

**AN-X-MOD-MAS  
Modicon S908 Remote I/O  
Communication  
Module**

# ***Configuring Quantum Parameters***



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## Overview

The AN-X-MOD-MAS communications module connects a computer or other device to a Modicon S908 remote I/O network, using Ethernet.

The module acts as a scanner on the S908 network, reading inputs and writing outputs. The module supports 800 series and Quantum remote drops. It supports up to 32 drops.

Some Quantum modules have additional parameters to define configurable properties of the module.

You send this parameter data by adding a line after the module definition that contains the length of the parameter data in words and the parameter data itself.

Example:

```
Slot=6,Type=ACO_020_00
```

```
CfgLen=6,0x8001,0x5555,0x0000,0x0000,0x0000,0x0000
```

The leading 0x indicates a hexadecimal number.

Some modules have no user definable parameter data but still require some parameter data be included in the configuration and sent when the AN-X-MOD-MAS brings the module online.

Some Quantum discrete output modules, for example, the DRA 840 00, can be configured for timeout behavior of either setting their outputs to the last value or setting the outputs to a user defined value. For these modules, to set the last state behavior, add a line after the module definition that contains the keyword CfgOutLast

Example:

```
Slot=4,Type=DRA_840_00
```

```
CfgOutLast
```

---

## ***Discrete Input Modules***

### **140 DAI 340 00**

Description: AC Input, 24 VAC 16x1 module

Parameters: No parameter data

### **140 DAI 353 00**

Description: AC Input, 24 VAC 4x8 module

Parameters: No parameter data

### **140 DAI 440 00**

Description: AC Input, 48 VAC 16x1 module

Parameters: No parameter data

### **140 DAI 453 00**

Description: AC Input, 48 VAC 4x8 module

Parameters: No parameter data

### **140 DAI 540 00**

Description: AC Input, 115 VAC 16x1 module

Parameters: No parameter data

### **140 DAI 543 00**

Description: AC Input 115 VAC 2x8 module

Parameters: No parameter data

### **140 DAI 553 00**

Description: AC Input, 115 VAC 4x8 module

Parameters: No parameter data

### **140 DAI 740 00**

Description: AC Input, 230 VAC 16x1 module

Parameters: No parameter data

### **140 DAI 753 00**

Description: AC, Input 230 VAC 4x8 module

Parameters: No parameter data

### **140 DDI 153 10**

Description: DC Input, 5V TTL 4x8 Source module

Parameters: No parameter data

### **140 DSI 353 00**

Description: DC Input 24 VDC 4x8 Sink module

Parameters: No parameter data

### **140 DDI 353 00**

Description: DC Input, 24 VDC 4x8 Sink module

Parameters: No parameter data

### **140 DDI 353 10**

Description: 24 VDC 4x8 True Low Input module

Parameters: No parameter data

### **140 DDI 364 00**

Description: 24 VDC Sink input module

Parameters: No parameter data

### **140 DDI 673 00**

Description: DC Input 125 VDC 3x8 Sink module

Parameters: 1 word of parameter data

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	A	B	C	0	0	0	0	0

Bits 5, 6 and 7 set the filter times for groups C, B and A.

The bit is 1 for a filter time of 0.7 ms and 0 for a filter time of 0.5 ms.

Example:

To configure a module in slot 4 for Group A with a filter time of 0.7 ms, Group B with a filter time of 1.5 ms, and Group C with a filter time of 0.7 ms,

Slot=4, Type=DDI\_673\_00

CfgLen=1, 0x00A0

## 140 DDI 841 00

Description: DC Input, 10 ... 60 VDC 8x2 Sink module

Parameters: No parameter data

## 140 DDI 853 00

Description: DC Input, 10 ... 60 VDC 4x8 Sink module

Parameters: No parameter data

## 140 DII 330 00

Description: Intrinsically Safe Digital Input module

Parameters:

## ***Discrete Output Modules***

### **140 DAO 840 00**

Description: AC Output 24 ... 230 VAC 16x1 module

Parameters: 1 word

The module can be set to hold its last outputs or go to a user defined timeout value when a timeout occurs.

If the module is to go to the last state when a timeout occurs, add a line with CfgOutLast after the module definition.

If the module is to go to a user defined state. add a line with a CfgLen of 1 and the user value in hexadecimal.

