Report Generated by Test Manager

Title: **Actuator closed loop test**
Author: **bpotter**
Date: **31-May-2019 12:49:41**

Test Environment

Platform: PCWIN64
MATLAB: (R2019a)

Summary

Name	Outcome	Duration (Seconds)
ActLoopTest	5	71
Actuator Control Test	5	71
ChirpFrequencyResponse		53
SmallPositiveStep		4
SmallNegativeStep		5
LargePositiveStep		4
LargeNegativeStep		4

ActLoopTest

Test Result Information

Result Type:	Test File Result
Parent:	None
Start Time:	31-May-2019 12:48:29
End Time:	31-May-2019 12:49:40
Outcome:	Total: 5, Passed: 5

Test Suite Information

Name:	ActLoopTest

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Actuator Control Test

Test Result Information

Result Type:	Test Suite Result
Parent:	ActLoopTest
Start Time:	31-May-2019 12:48:29
End Time:	31-May-2019 12:49:40
Outcome:	Total: 5, Passed: 5

Test Suite Information

Name:	Actuator Control Test

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ChirpFrequencyResponse

Test Result Information

Result Type:	Test Case Result
Parent:	Actuator Control Test
Start Time:	31-May-2019 12:48:29
End Time:	31-May-2019 12:49:22
Outcome:	Passed
Description:	

This test case runs a frequency sweep from 0 to 100 Hz to measure bandwidth and damping.

Test Case Information

Name: ChirpFrequencyResponse
Type: Simulation Test

Test Case Requirements

Description: SR_4 : Hydraulic Actuator Control Loop Performance (HelicopterSystemRequirements#8)
Document: HelicopterSystemRequirements.slreqx

Simulation

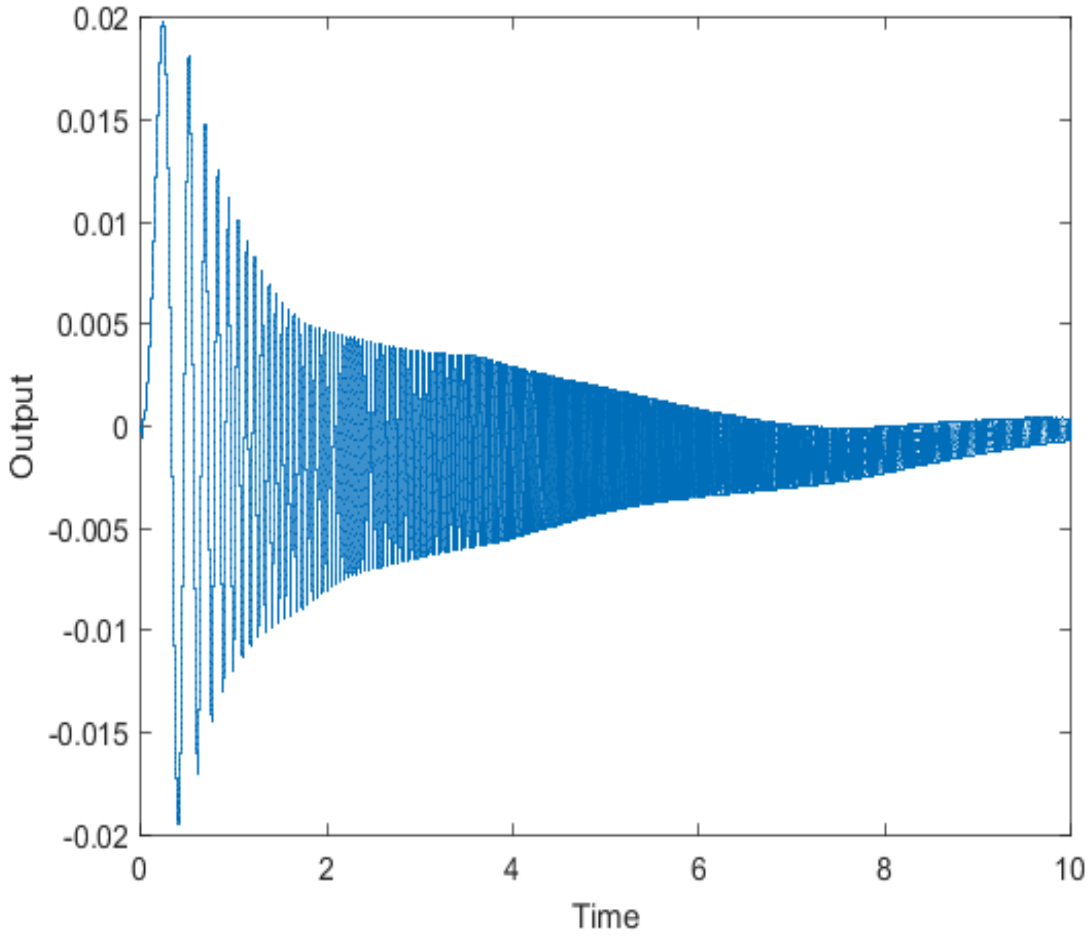
System Under Test Information

Model:	ActuatorControlLoop
Simulation Mode:	normal
Configuration Set:	Configuration
Start Time:	0
Stop Time:	10
Checksum:	3904778165 3134266203 1416340177 728902151
Simulink Version:	9.3
Model Version:	1.16
Model Author:	bpotter
Date:	Mon May 20 14:14:22 2019
User ID:	bpotter
Model Path:	C:\Users\bpotter\MATLAB\Projects\ARP_Example_Project\ARP_03_SystemArchitecture\specification\ActuatorControlLoop.slx
Machine Name:	AH-BPOTTER
Solver Name:	ode23t
Solver Type:	Variable-Step
Max Step Size:	0.001
Simulation Start Time:	2019-05-31 12:48:32
Simulation Stop Time:	2019-05-31 12:49:06
Platform:	PCWIN64

Simulation Output

Name	Data Type	Units	Sample Time	Interp	Sync	Link to Plot
Output	double		0.001	zoh	union	Link
Input.Command	double	m	0.001	zoh	union	Link

