

Descriptions

The T3 Series consists of general purpose input/output modules for building automation systems. Available in several input/output configurations, the T3 Series modules provide convenient termination for field devices and interfaces for your HVAC, lighting, temperature sensors, and other typical building automation applications.

Features:

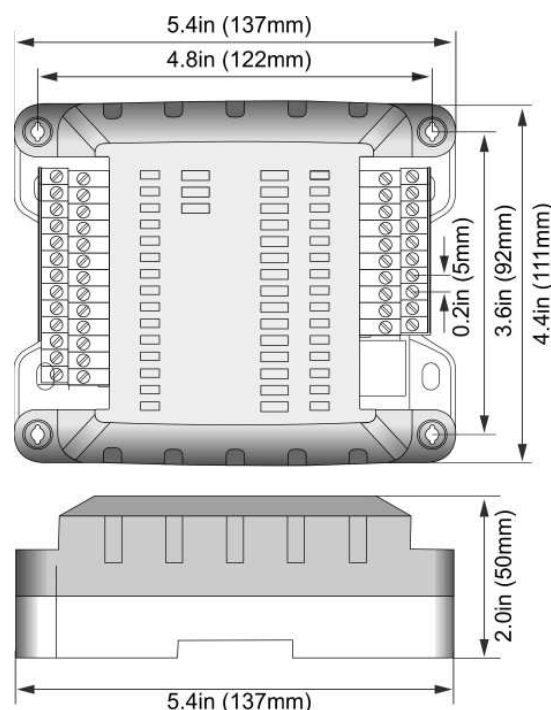
- Surge-protected Universal Inputs with 12-bit resolution
- High impact plastic enclosure provides durability in commercial environments
- Standard modbus RTU protocol allows for up to 254 devices on one RS485 network
- Input/output is configurable with software
- Outputs on T3-8o can individually be set to 3 different settings using a selector switch.



T3-22i

Specifications

Model	T3-22i	T3-8o
Analog Input	22 AI@0-5V, 0-10V, 4-20mA, 10K Type2 NTC.	8 AI@ 0-5V, 0-10V, 4-20mA, 10K Type2 NTC.
Digital Input	DI@pulse counter	DI@pulse counter
Analog Output	—	8 outputs@0-10V Accuracy: 0.01V
Relay	—	6 relay dry-contact outputs DC12V, 3A@125VDC
Baudrate	9600, 19200, 38400, 57600, 115200	
Operating Temperature	-30~70°C (-22~158°F)	
Supply Voltage	15~24VAC/DC ±10%, 50-60Hz	
Power Consumption	100mA at 15~24VAC/DC	
Storage Temperature	-40~85°C (-40~185°F)	
Operating Ambient Humidity	0-80 %Rh	
Communications	RS485, Ethernet	
Enclosure Color	Black	



