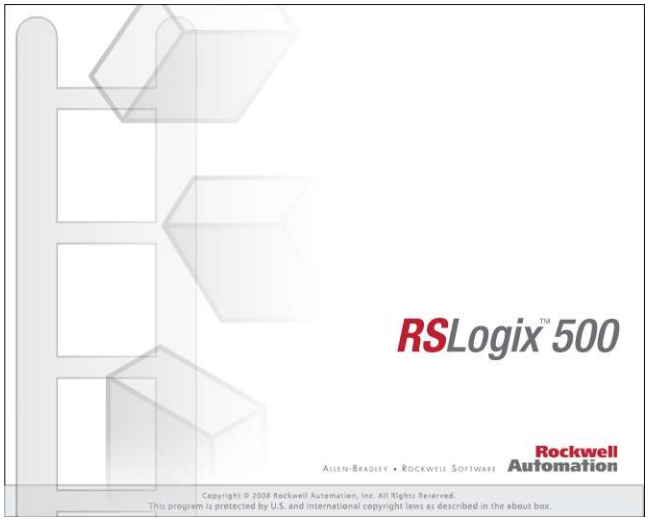
RSLogix Micro Project Report



Processor Information

Processor Type: Bul.1763 MicroLogix 1100 Series B

Processor Name: UNTITLED

Total Memory Used: 391 Instruction Words Used - 85 Data Table Words Used

Total Memory Left: 6265 Instruction Words Left

Program Files: 3

Data Files: 11

Program ID: 9909

I/O Configuration

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: 00:0F:73:00:2F:A5
   IP Address: 192.168.1.10
   Subnet Mask: 255.255.255.0
   Gateway Address: 0.0.0.0
   Msg Connection Timeout (x 1mS): 15000
   Msg Reply Timeout (x mS): 3000
   Inactivity Timeout (x Min): 1
   Bootp Enable: No
   Dhcp Enable No
   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
	2	LADDER	6	No	291

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	15	5	T4:4
COUNTER	5	C	Global	No	15	5	C5:4
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
BIT_ARRAY	93	B	Global	No	4	4	B93:3
NUM_BOXES	199	N	Global	No	5	5	N199:4

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 (3) PhotoEye stations (PE1; PE2 & PE3)
A Box at Station #1 is Detected by PE1
Increment a Counter for Each Box that Passes PE1
Each box's status judged as [reject] IF a rising edge is generatred by PE1 + PE3
When a box at Stationn #2 later generates a rising edge at downstream PE2:
- divert if box status from PE1 + PE3 was [reject]
- do not divert if box status from PE1 was [okay]
Decrement a Counter for Each Box that is detected by at Station #2 (PE2)

