


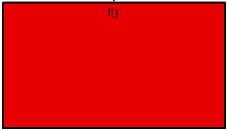
### Target: ECU555-80 (DEV)

Floating Point: single (32 bits)  
Stacks - FGND: 4096 BGND: 2048  
IDLE: 1024 IRQ: 1280  
Heap Size: 4096  
DLL Filename: BaseEngin\_003  
SRZ Filename: BaseEngineController\_LS\_003

Total FLASH:	373552
Total EEPROM:	1254
Total RAM:	26040
App FLASH:	154160
App EEPROM:	1080
App RAM:	7766



MotoHawk Function Trigger  
FGND\_RTI\_PERIODIC  
Priority Order: 0



Foreground

Main Power Relay  
On Delay: 100 ms  
Off Delay: 250 ms

Main Power Relay

MotoHawk Trigger Definition

FGND\_RTI Period: 5 ms  
BGND\_BASE Period: 50 ms (FGND x 10)

MotoHawk (RTW)  
Fault Manager Definition

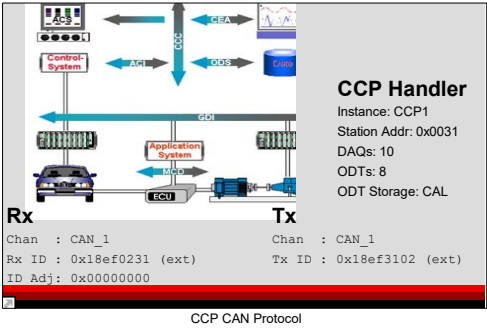
Storage: FLASH  
X/Y Data Type: uint16  
Read Access: 1  
Write Access: 1  
Clear Access: 1

MotoHawk CAN Definition

Name: CAN\_1  
Bus: CAN1  
Bit Timing: 500 kbaud  
TX Queue: 16 messages  
RX Queue: 16 messages  
MotoTune Protocol Enabled  
City ID: 0x0B (PCM-1)

MotoHawk CAN Definition

Name: CAN\_2  
Bus: CAN2  
Bit Timing: 500 kbaud  
TX Queue: 16 messages  
RX Queue: 16 messages  
MotoTune Protocol Enabled  
City ID: 0x0B (PCM-1)



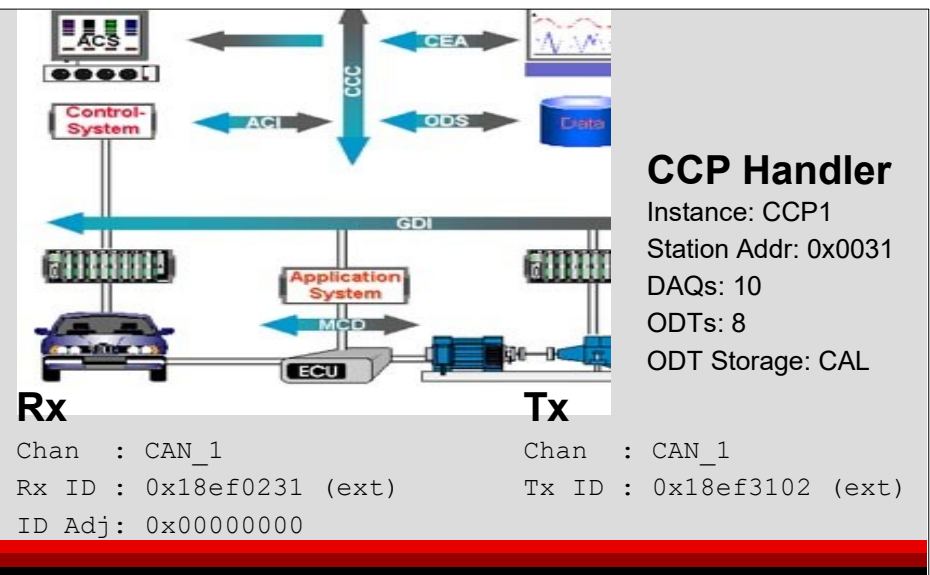
### MotoHawk CCP DAQ Triggers:

- FGND\_RTI\_PERIODIC
- FGND\_5XRTI\_PERIODIC
- FGND\_MID\_TDC\_EVENT
- FGND\_20XRTI\_PERIODIC
- BGND\_BASE\_PERIODIC

MotoHawk Function Trigger  
IDLE\_EVENT  
Priority Order: 255  
(Used in triggered subsystem)  
(Runs even when App Monitor stops)

Command trig

DAQ trig(s)



f()

f



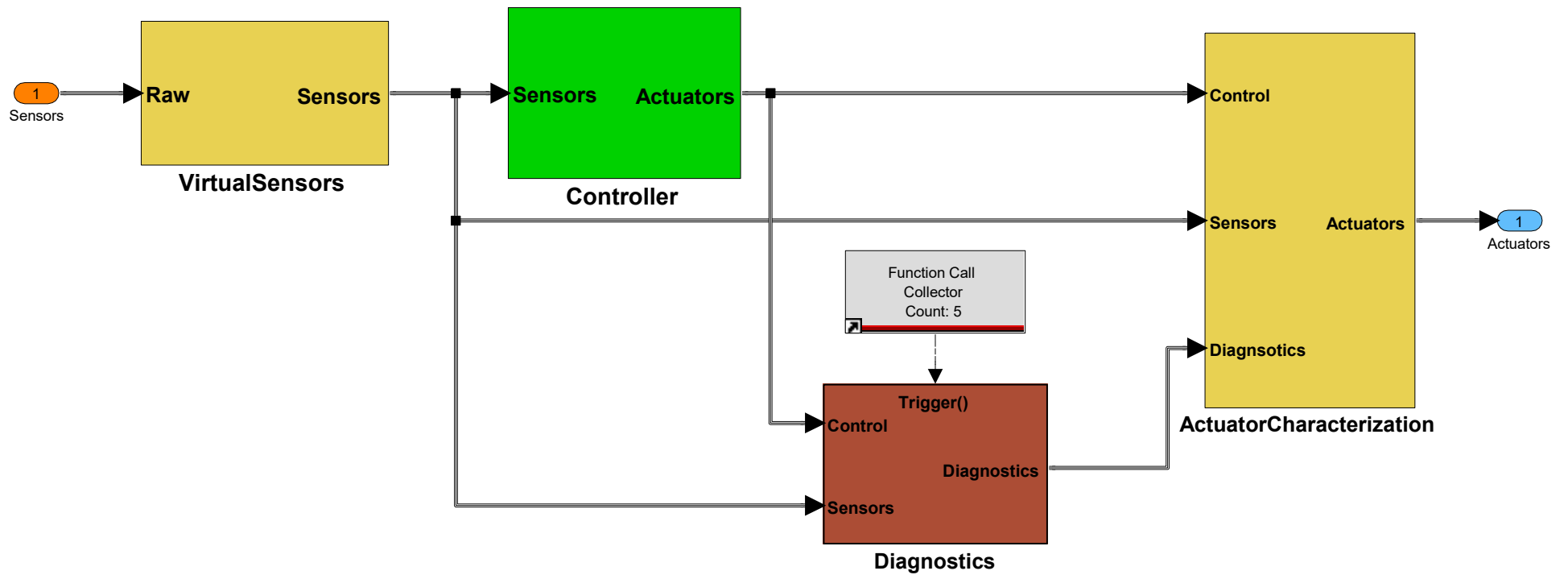
Inputs

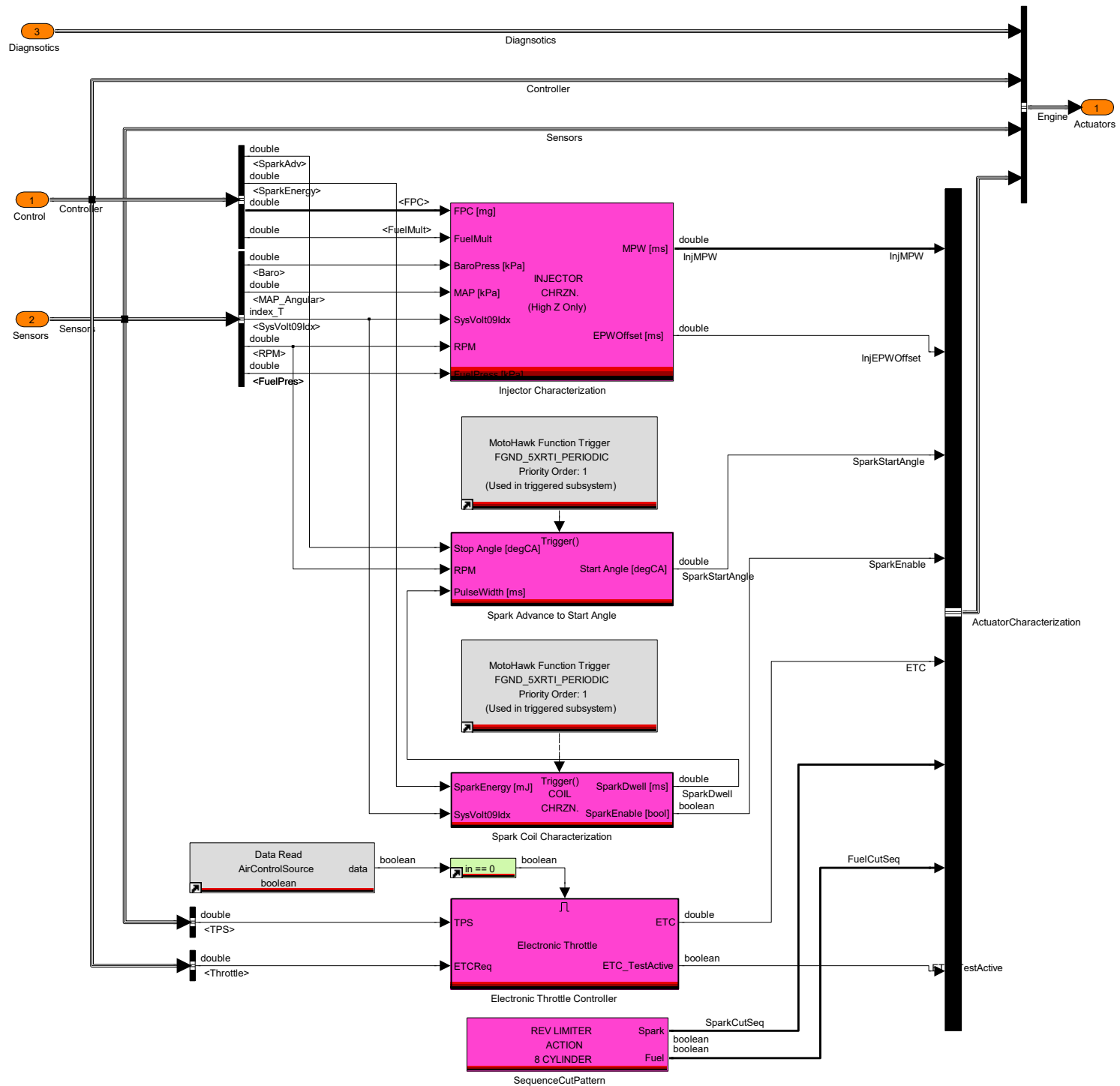


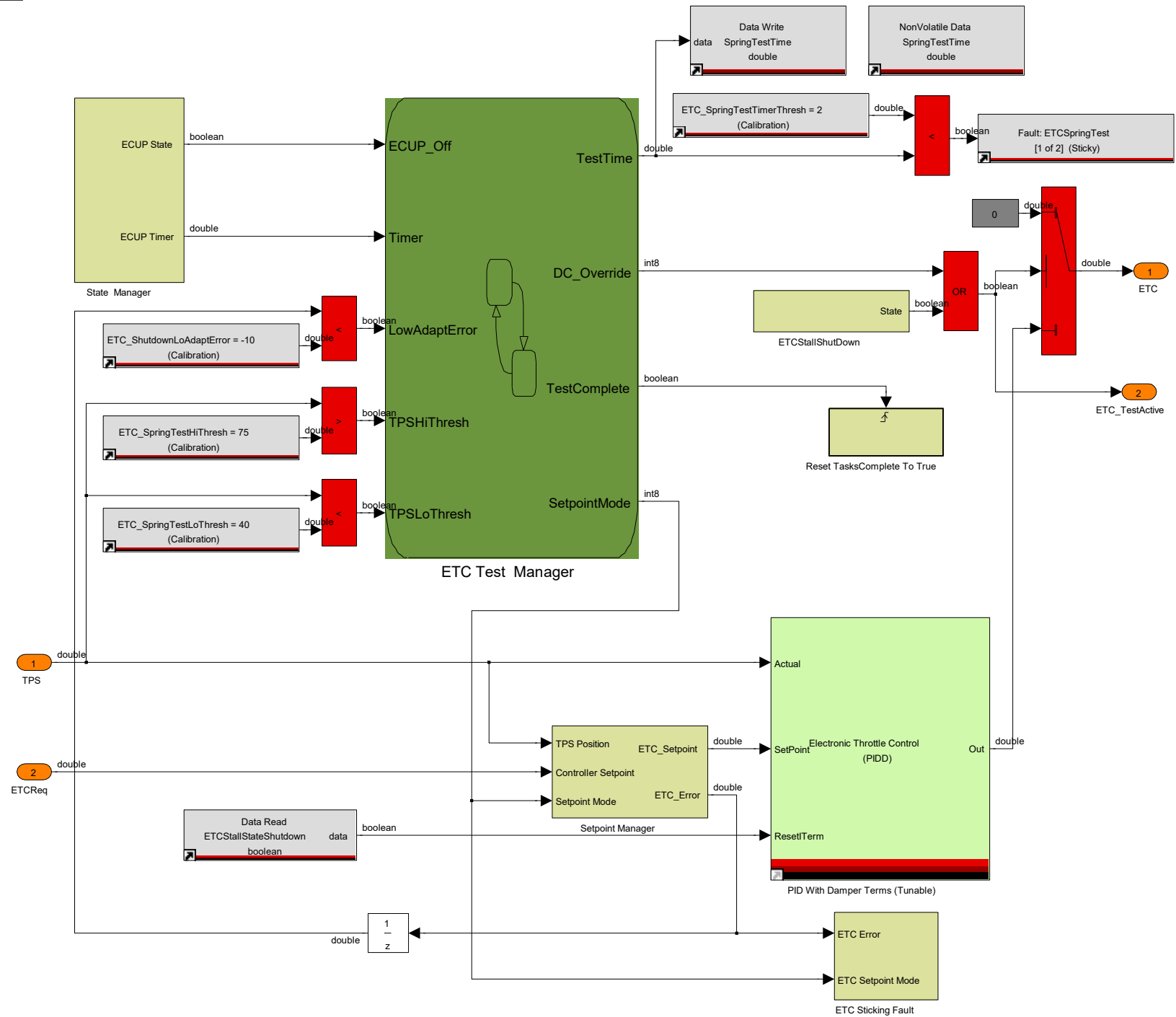
Control

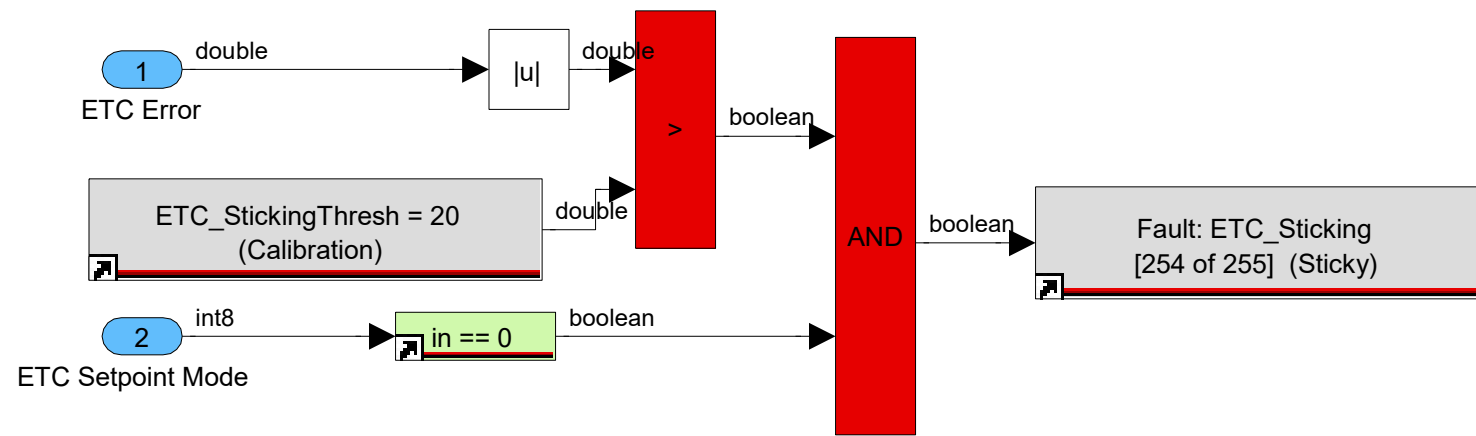


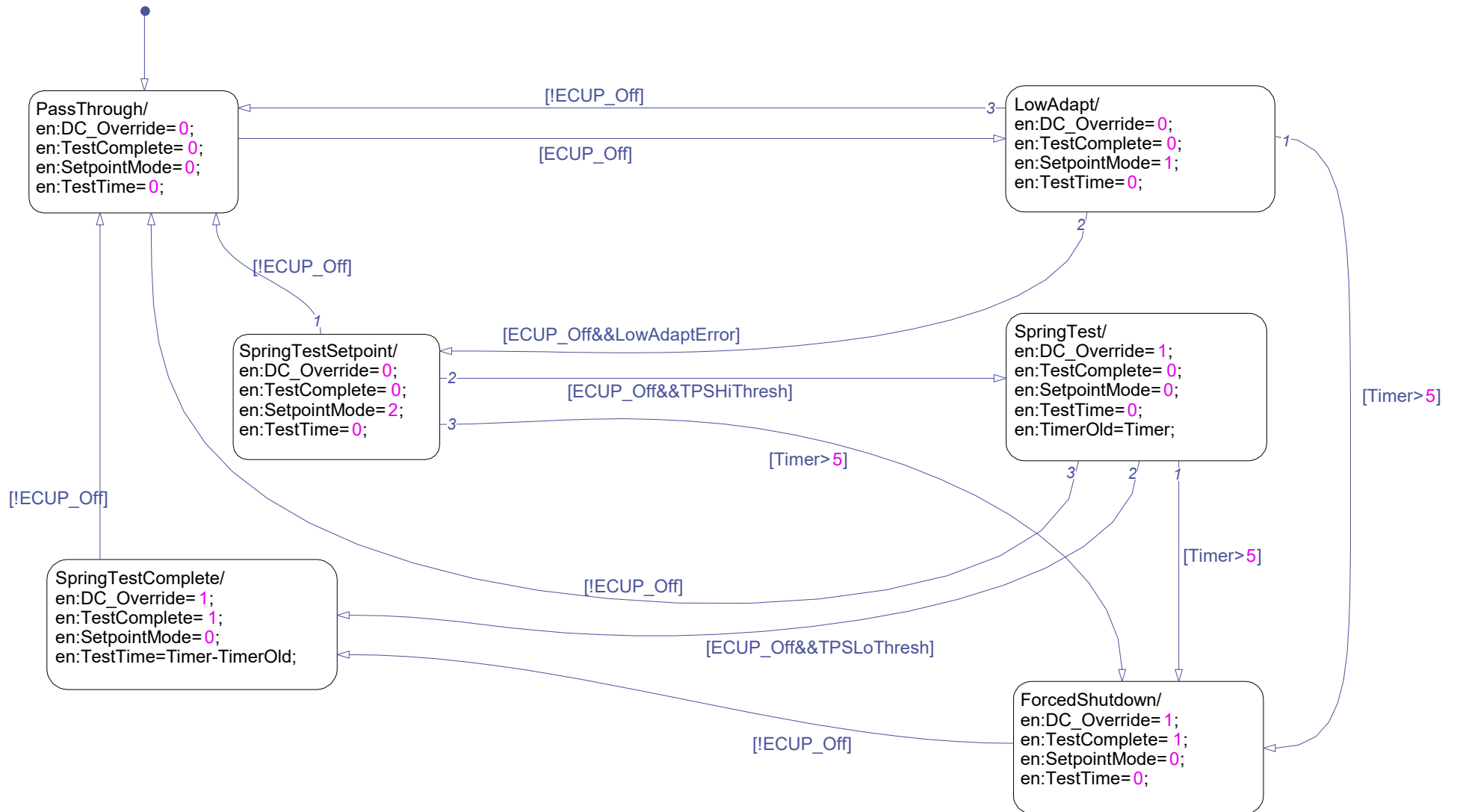
Outputs



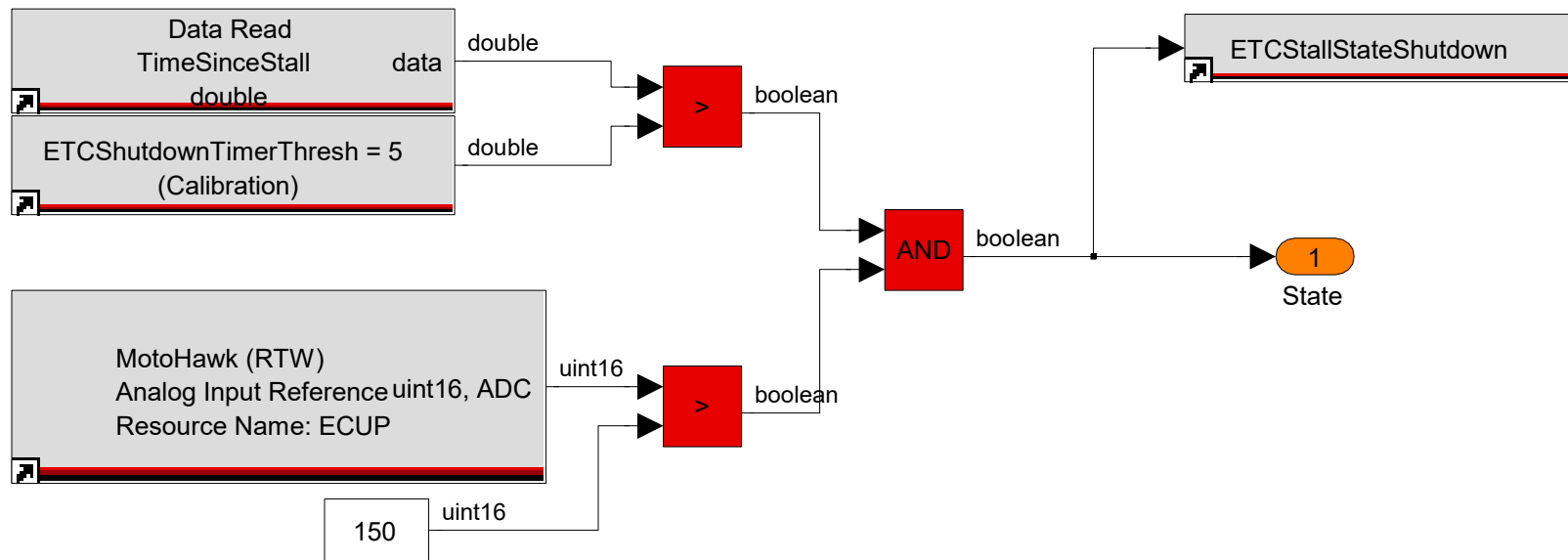


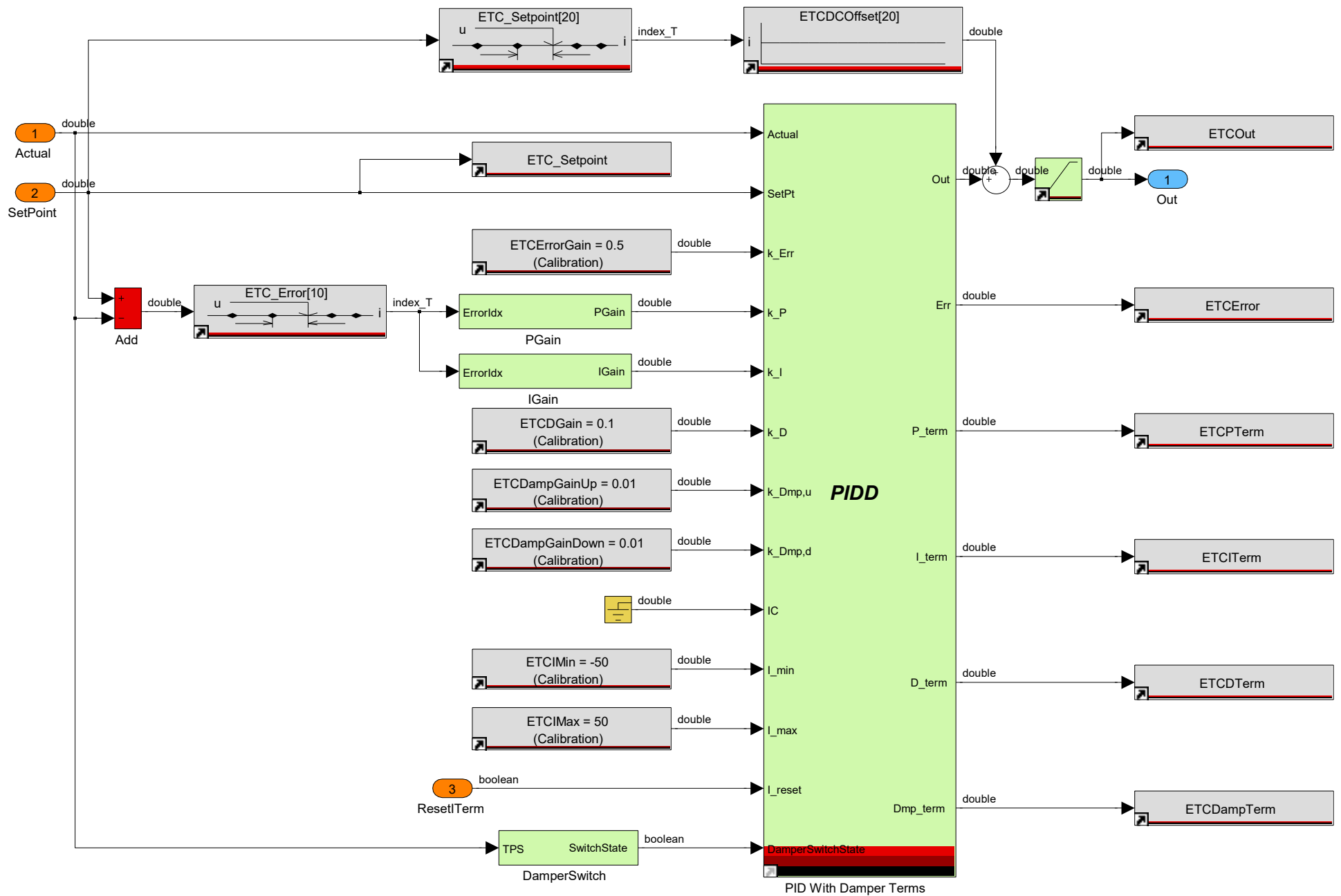


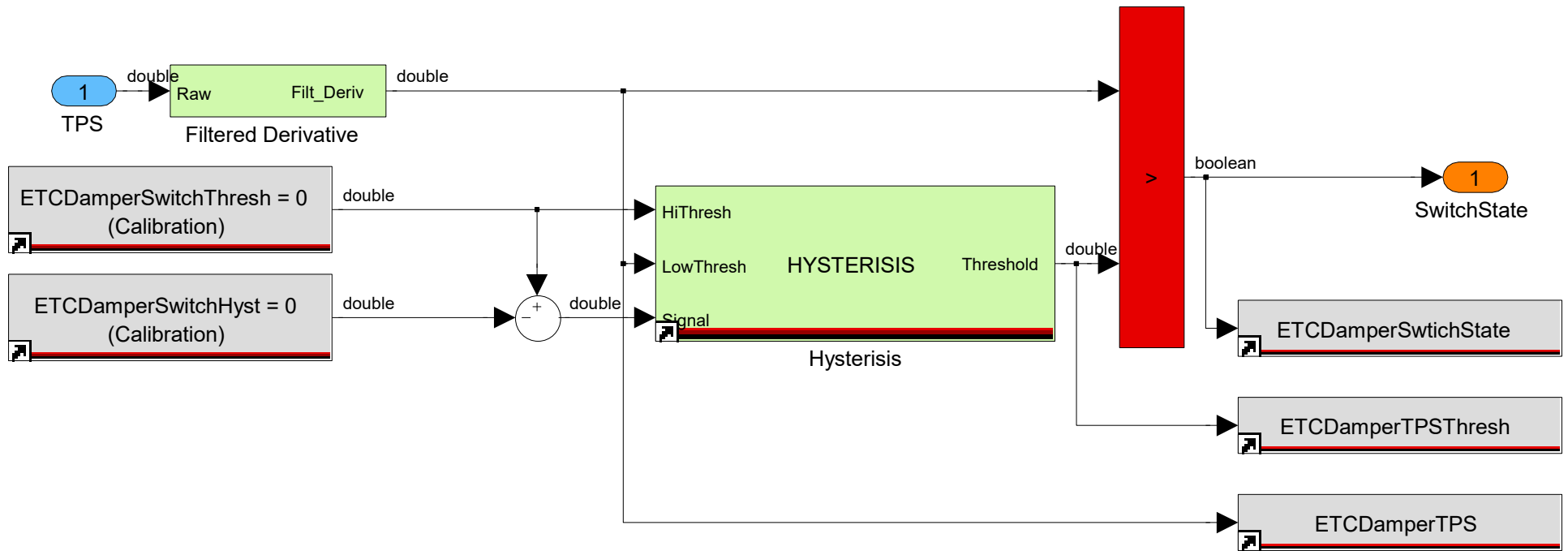


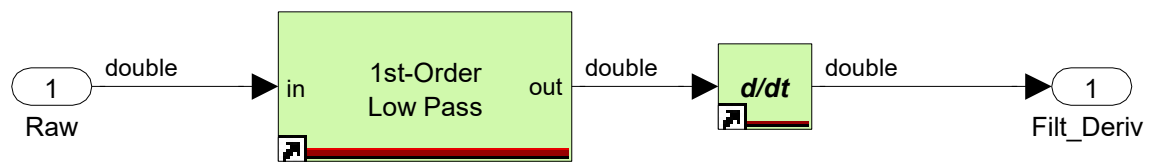


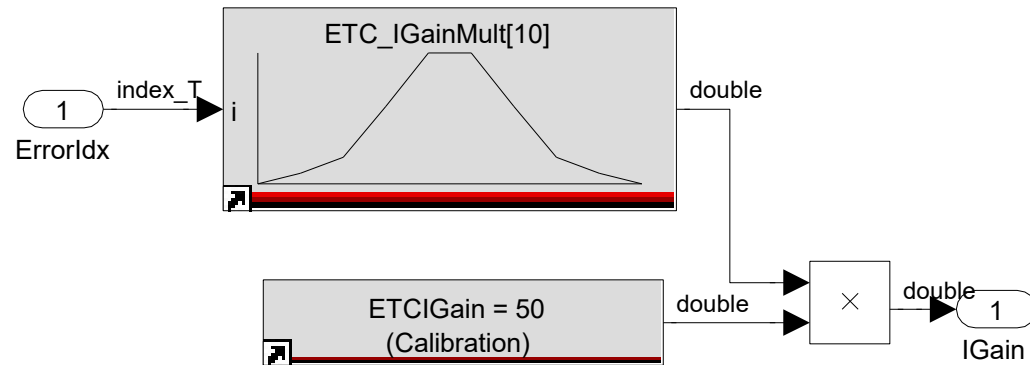


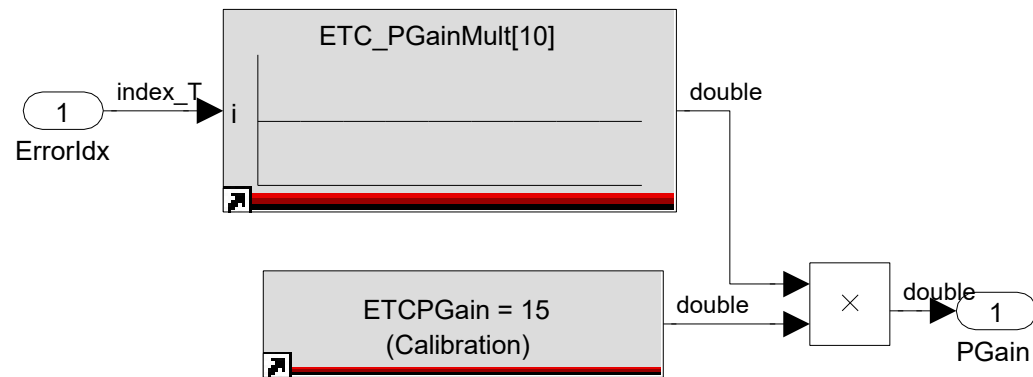






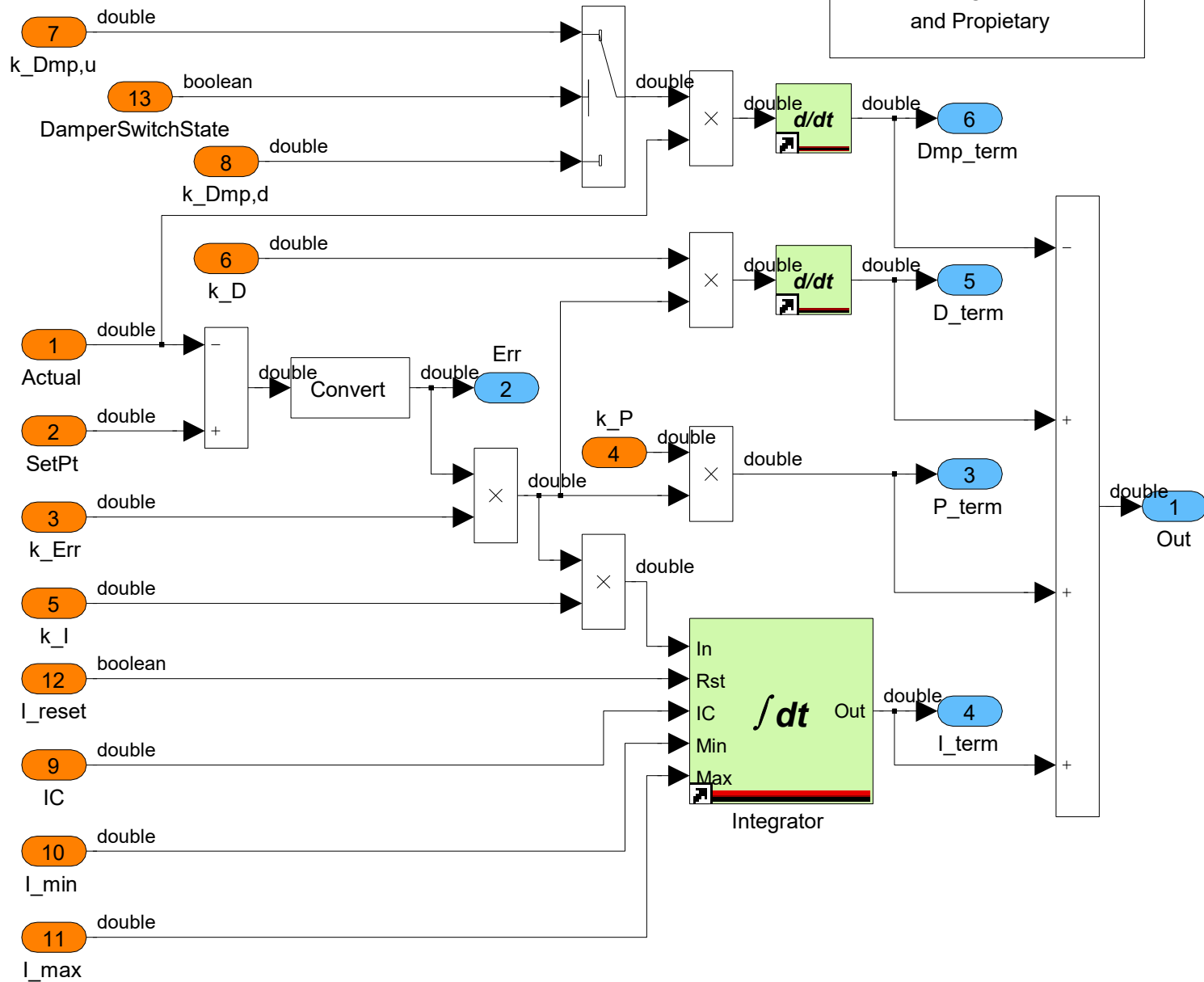






# Universal PID Controller with Dampers

Model Info:  
Author: Suhre, Poorman  
Mon May 16 15:00:08 2005  
Sat Nov 23 20:34:04 2019  
Version: 1.1848  
MotoTron Confidential  
and Proprietary

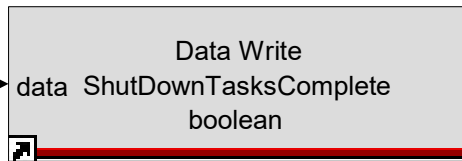




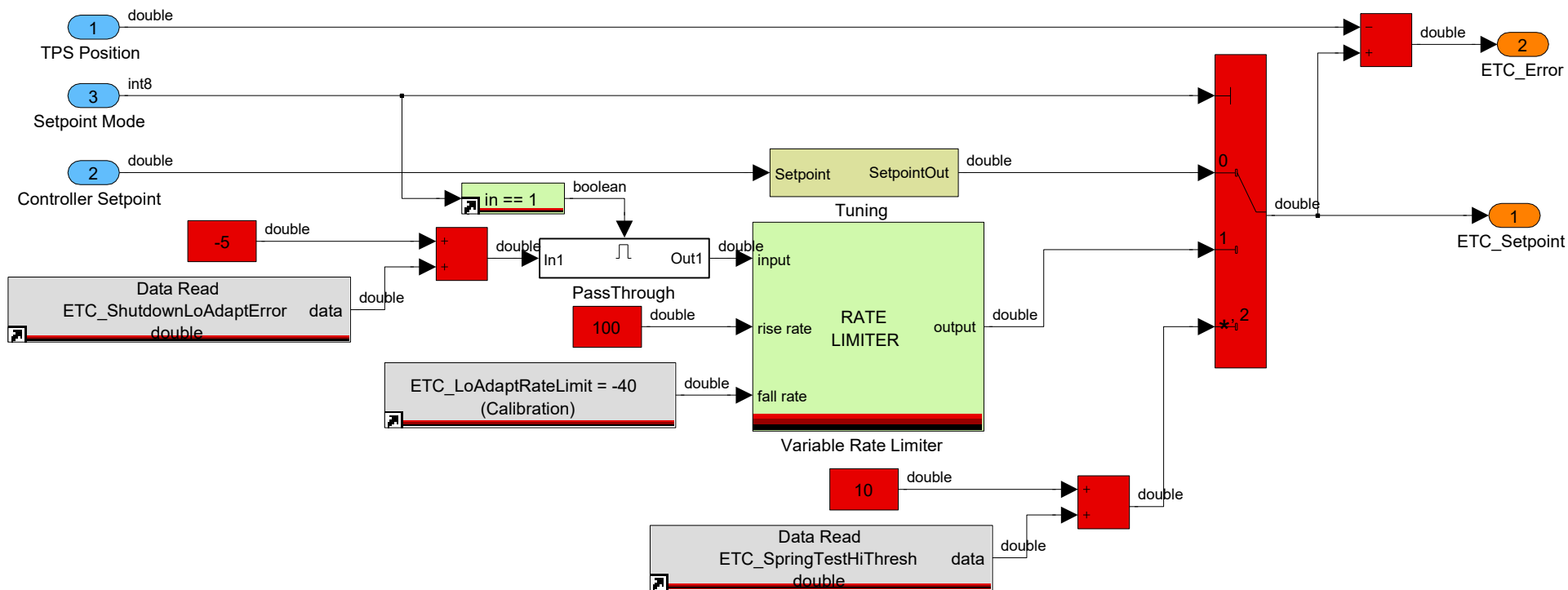
Trigger

true

boolean



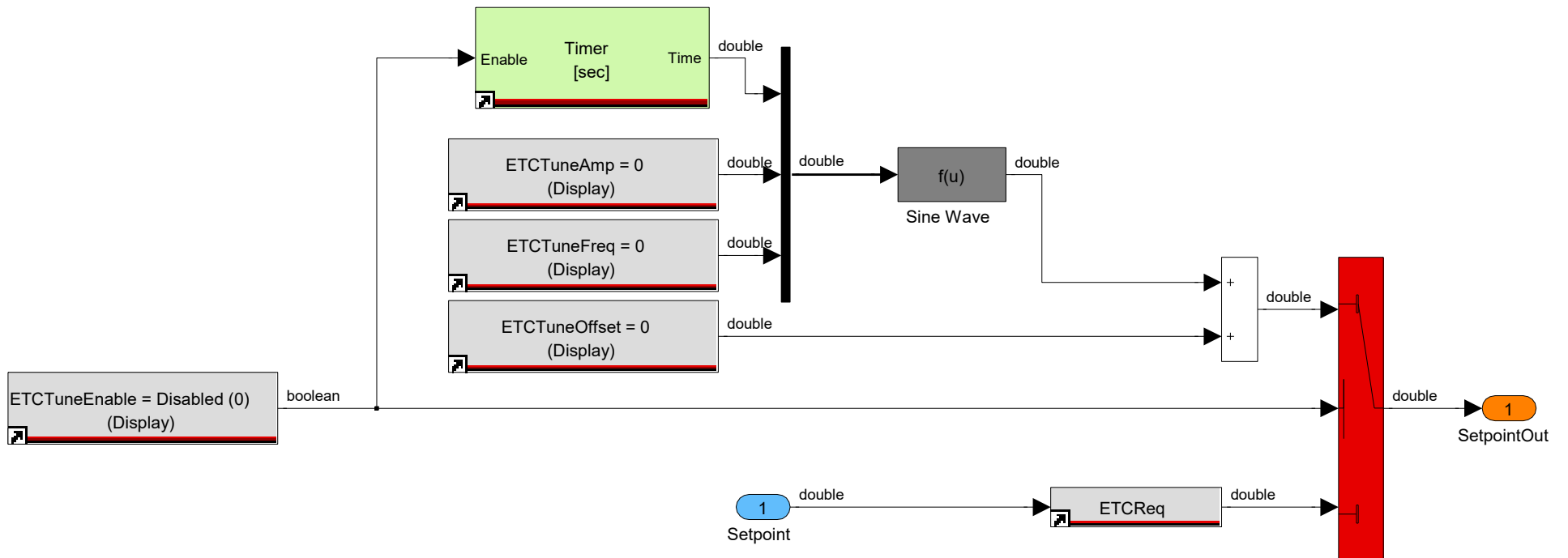




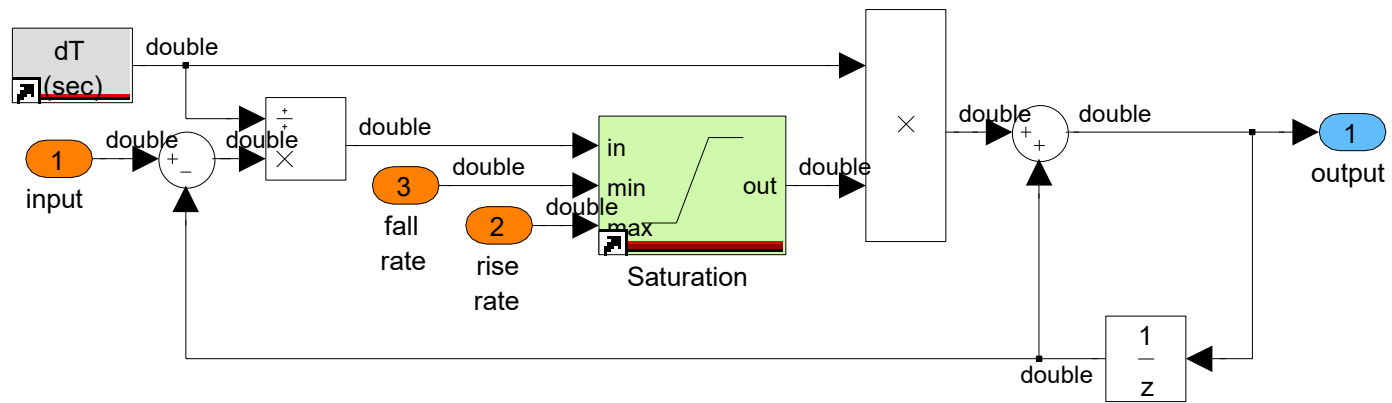


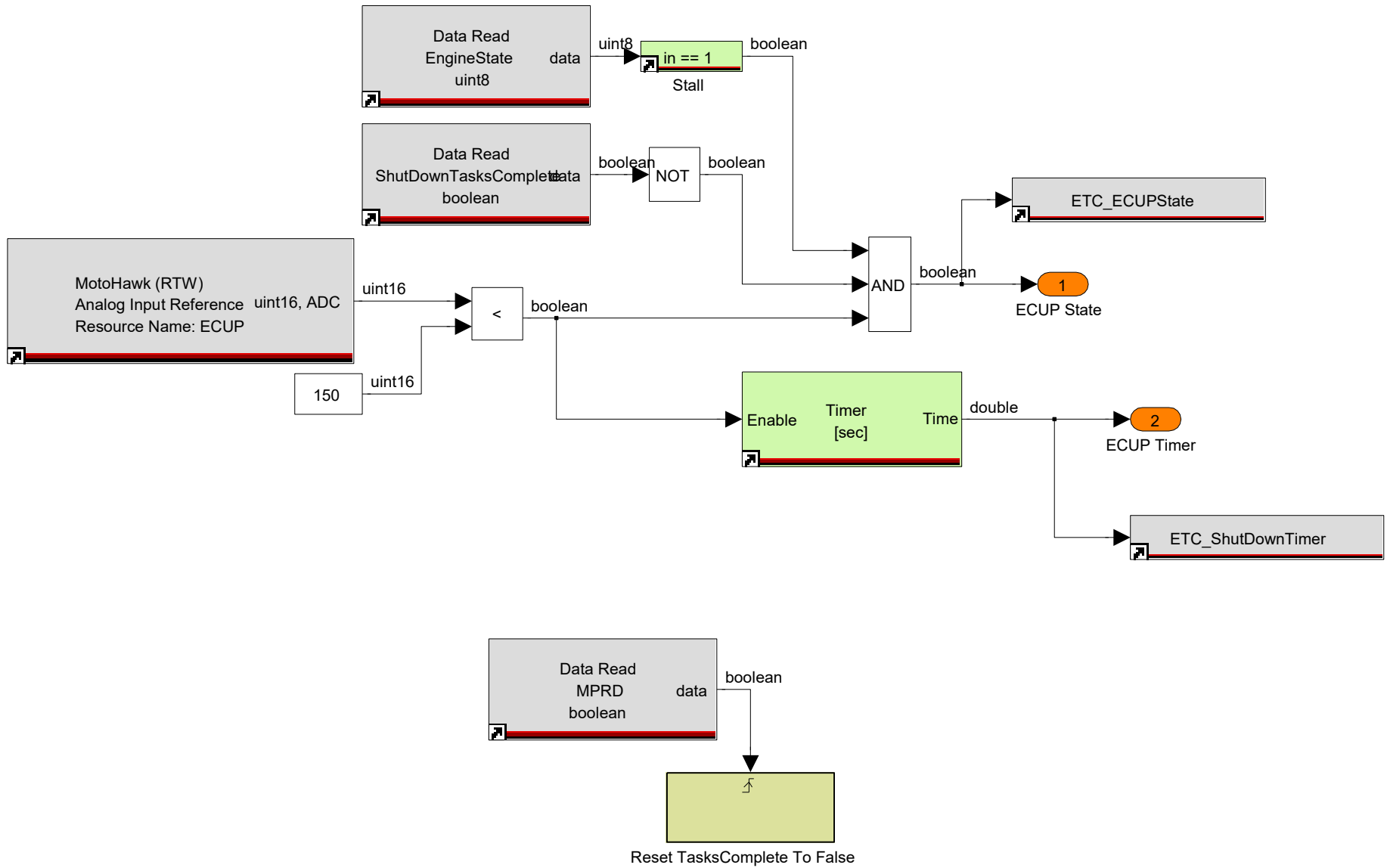
Enable





## Rate Limiter - Limit allowable change in signal per timestep



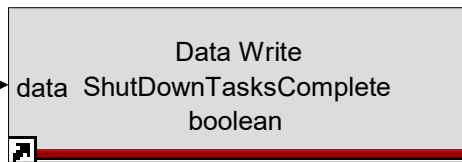


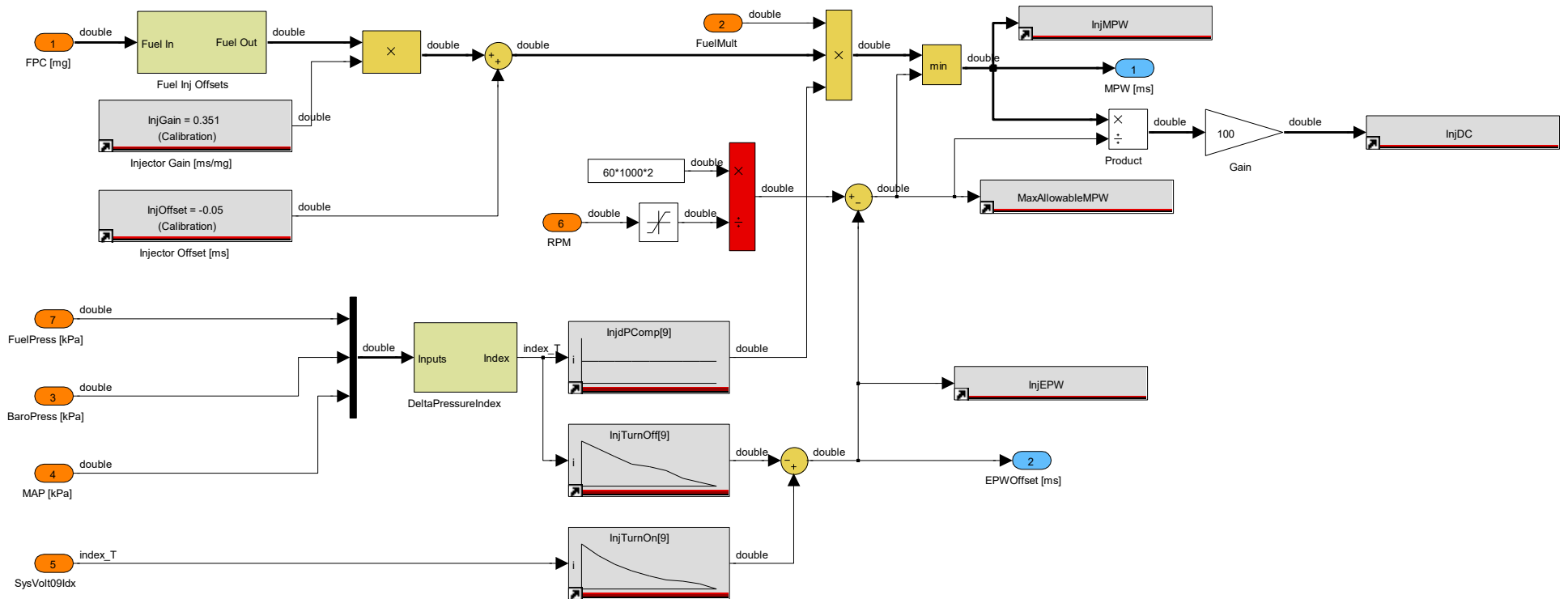


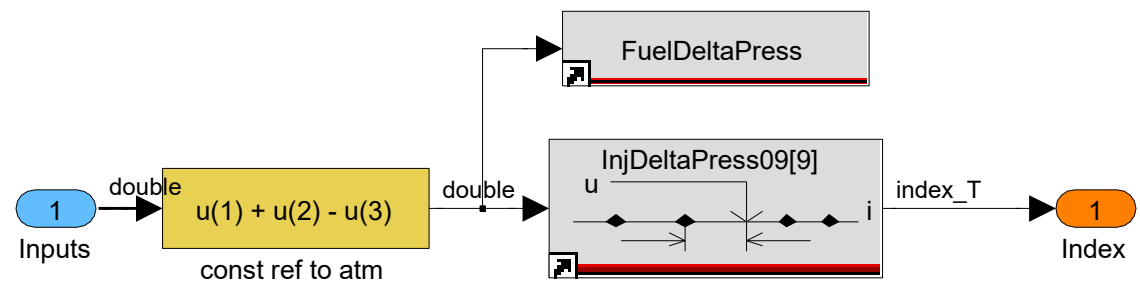
Trigger

false

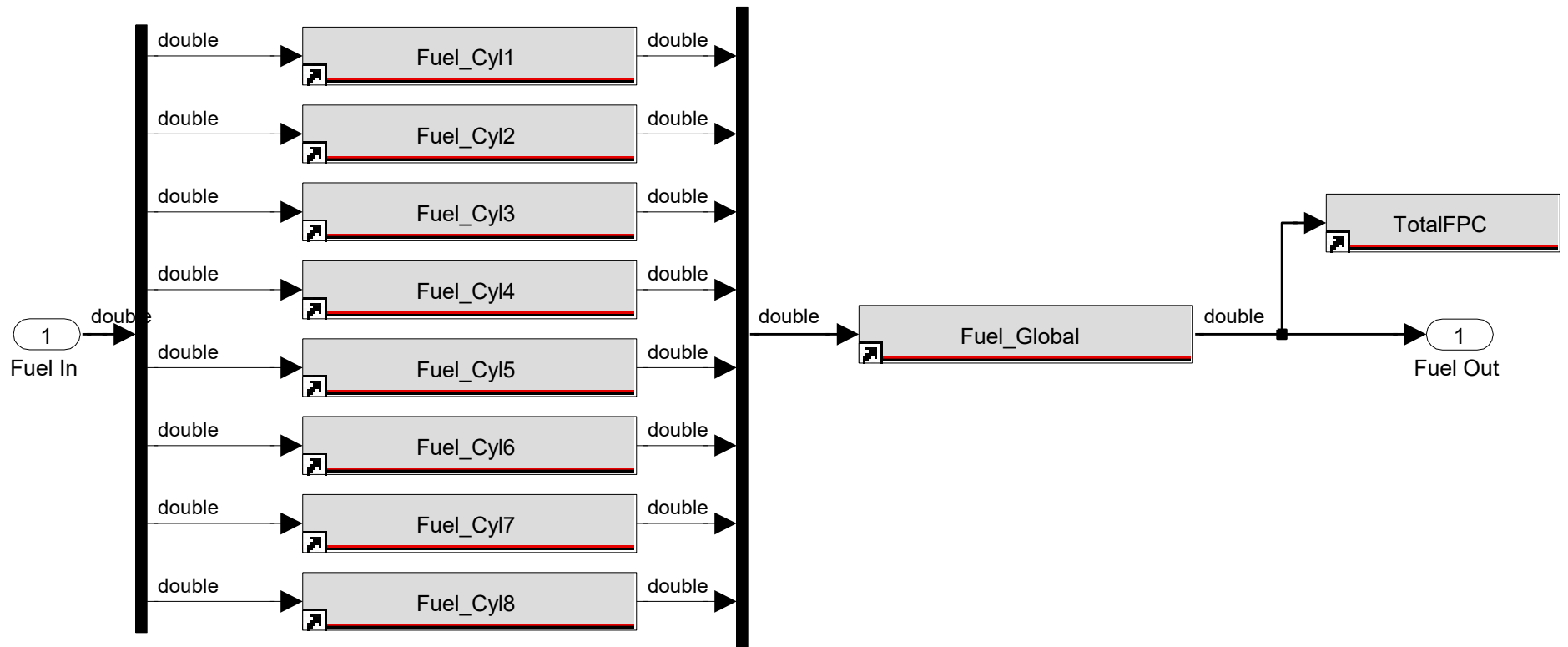
boolean

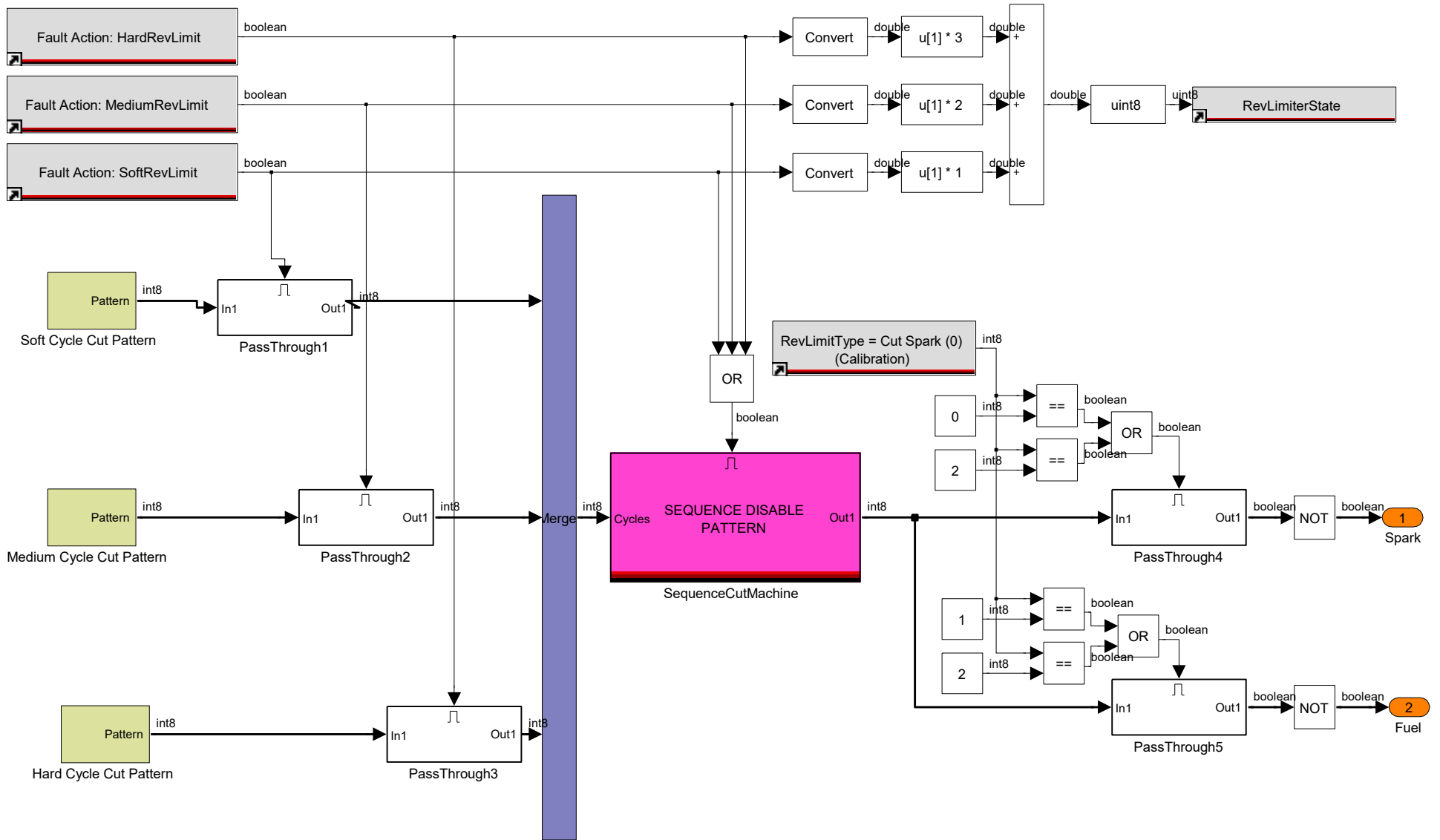


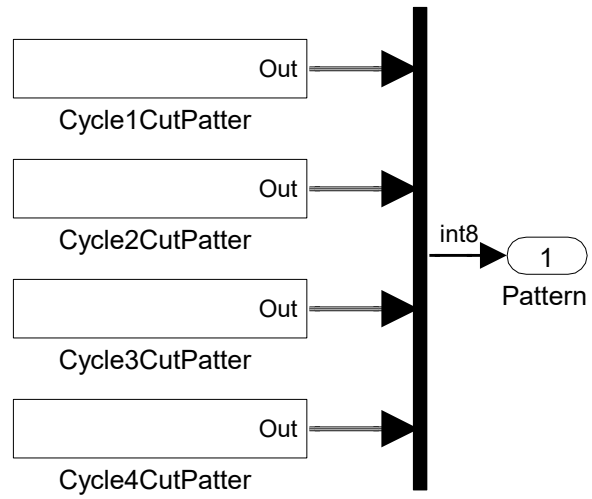


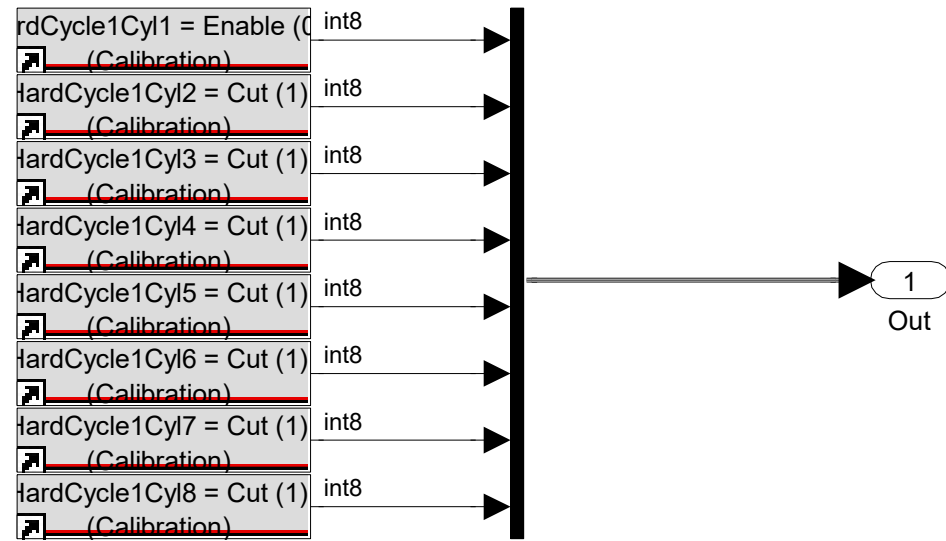


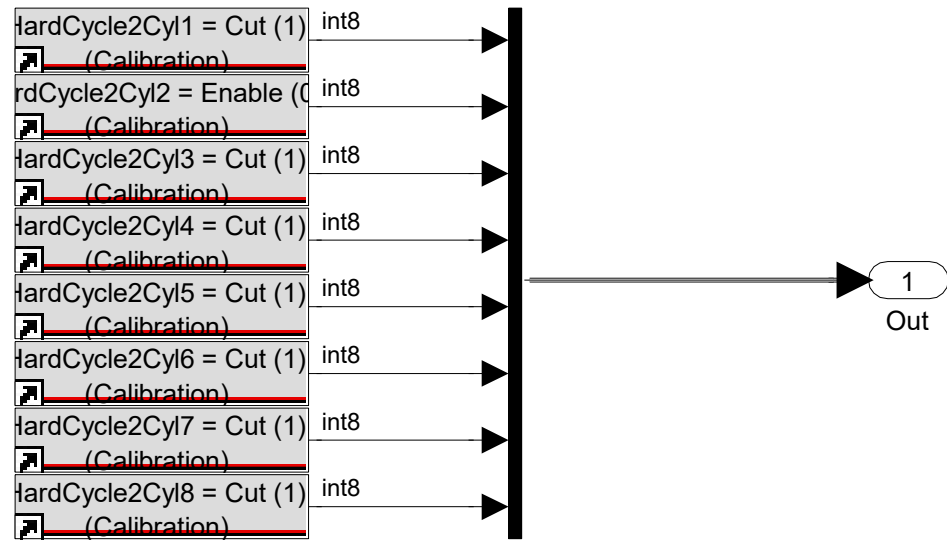


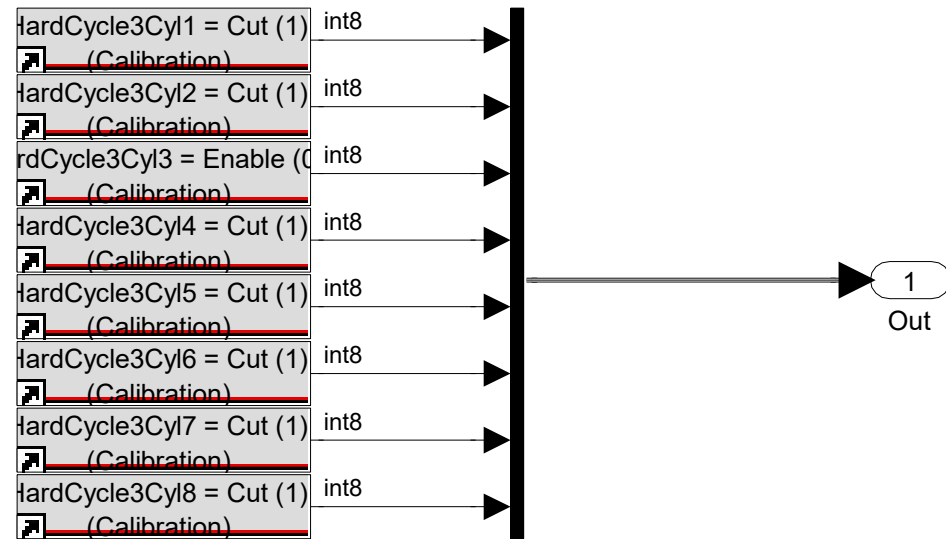


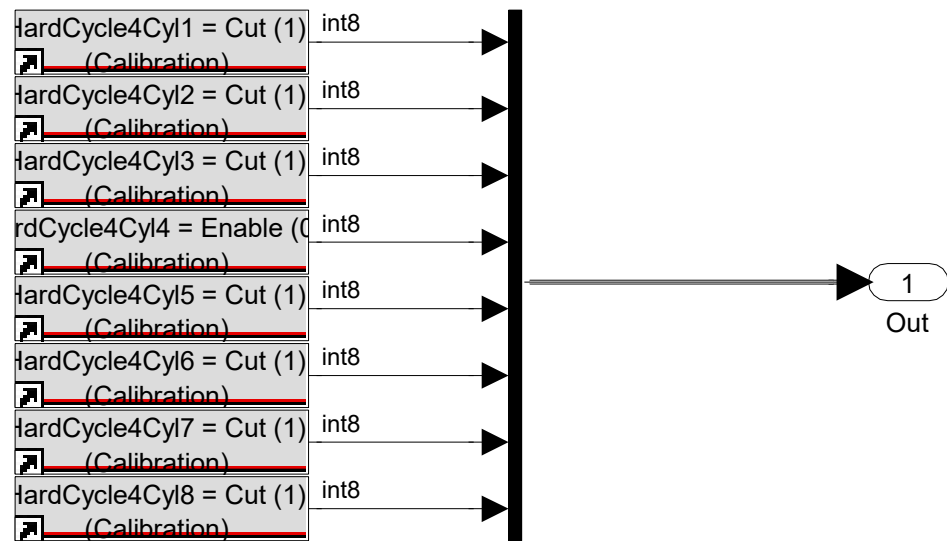


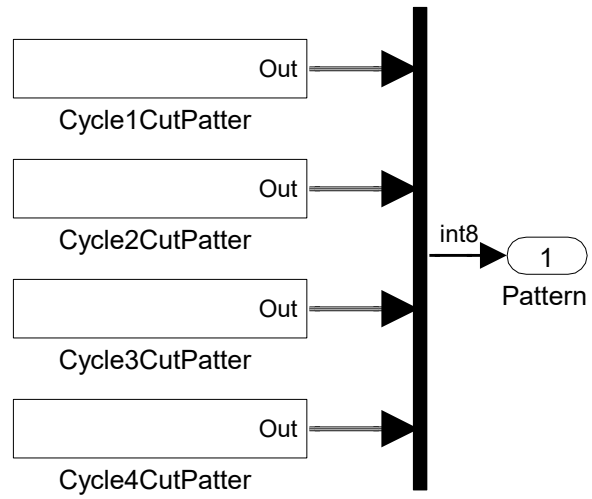




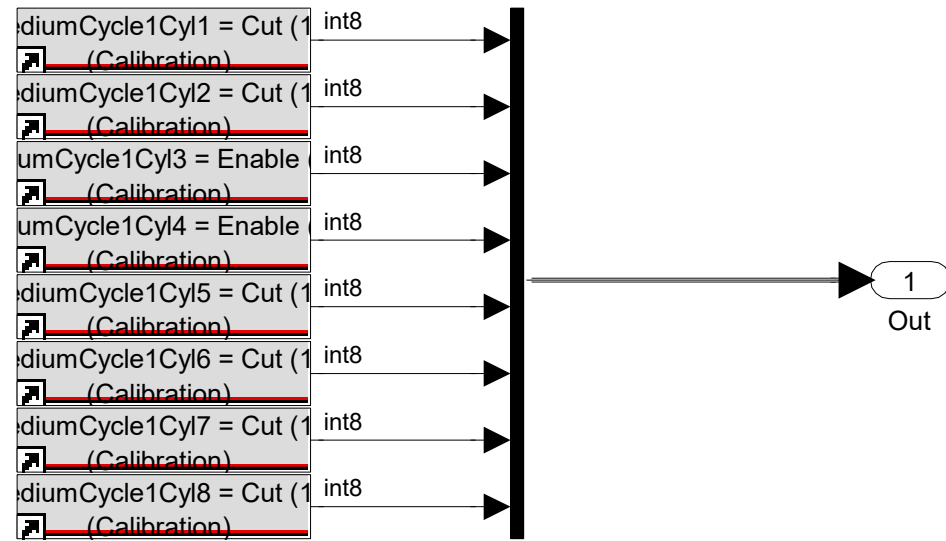


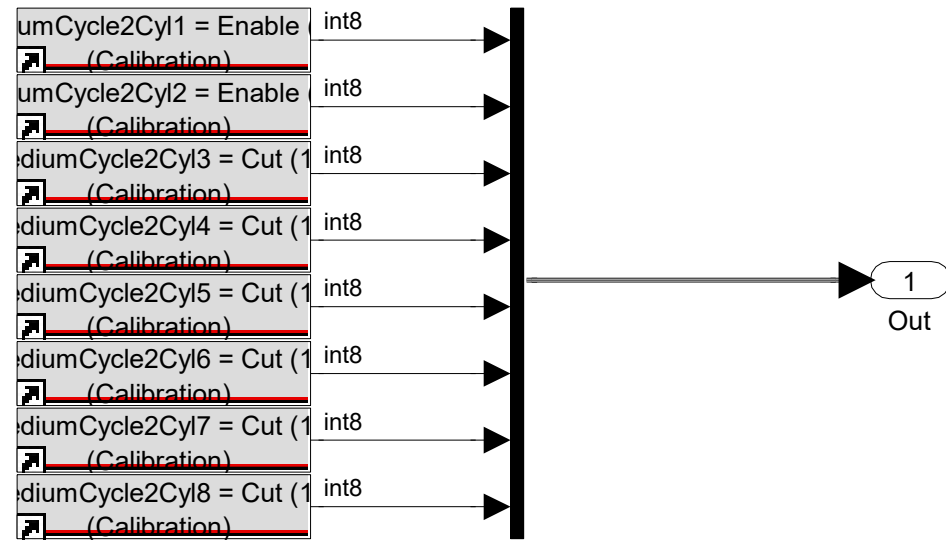


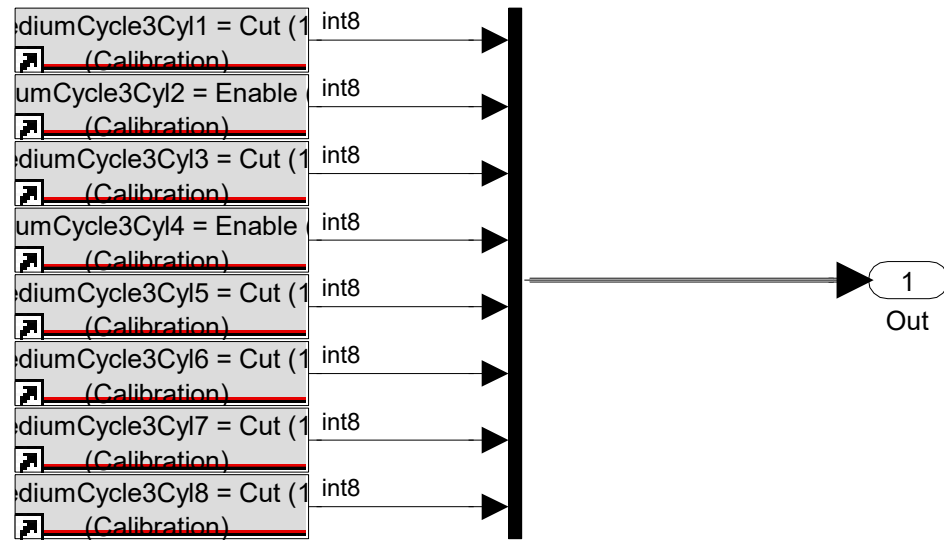


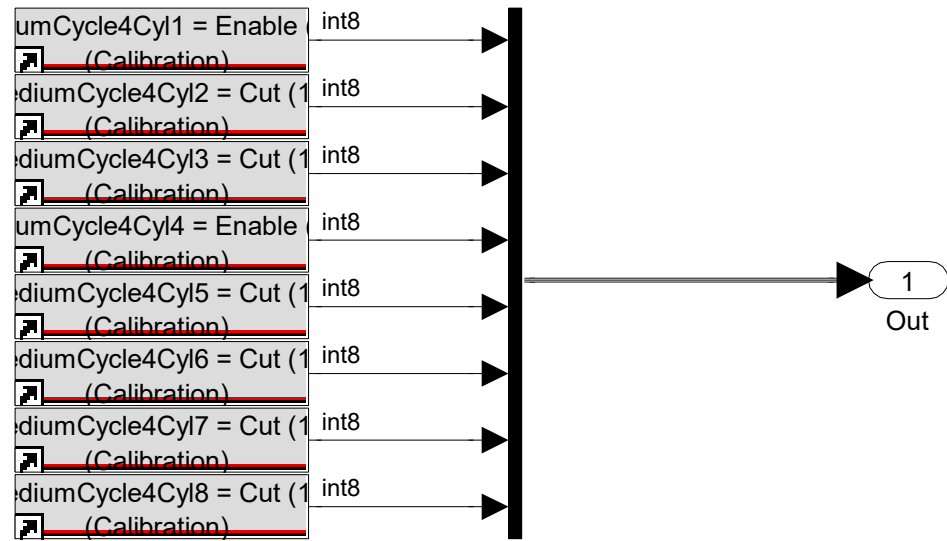






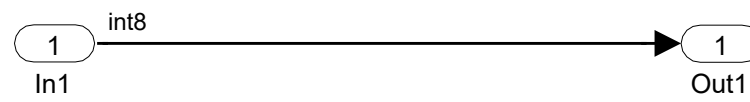






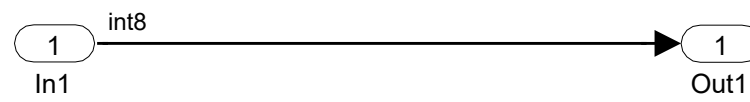


Enable



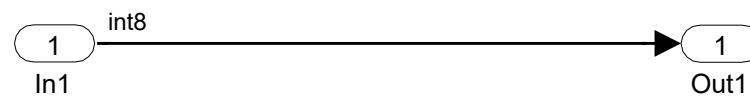


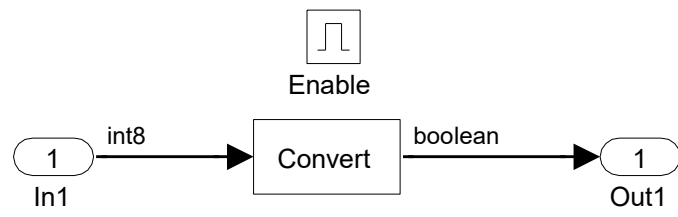
Enable



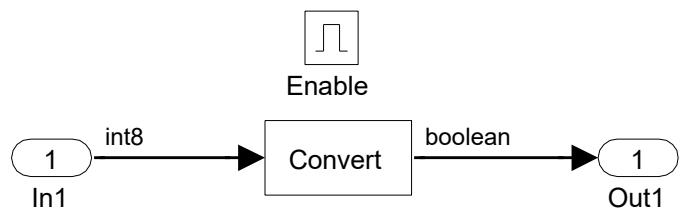


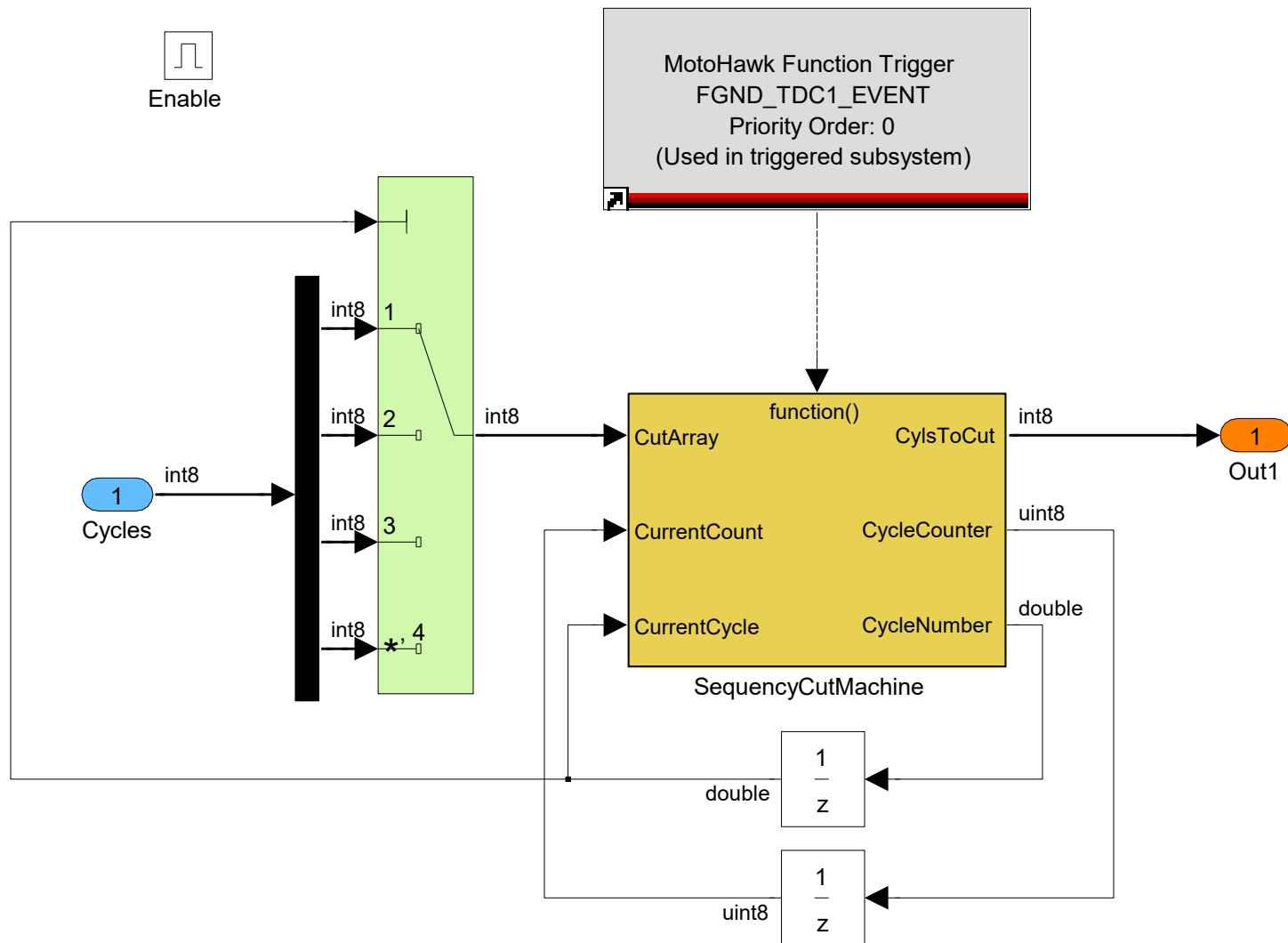
Enable



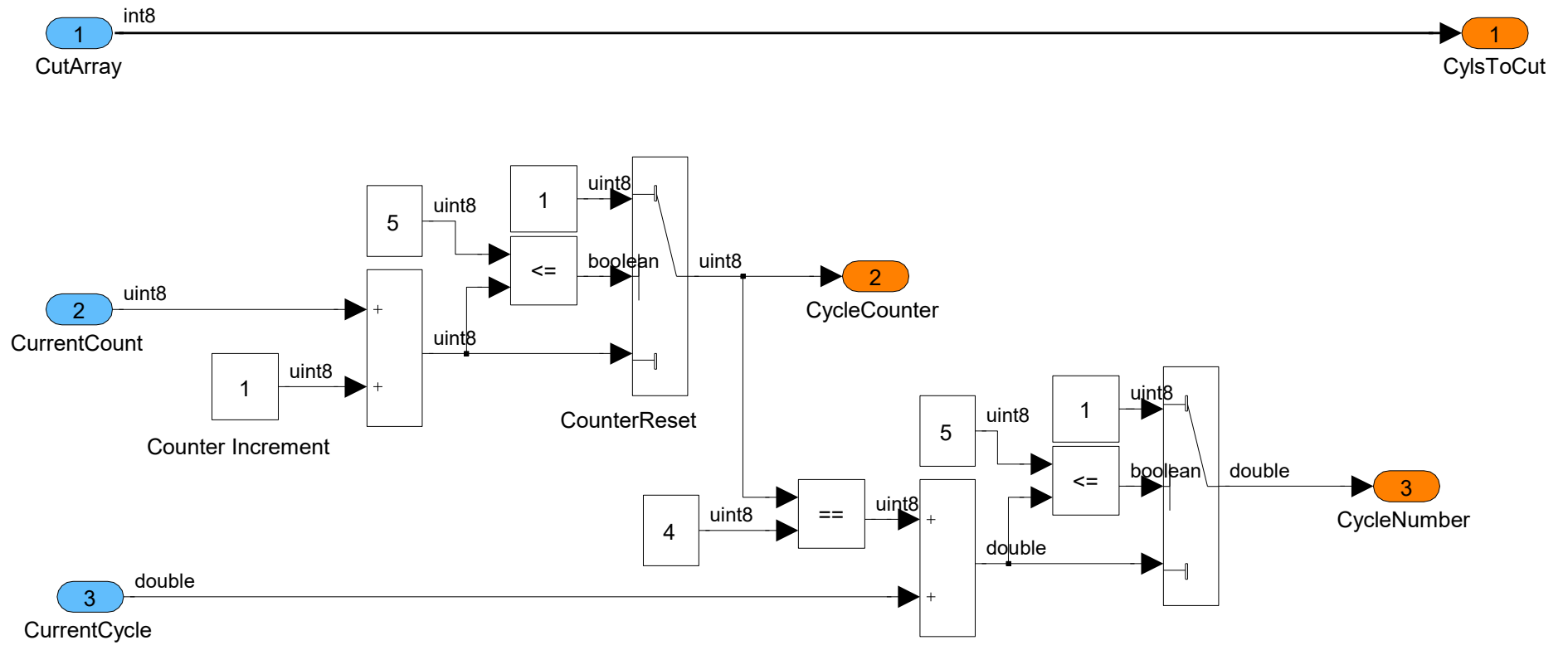


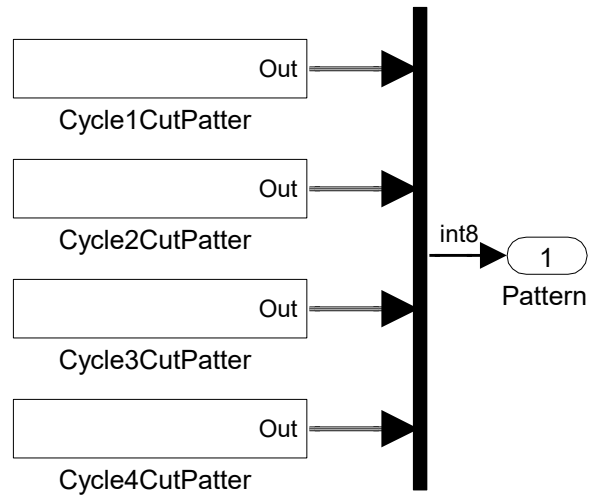


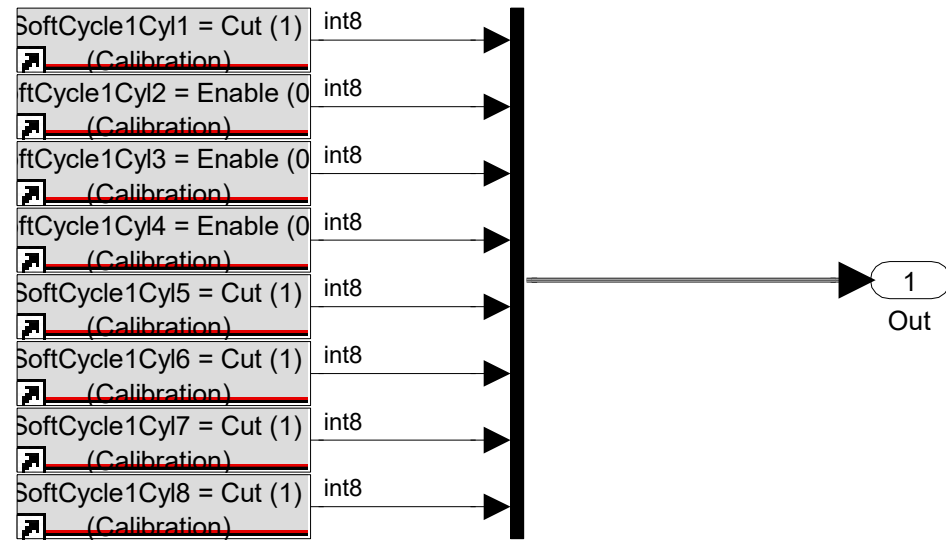


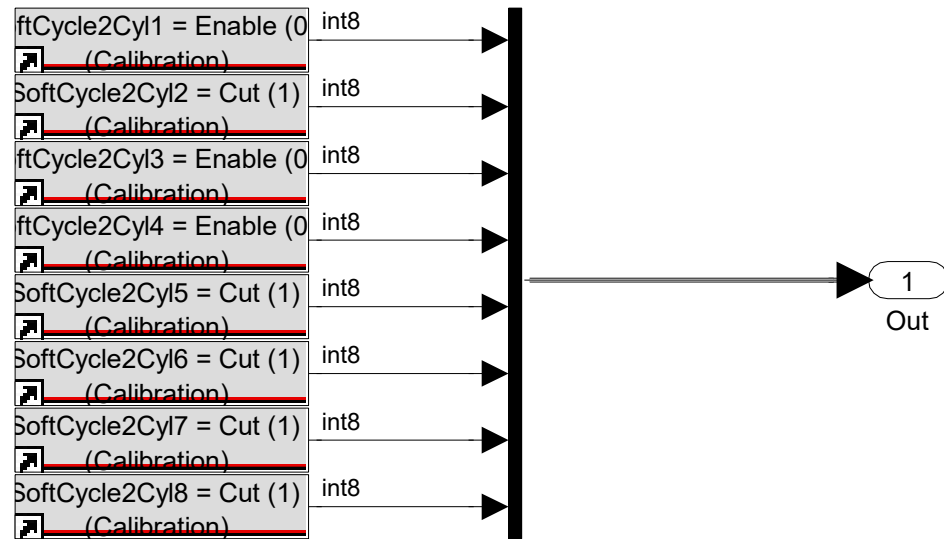


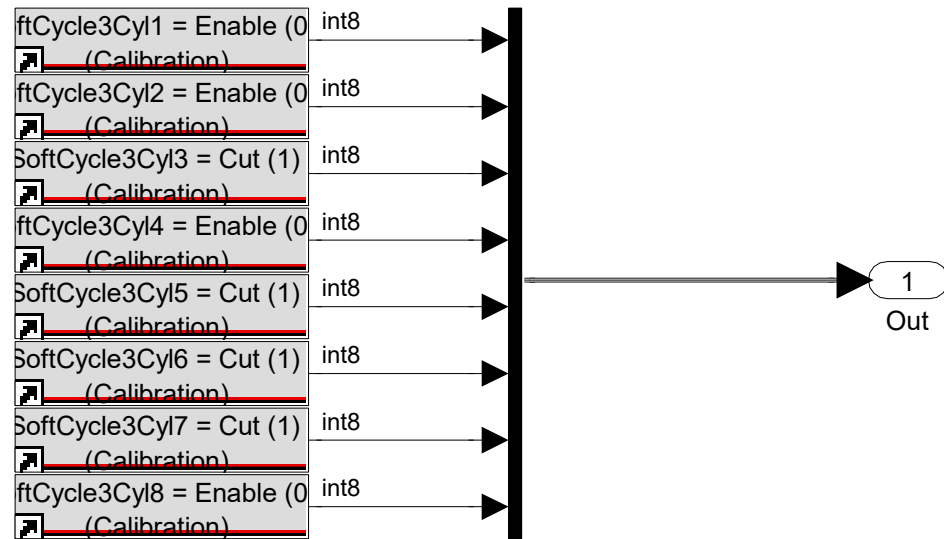
f()  
function

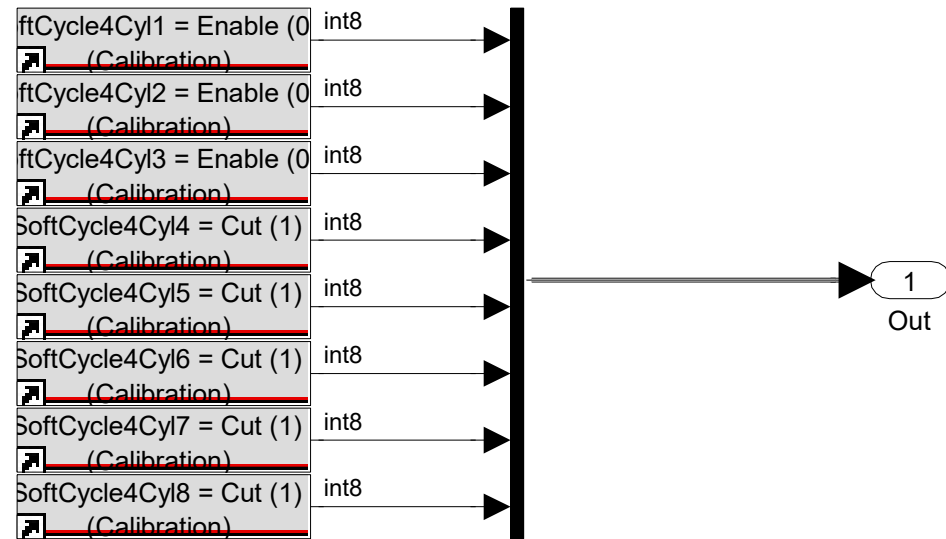






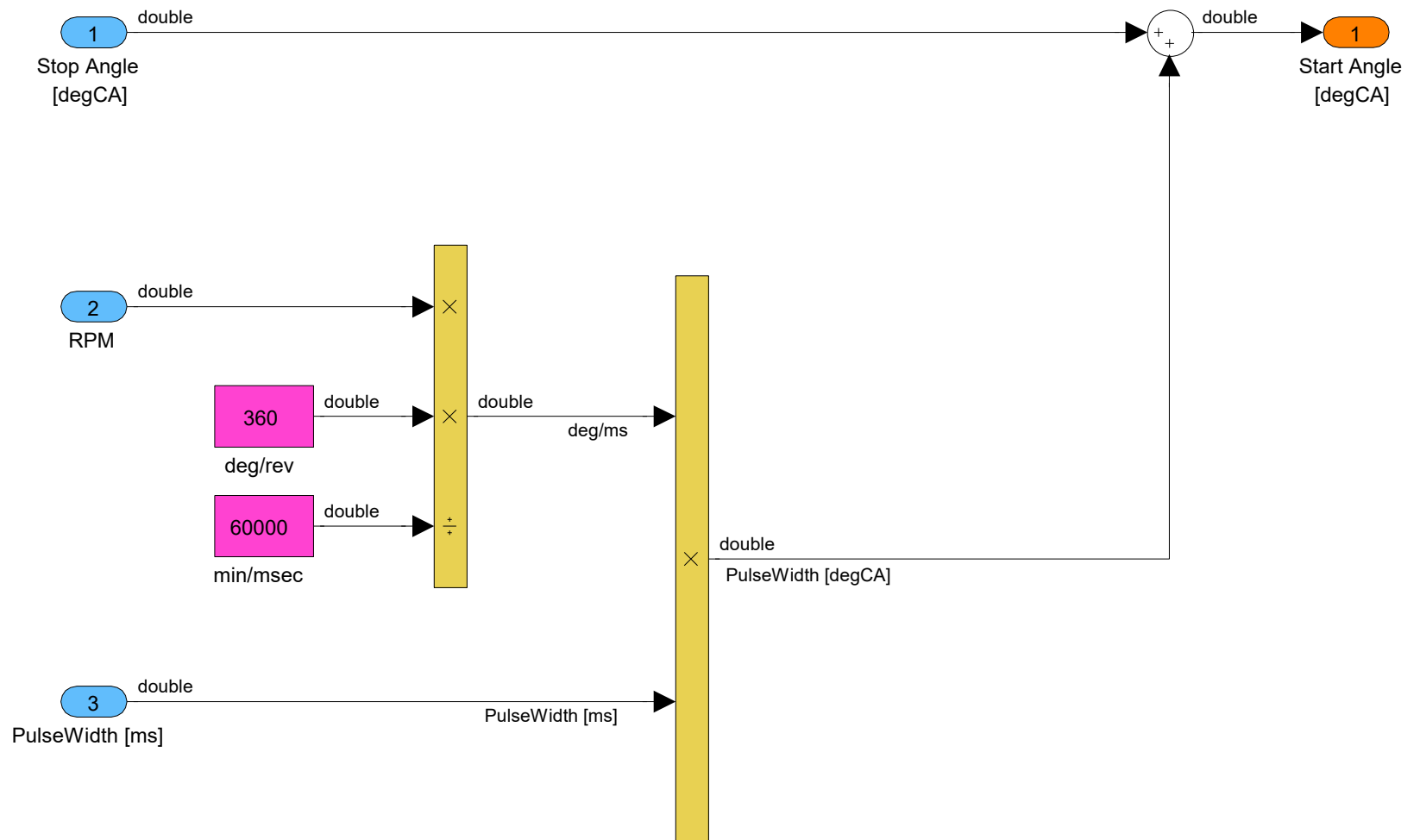




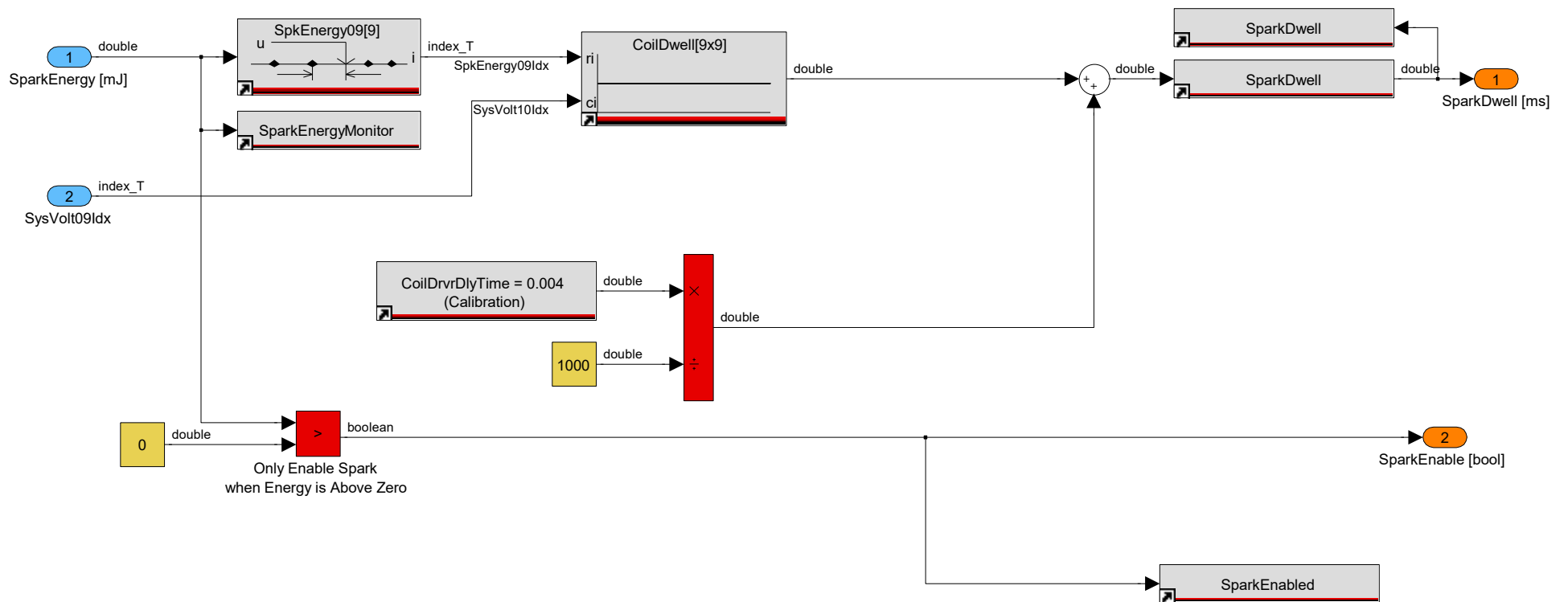


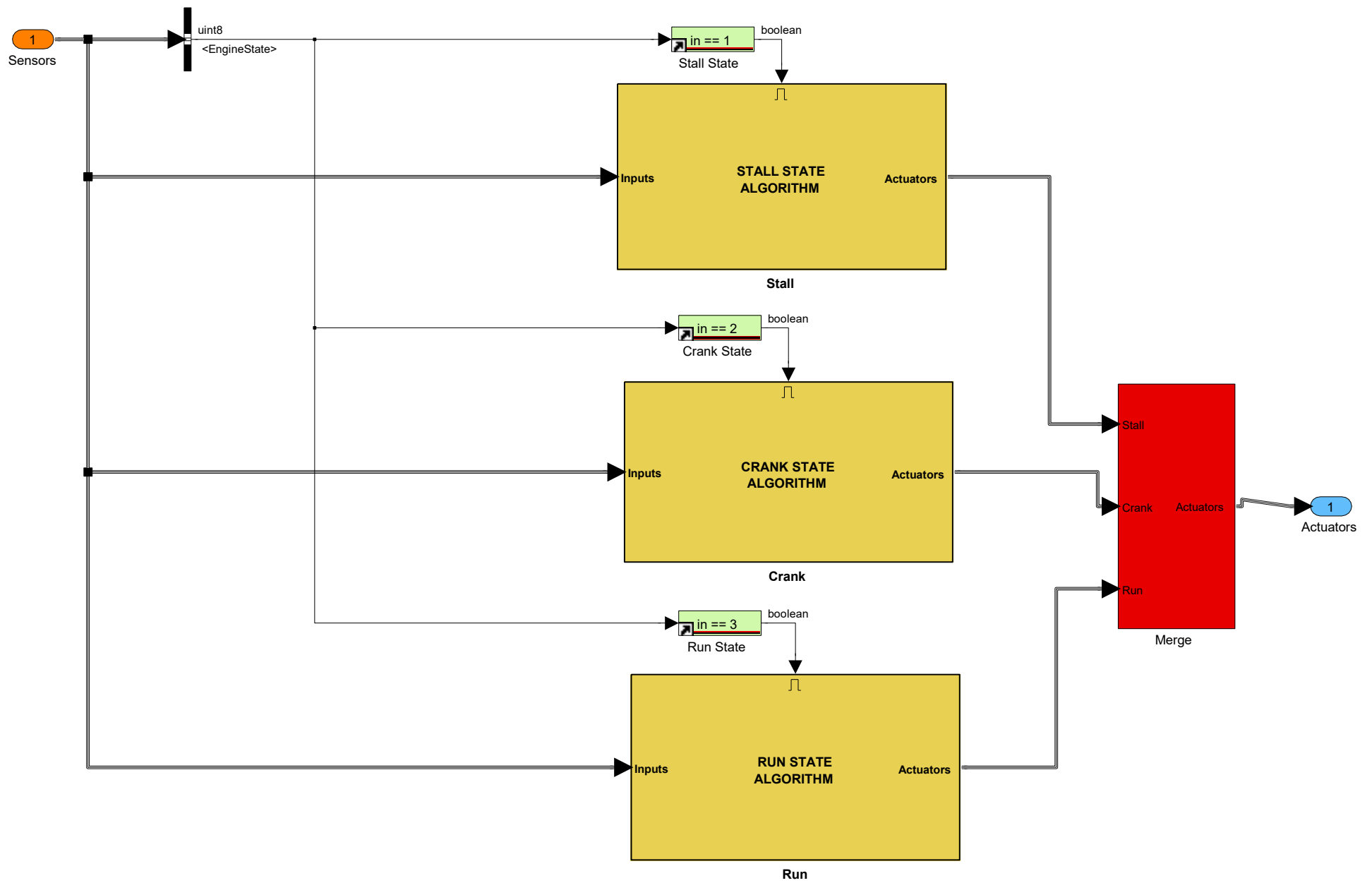


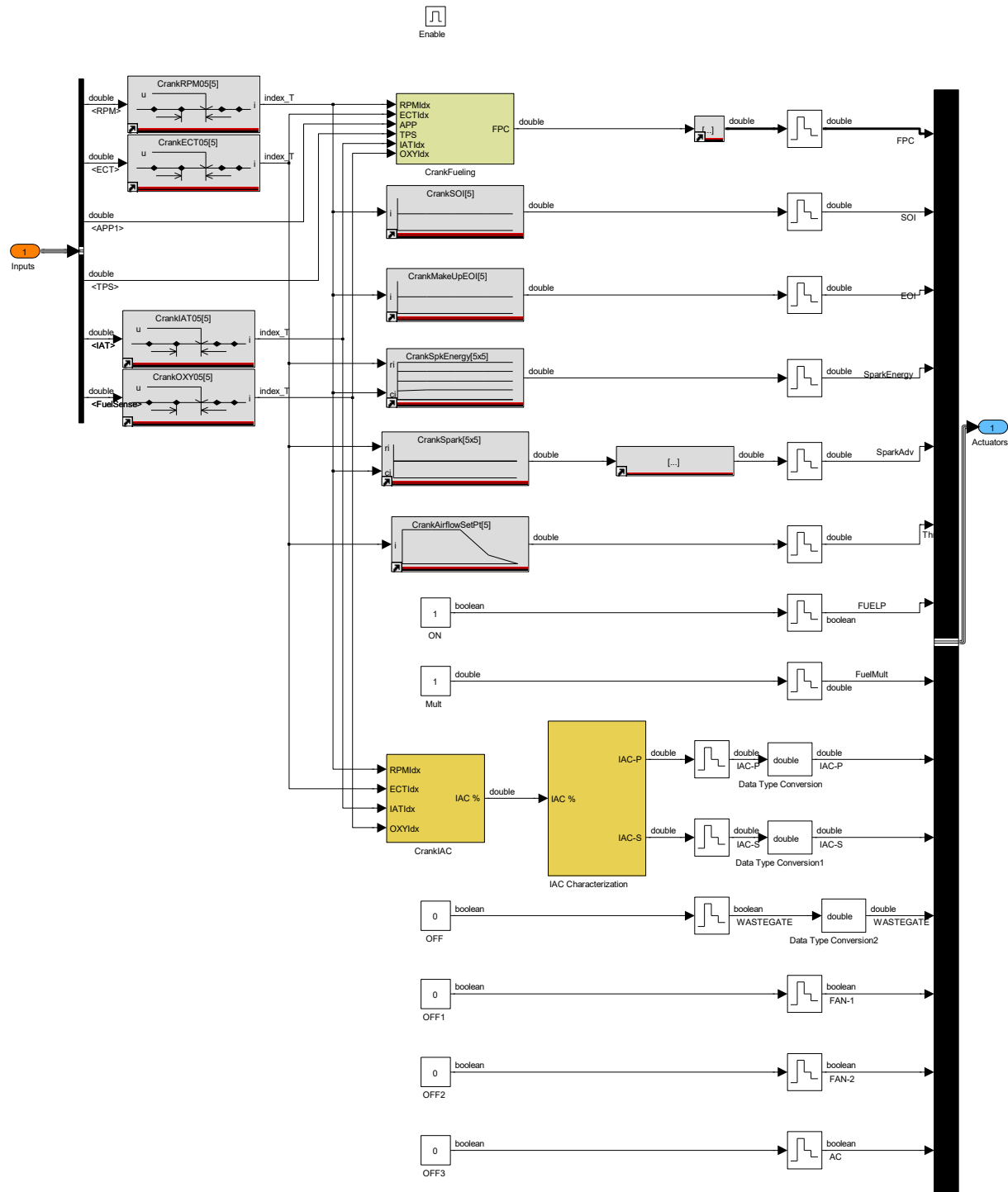
f()

