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.

0000

INPUT I:1/00 — I:1 — 0 — 1746-IA16

OUTPUT O:2/00 — O:2 — 0 — 1746-OA16

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

0001

INPUT I:1/01 — I:1 — 1 — 1746-IA16

INPUT I:1/02 — I:1 — 2 — 1746-IA16

INPUT I:1/03 — I:1 — 3 — 1746-IA16

INPUT I:1/07 — I:1 — 7 — 1746-IA16

OUTPUT O:2/01 — O:2 — L — 1 — 1746-OA16

INPUT I:1/04 — I:1 — 4 — 1746-IA16

INPUT I:1/05 — I:1 — 5 — 1746-IA16

INPUT I:1/06 — I:1 — 6 — 1746-IA16

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

0002

INPUT I:1/08 — I:1 — 8 — 1746-IA16

INPUT I:1/09 — I:1 — 9 — 1746-IA16

INPUT I:1/10 — I:1 — 10 — 1746-IA16

INPUT I:1/11 — I:1 — 11 — 1746-IA16

INPUT I:1/12 — I:1 — 12 — 1746-IA16

OUTPUT O:2/08 — O:2 — U — 8 — 1746-OA16

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.

0003

INPUT I:1/13 — I:1 — 13 — 1746-IA16

INPUT I:1/14 — I:1 — 14 — 1746-IA16

INPUT I:1/15 — I:1 — 15 — 1746-IA16

