

FACTS Terminator Analog Modules with T1H-EBC and ERM

The Host Engineering ERM (H2-ERM or H4-ERM) allows I/O in a T1H-EBC (or T1H-EBC100) base to act as remote I/O to the PLC that contains the ERM module. FACTS Analog module data in the T1H-EBC base is mapped to V-memory or Discrete I/O.

The ERM Workbench software will tell you what the mapping is for each I/O module in the T1H-EBC base. Once you have configured the ERM you will get a screen similar to this:

The screenshot shows the ERM Workbench software interface. At the top, it displays 'Ethernet Remote Master: H4-ERM', 'Ethernet Address: 00 E0 62 60 0D 29', 'IP: 192.168. 0.147', and 'Module ID: 47'. Below this, there are fields for 'CPU Interface: PLC', 'CPU: 440', 'Last ERM Error: no error', and 'PLC Mode: Program'. A 'Slave Status' grid shows 16 slots, with slot 1 highlighted in green and labeled 'Slave 1 - no error'. There are buttons for '1. Configure ERM...', '2. Select Slaves...', and '3. Write to ERM...'. A 'Time of last read: 12:37:09' is displayed. Below the main interface is a table of I/O module configurations.

I/O Module	I/O Points	PLC Start	PLC End	V-Map	Notes
<reserved>	Slave Status Bits	X300	X317	V40414	
	ERM Status Word	X320	X337	V40415	
	Disable Slave Comm...	Y300	Y317	V40514	
Slave 1	T1H-EBC100				hotswap(auto);Ethernet Address[00 E0 62 40 22 9F] on ...
Slave 1/Slot 1	16 Double Word Input	V2000	V2037		32-bit Binary;
Slave 1/Slot 2	16 Double Word Out...	V2100	V2137		32-bit Binary;
	8 Discrete Output	Y320	Y327	V40515...	
Slave 1/Slot 3	8 Double Word Input	V2040	V2057		32-bit Binary;
	4 Double Word Output	V2140	V2147		32-bit Binary;
	8 Discrete Output	Y330	Y337	V40515...	
Slave 1/Slot 4	8 Double Word Input	V2060	V2077		32-bit Binary;
Slave 1/Slot 5	8 Double Word Output	V2150	V2167		32-bit Binary;
	8 Discrete Output	Y340	Y347	V40516...	
Slave 1/Slot 6	8 Discrete Input	X340	X347	V40416...	
Slave 1/Slot 7	8 Discrete Output	Y350	Y357	V40516...	

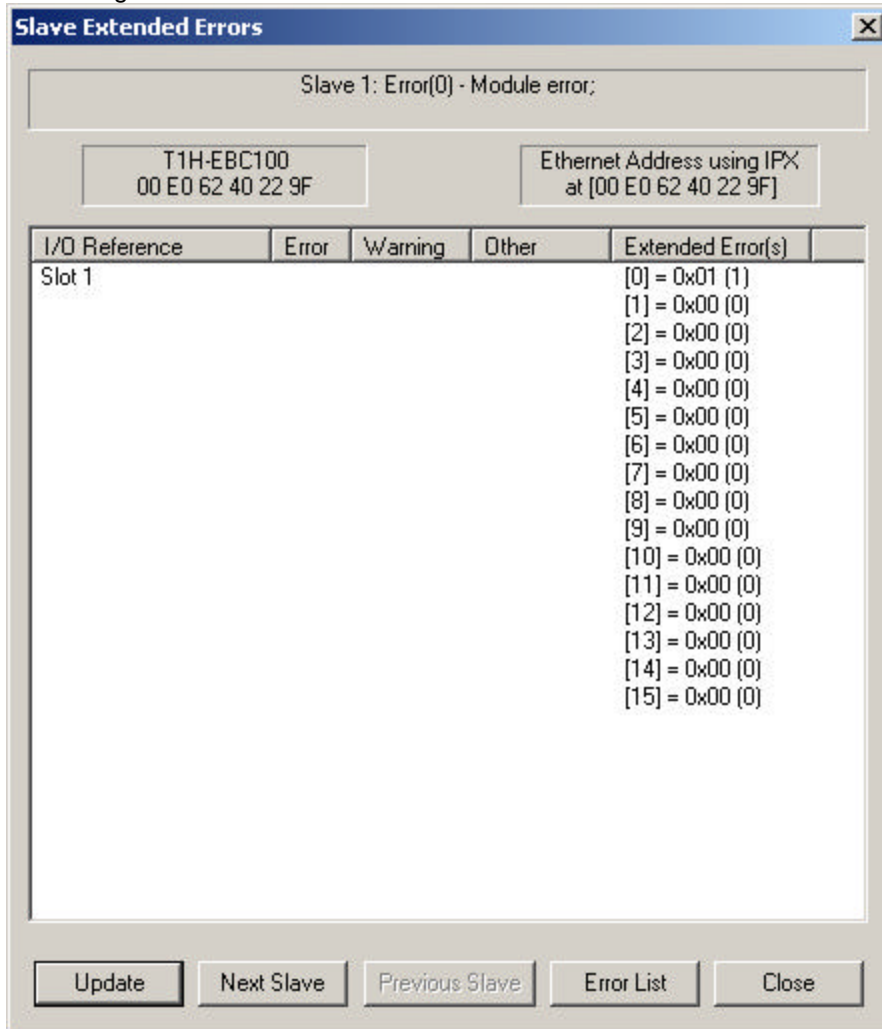
The I/O Configuration for the above screen shot is:

- Slot 1 = T1F-14THM
- Slot 2 = T1F-16DA-2
- Slot 3 = T1F-8AD2DA -2
- Slot 4 = T1F-08AD-2
- Slot 5 = T1F-08DA-2
- Slot 6 = T1K-08NA-1
- Slot 7 = T1K-08TR

Use the addresses shown in Netedit3 'Show Base Contents' along with the following table to read/write your analog I/O with your Modbus TCP master.

DIAGNOSTICS NOTE:

Click on 'Slave 1's Error List' to see any errors associated with that slave. It should look something like this:



Note that reading the error using ERM Workbench as shown above also clears the error if the error condition has been removed. In order to read and clear the error using ladder logic you would need to add logic as shown in Appendix B of the H24-ERM-M manual:

<http://www.automationdirect.com/static/manuals/h24ermm/appxb.pdf>

Part Number	Channel Data	Configuration Data	Diagnostic Data
T1F-08AD-1	<p>Note: 'V' is the V-Memory Location listed under the 'PLC Start' column in ERM Workbench. The offset is in octal so if the 'PLC Start' address is V2000 then V+36=V2036.</p> <p>Input Data V+0 = Ch1 V+2 = Ch2 ... V+14 = Ch7 V+16 = Ch8</p>	<p>No Software Configuration</p> <p>Input Range Depends on Input Signal -20 to 20mA = -8192 to 8191 0 to 20mA = 0 to 8191 4 to 20mA = 1638 to 8191</p>	<p>No Built-In Broken Transmitter Detection</p> <p>Monitor for counts less than 1638</p>
T1F-08AD-2	<p>Input Data V+0 = Ch1 V+2 = Ch2 ... V+14 = Ch7 V+16 = Ch8</p>	<p>No Software Configuration</p> <p>Input Range Depends on Input Signal 0 to 5V = 0 to 4095 0 to 10V = 0 to 8191 +/-5V = -4095 to 4095 +/-10V = -8192 to 8191</p>	<p>No Broken Transmitter Detection (N/A for Voltage)</p>
T1F-16AD-1	<p>Input Data V+0 = Ch1 V+2 = Ch2 ... V+34 = Ch15 V+36 = Ch16</p>	<p>No Software Configuration</p> <p>Input Range Depends on Input Signal -20 to 20mA = -8192 to 8191 0 to 20mA = 0 to 8191 4 to 20mA = 1638 to 8191</p>	<p>No Built-In Broken Transmitter Detection</p> <p>Monitor for counts less than 1638</p>