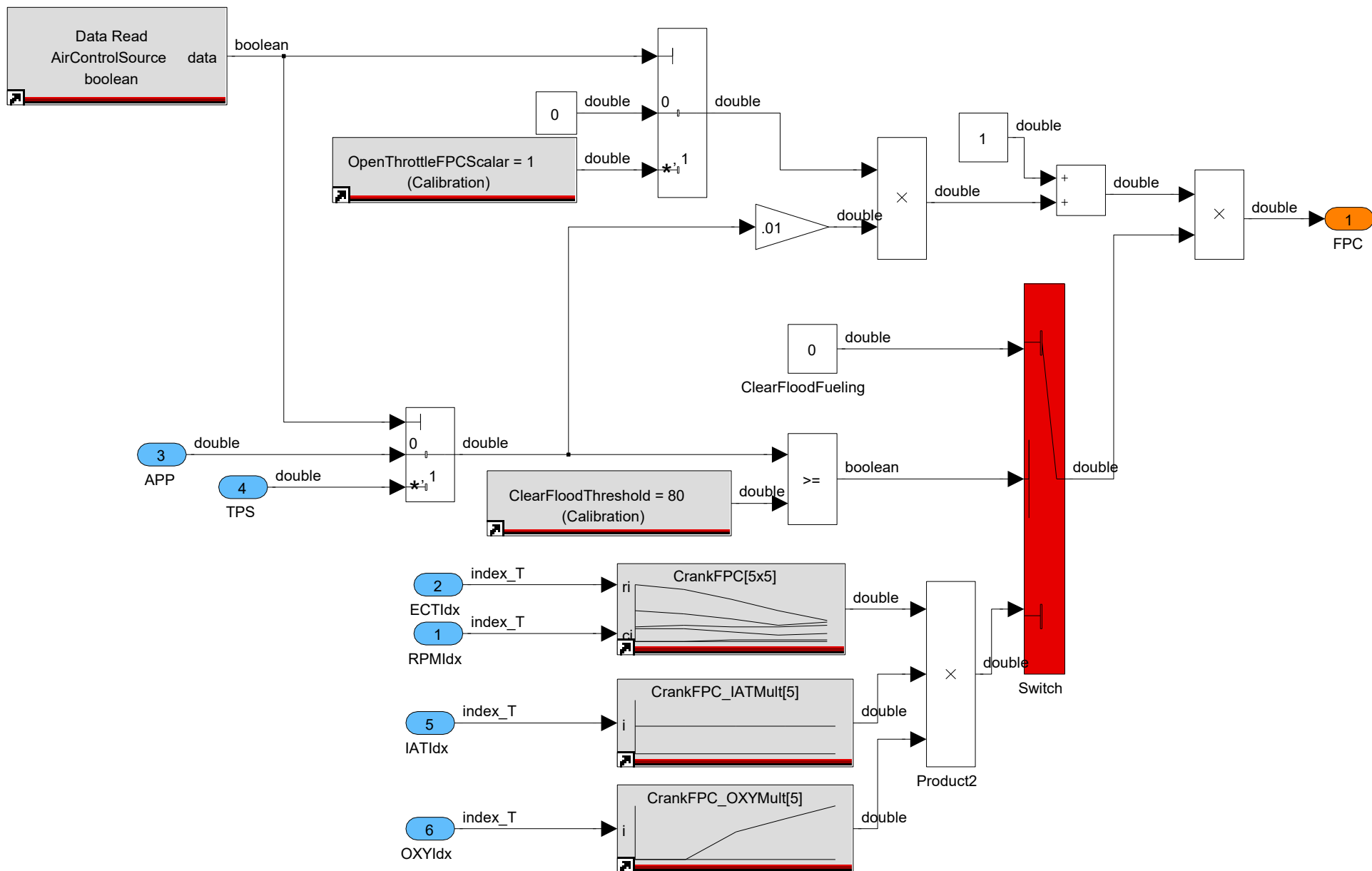


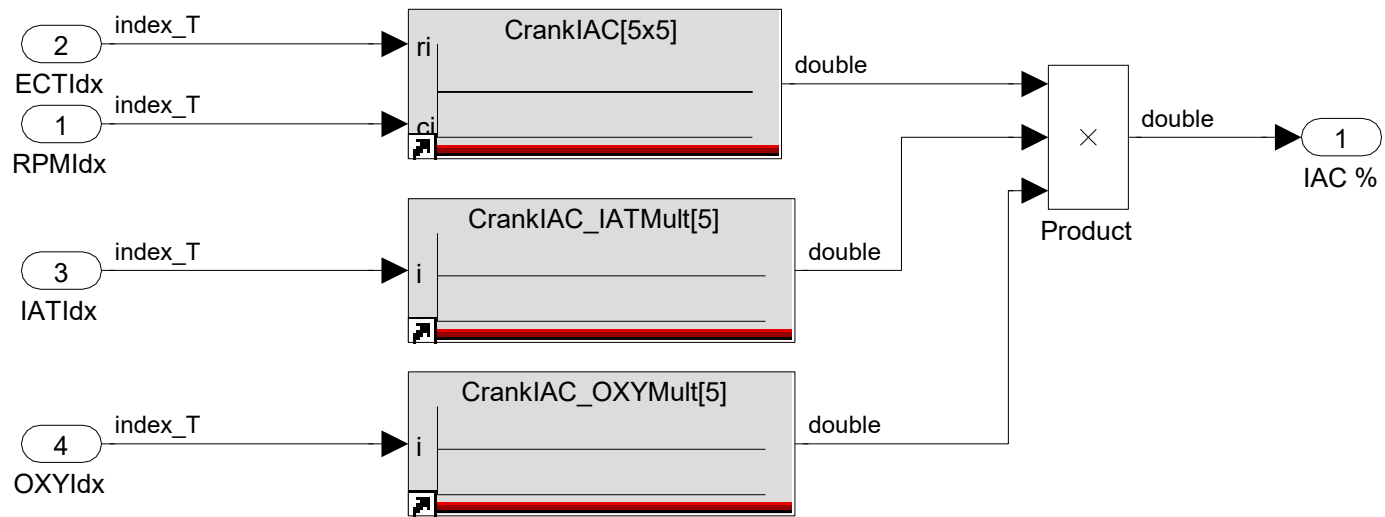
f()

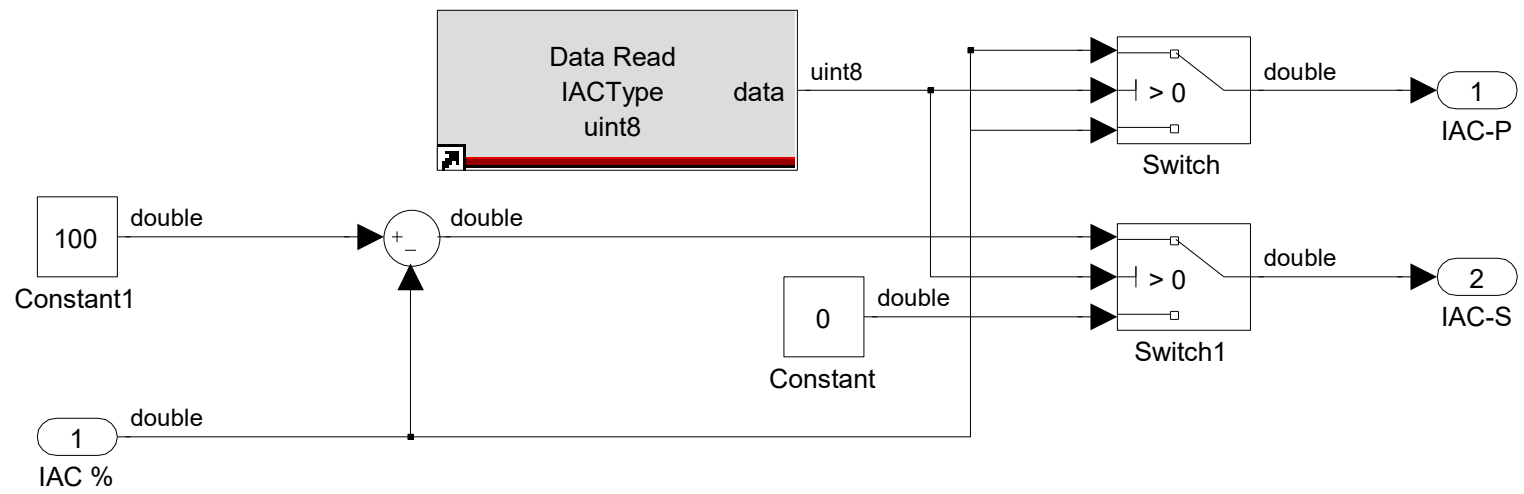


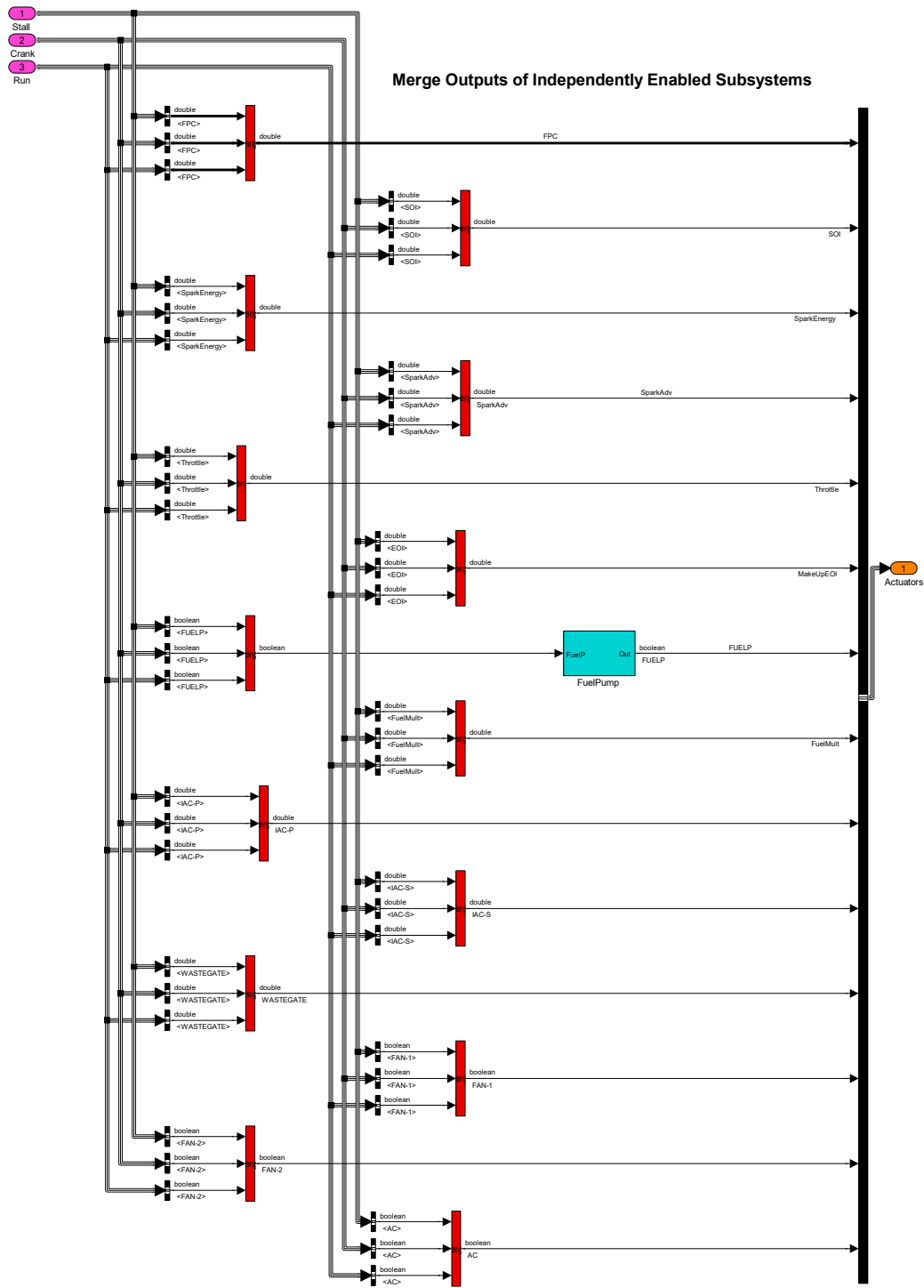




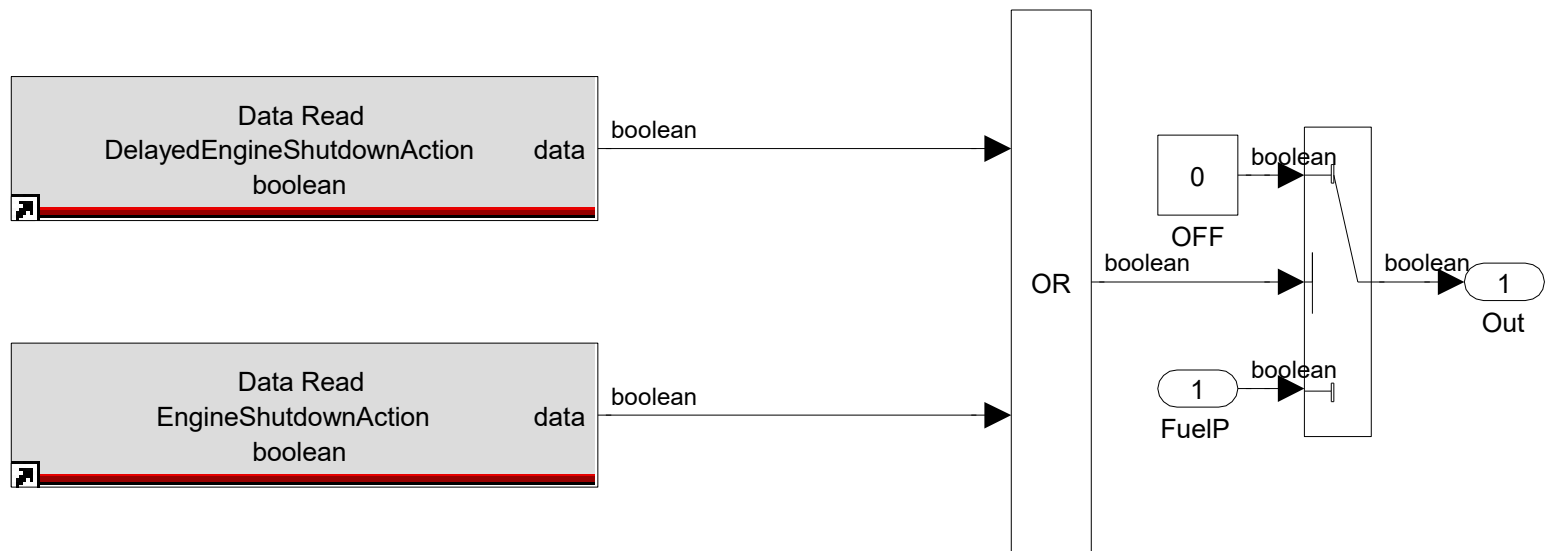


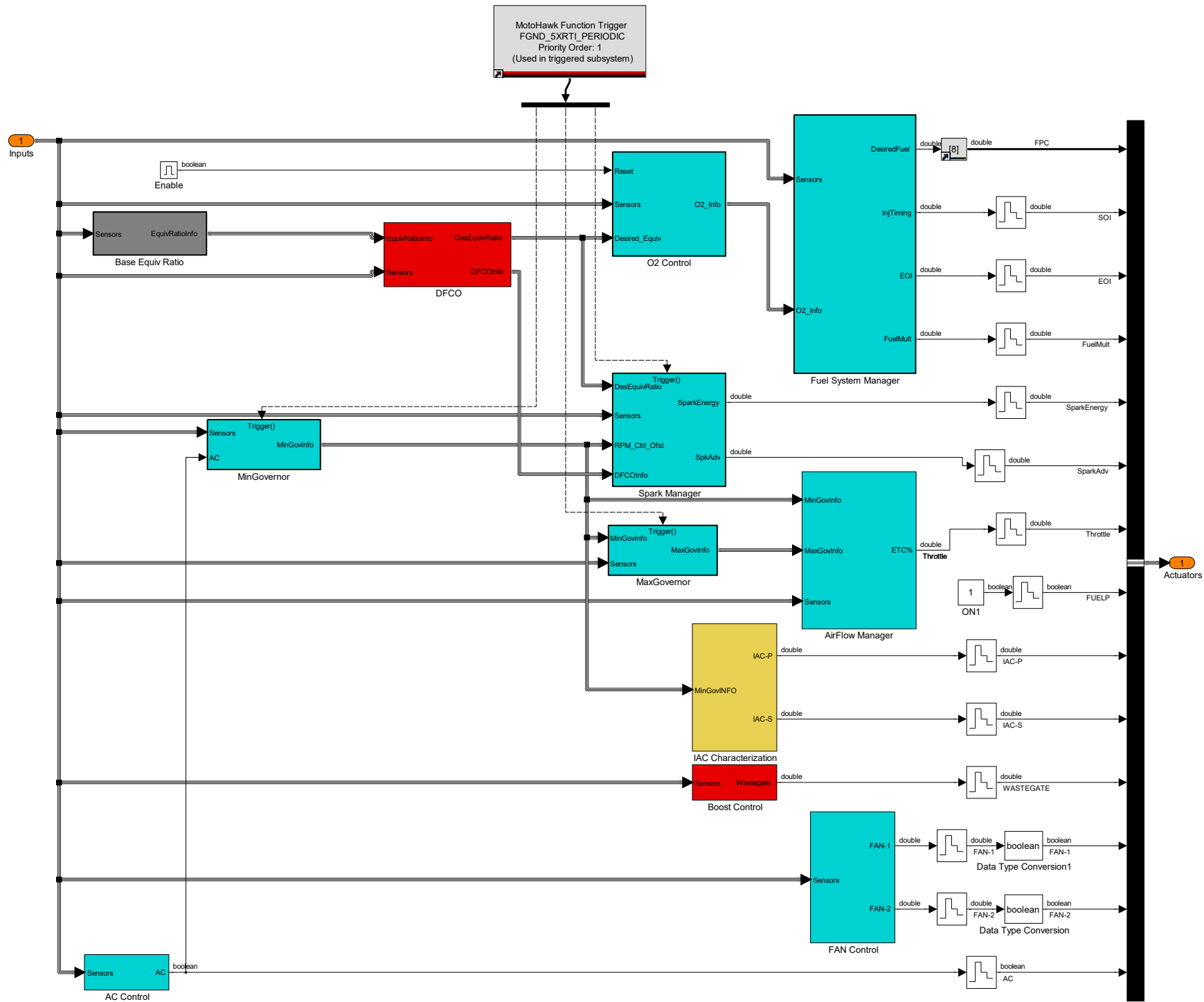


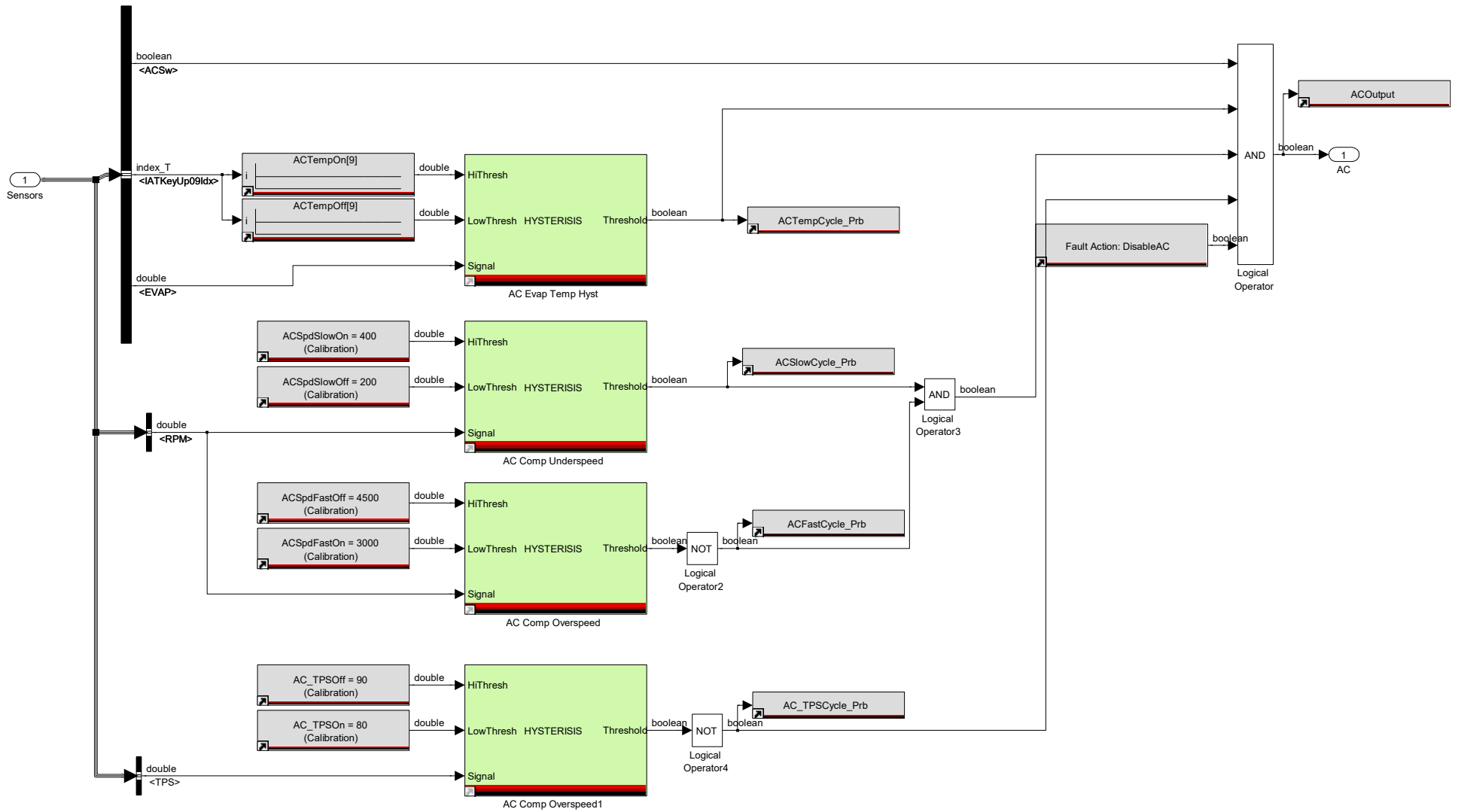


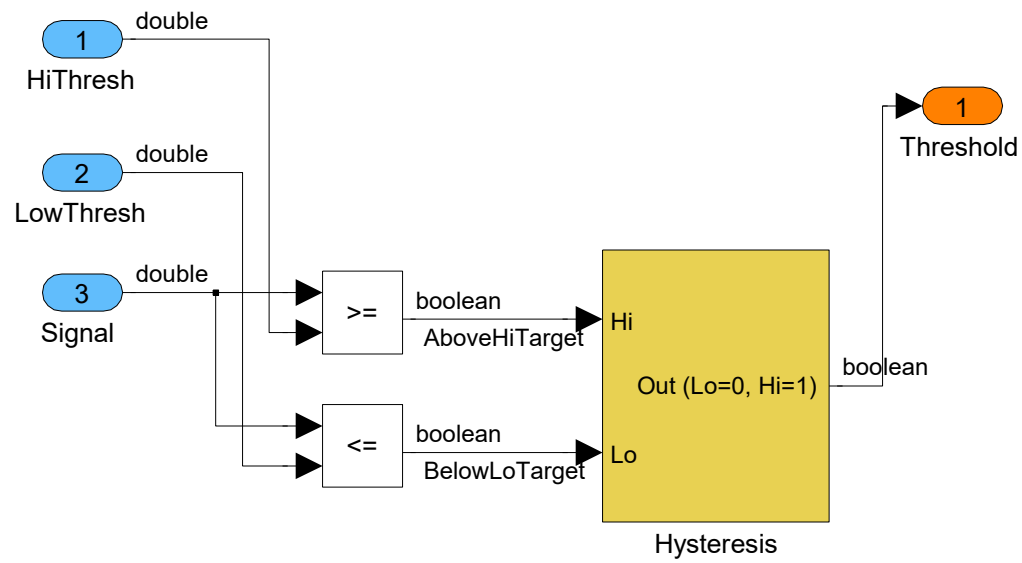




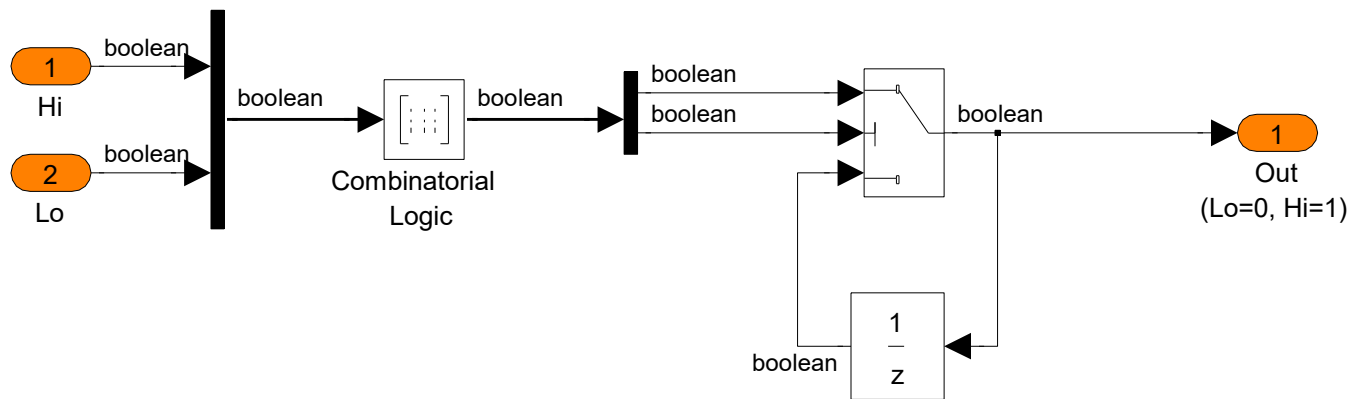


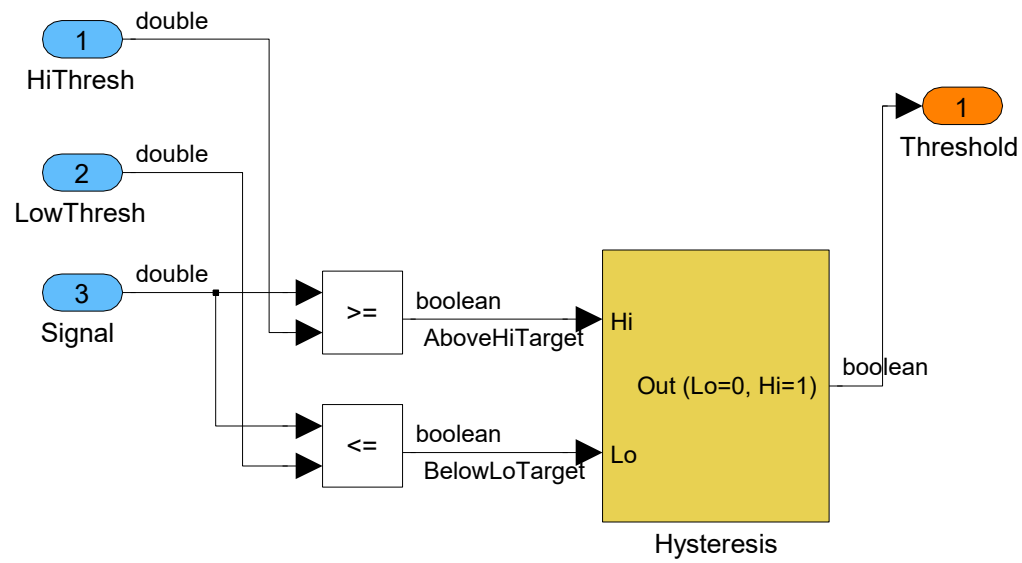




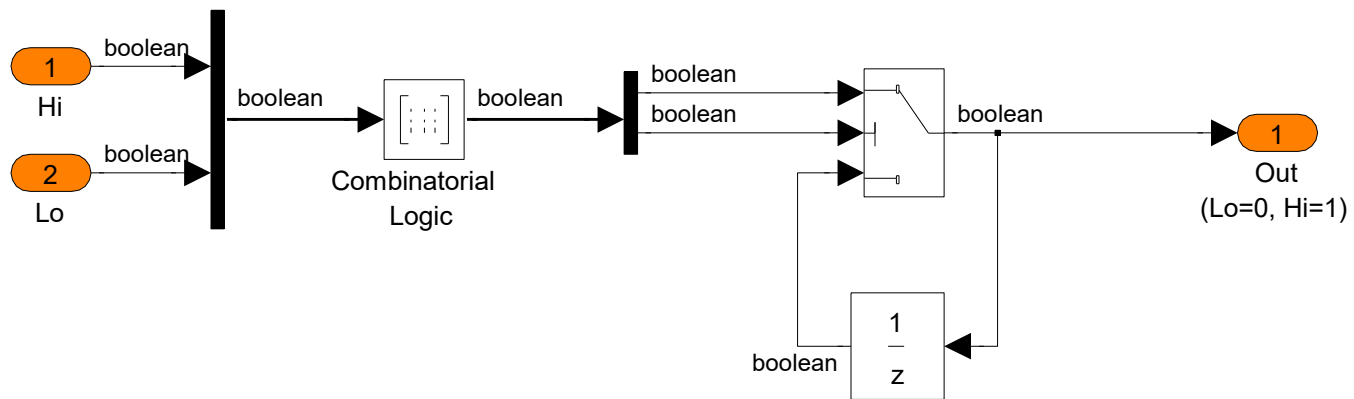


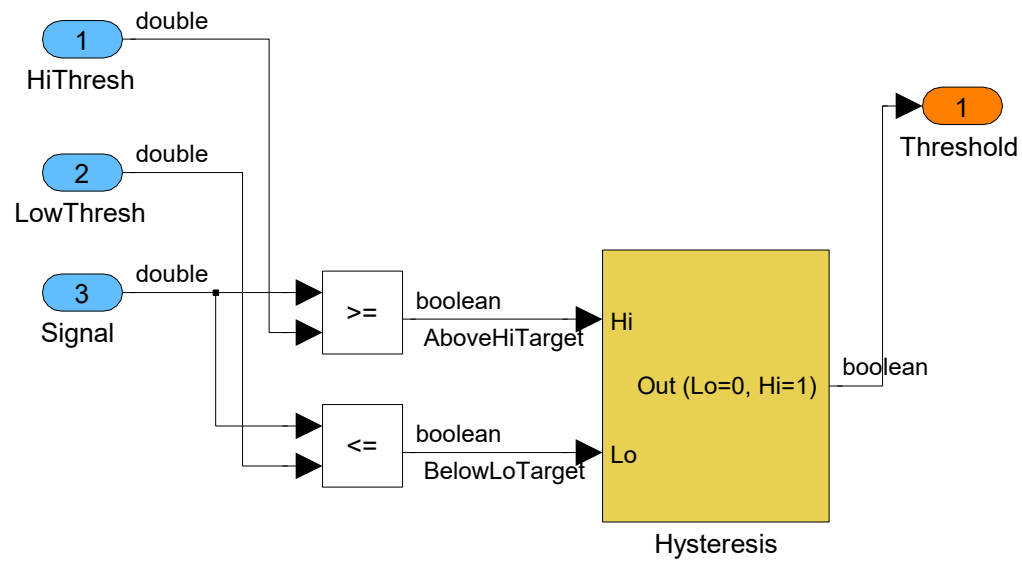
**Hi & !Lo => Hi**  
**Lo & !Hi => Lo**  
**Otherwise, Hold**





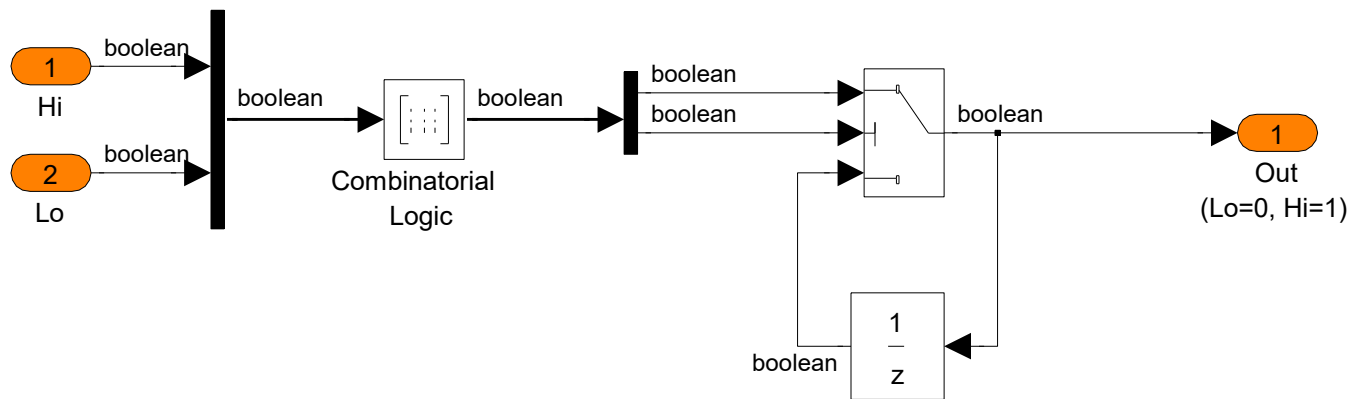
**Hi & !Lo => Hi**  
**Lo & !Hi => Lo**  
**Otherwise, Hold**

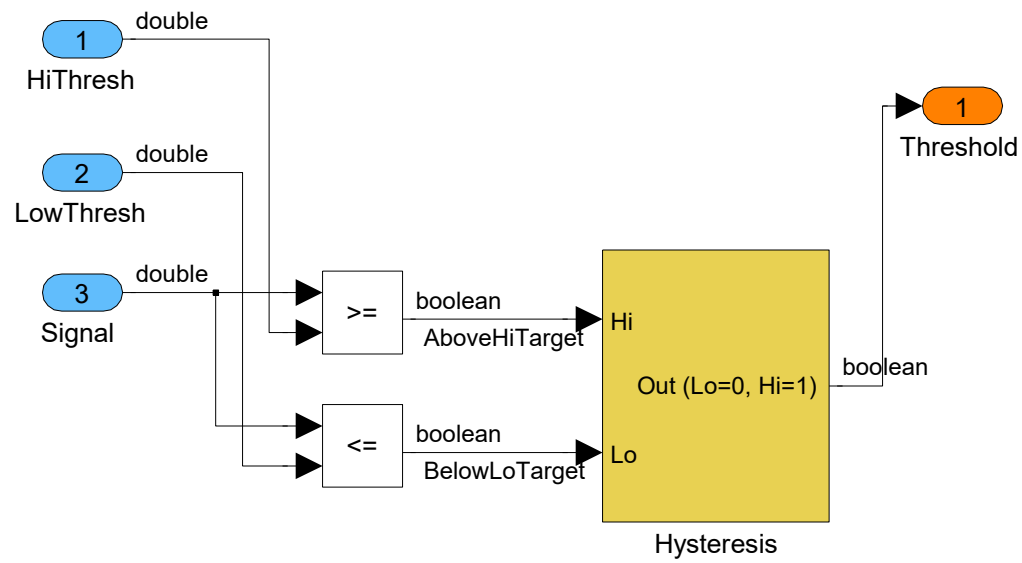




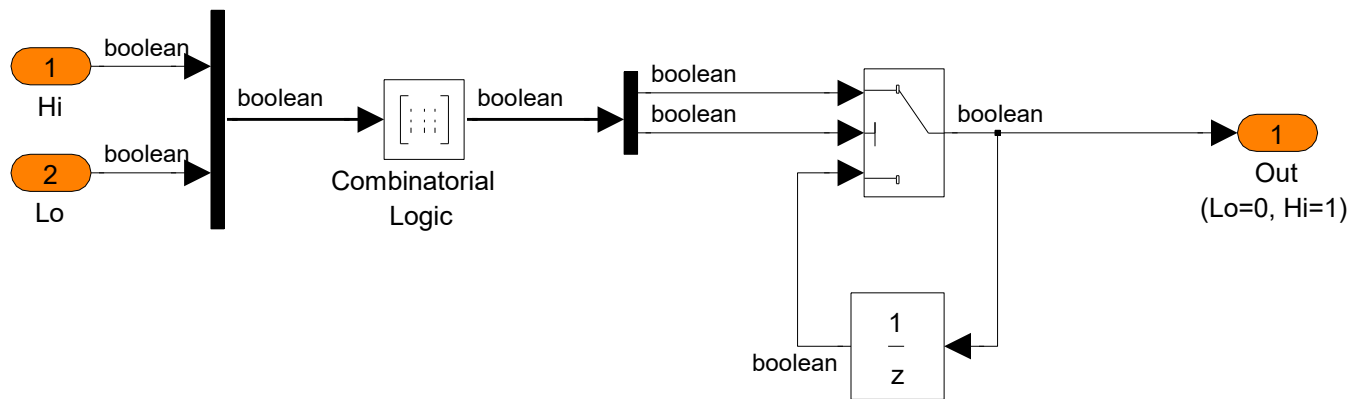


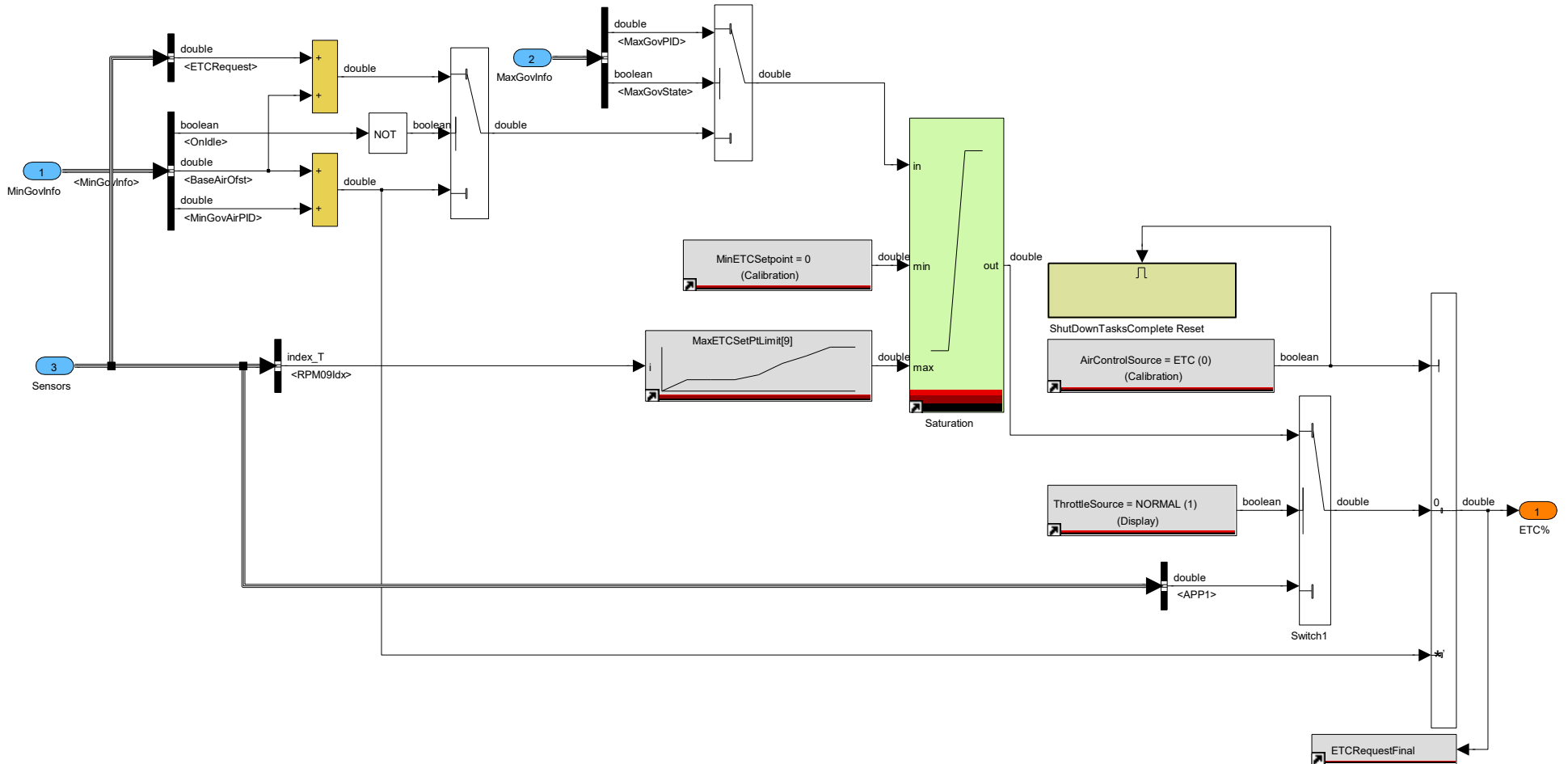
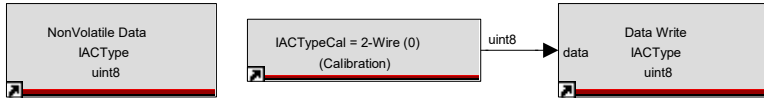
**Hi & !Lo => Hi**  
**Lo & !Hi => Lo**  
**Otherwise, Hold**





**Hi & !Lo => Hi**  
**Lo & !Hi => Lo**  
**Otherwise, Hold**







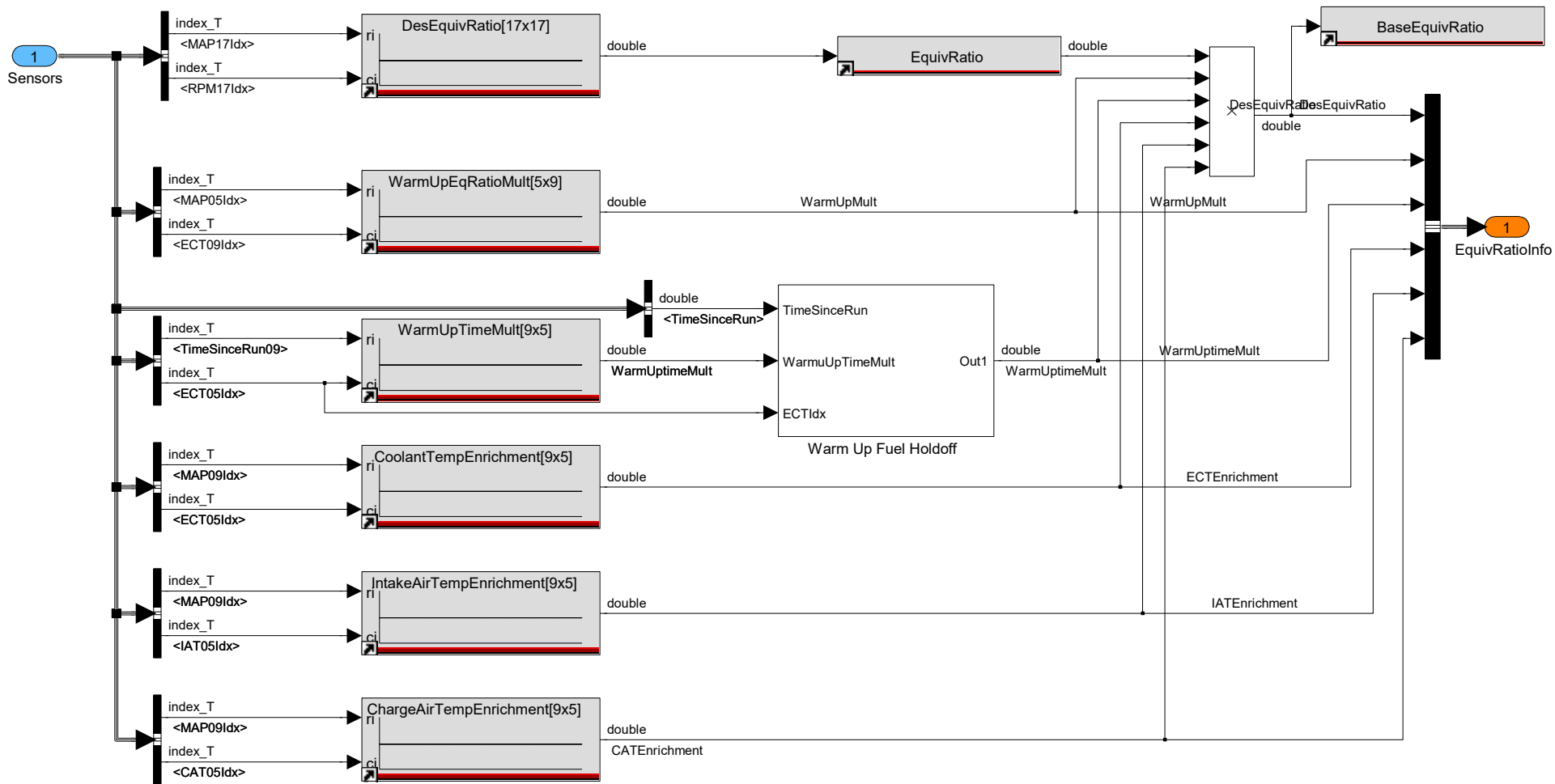
boolean(1)

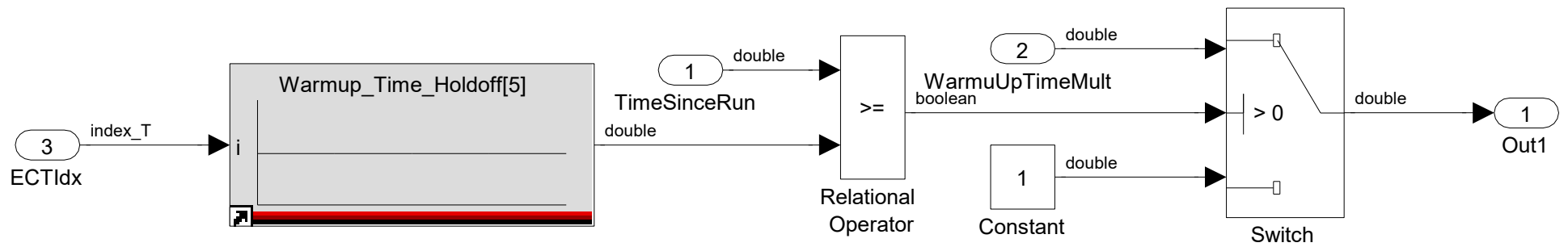
boolean

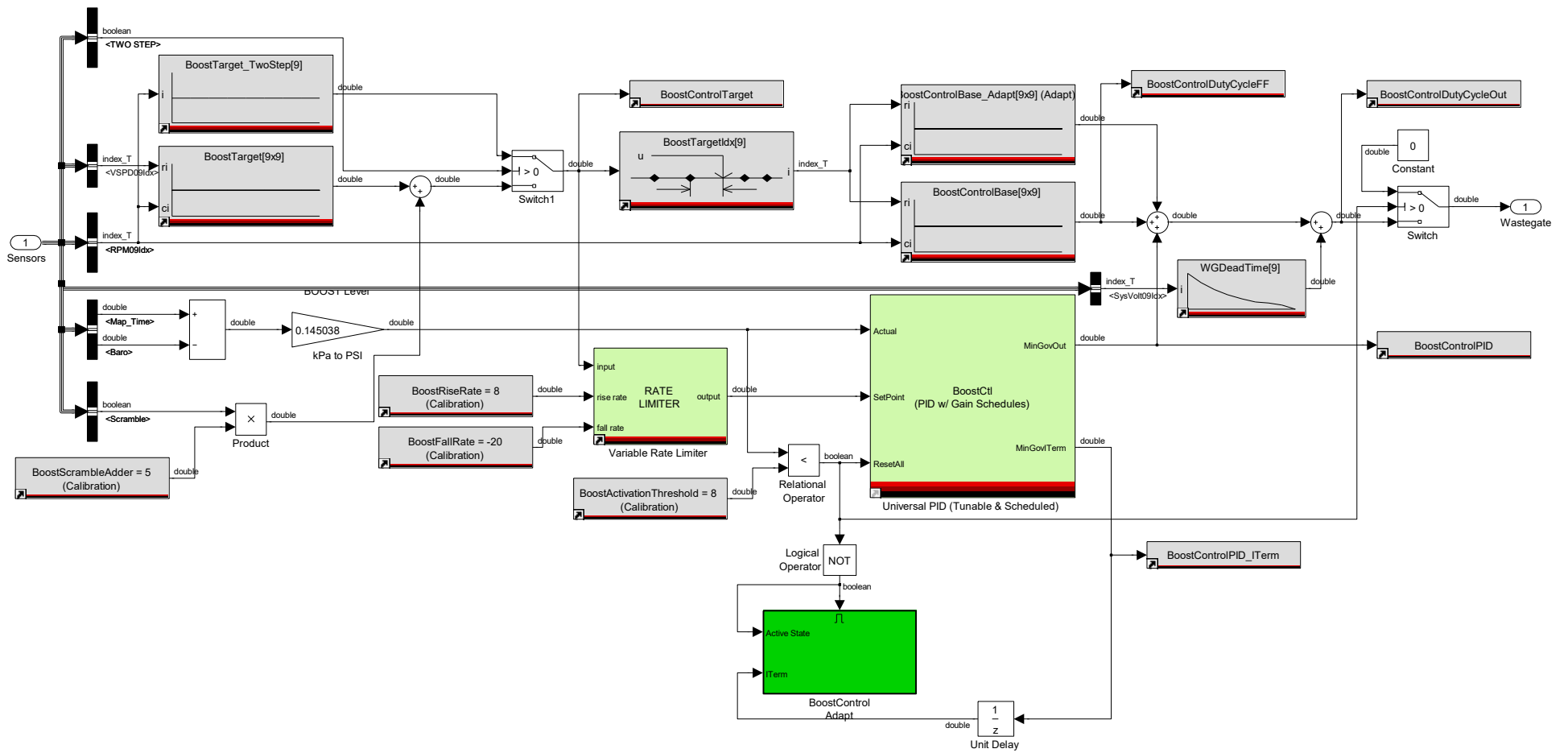
Data Write

ShutDownTasksComplete

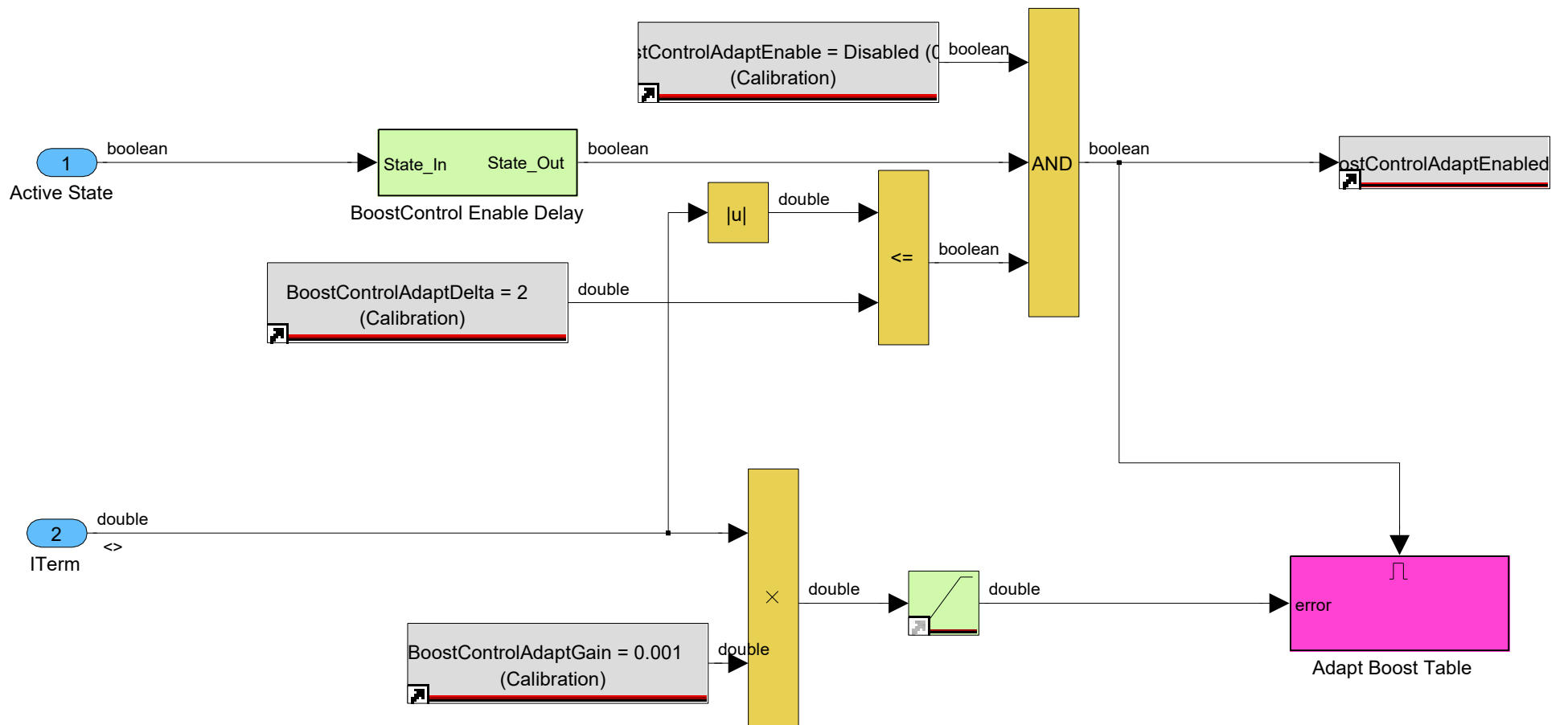
boolean

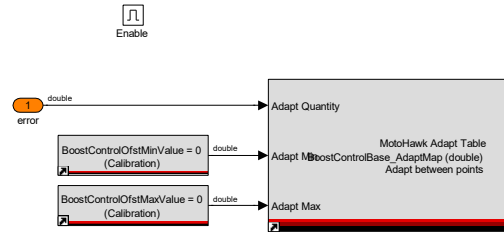






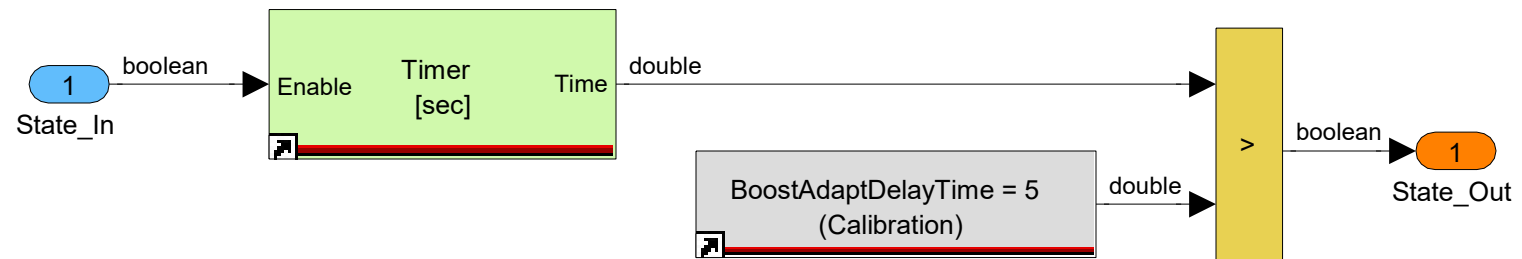




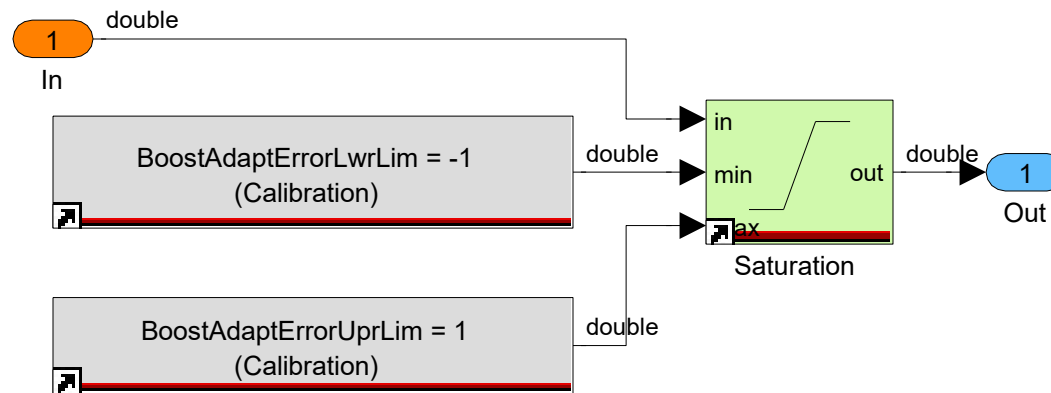


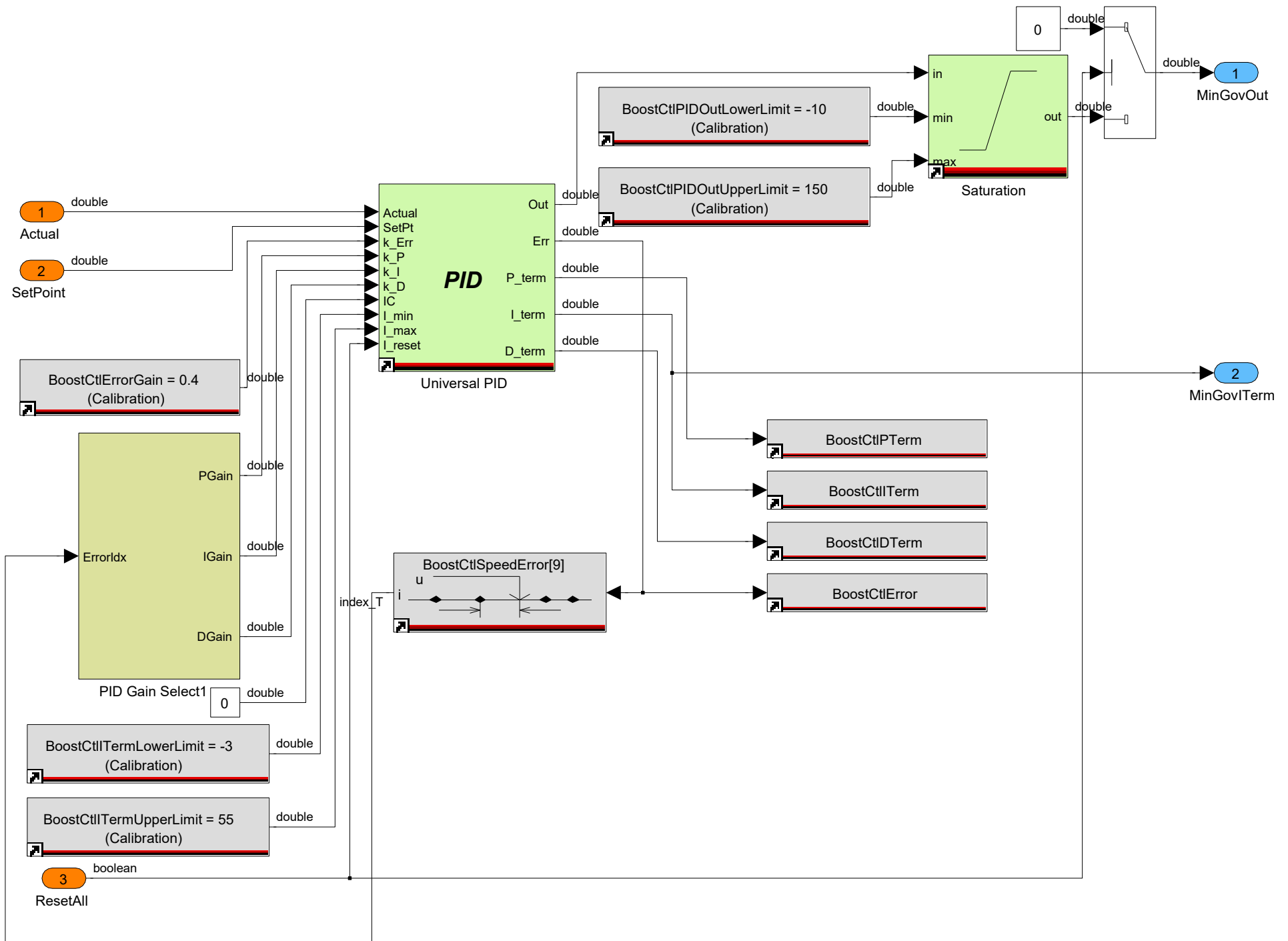
### Calibrations

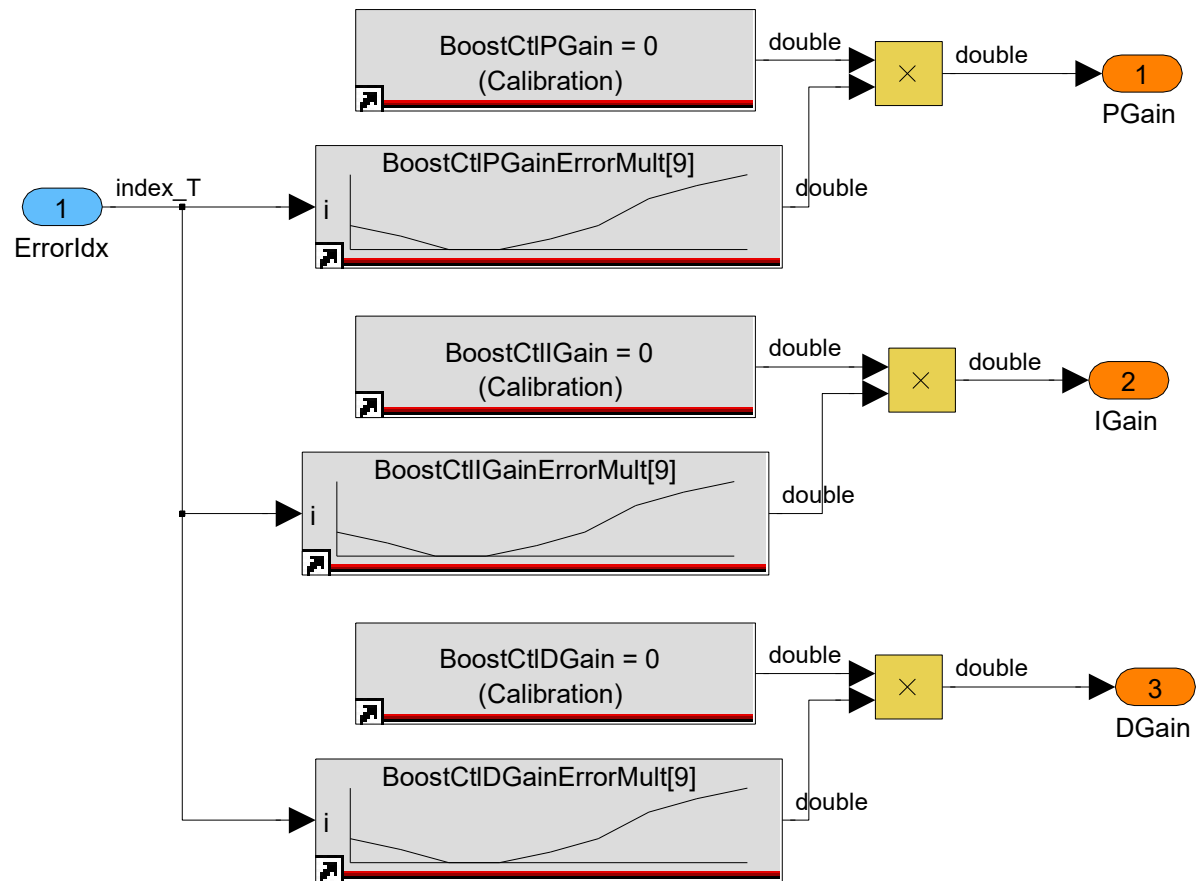
BaseAirflowOfstMaxValue	%	Maximum value that can be adapted into the BaseAirflowOfst table. MotoTune Path: Engine Control   Run   RPM Control   Min Gov   Min Gov Config
BaseAirflowOfstMinValue	%	Minimum value that can be adapted into the BaseAirflowOfst table. MotoTune Path: Engine Control   Run   RPM Control   Min Gov   Min Gov Config

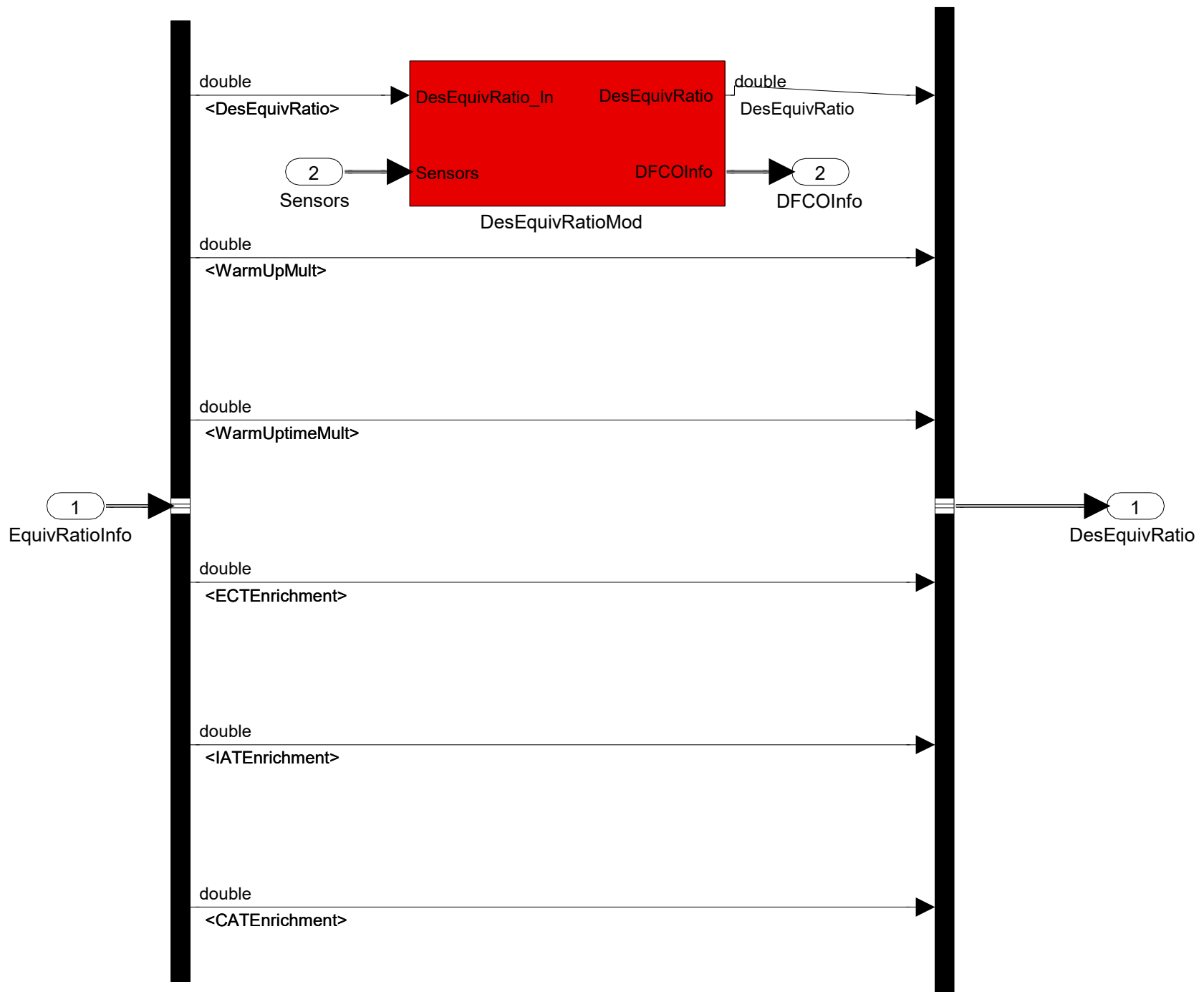


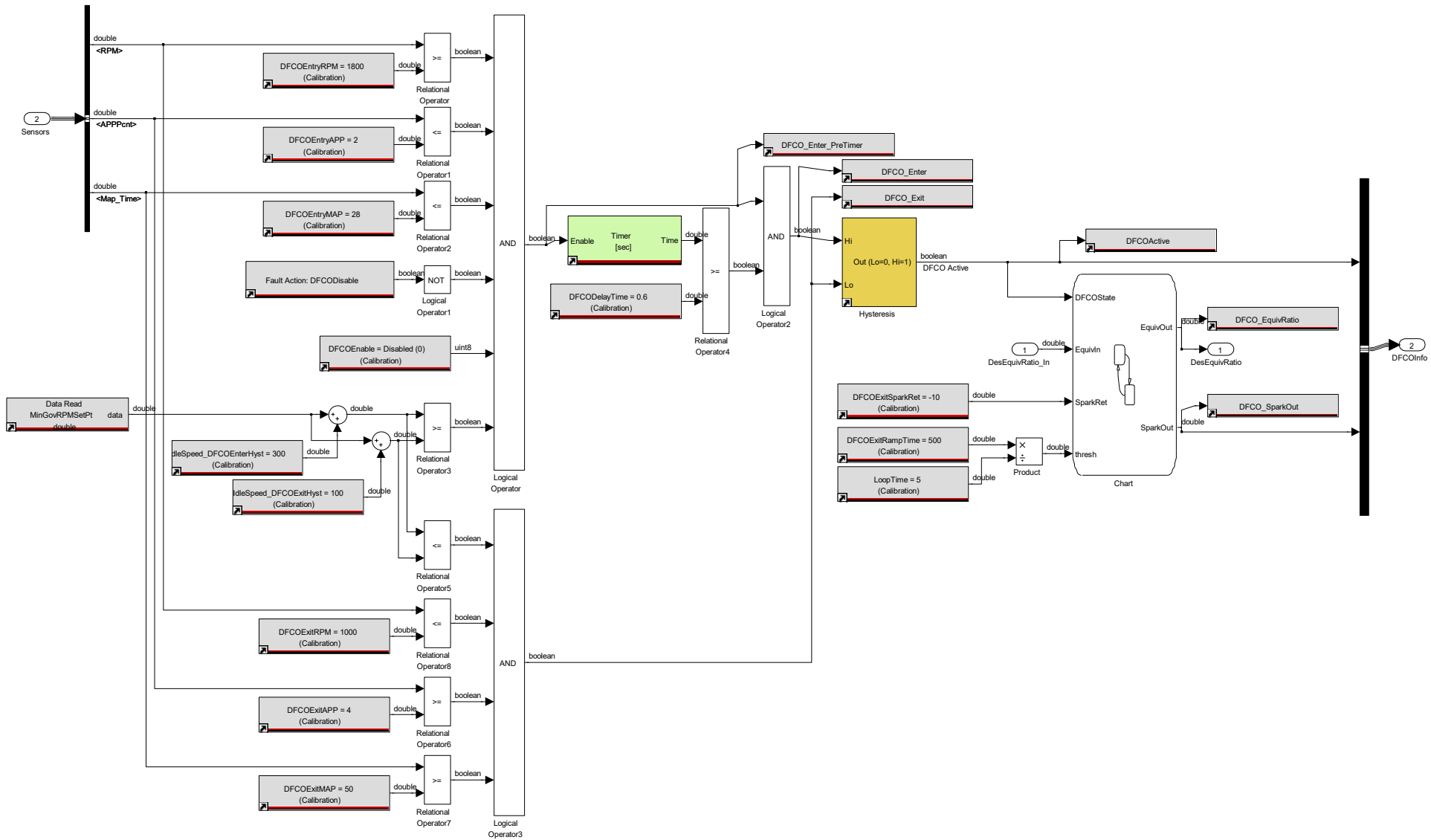
## Calibratable wrapper around the Saturation block



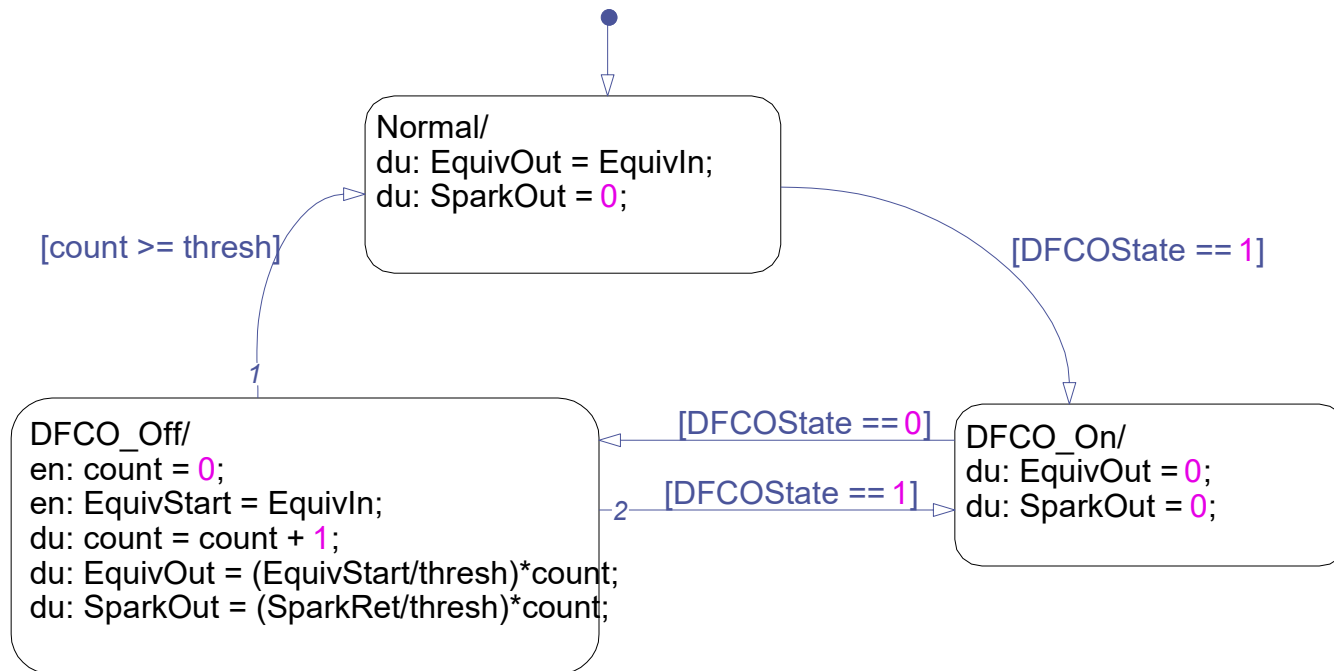


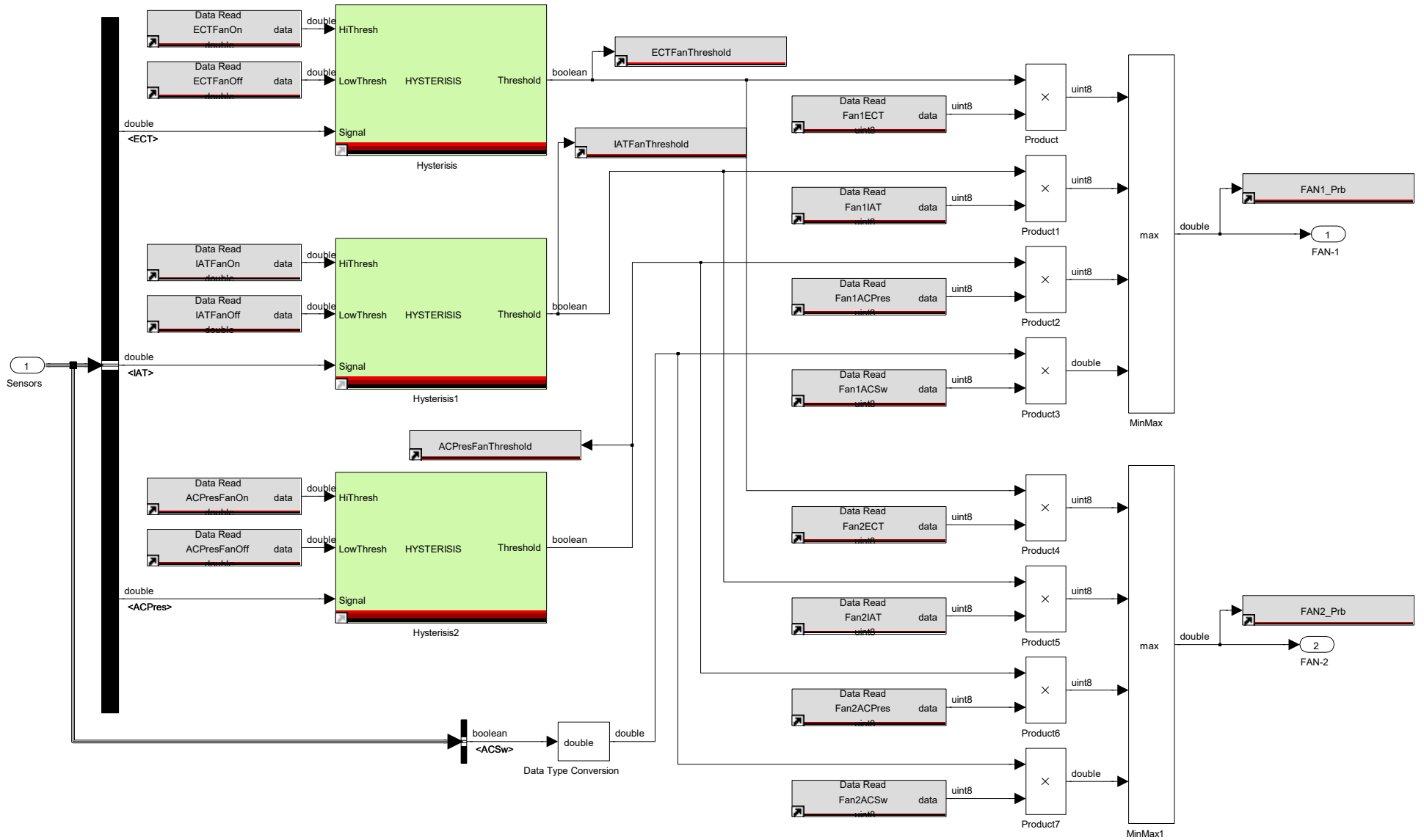


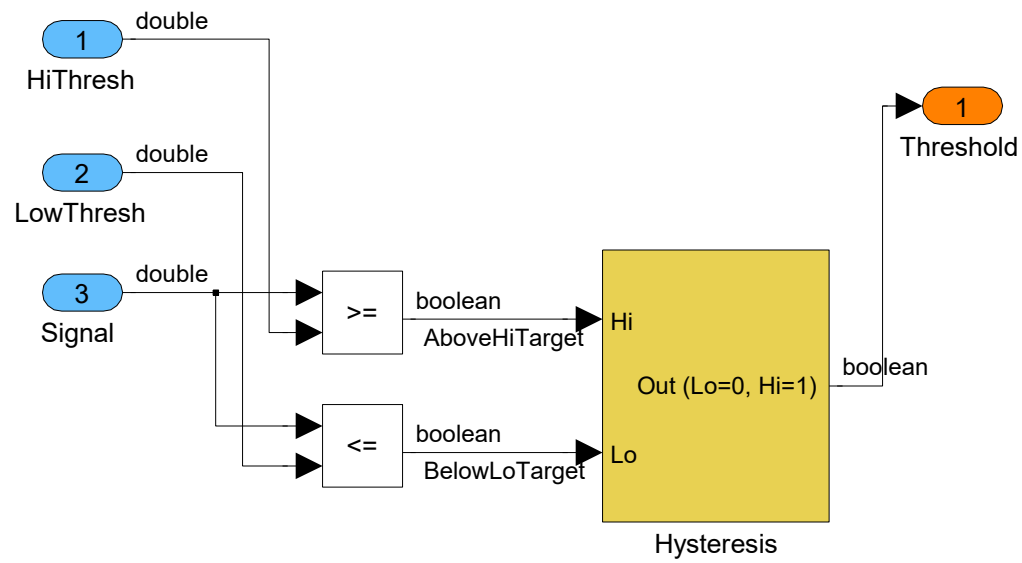




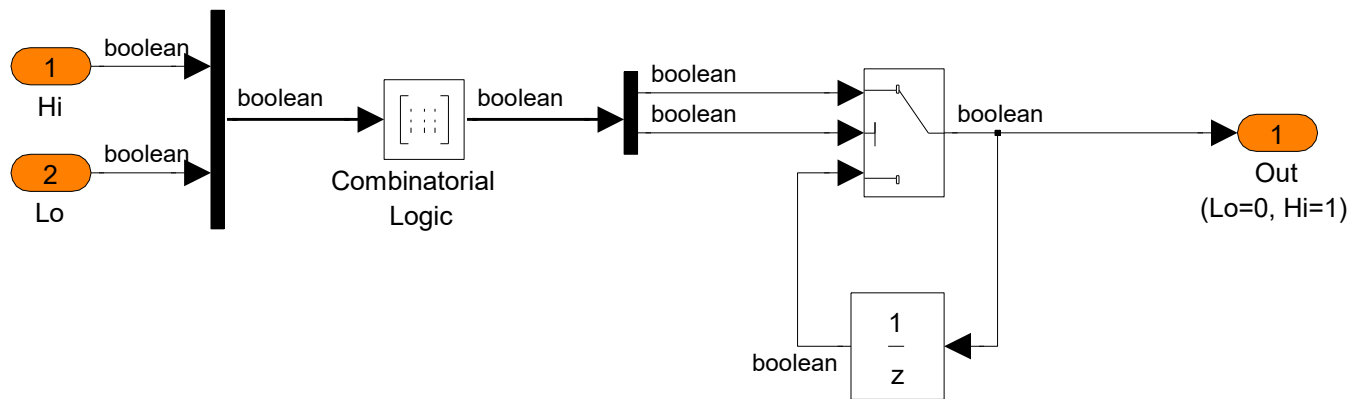


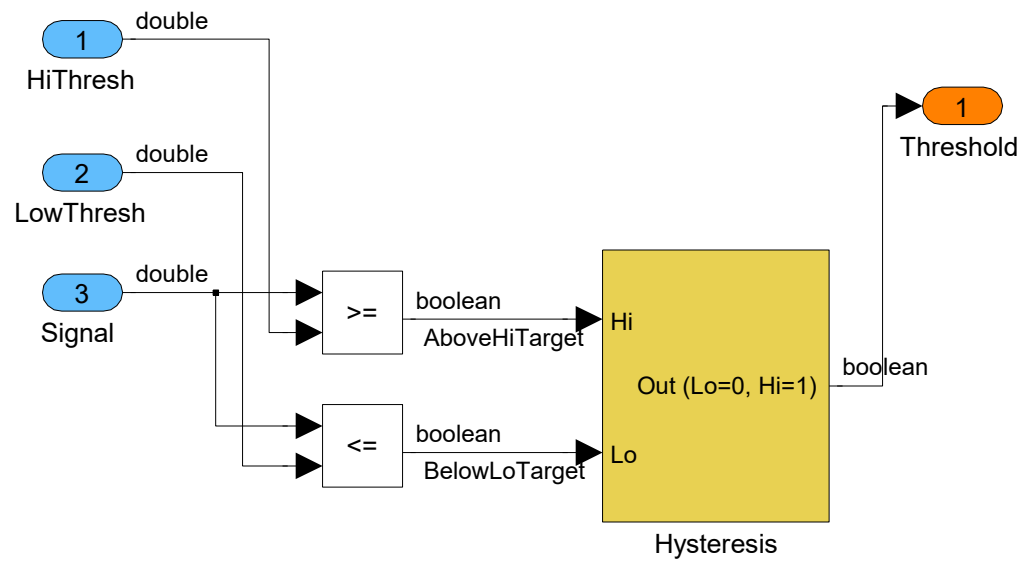




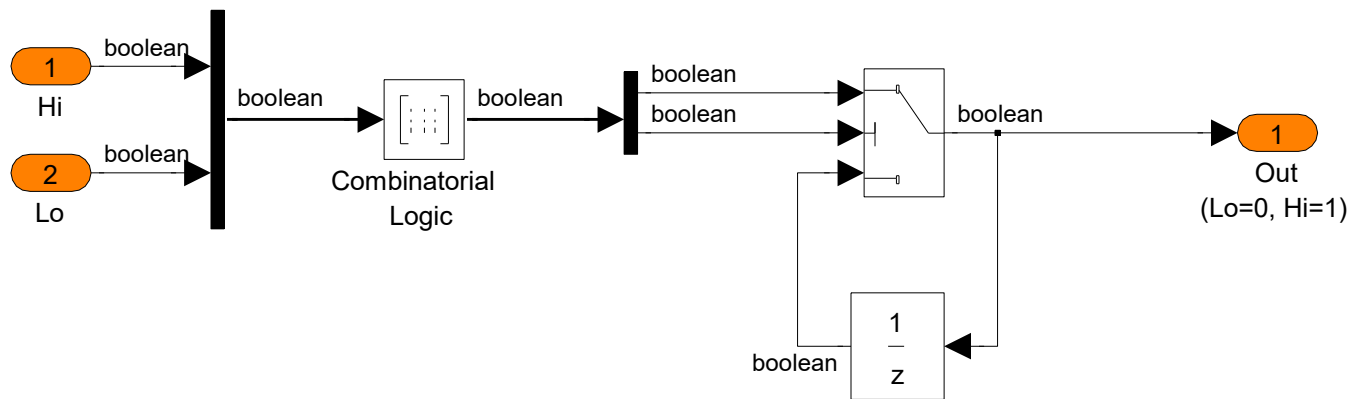


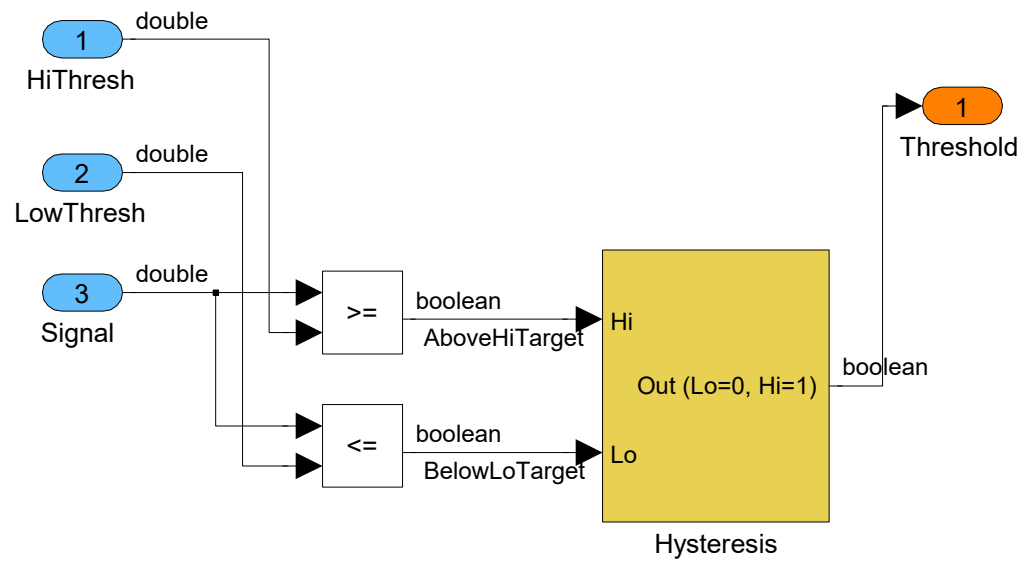
**Hi & !Lo => Hi**  
**Lo & !Hi => Lo**  
**Otherwise, Hold**



