Honeywell

TC300 Thermostats

Modbus Integration Guide

31-00670-03 | Rev. 09-24

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Declaration

Waste Electrical and Electronic Equipment (WEEE)

WEEE: Waste Electrical and Electronic Equipment Directive	
	• At the end of the product life, dispose of the packaging and product in an appropriate recycling center. • Do not dispose of the device with the usual domestic refuse. • Do not burn the device.

FCC Part 15 compliant

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.

Regulation (EC) No 1907/2006

According to Article 33 of Reach Regulation, be informed that the substances listed below may be contained in these products above the threshold level of 0.1% by weight of the listed article.

Product/Part Code	Substance Name	CAS Number
Only TC300 thermostats main board PCBA	Lead	7439-92-1
	Lead oxide	1317-36-8

Important Safety Information and Installation Precautions

Read all instructions.

Failure to follow all instructions may result in equipment damage or a hazardous condition. Read all instructions carefully before installing equipment.

When performing any work (installation, mounting, start-up), all manufacturer instructions and in particular the TC300 thermostats Mounting Instructions (31-00642) are to be observed.

- TC300 thermostats may be installed and mounted only by authorized and trained personnel.
- It is recommended that devices be kept at room temperature for at least 24 hours before applying power. This is to allow any condensation resulting from low shipping/storage temperatures to evaporate.
- Do not open TC300 thermostats, as they contains no user-serviceable parts inside!
- Investigated according to United States Standard UL60730-1 and UL60730-2-9.
- Investigated according to Canadian National Standard(s) C22.2, No. 205-M1983 (CNL-listed).
- CE declarations according to LVD Directive 2014/35/EU and EMC Directive 2014/30/EU.
- Product standards are EN 60730-1 and EN 60730-2-9.
- TC300 thermostats are Class B digital apparatus and complies with Canadian ICES-003.

Local codes and practices

Always install equipment in accordance with the National Electric Code and in a manner acceptable to the local authority that have jurisdiction.

Electrostatic sensitivity

This product and its components may be susceptible to electrostatic discharge (ESD). Use appropriate ESD grounding techniques while handling the product. When possible, always handle the product by its non-electrical components.

High voltage safety test

Experienced electricians, at first contact, always assume that hazardous voltages may exist in any wiring system. A safety check using a known, reliable voltage measurement or detection device should be made immediately before starting work and when work resumes.

Lightning and high-voltage danger

Most electrical injuries involving low-voltage wiring result from sudden, unexpected high voltages on normally low voltage wiring. Low voltage wiring can carry hazardous high voltages under unsafe conditions. Never install or connect wiring or equipment during electrical storms. Improperly protected wiring can carry a fatal lightning surge for many miles. All outdoor wiring must be equipped with properly grounded and listed signal circuit protectors, which must be installed in compliance with local, applicable codes. Never install wiring or equipment while standing in water.

Wiring and equipment separations

All wiring and controllers must be installed to minimize the possibility of accidental contact with other potentially hazardous and disruptive power and lighting wiring. Never place 24 VAC or communications wiring near other bare power wires, lightning rods, antennas, transformers, or steam or hot water pipes. Never place wire in any conduit, box, channel, duct, or other enclosure containing power or lighting circuits of any type. Always provide adequate separation of communications wiring and other electrical wiring according to code. Keep wiring and controllers at least six feet from large inductive loads (power distribution panels, lighting ballasts, motors, etc.). Failure to follow these guidelines can introduce electrical interference and cause the system to operate erratically.

Warning

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Safety Information as per EN60730-1

TC300 thermostats are intended for commercial and residential environments.

TC300 thermostats are independently mounted electronic control system with fixed wiring.

TC300 thermostats are used for the purpose of building HVAC control and is suitable for use only in non-safety controls for installation on or in appliances.

CHAPTER

1 INTRODUCTION

Topics covered

Scope of the document

The Modbus Integration document contains information related to Modbus Objects and the properties of the thermostat that help engineers to integrate and configure the settings via a Modbus tool.

Reference documents

- TC300 Commercial Thermostats User Guide (31-00644)
- TC300 Commercial Thermostats Datasheet (31-00645)
- TC300 Commercial Thermostats Mounting Instructions (31-00642)
- TC300 Commercial Thermostats Pocket Guide(31-00648)
- TC300 Deco Plate Pocket Guide (31-00657)
- TC300 Safety Sheet (31-00643)
- TC300 thermostats BACnet Integration Guide (31-00646)
- TC300 thermostats Modbus Integration Guide (31-00670)

Terms, Acronyms, and Abbreviations

Table 1 Terms, Acronyms, and Abbreviations

Term, Acronym, Abbreviation	Definition
UI	Universal Input
UIO	Universal Input/Output
DO	Digital Output
Cfg	Configuration
BAS	Building Automation System
ni	Network Input
no	Network Output
NC	Network Configuration

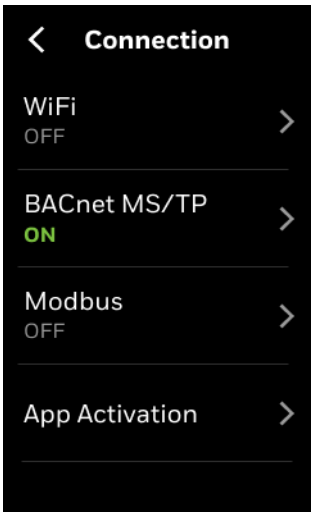
Configuring Modbus connection

The Modbus network can be configured while setting up the thermostat. Refer to the TC300 commercial thermostats user guide - 31-00644 or follow the steps below.

To connect thermostat via Modbus

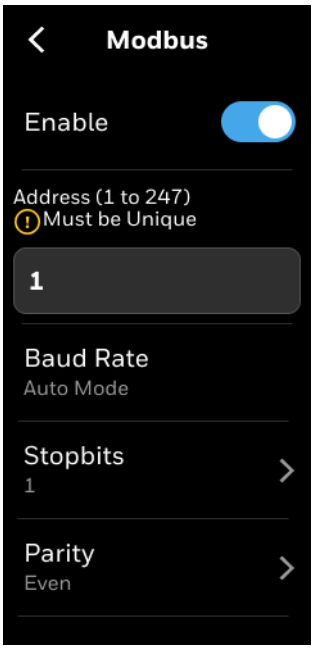
1. Swipe left from the Home screen.
2. On the Quick access screen of the thermostat, tap > **Connection**.
   The Connection screen appears.

Fig 1. Thermostat connection



3. Tap Modbus and enable it.
   The Modbus setting screen appears.

Fig 2. Modbus setting screen



4. Enter a unique address for the thermostat. It should be different from other TC300 thermostats.
5. Set the Baud Rate, Stopbits, and Parity from the list.
6. Tap the back arrow button to navigate back to the connection screen.