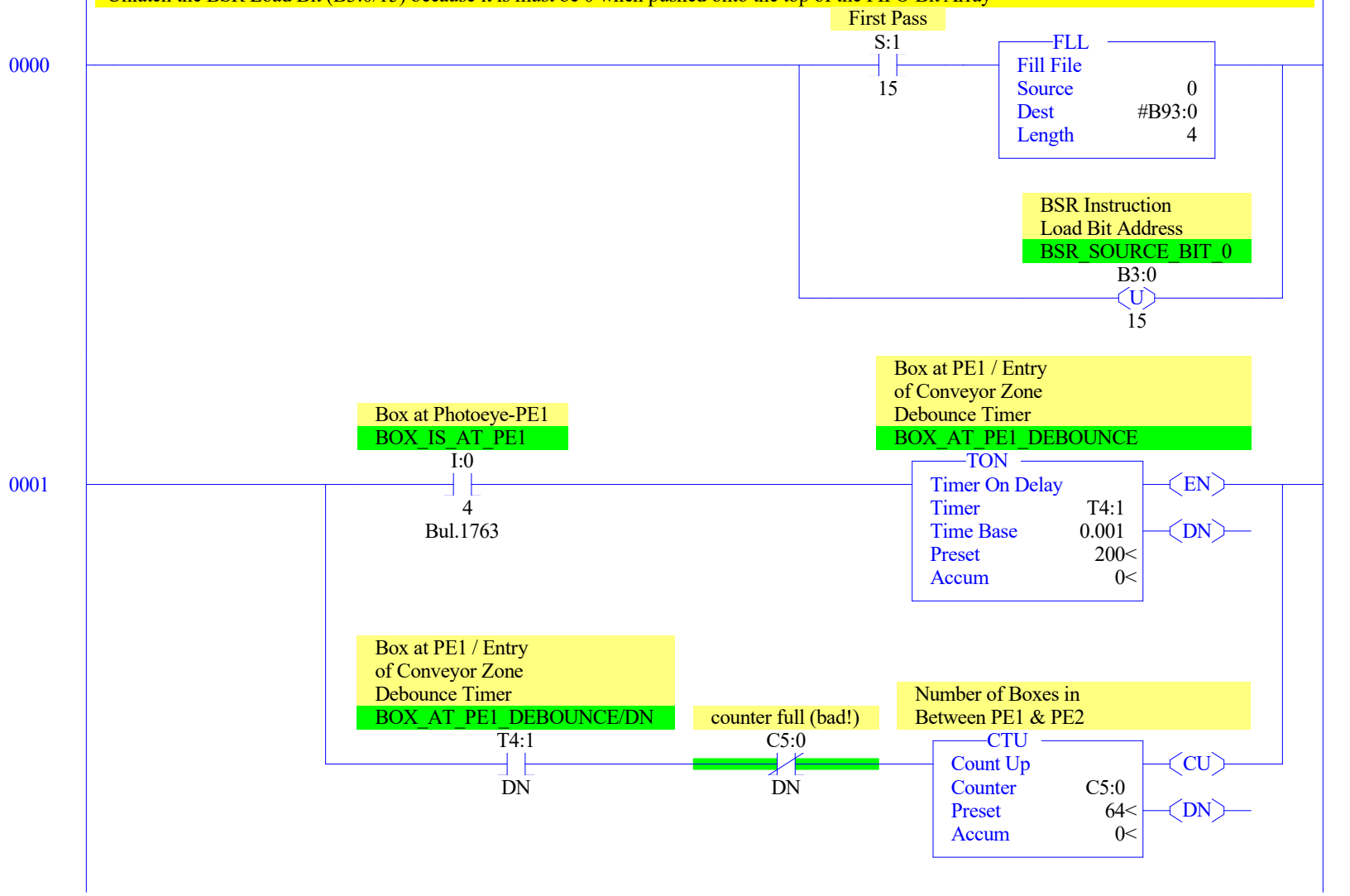
Implementation summary
======================

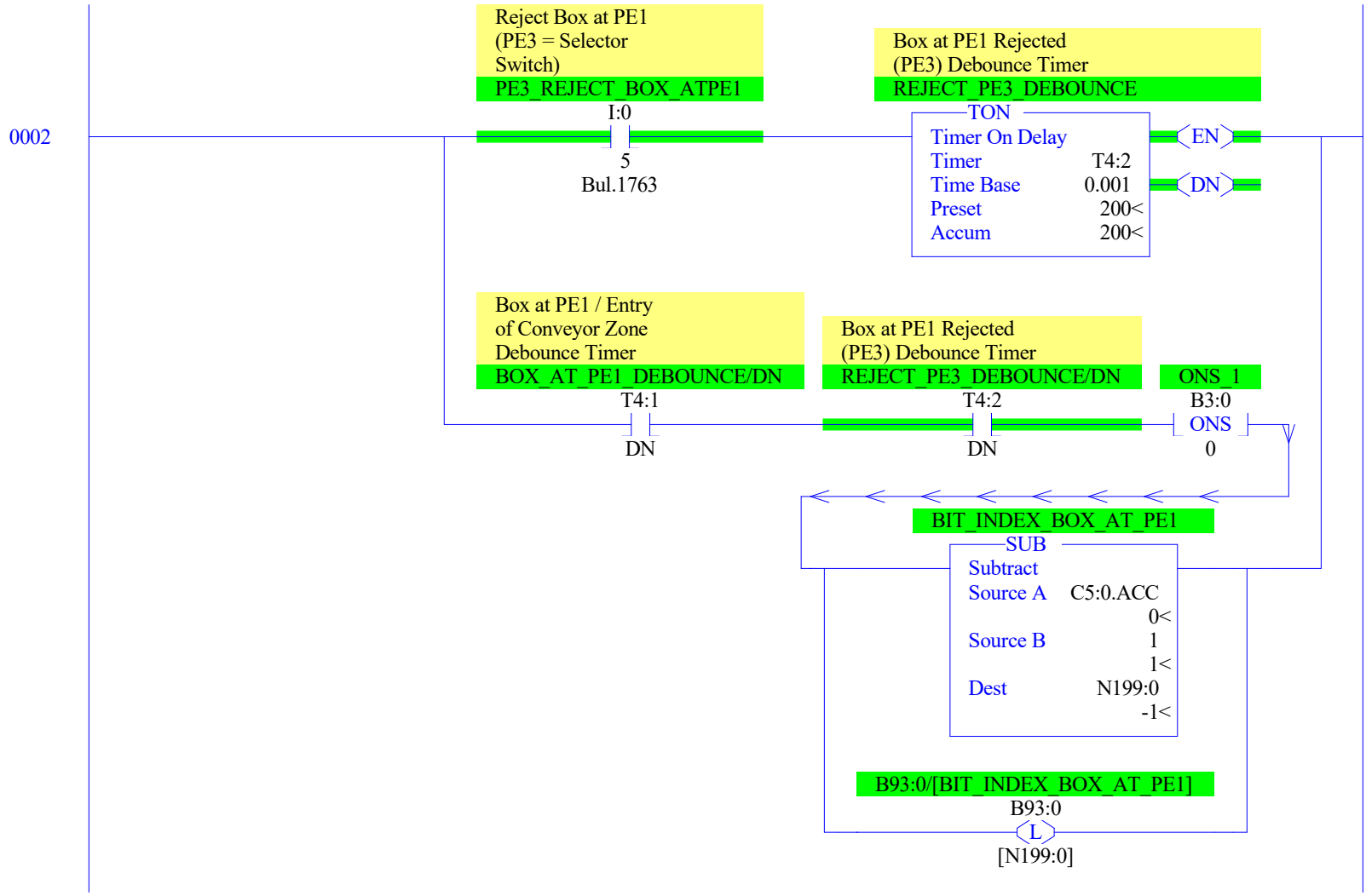
Pulse BSR with PE2 to Shift the Bit Array
BSR Length = number of boxes from PE1 to before PE2