OUTPUT O:2/15 — O:2 — 15 — 1746-OA16

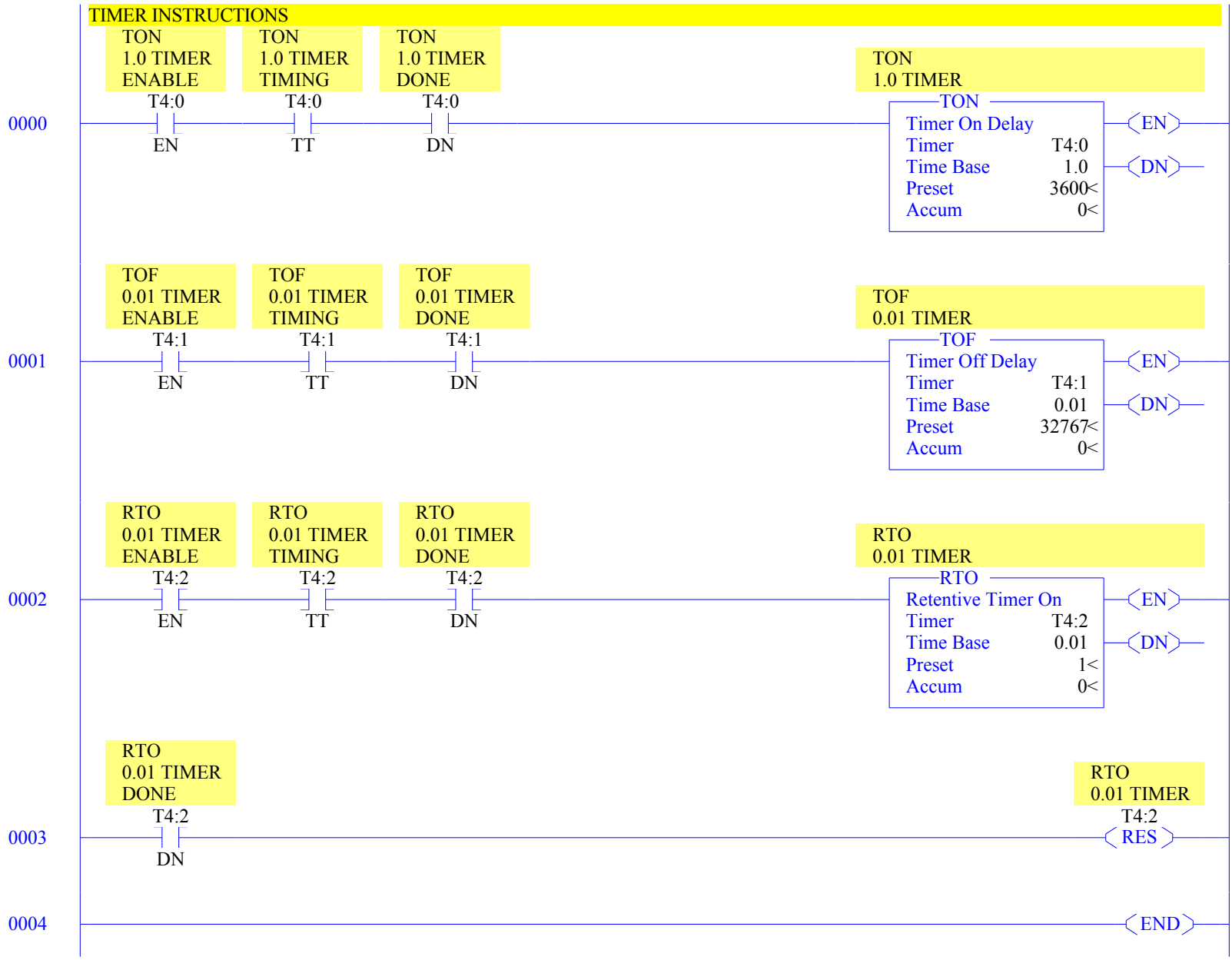
0004

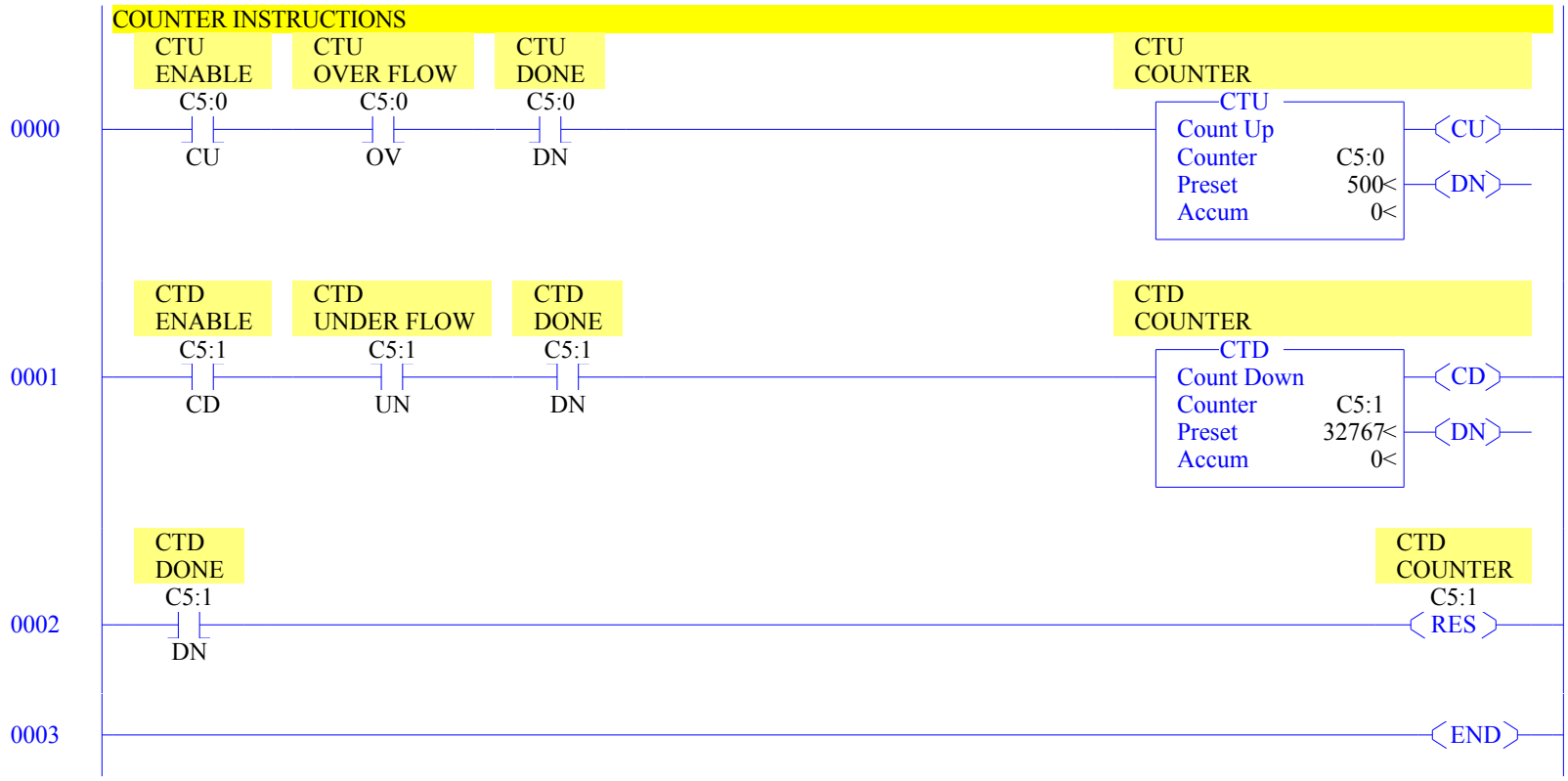
ONE SHOT — B3:0 — OSR — 0

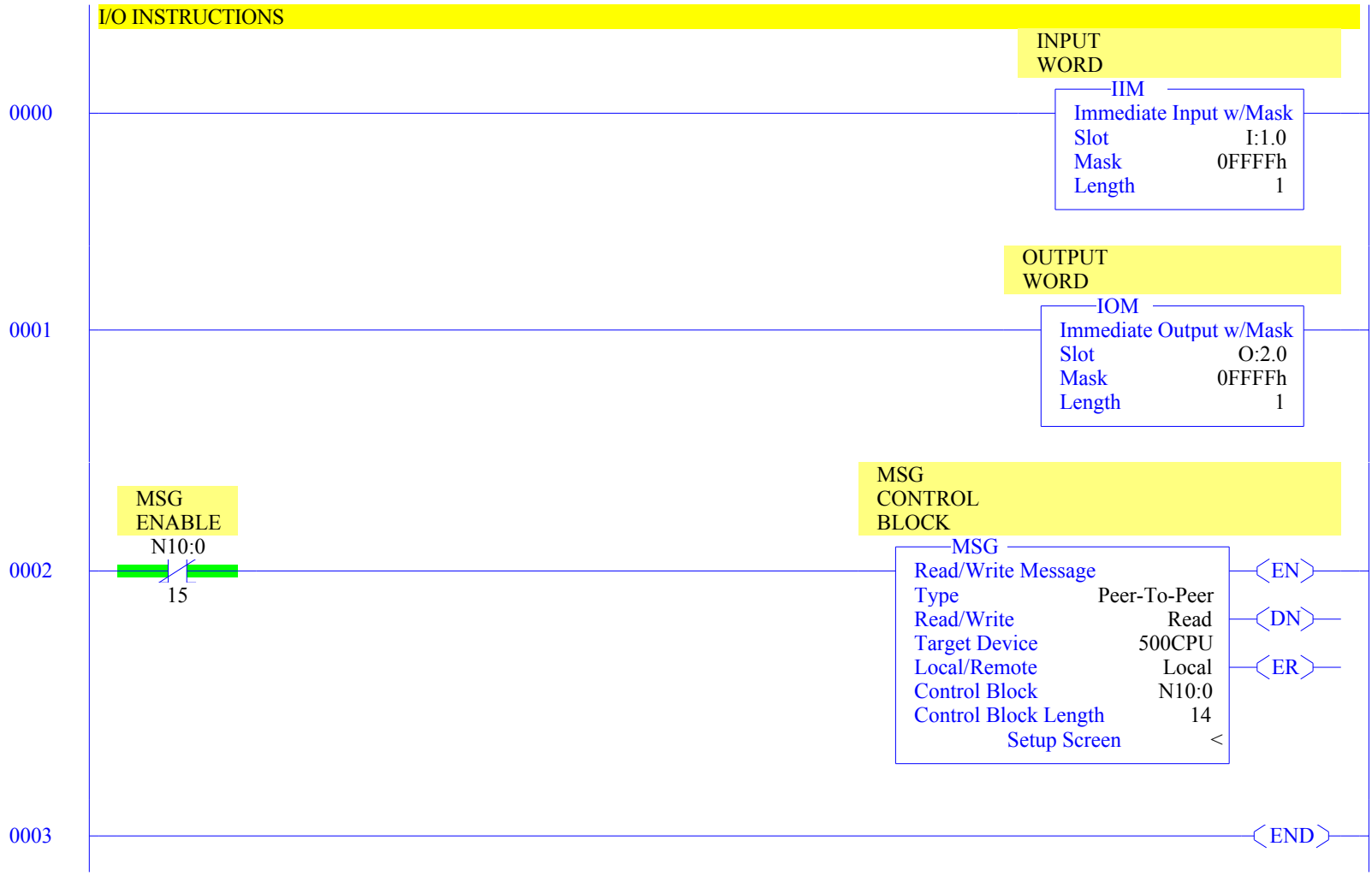
ONE SHOT OUTPUT — B3:0 — 2

0005

END


TIMER INSTRUCTIONS
TON 1.0 TIMER ENABLE
T4:0
EN
TON 1.0 TIMER TIMING
T4:0
TT
TON 1.0 TIMER DONE
T4:0
DN
TON 1.0 TIMER
TON
Timer On Delay
Timer T4:0
Time Base 1.0
Preset 3600<
Accum 0<
EN
DN
0000
TOF 0.01 TIMER ENABLE
T4:1
EN
TOF 0.01 TIMER TIMING
T4:1
TT
TOF 0.01 TIMER DONE
T4:1
DN
TOF 0.01 TIMER
TOF
Timer Off Delay
Timer T4:1
Time Base 0.01
Preset 32767<
Accum 0<
EN
DN
0001
RTO 0.01 TIMER ENABLE
T4:2
EN
RTO 0.01 TIMER TIMING
T4:2
TT
RTO 0.01 TIMER DONE
T4:2
DN
RTO 0.01 TIMER
RTO
Retentive Timer On
Timer T4:2
Time Base 0.01
Preset 1<
Accum 0<
EN
DN
0002
RTO 0.01 TIMER DONE
T4:2
DN
RTO 0.01 TIMER
T4:2
RES
0003
END
0004


COUNTER INSTRUCTIONS
CTU ENABLE
CTU OVER FLOW
CTU DONE
CTU COUNTER
0000
C5:0
CU
C5:0
OV
C5:0
