

Rung 1SBR0:0

Subroutine with parameters

```

|          SBR                      SBR                      |
|          INPUT 1                  INPUT 1                  |
|
|          RET                      RET                      |
|          RETURN 1                 RETURN 1                 |
| +SBR-----+                   +RET-----+               |
+--SUBROUTINE                   +RETURN ()                 +--+
| |Input parameter  1N2:0|       |Return parameter  1N2:0| |
| +-----+                   +-----+                   |

```

Rung 1SBR0:1

```

|                                     Lines                    |
|                                     Selected                 |
|                                     P14 on   |P15 on         |
| +CLR-----+                   1N1:98   |1N1:98         |
+-----+                   +---(U)-----+(U)-----+
| |Destination 1N1:99|           |0         |1         |
| |                   |           |0         |1         |
| +-----+                   +-----+                   |

```

Rung 1SBR0:2

```

|                                     Lines                    |
|                                     Selected                 |
|                                     +FOR-----+           |
+-----+                   +FOR-----+           +--+
|                                     |Label number  59| |
|                                     |Index          1N1:22| |
|                                     |Initial value  0| |
|                                     |Final value   19| |
|                                     |Step           1| |
|                                     +-----+           |

```

Rung 1SBR0:3

```

|                                     1B0: |
+-----+                   +---(U)-----+
|                                     1596 |

```

Rung 1SBR0:4

```

|                                     Line                    |
|                                     valves                   |
| V56 Open  |V57 Open  |V58 Open  |V59 Open  |         Line    |
| 1B23:     |1B23:     | 1B23:  | 1B23:   |         valves  |
+-----] [-----] [-----] [-----] [-----] ( )-----+
|   182     | 183     | 184     | 185     |         1B0:    |
|                                     1597 |

```

Rung 1SBR0:5

```

|                                     +RET-----+           |
+-----+                   +RETURN ()                 +--+
|                                     |Return parameter | |
|                                     +-----+           |

```

Rung 1SBR0:6

```

|                                     +-----+           |
+-----+                   +---(TND)-----+
|

```



Rung 1SBR0:13

```
|  
+-----[END OF FILE]-----+  
|
```

Rung 1SBR1:0  
Diagnostic

```

|                                     FBC                                     |
|                                     RESULT                                  |
|                                     CONTROL                                |
|-----+FBC-----+-----+-----+
+-----+FILE BIT COMPARE      +- (EN) -+
|Source          #1B3:10+- (DN) |
|Reference       #1B4:10+- (FD) |
|Result         #1N89:82+- (IN) |
|Compare control 1R6:10+- (ER) |
|Length          255|
|Position        0|
|Result control  1R6:11|
|Length          1|
|Position        0|
+-----+-----+-----+

```

Rung 1SBR1:1

```

|                                     DDT                                     |
|                                     RESULT                                  |
|                                     CONTROL                                |
|-----+DDT-----+-----+-----+
+-----+DIAGNOSTIC DETECT      +- (EN) -+
|Source          #1B3:90+- (DN) |
|Reference       #1B3:100+- (FD) |
|Result         #1N89:50+- (IN) |
|Compare control 1R6:12+- (ER) |
|Length          16|
|Position        0|
|Result control  1R6:13|
|Length          1|
|Position        0|
+-----+-----+-----+

```

Rung 1SBR1:2

```

|-----[END OF FILE]-----|

```

Rung 1SBR2:0

Block Transfers

BTR	BTR	BTR	BTR	
ENABLE	DONE	ERROR	CONTROL	
BR017:0	BR017:0	BR017:0	+BTR-----+	
+----]/[-----]/[-----]/[-----]			+BLOCK TRANSFER READ	+- (EN)-+
EN	DN	ER	Rack	001
			Group	7+- (DN)
			Module	0
			Control block	BR017:0+- (ER)
			Data file	1BTD0:0
			BT Length	32
			Continuous	NO
			BT Timeout	0
			+-----+	