N.B. Assumptions
- Adequate space between boxes, so 1 rising edge per box at PE1 and at PE2
- No boxed added or subtracted between PE1 and PE2 (or coffee cup blocks PE)
- PE1 & PE3 are positioned so a Box Enterng the Station #1 to Station#2 Zone (PE1) & a Rejected Box (PE3) can detect each condition at the same time

Initialization
==========

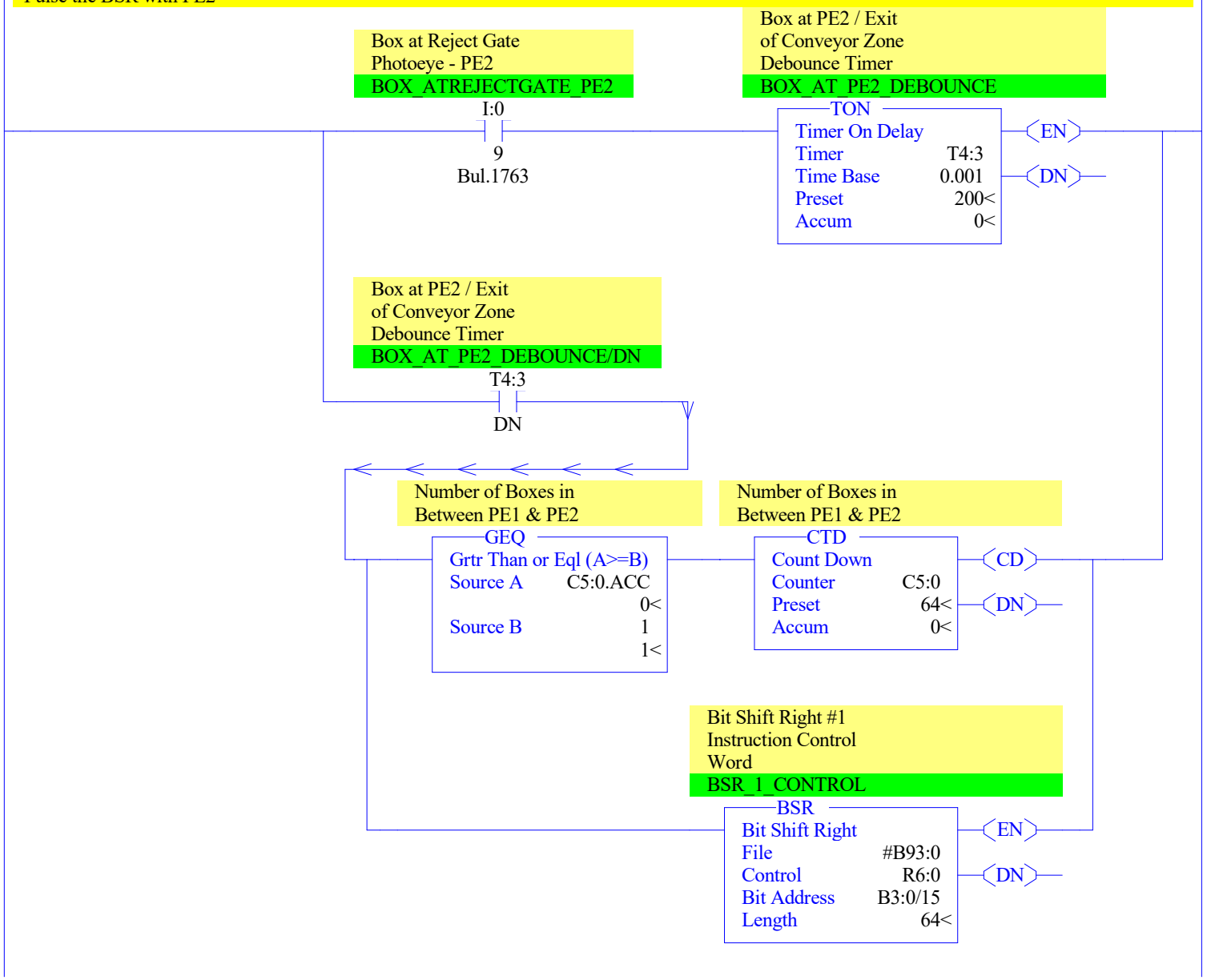
- Set FIFO Bit Array and index pointers to zero
- Unlatch the BSR Load Bit (B3:0/15) because it is must be 0 when pushed onto the top of the FIFO Bit Array




