

RSLogix Micro Project Report



Processor Information

Processor Type: Bul.1763 MicroLogix 1100 Series B

Processor Name: UNTITLED

Total Memory Used: 234 Instruction Words Used - 78 Data Table Words Used

Total Memory Left: 6422 Instruction Words Left

Program Files: 6

Data Files: 9

Program ID: 2e0d

I/O Configuration

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

Channel Configuration

CHANNEL 0 (SYSTEM) - Driver: Modbus RTU Master

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

Baud: 19200

Parity: NONE

Control Line : No Handshaking

InterCharacter Timeout(x1 ms): 0

Pre Transmit Delay(x1 ms): 0

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:73:01:72:04

IP Address: 192.168.1.112

Subnet Mask: 255.255.255.0

Gateway Address: 192.168.1.1

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	3	No	96
FILTERDATA	3	LADDER	2	No	91
LOADCELLIN	4	LADDER	5	No	96
TRAINING	5	LADDER	8	No	501

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	3	3	B3:2
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	10	10	N7:9
FLOAT	8	F	Global	No	20	10	F8:9

Load cell control - cf. <https://www.plctalk.net/qanda/showthread.php?t=133372>
 Call training routine, which will usually return immediately

TRAINING

JSR

Jump To Subroutine
SBR File Number

U:5

When training is inactive, continue getting load cell data every 100ms*

- 1) If a new load cell value is available, start a 100ms timer
 - 1.1) When that timer expires, latch a 1 into SEND_LOAD_CELL_DATUM to trigger the next load cell value
 - 2) Call routine LOADCELLIN
 - 3) Copy load cell data to itself so it will be displayed here
- * This ensures external source of data will exhaust its data and reset EMULATE_LOADCELLDATA

TRAINING IS INACTIVE

SEND_LOAD_CELL_DATUM

B3:0

5

B3:0

0

LOAD_CELL_SAMPLING2

TON

Timer On Delay

Timer

Time Base

Preset

Accum

T4:1

0.001

100<

21<

<EN>

<DN>

LOAD_CELL_SAMPLING2/DN

T4:1

DN

SEND_LOAD_CELL_DATUM

B3:0

0

LOAD_CELL_SAMPLING2

T4:1

<RES>

READ_LOAD_CELL_DATA

JSR

Jump To Subroutine
SBR File Number

U:4

LOAD_CELL_INPUT

MOV

Move

Source

Dest

F8:0

0.0<

F8:0

0.0<

<END>

Implement a low-pass filter on incoming load cell data:

$$\text{FILTERED_DATA}(n+1) = [(1 - f) \times \text{New_Load_Cell_Value}] + [f \times \text{FILTERED_DATA}(n)]$$

where $0.0 < f < 1.0$; f is the FILTER_PARAMETER, and is typically near 1.0

TEMPORARY_FLOAT

SUB

Subtract

Source A	1.0
	1.0<
Source B	F8:2
	0.965<
Dest	F8:3
	6.196586<

TEMPORARY_FLOAT

MUL

Multiply

Source A	F8:3
	6.196586<
Source B	F8:0
	0.0<
Dest	F8:3
	6.196586<

FILTERED_DATA

MUL

Multiply

Source A	F8:1
	182.7578<
Source B	F8:2
	0.965<
Dest	F8:1
	182.7578<

FILTERED_DATA

ADD

Add

Source A	F8:1
	182.7578<
Source B	F8:3
	6.196586<
Dest	F8:1
	182.7578<

END

Notional input map routine to

- 1) scale the input load cell data from an analog input card channel when requested i.e. when SEND_LOAD_CELL_DATUM becomes 1, and
- 2) indicate that value is ready by unlatching SEND_LOAD_CELL_DATUM to 0
- 3) Also implement logic to allow using emulated data from an external source i.e. the Python script [emulate_load_cell.py]

If SEND_LOAD_CELL_DATA is 0 i.e. not 1, then return and do nothing

SEND_LOAD_CELL_DATUM

B3:0

0

RET

Return

If execution got to here, then the process is requesting the next load cell datum (SEND_LOAD_CELL_DATA is 1)