Rung 1SBR2:1

BTW	BTW	BTW	BTW	
ENABLE	DONE	ERROR	CONTROL	
BW017:0	BW017:0	BW017:0	+BTW-----+	
+----]/[-----]/[-----]/[-----]			+BLOCK TRANSFER WRITE	+- (EN)-+
EN	DN	ER	Rack	001
			Group	7+- (DN)
			Module	0
			Control block	BW017:0+- (ER)
			Data file	1BTD1:0
			BT Length	13
			Continuous	NO
			BT Timeout	0
			+-----+	

Rung 1SBR2:2

Message

MSG	MSG	MSG	MSG	
ENABLE	DONE	ERROR	CONTROL	
0MSG0:0	0MSG0:0	0MSG0:0	+MSG-----+	
+----]/[-----]/[-----]/[-----]			+SEND/RECEIVE MESSAGE	+- (EN)-+
EN	DN	ER	Control block	0MSG0:0+- (DN)
				+- (ER)
			+-----+	

Rung 1SBR2:3

			INPUT	
			WORD 0	
			I:000	
+-----]			(IIN)	-----+

Rung 1SBR2:4

+-----[END OF FILE]-----+				

Rung 1SBR3:0

Process control

PID	PID
ENABLE	CONTROL
1PD0:0	+PID-----+
+----]/[-----+PID	+-----+--+
EN	Control block 1PD0:0
	Process variable 1BTD0:4
	Tieback 0
	Control output 1BTD1:1
	+-----+--+

Rung 1SBR3:1

TPO	TPO
DONE	BASE TIME
1T0:12	+TPO-----+
+----]/[-----+TPO	+--(EN)-+
DN	Percent on 75
	+- (TT)
	Timer 1T0:12
	Time base 0.01+- (DN)
	Cycle time 50
	Current 0
	Output bit 1B3:/256
	+-----+--+

Rung 1SBR3:2

|

+-----[END OF FILE]-----+

|

Rung 1SBR4:0

ASCII manipulation

ABL	ABL	ABL	
ENABLE	DONE	CONTROL	
MSG1:0	MSG1:0	+ABL-----+	
+----]/[-----]/[-----	+ASCII TEST FOR LINE	+- (EN)-+	
EN	DN	Channel	RM-1+- (DN)
		Control block	MSG1:0+- (ER)
		Characters	0
		+-----+	

Rung 1SBR4:1

ACB	ACB	ACB	
ENABLE	DONE	CONTROL	
MSG1:1	MSG1:1	+ACB-----+	
+----]/[-----]/[-----	+ASCII CHARS IN BUFFER	+- (EN)-+	
EN	DN	Channel	RM-1+- (DN)
		Control block	MSG1:1+- (ER)
		Characters	0
		+-----+	

Rung 1SBR4:2

ARD	ARD	ARD	
ENABLE	DONE	CONTROL	
MSG1:2	MSG1:2	+ARD-----+	
+----]/[-----]/[-----	+ASCII READ	+- (EN)-+	
EN	DN	Channel	RM-1+- (DN)
		Destination	OST0:0+- (ER)
		Control block	MSG1:2
		String length	80
		Characters read	0
		+-----+	

Rung 1SBR4:3

ARL	ARL	ARL	
ENABLE	DONE	CONTROL	
MSG1:3	MSG1:3	+ARL-----+	
+----]/[-----]/[-----	+ASCII READ LINE	+- (EN)-+	
EN	DN	Channel	RM-1+- (DN)
		Destination	OST0:1+- (ER)
		Control block	MSG1:3
		String length	80
		Characters read	0
		+-----+	

Rung 1SBR4:4

AWT	AWT	AWT	
ENABLE	DONE	CONTROL	
MSG1:4	MSG1:4	+AWT-----+	
+----]/[-----]/[-----	+ASCII WRITE	+- (EN)-+	
EN	DN	Channel	RM-1+- (DN)
		Source	OST0:2+- (ER)
		Control block	MSG1:4
		String length	80
		Characters sent	0
		+-----+	