0002
Reject Box at PE1
(PE3 = Selector
Switch)
PE3_REJECT_BOX_ATPE1
I:0
5
Bul.1763
Box at PE1 Rejected
(PE3) Debounce Timer
REJECT_PE3_DEBOUNCE
TON
Timer On Delay
Timer T4:2
Time Base 0.001
Preset 200<
Accum 200<
EN
DN
Box at PE1 / Entry
of Conveyor Zone
Debounce Timer
BOX_AT_PE1_DEBOUNCE/DN
T4:1
DN
Box at PE1 Rejected
(PE3) Debounce Timer
REJECT_PE3_DEBOUNCE/DN
T4:2
DN
ONS_1
B3:0
ONS
0
BIT_INDEX_BOX_AT_PE1
SUB
Subtract
Source A C5:0.ACC
0<
Source B 1
1<
Dest N199:0
-1<
B93:0/[BIT_INDEX_BOX_AT_PE1]
B93:0
L
[N199:0]

- Decrement Counter (C5:0) when a Box is Detected by the PARTATREJECTGATE_PE2
- Pulse the BSR with PE2

0003



- Start Off Delay Timer to Divert Gate for Timer Preset x Time Base Seconds with BSR Unload Bit
- Reset the Unload Bit to Start the Off Delay Timer
- Turn O:0/0 On when the Off Delay Timer is Timing (T4:0.DN = 1).
  - O:0/0 is a relay on MicroLogix 1100, so a click will be available as auditory feedback

0004

Bit Shift Right #1
Instruction Control
Word Unload Bit
BSR_1_CONTROL/UL
R6:0
UL

Reject Gate Open
Timer
REJECT_GATE_OPEN_TMR

TOF
Timer Off Delay
Timer T4:0
Time Base 0.01
Preset 500<
Accum 500<
EN
DN

Bit Shift Right #1
Instruction Control
Word Unload Bit
BSR_1_CONTROL/UL
R6:0
U
UL

Reject Gate Open
Timer Done Bit
REJECT_GATE_OPEN_TMR/DN
T4:0
DN

Diverter Gate Output
DIVERT_GATE_OUTPUT
O:0
0
Bul.1763

0005

END

Data File O0 (bin) -- OUTPUT

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

Data File I1 (bin) -- INPUT

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	1	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	1	0	1	Bul.1763	MicroLogix 1100 Series B-Analog
I:0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	Bul.1763	MicroLogix 1100 Series B-Analog

Main

Processor Mode S:1/0 - S:1/4 = Remote Run
On Power up Go To Run (Mode Behavior) S:1/12 = 0
First Pass S:1/15 = No
Free Running Clock S:4 = 0001-0111-1000-1000

Proc

OS Catalog Number S:57 = 1100
OS Series S:58 = B
OS FRS S:59 =
Processor Catalog Number S:60 =
Processor Series S:61 = A
Processor FRN S:62 =
User Program Type S:63 = 8108h
Compiler Revision Number S:64 =

Scan Times

Maximum (x10 ms) S:22 = 31
Watchdog (x10 ms) S:3 (high byte) = 10
Last 100 uSec Scan Time S:35 = 7
Scan Toggle Bit S:33/9 = 0

