

**T1H-EBC100 ANALOG  
MODULE ADDRESSING -  
MODBUS TCP**

---

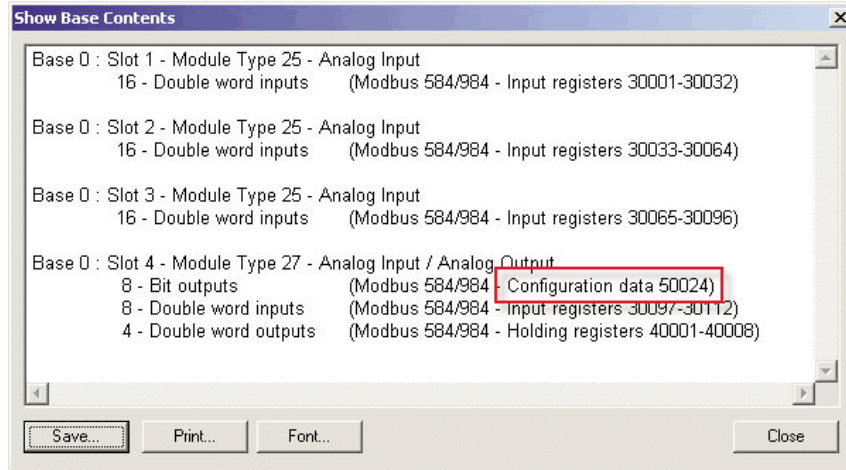


**In This Appendix...**

T1H-EBC100 Analog Module Addressing - Modbus TCP .....D-2

## T1H-EBC100 Analog Module Addressing - Modbus TCP

Using the NetEdit3 utility, find and select the IP address of the desired T1H-EBC(100). Then select the 'EBC Settings' tab and the 'Show Base Contents' button to see the I/O modules in the T1H-EBC100 base and the Modbus addressing for those modules. You should see something similar to the following:



Use the addresses shown in the 'Show Base Contents' section of NetEdit3 along with the following table to access the analog I/O with your Modbus TCP master.

For example, to read the current temperature detected by Channel 1 of the T1F-16RTD module in Slot 2, Modbus addresses 30033 and 30034 are required. For analog output modules with a Module Control Byte, find the required address in the Show Base Contents table. 'Configuration data' is the address needed (shown in the red box above). Then use the bit definitions below to determine how to configure the module. Be aware that the address could be displayed as a six digit or five digit address. In Modbus, 50024 and 410024 are equivalent. The screen capture shows it as five digit. DirectSOFT MRX and MWX instructions require six digit in the upper ranges.