Name	Data Type	Units	Sample Time	Interp	Sync
Output	double		0.001	zoh	union



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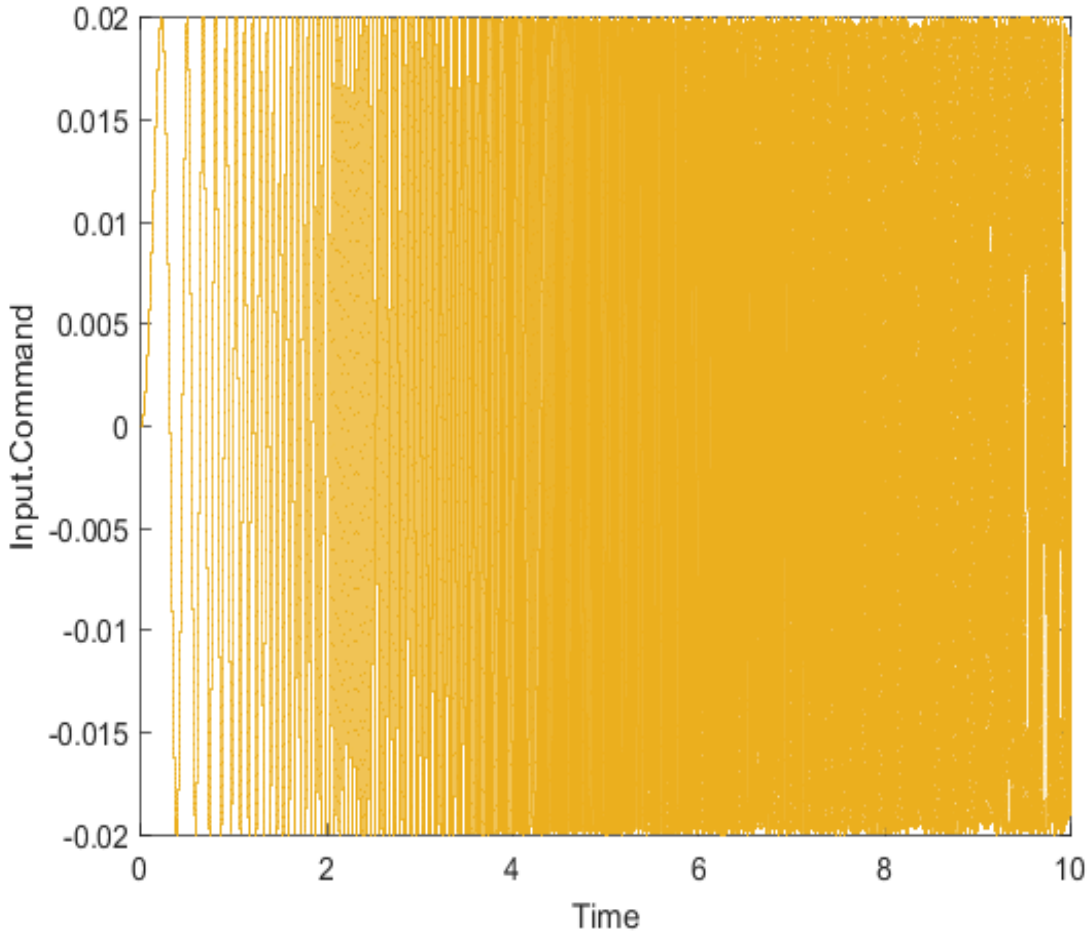
Name	Data Type	Units	Sample Time	Interp	Sync
Input.Command	double	m	0.001	zoh	union



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Simulation Logs:
Minimum '-0.1' is not supported for bus data type and has been ignored in range checking for port 1 on 'ActuatorControlLoop/Command_BusSelector'. Specify minimum on leaf elements of bus object 'ActCmd' to enable this check and to avoid an error in a future release

Maximum '0.1' is not supported for bus data type and has been ignored in range checking for port 1 on 'ActuatorControlLoop/Command_BusSelector'. Specify

maximum on leaf elements of bus object 'ActCmd' to enable this check and to avoid an error in a future release

Back to Report Summary

Custom Criteria Result Information

Diagnostic Record:
Outcome: Passed
Event: VerificationPassed

VerificationPassed in custom criteria of sltest.testmanager.TestCase.

Framework Diagnostic:

---

verifyGreaterThanOrEqual passed.

Actual Value:
83.510774581460140
Minimum Value (Inclusive):
62.831899999999997

Diagnostic Record:
Outcome: Passed
Event: VerificationPassed

VerificationPassed in custom criteria of sltest.testmanager.TestCase.

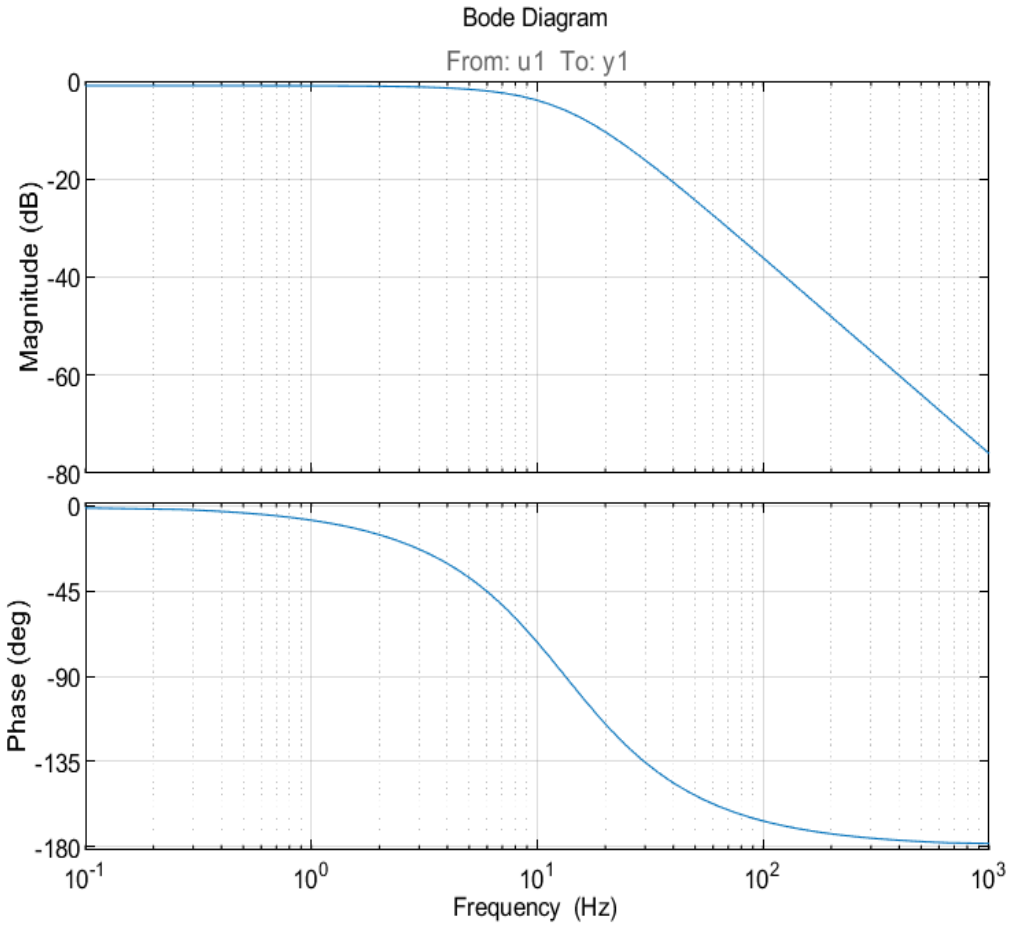
Framework Diagnostic:

---

verifyGreaterThanOrEqual passed.