Baud rate

Modbus supports automatic baud rate and manual baud rate configuration, It can support the following Baud rate: 1200, 2400, 4800, 9600, 14400, 19200, 38400, 57600, and 115200.

Auto Baud rate

The default for the first startup is Auto Baud rate. This detection process will last 5 minutes after TC300 thermostats start to detect there is data communication from Modbus master. If there is no right baud rate matched during this 5 minutes, TC300 thermostats will work as the last-detected baud rate, or default to 19200 bps.

Manual Baud rate

After the default Auto Baud rate matches, TC300 thermostats will enter manual baud mode, then can configure the desired Baud rate.

Modbus Serial port settings

- **Data Bits**: 8
- **Stop Bits**: 1

- **Parity**: None/Even/odd (Default: Even)

Notes:

— Both Modbus word order and Byte order are big-endian.

— The value of float type data stored in Modbus is an integer value of the real value enlarged by 1/scale, so it is equal to the true value divided by the value of the scale.

CHAPTER

2 TERMINAL INPUT AND NETWORK OUTPUT

Topics covered

Sensor objects

Heating, cooling, and fan status

Alerts objects

Other thermostat parameters

Sylk sensor

Schedule

Sensor objects

Table 2 Sensor objects

***Note: Supported only in TC3XXB models**						
Register Count = 1 Access = Read Memory Type = Volatile						
Reg Address	**Name**	**Register Type**	**Range**	**Default**	**Scaling**	**Description**
6501	ChangeoverSwitch	Discrete Input	Close = **0** Open = **1**	0	1	2-Pipe changeover switch status
101	Discharge Air Sensor	Input	-40 to 200 °F (-40 to 93 °C)		0.01°F	Discharge air sensor output value.
6502	Drain Pan Sensor	Discrete Input	Off = **0** On = **1**	0	1	Drain pan sensor status
6503	Occupancy Sensor	Discrete Input	Off = **0** On = **1**	0	1	Occupancy sensor status
6504	Proof of Airflow	Discrete Input	Off = **0** On = **1**	0	1	Proof of air flow sensor status
102	Pipe Sensor	Input	-40 to 260 °F (-40 to 126 °C)		0.01°F	Pipe sensor temperature output value
6506	Shutdown Sensor	Discrete Input	Off = **0** On = **1**		1	Shutdown sensor status.
103	Space Temp Sensor	Input	-40 to 150 °F (-40 to 65 °C)		0.01°F	Space temperature sensor output value
6404*	Proof of Waterflow	Discrete Input	Off = **0** On = **1**	0	1	Proof of waterflow status.
105	Outdoor Air Sensor	Input	-40 to 200 °F (-40 to 93 °C)		0.01°F	Outdoor air sensor value.

Heating, cooling, and fan status

Table 3 Heating, cooling, and fan status

***Note: Supported only in TC3XXB models**					
Register Count=1 Access = Read Memory Type = Volatile					
Reg Address	**Name**	**Register Type**	**Range**	**Scaling**	**Description**
201	Six-way Valve Cooling	Input	0 to 100 %	0.01 %	6-way valve cooling control output
202	Six-way Valve Heating	Input	0 to 100 %	0.01 %	6-way valve heating control output
203	Modulating Cool	Input	0 to 100 %	0.01 %	Modulating cool control output
204	Modulating Heat	Input	0 to 100 %	0.01 %	Modulating heat control output
205	Variable Fan	Input	0 to 100 %	0.01 %	Variable fan control output
6001	Auxiliary Heat	Discrete Input	Off = **0** On = **1**	1	Auxiliary heat control output
6002	ChangeOver Valve	Discrete Input	Off = **0** On = **1**	1	Change over valve control output

Table 3 Heating, cooling, and fan status (Continued)

***Note: Supported only in TC3XXB models**					
Register Count=1 Access = Read Memory Type = Volatile					
Reg Address	**Name**	**Register Type**	**Range**	**Scaling**	**Description**
6004	Cooling Valve (ON/Off)	Discrete Input	Off = **0** On = **1**	1	Cooling on/off valve output status
6005	Heating Valve (ON/Off)	Discrete Input	Off = **0** On = **1**	1	Heating on/off valve output status
6006*	Cooling Floating Open	Discrete Input	Off = **0** On = **1**	1	Cooling floating valve open control output.
6007*	Cooling Floating Close	Discrete Input	Off = **0** On = **1**	1	Cooling floating valve close control output.
6008*	heating Floating Open	Discrete Input	Off = **0** On = **1**	1	Heating floating valve open control output.
6009*	Heating Floating Close	Discrete Input	Off = **0** On = **1**	1	Heating floating valve close control output.
6010	High Speed Fan	Discrete Input	Off = **0** On = **1**	1	High speed fan on/off status
6011	Low Speed Fan	Discrete Input	Off = **0** On = **1**	1	Low speed fan on/off status
6012	Medium Speed Fan	Discrete Input	Off = **0** On = **1**	1	Medium speed fan on/off status
6014	Modulating Cooling Stage1	Discrete Input	Off = **0** On = **1**	1	Modulating cool stage1 on/off status
6015	Modulating Heating Stage1	Discrete Input	Off = **0** On = **1**	1	Modulating heat stage1 on/off status
6016*	WaterFlowValve	Discrete Input	Off = **0** On = **1**	1	Water flow valve control output.
6017*	ReversingValve	Discrete Input	Off = **0** On = **1**	1	Revering valve control output.
6609*	Humidifier	Discrete Input	Off = **0** On = **1**	1	Humidifier control output.

Alerts objects

Table 4 Alert objects

***Note: Supported only in TC3XXB models**					
Register Count = 1 Memory Type = Volatile Scaling = 1					
Reg Address	**Name**	**Register Type**	**Access**	**Range**	**Description**
7002	Proof of Air Flow Alarm	Discrete Input	Read	Inactive = **0** Active = **1**	Supply fan status mismatch alarm & priority
7049	Space Freeze Protection Alarm	Discrete Input	Read	Inactive = **0** Active = **1**	If the space temperature has dropped below 43°F and after 120 seconds of delay, the high priority alarm is created.
7057*	Proof of Water Flow Alarm	Discrete Input	Read	Inactive = **0** Active = **1**	Proof of water flow alarm & priority.
7050	Unknown Time Alarm	Discrete Input	Read	Inactive = **0** Active = **1**	Time lost alarm
81	Temp Sensor Faulty Alarm	Discrete Input	Read	**BIT0** = Inactive **BIT1** = High **BIT2** = MEDIUMN_ONBOARD **BIT3** = MEDIUMN_REMOTE **BIT4** = MEDIUMN_SYLK	**High Priority**: 1. Only local sensor configured & even if any one of the on-board temperature sensor is in alarm. 2. Onboard and remote temperature sensors are reporting null values. 3. Configured as multi sensor & both the remote sensor & on-board configured sensor has failed. **Medium priority**: 1. Configured to use multiple sensors & only the on-board sensor has failed. but getting reliable value from the Sylk sensors. 2. Configured for multiple temperature sensors (onboard and external). Either the onboard or Sylk sensor(s) has failed with values available from sensors. When at least one temperature sensor value is available then this will remain medium priority alarm.