DN
CTU
Count Up
Counter C5:0
Preset 500<
Accum 0<
CU
DN
CTD ENABLE
CTD UNDER FLOW
CTD DONE
CTD COUNTER
0001
C5:1
CD
C5:1
UN
C5:1
DN
CTD
Count Down
Counter C5:1
Preset 32767<
Accum 0<
CD
DN
CTD DONE
CTD COUNTER
0002
C5:1
DN
C5:1
RES
0003
END


I/O INSTRUCTIONS
INPUT WORD
0000
IIM
Immediate Input w/Mask
Slot I:1.0
Mask 0FFFFh
Length 1
OUTPUT WORD
0001
IOM
Immediate Output w/Mask
Slot O:2.0
Mask 0FFFFh
Length 1
MSG ENABLE
N10:0
15
MSG CONTROL BLOCK
0002
MSG
Read/Write Message
Type Peer-To-Peer
Read/Write Read
Target Device 500CPU
Local/Remote Local
Control Block N10:0
Control Block Length 14
Setup Screen <
EN
DN
ER
0003
END

COMPARE AND COMPUTE INSTRUCTIONS

0000

COMPUTE
CPT
Compute
Dest N7:1
0<
Expression N7:2 + N7:3

LIMIT TEST
LIM
Limit Test
Low Lim 0
0<
Test N7:4
0<
High Lim 100
100<

0001

ADD
ADD
Add
Source A N7:5
0<
Source B N7:6
0<
Dest N7:7
0<

MASKED EQUAL COMPARE
MEQ
Masked Equal
Source N7:8
0<
Mask 00FFh
255<
Compare N7:9
0<