## Appendix D: T1H-EBC100 Analog Module Addressing - Modbus TCP

| T1H-EBC100 Analog Module Addressing - Modbus TCP |  |   |  |
|--|--|---|--|
| Part Number                                      | Channel Data   | Module Configuration Data   | Diagnostics Data   |
| T1F-08AD-1                                       | Input Registers<br>Word 1 = Ch1<br>Word 3 = Ch2<br>Word 5 = Ch3<br>Word 7 = Ch4<br>Word 9 = Ch5<br>Word 11 = Ch6<br>Word 13 = Ch7<br>Word 15 = Ch8 | No Software Configuration<br><br>Input Range Depends on Input Signal:<br>-20 to 20mA = -8192 to 8191<br>0 to 20mA = 0 to 8191<br>4 to 20mA = 1638 to 8191               | No Built-In Broken Transmitter Detection Monitor for counts less than 1638 when using 4 to 20mA  |
| T1F-08AD-2                                       | Input Registers<br>Word 1 = Ch1<br>Word 3 = Ch2<br>Word 5 = Ch3<br>Word 7 = Ch4<br>Word 9 = Ch5<br>Word 11 = Ch6<br>Word 13 = Ch7<br>Word 15 = Ch8 | No Software Configuration<br><br>Input Range Depends on Input Signal:<br>0 to 5V = 0 to 4095<br>0 to 10V = 0 to 8191<br>+/-5V = -4095 to 4095<br>+/-10V = -8192 to 8191 | No Broken Transmitter Detection (N/A for Voltage)  |
| T1F-16AD-1                                       | Input Registers<br>Word 1 = Ch1<br>Word 3 = Ch2<br>Word 5 = Ch3<br>...<br>Word 27 = Ch14<br>Word 29 = Ch15<br>Word 31 = Ch16                       | No Software Configuration<br><br>Input Range Depends on Input Signal:<br>-20 to 20mA = -8192 to 8191<br>0 to 20mA = 0 to 8191<br>4 to 20mA = 1638 to 8191               | No Built-In Broken Transmitter Detection Monitor for counts less than 1638 when using 4 to 20mA  |
| T1F-16AD-2                                       | Input Registers<br>Word 1 = Ch1<br>Word 3 = Ch2<br>Word 5 = Ch3<br>...<br>Word 27 = Ch14<br>Word 29 = Ch15<br>Word 31 = Ch16                       | No Software Configuration<br><br>Input Range Depends on Input Signal:<br>0 to 5V = 0 to 4095<br>0 to 10V = 0 to 8191<br>+/-5V = -4095 to 4095<br>+/-10V = -8192 to 8191 | No Broken Transmitter Detection (N/A for Voltage)  |
| T1F-14THM  | Input Registers<br>Word 1 = Ch1<br>Word 3 = Ch2<br>Word 5 = Ch3<br>...<br>Word 25 = Ch13<br>Word 27 = Ch14<br>Word 29 = Status<br>Word 31 = Status | No Software Configuration<br><br>THM Type Set by Jumpers  | I/O Module Status:<br>37401: Indicates if an error is present<br>37405 to 37420: One word per channel gives 1 if broken transmitter, 0 if OK<br>Once error condition is corrected write 0 (zero) to 410001 to clear errors |
| T1F-16RTD  | Input Registers<br>Word 1 = Ch1<br>Word 3 = Ch2<br>Word 5 = Ch3<br>...<br>Word 27 = Ch14<br>Word 29 = Ch15<br>Word 31 = Ch16                       | No Software Configuration<br><br>RTD Type Set by Jumpers  | I/O Module Status:<br>37401: Indicates if an error is present<br>37405 to 37420: One word per channel gives 1 if broken transmitter, 0 if OK<br>Once error condition is corrected write 0 (zero) to 410001 to clear errors |

D

## Appendix D: T1H-EBC100 Analog Module Addressing - Modbus TCP

**D**

| T1H-EBC100 Analog Module Addressing - Modbus TCP |   |  |  |  |
|--|---|--|--|--|
| Part Number                                      | Channel Data  | Module Configuration Data  |  | Diagnostics Data   |
| T1F-8AD4DA-1                                     | Input Registers<br>Word 1 = Ch1<br>Word 3 = Ch2<br>Word 5 = Ch3<br>Word 7 = Ch4<br>Word 9 = Ch5<br>Word 11 = Ch6<br>Word 13 = Ch7<br>Word 15 = Ch8<br>Holding Registers<br>Word 1 = Ch1<br>Word 3 = Ch2<br>Word 5 = Ch3<br>Word 7 = Ch4 | Analog Output Configuration (T1F-8AD4DA-1)   |  | No Built-In Broken Transmitter Detection<br>Monitor for counts less than 1638 when using 4 to 20mA |
|  |   | Bit 0  | Output Enable<br>0: Outputs OFF<br>1: Outputs Enabled  |  |
|  |   | Bit 1  | N/A  |  |
|  |   | Bit 2  | N/A  |  |
|  |   | Bit 3  | 0-20mA or 4-20mA<br>0: 0-20mA range<br>1: 4-20mA range |  |
|  |   | Bits 4-15  | Reserved   |  |
|  |   | Input Range Depends on Input Signal:<br>-20 to 20mA = -8192 to 8191<br>0 to 20mA = 0 to 8191<br>4 to 20mA = 1638 to 8191               |  |  |
| T1F-8AD4DA-2                                     | Input Registers<br>Word 1 = Ch1<br>Word 3 = Ch2<br>Word 5 = Ch3<br>Word 7 = Ch4<br>Word 9 = Ch5<br>Word 11 = Ch6<br>Word 13 = Ch7<br>Word 15 = Ch8<br>Holding Registers<br>Word 1 = Ch1<br>Word 3 = Ch2<br>Word 5 = Ch3<br>Word 7 = Ch4 | Analog Output Configuration (T1F-8AD4DA-2)   |  | No Broken Transmitter Detection<br>(N/A for Voltage)   |
|  |   | Bit 0  | Output Enable<br>0: Outputs OFF<br>1: Outputs Enabled  |  |
|  |   | Bit 1  | Unipolar/Bipolar<br>0: Unipolar<br>1: Bipolar          |  |
|  |   | Bit 2  | 5V/10V Range<br>0: 5V Range<br>1: 10V Range            |  |
|  |   | Bit 3  | N/A  |  |
|  |   | Bits 4-15  | Reserved   |  |
|  |   | Input Range Depends on Input Signal:<br>0 to 5V = 0 to 4095<br>0 to 10V = 0 to 8191<br>+/-5V = -4095 to 4095<br>+/-10V = -8192 to 8191 |  |  |
| T1F-08DA-1                                       | Holding Registers<br>Word 1 = Ch1<br>Word 3 = Ch2<br>Word 5 = Ch3<br>Word 7 = Ch4<br>Word 9 = Ch5<br>Word 11 = Ch6<br>Word 13 = Ch7<br>Word 15 = Ch8  | Analog Output Configuration (T1F-08DA-1)   |  | None   |
|  |   | Bit 0  | Output Enable<br>0: Outputs OFF<br>1: Outputs Enabled  |  |
|  |   | Bit 1  | N/A  |  |
|  |   | Bit 2  | N/A  |  |
|  |   | Bit 3  | 0-20mA or 4-20mA<br>0: 0-20mA range<br>1: 4-20mA range |  |
|  |   | Bits 4-15  | Reserved   |  |