- If the data are not being emulated from an external source, then copy the raw data from the analog input channel into the raw data buffer, LOAD_CELL_INPUT
- If the data are being emulated from an external source, then that source will control the raw data buffer directly

EMULATE_LOADCELLDATA

B3:0

3

#LOAD_CELL_RAW_INPUT

CPW

Copy Word

Source #I:0.0

Dest #N7:1

Length 1

Scale the raw input into float LOAD_CELL_INPUT

LOAD_CELL_INPUT

SCP

Scale w/Parameters

Input N7:1
0<

Input Min. 0.0
0.0<

Input Max. 4095.0
4095.0<

Scaled Min. 0.0
0.0<

Scaled Max. 1000.0
1000.0<

Output F8:0
0.0<

If the data are not being emulated from an external source, then unlatch SEND_LOAD_CELL_DATUM to 0

If the data are being emulated from an external source, then that source will control SEND_LOAD_CELL_DATA

N.B. the falling edge of SEND_LOAD_CELL_DATA will indicate to the calling routine that the new value is ready

EMULATE_LOADCELLDATA

B3:0

3

SEND_LOAD_CELL_DATUM

B3:0

0

END

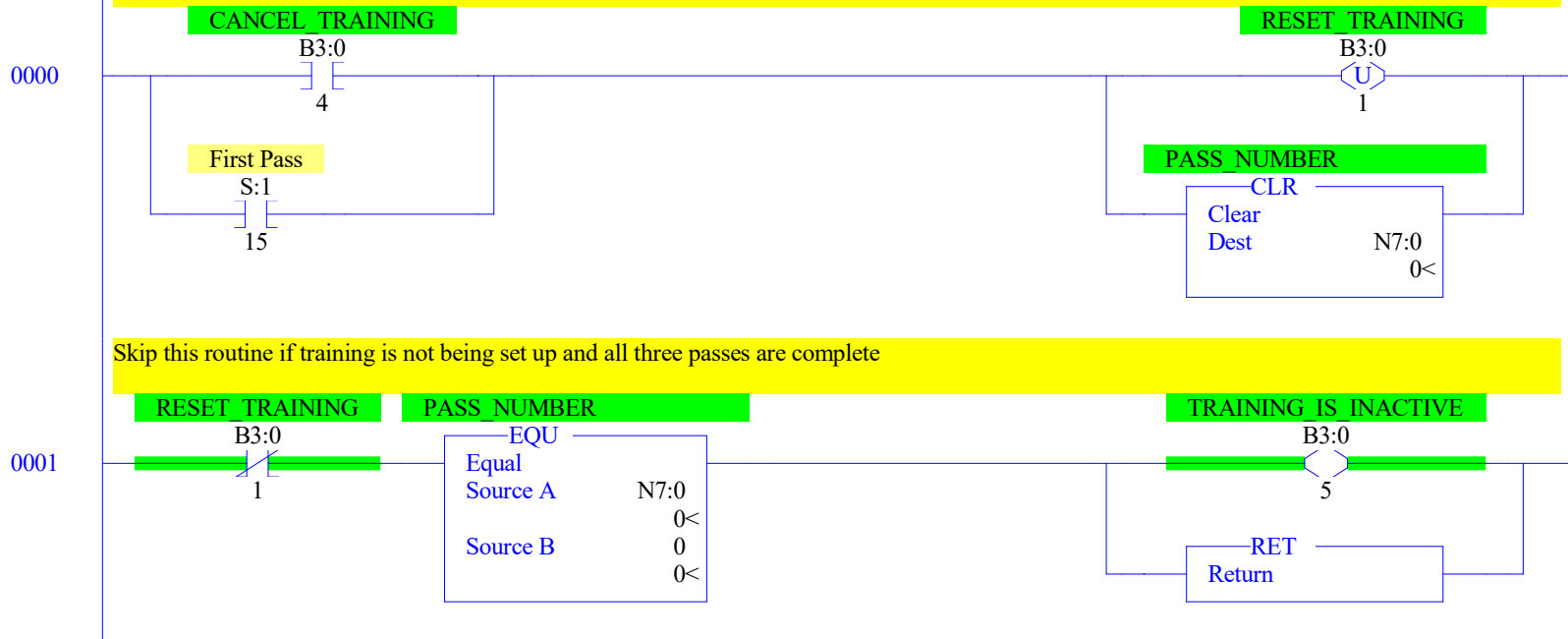
Training routine - cf. <https://www.plctalk.net/qanda/showthread.php?t=133372>