0002

SUBTRACT
SUB
Subtract
Source A N7:10
0<
Source B N7:11
0<
Dest N7:12
0<

EQUAL
EQU
Equal
Source A N7:13
0<
Source B 55
55<

0003

MULTIPLY
MUL
Multiply
Source A N7:14
0<
Source B 100
100<
Dest N7:15
0<

NOT EQUAL
NEQ
Not Equal
Source A N7:16
0<
Source B N7:17
0<

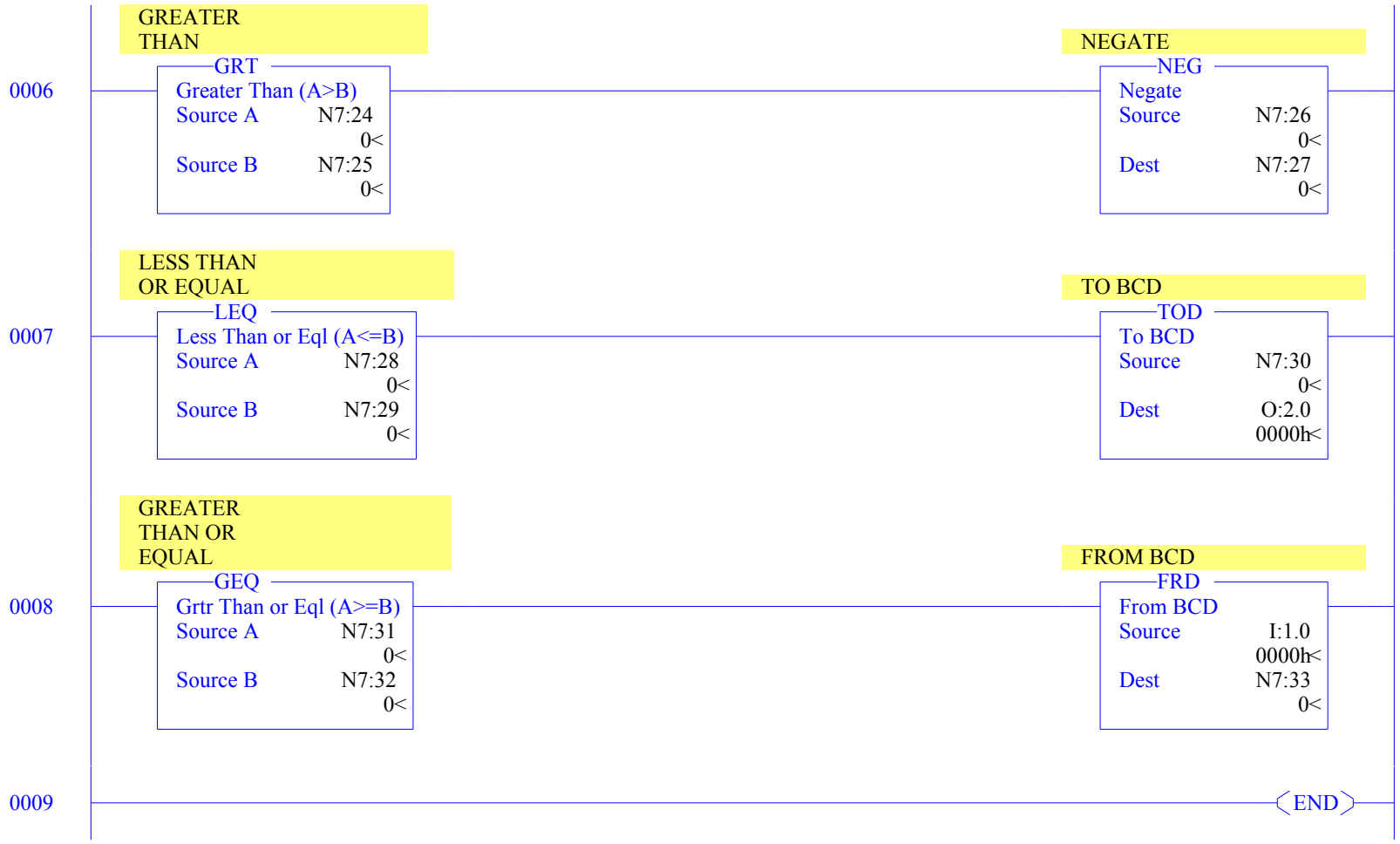
0004

DIVIDE
DIV
Divide
Source A N7:18
0<
Source B 4095.0
4095.0<
Dest F8:0
0.0<

LESS THAN
LES
Less Than (A<B)
Source A N7:20
0<
Source B N7:21
0<

0005

SQUARE ROOT
SQR
Square Root
Source N7:22
0<
Dest N7:23
0<


GREATER THAN
GRT
Greater Than (A>B)
Source A N7:24 0<
Source B N7:25 0<
NEGATE
NEG
Negate
Source N7:26 0<
Dest N7:27 0<
0006
LESS THAN OR EQUAL
LEQ
Less Than or Eql (A<=B)
Source A N7:28 0<
Source B N7:29 0<
TO BCD
TOD
To BCD
Source N7:30 0<
Dest O:2.0 0000h<
0007
GREATER THAN OR EQUAL
GEQ
Grtr Than or Eql (A>=B)
Source A N7:31 0<
Source B N7:32 0<
FROM BCD
FRD
From BCD
Source I:1.0 0000h<
Dest N7:33 0<
0008
0009
END