Actual Value:
0.891639273925356
Minimum Value (Inclusive):
0.400000000000000

Custom Criteria Plots



SmallPositiveStep

Test Result Information

Result Type:	Test Case Result
Parent:	Actuator Control Test
Start Time:	31-May-2019 12:49:23
End Time:	31-May-2019 12:49:27
Outcome:	Passed

Description:

Thsi test case is a small signal step that verifies the rise time and tracking within 5% of final value.

Test Case Information

Name:	SmallPositiveStep
Type:	Simulation Test

Test Case Requirements

Description:	SR_4 : Hydraulic Actuator Control Loop Performance (HelicopterSystemRequirements#8)
Document:	HelicopterSystemRequirements.slreqx

Simulation

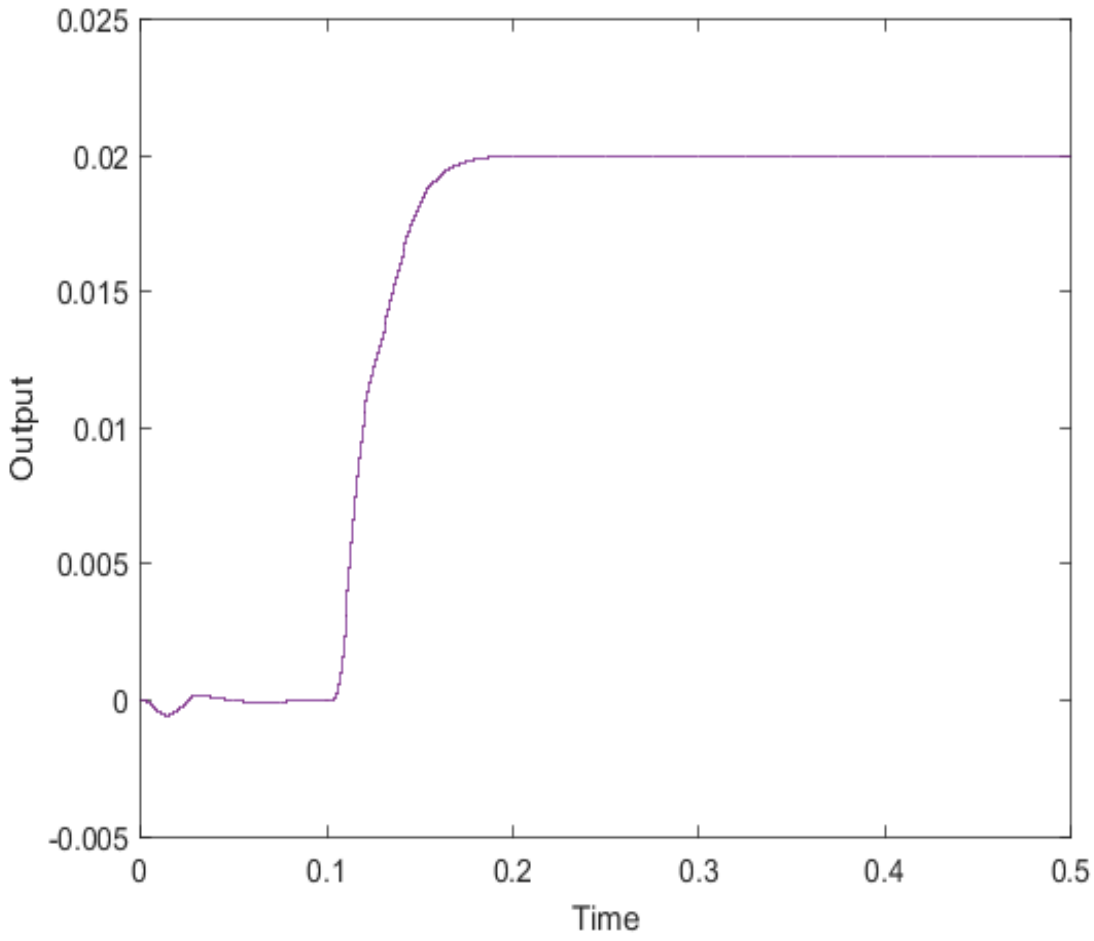
System Under Test Information

Model:	ActuatorControlLoop
Simulation Mode:	normal
Configuration Set:	Configuration
Start Time:	0
Stop Time:	0.5
Checksum:	135213407 3726666699 2484054909 2810672821
Simulink Version:	9.3
Model Version:	1.16
Model Author:	bpotter
Date:	Mon May 20 14:14:22 2019
User ID:	bpotter
Model Path:	C:\Users\bpotter\MATLAB\Projects\ARP_Example_Project\ARP_03_SystemArchitecture\specification\ActuatorControlLoop.slx
Machine Name:	AH-BPOTTER
Solver Name:	ode23t
Solver Type:	Variable-Step
Max Step Size:	0.001
Simulation Start Time:	2019-05-31 12:49:23
Simulation Stop Time:	2019-05-31 12:49:27
Platform:	PCWIN64

Simulation Output

Name	Data Type	Units	Sample Time	Interp	Sync	Link to Plot
Output	double		0.001	zoh	union	Link
Input.Command	double	m	0.001	zoh	union	Link