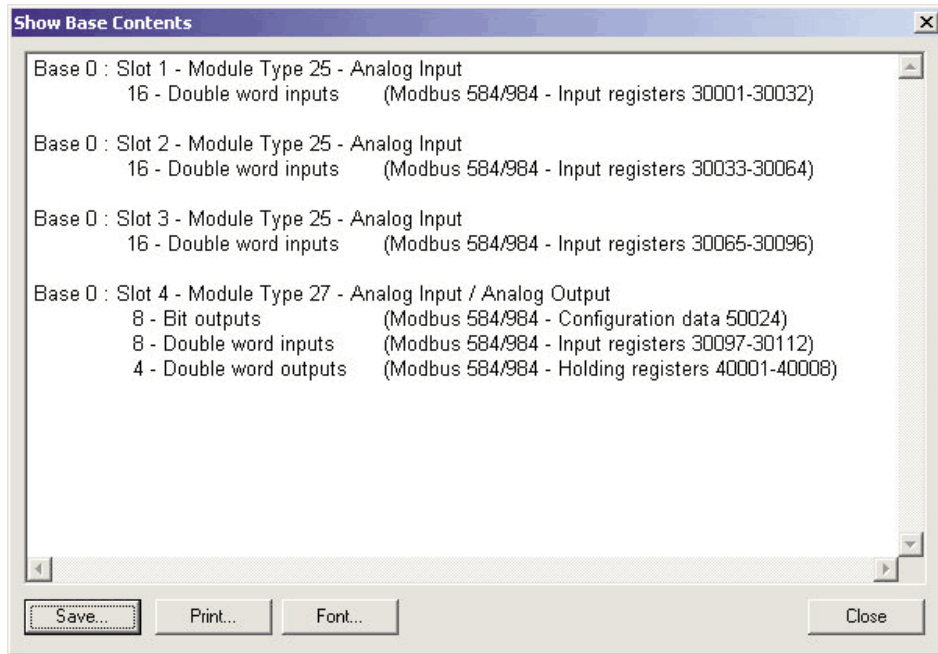
## Appendix D: T1H-EBC100 Analog Module Addressing - Modbus TCP

