

```

|This program is totally useless...
|
|as far as controlling any process. Now on the other hand if you
|would like to see how different instructions are converted read on.
|
|INPUT                                OUTPUT
|I:1/00                                O:2/00
| I:1.0                                O:2.0
0+----] [-----] [-----] [-----] [-----] [-----] ( )----+
|      0                                0

```

This program was converted using the 1756 option. I/O modules were converted to a local 1756 module in the ControlLogix chassis.

I/O addresses will convert to: Local:SS:I.Data.TT

```

| INPUT      INPUT      INPUT      INPUT      OUTPUT
| I:1/01     I:1/02     I:1/03     I:1/07     O:2/01
| I:1.0      I:1.0      I:1.0      I:1.0      O:2.0
1+----] [-----] [-----] [-----] [-----] [-----] (L)----+
| |      1      2      3      |      7      1
| |INPUT      INPUT      INPUT      |
| |I:1/04     I:1/05     I:1/06     |
| | I:1.0      I:1.0      I:1.0      |
| +----]/[-----]/[-----]/[-----]
|      4      5      6

```

where:
 |SS = slot
 |I = Input (or O for Output)
 |TT = Terminal

```

|INPUT      INPUT      INPUT      INPUT      INPUT      OUTPUT
|I:1/08     I:1/09     I:1/10     I:1/11     I:1/12     O:2/08
| I:1.0      I:1.0      I:1.0      I:1.0      I:1.0      O:2.0
2+----] [-----] [-----] [-----] [-----] [-----] (U)----+
|      8      9      10     11     12      8

```

I/O outside of this range (or using the NONE option) or modules that don't convert will point to the INT array (Ixxx or Oxxx).

where: xxx = slot

This section of rungs show how BITS are converted.

```

|INPUT      INPUT      INPUT      OUTPUT
|I:1/13     I:1/14     I:1/15     O:2/15
| I:1.0      I:1.0      I:1.0      O:2.0
3+----]/[-----]/[-----]/[-----] [-----] ( )----+
|      13     14     15      15
|
|ONE SHOT
|ONE SHOT      OUTPUT
| B3            B3
4+-- [OSR]-----] [-----] [-----] [-----] ( )----+
|      0            2
5+-----] [-----] [-----] [-----] [-----] [-----] [END]----+

```



```

-----
|COUNTER INSTRUCTIONS
|CTU      CTU      CTU      CTU
|ENABLE  OVER FLOW  DONE    COUNTER
|  C5:0   C5:0     C5:0     +---CTU-----+
0+---] [-----] [-----] [-----] +Count Up      +- (CU) -+
|   CU      OV      DN          |Counter   C5:0+- (DN) |
|                                     |Preset    500|
|                                     |Accum     0|
|                                     +-----+
|CTD      CTD      CTD      CTD
|ENABLE  UNDER FLOW  DONE    COUNTER
|  C5:1   C5:1     C5:1     +---CTD-----+
1+---] [-----] [-----] [-----] +Count Down    +- (CD) -+
|   CD      UN      DN          |Counter   C5:1+- (DN) |
|                                     |Preset   32767|
|                                     |Accum     0|
|                                     +-----+
|CTD                                           CTD
|DONE                                           COUNTER
|  C5:1                                           C5:1
2+---] [-----] [-----] [-----] [RES] -+
|   DN
3+----- [END] -+
  
```

```

-----
| I/O INSTRUCTIONS                                     |
|                                                     |
|                                                     | INPUT
|                                                     | WORD
|                                                     | +--IIM-----+
0+-----+Immediate Input w/Mask+-----+
|                                                     | |Slot      I:1.0|
|                                                     | |Mask      0FFFFh|
|                                                     | |Length    1|
|                                                     | +-----+
|                                                     | OUTPUT
|                                                     | WORD
|                                                     | +--IOM-----+
1+-----+Immediate Output w/Mask+-----+
|                                                     | |Slot      O:2.0|
|                                                     | |Mask      0FFFFh|
|                                                     | |Length    1|
|                                                     | +-----+
|                                                     | MSG
|MSG      CONTROL
|ENABLE   BLOCK
| N10:0    +--MSG-----+
2+---]/[---+Read/Write Message +- (EN) -+
| 15      |Type      Peer-To-Peer+- (DN) |
|          |Read/Write  Read+- (ER) |
|          |Target Device 500CPU|
|          |Local/Remote  Local|
|          |Control Block  N10:0|
|          |Control Block Length 14|
|          | +-----+
3+-----+----- [END] -+

