Report Generated by Test Manager

Title: AHRS_voter SIL REQ-Based Tests
Author:
Date: 14-May-2020 08:49:44

Test Environment

Platform: PCWIN64
MATLAB: (R2019b)

Summary

Name	Outcome	Duration (Seconds)
Results: 2020-May-14 08:49:17	3	24.512
AHRS_voter_REQ_Based_Test	3	24.512
AHRS Voting Test Suite	3	24.512
Mid Value Voting Test Case		7.738
Average Value Voting Test Case		9.269
Single Value Voting Test Case		7.42

Results: 2020-May-14 08:49:17

Result Type: Result Set
Parent: None
Start Time: 14-May-2020 08:49:17
End Time: 14-May-2020 08:49:42
Outcome: Total: 3, Passed: 3

Aggregated Coverage Results

Analyzed Model	Sim Mode	Complexity	Decision	Function	Function call	Execution
AHRS_voter	ModelRefSIL	23	93%	100%	100%	95%

Back to Report Summary

AHRS_voter_REQ_Based_Test

Test Result Information

Result Type: Test File Result
Parent: Results: 2020-May-14 08:49:17
Start Time: 14-May-2020 08:49:17
End Time: 14-May-2020 08:49:42
Outcome: Total: 3, Passed: 3
Description:

Checksum when compiled as referenced model: 274277033 2770558437 1049845676 2563622565

Checksum when compiled as top model: 1951542874 3450456451 46553782 3275149564

Test Suite Information

Name: AHRS_voter_REQ_Based_Test

Back to Report Summary

AHRS Voting Test Suite

Test Result Information

Result Type: Test Suite Result
Parent: AHRS_voter_REQ_Based_Test
Start Time: 14-May-2020 08:49:17
End Time: 14-May-2020 08:49:42

Outcome: Total: 3, Passed: 3

Test Suite Information

Name: AHRS Voting Test Suite

Back to Report Summary

Mid Value Voting Test Case

Test Result Information

Result Type: Test Case Result
Parent: AHRS Voting Test Suite
Start Time: 14-May-2020 08:49:17
End Time: 14-May-2020 08:49:25
Outcome: Passed
Description:

Test the mid value voting algorithm with three valid AHRS.

Test Case Information

Name: Mid Value Voting Test Case
Type: Simulation Test

Test Case Requirements

Description: HLR_11: AHRS Voting for Triple Sensors (HelicopterSoftwareRequirements#15)
Document: HelicopterSoftwareRequirements.slreqx
Description: HLR_9 : AHRS Validity Check (HelicopterSoftwareRequirements#13)
Document: HelicopterSoftwareRequirements.slreqx

Verify Result

Name
Test Sequence/step_1:verify(abs(voted_fb(1))<Tol)
Test Sequence/step_1:verify(abs(voted_fb(2))<Tol)
Test Sequence/step_1:verify(abs(voted_fb(3))<Tol)
Test Sequence/step_1:verify(abs(voted_fb(4))<Tol)
Test Sequence/step_1:verify(abs(voted_fb(5))<Tol)
Test Sequence/step_3:verify((voted_fb(1)-AHRS1.theta)<Tol)
Test Sequence/step_3:verify((voted_fb(2)-AHRS2.phi)<Tol)

Test Sequence/step_3:verify((voted_fb(3)-AHRS3.r)<Tol)
Test Sequence/step_3:verify((voted_fb(4)-AHRS3.q)<Tol)
Test Sequence/step_3:verify((voted_fb(5)-AHRS1.p)<Tol)
Test Sequence/step_5:verify((voted_fb(1)-AHRS2.theta)<Tol)
Test Sequence/step_5:verify((voted_fb(2)-AHRS1.phi)<Tol)
Test Sequence/step_5:verify((voted_fb(3)-AHRS2.r)<Tol)
Test Sequence/step_5:verify((voted_fb(4)-AHRS2.q)<Tol)
Test Sequence/step_5:verify((voted_fb(5)-AHRS3.p)<Tol)
Test Sequence/step_7:verify((voted_fb(1)-AHRS3.theta)<Tol)
Test Sequence/step_7:verify((voted_fb(2)-AHRS3.phi)<Tol)
Test Sequence/step_7:verify((voted_fb(3)-AHRS1.r)<Tol)
Test Sequence/step_7:verify((voted_fb(4)-AHRS1.q)<Tol)
Test Sequence/step_7:verify((voted_fb(5)-AHRS2.p)<Tol)

