

Allen-Bradley Co.  
6200 Series Software  
PLC-2 Programming Terminal Software  
Release 2.23  
Program Listing

Processor File: 6200PLC2  
2 November 2007 - 10:32

Rung M:0

```

|
|-----START OF PROGRAM-----|
|

```

Rung M:1

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.

Bits

	This is an		This is an	
	address		address	
	comment		comment	
	for input		for output	
	110/00		010/00	
	SYM_110_00		SYM_010_00	
	110		010	
	00		00	
	Instruction			
	comment			
	for			
	XIO 110/00			
	SYM_110_00			
	110			
	00			

Rung M:2

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.

	Instruction		Comment	
	comment		for	
	with no		010/01	
	address			
	comment			
	SYM_110_01		SYM_010_01	
	110		010	
	01		(L)	
	01		01	

Rung M:3

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

Comment		Comment	
for		for	
110/02		010/02	
SYM_110_02		SYM_010_02	
110		010	
+----] [-----		(U)	+-----
02		02	

Rung M:4

This section of rungs show how bits are converted.

Comment		Comment	
for		for	
110/03		010/03	
SYM_110_03		SYM_010_03	
110		010	
+----] [-----		( )	+-----
03		03	

Rung M:5

Comment		Comment	
for		for	
110/04		010/04	
SYM_110_04		SYM_010_04	
110		010	
+----] [-----		(L)	+-----
04		04	

Rung M:6

Comment		Comment	
for		for	
110/05		010/05	
SYM_110_05		SYM_010_05	
110		010	
+----] [-----		(U)	+-----
05		05	

Rung M:7

Comment		Comment	
for		for	
110/06		010/06	
SYM_110_06		SYM_010_06	
110		010	
+----] [-----		( )	+-----
06		06	

Rung M:8

The next three rungs will AFI.

	Comment		Comment	
	for		for	
	110/07		010/07	
	SYM_110_07		SYM_010_07	
	110		010	
+--+	----	] [-----+-----	-----	(L)-----+
		07		07

Rung M:9

	Comment		Comment	
	for		for	
	110/10		010/10	
	SYM_110_10		SYM_010_10	
	110		010	
+--+	----	] [-----+<MISSING BND>-----	-----	(U)-----+
		10		10
	+-----			

Rung M:10

	Comment		Comment	
	for		for	
	110/11		010/11	
	SYM_110_11		SYM_010_11	
	110		010	
+---	----	] [-----AFI-----	-----	( )-----+
		11		11

Rung M:11

	Comment		Comment	
	for		for	
	110/12		010/12	
	SYM_110_12		SYM_010_12	
	110		010	
+---	----	] [-----	-----	(L)-----+
		12		12

Rung M:12

	Comment		Comment	
	for		for	
	110/13		010/13	
	SYM_110_13		SYM_010_13	
	110		010	
+---	----	] [-----	-----	(U)-----+
		13		13

```

Rung M:13
| Comment                                     Comment |
| for                                         for     |
| 110/14                                     010/14  |
| SYM_110_14                                SYM_010_14 |
|   110                                       010     |
+----] [-----] [-----] [-----] ( )-----+
|      14                                           14     |

```

```

Rung M:14
| Comment                                     Comment |
| for                                         for     |
| 110/15                                     010/15  |
| SYM_110_15                                SYM_010_15 |
|   110                                       010     |
+----] [-----] [-----] [-----] (L)-----+
|      15                                           15     |

```

```

Rung M:15
| Comment                                     Comment |
| for                                         for     |
| 110/16                                     010/16  |
| SYM_110_16                                SYM_010_16 |
|   110                                       010     |
+----] [-----] [-----] [-----] (U)-----+
|      16                                           16     |

```

```

Rung M:16
| Comment                                     Comment |
| for                                         for     |
| 110/17                                     010/17  |
| SYM_110_17                                SYM_010_17 |
|   110                                       010     |
+----] [-----] [-----] [-----] ( )-----+
|      17                                           17     |

```

```

Rung M:17
| This address is outside the rack range | Comment | This commt is at the bit level, overrides the word | Comment | Comment | Comment |
| 050 050 150 150 250 250 350 |
+----] [-----]/[-----] [-----]/[-----] [-----]/[-----] ( )-----+
|      00      01      00      01      00      01      17     |

