

```
|This is a rung comment.
|
|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.
|
|This program was converted using the DHRIO option. The racks get
|converted to full racks on a universal Remote I/O. The PLC2 does
|not save the rack information so there is no way to know what hardware
|actually exists. Bits in the rack range will be remapped to I/O.
|Bits outside of this range will point to the INT array.
|
|I/O bit addresses use the format: _RRS:I.Data[M].B
|where:
|RR = rack in octal
|S = Starting module group
|I = Input (or O for output)
|M = Module group offset
|B = Terminal number in decimal
|
|This section of rungs show how bits are converted.
| This is an address comment for input 110/00
| SYM_110_00
| 110
| This is an address comment for output 010/00
| SYM_010_00
| 010
0+-----] [-----] ( )-----+
| | 00 | | 00 |
| |This is an address comment for input 110/00
| |SYM_110_00
| | 110 |
| +-----]/[-----+
| | 00 |
|Comment for 110/01 SYM_110_01 110 Comment for 010/01 SYM_010_01 010
1+----] [-----] (L)-----+
| | 01 | | 01 |
|Comment for 110/02 SYM_110_02 110 Description for 010/02 SYM_010_02 010
2+----] [-----] (U)-----+
| | 02 | | 02 |
|Comment for 110/03 SYM_110_03 110 Comment for 010/03 SYM_010_03 010
3+----] [-----] ( )-----+
| | 03 | | 03 |
```



```

-----+-----+
|Comment for                                Comment for |
|110/16                                     010/16       |
|SYM_110_16                                SYM_010_16    |
| 110                                       010          |
14+----] [-----+-----+                (U)-----+
| 16                                       16          |
|Comment for                                Comment for |
|110/17                                     010/17       |
|SYM_110_17                                SYM_010_17    |
| 110                                       010          |
15+----] [-----+-----+                ( )-----+
| 17                                       17          |
|                                           This comment |
|                                           is at the bit |
|                                           level and over |
|This address                               rides the word |
|is outside the                             comment       |
|rack range      Comment                    comment       Comment Comment      Comment |
| 050            050      150              150      250      250      350 |
16+-----] [-----]/[-----] [-----]/[-----] [-----]/[-----] ( )-----+
| 00            01      00              01      00      01      17 |

```

PLC-2 LADDER LOGISTICS

Timers

Project:AI2

Page:00004

14:30 10/24/07

```

|This is the
|TON 200 done
|bit
| 200
17+-----]/[-----+TIMER ON DELAY +- (EN)+
| 15
|
|
|
|Timer enable
|for TOF 201
| 201
18+-----]/[-----+TIMER OFF DELAY +- (EN)+
| 17
|
|
|
|Retentive timer
|at 20 ms
| 202
19+--]/[-----+RETENTIVE TIMER +- (EN)+
| 15
|
|
|
|Retentive timer
|at 20 ms
| 202
20+-----+RETENTIVE TIMER RESET+
|
|
|
|

```

```

|This rung comment is attached to the output.
|Counter Up
|Enable
| 203
21+----] [-----+COUNTER UP +- (CU)+
| 17 |COUNTER: 203|
| |PRESET: 999+- (DN)|
| |ACCUM: 000|
| |-----+
|This rung comment is attached to the output.
|Counter Down
|Enable
| 203
22+----] [-----+COUNTER DOWN +- (CD)+
| 16 |COUNTER: 203|
| |PRESET: 999+- (DN)|
| |ACCUM: 000|
| |-----+
|This rung comment is attached to the output.
|Counter
|Done
| 203
23+--]/[-----+COUNTER RESET+
| 15 |COUNTER: 203|
| |PRESET: 999|
| |ACCUM: 000|
| |-----+