Example 1:

To configure a module in slot 4 to hold its last state

Slot=4,Type=DAO\_840\_00

CfgOutLast

Example 2:

To configure a module in slot 4 to go to a user defined state, in this case, 0x1234

Slot=4,Type=DAO\_840\_00

CfgLen=1,0x1234

### **140 DAO 840 10**

Description: AC Output 24 ... 115 VAC 16x1 module

Parameters: 1 word

The module can be set to hold its last outputs or go to a user defined timeout value when a timeout occurs.

If the module is to go to the last state when a timeout occurs, add a line with CfgOutLast after the module definition.

If the module is to go to a user defined state. add a line with a CfgLen of 1 and the user value in hexadecimal.

Example 1:

To configure a module in slot 4 to hold its last state

Slot=4,Type=DAO\_840\_10

CfgOutLast

Example 2:

To configure a module in slot 4 to go to a user defined state, in this case, 0xFFFF

Slot=4,Type=DAO\_840\_10

CfgLen=1,0xFFFF

## **140 DAO 842 10**

Description: AC Output 100 ... 230 VAC 4x4 module

Parameters: 1 word

The module can be set to hold its last outputs or go to a user defined timeout value when a timeout occurs.

If the module is to go to the last state when a timeout occurs, add a line with CfgOutLast after the module definition.

If the module is to go to a user defined state. add a line with a CfgLen of 1 and the user value in hexadecimal.

Example 1:

To configure a module in slot 4 to hold its last state

Slot=4,Type=DAO\_842\_10

CfgOutLast

Example 2:

To configure a module in slot 4 to go to a user defined state, in this case, 0xFFFF

Slot=4,Type=DAO\_842\_10

CfgLen=1,0xFFFF

## **140 DAO 842 20**

Description: AC Output 24 ... 48 VAC 4x4 module

Parameters: 1 word

The module can be set to hold its last outputs or go to a user defined timeout value when a timeout occurs.

If the module is to go to the last state when a timeout occurs, add a line with CfgOutLast after the module definition.

If the module is to go to a user defined state. add a line with a CfgLen of 1 and the user value in hexadecimal.

Example 1:

To configure a module in slot 4 to hold its last state

Slot=4,Type=DAO\_842\_20

CfgOutLast

Example 2:

To configure a module in slot 4 to go to a user defined state, in this case, 0xFFFF

Slot=4,Type=DAO\_842\_20

CfgLen=1,0xFFFF

## **140 DAO 853 00**

Description: AC Output 230 VAC 4x8 module

Parameters: No parameter data

## **140 DRA 840 00**

Description: Relay Output 16x1 Normally Open module

Parameters: 1 word

The module can be set to hold its last outputs or go to a user defined timeout value when a timeout occurs.

If the module is to go to the last state when a timeout occurs, add a line with CfgOutLast after the module definition.

If the module is to go to a user defined state. add a line with a CfgLen of 1 and the user value in hexadecimal.

Example 1:

To configure a module in slot 4 to hold its last state

Slot=4,Type=DRA\_840\_00

CfgOutLast

Example 2:

To configure a module in slot 4 to go to a user defined state, in this case, 0x1234

Slot=4,Type=DRA\_840\_00

CfgLen=1,0x1234

## 140 DRC 830 00

Description: Relay Output 8x1 Normally Open / Normally Closed

Parameters: 1 word

The module can be set to hold its last outputs or go to a user defined timeout value when a timeout occurs.

If the module is to go to the last state when a timeout occurs, add a line with CfgOutLast after the module definition.

If the module is to go to a user defined state. add a line with a CfgLen of 1 and the user value in hexadecimal.

Example 1:

To configure a module in slot 4 to hold its last state

Slot=4,Type=DRC\_830\_00

CfgOutLast

Example 2:

To configure a module in slot 4 to go to a user defined state, in this case, 0x1234

Slot=4,Type=DRC\_830\_00

CfgLen=1,0x1234

## 140 DDO 153 10

Description: DC Output 5 V TTL 4x8 Sink module

Parameters: 2 words

The module can be set to hold its last outputs or go to a user defined timeout value when a timeout occurs. There are two words of user defined timeout data.

If the module is to go to the last state when a timeout occurs, add a line with CfgOutLast after the module definition.

If the module is to go to a user defined state. add a line with a CfgLen of 2 and the user value in hexadecimal.