Table 4 Alert objects (Continued)

***Note: Supported only in TC3XXB models**					
Register Count = 1 Memory Type = Volatile Scaling = 1					
Reg Address	**Name**	**Register Type**	**Access**	**Range**	**Description**
82	Humidity Sensor Faulty Alarm	Input	Read	**BIT0** = Inactive **BIT1** = High **BIT2** = MEDIUMN_ONBOARD **BIT4** = MEDIUMN_SYLK	**High Priority**: 1. Only local sensor configured & on-board humidity sensor is in alarm. 2. Remote Sylk bus sensor addr 2 is giving null value and digital output is configured for Humidification and Dehumidification. 3. Onboard and remote temperature sensors are reporting null values. **Medium priority**: 1. Configured to use multiple sensors & only the on-board sensor has failed, but getting reliable value from the Sylk sensors. 2. Configured for multiple humidity sensors (onboard and external). Either the onboard or Sylk sensor(s) has failed with values available from sensors. When at least one humidity sensor value is available then this will remain medium priority alarm.
83	Sylk Device Comm. Failure Alarm	Input	Read	Normal = **1** SylkAddr2Fail = **2** SylkAddr3Fail = **3** SylkAddr4Fail = **4** SylkAddr5Fail = **5** SylkAddr10Fail = **10** ManySylkFail = **16**	Sylk communication failure alarm. If more than 1 Sylk sensor has failed then 'ManySylkFail' alarm would be generated & installer has to check the BACnet points related to all Sylk sensor to understand which sensor has failed.
84	Space Temp Out of Range Alarm	Input	Read	**BIT0** = Inactive **BIT1** = High **BIT2** = MEDIUMN_ONBOARD **BIT3** = MEDIUMN_REMOTE **BIT4** = MEDIUMN_SYLK **BIT5** = MEDIUMN_NETWORKINPUT OUTOFRANGE	**High priority**: All space temperature are out of range. No other resource can be used. **Medium priority**: Some of space temperatures are out of range, other resource can be used for controlling.
29	Discharge Air Temp Sensor Faulty Alarm	Input	Read	Inactive = **1** Medium = **2** High = **3**	**High priority**: Discharge air sensor failure. **Medium priority**: Discharge air sensor out of range.

Table 4 Alert objects (Continued)

***Note: Supported only in TC3XXB models**					
Register Count = 1 Memory Type = Volatile Scaling = 1					
Reg Address	**Name**	**Register Type**	**Access**	**Range**	**Description**
42	Outdoor Air Temp Sensor Alarm	Input	Read	Inactive = **1** Medium = **2** High = **3**	**High priority**: Outdoor air sensor failure. **Medium priority**: Outdoor air sensor out of range.
7011	ShutdownAlarm Alarm	Discrete Input	Read	Inactive = **0** Active = **1**	The system activates the shutdown alarm when it receives the shutdown signal from the network input or terminal.
30	Pipe Sensor failure	Input	Read	Inactive = **1** Active = **3**	Pipe sensor failure occurs.
85	Pipe Sensor Temp Heat Or Cool Threshold	Input	Read	Inactive = **0** Active = **1**	For 2 pipe single coil heat & cool: Water temperature is not suitable for heating/cooling.
7051	Room Temp Trend failure	Discrete Input	Read	Inactive = **0** Active = **1**	Room temperature changing trend is reversed with system operating mode.
7052	Drain Pan Sensor Alarm Status	Discrete Input	Read	Inactive = **0** Active = **1**	Alarm occurs when condensation Leak alarm/Pan drain sensor alarm detect
31	Pipe Sensor Out of Range	Input	Read	Inactive = **0** Active = **1**	Pipe sensor temperature out of range.
2932	Proof of Air Flow Alarm Config	Holding	Read/ Write	**BIT0** = primary heating and cooling On Off **BIT1** = PopUpOnHomeScreen **BIT2** = Acknowledged **BIT3** = Auxiliary heat On Off	Bits 0 False – Will not turn off Heat/Cool Outputs when alarm is triggered. Bits 0 True – Turn off Heat/Cool Outputs when alarm is triggered. Bits 3 False – Will not turn off Auxiliary heat Outputs when alarm is triggered. Bits3 True – Turn off Auxiliary heat Outputs when alarm is triggered.
3193*	Proof of Water Flow Alarm Config	Holding	Read/ Write	**BIT0** = Primary heating and cooling On Off **BIT1** = PopUpOnHomeScreen **BIT2** = Acknowledged **BIT3** = Auxiliary heat On Off	Bit0 False - Keep compressor outputs running. Bit0 True - Turn off compressor outputs. Bit3 False - Keep auxiliary heat running. Bit3 True - Turn off auxiliary heat.
2741	Space Temp Sensor Faulty Alarm Config	Holding	Read/ Write	**BIT0** = Reserved **BIT1** = PopUpOnHomeScreen **BIT2** = Acknowledged **BIT3** = SuspendsAllEquipmentFunctions **BIT4** = RevertToLocalSensor	If the remote space temperature sensor gives an invalid reading, the user can switch to the local sensor or suspend all equipment functions.

Table 4 Alert objects (Continued)

***Note: Supported only in TC3XXB models**					
Register Count = 1 Memory Type = Volatile Scaling = 1					
Reg Address	**Name**	**Register Type**	**Access**	**Range**	**Description**
2942	Room Temp Trend Config	Holding	Read/ Write	**BIT0** = shutdown all digital outputs On off **BIT1** = PopUpOnHomeScreen **BIT2** = Acknowledged	BIT 0 False - Don't shut down all digital outputs. BIT0 True - Shut down all digital outputs.
2944	Drain Pan Sensor Alarm Config	Holding	Read/ Write	**BIT0** = ShotdownCooling **BIT1** = PopUpOnHomeScreen **BIT2** = Acknowledged **BIT3** = ShotdownHeat **BIT4** = ShotdownFanWhenInVentilationMode}	Bit0 False - Don't shut down Cooling when alarm occurs. Bit0 True - Shut down cooling when alarm occurs. Bit3 False - Don't shut down Heating when alarm occurs. Bit3 True - Shut down Heating when alarm occurs. Bit4 False - Fan will run in ventilation mode when alarm occurs. Bit4 True - Fan will not run in ventilation mode when alarm occurs.
7035	Generic Alarm	Discrete Input	Read	Inactive = **0** Active = **1**	General alarm flag