<p>T1F-16AD-2</p>	<p>Input Data V+0 = Ch1 V+2 = Ch2 ... V+34 = Ch15 V+36 = Ch16</p>	<p>No Software Configuration</p> <p>Input Range Depends on Input Signal 0 to 5V = 0 to 4095 0 to 10V = 0 to 8191 +/-5V = -4095 to 4095 +/-10V = -8192 to 8191</p>	<p>No Broken Transmitter Detection (N/A for Voltage)</p>																						
<p>T1F-14THM</p>	<p>Input Data V+0 = Ch1 V+2 = Ch2 ... V+30 = Ch13 V+32 = Ch14 V+34 = Status 1 V+36 = Status 2</p> <p>Status info is only available if T1F-14THM is date code 1205 or later. See Rev F Data Sheet for details.</p>	<p>No Software Configuration</p> <p>THM Type Set by Jumpers</p> <p>Status 1 Data</p> <table border="1" data-bbox="732 709 1089 1213"> <tr> <td>Bit 0-3</td> <td>Number of Channels Enabled (Inverted) 0001 = All Channels 1110 = One Channel</td> </tr> <tr> <td>Bit 4</td> <td>T/C Type Jumper 0 0=installed, 1=removed</td> </tr> <tr> <td>Bit 5</td> <td>T/C Type Jumper 1</td> </tr> <tr> <td>Bit 6</td> <td>T/C Type Jumper 2</td> </tr> <tr> <td>Bit 7</td> <td>T/C Type Jumper 3</td> </tr> <tr> <td>Bit 8</td> <td>Units 0 Jumper</td> </tr> <tr> <td>Bit 9</td> <td>Units 1 Jumper</td> </tr> <tr> <td>Bit 10</td> <td>Calibrate Enable Jumper</td> </tr> <tr> <td>Bit 11</td> <td>CJC Installed 0=Yes, 1=No</td> </tr> <tr> <td>Bits 12,13</td> <td>Always ON</td> </tr> <tr> <td>Bits 14-15</td> <td>Always OFF</td> </tr> </table> <p>Status 2 Data is the Temperature of the CJC with one implied decimal place.</p>	Bit 0-3	Number of Channels Enabled (Inverted) 0001 = All Channels 1110 = One Channel	Bit 4	T/C Type Jumper 0 0=installed, 1=removed	Bit 5	T/C Type Jumper 1	Bit 6	T/C Type Jumper 2	Bit 7	T/C Type Jumper 3	Bit 8	Units 0 Jumper	Bit 9	Units 1 Jumper	Bit 10	Calibrate Enable Jumper	Bit 11	CJC Installed 0=Yes, 1=No	Bits 12,13	Always ON	Bits 14-15	Always OFF	<p>Broken Thermocouple Indication. The channel data goes to zero and ERM Workbench 'Slave Error List' shows error in 'Extended Error' column.</p>
Bit 0-3	Number of Channels Enabled (Inverted) 0001 = All Channels 1110 = One Channel																								
Bit 4	T/C Type Jumper 0 0=installed, 1=removed																								
Bit 5	T/C Type Jumper 1																								
Bit 6	T/C Type Jumper 2																								
Bit 7	T/C Type Jumper 3																								
Bit 8	Units 0 Jumper																								
Bit 9	Units 1 Jumper																								
Bit 10	Calibrate Enable Jumper																								
Bit 11	CJC Installed 0=Yes, 1=No																								
Bits 12,13	Always ON																								
Bits 14-15	Always OFF																								

T1F-16RTD	Input Data V+0 = Ch1 V+2 = Ch2 ... V+34 = Ch15 V+36 = Ch16	No Software Configuration RTD Type Set by Jumpers	Broken RTD Indication. The channel data goes to zero and ERM Workbench 'Slave Error List' shows error in 'Extended Error' column.										
T1F-8AD4DA-1	Input Data V+0 = Ch1 V+2 = Ch2 ... V+14 = Ch7 V+16 = Ch8 Output Data V+0 = Ch1 V+2 = Ch2 V+4 = Ch3 V+6 = Ch4	8 Discrete Output Bits Analog Output Configuration <table border="1" data-bbox="732 562 1089 814"> <tr> <td>Y+0</td> <td>Output Enable 0 – Outputs OFF 1 – Outputs Enabled</td> </tr> <tr> <td>Y+1</td> <td>N/A</td> </tr> <tr> <td>Y+2</td> <td>N/A</td> </tr> <tr> <td>Y+3</td> <td>0-20mA/4-20mA 0 – 0-20mA range 1 – 4-20mA range</td> </tr> <tr> <td>Y+4 to Y+7</td> <td>Reserved</td> </tr> </table> Input Range Depends on Input Signal -20 to 20mA = -8192 to 8191 0 to 20mA = 0 to 8191 4 to 20mA = 1638 to 8191	Y+0	Output Enable 0 – Outputs OFF 1 – Outputs Enabled	Y+1	N/A	Y+2	N/A	Y+3	0-20mA/4-20mA 0 – 0-20mA range 1 – 4-20mA range	Y+4 to Y+7	Reserved	No Built-In Broken Transmitter Detection Monitor for counts less than 1638
Y+0	Output Enable 0 – Outputs OFF 1 – Outputs Enabled												
Y+1	N/A												
Y+2	N/A												
Y+3	0-20mA/4-20mA 0 – 0-20mA range 1 – 4-20mA range												
Y+4 to Y+7	Reserved												
T1F-8AD4DA-2	Input Data V+0 = Ch1 V+2 = Ch2 ... V+14 = Ch7 V+16 = Ch8 Output Data V+0 = Ch1 V+2 = Ch2 V+4 = Ch3 V+6 = Ch4	8 Discrete Output Bits Analog Output Configuration <table border="1" data-bbox="732 1150 1089 1444"> <tr> <td>Y+0</td> <td>Output Enable 0 – Outputs OFF 1 – Outputs Enabled</td> </tr> <tr> <td>Y+1</td> <td>Unipolar/Bipolar 0 – Unipolar 1 – Bipolar</td> </tr> <tr> <td>Y+2</td> <td>5V/10V Range 0 – 5V Range 1 – 10V Range</td> </tr> <tr> <td>Y+3</td> <td>N/A</td> </tr> <tr> <td>Y+4 to Y+7</td> <td>Reserved</td> </tr> </table> Input Range Depends on Input Signal 0 to 5V = 0 to 8191 0 to 10V = 0 to 8191 -/+ 5V = -4095 to 4095 -/+ 10V = -8192 to 8191	Y+0	Output Enable 0 – Outputs OFF 1 – Outputs Enabled	Y+1	Unipolar/Bipolar 0 – Unipolar 1 – Bipolar	Y+2	5V/10V Range 0 – 5V Range 1 – 10V Range	Y+3	N/A	Y+4 to Y+7	Reserved	No Broken Transmitter Detection (N/A for Voltage)
Y+0	Output Enable 0 – Outputs OFF 1 – Outputs Enabled												
Y+1	Unipolar/Bipolar 0 – Unipolar 1 – Bipolar												
Y+2	5V/10V Range 0 – 5V Range 1 – 10V Range												
Y+3	N/A												
Y+4 to Y+7	Reserved												