Example 1:

To configure a module in slot 4 to hold its last state

Slot=4,Type=DDO\_153\_10

CfgOutLast

Example 2:

To configure a module in slot 4 to go to a user defined state, in this case, 0x1234

Slot=4,Type=DDO\_153\_10

CfgLen=2,0x1234, 0x5678

## 140 DDO 353 00

Description: DC Output 24 VDC 4x8 Source module

Parameters: 2 words

The module can be set to hold its last outputs or go to a user defined timeout value when a timeout occurs. There are two words of user defined timeout data.

If the module is to go to the last state when a timeout occurs, add a line with CfgOutLast after the module definition.

If the module is to go to a user defined state. add a line with a CfgLen of 2 and the user value in hexadecimal.

Example 1:

To configure a module in slot 4 to hold its last state

Slot=4,Type=DDO\_353\_00

CfgOutLast

Example 2:

To configure a module in slot 4 to go to a user defined state, in this case, 0x1234

Slot=4,Type=DDO\_353\_00

CfgLen=2,0x1234, 0x5678

## 140 DDO 353 01

Description: DC Output 24 VDC 4x8 Source module, source module switches 24 VDC powered loads, and is short circuit and overload resistant

Parameters: 2 words

The module can be set to hold its last outputs or go to a user defined timeout value when a timeout occurs. There are two words of user defined timeout data.

If the module is to go to the last state when a timeout occurs, add a line with CfgOutLast after the module definition.

---

If the module is to go to a user defined state. add a line with a CfgLen of 2 and the user value in hexadecimal.

Example 1:

To configure a module in slot 4 to hold its last state

Slot=4,Type=DDO\_353\_01

CfgOutLast

Example 2:

To configure a module in slot 4 to go to a user defined state, in this case, 0x1234

Slot=4,Type=DDO\_353\_01

CfgLen=2,0x1234, 0x5678

## 140 DDO 353 10

Description: 24 VDC True Low 4x8 Output module

Parameters: 2 words

The module can be set to hold its last outputs or go to a user defined timeout value when a timeout occurs. There are two words of user defined timeout data.

If the module is to go to the last state when a timeout occurs, add a line with CfgOutLast after the module definition.

If the module is to go to a user defined state. add a line with a CfgLen of 1 and the user value in hexadecimal.

Example 1:

To configure a module in slot 4 to hold its last state

Slot=4,Type=DDO\_353\_10

CfgOutLast

Example 2:

To configure a module in slot 4 to go to a user defined state, in this case, 0x1234

Slot=4,Type=DDO\_353\_10

CfgLen=2,0x1234, 0x5678

## 140 DDO 364 00

Description: module switches 24 VDC powered loads.

Parameters: 6 words of timeout data

The module can be set to hold its last outputs or go to a user defined timeout value when a timeout occurs. There are two words of user defined timeout data.

If the module is to go to the last state when a timeout occurs, add a line with CfgOutLast after the module definition.

If the module is to go to a user defined state. add a line with a CfgLen of 6 and the user value in hexadecimal.

Example 1:

To configure a module in slot 4 to hold its last state

Slot=4,Type=DDO\_364\_00

CfgOutLast

Example 2:

To configure a module in slot 4 to go to a user defined state, in this case, 0x1234

Slot=4,Type=DDO\_364\_00

CfgLen=6,0x1111, 0x2222, 0x3333, 0x4444, 0x5555, 0x6666

## 140 DDO 843 00

Description: DC Output 10 ... 60 VDC 2x8 Source

Parameters: 1 word

The module can be set to hold its last outputs or go to a user defined timeout value when a timeout occurs.

If the module is to go to the last state when a timeout occurs, add a line with CfgOutLast after the module definition.

If the module is to go to a user defined state. add a line with a CfgLen of 1 and the user value in hexadecimal.

Example 1:

To configure a module in slot 4 to hold its last state

Slot=4,Type=DDO\_843\_00

CfgOutLast

Example 2:

To configure a module in slot 4 to go to a user defined state, in this case, 0x1234

Slot=4,Type=DDO\_843\_00

CfgLen=1,0x1234

## 140 DDO 885 00

Description: DC Output 24 ... 125 VDC 2x6 Source module

Parameters: 1 word

The module can be set to hold its last outputs or go to a user defined timeout value when a timeout occurs.

If the module is to go to the last state when a timeout occurs, add a line with CfgOutLast after the module definition.

If the module is to go to a user defined state. add a line with a CfgLen of 1 and the user value in hexadecimal.

