

RSLogix Micro Project Report



Processor Information

Processor Type: Bul.1763 MicroLogix 1100 Series B

Processor Name: UNTITLED

Total Memory Used: 914 Instruction Words Used - 73 Data Table Words Used

Total Memory Left: 5742 Instruction Words Left

Program Files: 5

Data Files: 15

Program ID: 495a

0	Bul.1763	MicroLogix 1100 Series B
1		
2		
3		
4		

Channel Configuration

CHANNEL 0 (SYSTEM) - Driver: DF1 Full Duplex

CHANNEL 0 (SYSTEM) - Driver: DF1 Full Duplex Edit Resource/Owner Timeout: 60
CHANNEL 0 (SYSTEM) - Driver: DF1 Full Duplex Passthru Link ID: 1
CHANNEL 0 (SYSTEM) - Driver: DF1 Full Duplex Write Protected: No
CHANNEL 0 (SYSTEM) - Driver: DF1 Full Duplex Comms Servicing Selection: Yes
CHANNEL 0 (SYSTEM) - Driver: DF1 Full Duplex Message Servicing Selection: Yes
CHANNEL 0 (SYSTEM) - Driver: DF1 Full Duplex 1st AWA Append Character: \d
CHANNEL 0 (SYSTEM) - Driver: DF1 Full Duplex 2nd AWA Append Character: \a

Source ID: 1 (decimal)
Baud: 19200
Parity: NONE
Control Line : No Handshaking
Error Detection: CRC
Embedded Responses: Auto Detect
Duplicate Packet Detect: Yes
ACK Timeout(x20 ms): 50
NAK Retries: 3
ENQ Retries: 3

CHANNEL 1 (SYSTEM) - Driver: Ethernet

CHANNEL 1 (SYSTEM) - Driver: Ethernet Edit Resource/Owner Timeout: 60
CHANNEL 1 (SYSTEM) - Driver: Ethernet Passthru Link ID: 1
CHANNEL 1 (SYSTEM) - Driver: Ethernet Write Protected: No
CHANNEL 1 (SYSTEM) - Driver: Ethernet Comms Servicing Selection: Yes
CHANNEL 1 (SYSTEM) - Driver: Ethernet Message Servicing Selection: Yes

Hardware Address: 00:00:00:00:00:00
IP Address: 0.0.0.0
Subnet Mask: 0.0.0.0
Gateway Address: 0.0.0.0
Msg Connection Timeout (x 1mS): 15000
Msg Reply Timeout (x mS): 3000
Inactivity Timeout (x Min): 30
Bootp Enable: No
Dhcp Enable: Yes
SNMP Enable: No
HTTP Enable: Yes
Auto Negotiate Enable: Yes
Port Speed Enable: 10/100 Mbps Full Duplex/Half Duplex
Contact:
Location:

Program File List

Name	Number	Type	Rungs	Debug	Bytes
[SYSTEM]	0	SYS	0	No	0
	1	SYS	0	No	0
MAIN	2	LADDER	12	No	576
PE_SIMUL8R	240	LADDER	10	No	308
REJSIMUL8R	250	LADDER	7	No	309

Data File List

Name	Number	Type	Scope	Debug	Words	Elements	Last
OUTPUT	0	O	Global	No	12	4	O:3
INPUT	1	I	Global	No	18	6	I:5
STATUS	2	S	Global	No	0	66	S:65
BINARY	3	B	Global	No	10	10	B3:9
TIMER	4	T	Global	No	6	2	T4:1
COUNTER	5	C	Global	No	6	2	C5:1
CONTROL	6	R	Global	No	3	1	R6:0
INTEGER	7	N	Global	No	1	1	N7:0
FLOAT	8	F	Global	No	2	1	F8:0
FIFO	99	N	Global	No	4	4	N99:3
INDEX	199	N	Global	No	1	1	N199:0
INTPESML8R	241	N	Global	No	3	3	N241:2
BITPESML8R	242	B	Global	No	2	2	B242:1
RNGSIMUL8R	251	L	Global	No	4	2	L251:1
BITSIMUL8R	252	B	Global	No	1	1	B252:0

Pass per-item reject status, determined at upstream event, to downstream event

Cf. <https://www.plctalk.net/qanda/showthread.php?t=124552>

Process

Boxes on a conveyor

Three independent discrete inputs:

- Two PhotoEye (PE) station discrete inputs: upstream BOX_AT_PE1; downstream BOX_AT_PE2
 - 1 => box is present at station; 0 => no box is present at station
- A third discrete input REJECT_BOX_AT_PE1 determines whether a box at the upstream station either
 - is a reject (1), and to be later diverted at PE2,
 - OR
 - is okay (0), and not to be diverted.

Rising edge at upstream station BOX_AT_PE1 station is where each box's {1:reject;0:okay} status is set

- Based on the status of REJECT_BOX_AT_PE1

When each box later generates a rising edge at downstream station BOX_AT_PE2

- divert if box status from BOX_AT_PE1 was [reject]
- do not divert if box status BOX_AT_PE1 was [okay]

There will be an arbitrary number of boxes that have triggered BOX_AT_PE1 but not yet triggered BOX_AT_PE2

- These are the only boxes this program can keep track of with the available inputs
- The number of boxes will range from 0 to no more than approximately 10

Implementation data structures

Integer index TRACKED_BOX_COUNT (N199:0) is the count of tracked boxes

- I.e boxes that have triggered BOX_AT_PE1 but not yet triggered BOX_AT_PE2

Bit array (FIFO) in file #N99

- Only up bits up to to N99:0/[TRACKED_BOX_COUNT-1] represent tracked boxes
- N99 bit count = 64, which is much greater than the maximum possible value of TRACKED_BOX_COUNT
- Bit value is 1 if a tracked box is a [reject] and is to be diverted at PE2
- Bit value is 0 if a tracked box is [okay] and is not to be diverted at PE2
- FIFO content and shifting are controlled with BSR only, not FFL/FFU
- BSR always pushes 0-valued bit (status [okay]) at front of FIFO
 - Which will always be well upstream of N99:0/[TRACKED_BOX_COUNT]

Implementation events

At BOX_AT_PE2 rising edge

- Pop reject/okay bit
 - Set (or leave) DIVERTED bit state to (as) that popped bit
- Decrement TRACKED_BOX_COUNT