Rung 1SBR4:11

```

|                                     AEX                                     |
|                                     SOURCE                                 |
|                                     +AEX-----+                         |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
|                                     +STRING EXTRACT +--+                |
|                                     |Source      OST0:3| |                |
|                                     |Index        5| |                |
|                                     |Number       4| |                |
|                                     |Destination  OST0:4| |                |
|                                     +-----+-----+-----+-----+

```

Rung 1SBR4:12

```

|           ASR                                     ASC                                     |
|           SOURCE A                               SOURCE                                 |
| +ASR-----+                                     +ASC-----+                         |
+--+ASCII STRING COMPARE +-----+-----+-----+-----+-----+-----+
| |Source A      OST0:4| |                                     |STRING SEARCH +--+                | | |
| |Source B      OST0:5| |                                     |Source      OST0:6| |                |
| +-----+-----+ |                                     |Index        0| |                |
|                                     |                                     |Search      OST0:7| |                |
|                                     |                                     |Result      1N77:2| |                |
|                                     |                                     |               0| |                |
|                                     +-----+-----+-----+-----+

```

Rung 1SBR4:13

```

|                                     |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
|                                     [END OF FILE]                                     |
|                                     |

```

Rung 1TRN0:0

|  
+--[AFI]-----[EOT]--+

Rung 1TRN0:1

|  
+-----[END OF FILE]-----+  
|



Rung 1STEP0:4

```

| | ISYM_IN04 | | SYM_OUT04 |
| | I:010 | | O:011 |
+----] / [----+-----+-----+-----+-----+
| | 04 | | 04 |
| | INPUT 05 | | OUTPUT 05 |
| | SYM_IN05 | | SYM_OUT05 |
| | I:010 | | O:011 |
+----] / [----+-----+-----+-----+-----+
| | 05 | | 05 |
| | INPUT 06 | | OUTPUT 06 |
| | SYM_IN06 | | SYM_OUT06 |
| | I:010 | | O:011 |
+----] / [----+-----+-----+-----+-----+
| | 06 | | 06 |
| | INPUT 07 | | OUTPUT 07 |
| | SYM_IN07 | | SYM_OUT07 |
| | I:010 | | O:011 |
+----] / [----+-----+-----+-----+-----+
| | 07 | | 07 |

```

Rung 1STEP0:5

```

| INPUT 10 | INPUT 11 | INPUT 12 | INPUT 13 | OUTPUT 10 | OUTPUT 11 | OUTPUT 12
| SYM_IN10 | SYM_IN11 | SYM_IN12 | SYM_IN13 | SYM_OUT10 | SYM_OUT11 | SYM_OUT12
| I:010 | I:010 | I:010 | I:010 | O:011 | O:011 | O:011 >
+----] [-----] / [-----] [-----] / [-----] ( )----- (L)----- (U)----->
| 10 | 11 | 12 | 13 | 10 | 11 | 12 >

```

```

OUTPUT 13 |
SYM_OUT13 |
< O:011 |
<---- ( )-----+
< 13 |

```

Rung 1STEP0:6

```

| INPUT 14 | | OUTPUT 14 |
| SYM_IN14 | | SYM_OUT14 |
| I:010 | | O:011 |
+----] [-----] / [-----] (L)-----+
| 14 | | 14 |

```

Rung 1STEP0:7

```

| INPUT 15 | | |
| THIS IS AN | |
| INSTRUCTN | |
| COMMENT | |
| SYM_IN15 | | OUTPUT 15 |
| I:010 | | SYM_OUT15 |
| | | O:011 |
+----] / [-----] (U)-----+
| 15 | | 15 |

```

Rung 1STEP0:8

```

| INPUT 16 | | OUTPUT 16 |
| SYM_IN16 | | SYM_OUT16 |
| I:010 | | O:011 |
+----] [-----] / [-----] (U)-----+
| 16 | | 16 |