T1F-08DA-1	Output Data V+0 = Ch1 V+2 = Ch2 ... V+14 = Ch7 V+16 = Ch8	8 Discrete Output Bits Analog Output Configuration <table border="1" data-bbox="732 317 1089 562"> <tr> <td>Y+0</td> <td>Output Enable 0 – Outputs OFF 1 – Outputs Enabled</td> </tr> <tr> <td>Y+1</td> <td>N/A</td> </tr> <tr> <td>Y+2</td> <td>N/A</td> </tr> <tr> <td>Y+3</td> <td>0-20mA/4-20mA 0 – 0-20mA range 1 – 4-20mA range</td> </tr> <tr> <td>Y+4 to Y+7</td> <td>Reserved</td> </tr> </table>	Y+0	Output Enable 0 – Outputs OFF 1 – Outputs Enabled	Y+1	N/A	Y+2	N/A	Y+3	0-20mA/4-20mA 0 – 0-20mA range 1 – 4-20mA range	Y+4 to Y+7	Reserved	None
Y+0	Output Enable 0 – Outputs OFF 1 – Outputs Enabled												
Y+1	N/A												
Y+2	N/A												
Y+3	0-20mA/4-20mA 0 – 0-20mA range 1 – 4-20mA range												
Y+4 to Y+7	Reserved												
T1F-08DA-2	Output Data V+0 = Ch1 V+2 = Ch2 ... V+14 = Ch7 V+16 = Ch8	8 Discrete Output Bits Analog Output Configuration <table border="1" data-bbox="732 695 1089 982"> <tr> <td>Y+0</td> <td>Output Enable 0 – Outputs OFF 1 – Outputs Enabled</td> </tr> <tr> <td>Y+1</td> <td>Unipolar/Bipolar 0 – Unipolar 1 – Bipolar</td> </tr> <tr> <td>Y+2</td> <td>5V/10V Range 0 – 5V Range 1 – 10V Range</td> </tr> <tr> <td>Y+3</td> <td>N/A</td> </tr> <tr> <td>Y+4 to Y+7</td> <td>Reserved</td> </tr> </table>	Y+0	Output Enable 0 – Outputs OFF 1 – Outputs Enabled	Y+1	Unipolar/Bipolar 0 – Unipolar 1 – Bipolar	Y+2	5V/10V Range 0 – 5V Range 1 – 10V Range	Y+3	N/A	Y+4 to Y+7	Reserved	None
Y+0	Output Enable 0 – Outputs OFF 1 – Outputs Enabled												
Y+1	Unipolar/Bipolar 0 – Unipolar 1 – Bipolar												
Y+2	5V/10V Range 0 – 5V Range 1 – 10V Range												
Y+3	N/A												
Y+4 to Y+7	Reserved												
T1F-16DA-1	Output Data V+0 = Ch1 V+2 = Ch2 ... V+34 = Ch15 V+36 = Ch16	8 Discrete Output Bits Analog Output Configuration <table border="1" data-bbox="732 1119 1089 1365"> <tr> <td>Y+0</td> <td>Output Enable 0 – Outputs OFF 1 – Outputs Enabled</td> </tr> <tr> <td>Y+1</td> <td>N/A</td> </tr> <tr> <td>Y+2</td> <td>N/A</td> </tr> <tr> <td>Y+3</td> <td>0-20mA/4-20mA 0 – 0-20mA range 1 – 4-20mA range</td> </tr> <tr> <td>Y+4 to Y+7</td> <td>Reserved</td> </tr> </table>	Y+0	Output Enable 0 – Outputs OFF 1 – Outputs Enabled	Y+1	N/A	Y+2	N/A	Y+3	0-20mA/4-20mA 0 – 0-20mA range 1 – 4-20mA range	Y+4 to Y+7	Reserved	None
Y+0	Output Enable 0 – Outputs OFF 1 – Outputs Enabled												
Y+1	N/A												
Y+2	N/A												
Y+3	0-20mA/4-20mA 0 – 0-20mA range 1 – 4-20mA range												
Y+4 to Y+7	Reserved												
T1F-16DA-2	Output Data V+0 = Ch1 V+2 = Ch2 ... V+34 = Ch15 V+36 = Ch16	8 Discrete Output Bits Analog Output Configuration <table border="1" data-bbox="732 1493 1089 1780"> <tr> <td>Y+0</td> <td>Output Enable 0 – Outputs OFF 1 – Outputs Enabled</td> </tr> <tr> <td>Y+1</td> <td>Unipolar/Bipolar 0 – Unipolar 1 – Bipolar</td> </tr> <tr> <td>Y+2</td> <td>5V/10V Range 0 – 5V Range 1 – 10V Range</td> </tr> <tr> <td>Y+3</td> <td>N/A</td> </tr> <tr> <td>Y+4 to Y+7</td> <td>Reserved</td> </tr> </table>	Y+0	Output Enable 0 – Outputs OFF 1 – Outputs Enabled	Y+1	Unipolar/Bipolar 0 – Unipolar 1 – Bipolar	Y+2	5V/10V Range 0 – 5V Range 1 – 10V Range	Y+3	N/A	Y+4 to Y+7	Reserved	None
Y+0	Output Enable 0 – Outputs OFF 1 – Outputs Enabled												
Y+1	Unipolar/Bipolar 0 – Unipolar 1 – Bipolar												
Y+2	5V/10V Range 0 – 5V Range 1 – 10V Range												
Y+3	N/A												
Y+4 to Y+7	Reserved												