Other thermostat parameters

Table 5 Other thermostat parameters

***Note: Supported only in TC3XXB models**						
Access = Read Memory Type = Volatile						
Reg Address	**Name**	**Register Type**	**Register Count**	**Range**	**Scaling**	**Description**
7067	Customized1DigitalOutput	Discrete Input	1	Off = **0** On = **1**	1	Customized1 sensor digital output
449	Customized1VoltageOutput	Input	1	0 to 100 %	0.01	Customized1 sensor voltage output percentage
450	Customized1TempOutput	Input	1	-40 to 260 °F (-40 to 126 °C)	0.01	Customized1 sensor temperature output
7068	Customized2DigitalOutput	Discrete Input	1	Off = **0** On = **1**	1	Customized2 sensor digital output
451	Customized2VoltageOutput	Input	1	0 to 100 %	0.01	Customized2 sensor voltage output percentage
452	Customized2TempOutput	Input	1	-40 to 260 °F (-40 to 126 °C)	0.01	Customized2 sensor temperature output
7069	Customized3DigitalOutput	Discrete Input	1	Off = **0** On = **1**	1	Customized3 sensor digital output
453	Customized3VoltageOutput	Input	1	0 to 100 %	0.01	Customized3 sensor voltage output percentage
454	Customized3TempOutput	Input	1	-40 to 260 °F (-40 to 126 °C)	0.01	Customized3 sensor temperature output
329	HeatOATLockOut	Input	1	None = **1** HeatLockout = **2** CompressorLockout = **3** AuxiliaryHeatLockout = **4**	1	Outdoor air temperature heat lockout flag
7059	CoolOATLockOut	Discrete Input	1	Off = **0** On = **1**	1	Outdoor air temperature Cool lockout flag
326	CoolCtrl_RunTimeAccumulate	Input	2	0 to 270737hours	1 hour	Outputs the actual run time of cooling control
313	Local Occupancy Sensor State	Input	1	Occupied = **1** Unoccupied = **2** Unused = **3**	1	Local Occupancy sensor state
328	AuxHeatTermLdOut	Input	1	-200 to 0% (Default 0)	0.01%	Terminal load for auxiliary heat
314	Effective Occupancy State	Input	1	Occupied = **1** Unoccupied = **2** Bypass = **3** Standby = **4**	1	Effective occupancy state

Table 5 Other thermostat parameters (Continued)

***Note: Supported only in TC3XXB models**						
Access = Read Memory Type = Volatile						
Reg Address	**Name**	**Register Type**	**Register Count**	**Range**	**Scaling**	**Description**
330	CoolStg1_RunTimeAccumulate	Input	2	0 to 270737hours	1 hour	Outputs the actual run time of cooling stage 1
332	HeatCtrl_RunTimeAccumulate	Input	2	0 to 270737hours	1 hour	Outputs the actual run time of heating control
334	HeatStg1_RunTimeAccumulate	Input	2	0 to 270737hours	1 hour	Outputs the actual run time of heating stage 1
336	Fan_RunTimeAccumulate	Input	2	0 to 270737hours	1 hour	Outputs the actual run time of Fan
7015	OccupancyState	Discrete Input	1	UnOccupied = **0** Occupied = **1**	1	System is in occupied/ unoccupied state.
7016	HeatDatLockout	Discrete Input	1	Off = **0** On = **1**	1	Discharge Air High Limit output: DAT heating lockout flag
7017	IsAuxHeatDisable	Discrete Input	1	Off = **0** On = **1**	1	Auxiliary heating enabled/ disabled
7018	IsHeatDisable	Discrete Input	1	Off = **0** On = **1**	1	Heating enabled/ disabled
7019	IsFanOnly	Discrete Input	1	Off = **0** On = **1**	1	Fan only mode enabled/ disabled
338	Effective Setpoint	Input	1	40 to 120°F (5 to 48°C)	0.01°F	Effective setpoint
316	Effective Temperature Mode	Input	1	CoolMode = **1** ReheatMode = **2** HeatMode = **3** EmergencyHeat = **4*** Off = **5** Ventilation = **6**	1	Effective Temperature Mode
339	EffAuxHeatSetpoint	Input	1	40 to 120 °F (5 to 48 °C)	0.01	Effective auxiliary heat setpoint.
7020	SystemDisable	Discrete Input	1	Off = **0** On = **1**	1	System disable
7021	Dehumidification	Discrete Input	1	Inactive = **0** Active = **1**	1	Dehumidification Active/ Inactive
7022	BypassState	Discrete Input	1	NoBypass = **0** Bypass = **1**	1	Bypass state output
317	ManualOverride	Input	1	Occupied = **1** Unoccupied = **2** Bypass = **3** Standby = **4** Null = **5**	1	Manual override
318	EffOccSensState	Input	1	Occupied = **1** Unoccupied = **2** Unused = **3**	1	Effective occupancy sensor state

Table 5 Other thermostat parameters (Continued)

***Note: Supported only in TC3XXB models**						
Access = Read Memory Type = Volatile						
Reg Address	**Name**	**Register Type**	**Register Count**	**Range**	**Scaling**	**Description**
7023	CoolDatLockout	Discrete Input	1	Off = **0** On = **1**	1	Discharge air temperature cooling lockout flag
342	CoolTermLdOut	Input	1	0 to 200 %	0.01%	Terminal load for cooling.
7025	IsCoolDisable	Discrete Input	1	Enable = **0** Disable = **1**	1	Cooling enabled/ disabled
344	HeatTermLdOut	Input	1	-200 to 0%	0.01%	Terminal load for heating
7026	Fan Start	Discrete Input	1	Off = **0** On = **1**	1	Fan start command
346	Discharge Air Temp	Input	1	-40 to 200 °F (-40 to 93 °C)	0.01°F	Discharge air temperature
347	Pipe Temp	Input	1	-40 to 260 °F (5 to 48 °C)	0.01°F	Pipe sensor temperature
319	Current Schedule	Input	1	Occupied = **1** Unoccupied = **2** Bypass = **3** Standby = **4** NoOverride = **5**	1	Current Schedule State to Network
320	Next Schedule	Input	1	Occupied = **1** Unoccupied = **2** Bypass = **3** Standby = **4** NoOverride = **5**	1	Next schedule state to network
348	Minutes to Next Event	Input	1	0 to 11520 minutes	1 minute	TUNCOS is the difference between the future change in event & current event in minutes to the network.
349	Override Remaining Time	Input	1	0 to 1080 minutes	1	This point gives out the exact remaining time for the bypass to reset once the system is in override condition.
350	Control Space Temperature	Input	1	-40 to 150 °F (-40 to 65 °C)	0.01°F	Control space temperature output (Only for testing purpose)
7030	Recovery Status	Discrete Input	1	Normal = **0** Recovery = **1**	1	This point gives out when the system is in recovery mode.