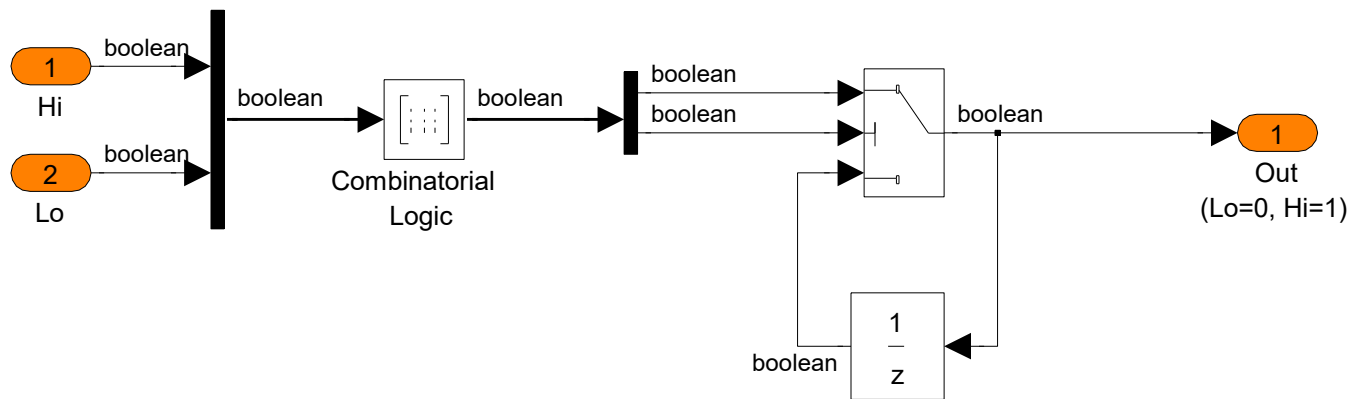


**Hi & !Lo => Hi**  
**Lo & !Hi => Lo**  
**Otherwise, Hold**

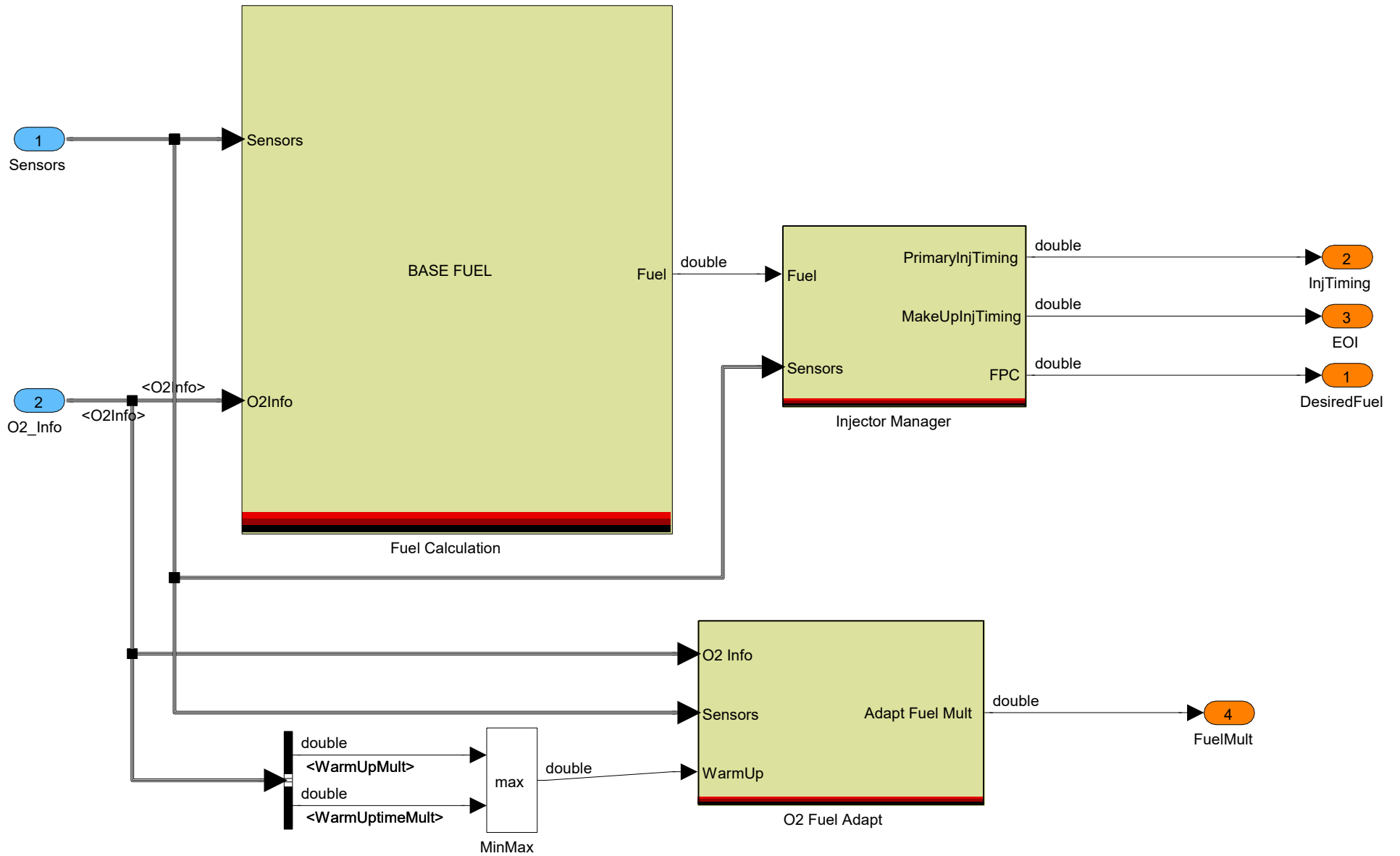


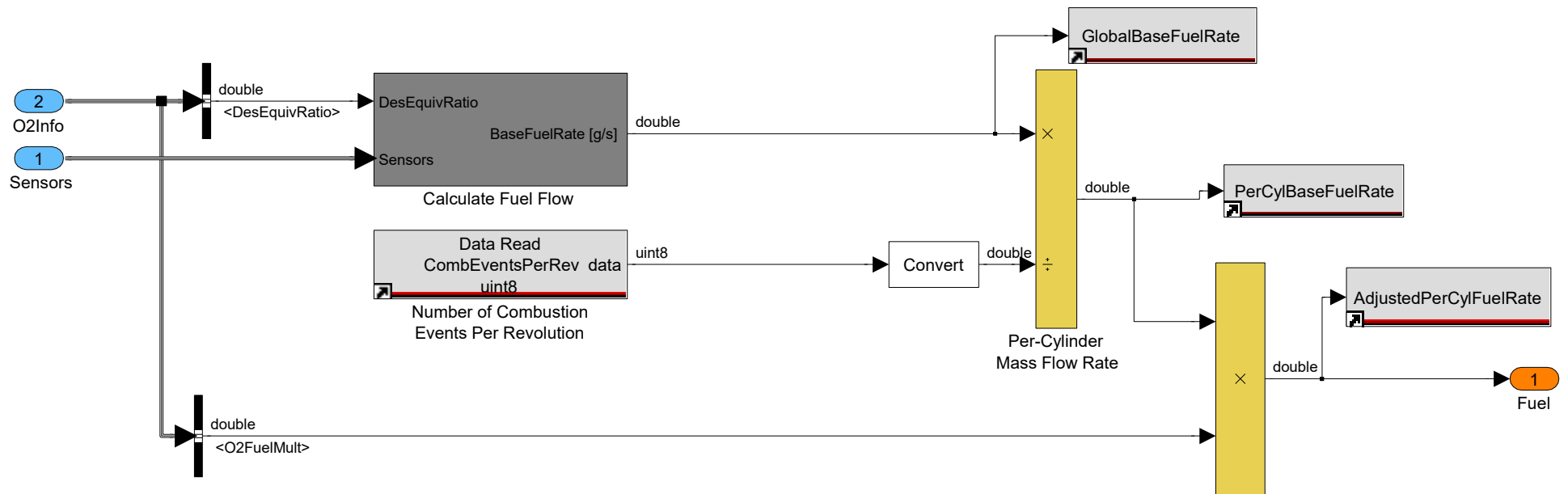


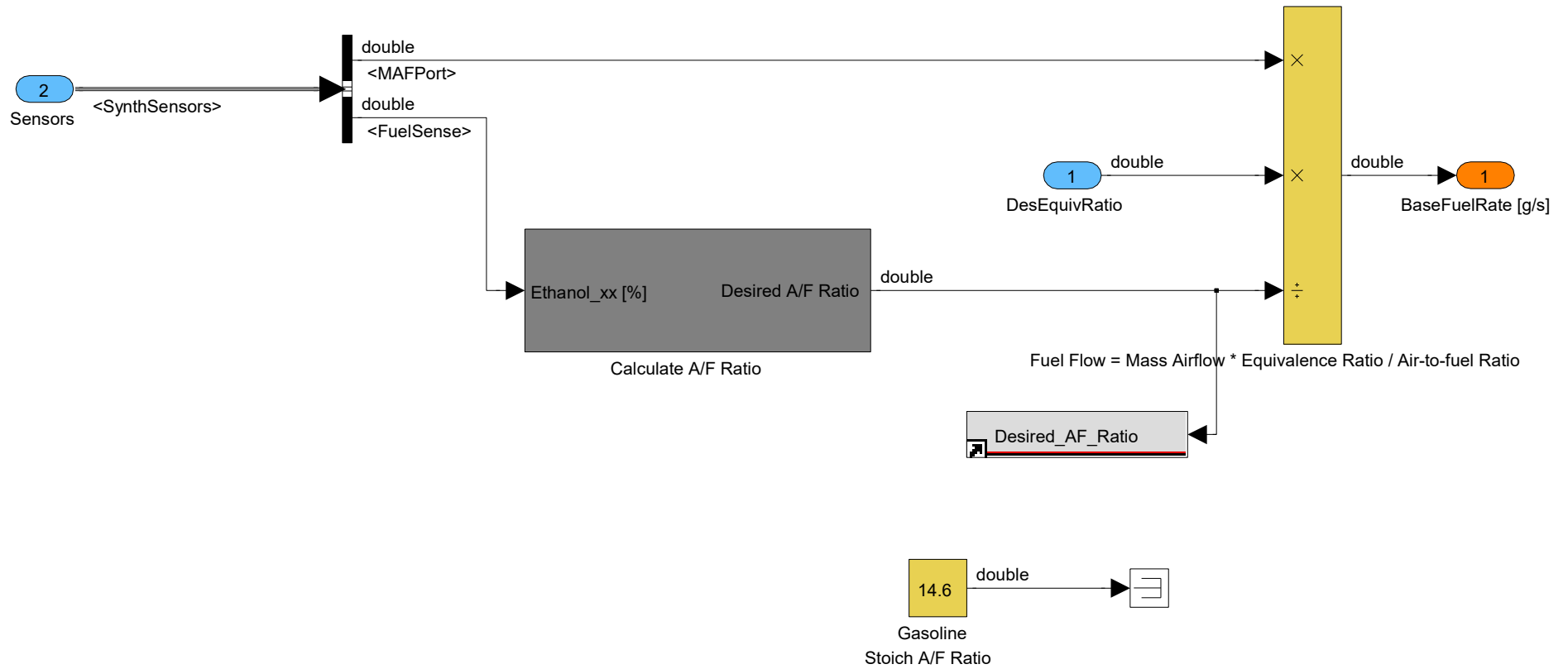
**Hi & !Lo => Hi**  
**Lo & !Hi => Lo**  
**Otherwise, Hold**

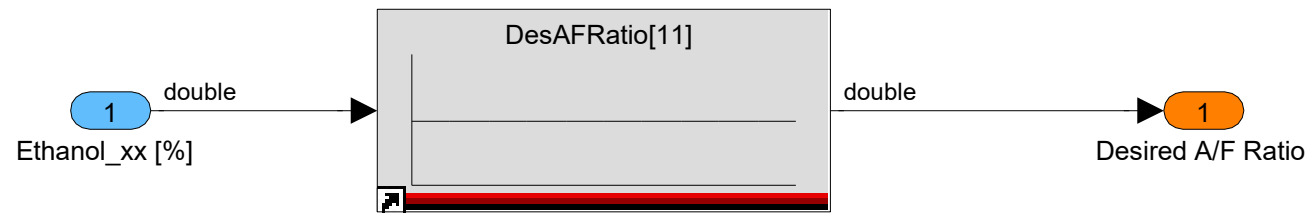


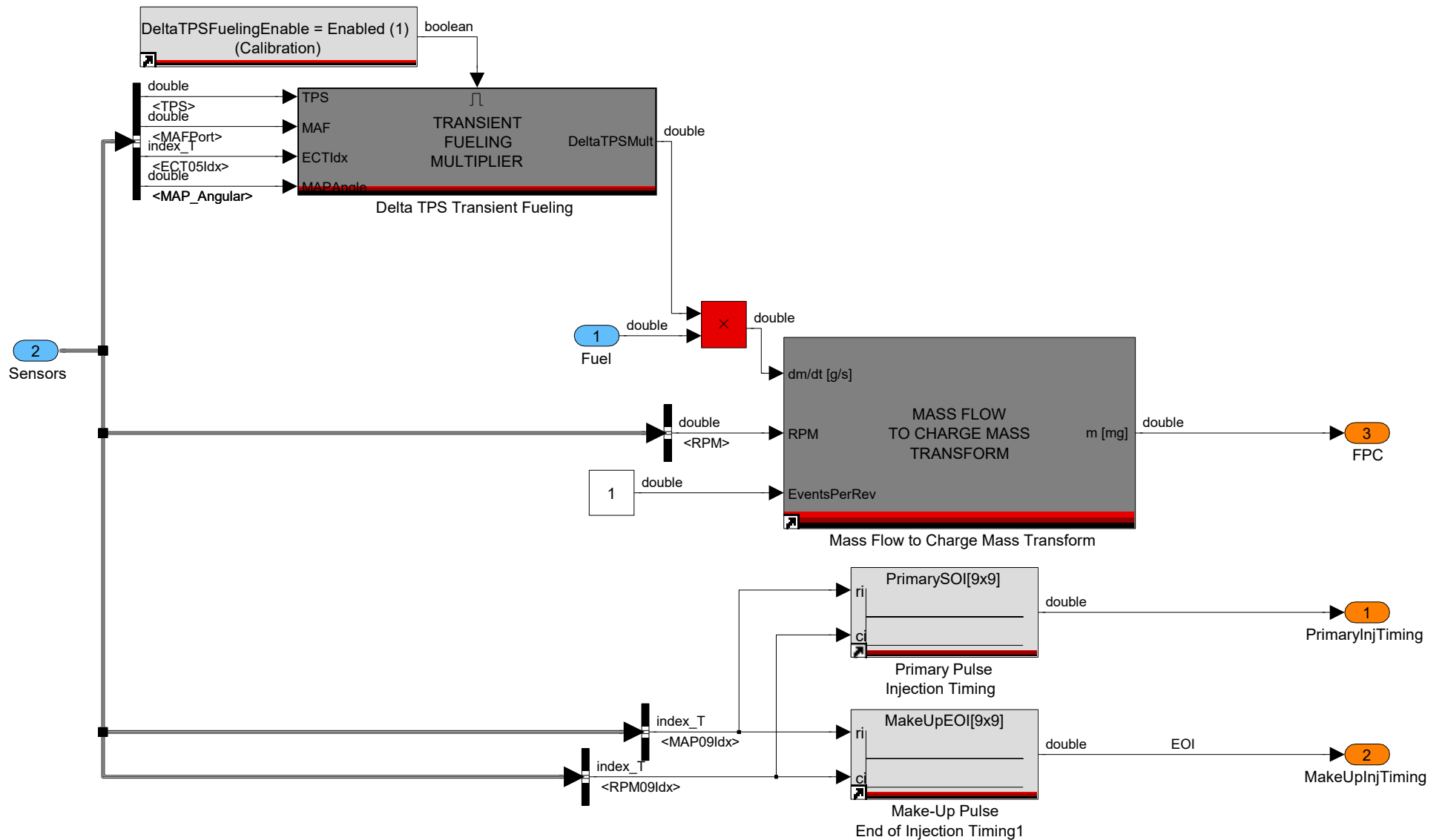






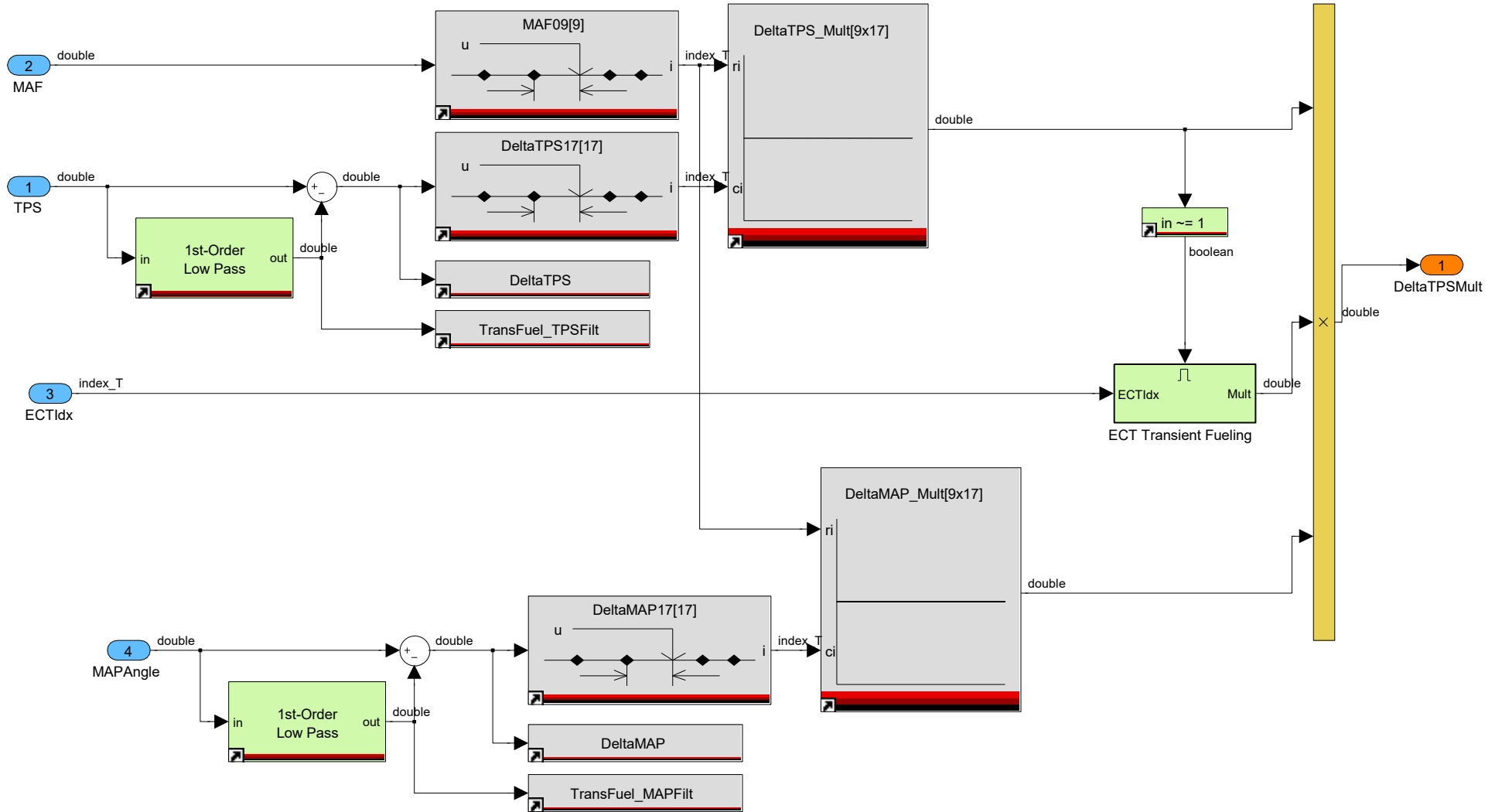


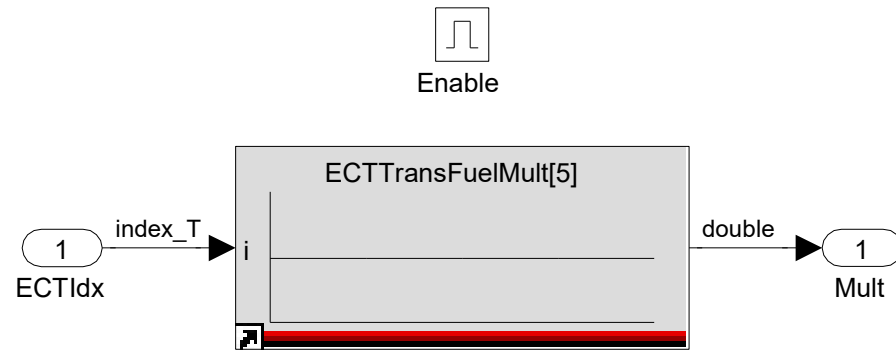


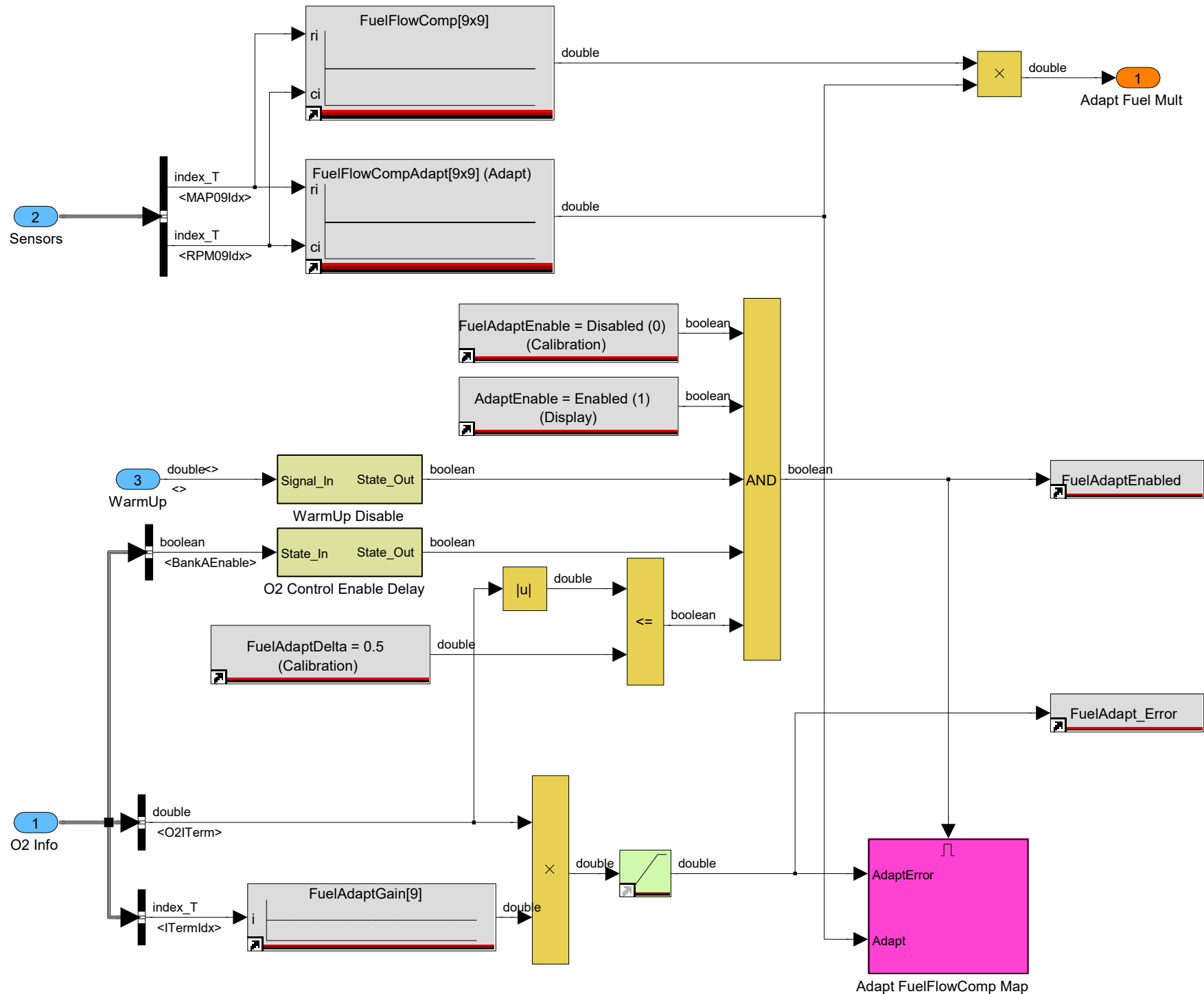




Enable









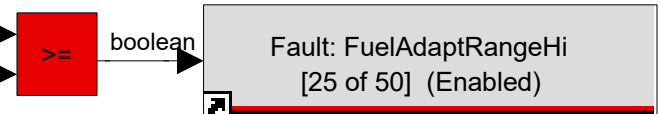
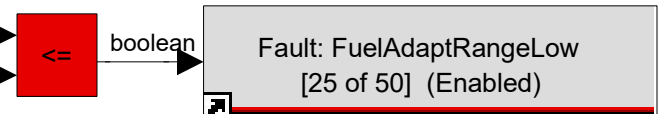
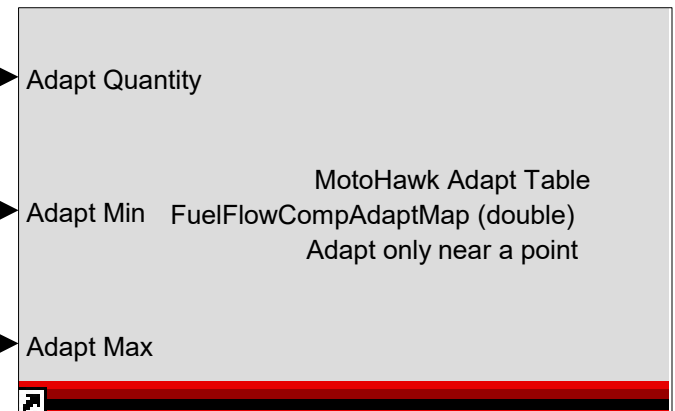


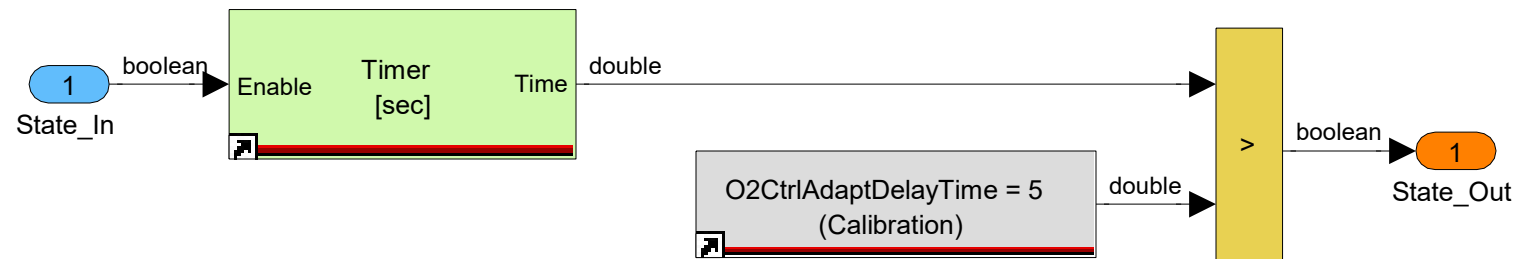
1 double  
RichEquivRatioTargetDelta  
AdaptError

FuelFlowCompMinValue = 0.5  
(Calibration)

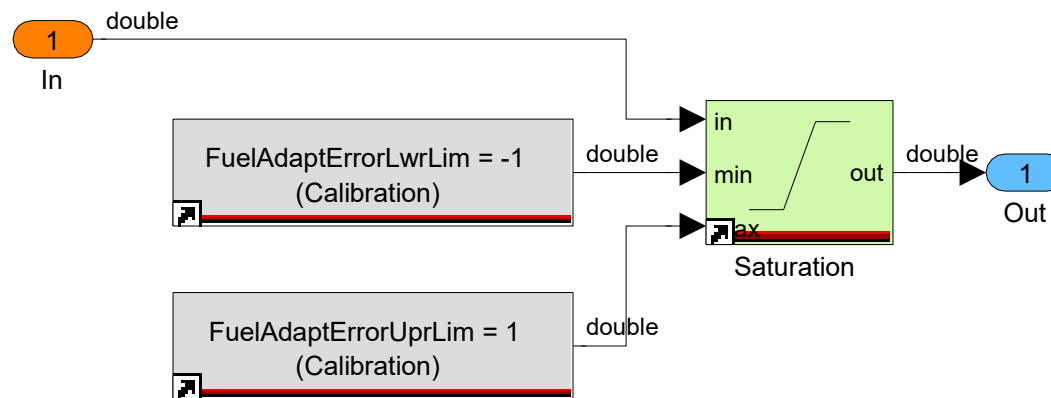
FuelFlowCompMaxValue = 1.5  
(Calibration)

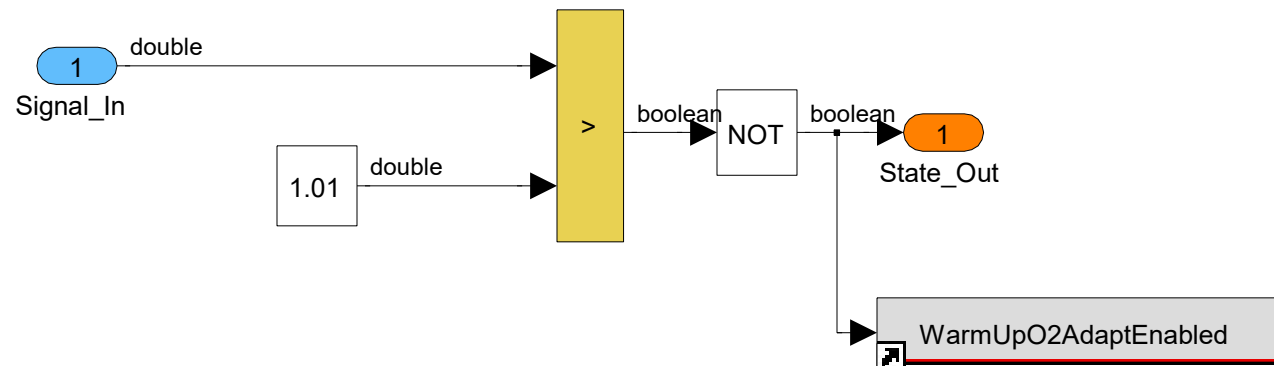
2 double  
Adapt

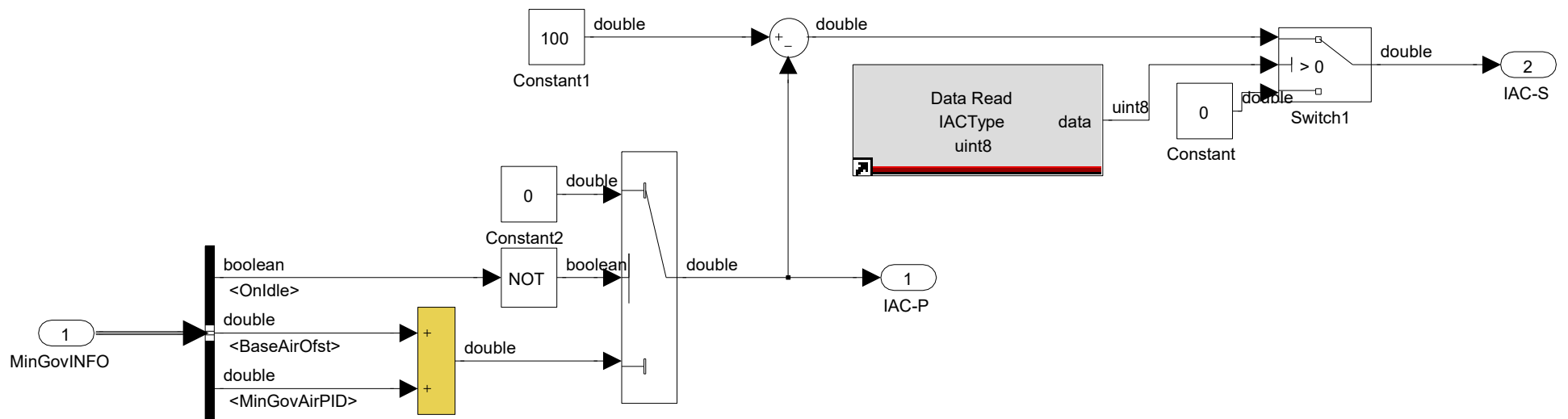




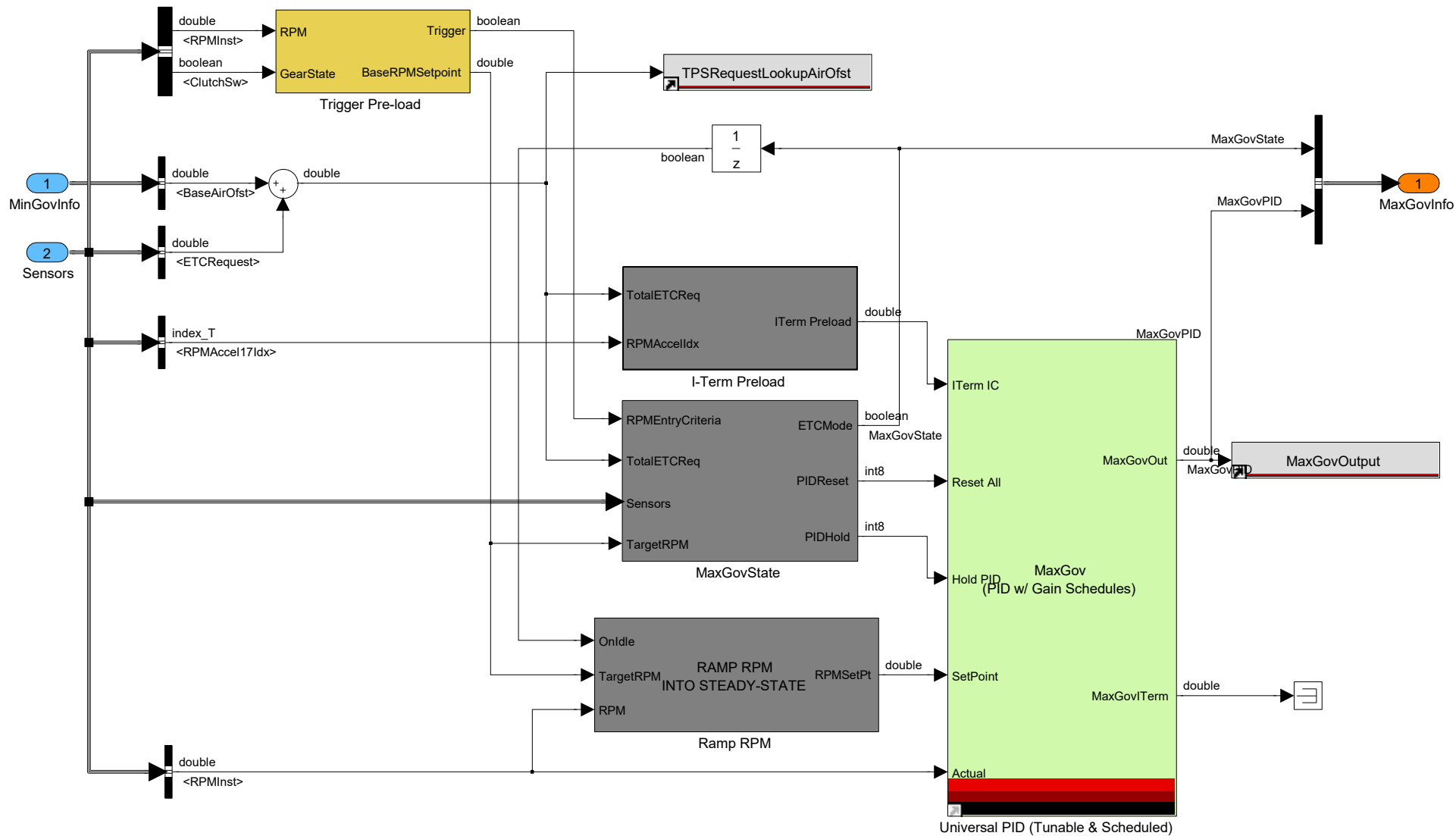
## Calibratable wrapper around the Saturation block

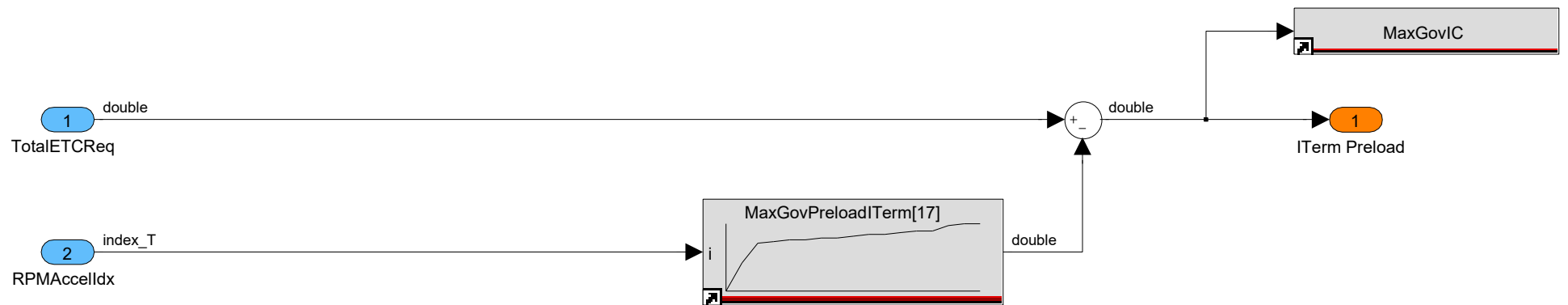


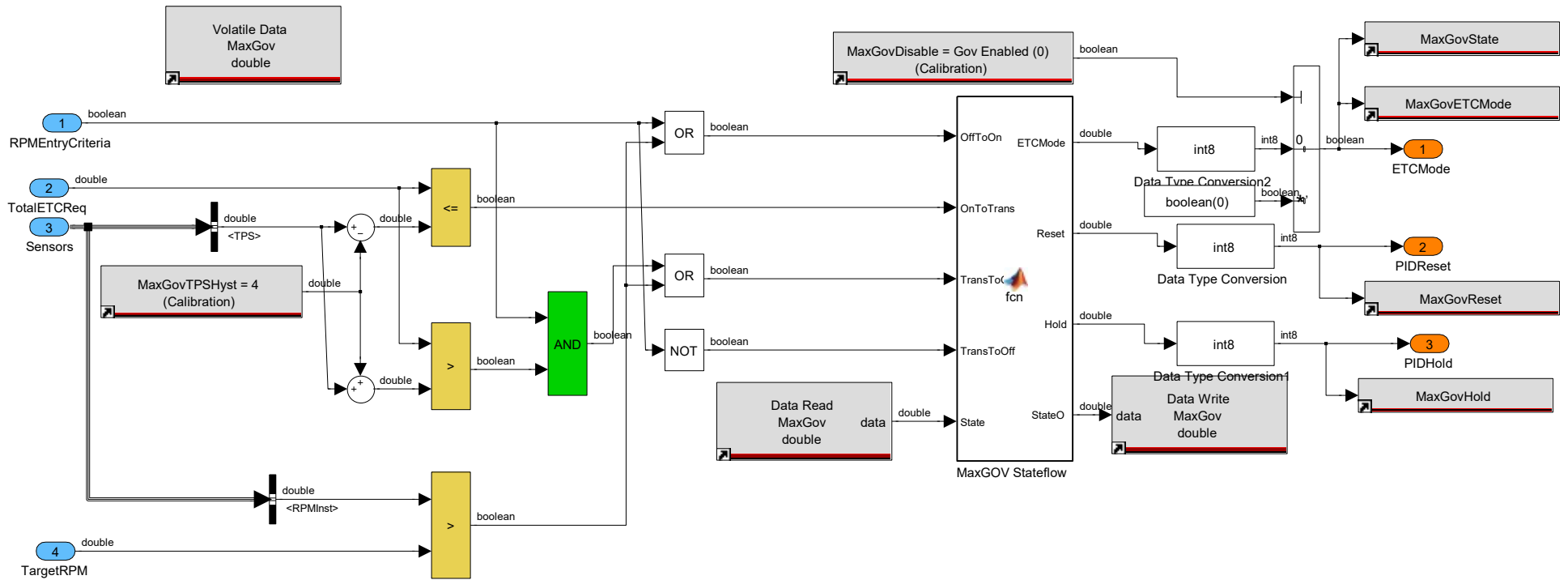




f()







Move into On State if RPM > EntryCriteria or Target.

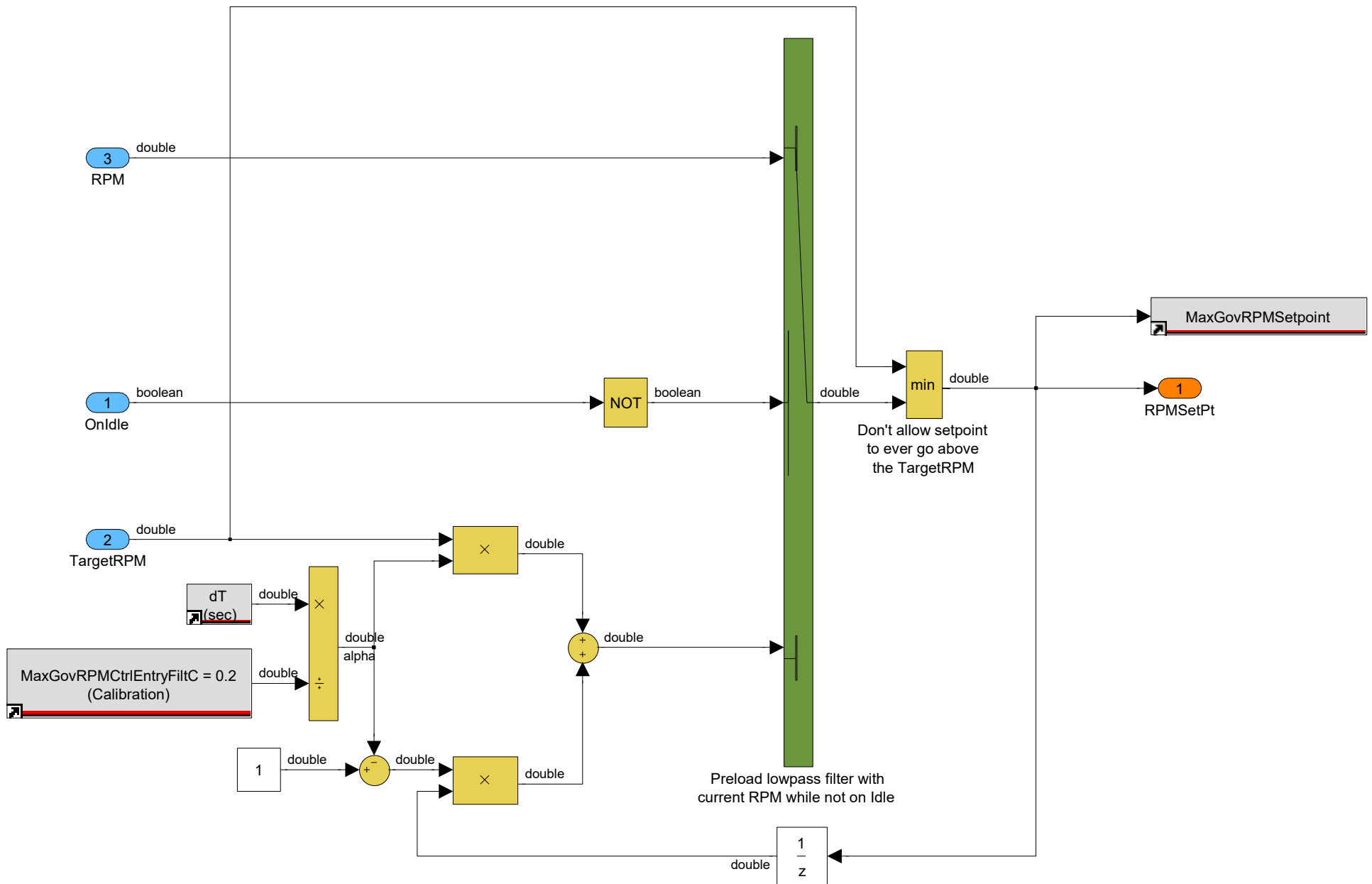
Move into Trans State if APP falls below TPS, PID controller is frozen during Trans State, but output is based on APP.

When in AllSpeedGov mode, switch to Trans if AllSpeedGov setpoint is less than MaxGov setpoint minus hyst.

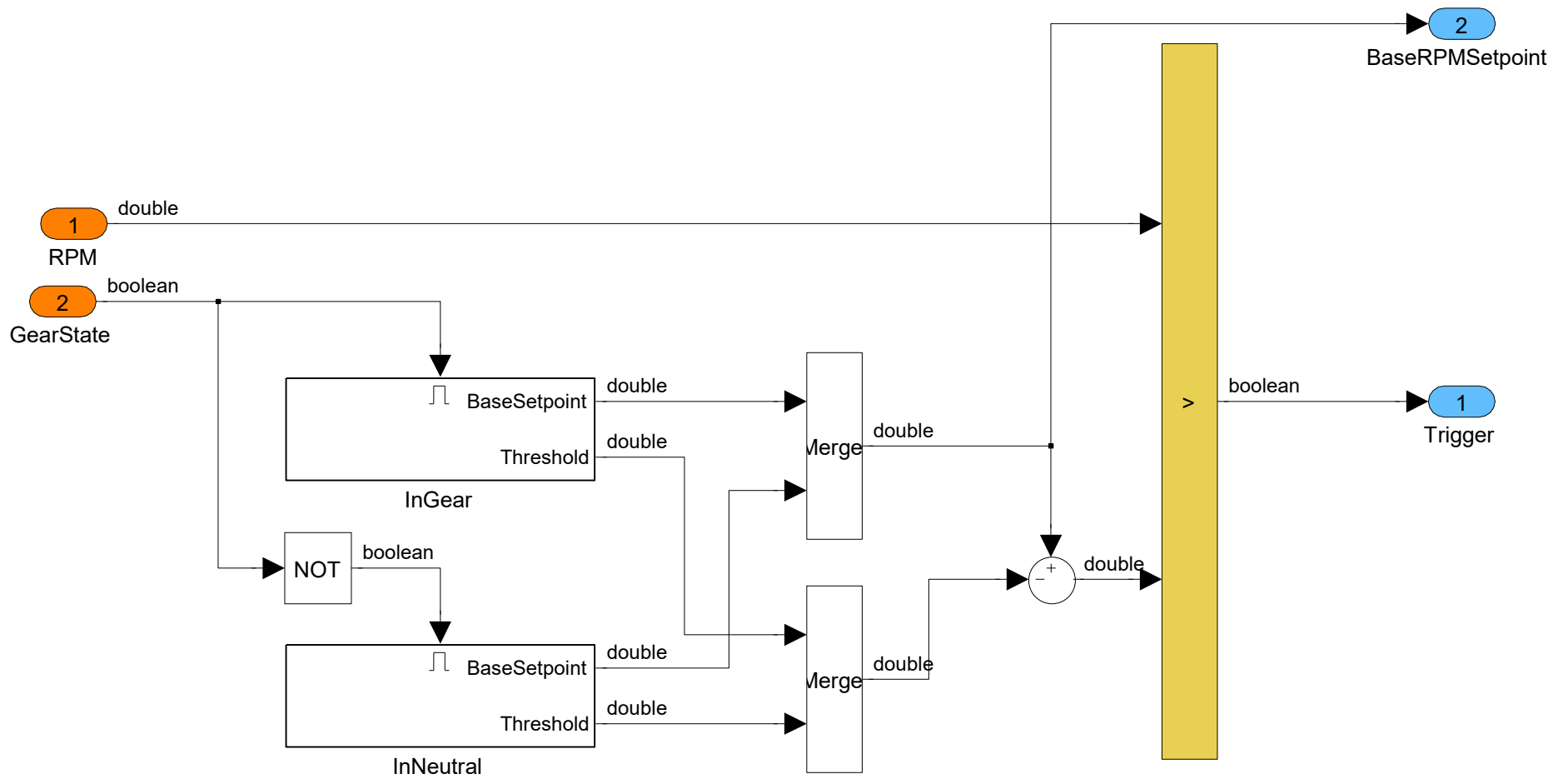
Move from Trans State back to On State if RPM > Target.

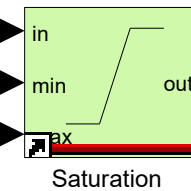
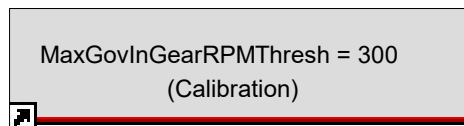
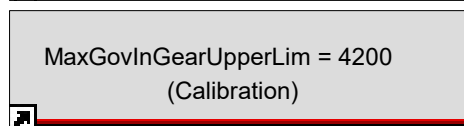
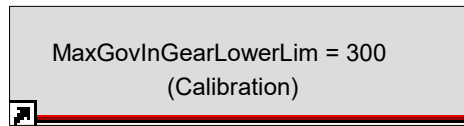
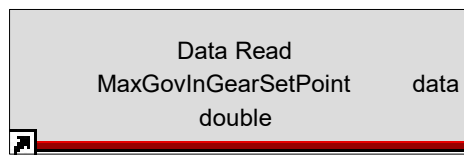
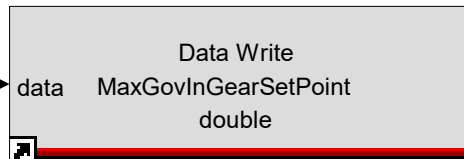
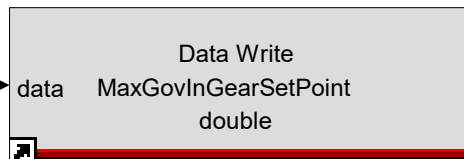
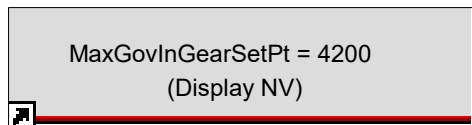
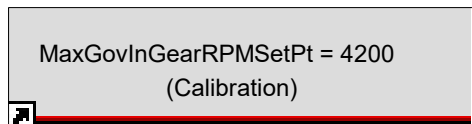
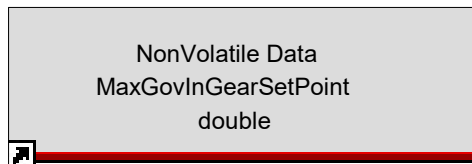
Move from Trans State to Off if RPM < Entry Criteria.

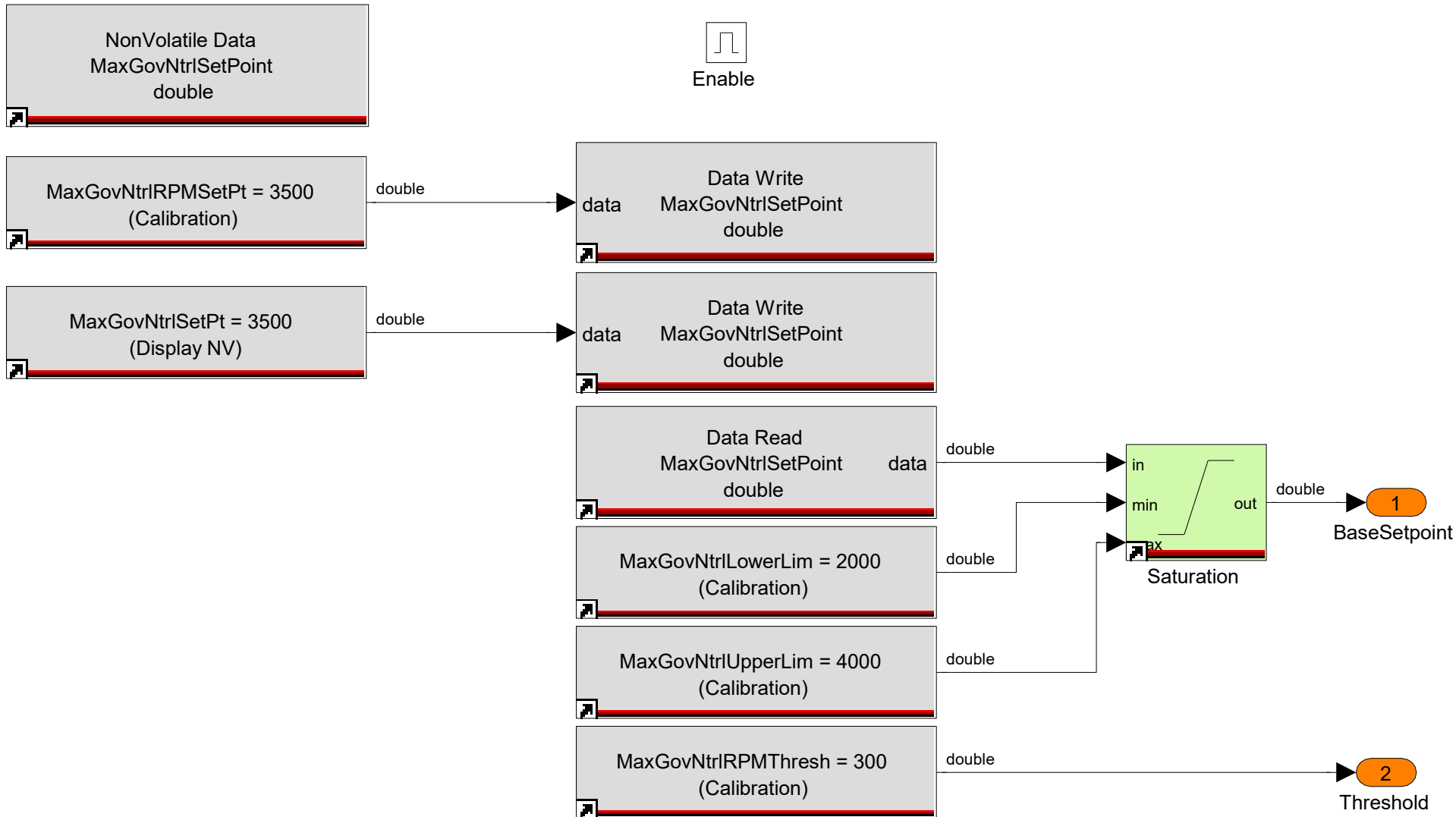


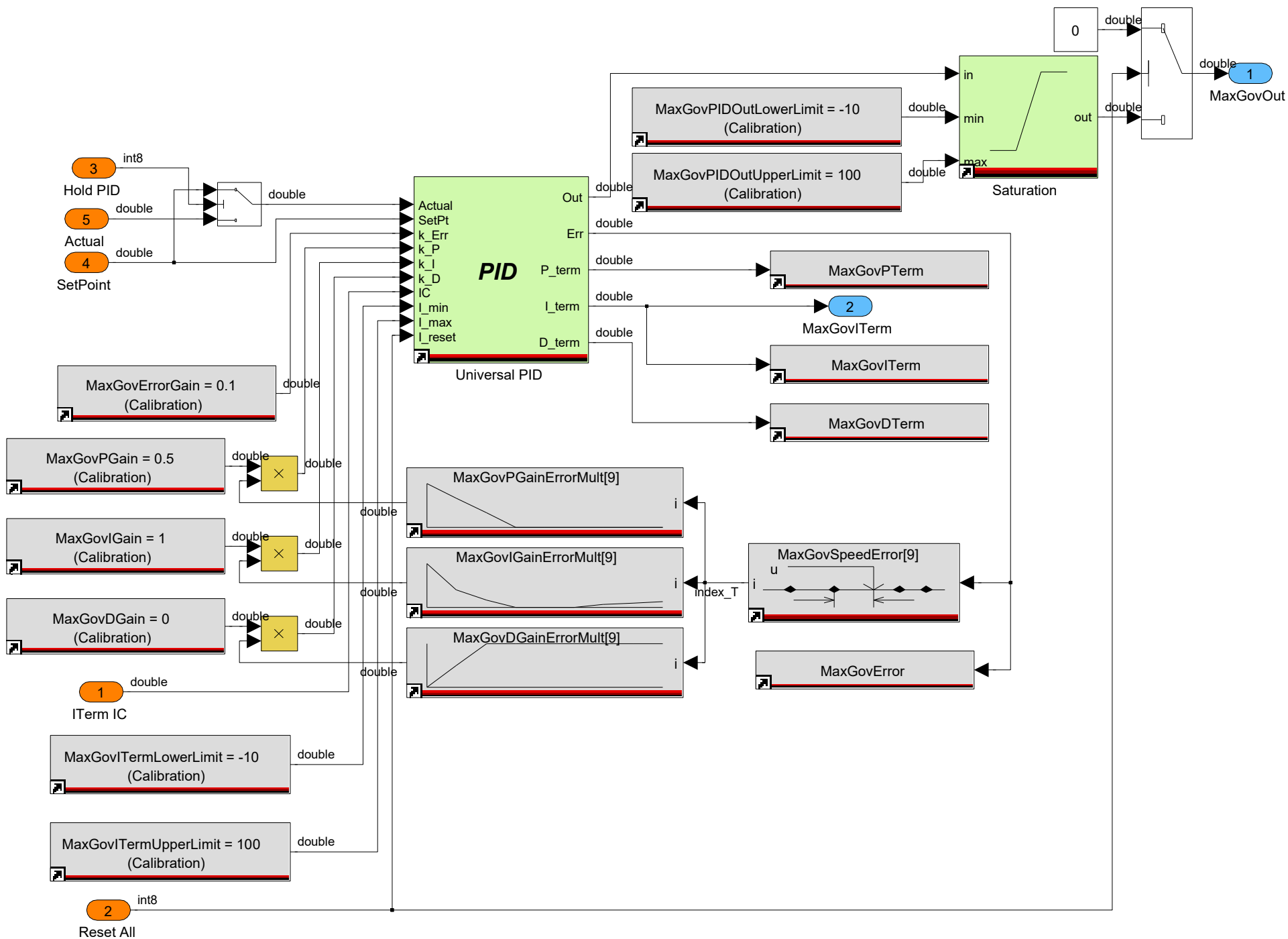


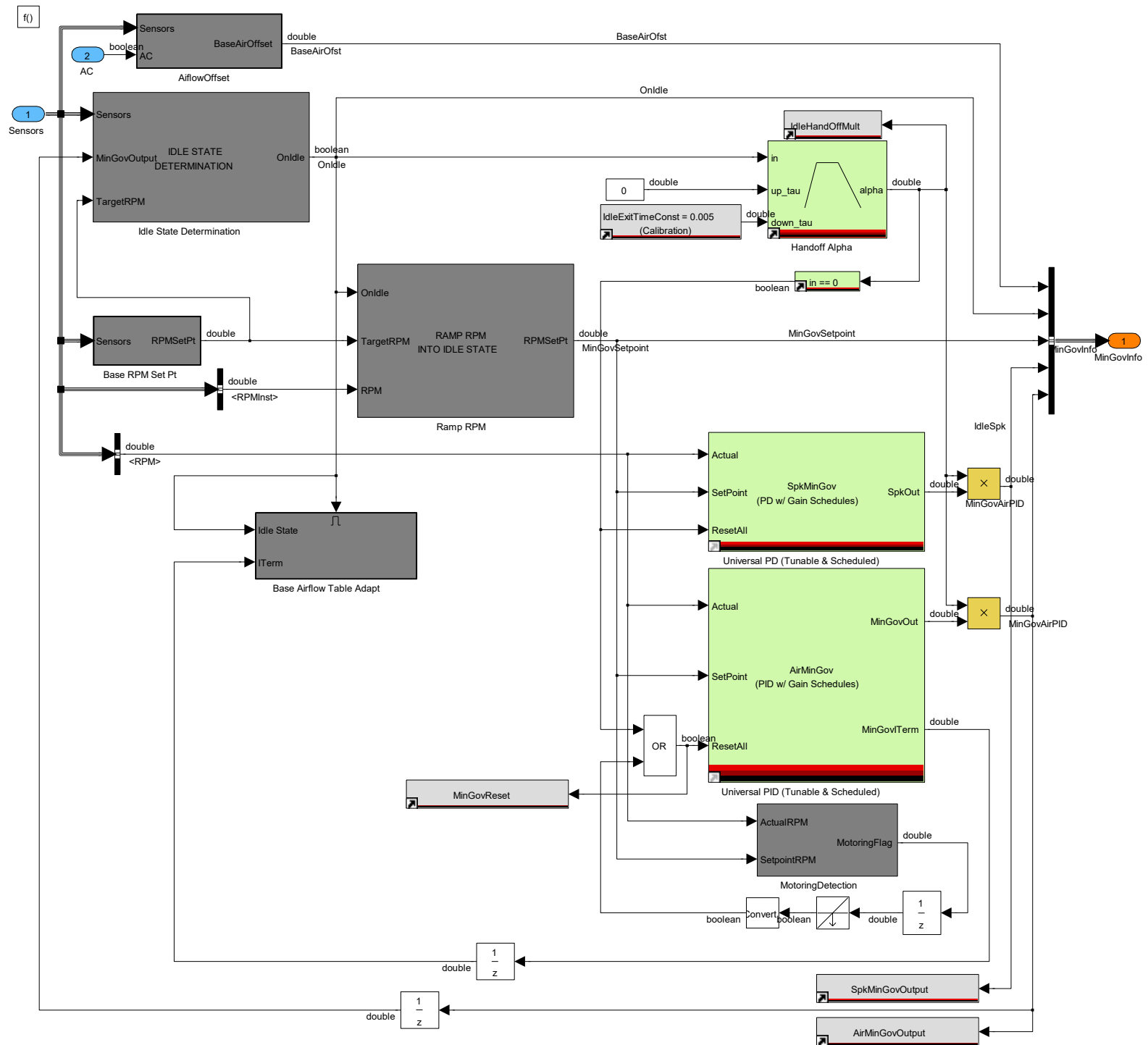
**1st-Order Ramp Up**  
 $y[k] = a \cdot x[k] + (1-a) \cdot y[k-1]$   
 where  $a = t/T$

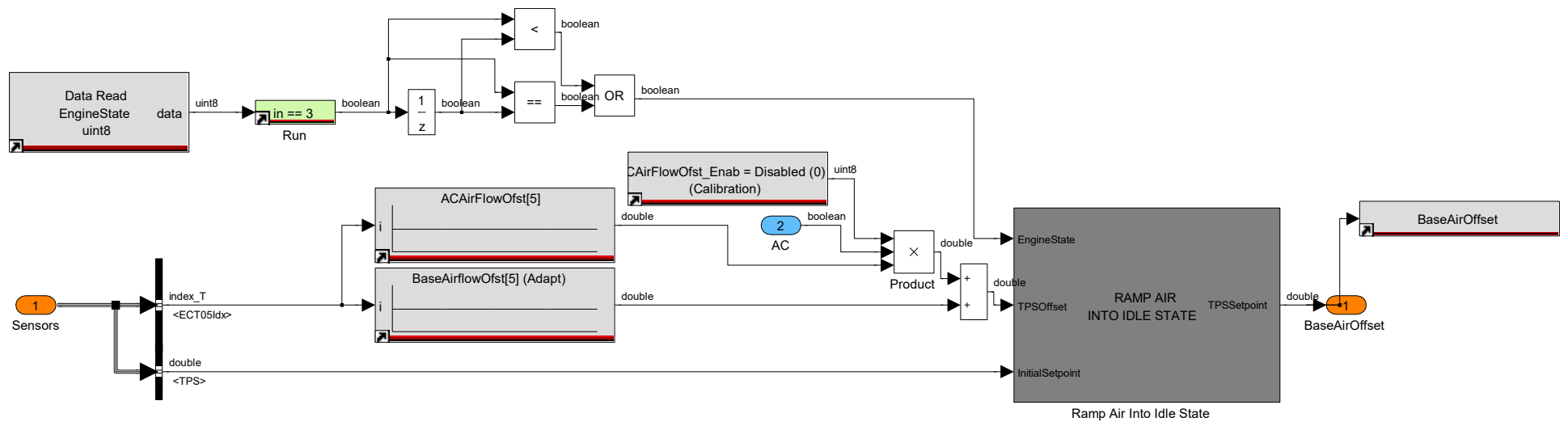


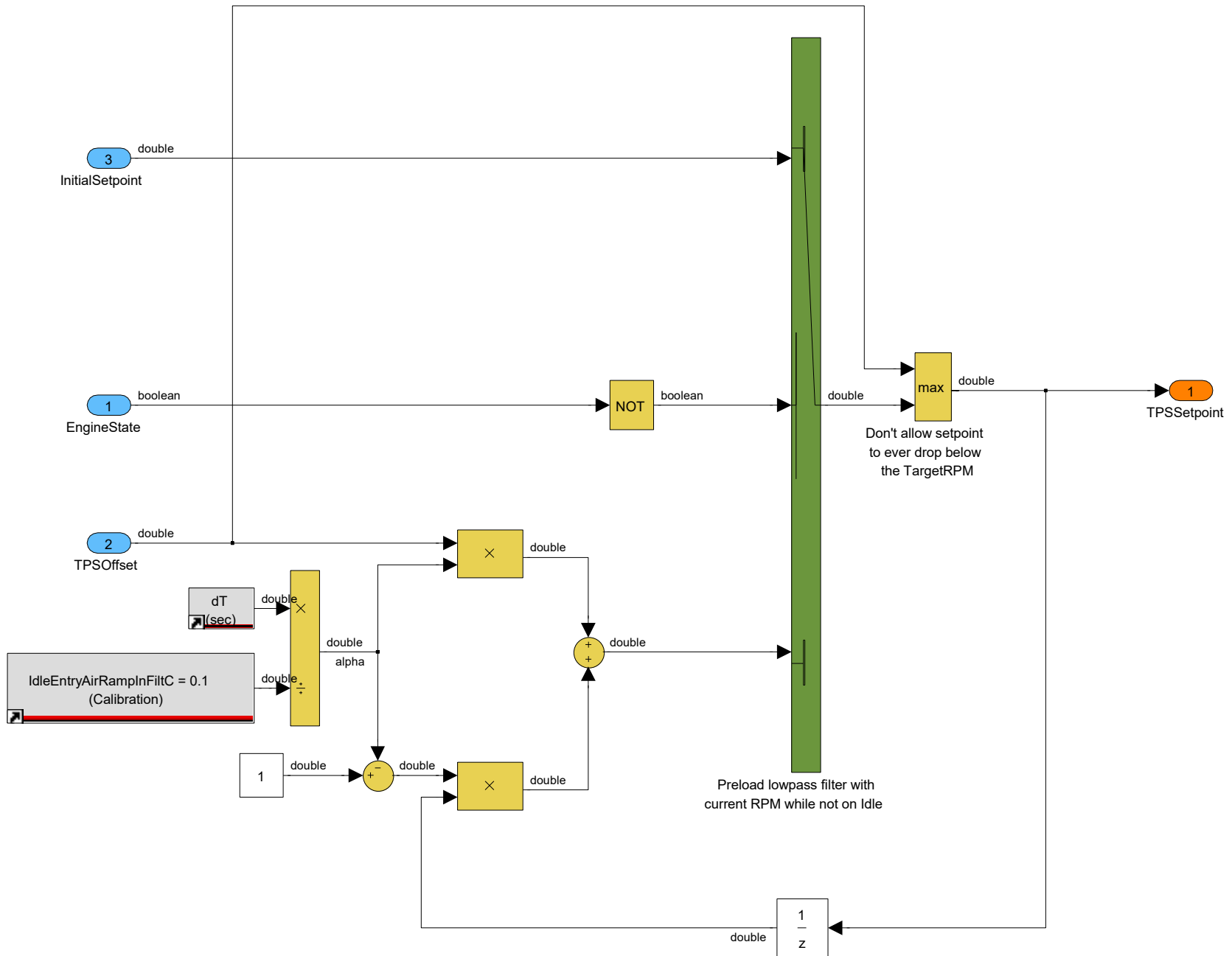








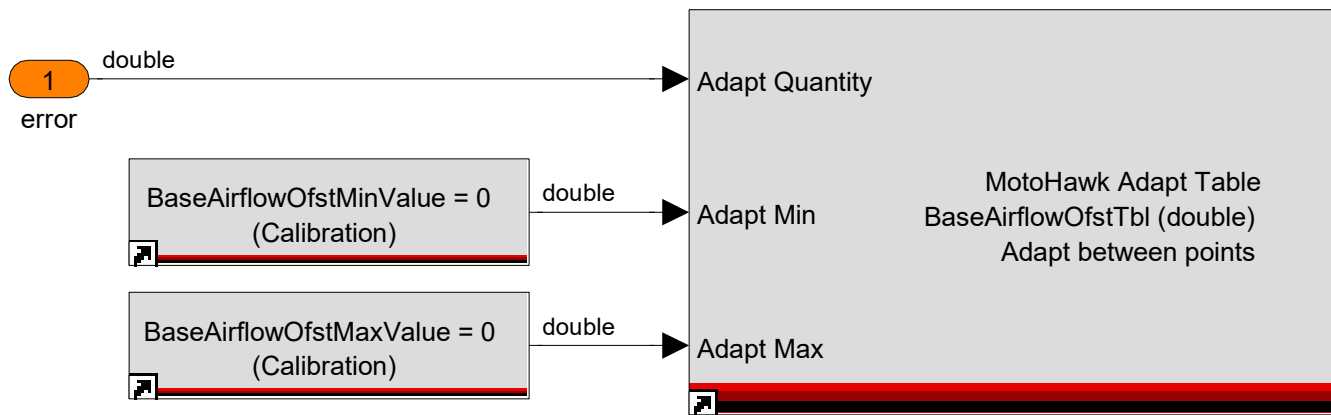


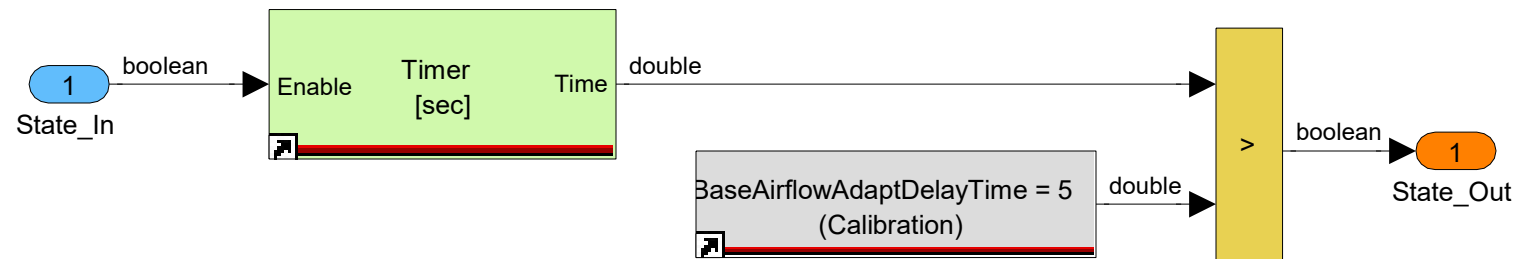


**1st-Order Ramp Down**  
 $y[k] = a \cdot x[k] + (1-a) \cdot y[k-1]$   
 where  $a = t/T$

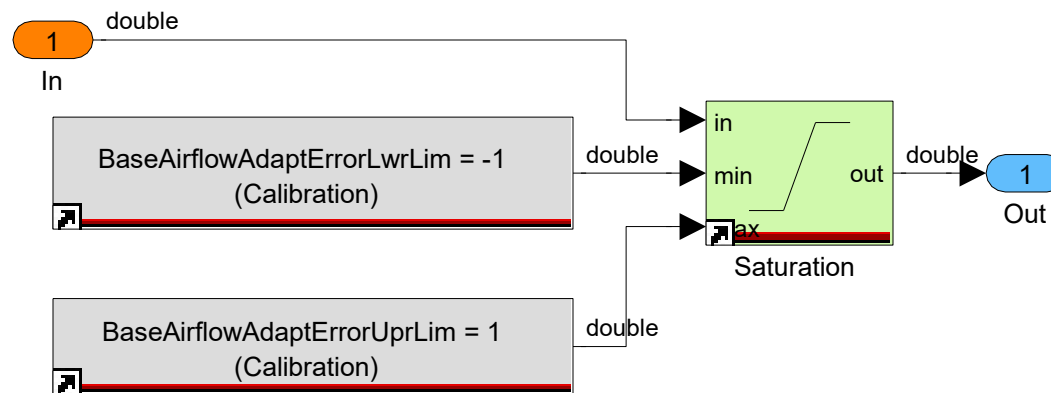


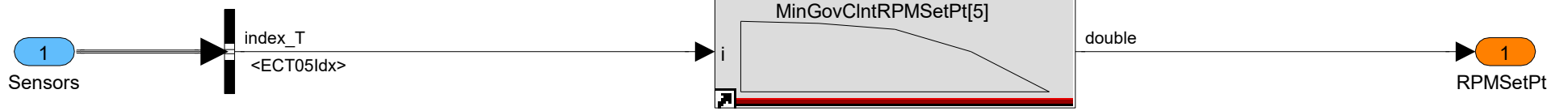


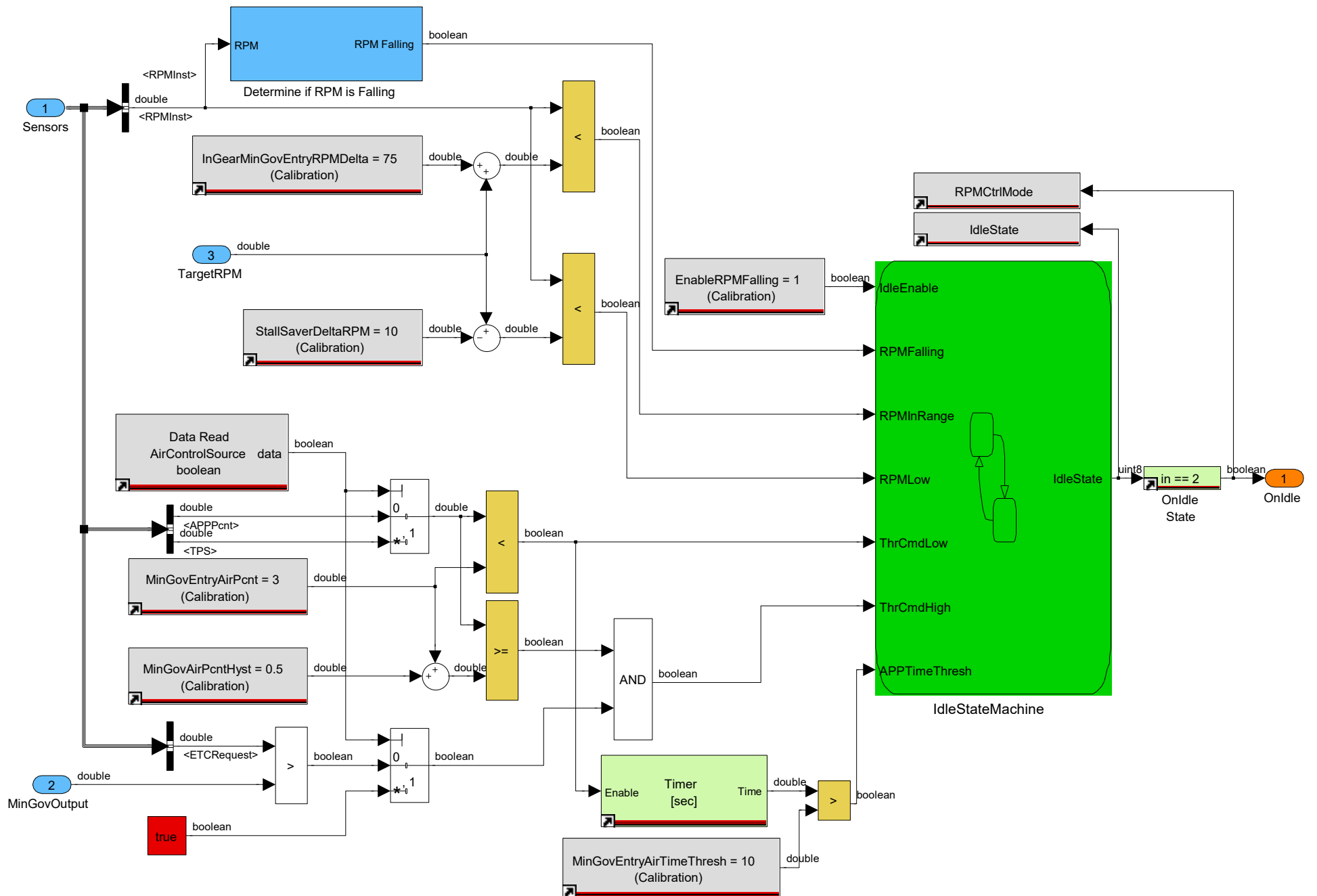




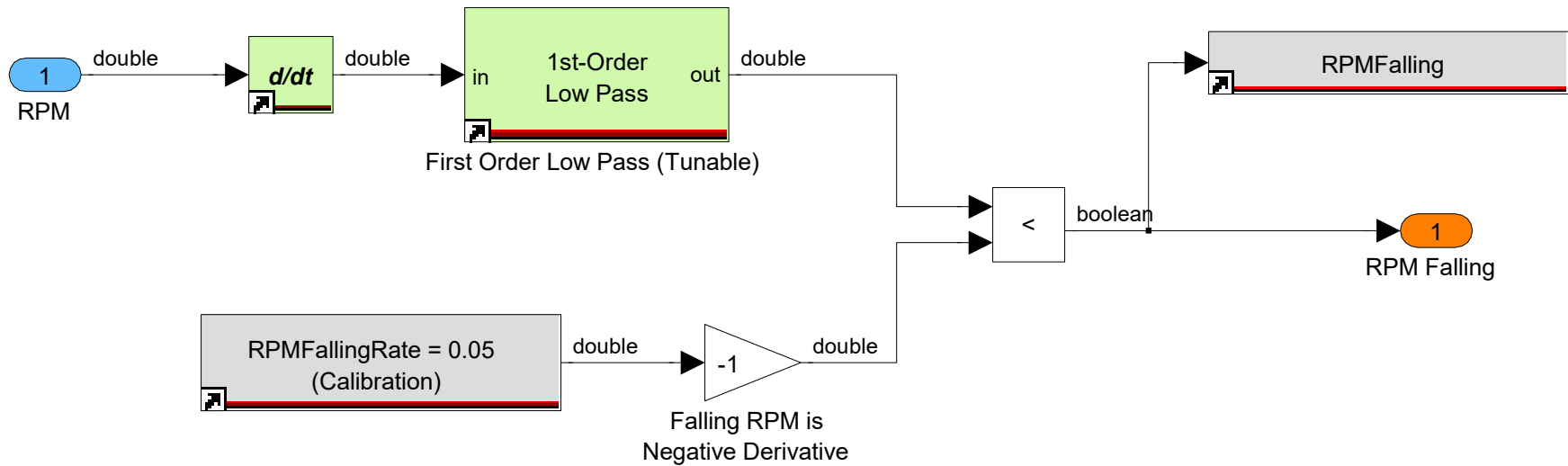
## Calibratable wrapper around the Saturation block

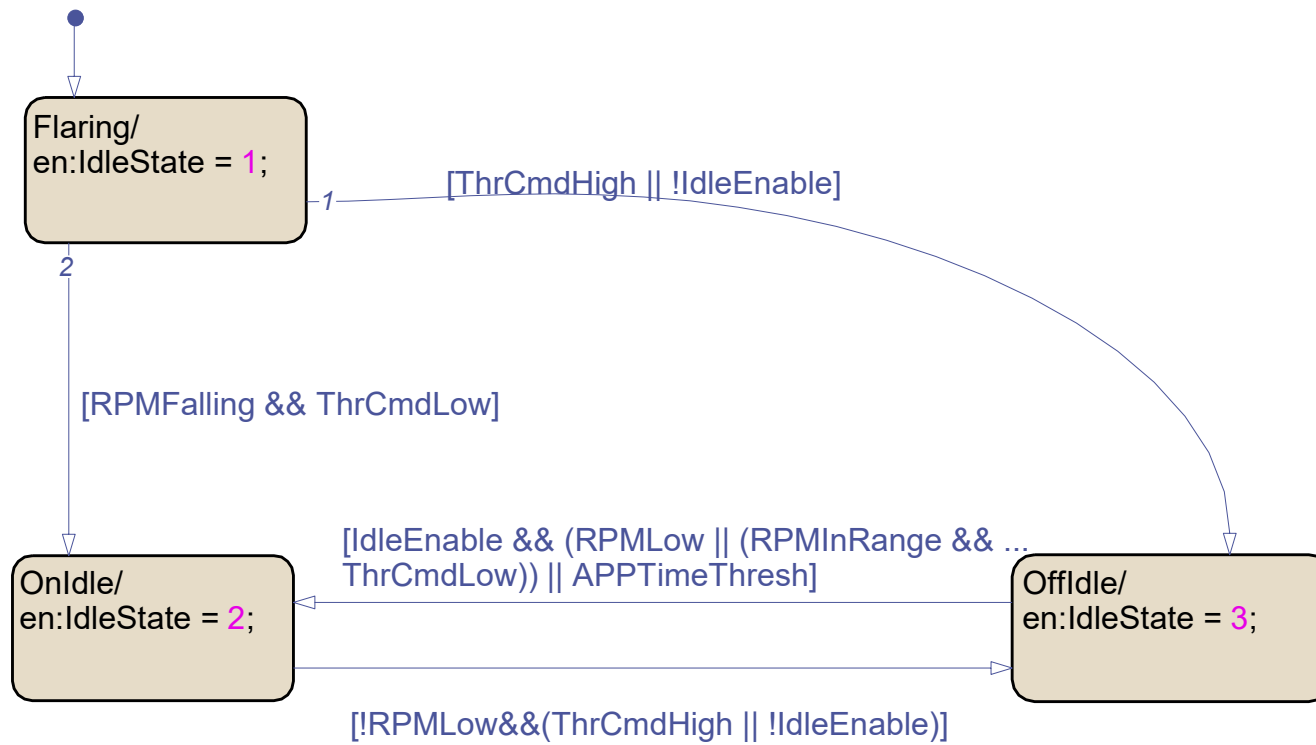




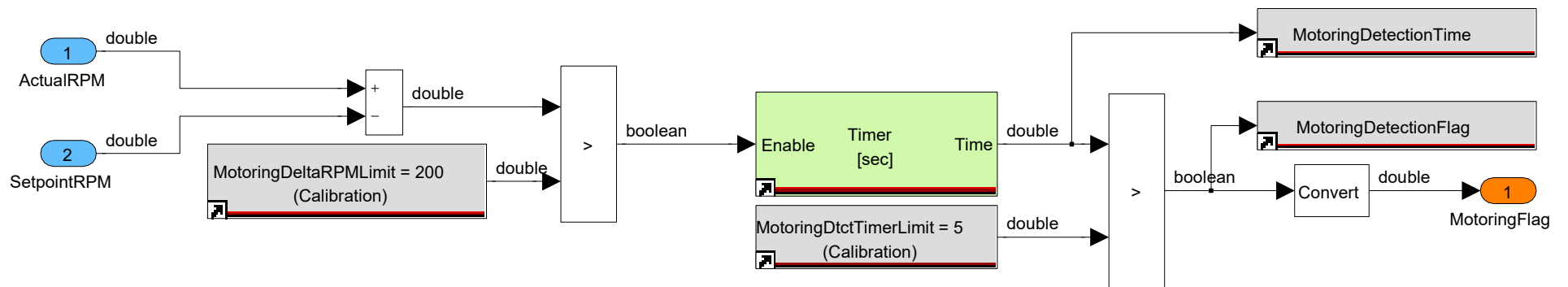


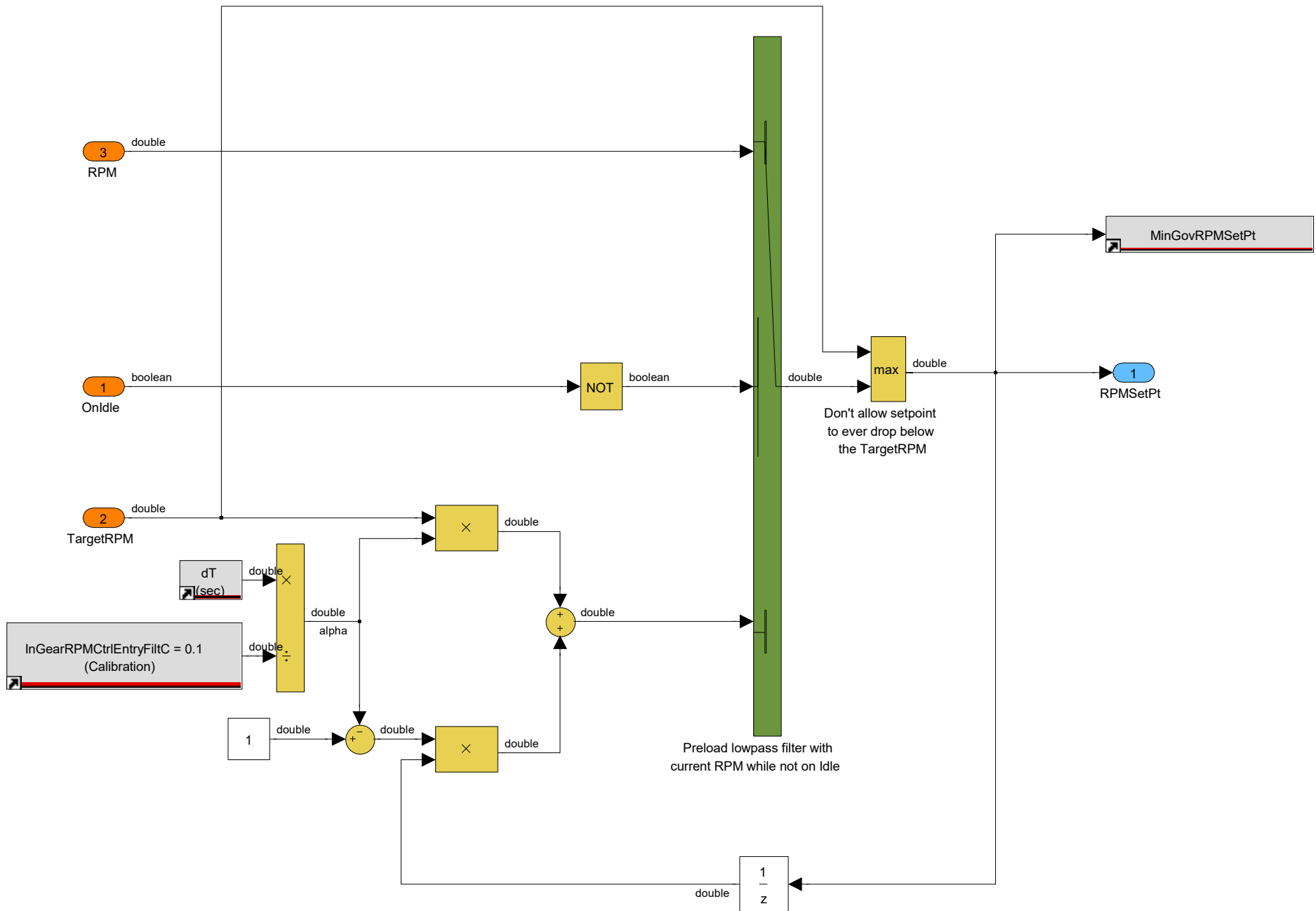
## Determine if RPM is falling



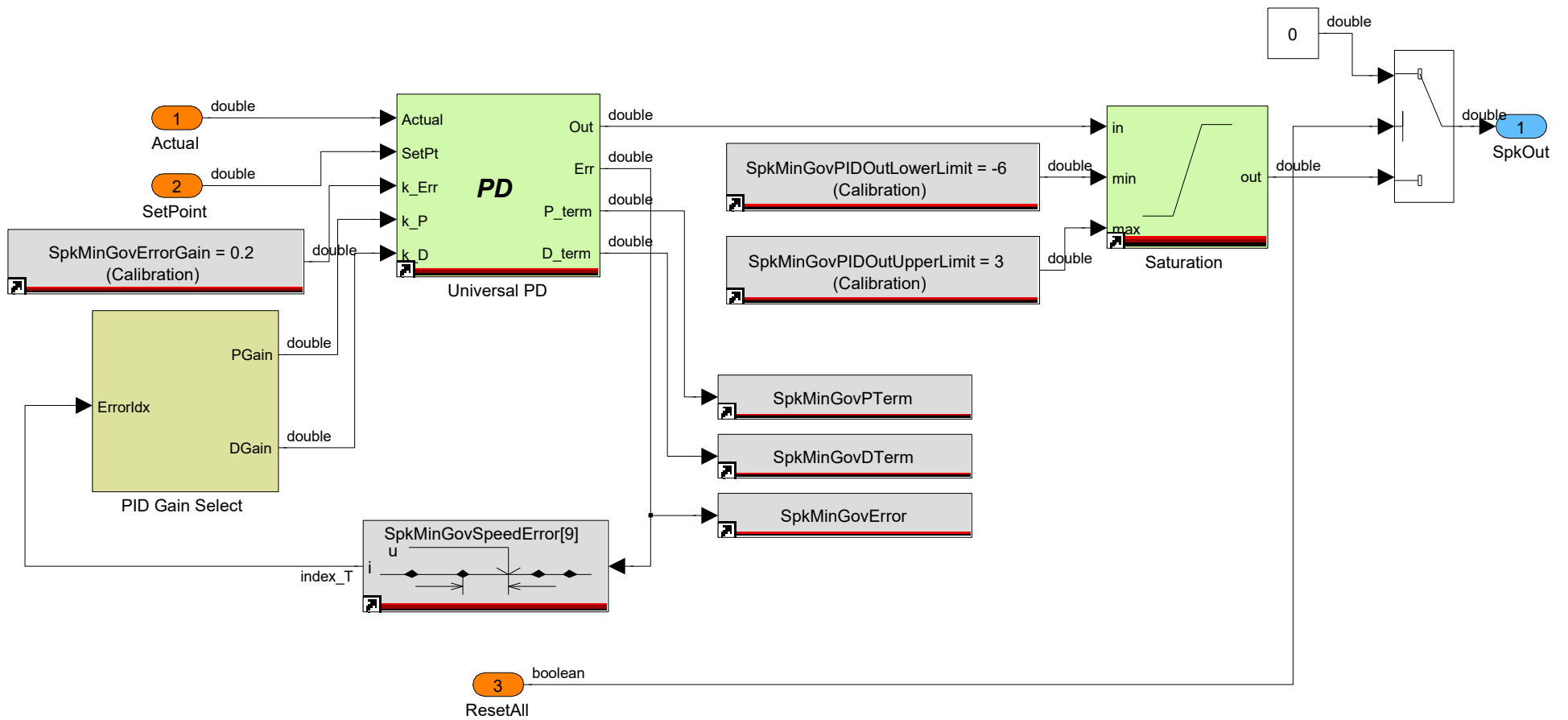


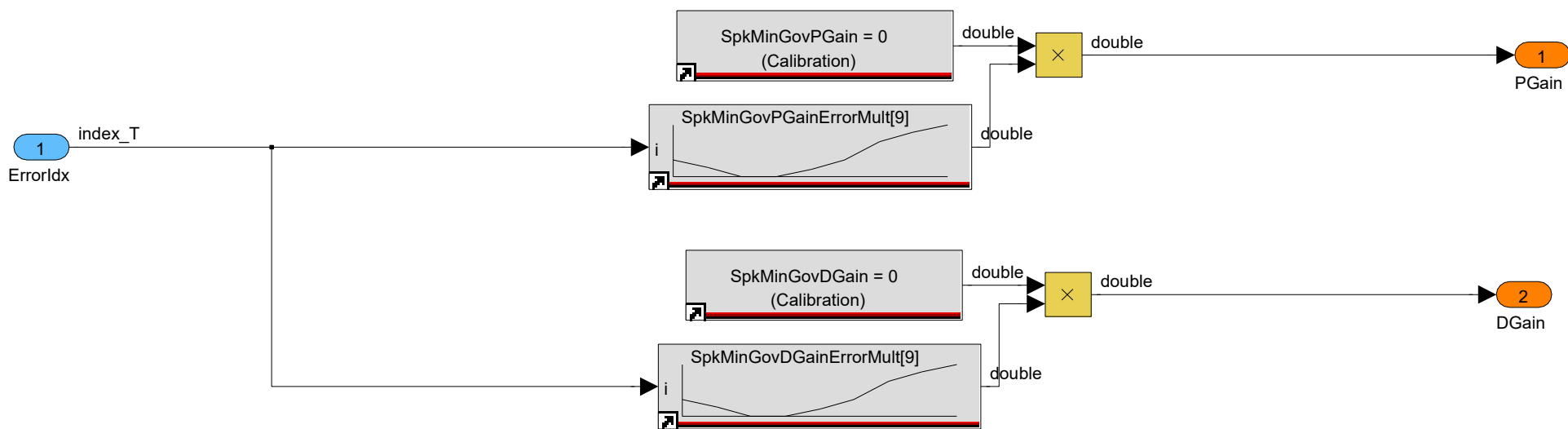


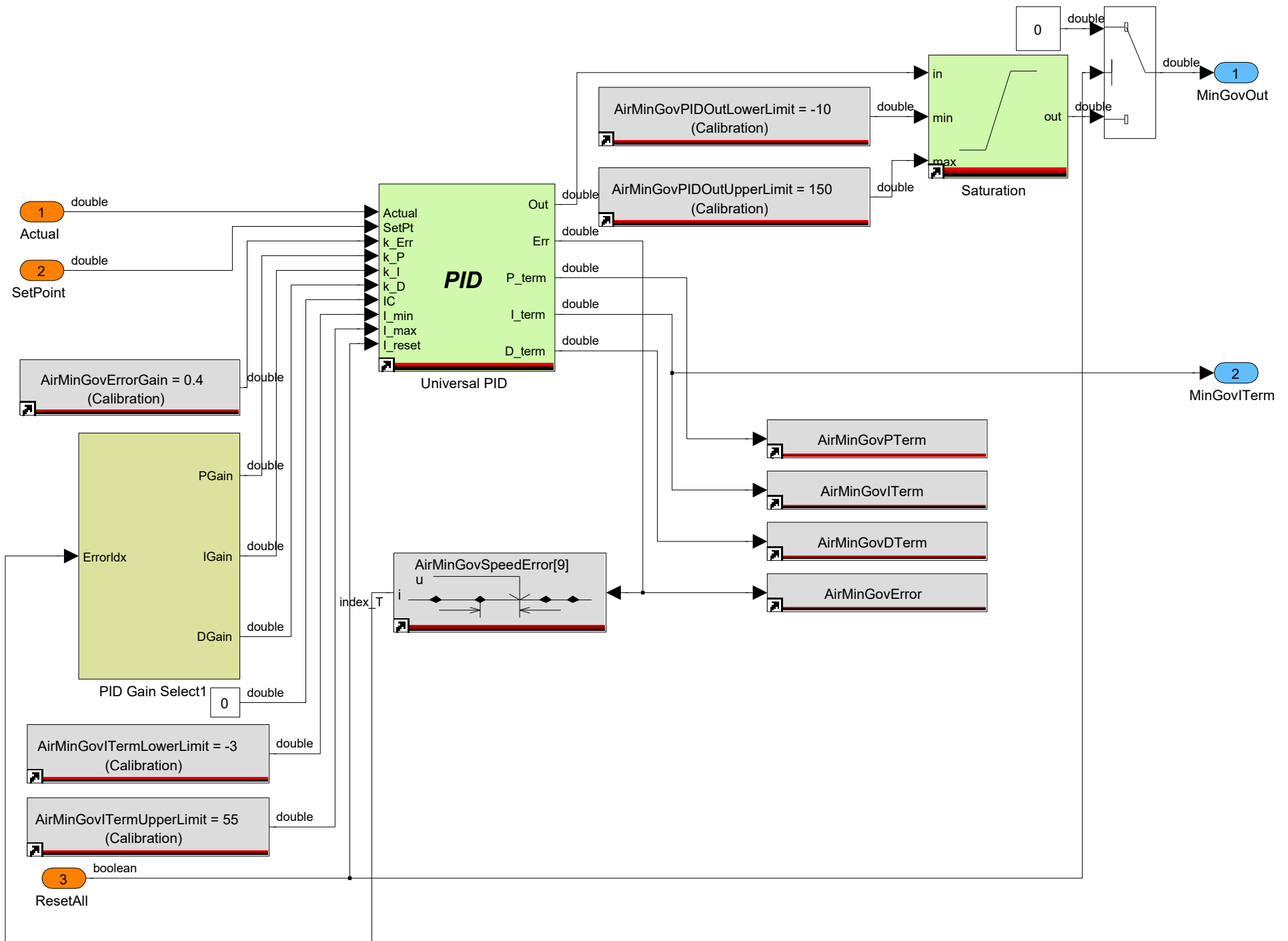


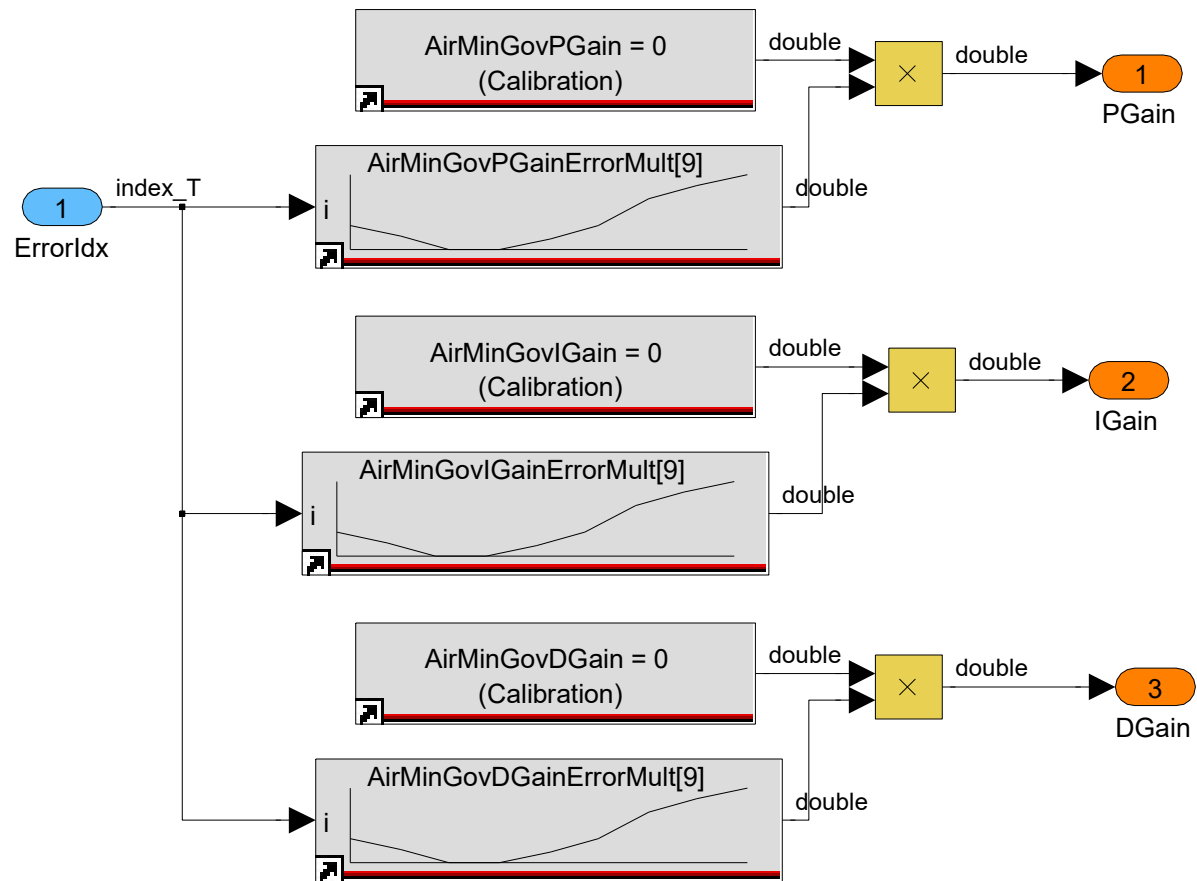


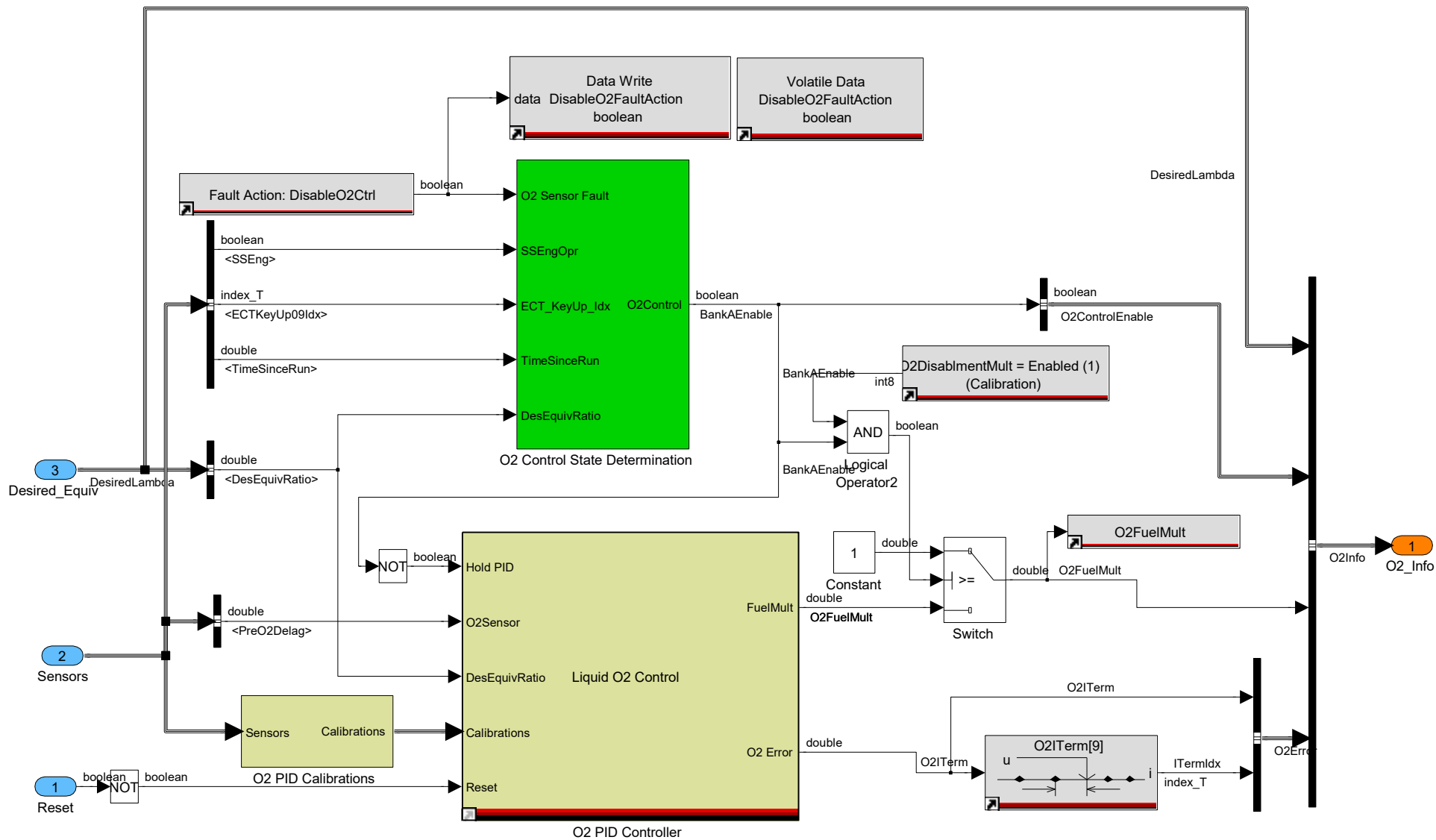
**1st-Order Ramp Down**  
 $y[k] = a \cdot x[k] + (1-a) \cdot y[k-1]$   
 where  $a = t/T$