WORD MOVE AND LOGICAL INSTRUCTIONS

0000

MOVE
WORD

MOV
Move
Source N11:0
0<
Dest N11:1
0<

0001

MASKED
MOVE
WORD

MVM
Masked Move
Source N11:2
0<
Mask 0FF00h
-256<
Dest N11:3
0<

0002

BITWISE
AND

AND
Bitwise AND
Source A N11:4
0000h<
Source B N11:5
0000h<
Dest N11:6
0000h<

0003

BITWISE
OR

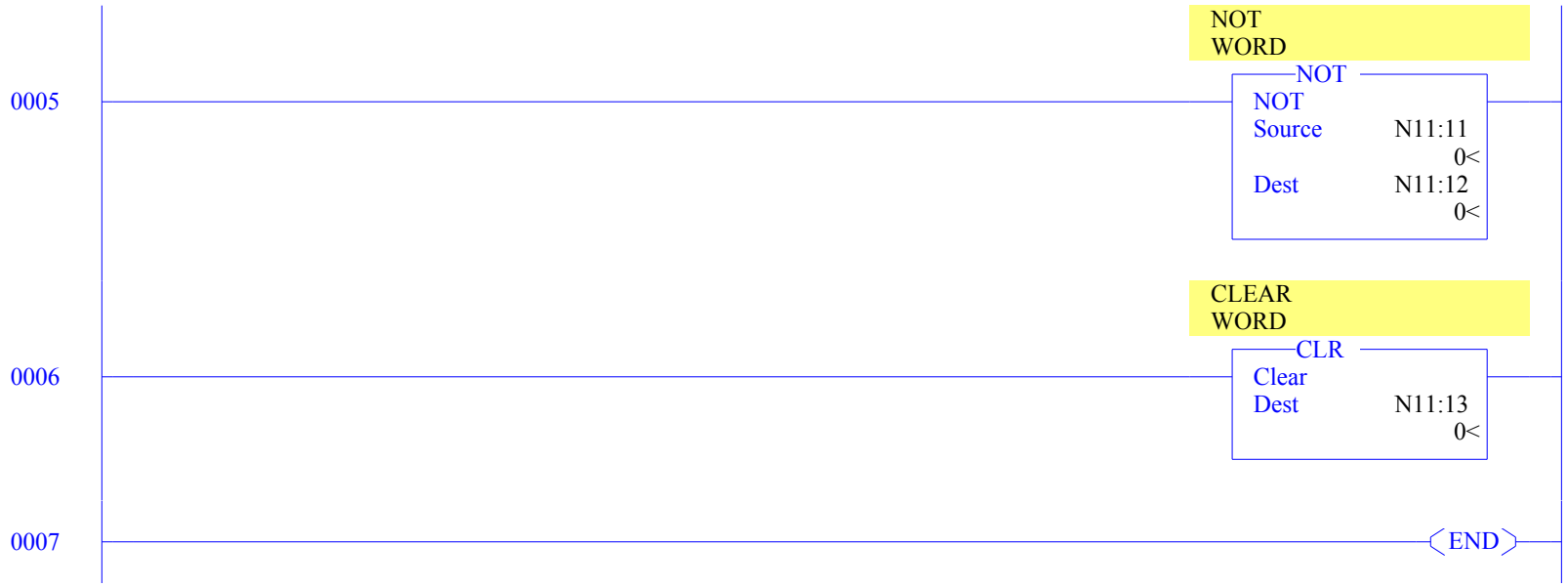
OR
Bitwise Inclusive OR
Source A N11:7
0000h<
Source B 255
255<
Dest N11:8
0000h<

0004

BITWISE
EXCULSIVE
OR

XOR
Bitwise Exclusive OR
Source A N11:9
0000h<
Source B B3:1
0000h<
Dest N11:10
0000h<

LAD 7 - MOVE --- Total Rungs in File = 8



FILE INSTRUCTIONS AND PID

0000

COPY
FILE

COP
Copy File
Source #N12:0
Dest #N12:10
Length 10

0001

FILL
FILE

FLL
Fill File
Source 0
Dest #N12:20
Length 10

0002

DOUBLE
DIVIDE

DDV
Double Divide
Source N12:30
0<
Dest N12:31
0<

0003

SCALE

SCL
Scale
Source N12:32
0<
Rate [/10000] 1250
1250<
Offset 32
32<
Dest N12:33
0<

0004

PID
ENABLE
BIT
N13:0
15

PID
CONTROL
BLOCK

PID
PID
Control Block N13:0
Process Variable N12:34
Control Variable N12:35
Control Block Length 23
Setup Screen <

0005

END

SHIFT AND SEQUENCE INSTRUCTIONS

0000

BSL ENABLE R6:0 EN | BSL DONE R6:0 DN | BSL ERROR R6:0 ER | BSL UNLOAD R6:0 UL

BIT SHIFT LEFT

BSL
Bit Shift Left
File #B14:0
Control R6:0
Bit Address B3:0/1
Length 45<
EN
DN

0001

BSR ENABLE R6:1 EN | BSR DONE R6:1 DN | BSR ERROR R6:1 ER | BSR UNLOAD R6:1 UL

BIT SHIFT RIGHT

BSR
Bit Shift Right
File #B14:3
Control R6:1
Bit Address B3:0/3
Length 45<
EN
DN

0002

SQC ENABLE R6:2 EN | SQC DONE R6:2 DN | SQC ERROR R6:2 ER | SQC FOUND R6:2 FD

SEQUENCER COMPARE

SQC
Sequencer Compare
File #B14:6
Mask 0FFFh
Source I:1.0
Control R6:2
Length 20<
Position 0<
EN
DN
FD

0003

SQL ENABLE R6:3 EN | SQL DONE R6:3 DN | SQL ERROR R6:3 ER

SEQUENCER LOAD

SQL
Sequencer Load
File #B14:6
Source I:1.0
Control R6:3
Length 20<
Position 0<
EN
DN