```



Rung 1STEP0:14

TOF	TOF	TOF	
1 SEC	1 SEC	1 SEC	TOF
TIME BASE	TIME BASE	TIME BASE	1 SEC
ENABLE	TIMING	DONE	TIME BASE
1T0:2	1T0:2	1T0:2	+TOF-----+
+----] [-----]/[-----] [-----]			+TIMER OFF DELAY +- (EN) -+
EN	TT	DN	Timer 1T0:2
			Time base 1.0+- (DN)
			Preset 2400
			Accum 0
			+-----+

Rung 1STEP0:15

TOF	TOF	TOF	
.01 SEC	.01 SEC	.01 SEC	TOF
TIME BASE	TIME BASE	TIME BASE	.01 SEC
ENABLE	TIMING	DONE	TIME BASE
1T0:3	1T0:3	1T0:3	+TOF-----+
+----] [-----]/[-----] [-----]			+TIMER OFF DELAY +- (EN) -+
EN	TT	DN	Timer 1T0:3
			Time base 0.01+- (DN)
			Preset 2400
			Accum 0
			+-----+

Rung 1STEP0:16

RTO	RTO	RTO	
1 SEC	1 SEC	1 SEC	RTO
TIME BASE	TIME BASE	TIME BASE	1 SEC
ENABLE	TIMING	DONE	TIME BASE
1T0:4	1T0:4	1T0:4	+RTO-----+
+----] [-----]/[-----] [-----]			+RETENTIVE TIMER ON+- (EN) -+
EN	TT	DN	Timer 1T0:4
			Time base 1.0+- (DN)
			Preset 1800
			Accum 0
			+-----+

Rung 1STEP0:17

RTO	RTO	RTO	
.01 SEC	.01 SEC	.01 SEC	RTO
TIME BASE	TIME BASE	TIME BASE	.01 SEC
ENABLE	TIMING	DONE	TIME BASE
1T0:5	1T0:5	1T0:5	+RTO-----+
+----] [-----]/[-----] [-----]			+RETENTIVE TIMER ON+- (EN) -+
EN	TT	DN	Timer 1T0:5
			Time base 0.01+- (DN)
			Preset 1800
			Accum 0
			+-----+

Rung 1STEP0:18

			RTO
			.01 SEC
			TIME BASE
			1T0:5
+-----			(RES)-----+



Rung 1STEP0:24

Compare and Compute

	CMP		CPT	
	LESS THAN		MULTIPLY	
	+CMP-----+		+CPT-----+	
+-+	COMPARE	+	COMPUTE	+-+
	Expression		Destination 1N89:4	
	1N89:0<1N89:1		0	
	+-----+		Expression	
			1N89:2*1N89:3	
			+-----+	

Rung 1STEP0:25

	LIM		ADD	
	TEST		DESTINATN	
	+LIM-----+		+ADD-----+	
+-+	LIMIT TEST (CIRC)	+	ADD	+-+
	Low limit 0		Source A 1N89:6	
	0		0	
	Test 1N89:5		Source B 1N89:7	
	0		0	
	High limit 300		Destination 1N89:8	
	0		0	
	+-----+		+-----+	

Rung 1STEP0:26

	MEQ		SUB	
	COMPARE		DESTINATN	
	+MEQ-----+		+SUB-----+	
+-+	MASKED EQUAL	+	SUBTRACT	+-+
	Source 0B1:0		Source A 1N89:9	
	0000000000000000		0	
	Mask 00000FFF		Source B 1	
	0		0	
	Compare 0B1:1		Destination 1N89:9	
	0000000000000000		0	
	+-----+		+-----+	