Examples

All examples are based on this ERM configuration:

The screenshot shows the ERM Workbench software interface. The title bar reads "ERM Module [00 E0 62 60 0D 29] - ERM Workbench". The main window contains the following elements:

- Configuration Section:**
 - Ethernet Remote Master: H4-ERM
 - Ethernet Address: 00 E0 62 60 0D 29
 - IP: 192.168. 0.147
 - Module ID: 47
 - CPU Interface: PLC
 - CPU: 440
 - PLC Mode: Run
 - Last ERM Error: no error
 - Time of last read: 15:05:45
 - Buttons: Read ERM Status, Detailed ERM Status...
- Slave Status Section:**
 - Grid of 16 slave status indicators (1-16). Slave 1 is highlighted in green.
 - Text: "Click on slave # above to see its Last Error: Slave 1 - no error"
 - Buttons: Clear Last Error Slave 1, Slave 1's Error List
- Navigation Buttons:** 1. Configure ERM..., 2. Select Slaves..., 3. Write to ERM...
- I/O Module Table:**

I/O Module	I/O Points	PLC Start	PLC End	V-Map	Notes
<reserved>	Slave Status Bits	X300	X317	V40414	
	ERM Status Word	X320	X337	V40415	
	Disable Slave Comm...	Y300	Y317	V40514	
Slave 1	T1H-EBC100				hotswap(auto);Ethernet Address[00 E0 62 40 22 9F] on ...
Slave 1/Slot 1	16 Double Word Input	V2000	V2037		32-bit Binary;
Slave 1/Slot 2	16 Double Word Out...	V2100	V2137		32-bit Binary;
	8 Discrete Output	Y320	Y327	V40515...	
Slave 1/Slot 3	8 Double Word Input	V2040	V2057		32-bit Binary;
	4 Double Word Output	V2140	V2147		32-bit Binary;
	8 Discrete Output	Y330	Y337	V40515...	
Slave 1/Slot 4	8 Double Word Input	V2060	V2077		32-bit Binary;
Slave 1/Slot 5	8 Double Word Output	V2150	V2167		32-bit Binary;
	8 Discrete Output	Y340	Y347	V40516...	
Slave 1/Slot 6	8 Discrete Input	X340	X347	V40416...	
Slave 1/Slot 7	8 Discrete Output	Y350	Y357	V40516...	

At the bottom of the window, the status bar shows "Ready" and "Read ERM Status : MANUAL MODIFIED NUM".

T1F-14THM Example

Example Setup

24VDC is applied to the T1F-14THM in Slave 1 Slot 1 and all channels are shorted CH+ to CH-.