Train PLC to get obtain or three load cell values that are steady

Inputs and Outputs

- RESET_TRAINING
 - Discrete momentary (push button?). or controlled by external data emulator (emulate_load_cell.py)
 - When pressed, initializes training values
 - When released (falling edge), starts a training rung
- LOAD_CELL_INPUT
 - Analog float value that is loaded from load cell in response to a rising edge of Boolean SEND_LOAD_CELL_DATUM
- SEND_LOAD_CELL_DATUM (both output-ish and input-ish)
 - Output: written to as a 1 by this routine to indicate 100ms have expired and it is time for the next load cell value
 - Input: written to as a 0 by another entity to after putting a new value into LOAD_CELL_INPUT
 - This falling edge indicates a new LOAD_CELL_INPUT is ready
 - The other entity could be an I/O mapping routine, or the Python script [emulate_load_cell.py]

First rung: respond to request to cancel training



Initialize and set up for training run

RESET TRAINING

B3:0

1

FILTERED DATA

MOV

Move
Source F8:0
0.0<
Dest F8:1
182.7578<

PASS NUMBER

MOV

Move
Source 3
3<
Dest N7:0
0<

FILTERED DATA_LOW

CLR

Clear
Dest F8:5
184.5199<

FILTERED DATA_HIGH

CLR

Clear
Dest F8:6
273.3434<

FILTERED DATA_THIRD

CLR

Clear
Dest F8:7
183.8225<

SEND_LOAD_CELL_DATUM

B3:0

(U)
0

STEADY_COUNT

C5:0

(RES)

TOTAL_COUNT

C5:1

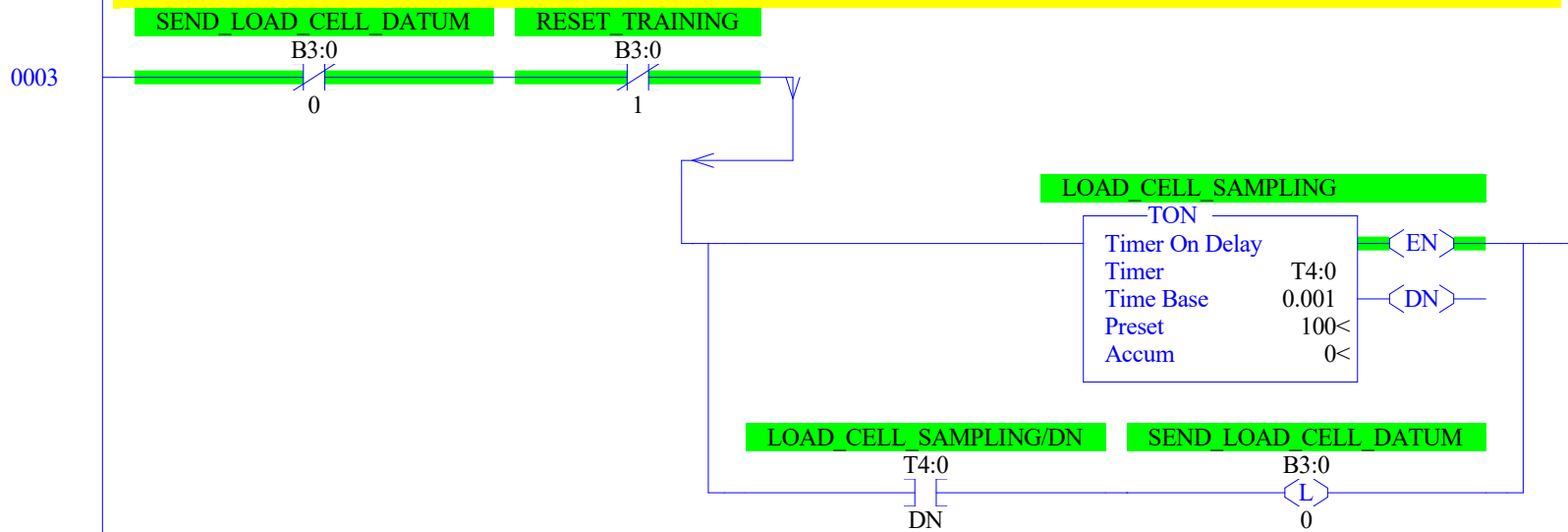
(RES)