Example 1:

To configure a module in slot 4 to hold its last state

Slot=4,Type=DDO\_885\_00

CfgOutLast

Example 2:

To configure a module in slot 4 to go to a user defined state, in this case, 0x1234

Slot=4,Type=DDO\_885\_00

CfgLen=1,0x1234

## 140 DVO 853 00

Description: 10 ... 30 VDC, 32 point output module with diagnostic capability.

Parameters: 5 words

Output shutdown state: Fail states or disabled

Automatic restart of failed points: yes/no

Four groups consisting of:

Status input: Verified health, verified fault, input only, actual

Fail states: Outputs off, last value, user defined

User value: 2 hexadecimal digits

Word 1

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Shutdown	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Word 2

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
									Fail states							
	0	0	0	0	0	0	0	0	Group 4	Group 3		Group 2		Group 1		

Word 3

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Group 2 user value								Group 1 user value							

Word 4

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Group 4 user value								Group 3 user value							

Word 5

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
									Status Input							
	0	0	0	0	0	0	0	Restart	Group 4	Group 3		Group 2		Group 1		

Output shutdown state, word 1, bit 15: 1=disabled, 0=fail states

Fail state values

0 0 Outputs off

0 1 Last value

1 0 User defined

Automatic restart of failed states, word 5, bit 8: 1 = yes, 0=no

Status input states

0 0 Verified health

0 1 Verified fault

1 0 Input only

---

1 1 Actual

## 140 DIO 330 00

Description: Intrinsically Safe Digital Output module

Parameters: 1 word

The module can be set to hold its last outputs or go to a user defined timeout value when a timeout occurs.

If the module is to go to the last state when a timeout occurs, add a line with CfgOutLast after the module definition.

If the module is to go to a user defined state. add a line with a CfgLen of 1 and the user value in hexadecimal.

Example 1:

To configure a module in slot 4 to hold its last state

Slot=4,Type=DIO\_330\_00

CfgOutLast

Example 2:

To configure a module in slot 4 to go to a user defined state, in this case, 0x1234

Slot=4,Type=DIO\_330\_00

CfgLen=1,0x1234

## ***Discrete Combo Modules***

### **140 DAM 590 00**

Description: AC Input 115 VAC 2x8 / AC Output 115 VAC 2x4 module

Parameters: 1 word

The module can be set to hold its last outputs or go to a user defined timeout value when a timeout occurs.

If the module is to go to the last state when a timeout occurs, add a line with CfgOutLast after the module definition.

If the module is to go to a user defined state. add a line with a CfgLen of 1 and the user value in hexadecimal.

Example 1:

To configure a module in slot 4 to hold its last state

Slot=4,Type=DAM\_590\_00

CfgOutLast

Example 2:

To configure a module in slot 4 to go to a user defined state, in this case, 0x1234

Slot=4,Type=DAM\_590\_00

CfgLen=1,0x1234

### **140 DDM 690 00**

Description: 125 VDC High Power IN/OUT module

Parameters: 2 words

Inputs

Dual mode: enabled/disabled, word 2 bit 6: 1=enabled, 0=disabled

Filter select: 0.5/1.5, word 2, bit 7, 0=0.5 ms, 1=1.5 ms

Outputs

Timeout: Hold last value/User defined

Timeout value 0-F hex

To select last value, include CfgOutLast on the configuration line

Word 1

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	Timeout				0	0	0	0	0	0	0	0

Word 2

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	Filter	Inputs	0	0	0	0	0	0

Example 1:

To configure a module in slot 4 to hold its last state, inputs enabled, filter 1.5 ms

Slot=4,Type=DDM\_690\_00

CfgOutLast, CfgLen=2, 0x0000, 0x00c0

Example 1:

To configure a module in slot 4 with a user defined timeout F, inputs enabled, filter 0.5 ms

Slot=4,Type=DDM\_690\_00

CfgLen=2, 0x00F0, 0x0040

## 140 DDM 390 00

Description: DC Input 24 VDC 2x8 Sink / DC Output 24 VDC 2x4 Source module

Parameters: 1 word

The module can be set to hold its last outputs or go to a user defined timeout value when a timeout occurs.

If the module is to go to the last state when a timeout occurs, add a line with CfgOutLast after the module definition.

If the module is to go to a user defined state. add a line with a CfgLen of 1 and the user value in hexadecimal.