The V-memory mapping is:

V2000 = Channel 1 Temperature
 V2002 = Channel 2 Temperature
 V2004 = Channel 3 Temperature
 V2006 = Channel 4 Temperature
 V2010 = Channel 5 Temperature
 V2012 = Channel 6 Temperature
 V2014 = Channel 7 Temperature
 V2016 = Channel 8 Temperature
 V2020 = Channel 9 Temperature
 V2022 = Channel 10 Temperature
 V2024 = Channel 11 Temperature
 V2026 = Channel 12 Temperature
 V2030 = Channel 13 Temperature
 V2032 = Channel 14 Temperature
 V2034 = Status
 V2036 = CJC Temperature

Data1		
E!	Decimal	DWORD
	Element	Status
1		
2	V2000	806
3	V2002	809
4	V2004	811
5	V2006	815
6	V2010	811
7	V2012	819
8	V2014	821
9	V2016	813
10	V2020	799
11	V2022	803
12	V2024	805
13	V2026	809
14	V2030	806
15	V2032	788
16	V2034	0011010000000001
17	V2036	272

All V-memory in this DirectSoft Data View is displayed as Decimal DWORD except V2034 which is displayed as Binary WORD.

All Channels read the terminal block ambient temperature when shorted (degrees F in this configuration).

V2034 Is the Status Word

Bit 0-3	All Channels Enabled (0001)
Bit 4	T/C Type Jumper 0 Installed (0)
Bit 5	T/C Type Jumper 1 Installed (0)
Bit 6	T/C Type Jumper 2 Installed (0)
Bit 7	T/C Type Jumper 3 Installed (0)
Bit 8	Units 0 Jumper Installed (0)
Bit 9	Units 1 Jumper Installed (0)
Bit 10	Calibrate Enable Jumper Removed (1)
Bit 11	CJC Installed Yes (0)
Bits 12,13	Always ON
Bits 14-15	Always OFF

V2036 is the CJC temperature reading in degrees C with one implied decimal place. So 27.2C = 80.9F.

T1F-14THM Example (continued)

Broken Thermocouple

24VDC is applied to the T1F-14THM and all channels are shorted CH+ to CH- except Channel 8 which is open.

Data1		
	Element	Status
1		
2	V2000	807
3	V2002	810
4	V2004	812
5	V2006	815
6	V2010	812
7	V2012	820
8	V2014	821
9	V2016	0
10	V2020	801
11	V2022	804
12	V2024	806
13	V2026	810
14	V2030	807
15	V2032	789
16	V2034	0011010000000001
17	V2036	272

All Channels read the terminal block ambient temperature when shorted (degrees F in this configuration) except the open channel 8 which reads 0.

ERM Workbench indicates an error on slave 1.

The screenshot shows the ERM Workbench interface for an H4ERM module. Key details include:

- Hardware Info:** Ethernet Address: 00 E0 62 00 0D 29, IP: 192.168.0.147, Module ID: 47.
- PLC Status:** CPU: 440, PLC Mode: Run, Last ERM Error: no error.
- Slave Status:** A grid of 16 channels is shown. Channel 1 is highlighted in red, indicating an error. Other channels (2-16) are in green, indicating they are operational.
- I/O Module List:**

I/O Module	UD Points	PLC Start	PLC End	V-Map	Notes
Slave 1 Slot 1	16 Double Word Input	V2000	V2037		32 bit Binary
Slave 1 Slot 2	16 Double Word Output	V2100	V2137		32 bit Binary
Slave 1 Slot 3	8 Discrete Output	Y320	Y327	V40515..	32 bit Binary
Slave 1 Slot 4	8 Double Word Input	V2040	V2057		32 bit Binary
Slave 1 Slot 5	4 Double Word Output	V2140	V2147		32 bit Binary
Slave 1 Slot 6	8 Discrete Output	Y330	Y337	V40515..	32 bit Binary
Slave 1 Slot 7	8 Double Word Input	V2060	V2077		32 bit Binary
Slave 1 Slot 8	8 Double Word Output	V2150	V2167		32 bit Binary
Slave 1 Slot 9	8 Discrete Output	Y340	Y347	V40515..	32 bit Binary
Slave 1 Slot 10	8 Discrete Input	X340	X347	V40016..	
Slave 1 Slot 11	8 Discrete Output	Y350	Y357	V40515..	

'Slave 1's Error List' shows an extended error in the eighth entry (7).

The screenshot shows a window titled "Slave Extended Errors" with a close button (X) in the top right corner. The window content includes:

- Header: "Slave 1: Error(0) - Module error;"
- Module ID: "T1H-EBC100" and "00 E0 62 40 22 9F"
- Ethernet Address: "Ethernet Address using IPX at [00 E0 62 40 22 9F]"
- A table with columns: "I/O Reference", "Error", "Warning", "Other", and "Extended Error(s)".
- Row 1: "Slot 1" under "I/O Reference".
- Row 2: "Extended Error(s)" column contains a list of 16 entries: [0] = 0x00 (0), [1] = 0x00 (0), [2] = 0x00 (0), [3] = 0x00 (0), [4] = 0x00 (0), [5] = 0x00 (0), [6] = 0x00 (0), [7] = 0x01 (1), [8] = 0x00 (0), [9] = 0x00 (0), [10] = 0x00 (0), [11] = 0x00 (0), [12] = 0x00 (0), [13] = 0x00 (0), [14] = 0x00 (0), [15] = 0x00 (0).
- Buttons at the bottom: "Update", "Next Slave", "Previous Slave", "Error List", and "Close".