Part Number Scheme

T3 - 22i

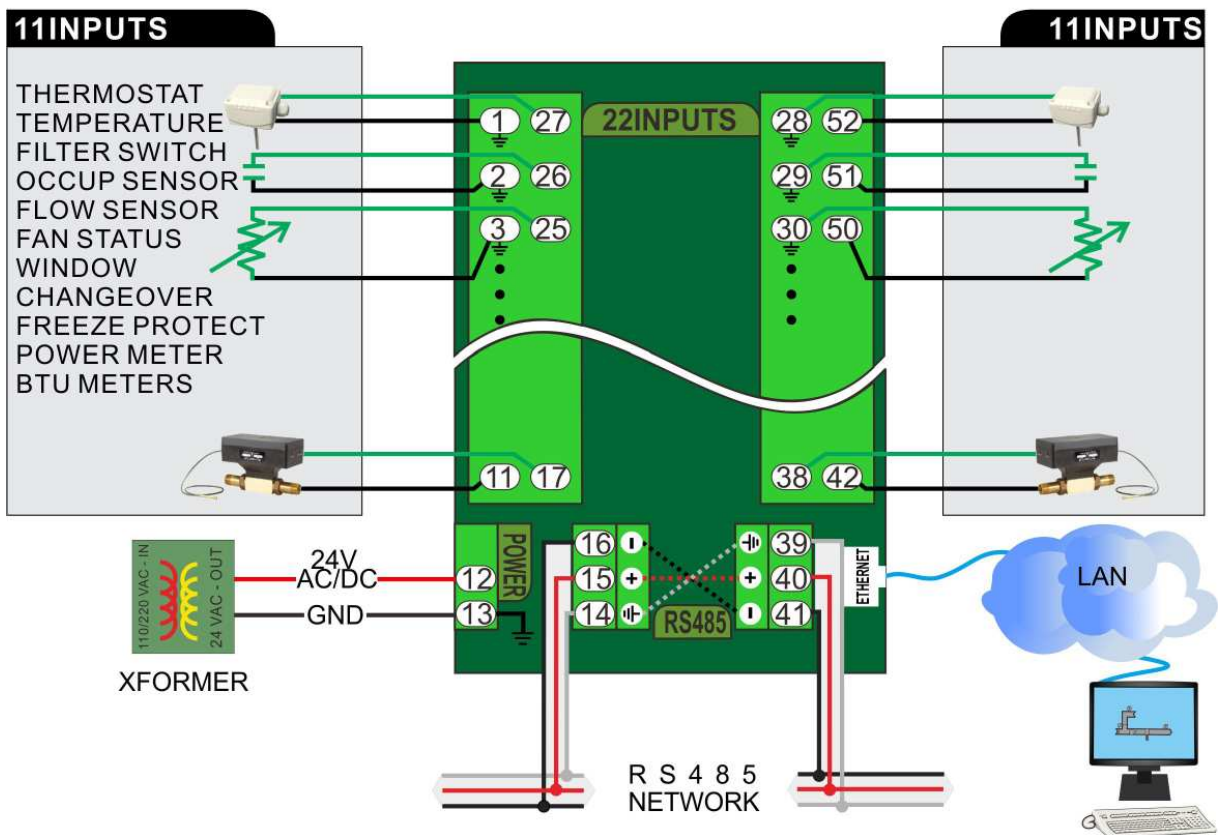
Code	Description
T3	T3 Module

Code	Option
22i	22 Analog Input
8o	8 Analog Input, 8 Analog Output, 6 Relay

Wiring Diagram

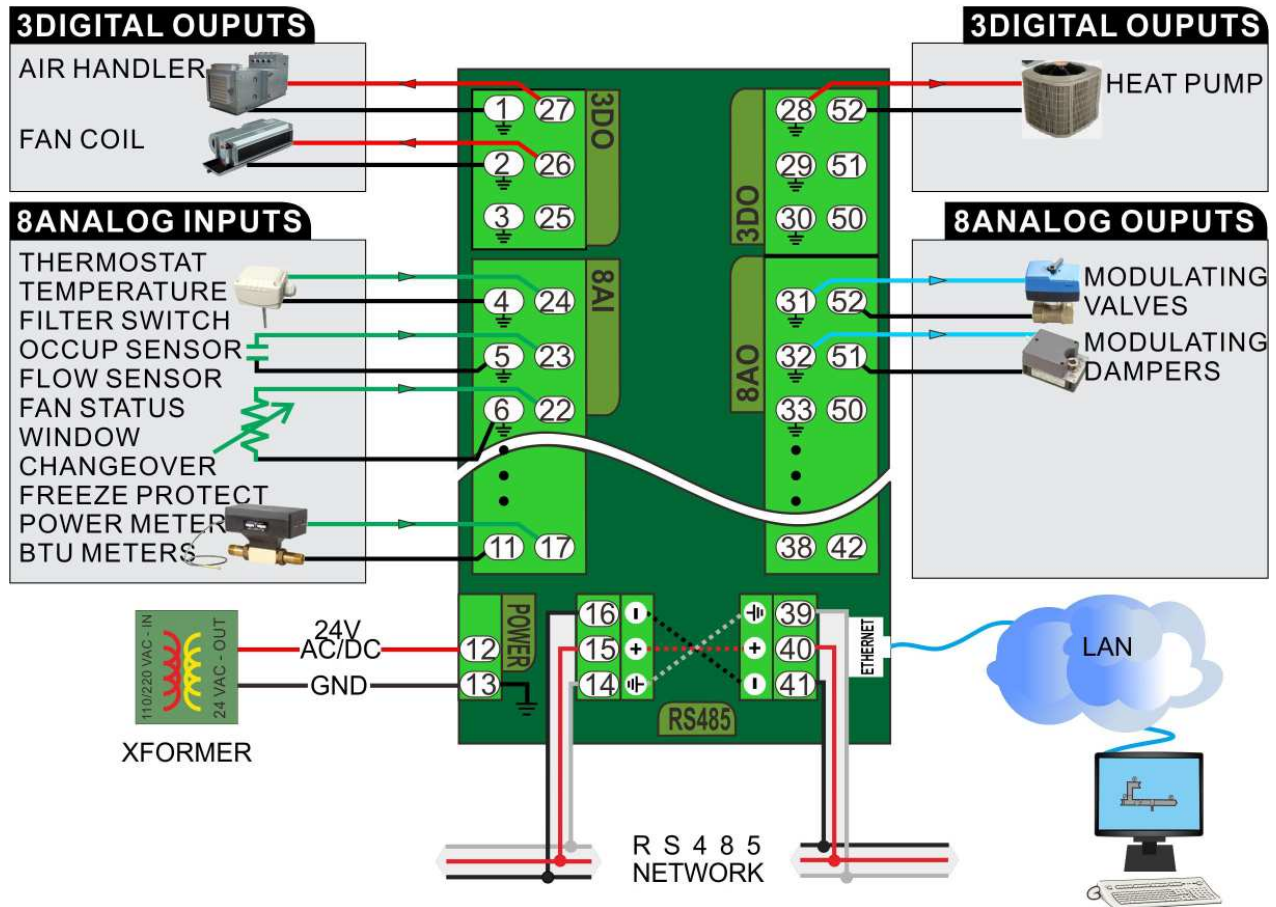
The T3-22i has 22 inputs, 2 RS485 terminals that share the same serial port, and 1 Ethernet port.

T3-22i WIRING DIAGRAM



The T3-8o has 8 inputs, 8 outputs, 6 relays, 2 RS485 terminals that share the same serial port, and 1 Ethernet port.

T3-8o WIRING DIAGRAM



Standard Operation

Inputs

Each input of a T3 Module can be configured in 1 of 5 ways:

- 0-5V
- 0-10V
- 4-20mA
- 10K type2 NTC
- pulse counter

The value of each input is stored as a 12-bit number in the respective modbus register.

The registers addresses are as follow:

Model	Number of inputs	Register addresses	
T3-22i	22	1-11	100-121
		12-22	122-132
T3-8o	8	116-123	

For T3-22i, the first 11 channels of input support up to 1MHz pulse input, the later 11 channels of input support up to 2KHz pulse input.

The maximum values for the 5V, 10V, 20mA, 10K type2 NTC and pulse counter configurations would produce a reading of 4096. Each input has a corresponding LED which will light up if the value of the input is greater than 2048.

Outputs

The state of each output is determined by its corresponding switch position for the T3-8o. The switches have 3 states: hand /off /auto.

	Analog	Digital
Hand	10V	Disconnected
Off	0V	Connected
Auto	Register Value	Non-zero value = activate

The registers addresses are as follows:

Model	Number of analog outputs	Register addresses
T3-8o	8	100-107

Model	Number of digital outputs	Register addresses
T3-8o	6	108-113

When the switch is set to the 'hand' position, the corresponding output will be switched to 10V for analog, the contact will be disconnected the relay, or 0V for sinking outputs. When it is on the 'off' position, the output will be set to 0V for analog, contact open for relay, or open circuit for sinking outputs. When it is on the 'auto' position the analog output will be set to the level stored in the corresponding MODBUS output registers. For digital or sinking outputs, a register value of 0 is to deactivate and a register value of 1000 is to activate.

These registers can be changed using the RS485 serial interface when in auto mode. For analog outputs, 0 corresponds to 0V, 1000 corresponds to 10V. For relay or sinking outputs, the output will be activated by any number greater than 0. The output registers are stored in RAM, thus the contents of each register will be lost upon power-off. Each output has a corresponding LED which will light up if the value of the output is greater than 0. For more information, please see the Standard Register lists starting on the next page.

