

Modbus Points List



Rev 2
Date 06/01/2022

COMMUNICATIONS

Modbus-RTU (NT-485)		Modbus TCP/IP (X7 and X5 Thermostats)	
Baud	9600	Port	502
Data Bits	8		
Parity	Even		
Stop Bits	1		

GENERAL NOTES

- 1 After connection to the thermostat (RS1, RS2, RS+V), it will take up to a minute for the thermostat to see the NT-485
- 2 The thermostat will temporarily display 'Modbus Active' when NT-485 is first discovered
- 3 The green LED on the NT-485 will blink when it receives a message from the thermostat
- 4 The Modbus address can be set from the thermostat's 'Installer Menu' (if the NT-485 is active). Access by press/hold the menu (hamburger) in the lower left of the screen for 5 seconds

# Bytes	Type	Object Name	Function	Modbus Address	Function Code	Low Limit	High Limit	Notes
HARDWARE / SOFTWARE								
2	input register	Modbus Slave Address	R/W	46001	3	1	254	Default = 254; can be set via Modbus or thermostat screen
2	input register	Hardware Revision	R	39001	4	N/A	N/A	
2	input register	Backplate/NT-485 Software Revision Major	R	39002	4	0	255	
2	input register	Backplate/NT-485 Software Revision Minor	R	39003	4	0	255	
2	input register	Model	R	39004	4	N/A	N/A	NT-485 = 485, X7 = 7, X5 = 5
2	input register	Faceplate Revision Major	R	39005	4	0	255	
2	input register	Faceplate Revision Minor	R	39006	4	0	255	
RELAYS								
1 bit	coil	Relay 1 Output Y1	R	1	1	0	1	
1 bit	coil	Relay 2 Output Y2	R	2	1	0	1	
1 bit	coil	Relay 3 Output E/W1	R	3	1	0	1	
1 bit	coil	Relay 4 Output B/O/W2	R	4	1	0	1	
1 bit	coil	Relay 5 Output G	R	5	1	0	1	
1 bit	coil	Relay 6 Output KHD	R	6	1	0	1	
1 bit	coil	Relay 7 Output K2	R	7	1	0	1	
INPUTS								
1 bit	discrete input	LED1 Input	R	10001	2	0	1	
1 bit	discrete input	LED2 Input	R	10002	2	0	1	
1 bit	discrete input	CLK Input	R	10003	2	0	1	