After Channel 8 is reconnected, clicking on 'Update' will show the error has cleared.





The screenshot shows the same "Slave Extended Errors" window after an update. The content is:

- Header: "Slave 1: Error(0) - Module error;"
- Module ID: "T1H-EBC100" and "00 E0 62 40 22 9F"
- Ethernet Address: "Ethernet Address using IPX at [00 E0 62 40 22 9F]"
- Table with columns: "I/O Reference", "Error", "Warning", "Other", and "Extended Error(s)".
- Row 1: "No errors found" under "Extended Error(s)".
- Buttons at the bottom: "Update", "Next Slave", "Previous Slave", "Error List", and "Close".

T1F-16DA-2 Example

Example Setup

24VDC is applied to the T1F-16DA2 in Slave 1 Slot 2 and a multi-meter is used to measure the output. The outputs are enabled and configured for -5 to +5V range.

Data1			
 Decimal DWORD   			
	Element	Status	Edits
1			
2	V2100	0	0
3	V2102	270	270
4	V2104	525	525
5	V2106	780	780
6	V2110	1035	1035
7	V2112	1545	1545
8	V2114	1800	1800
9	V2116	2055	2055
10	V2120	2310	2310
11	V2122	2565	2565
12	V2124	2820	2820
13	V2126	3075	3075
14	V2130	3330	3330
15	V2132	3585	3585
16	V2134	3840	3840
17	V2136	4095	4095
18			
19	Y320	ON	<input type="checkbox"/> ON <input checked="" type="checkbox"/> OFF
20	Y321	ON	<input type="checkbox"/> ON <input checked="" type="checkbox"/> OFF
21	Y322	OFF	<input checked="" type="checkbox"/> ON <input type="checkbox"/> OFF
22	Y323	OFF	<input type="checkbox"/> ON <input checked="" type="checkbox"/> OFF
23	Y324	OFF	<input type="checkbox"/> ON <input checked="" type="checkbox"/> OFF
24	Y325	OFF	<input type="checkbox"/> ON <input checked="" type="checkbox"/> OFF
25	Y326	OFF	<input type="checkbox"/> ON <input checked="" type="checkbox"/> OFF
26	Y327	OFF	<input type="checkbox"/> ON <input checked="" type="checkbox"/> OFF

All V-memory in this DirectSoft Data View is displayed as Decimal DWORD.

V2100 = Channel 1 / 0 = -5V
 V2102 = Channel 2 / 270 = -4.34V
 V2104 = Channel 3 / 525 = -3.71V
 V2106 = Channel 4 / 780 = -3.09V
 V2110 = Channel 5 / 1035 = -2.47V
 V2112 = Channel 6 / 1545 = -1.22V
 V2114 = Channel 7 / 1800 = -0.60V
 V2116 = Channel 8 / 2055 = 0.01V
 V2120 = Channel 9 / 2310 = 0.64V
 V2122 = Channel 10 / 2565 = 1.26V
 V2124 = Channel 11 / 2820 = 1.88V
 V2126 = Channel 12 / 3075 = 2.50V
 V2130 = Channel 13 / 3330 = 3.13V
 V2132 = Channel 14 / 3585 = 3.75V
 V2134 = Channel 15 / 3840 = 4.37V
 V2136 = Channel 16 / 4095 = 5V

Y320 = ON for Output Enable
 Y321 = ON selects Bipolar output
 Y322 = OFF selects 5V output range
 Y323 to Y327 = N/A

T1F-8AD2DA-2 Example

Example Setup

24VDC is applied to the T1F-8AD4DA-2 in Slave 1 Slot 3. Ch1 output is tied to Ch1 and 2 input, Ch2 output is tied to Ch3 and 4 input, Ch3 output is tied to Ch5 and 6 input, Ch4 output is tied to Ch7 and 8 input. The outputs are enabled and configured for -10 to +10V range.

Data1			
<input type="button" value="E"/> BCD/Hex <input type="button" value="DWORD"/> <input type="button" value="Print"/> <input type="button" value="Refresh"/>			
	Element	Status	Edits
1			
2	V2040	-4096	0
3	V2040	FFFFFF00	
4	V2042	-4097	0
5	V2042	FFFFEFFF	
6	V2044	1	0
7	V2046	1	0
8	V2050	4098	0
9	V2052	4099	0
10	V2054	8191	0
11	V2056	8191	0
12			
13	V2140	1024	1024
14	V2142	2048	2048
15	V2144	3072	3072
16	V2146	4095	4095
17			
18	Y330	ON	<input type="button" value="ON"/> <input type="button" value="OFF"/>
19	Y331	ON	<input type="button" value="ON"/> <input type="button" value="OFF"/>
20	Y332	ON	<input type="button" value="ON"/> <input type="button" value="OFF"/>
21	Y333	OFF	<input type="button" value="ON"/> <input type="button" value="OFF"/>
22	Y334	OFF	<input type="button" value="ON"/> <input type="button" value="OFF"/>
23	Y335	OFF	<input type="button" value="ON"/> <input type="button" value="OFF"/>
24	Y336	OFF	<input type="button" value="ON"/> <input type="button" value="OFF"/>
25	Y337	OFF	<input type="button" value="ON"/> <input type="button" value="OFF"/>