Table 5 Other thermostat parameters (Continued)

***Note: Supported only in TC3XXB models**						
Access = Read Memory Type = Volatile						
Reg Address	**Name**	**Register Type**	**Register Count**	**Range**	**Scaling**	**Description**
351	Terminal Load Output	Input	1	-200 to 200 %	1%	Common terminal load output for heating and cooling. This is an output showing the terminal load, which is a percentage between -200% and +200% based on the control output level. Negative values indicate heating load and positive values indicate cooling load.
352	Effective SetDATpoint	Input	1	40 to 150 °F (5 to 65 °C)	0.01°F	Effective discharge air control setpoint

Sylk sensor

Table 6 Sylk sensor

Register Type = Input Register Count = 1 Access = Read Memory Type = Volatile				
Reg Address	**Name**	**Range**	**Scaling**	**Description**
223	Sylk2Temp	-40 to 150°F (-40 to 65°C)	0.01 °F	TR40-H-CO2: Temperature (May also use models TR40, TR40-H, TR40-CO2, TR40-H-CO2)
224	Sylk2Hum	0 to 100RH%	0.01 %	TR40-H-CO2: Humidity (May also use models TR40, TR40-H, TR40-CO2, TR40-H-CO2)
225	Sylk2CO2	0 to 2000ppm	1 ppm	TR40-H-CO2: CO2. (May also use models TR40-CO2, TR40-H-CO2)
226	Sylk3Temp	-40 to 150°F (-40 to 65°C)	0.01 °F	Address 3 TR40: Temperature
227	Sylk4Temp	-40 to 150°F (-40 to 65°C)	0.01 °F	Address 4 TR40: Temperature
228	Sylk5Temp	-40 to 150°F (-40 to 65°C)	0.01 °F	Address 5 TR40: Temperature
231	Sylk8Temp	-40 to 200°F (-40 to 93°C)	0.01 °F	Address 8 C7400S: Temperature.
232	Sylk8Hum	0 to 100RH%	0.01%	Address 8 C7400S: Humidity.
235	Sylk10Temp	-40 to 200°F (-40 to 93°C)	0.01 °F	Address 10 C7400S: Temperature
236	Sylk10Hum	0 to 100RH%	0.01%	Address 10 C7400S: Humidity

Schedule

Table 7 Schedule

Register Type = Input Register Count = 1 Access = Read/Write Memory Type = Volatile Scaling = 1			
Reg Address	**Name**	**Range**	**Description**
65	Schedule Current State	Occupied = **1** Unoccupied = **2** Temporary = **3** Standyby = **4**	Current schedule state
20	Schedule Next State	Occupied = **1** Unoccupied = **2** Temporary = **3** Standyby = **4**	Next schedule state
21	Schedule Time To Next	1 to 11520 minutes	Time to next schedule state

CHAPTER

3 APPLICATION CONFIGURATION

Topics covered

Aux heat configuration

Compressor

Cooling and Heating advanced settings

Hum Config

Dehumidification

Fan configuration

Fan speed by operating mode

IO configuration

Aux heat configuration

Table 8 Aux heat configuration

Register Count = 1 Memory Type = Non Volatile Access = Read/Write					
Reg Address	**Name**	**Register Type**	**Range**	**Scaling**	**Description**
5039	Auxiliary Heat Enable	Coil	Off = **0** On = **1** (Default 0)	1	Auxiliary heat enable
2903	Auxiliary Heat Mode	Holding	Peripheral = **1** Supplemental = **2** (Default 1)	1	Auxiliary heat type
3718	Auxiliary Heat Peripheral Droop	Holding	0 to 10 Δ°F (0 to 5 Δ°C) (Default 0 Δ°F/ 0Δ°C)	0.01°F	Peripheral aux heat droop
3719	Auxiliary Heat Supplemental Droop	Holding	0 to 10 Δ°F (0 to 5 Δ°C) (Default 2 Δ°F/1 Δ°C)	0.01°F	Supplemental aux heat droop
5001	Aux Heat Fan On/ OFF	Coil	Off = **0** On = **1** (Default 1)	1	Fan run On/Off when aux heat on
3050	Auxiliary Heat OAT Lockout	Holding	30 to 120 °F (-2 to 48 °C) (Default 65°F/18.3°C)	0.01	Outdoor air temperature auxiliary heat lockout
3215	Upstage Timer	Holding	30 to 960 minutes (Default 30 minutes)	1	Up stage timer value
5055	Upstage TimerEnbale	Coil	Off = **0** On = **1** (Default 0)	1	Up stage timer enable
3053	Auxiliary Heat Ramp Factor	Holding	0 to 100 (Default 2)	0.01	Auxiliary heat recovery ramp factor

Compressor

Table 9 Compressor

***Note: Supported only in TC3XXB models**					
Register Count = 1 Memory Type = Non Volatile Access = Read/Write					
Reg Address	**Name**	**Register Type**	**Range**	**Scaling**	**Description**
2954*	Compressor Delay	Holding	15 to 120 seconds (Default 90 seconds)	1	Compressor delay time value.
3051*	Compressor OAT Lockout	Holding	0 to 70 °F (-17 to 21 °C) (Default 30 °F/-1.1 °C)	0.01	Outdoor air temperature compressor lockout.

Cooling and Heating advanced settings

Table 10 Cooling and Heating advanced settings

***Note: Supported only in TC3XXB models**					
Register Type = Holding	**Register Count = 1**	**Access = Read/Write**	**Memory Type = Non Volatile**		
Reg Address	**Name**	**Range**	**Default**	**Scaling**	**Description**
3041	Cooling Throttling Range	0 to 30 Δ°F (0 to 16 Δ°C)	4 Δ°F (2.2 Δ°C)	0.01°F	Cooling throttling range
3042	Cooling Integral Time	0 to 5000 seconds	2500 seconds	1 second	Cooling integral time 0 = Disable (i.e. proportional only)
3044*	Cooling System Response	2 to 20 cycles per hour	3 cycles per hour	1	Cooling system response.
3045*	Cooling Min On Time	0 to 300 seconds	120 seconds	1 second	Cooling stage minimum on time.
3082*	Cooling Min Off Time	0 to 300 seconds	60 seconds	1 second	Cooling stage minimum off time.
3046*	OAT Cooling Lockout	-40 to 120 °F (-40 to 48 °C)	35 °F (1.7 °C)	0.01°F	Outdoor air temperature cool lockout.
3047	DAT Cooling Low Limit	-40 to 60°F (-40 to 15 °C)	45 °F (7.2 °C)	0.01°F	Discharge air temperature low limit setpoint.
3054	Heating Throttling Range	0 to 30 Δ°F (0 to 16 Δ°C)	4 Δ°F (2.2 Δ°C)	0.01°F	Heating throttling range
3055	Heating Integral Time	0 to 5000 seconds	2500 seconds	1 second	Heating integral time 0 = Disable (i.e. proportional only)
3057	Heating System Response	2 to 20 cycles per hour	6 cycles per hour	1	Heating system response.
3058*	Heating Min On Time	0 to 300 seconds	120 seconds	1 second	Heating stage minimum on time.
3059*	Heating Min Off Time	0 to 300 seconds	60 seconds	1 second	Heating stage minimum off time.
3060*	OAT Heating Lockout	40 to 120 °F (-40 to 48 °C)	70 °F (21.2 °C)	0.01	Outdoor air temperature heat lockout.
3061	DAT Heating High Limit	60 to 200°F (16 to 93 °C)	150 °F (65.5 °C)	0.01°F	Discharge air temperature high limit setpoint.
3745*	Heat_FuelType	Gas/Oil = **1** Electric = **2**	Gas/Oil = **1**	1	Fuel type selection. Based on the fuel type the default CPH will vary.