Simulation

System Under Test Information

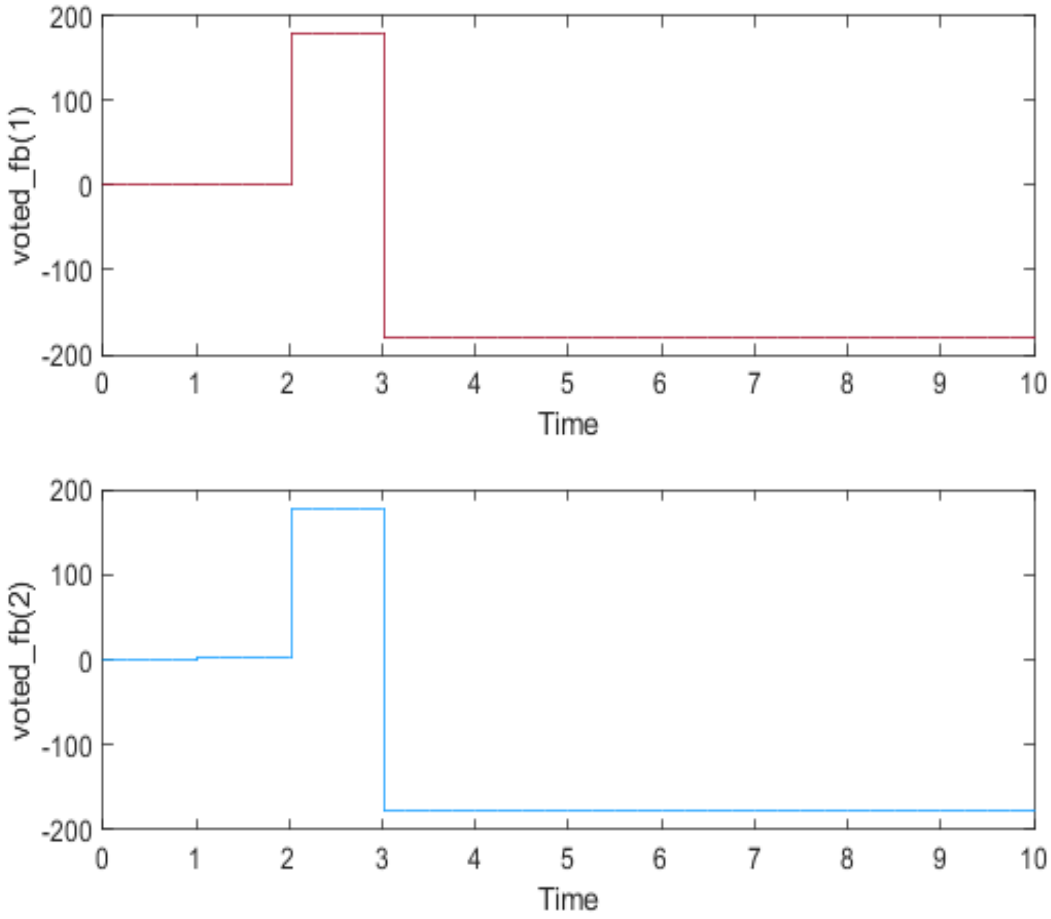
Model:	AHRS_voter
Harness:	AHRS_voter_Harness_triple_sensor
Harness Owner:	AHRS_voter
Simulation Mode:	software-in-the-loop (sil)
Override SIL or PIL Mode:	0
Configuration Set:	Configuration1
Start Time:	0
Stop Time:	10
Checksum:	3126753826 1062275525 336322258 2830877220
Simulink Version:	10.0
Model Version:	1.7
Model Author:	bpotter
Date:	Wed May 13 13:30:04 2020
User ID:	bpotter
Model Path:	C:\Users\bpotter\MATLAB\Projects\ARP_DO_Project\DO_03_Design\AHRS_voter\specification\AHRS_voter_Harness_triple_sensor.slx
Machine Name:	AH-BPOTTER
Solver Name:	FixedStepDiscrete
Solver Type:	Fixed-Step
Fixed Step Size:	0.01

Simulation Start Time: 2020-05-14 08:49:18
Simulation Stop Time: 2020-05-14 08:49:24
Platform: PCWIN64