At PE1 rising edge

- Ensure bit N99:0/[TRACKED_BOX_COUNT] has same current value as REJECT_BOX_AT_PE1
- Increment TRACKED_BOX_COUNT

Implementation assumptions

There is adequate physical space between boxes, so there is exactly 1 rising edge per box at photoeyes, both at PE1, and at PE2

No boxes are added or subtracted between PE1 and PE2, nor coffee cups blocking either PE

Initialization

Set diverted state to 0

- Better alternative would be detect diverter state

Set FIFO and index to zero

- Better alternative would be operator input of TRACKED_BOX_COUNT before starting conveyor
 - Could also be used for resynchronization
 - Could also set default reject/divert for any boxes past PE1 rising edge

First Pass

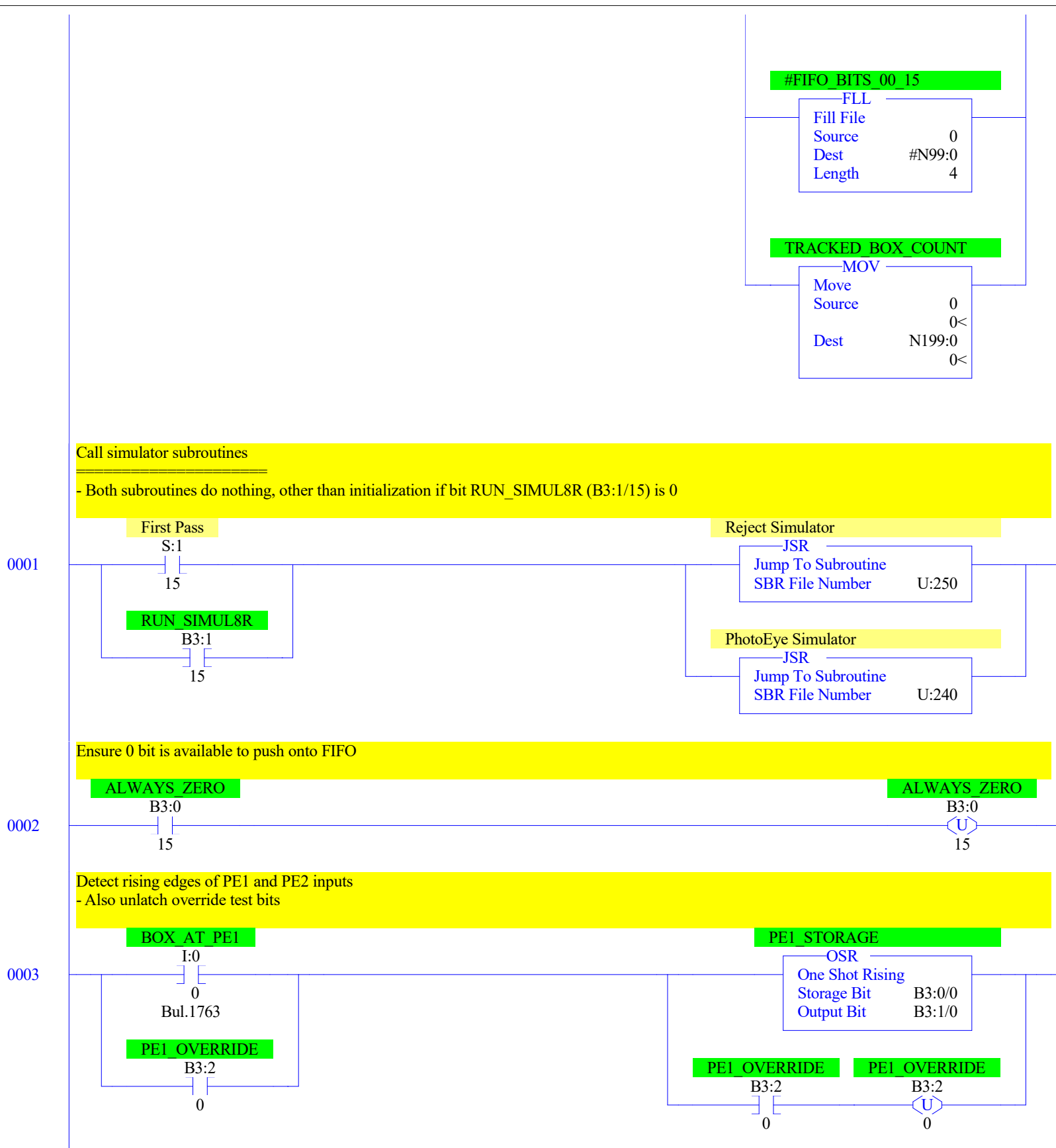
DIVERTED

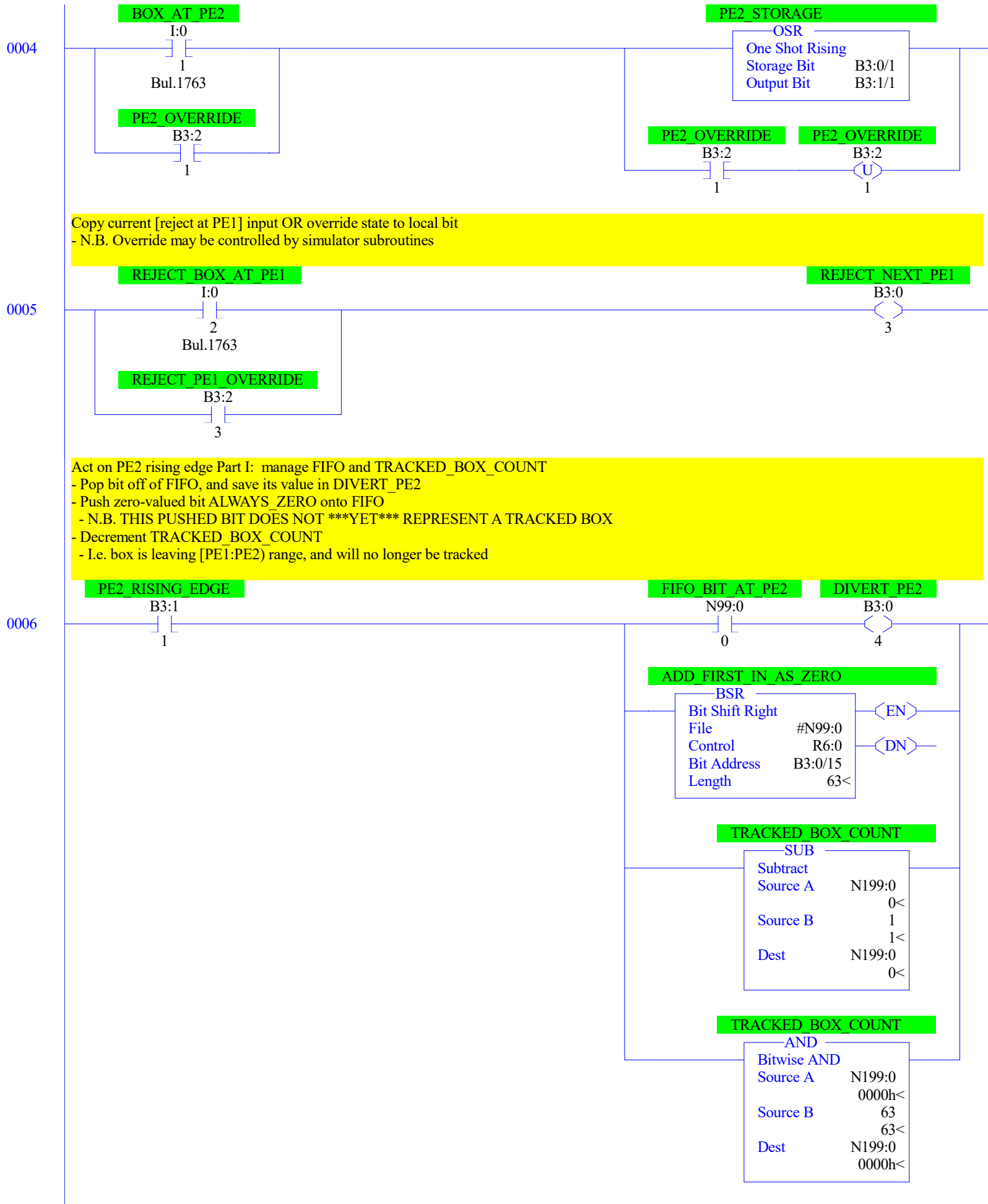
S:1

B3:1

15

2

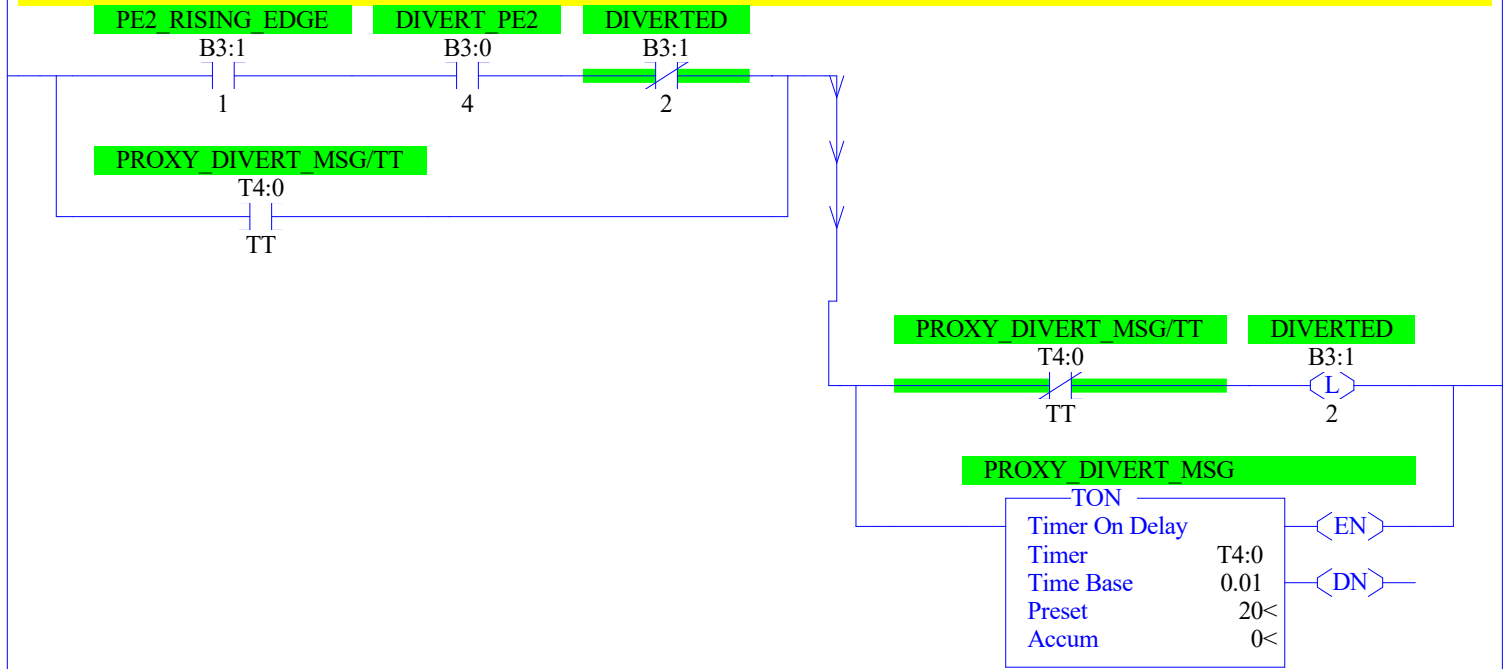




Act on PE2 rising edge Part IIa: manage diverter

- When DIVERT_PE2 (popped bit) is 1 and DIVERTED is 0
- Latch DIVERTED bit
- Start timer as proxy for sending MSG to activate diverter