```

COMPARE AND COMPUTE INSTRUCTIONS		COMPUTE
		+-CPT-----+
0+	-----+	+Compute +--+
		Dest N7:1
		0
		Expression
		N7:2 + N7:3
		+-----+
LIMIT		
TEST		ADD
+--LIM-----+		+--ADD-----+
1++	Limit Test +-----+	+Add +--+
	Low Lim 0	Source A N7:5
	0	0
	Test N7:4	Source B N7:6
	0	0
	High Lim 100	Dest N7:7
		0
		+-----+
MASKED		
EQUAL		
COMPARE		SUBTRACT
+--MEQ-----+		+--SUB-----+
2++	Masked Equal +-----+	+Subtract +--+
	Source N7:8	Source A N7:10
	0	0
	Mask 00FFh	Source B N7:11
		0
	Compare N7:9	Dest N7:12
	0	0
		+-----+
EQUAL		MULTIPLY
+--EQU-----+		+--MUL-----+
3++	Equal +-----+	+Multiply +--+
	Source A N7:13	Source A N7:14
	0	0
	Source B 55	Source B 100
		Dest N7:15
		0
		+-----+
NOT EQUAL		DIVIDE
+--NEQ-----+		+--DIV-----+
4++	Not Equal +-----+	+Divide +--+
	Source A N7:16	Source A N7:18
	0	0
	Source B N7:17	Source B 4095.0
	0	
		Dest F8:0
		0.0
		+-----+
LESS THAN		SQUARE
+--LES-----+		+--SQR-----+
5++	Less Than (A<B) +-----+	+Square Root +--+
	Source A N7:20	Source N7:22
	0	0
	Source B N7:21	Dest N7:23
	0	0
		+-----+
GREATER		NEGATE
THAN		+--NEG-----+
+--GRT-----+		+Negate +--+
6++	Greater Than (A>B) +-----+	+Negate +--+
	Source A N7:24	Source N7:26

```

| |                               0 | |                               0 | | |
| |Source B      N7:25 | |                               |Dest      N7:27 | |
| |                               0 | |                               0 | |
|+-----+ |                               +-----+ |
|LESS THAN | |                               TO BCD | |
|OR EQUAL  | |                               +---TOD-----+ |
|+---LEQ-----+ |                               +-----+ |
7++Less Than or Eql (A<=B)+-----+-----+To BCD +--+
| |Source A      N7:28 | |                               |Source      N7:30 | |
| |                               0 | |                               |           0 | |
| |Source B      N7:29 | |                               |Dest       0:2.0 | |
| |                               0 | |                               |           0000h | |
|+-----+ | |                               +-----+ |
|GREATER   | |                               FROM BCD | |
|THAN OR   | |                               +---FRD-----+ |
|EQUAL     | |                               +-----+ |
|+---GEQ-----+ | |                               +-----+ |
8++Grtr Than or Eql (A>=B)+-----+-----+From BCD +--+
| |Source A      N7:31 | |                               |Source      I:1.0 | |
| |                               0 | |                               |           0000h | |
| |Source B      N7:32 | |                               |Dest       N7:33 | |
| |                               0 | |                               |           0 | |
|+-----+ | |                               +-----+ |
9+-----+-----+-----+-----+-----+ [END] -+