Simulation Output

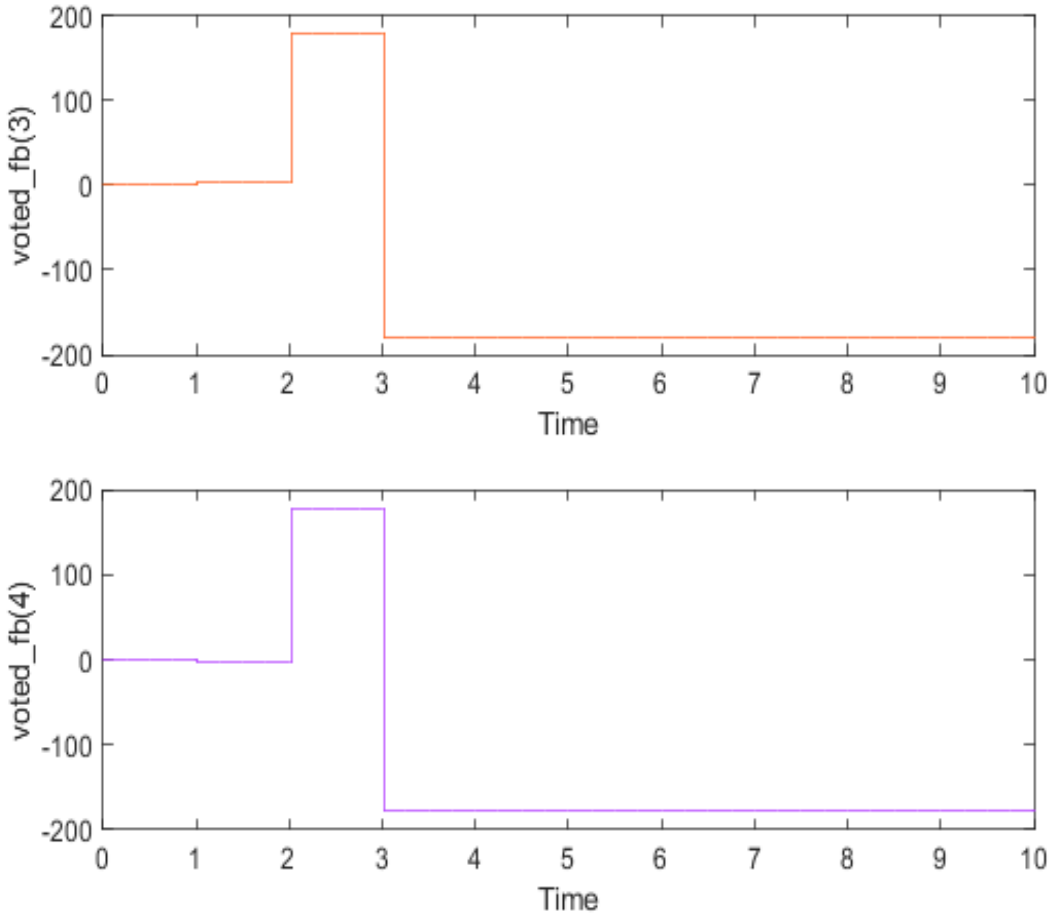
Name	Data Type	Units	Sample Time	Interp	Sync	Link to Plot
voted_fb(1)	double		0.01	zoh	union	Link
voted_fb(2)	double		0.01	zoh	union	Link
voted_fb(3)	double		0.01	zoh	union	Link
voted_fb(4)	double		0.01	zoh	union	Link
voted_fb(5)	double		0.01	zoh	union	Link

Name	Data Type	Units	Sample Time	Interp	Sync
voted_fb(1)	double		0.01	zoh	union
voted_fb(2)	double		0.01	zoh	union



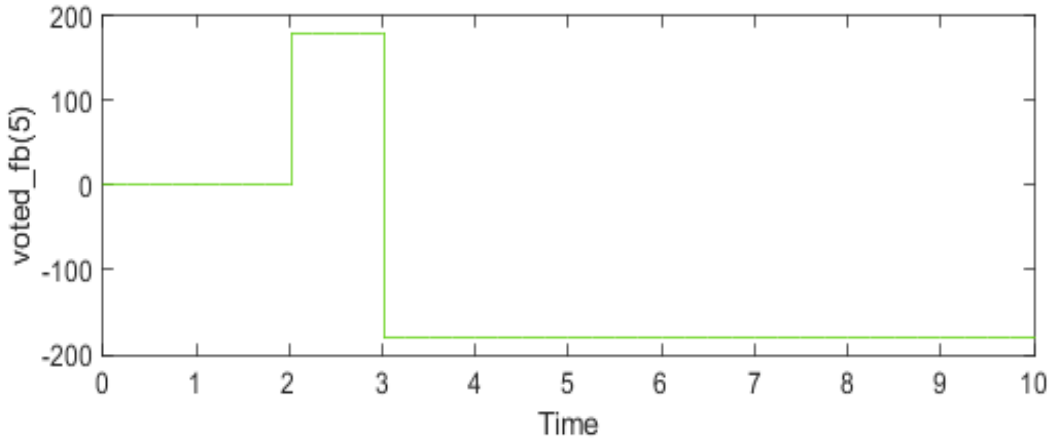
Back to Report SummaryBack to Signal Summary

Name	Data Type	Units	Sample Time	Interp	Sync
voted_fb(3)	double		0.01	zoh	union
voted_fb(4)	double		0.01	zoh	union



Back to Report SummaryBack to Signal Summary

Name	Data Type	Units	Sample Time	Interp	Sync
voted_fb(5)	double		0.01	zoh	union



Back to Report SummaryBack to Signal Summary

Average Value Voting Test Case

Test Result Information

Result Type:	Test Case Result
Parent:	AHRS Voting Test Suite
Start Time:	14-May-2020 08:49:25
End Time:	14-May-2020 08:49:34

Outcome: Passed
Description:

Test the average value voting algorithm with two valid AHRS.