# Bytes	Type	Object Name	Function	Modbus Address	Function Code	Low Limit	High Limit	Notes
REMOTE SENSORS Validity Flags								
1 bit	discrete input	Remote Room Temperature	R	11001	2	0	1	0=Sensor Invalid, 1=Sensor Valid
1 bit	discrete input	Remote Room Humidity	R	11002	2	0	1	0=Sensor Invalid, 1=Sensor Valid
1 bit	discrete input	Aux1 Temp	R	11003	2	0	1	0=Sensor Invalid, 1=Sensor Valid
1 bit	discrete input	Aux2 Temp	R	11004	2	0	1	0=Sensor Invalid, 1=Sensor Valid
1 bit	discrete input	Aux3 Temp	R	11005	2	0	1	0=Sensor Invalid, 1=Sensor Valid
1 bit	discrete input	Aux4 Temp	R	11006	2	0	1	0=Sensor Invalid, 1=Sensor Valid
1 bit	discrete input	Aux5 Temp	R	11007	2	0	1	0=Sensor Invalid, 1=Sensor Valid
1 bit	discrete input	Aux6 Temp	R	11008	2	0	1	0=Sensor Invalid, 1=Sensor Valid
1 bit	discrete input	Aux7 Temp	R	11009	2	0	1	0=Sensor Invalid, 1=Sensor Valid
1 bit	discrete input	Remote Outdoor Temperature	R	11010	2	0	1	0=Sensor Invalid, 1=Sensor Valid
1 bit	discrete input	Remote Outdoor Humidity	R	11011	2	0	1	0=Sensor Invalid, 1=Sensor Valid
1 bit	discrete input	Water Leak	R	11012	2	0	1	0=Sensor Invalid, 1=Sensor Valid
1 bit	discrete input	CO2 Sensor	R	11013	2	0	1	0=Sensor Invalid, 1=Sensor Valid
1 bit	discrete input	Airflow Level	R	11014	2	0	1	0=Sensor Invalid, 1=Sensor Valid (future release)
Fahrenheit Scale								
# Bytes	Type	Object Name	Function	Modbus Address	Function Code	Low Limit	High Limit	Notes
THERMOSTAT (Fahrenheit) READ ONLY								
2	input register	Room Temperature	R	30001	4	28F	118F	F with resolution 0.01F (72F = 7200)
2	input register	Room Humidity	R	30002	4	0	100	% RH with resolution 1%
2	input register	Current Heat / Cool Operation	R	30003	4	0	2	0=off, 1=cooling, 2=heating
2	input register	Stages Active of Heat / Cool	R	30004	4	0	4	0=off, 1=1st stage, 2=2nd stage, 3=3rd stage, 4=4th stage (3, 4 for future release)
2	input register	Room CO2 Level	R	30005	4	0	40000	ppm
2	input register	Room VOC Level	R	30006	4	0	5000	Scale TBD (future release)
REMOTE SENSORS (Fahrenheit) READ ONLY								
2	input register	Remote Room Temperature	R	31001	4	28F	118F	F with resolution 0.01F (72F = 7200)
2	input register	Remote Room Humidity	R	31002	4	0	100	% RH with resolution 1%
2	input register	Aux1 Temp	R	31003	4	-40F	+200F	F with resolution 0.01F (72F = 7200)
2	input register	Aux2 Temp	R	31004	4	-40F	+200F	F with resolution 0.01F (72F = 7200)
2	input register	Aux3 Temp	R	31005	4	-40F	+200F	F with resolution 0.01F (72F = 7200)
2	input register	Aux4 Temp	R	31006	4	-40F	+200F	F with resolution 0.01F (72F = 7200)
2	input register	Aux5 Temp	R	31007	4	-40F	+200F	F with resolution 0.01F (72F = 7200)
2	input register	Aux6 Temp	R	31008	4	-40F	+200F	F with resolution 0.01F (72F = 7200)
2	input register	Aux7 Temp	R	31009	4	-40F	+200F	F with resolution 0.01F (72F = 7200)
2	input register	Remote Outdoor Temperature	R	31010	4	-54F	+119F	F with resolution 0.01F (72F = 7200)
2	input register	Remote Outdoor Humidity	R	31011	4	0	100	% RH with resolution 1%
2	input register	Water Leak	R	31012	4	0	1	0=no water, 1=water