| T1H-EBC100 Analog Module Addressing - Modbus TCP |  |  |  |                  |
|--|--|--|--|------------------|
| Part Number                                      | Channel Data   | Module Configuration Data                |  | Diagnostics Data |
| T1F-08DA-2                                       | Holding Registers<br>Word 1 = Ch1<br>Word 3 = Ch2<br>Word 5 = Ch3<br>Word 7 = Ch4<br>Word 9 = Ch5<br>Word 11 = Ch6<br>Word 13 = Ch7<br>Word 15 = Ch8 | Analog Output Configuration (T1F-08DA-2) |  | None             |
|  |  | Bit 0                                    | Output Enable<br>0: Outputs OFF<br>1: Outputs Enabled  |                  |
|  |  | Bit 1                                    | Unipolar/Bipolar<br>0: Unipolar<br>1: Bipolar          |                  |
|  |  | Bit 2                                    | 5V/10V Range<br>0: 5V Range<br>1: 10V Range            |                  |
|  |  | Bit 3                                    | N/A  |                  |
|  |  | Bits 4-15                                | Reserved   |                  |
| T1F-16DA-1                                       | Holding Registers<br>Word 1 = Ch1<br>Word 3 = Ch2<br>Word 5 = Ch3<br>...<br>Word 27 = Ch14<br>Word 29 = Ch15<br>Word 31 = Ch16                       | Analog Output Configuration (T1F-16DA-1) |  | None             |
|  |  | Bit 0                                    | Output Enable<br>0: Outputs OFF<br>1: Outputs Enabled  |                  |
|  |  | Bit 1                                    | N/A  |                  |
|  |  | Bit 2                                    | N/A  |                  |
|  |  | Bit 3                                    | 0-20mA or 4-20mA<br>0: 0-20mA range<br>1: 4-20mA range |                  |
|  |  | Bits 4-15                                | Reserved   |                  |
| T1F-16DA-2                                       | Holding Registers<br>Word 1 = Ch1<br>Word 3 = Ch2<br>Word 5 = Ch3<br>...<br>Word 27 = Ch14<br>Word 29 = Ch15<br>Word 31 = Ch16                       | Analog Output Configuration (T1F-16DA-2) |  | None             |
|  |  | Bit 0                                    | Output Enable<br>0: Outputs OFF<br>1: Outputs Enabled  |                  |
|  |  | Bit 1                                    | Unipolar/Bipolar<br>0: Unipolar<br>1: Bipolar          |                  |
|  |  | Bit 2                                    | 5V/10V Range<br>0: 5V Range<br>1: 10V Range            |                  |
|  |  | Bit 3                                    | N/A  |                  |
|  |  | Bits 4-15                                | Reserved   |                  |

D

### T1F-8AD4DA-2 Example (Module in Slot 4)

Using the 'Show Base Contents' dialog below and the 'T1H-EBC100 Analog Module Addressing - Modbus TCP' chart above, we can find all of the addresses associated with the T1F-8AD4DA-2 module in Slot 4. The addresses are in the following chart. Be aware that the configuration data address could be displayed as a six digit or five digit address. In Modbus, 50024 and 410024 are equivalent. The screen capture below shows it as five digit.



| Input Channel  | Address       |
|----------------|---------------|
| Channel 1      | 30097 - 30098 |
| Channel 2      | 30099 - 30100 |
| Channel 3      | 30101 - 30102 |
| Channel 4      | 30103 - 30104 |
| Channel 5      | 30105 - 30106 |
| Channel 6      | 30107 - 30108 |
| Channel 7      | 30109 - 30110 |
| Channel 8      | 30111 - 30112 |
| Output Channel | Address       |
| Channel 1      | 40001 - 40002 |
| Channel 2      | 40003 - 40004 |
| Channel 3      | 40005 - 40006 |
| Channel 4      | 40007 - 40008 |

| Control Byte (Address 50024) |   |
|------------------------------|---|
| Bit                          | Function  |
| Bit 0                        | Output Enable<br>0: Outputs OFF<br>1: Outputs Enabled |
| Bit 1                        | Unipolar/Bipolar<br>0: Unipolar<br>1: Bipolar         |
| Bit 2                        | 5V/10V Range<br>0: 5V Range<br>1: 10V Range           |
| Bit 3                        | N/A   |
| Bit 4                        | Reserved  |