Test Case Information

Name: Average Value Voting Test Case
Type: Simulation Test

Test Case Requirements

Description: HLR_12: AHRS Voting for Dual Sensors (HelicopterSoftwareRequirements#16)
Document: HelicopterSoftwareRequirements.slreqx
Description: HLR_9 : AHRS Validity Check (HelicopterSoftwareRequirements#13)
Document: HelicopterSoftwareRequirements.slreqx

Verify Result

Name
Test Sequence/step_1:verify(abs(voted_fb(1)-(AHRS1.theta+AHRS2.theta)/2)<Tol)
Test Sequence/step_1:verify(abs(voted_fb(2)-(AHRS1.phi+AHRS2.phi)/2)<Tol)
Test Sequence/step_1:verify(abs(voted_fb(3)-(AHRS1.r+AHRS2.r)/2)<Tol)
Test Sequence/step_1:verify(abs(voted_fb(4)-(AHRS1.q+AHRS2.q)/2)<Tol)
Test Sequence/step_1:verify(abs(voted_fb(5)-(AHRS1.p+AHRS2.p)/2)<Tol)
Test Sequence/step_3:verify(abs(voted_fb(1)-(AHRS1.theta+AHRS3.theta)/2)<Tol)
Test Sequence/step_3:verify(abs(voted_fb(2)-(AHRS1.phi+AHRS3.phi)/2)<Tol)
Test Sequence/step_3:verify(abs(voted_fb(3)-(AHRS1.r+AHRS3.r)/2)<Tol)
Test Sequence/step_3:verify(abs(voted_fb(4)-(AHRS1.q+AHRS3.q)/2)<Tol)
Test Sequence/step_3:verify(abs(voted_fb(5)-(AHRS1.p+AHRS3.p)/2)<Tol)
Test Sequence/step_5:verify(abs(voted_fb(1)-(AHRS3.theta+AHRS2.theta)/2)<Tol)
Test Sequence/step_5:verify(abs(voted_fb(2)-(AHRS3.phi+AHRS2.phi)/2)<Tol)
Test Sequence/step_5:verify(abs(voted_fb(3)-(AHRS3.r+AHRS2.r)/2)<Tol)
Test Sequence/step_5:verify(abs(voted_fb(4)-(AHRS3.q+AHRS2.q)/2)<Tol)
Test Sequence/step_5:verify(abs(voted_fb(5)-(AHRS3.p+AHRS2.p)/2)<Tol)

Simulation

System Under Test Information

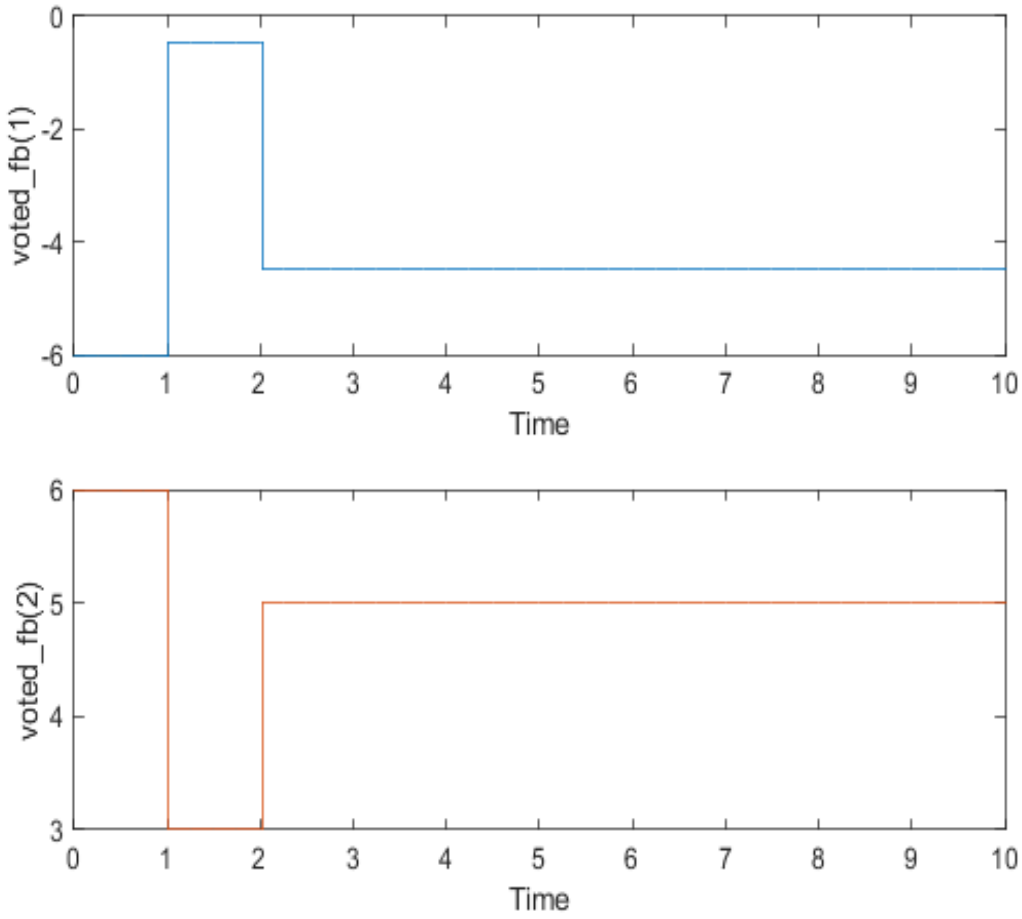
Model: AHRS_voter
Harness: AHRS_voter_Harness_dual_sensor