```

| | | | | |
|----|--------------|----------------|---------------------------------|--|
| | | | Block Transfer | |
| | | | Write | |
| | BTW Done bit | BTW Enable bit | Control Block | |
| | 136 | 036 | +---BTW-----+ 036 | |
| 24 | +-----] | [-----] | +Block Transfer Write +- (EN)++ | |
| | 06 | 06 | Mod Type: 1771-IFE 06 | |
| | | | 12 Bit Analog Input | |
| | | | Rack: 3 136 | |
| | | | Group: 6+- (DN) | |
| | | | Slot: 0 06 | |
| | | | Control Addr: 205 | |
| | | | Data File: 310 | |
| | | | Block Length: 39 | |
| | | | +-----+ | |
| | | | Block Transfer | |
| | | | Read | |
| | BTR Done Bit | BTR Enable Bit | Control Block | |
| | 136 | 036 | +---BTR-----+ 036 | |
| 25 | +-----] | [-----] | +Block Transfer Read +- (EN)++ | |
| | 07 | 07 | Mod Type: 1771-IFE 07 | |
| | | | 12 Bit Analog Input | |
| | | | Rack: 3 136 | |
| | | | Group: 6+- (DN) | |
| | | | Slot: 0 07 | |
| | | | Control Addr: 204 | |
| | | | Data File: 210 | |
| | | | Block Length: 22 | |
| | | | +-----+ | |
| | | | Block Transfer | |
| | | | Write | |
| | BTW Done Bit | BTW Enable Bit | Control Block | |
| | 136 | 036 | +---BTW-----+ 036 | |
| 26 | +-----] | [-----] | +Block Transfer Write +- (EN)++ | |
| | 16 | 16 | Mod Type: 1771-OFE 16 | |
| | | | 12 Bit Analog Output | |
| | | | Rack: 3 136 | |
| | | | Group: 6+- (DN) | |
| | | | Slot: 1 16 | |
| | | | Control Addr: 207 | |
| | | | Data File: 360 | |
| | | | Block Length: 13 | |
| | | | +-----+ | |
| | | | Block Transfer | |
| | | | Read | |
| | BTR Done Bit | BTR Enable Bit | Control Block | |
| | 136 | 036 | +---BTR-----+ 036 | |
| 27 | +-----] | [-----] | +Block Transfer Read +- (EN)++ | |
| | 17 | 17 | Mod Type: 1771-OFE 17 | |
| | | | 12 Bit Analog Output | |
| | | | Rack: 3 136 | |
| | | | Group: 6+- (DN) | |
| | | | Slot: 1 17 | |
| | | | Control Addr: 206 | |
| | | | Data File: 350 | |
| | | | Block Length: 05 | |
| | | | +-----+ | |

```

-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
|          Test for                                     |
|Source      less than                                 |
|+---GET-----+ +---LES-----+                       |
28++Get Word +-+Less than +-----+-----+-----+-----+-----+ (MCR) +-+
| |Addr: 400| |Addr: 401|                               |
| |Data: 001| |Data: 002|                               |
|+-----+ +-----+                                   |
|Source for   Test for                                 |
|equal        equal                                   |
|+---GET-----+ +---EQU-----+                       |
29++Get Word +-+Equal +-----+-----+-----+-----+-----+ ( ) +-+
| |Addr: 402| |Addr: 403|                               |
| |Data: 003| |Data: 004|                               |
|+-----+ +-----+                                   |
|Value to test Limits                                 |
|+---GET-----+ +---LIM-----+                       |
30++Get Word +-+Limit Test+-----+-----+-----+-----+-----+ ( ) +-+
| |Addr: 404| |ADDR: 405|                               |
| |Data: 005| |HIGH: 100|                               |
|+-----+ |LOW: 050|                                   |
|          +-----+                                   |
31+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+ (MCR) +-+

```

```

-----+-----+-----+
|Augend      + Addend                               Sum      |
|+---GET-----+ +---GET-----+                    410  |
32++Get Word  +-+Get Word  +-----+-----+-----+ (ADD)  +-+
||Addr: 406| |Addr: 407|                               015  |
||Data: 007| |Data: 008|                               |
|+-----+ +-----+                                     |
|Minuend     - Subtrahend                           Difference |
|+---GET-----+ +---GET-----+                    413  |
33++Get Word  +-+Get Word  +-----+-----+-----+ (SUB)  +-+
||Addr: 411| |Addr: 412|                               - 001  |
||Data: 009| |Data: 010|                               |
|+-----+ +-----+                                     |
|Multiplicand Multiplier                             Product   |
|+---GET-----+ +---GET-----+                    +---MUL-----+ |
34++Get Word  +-+Get Word  +-----+-----+-----+ +MULTIPLICATION+ +-+
||Addr: 414| |Addr: 415|                    |MSD Addr: 416| |
||Data: 011| |Data: 012|                    |LSD Addr: 417| |
|+-----+ +-----+                    |Result: 000132| |
|                                     +-----+-----+ |
|Dividend    Divisor                               Quotient   |
|+---GET-----+ +---GET-----+                    +---DIV-----+ |
35++Get Word  +-+Get Word  +-----+-----+-----+ +DIVISION   +-+
||Addr: 420| |Addr: 421|                    |MSD Addr: 422| |
||Data: 013| |Data: 014|                    |LSD Addr: 423| |
|+-----+ +-----+                    |Result:000.928| |
|                                     +-----+-----+ |