## Appendix D: T1H-EBC100 Analog Module Addressing - Modbus TCP

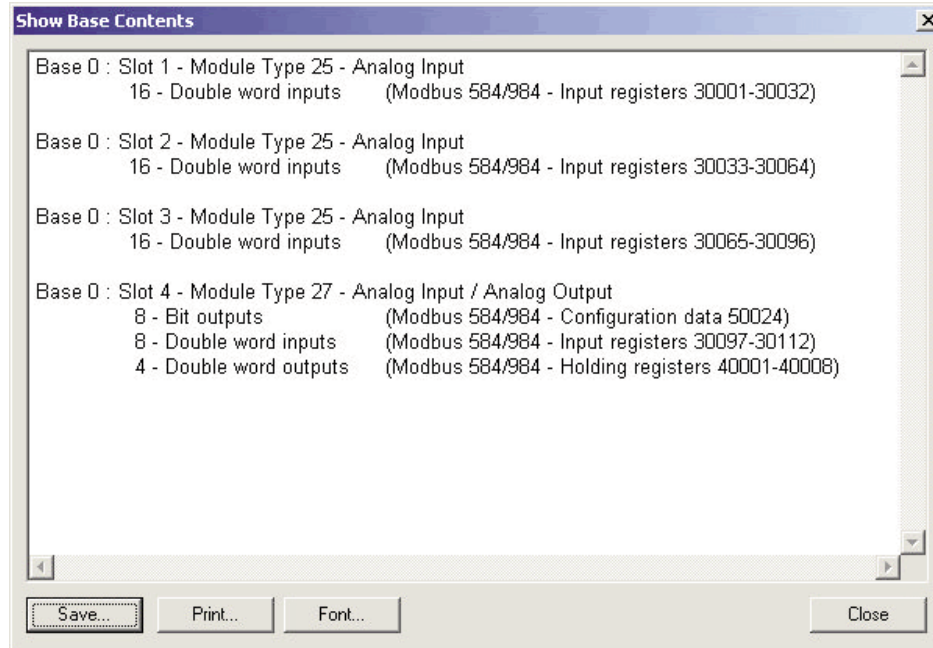
The chart below, lists all of the possible Control Byte combinations and their resulting configuration.

| Control Byte<br>(Address 50024) | Corresponding Configuration |                  |              |
|---------------------------------|-----------------------------|------------------|--------------|
|                                 | Output Enable/Disable       | Unipolar/Bipolar | 5V/10V Range |
| 0                               | Disabled                    | Unipolar         | 5V           |
| 1                               | Enabled                     |                  |              |
| 2                               | Disabled                    | Bipolar          |              |
| 3                               | Enabled                     |                  |              |
| 4                               | Disabled                    | Unipolar         | 10V          |
| 5                               | Enabled                     |                  |              |
| 6                               | Disabled                    | Bipolar          |              |
| 7                               | Enabled                     |                  |              |

D

### T1F-16RTD Example (Module in Slot 2)

Using the 'Show Base Contents' dialog below and the 'T1H-EBC100 Analog Module Addressing - Modbus TCP' chart, we can find all of the addresses associated with the T1F-16RTD module in Slot 2. The addresses are in the following chart.



## Appendix D: T1H-EBC100 Analog Module Addressing - Modbus TCP

| Input Channel | Address       | Error Words  |
|---------------|---------------|--|
| Channel 1     | 30033 - 30034 | <p>37421 is the Error Flag Word:<br/>For Words 2 to 4, refer to the Current/Last State Error Codes Table (Chapter 4)</p> <p>Extended Error Codes (0 = Transmitter OK, 1 = Broken Transmitter)</p> <p>37425 is the Extended Error Code for Ch1<br/>37426 is the Extended Error Code for Ch2<br/>37427 is the Extended Error Code for Ch3</p> <p>...</p> <p>37438 is the Extended Error Code for Ch14<br/>37439 is the Extended Error Code for Ch15<br/>37440 is the Extended Error Code for Ch16</p> <p>410001 is the EBC Dynamic Module Data Error Code (Write zero to clear errors)</p> |
| Channel 2     | 30035 - 30036 |  |
| Channel 3     | 30037 - 30038 |  |
| Channel 4     | 30039 - 30040 |  |
| Channel 5     | 30041 - 30042 |  |
| Channel 6     | 30043 - 30044 |  |
| Channel 7     | 30045 - 30046 |  |
| Channel 8     | 30047 - 30048 |  |
| Channel 9     | 30049 - 30050 |  |
| Channel 10    | 30051 - 30052 |  |
| Channel 11    | 30053 - 30054 |  |
| Channel 12    | 30055 - 30056 |  |
| Channel 13    | 30057 - 30058 |  |
| Channel 14    | 30059 - 30060 |  |
| Channel 15    | 30061 - 30062 |  |
| Channel 16    | 30063 - 30064 |  |

**D**