Example 1:

To configure a module in slot 4 to hold its last state

Slot=4,Type=DDM\_390\_00

CfgOutLast

Example 2:

To configure a module in slot 4 to go to a user defined state, in this case, 0x1234

Slot=4,Type=DDM\_390\_00

CfgLen=1,0x1234

## Analog Input Modules

### 140 ACI 030 00

Description: Analog Input 8 Channel Unipolar module

Parameters: No parameter data

### 140 ACI 040 00

Description:

Parameters: 5 words of parameter data, channel configuration for 8 channels

Each channel is defined by 2 bits. The values are:

0 0 4-20 mA 0-16000

0 1 4-20 mA 0-4095

1 0 0-20 mA 0-20000

1 1 0-25 mA 0-25000

The following tables show the locations of the bits for each channel

Word 1

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Word 2

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	Ch 1		0	0	0	0	0	0	Ch 2	

Word 3

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	Ch 3		0	0	0	0	0	0	Ch 4	

Word 4

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	Ch 5		0	0	0	0	0	0	Ch 6	

Word 5

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	Ch 7		0	0	0	0	0	0	Ch 8	

**140 All 330 00**

Description: Intrinsically Safe Analog Input module, RTD and thermocouple configurable

Parameters: 10 words of parameter data. Words 1-5 are for RTD mode, words 6-10 are for TC mode

**RTD Mode**

Word 1

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	Raw	F/C	Res	0	0	0	0	0	0	0	0	0

Raw output: 0 = temperature output, 1=raw output

Output units: 0=Centigrade, 1=Fahrenheit

Resolution: 0=1.0 Deg, 1= 0.1 deg

Word 2

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Channel 2								Channel 1							

Word 3

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Channel 4								Channel 3							

Word 4

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Channel 6								Channel 5							

Word 5

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Channel 8								Channel 7							

Channel configuration for each channel consists of:

Bit	7	6	5	4	3	2	1	0
	Disable	Wire		Type				

Bit 7 is 1 to disable the channel, 0 to enable it.

Bit 6	Bit 5	
0	0	4-wire
0	1	2-wire
1	0	3-wire

Bits 4, 3, 2, 1 and 0 define the type. They are:

4	3	2	1	0	Type
0	0	0	0	0	Pt 100
0	0	0	0	1	Pt 200
0	0	0	1	0	Pt 500
0	0	0	1	1	Pt 1000
0	0	1	0	0	Ni 100
0	0	1	0	1	Ni 200
0	0	1	1	0	Ni 500
0	0	1	1	1	Ni 1000
0	1	0	0	0	Res 0-766.66 ohms
0	1	0	0	1	Res 0-4000 ohms
1	0	0	0	0	APt 100
1	0	0	0	1	APt 200
1	0	0	1	0	APt 500
1	0	0	1	1	APt 1000

Word 6

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Word 7

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Word 8

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Word 9

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Word 10

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

**Thermocouple Mode**

Word 1

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Word 2

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Word 3

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Word 4

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Word 5

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Word 6

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Channel 1								0	0	0	0	CJ	F/C	Res	0

Cold Junction (CJ) compensator: 0=On board, 1=Channel 1

Output units: 0=Centigrade, 1=Fahrenheit

Resolution: 0=1.0 Deg, 1= 0.1 deg

Word 7

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Channel 3								Channel 2							

Word 8

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Channel 5								Channel 4							

Word 9

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Channel 7								Channel 6							

Word 10

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	Channel 8							

Channel configuration for each channel consists of:

Bit	7	6	5	4	3	2	1	0
	Disable	Gain	Open circuit	0	0	Type		

Bit 7 is 1 to disable the channel, 0 to enable it.

Bit 6 is 0 for gain 25, 1 for gain 100

Bit 5 is 1 to enable the open circuit test, 0 to disable it.

Bits 2, 1 and 0 define the type. They are

0 0 0 undefined

0 0 1 Type J

0 1 0 Type K

0 1 1 Type E

1 0 0 Type T

1 0 1 Type S

1 1 0 Type R

1 1 1 Type B

## 140 All 330 10

Description:

Parameters: 2 words, configuration data for 8 channels

Each channel is defined by 2 bits. The values are:

0 0 4-20 mA 0-16000

0 1 4-20 mA 0-4095

1 0 0-20 mA 0-20000

1 1 0-25 mA 0-25000

The following tables show the locations of the bits for each channel

Word 1

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Word 2

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Ch 8		Ch 7		Ch 6		Ch 5		Ch 4		Ch 3		Ch 2		Ch 1	

