

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	

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>	
		10	(U)	
			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		
for equal	equal		
402	403		020
+---]G[-----]	= [-----]		( )---+
3	4		01

Rung M:31

Value to	Limits		
test			
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	-		Difference	
	Subtrahend			
411	412		413	
+---]G[-----]	]G[-----]		(-)	---+
9	10		-001	

Rung M:35

Multiplica	Multiplier		Product	
nd				
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-----+                               020 |
+--+EXAMINE OFF SHIFT BIT +--+EXAMINE ON SHIFT BIT +----- ( )--+
| |File:           1060| |File:           1060|           10 |
| |Bit No.:         1| |Bit No.:         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       |
|           3     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:0

+-----START OF SUBROUTINES-----+

Rung S:1

More Shift Sequence

This is Subroutine 1

	Jump to	FFL	FFL		FIFO	
	Subroutine	enable bit	done bit		Load	
	1					
	1	1204	1204		+FFL-----+ 1204	
+---	LBL-----]	[-----]	[-----]		+FIFO LOAD	+-(EN)-+
		17	15		Counter Addr: 1204	17
					FIFO Size: 8	1204
					Number in File: 0+-(FL)	
					File: 1250- 1257	15
					Input Addr: 161	1204
					Input Data: 161+-(EM)	
					+-----+	14

Rung S:2

	FFU	FFU			FIFO	
	enable bit	done bit			Unload	
	1205	1205			+FFU-----+ 1205	
+---	]	[-----]	[-----]		+FIFO UNLOAD	+-(EN)-+
	17	15			Counter Addr: 1205	16
					FIFO Size: 8	1205
					Number in File: 0+-(FL)	
					File: 1250- 1257	15
					Output Addr: 061	1205
					Output Data: 61+-(EM)	
					+-----+	14

Rung S:3

	SQO	SQO		Sequencer	Sequencer	
	enable bit	done bit		Input	Output	
	1206	1206		+SQI-----+	+SQO-----+ 1206	
+---	]	[-----]	[-----]	+SEQUENCER INPUT	+SEQUENCER OUTPUT	+-(EN)-+
	17	15		Counter Addr: 1207	Counter Addr: 1206	17
				Current Step: 1	Current Step: 1	1206
				Seq Length: 8	Seq Length: 8+-(DN)	
				Words per Step: 1	Words per Step: 1	15
				File: 1260- 1267	File: 1260- 1267	
				Mask: 1270- 1270	Mask: 1270- 1270	
				Input Word 1: 127	Output Word 1: 027	
				Input Word 2:	Output Word 2:	
				Input Word 3:	Output Word 3:	
				Input Word 4:	Output Word 4:	
				+-----+	+-----+	

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