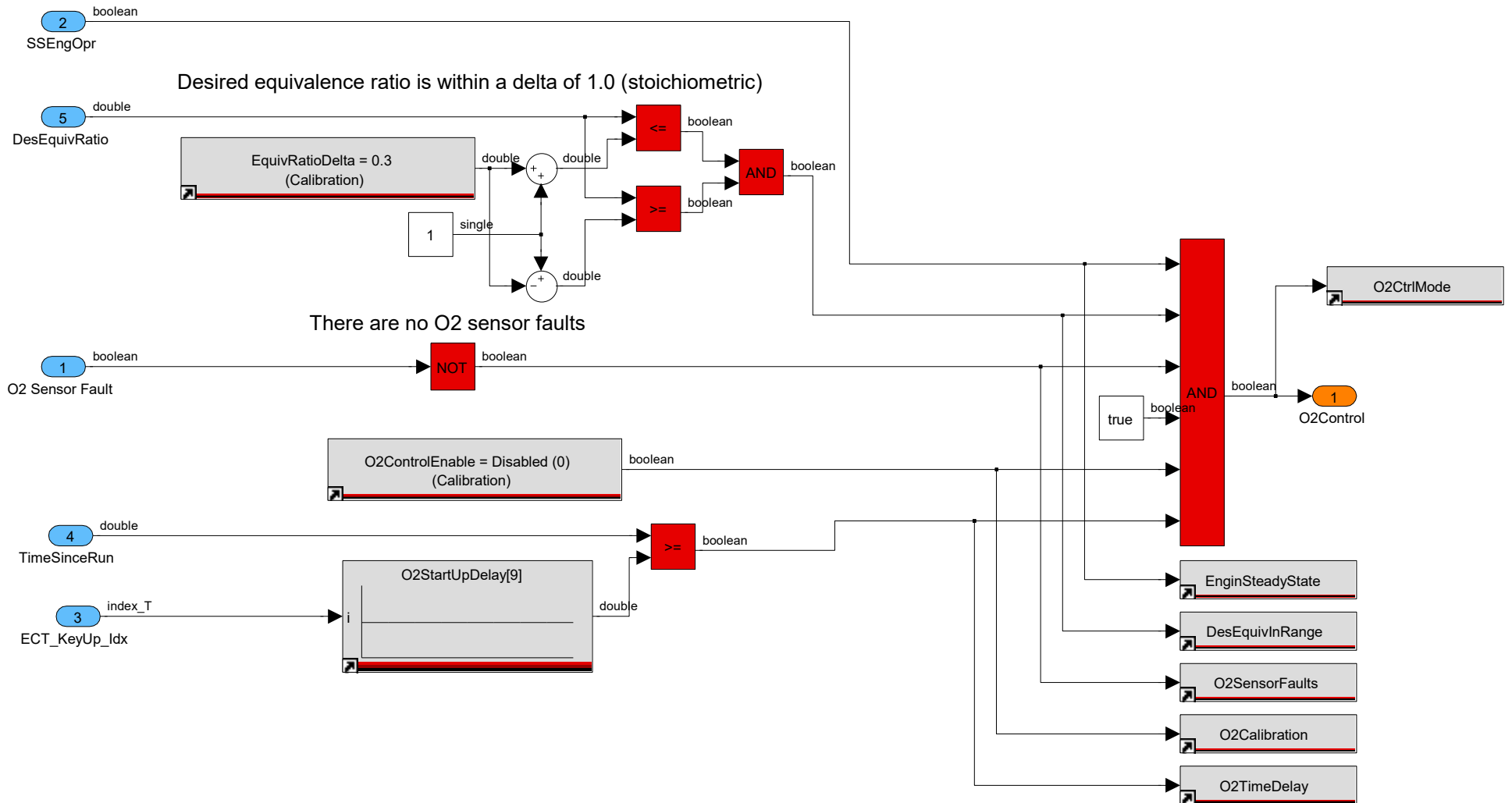




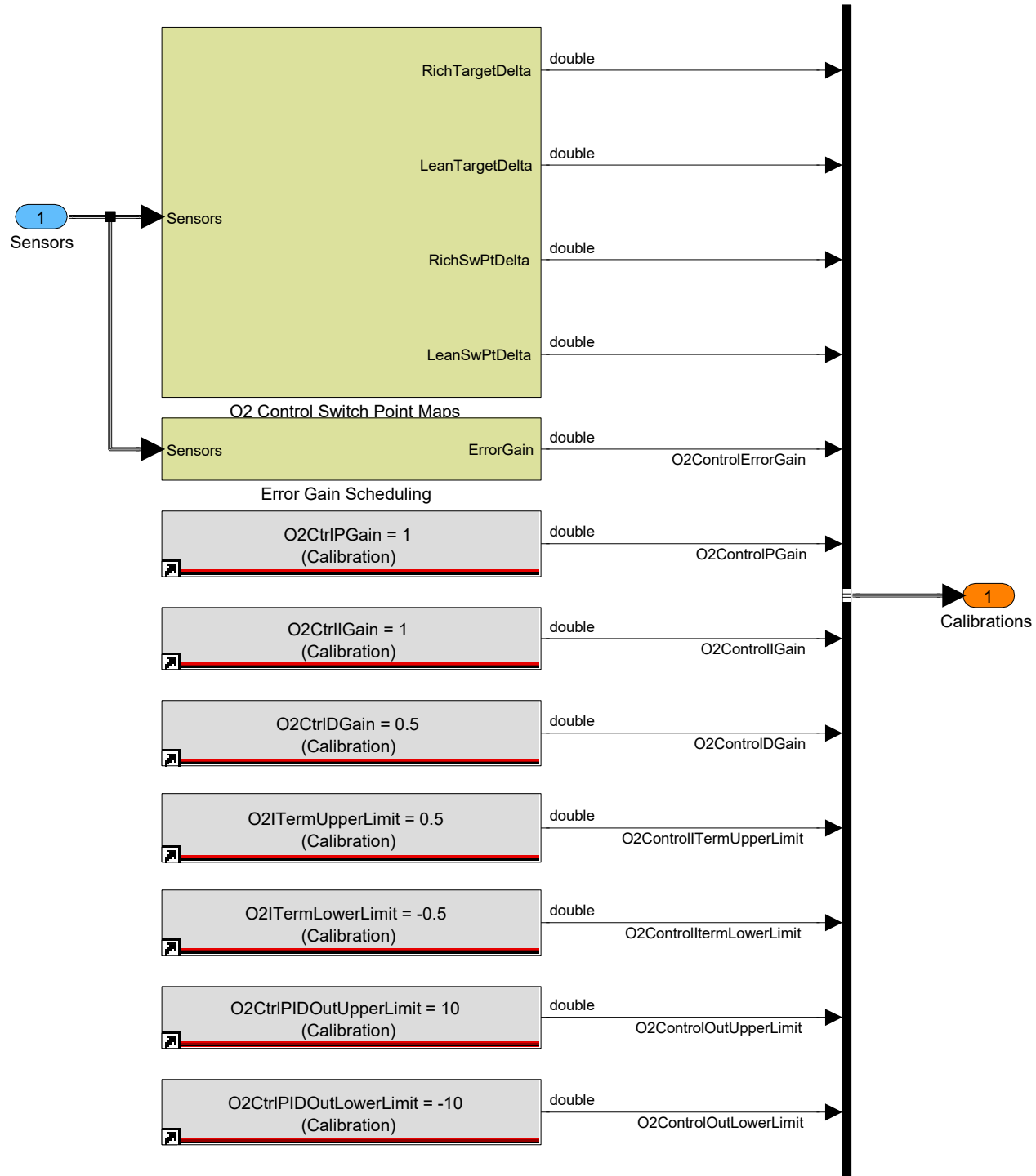


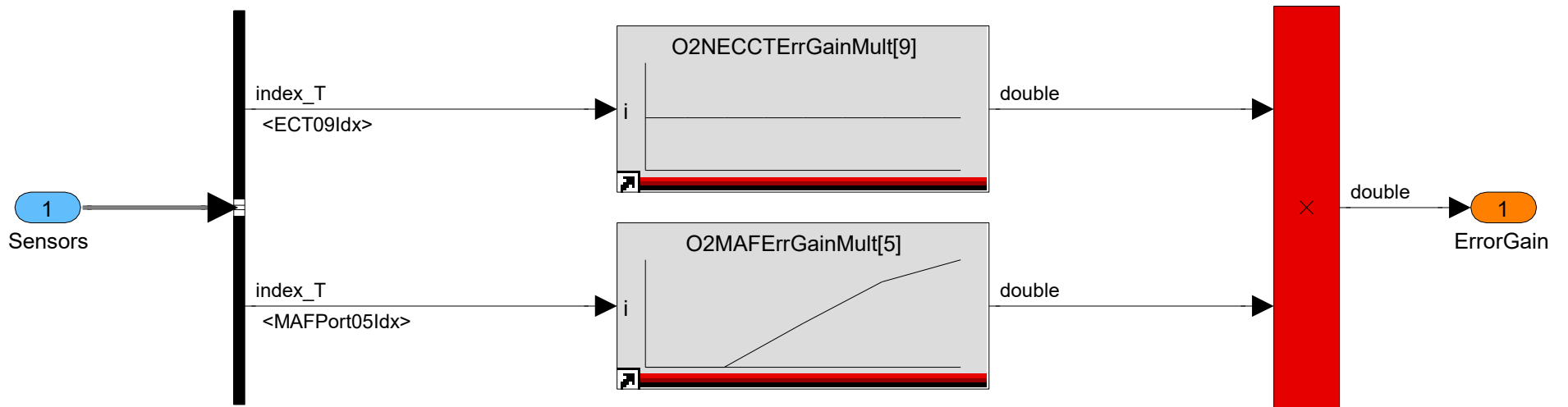


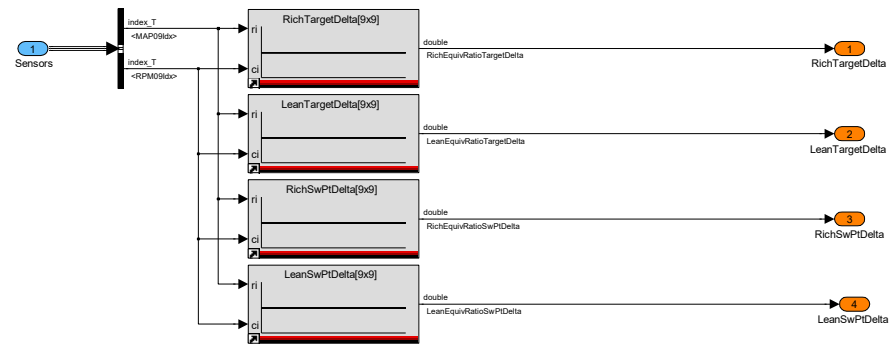


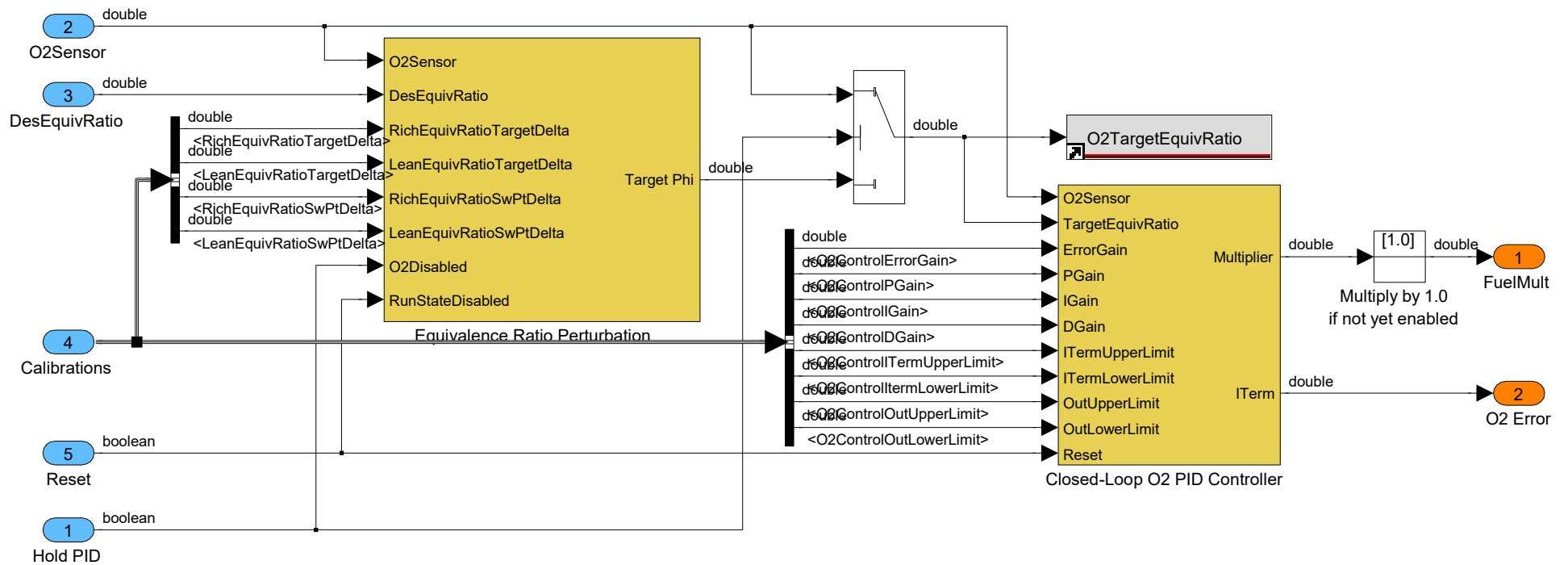


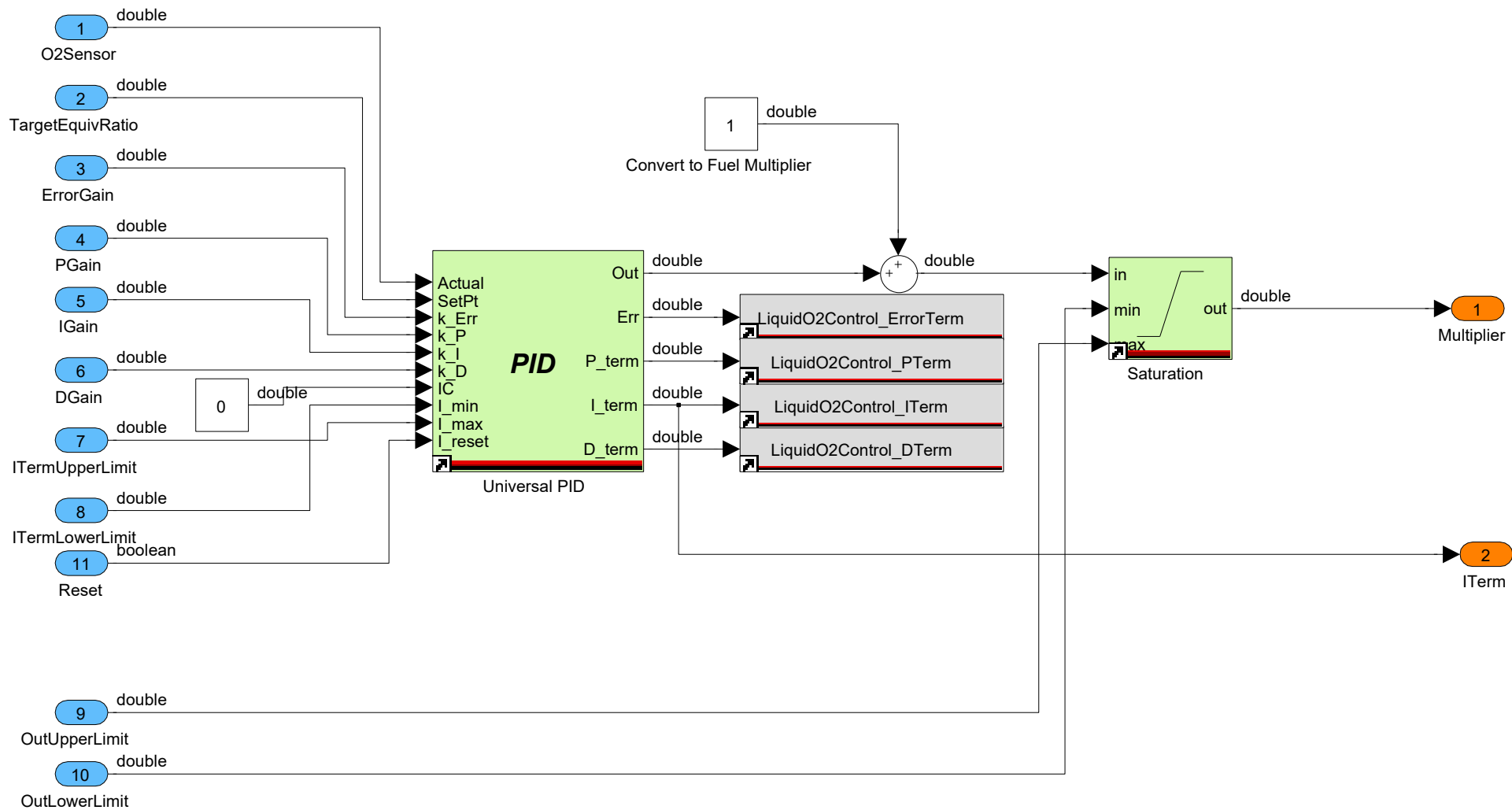


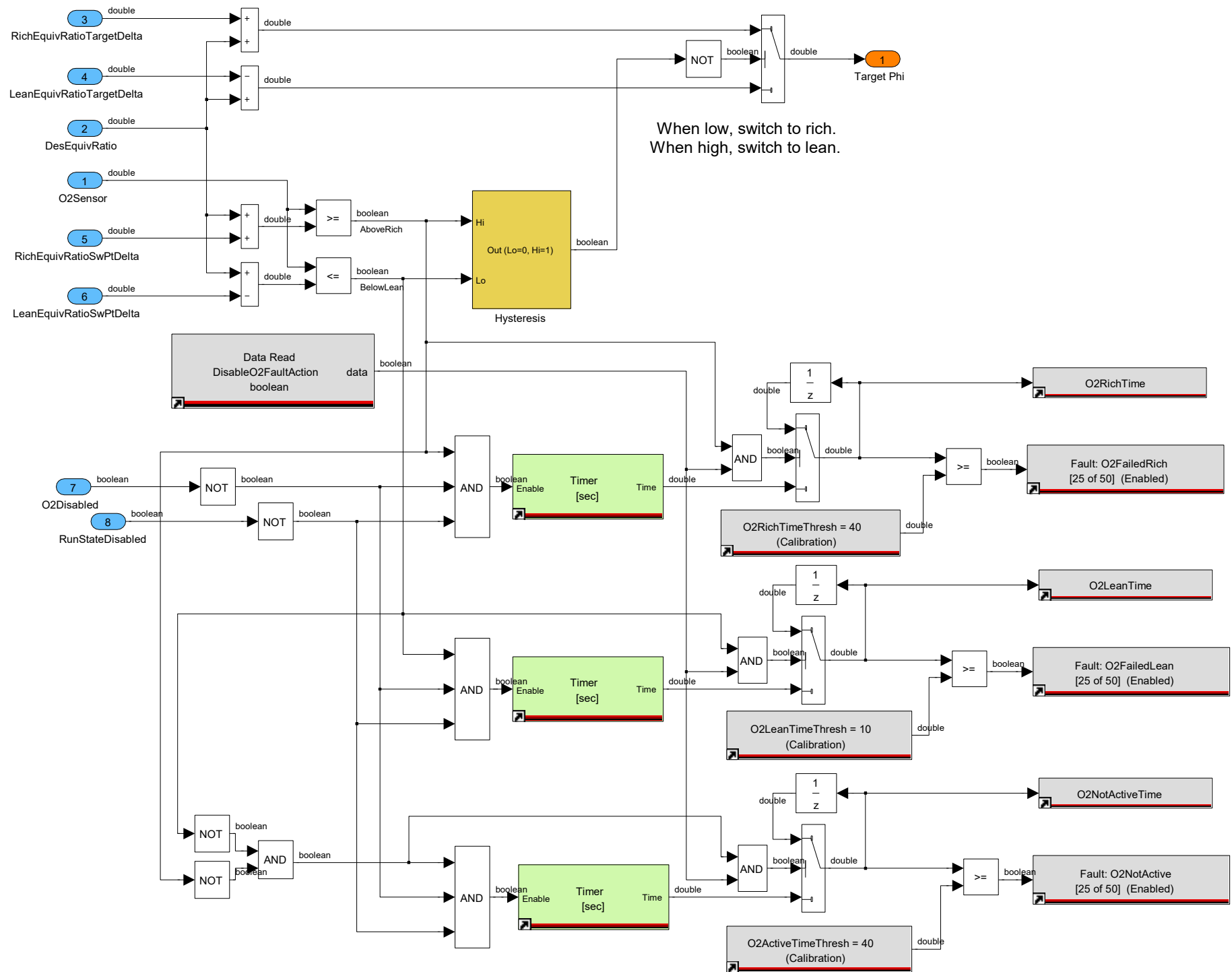




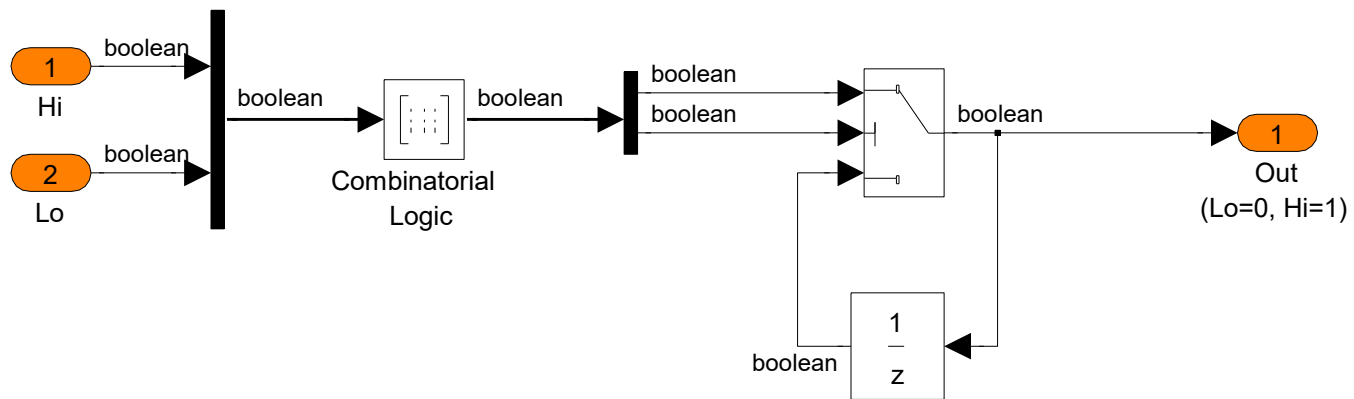




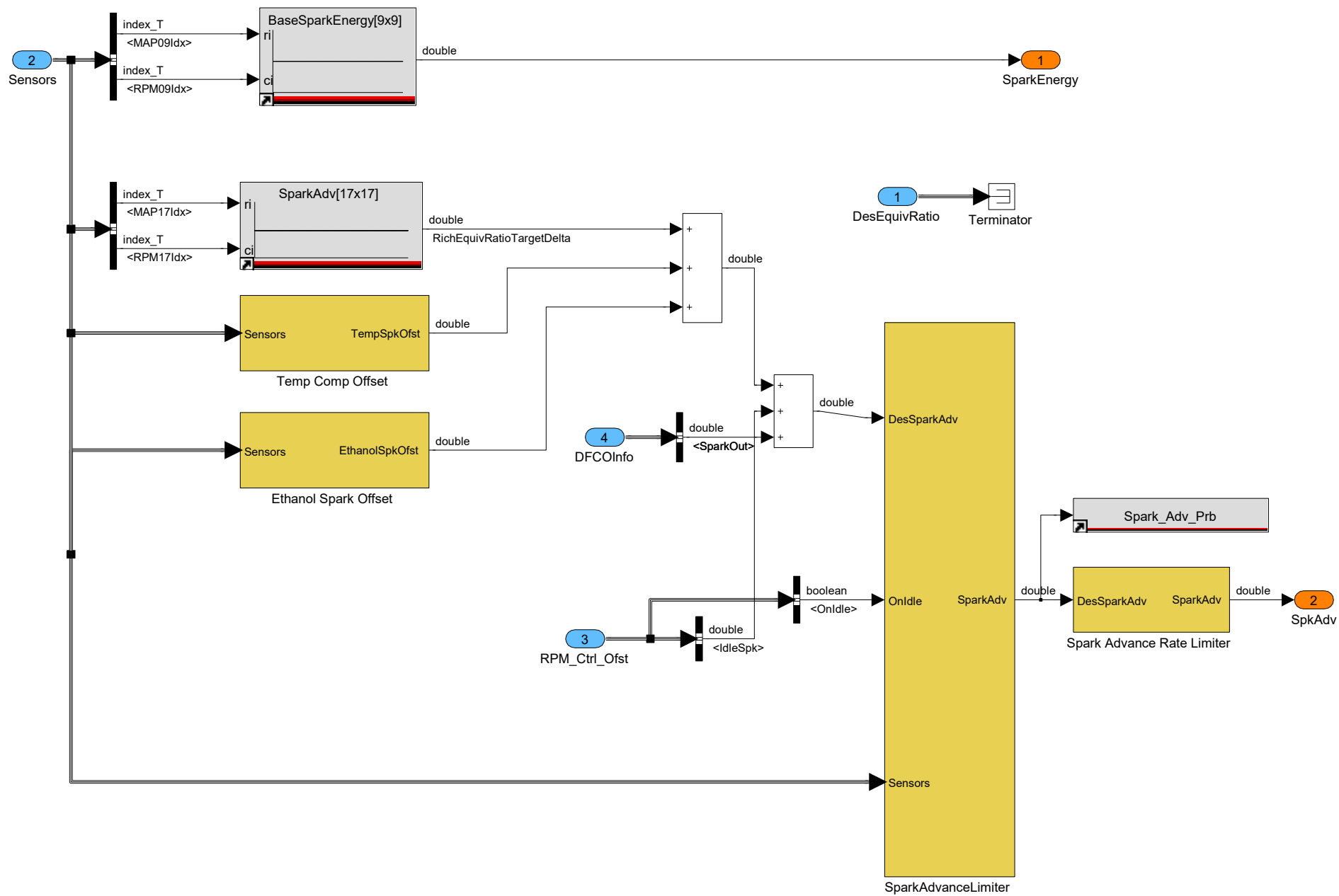




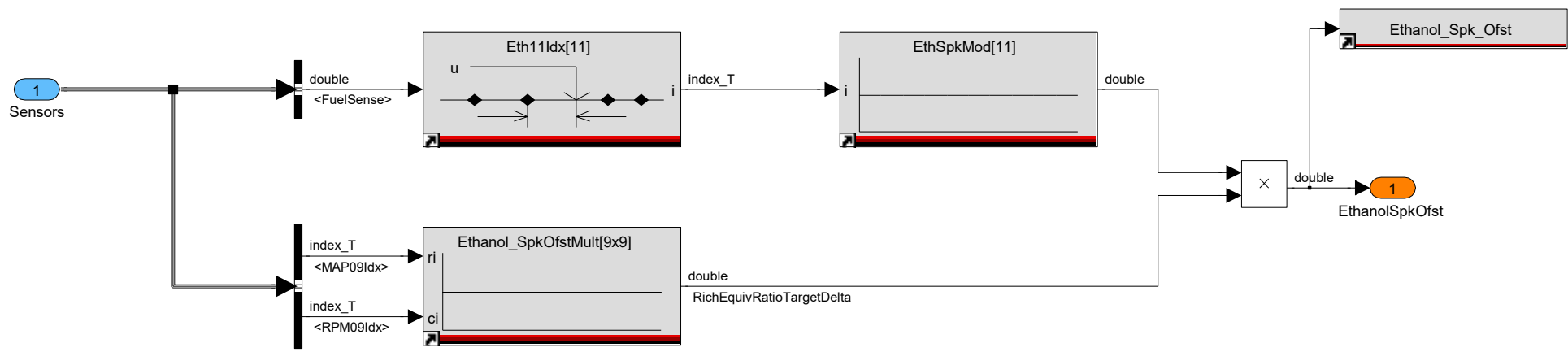
**Hi & !Lo => Hi**  
**Lo & !Hi => Lo**  
**Otherwise, Hold**

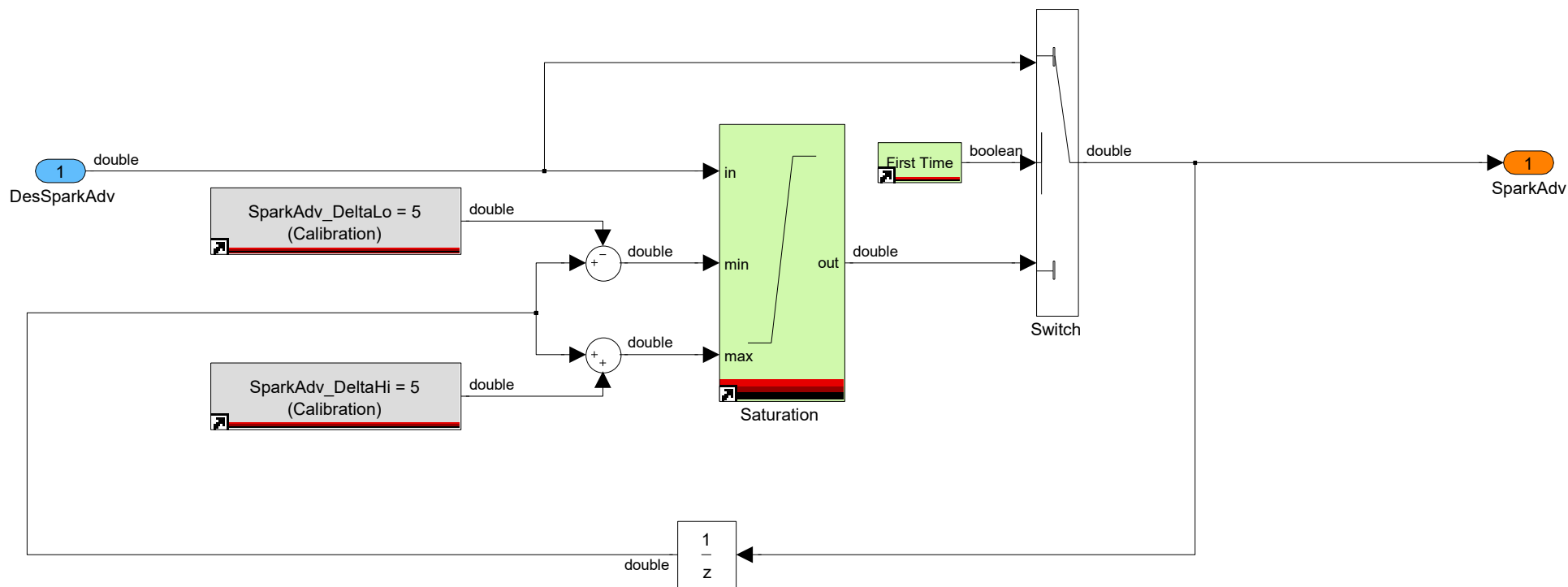


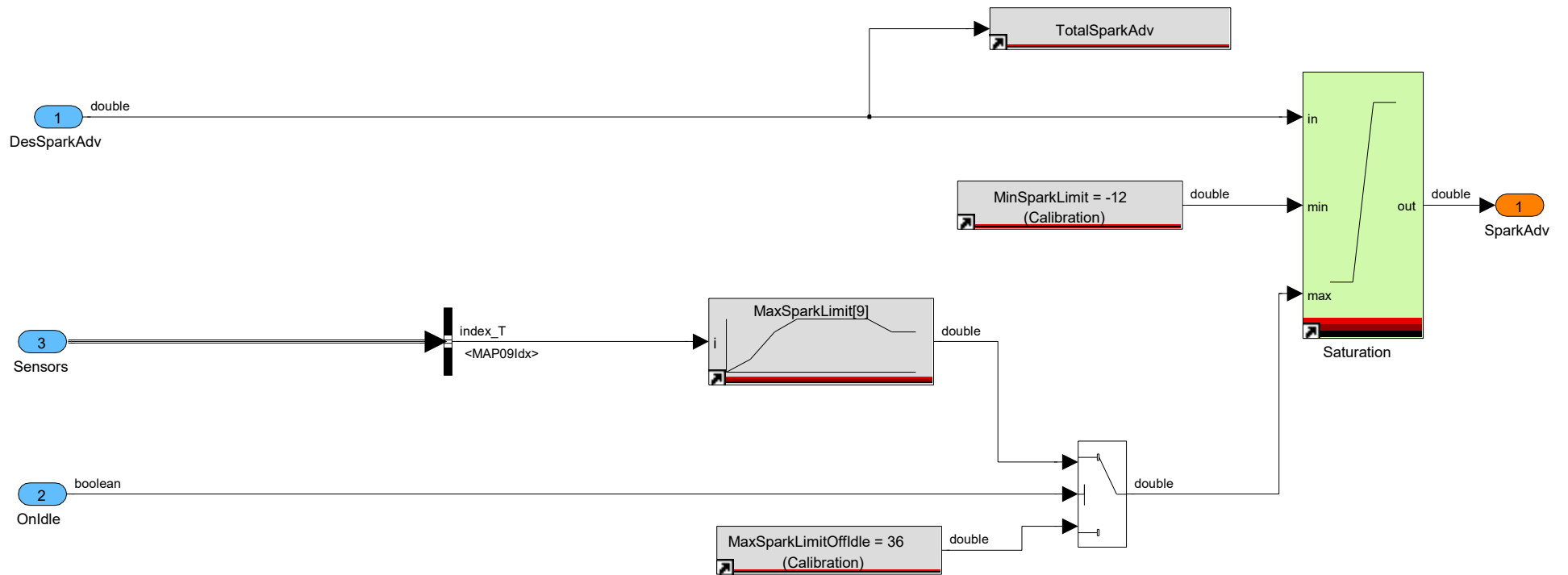
f()



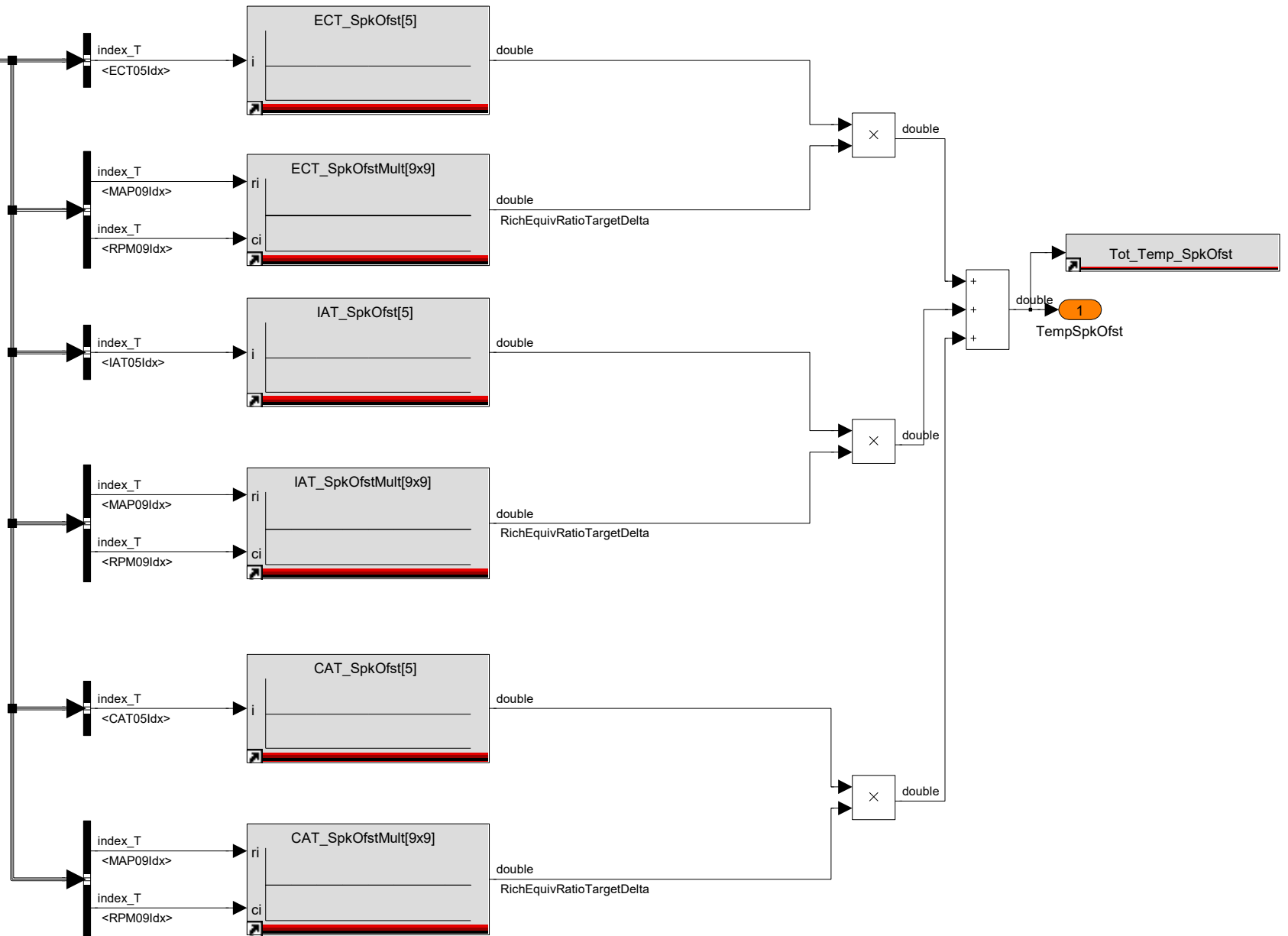


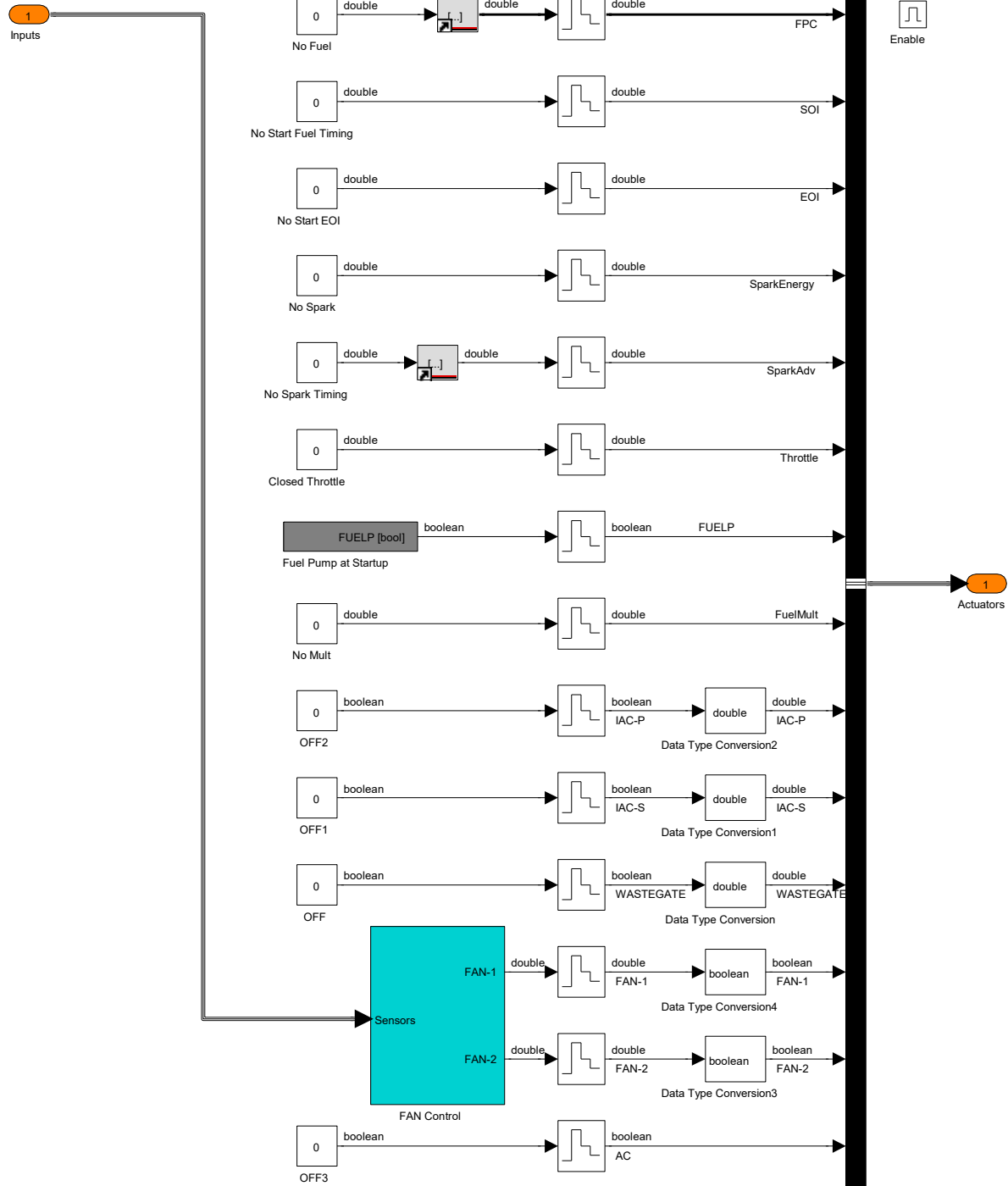


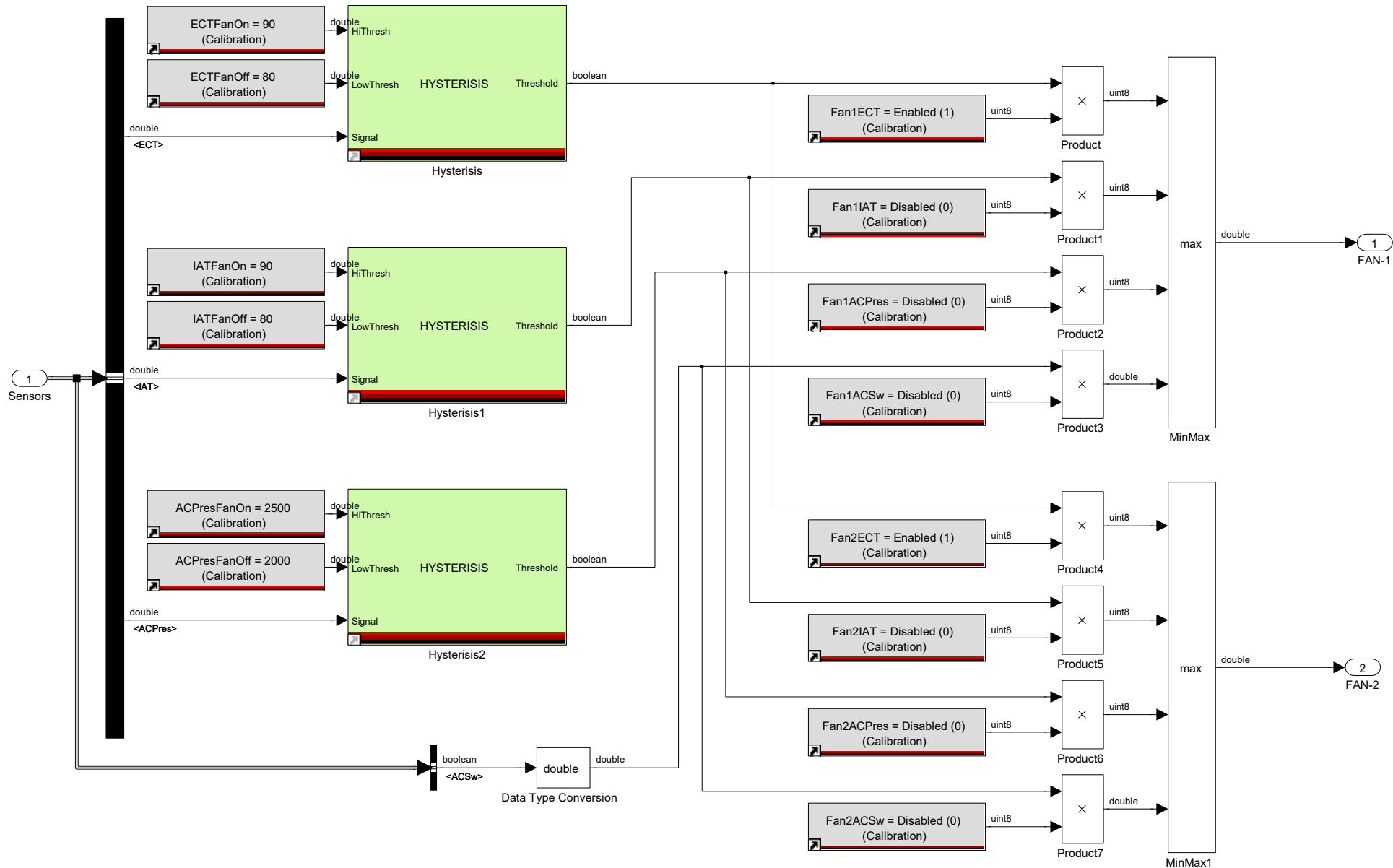


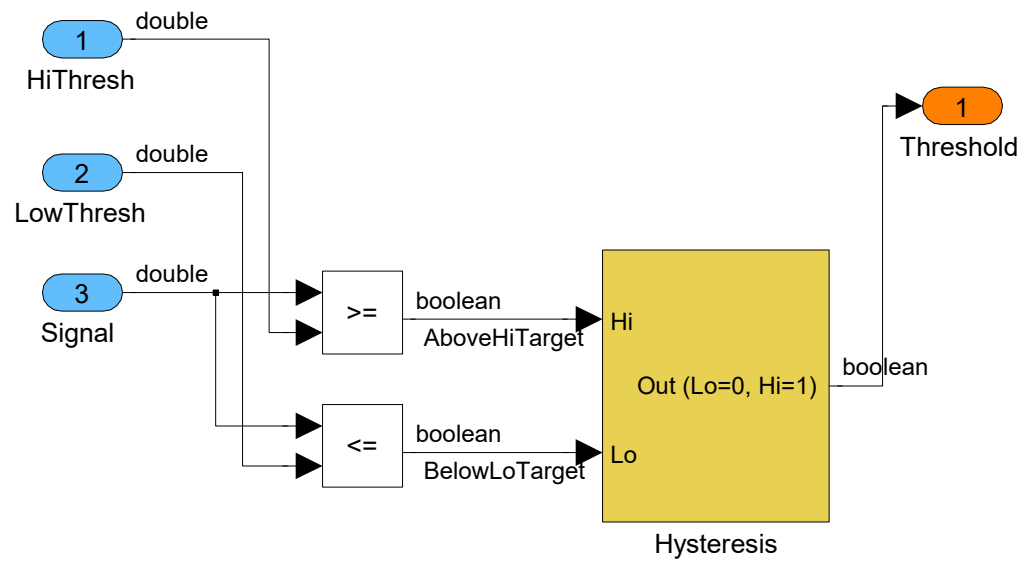


1  
Sensors

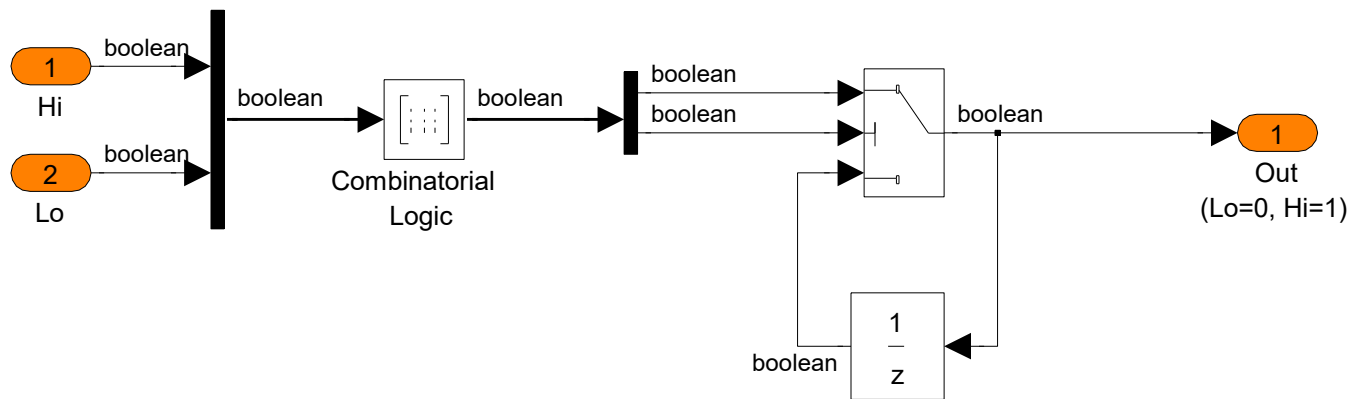




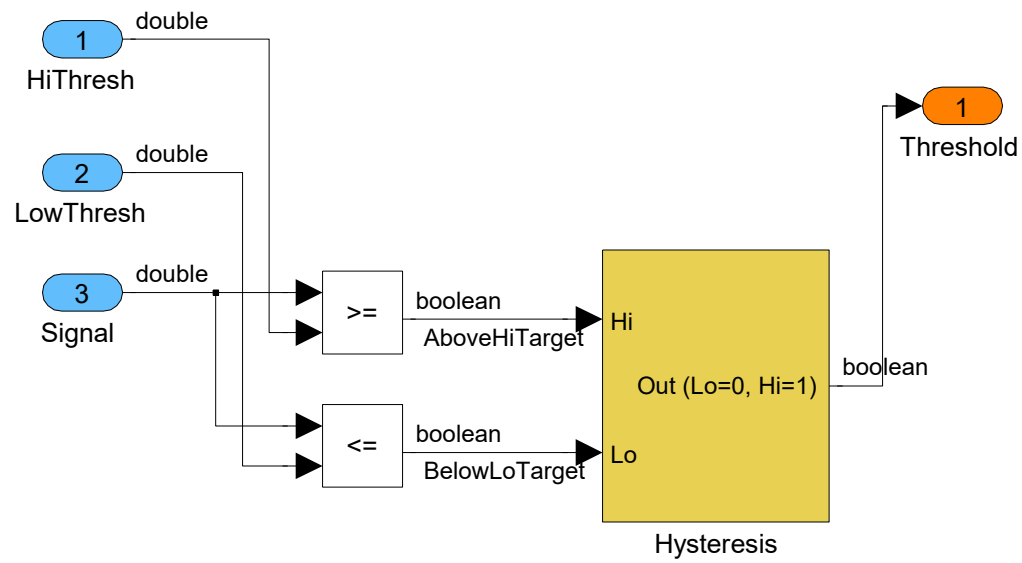




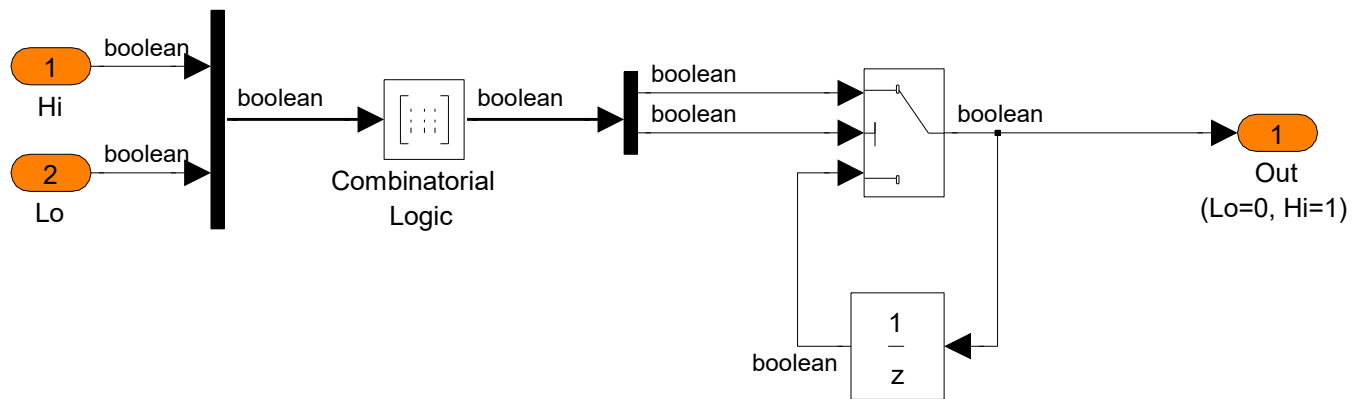
**Hi & !Lo => Hi**  
**Lo & !Hi => Lo**  
**Otherwise, Hold**

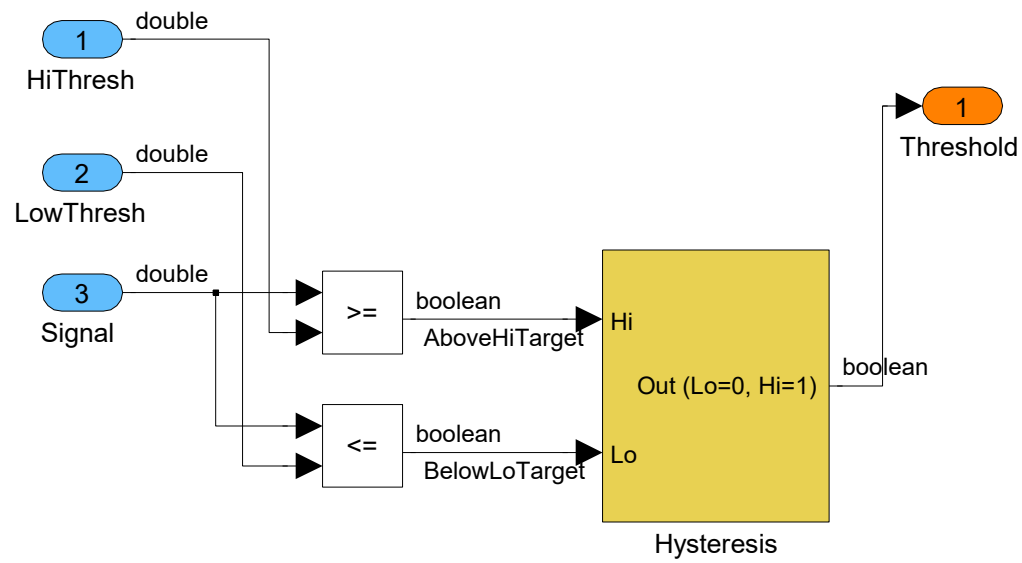




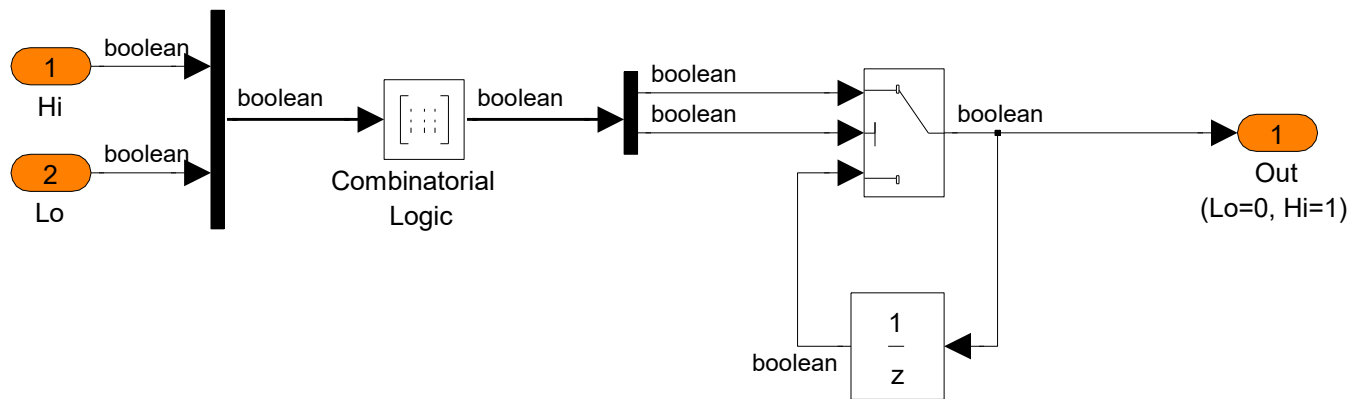


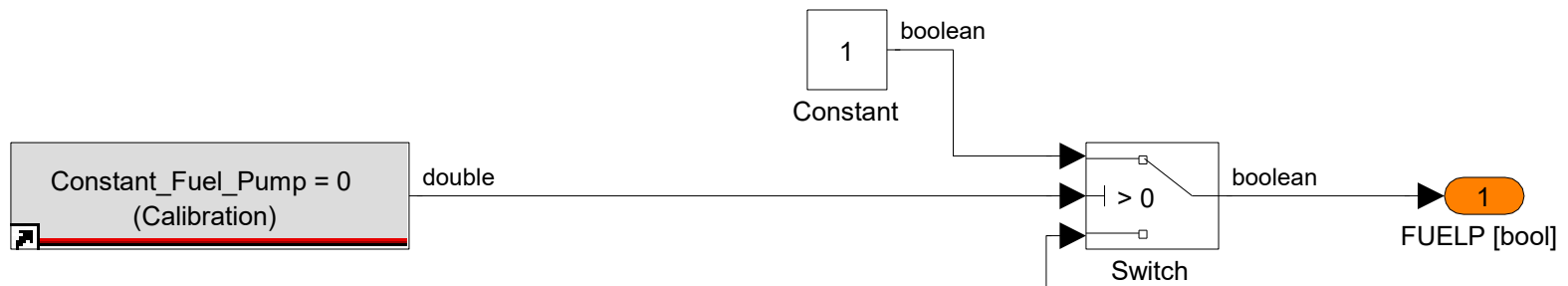
**Hi & !Lo => Hi**  
**Lo & !Hi => Lo**  
**Otherwise, Hold**



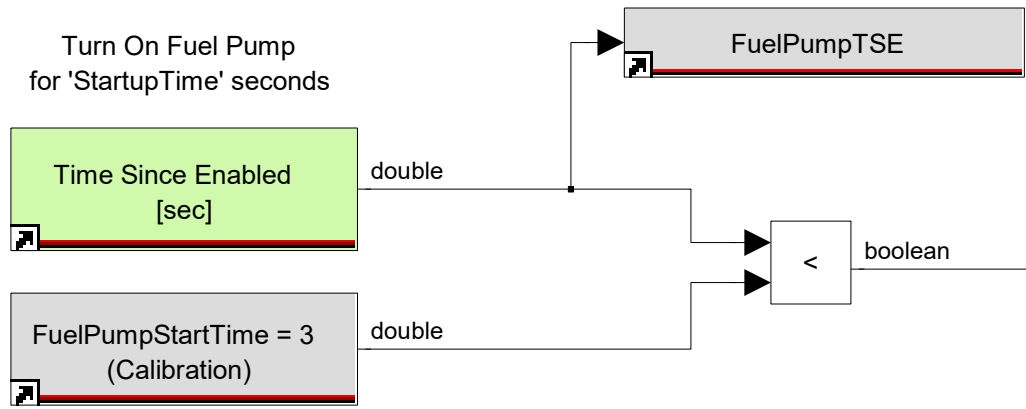


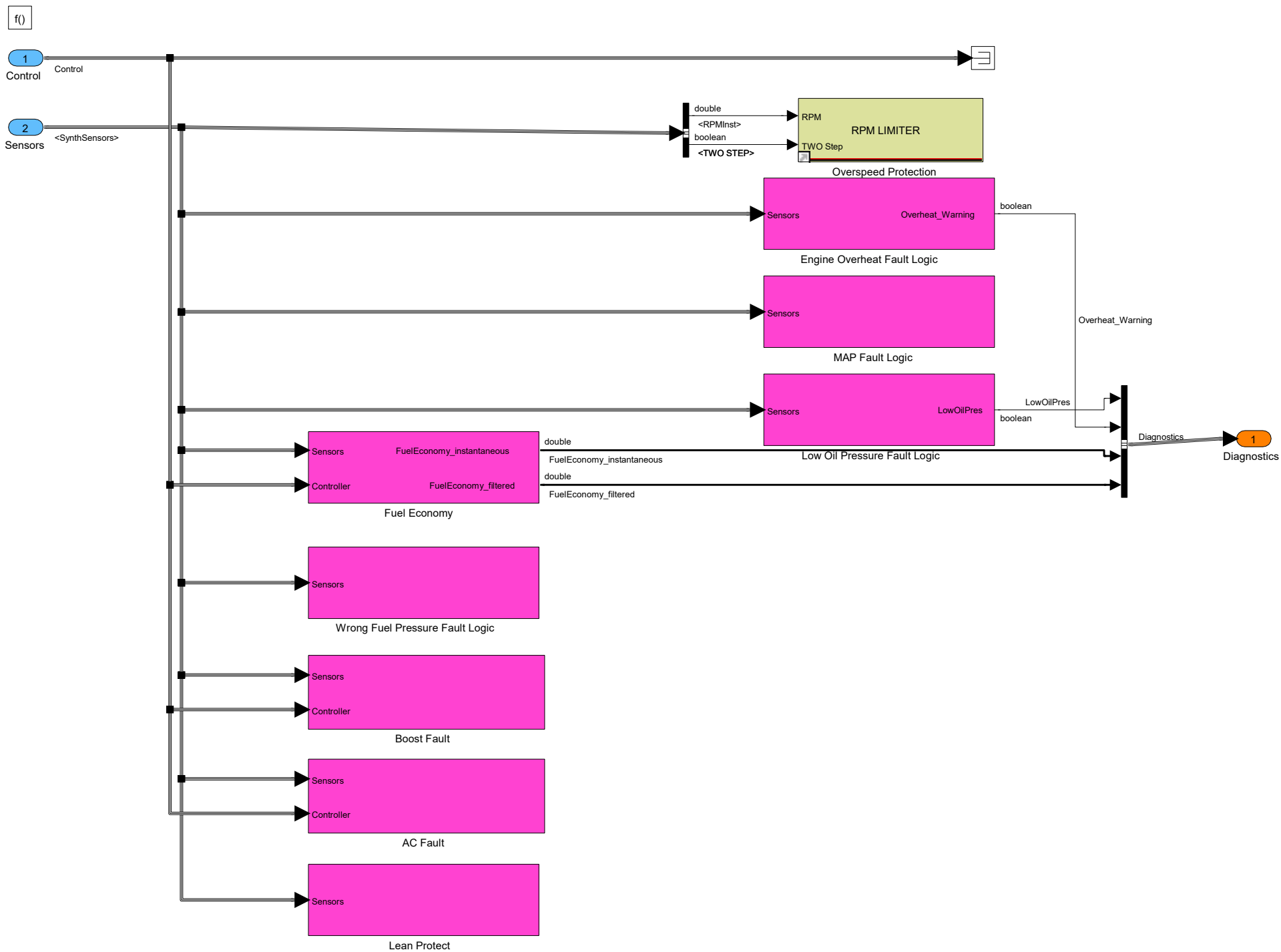
**Hi & !Lo => Hi**  
**Lo & !Hi => Lo**  
**Otherwise, Hold**