Name	Data Type	Units	Sample Time	Interp	Sync
Output	double		0.001	zoh	union



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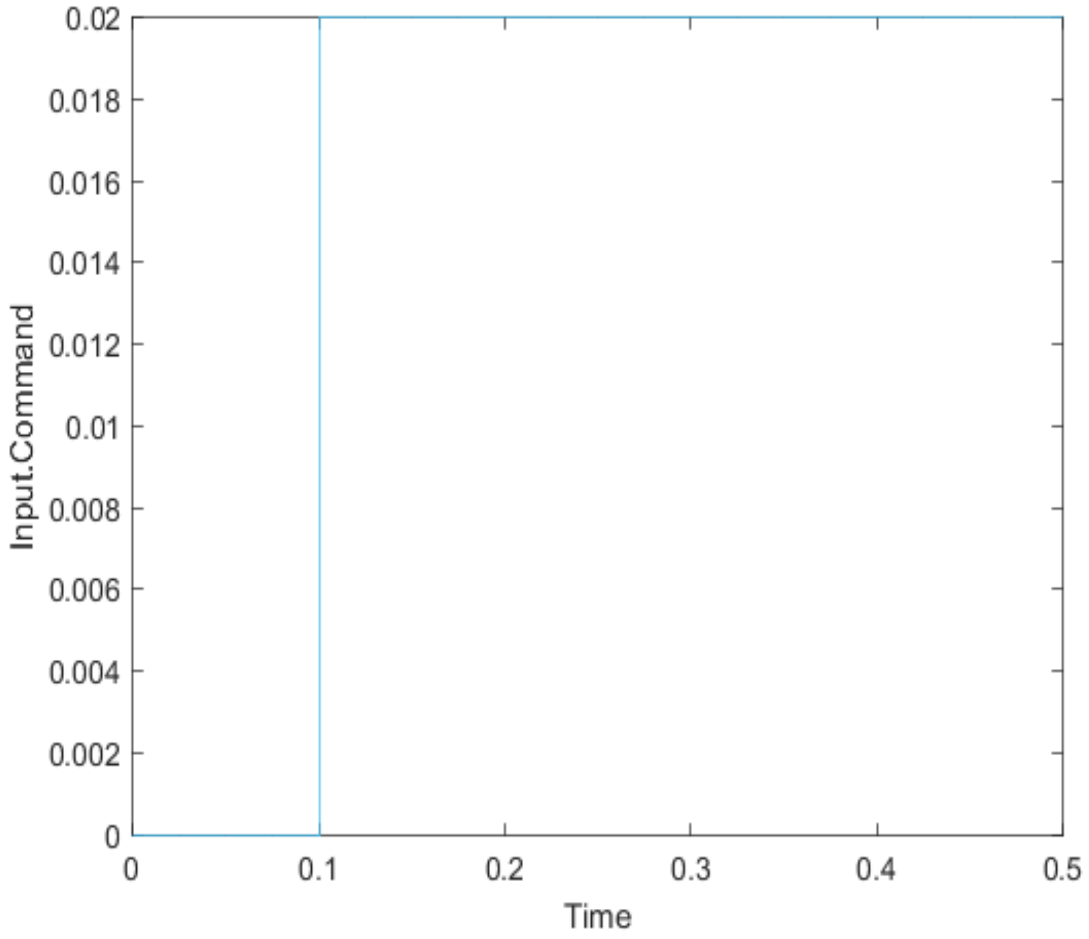
Name	Data Type	Units	Sample Time	Interp	Sync
Input.Command	double	m	0.001	zoh	union



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Simulation Logs:
Minimum '-0.1' is not supported for bus data type and has been ignored in range checking for port 1 on 'ActuatorControlLoop/Command_BusSelector'. Specify minimum on leaf elements of bus object 'ActCmd' to enable this check and to avoid an error in a future release

Maximum '0.1' is not supported for bus data type and has been ignored in range checking for port 1 on 'ActuatorControlLoop/Command_BusSelector'. Specify

maximum on leaf elements of bus object 'ActCmd' to enable this check and to avoid an error in a future release

Back to Report Summary

Custom Criteria Result Information

Diagnostic Record:
Outcome: Passed
Event: VerificationPassed

VerificationPassed in custom criteria of sltest.testmanager.TestCase.

Framework Diagnostic:

---

verifyGreaterThanOrEqual passed.

Actual Value:
0.019935917777008
Minimum Value (Inclusive):
0.019000000000000

Diagnostic Record:
Outcome: Passed
Event: VerificationPassed

VerificationPassed in custom criteria of sltest.testmanager.TestCase.

Framework Diagnostic:

---

verifyLessThanOrEqual passed.

Actual Value:
0.019984016279482
Maximum Value (Inclusive):
0.021000000000000

SmallNegativeStep

Test Result Information

Result Type:	Test Case Result
Parent:	Actuator Control Test
Start Time:	31-May-2019 12:49:27
End Time:	31-May-2019 12:49:32
Outcome:	Passed
Description:	

Thsi test case is a small signal step that verifies the rise time and tracking within 5% of final value.

Test Case Information

Name:	SmallNegativeStep
Type:	Simulation Test

Test Case Requirements

Description:	SR_4 : Hydraulic Actuator Control Loop Performance (HelicopterSystemRequirements#8)
Document:	HelicopterSystemRequirements.slreqx

Simulation

System Under Test Information

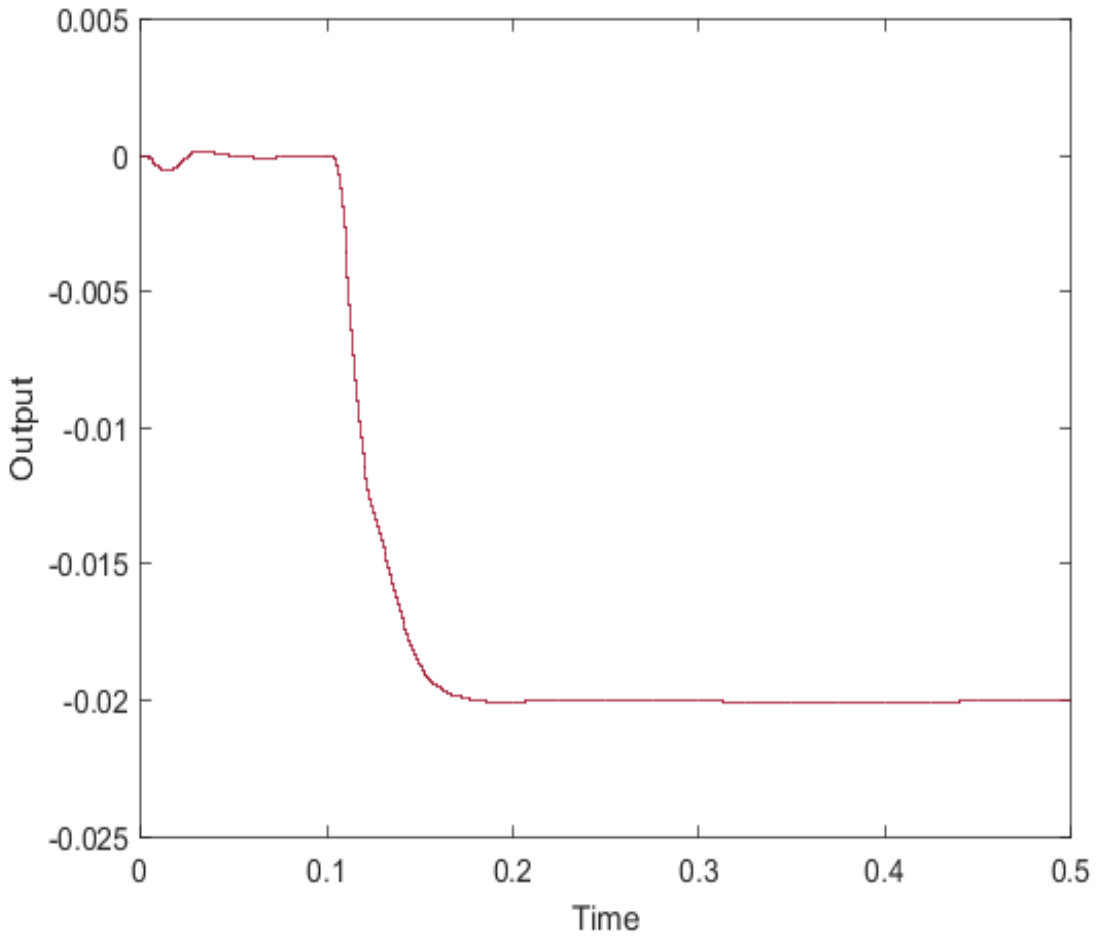
Model:	ActuatorControlLoop
Simulation Mode:	normal
Configuration Set:	Configuration
Start Time:	0
Stop Time:	0.5
Checksum:	135213407 3726666699 2484054909 2810672821
Simulink Version:	9.3
Model Version:	1.16
Model Author:	bpotter
Date:	Mon May 20 14:14:22 2019
User ID:	bpotter