Harness Owner:	AHRS_voter
Simulation Mode:	software-in-the-loop (sil)
Override SIL or PIL Mode:	0
Configuration Set:	Configuration1
Start Time:	0
Stop Time:	10
Checksum:	4001394588 2910937263 1001402514 314995091
Simulink Version:	10.0
Model Version:	1.4
Model Author:	bpotter
Date:	Wed May 13 13:30:04 2020
User ID:	bpotter
Model Path:	C:\Users\bpotter\MATLAB\Projects\ARP_DO_Project\DO_03_Design\AHRS_voter\specification\AHRS_voter_Harness_dual_sensor.slx
Machine Name:	AH-BPOTTER
Solver Name:	FixedStepDiscrete
Solver Type:	Fixed-Step
Fixed Step Size:	0.01
Simulation Start Time:	2020-05-14 08:49:25
Simulation Stop Time:	2020-05-14 08:49:34
Platform:	PCWIN64

Simulation Output

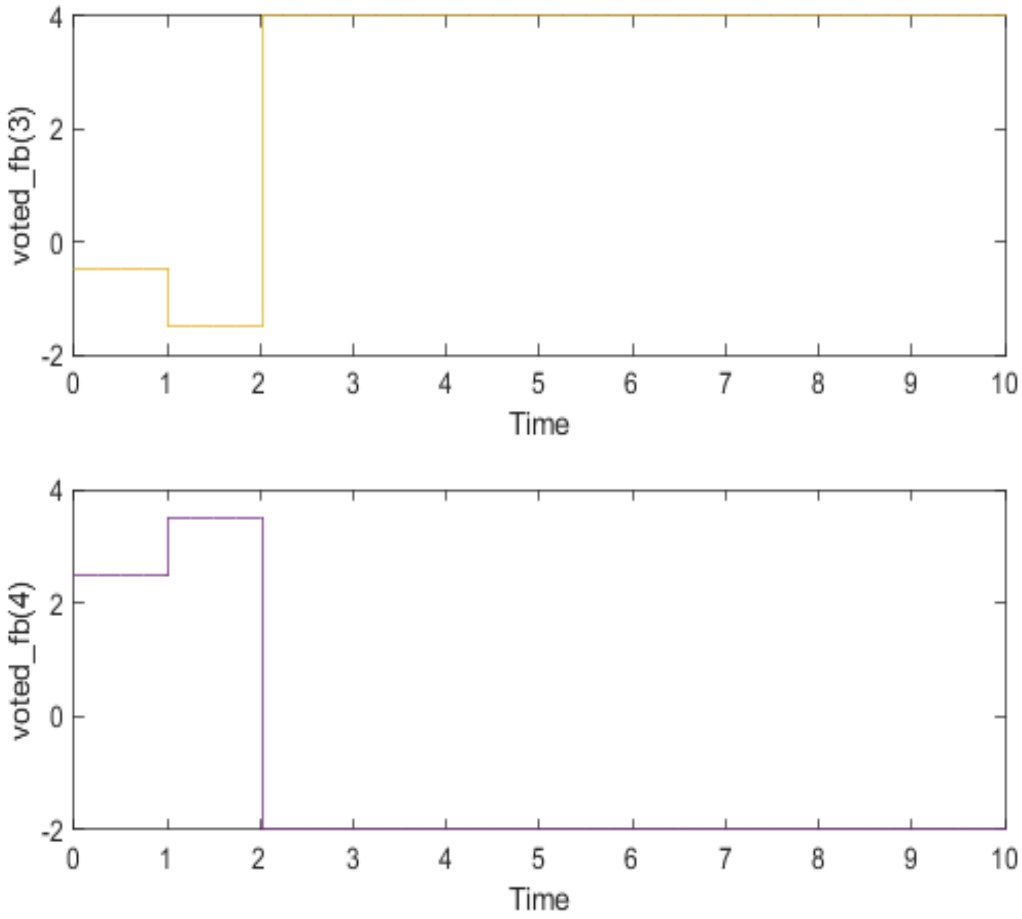
Name	Data Type	Units	Sample Time	Interp	Sync	Link to Plot
voted_fb(1)	double		0.01	zoh	union	Link
voted_fb(2)	double		0.01	zoh	union	Link
voted_fb(3)	double		0.01	zoh	union	Link
voted_fb(4)	double		0.01	zoh	union	Link
voted_fb(5)	double		0.01	zoh	union	Link