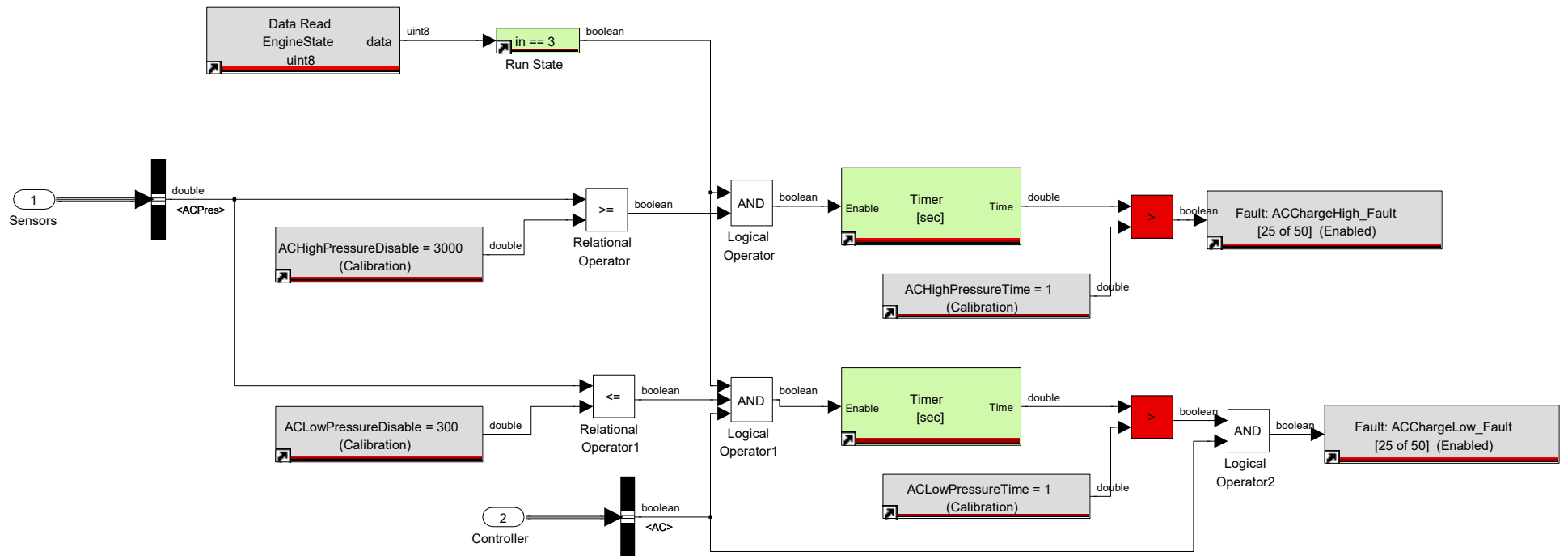


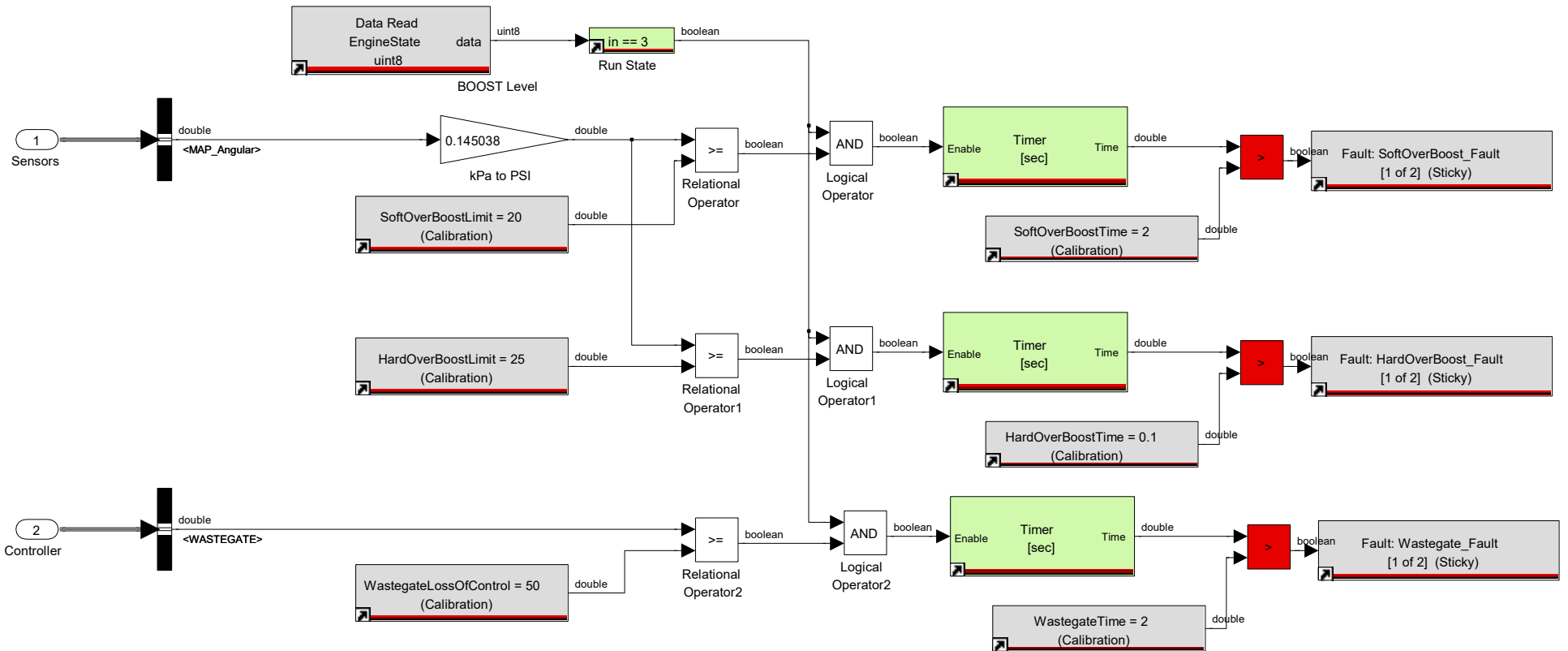


## Turn on Fuel Pump at Startup

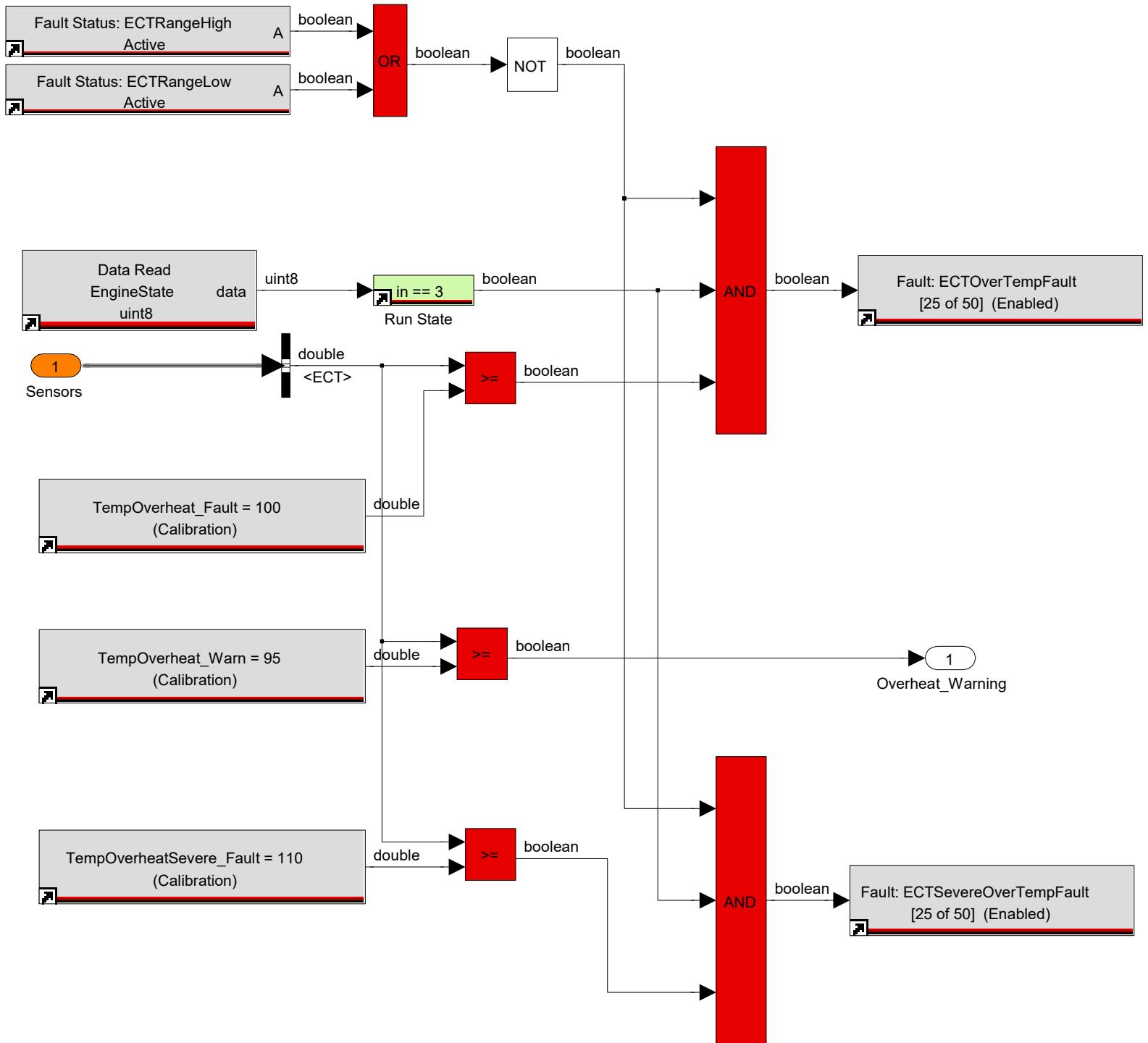


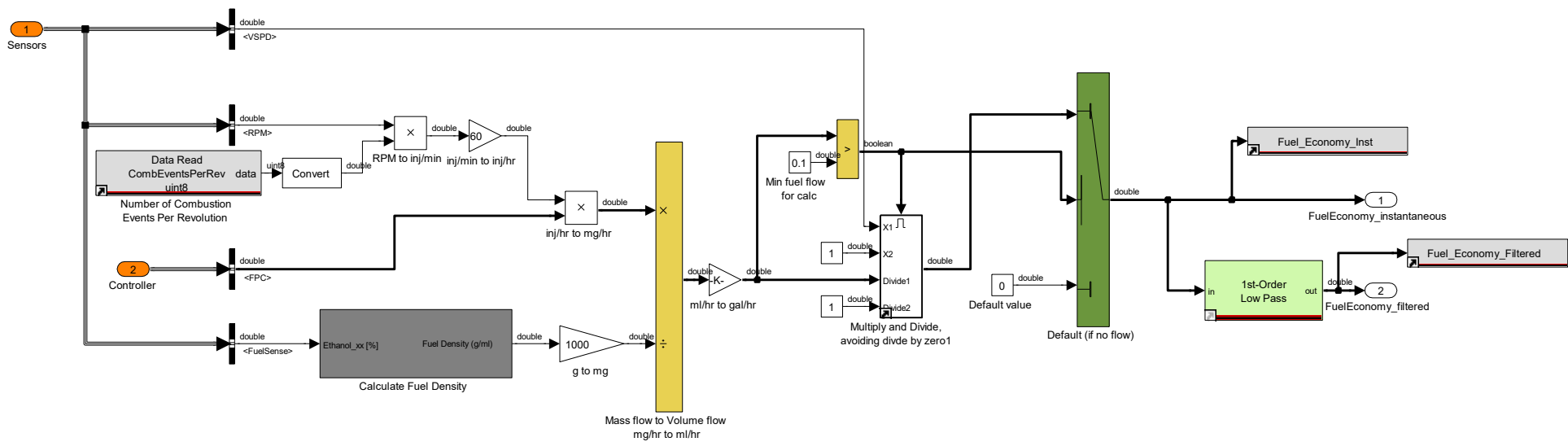


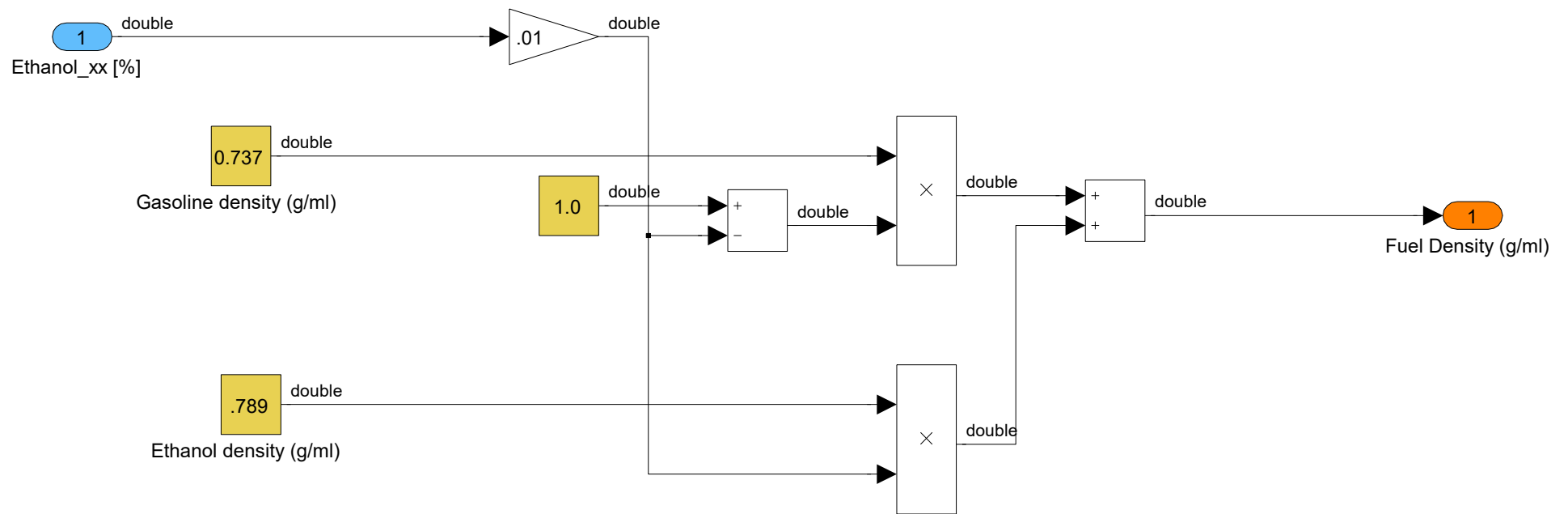




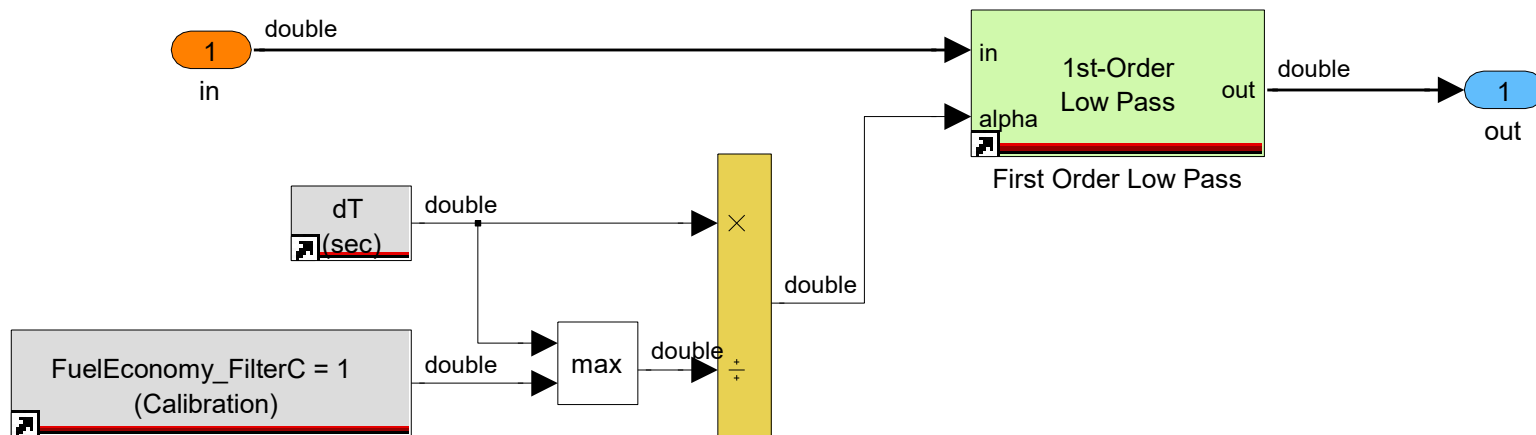


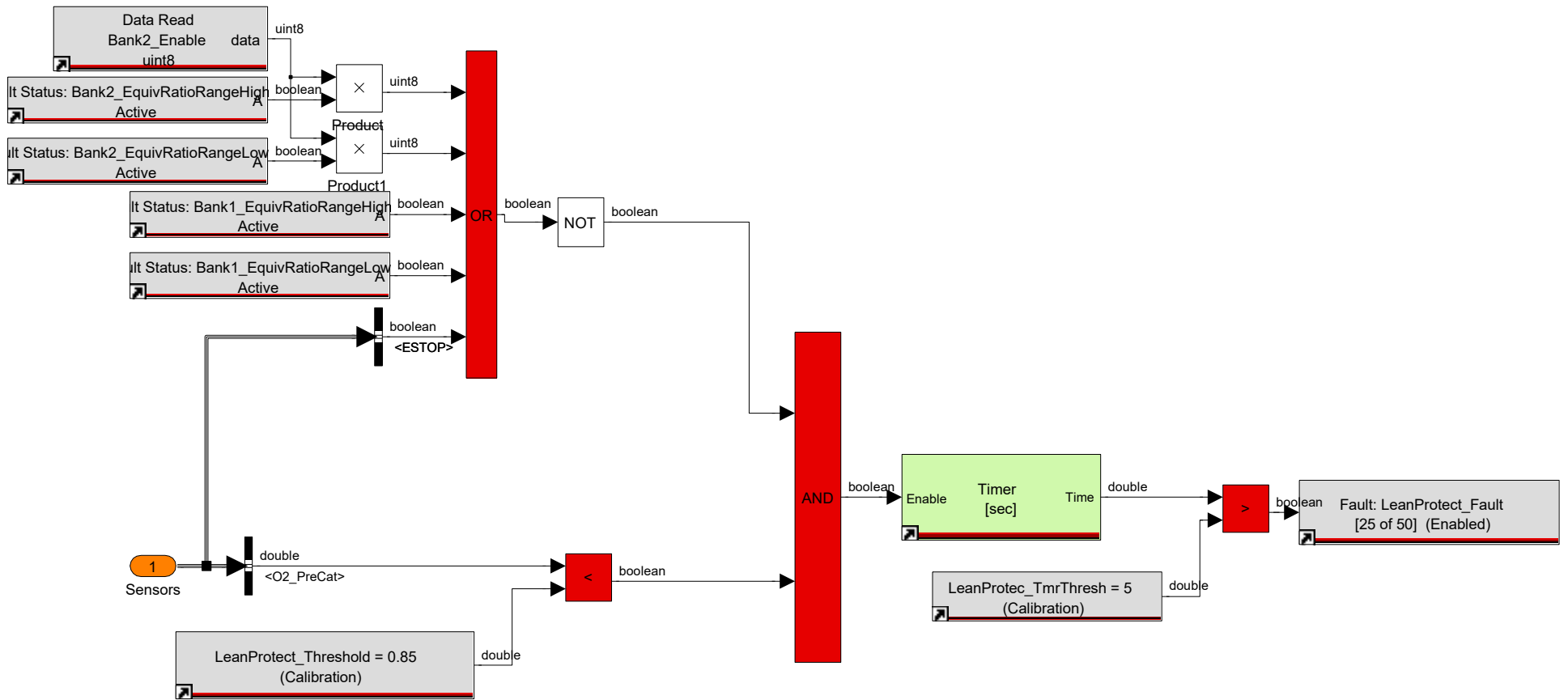


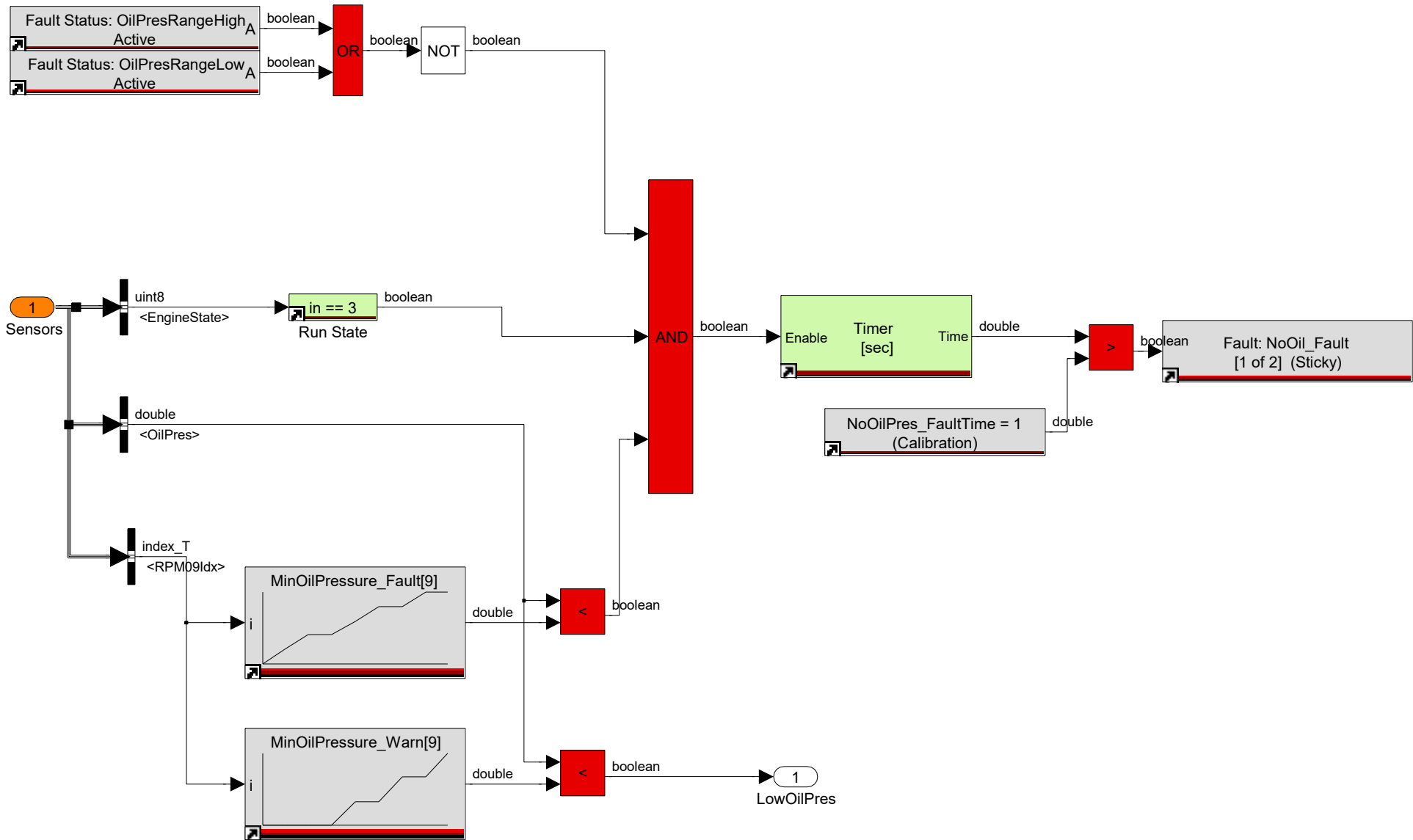


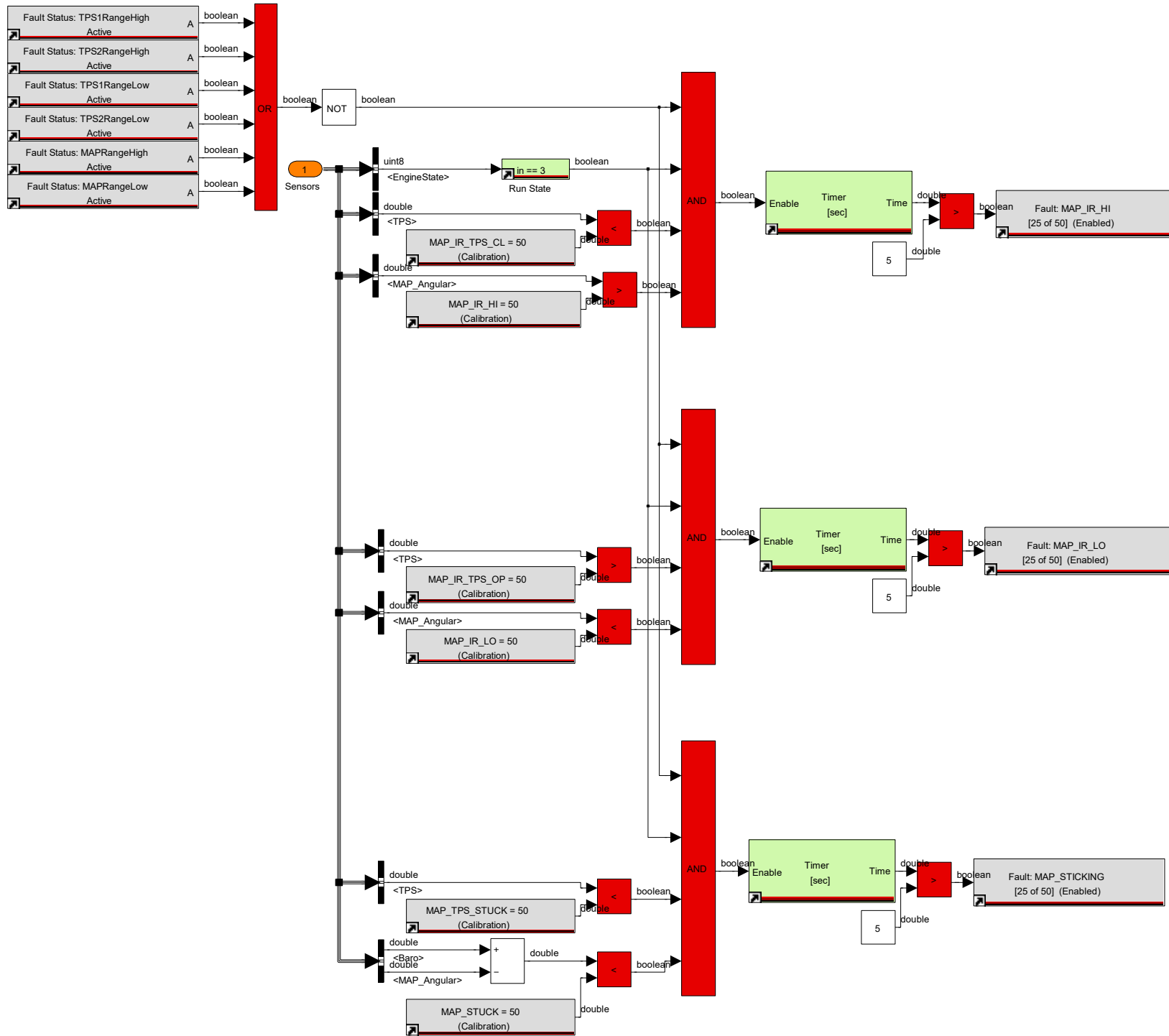


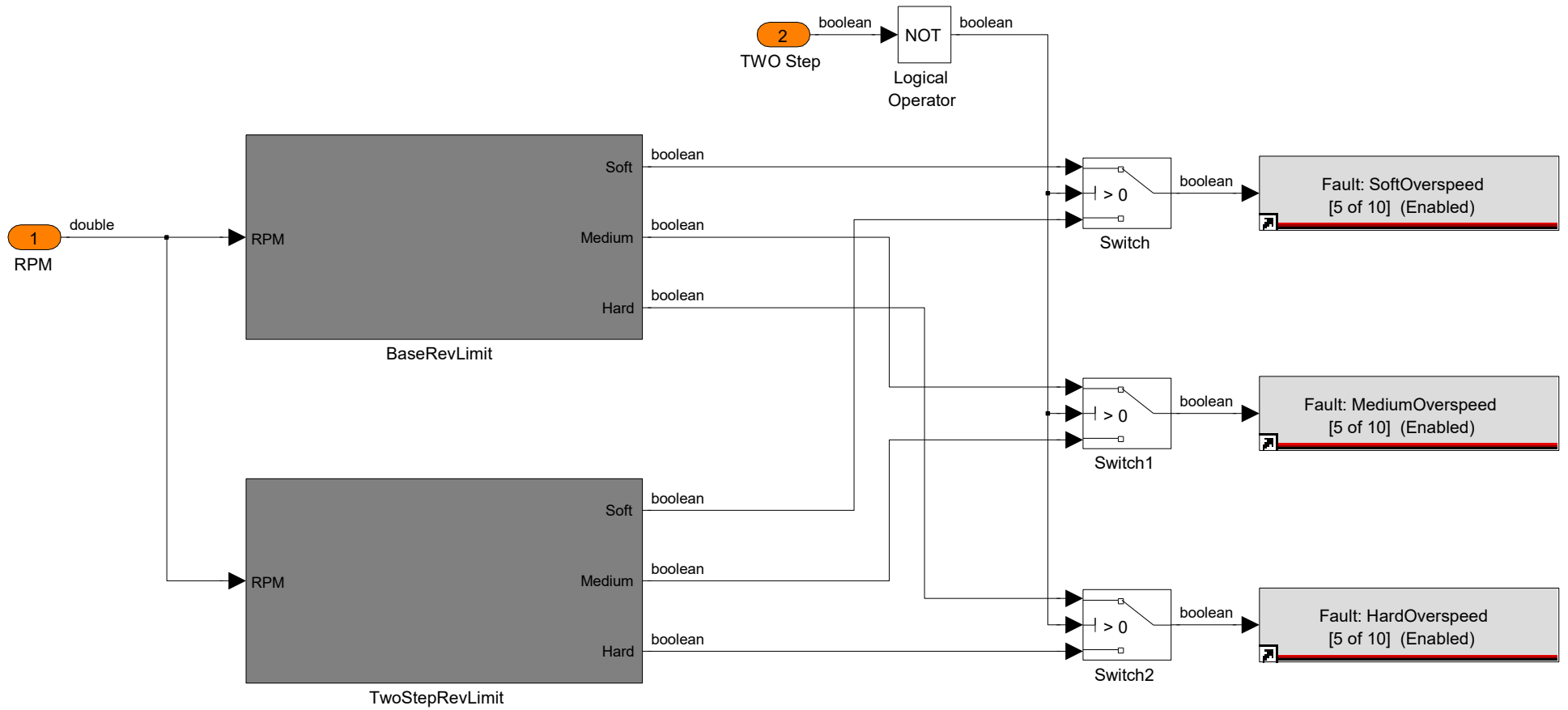
# Tunable 1st-Order Low-Pass Filter



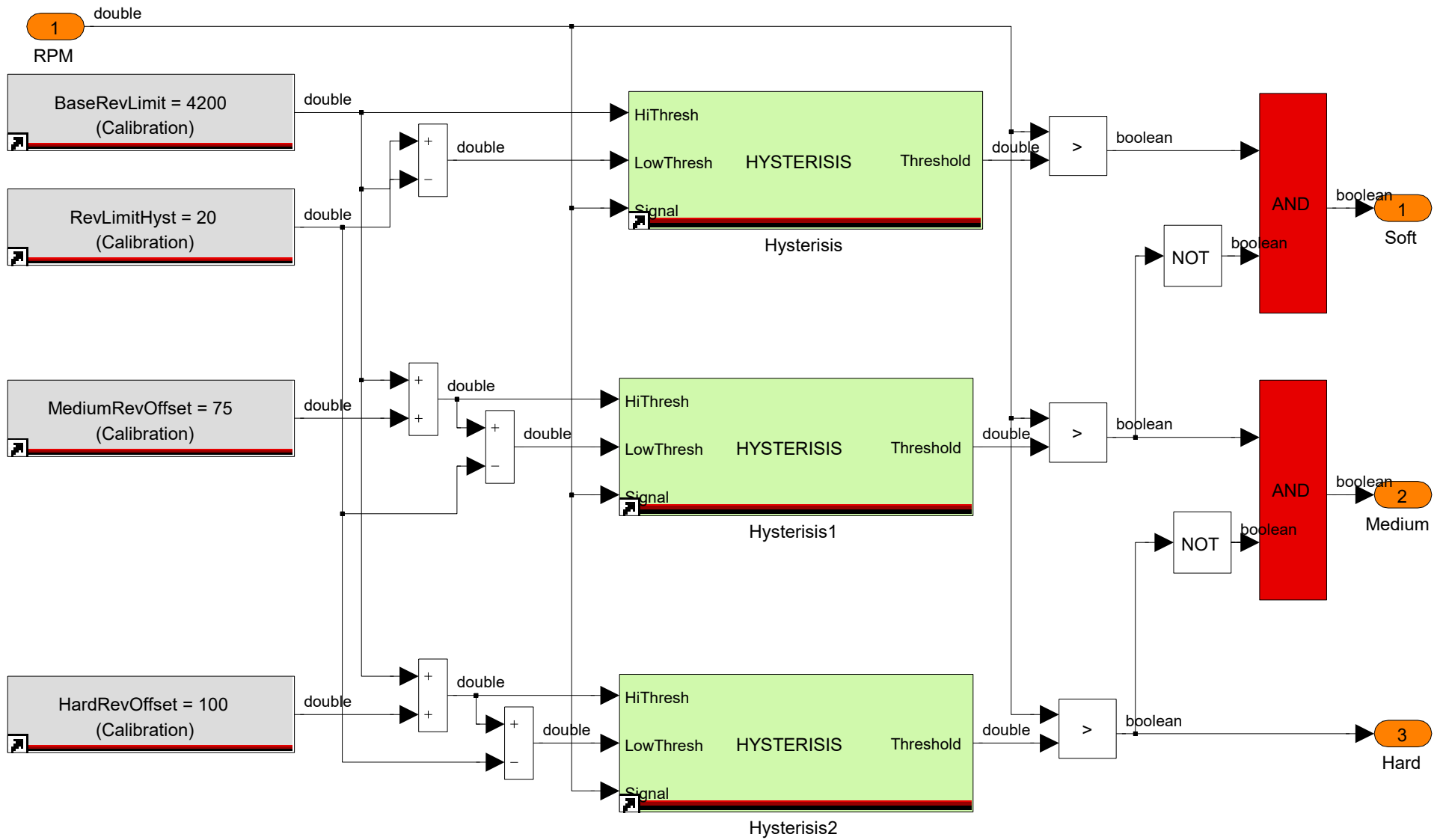


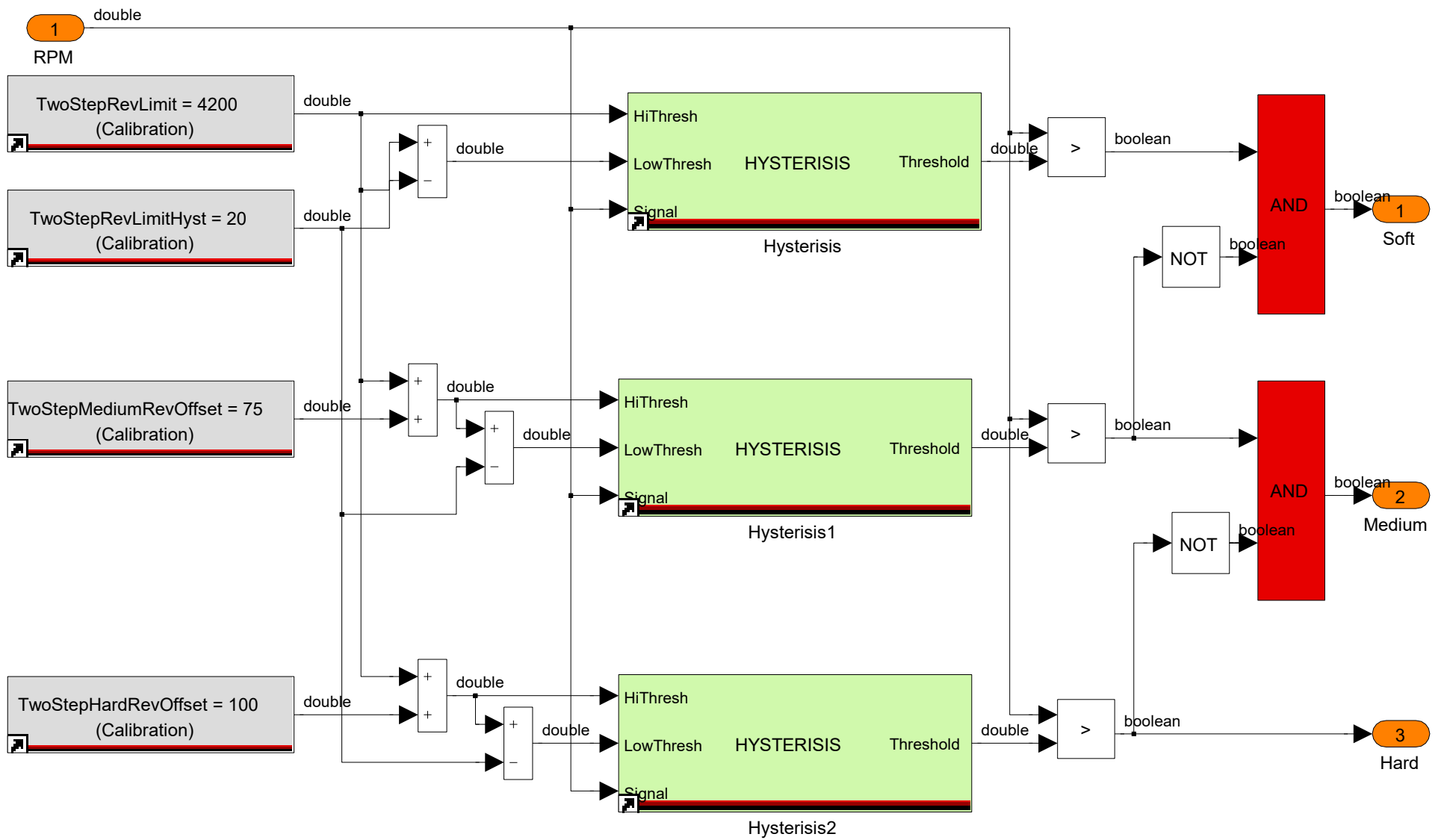


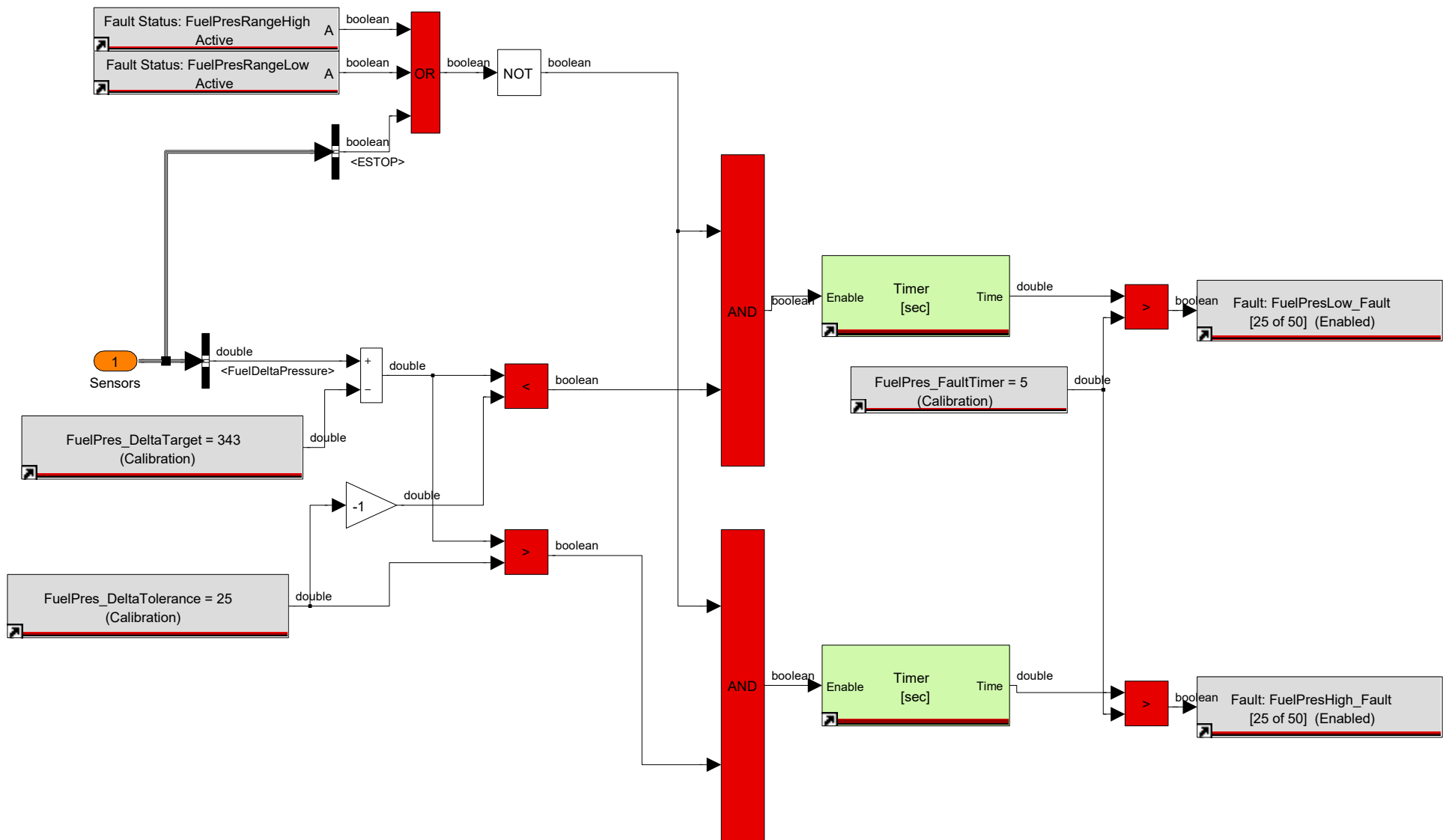


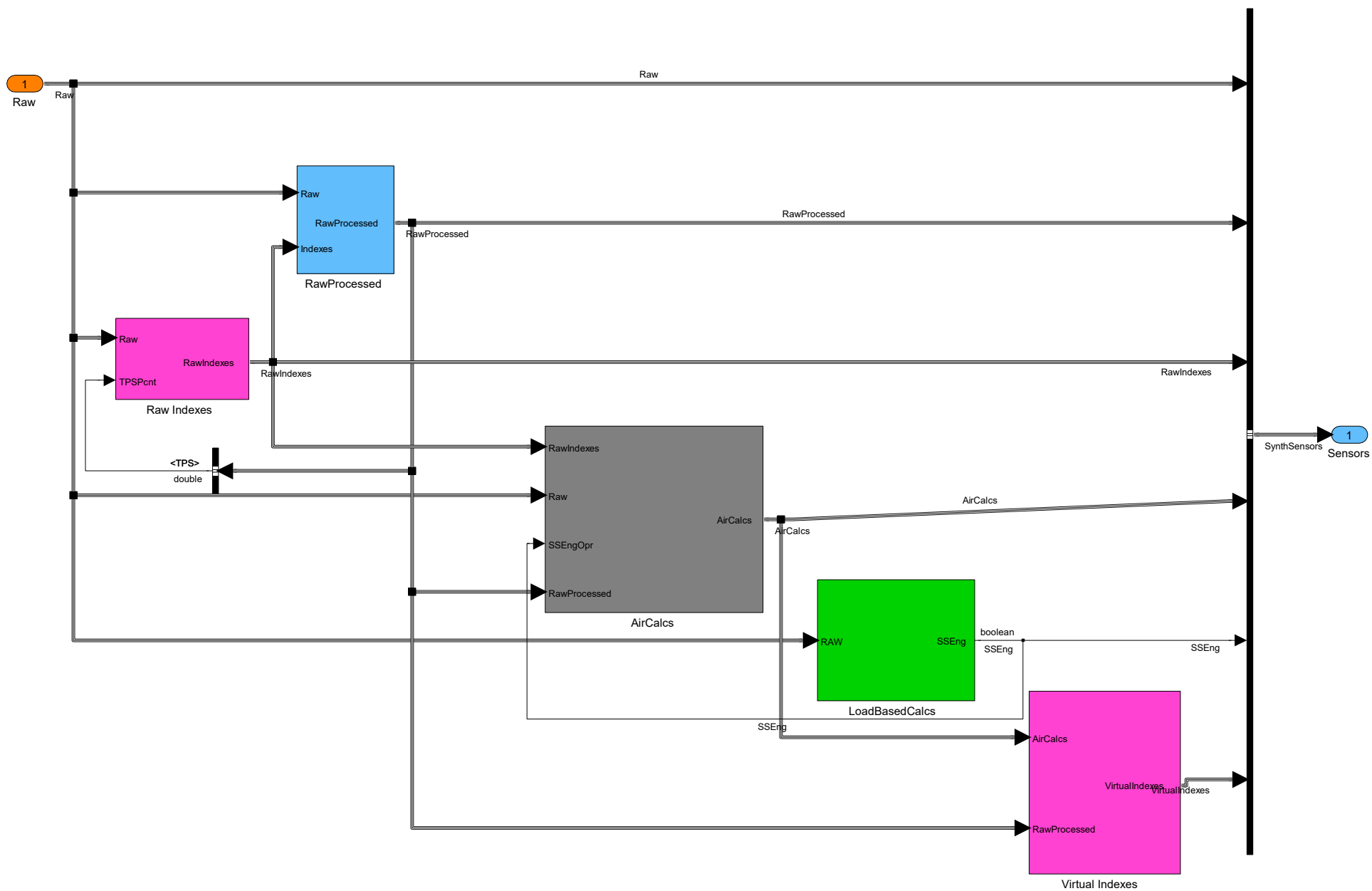


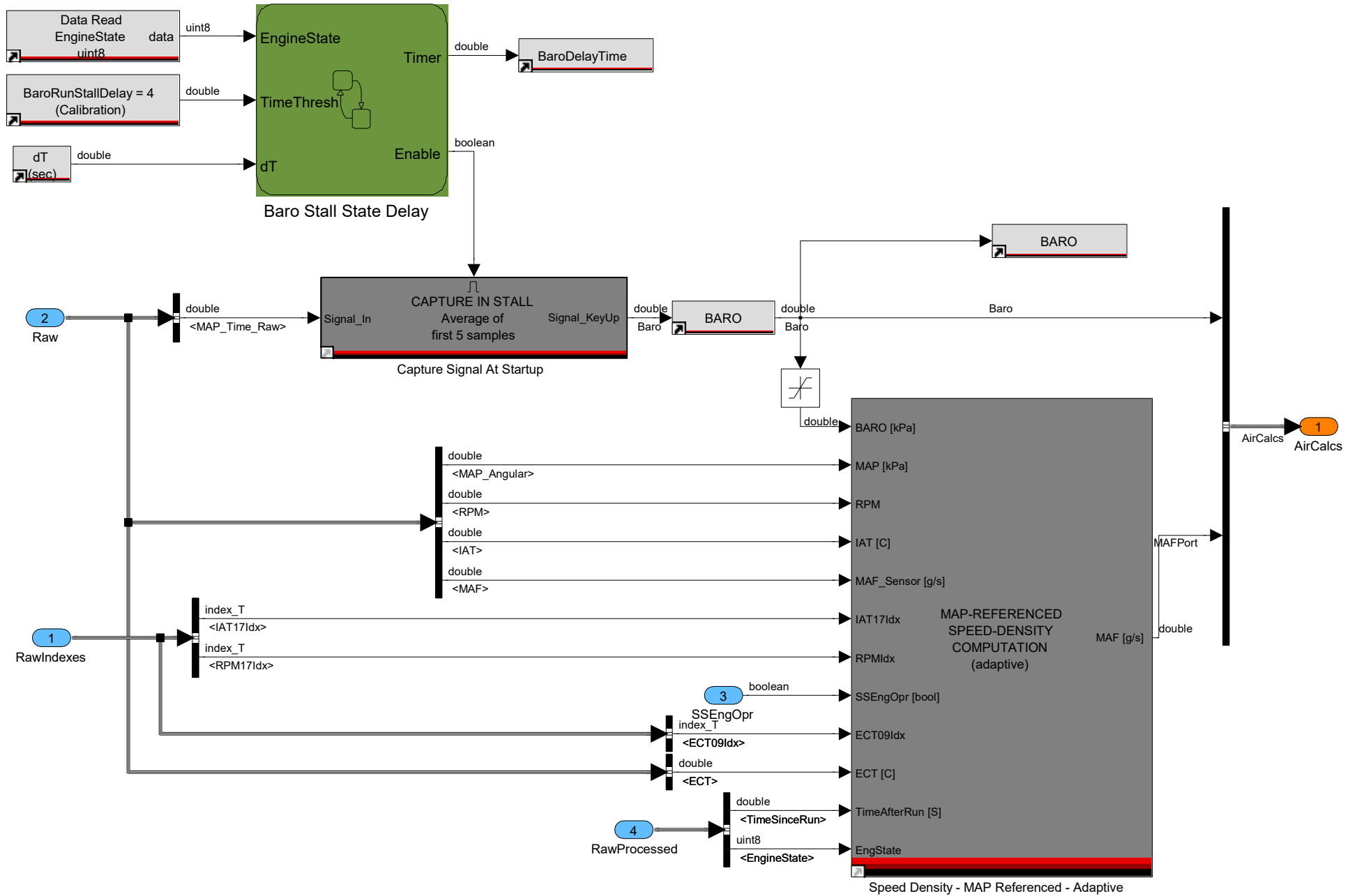


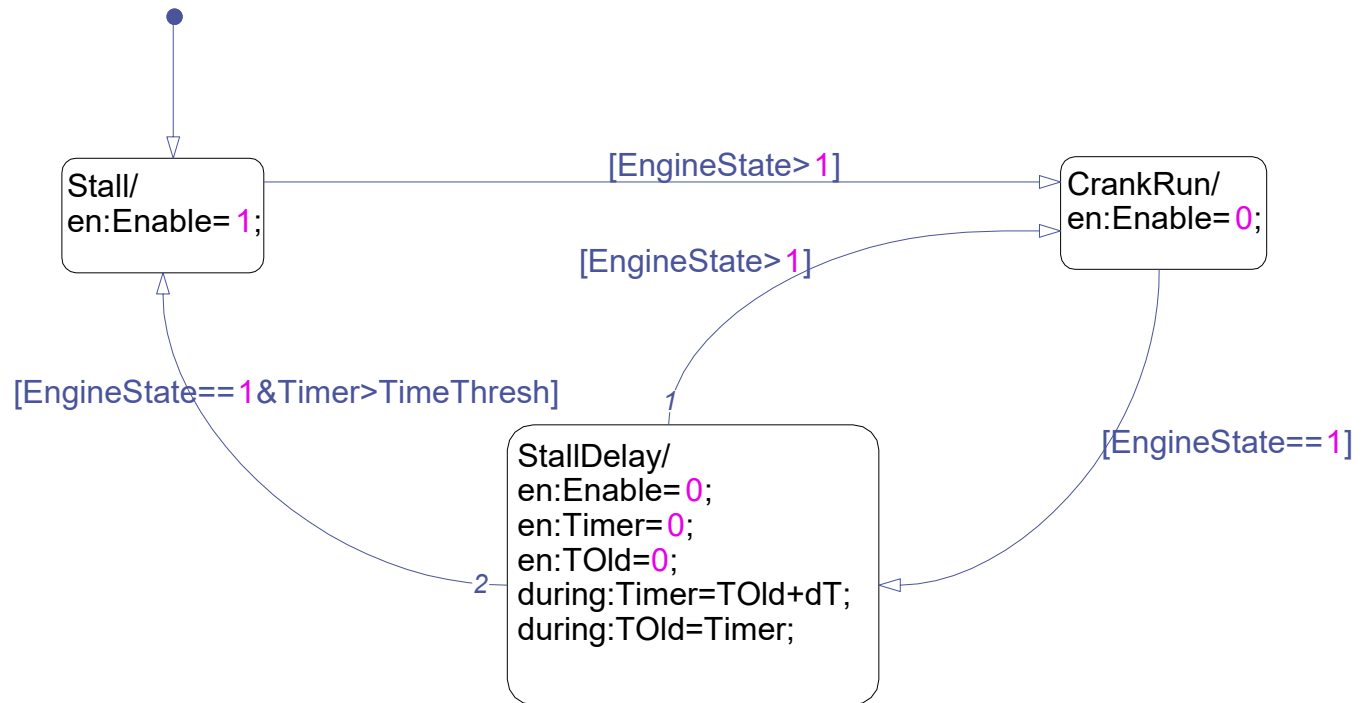




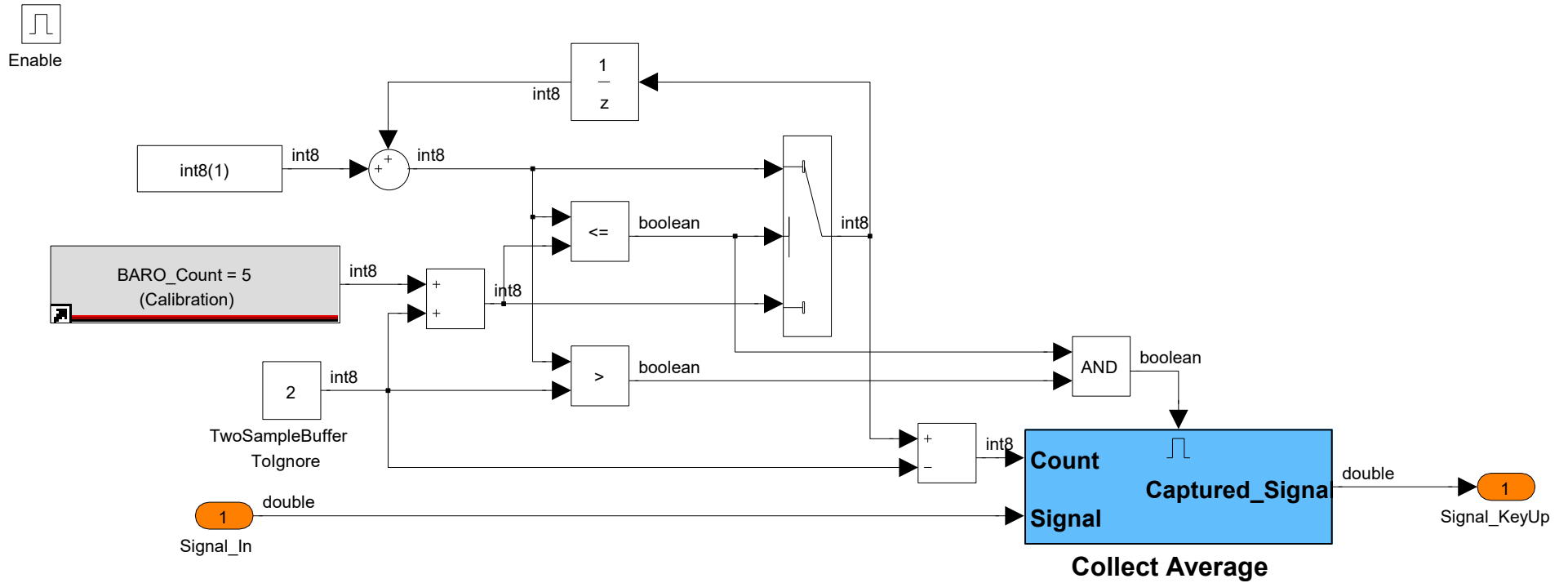




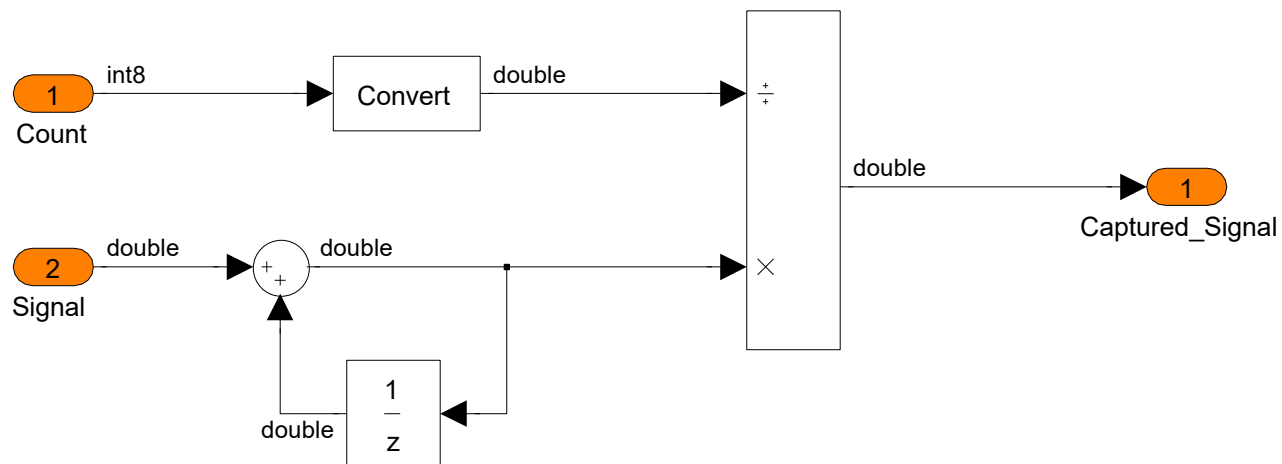
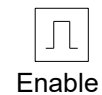




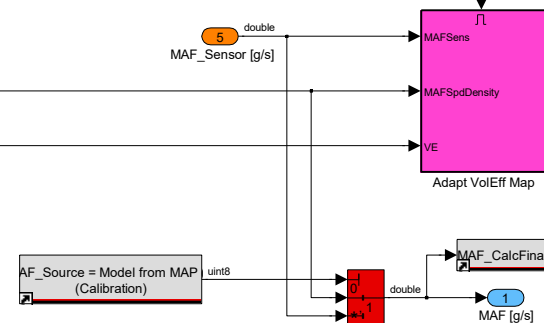
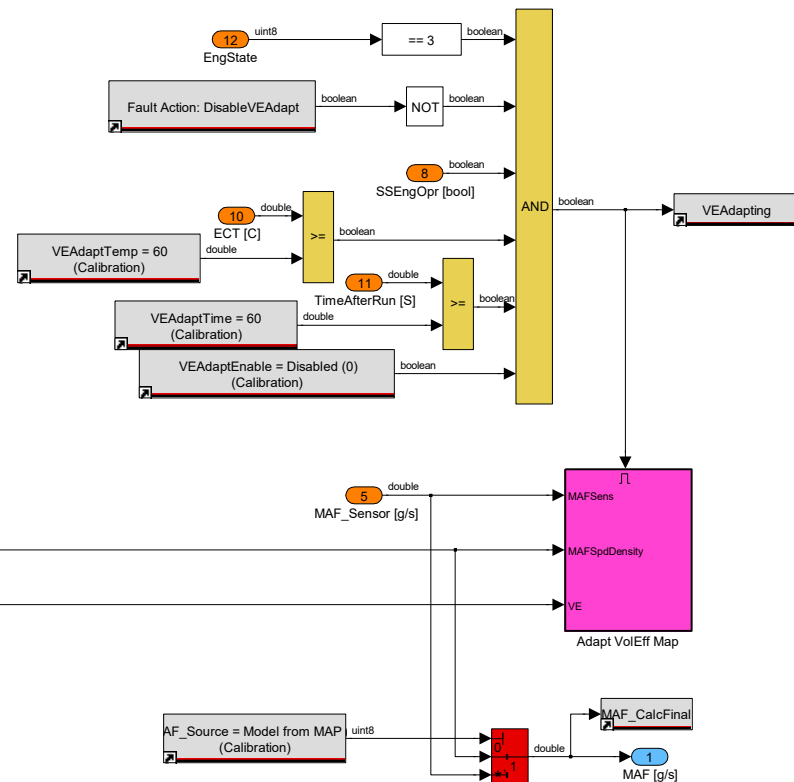
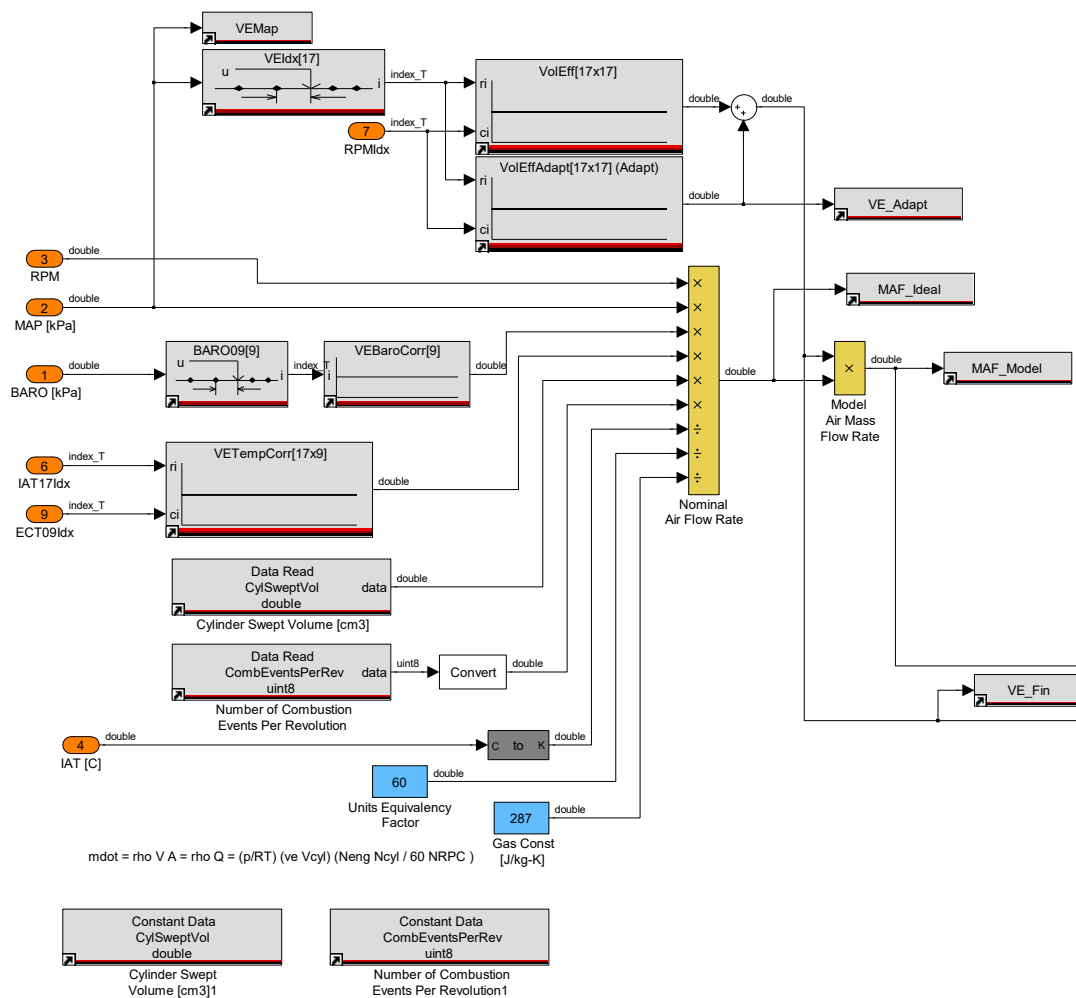
## Count up to "BARO\_Count" samples



**Collect samples by summing,  
and divide by the total, to obtain average**

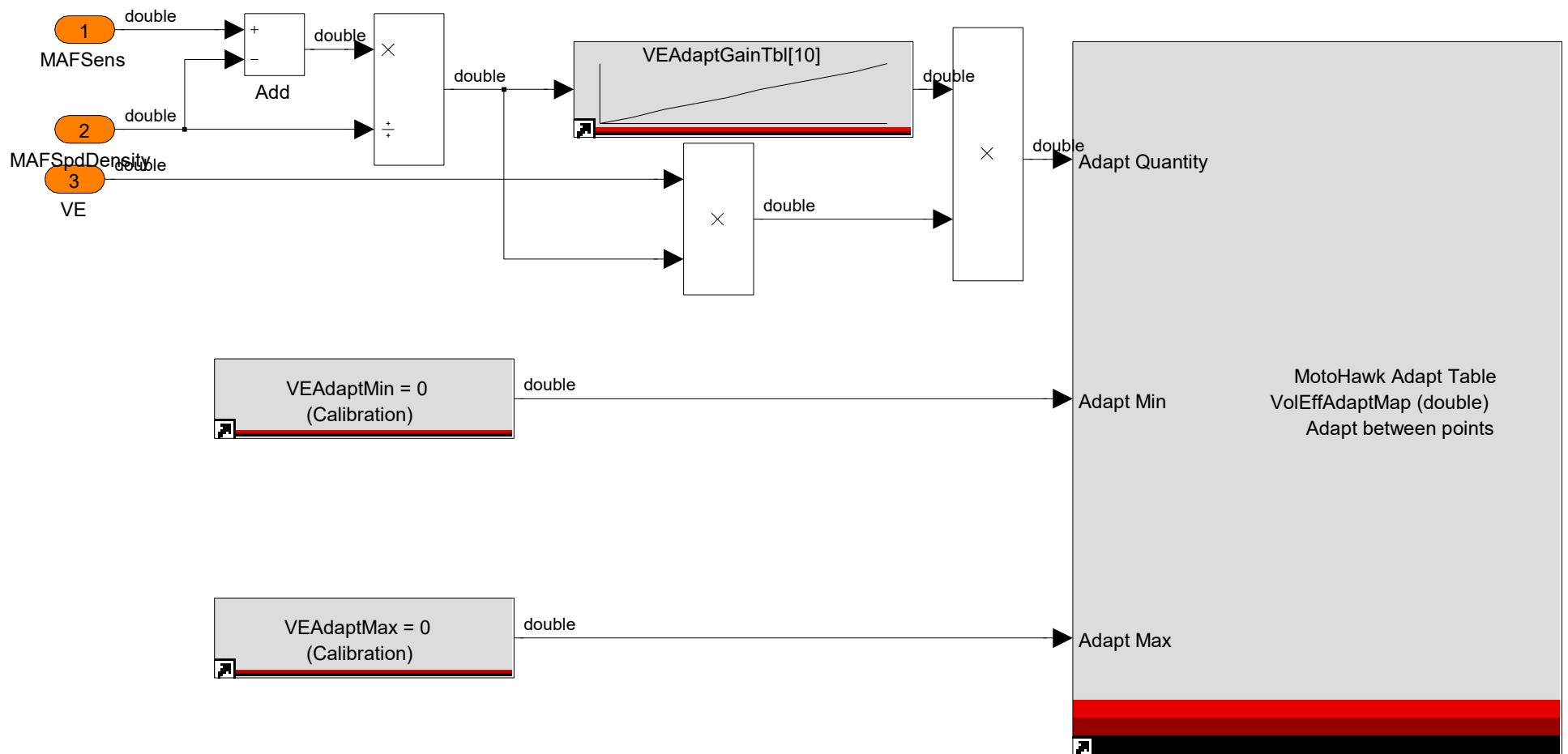


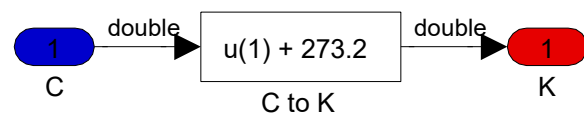


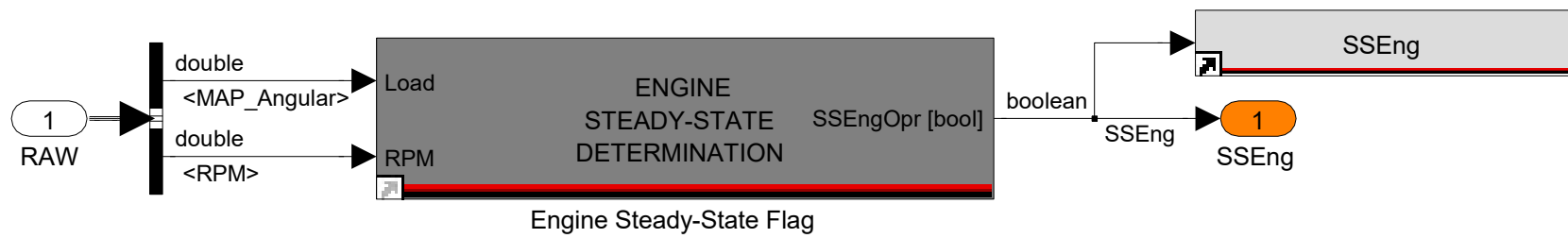


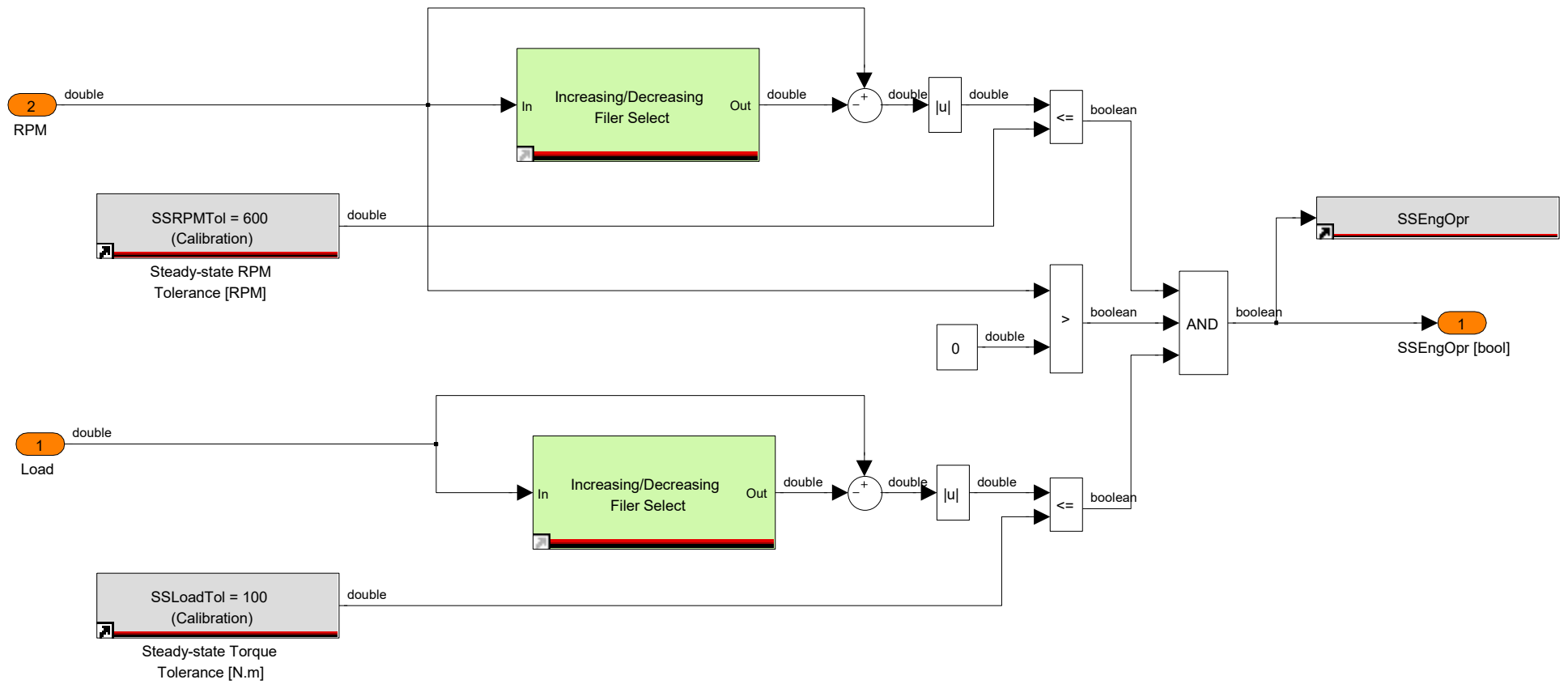


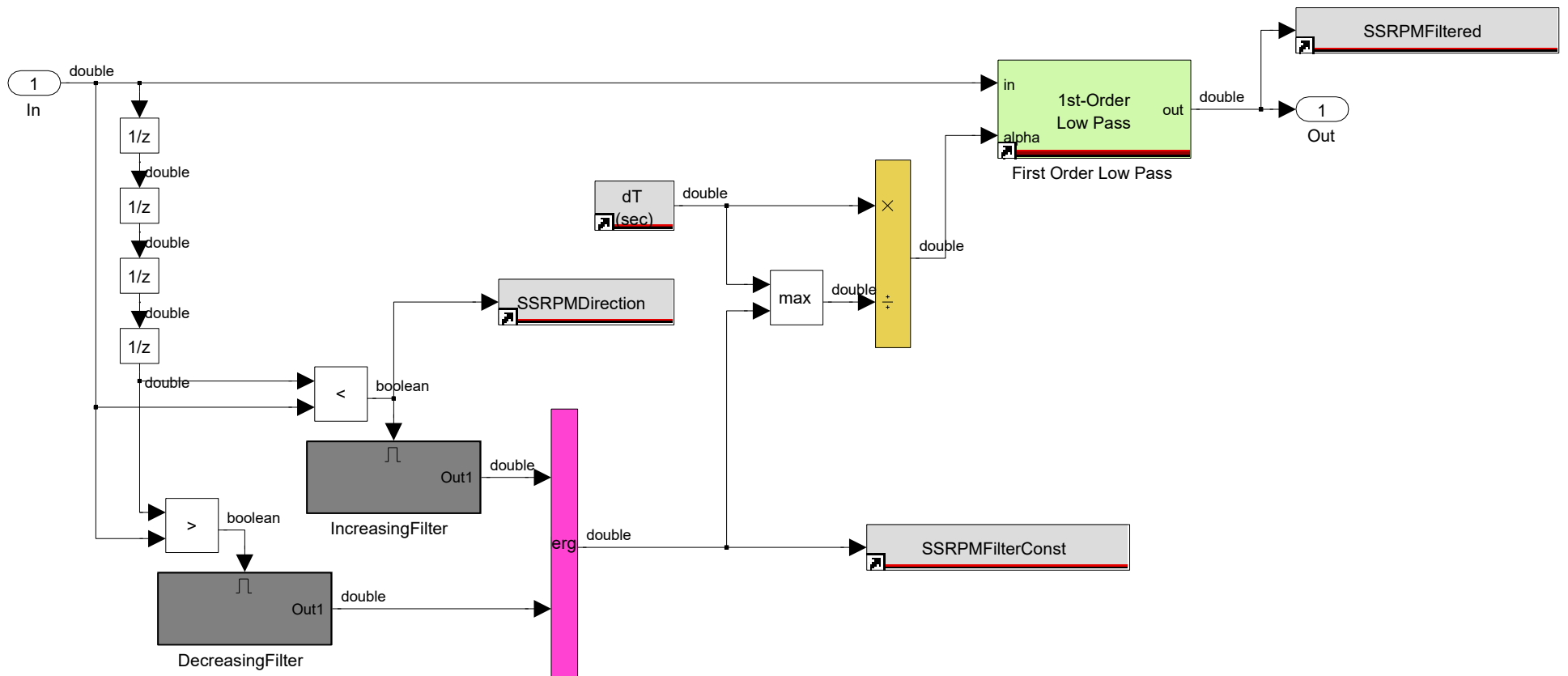
Enable





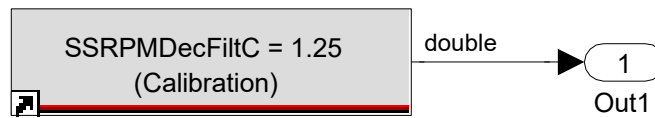






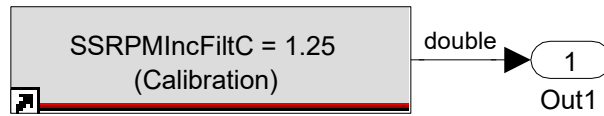


Enable

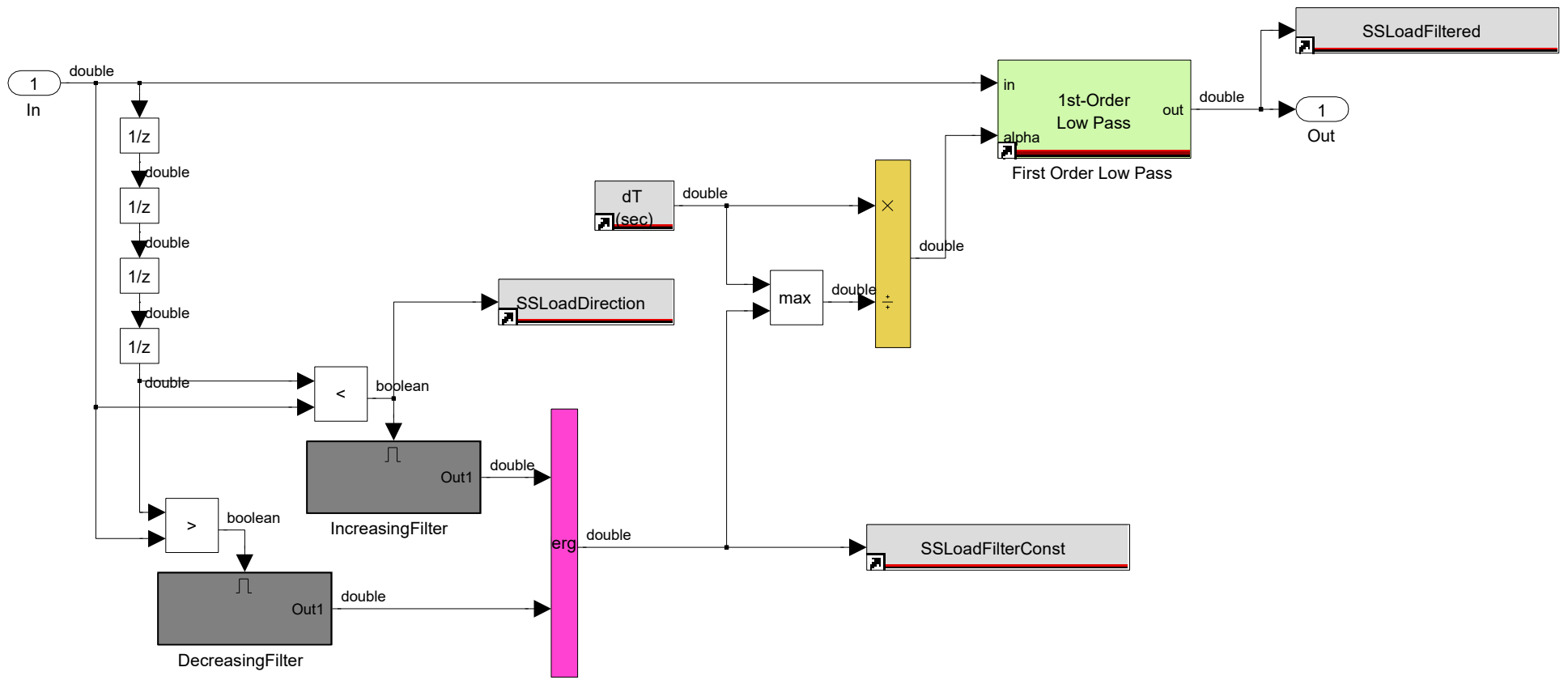




Enable

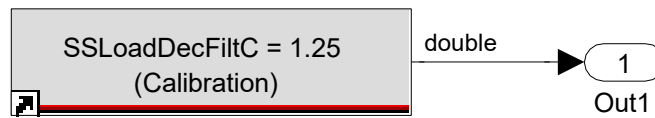








Enable



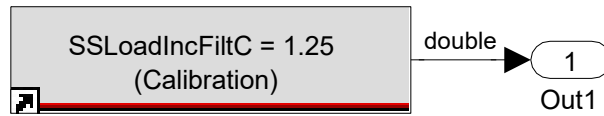
double

1

Out1

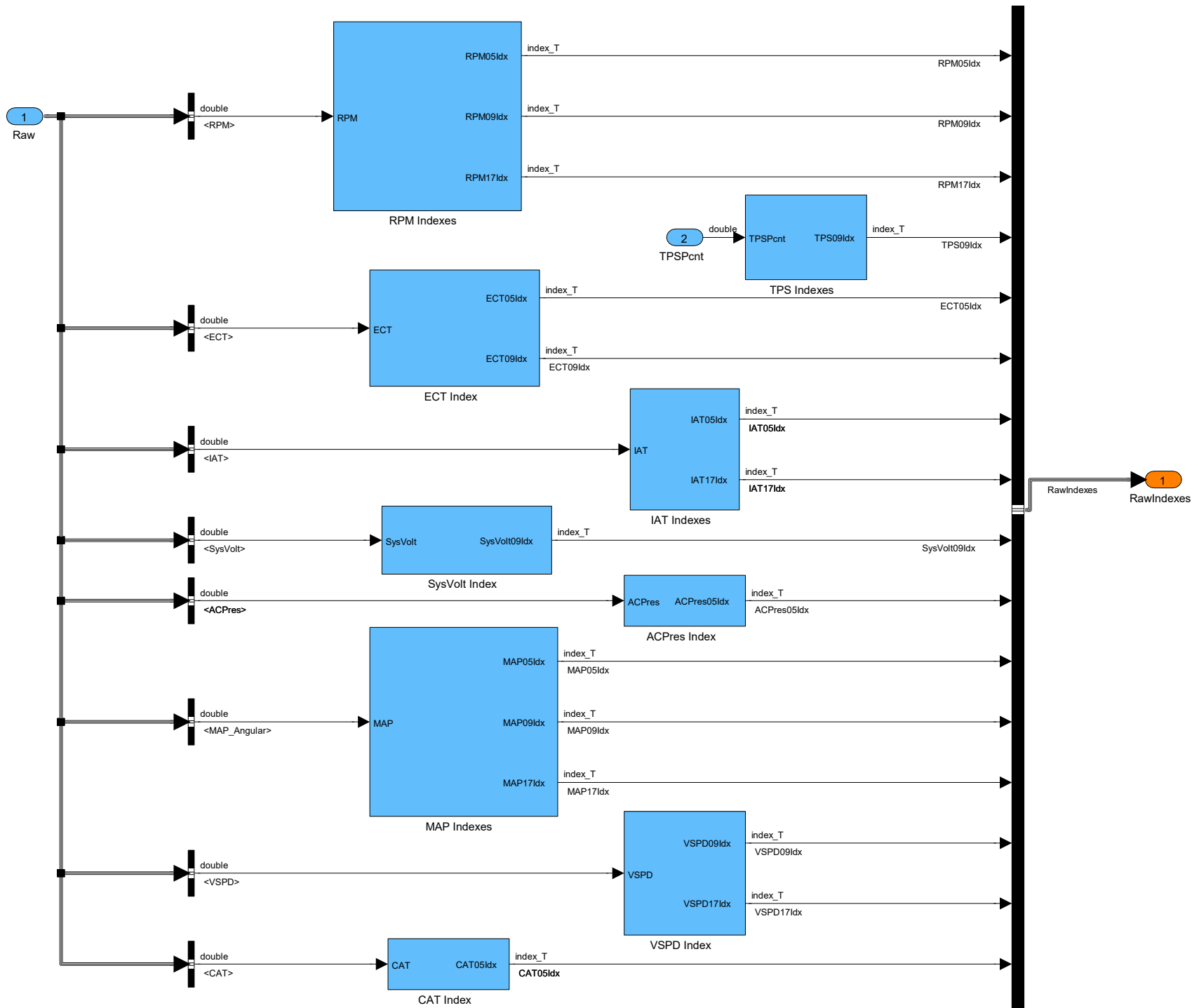


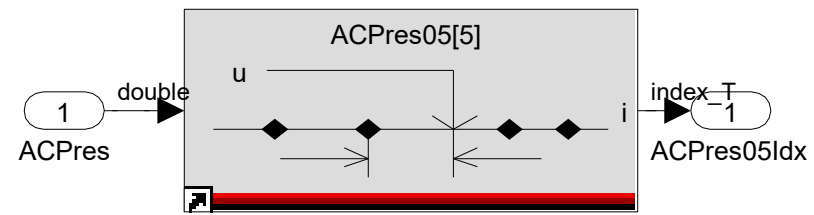
Enable

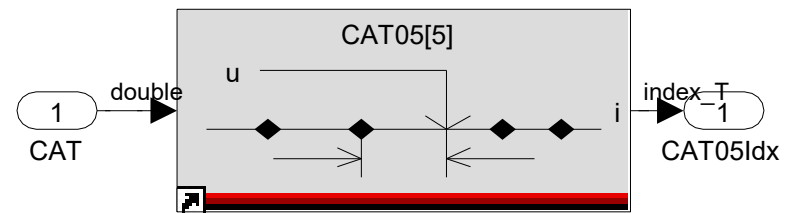


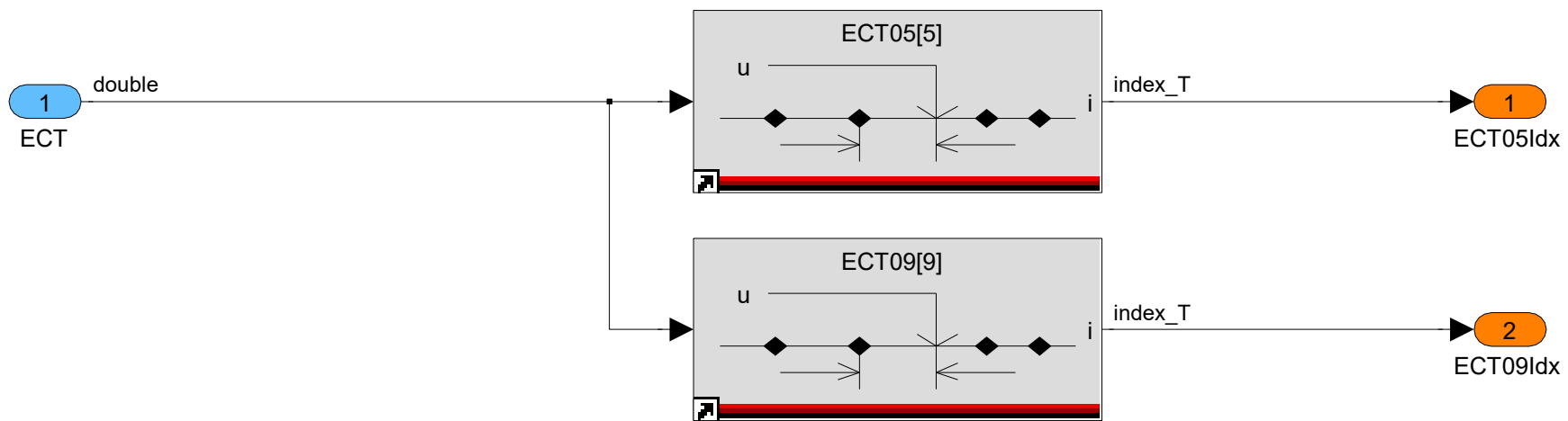
1

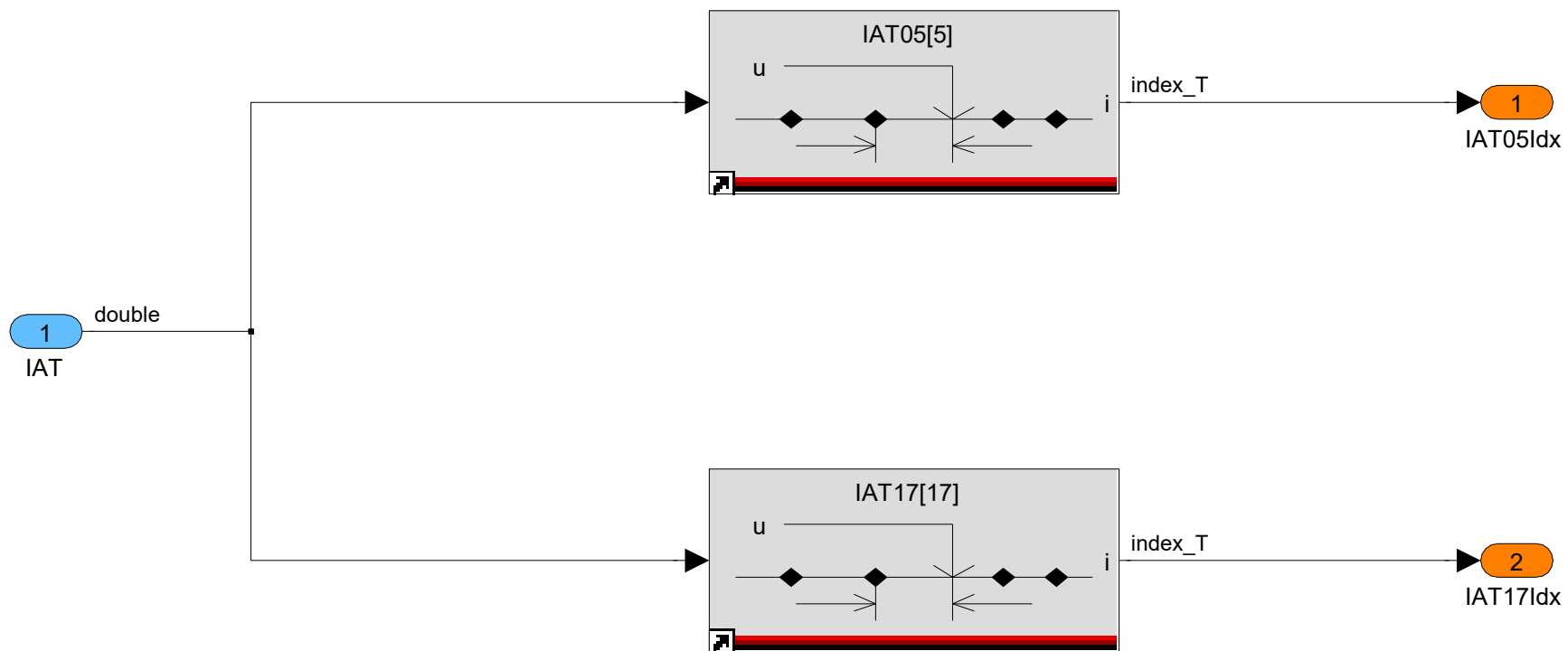
Out1



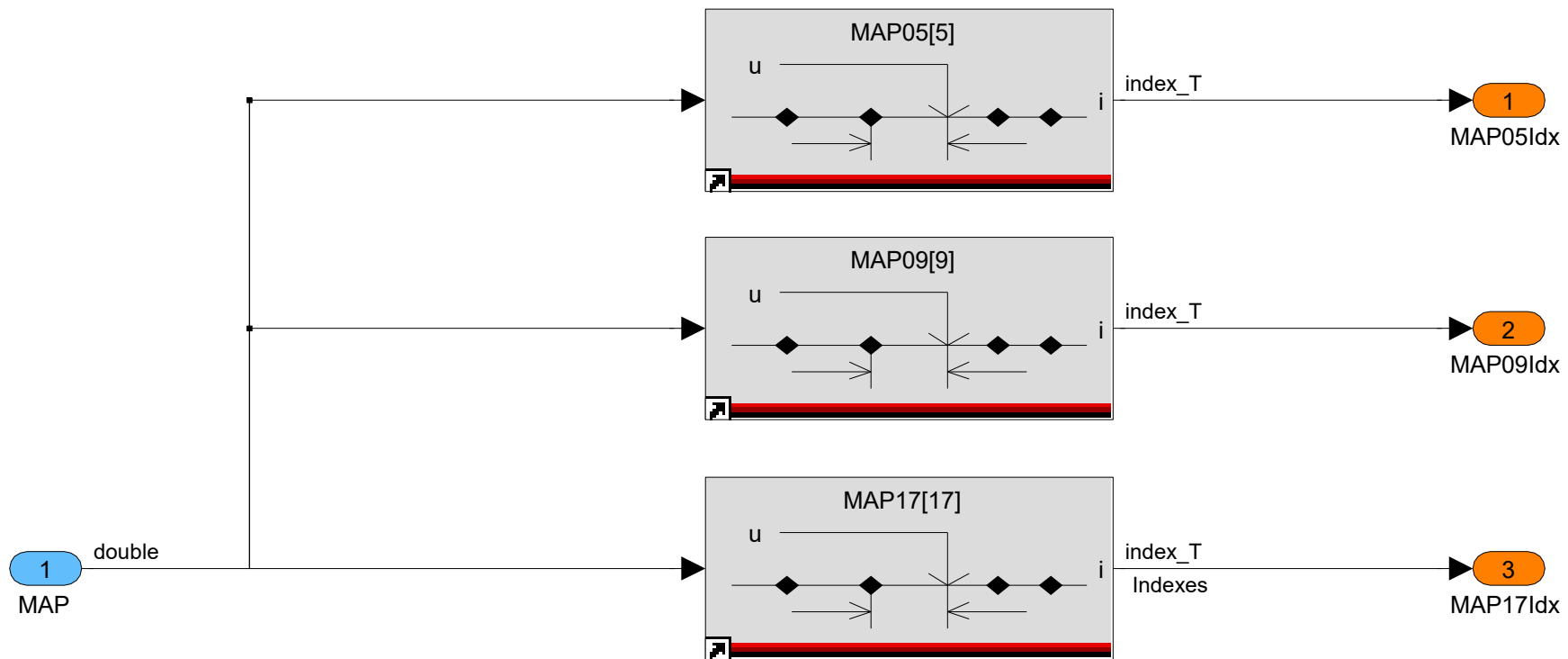


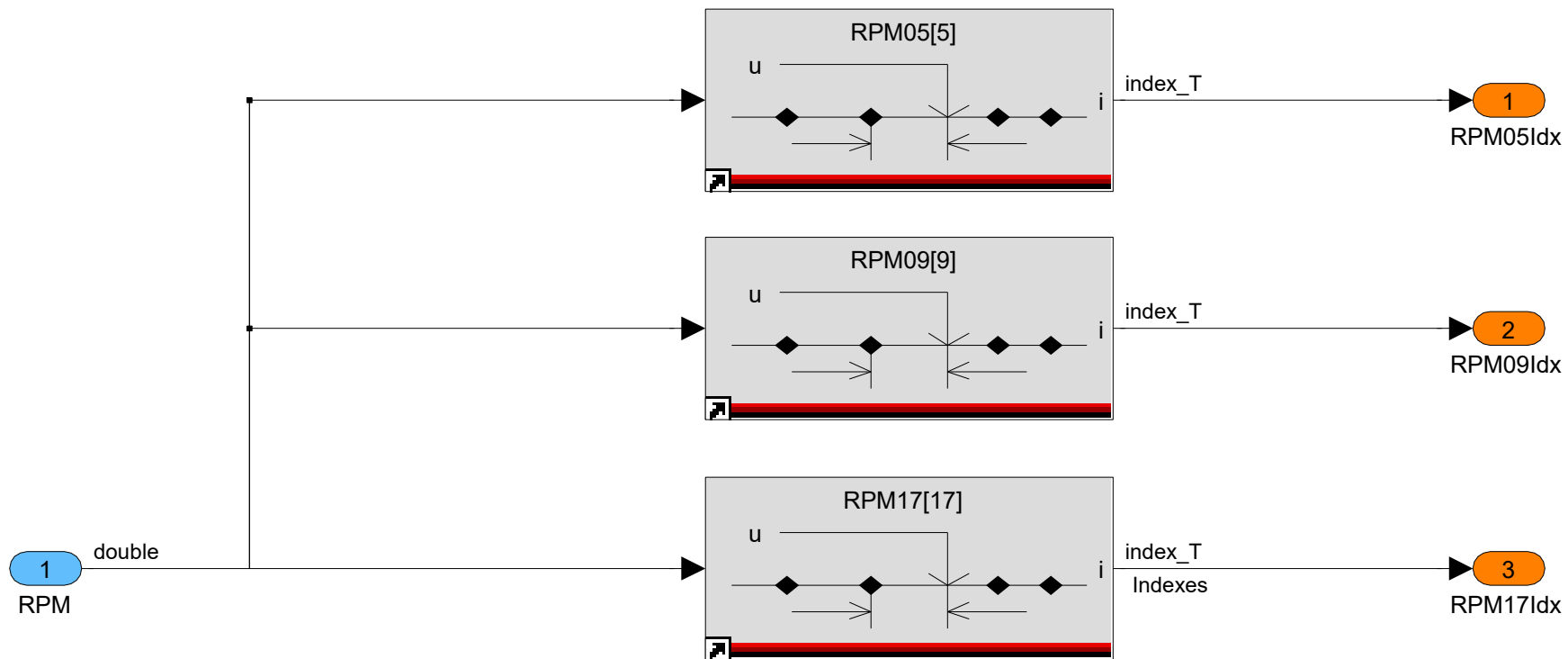






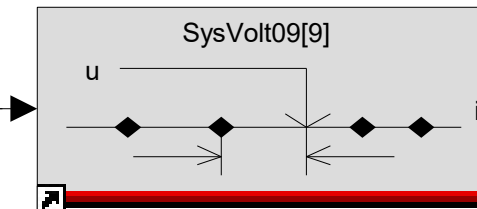






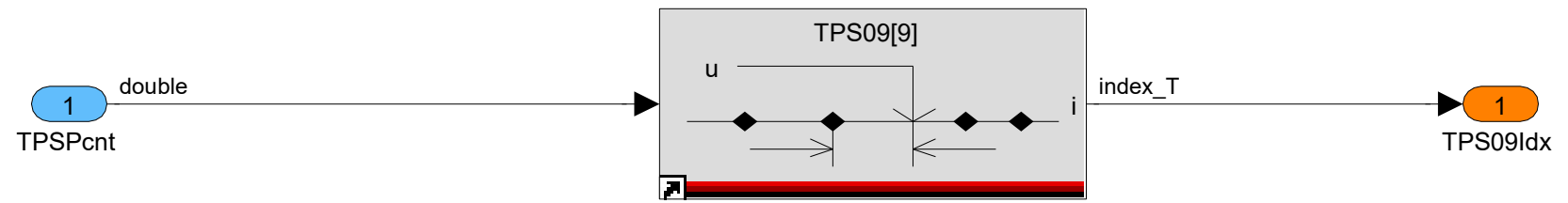
1  
SysVolt

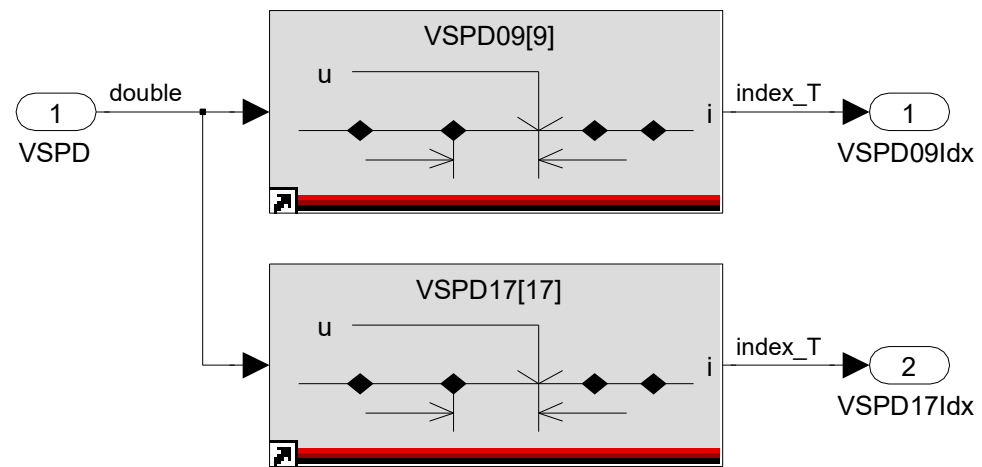
double

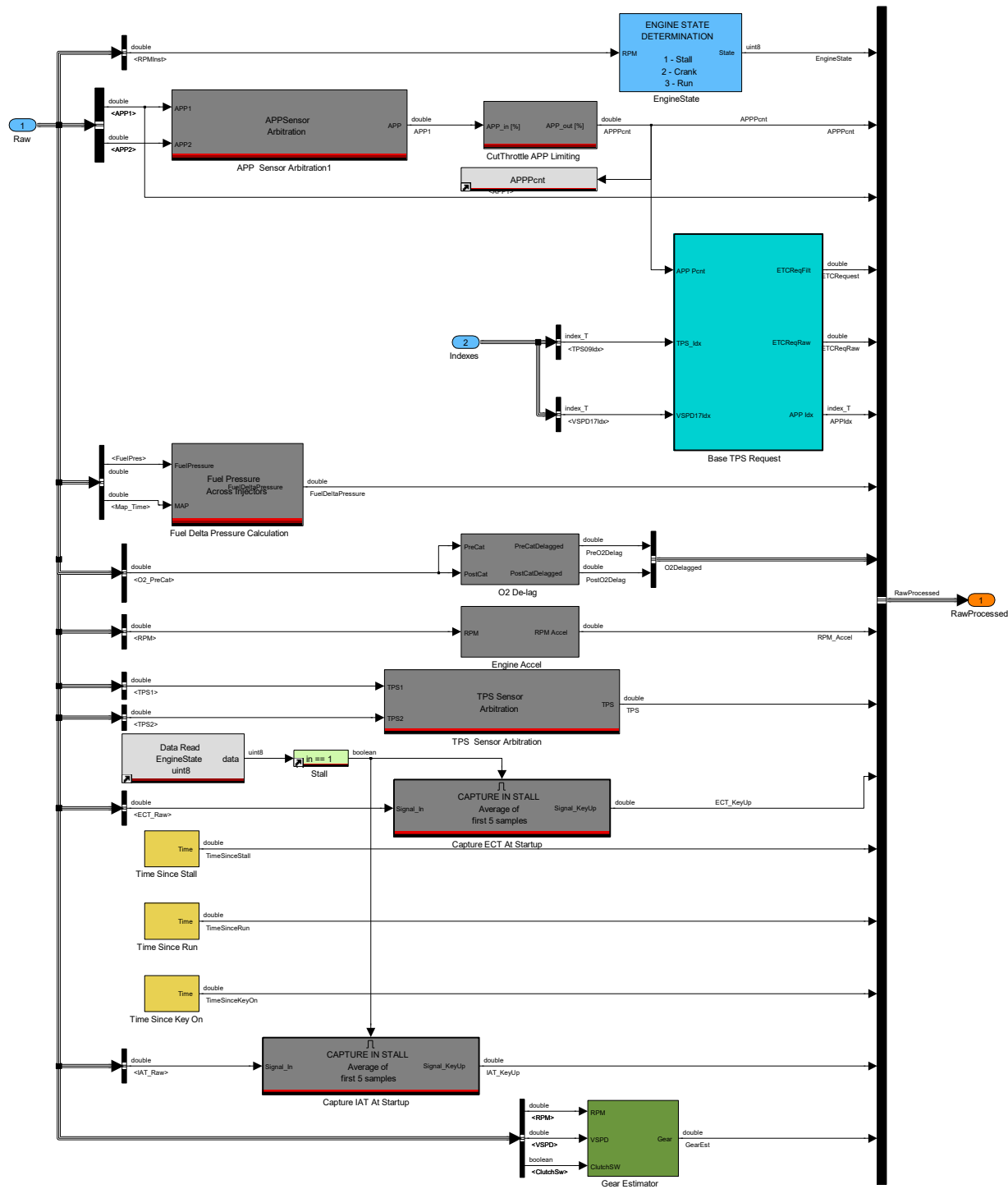


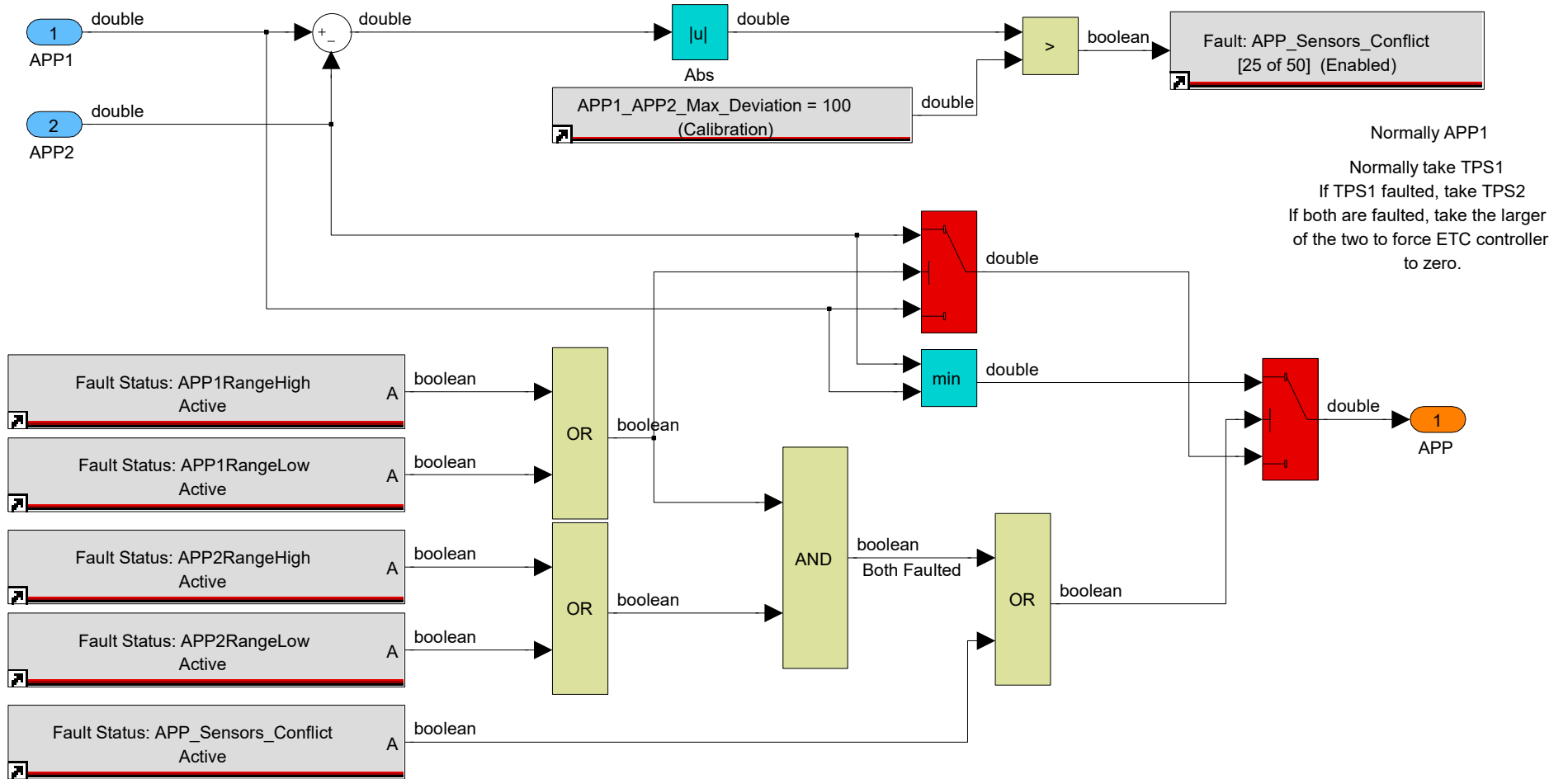
index\_T

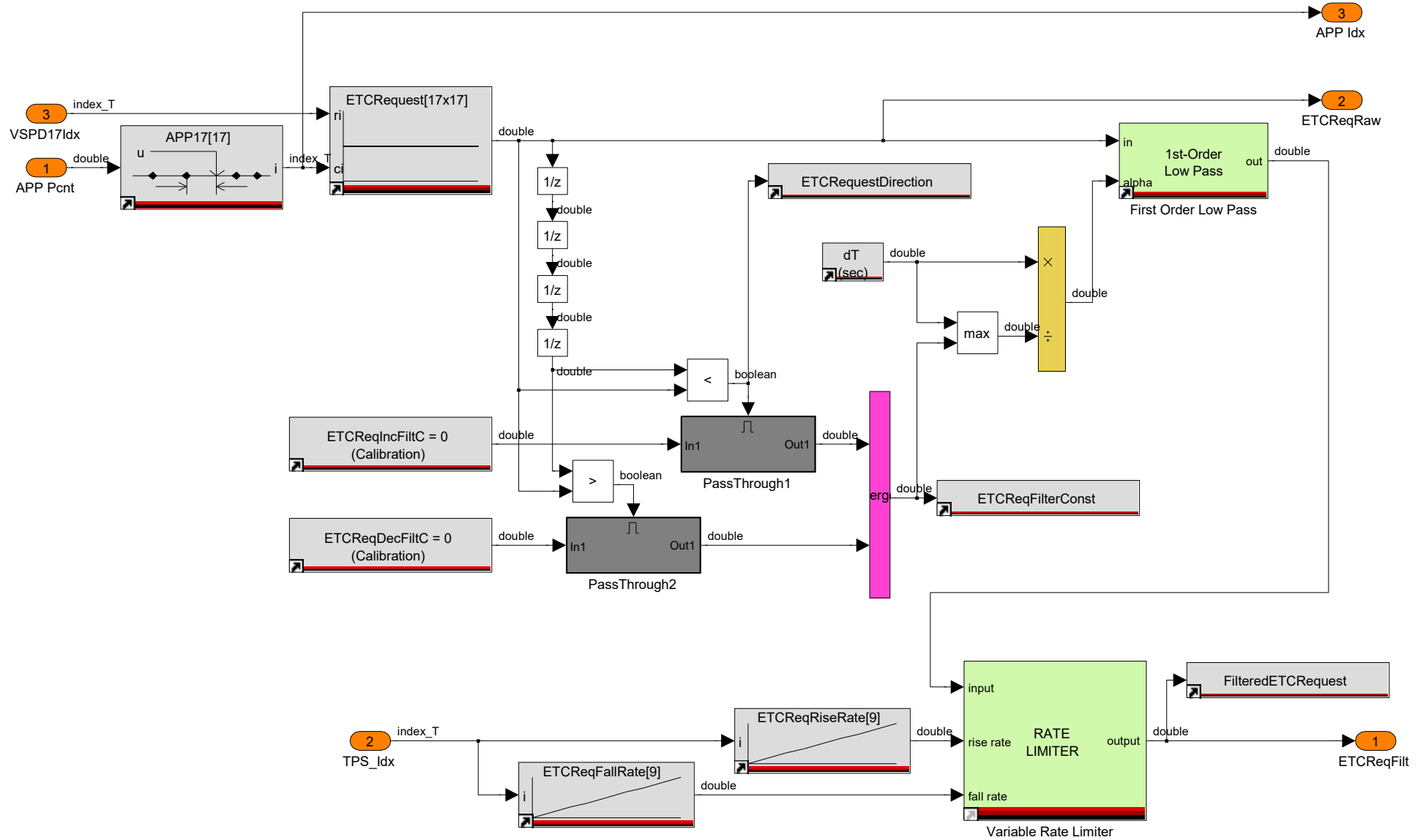
1  
SysVolt09Idx







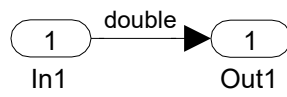






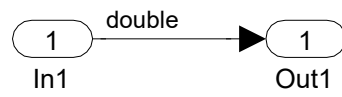


Enable

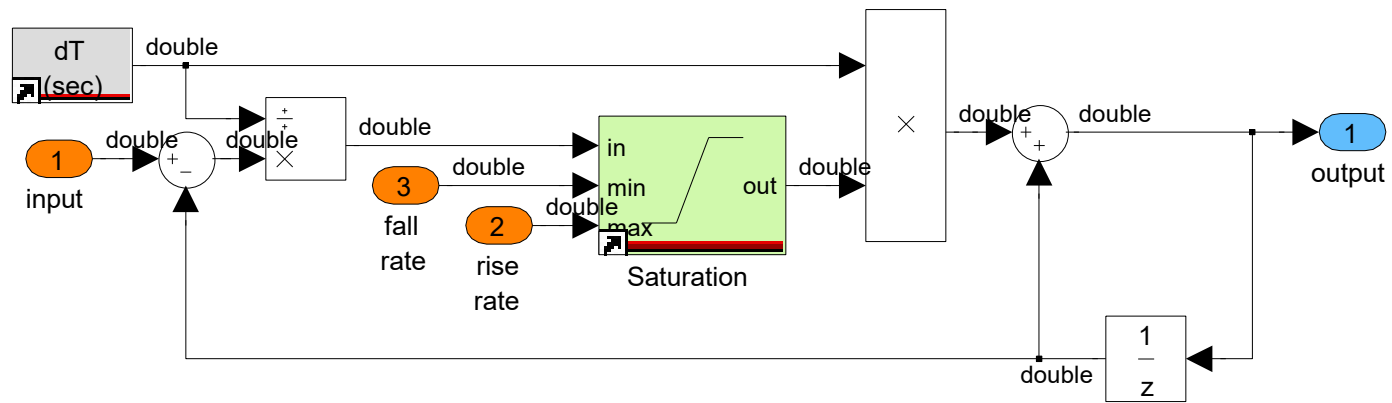




Enable

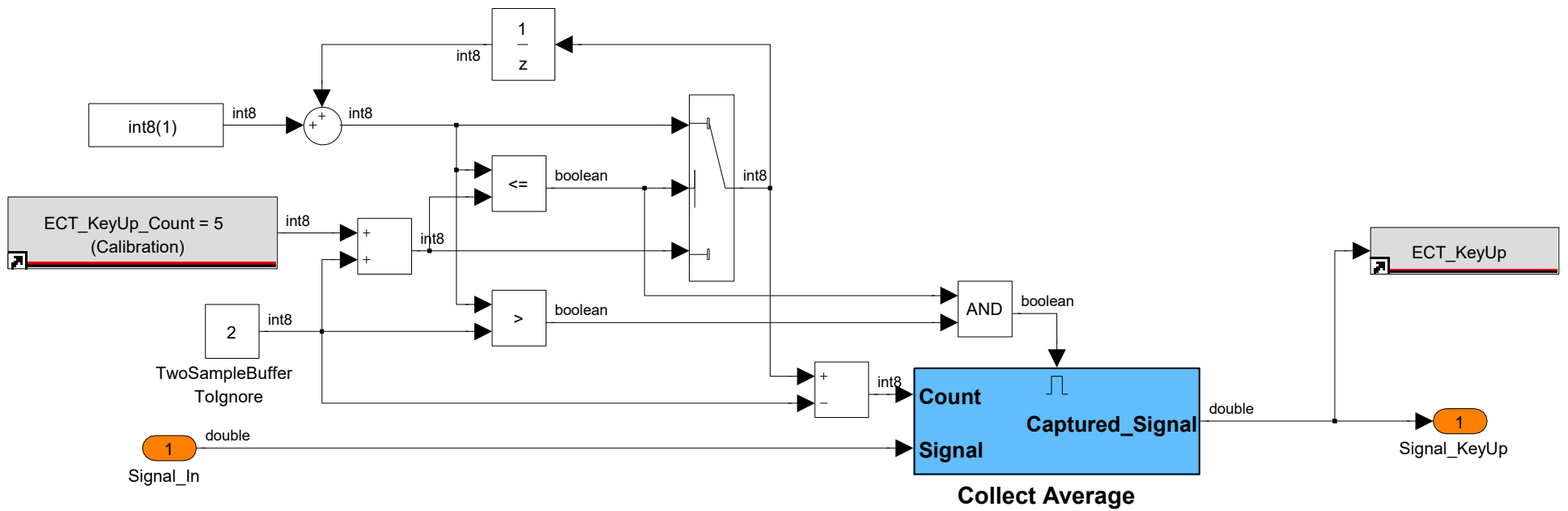


## Rate Limiter - Limit allowable change in signal per timestep

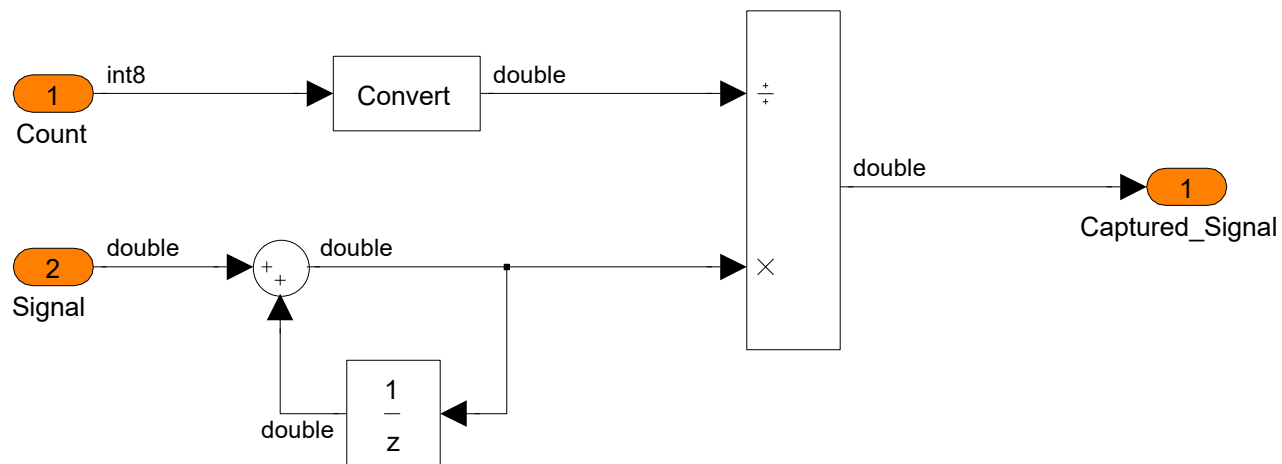
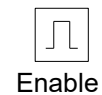




Enable

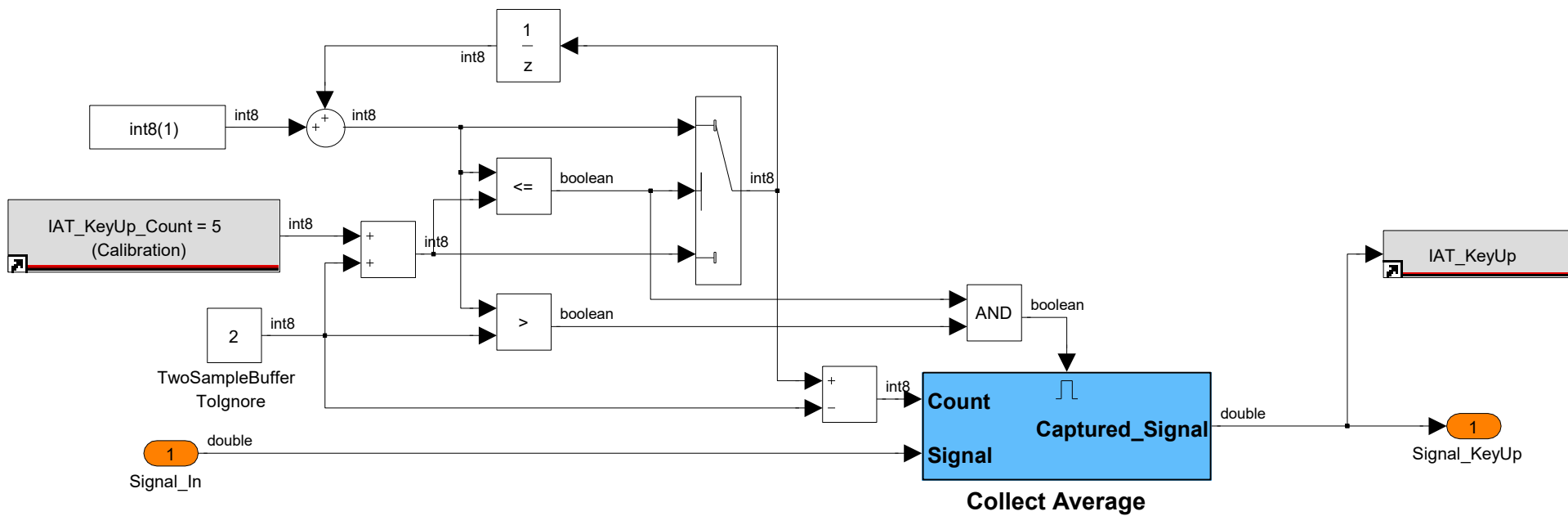


**Collect samples by summing,  
and divide by the total, to obtain average**

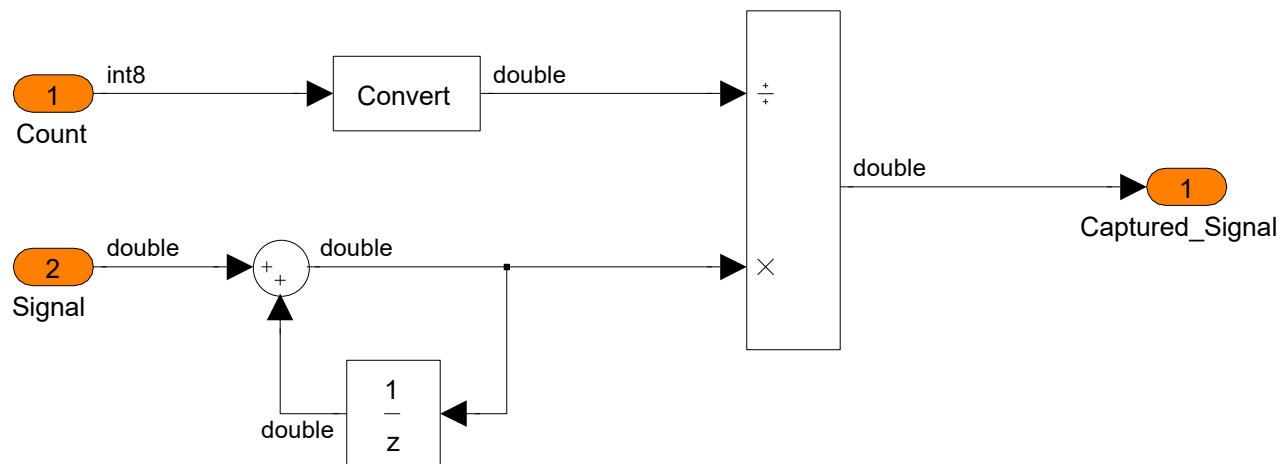
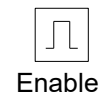


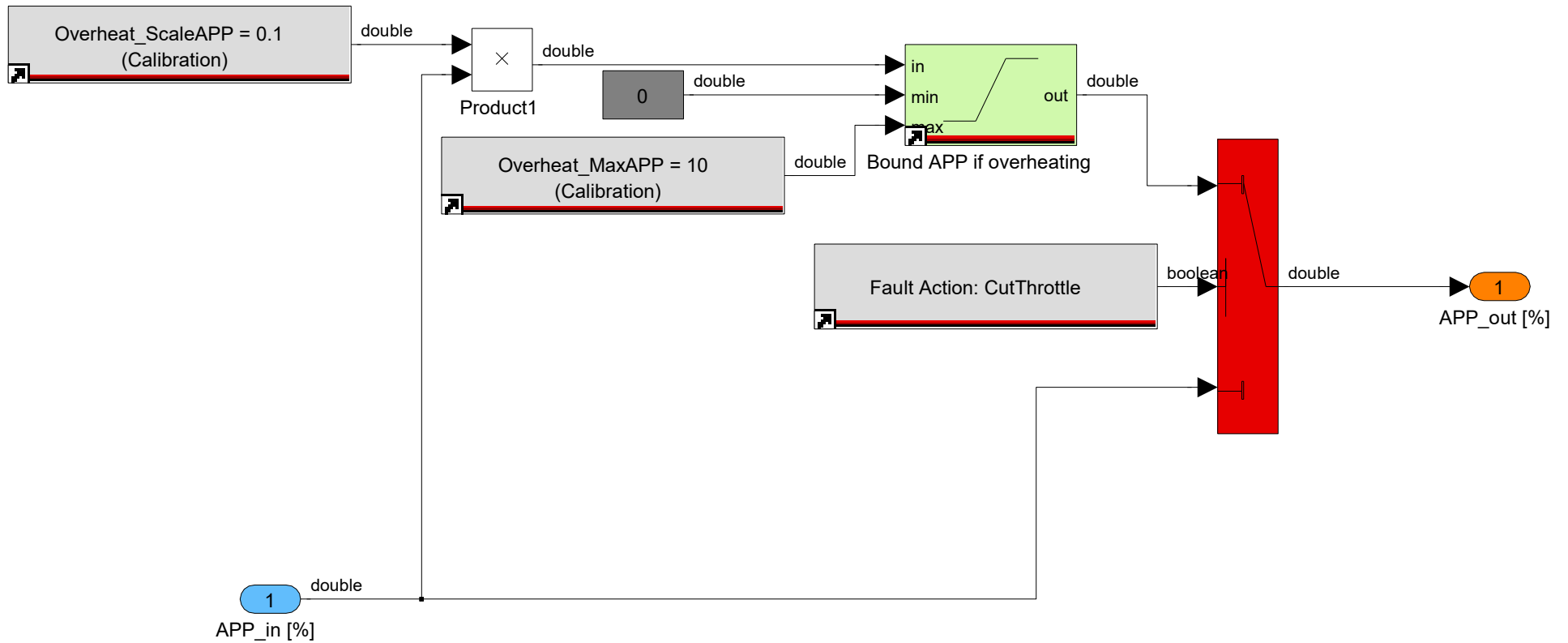


Enable

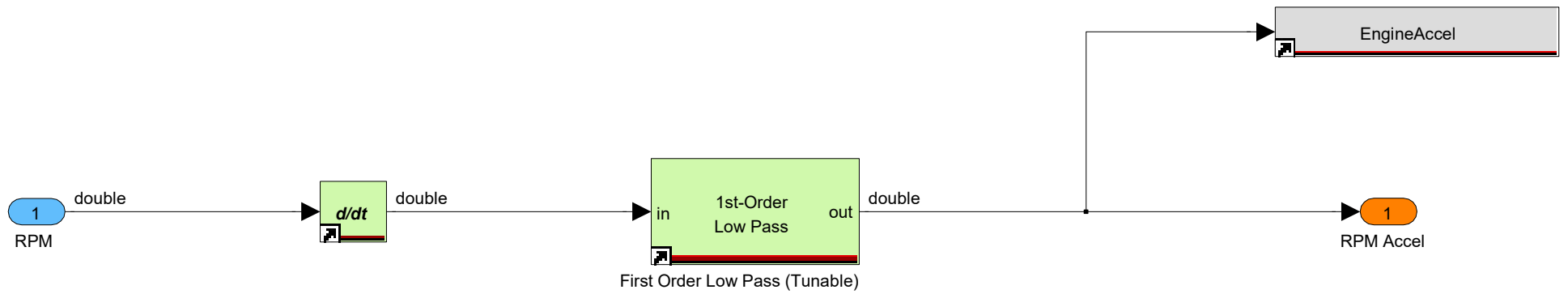


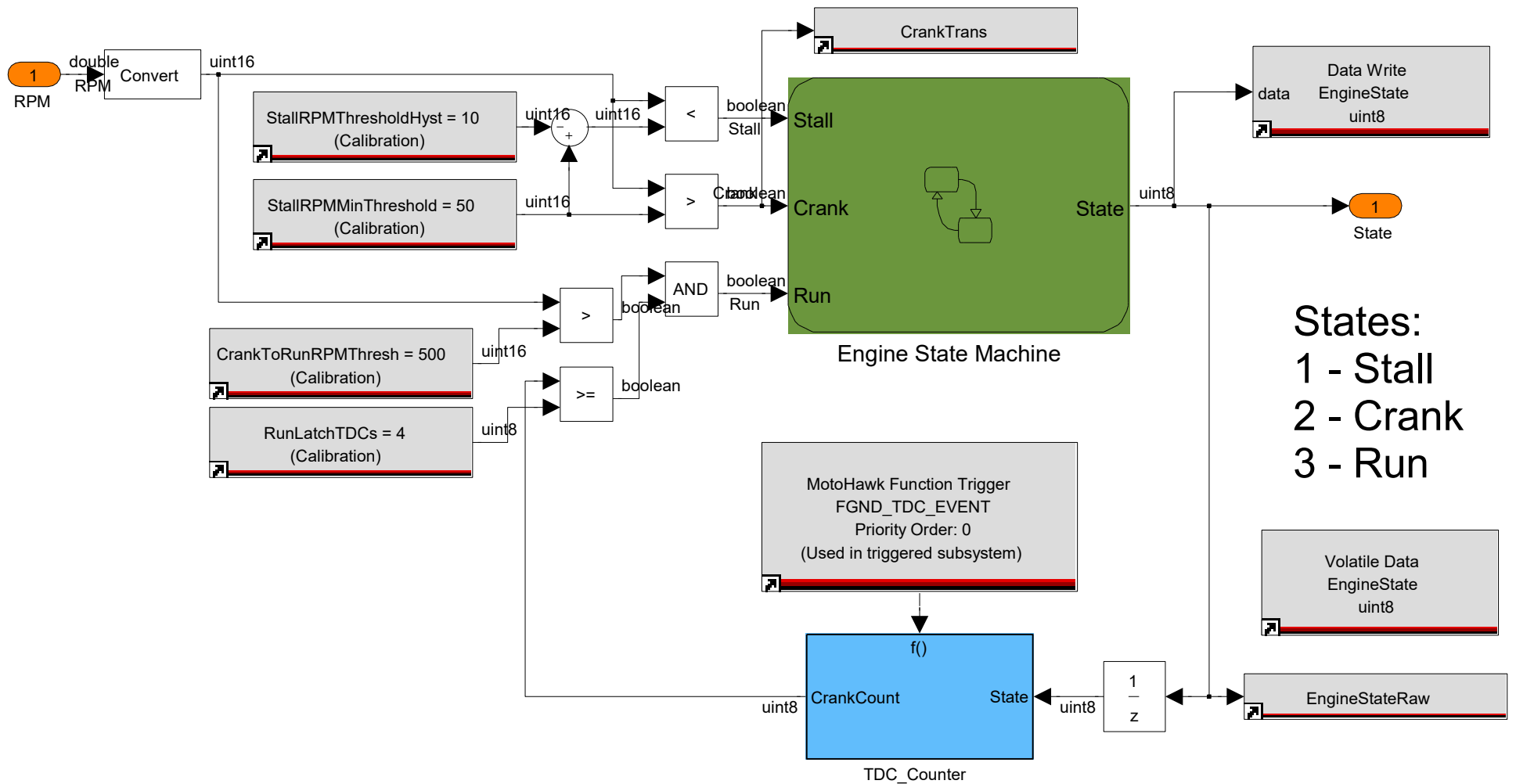
**Collect samples by summing,  
and divide by the total, to obtain average**