Model Path:	C:\Users\bpotter\MATLAB\Projects\ARP_Example_Project\ARP_03_SystemArchitecture\specification\ActuatorControlLoop.slx
Machine Name:	AH-BPOTTER
Solver Name:	ode23t
Solver Type:	Variable-Step
Max Step Size:	0.001
Simulation Start Time:	2019-05-31 12:49:28
Simulation Stop Time:	2019-05-31 12:49:31
Platform:	PCWIN64

Simulation Output

Name	Data Type	Units	Sample Time	Interp	Sync	Link to Plot
Output	double		0.001	zoh	union	Link
Input.Command	double	m	0.001	zoh	union	Link

Name	Data Type	Units	Sample Time	Interp	Sync
Output	double		0.001	zoh	union



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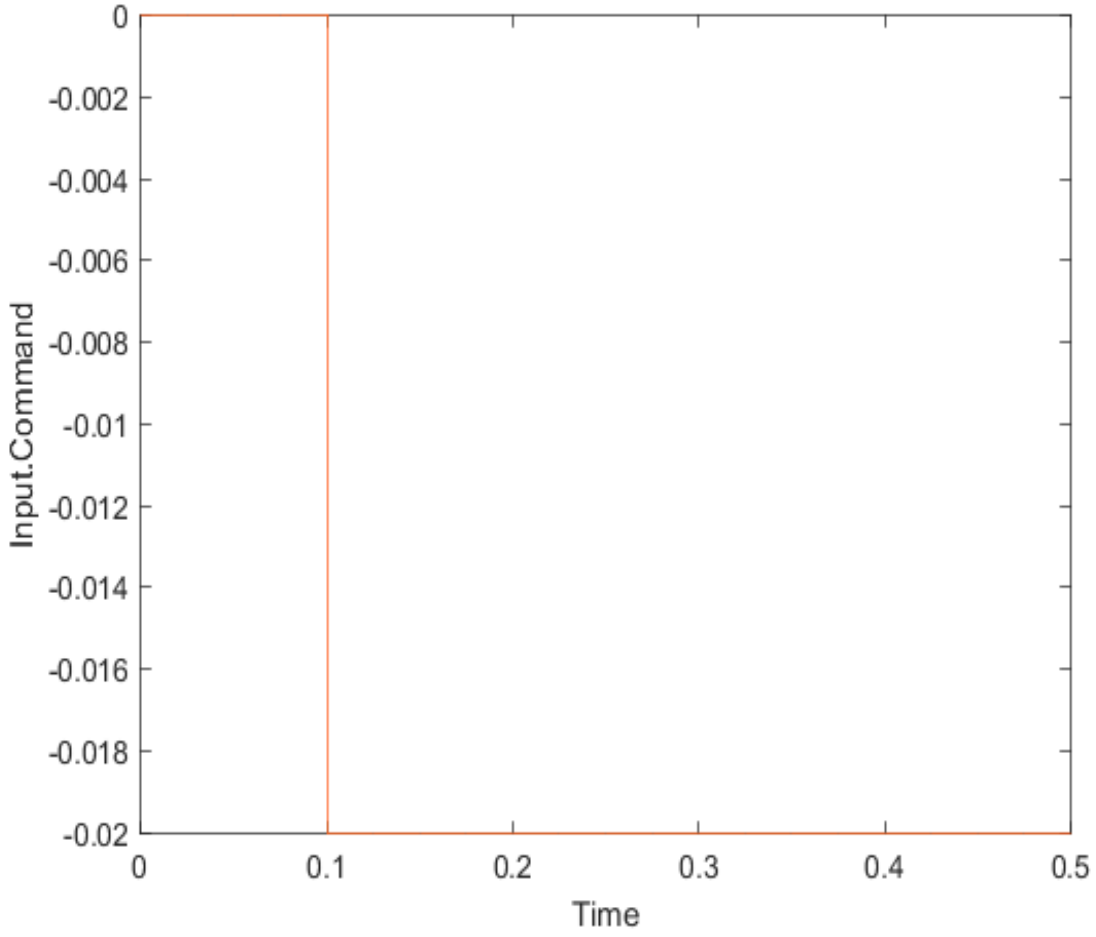
Name	Data Type	Units	Sample Time	Interp	Sync
Input.Command	double	m	0.001	zoh	union



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Simulation Logs:
Minimum '-0.1' is not supported for bus data type and has been ignored in range checking for port 1 on 'ActuatorControlLoop/Command_BusSelector'. Specify minimum on leaf elements of bus object 'ActCmd' to enable this check and to avoid an error in a future release

Maximum '0.1' is not supported for bus data type and has been ignored in range checking for port 1 on 'ActuatorControlLoop/Command_BusSelector'. Specify

maximum on leaf elements of bus object 'ActCmd' to enable this check and to avoid an error in a future release

Back to Report Summary

Custom Criteria Result Information

Diagnostic Record:
Outcome: Passed
Event: VerificationPassed

VerificationPassed in custom criteria of sltest.testmanager.TestCase.

Framework Diagnostic:

---

verifyGreaterThanOrEqual passed.

Actual Value:
-0.020069865979045
Minimum Value (Inclusive):
-0.021000000000000

Diagnostic Record:
Outcome: Passed
Event: VerificationPassed

VerificationPassed in custom criteria of sltest.testmanager.TestCase.