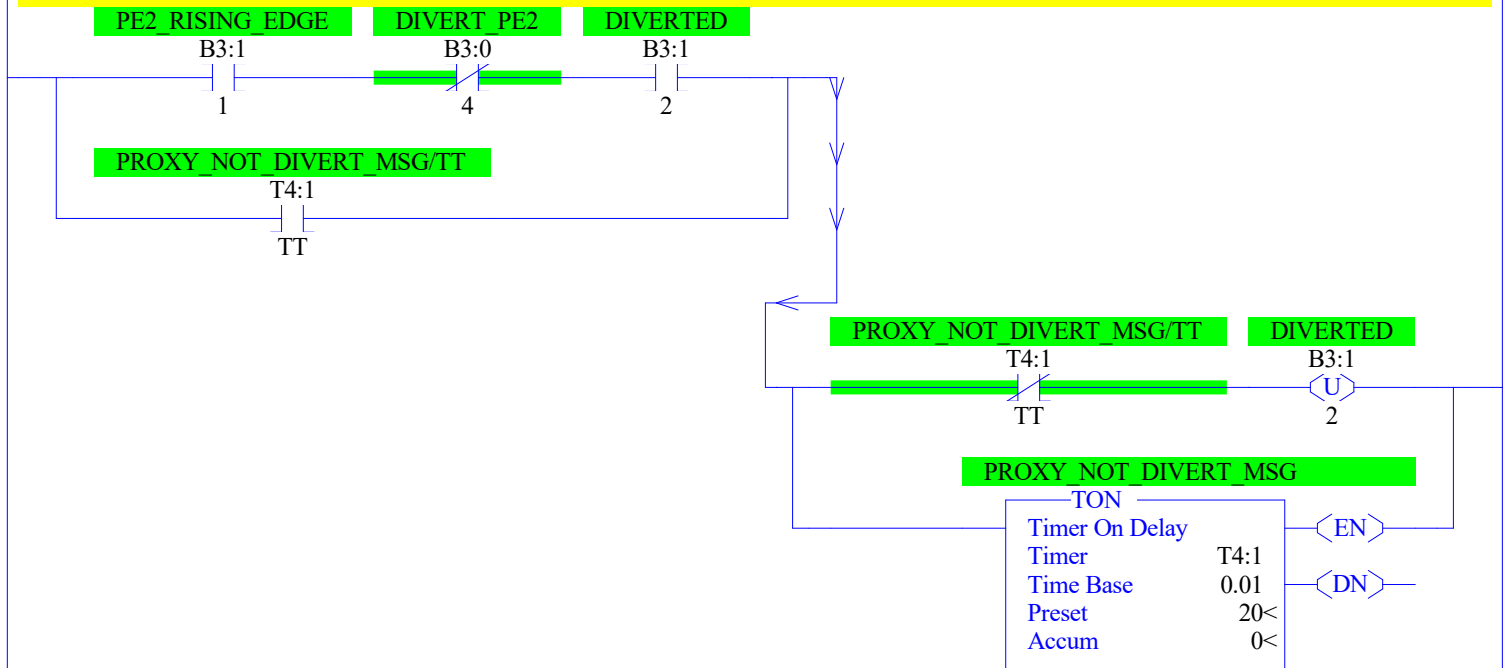
0007



Act on PE2 rising edge Part IIb: manage diverter

- When DIVERT_PE2 (popped bit) is 0 and DIVERTED is 1
- Unlatch DIVERTED bit
- Start timer as proxy for sending MSG to deactivate diverter

0008



Act on PE1 rising edge

- Latch bit N99:0/[TRACKED_BOX_COUNT] to 1 if REJECT_BOX_AT_PE1 is [reject]
- Otherwise, that bit is already 0 because
 - A 0 (ALWAYS_ZERO) was pushed onto the top of F99, and
 - That 0 was shifted to index TRACKED_BOX_COUNT by previous BSRs
- Increment TRACKED_BOX_COUNT
- I.e. box at PE1 is tracked as it enters [PE1:PE2) range

PE1 RISING EDGE

B3:1

0

REJECT NEXT PE1

B3:0

3

FIFO BIT AT PE1

N99:0

[N199:0]

TRACKED BOX COUNT

ADD

Add	
Source A	N199:0
	0<
Source B	1
	1<
Dest	N199:0
	0<

TRACKED BOX COUNT

AND

Bitwise AND	
Source A	N199:0
	0000h<
Source B	63
	63<
Dest	N199:0
	0000h<

Toggle output O:0/0 when any MSG proxy is active

- This could be used to flash a lamp when the diverter starts moving
- O:0/0 is relay on MicroLogix 1100, so a click will be available as auditory feedback

PROXY DIVERT MSG/TT

T4:0

TT

PROXY NOT DIVERT MSG/EN

T4:1

EN

O:0

0

Bul.1763

END

PhotoEye simulator

Simulate PhotoEye (PE) activity

Trigger PE events via PE1_OVERRIDE and PE2_OVERRIDE

Implementation summary

When box count in [PE1:PE2] range is small, generate PE1 events at a higher rate than PE2 events

When box count is large, do the opposite

Initialization

Select lower bit (13 in S:4) for PE1 events

First Pass

S:1

15

PE1_BIT_NUMBER

MOV

Move

Source

13

13<

Dest

N241:0

0<

Do not execute this subroutine if simulation is disabled

Return from this subroutine early if RUN_SIMUL8R bit is 0

RUN_SIMUL8R

B3:1

15

RET

Return

Set bit number for PE1 events

Trigger is state change of bit 13 (~0.8s) for PE1 to be faster so box count increases

Trigger is state change of bit 15 (~3.3s) for PE2 to be faster so box count decreases

TRACKED_BOX_COUNT

PE1_BIT_NUMBER

EQU

Equal

Source A

N199:0

0<

Source B

0

0<

MOV

Move

Source

13

13<

Dest

N241:0

0<

TRACKED_BOX_COUNT

PE1_BIT_NUMBER

GRT

Greater Than (A>B)

Source A

N199:0

0<

Source B

23

23<

MOV

Move

Source

15

15<

Dest

N241:0

0<

Set bit number for PE2 to complement of bit number for PE1 set above

PE2_BIT_NUMBER

SUB

Subtract

Source A

28

28<

Source B

N241:0

0<

Dest

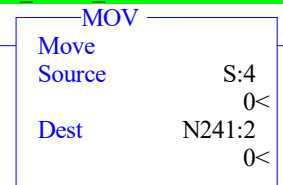
N241:1

0<

Copy free-running timer value to local word

So bits of word can be examined

S4 TIME BASE



Get the bits for PE1 and PE2

S4 TIME BASE/[PE1_BIT_NUMBER]

N241:2

PE1_BIT

B242:0

[N241:0]

0

S4 TIME BASE/[PE2_BIT_NUMBER]

N241:2

PE2_BIT

B242:0

[N241:1]