```

Rung M:18

Timers

```

| This is                               Timer for           |
| the                                   two                 |
| TON 200                               seconds           |
| done bit                               |
|   200                                +TON-----+ 200 |
+---] / [-----+TIMER ON DELAY      +- (EN) -+
|   15                                |Timer Addr:   200| 17 |
|                                     |Time base (sec): 1.0| 200 |
|                                     |Preset:       2+- (DN) |
|                                     |Accum:       1| 15 |
|                                     +-----+

```

Rung M:19

```

| Timer                                 TOF timer         |
| enable for                            for               |
| TOF 201                                200 ms           |
|   201                                +TOF-----+ 201 |
+---] / [-----+TIMER OFF DELAY      +- (EN) -+
|   17                                |Timer Addr:   201| 17 |
|                                     |Time base (sec): 0.1| 201 |
|                                     |Preset:       2+- (DN) |
|                                     |Accum:       0| 15 |
|                                     +-----+

```

Rung M:20

```

|                                     Retentive           |
|                                     timer at             |
|                                     20 ms              |
|   202                                +RTO-----+ 202 |
+---] / [-----+RETENTIVE TIMER ON      +- (EN) -+
|   15                                |Timer Addr:   202| 17 |
|                                     |Time base (sec): 0.01| 202 |
|                                     |Preset:       2+- (DN) |
|                                     |Accum:       0| 15 |
|                                     +-----+

```

Rung M:21

```

|                                     Retentive           |
|                                     timer at             |
|                                     20 ms              |
|                                     202                |
+----- (RTR) -----+
|

```

Rung M:22

Counters

Rung comments are attached to the output instruction and address.  
It will translate to the output address.

```

| Counter up                               Counter          |
| enable                                     |                  |
|   203                                     +CTU-----+ 203 |
+----] [-----+COUNT UP          +- (CU)-+
|   17                                     |Counter Addr: 203| 17 |
|                                     |Preset:          999| 203 |
|                                     |Accum:           0+- (DN) |
|                                     +-----+ 15 |
    
```

Rung M:23

```

| Counter                               Counter          |
| down                                   |                  |
| enable                                     |                  |
|   203                                     +CTD-----+ 203 |
+----] [-----+COUNT DOWN          +- (CD)-+
|   16                                     |Counter Addr: 203| 16 |
|                                     |Preset:          999| 203 |
|                                     |Accum:           0+- (DN) |
|                                     +-----+ 15 |
    
```

Rung M:24

```

| Counter                               Counter          |
| done                                     |                  |
|   203                                     203              |
+----]/[----- (CTR)-----+
|   15                                     |
    
```

Rung M:25

Block Transfers

```

| BTW      |BTW      | Block Transfer Write control block |
| done bit |enable bit |                                     |
|          |          |                                     |
| 136      | 036      | +BTW-----+ 036 |
+----] [-----] [-----+BLOCK TRANSFER WRITE +- (EN)-+
|   06      |   06      | |Data Addr:   205| 06 |
|          |          | |Module Addr:  360| 136 |
|          |          | |Block Length:  39+- (DN) |
|          |          | |File:         310-356| 06 |
|          |          | +-----+
    
```





Rung M:30

Compare

Source	Test for	
402	403	020
+-----]G[-----]=[----- ( )-----+		
3	4	01

Rung M:31

Value to test	Limits	
404	+LIM-----+	020
+-----]G[-----+LIMIT TEST +----- ( )-----+		
5	Limit: 405	02
	Low Reference: 50	
	High Reference: 100	
	+-----+	

Rung M:32

+----- (MCR)-----+	
--------------------	--

Rung M:33

Math

Augend	+ Addend	Sum
406	407	410
+-----]G[-----]G[----- (+)-----+		
7	8	15

Rung M:34

Minuend	- Subtrahend	Difference
411	412	413
+-----]G[-----]G[----- (-)-----+		
9	10	-001

Rung M:35

Multipl nd	Multipl ier	Product
414	415	416 417
+-----]G[-----]G[----- (x) - (x)-----+		
11	12	0 132

Rung M:36

Dividend	Divisor	Quotient
420	421	422 423
+-----]G[-----]G[----- (:)- (:)------+		
13	14	0.928

Rung M:37

Data Move

```

| Source                               Destinaton |
| 424                                  425      |
+----]G[----- (PUT) ----+
| 30                                   30       |