Framework Diagnostic:

---

verifyLessThanOrEqual passed.

Actual Value:
-0.020024325744556
Maximum Value (Inclusive):
-0.019000000000000

LargePositiveStep

Test Result Information

Result Type:	Test Case Result
Parent:	Actuator Control Test
Start Time:	31-May-2019 12:49:32
End Time:	31-May-2019 12:49:36
Outcome:	Passed
Description:	

Thsi test case is a large signal step that verifes tracking within 5% of final full scale value.

Test Case Information

Name:	LargePositiveStep
Type:	Simulation Test

Test Case Requirements

Description:	SR_4 : Hydraulic Actuator Control Loop Performance (HelicopterSystemRequirements#8)
Document:	HelicopterSystemRequirements.slreqx

Simulation

System Under Test Information

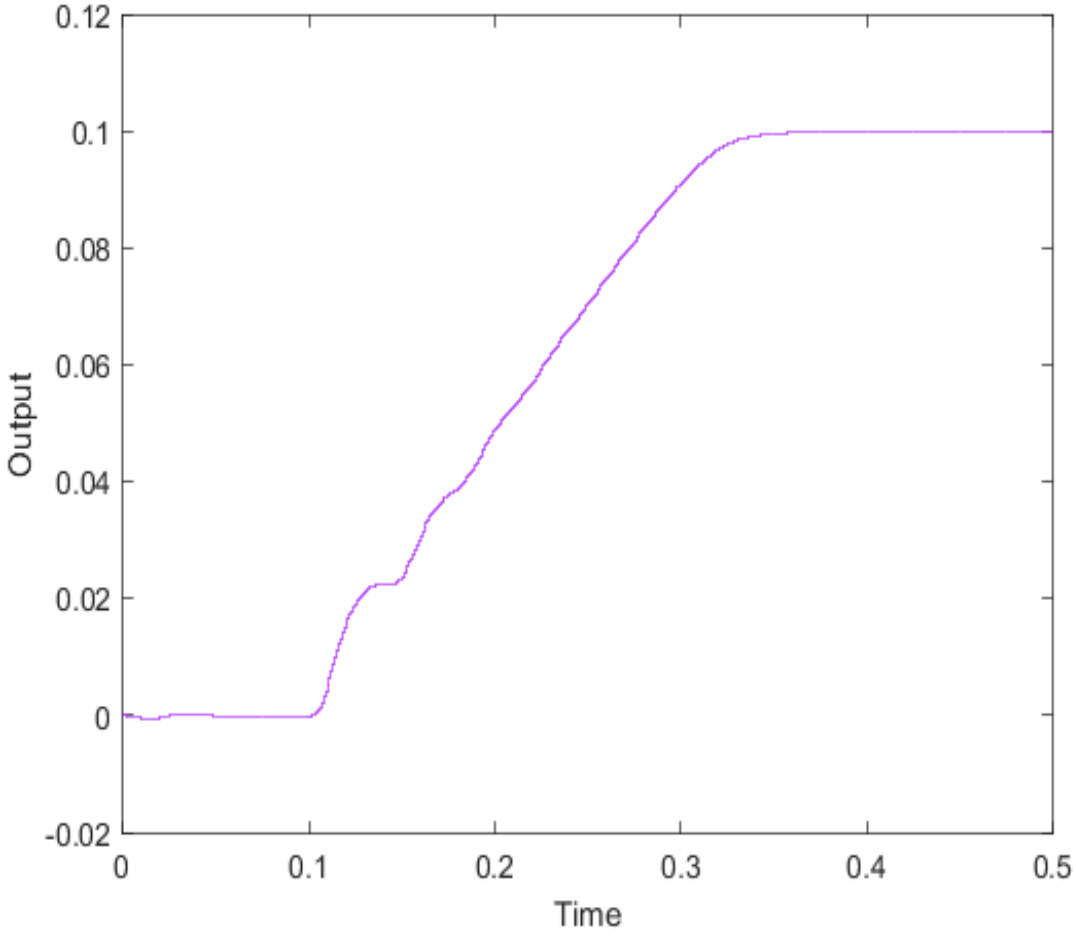
Model:	ActuatorControlLoop
Simulation Mode:	normal
Configuration Set:	Configuration
Start Time:	0
Stop Time:	0.5
Checksum:	135213407 3726666699 2484054909 2810672821
Simulink Version:	9.3
Model Version:	1.16
Model Author:	bpotter
Date:	Mon May 20 14:14:22 2019
User ID:	bpotter

Model Path:	C:\Users\bpotter\MATLAB\Projects\ARP_Example_Project\ARP_03_SystemArchitecture\specification\ActuatorControlLoop.slx
Machine Name:	AH-BPOTTER
Solver Name:	ode23t
Solver Type:	Variable-Step
Max Step Size:	0.001
Simulation Start Time:	2019-05-31 12:49:32
Simulation Stop Time:	2019-05-31 12:49:35
Platform:	PCWIN64

Simulation Output

Name	Data Type	Units	Sample Time	Interp	Sync	Link to Plot
Output	double		0.001	zoh	union	Link
Input.Command	double	m	0.001	zoh	union	Link