0004

SQO ENABLE R6:4 EN | SQO DONE R6:4 DN | SQO ERROR R6:4 ER

SEQUENCER OUTPUT

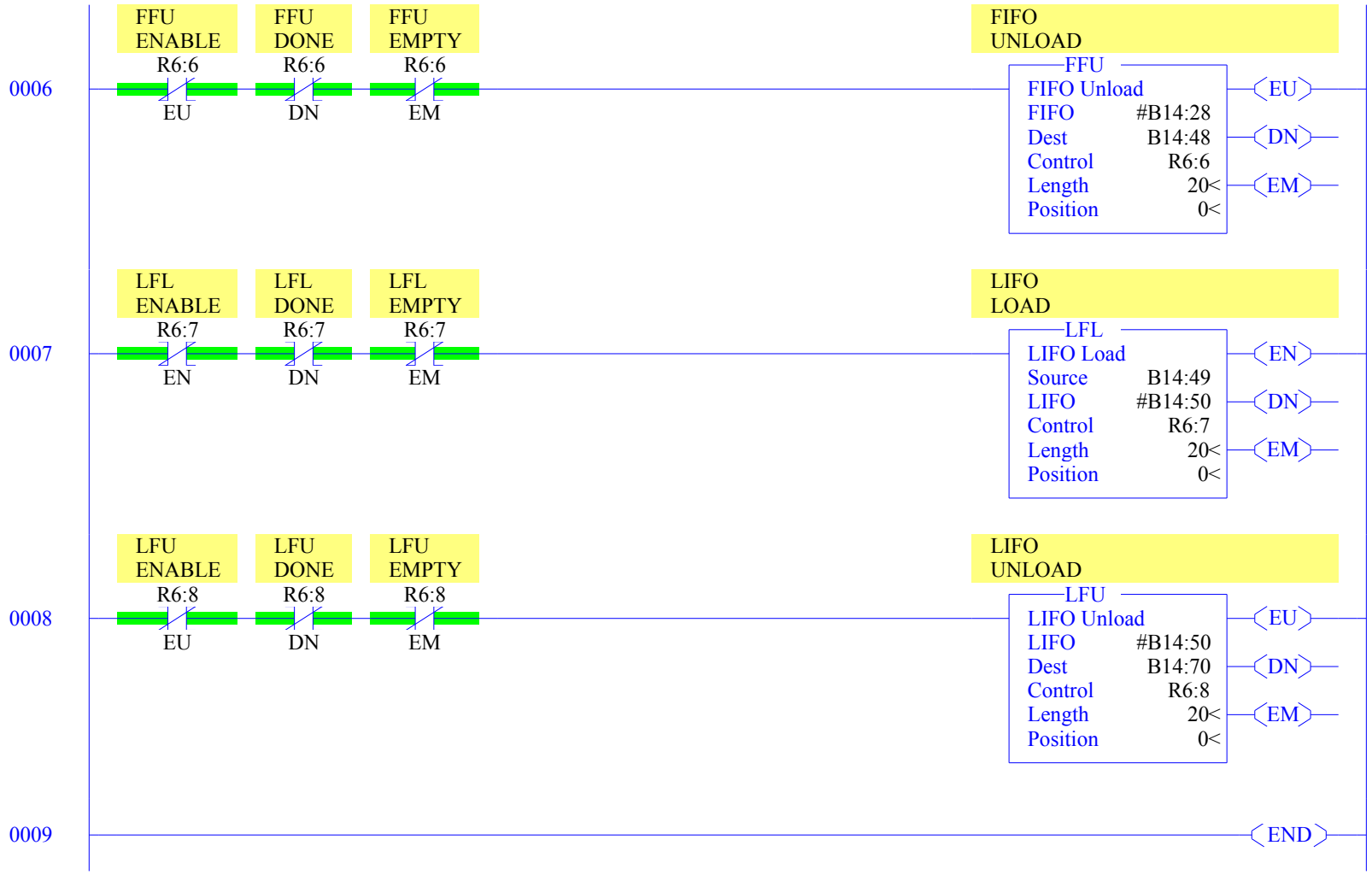
SQO
Sequencer Output
File #B14:6
Mask 00FFh
Dest O:2.0
Control R6:4
Length 20<
Position 0<
EN
DN

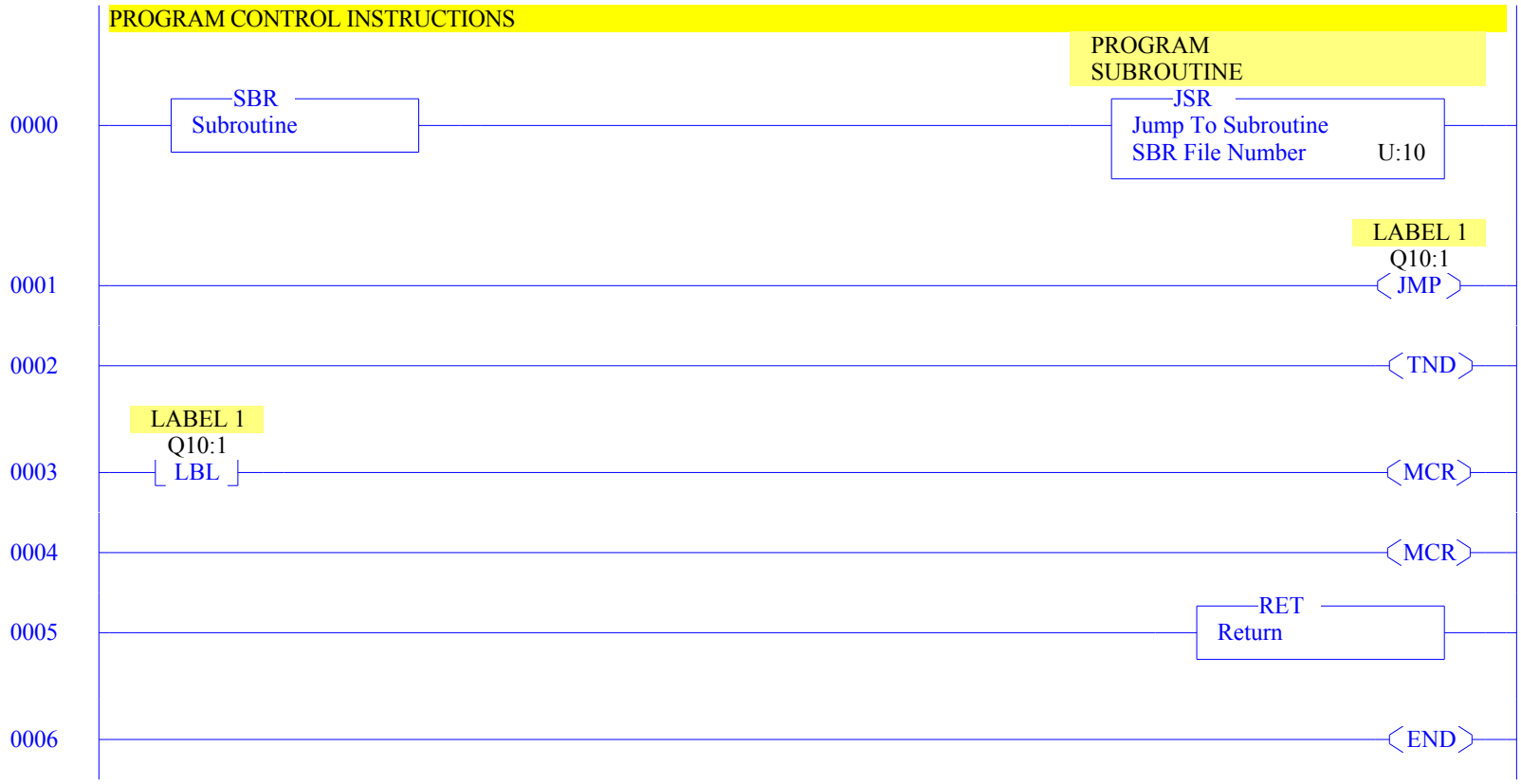
0005

FFL ENABLE R6:5 EN | FFL DONE R6:5 DN | FFL EMPTY R6:5 EM

FIFO LOAD

FFL
FIFO Load
Source B14:27
FIFO #B14:28
Control R6:5
Length 20<
Position 0<
EN
DN
EM