Rung 1STEP0:27

	EQU		MUL	
	SOURCE A		DESTINATN	
	+EQU-----+		+MUL-----+	
+-+	EQUAL	+	MULTIPLY	+-+
	Source A 1T0:2.ACC		Source A 1N89:10	
	0		0	
	Source B 1C0:3.ACC		Source B 1N89:11	
	0		0	
	+-----+		Destination 1N89:11	
			0	
			+-----+	



Rung 1STEP0:28

	NEQ		DIV	
	SOURCE A		DESTINATN	
	+NEQ-----+		+DIV-----+	
+-+	NOT EQUAL		DIVIDE	+-+
	Source A 1L3:1		Source A 1N89:12	
	0		0	
	Source B 999999		Source B 2	
	+-----+		Destination 1N89:13	
			0	
			+-----+	

Rung 1STEP0:29

	LES/GRT		SQR	
	SOURCE A		DESTINATN	
	+LES-----+		+SQR-----+	
+-+	LESS THAN		SQUARE ROOT	+-+
	Source A 1F8:4		Source 1N89:14	
	0.000000		0	
	Source B 5.500000		Destination 1N89:15	
			0	
	+-----+		+-----+	

Rung 1STEP0:30

	LES/GRT		NEG	
	SOURCE A		DESTINATN	
	+GRT-----+		+NEG-----+	
+-+	GREATER THAN		NEGATE	+-+
	Source A 1F8:4		Source 1N89:16	
	0.000000		0	
	Source B 5.500000		Destination 1N89:17	
			0	
	+-----+		+-----+	

Rung 1STEP0:31

	LEQ		TOD	
	SOURCE A		DESTINATN	
	+LEQ-----+		+TOD-----+	
+-+	LESS THAN OR EQUAL		TO BCD	+-+
	Source A 1N3:3		Source 1B3:4	
	0		0000000000000000	
	Source B 1N3:4		Destination 0:013	
	0		0	
	+-----+		+-----+	

Rung 1STEP0:32

	GEQ		FRD	
	SOURCE A		DESTINATN	
	+GEQ-----+		+FRD-----+	
+-+	GREATER THAN OR EQUAL		FROM BCD	+-+
	Source A 1N3:5		Source I:013	
	0		0	
	Source B 1N3:6		Destination 1B3:5	
	0		0000000000000000	
	+-----+		+-----+	









Rung 1STEP0:52

SQI/SQO	SQI/SQO		SQL	
ENABLE	DONE		CONTROL	
1R6:8	1R6:8		+SQL-----+	
+----]	[-----]	[-----]	+SEQUENCER LOAD	+-(EN)-+
EN	DN		File	#ON60:10
			Source	1N89:80+-(DN)
			Control	1R6:9
			Length	4
			Position	0
			+-----+	

Rung 1STEP0:53

Program control

			LABEL 1	
			1	
+-[AFI]	-----			-(JMP)-----+

Rung 1STEP0:54

			JSR TO	
LABEL 1			1SBR0	
1			+JSR-----+	
+--[LBL]	-----		+JUMP TO SUBROUTINE	+--+
			File	1SBR0
			Input parameter	1N89:83
			Return parameter	1N89:93
			+-----+	

Rung 1STEP0:55

+-----	-----			-(TND)-----+

Rung 1STEP0:56

+-----	-----			-[END OF FILE]-----+

NO FILES IN SECTION 2IBP

NO FILES IN SECTION 2SBR

Rung 2TRN0:0

|  
+--[AFI]-----[EOT]--+

Rung 2TRN0:1

|  
+-----[END OF FILE]-----+  
|

Rung 2STEP0:0

This step is in LP2. It shows what the addresses look like in a different processor.

TON LP2		TON LP2	
TIMER		SCAN	
DONE		TIMER	
2T5:9		+TON-----+	
+----]/[-----		+TIMER ON DELAY	+-(EN)-+
DN		Timer 2T5:9	
		Time base 0.01+-	-(DN)
		Preset 1000	
		Accum 0	
		+-----+	

Rung 2STEP0:1

+-----	[END OF FILE]	-----+