QuadraTherm 640i/780i Modbus

Quick Install Guide

This Quick Install Guide is applicable for models: QuadraTherm® 640i & 780i

A copy of this Quick Install Guide, the QuadraTherm 640i & 780i Modbus instruction manual, and the QuadraTherm 640i & 780i product instruction manual are included on the digital communication information CD included in your shipment. This information is also available for download.

Connecting to a Modbus Network

You will need the following to connect Modbus to your device:

1. A Modbus equipped 640i or 780i mass flow meter.
2. A PC equipped with a 2-wire RS-485 interface card or USB to RS-485 adapter.
3. A 2-wire RS-485 network with an end-of-line terminator with pull up and pull down resistors. This becomes more critical when you have more slaves and longer/higher baud rates. See QuadraTherm 640i & 780i Modbus Manual, Chapter 2.
4. A HyperTerminal or another terminal program to access the boot loader to set the ID#, baud rate, parity, and Tx delay. Note: HyperTerminal has been removed from Windows 7. You can either use another terminal program or copy hypertrm.exe and hypertrm.dll from a Windows XP system.
5. Power supply to power the flow meter, 24 VDC +/-10%, Amperage: 1.1A.

Installation Steps

1. Connect the flow meter to the A and B RS-485 network connections (see Figure 1).
2. Start the HyperTerminal (Baud 9600, bits 8, Parity None, Stop Bits 1, Flow Control None).
3. Power-up the meter. Pin 1 +24 VDC and Pin 2 Power Rtn (see Figure 1).
4. Press Enter on your PC within 2 seconds of powering up the flow meter to start the boot loader.
5. Setup meter ID (1 to 247) and the other COM settings. See Set Up instructions in the QuadraTherm 640i & 780i Modbus Manual, Chapter 4 Bootloader for more info.
6. Quit the boot loader and exit HyperTerminal. Start your Modbus application.
7. All the available registers are listed in Table 1.