LOAD_CELL_SAMPLING

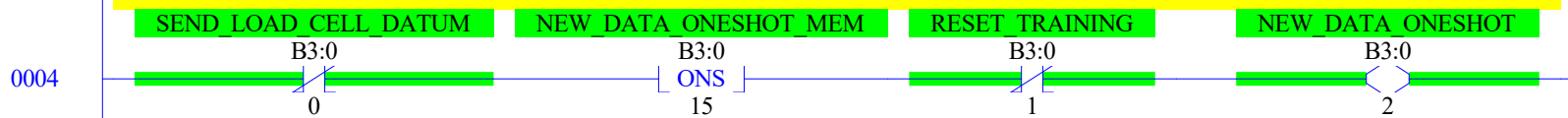
T4:0

(RES)

When SEND_LOAD_CELL_DATUM is 0, indicating a new load cell value is available, start a 100ms timer
 When that timer expires, latch a 1 into SEND_LOAD_CELL_DATUM to trigger an external process to get the next load cell value
 *** N.B. the external process will unlatch a 0 into SEND_LOAD_CELL_DATA to indicate the next load cell value is ready

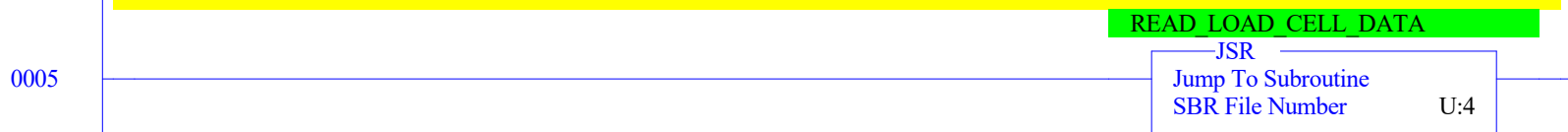


Detect the falling edge (one-shot) of SEND_LOAD_CELL_DATUM, to respond to the next load cell value



Read the raw load cell data, scale to float LOAD_CELL_INPUT

N.B. The one-shot in the rung above needs to be between
 - the timer in the rung above that, which that latches SEND_LOAD_CELL_DATA to 1,
 - and this rung
 so that the one-shot can detect a falling edge, because the



On any scan when a new load cell value is available (see one-shot on previous rung)

- Call the low-pass filtering routine
- Calculate the difference between the new load cell value and the low-pass-filtered value
- Count the total number of load cell values used
- Count the steady number of load cell values, i.e. where the calculated difference's magnitude is less than 5
- If the calculated difference's magnitude is 5 or more
 - If the steady count reached 100 values, increment PASS_NUMBER to move to the next pass
 - Clear the steady count
- On the scan when the steady count reaches 100, save the current filtered value to the float of the current pass

NEW_DATA_ONESHOT

B3:0

2

FILTER_DATA

JSR

Jump To Subroutine
SBR File Number

U:3

DATA_DIFFERENCE

SUB

Subtract

Source A F8:0
0.0<

Source B F8:1
182.7578<

Dest F8:4
-5.712646<

TOTAL_COUNT

CTU

Count Up

Counter

Preset

Accum

C5:1

100<

1545<

<CU>

<DN>

DATA_DIFFERENCE

GRT

Greater Than (A>B)