```


PLC-2 LADDER LOGISTICS

Data Move

Page:00009

14:30 10/24/07

Project:AI2

```

|Source                                     Destination |
|+--GET-----+                             +--PUT-----+ |
36++Get Word +-----+                       +Put Word  +-+ |
| |Addr: 424|                               |Addr: 425| |
| |Data: 030|                               |Data: 030| |
|+-----+                                   +-----+ |
|Low byte move                               Destination |
| 430:0                                       +--PUT-----+ |
37+----[BYT]-----+                       +Put Word  +-+ |
|      041                                       |Addr: 431| |
|                                       |Data: 110| |
|                                       +-----+ |
|High byte move                               Destination |
| 430:1                                       +--PUT-----+ |
38+----[BYT]-----+                       +Put Word  +-+ |
|      103                                       |Addr: 435| |
|                                       |Data: 311| |
|                                       +-----+ |
|                                       Word to File |
|WFM Enable Bit                               Move      |
| 432                                         +--CTU-----+ |
39+----]/[-----+                       +COUNTER UP +- (CU) +-+ |
|      17                                       |COUNTER: 432| |
|                                       |PRESET: 008+- (DN) |
|                                       |ACCUM: 000| |
|                                       +-----+ |
|                                       Word to File |
|WFM Done Bit                               Move      |
| 432                                         +--WFM-----+ |
40+----]/[-----+                       +Word to File Move +- (DN) +-+ |
|      15                                       |Counter Addr: 432| |
|                                       |Position: 000| |
|                                       |File Length: 008| |
|                                       |Word Addr: 440| |
|                                       |File R: 450| |
|                                       +-----+ |
|                                       File to Word |
|FWM Enable Bit                               Move      |
| 460                                         +--CTU-----+ |
41+----]/[-----+                       +COUNTER UP +- (CU) +-+ |
|      17                                       |COUNTER: 460| |
|                                       |PRESET: 008+- (DN) |
|                                       |ACCUM: 000| |
|                                       +-----+ |
|                                       File to Word |
|FWM Done Bit                               Move      |
| 460                                         +--FWM-----+ |
42+----]/[-----+                       +File to Word Move +- (DN) +-+ |
|      15                                       |Counter Addr: 460| |
|                                       |Position: 000| |
|                                       |File Length: 008| |
|                                       |File A: 471| |
|                                       |Word Addr: 470| |
|                                       +-----+ |

```


Project:AI2

```

|
| FFM Enable Bit FFM Done Bit
| 1000 1000
50+-----]/[-----]/[-----+File to File Move +- (EN)--+
| 17 15 |Counter Addr: 1000|
| |Position: 001|
| |File Length: 008|
| |File A: 1010+-(DN)|
| |File R: 1110|
| |Rate Per Scan: 004|
| |-----+
| |File
| FCM Enable Bit FCM Done Bit
| 1001 1001
51+-----] [-----] [-----+File Complement +- (EN)--+
| 17 15 |Counter Addr: 1001|
| |Position: 001|
| |File Length: 008|
| |File A: 1020+-(DN)|
| |File R: 1120|
| |Rate Per Scan: 008|
| |-----+
| |File to File
| FFA Enable Bit FFA Done Bit
| 1002 1002
52+-----] [-----] [-----+File to File AND +- (EN)--+
| 17 15 |Counter Addr: 1002|
| |Position: 001|
| |File Length: 008|
| |File A: 1030+-(DN)|
| |File B: 1130|
| |File R: 1030|
| |Rate Per Scan: 008|
| |-----+
| |File to File
| FFO Enable Bit FFO Done Bit
| 1003 1003
53+-----] [-----] [-----+File to File OR +- (EN)--+
| 17 15 |Counter Addr: 1003|
| |Position: 001|
| |File Length: 008|
| |File A: 1040+-(DN)|
| |File B: 1140|
| |File R: 1040|
| |Rate Per Scan: 008|
| |-----+
| |File to File
| FFX Enable Bit FFX Done Bit
| 1004 1004
54+-----] [-----] [-----+File to File XOR +- (EN)--+
| 17 15 |Counter Addr: 1004|
| |Position: 001|
| |File Length: 008|
| |File A: 1050+-(DN)|
| |File B: 1150|
| |File R: 1050|
| |Rate Per Scan: 008|
| |-----+