```

Rung M:38

```

| Byte move                             Destinaton |
| 430 0                                  431      |
+----]B[----- (PUT) ----+
| 041                                    110     |

```

Rung M:39

```

| Byte move                             Destinaton |
| 430 1                                  435      |
+----]B[----- (PUT) ----+
| 103                                    311     |

```

Rung M:40

```

| WFM                                     Word to   |
| enable bit                             File      |
|                                         Move      |
| 432                                     +CTU-----+ 432 |
+----]/[-----+COUNT UP      +- (CU) --+
| 17                                     |Counter Addr: 432| 17 |
|                                         |Preset:         8| 432 |
|                                         |Accum:         0+- (DN) |
|                                         +-----+ 15 |

```

Rung M:41

```

| WFM                                     Word to   |
| done bit                               File      |
|                                         Move      |
| 432                                     +WFM-----+ 432 |
+----]/[-----+WORD TO FILE MOVE +- (DN) --+
| 15                                     |Counter Addr: 432| 15 |
|                                         |Position:       0|   |
|                                         |File Length:   8|   |
|                                         |Word Addr:     440|   |
|                                         |File R: 450- 457|   |
|                                         +-----+   |

```

Rung M:42

```

| FWM                               File to
| enable bit                         Word
|                                     Move
|         460                       +CTU-----+ 460 |
+----]/[-----+COUNT UP      +- (CU)-+
|         17                       |Counter Addr: 460| 17 |
|                                     |Preset:         8| 460 |
|                                     |Accum:          0+- (DN) |
|                                     +-----+ 15 |

```

Rung M:43

```

| FWM                               File to
| done bit                           Word
|                                     Move
|         460                       +FWM-----+ 460 |
+----]/[-----+FILE TO WORD MOVE +- (DN)-+
|         15                       |Counter Addr: 460| 15 |
|                                     |Position:        0|   |
|                                     |File Length:     8|   |
|                                     |File A: 471- 500|   |
|                                     |Word Addr:      470|   |
|                                     +-----+   |

```

Rung M:44

```

| ANW                               Word to
| enable bit                         File
|                                     AND
|         600                       +CTU-----+ 600 |
+----]/[-----+COUNT UP      +- (CU)-+
|         17                       |Counter Addr: 600| 17 |
|                                     |Preset:        6| 600 |
|                                     |Accum:         0+- (DN) |
|                                     +-----+ 15 |

```

Rung M:45

```

| ANW                               Word to
| done bit                           File
|                                     AND
|         600                       +ANW-----+ 600 |
+----]/[-----+WORD TO FILE AND +- (DN)-+
|         15                       |Counter Addr: 600| 15 |
|                                     |Position:       0|   |
|                                     |File Length:    6|   |
|                                     |Word Addr:     610|   |
|                                     |File B: 611- 616|   |
|                                     |File R: 621- 626|   |
|                                     +-----+   |

```

Rung M:46

```

| ORW                                     Word to
| enable bit                             File
|                                         OR
|      601                               +CTU-----+ 601
+---] / [-----+COUNT UP          +- (CU)-+
|      17                               |Counter Addr: 601| 17
|                                         |Preset:         6| 601
|                                         |Accum:          0+- (DN)
|                                         +-----+ 15
    
```

Rung M:47

```

| ORW                                     Word to
| done bit                               File
|                                         OR
|      601                               +ORW-----+ 601
+---] / [-----+WORD TO FILE OR    +- (DN)-+
|      15                               |Counter Addr: 601| 15
|                                         |Position:        0|
|                                         |File Length:     6|
|                                         |Word Addr:       630|
|                                         |File B: 631- 636|
|                                         |File R: 641- 646|
|                                         +-----+
    
```

Rung M:48

```

| XOW                                     Word to
| enable bit                             File
|                                         XOR
|      602                               +CTU-----+ 602
+---] / [-----+COUNT UP          +- (CU)-+
|      17                               |Counter Addr: 602| 17
|                                         |Preset:         6| 602
|                                         |Accum:          0+- (DN)
|                                         +-----+ 15
    
```