Source A F8:4
-5.712646<

Source B -5.0
-5.0<

DATA_DIFFERENCE

LES

Less Than (A<B)

Source A F8:4
-5.712646<

Source B 5.0
5.0<

STEADY_COUNT

CTU

Count Up

Counter

Preset

Accum

C5:0

100<

0<

<CU>

<DN>

STEADY_COUNT/CU

C5:0

CU

STEADY_COUNT/DN

C5:0

DN

PASS_NUMBER

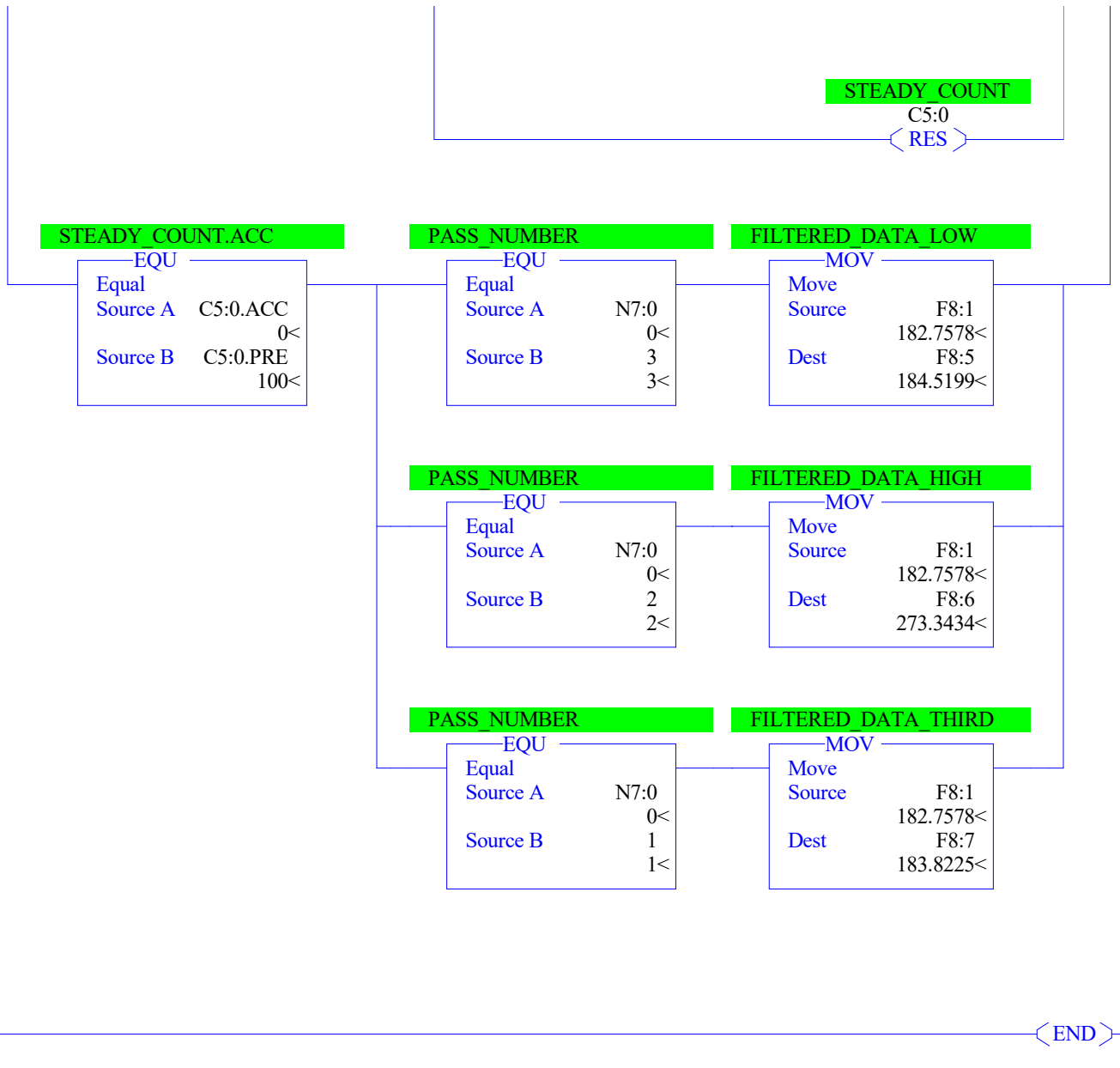
SUB

Subtract

Source A N7:0
0<

Source B 1
1<

Dest N7:0
0<



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	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	1	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	1	0	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 = 1000-1011-0101-1011

Proc

OS Catalog Number S:57 = 1100 User Program Type S:63 = 8108h
OS Series S:58 = B 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 = 38
Watchdog (x10 ms) S:3 (high byte) = 10
Last 100 uSec Scan Time S:35 = 8
Scan Toggle Bit S:33/9 = 0

Math

Math Overflow Selected S:2/14 = 1 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 = 1
Sign Bit S:0/3 = 0

Chan 0

Processor Mode S:1/0- S:1/4 = Remote Run
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 = True

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 = 1

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	1	0	0	0	0	0	0	0	0	0	1	0	0	1	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		

Data File T4 -- TIMER

Offset	EN	TT	DN	BASE	PRE	ACC	(Symbol)	Description
T4:0	1	1	0	.001 sec	100	0	(LOAD_CELL_SAMPLING)	
T4:1	1	1	0	.001 sec	100	21	(LOAD_CELL_SAMPLING2)	

Data File C5 -- COUNTER

Offset	CU	CD	DN	OV	UN	UA	PRE	ACC	(Symbol)	Description
C5:0	0	0	0	0	0	0	100	0	(STEADY COUNT)	
C5:1	1	0	1	0	0	0	100	1545	(TOTAL_COUNT)	