V2040 and V2042 are displayed as both Signed Decimal DWORD and BCD/Hex DWORD in this DirectSoft Data View.

V2044-V2056 are displayed as Signed Decimal DWORD.

V2140-V2146 are displayed as Decimal DWORD.

V2040 = Ch1 AI / -4096 = -10V
 V2042 = Ch2 AI / -4096 = -10V
 V2044 = Ch3 AI / 1 = 0V
 V2046 = Ch4 AI / 1 = 0V
 V2050 = Ch5 AI / 4098 = 5V
 V2052 = Ch6 AI / 4099 = 5V
 V2054 = Ch7 AI / 8191 = 10V
 V2056 = Ch8 AI / 8191 = 10V

V2140 = Ch1 AO / 1024 = -10V
 V2142 = Ch2 AO / 2048 = 0V
 V2144 = Ch3 AO / 3072 = 5V
 V2146 = Ch4 AO / 4095 = 10V

Y330 = ON for Output Enable
 Y331 = ON selects Bipolar output
 Y332 = ON selects 10V output range
 Y333 to Y337 = N/A

T1F-08AD-2 Example

Example Setup

24VDC is applied to the T1F-08AD-2 in Slave 1 Slot 4. Voltage is applied to all eight channels.

Data3		
E!	BCD/Hex	DWORD
	Element	Status
1	V2060	-4097
2	V2060	FFFFFFF
3	V2062	-4097
4	V2062	FFFFFFF
5	V2064	1
6	V2066	1
7	V2070	4097
8	V2072	4097
9	V2074	8190
10	V2076	8191

V2060 and V2062 are displayed as both Signed Decimal DWORD and BCD/Hex DWORD in this DirectSoft Data View.

V2064-V2076 are displayed as Signed Decimal DWORD.

V2060 = Ch1 AI / -4097 = -10V

V2062 = Ch2 AI / -4097 = -10V

V2064 = Ch3 AI / 1 = 0V

V2066 = Ch4 AI / 1 = 0V

V2070 = Ch5 AI / 4097 = 5V

V2072 = Ch6 AI / 4097 = 5V

V2074 = Ch7 AI / 8190 = 10V

V2076 = Ch8 AI / 8191 = 10V

T1F-08DA-2 Example

Example Setup

24VDC is applied to the T1F-08DA-2 in Slave 1 Slot 5 and a multi-meter is used to measure the output. The outputs are enabled and configured for 0 to 10V range.

Data3			
Element	Status	Edits	
1			
2	V2150	2048	2048
3	V2152	128	128
4	V2154	256	256
5	V2156	512	512
6	V2160	1024	1024
7	V2162	2048	2048
8	V2164	3072	3072
9	V2166	4095	4095
10			
11	Y340	ON	<input type="checkbox"/> ON <input type="checkbox"/> OFF
12	Y341	OFF	<input type="checkbox"/> ON <input type="checkbox"/> OFF
13	Y342	ON	<input type="checkbox"/> ON <input type="checkbox"/> OFF
14	Y343	OFF	<input type="checkbox"/> ON <input type="checkbox"/> OFF
15	Y344	OFF	<input type="checkbox"/> ON <input type="checkbox"/> OFF
16	Y345	OFF	<input type="checkbox"/> ON <input type="checkbox"/> OFF
17	Y346	OFF	<input type="checkbox"/> ON <input type="checkbox"/> OFF
18	Y347	OFF	<input type="checkbox"/> ON <input type="checkbox"/> OFF

All V-memory in this DirectSoft Data View is displayed as Decimal DWORD.

V2150 = Channel 1 / 2048 = 5V
 V2152 = Channel 2 / 128 = 0.32V
 V2154 = Channel 3 / 256 = 0.63V
 V2156 = Channel 4 / 512 = 1.25V
 V2160 = Channel 5 / 1024 = 2.5V
 V2162 = Channel 6 / 2048 = 5V
 V2164 = Channel 7 / 3072 = 7.5V
 V2166 = Channel 8 / 4095 = 10V

Y340 = ON for Output Enable
 Y341 = OFF selects Unipolar output
 Y342 = ON selects 10V output range
 Y343 to Y347 = N/A