAndArtifacts	off
PackageName	
TemplateMakefile	grt_default_tmf
PostCodeGenCommand	
Description	
GenerateReport	off
SaveLog	off
RTWVerbose	on

RetainRTWFile	off
ProfileTLC	off
TLCDebug	off
TLCCoverage	off
TLCAssert	off
ProcessScriptMode	Default
ConfigurationMode	Optimized
ProcessScript	
ConfigurationScript	
ConfigAtBuild	off
RTWUseLocalCustomCode	off
RTWUseSimCustomCode	off
CustomSourceCode	
CustomHeaderCode	
CustomInclude	
CustomSource	
CustomLibrary	
CustomDefine	
CustomLAPACKCallback	
CustomInitializer	
CustomTerminator	
Toolchain	Automatically locate an installed toolchain
BuildConfiguration	Faster Builds
CustomToolchainOptions	
IncludeHyperlinkInReport	off
LaunchReport	off
RecursionLimit	50
PortableWordSizes	off
GenerateErtSFunction	off
CreateSILPILBlock	None
CodeExecutionProfiling	off
CodeExecutionProfileVariable	executionProfile
CodeProfilingSaveOptions	SummaryOnly
CodeProfilingInstrumentation	off
CodeCoverageSettings	Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components(8).CodeCoverageSettings [36]
SILDebugging	off
TargetLang	C

IncludeERTFirstTime	off
GenerateTraceInfo	off
GenerateTraceReport	off
GenerateTraceReportSl	off
GenerateTraceReportSf	off
GenerateTraceReportEml	off
GenerateCodeInfo	off
GenerateWebview	off
GenerateCodeMetricsReport	off
GenerateCodeReplacementReport	off
RTWCompilerOptimization	off
ObjectivePriorities	
RTWCustomCompilerOptimizations	
CheckMdlBeforeBuild	Off
CustomRebuildMode	OnUpdate
DataInitializer	
Components	[Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components(8).Components(1)-[36], Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components(8).Components(2) [38]]

Tabella 42. Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components [24](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

CovHtmlReporting	off
CovForceBlockReductionOff	on
CovEnableCumulative	on
CovSaveCumulativeToWorkspaceVar	off
CovSaveSingleToWorkspaceVar	off
CovCumulativeVarName	covCumulativeData
CovCumulativeReport	off
CovSaveOutputData	on
CovOutputDir	slcov_output/\$ModelName\$
CovDataFileName	\$ModelName\$_cvdata
CovShowResultsExplorer	on
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
CovHighlightResults	off
CovMcdcMode	Masking

Tabella 43. Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components(8) [33].CodeCoverageSettings

Property	Value
TopModelCoverage	off
ReferencedModelCoverage	off
CoverageTool	None

Tabella 44. Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components(8).Components [35](1)

Property	Value
Name	Code Appearance
Description	
Components	
ForceParamTrailComments	off
GenerateComments	on
CommentStyle	Auto
IgnoreCustomStorageClasses	on
IgnoreTestpoints	off
IncHierarchyInIds	off
MaxIdLength	31
PreserveName	off
PreserveNameWithParent	off
ShowEliminatedStatement	off
OperatorAnnotations	off
IncAutoGenComments	off
SimulinkDataObjDesc	off
SFDataObjDesc	off
MATLABFcnDesc	off
IncDataTypeInIds	off
PrefixModelToSubsysFcnNames	on
MangleLength	1
CustomSymbolStr	\$R\$N\$M
CustomSymbolStrGlobalVar	\$R\$N\$M
CustomSymbolStrType	\$N\$R\$M_T
CustomSymbolStrField	\$N\$M
CustomSymbolStrFcn	\$R\$N\$M\$F
CustomSymbolStrSimulinkFcn	\$R\$N
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
MATLABSourceComments	off
EnableCustomComments	off
InternalIdentifier	Shortened
InlinedPrmAccess	Literals
ReqsInCode	off
UseSimReservedNames	off
ReservedNameArray	

Tabella 45. Pub_Sub_Husqvarna_Smartwatch Configuration Set.Components(8).Components [35](2)

Property	Value
Name	Target
Description	
Components	
IsERTTarget	off
TargetFcnLib	ansi_tfl_table_tmw.mat
TargetLibSuffix	
TargetPreCompLibLocation	
GenFloatMathFcnCalls	NOT IN USE
TargetLangStandard	C99 (ISO)
TargetFunctionLibrary	NOT IN USE
CodeReplacementLibrary	None
UtilityFuncGeneration	Auto
ERTMultiwordTypeDef	System defined
MultiwordTypeDef	System defined
ERTMultiwordLength	2048
MultiwordLength	2048
GenerateFullHeader	on
InferredTypesCompatibility	off
ExistingSharedCode	

GenerateSampleERTMain	off
GenerateTestInterfaces	off
ModelReferenceCompliant	on
ParMdlRefBuildCompliant	on
CompOptLevelCompliant	on
ConcurrentExecutionCompliant	on
IncludeMdlTerminateFcn	on
CombineOutputUpdateFcns	on
CombineSignalStateStructs	off
SuppressErrorStatus	off
ERTFirstTimeCompliant	off
IncludeFileDelimiter	Auto
ERTCustomFileBanners	off
SupportAbsoluteTime	on
LogVarNameModifier	rt_
MatFileLogging	on
MultiInstanceERTCode	off
CodeInterfacePackaging	Nonreusable function
SupportNonFinite	on
SupportComplex	on
PurelyIntegerCode	off
SupportContinuousTime	on
SupportNonInlinedSFcns	on
RemoveDisableFunc	off
RemoveResetFunc	off
SupportVariableSizeSignals	off
ParenthesesLevel	Nominal
CastingMode	Nominal
GenerateClassInterface	off
ModelStepFunctionPrototypeControlCompliant	off
CPPClassGenCompliant	on
GRTInterface	off
GenerateAllocFcn	off
UseToolchainInfoCompliant	on
GenerateSharedConstants	on
ExtMode	off
ExtModeStaticAlloc	off
ExtModeTesting	off

System Model Configuration

ExtModeStaticAllocSize	1000000
ExtModeTransport	0
ExtModeMexFile	ext_comm
ExtModeMexArgs	
ExtModeIntrfLevel	Level1
RTWCAPISignals	off
RTWCAPIParams	off
RTWCAPIStates	off
RTWCAPIRootIO	off
GenerateASAP2	off
MultiInstanceErrorCode	Error

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.

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).

About this Report

Indice

Report Overview	42
Root System Description	42
Subsystem Descriptions	43
State Chart Descriptions	43

Report Overview

This report describes the design of the Pub_Sub_Husqvarna_Smartwatch 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.

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 Traceability. 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.