Table 10 Cooling and Heating advanced settings (Continued)

***Note: Supported only in TC3XXB models**					
Register Type = Holding Register Count = 1 Access = Read/Write Memory Type = Non Volatile					
Reg Address	**Name**	**Range**	**Default**	**Scaling**	**Description**
3101	Thermostat Deadband	2 to 9 Δ°F (2 to 5 Δ°C)	3 Δ°F (1.7 Δ°C)	0.01°F	Temperature differential between heat and cool setpoint
3014	Initial delay to start control after power cycle	0 to 300 seconds	10 seconds	1 second	Initial delay to start control after power cycle
3018	Cooling recovery max setpoint ramp	0 to 20 Δ°F/hr (0 to 11 Δ°C/hr)	6 Δ°F/hr (3.3 Δ°C/hr)	0.01°F/hr	Maximum cooling setpoint ramp
3016	Cooling recovery min setpoint ramp	0 to 20 Δ°F/hr (0 to 11 Δ°C/hr)	2 Δ°F/hr (1.1 Δ°C/hr)	0.01°F/hr	Minimum cooling setpoint ramp.
3017	OAT at the maximum cool setpoint ramp	-40 to 120 °F (-40 to 48 °C)	70 °F (21.1 °C)	0.01	Outdoor air temperature at the maximum cool setpoint ramp
3015	OAT at the minimum cool setpoint ramp	-40 to 120 °F (-40 to 48 °C)	90 °F (32.2 °C)	0.01	Outdoor air temperature at the minimum cool setpoint ramp
3022	Heating recovery max setpoint ramp	0 to 36 Δ°F/hr (0 to 20 Δ°C/hr)	8 Δ°F/hr (4.4 Δ°C/hr)	0.01 °F/hr	Maximum cooling setpoint ramp
3020	Heating recovery min setpoint ramp	0 to 36 Δ°F/hr (0 to 20 Δ°C/hr)	2 Δ°F/hr (1.1 Δ°C/hr)	0.01 °F/hr	Minimum heating setpoint ramp
3021	OAT at the maximum heat setpoint ramp	-40 to 120 °F (-40 to 48 °C)	60 °F (15.5 °C)	0.01	Outdoor air temperature at the maximum heat setpoint ramp
3019	OAT at the minimum heat setpoint ramp	-40 to 120°F (-40 to 48 °C)	0°F (-17.8 Δ°C)	0.01	Outdoor air temperature at the minimum heat setpoint ramp

Hum Config

Table 11 Hum config

***Note: Supported only in TC3XXB models**					
Register Count = 1 Access = Read/Write Memory Type = Non Volatile					
Reg Address	**Name**	**Register Type**	**Range**	**Scaling**	**Description**
5056*	Humidification Enable	Coil	Off = **0** On = **1** (Default 0)	1	Humidification enable.
2062*	Humidification Space Relative Humidity Low Limit setpoint	Holding	0 to 100%RH (Default 35)	0.01	Space relative humidity (RH) low limit setpoint.

Dehumidification

Table 12 Dehumidification

Register Count = 1 Access = Read/Write Memory Type = Non Volatile					
Reg Address	**Name**	**Register Type**	**Range**	**Scaling**	**Description**
5040	Dehumidification Enable	Coil	Off = **0** On = **1** (Default 0)	1	Enable/disable dehumidification
3048	Dehumidification Space Relative Humidity High Limit setpoint	Holding	30 to 100RH% (Default 65RH%)	0.01%	Space relative humidity (RH) high limit setpoint
3722	Dehumidification Over Cool Offset	Holding	-5 to -1 Δ°F (-2 to 0 Δ°C) (Default -2 Δ°F/-1.1 Δ°C)	0.01°F	Dehumidification overcool offset
4133	Dehumidification Staged Reheat Operation Enable	Coil	Disable = **0** Enable = **1** (Default 0)	1	Staged reheat operation enable
5041	Dehumidification Aux Heat for Reheat	Coil	Disable = **0** Enable = **1** (Default 0)	1	Aux heat reheat enable

Fan configuration

Table 13 Fan configuration

Register Type = Holding Register Count = 1 Access = Read/Write Memory Type = Non Volatile					
Reg Address	**Name**	**Range**	**Default**	**Scaling**	**Description**
2012	Fan Type	SingleSpeed = **1** TwoSpeed = **2** ThreeSpeed = **3** VariableSpeed = **4**	1	1	Fan can be configured as single speed, 2 speed or as a variable speed fan.
2089	Fan Default Mode	Auto = **1** Circulate = **2** Continuous = **3**	1	1	Fan Mode of operation config by user & supervisor.
3039	Fan Off_Cool_Delay	0 to 180 seconds	0 second	1 second	Fan run on time after all cooling terminal turns off.
3040	Fan On heat Delay	0 to 30 seconds	30 seconds	1 second	Fan run on delay time after heating terminal turns on.
3717	Fan Off_heat Delay	0 to 180	120 seconds	0.01 second	Fan run on time after all heating terminal turns off.
2583	Manual Fan speed	Auto = **1** Low = **2** Medium = **3** High = **4** Off = **5** Circulate = **6**	1	1	Fan speed
2902	Fan Config	BIT0 = **Auto** BIT1 = **Manual** BIT2 = **Circulate**	15	1	Fan configuration. BIT0 Auto must be set as 1, Manual and Circulate can be set as 1 or 0.