Baudrate

T3-22i and T3-8o have adjustable baudrates that are set by register 15. The options include:

value 0 will set the baudrate to 9600bps

value 1 will set the baudrate to 19200bps

value 2 will set the baudrate to 38400bps

value 3 will set the baudrate to 57600bps

value 4 will set the baudrate to 115200bps

Standard Operation

T3-22i Register List

Address	Register and description
0~3	Serial number
4	Firmware version number
5	software version number
6	modbus service address
7	product model
8	hardware version number
9	spare
10	spare
11	spare
12	spare
13	spare
15	baudrate
16	spare
17 to 99	spare
100	Input1 high word
101	Input1 low word Input1: 2 registers, Value = Reg100 * 65535 + Reg 101 The A/D converter is 12 bits so for most ranges you can read reg101 only. For pulse counting use reg 100 and 101.
102	Input2 . see input1 description for details
103	
104	Input3 . see input1 description for details
105	
106	Input4 . see input1 description for details
107	
108	Input5 . see input1 description for details
109	
110	Input6 . see input1 description for details
111	
112	Input7 . see input1 description for details
113	
114	Input8 . see input1 description for details
115	
116	Input9 . see input1 description for details
117	
118	Input10 . see input1 description for details
119	
120	Input11 . see input1 description for details
121	

Address	Register and description
122	Input12
123	Input13
124	Input14
125	Input15
126	Input16
127	Input17
128	Input18
129	Input19
130	Input20
131	Input21
132	Input22
200	filter for input1
201	filter for input2
202	filter for input3
203	filter for input4
204	filter for input5
205	filter for input6
206	filter for input7
207	filter for input8
208	filter for input9
209	filter for input10
210	filter for input11
211	filter for input12
212	filter for input13
213	filter for input14
214	filter for input15
215	filter for input16
216	filter for input17
217	filter for input18
218	filter for input19
219	filter for input20
220	filter for input21
221	filter for input22
225	range for input1
226	range for input2
227	range for input3
228	range for input4
229	range for input5

Address	Register and description
230	range for input6
231	range for input7
232	range for input8
233	range for input9
234	range for input10
235	range for input11
236	range for input12
237	range for input13
238	range for input14
239	range for input15
240	range for input16
241	range for input17
242	range for input18
243	range for input19
244	range for input20
245	range for input21
246	range for input22
250	offset for input1
251	offset for input2
252	offset for input3
253	offset for input4
254	offset for input5
255	offset for input6
256	offset for input7
257	offset for input8
258	offset for input9
259	offset for input10
260	offset for input11
261	offset for input12
262	offset for input13
263	offset for input14
264	offset for input15
265	offset for input16
266	offset for input17
267	offset for input18
268	offset for input19
269	offset for input20
270	offset for input21
271	offset for input22

T3-8o Register List

Address	Register and description
0~3	Serial number
4	Firmware version number
5	software version number
6	modbus service address
7	product model
8	hardware version number
9	spare
10	spare
11	spare
12	spare
13	spare
15	baudrate
16	spare
17 to 99	spare
100	analog output 1
101	analog output 2
102	analog output 3
103	analog output 4
104	analog output 5
105	analog output 6
106	analog output 7
107	analog output 8
108	digit output1
109	digit output2
110	digit output3
111	digit output4
112	digit output5
113	digit output6
114	swtich status 1
115	swtich status 2
116	analog input1
117	analog input2
118	analog input3
119	analog input4
120	analog input5
121	analog input6
122	analog input7
123	analog input8

Address	Register and description
200	analog input1 filter
201	analog input2 filter
202	analog input3 filter
203	analog input4 filter
204	analog input5 filter
205	analog input6 filter
206	analog input7 filter
207	analog input8 filter
225	range for input1
226	range for input2
227	range for input3
228	range for input4
229	range for input5
230	range for input6
231	range for input7
232	range for input8
250	offset for input1
251	offset for input2
252	offset for input3
253	offset for input4
254	offset for input5
255	offset for input6
256	offset for input7