```

WORD MOVE AND LOGICAL INSTRUCTIONS		
	MOVE WORD +--MOV-----+	
0+	+Move	+--+
	Source N11:0	
	0	
	Dest N11:1	
	0	
	+-----+	
	MASKED MOVE WORD +--MVM-----+	
1+	+Masked Move	+--+
	Source N11:2	
	0	
	Mask 0FF00h	
	Dest N11:3	
	0	
	+-----+	
	BITWISE AND +--AND-----+	
2+	+Bitwise AND	+--+
	Source A N11:4	
	0000h	
	Source B N11:5	
	0000h	
	Dest N11:6	
	0000h	
	+-----+	
	BITWISE OR +--OR-----+	
3+	+Bitwise Inclus OR+	+--+
	Source A N11:7	
	0000h	
	Source B 255	
	Dest N11:8	
	0000h	
	+-----+	
	BITWISE EXCULSIVE OR +--XOR-----+	
4+	+Bitwise Exclus OR+	+--+
	Source A N11:9	
	0000h	
	Source B B3:1	
	0000h	
	Dest N11:10	
	0000h	
	+-----+	
	NOT WORD +--NOT-----+	
5+	+NOT	+--+
	Source N11:11	
	0	
	Dest N11:12	
	0	
	+-----+	
	CLEAR WORD	

```
|
6+-----+---CLR-----+ |
|          +Clear          +-+
|          |Dest          N11:13| |
|          |              0| |
|          +-----+ |
7+----- [END] -+
```



```

-----+-----+-----+
|                                     COPY                                     |
|                                     FILE                                     |
|                                     +---COP-----+                       |
0+-----+-----+-----+-----+-----+-----+-----+-----+-----+
|                                     +Copy File                             +-+
|                                     |Source      #N12:0|                   |
|                                     |Dest        #N12:10|                   |
|                                     |Length      10|                       |
|                                     +-----+-----+                       |
|                                     FILL                                     |
|                                     FILE                                     |
|                                     +---FLL-----+                       |
1+-----+-----+-----+-----+-----+-----+-----+-----+-----+
|                                     +Fill File                             +-+
|                                     |Source        0|                       |
|                                     |Dest        #N12:20|                   |
|                                     |Length      10|                       |
|                                     +-----+-----+                       |
|                                     DOUBLE                                   |
|                                     DIVIDE                                   |
|                                     +---DDV-----+                       |
2+-----+-----+-----+-----+-----+-----+-----+-----+-----+
|                                     +Double Divide                         +-+
|                                     |Source      N12:30|                   |
|                                     |           0|                       |
|                                     |Dest       N12:31|                   |
|                                     |           0|                       |
|                                     +-----+-----+                       |
|                                     SCALE                                   |
|                                     +---SCL-----+                       |
3+-----+-----+-----+-----+-----+-----+-----+-----+-----+
|                                     +Scale                                 +-+
|                                     |Source      N12:32|                   |
|                                     |           0|                       |
|                                     |Rate [ /10000] 1250|                   |
|                                     |Offset      32|                       |
|                                     |Dest       N12:33|                   |
|                                     |           0|                       |
|                                     +-----+-----+                       |
|                                     PID                                     |
|                                     CONTROL                                   |
|                                     BLOCK                                   |
|                                     +---PID-----+                       |
4+-----] / [-----+-----+-----+-----+-----+-----+-----+-----+
|                                     +PID                                 +-+
|                                     |Control Block  N13:0|                   |
|                                     |Process Variable N12:34|                   |
|                                     |Control Variable N12:35|                   |
|                                     |Control Block Length 23|                   |
|                                     +-----+-----+                       |
5+-----+-----+-----+-----+-----+-----+-----+-----+-----+
|                                     [END]                                 +-+

```

```

|SHIFT AND SEQUENCE INSTRUCTIONS
|
|BSL      BSL      BSL      BSL      BIT
|ENABLE   DONE     ERROR   UNLOAD  SHIFT
|   R6:0   R6:0   R6:0     R6:0    LEFT
0+---]/[----]/[----]/[----]/[-----+Bit Shift Left +- (EN)-+
|   EN     DN     ER     UL
|
|
|BSR      BSR      BSR      BSR      BIT
|ENABLE   DONE     ERROR   UNLOAD  SHIFT
|   R6:1   R6:1   R6:1     R6:1    RIGHT
1+---]/[----]/[----]/[----]/[-----+Bit Shift Right +- (EN)-+
|   EN     DN     ER     UL
|
|
|SQC      SQC      SQC      SQC      SEQUENCER
|ENABLE   DONE     ERROR   FOUND   COMPARE
|   R6:2   R6:2   R6:2     R6:2
2+---]/[----]/[----]/[----]/[-----+Sequencer Compare+- (EN)-+
|   EN     DN     ER     FD
|
|
|SQL      SQL      SQL      SEQUENCER
|ENABLE   DONE     ERROR   LOAD
|   R6:3   R6:3   R6:3
3+---]/[----]/[----]/[-----+Sequencer Load +- (EN)-+
|   EN     DN     ER
|
|
|SQO      SQO      SQO      SEQUENCER
|ENABLE   DONE     ERROR   OUTPUT
|   R6:4   R6:4   R6:4
4+---]/[----]/[----]/[-----+Sequencer Output+- (EN)-+
|   EN     DN     ER
|
|
|FFL      FFL      FFL      FIFO
|ENABLE   DONE     EMPTY  LOAD
|   R6:5   R6:5   R6:5
5+---]/[----]/[----]/[-----+FIFO Load +- (EN)-+
|   EN     DN     EM
|
|
|FFU      FFU      FFU      FIFO
|ENABLE   DONE     EMPTY  UNLOAD