Math

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

Chan 0

Processor Mode S:1/0- S:1/4 = Remote Run
Node Address S:15 (low byte) = 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
Outgoing Msg Cmd Pending S:33/2 = 0

Debug

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

Errors

Fault Override At Power Up S:1/8 = 0
Startup Protection Fault S:1/9 = 0
Major Error Halt S:1/13 = 0
Overflow Trap S:5/0 = 0
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
Fault Routine S:29 = 0
Major Error S:6 = 0h
Error Description:

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

Data File B3 (bin) -- BINARY

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	

Data File T4 -- TIMER

Offset	EN	TT	DN	BASE	PRE	ACC	(Symbol) Description
T4:0	0	0	0	.01 sec	500	500	(REJECT GATE OPEN TMR) Reject Gate Open Timer
T4:1	0	0	0	.001 sec	200	0	(BOX_AT_PE1_DEBOUNCE) Box at PE1 / Entry of Conveyor Zone Debo
T4:2	1	0	1	.001 sec	200	200	(REJECT_PE3_DEBOUNCE) Box at PE1 Rejected (PE3) Debounce Timer
T4:3	0	0	0	.001 sec	200	0	(BOX_AT_PE2_DEBOUNCE) Box at PE2 / Exit of Conveyor Zone Debou
T4:4	0	0	0	.01 sec	0	0	

Data File C5 -- COUNTER

Offset	CU	CD	DN	OV	UN	UA	PRE	ACC	(Symbol) Description
C5:0	0	0	0	0	0	0	64	0	Number of Boxes in Between PE1 & PE2
C5:1	0	0	0	0	0	0	0	0	
C5:2	0	0	0	0	0	0	0	0	
C5:3	0	0	0	0	0	0	0	0	
C5:4	0	0	0	0	0	0	0	0	

Data File R6 -- CONTROL

Offset	EN	EU	DN	EM	ER	UL	IN	FD	LEN	POS	(Symbol)	Description
R6:0	0	0	0	0	0	0	0	0	64	0	(BSR_1_CONTROL)	Bit Shift Right #1 Instruction Control W

Data File N7 (dec) -- INTEGER

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

Data File F8 -- FLOAT

Offset	0	1	2	3	4
F8:0	0				

Data File B93 (bin) -- BIT_ARRAY -- Binary Bit Array

Offset	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	(Symbol) Description
B93:0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
B93:1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
B93:2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
B93:3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Data File N199 (dec) -- NUM_BOXES -- Number of Boxes in Between PE1 & PE2

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

Address/Symbol Database

Address	Symbol	Scope	Description	Sym Group	De
B3:0/0	ONS_1	Global			
B3:0/15	BSR_SOURCE_BIT_0	Global	BSR Instruction Load Bit Address		
B93:0/[N199:0]					
C5:0			Number of Boxes in Between PE1 & PE2		
C5:0.PRE					
C5:0.ACC					
C5:0/DN			counter full (bad!)		
I:0/0					
I:0/1					
I:0/4	BOX_IS_AT_PE1	Global	Box at Photoeye-PE1		
I:0/5	PE3_REJECT_BOX_ATPE1	Global	Reject Box at PE1 (PE3 = Selector Switch)		
I:0/9	BOX_ATREJECTGATE_PE2	Global	Box at Reject Gate Photoeye - PE2		
N199:0	BIT_INDEX_BOX_AT_PE1	Global			
O:0/0	DIVERT_GATE_OUTPUT	Global	Diverter Gate Output		
R6:0	BSR_1_CONTROL	Global	Bit Shift Right #1 Instruction Control Word		
R6:0.LEN					
R6:0/UL			Bit Shift Right #1 Instruction Control Word Unload Bit		
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		
S:4			Time Base		
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		

Address/Symbol Database

Address	Symbol	Scope	Description	Sym Group	De
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 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		
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	REJECT_GATE_OPEN_TMR	Global	Reject Gate Open Timer		
T4:0/DN			Reject Gate Open Timer Done Bit		
T4:1	BOX_AT_PE1_DEBOUNCE	Global	Box at PE1 / Entry of Conveyor Zone Debounce Timer		
T4:1/DN					
T4:2	REJECT_PE3_DEBOUNCE	Global	Box at PE1 Rejected (PE3) Debounce Timer		
T4:2/DN					
T4:3	BOX_AT_PE2_DEBOUNCE	Global	Box at PE2 / Exit of Conveyor Zone Debounce Timer		
T4:3/DN					

Instruction Comment Database

Address	Instruction	Description

Symbol Group Database

Group_Name Description