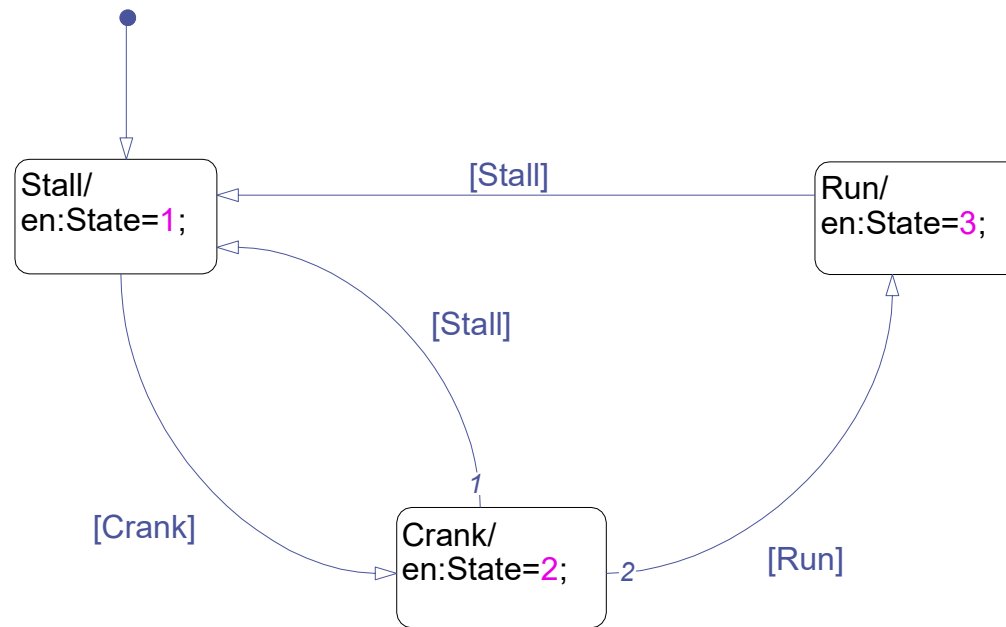


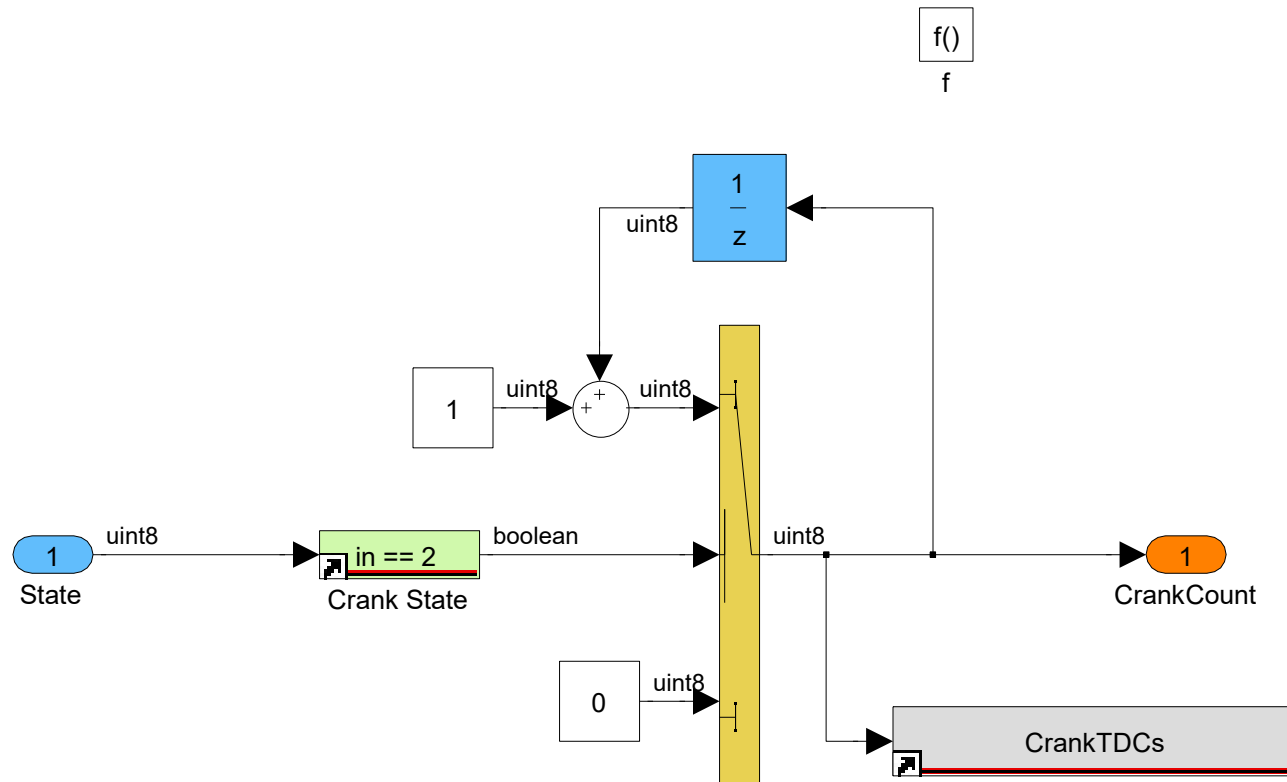


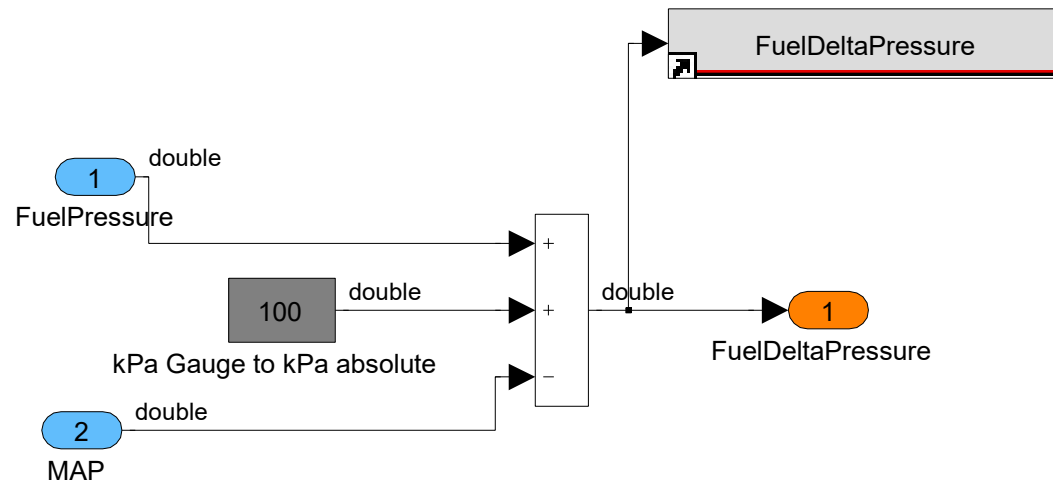


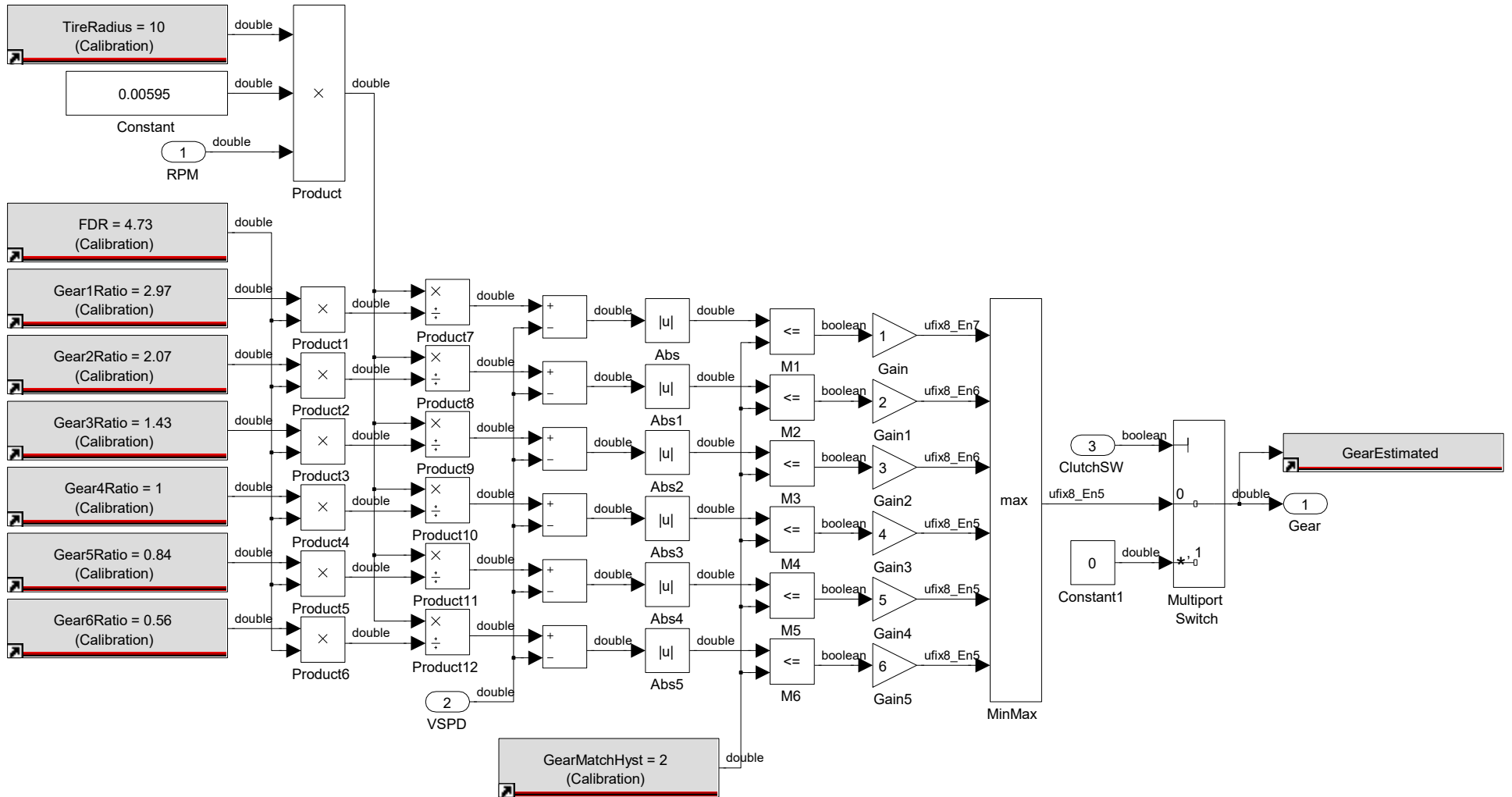


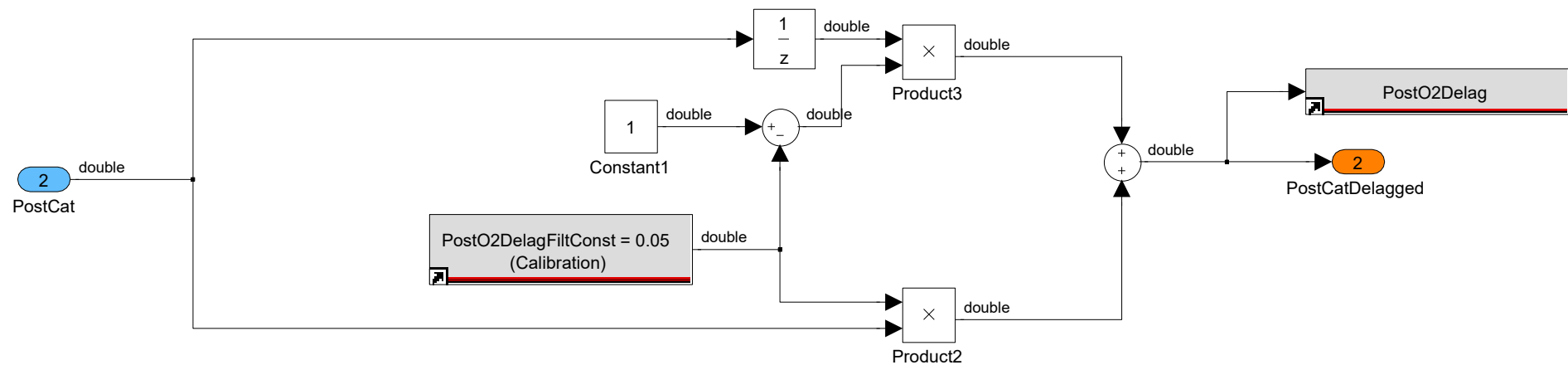
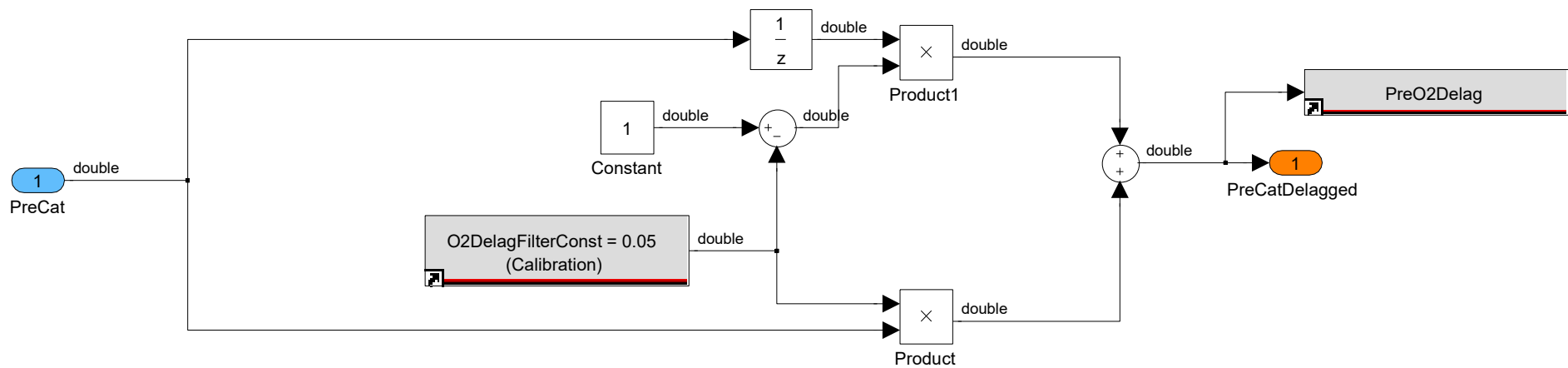


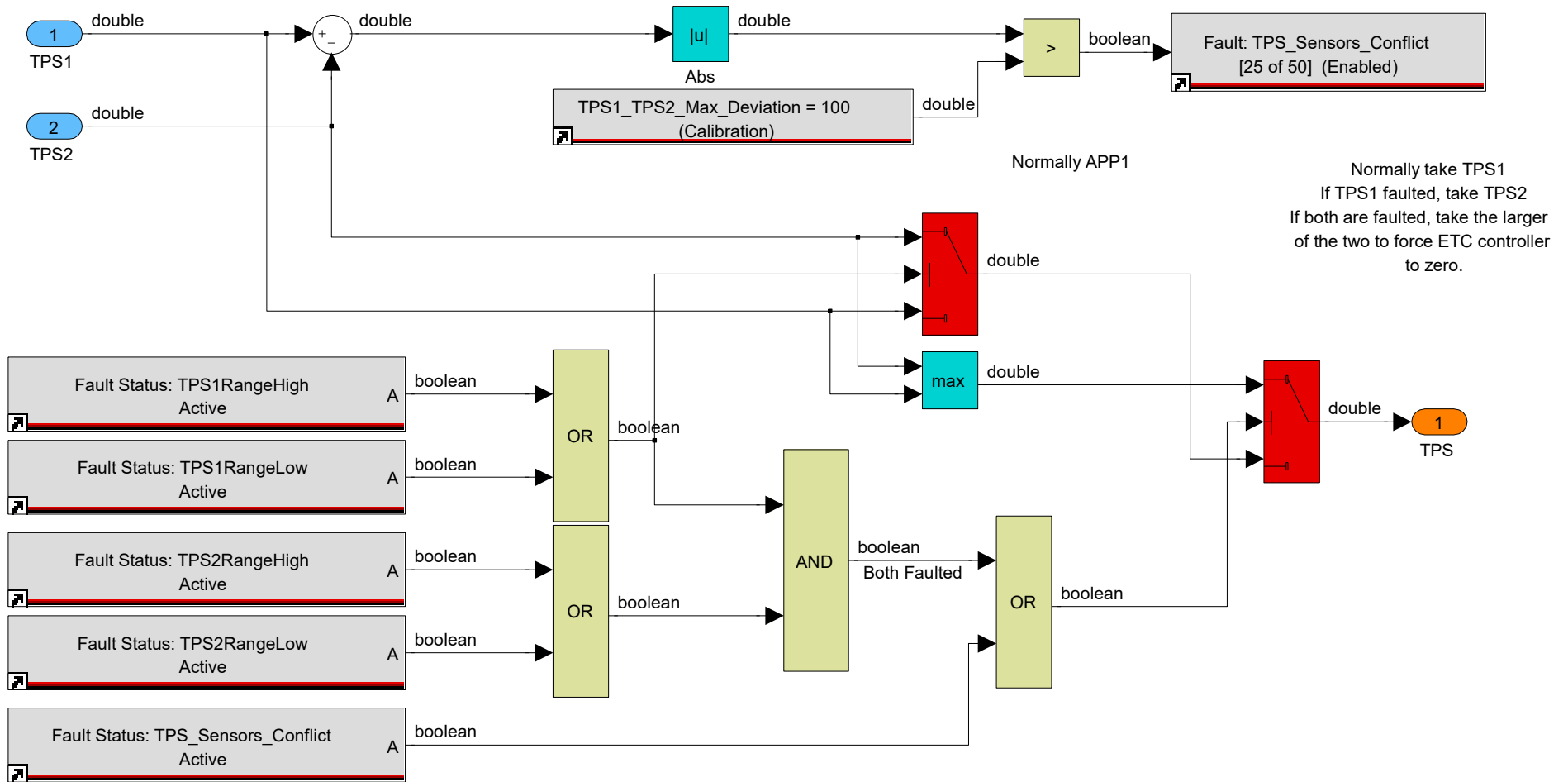




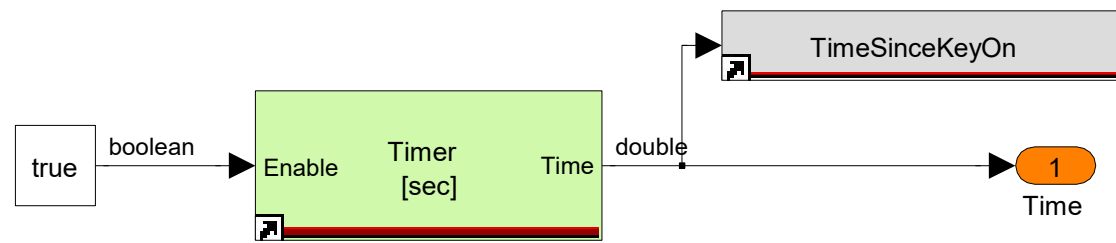


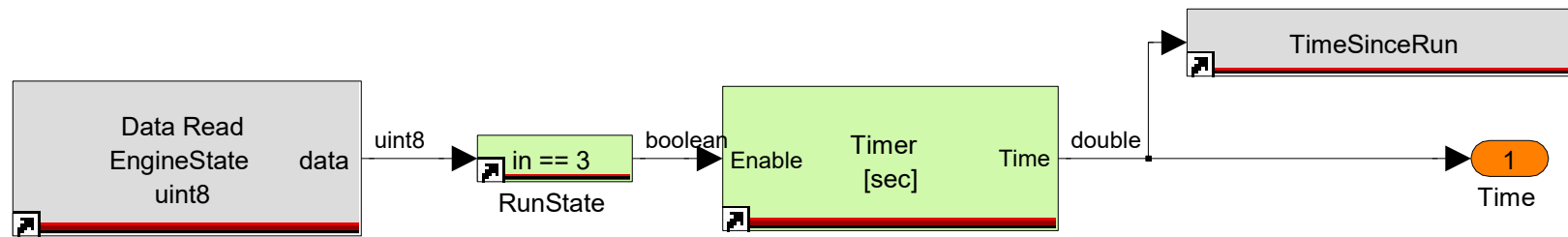


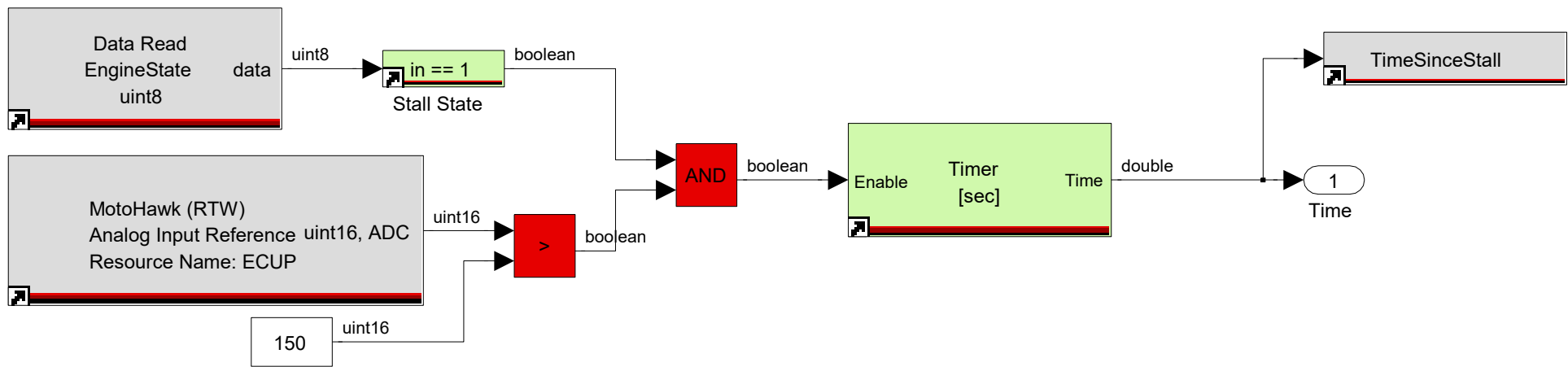


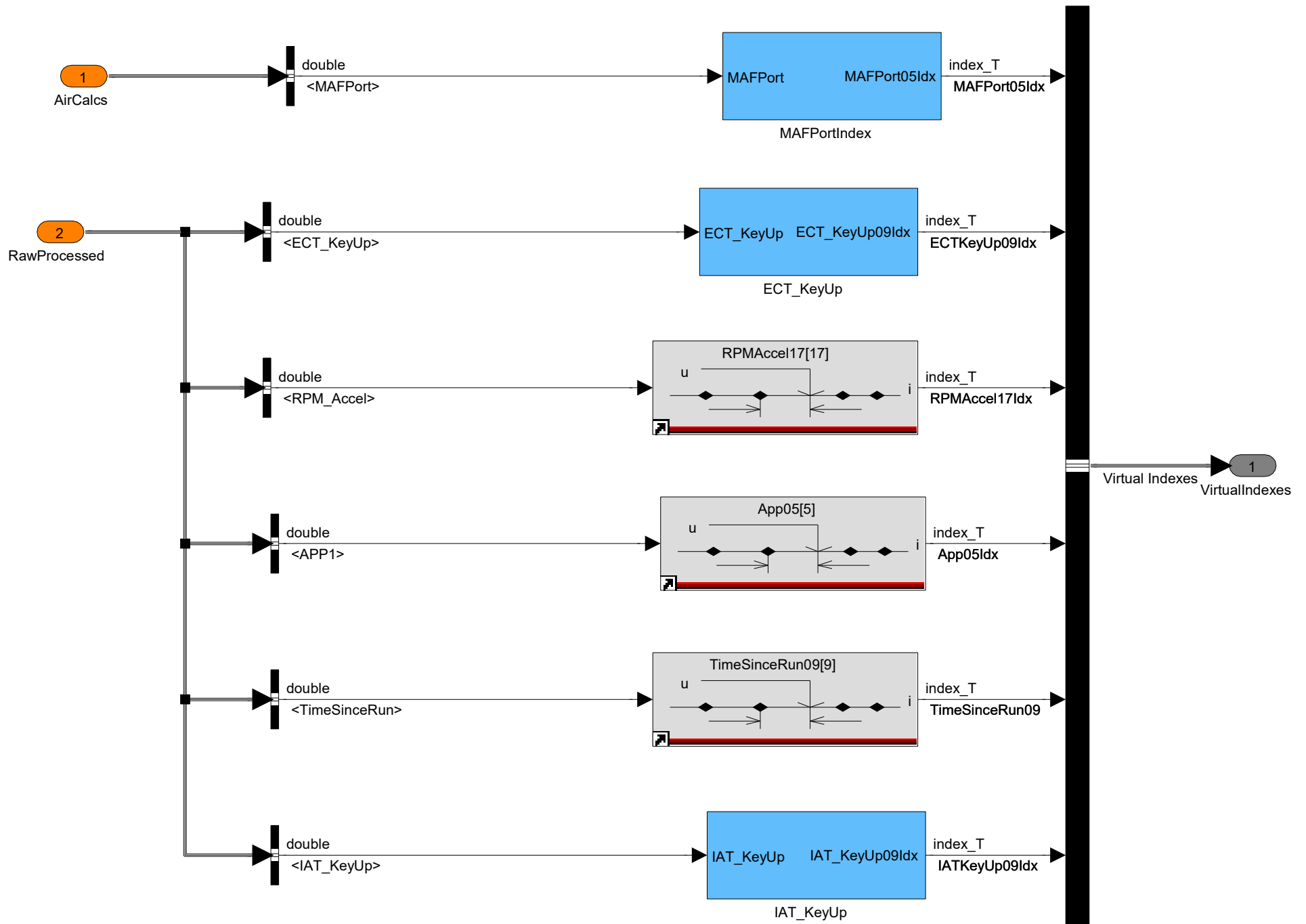


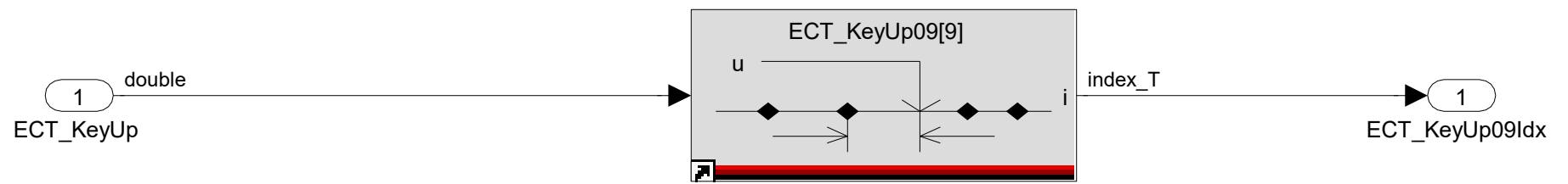


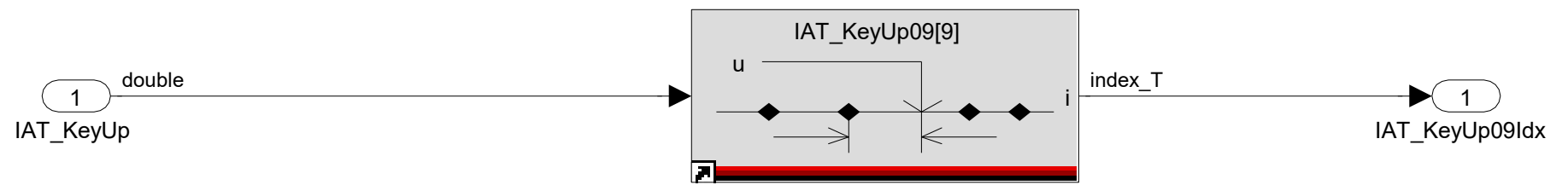


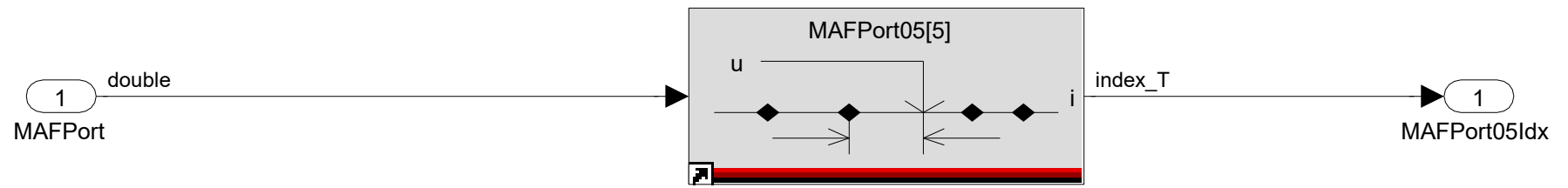


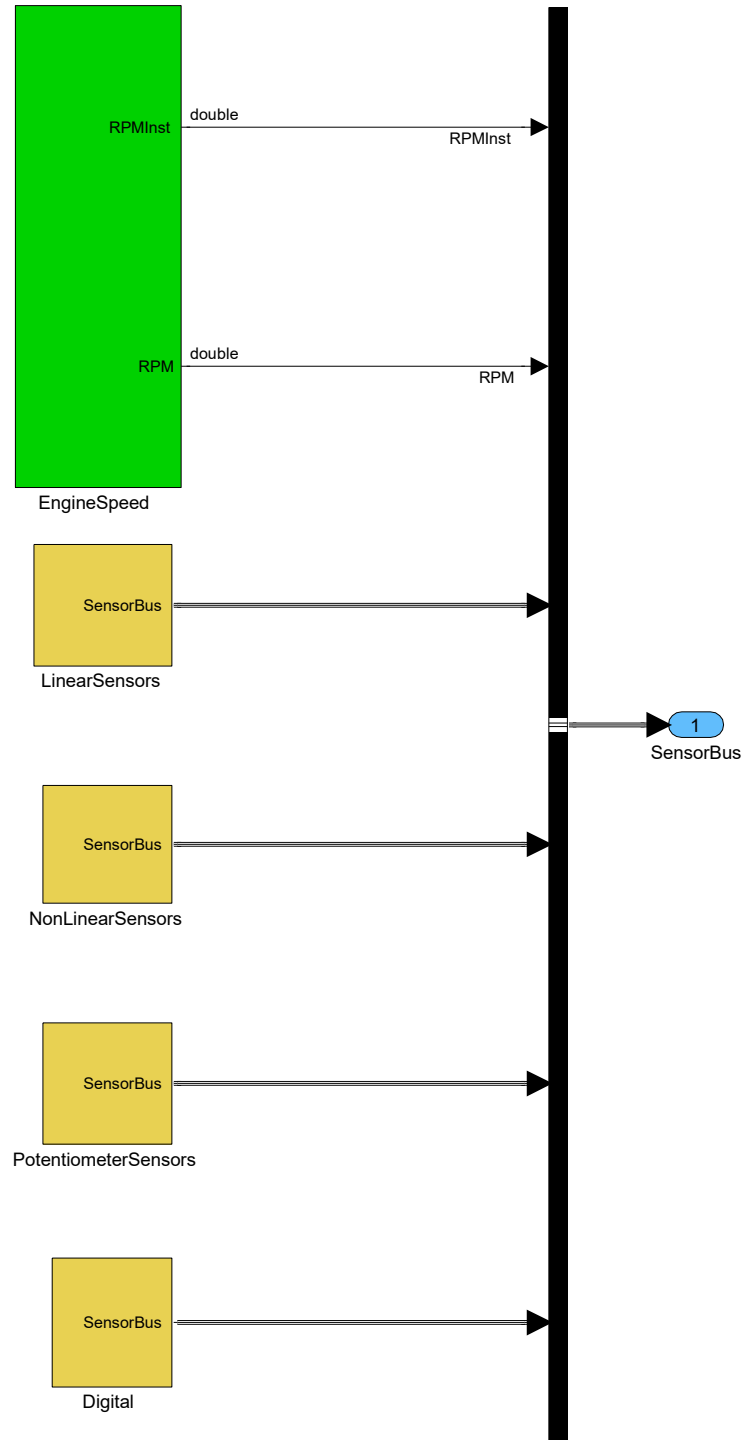










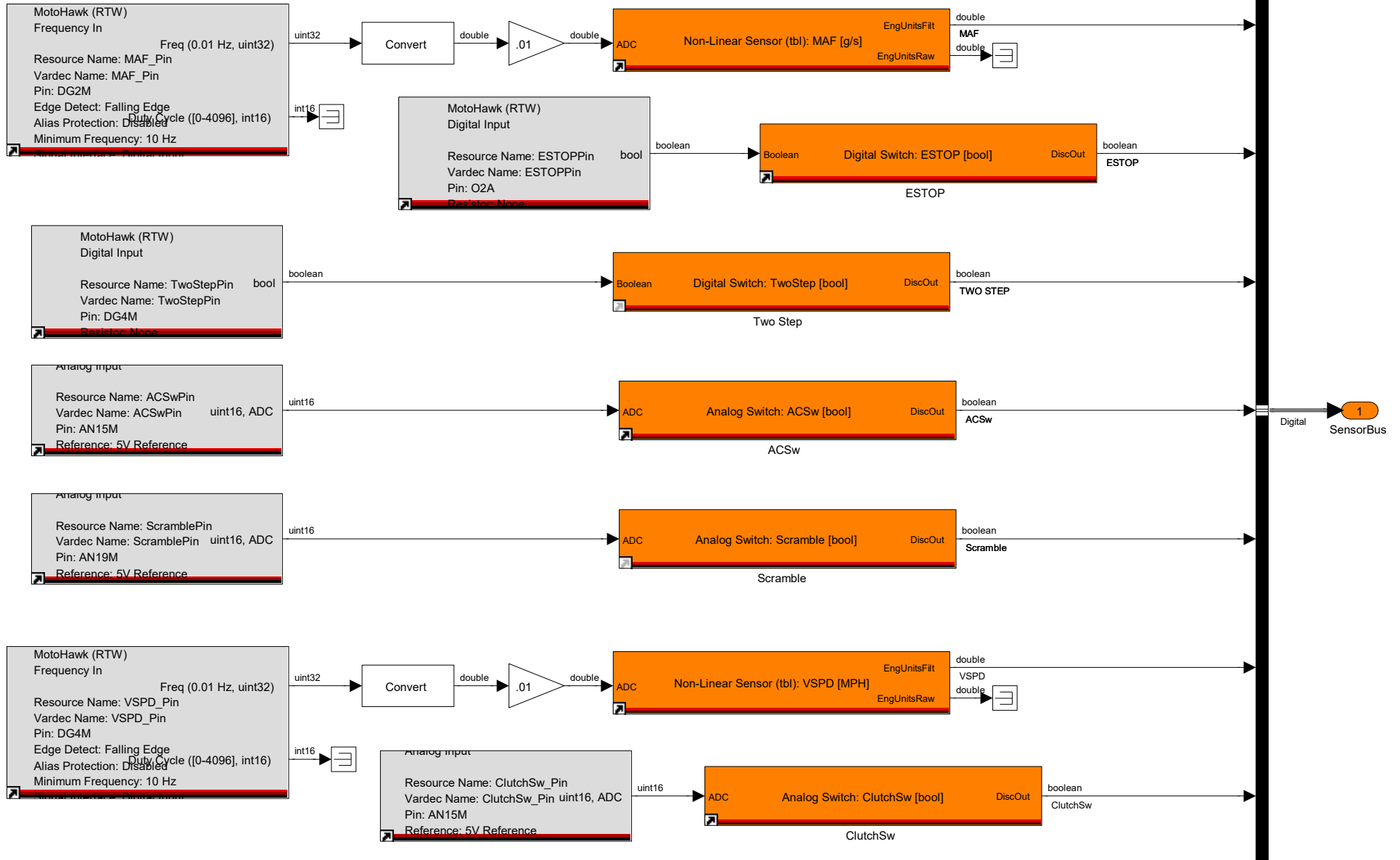


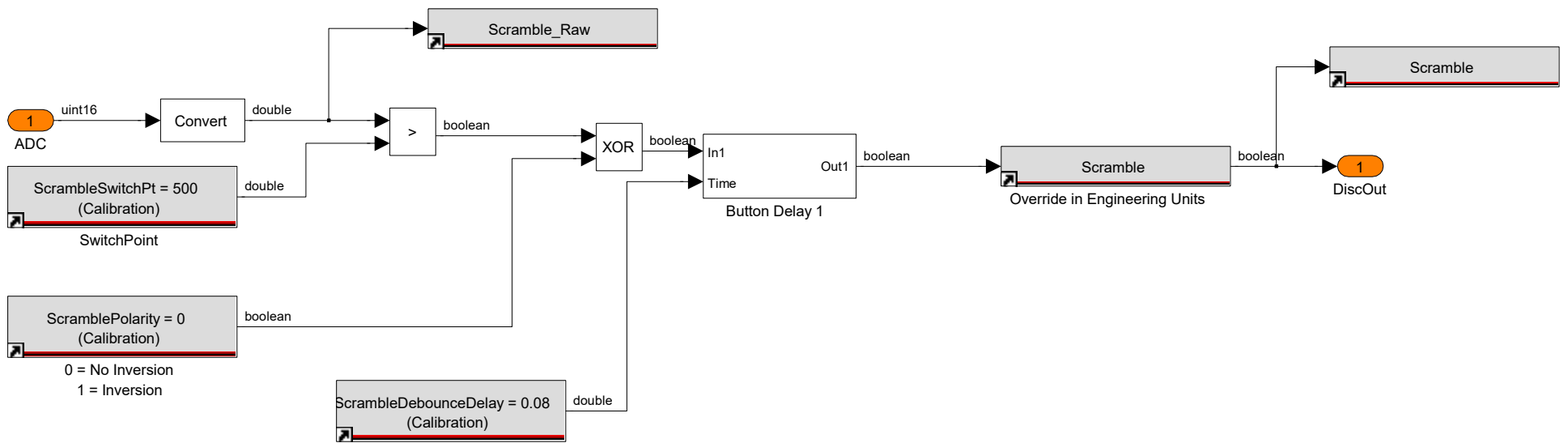


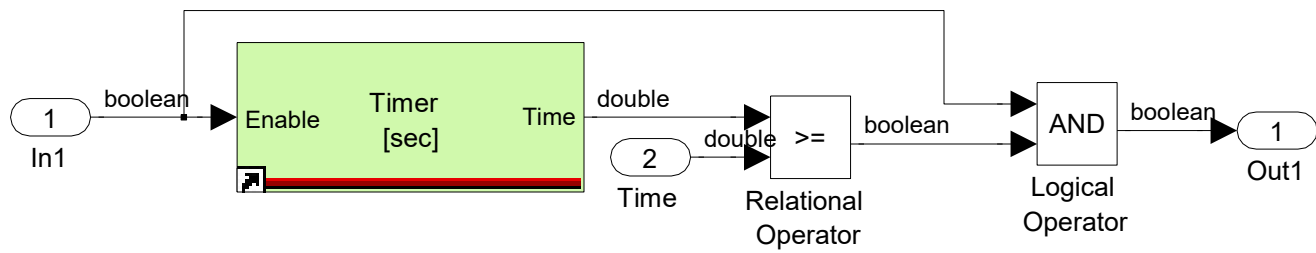
Read from H/W

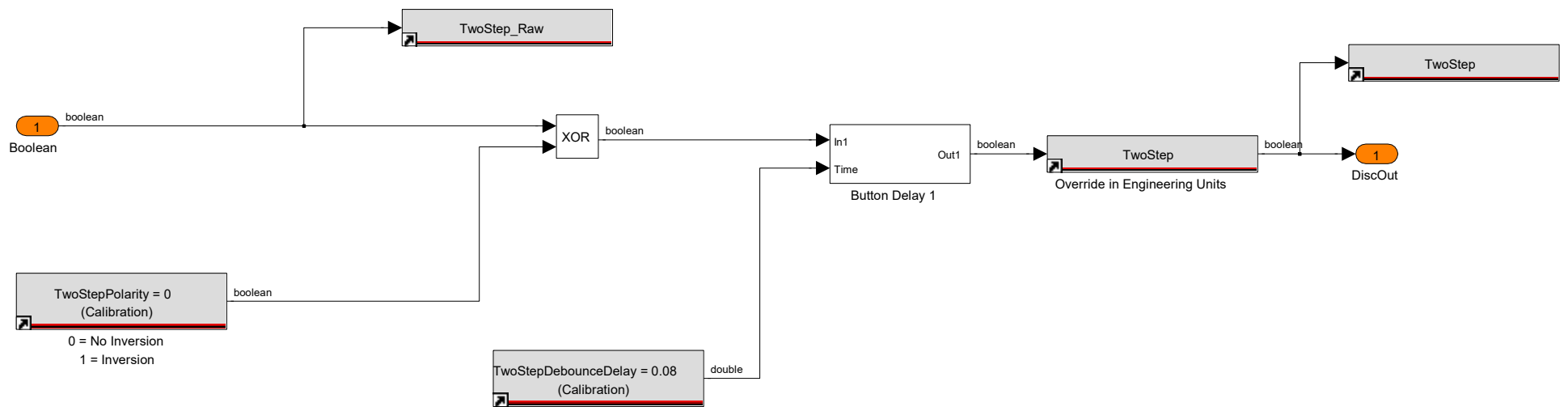
Convert to Engineering Units

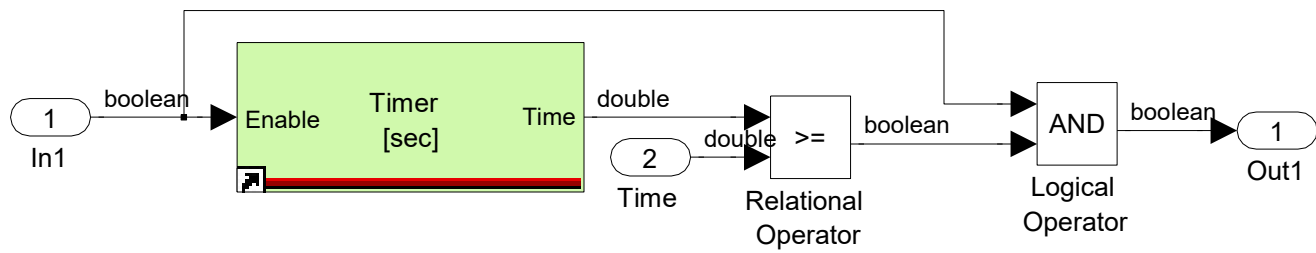
Create a Bus of Sensors



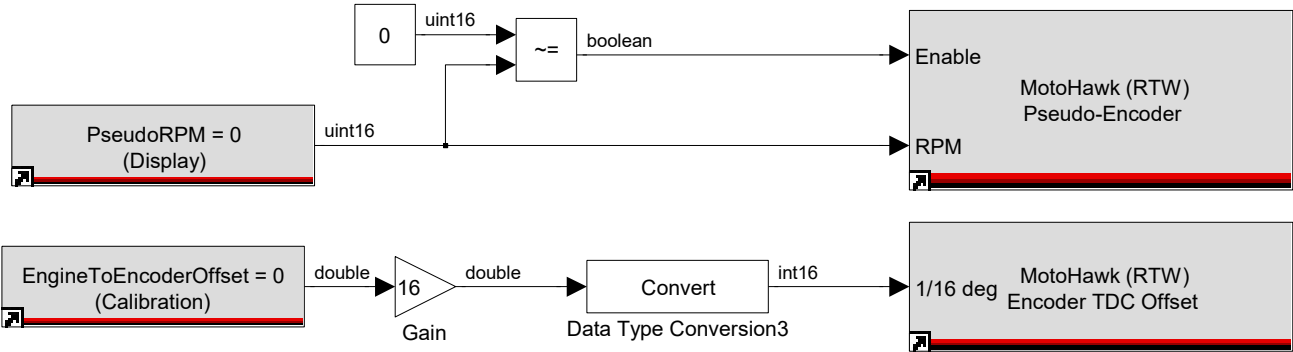








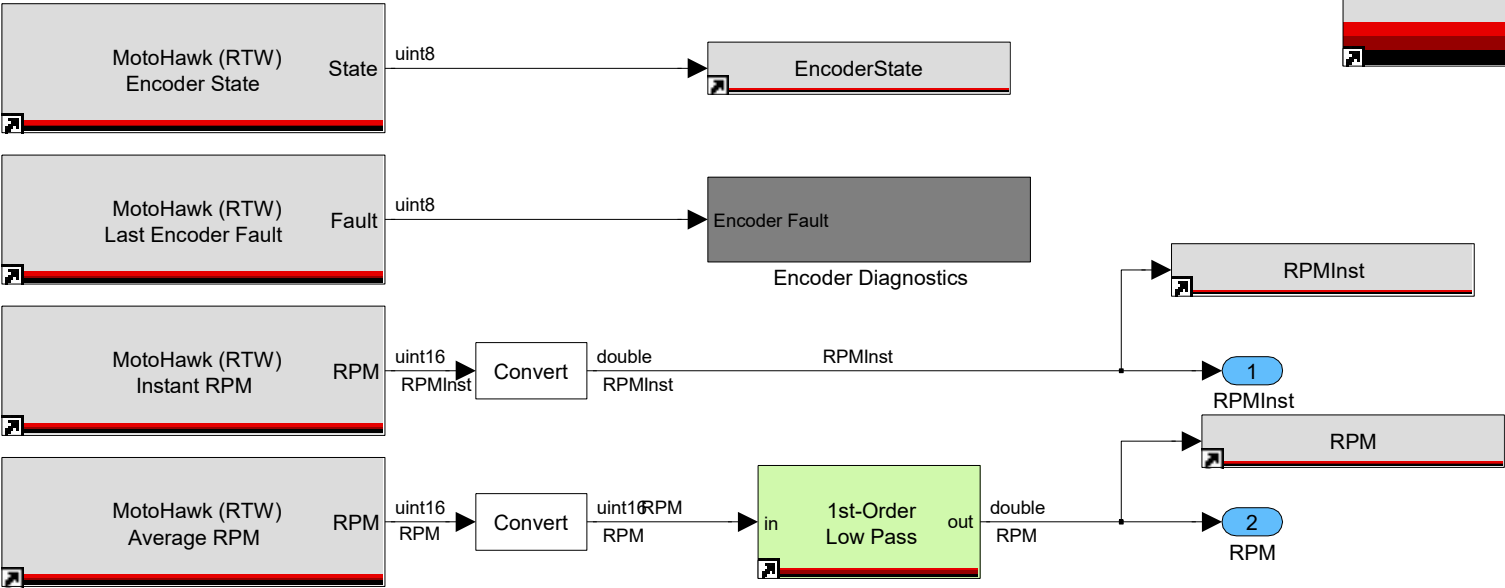
Set PseudoRPM from MotoTune  
to a non-zero value to cause  
simulated RPM

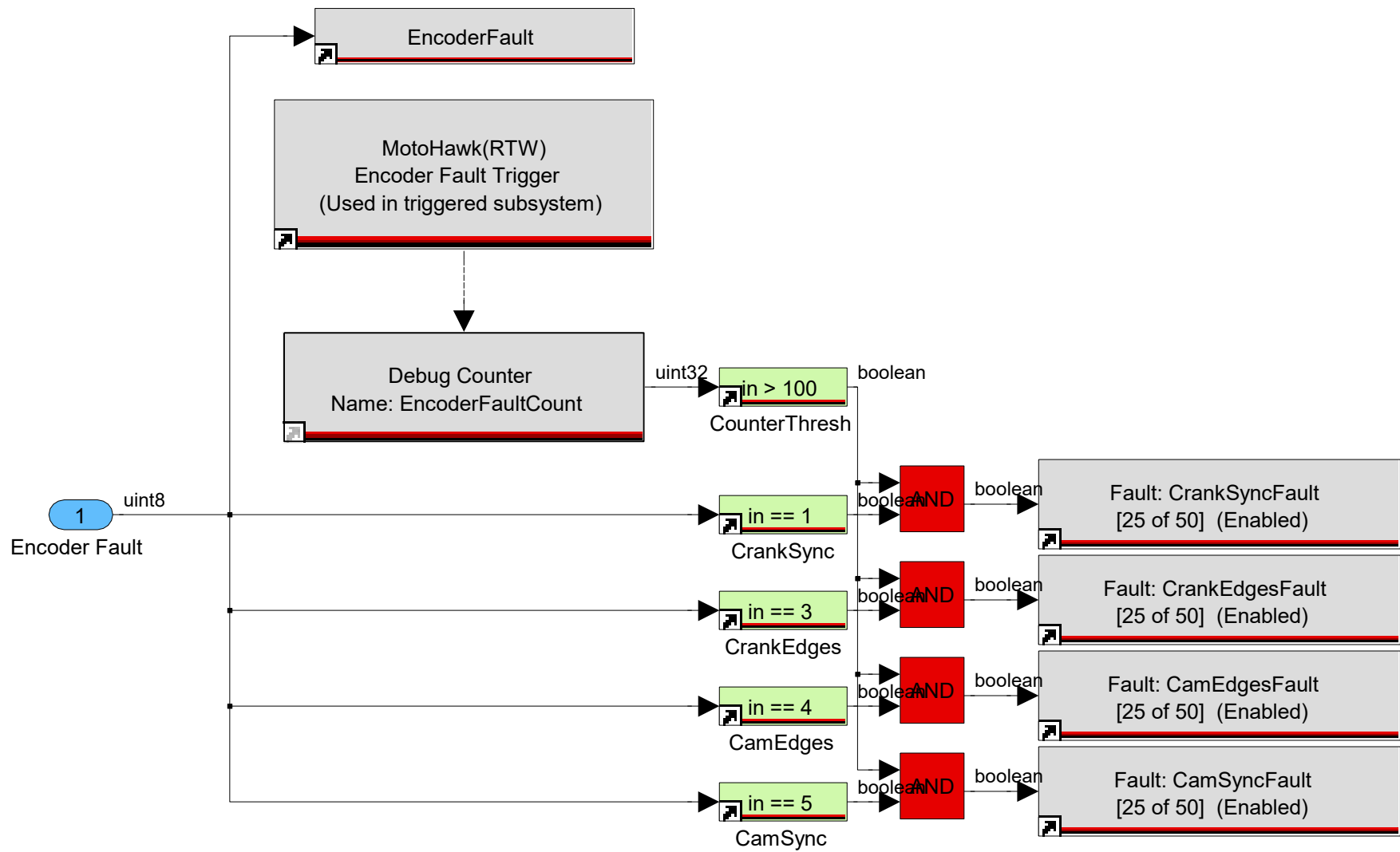


MotoHawk (RTW)  
Encoder Definition

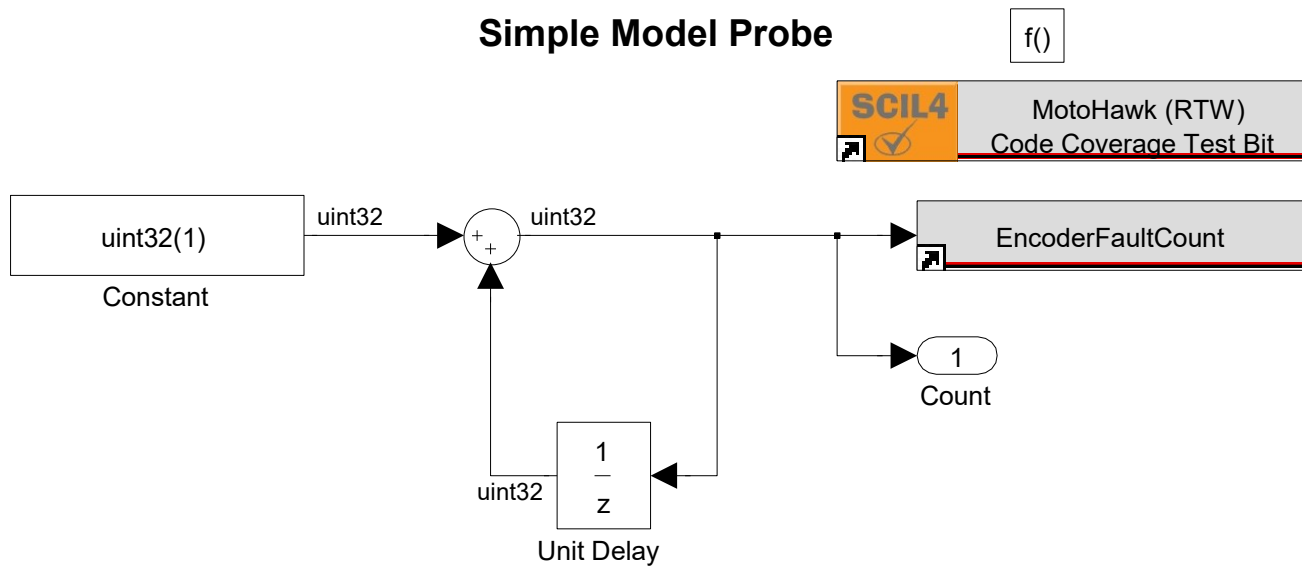
Encoder Type: 24 Minus 1 - 4-Stroke - Half-Moon CAM  
Redundancy: None  
Signal Interface: VR Crank - Digital Cam  
Crank Synchronization: Rising Edge  
Crank Pullup: Strong Pullup  
Cam Synchronization: Rising Edge  
Cam Pullup: Strong Pullup  
Number of Cylinders: 4  
TDC Angles: [0 180 360 540 0 0 0 0]  
TDC Angle Offset: 27  
Teeth to ignore before attempting synchronization: 6  
Cam Delay: 0  
Calibratable Max Cylinders: 8

Archive: TPU\_N\_12.a

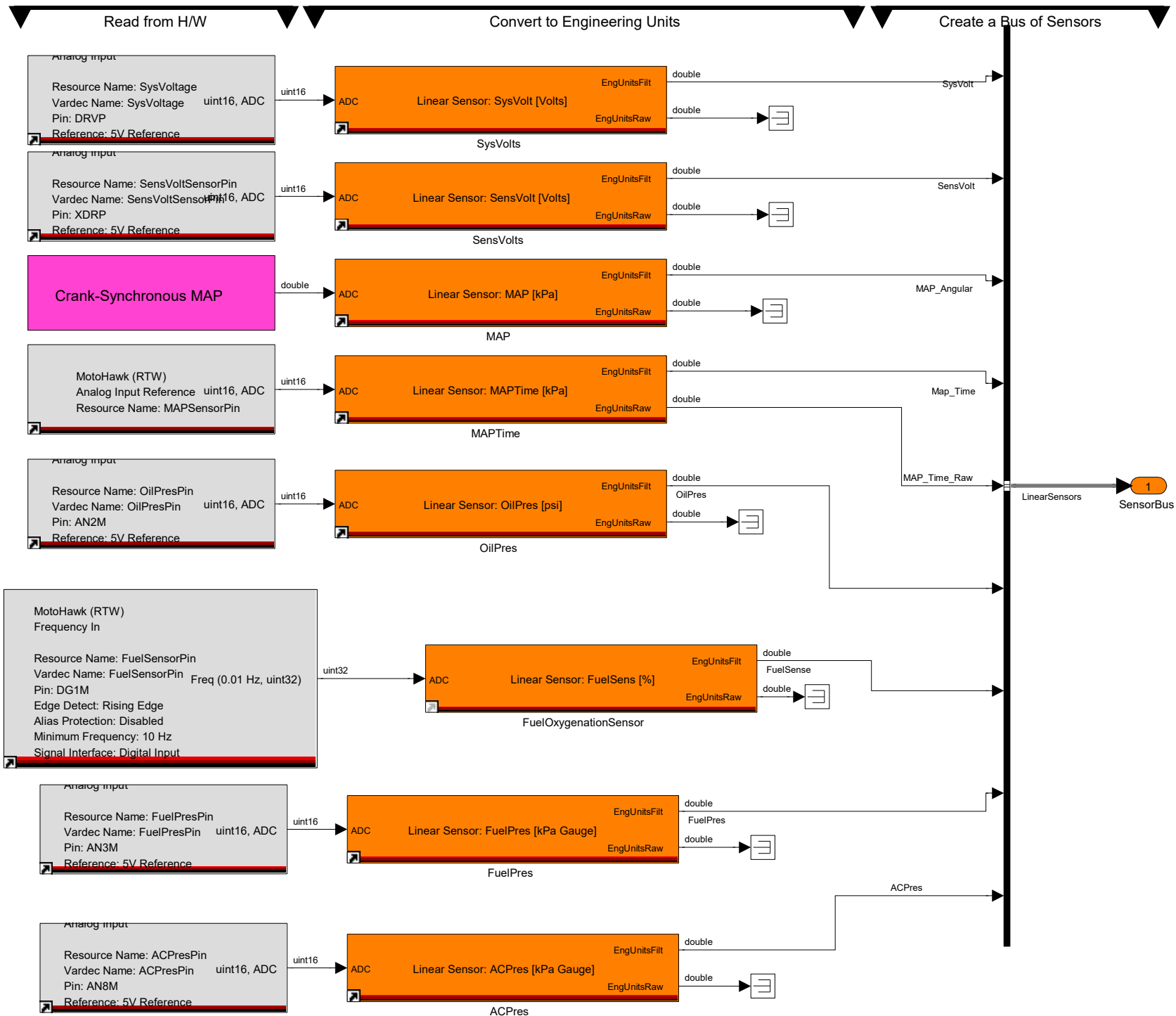


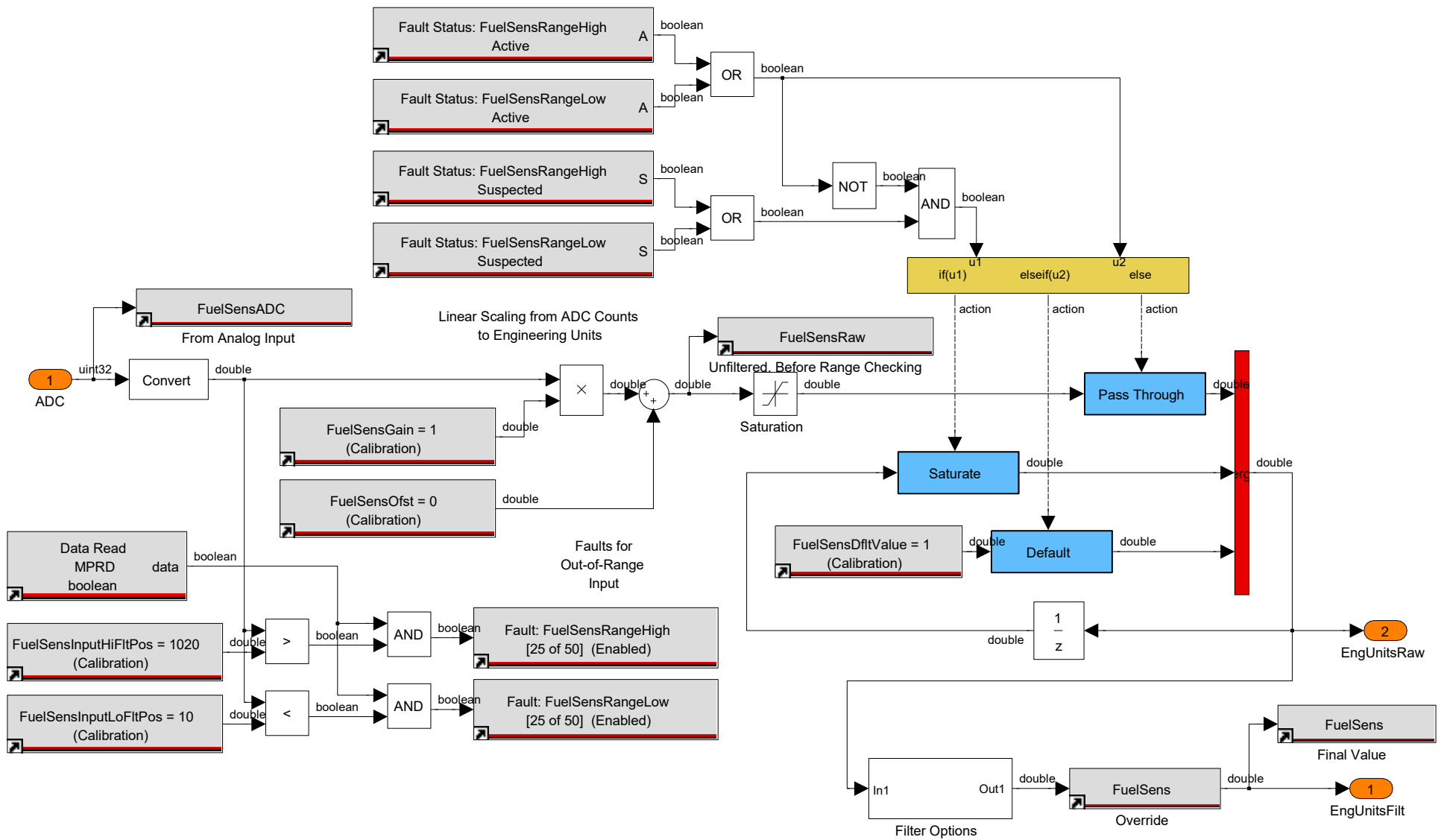


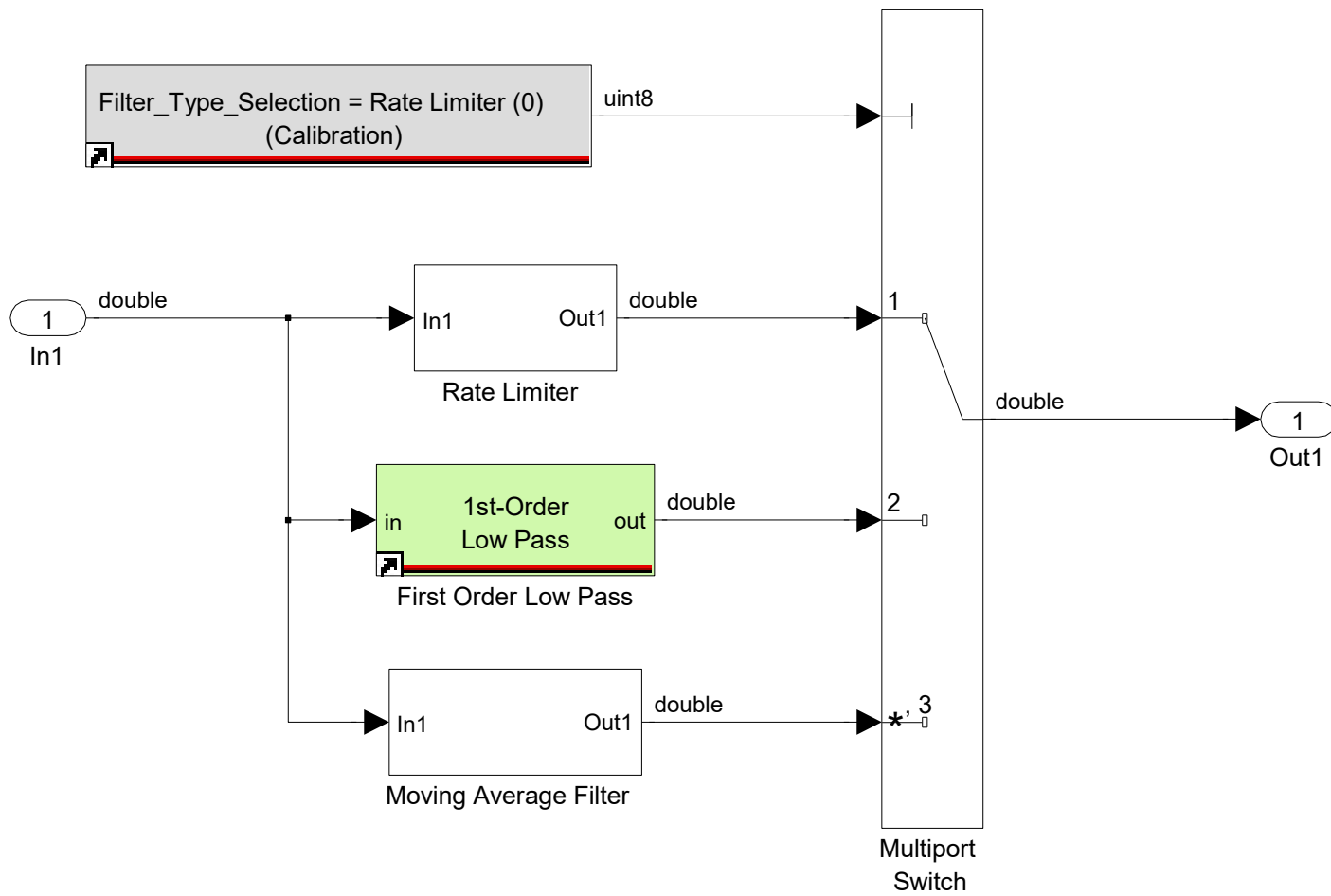
## Simple Model Probe

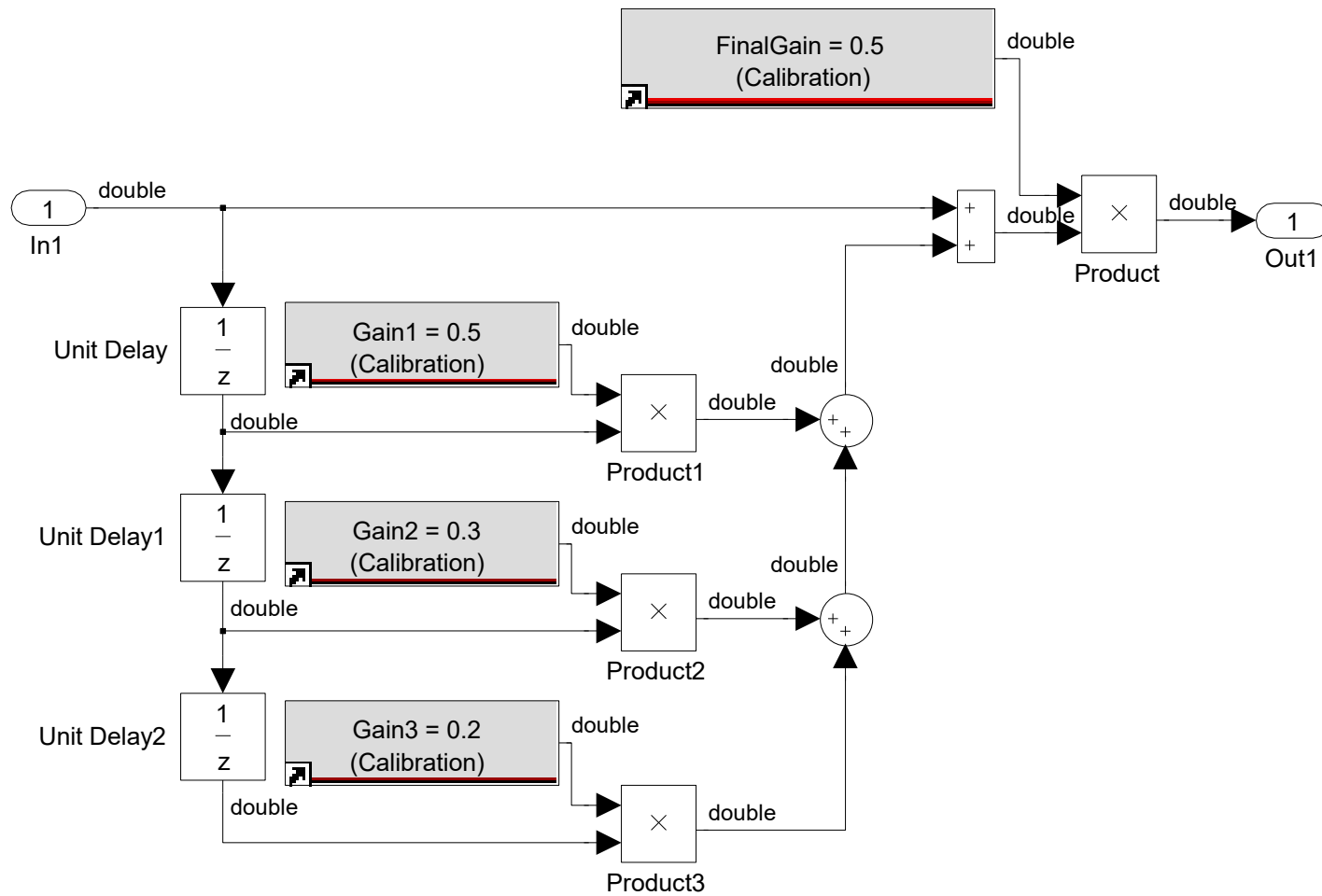


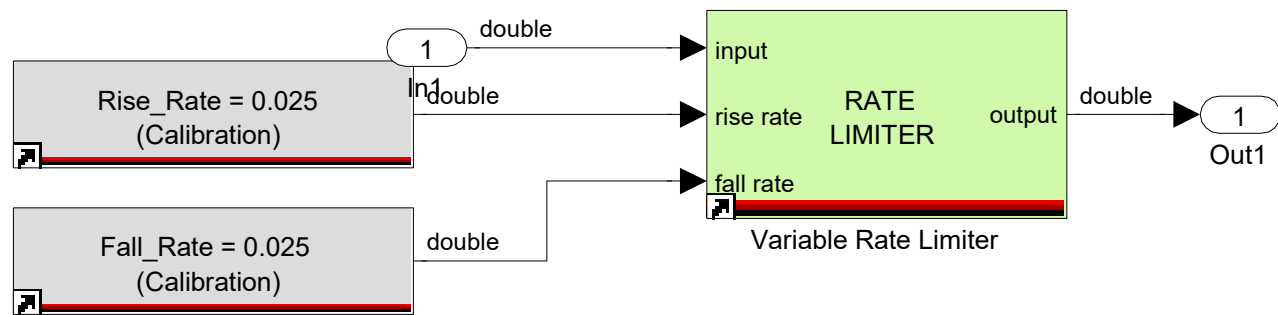












if { }

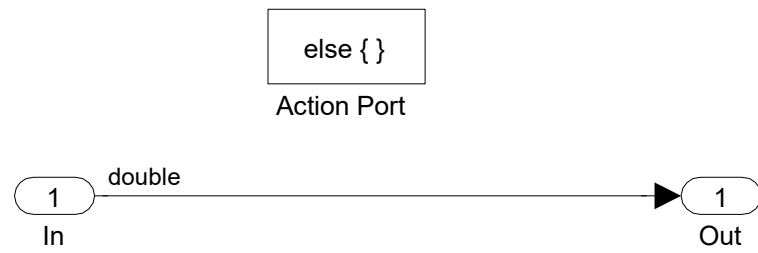
Action Port



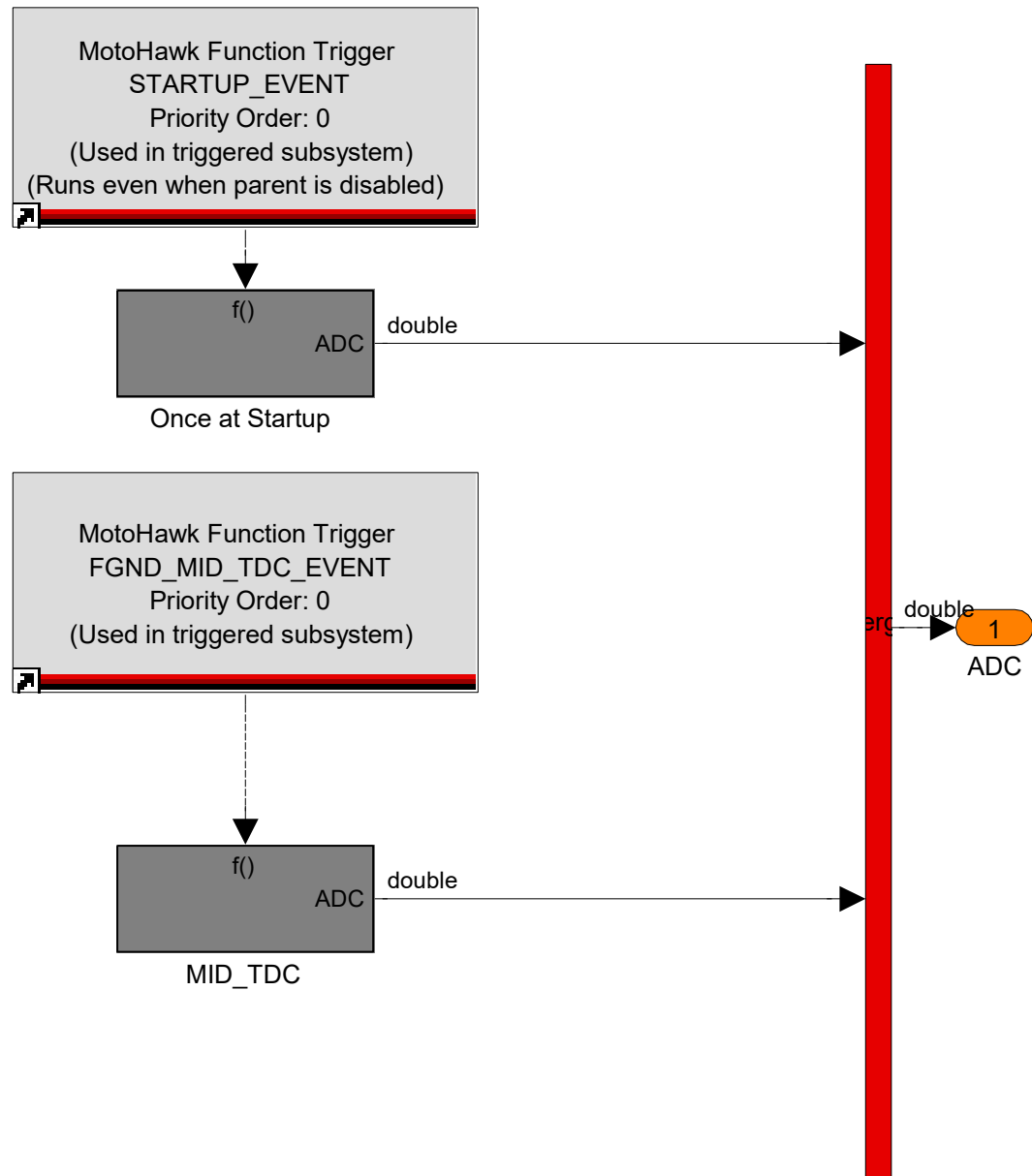
elseif { }

Action Port

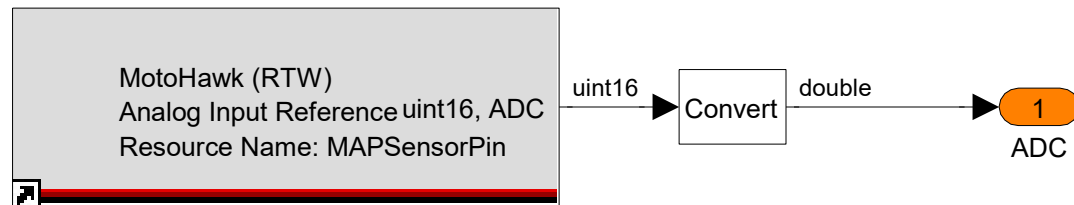








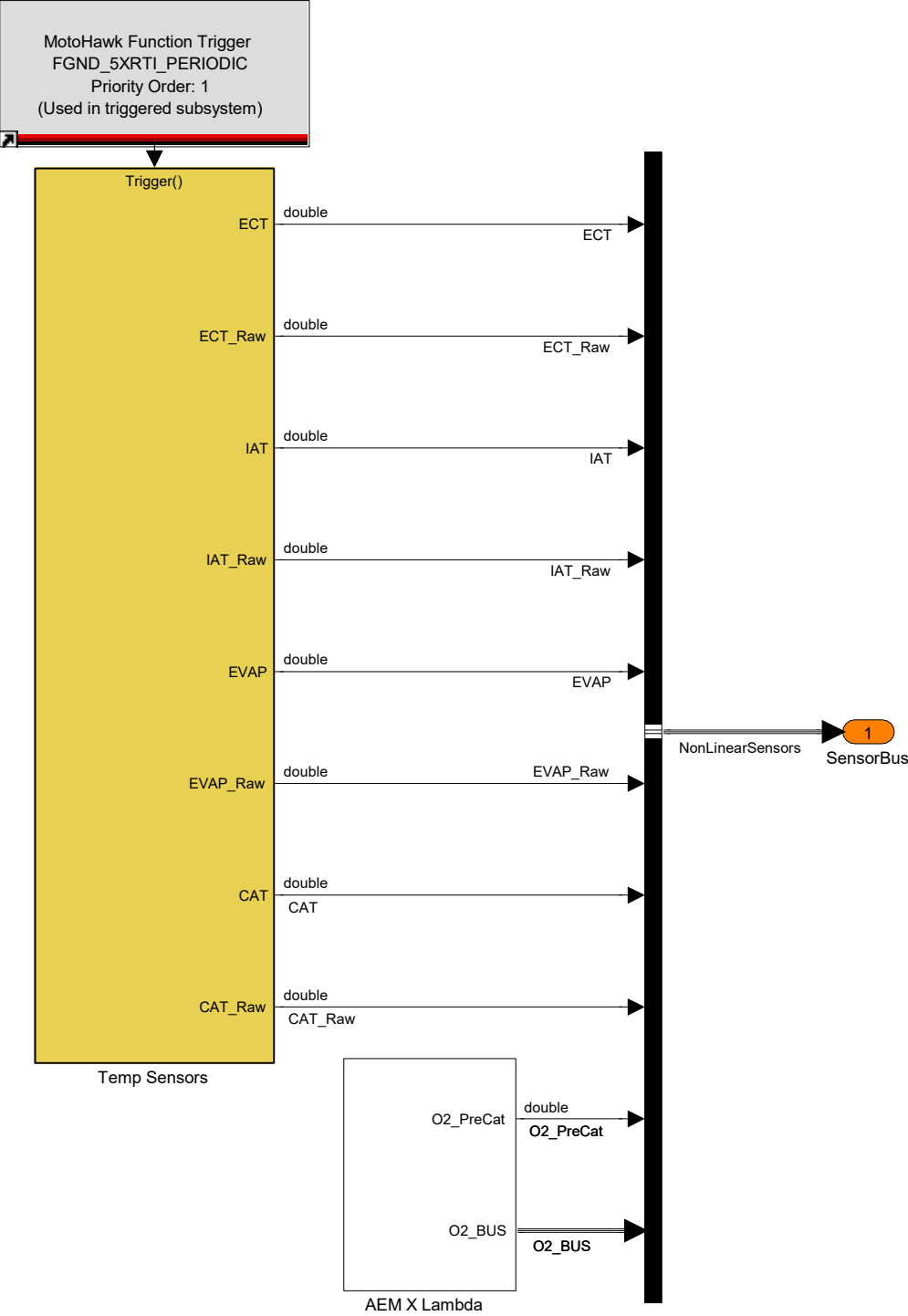
f()  
f

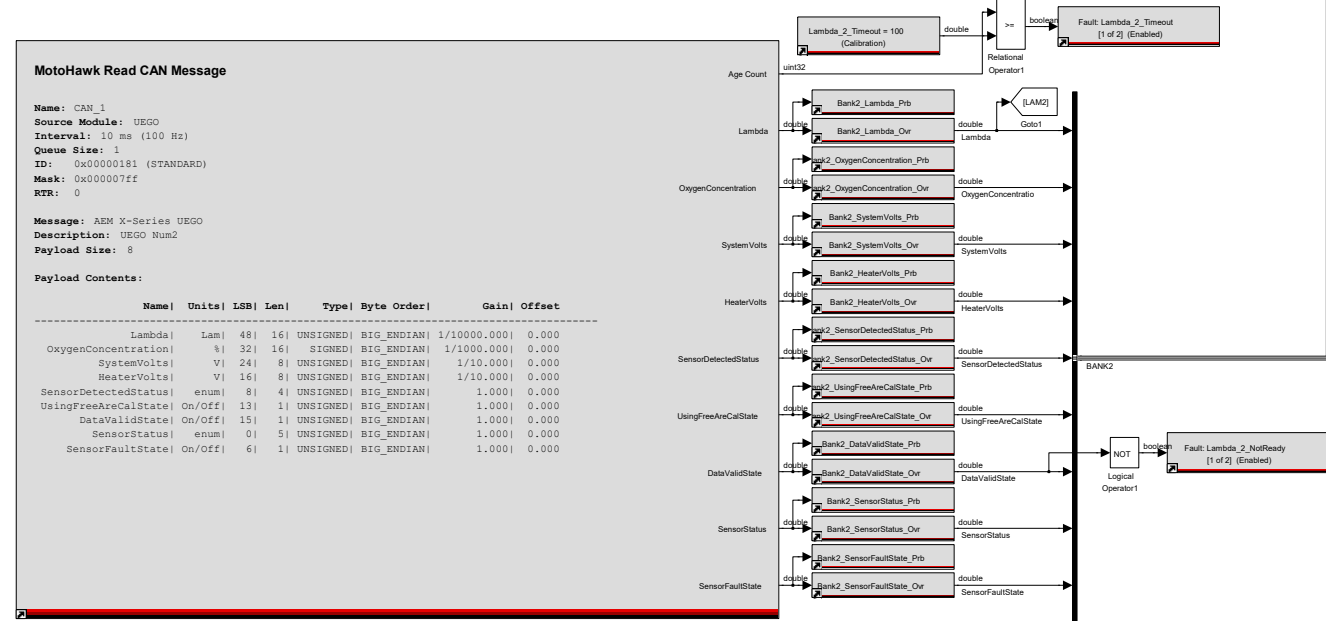
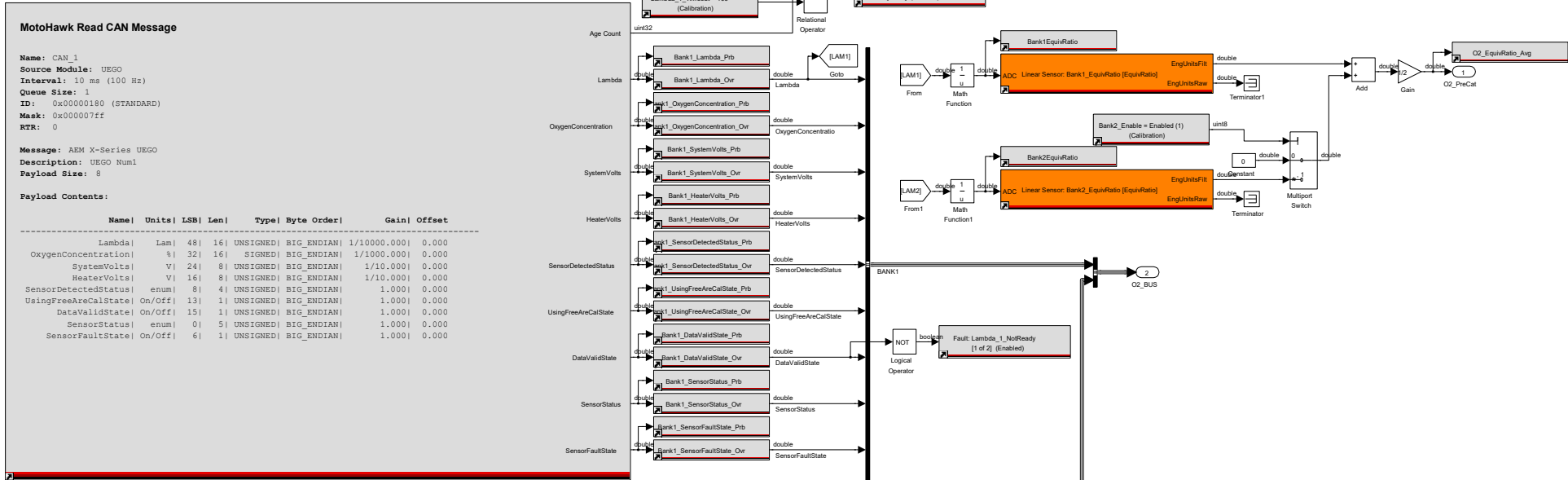


f()  
f

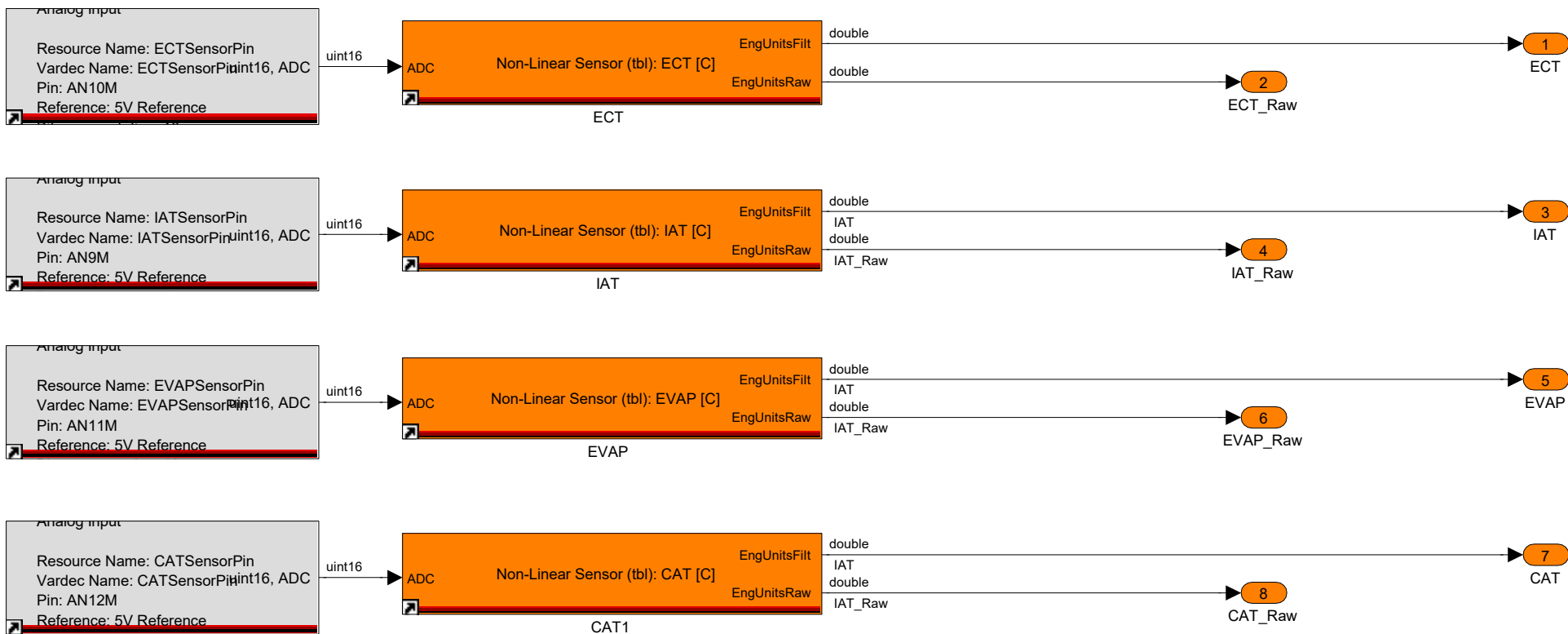
## Sample Crank-Synchronous MAP Once at Startup

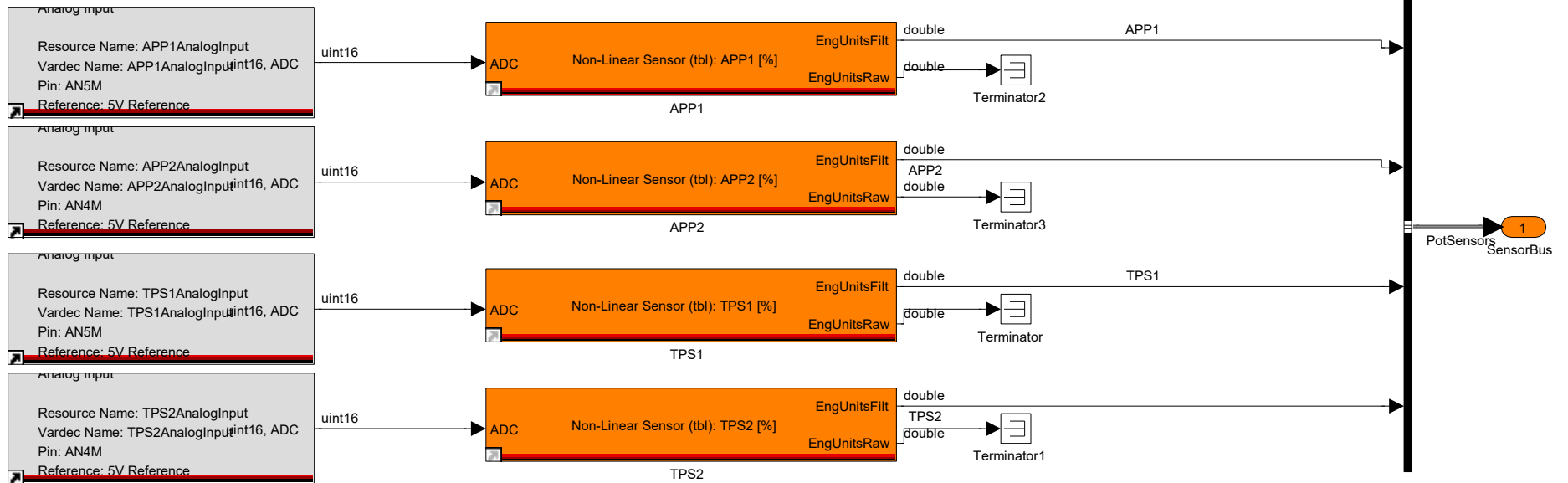
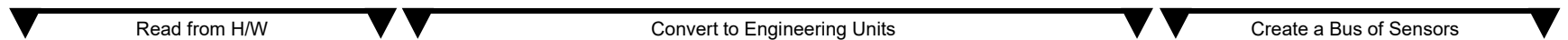


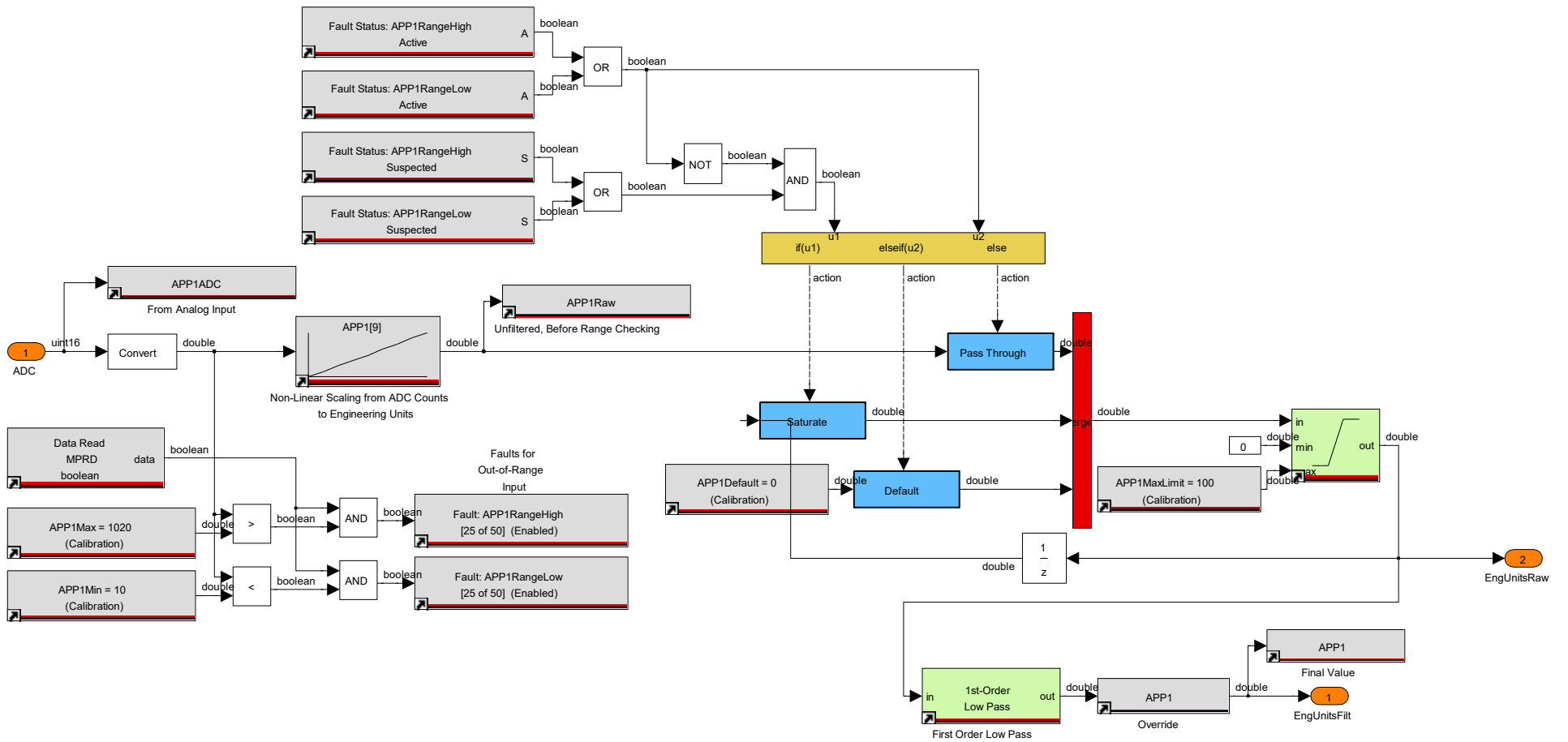




f()