Name	Data Type	Units	Sample Time	Interp	Sync
voted_fb(1)	double		0.01	zoh	union
voted_fb(2)	double		0.01	zoh	union



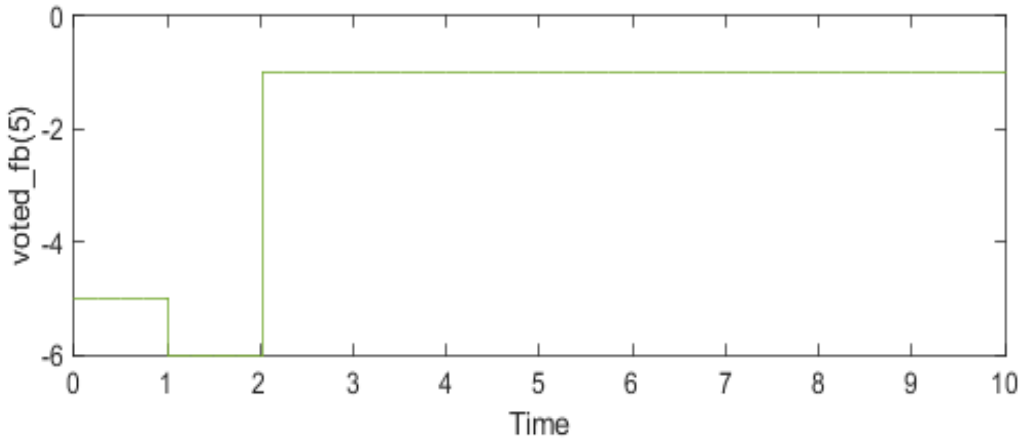
Back to Report SummaryBack to Signal Summary

Name	Data Type	Units	Sample Time	Interp	Sync
voted_fb(3)	double		0.01	zoh	union
voted_fb(4)	double		0.01	zoh	union



Back to Report SummaryBack to Signal Summary

Name	Data Type	Units	Sample Time	Interp	Sync
voted_fb(5)	double		0.01	zoh	union



Back to Report SummaryBack to Signal Summary

Single Value Voting Test Case

Test Result Information

Result Type:	Test Case Result
Parent:	AHRS Voting Test Suite
Start Time:	14-May-2020 08:49:34
End Time:	14-May-2020 08:49:42

Outcome: Passed
Description:

Test the single value voting algorithm with one valid AHRS.

Test Case Information

Name: Single Value Voting Test Case
Type: Simulation Test

Test Case Requirements

Description: HLR_13: AHRS Usage of Single Sensor (HelicopterSoftwareRequirements#17)
Document: HelicopterSoftwareRequirements.slreqx
Description: HLR_9 : AHRS Validity Check (HelicopterSoftwareRequirements#13)
Document: HelicopterSoftwareRequirements.slreqx

Verify Result

Name
Test Sequence/step_1:verify(abs(voted_fb(1)-AHRS1.theta)<Tol)
Test Sequence/step_1:verify(abs(voted_fb(2)-AHRS1.phi)<Tol)
Test Sequence/step_1:verify(abs(voted_fb(3)-AHRS1.r)<Tol)
Test Sequence/step_1:verify(abs(voted_fb(4)-AHRS1.q)<Tol)
Test Sequence/step_1:verify(abs(voted_fb(5)-AHRS1.p)<Tol)
Test Sequence/step_3:verify(abs(voted_fb(1)-AHRS2.theta)<Tol)
Test Sequence/step_3:verify(abs(voted_fb(2)-AHRS2.phi)<Tol)
Test Sequence/step_3:verify(abs(voted_fb(3)-AHRS2.r)<Tol)
Test Sequence/step_3:verify(abs(voted_fb(4)-AHRS2.q)<Tol)
Test Sequence/step_3:verify(abs(voted_fb(5)-AHRS2.p)<Tol)
Test Sequence/step_5:verify(abs(voted_fb(1)-AHRS3.theta)<Tol)
Test Sequence/step_5:verify(abs(voted_fb(2)-AHRS3.phi)<Tol)
Test Sequence/step_5:verify(abs(voted_fb(3)-AHRS3.r)<Tol)
Test Sequence/step_5:verify(abs(voted_fb(4)-AHRS3.q)<Tol)
Test Sequence/step_5:verify(abs(voted_fb(5)-AHRS3.p)<Tol)