Name	Data Type	Units	Sample Time	Interp	Sync
Output	double		0.001	zoh	union



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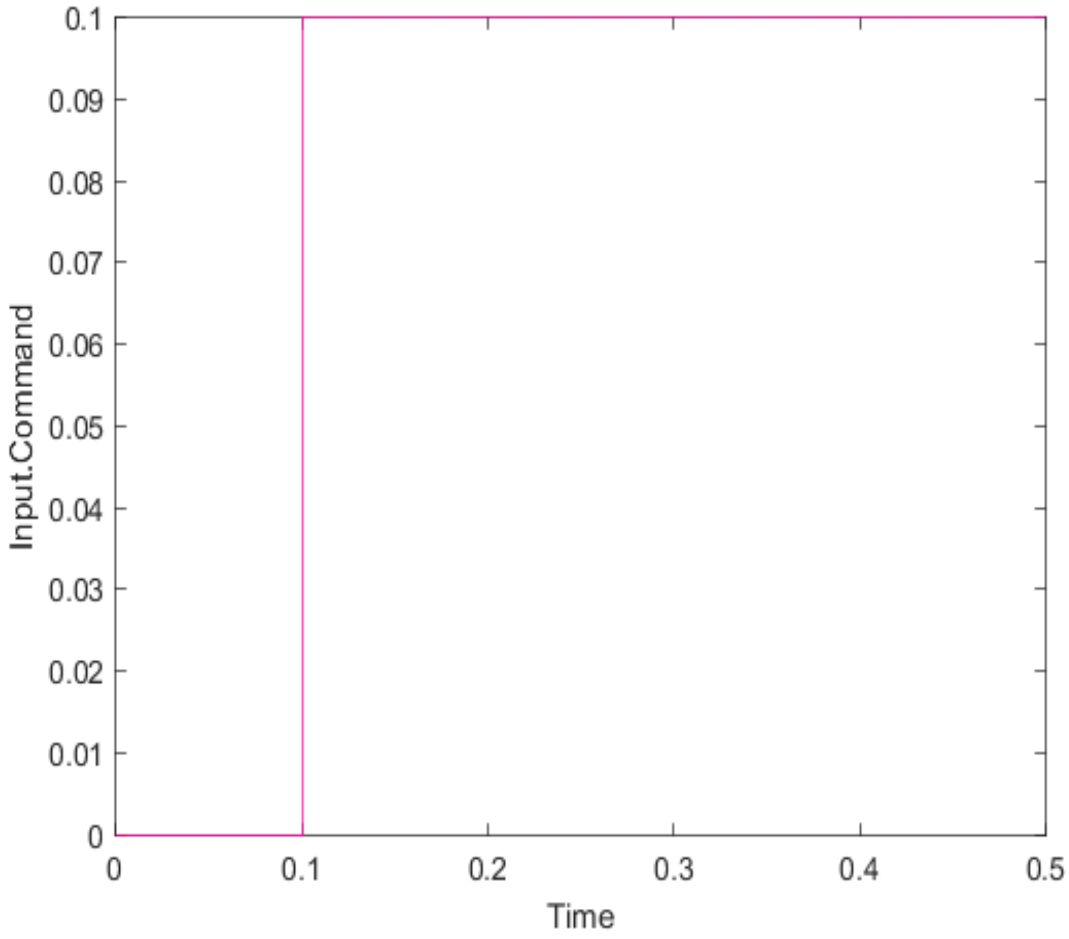
Name	Data Type	Units	Sample Time	Interp	Sync
Input.Command	double	m	0.001	zoh	union



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Simulation Logs:
Minimum '-0.1' is not supported for bus data type and has been ignored in range checking for port 1 on 'ActuatorControlLoop/Command_BusSelector'. Specify minimum on leaf elements of bus object 'ActCmd' to enable this check and to avoid an error in a future release

Maximum '0.1' is not supported for bus data type and has been ignored in range checking for port 1 on 'ActuatorControlLoop/Command_BusSelector'. Specify

maximum on leaf elements of bus object 'ActCmd' to enable this check and to avoid an error in a future release

The following warning occurred while simulating the Model block with block path ActuatorControlLoop/Actuator

Saturate on overflow detected. This originated from 'hydraulic_actuator/Hardware gain3'

Back to Report Summary

Custom Criteria Result Information

Diagnostic Record:
Outcome: Passed
Event: VerificationPassed

VerificationPassed in custom criteria of sltest.testmanager.TestCase.

Framework Diagnostic:

---

verifyGreaterThanOrEqual passed.

Actual Value:
0.095888619951485
Minimum Value (Inclusive):
0.095000000000000

Diagnostic Record:
Outcome: Passed
Event: VerificationPassed

VerificationPassed in custom criteria of sltest.testmanager.TestCase.

Framework Diagnostic:

---

verifyLessThanOrEqual passed.

Actual Value:
0.100034202802136
Maximum Value (Inclusive):
0.105000000000000

LargeNegativeStep

Test Result Information

Result Type:	Test Case Result
Parent:	Actuator Control Test
Start Time:	31-May-2019 12:49:36
End Time:	31-May-2019 12:49:40
Outcome:	Passed
Description:	

Thsi test case is a large signal step that verifes tracking within 5% of final full scale value.

Test Case Information

Name:	LargeNegativeStep
Type:	Simulation Test

Test Case Requirements

Description:	SR_4 : Hydraulic Actuator Control Loop Performance (HelicopterSystemRequirements#8)
Document:	HelicopterSystemRequirements.slreqx

Simulation

System Under Test Information

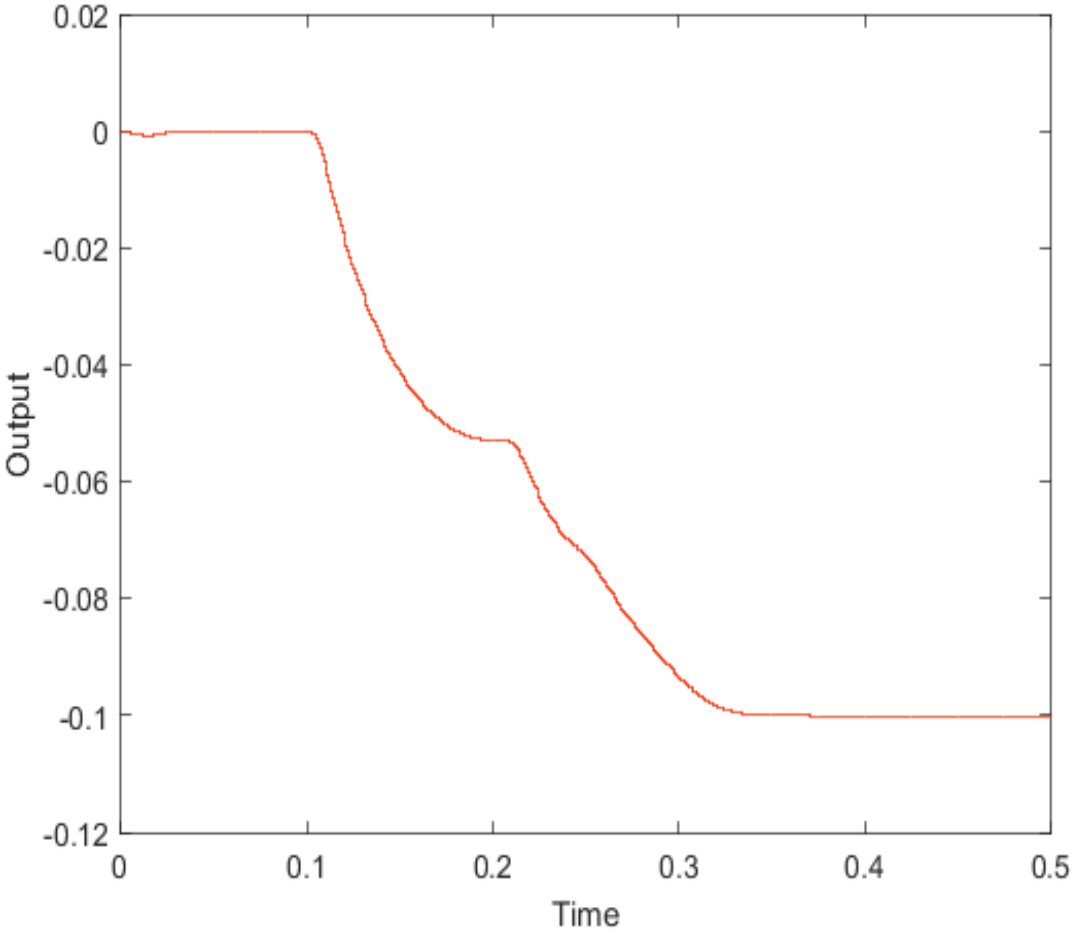
Model:	ActuatorControlLoop
Simulation Mode:	normal
Configuration Set:	Configuration
Start Time:	0
Stop Time:	0.5
Checksum:	135213407 3726666699 2484054909 2810672821