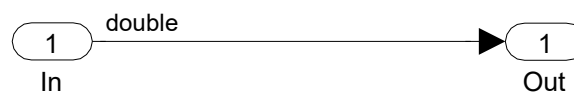
if { }

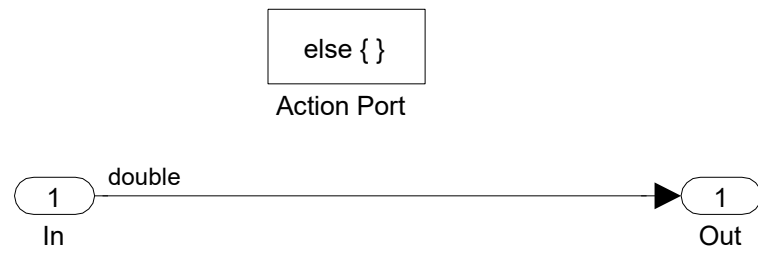
Action Port

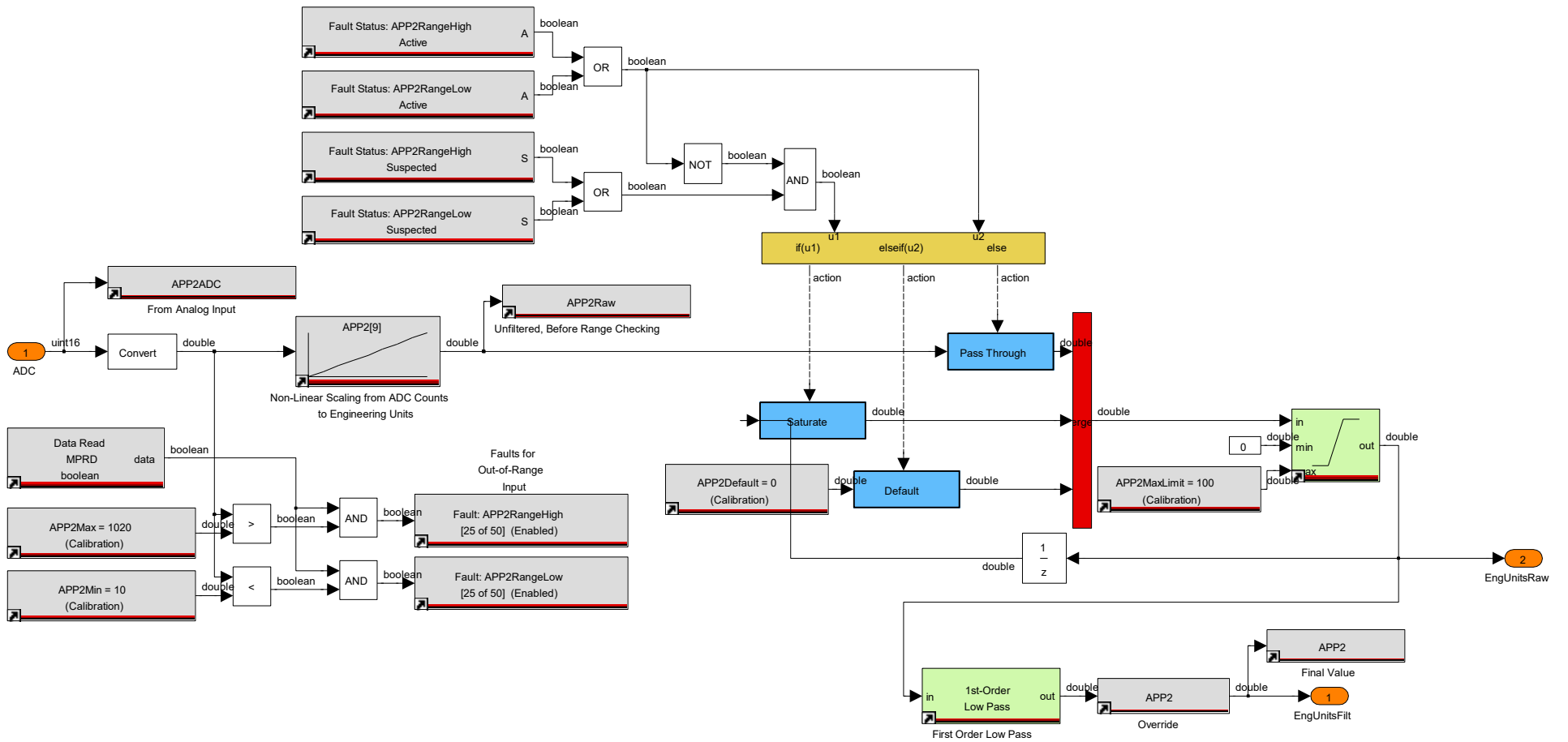


elseif { }

Action Port







if { }

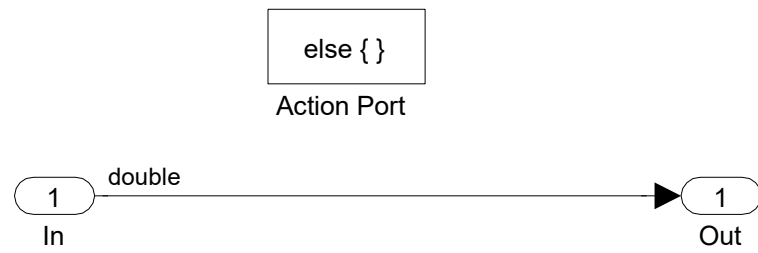
Action Port

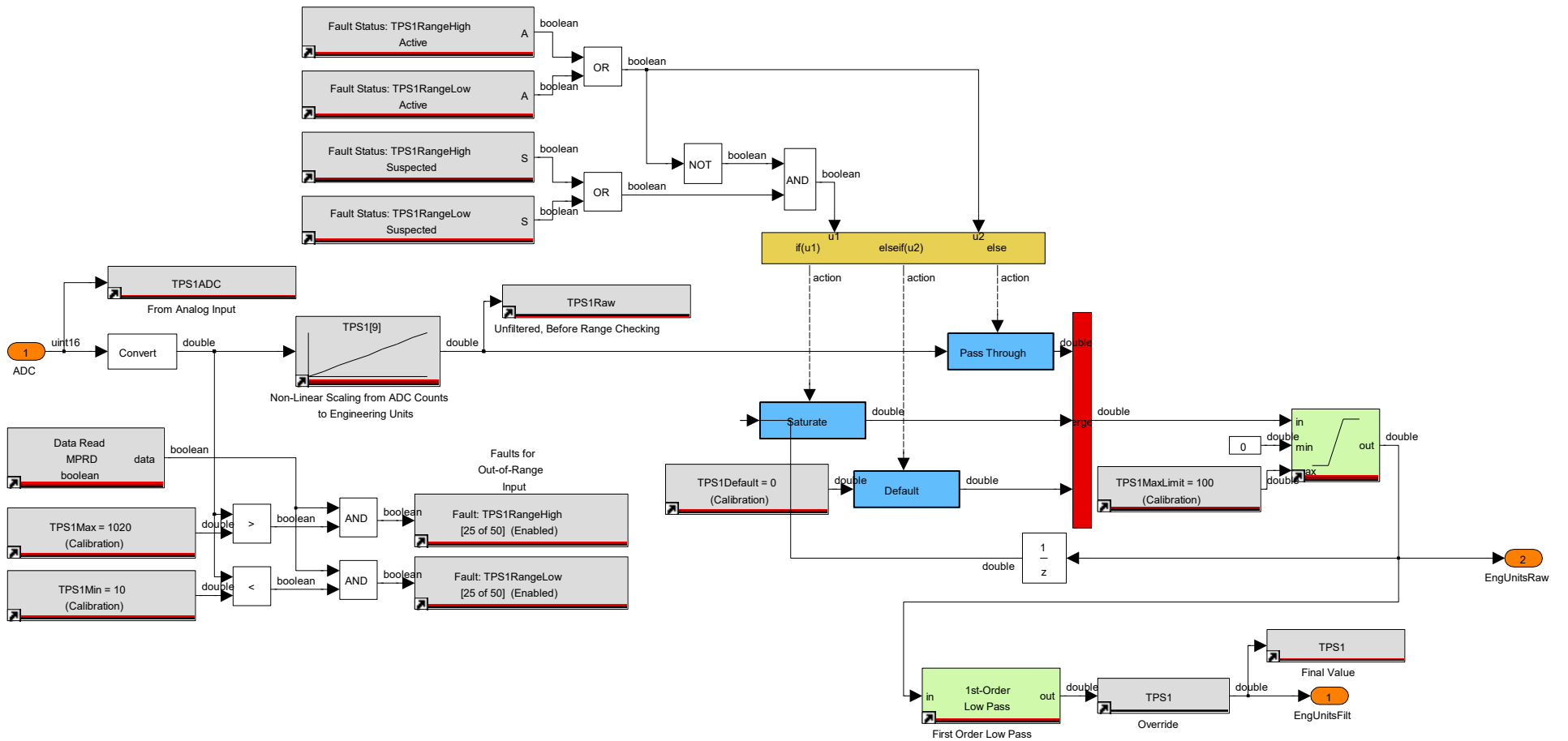


elseif { }

Action Port









if { }

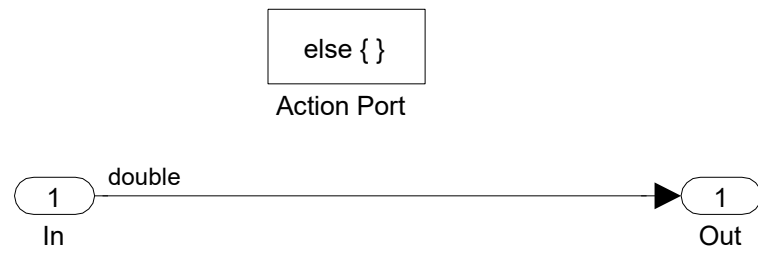
Action Port

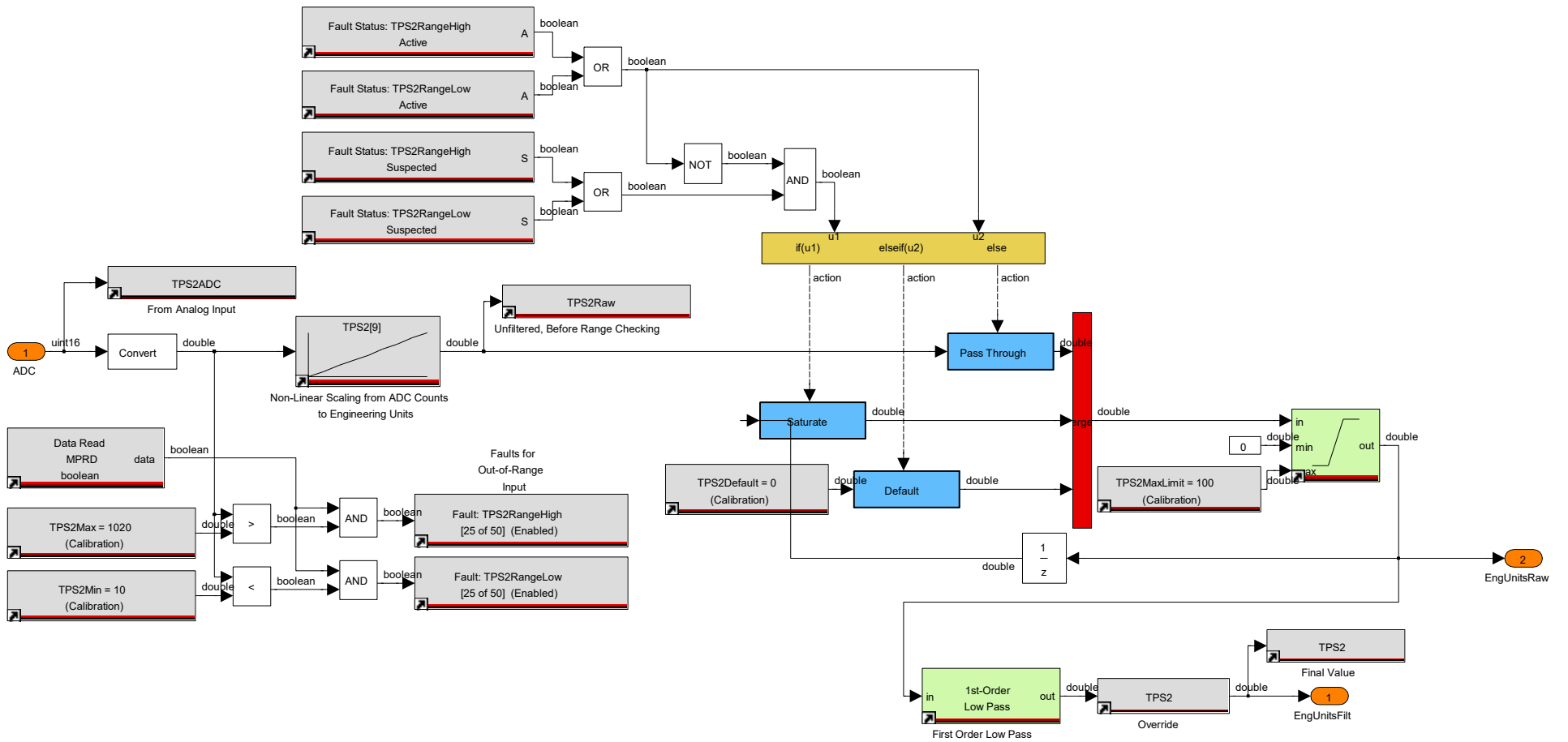


elseif { }

Action Port







if { }

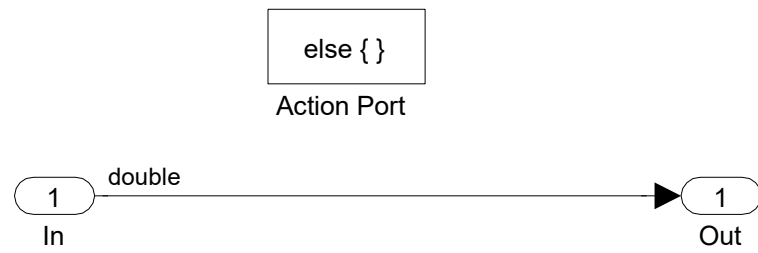
Action Port

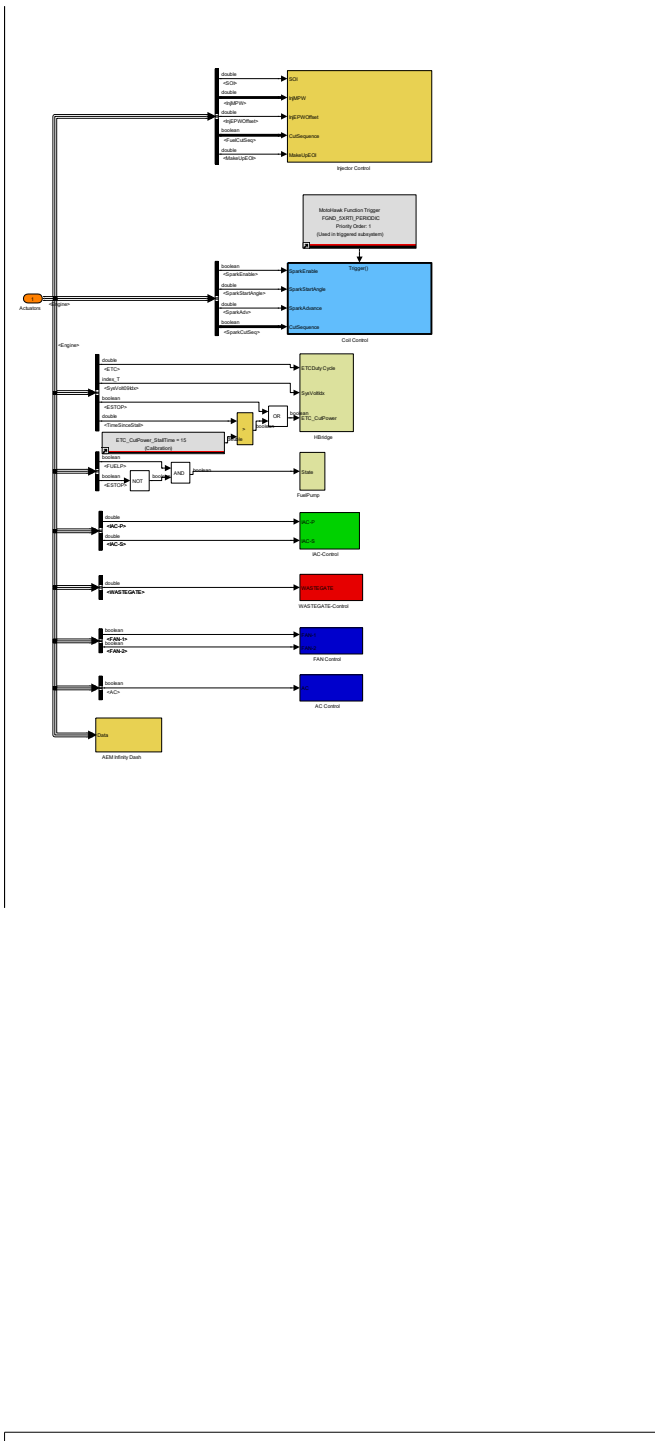


elseif { }

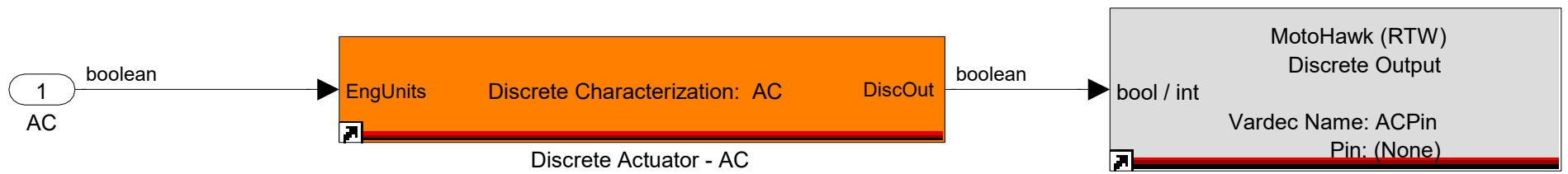
Action Port

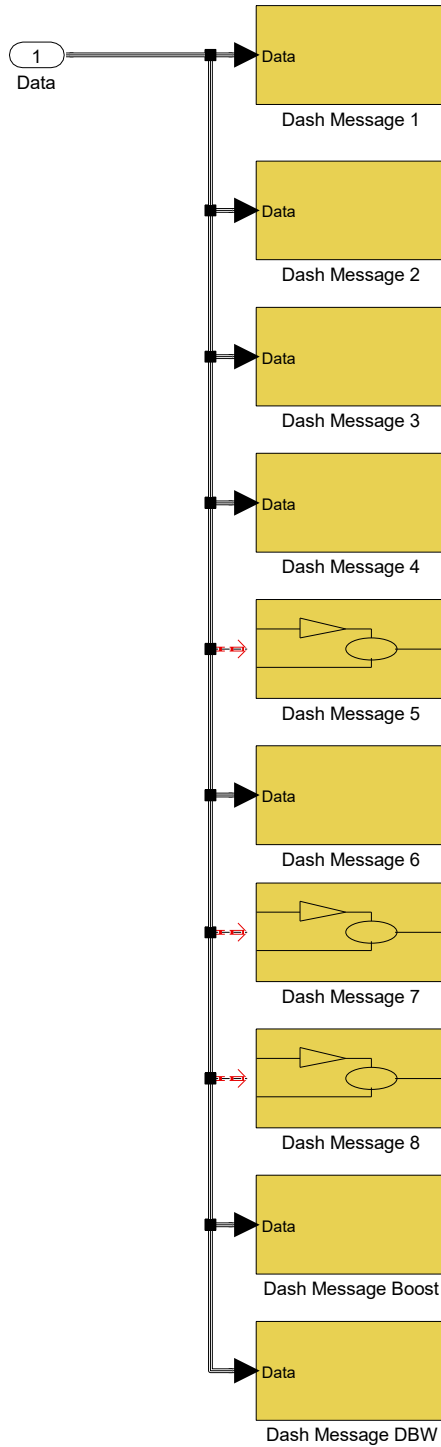


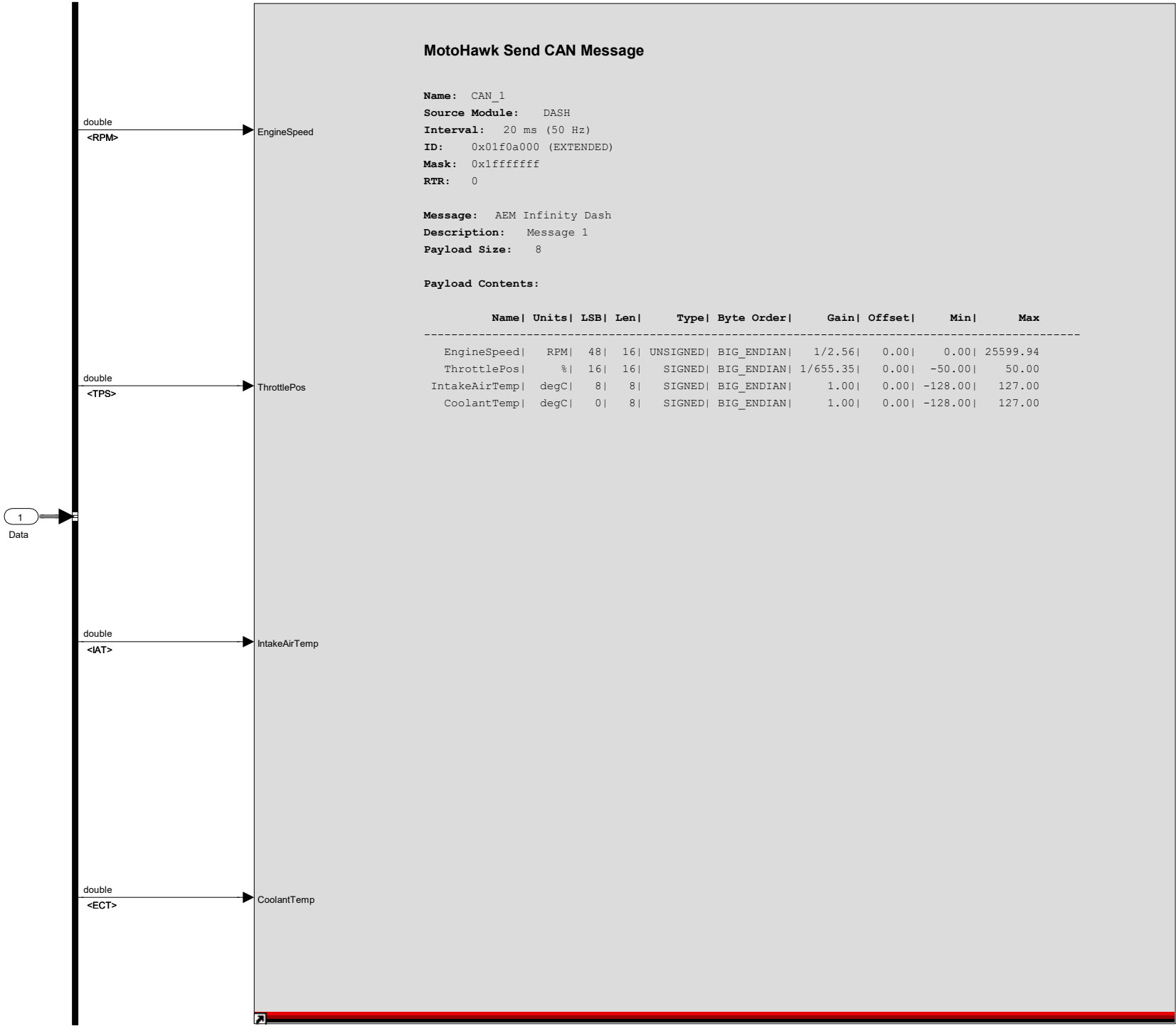


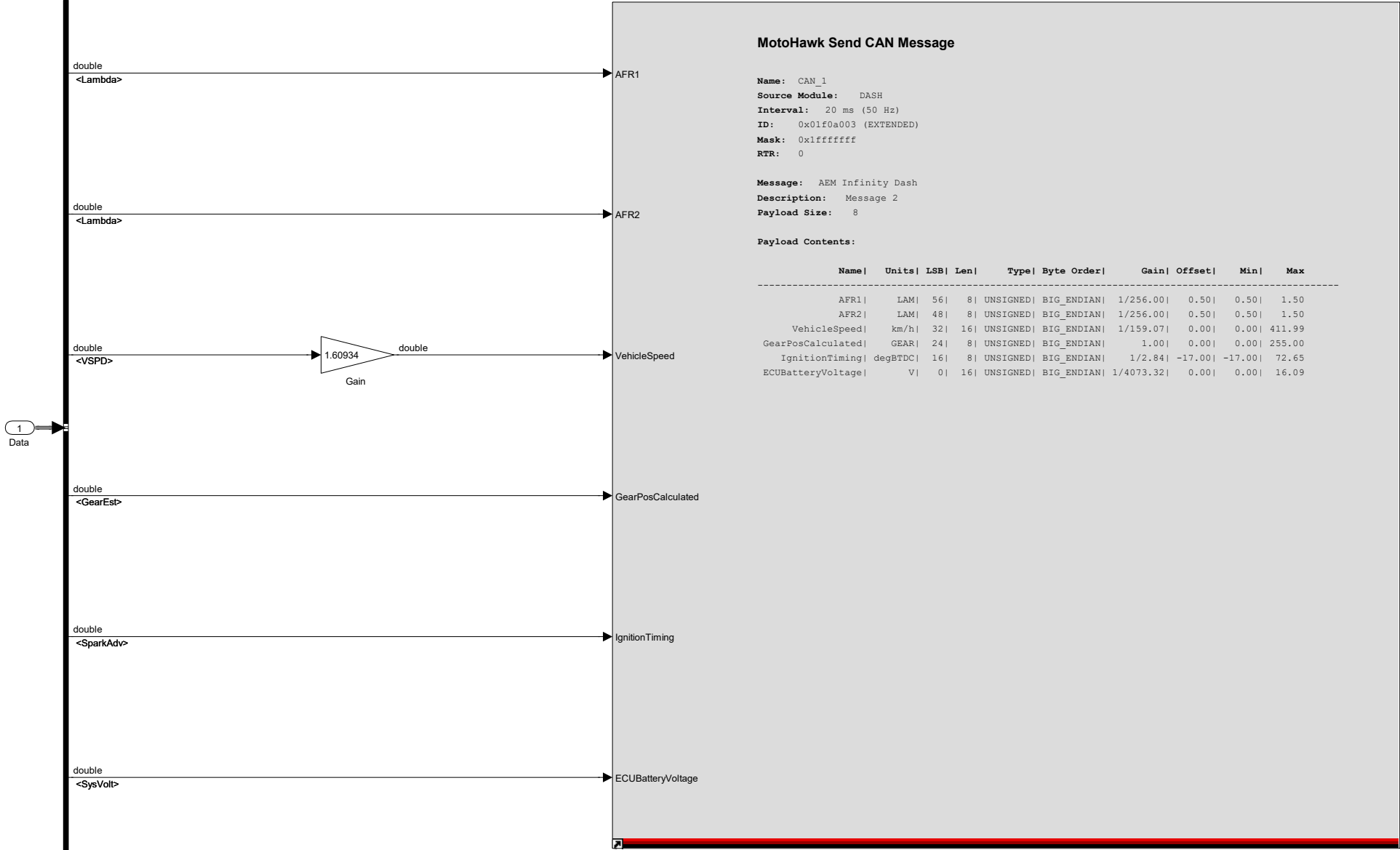




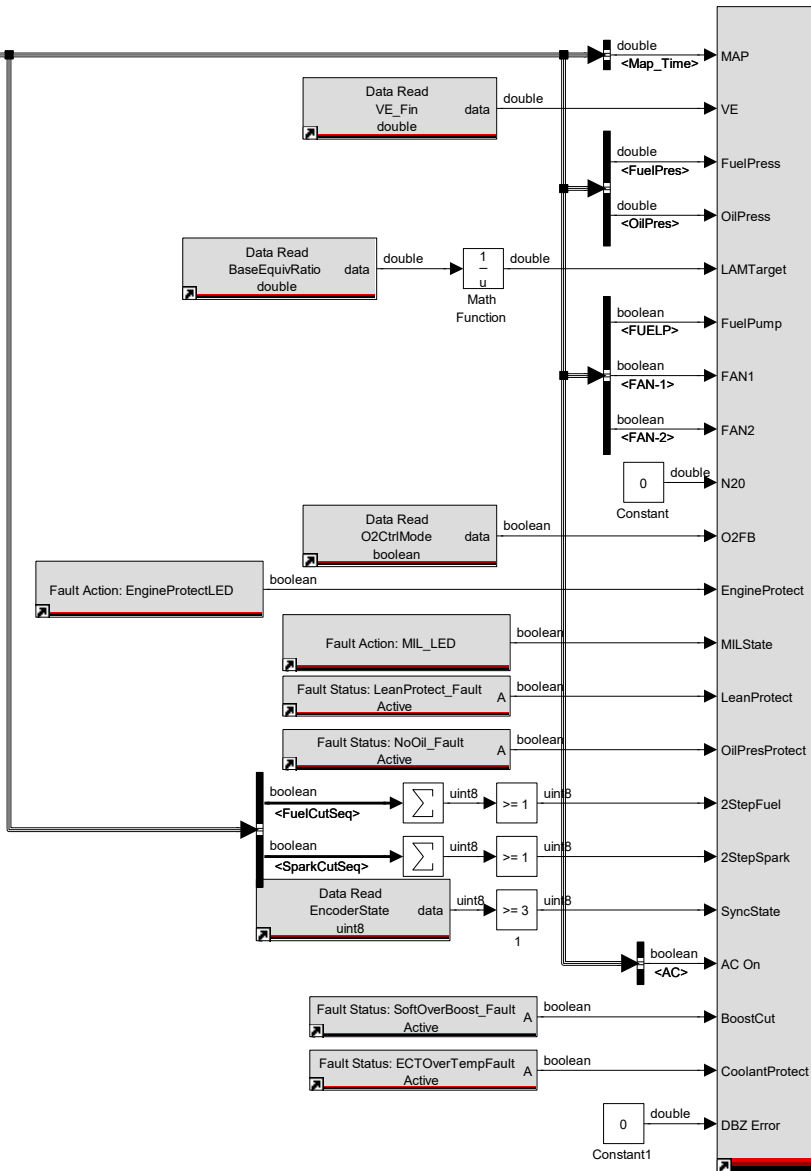








1  
Data



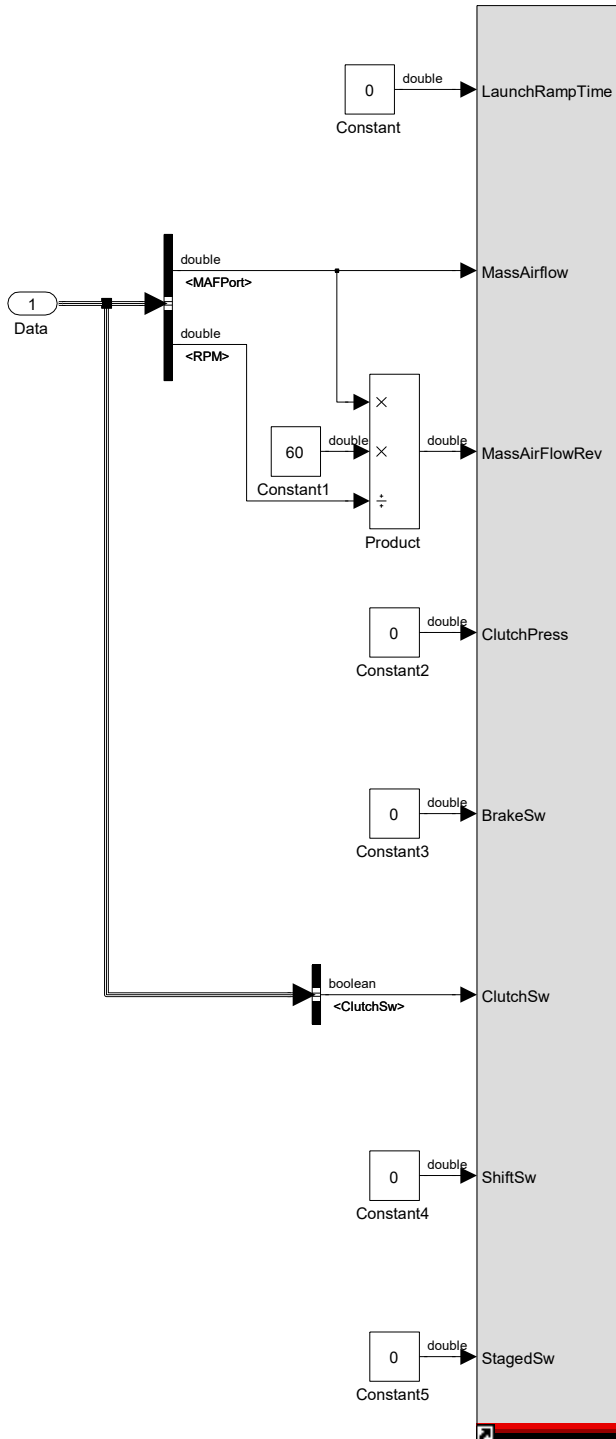
## MotoHawk Send CAN Message

**Name:** CAN\_1  
**Source Module:** DASH  
**Interval:** 20 ms (50 Hz)  
**ID:** 0x01f0a004 (EXTENDED)  
**Mask:** 0x1fffffff  
**RTR:** 0

**Message:** AEM Infinity Dash  
**Description:** Message 3  
**Payload Size:** 8

### Payload Contents:

Name	Units	LSB	Len	Type	Byte Order	Gain	Offset	Min	Max
MAP	kPa	48	16	UNSIGNED	BIG_ENDIAN	1/10.00	0.00	0.00	6553.50
VE	%	40	8	UNSIGNED	BIG_ENDIAN	1.00	0.00	0.00	255.00
FuelPress	barG	32	8	UNSIGNED	BIG_ENDIAN	1/25.00	0.00	0.00	10.20
OilPress	barG	24	8	UNSIGNED	BIG_ENDIAN	1/25.00	0.00	0.00	10.20
LAMTarget	LAM	16	8	UNSIGNED	BIG_ENDIAN	1/256.00	0.50	0.50	1.50
FuelPump	On/Off	8	1	UNSIGNED	BIG_ENDIAN	1.00	0.00	0.00	1.00
FAN1	On/Off	9	1	UNSIGNED	BIG_ENDIAN	1.00	0.00	0.00	1.00
FAN2	On/Off	10	1	UNSIGNED	BIG_ENDIAN	1.00	0.00	0.00	1.00
N20	On/Off	11	1	UNSIGNED	BIG_ENDIAN	1.00	0.00	0.00	1.00
O2FB	On/Off	12	1	UNSIGNED	BIG_ENDIAN	1.00	0.00	0.00	1.00
EngineProtect	On/Off	13	1	UNSIGNED	BIG_ENDIAN	1.00	0.00	0.00	1.00
MILState	On/Off	14	1	UNSIGNED	BIG_ENDIAN	1.00	0.00	0.00	1.00
LeanProtect	On/Off	15	1	UNSIGNED	BIG_ENDIAN	1.00	0.00	0.00	1.00
OilPresProtect	On/Off	0	1	UNSIGNED	BIG_ENDIAN	1.00	0.00	0.00	1.00
2StepFuel	On/Off	1	1	UNSIGNED	BIG_ENDIAN	1.00	0.00	0.00	1.00
2StepSpark	On/Off	2	1	UNSIGNED	BIG_ENDIAN	1.00	0.00	0.00	1.00
SyncState	On/Off	3	1	UNSIGNED	BIG_ENDIAN	1.00	0.00	0.00	1.00
AC On	On/Off	4	1	UNSIGNED	BIG_ENDIAN	1.00	0.00	0.00	1.00
BoostCut	On/Off	5	1	UNSIGNED	BIG_ENDIAN	1.00	0.00	0.00	1.00
CoolantProtect	On/Off	6	1	UNSIGNED	BIG_ENDIAN	1.00	0.00	0.00	1.00
DBZ Error	On/Off	7	1	UNSIGNED	BIG_ENDIAN	1.00	0.00	0.00	1.00



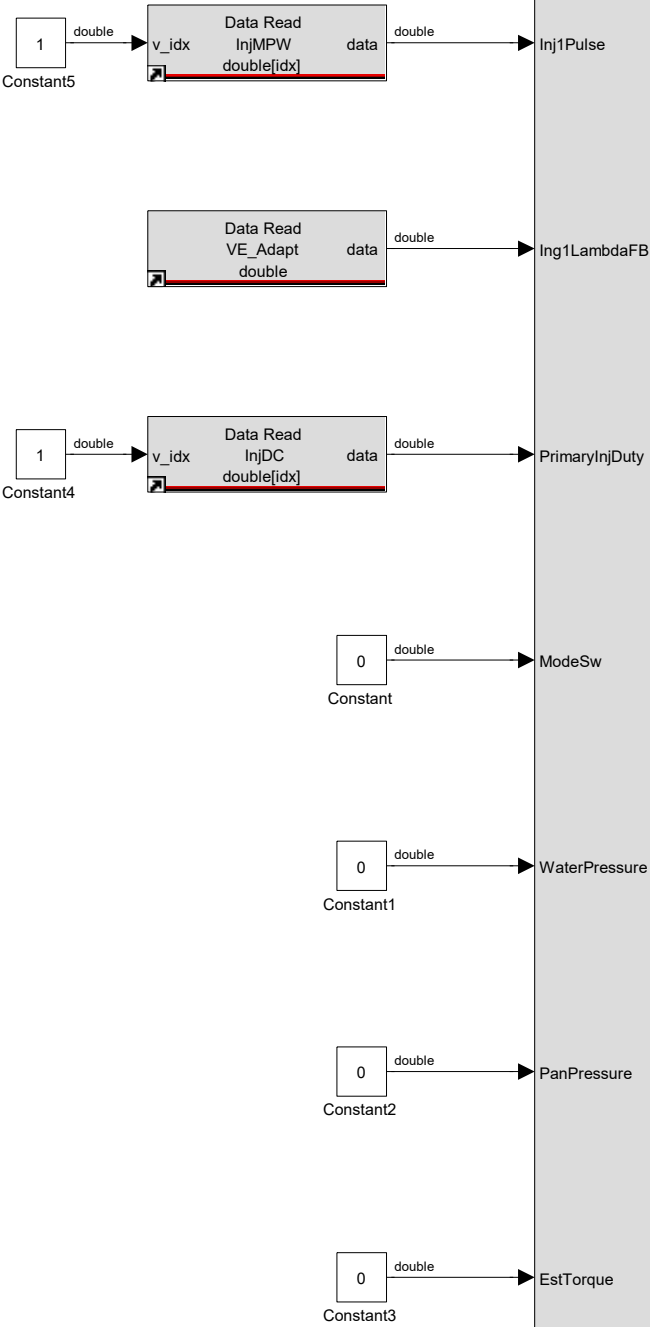
## MotoHawk Send CAN Message

**Name:** CAN\_1  
**Source Module:** DASH  
**Interval:** 20 ms (50 Hz)  
**ID:** 0x01f0a005 (EXTENDED)  
**Mask:** 0x1fffffff  
**RTR:** 0

**Message:** AEM Infinity Dash  
**Description:** Message 4  
**Payload Size:** 8

### Payload Contents:

Name	Units	LSB	Len	Type	Byte Order	Gain	Offset	Min	Max
LaunchRampTime	ms	48	16	UNSIGNED	BIG_ENDIAN	10.00	0.00	0.00	655350.00
MassAirflow	g/s	32	16	UNSIGNED	BIG_ENDIAN	1/20.00	0.00	0.00	3276.75
MassAirFlowRev	g/rev	16	16	UNSIGNED	BIG_ENDIAN	1/2000.00	0.00	0.00	32.77
ClutchPress	barG	8	8	UNSIGNED	BIG_ENDIAN	1/2.90	0.00	0.00	87.91
BrakeSw	On/Off	0	1	UNSIGNED	BIG_ENDIAN	1.00	0.00	0.00	1.00
ClutchSw	On/Off	1	1	UNSIGNED	BIG_ENDIAN	1.00	0.00	0.00	1.00
ShiftSw	On/Off	2	1	UNSIGNED	BIG_ENDIAN	1.00	0.00	0.00	1.00
StagedSw	On/Off	3	1	UNSIGNED	BIG_ENDIAN	1.00	0.00	0.00	1.00



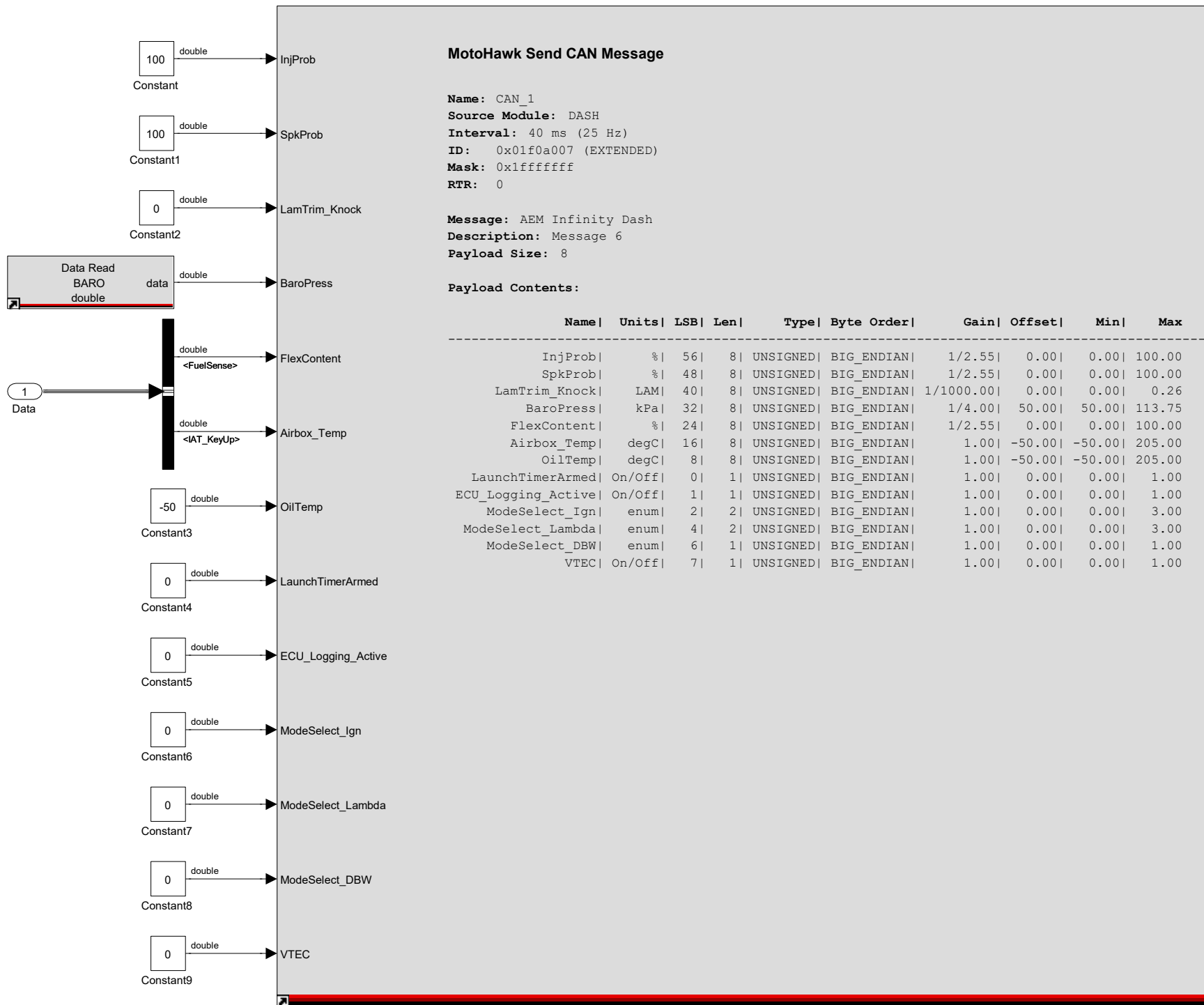
**MotoHawk Send CAN Message**

**Name:** CAN\_1  
**Source Module:** DASH  
**Interval:** 40 ms (25 Hz)  
**ID:** 0x01f0a006 (EXTENDED)  
**Mask:** 0x1fffffff  
**RTR:** 0

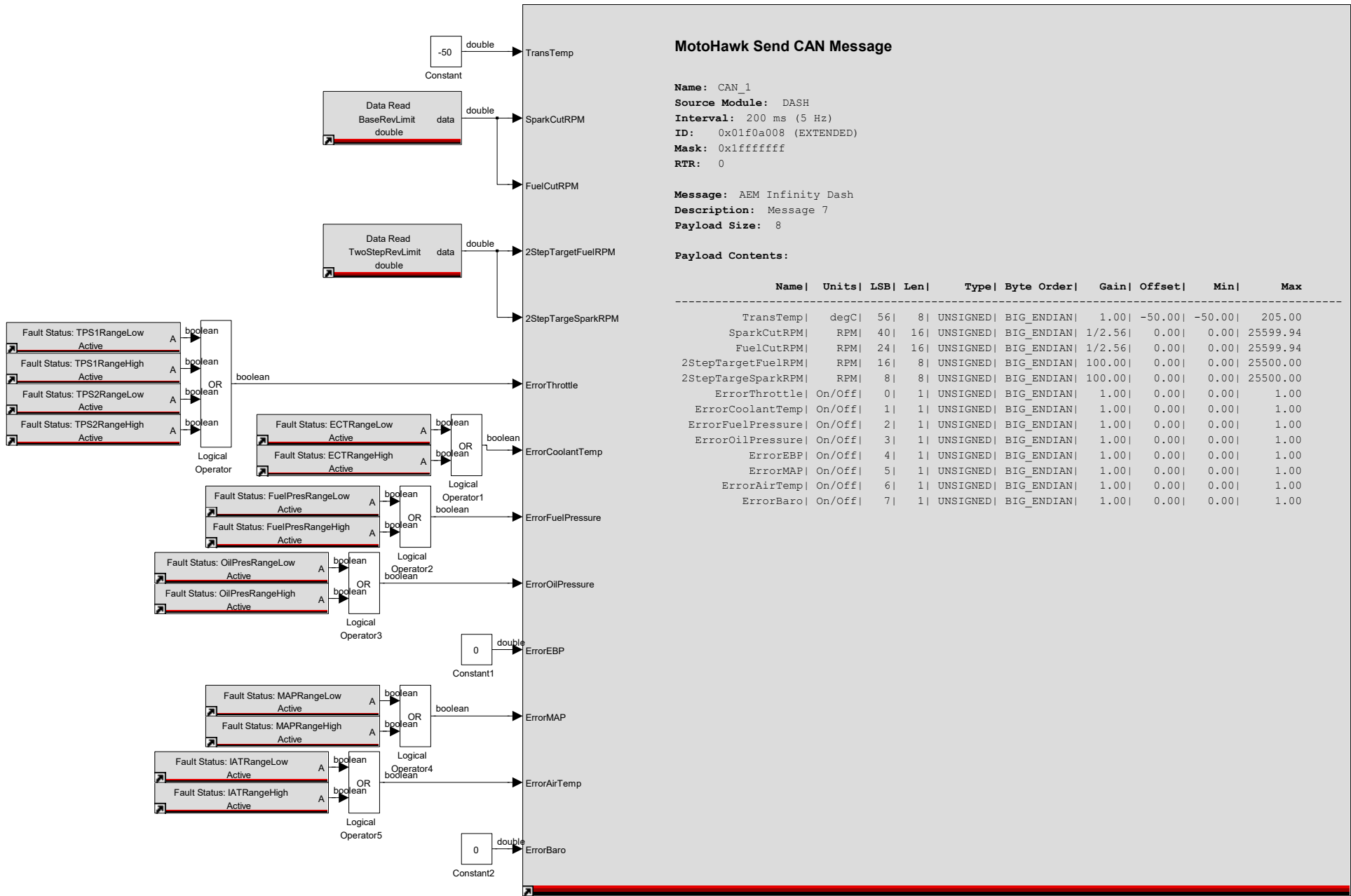
**Message:** AEM Infinity Dash  
**Description:** Message 5  
**Payload Size:** 8

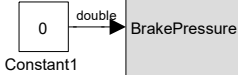
**Payload Contents:**

Name	Units	LSB	Len	Type	Byte Order	Gain	Offset	Min	Max
Inj1Pulse	ms	56	8	UNSIGNED	BIG_ENDIAN	1/10.00	0.00	0.00	25.50
Ing1LambdaFB	%	48	8	UNSIGNED	BIG_ENDIAN	1/2.00	-64.00	-64.00	63.50
PrimaryInjDuty	%	40	8	UNSIGNED	BIG_ENDIAN	1/2.55	0.00	0.00	100.00
ModeSw	enum	32	8	UNSIGNED	BIG_ENDIAN	1.00	0.00	0.00	255.00
WaterPressure	barG	24	8	UNSIGNED	BIG_ENDIAN	1/25.00	0.00	0.00	10.20
PanPressure	barG	16	8	UNSIGNED	BIG_ENDIAN	1.00	0.00	0.00	255.00
EstTorque	Nm	0	16	UNSIGNED	BIG_ENDIAN	1/10.00	-3276.80	-3276.80	3276.70









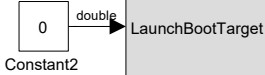
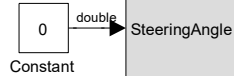
MotoHawk Send CAN Message

Name: CAN\_1  
Source Module: DASH  
Interval: 40 ms (25 Hz)  
ID: 0x01f0a009 (EXTENDED)  
Mask: 0x1fffffff  
RTR: 0

Message: AEM Infinity Dash  
Description: Message 8  
Payload Size: 8

Payload Contents:

Name	Units	LSB	Len	Type	Byte Order	Gain	Offset	Min	Max
BrakePressure	Barg	48	16	UNSIGNED	BIG_ENDIAN	1/145.03	0.00	0.00	451.86
SteeringAngle	deg	32	16	UNSIGNED	BIG_ENDIAN	1/10.00	-3276.80	-3276.80	3276.70
LaunchBootTarget	kPa	16	16	UNSIGNED	BIG_ENDIAN	1/10.00	0.00	0.00	6553.50





double

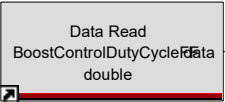
BoostTarget



double

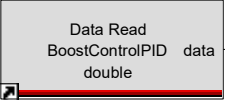
ChargeOutPress

Constant



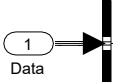
double

BoostControl



double

BoostFB\_PID



double

ChargeOutTemp

Data

<CAT>



double

TurboSpeed

Constant1

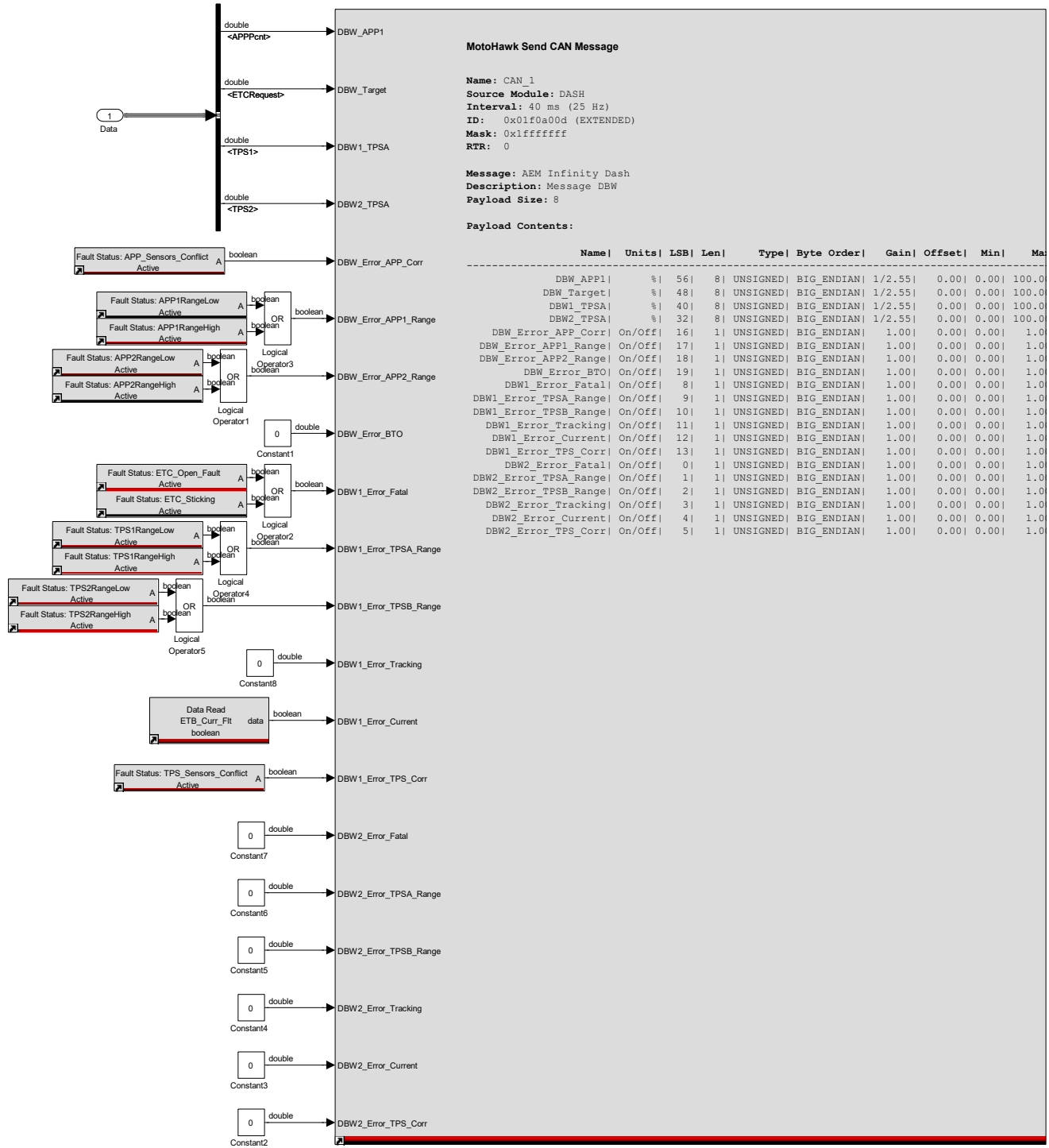
MotoHawk Send CAN Message

**Name:** CAN\_1  
**Source Module:** DASH  
**Interval:** 40 ms (25 Hz)  
**ID:** 0x01f0a00b (EXTENDED)  
**Mask:** 0x1fffffff  
**RTR:** 0

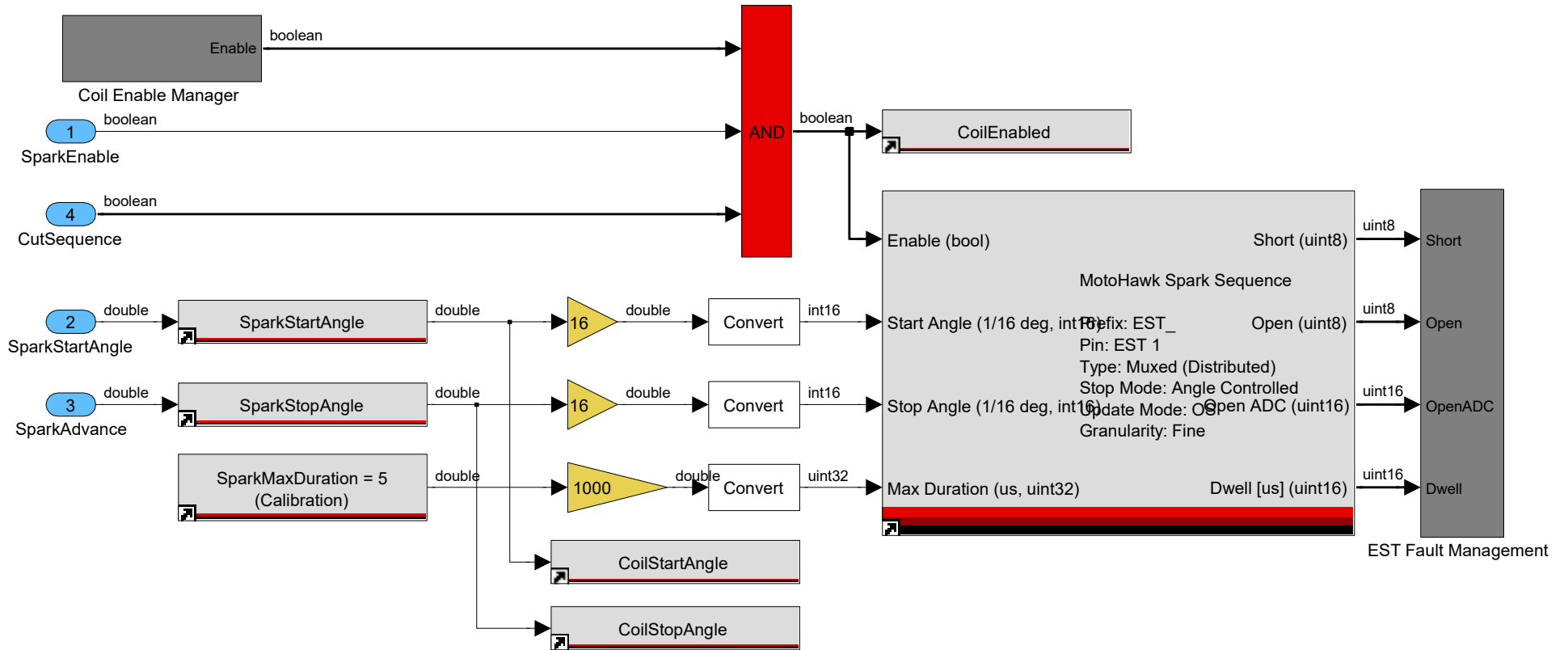
**Message:** AEM Infinity Dash  
**Description:** Message Boost  
**Payload Size:** 8

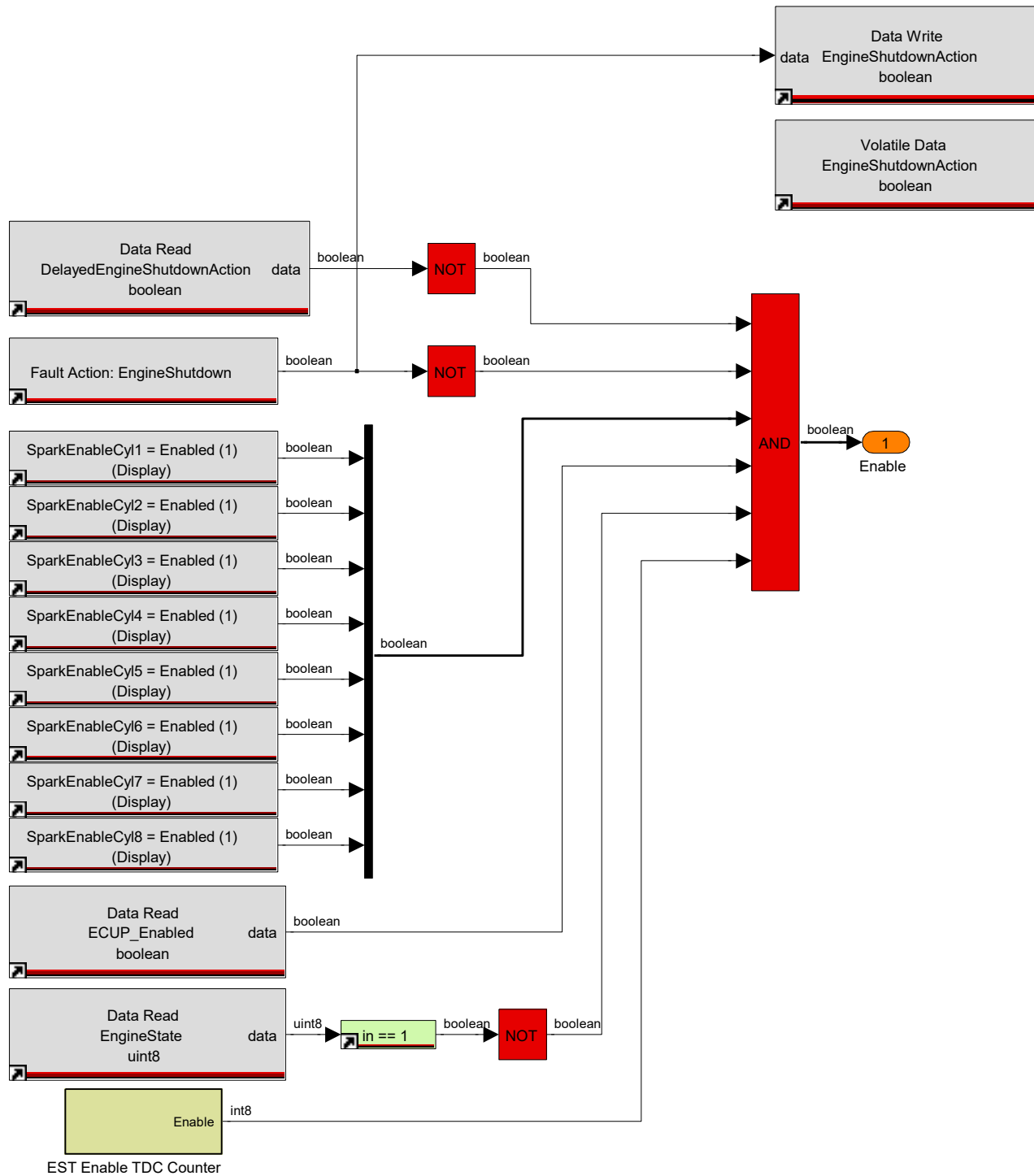
Payload Contents:

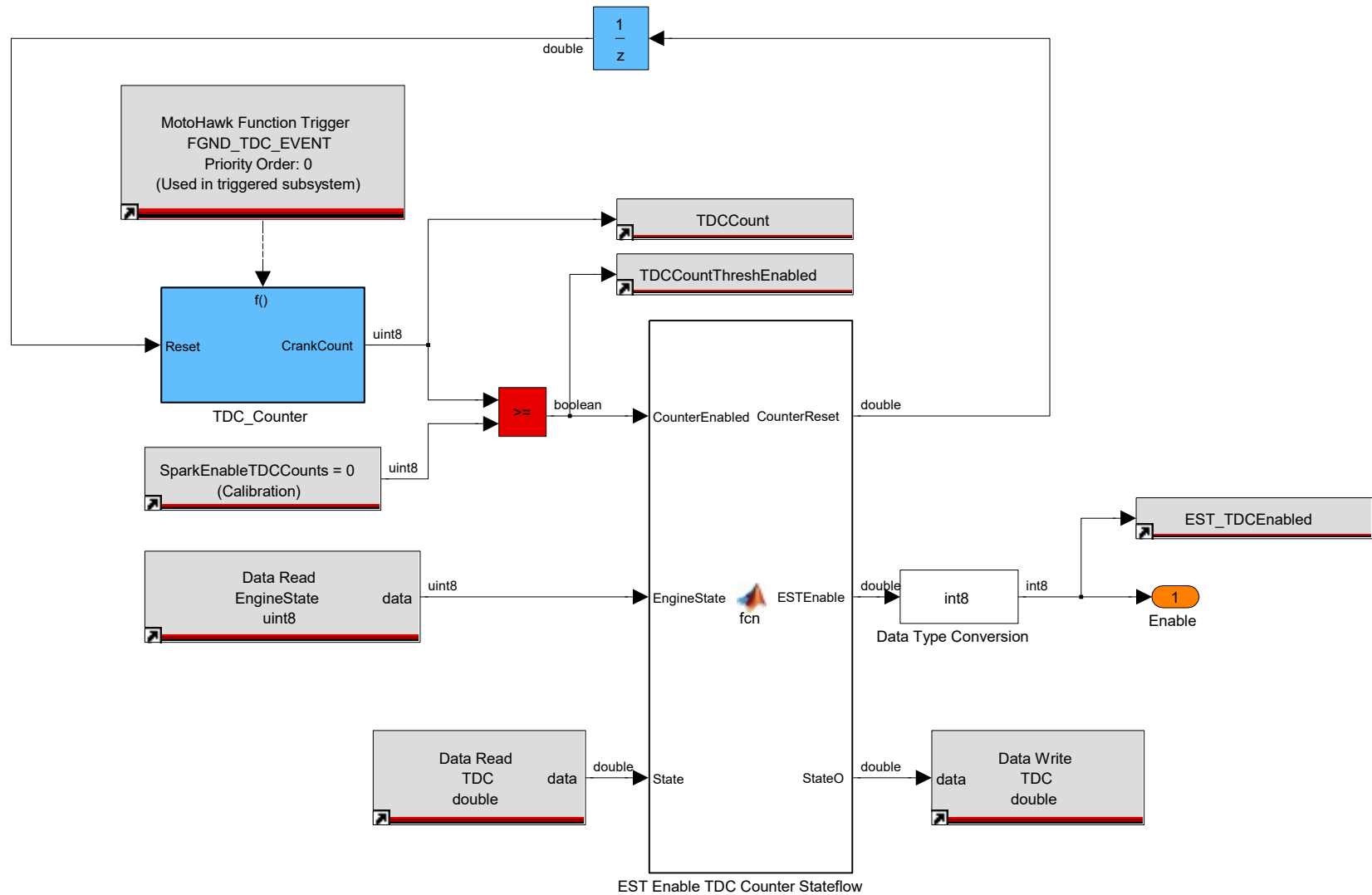
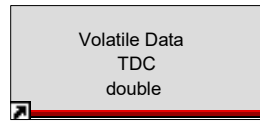
Name	Units	LSB	Len	Type	Byte Order	Gain	Offset	Min	Max
BoostTarget	kPa	48	16	UNSIGNED	BIG_ENDIAN	1/10.00	0.00	0.00	6553.50
ChargeOutPress	kPa	32	16	UNSIGNED	BIG_ENDIAN	1/10.00	0.00	0.00	6553.50
BoostControl	%	24	8	UNSIGNED	BIG_ENDIAN	1/2.55	0.00	0.00	100.00
BoostFB_PID	%	16	8	UNSIGNED	BIG_ENDIAN	1/2.55	0.00	0.00	100.00
ChargeOutTemp	degC	8	8	UNSIGNED	BIG_ENDIAN	1.00	-50.00	-50.00	205.00
TurboSpeed	RPM	0	8	UNSIGNED	BIG_ENDIAN	500.00	0.00	0.00	127500.00



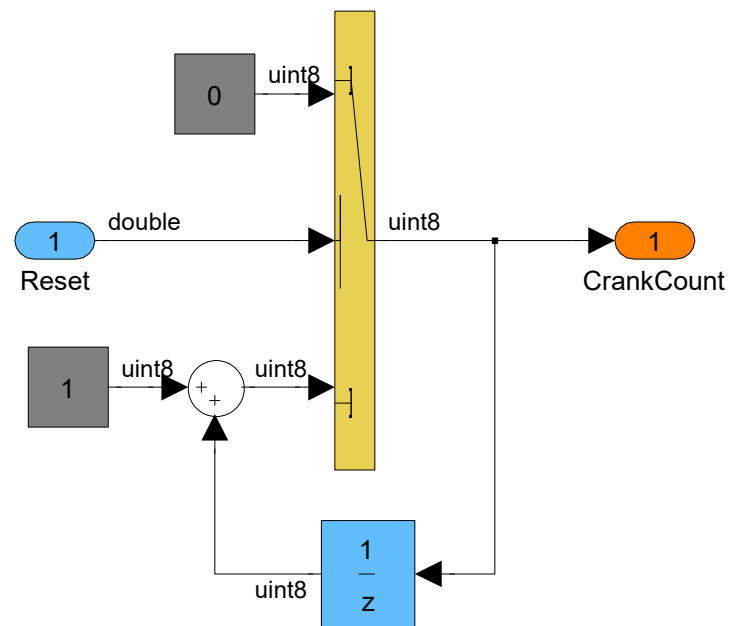
f()



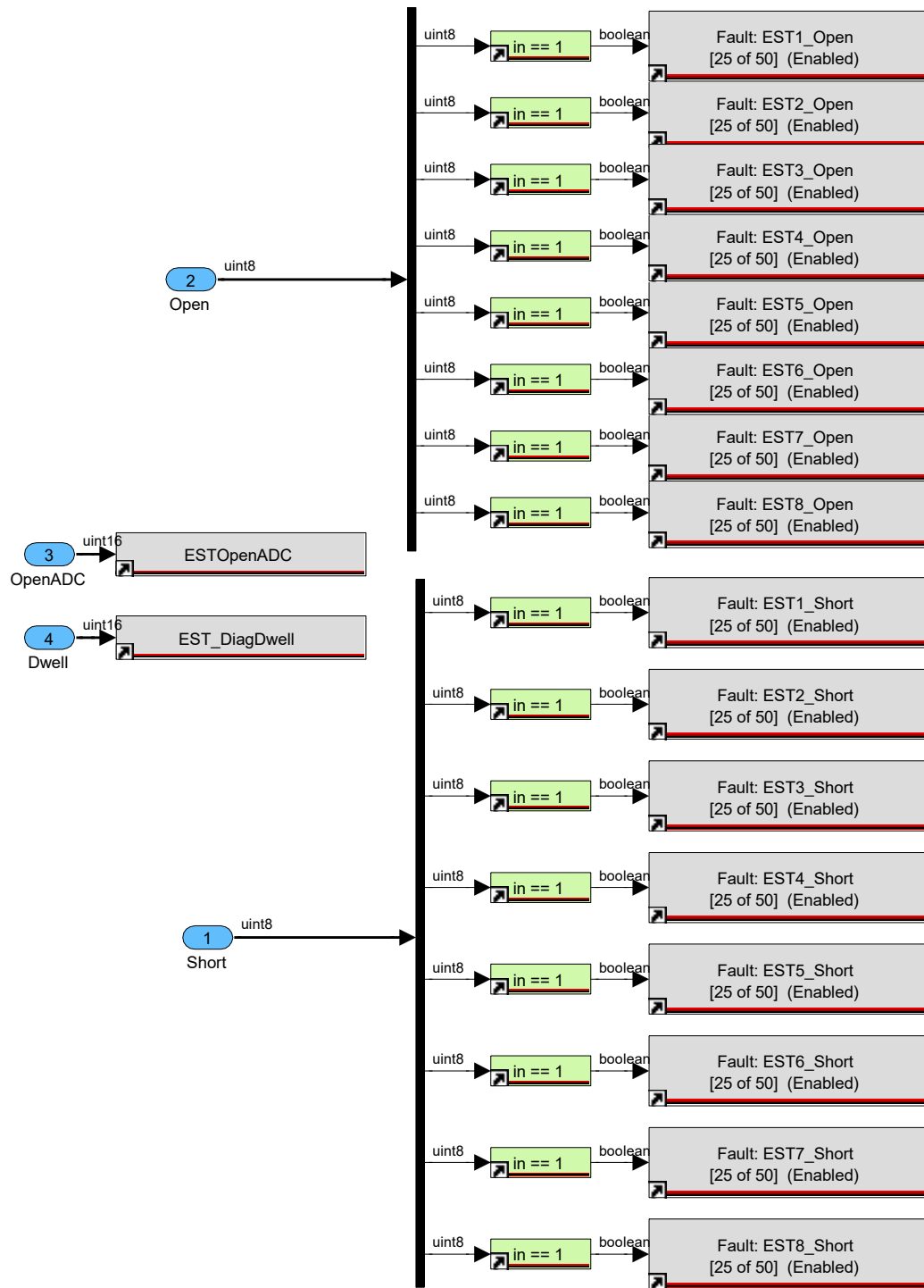


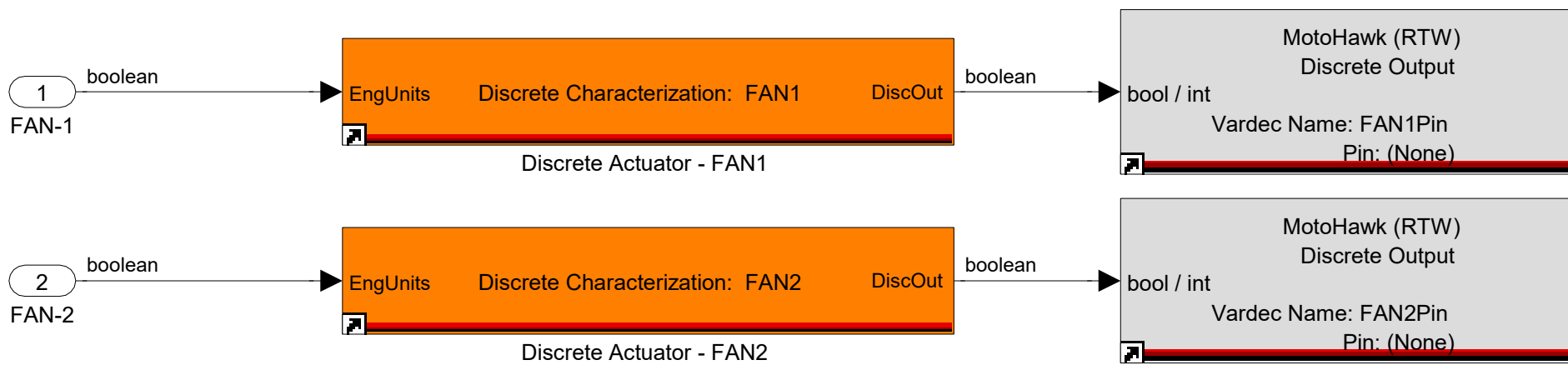


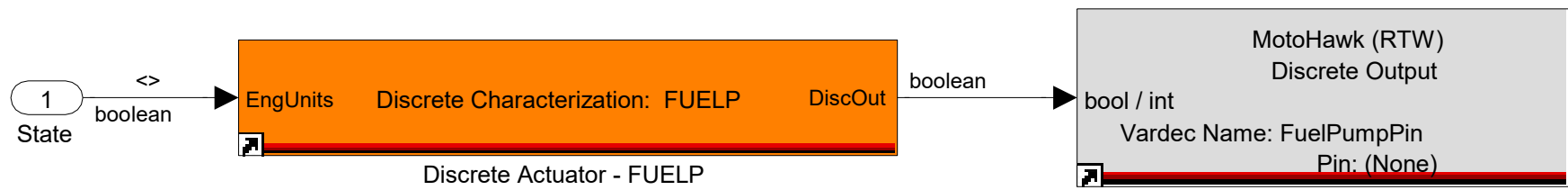
f()  
f

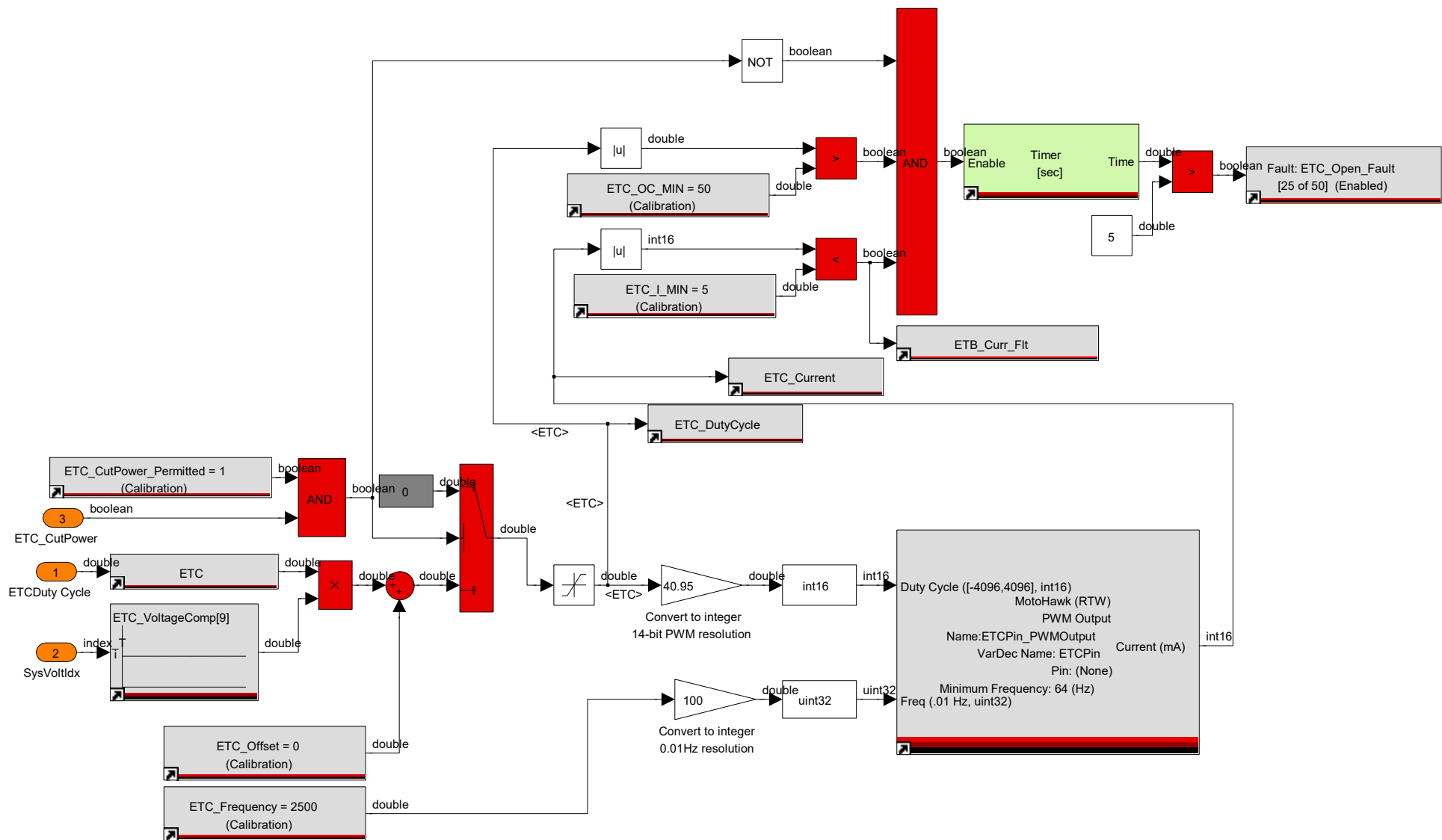


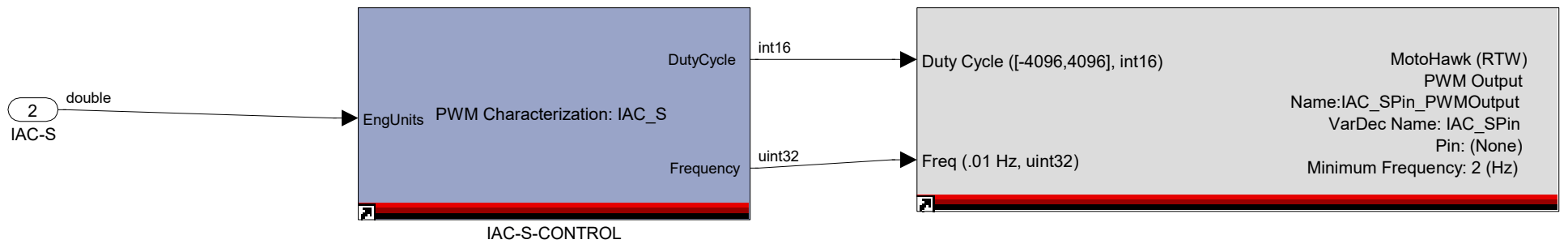
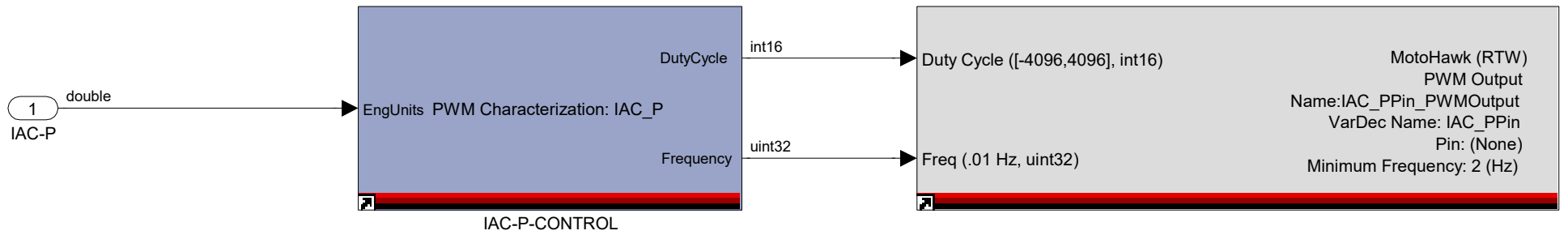


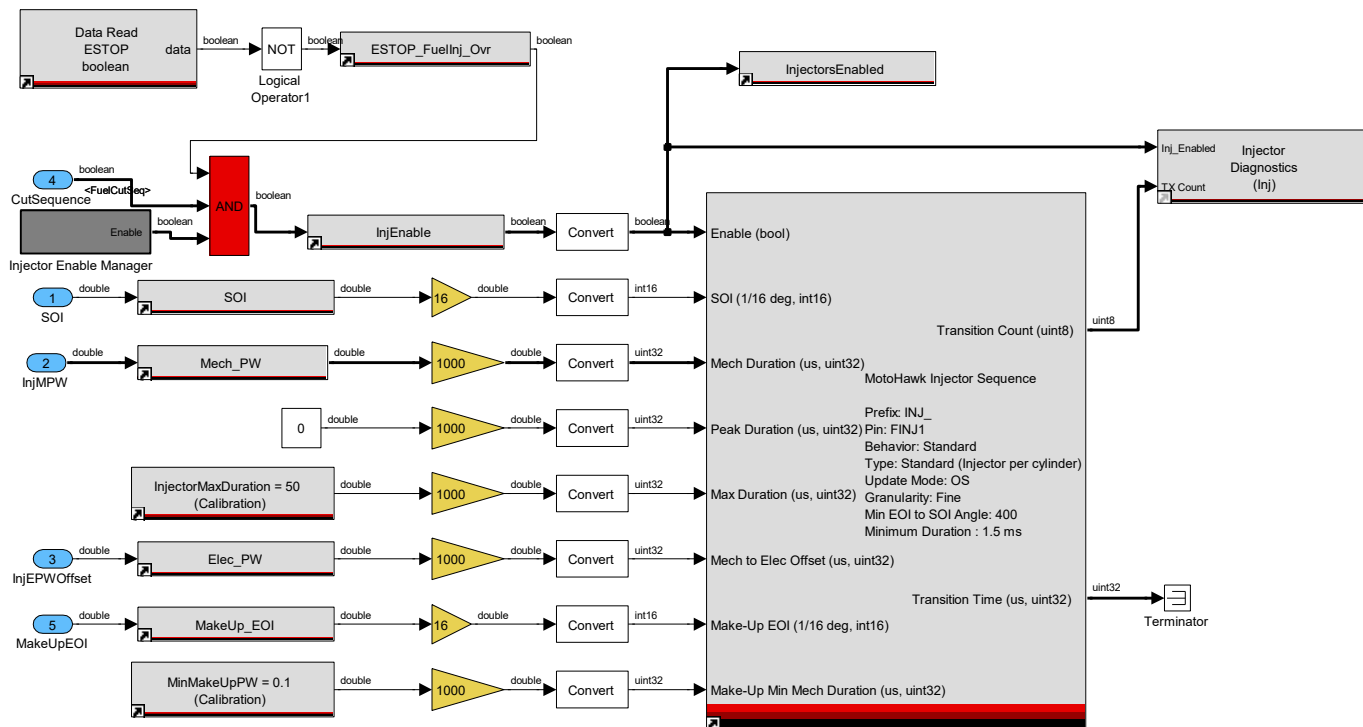


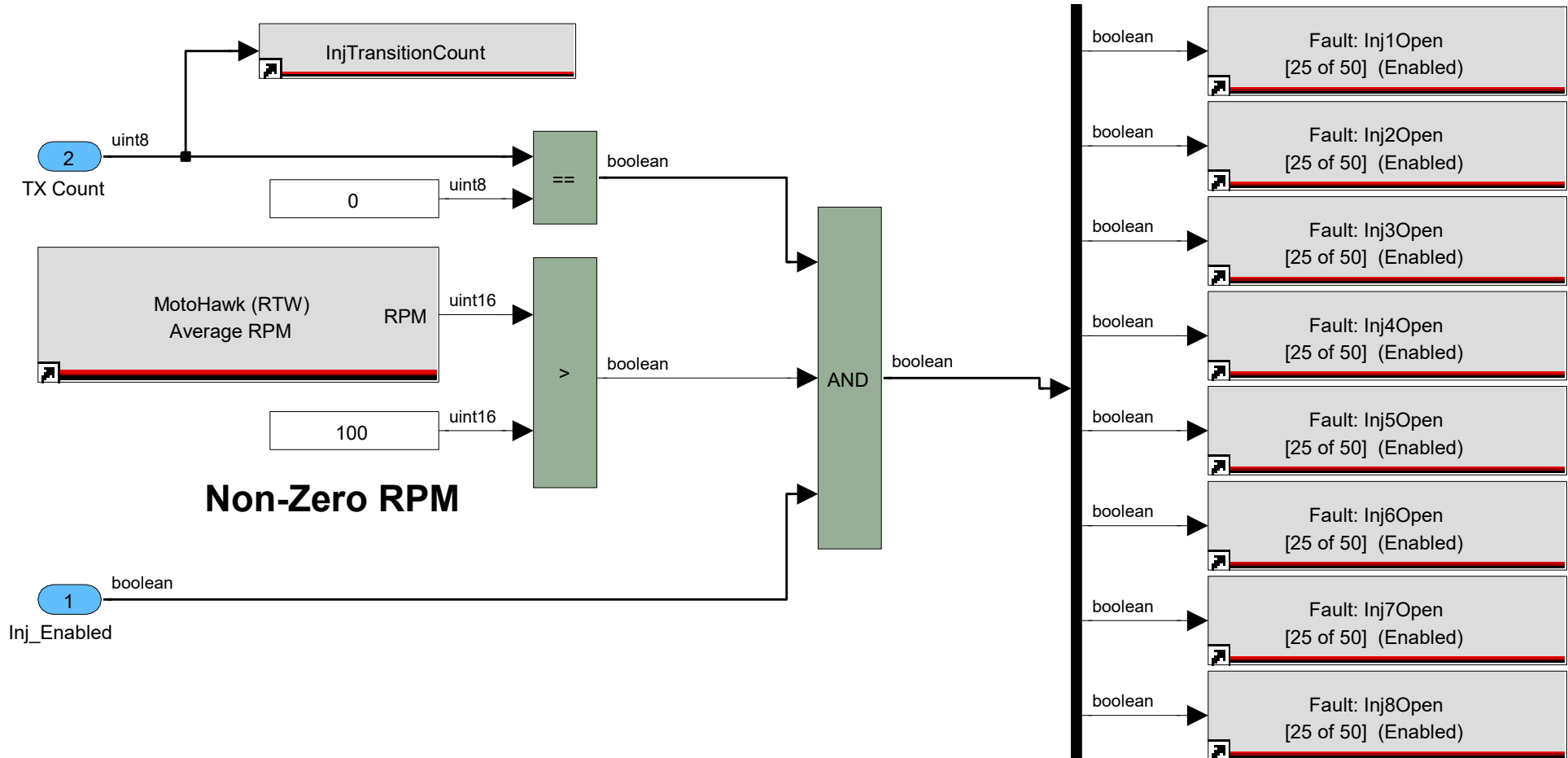


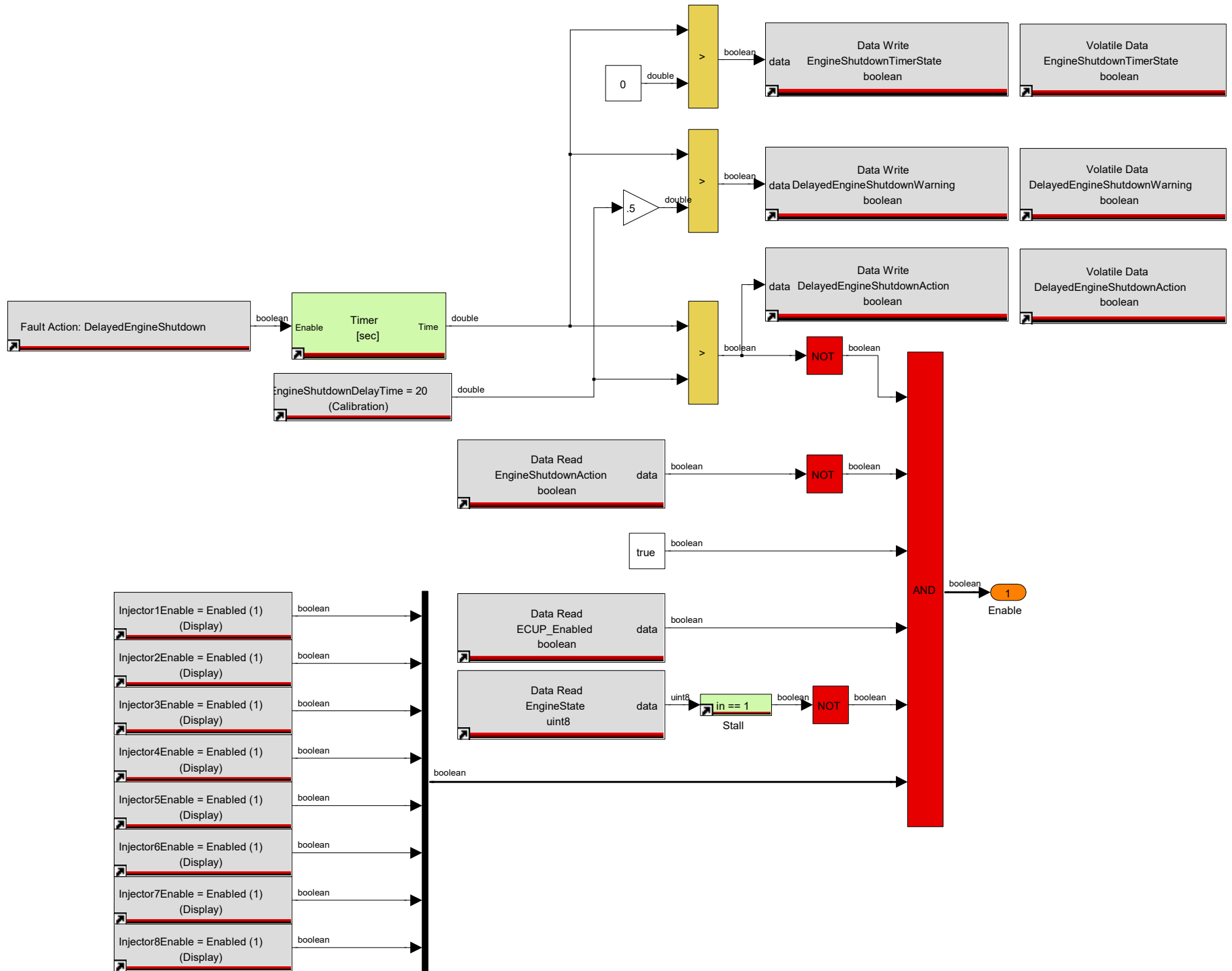




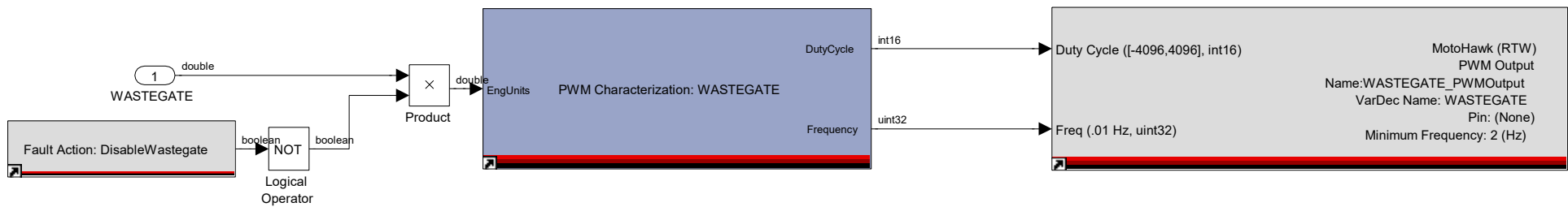






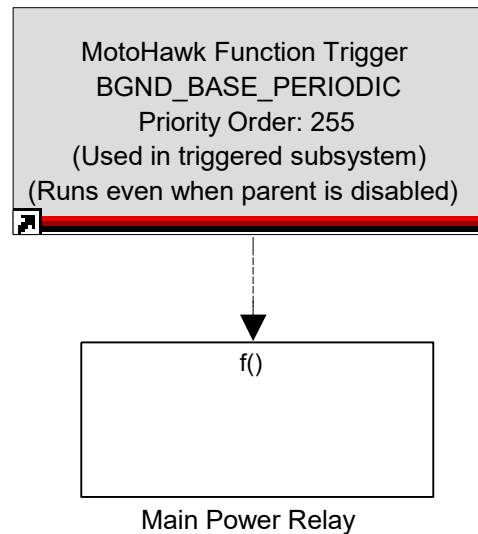




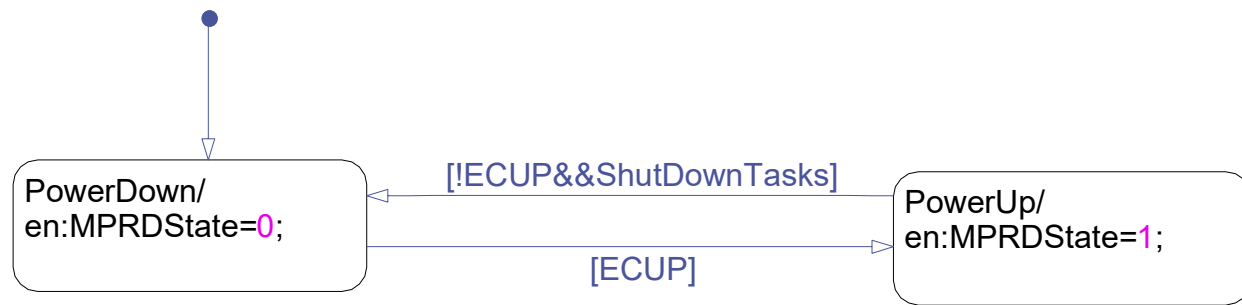


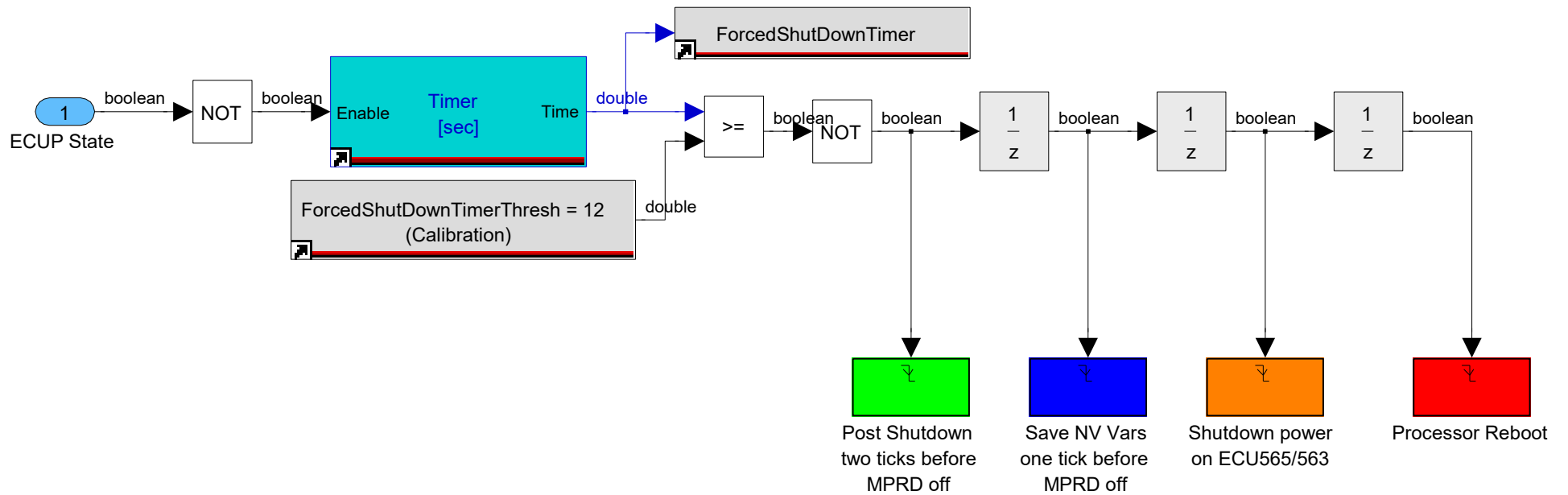
## Always execute Main Power Relay control in the background.

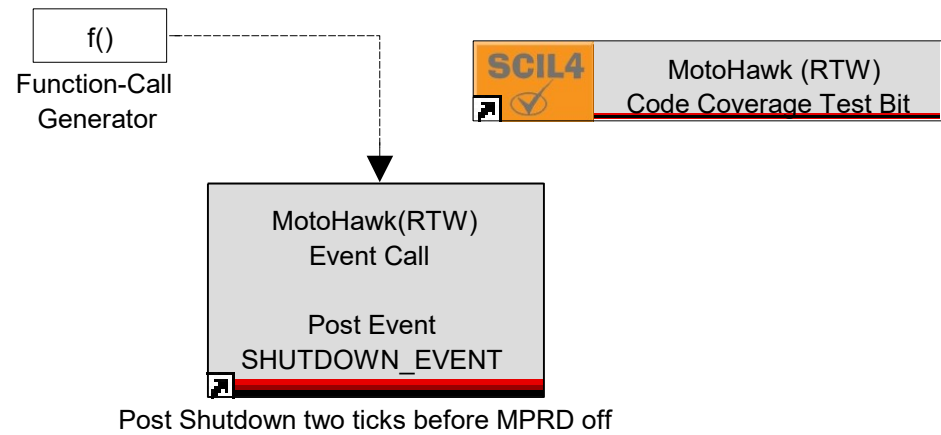
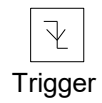
The saving and restoring of non-volatile variables must be called from a background priority task.