Fan speed by operating mode

Table 14 Fan speed by operating mode

***Note: Supported only in TC3XXB models**					
Register Type = Holding Register Count = 1 Access = Read/Write Memory Type = Non Volatile					
Reg Address	**Name**	**Range**	**Default**	**Scaling**	**Description**
2585	Fan Coil Two Speed Vent Mode	Low = **1** High = **2**	1	1	Fan speed for ventilation mode
2586	Fan Coil Three Speed Vent Mode	Low = **1** Medium = **2** High = **3**	1	1	Fan speed for ventilation mode
2581*	Fan Coil Two Speed Char	MultipleOutputsAtATime = **1** OneOutputAtATime = **2**	2	1	Two speed fan output type.
2582*	Fan Coil Three Speed Char	MultipleOutputsAtATime = **1** OneOutputAtATime = **2**	2	1	Three speed fan output type.

Table 14 Fan speed by operating mode (Continued)

***Note: Supported only in TC3XXB models**					
Register Type = Holding Register Count = 1 Access = Read/Write Memory Type = Non Volatile					
Reg Address	**Name**	**Range**	**Default**	**Scaling**	**Description**
3570	Variable Speed Fan Vent Mode	0 to 100 %	20%	0.01%	Variable speed fan speed for ventilation mode
2015*	Fan Speed Compressor Single Mode	Low = **1** High = **2** Auto = **3**	2	1	Heat pump two speed compressor single mode.
3741*	Fan Speed Cool Single Mode	Low = **1** High = **2** Auto = **3**	2	1	Conventional two speed cool single mode.
2017*	Fan Speed Heat Single Mode	Low = **1** High = **2** Auto = **3**	2	1	Conventional two speed heat single mode.
3743*	Fan Speed Aux Heat Mode	Low = **1** High = **2** Auto = **3**	2	1	Heat pump two speed auxiliary heat single mode.
3568	Variable Speed Fan Cool Mode Min Speed	0 to 100 %	20 %	0.01 %	Variable speed fan min speed for cool
3569	Variable Speed Fan Cool Mode Max Speed	0 to 100 %	100 %	0.01 %	Variable speed fan max speed for cool
3573	Variable Speed Fan Heat Mode Min Speed	0 to 100 %	10 %	0.01 %	Variable speed fan min speed for heat
3574	Variable Speed Fan Heat Mode Max Speed	0 to 100 %	50 %	0.01 %	Variable speed fan max speed for heat

IO configuration

Table 15 IO configuration

***Note: Supported only in TC3XXB models**						
Register Count = 1 Access = Read/Write Memory Type = Non Volatile						
Reg Address	**Name**	**Register Type**	**Range**	**Default**	**Scaling**	**Description**
4031	Occupancy sensor type	Coil	NormallyOpen = **0** NormallyClosed = **1**	0	1	Occupancy sensor input characteristics selection.
4033	Airflow status sensor type	Coil	NormallyOpen = **0** NormallyClosed = **1**	0	1	Airflow status input characteristics selection.
3185	DAT Sensor Offset	Holding	-10 to 10 **Δ**°F (-5 to 5 **Δ**°C)	0 **Δ**°F (0 **Δ**°C)	1°F	Universal input discharge air temperature calibration offset.
3186	OAT Sensor Offset	Holding	-10 to 10 **Δ**°F (-5 to 5 **Δ**°C)	0 **Δ**°F (0 **Δ**°C)	1°F	Outdoor air temperature calibration offset.
4383*	Waterflow status sensor type	Coil	NormallyOpen = **0** NormallyClosed = **1**	0	1	Waterflow sensor input characteristics selection.
2372	SpaceTemp sensor type	Holding	NTC10K Type II = **1** NTC10K Type III = **2** NTC20K = **3**	3	1	Space temperature sensor characteristic selection.
3564	SpaceTemp Sensor Offset	Holding	-10 to 10 **Δ**°F (-5 to 5 **Δ**°C)	0 **Δ**°F (0 **Δ**°C)	0.01°F	Space temperature calibration offset.
3575	Modulating Heat Min Output	Holding	0 to 9 V	2	0.01 V	Minimum output voltage when modulating heating is enabled.
4380	Modulating Heat Control Action	Coil	Direct = **0** Reverse = **1**	0	1	Modulating heat polarity selection.
3576	Modulating Cool Min Output	Holding	0 to 9 V	2	0.01 V	Minimum output voltage when modulating cooling is enabled.
4381	Modulating Cool Control Action	Coil	Direct = **0** Reverse = **1**	0	1	Modulating cool polarity selection.
2373	Variable speed fan type	Holding	0-10V = **1** 2-10V = **2**	2	1	Variable fan speed Type characteristic selection.
3577	Modulating Heat Max Output	Holding	1 to 10 V	10	0.01V	Maximum voltage on heating output.
3578	Modulating Cool Max Output	Holding	1 to 10 V	10	0.01V	Maximum voltage on cooling output.

Table 15 IO configuration

***Note: Supported only in TC3XXB models**						
Register Count = 1 Access = Read/Write Memory Type = Non Volatile						
Reg Address	**Name**	**Register Type**	**Range**	**Default**	**Scaling**	**Description**
2905	Pipe sensor type	Holding	NTC10K Type II = **1** NTC10K Type III = **2** NTC20K = **3**	3	1	Pipe sensor type
2502	OAT sensor type	Holding	NTC10K Type II = **1** NTC10K Type III = **2** NTC20K = **3**	3	1	Outdoor air sensor type.
2503	DAT sensor type	Holding	NTC10K Type II = **1** NTC10K Type III = **2** NTC20K = **3**	3	1	Discharge air sensor type
4455	Leak detector sensor type	Coil	NormallyOpen = **0** NormallyClosed = **1**	1	1	Leak detector/Drain pan sensor characteristics.
4034	ShutdownSensorType	Coil	NormallyOpen = **0** NormallyClosed = **1**	0	1	Shutdown sensor type.
2946	Customized1SensorType	Holding	enum{DigitalInput = **1** VoltageInput = **2** TemperatureSensor = **3**	1	1	Customized1 input type of the sensor.
5061	Customized1DigitalInputType	Coil	NormallyOpen = **0** NormallyClosed = **1**	0	1	Customized1 digital input type of the sensor.
5062	Customized1VoltageInputControlAction	Coil	Direct = **0** Reverse = **1**	0	1	Customized1 sensor the polarity of the voltage input.
2743	Customized1VoltageMInInput	Holding	0 to 9 V	2	0.01	Customized1 minimum voltage input for the sensor.
2744	Customized1VoltageMaxInput	Holding	1 to 10 V	10	0.01	Customized1 maximum voltage input for the sensor.
2947	Customized1TempSensorType	Holding	NTC10K Type II = **1** NTC10K Type III = **2** NTC20K = **3**	3	1	Customized1 temperature sensor input type.
2948	Customized2SensorType	Holding	DigitalInput = **1** VoltageInput = **2** TemperatureSensor = **3**	1	1	Customized2 input type of the sensor.
5063	Customized2DigitalInputType	Coil	NormallyOpen = **0** NormallyClosed = **1**	0	1	Customized2 digital input type of the sensor.
5064	Customized2VoltageInputControlAction	Coil	Direct = **0** Reverse = **1**	0	1	Customized2 sensor the polarity of the voltage input.
2745	Customized2VoltageMInInput	Holding	0 to 9 V	2	0.01	Customized2 minimum voltage input for the sensor.