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	16	0		

Data File N7 (dec) -- INTEGER

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

Data File F8 -- FLOAT

Offset	0	1	2	3	4
F8:0	0	182.7578	0.965	6.196586	-5.712646
F8:5	184.5199	273.3434	183.8225	0	0

Address/Symbol Database

Address	Symbol	Scope	Description	Sym Group	Dev. Code	ABV
B3:0/0	SEND_LOAD_CELL_DATUM	Global				
B3:0/1	RESET_TRAINING	Global				
B3:0/2	NEW_DATA_ONESHOT	Global				
B3:0/3	EMULATE_LOADCELLDATA	Global				
B3:0/4	CANCEL_TRAINING	Global				
B3:0/5	TRAINING_IS_INACTIVE	Global				
B3:0/15	NEW_DATA_ONESHOT_MEM	Global				
C5:0	STEADY_COUNT	Global				
C5:1	TOTAL_COUNT	Global				
F8:0	LOAD_CELL_INPUT	Global				
F8:1	FILTERED_DATA	Global				
F8:2	FILTER_PARAMETER	Global				
F8:3	TEMPORARY_FLOAT	Global				
F8:4	DATA_DIFFERENCE	Global				
F8:5	FILTERED_DATA_LOW	Global				
F8:6	FILTERED_DATA_HIGH	Global				
F8:7	FILTERED_DATA_THIRD	Global				
N7:0	PASS_NUMBER	Global				
N7:1	LOAD_CELL_RAW_INPUT	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			
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			

Address/Symbol Database

Address	Symbol	Scope	Description	Sym Group	Dev. Code	ABV
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,F1			
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	LOAD_CELL_SAMPLING	Global				
T4:1	LOAD_CELL_SAMPLING2	Global				
U:3	FILTER_DATA	Global				
U:4	READ_LOAD_CELL_DATA	Global				
U:5	TRAINING	Global				

Instruction Comment Database

Address	Instruction	Description
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Symbol Group Database

Group_Name	Description
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