Simulink Version:	9.3
Model Version:	1.16
Model Author:	bpotter
Date:	Mon May 20 14:14:22 2019
User ID:	bpotter
Model Path:	C:\Users\bpotter\MATLAB\Projects\ARP_Example_Project\ARP_03_SystemArchitecture\specification\ActuatorControlLoop.slx
Machine Name:	AH-BPOTTER
Solver Name:	ode23t
Solver Type:	Variable-Step
Max Step Size:	0.001
Simulation Start Time:	2019-05-31 12:49:36
Simulation Stop Time:	2019-05-31 12:49:40
Platform:	PCWIN64

Simulation Output

Name	Data Type	Units	Sample Time	Interp	Sync	Link to Plot
Output	double		0.001	zoh	union	Link
Input.Command	double	m	0.001	zoh	union	Link

Name	Data Type	Units	Sample Time	Interp	Sync
Output	double		0.001	zoh	union



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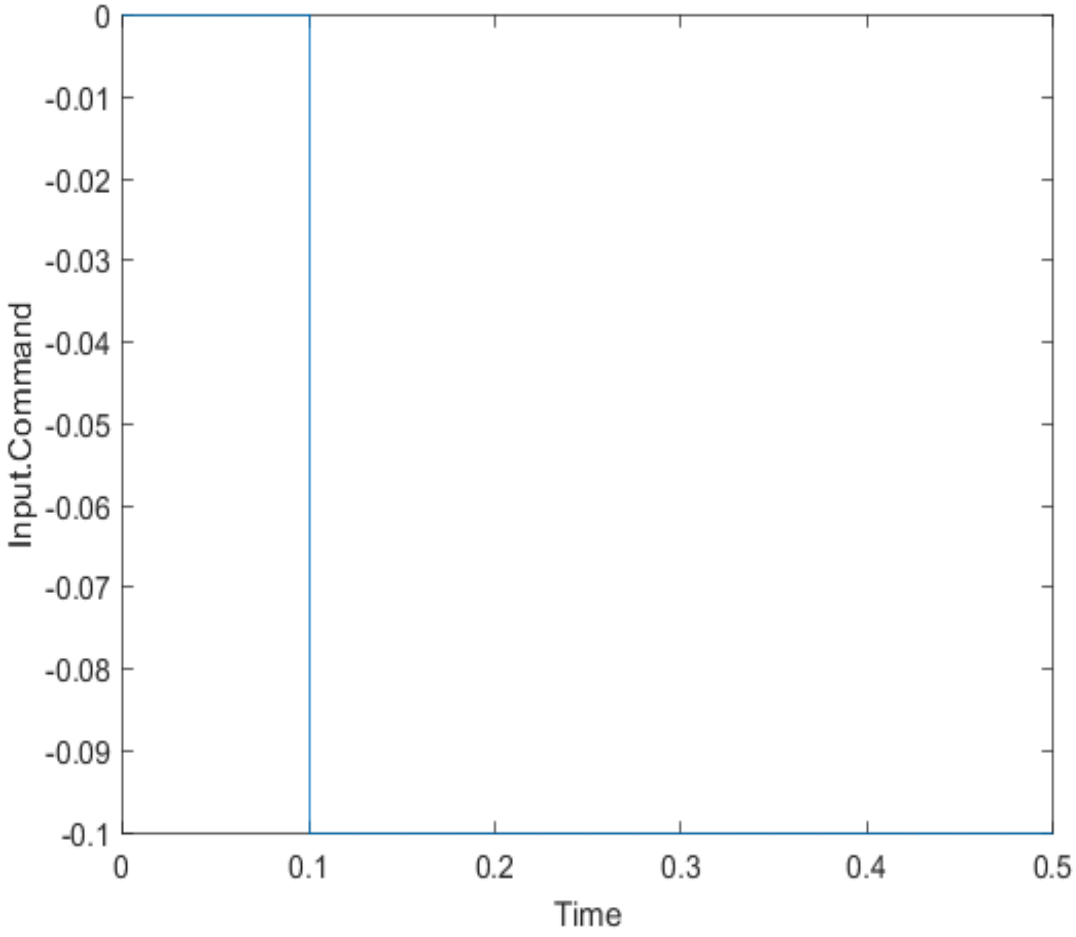
Name	Data Type	Units	Sample Time	Interp	Sync
Input.Command	double	m	0.001	zoh	union



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Simulation Logs:
Minimum '-0.1' is not supported for bus data type and has been ignored in range checking for port 1 on 'ActuatorControlLoop/Command_BusSelector'. Specify minimum on leaf elements of bus object 'ActCmd' to enable this check and to avoid an error in a future release

Maximum '0.1' is not supported for bus data type and has been ignored in range checking for port 1 on 'ActuatorControlLoop/Command_BusSelector'. Specify

maximum on leaf elements of bus object 'ActCmd' to enable this check and to avoid an error in a future release

The following warning occurred while simulating the Model block with block path ActuatorControlLoop/Actuator

Saturate on overflow detected. This originated from 'hydraulic_actuator/Hardware gain3'

Back to Report Summary

Custom Criteria Result Information

Diagnostic Record:
Outcome: Passed
Event: VerificationPassed

VerificationPassed in custom criteria of sltest.testmanager.TestCase.

Framework Diagnostic:

---

verifyGreaterThanOrEqual passed.

Actual Value:
-0.100046534773485
Minimum Value (Inclusive):
-0.105000000000000

Diagnostic Record:
Outcome: Passed
Event: VerificationPassed

VerificationPassed in custom criteria of sltest.testmanager.TestCase.

Framework Diagnostic:

---

verifyLessThanOrEqual passed.

Actual Value:
-0.097490445648413
Maximum Value (Inclusive):
-0.095000000000000