Rung M:49

```

| XOW                                     Word to
| done bit                               File
|                                         XOR
|      602                               +XOW-----+ 602
+---] / [-----+WORD TO FILE XOR    +- (DN)-+
|      15                               |Counter Addr: 602| 15
|                                         |Position:        0|
|                                         |File Length:     6|
|                                         |Word Addr:       650|
|                                         |File B: 651- 656|
|                                         |File R: 661- 666|
|                                         +-----+
    
```

Rung M:50

```

|                                     | Label 3 |
|                                     |     3   |
+-----+-----+-----+-----+ (JMP) -----+
|

```

Rung M:51

File Move

```

| FFM          | FFM          | File to |
| enable bit | done bit | File |
|                                     | Move |
|      1000      |      1000      | +FFM-----+ 1000 |
+---] / [-----] / [-----] / [-----] +FILE TO FILE MOVE +- (EN) -+
|      17        |      15        | |Counter Addr: 1000| 17 |
|                                     | |Position:         | 1 | 1000 |
|                                     | |File Length:      | 8+- (DN) |
|                                     | |File A: 1010- 1017| 15 |
|                                     | |File R: 1110- 1117| |
|                                     | |Rate per Scan:   | 4 |
|                                     | +-----+

```

Rung M:52

```

| FFC          | FFC          | File to |
| enable bit | done bit | File |
|                                     | Complement |
|      1001      |      1001      | +FFC-----+ 1001 |
+---] [-----] [-----] [-----] +FILE COMPLEMENT +- (EN) -+
|      17        |      15        | |Counter Addr: 1001| 17 |
|                                     | |Position:         | 1 | 1001 |
|                                     | |File Length:      | 8+- (DN) |
|                                     | |File A: 1020- 1027| 15 |
|                                     | |File R: 1120- 1127| |
|                                     | |Rate per Scan:   | 8 |
|                                     | +-----+

```

Rung M:53

```

| ANF          | ANF          | File to |
| enable bit | done bit | File |
|                                     | AND |
|      1002      |      1002      | +ANF-----+ 1002 |
+---] [-----] [-----] [-----] +FILE TO FILE AND +- (EN) -+
|      17        |      15        | |Counter Addr: 1002| 17 |
|                                     | |Position:         | 1 | 1002 |
|                                     | |File Length:      | 8+- (DN) |
|                                     | |File A: 1030- 1037| 15 |
|                                     | |File B: 1130- 1137| |
|                                     | |File R: 1030- 1037| |
|                                     | |Rate per Scan:   | 8 |
|                                     | +-----+

```

Rung M:54

```

| ORF          |ORF          |          File to          |
| enable bit|done bit      |          File              |
|          |          |          OR                |
|    1003      |    1003      |          +ORF-----+ 1003 |
+----] [-----] [-----+FILE TO FILE OR  +- (EN)-+
|          17      |          15      | |Counter Addr: 1003| 17 | |
|          |          | |Position:         | 1| 1003 |
|          |          | |File Length:      | 8+- (DN) |
|          |          | |File A: 1040- 1047| 15 |
|          |          | |File B: 1140- 1147|   |
|          |          | |File R: 1040- 1047|   |
|          |          | |Rate per Scan:   | 8|   |
|          |          | +-----+          |

```

Rung M:55

```

| XOF          |XOF          |          File to          |
| enable bit|done bit      |          File              |
|          |          |          XOR                |
|    1004      |    1004      |          +XOF-----+ 1004 |
+----] [-----] [-----+FILE TO FILE XOR  +- (EN)-+
|          17      |          15      | |Counter Addr: 1004| 17 | |
|          |          | |Position:         | 1| 1004 |
|          |          | |File Length:      | 8+- (DN) |
|          |          | |File A: 1050- 1057| 15 |
|          |          | |File B: 1150- 1157|   |
|          |          | |File R: 1050- 1057|   |
|          |          | |Rate per Scan:   | 8|   |
|          |          | +-----+          |

```

Rung M:56

```

|          |          |          Set/Reset          |
|          |          |          Bit                |
|          |          |          examine            |
|          |          |          bit                |
|          |          |          +SSB-----+          |
+-----+SET SHIFT BIT  +--+
|          |          | |File:             | 1060| |
|          |          | |Bit No.:          | 16| |
|          |          | +-----+          |