1

Latch PE1_OVERRIDE to 1 when PE1 bit changes

PE1_BIT

B242:0

PE1_OSR STORAGE

B242:0

ONS

12

PE1_OVERRIDE

B3:2

L

0

PE1_BIT

B242:0

PE1_OSF STORAGE

B242:0

ONS

13

PE1_OVERRIDE

B3:2

L

0

Latch PE2_OVERRIDE to 1 when PE2 bit changes, but only if box count is positive

PE2_BIT

B242:0

PE2_OSR STORAGE

B242:0

ONS

14

TRACKED_BOX_COUNT

GRT

Greater Than (A>B)

Source A

N199:0

0<

Source B

0

0<

PE2_OVERRIDE

B3:2

L

1

PE2_BIT

B242:0

PE2_OSF STORAGE

B242:0

ONS

15

TRACKED_BOX_COUNT

GRT

Greater Than (A>B)

Source A

N199:0

0<

Source B

0

0<

PE2_OVERRIDE

B3:2

L

1

Return to main routine

RET

Return

END

Rejection simulator

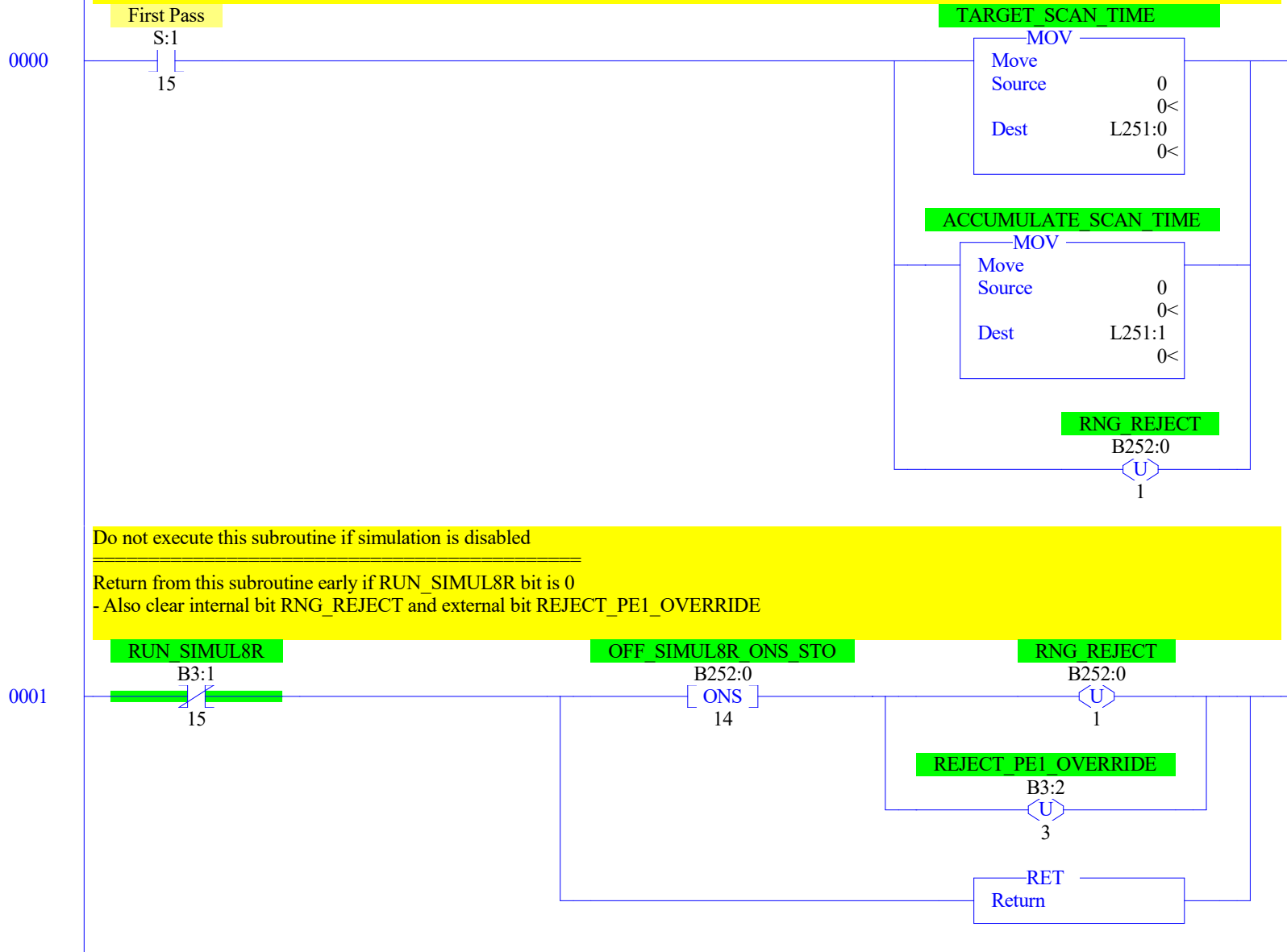
Latch or unlatch bit REJECT_PE1_OVERRIDE (B3:2/3) to model a box rejection process

Implementation summary

This model creates alternating periods of random lengths
At the transition between periods, bit REJECT PE1_OVERRIDE is toggled
Bit RNG_REJECT stores the last value latched into REJECT_PE1_OVERRIDE

Initialization

Reset scan time variables
Unlatch RNG_REJECT



Manage random periods Part 1

Increment accumulated time from last scan (status word S:35)

ACCUMULATE SCAN TIME

ADD

Add	
Source A	L251:1
	0<
Source B	S:35
	0<
Dest	L251:1
	0<

0002

Manage random periods Part 2

The current oeriod is complete: the target scan time is less than or equal to the accumulated scan time in thiis period

- 1) Set one-shot bit so RNG_REJECT and PE1_REJECT_OVERRIDE can be toggled
- 2) Generate random time for next period: TARGET_SCAN_TIME (L251:0)
 - Random value from 0 to 32,767
 - Represents period durations from 0 to 3.2767s (3,276,700us = 32,767 100us tick)
- 3) Reset accumulated time to zero: ACCUMULATE_SCAN_TIME (L251:1)
 - Will be increased by S:35 in previous rung once per scan.