# Bytes	Type	Object Name	Function	Modbus Address	Function Code	Low Limit	High Limit	Notes
THERMOSTAT (Fahrenheit) READ / WRITE - WHEN THERMOSTAT SCHEDULES ARE RUNNING								
2	holding register	System Mode Heat / Cool Mode	R/W	40001	3	0	6	0=off, 1=cool, 2=heat, 3=auto, 4=eheat
2	holding register	Fan Mode	R/W	40002	3	0	5	0=auto, 1=on/low, 2=med, 3=high
2	holding register	Active Cool Set Point	R/W	40003	3	60F	108F	F with resolution 1 degree resolution
2	holding register	Active Heat Set Point	R/W	40004	3	38F	88F	F with resolution 1 degree resolution
THERMOSTAT (Fahrenheit) in Manual Mode READ / WRITE - WHEN THERMOSTAT IS IN 'MANUAL MODE' (ALL SCHEDULES INACTIVE)								
2	holding register	System Mode Heat / Cool Mode	R/W	42001	3	0	6	0=off, 1=cool, 2=heat, 3=auto, 4=eheat
2	holding register	Fan Mode	R/W	42002	3	0	5	0=auto, 1=on/low, 2=med, 3=high (2, 3 for future release)
2	holding register	Occupied Cool Set Point	R/W	42003	3	60F	108F	F with resolution 1 degree resolution
2	holding register	Occupied Heat Set Point	R/W	42004	3	38F	88F	F with resolution 1 degree resolution
2	holding register	Unoccupied Cool Set Point	R/W	42005	3	60F	108F	F with resolution 1 degree resolution
2	holding register	Unoccupied Heat Set Point	R/W	42006	3	38F	88F	F with resolution 1 degree resolution
2	holding register	Occ/Unocc Toggle	R/W	42007	3	0	1	0=occupied, 1=unoccupied
2	holding register	Manual Operation / Schedule	R/W	42008	3	0	1	0=schedules, 1=manual (Sets Schedule or Manual)
Celsius Scale								
# Bytes	Type	Object Name	Function	Modbus Address	Function Code	Low Limit	High Limit	Notes
THERMOSTAT (Celsius) READ ONLY								
2	input register	Room Temperature	R	32001	4	0C	48C	C with resolution 0.01C (21C = 2100)
2	input register	Room Humidity	R	32002	4	0	100	% RH with resolution 1%
2	input register	Current Heat / Cool Operation	R	32003	4	0	2	0=off, 1=cooling, 2=heating
2	input register	Stages Active of Heat / Cool	R	32004	4	0	4	0=off, 1=1st stage, 2=2nd stage, 3=3rd stage, 4=4th stage (3, 4 for future release)
2	input register	Room CO2 Level	R	32005	4	0	40000	ppm
2	input register	Room VOC Level	R	32006	4	0	5000	Scale TBD (future release)
REMOTE SENSORS (Celsius) READ ONLY								
2	input register	Remote Room Temperature	R	33001	4	-2C	+48C	C with resolution 0.01C (25C = 2500)
2	input register	Remote Room Humidity	R	33002	4	0	100	% RH with resolution 1%
2	input register	Aux1 Temp	R	33003	4	-40F	+93C	C with resolution 0.01C (25C = 2500)
2	input register	Aux2 Temp	R	33004	4	-40F	+93C	C with resolution 0.01C (25C = 2500)
2	input register	Aux3 Temp	R	33005	4	-40F	+93C	C with resolution 0.01C (25C = 2500)
2	input register	Aux4 Temp	R	33006	4	-40F	+93C	C with resolution 0.01C (25C = 2500)
2	input register	Aux5 Temp	R	33007	4	-40F	+93C	C with resolution 0.01C (25C = 2500)
2	input register	Aux6 Temp	R	33008	4	-40F	+93C	C with resolution 0.01C (25C = 2500)
2	input register	Aux7 Temp	R	33009	4	-40F	+93C	C with resolution 0.01C (25C = 2500)
2	input register	Remote Outdoor Temperature	R	33010	4	-40F	+93C	C with resolution 0.01C (25C = 2500)
2	input register	Remote Outdoor Humidity	R	33011	4	0	100	% RH with resolution 1%
2	input register	Water Leak	R	33012	4	0	1	0=no water, 1=water
2	input register	Airflow Level	R	33013	4	0	5000	in 0.1cfm increments (future release)

# Bytes	Type	Object Name	Function	Modbus Address	Function Code	Low Limit	High Limit	Notes
THERMOSTAT (Celsius) READ / WRITE - WHEN THERMOSTAT SCHEDULES ARE RUNNING								
2	holding register	Heat / Cool Mode	R/W	41001	3	0	6	0=off, 1=cool, 2=heat, 3=auto, 4=eheat
2	holding register	Fan Mode	R/W	41002	3	0	5	0=auto, 1=on/low, 2=med, 3=high
2	holding register	Active Cool Set Point	R/W	41003	3	16C	40C	C with resolution 1 degree resolution
2	holding register	Active Heat Set Point	R/W	41004	3	6C	30C	C with resolution 1 degree resolution
THERMOSTAT (Celsius) READ / WRITE - WHEN THERMOSTAT IS IN 'MANUAL MODE' (ALL SCHEDULES INACTIVE)								
2	holding register	System Mode Heat / Cool Mode	R/W	43001	3	0	6	0=off, 1=cool, 2=heat, 3=auto, 4=eheat
2	holding register	Fan Mode	R/W	43002	3	0	5	0=auto, 1=on/low, 2=med, 3=high (2, 3 for future release)
2	holding register	Occupied Cool Set Point	R/W	43003	3	16C	40C	C with resolution 1 degree resolution
2	holding register	Occupied Heat Set Point	R/W	43004	3	6C	30C	C with resolution 1 degree resolution
2	holding register	Unoccupied Cool Set Point	R/W	43005	3	16C	40C	C with resolution 1 degree resolution
2	holding register	Unoccupied Heat Set Point	R/W	43006	3	6C	30C	C with resolution 1 degree resolution
2	holding register	Occ/Unocc Toggle	R/W	43007	3	0	1	0=occupied, 1=unoccupied
2	holding register	Manual Operation / Schedule	R/W	43008	3	0	1	0=schedules, 1=manual (Sets Schedule or Manual)