Simulation

System Under Test Information

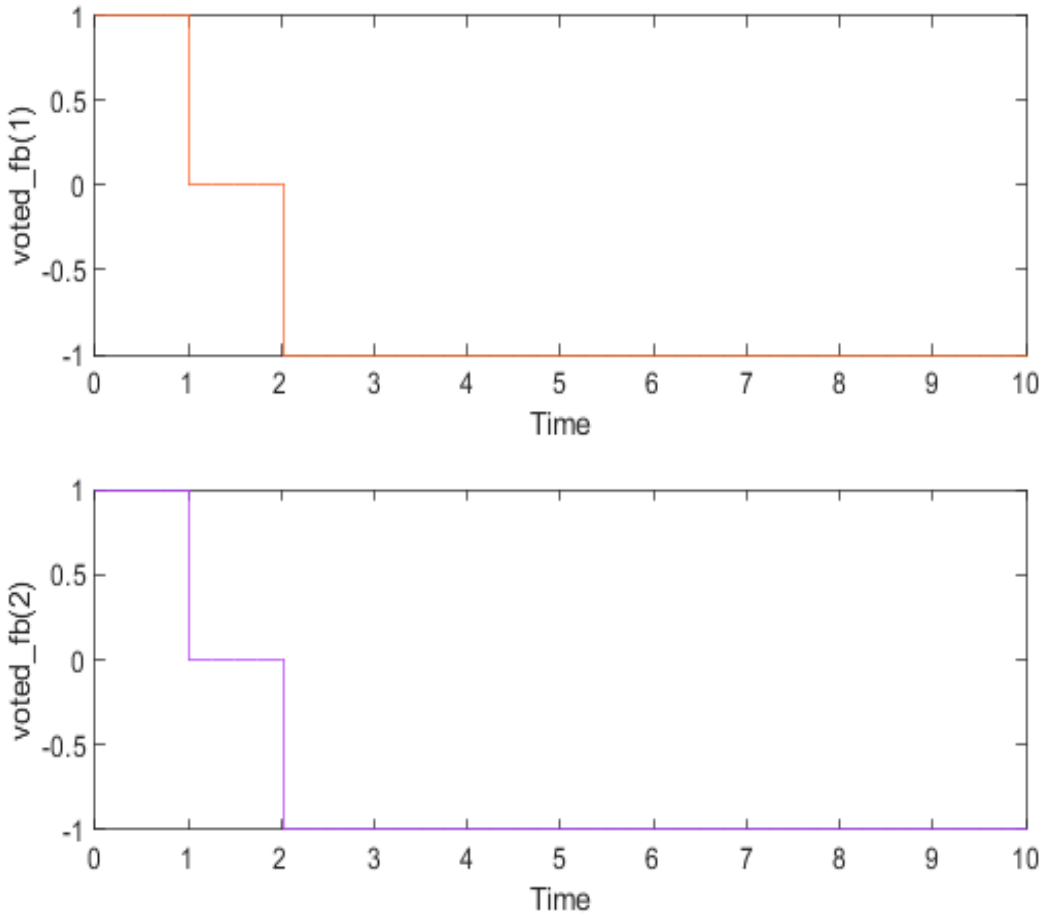
Model: AHRS_voter
Harness: AHRS_voter_Harness_single_sensor

Harness Owner:	AHRS_voter
Simulation Mode:	software-in-the-loop (sil)
Override SIL or PIL Mode:	0
Configuration Set:	Configuration1
Start Time:	0
Stop Time:	10
Checksum:	1248596253 747419020 2561291537 1643757328
Simulink Version:	10.0
Model Version:	1.6
Model Author:	bpotter
Date:	Wed May 13 13:30:04 2020
User ID:	bpotter
Model Path:	C:\Users\bpotter\MATLAB\Projects\ARP_DO_Project\DO_03_Design\AHRS_voter\specification\AHRS_voter_Harness_single_sensor.slx
Machine Name:	AH-BPOTTER
Solver Name:	FixedStepDiscrete
Solver Type:	Fixed-Step
Fixed Step Size:	0.01
Simulation Start Time:	2020-05-14 08:49:35
Simulation Stop Time:	2020-05-14 08:49:41
Platform:	PCWIN64