TARGET_SCAN_TIME

LEQ

Less Than or Eql (A<=B)

Source A L251:0

0<

Source B L251:1

0<

RNG_ONESHOT

B252:0

0

TARGET_SCAN_TIME

MUL

Multiply

Source A L251:0

0<

Source B 20077

20077<

Dest L251:0

0<

TARGET_SCAN_TIME

ADD

Add

Source A L251:0

0<

Source B 12345

12345<

Dest L251:0

0<

TARGET_SCAN_TIME

AND

Bitwise AND

Source A L251:0

00000000h<

Source B 32767

32767<

Dest L251:0

00000000h<

ACCUMULATE_SCAN_TIME

MOV

Move

Source 0

0<

Dest L251:1

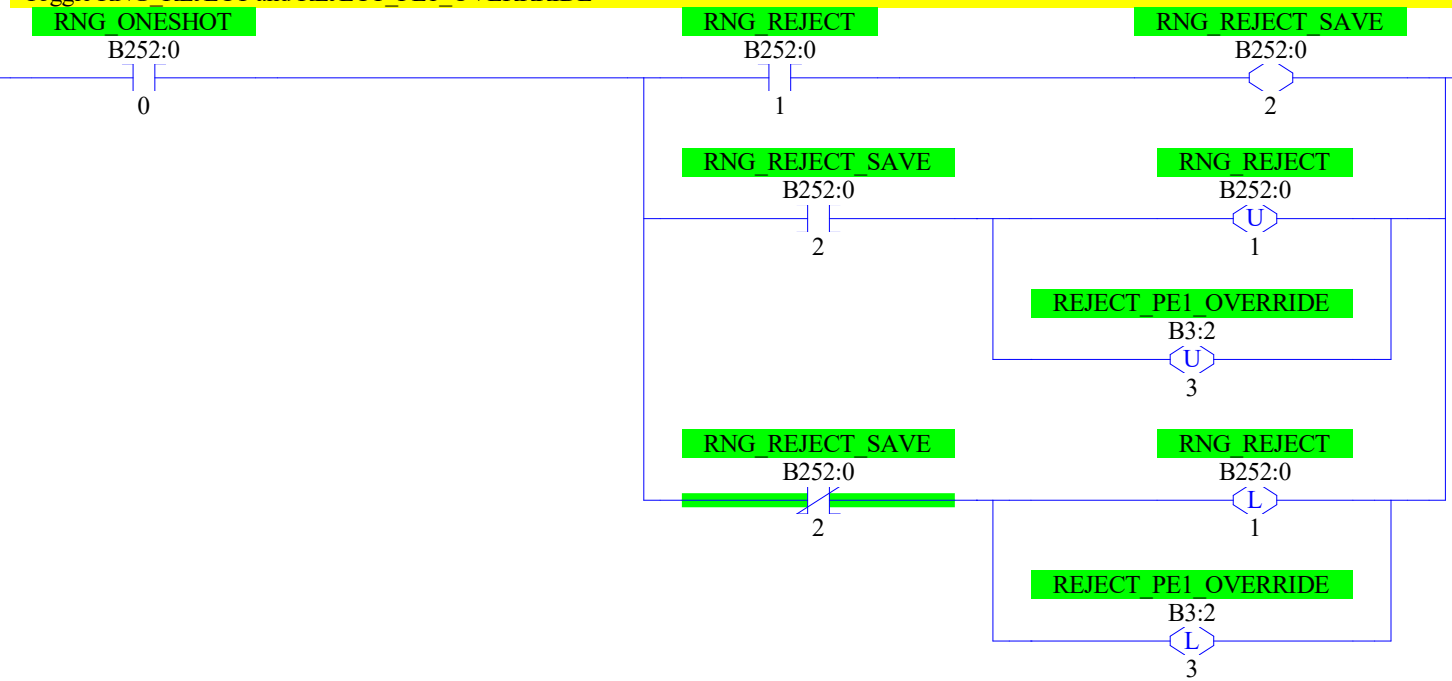
0<

0003

Toggle REJECT_PE1_OVERRIDE

On transition from one period to the next, RNG_ONESHOT will be 1
- Save RNG_REJECT state to RNG_REJECT_SAVE in preparation for following branches
- Toggle RNG_REJECT and REJECT_PE1_OVERRIDE

0004

**Return to main routine**

0005

RET
Return

0006

<END>

Offset	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0				
O:0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Bul.1763	MicroLogix	1100	Series B
O:0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Bul.1763	MicroLogix	1100	Series B
O:0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Bul.1763	MicroLogix	1100	Series B
O:0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Bul.1763	MicroLogix	1100	Series B

Offset	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0				
I:0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Bul.1763	MicroLogix	1100	Series B
I:0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Bul.1763	MicroLogix	1100	Series B
I:0.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Bul.1763	MicroLogix	1100	Series B
I:0.3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Bul.1763	MicroLogix	1100	Series B
I:0.4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Bul.1763	MicroLogix	1100	Series B-Analog
I:0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Bul.1763	MicroLogix	1100	Series B-Analog

Main

Processor Mode S:1/0 - S:1/4 = Remote Program Mode
On Power up Go To Run (Mode Behavior) S:1/12 = 0
First Pass S:1/15 = No
Free Running Clock S:4 = 0000-0000-0000-0000

Proc

OS Catalog Number S:57 = 1100 User Program Type S:63 = 8001h
OS Series S:58 = A Compiler Revision Number S:64 =
OS FRS S:59 =
Processor Catalog Number S:60 =
Processor Series S:61 = A
Processor FRN S:62 =

Scan Times

Maximum (x10 ms) S:22 = 0
Watchdog (x10 ms) S:3 (high byte) = 10
Last 100 uSec Scan Time S:35 = 0
Scan Toggle Bit S:33/9 = 0

Math

Math Overflow Selected S:2/14 = 0 Math Register (lo word) S:13 = 0
Overflow Trap S:5/0 = 0 Math Register (high word) S:14-S:13 = 0
Carry S:0/0 = 0 Math Register (32 Bit) S:14-S:13 = 0
Overflow S:0/1 = 0
Zero Bit S:0/2 = 0
Sign Bit S:0/3 = 0

Chan 0

Processor Mode S:1/0- S:1/4 = Remote Program Mode
Node Address S:15 (low byte) = 0 Outgoing Msg Cmd Pending S:33/2 = 0
Baud Rate S:15 (high byte) = ?
Channel Mode S:33/3 = 0
Comms Active S:33/4 = 0
Incoming Cmd Pending S:33/0 = 0
Msg Reply Pending S:33/1 = 0