0006
FFU ENABLE
R6:6
EU
FFU DONE
R6:6
DN
FFU EMPTY
R6:6
EM
FIFO UNLOAD
FFU
FIFO Unload
FIFO #B14:28
Dest B14:48
Control R6:6
Length 20<
Position 0<
EU
DN
EM
0007
LFL ENABLE
R6:7
EN
LFL DONE
R6:7
DN
LFL EMPTY
R6:7
EM
LIFO LOAD
LFL
LIFO Load
Source B14:49
LIFO #B14:50
Control R6:7
Length 20<
Position 0<
EN
DN
EM
0008
LFU ENABLE
R6:8
EU
LFU DONE
R6:8
DN
LFU EMPTY
R6:8
EM
LIFO UNLOAD
LFU
LIFO Unload
LIFO #B14:50
Dest B14:70
Control R6:8
Length 20<
Position 0<
EU
DN
EM
0009
END


PROGRAM CONTROL INSTRUCTIONS
PROGRAM
SUBROUTINE
0000
SBR
Subroutine
JSR
Jump To Subroutine
SBR File Number U:10
LABEL 1
Q10:1
0001
JMP
0002
TND
LABEL 1
Q10:1
0003
LBL
MCR
0004
MCR
RET
0005
Return
0006
END

ADVANCED MATH INSTRUCTIONS

0000

SINE

SIN
Sine
Source F15:0 0.0
Dest F15:1 0.0

0001

COSINE

COS
Cosine
Source F15:2 0.0
Dest F15:3 0.0

0002

TANGENT

TAN
Tangent
Source F15:4 0.0
Dest F15:5 0.0

0003

ARCSINE

ASN
Arc Sine
Source F15:6 0.0
Dest F15:7 0.0

0004

ARCCOSINE

ACS
Arc Cosine
Source F15:8 0.0
Dest F15:9 0.0

0005

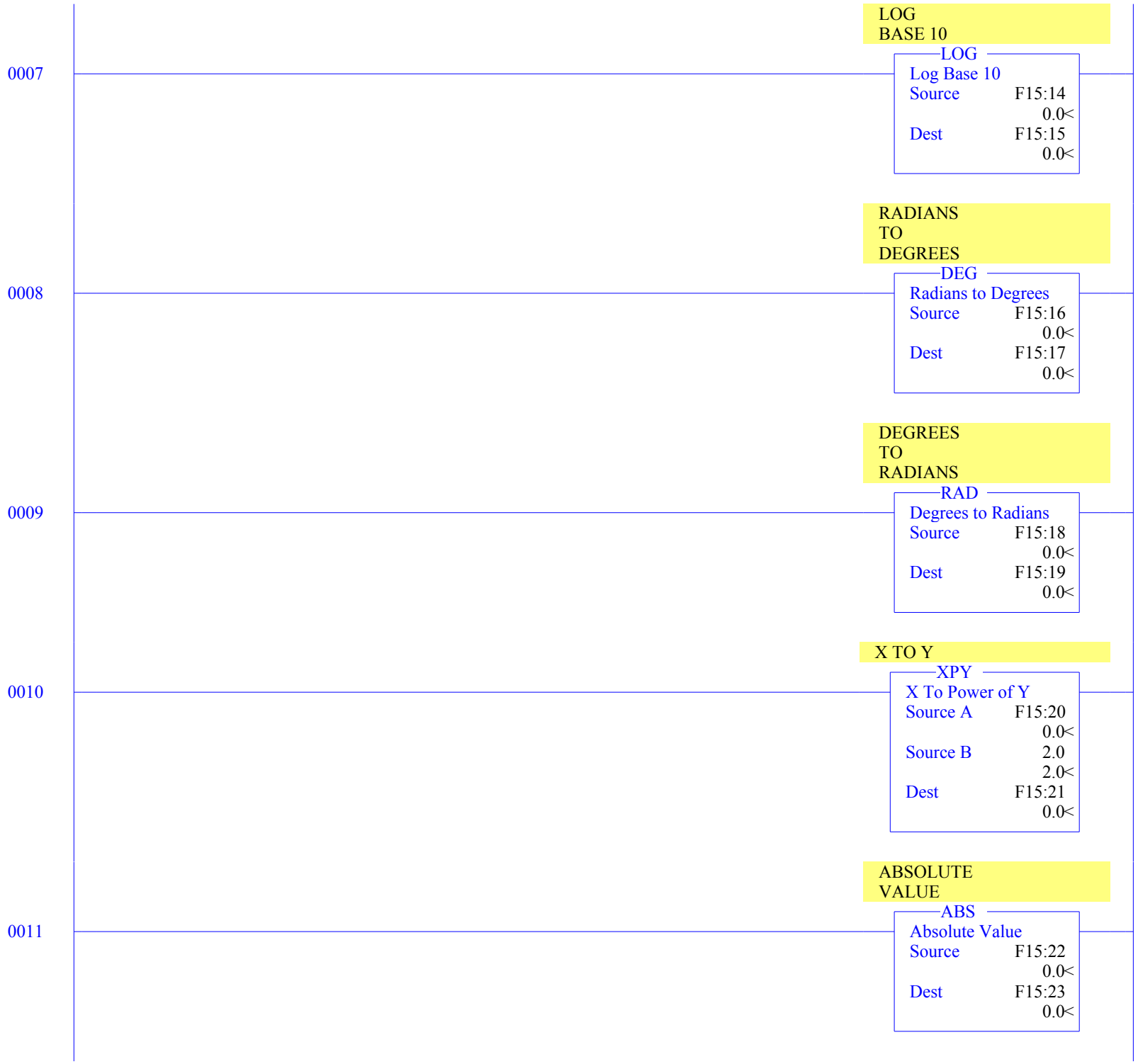
ARCTANGENT