Simulation Output

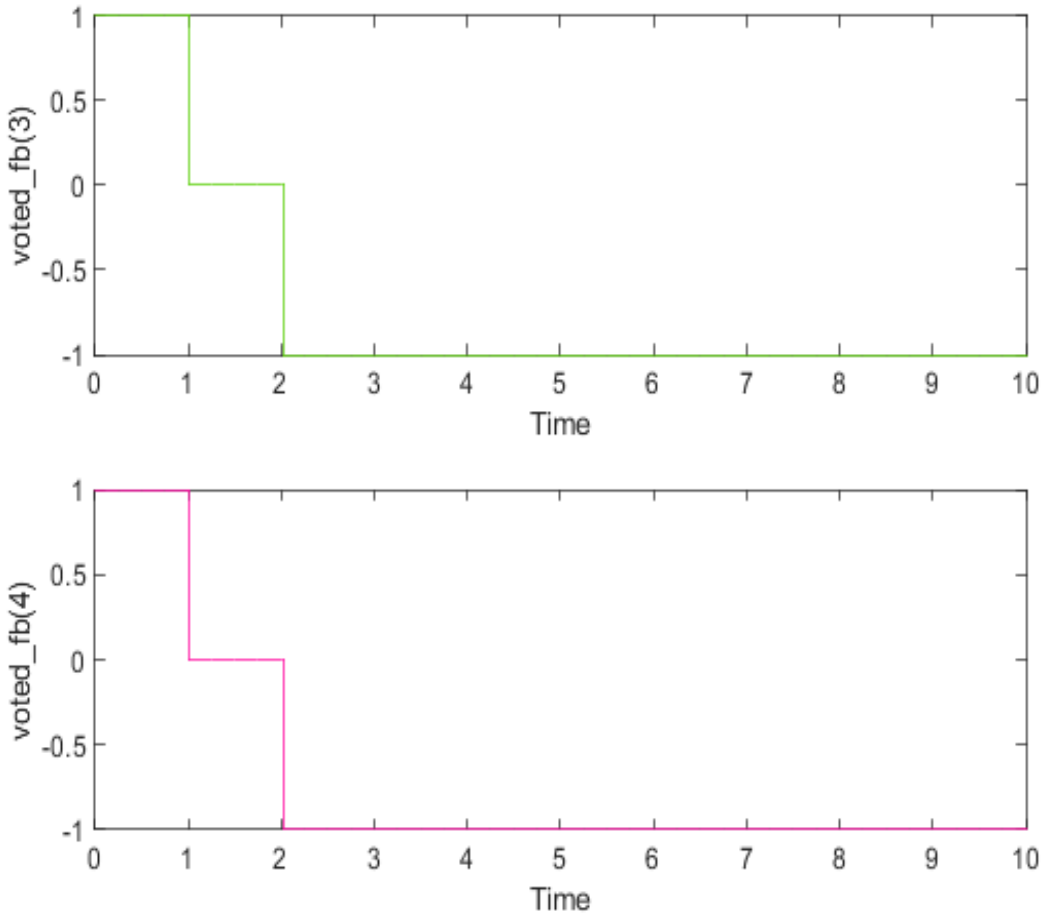
Name	Data Type	Units	Sample Time	Interp	Sync	Link to Plot
voted_fb(1)	double		0.01	zoh	union	Link
voted_fb(2)	double		0.01	zoh	union	Link
voted_fb(3)	double		0.01	zoh	union	Link
voted_fb(4)	double		0.01	zoh	union	Link
voted_fb(5)	double		0.01	zoh	union	Link

Name	Data Type	Units	Sample Time	Interp	Sync
voted_fb(1)	double		0.01	zoh	union
voted_fb(2)	double		0.01	zoh	union



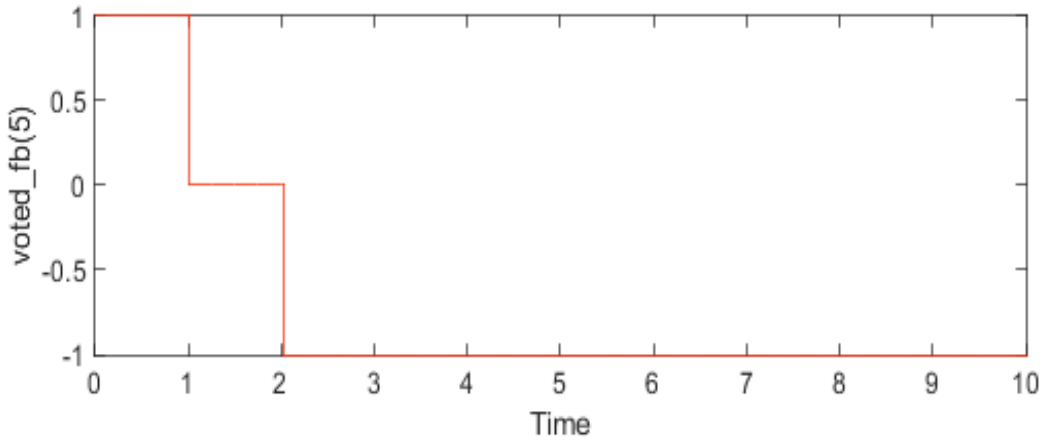
Back to Report SummaryBack to Signal Summary

Name	Data Type	Units	Sample Time	Interp	Sync
voted_fb(3)	double		0.01	zoh	union
voted_fb(4)	double		0.01	zoh	union



Back to Report SummaryBack to Signal Summary

Name	Data Type	Units	Sample Time	Interp	Sync
voted_fb(5)	double		0.01	zoh	union



Back to Report SummaryBack to Signal Summary