```

```

| R6:6 R6:6 R6:6 +---FFU-----+ |
6+---]/[----]/[----]/[-----+FIFO Unload +- (EU) -+
| EU DN EM |FIFO #B14:28+- (DN) | |
| | |Dest B14:48+- (EM) |
| | |Control R6:6|
| | |Length 20|
| | |Position 0|
| | |-----+
|LFL LFL LFL LIFO
|ENABLE DONE EMPTY LOAD
| R6:7 R6:7 R6:7 +---LFL-----+
7+---]/[----]/[----]/[-----+LIFO Load +- (EN) -+
| EN DN EM |Source B14:49+- (DN) | |
| | |LIFO #B14:50+- (EM) |
| | |Control R6:7|
| | |Length 20|
| | |Position 0|
| | |-----+
|LFU LFU LFU LIFO
|ENABLE DONE EMPTY UNLOAD
| R6:8 R6:8 R6:8 +---LFU-----+
8+---]/[----]/[----]/[-----+LIFO Unload +- (EU) -+
| EU DN EM |LIFO #B14:50+- (DN) | |
| | |Dest B14:70+- (EM) |
| | |Control R6:8|
| | |Length 20|
| | |Position 0|
| | |-----+
9+-----+ [END] -+

```


ADVANCED MATH INSTRUCTIONS	
	SINE
	+--SIN-----+
0+	+Sine +--+
	Source F15:0
	0.0
	Dest F15:1
	0.0
	+-----+
	COSINE
	+--COS-----+
1+	+Cosine +--+
	Source F15:2
	0.0
	Dest F15:3
	0.0
	+-----+
	TANGENT
	+--TAN-----+
2+	+Tangent +--+
	Source F15:4
	0.0
	Dest F15:5
	0.0
	+-----+
	ARCSINE
	+--ASN-----+
3+	+Arc Sine +--+
	Source F15:6
	0.0
	Dest F15:7
	0.0
	+-----+
	ARCCOSINE
	+--ACS-----+
4+	+Arc Cosine +--+
	Source F15:8
	0.0
	Dest F15:9
	0.0
	+-----+
	ARCTANGENT
	+--ATN-----+
5+	+Arc Tangent +--+
	Source F15:10
	0.0
	Dest F15:11
	0.0
	+-----+
	NATURAL
	LOG
	+--LN-----+
6+	+Natural Log +--+
	Source F15:12
	0.0
	Dest F15:13
	0.0
	+-----+
	LOG
	BASE 10
	+--LOG-----+
7+	+Log Base 10 +--+
	Source F15:14
	0.0
	Dest F15:15

| +-----+ |
15+-----[END]-+

|INDIRECT ADDRESSING

|These rungs show how indirect addresses will be converted. Indirect addresses
 |can not be documented in the ControlLogix.

		POINTER	
		ADDRESS	
		+--MOV-----+	
0+		+Move	+--+
		Source	1
		Dest	N17:0
			0
		+-----+	
BIT		WORD	
INDIRECT		INDIRECT	
ADDRESS		ADDRESS	
N7:19		+--MOV-----+	
1+---]		+Move	+--+
[N17:0]		Source	2
		Dest	N7:[N17:0]
			*
		+-----+	
2+		-----	[END]-+