## 140 AVI 030 00

Description: Analog In 8 Channel Bipolar module

Parameters: 5 words

Data format: 16 bit, voltmeter, 12 bit

The data format is configured in word 1 bits 0 and 1. The values are

0 1 16 bit

1 0 Voltmeter

1 1 12 bit

Channels: 8 channels, each of which can have one of eight data formats. There are 3 configuration bits for each channel. The values are

Configuration bits	Channel configuration
0 0 0	-10V to 10V
0 0 1	0 to 10V
0 1 0	-5V to 5V
0 1 1	0 to 5V
1 0 0	1V to 5V
1 0 1	-20 mA to 20 mA
1 1 0	0 to 20 mA
1 1 1	4 to 20 mA

Word 1

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	Channel 1			0	0	0	0	0	0	Data format	

Word 2

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	Channel 3			0	0	0	0	0	Channel 2		

Word 3

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	Channel 5			0	0	0	0	0	Channel 4		

Word 4

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	Channel 7			0	0	0	0	0	Channel 6		

Word 5

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	Channel 8		

Example:

## 140 ATI 030 00

Description: 8 channel thermocouple input module.

Parameters: 5 words

Global parameters:

Resolution: 1.0 Deg/ 0.1 deg

Output units: Centigrade/Fahrenheit

Cold Junction compensator: On board/Channel 1

Channel configuration:

Each channel has the following options:

- Not installed
- Open circuit test (enabled/disabled)
- Raw output amplifier gain, 100/25
- Type

Word 1

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Channel 1								Global parameters							

Word 2

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Channel 3								Channel 2							

Word 3

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Channel 5								Channel 4							

Word 4

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Channel 7								Channel 6							

Word 5

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	1	Channel 8							

The global parameters consist of

Bit	7	6	5	4	3	2	1	0
	0	0	1	0	Cold	F/C	Res	0

Cold Junction compensator: 0=On board, 1=Channel 1

Output units: 0=Centigrade, 1=Fahrenheit

Resolution: 0=1.0 Deg, 1= 0.1 deg

Channel configuration for each channel consists of:

Bit	7	6	5	4	3	2	1	0
	Disable	Gain	Open circuit	0	0	Type		

Bit 7 is 1 to disable the channel, 0 to enable it.

Bit 6 is 0 for gain 25, 1 for gain 100

Bit 5 is 1 to enable the open circuit test, 0 to disable it.

Bits 2, 1 and 0 define the type. They are

0 0 0 undefined

0 0 1 Type J

0 1 0 Type K

0 1 1 Type E

1 0 0 Type T

1 0 1 Type S

1 1 0 Type R

1 1 1 Type B

The default parameter data is 0x0120 0x0101 0x0101 0x0101 0x0101

## 140 ARI 030 10

Description: Analog RTD Input 8 Channel module

Parameters: 5 words

Global parameters:

Resolution: 1.0 Deg/ 0.1 deg

Output units: Centigrade/Fahrenheit

Value type: Temperature or raw value

Channel configuration:

Each channel has the following options:

- Disable
- Wire: 4-wire, 3-wire, 2 wire
- Type

Word 1

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Channel 1								Global parameters							

Word 2

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Channel 3								Channel 2							

Word 3

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Channel 5								Channel 4							

Word 4

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Channel 7								Channel 6							

Word 5

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	Channel 8							

The global parameters consist of

Bit	7	6	5	4	3	2	1	0
	0	0	1	0	Raw	F/C	Res	0

Raw output: 0 = temperature output, 1=raw output

Output units: 0=Centigrade, 1=Fahrenheit

Resolution: 0=1.0 Deg, 1= 0.1 deg

Channel configuration for each channel consists of:

Bit	7	6	5	4	3	2	1	0
	Disable	Wire			Type			

Bit 7 is 1 to disable the channel, 0 to enable it.

Bit 6	Bit 5	
0	0	4-wire
0	1	2-wire
1	0	3-wire

Bits 4, 3, 2, 1 and 0 define the type. They are:

4	3	2	1	0	Type
0	0	0	0	0	Pt 100
0	0	0	0	1	Pt 200

4	3	2	1	0	Type
0	0	0	1	0	Pt 500
0	0	0	1	1	Pt 1000
0	0	1	0	0	Ni 100
0	0	1	0	1	Ni 200
0	0	1	1	0	Ni 500
0	0	1	1	1	Ni 1000
0	1	0	0	0	Res 0-766.66 ohms
0	1	0	0	1	Res 0-4000 ohms
1	0	0	0	0	APt 100
1	0	0	0	1	APt 200
1	0	0	1	0	APt 500
1	0	0	1	1	APt 1000

Default parameter data: 0x0000 0x0000 0x0000 0x0000 0x0000

## Analog Output Modules

### 140 ACO 020 00

Description: Analog Output 4 Channel Current module

Parameters: 6 words

The module has 4 channels, each of which can be configured for timeout values of outputs disabled, last state, or user defined value.