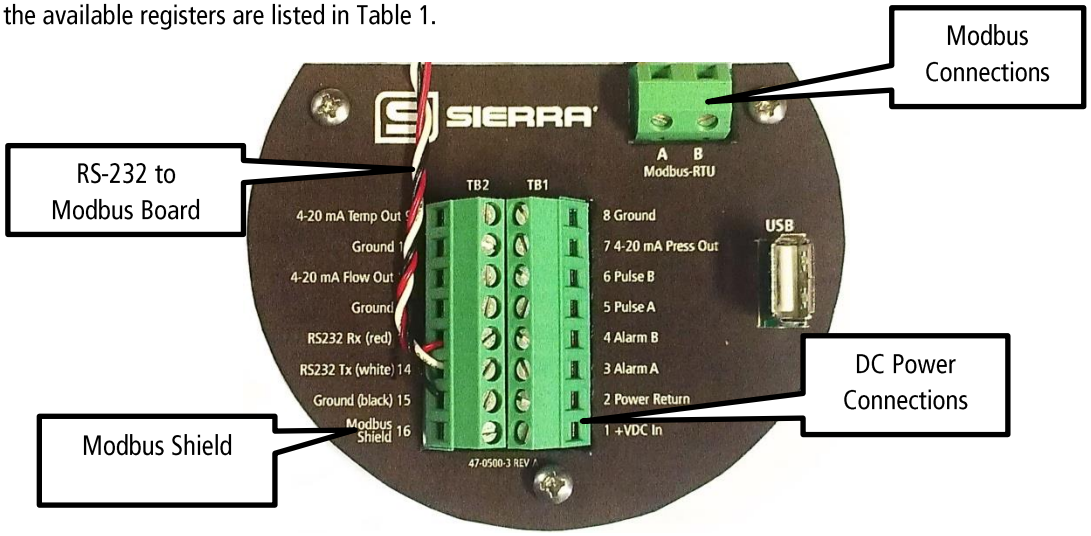

Figure 1: 640i/780i Terminal Board for Modbus Connection

Holding Registers

PDU Address	Register	Description	Read/ Write	Type	No. registers*
$00	40001	Actual flow - low word	R	32 bits real	2
$01	40002	Actual flow - high word	R		
$02	40003	Actual temp - low word	R	32 bits real	2
$03	40004	Actual temp - high word	R		
$04	40005	Actual pressure - low word	R	32 bits real	2
$05	40006	Actual pressure - high word	R		
$06	40007	Actual total - low word	R	32 bits real	2
$07	40008	Actual total - high word	R		
$08	40009	Alarm status	R	integer	1
$09	40010	Gas name	R	16 bits ASCII	8
~					
$10	40017				
$11	40018	Gas index	R/W	integer	1
$12	40019	Flow units	R	16 bits ASCII	4
~					
$15	40022				
$16	40023	Flow unit - index	R/W	integer	1
$17	40024	User full scale – low word	R/W	32 bits real	2
$18	40025	User full scale – high word	R/W		
$19	40026	Totalizer units	R	16 bits ASCII	2
$1A	40027				
$1B	40028	Totalizer unit - index	R	integer	1
$1C	40029	Temperature units	R	16 bits ASCII	1
$1D	40030	Temperature unit - index	R/W	integer	1
$1E	40031	Pressure units	R	16 bits ASCII	4
~					
$21	40034				
$22	40035	Pressure unit - index	R/W	integer	1
$23	40036	Standard temperature - low word	R/W	32 bits real	2
$24	40037	Standard temperature - high word	R/W		
$25	40038	Standard temperature - index	R/W	integer	1
$26	40039	Standard pressure - low word	R/W	32 bits real	2
$27	40040	Standard pressure - high word	R/W		
$28	40041	Standard pressure - index	R/W	integer	1
$29	40042	Normal temperature - low word	R/W	32 bits real	2
$2A	40043	Normal temperature - high word	R/W		
$2B	40044	Normal temperature - index	R/W	integer	1
$2C	40045	Normal pressure - low word	R/W	32 bits real	2
$2D	40046	Normal pressure - high word	R/W		
$2E	40047	Normal pressure - index	R/W	integer	1
$2F	40048	Adjust DAC for flow – 4mA	R/W	integer	1
$30	40049	Adjust DAC for flow – 20mA	R/W	integer	1
$31	40050	Adjust DAC for temperature – 4mA	R/W	integer	1
$32	40051	Adjust DAC for temperature – 20mA	R/W	integer	1

$33	40052	Adjust DAC for pressure – 4mA	R/W	integer	1
$34	40053	Adjust DAC for pressure – 20mA	R/W	integer	1
$35	40054	Temperature 4mA value – low word	R/W	32 bits real	2
$36	40055	Temperature 4mA value – high word	R/W		
$37	40056	Temperature 20mA value – low word	R/W	32 bits real	2
$38	40057	Temperature 20mA value – high word	R/W		
$39	40058	Pressure 4mA value – low word	R/W	32 bits real	2
$3A	40059	Pressure 4mA value – high word	R/W		
$3B	40060	Pressure 20mA value – low word	R/W	32 bits real	2
$3C	40061	Pressure 20mA value – high word	R/W		
$3D	40062	Alarm active	R/W	integer	1
$3E	40063	Alarm mode	R/W	integer	1
$3F	40064	Low alarm flow trig – low word	R/W	32 bits real	2
$40	40065	Low alarm flow trig – high word	R/W		
$41	40066	High alarm flow trig – low word	R/W	32 bits real	2
$42	40067	High alarm flow trig – high word	R/W		
$43	40068	Low alarm temp trig – low word	R/W	32 bits real	2
$44	40069	Low alarm temp trig – high word	R/W		
$45	40070	High alarm temp trig – low word	R/W	32 bits real	2
$46	40071	High alarm temp trig – high word	R/W		
$47	40072	Low alarm pressure trig – low word	R/W	32 bits real	2
$48	40073	Low alarm pressure trig – high word	R/W		
$49	40074	High alarm pressure trig – low word	R/W	32 bits real	2
$4A	40075	High alarm pressure trig – high word	R/W		
$4B	40076	Low alarm total trig – low word	R/W	32 bits real	2
$4C	40077	Low alarm total trig – high word	R/W		
$4D	40078	High alarm total trig – low word	R/W	32 bits real	2
$4E	40079	High alarm total trig – high word	R/W		
$4F	40080	Pipe diameter – low word	R/W	32 bits real	2
$50	40081	Pipe diameter – high word	R/W		
$51	40082	Pipe roughness	R/W	integer	1
$52	40083	Pipe diameter units - index	R/W	integer	1
$53	40084	Flow correction – low word	R/W	32 bits real	2
$54	40085	Flow correction – high word	R/W		
$55	40086	Totalizer enable	R/W	integer	1
$56	40087	Totalizer buck – low word	R/W	32 bits real	2
$57	40088	Totalizer buck – high word	R/W		
$58	40089	Totalizer pulse width	R/W	integer	1
$59	40090	Totalizer reset	R/W	integer	1
$5A	40091	Password	R/W	integer	1
$5B	40092	Standard temperature units	R	16 bits ASCII	1
$5C	40093	Normal temperature units	R	16 bits ASCII	1
$5D	40094	Standard pressure units	R	16 bits ASCII	4
~					
$60	40097				
$61	40098	Normal pressure units	R	16 bits ASCII	4
~					
$64	40101				
$65	40102	Pipe diameter units	R	16 bits ASCII	2

$66	40103				
$67	40104	Pipe roughness description	R	16 bits ASCII	5
~					
$6B	40108				
$6C	40109	Alarm status	R	16 bits ASCII	2
$6D	40110				
$6E	40111	Alarm active	R	16 bits ASCII	2
$6F	40112				
$70	40113	Alarm mode	R	16 bits ASCII	3
~					
$72	40115				
$73	40116	Serial number	R	16 bits ASCII	4
~					
$76	40119				
$77	40120	Firmware version	R	16 bits ASCII	4
~					
$7A	40123				
$7B	40124	Calibration date	R	16 bits ASCII	5
~					
$7F	40128				
$80	40129	PCA version	R	16 bits ASCII	3
~					
$82	40131				

** Exceeding the numbers of registers will raise an exception code*