```

Rung M:57

```

|          |          |          Set/Reset          |
|          |          |          Bit                |
|          |          |          examine            |
|          |          |          bit                |
|          |          |          +RSB-----+          |
+-----+RESET SHIFT BIT  +--+
|          |          | |File:             | 1060| |
|          |          | |Bit No.:          | 1| |
|          |          | +-----+          |

```

Rung M:58

```

|           Set/Reset           Set/Reset           |
|           Bit                   Bit                   |
|           examine                 examine                 |
|           bit                     bit                     |
| +XFB-----+ +XNB-----+                                |
+-+EXAMINE OFF SHIFT BIT +--+EXAMINE ON SHIFT BIT +-----+ ( )--+
| |File:           1060| |File:           1060|           10 |
| |Bit No.:         1| |Bit No.:         16|           16 |
| +-----+ +-----+                                     |

```

Rung M:59

```

|                                                     Jump to |
|                                                     Subroutine |
|                                                     1         |
|                                                     1         |
+-----+-----+-----+-----+-----+-----+-----+ (JSR) +-----+
|

```

Rung M:60

Shift Sequence

```

| Label 3   |SFU       |SFU           | Shift           |
|           |enable bit|done bit      | File            |
|           |           |              | Up              |
|           | 1200     | 1200         | +SFU-----+ 1200 |
+---LBL-----] [-----] [-----+SHIFT FILE UP +- (EN)---+
|           | 17       | 15           | |Counter Addr: 1200| 17 |
|           |           |              | |File Length:     8| 1200 |
|           |           |              | |File: 1210- 1217+- (DN) |
|           |           |              | |Input Addr:     131| 15 |
|           |           |              | |Output Addr:    031|
|           |           |              | |Rate per Scan:   8|
|           |           |              | +-----+

```

Rung M:61

```

| SFD       |SFD           | Shift           | |
| enable bit|done bit      | File            |
|           |              | Down            |
|           | 1201        | 1201           | +SFD-----+ 1201 |
+---] [-----] [-----+SHIFT FILE DOWN +- (EN)---+
|           | 17         | 15             | |Counter Addr: 1201| 17 |
|           |           |              | |File Length:   8| 1201 |
|           |           |              | |File: 1220- 1227+- (DN) |
|           |           |              | |Input Addr:    132| 15 |
|           |           |              | |Output Addr:   032|
|           |           |              | |Rate per Scan:  8|
|           |           |              | +-----+

```

Rung M:62

BSL	BSL		Bit	
enable bit	done bit		Shift	
			Left	
1202	1202		+BSL-----+ 1202	
+----] [-----] [-----			+BIT SHIFT LEFT +- (EN)-+	
17	15		Counter Addr: 1202  17	
			Number of Bits: 16  1202	
			File: 1230- 1230+- (DN)	
			Input: 160/03  15	
			Output: 060/15	
			+-----+	

Rung M:63

BSR	BSR		Bit	
enable bit	done bit		Shift	
			Right	
1203	1203		+BSR-----+ 1203	
+----] [-----] [-----			+BIT SHIFT RIGHT +- (EN)-+	
17	15		Counter Addr: 1203  17	
			Number of Bits: 16  1203	
			File: 1240- 1240+- (DN)	
			Input: 160/07  15	
			Output: 060/07	
			+-----+	





Rung S:4

```

| This is                               Sequencer      |
| the                                   Load            |
| TON 200                               |              |
| done bit                               |              |
|   200                                  +SQL-----+ 1400 |
+----] [-----+SEQUENCER LOAD  +- (EN) -+
|   15                                             |Counter Addr: 1400| 17 |
|                                                    |Current Step:    1| 1400 |
|                                                    |Seq Length:      8+- (DN) |
|                                                    |Words per Step:  1| 15 |
|                                                    |File: 1260- 1267|
|                                                    |Input Word 1: 155|
|                                                    |Input Word 2:    |
|                                                    |Input Word 3:    |
|                                                    |Input Word 4:    |
|                                                    +-----+

```

Rung S:5

```

|
+----- (RET) -----
|

```

Rung S:6

```

|
+-----END OF PROGRAM-----
|

```

REPORT OPTIONS SUMMARY

Page Width:	80
Page Length:	66
Graphics Capabilities:	NO
Right Power Rail:	YES
Address Comments:	YES
Symbols:	YES
Rung Comments:	YES
Cross References:	NO
Starting Rung:	M00000
Ending Rung:	S00007