Word 1

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

Word 2, channel configuration

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Channel 4				Channel 3				Channel 2				Channel 1			

Channel configuration value are:

0 0 0 0 Disabled

0 1 0 1 Last value

1 0 1 0 User defined value

Word 3

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	User value channel 1															

Word 4

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	User value channel 2															

Word 5

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	User value channel 3															

Word 6

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	User value channel 4															

Default parameter data 0x8001, 0x5555, 0x0000, 0x0000, 0x0000, 0x0000

Example:

## 140 ACO 130 00

Description: 8 channel analog output module

Parameters: 12 words

The module has 8 channels, each of which can be configured for a range and for timeout values of outputs disabled, last state, or user defined value. If the timeout state is user defined value, there's also a timeout value.

Word 1

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Word 2, Timeout state

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Ch 8		Ch 7		Ch 6		Ch 5		Ch 4		Ch 3		Ch 2		Ch 1	

Timeout state bits are:

0 0 Outputs disabled

0 1 Last state

1 0 User defined value

Word 3

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	User defined value, channel 1															

Word 4

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	User defined value, channel 2															

Word 5

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	User defined value, channel 3															

Word 6

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	User defined value, channel 4															

Word 7

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	User defined value, channel 5															

Word 8

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	User defined value, channel 6															

Word 9

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	User defined value, channel 7															

Word 10

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	User defined value, channel 8															

Word 11, Channel config, channels 1-4

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Channel 1				Channel 2				Channel 3				Channel 4			

Word 12, Channel config, channels 5-8

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Channel 5				Channel 6				Channel 7				Channel 8			

Channel values are

0 0 0 0 4-20 mA 0-16000

0 0 0 1 4-20 mA 0-4095

0 0 1 0 0-20 mA 0-20000

0 0 1 1 0-25 mA 0-25000

**140 AVO 020 00**

Description: Analog Out 4 Channel module

Parameters: 6 words

The module has 4 channels, each of which can be configured for timeout values of outputs disabled, last state, or user defined value. If there timeout state is user defined value, then there's also a user value.

Word 1

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

Word 2, channel configuration

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Channel 4				Channel 3				Channel 2				Chnnel 1			

Channel configuration value are:

0 0 0 0 Disabled

0 1 0 1 Last value

1 0 1 0 User defined value

Word 3

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	User value channel 1															

Word 4

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	User value channel 2															

Word 5

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	User value channel 3															

Word 6

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	User value channel 4															

Default parameter data 0x8001, 0x5555, 0x0000, 0x0000, 0x0000, 0x0000

Example:

## 140 AIO 330 00

Description: Intrinsically Safe Analog Output module

Parameters: 12 words

Word 1

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Word 2, timeout type

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Ch 8		Ch 7		Ch 6		Ch 5		Ch 4		Ch 3		Ch 2		Ch 1	

0 0 outputs disabled

0 1 last value

1 0 user defined value

Word 3

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	User value, channel 1															

Word 4

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	User value, channel 2															

Word 5

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	User value, channel 3															

Word 6

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	User value, channel 4															

Word 7

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	User value, channel 5															

Word 8

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	User value, channel 6															

Word 9

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	User value, channel 7															

Word 10

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	User value, channel 8															

all user values are entered as percents, for example, for 50%, enter 5000

Word 11, range

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Ch 8		Ch 7		Ch 6		Ch 5		Ch 4		Ch 3		Ch 2		Ch 1	

---

0 0 4-20 mA 0-16000

0 1 4-20 mA 0-4095

1 0 0-20 mA 0-20000

1 1 0-25 mA 0-25000

Word 12

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

## Combo Analog Modules

### 140 AMM 090 00

Description: Analog In/Out 4/2 bi-directional module

Parameters: 6 words

#### Word 1

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	1	0	0	0	0	0	0	0	0	0	0	0	0	0	Data format	

#### Data format

0 1 16 bit data

1 0 voltmeter

1 1 12 bit data

#### Word 2

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	Output Ch 2			Output Ch 1				

#### Output channel timeout configuration

0 0 0 0 Outputs disabled

0 1 0 1 Last state

1 0 1 0 User defined value

#### Word 3

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	User defined data, output channel 1															