Trigger

Inline Code

Include:  
Start:  
Output: while (1);

Loop Forever  
Causing Watchdog Reset

SCIL4


MotoHawk (RTW)  
Code Coverage Test Bit



Trigger

f()

Function-Call  
Generator

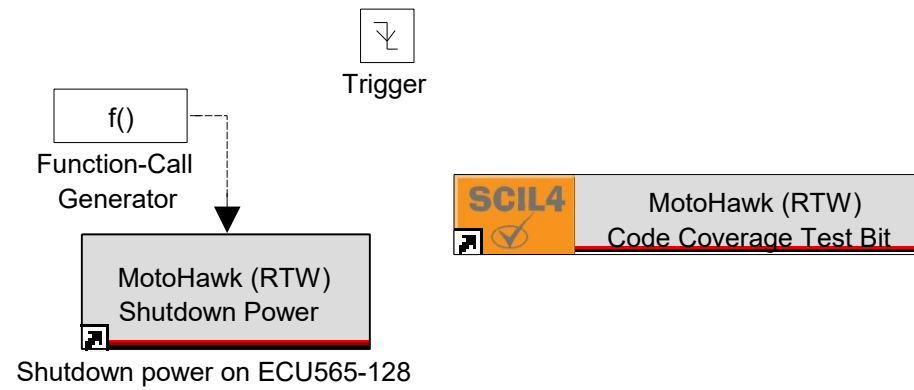
<b>SCIL4</b> 	MotoHawk (RTW) Code Coverage Test Bit
---	--



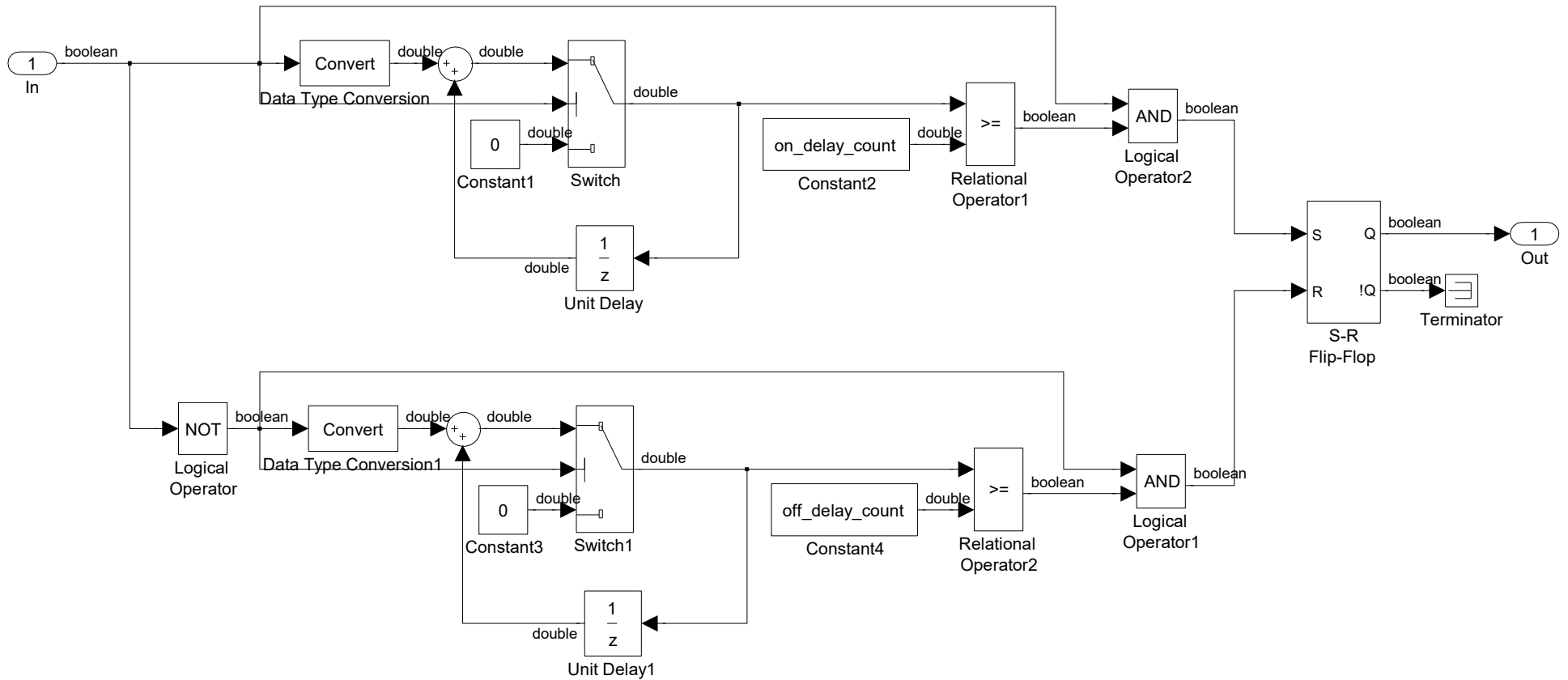
Store NonVolatile Data 
--

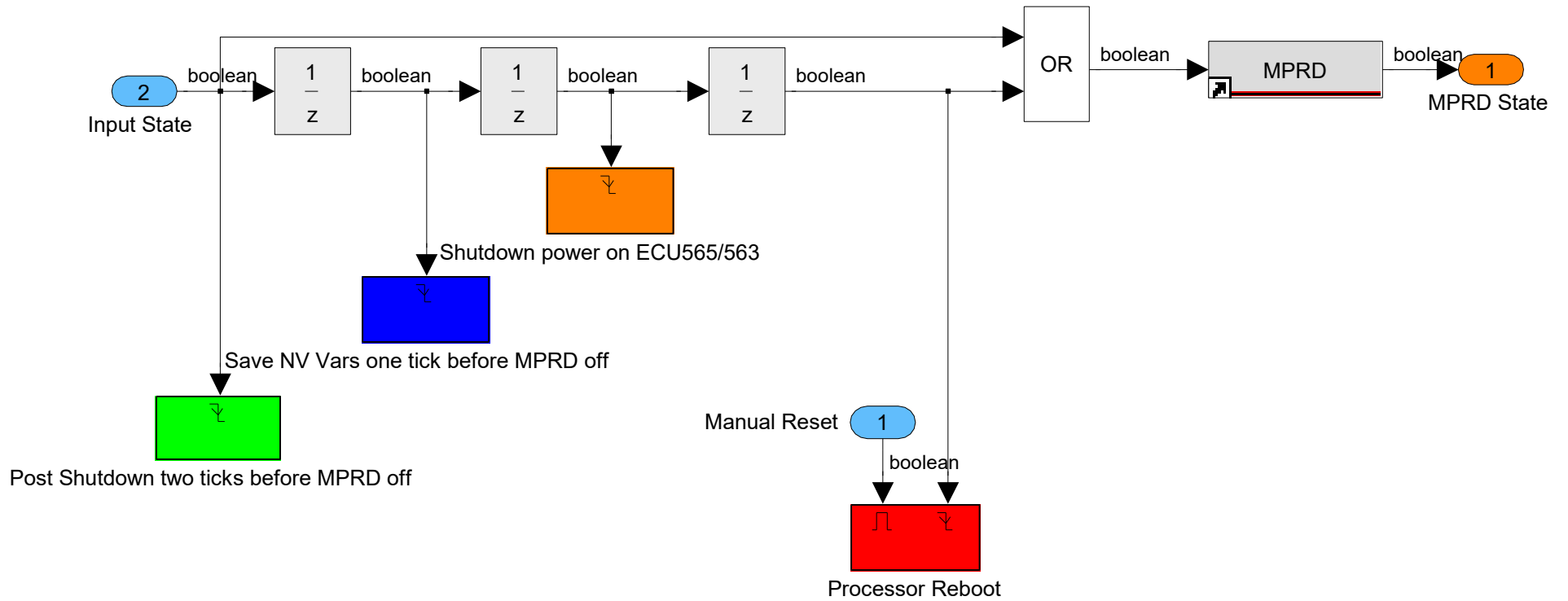
Save NV Vars one tick before MPRD off





## Delay the rising and falling of a boolean signal



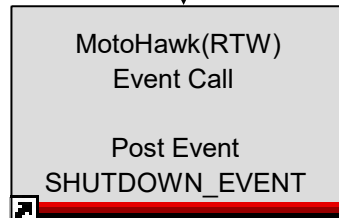




Trigger

f()

Function-Call  
Generator



Post Shutdown two ticks before MPRD off



Trigger



Enable

Inline Code

Include:

Start:

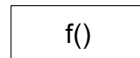
Output: while (1);



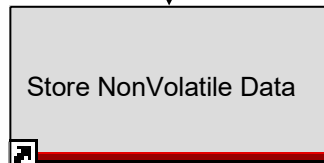
Loop Forever  
Causing Watchdog Reset



Trigger

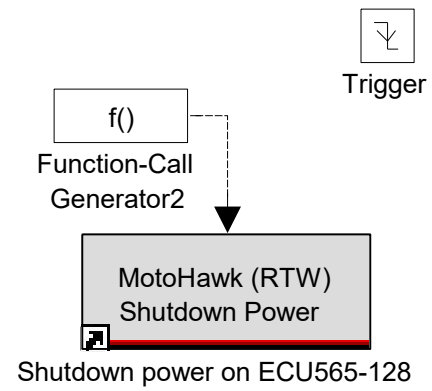


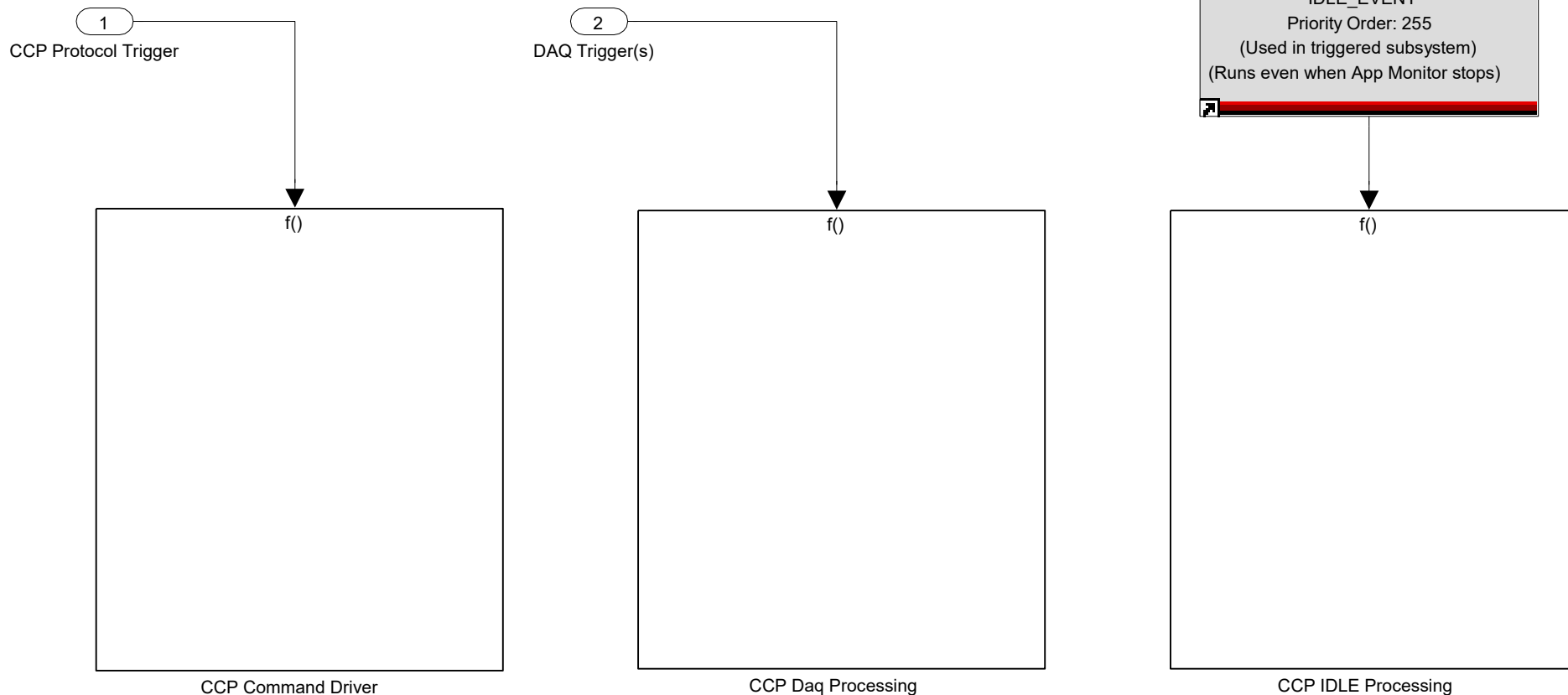
Function-Call  
Generator1



Store NonVolatile Data

Save NV Vars one tick before MPRD off



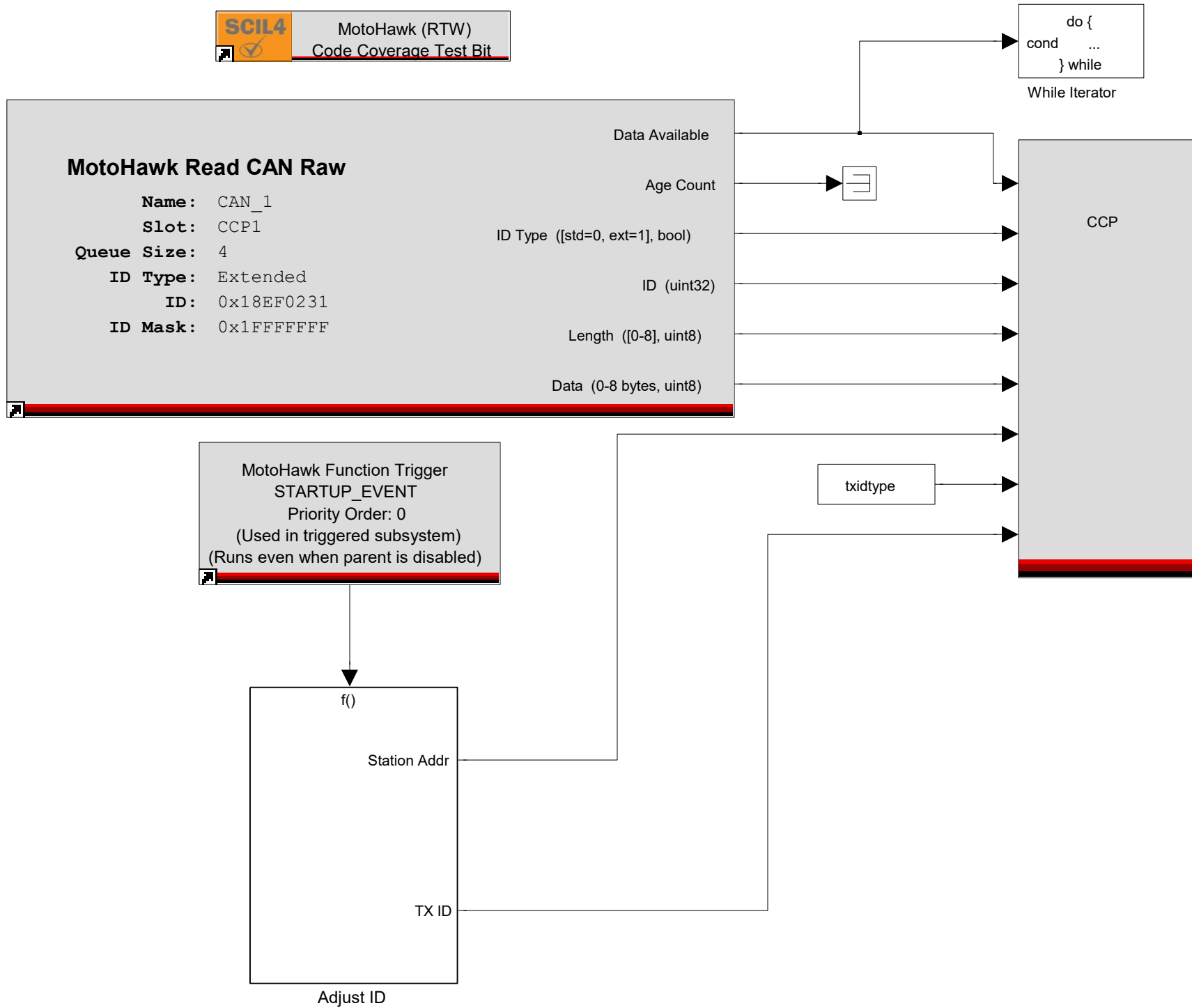




f()  
f

do { ... } while

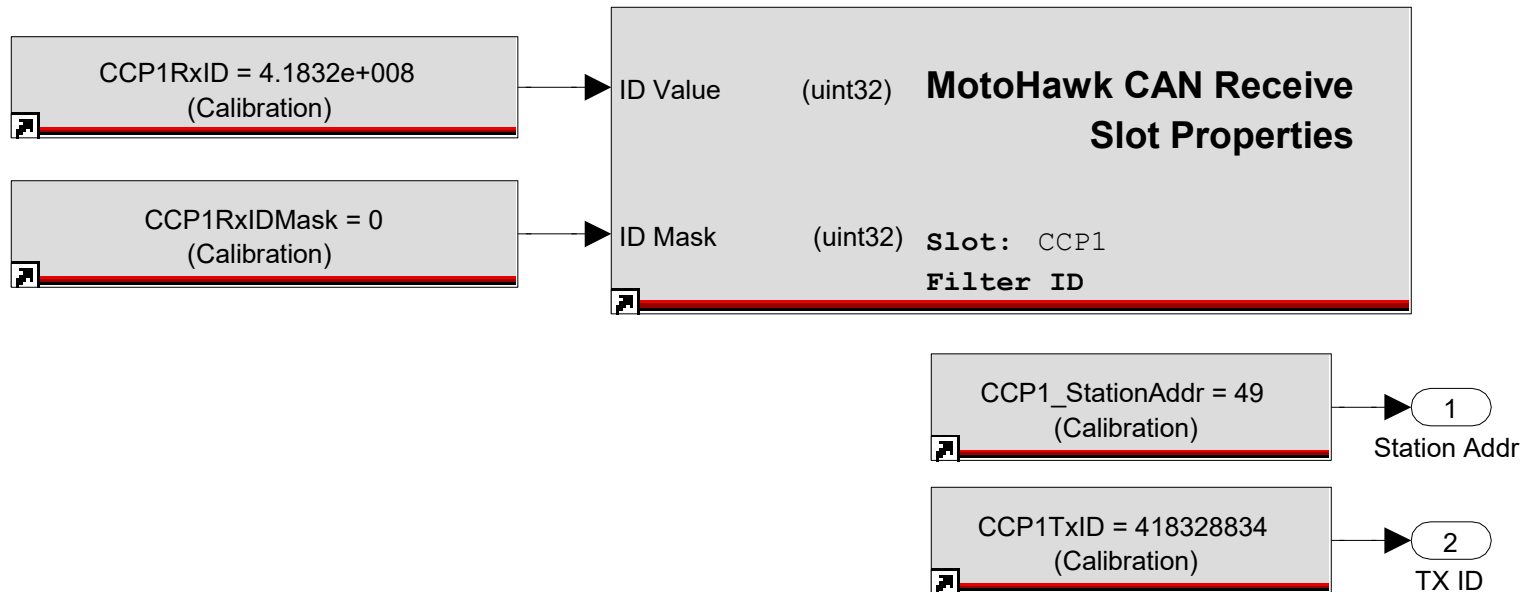
While new CCP Command

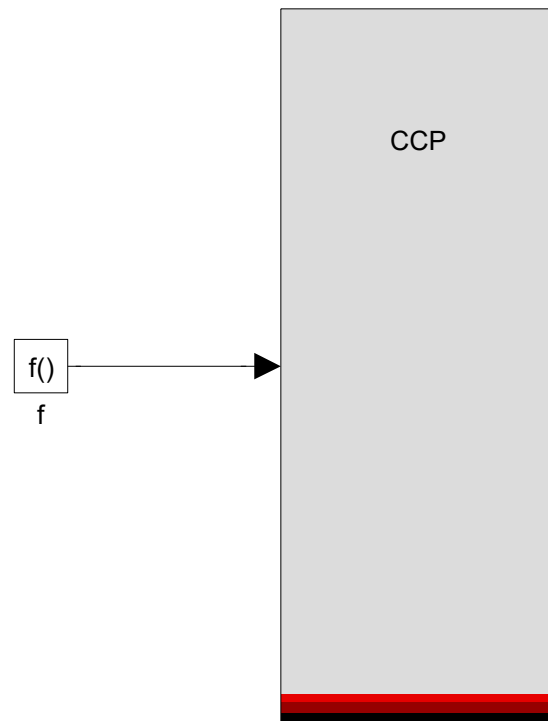


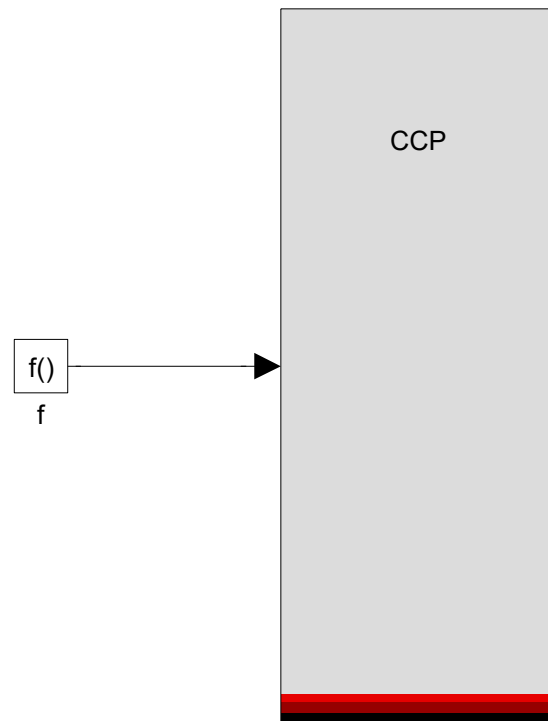
f()  
f

SCIL4

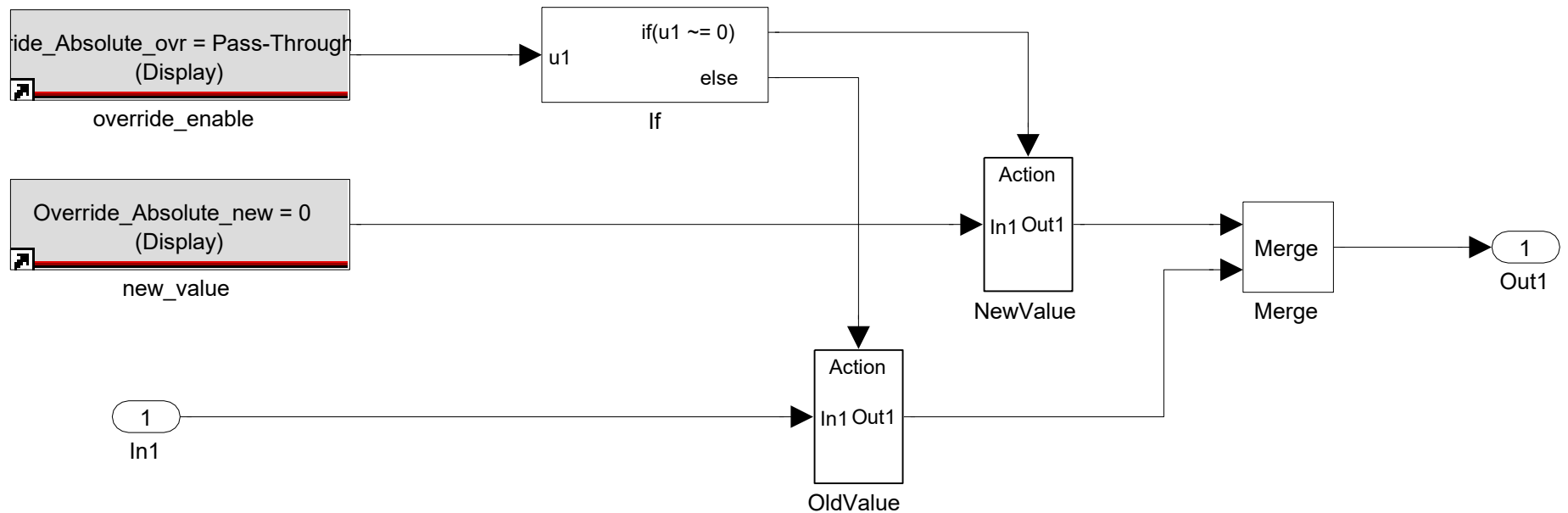
MotoHawk (RTW)  
Code Coverage Test Bit








## MotoHawk Absolute Override



Action

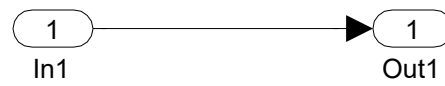
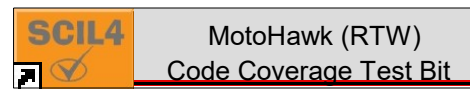
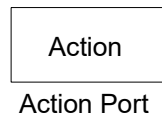
Action Port

SCIL4



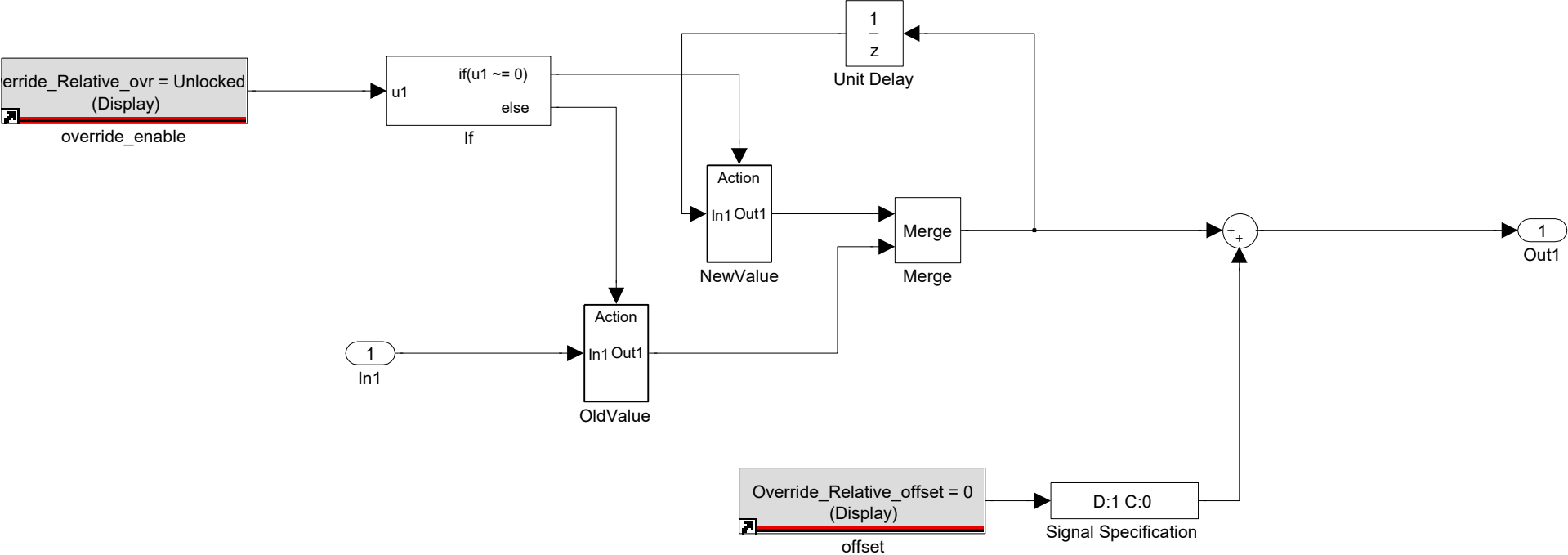
MotoHawk (RTW)  
Code Coverage Test Bit

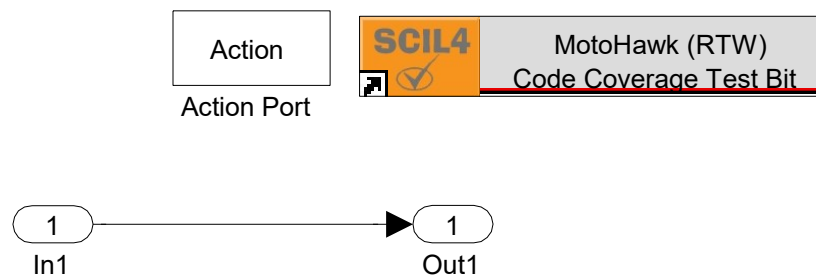


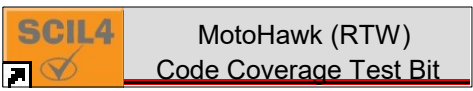
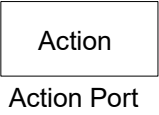




MotoHawk Relative Override







f()

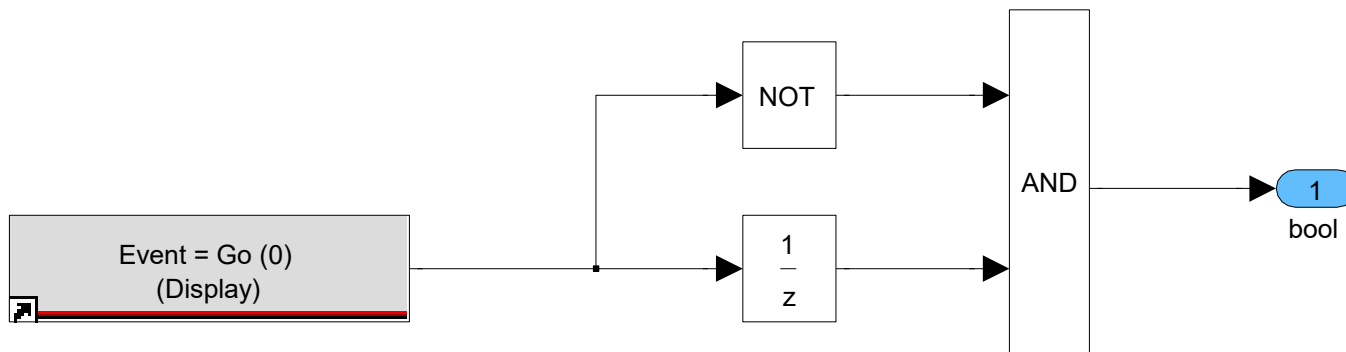
Trigger

motohawk\_sfun\_restore\_nvmem

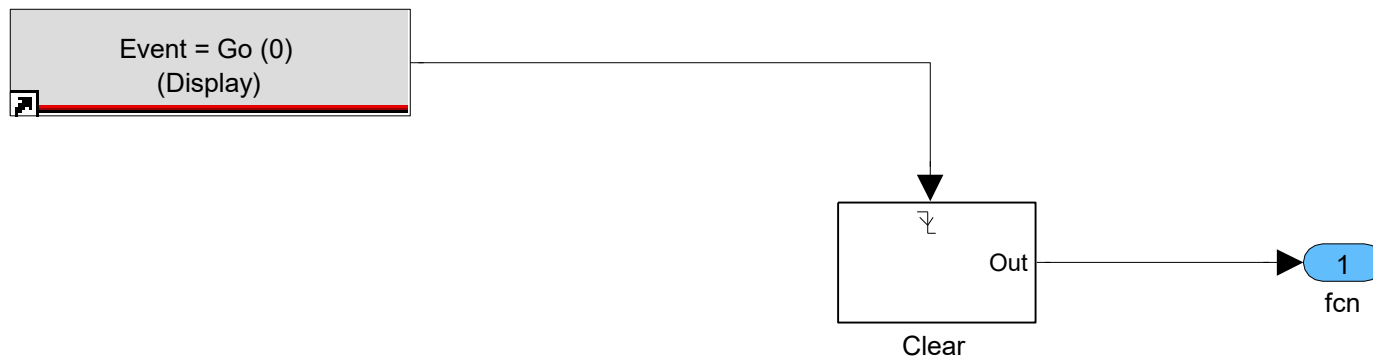
f()

Trigger

motohawk\_sfun\_store\_nvmem



**Output true once on falling edge of event display variable**

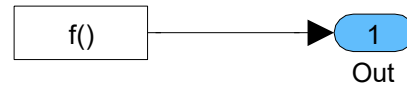


**Output function-call once on falling edge of event display variable**

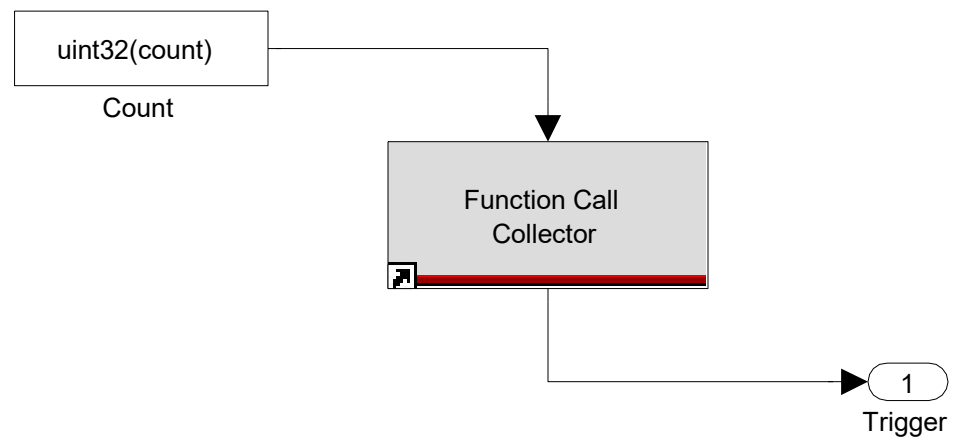


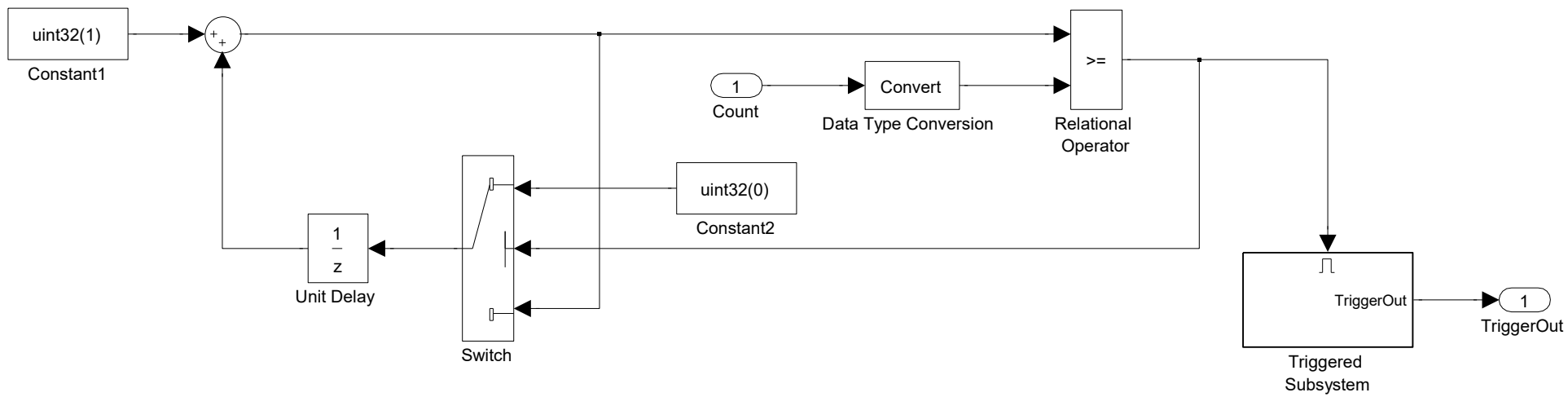
Trigger

<b>SCIL4</b> 	MotoHawk (RTW) Code Coverage Test Bit
------------------	--






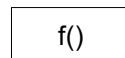






Enable

<b>SCIL4</b> 	MotoHawk (RTW) Code Coverage Test Bit
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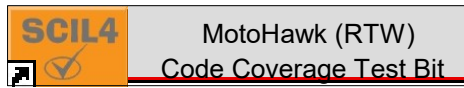
Function-Call  
Generator



TriggerOut

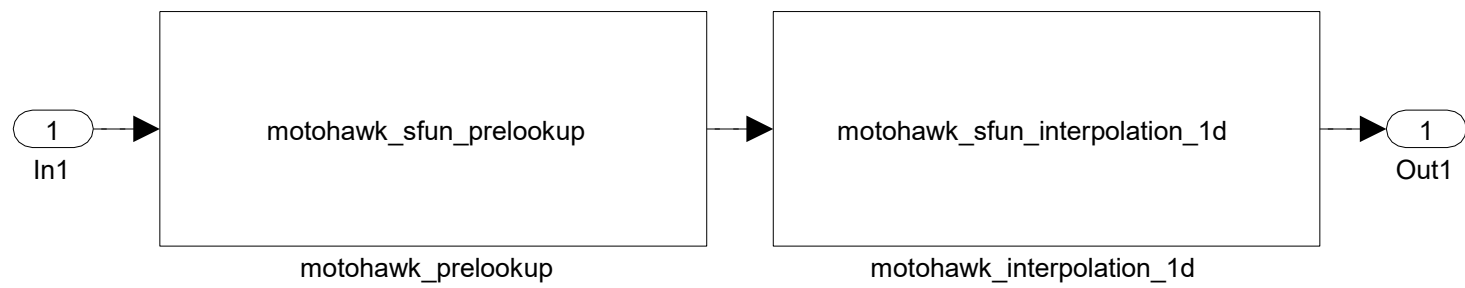
f()

function



motohawk\_sfun\_shutdown\_power

motohawk\_shutdown\_power




f()

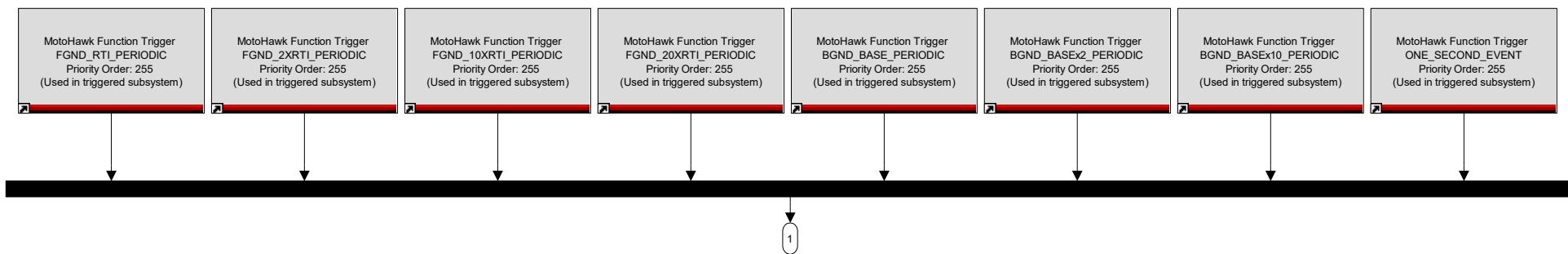
Trigger

MotoHawk(RTW)  
Event Call

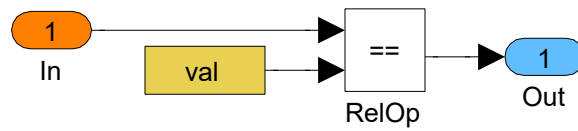
SCIL4



MotoHawk (RTW)  
Code Coverage Test Bit

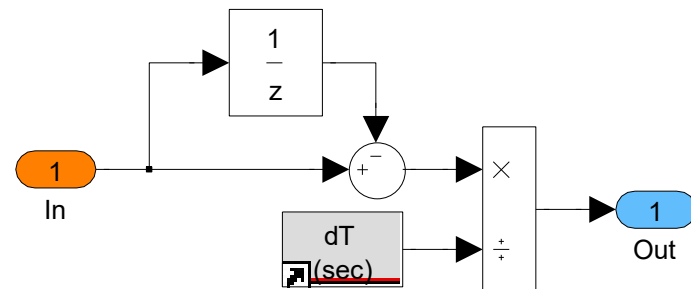


**Check how input compares to 'val'**

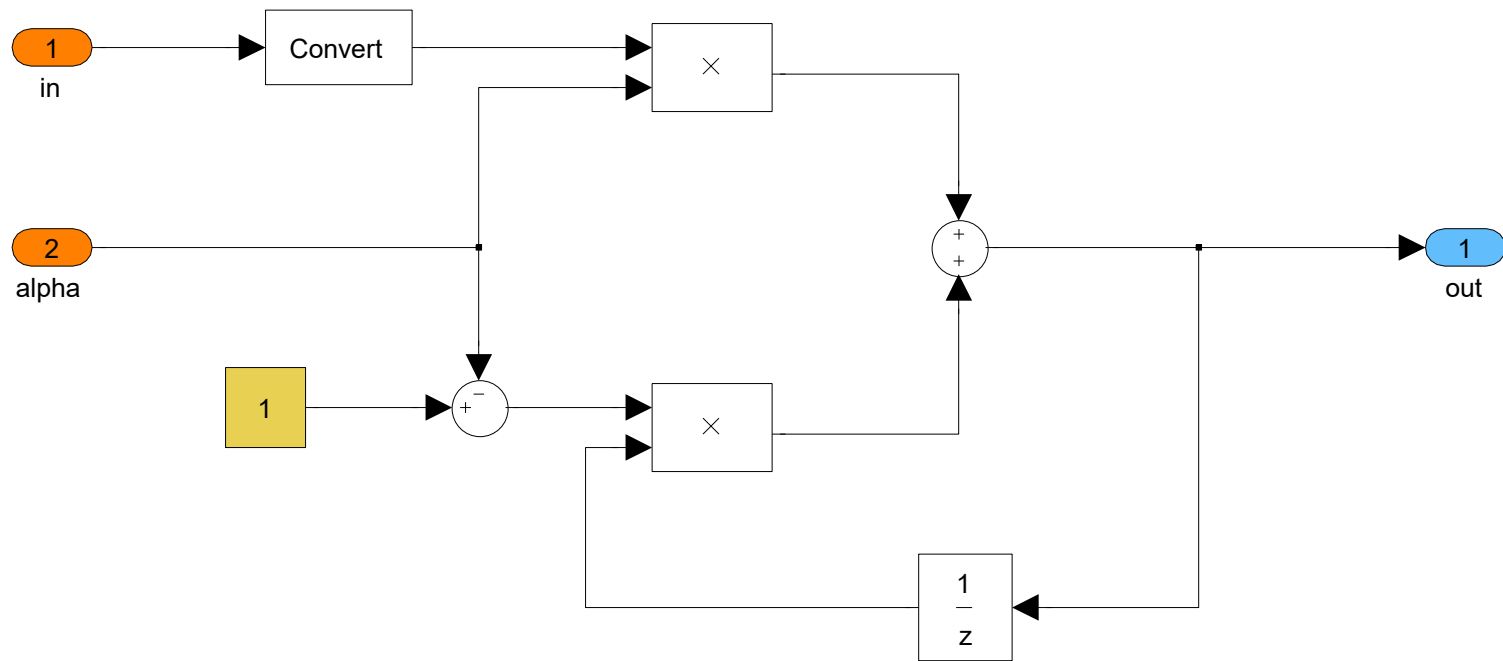




## Discrete Derivative



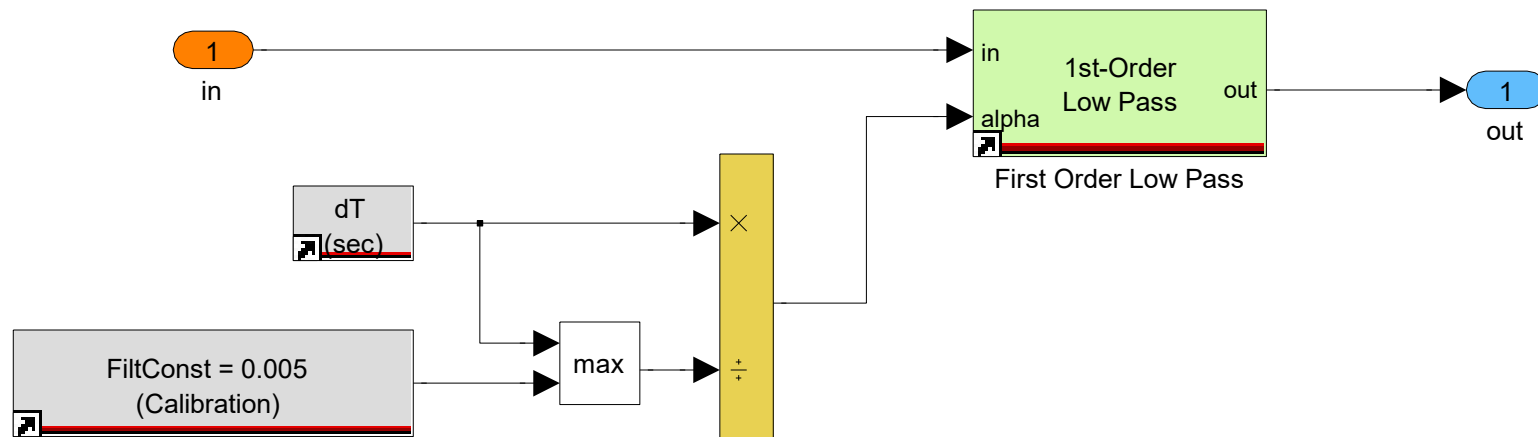
# 1st-Order Low-Pass Filter

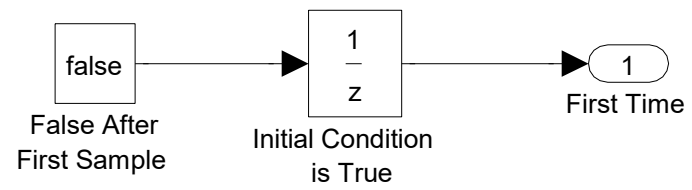


$$y[k] = a \cdot x[k] + (1-a) \cdot y[k-1]$$

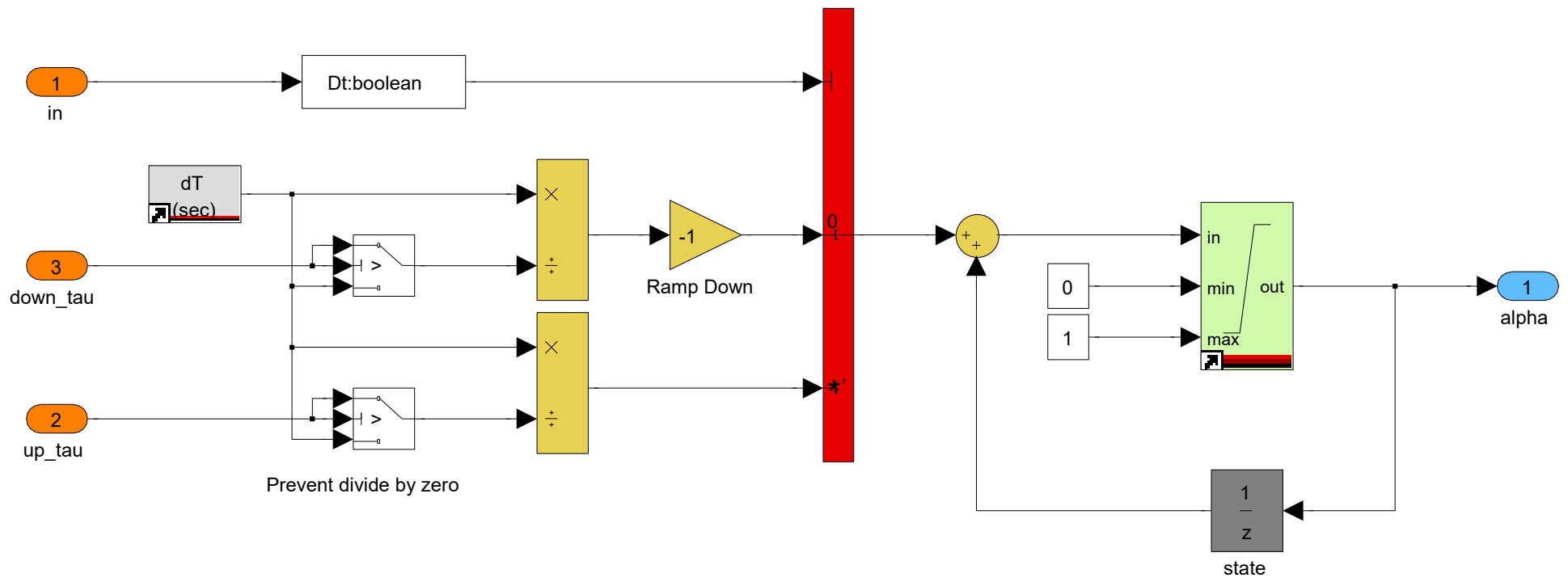
where  $a = t/T$

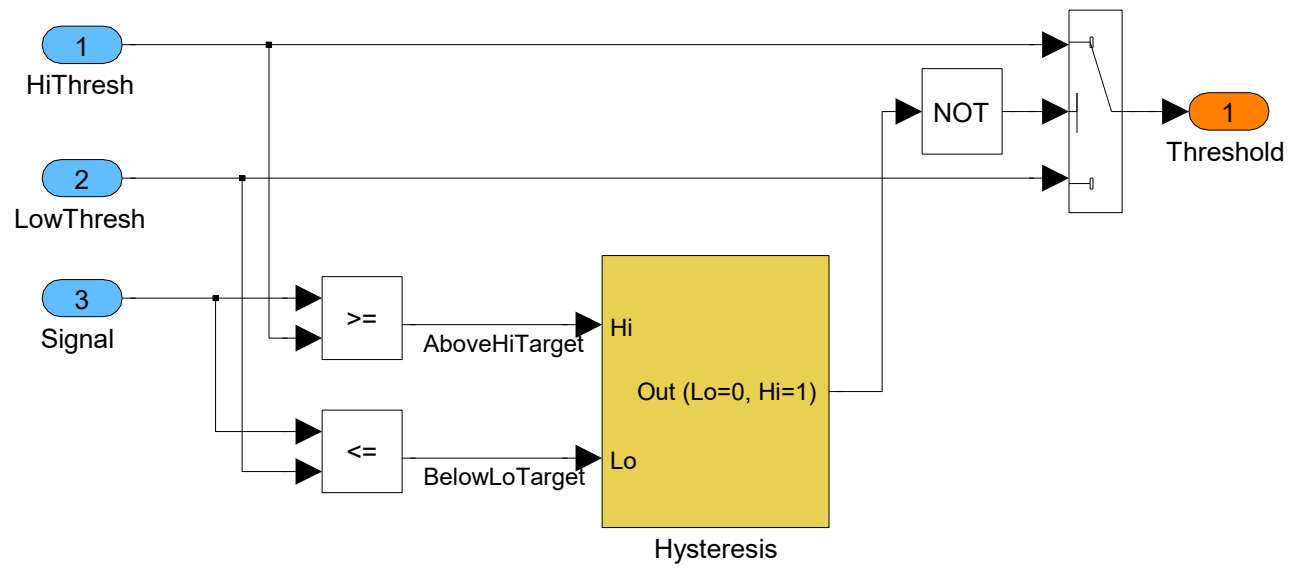
# Tunable 1st-Order Low-Pass Filter



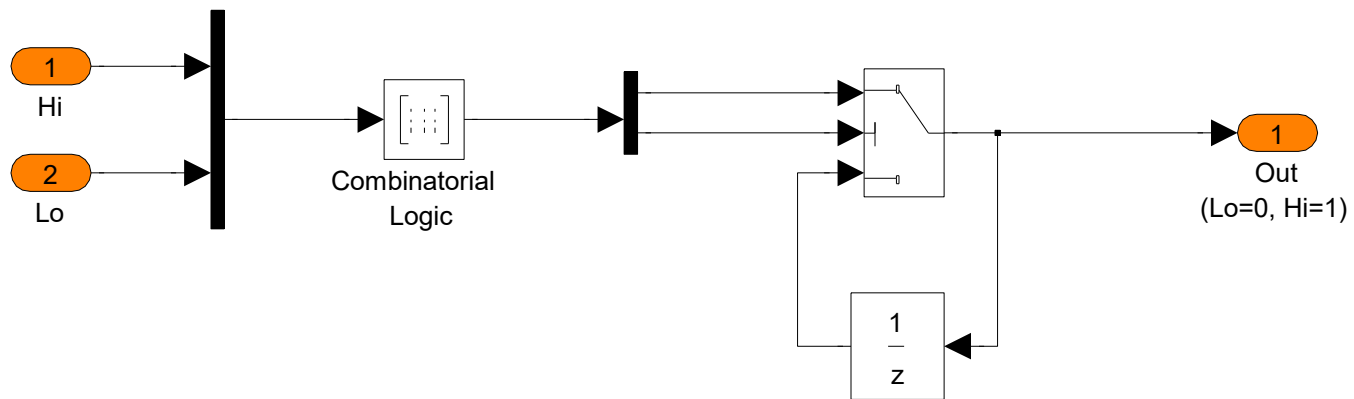


## Convert a boolean input signal to a more slowly ramping 'alpha' from 0 to 1

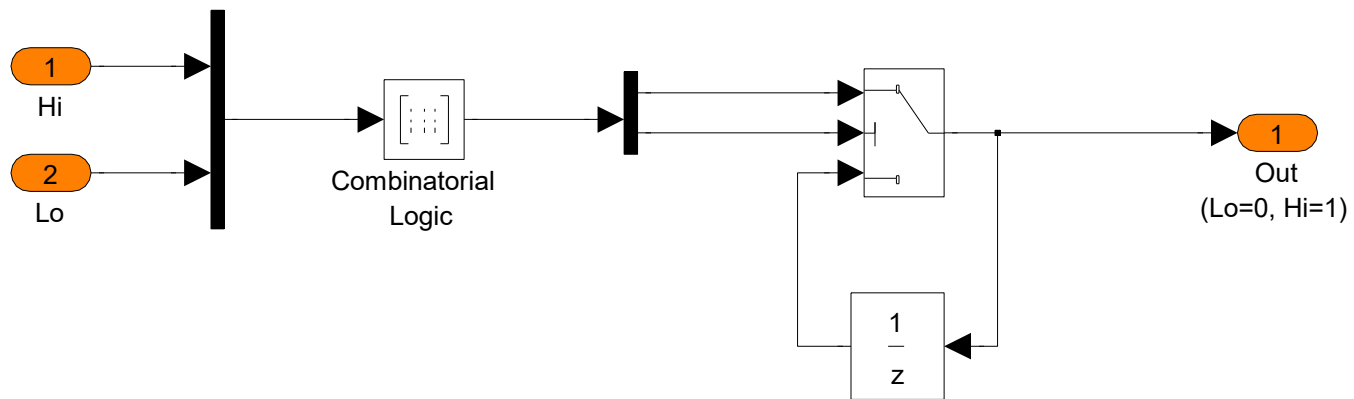




**$Hi \ \& \ !Lo \Rightarrow Hi$**   
 **$Lo \ \& \ !Hi \Rightarrow Lo$**   
**Otherwise, Hold**

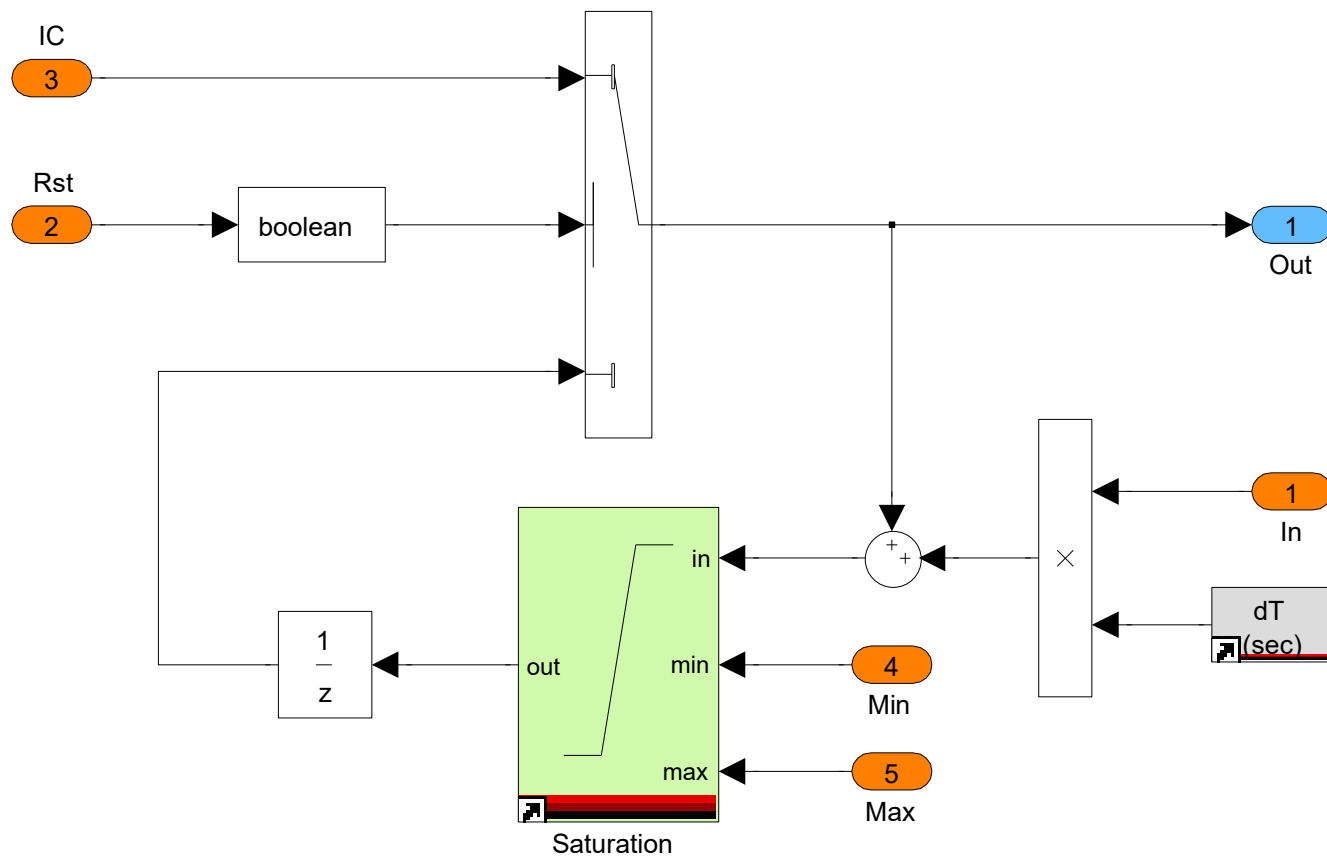


**$Hi \ \& \ !Lo \Rightarrow Hi$**   
 **$Lo \ \& \ !Hi \Rightarrow Lo$**   
**Otherwise, Hold**

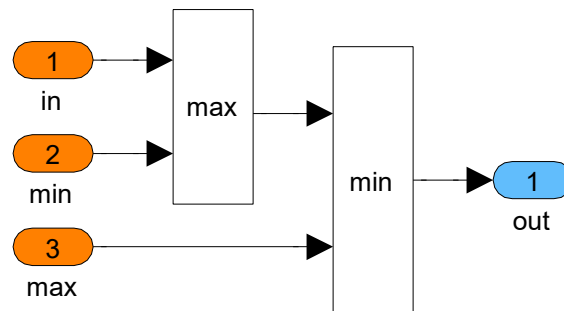




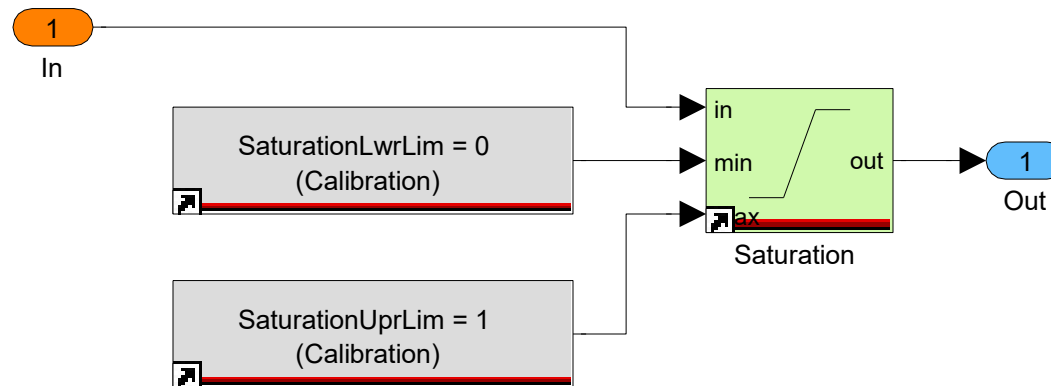
## Discrete Integrator, with output and state saturation.



**Output 'In' when between Min and Max,  
and saturate against limits otherwise.**



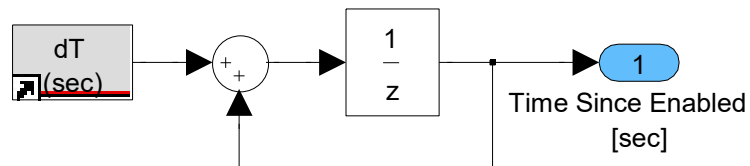
## Calibratable wrapper around the Saturation block

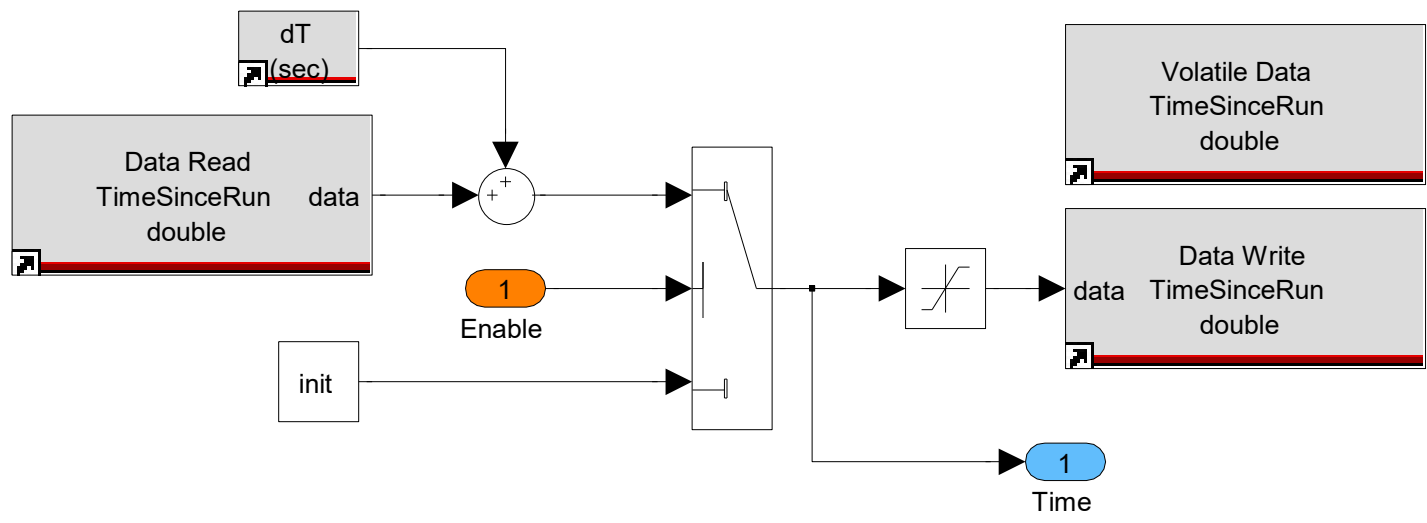


## Output the time since enabled, by summing up 'dt'.

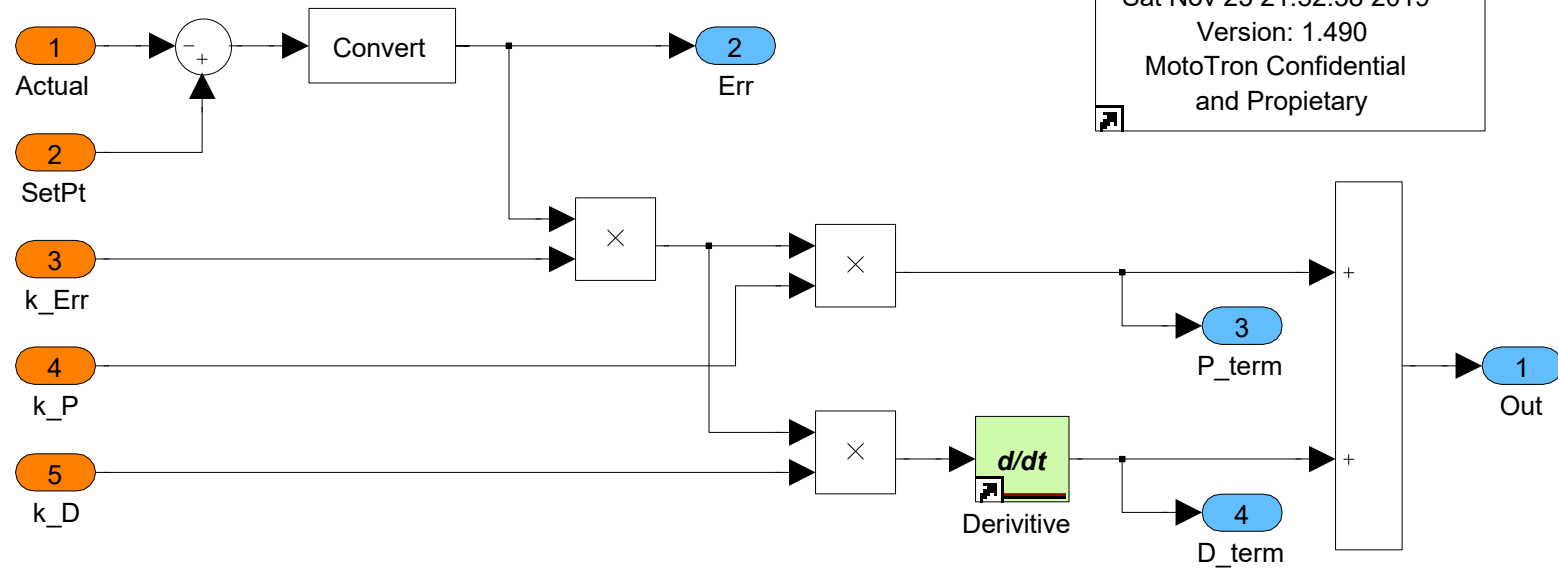
If this block is in an enabled subsystem that resets its states, then the count will reset as well. Otherwise, the count will resume from where it left off.

Note that when the Sample Time of the the 'dt' is non-positive, the block will only output its Initial Value if the enabled subsystem is set to reset its state. This means that the count will immediately 'catch up' if the enabled subsystem holds its states.



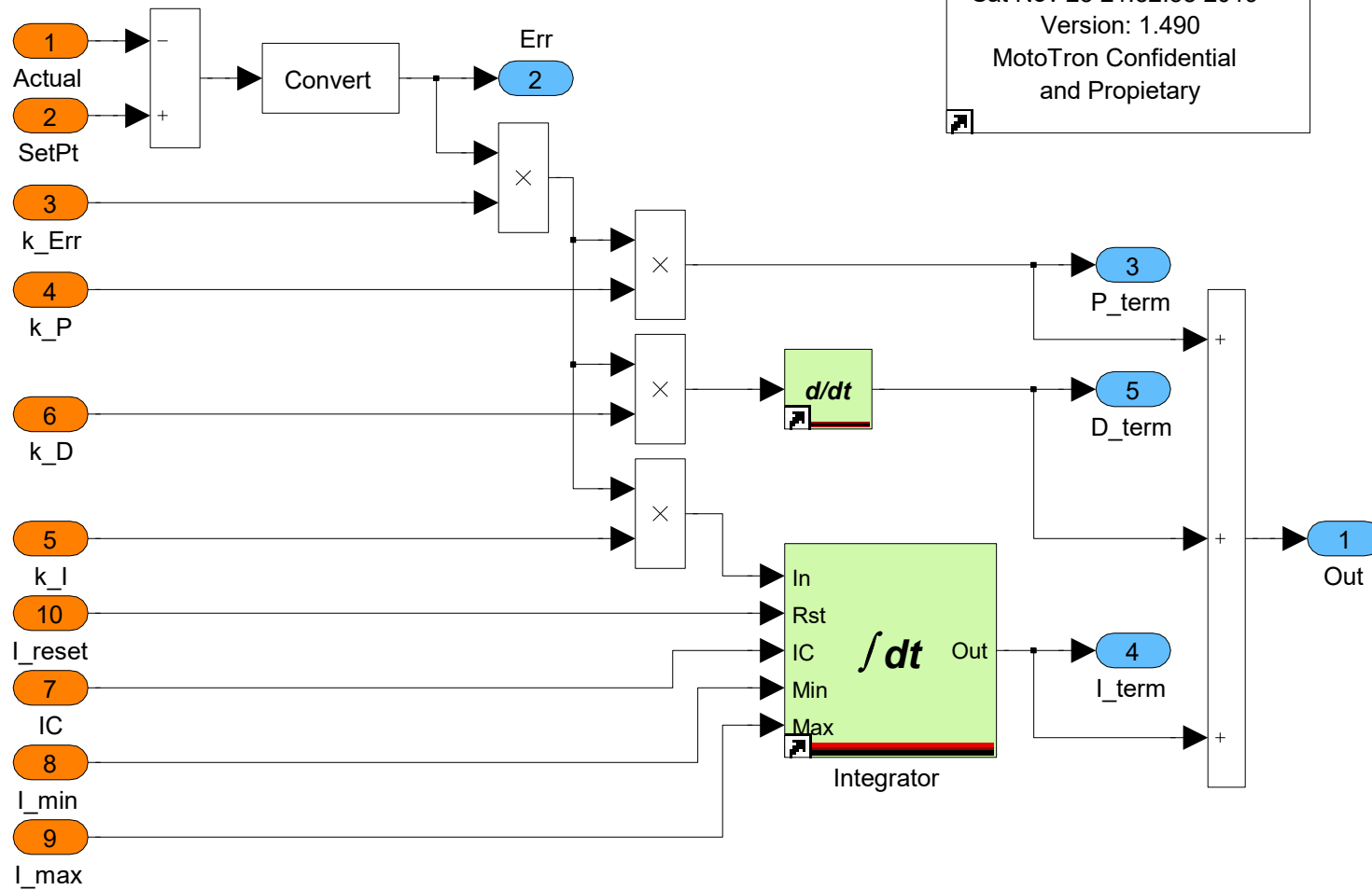


# Universal PD Controller

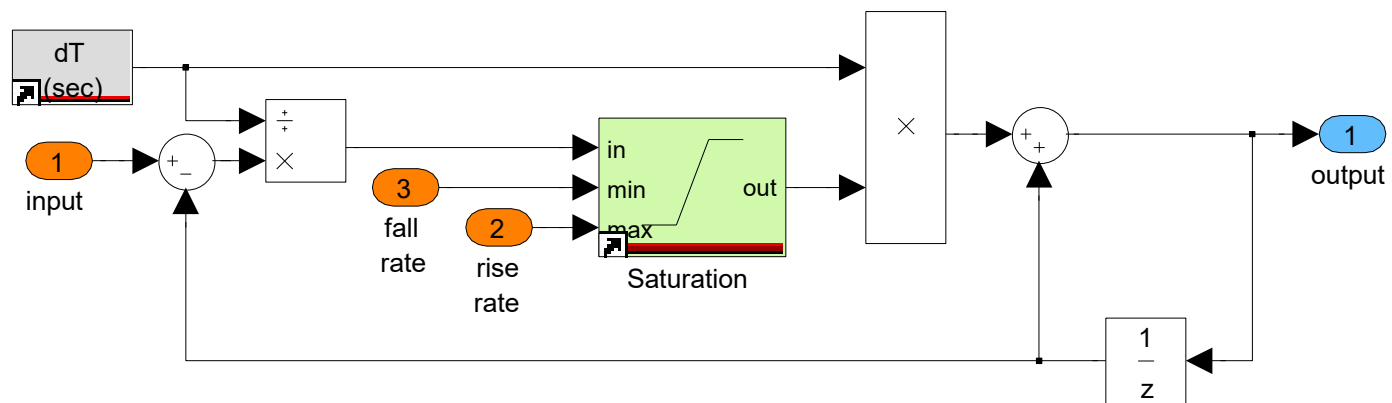


# Universal PID Controller

Model Info:  
Author: Suhre, Poorman  
Thu Mar 18 14:13:06 2004  
Sat Nov 23 21:52:58 2019  
Version: 1.490  
MotoTron Confidential  
and Proprietary

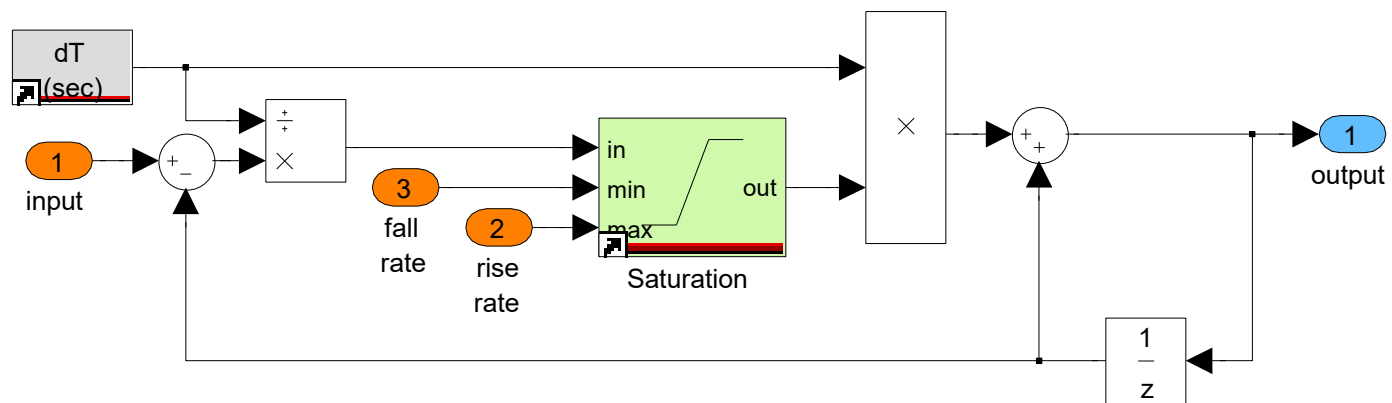


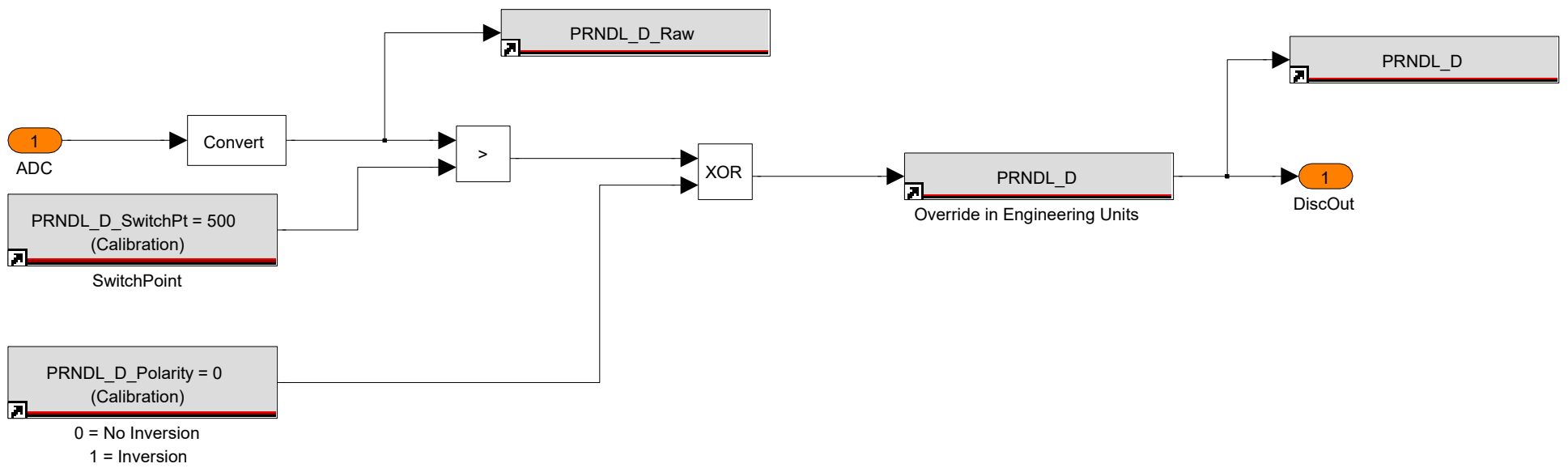
## Rate Limiter - Limit allowable change in signal per timestep

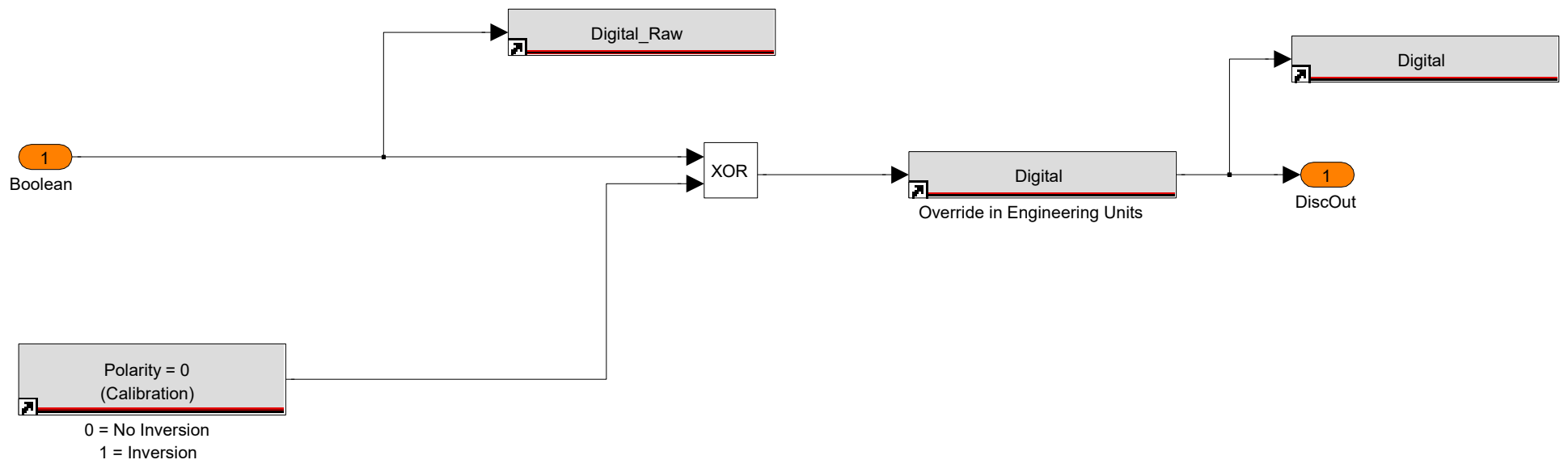


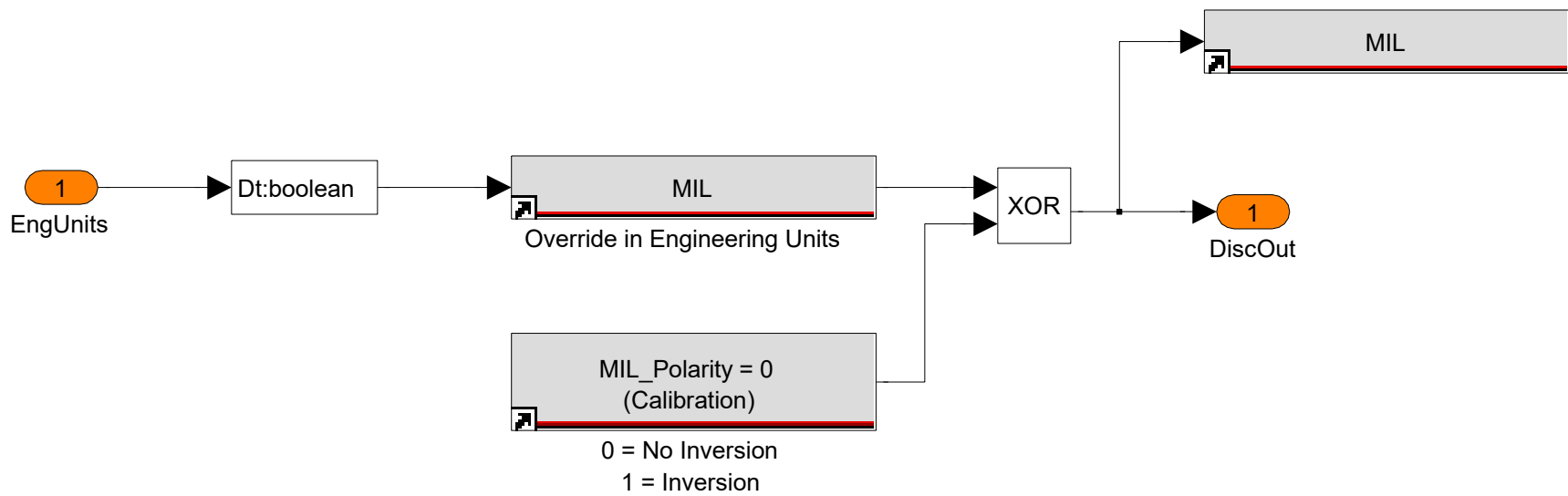


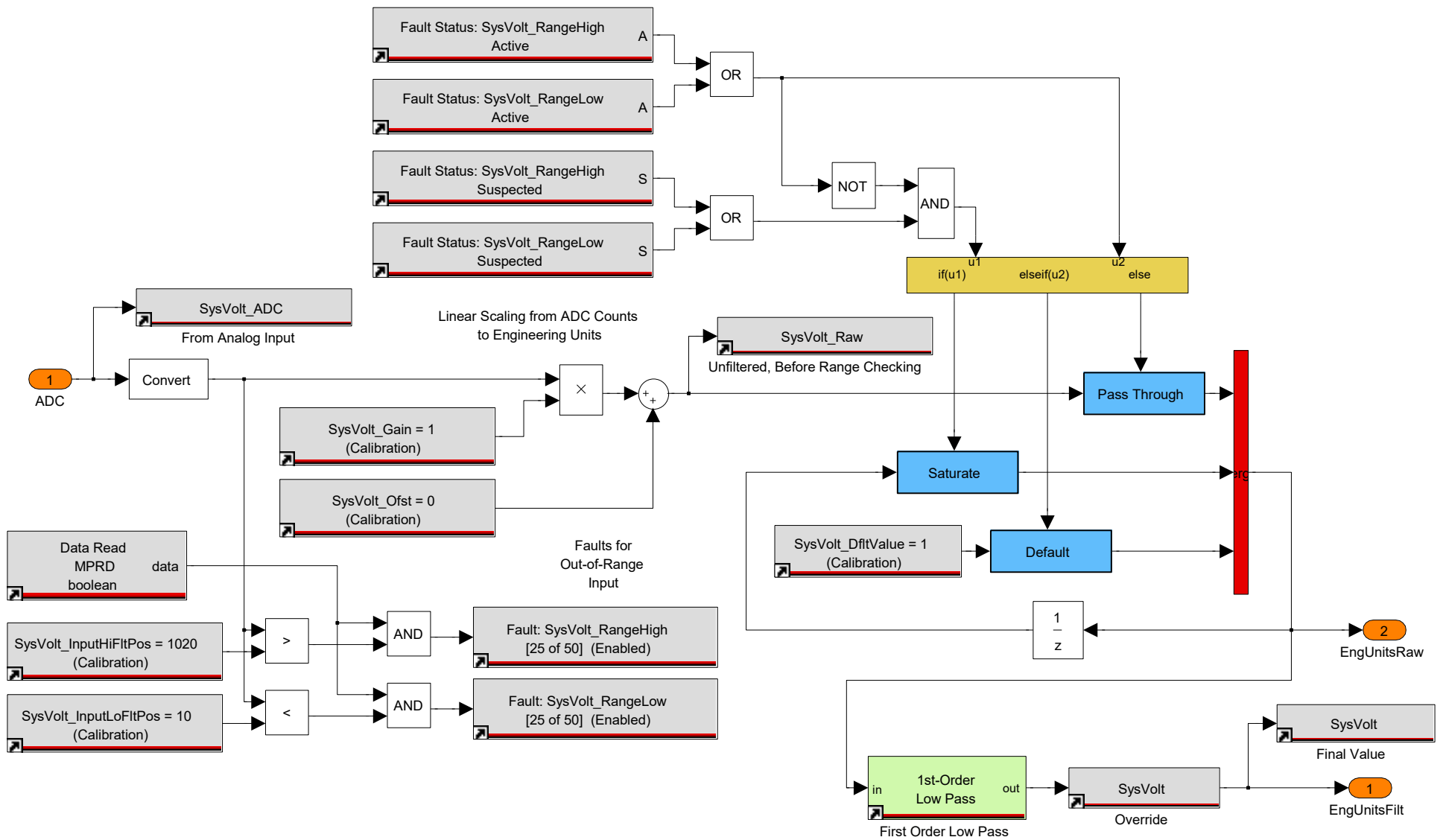
## Rate Limiter - Limit allowable change in signal per timestep

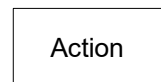












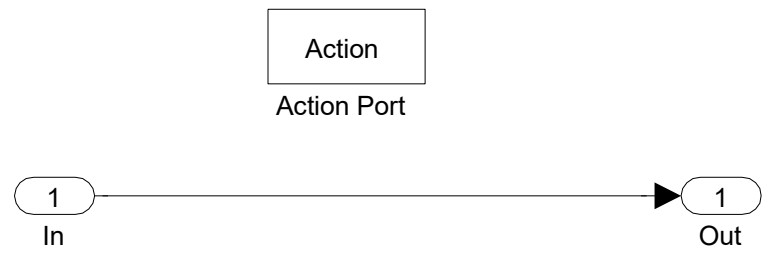
Action Port



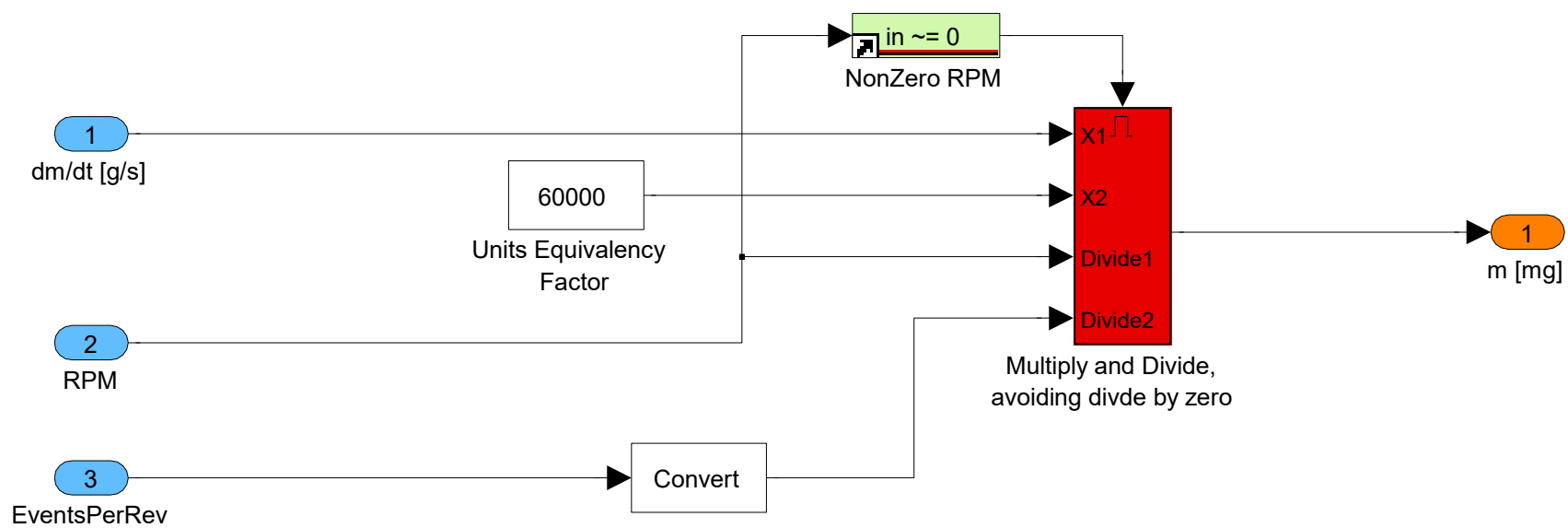


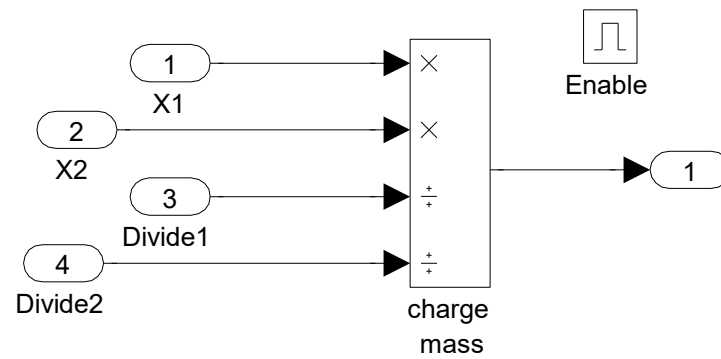
Action Port

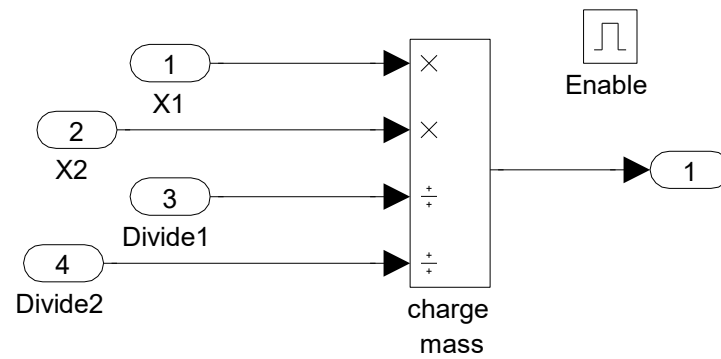


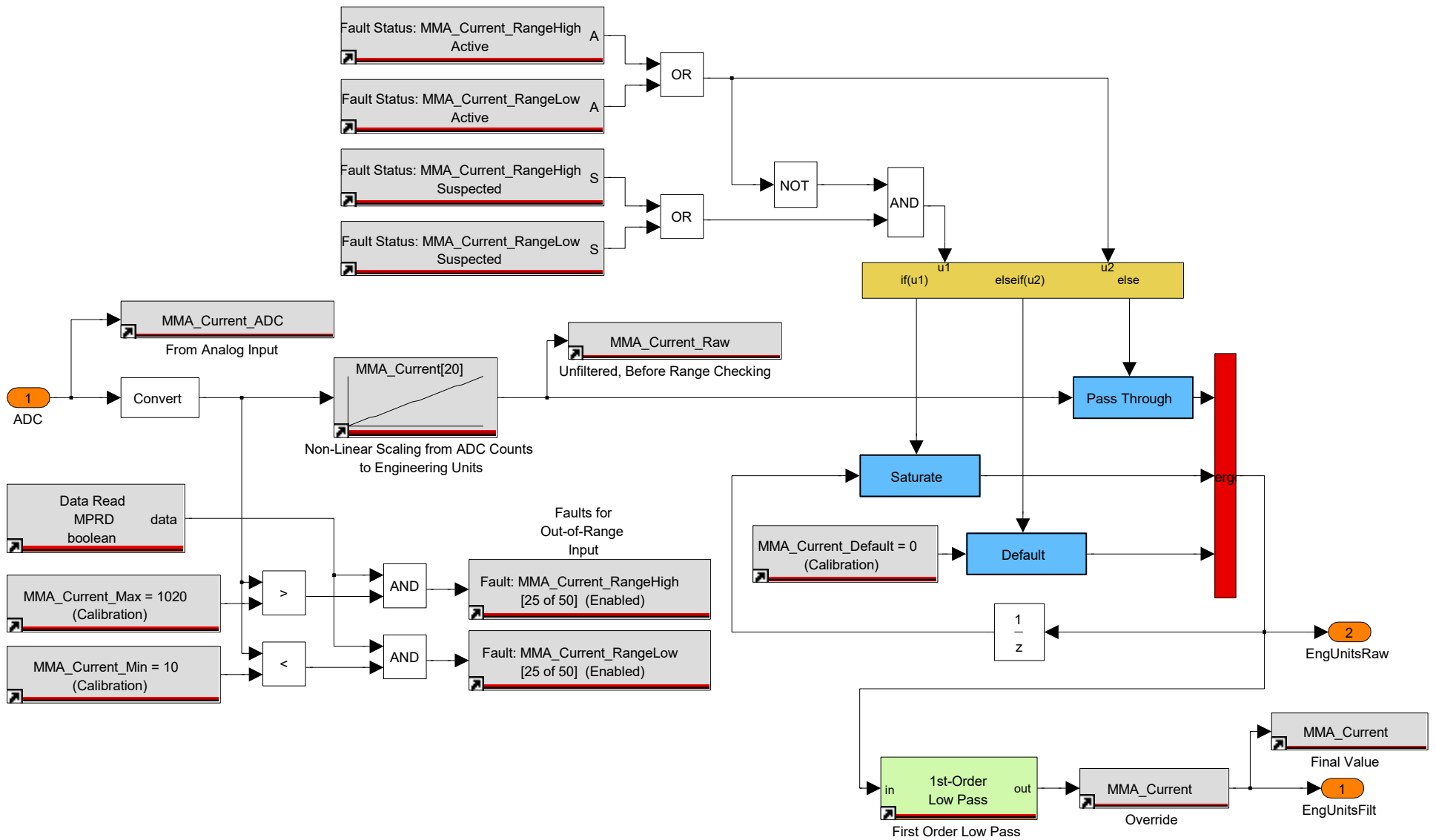








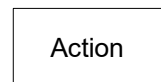




Action

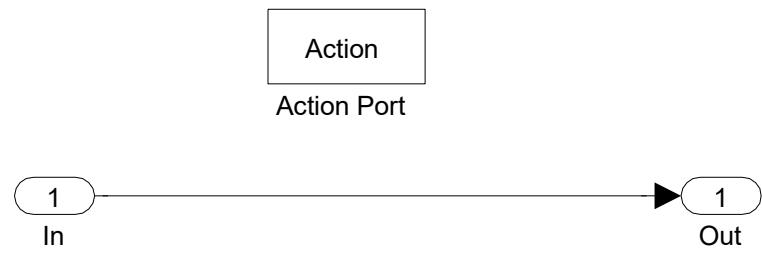
Action Port

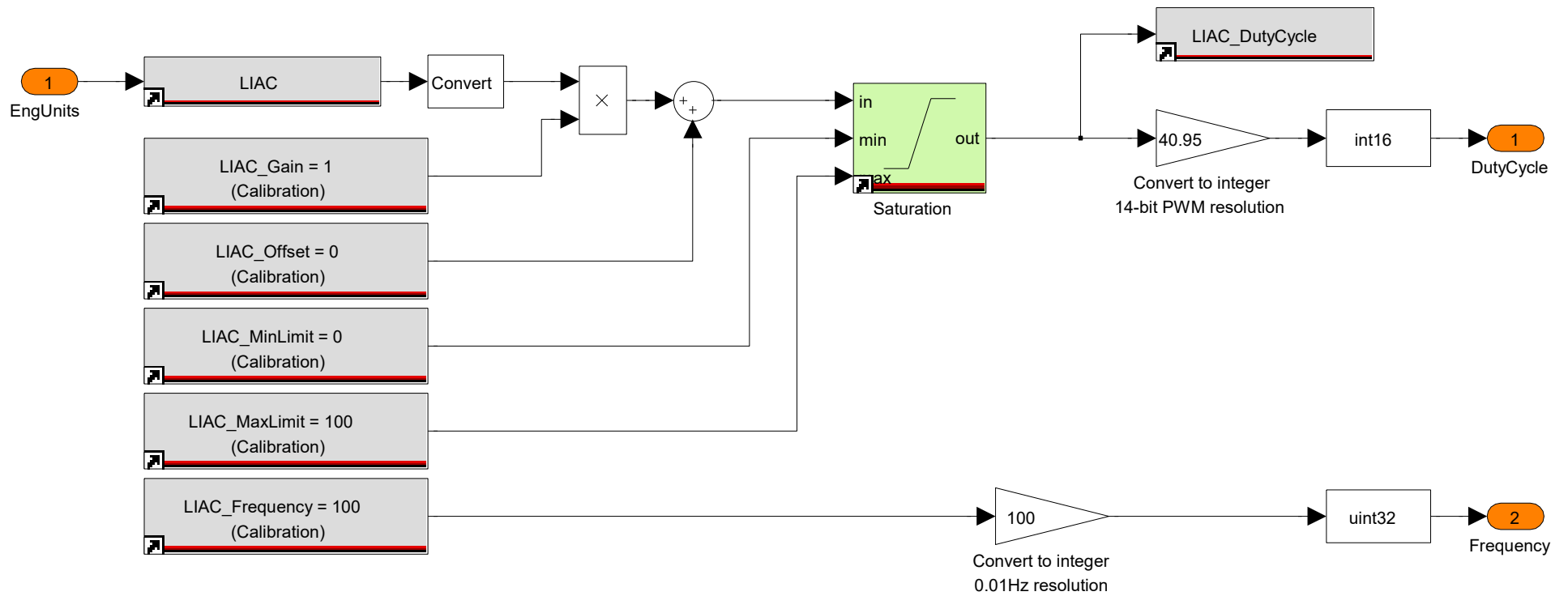




Action Port

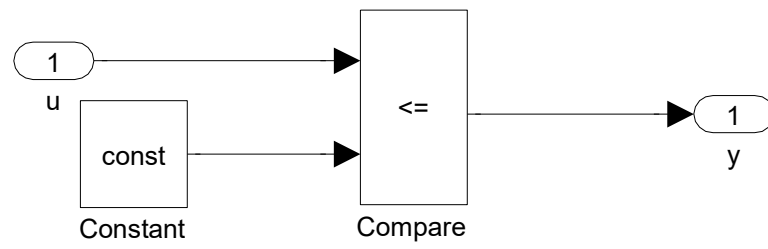






The outputs of this block are designed to be directly connected to a MotoHawk PWM block.







EmptySubsystem