```


PLC-2 LADDER LOGISTICS

Shift Sequence

Project:AI2

Page:00013

14:30 10/24/07

```

-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
|                               Shift File                               |
| Label 3 SFU Enable Bit SFU Done Bit                               Up   |
| L:03      1200      1200      1200                               +---SFU-----+ |
59+-----] [-----] [-----] +Shift File Up      +- (EN) +-+ |
|                               |Counter Addr: 1200|               |
|                               |File Length:  008|               |
|                               |File:         1210|               |
|                               |Input Addr:   131+-(DN)|           |
|                               |Output Addr:  031|               |
|                               |Rate Per Scan: 008|               |
|                               +-----+                         |
|                               Shift File                               |
| SFD Enable Bit SFD Done Bit                               Down   |
| 1201      1201      1201      1201                               +---SFD-----+ |
60+-----] [-----] [-----] +Shift File Down      +- (EN) +-+ |
|                               |Counter Addr: 1201|               |
|                               |File Length:  008|               |
|                               |File:         1220|               |
|                               |Input Addr:   132+-(DN)|           |
|                               |Output Addr:  032|               |
|                               |Rate Per Scan: 008|               |
|                               +-----+                         |
|                               Bit Shift                               |
| BSL Enable Bit BSL Done Bit                               Left   |
| 1202      1202      1202      1202                               +---BSL-----+ |
61+-----] [-----] [-----] +Bit Shift Left      +- (EN) +-+ |
|                               |Counter Addr: 1202|               |
|                               |# of Bits:    016|               |
|                               |File:         1230|               |
|                               |Input:        160/03+-(DN)|         |
|                               |Output:       060/15|               |
|                               +-----+                         |
|                               Bit Shift                               |
| BSR Enable Bit BSR Done Bit                               Right  |
| 1203      1203      1203      1203                               +---BSR-----+ |
62+-----] [-----] [-----] +Bit Shift Right     +- (EN) +-+ |
|                               |Counter Addr: 1203|               |
|                               |# of Bits:    016|               |
|                               |File:         1240|               |
|                               |Input:        160/07+-(DN)|         |
|                               |Output:       060/07|               |
|                               +-----+                         |
63+-----+-----+-----+-----+-----+-----+-----+-----+-----+
{Subroutine Area}+

```

Project:AI2

```

|This is subroutine 1.
|Jump to
|Subroutine 1 FFL Enable Bit FFL Done Bit      FIFO Load
|  L:01      1204      1204      +--FFL-----+
64+----[LBL]-----] [-----] [-----]+Fifo Load      +- (LD)--+
|                                     |Counter Addr: 1204|
|                                     |Fifo Size:    008|
|                                     |# in File:   000+- (FL)|
|                                     |FIFO:        1250|
|                                     |Input Addr:  161|
|                                     |Input Data:  161+- (EM)|
|                                     +-----+
|FFU Enable Bit FFU Done Bit      FIFO Unload
|  1205      1205      +--FFU-----+
65+----] [-----] [-----]+Fifo Unload      +- (UL)--+
|                                     |Counter Addr: 1205|
|                                     |Fifo Size:    008|
|                                     |# in File:   000+- (FL)|
|                                     |FIFO:        1250|
|                                     |Output Addr:  061|
|                                     |Output Data:  061+- (EM)|
|                                     +-----+
|                                     Sequencer
|SQO Enable Bit SQO Done Bit Input
|  1206      1206      +--SQI-----+
66+----] [-----] [-----]+Sequencer Input      +-----+>
|                                     |Counter Addr: 1207|
|                                     |Current Step:  001|
|                                     |Seq Length:   008|
|                                     |Words per Step:  1|
|                                     |File:         1260|
|                                     |Mask:         1270|
|                                     |Input #1:     127|
|                                     +-----+
|                                     Sequencer
|                                     Output
|                                     <+--SQO-----+
|                                     <+Sequencer Output      +- (EN)--+
|                                     <|Counter Addr: 1206|
|                                     |Current Step:  001|
|                                     |Seq Length:   008|
|                                     |Words per Step:  1+- (DN)|
|                                     |File:         1260|
|                                     |Mask:         1270|
|                                     |Output #1:     027|
|                                     +-----+
|This is the
|TON 200 done
|bit
|  200
67+----] [-----]+Sequencer Load      +- (EN)--+
|                                     |Counter Addr: 1400|
|                                     |Current Step:  001|
|                                     |Seq Length:   008|
|                                     |Words per Step:  1+- (DN)|
|                                     |File:         1260|
|                                     |Load #1:      155|
|                                     +-----+
|                                     +--RET-----+
68+----+Return from Subroutine+
|                                     +-----+

```

| Prog End Addr:1224 |
69+-----[End of Program]--+