Debug

Suspend Code S:7 = 0
Suspend File S:8 = 0

Errors

Fault Override At Power Up S:1/8 = 0 Fault Routine S:29 = 0
Startup Protection Fault S:1/9 = 0 Major Error S:6 = 0h
Major Error Halt S:1/13 = 0
Overflow Trap S:5/0 = 0 Error Description:
Control Register Error S:5/2 = 0
Major Error Executing User Fault Rtn. S:5/3 = 0
Battery Low S:5/11 = 0
Input Filter Selection Modified S:5/13 = 0
ASCII String Manipulation error S:5/15 = 0

Protection

Deny Future Access S:1/14 = No
Data File Overwrite Protection Lost S:36/10 = False

Mem Module

Memory Module Loaded On Boot S:5/8 = 0
Password Mismatch S:5/9 = 0
Load Memory Module On Memory Error S:1/10 = 0
Load Memory Module Always S:1/11 = 0
On Power up Go To Run (Mode Behavior) S:1/12 = 0
Program Compare S:2/9 = 0
Data File Overwrite Protection Lost S:36/10 = 0

Forces

Forces Enabled S:1/5 = Yes
Forces Installed S:1/6 = No

Offset	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	(Symbol)	Description
B3:0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
B3:1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
B3:2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
B3:3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
B3:4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
B3:5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
B3:6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
B3:7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
B3:8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
B3:9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

Offset	EN	TT	DN	BASE	PRE	ACC	(Symbol)	Description
T4:0	0	0	0	.01 sec	20	0	(PROXY DIVERT MSG)	
T4:1	0	0	0	.01 sec	20	0	(PROXY_NOT_DIVERT_MSG)	

Offset	CU	CD	DN	OV	UN	UA	PRE	ACC	(Symbol)	Description
C5:0	0	0	0	0	0	0	100	0	(PE1_OVERRIDE_COUNT)	
C5:1	0	0	0	0	0	0	100	0	(PE2_OVERRIDE_COUNT)	

Offset	EN	EU	DN	EM	ER	UL	IN	FD	LEN	POS	(Symbol)	Description
R6:0	0	0	0	0	0	0	0	0	63	0	(ADD_FIRST_IN_AS_ZERO)	

Data File N7 (dec) -- INTEGER

Offset	0	1	2	3	4	5	6	7	8	9
N7:0	0									

Offset	0	1	2	3	4
F8:0	0				

Offset	0	1	2	3	4	5	6	7	8	9
N99:0	0	0	0	0						

Data File N199 (dec) -- INDEX

Offset	0	1	2	3	4	5	6	7	8	9
N199:0	0									

Offset	0	1	2	3	4	5	6	7	8	9
N241:0	0	0	0							

Offset	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	(Symbol)	Description
B242:0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
B242:1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

Offset	0	1	2	3	4
L251:0	0	0			

Offset	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	(Symbol)	Description
B252:0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

Address/Symbol Database

Address	Symbol	Scope	Description	Sym Group	Dev. Code
B3:0/0	PE1_STORAGE	Global			
B3:0/1	PE2_STORAGE	Global			
B3:0/2	DIVERTED_STORE	Global			
B3:0/3	REJECT_NEXT_PE1	Global			
B3:0/4	DIVERT_PE2	Global			
B3:0/15	ALWAYS_ZERO	Global			
B3:1/0	PE1_RISING_EDGE	Global			
B3:1/1	PE2_RISING_EDGE	Global			
B3:1/2	DIVERTED	Global			
B3:1/15	RUN_SIMUL8R	Global			
B3:2/0	PE1_OVERRIDE	Global			
B3:2/1	PE2_OVERRIDE	Global			
B3:2/3	REJECT_PE1_OVERRIDE	Global			
B242:0/0	PE1_BIT	Global			
B242:0/1	PE2_BIT	Global			
B242:0/12	PE1_OSR_STORAGE	Global			
B242:0/13	PE1_OSF_STORAGE	Global			
B242:0/14	PE2_OSR_STORAGE	Global			
B242:0/15	PE2_OSF_STORAGE	Global			
B242:1/12	PE1_OSR	Global			
B242:1/13	PE1_OSF	Global			
B242:1/14	PE2_OSR	Global			
B242:1/15	PE2_OSF	Global			
B252:0/0	RNG_ONESHOT	Global			
B252:0/1	RNG_REJECT	Global			
B252:0/2	RNG_REJECT_SAVE	Global			
B252:0/14	OFF_SIMUL8R_ONS_STO	Global			
C5:0	PE1_OVERRIDE_COUNT	Global			
C5:1	PE2_OVERRIDE_COUNT	Global			
I:0/0	BOX_AT_PE1	Global			
I:0/1	BOX_AT_PE2	Global			
I:0/2	REJECT_BOX_AT_PE1	Global			
L99:0	FIRST_32	Global			
L99:0/0	NEXT_PE2_DIVERT_BIT	Global			
L99:0/[N199:0]	NEXT_PE1_REJECT_BIT	Global			
L99:1	SECOND_32	Global			
L99:2	ZERO_BIT_SOURCE	Global			
L251:0	TARGET_SCAN_TIME	Global			
L251:1	ACCUMULATE_SCAN_TIME	Global			
N99:0	FIFO_BITS_00_15	Global			
N99:0/0	FIFO_BIT_AT_PE2	Global			
N99:0/[N199:0]	FIFO_BIT_AT_PE1	Global			
N99:1	FIFO_BITS_16_31	Global			
N99:2	FIFO_BITS_32_47	Global			
N99:3	FIFO_BITS_48_63	Global			
N199:0	TRACKED_BOX_COUNT	Global			
N241:0	PE1_BIT_NUMBER	Global			
N241:1	PE2_BIT_NUMBER	Global			
N241:2	S4_TIME_BASE	Global			
N250:8					
N250:9					
R6:0	ADD_FIRST_IN_AS_ZERO	Global			
S:0			Arithmetic Flags		
S:0/0			Processor Arithmetic Carry Flag		
S:0/1			Processor Arithmetic Underflow/ Overflow Flag		
S:0/2			Processor Arithmetic Zero Flag		
S:0/3			Processor Arithmetic Sign Flag		
S:1			Processor Mode Status/ Control		
S:1/0			Processor Mode Bit 0		
S:1/1			Processor Mode Bit 1		
S:1/2			Processor Mode Bit 2		
S:1/3			Processor Mode Bit 3		
S:1/4			Processor Mode Bit 4		
S:1/5			Forces Enabled		
S:1/6			Forces Present		
S:1/7			Comms Active		
S:1/8			Fault Override at Powerup		
S:1/9			Startup Protection Fault		
S:1/10			Load Memory Module on Memory Error		
S:1/11			Load Memory Module Always		
S:1/12			Load Memory Module and RUN		
S:1/13			Major Error Halted		
S:1/14			Access Denied		
S:1/15			First Pass		
S:2/0			STI Pending		
S:2/1			STI Enabled		
S:2/2			STI Executing		
S:2/3			Index Addressing File Range		
S:2/4			Saved with Debug Single Step		
S:2/5			DH-485 Incoming Command Pending		
S:2/6			DH-485 Message Reply Pending		
S:2/7			DH-485 Outgoing Message Command Pending		
S:2/15			Comms Servicing Selection		
S:3			Current Scan Time/ Watchdog Scan Time		