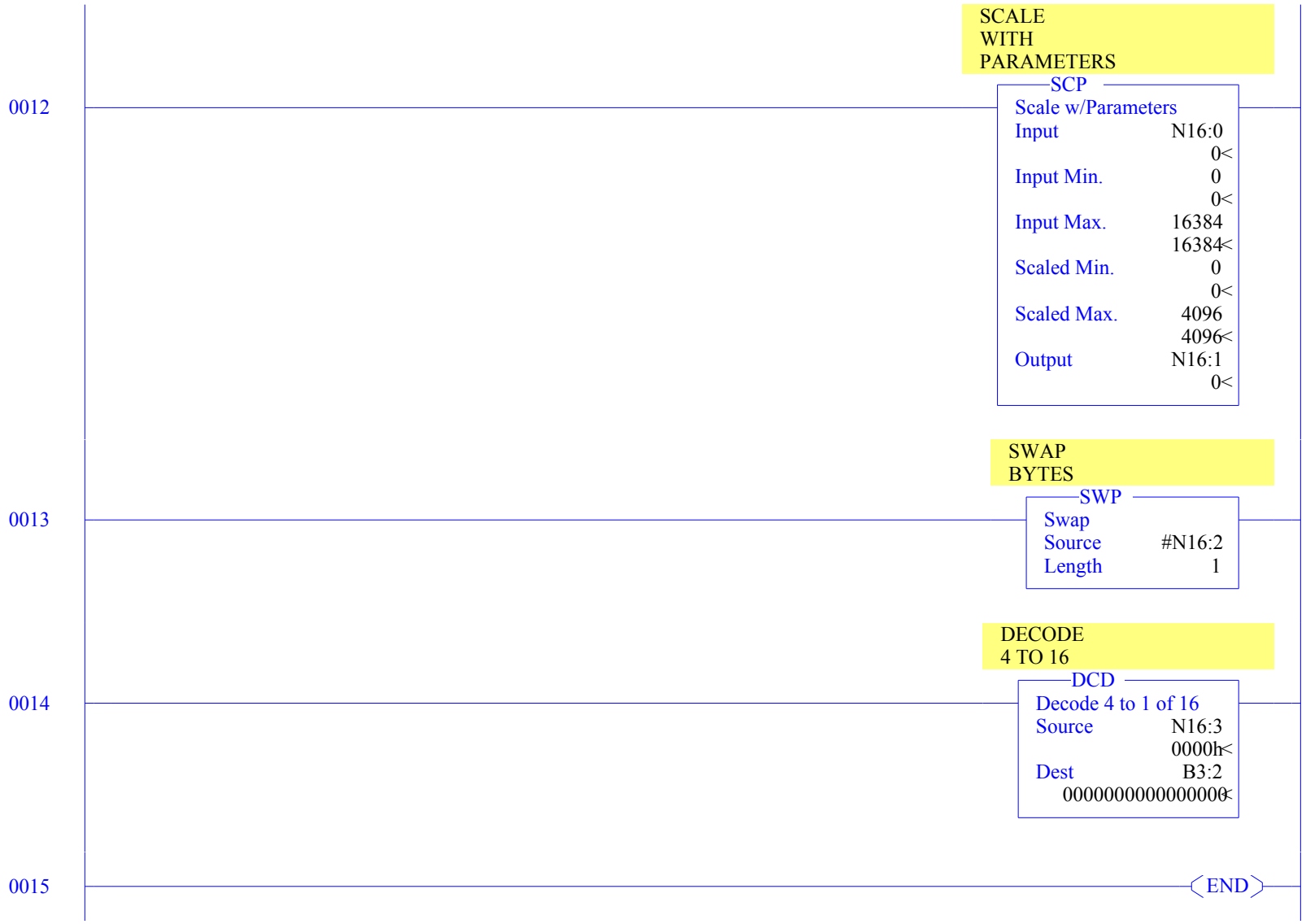
ATN
Arc Tangent
Source F15:10 0.0
Dest F15:11 0.0

0006

NATURAL LOG

LN
Natural Log
Source F15:12 0.0
Dest F15:13 0.0


LOG
BASE 10
0007
LOG
Log Base 10
Source F15:14
0.0
Dest F15:15
0.0
RADIANS
TO
DEGREES
0008
DEG
Radians to Degrees
Source F15:16
0.0
Dest F15:17
0.0
DEGREES
TO
RADIANS
0009
RAD
Degrees to Radians
Source F15:18
0.0
Dest F15:19
0.0
X TO Y
0010
XPY
X To Power of Y
Source A F15:20
0.0
Source B 2.0
2.0
Dest F15:21
0.0
ABSOLUTE
VALUE
0011
ABS
Absolute Value
Source F15:22
0.0
Dest F15:23
0.0


SCALE
WITH
PARAMETERS
0012
SCP
Scale w/Parameters
Input N16:0
0
Input Min. 0
0
Input Max. 16384
16384
Scaled Min. 0
0
Scaled Max. 4096
4096
Output N16:1
0
SWAP
BYTES
0013
SWP
Swap
Source #N16:2
Length 1
DECODE
4 TO 16
0014
DCD
Decode 4 to 1 of 16
Source N16:3
0000h
Dest B3:2
0000000000000000
0015
END

INDIRECT ADDRESSING

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

0000

POINTER ADDRESS

MOV
Move
Source 1
1<
Dest N17:0
0<

0001

BIT INDIRECT ADDRESS

N7:19
[N17:0]

WORD INDIRECT ADDRESS

MOV
Move
Source 2
2<
Dest N7:[N17:0]
0<

0002

END