#### Word 4

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	User defined data, output channel 2															

Word 5, input data configuration, channels 1 and 2

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Input Channel 2								Input Channel 1							

Word 6, input data configuration, channels 3 and 4

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Input Channel 4								Input Channel 3							

Input channel configuration, values in hex

00 Not installed

08 -10V to +10V

09 0V to +10V

0A -5V to +5V

0B 0V to +5V

0C +1V to +5V

0D -20 mA to +20 mA

0E 0 mA to +20 mA

0F +4 mA to +20 mA

Default parameters

0x8001 0x0055 0x0000 0x0000 0x0000 0x0000

Example:

## Expert Modules

### 140 EHC 105 00

Description: 5 channel high speed counter

Parameters: 51 words

### 140 EHC 202 00

Description: 2 channel High speed counter

Parameters: 9 words

The module has four modes of operation. Parameter usage is different in each mode.

#### Mode 1: 2x16 with Output

Word 1

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	C2 quad	C1 quad	0	0	0	0	0	0	0	0

Bit 8 is 0 for C1 in incremental mode, 1 for quadrature

Bit 9 is 0 for C2 in incremental mode, 1 for quadrature

Word 2

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	C1B mode				C1A mode				C2B mode				C2A mode			

Mode values are:

0 0 0 1 Setpoint

0 0 1 0 Latched setpoint

0 0 1 1 Terminal count

0 1 0 0 Latched terminal

0 1 0 1 Timed setpoint

0 1 1 0 Timed terminal

Word 3

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	C1 Max															

Word 4

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	C1 Setpoint															

Word 5

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	C2 Max															

Word 6

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	C2 Setpoint															

Word 7

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Time output on, ms															

Word 8

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Word 9

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

**Mode 2: 1x32 with output**

Word 1

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	1	C2 quad	0	0	0	0	0	0	0	0	0

Bit 9 is 0 for C2 in incremental mode, 1 for quadrature

Word 2

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	C2B mode				C2A mode			

Mode values are:

0 0 0 1 Setpoint

0 0 1 0 Latched setpoint

0 0 1 1 Terminal count

0 1 0 0 Latched terminal

0 1 0 1 Timed setpoint

0 1 1 0 Timed terminal

Word 3

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	C2 Max Low															

Word 4

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	C2 Max High															

Word 5

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	C2 Setpoint Low															

Word 6

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	C2 Setpoint High															

Word 7

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Time output on, ms															

Word 8

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Word 9

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

**Mode 3: 2x32 no output**

Word 1

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	1	1	C2 quad	C1 quad	0	0	0	0	0	0	0	0

Bit 8 is 0 for C1 in incremental mode, 1 for quadrature

Bit 9 is 0 for C2 in incremental mode, 1 for quadrature

Word 2

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1

Word 3

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	C1 Max Low															

Word 4

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	C1 Max High															

Word 5

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	C2 Max Low															

Word 6

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	C2 Max High															

Word 7

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Word 8

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Word 9

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

**Mode 4: Rate sample mode**

Word 1

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	1	0	0	C2 quad	C1 quad	0	0	0	0	0	0	0	0

Bit 8 is 0 for C1 in incremental mode, 1 for quadrature

Bit 9 is 0 for C2 in incremental mode, 1 for quadrature

Word 2

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	1	0	0	0	1	0	0	0	1	0	0	0	1

Word 3

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Word 4

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Word 5

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Word 6

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Word 7

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Word 8

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Timer 1															

Word 9

Bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
	Timer 2															

**140 HLI 340 00**

Description: Latch &amp; Interrupt

Parameters:

## **140 ERT 854 10**

Description: Time Stamp / Interrupt

Parameters:

## **140 DCF 077 00**

Description: DCF77 Interface

Parameters:

## **140 CHS 110 00**

Description: Hot Standby

Parameters:

## **140 ESI 062 10**

Description: ASCII Interface

Parameters:

## **140 EIA 921 00**

Description: AS-i Interface Module

Parameters:

## ***Support***

Technical support is available from Quest Technical Solutions.

Quest Technical Solutions

4110 Mourning Dove Court

Melbourne FL 32934

321 757-8483

website: [qtsusa.com](http://qtsusa.com)

email: [support@qtsusa.com](mailto:support@qtsusa.com)

If you need to make a return, contact QTS to obtain a return authorization number.