Address/Symbol Database

Address	Symbol	Scope	Description	Sym Group	Dev. Code
S:4			Time Base		
S:4/[N241:0]					
S:5/0			Overflow Trap		
S:5/2			Control Register Error		
S:5/3			Major Err Detected Executing UserFault Routine		
S:5/4			M0-M1 Referenced on Disabled Slot		
S:5/8			Memory Module Boot		
S:5/9			Memory Module Password Mismatch		
S:5/10			STI Overflow		
S:5/11			Battery Low		
S:6			Major Error Fault Code		
S:7			Suspend Code		
S:8			Suspend File		
S:9			Active Nodes		
S:10			Active Nodes		
S:11			I/O Slot Enables		
S:12			I/O Slot Enables		
S:13			Math Register		
S:14			Math Register		
S:15			Node Address/ Baud Rate		
S:16			Debug Single Step Rung		
S:17			Debug Single Step File		
S:18			Debug Single Step Breakpoint Rung		
S:19			Debug Single Step Breakpoint File		
S:20			Debug Fault/ Powerdown Rung		
S:21			Debug Fault/ Powerdown File		
S:22			Maximum Observed Scan Time		
S:23			Average Scan Time		
S:24			Index Register		
S:25			I/O Interrupt Pending		
S:26			I/O Interrupt Pending		
S:27			I/O Interrupt Enabled		
S:28			I/O Interrupt Enabled		
S:29			User Fault Routine File Number		
S:30			STI Setpoint		
S:31			STI File Number		
S:32			I/O Interrupt Executing		
S:33			Extended Proc Status Control Word		
S:33/0			Incoming Command Pending		
S:33/1			Message Reply Pending		
S:33/2			Outgoing Message Command Pending		
S:33/3			Selection Status User/DF1		
S:33/4			Communicat Active		
S:33/5			Communicat Servicing Selection		
S:33/6			Message Servicing Selection Channel 0		
S:33/7			Message Servicing Selection Channel 1		
S:33/8			Interrupt Latency Control Flag		
S:33/9			Scan Toggle Flag		
S:33/10			Discrete Input Interrupt Reconfigur Flag		
S:33/11			Online Edit Status		
S:33/12			Online Edit Status		
S:33/13			Scan Time Timebase Selection		
S:33/14			DTR Control Bit		
S:33/15			DTR Force Bit		
S:34			Pass-thru Disabled		
S:34/0			Pass-Thru Disabled Flag		
S:34/1			DH+ Active Node Table Enable Flag		
S:34/2			Floating Point Math Flag Disable,Fl		
S:35	LAST_SCAN_100US	Global	Last 1 ms Scan Time		
S:36			Extended Minor Error Bits		
S:36/8			DII Lost		
S:36/9			STI Lost		
S:36/10			Memory Module Data File Overwrite Protection		
S:37			Clock Calendar Year		
S:38			Clock Calendar Month		
S:39			Clock Calendar Day		
S:40			Clock Calendar Hours		
S:41			Clock Calendar Minutes		
S:42			Clock Calendar Seconds		
S:43			STI Interrupt Time		
S:44			I/O Event Interrupt Time		
S:45			DII Interrupt Time		
S:46			Discrete Input Interrupt- File Number		
S:47			Discrete Input Interrupt- Slot Number		
S:48			Discrete Input Interrupt- Bit Mask		
S:49			Discrete Input Interrupt- Compare Value		
S:50			Processor Catalog Number		
S:51			Discrete Input Interrupt- Return Number		
S:52			Discrete Input Interrupt- Accumulat		
S:53			Reserved/ Clock Calendar Day of the Week		
S:55			Last DII Scan Time		
S:56			Maximum Observed DII Scan Time		
S:57			Operating System Catalog Number		
S:58			Operating System Series		

Address/Symbol Database

Address	Symbol	Scope	Description	Sym Group	Dev. Code
S:59			Operating System FRN		
S:61			Processor Series		
S:62			Processor Revision		
S:63			User Program Type		
S:64			User Program Functional Index		
S:65			User RAM Size		
S:66			Flash EEPROM Size		
S:67			Channel 0 Active Nodes		
S:68			Channel 0 Active Nodes		
S:69			Channel 0 Active Nodes		
S:70			Channel 0 Active Nodes		
S:71			Channel 0 Active Nodes		
S:72			Channel 0 Active Nodes		
S:73			Channel 0 Active Nodes		
S:74			Channel 0 Active Nodes		
S:75			Channel 0 Active Nodes		
S:76			Channel 0 Active Nodes		
S:77			Channel 0 Active Nodes		
S:78			Channel 0 Active Nodes		
S:79			Channel 0 Active Nodes		
S:80			Channel 0 Active Nodes		
S:81			Channel 0 Active Nodes		
S:82			Channel 0 Active Nodes		
S:83			DH+ Active Nodes		
S:84			DH+ Active Nodes		
S:85			DH+ Active Nodes		
S:86			DH+ Active Nodes		
T4:0	PROXY_DIVERT_MSG	Global			
T4:1	PROXY_NOT_DIVERT_MSG	Global			
U:240			PhotoEye Simulator		
U:250			Reject Simulator		

Address	Instruction	Description
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Group_Name	Description
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