Table 15 IO configuration

***Note: Supported only in TC3XXB models**						
Register Count = 1 Access = Read/Write Memory Type = Non Volatile						
Reg Address	**Name**	**Register Type**	**Range**	**Default**	**Scaling**	**Description**
2746	Customized2VoltageMaxInput	Holding	1 to 10	10	0.01	Customized2 maximum voltage input for the sensor.
2949	Customized2TempSensorType	Holding	NTC10K Type II = **1** NTC10K Type III = **2** NTC20K = **3**	3	1	Customized2 temperature sensor input type.
2950	Customized3SensorType	Holding	DigitalInput = **1** VoltageInput = **2** TemperatureSensor = **3**	1	1	Customized3 input type of the sensor.
5065	Customized3DigitalInputType	Coil	NormallyOpen = **0** NormallyClosed = **1**	0	1	Customized3 digital input type of the sensor.
5066	Customized3VoltageInputControlAction	Coil	Direct = **0** Reverse = **1**	0	1	Customized3 sensor the polarity of the voltage input.
2747	Customized3VoltageMInInput	Holding	0 to 9	2	0.01	Customized3 minimum voltage input for the sensor.
2748	Customized3VoltageMaxInput	Holding	1 to 10	10	0.01	Customized3 maximum voltage input for the sensor.
2951	Customized3TempSensorType	Holding	NTC10K Type II = **1** NTC10K Type III = **2** NTC20K = **3**	3	1	Customized3 temperature sensor input type.

CHAPTER

4 COMMON CONFIGURATION

Topics covered

Device

Table 16 Device

Scaling = 1							
Reg Address	**Name**	**Register Type**	**Reg Count**	**Access**	**Memory Type**	**Range**	**Description**
5500	Device Configured	Coil	1	Read/ Write	Non Volatile	Not Configured = **0** Configured = **1** (Default 0)	Device configured
3408	Display Options	Holding	1	Read/ Write	Non Volatile	BIT1 = **Time** BIT2 = **Schedule Status** BIT5 = **Indoor CO2** BIT6 = **IndoorHumidity**	Display options
800	Last Restart Reason	Input	1	Read	Non Volatile	ColdSart = **0** WarmStart = **1** StartFirmwareDownload = **126** startdlssettingsdownload = **130** enddlssettingsdownload = **131** (Default 0)	Last restart reason
801	Time Of Device Restart	Input	2	Read	Volatile		Time Of Device Restart. The maximum seconds is about 136 years.
3800	DeviceName	Holding	5	Read/ Write	Non Volatile		Device Name
3833	ContractorName	Holding	16	Read/ Write	Non Volatile		Contractor Name
3849	ContractorTel	Holding	16	Read/ Write	Non Volatile		Contractor Telephone number
1000	ModelName	Input	8	Read	Non Volatile		Model Name
1008	SerialNumber	Input	8	Read	Non Volatile		Serial Number
1016	FirmwareVersion	Input	2	Read	Non Volatile		Firmware Version
1018	AppVersion	Input	2	Read	Non Volatile		Application Version
1020	BootVersion	Input	2	Read	Non Volatile		Bootloader Version
1022	WirelessVersion	Input	2	Read	Non Volatile		Wireless Version

Equipment

Table 17 Equipment

***Note: Supported only in TC3XXB models**						
Register Count = 1 Access = Read/Write Memory Type = Non Volatile						
Reg Address	**Name**	**Register Type**	**Range**	**Default**	**Scaling**	**Description**
2007*	Equipment Type	Holding	FanCoil = **1** Conventional = **2** HeatPump = **3**	1	1	Equipment type.
4013*	HeatPumpReversingValve	Coil	EnergizeOnHeat = **0** EnergizeOnCool = **1**	1	1	Heat pump reversing valve type.
3738*	WaterFlowValveConfig	Holding	None = **1** NormallyClosed = **2** NormallyOpen = **3**	1	1	Water flow valve type.
3739*	HeatPumpType	Holding	AirSource = **1** WaterSource = **2**	1	1	Heat pump source type.
3740*	ConventionalMode	Holding	Heat&Cool = **1** HeatOnly = **2** CoolOnly = **3**	1	1	Conventional mode.
4035	Stage 1 Heat to enable Modulating	Coil	Disable = **0** Enable = **1**	0	1	Modulating heat stage mode
3096	Minimum Output when Modulating Heat enabled	Holding	0 to 100%	20%	0.01%	Modulating heat minimum output when enabled.
2087	Four Pipe Single Coil Valve Type	Holding	Regulating&ChangeOve = **1** 6-WayValve = **2**	1	1	4-pipe single coil valve type
3733	Changeover Switch Characteristic	Holding	ClosedWithHeat = **1** ClosedWithCool = **2**	0	1	Changeover switch polarity type
3734	Two-pipe single coil heat and cool changeover method type	Holding	PipeSensor = **1** NetworkInput = **2** ChangeoverSwitch = **3** ManualChangeover = **4**	1	1	2-pipe single coil heat & cool system mode changeover method.
4377	Stage 1 Cool to enable Modulating	Coil	Disable = **0** Enable = **1**	0	1	Modulating cool use stage 1 as enabled.
3561	Minimum Output when Modulating Cool enabled	Holding	0 to 100%	20	0.01%	Modulating cool minimum output when enabled.
2575	Fan Coil Type	Holding	4 PipeDualCoil = **1** 4PipeSingleCoil = **2** 2PipeSingleCoil = **3**	1	1	Fan coil type

Table 17 Equipment (Continued)

***Note: Supported only in TC3XXB models**						
Register Count = 1 Access = Read/Write Memory Type = Non Volatile						
Reg Address	**Name**	**Register Type**	**Range**	**Default**	**Scaling**	**Description**
2576	Fan Coil Heating Type	Holding	None = **1** OnOff = **2** Floating = **3*** Modulating = **4**	2	1	4 pipe dual coil heating valve type, 4 pipe single coil/2 pipe single coil valve type.
2577	Fan Coil Cooling Type	Holding	None = **1** OnOff = **2** Floating = **38*** Modulating = **4**	2	1	4 pipe dual coil cooling valve type.
3621*	Run Time Valve for heating	Holding	0 to 240 seconds	90	1 second	4 pipe dual coil floating heating drive time, 4 pipe single coil/ 2 pipe single coil valve drive time.
3622*	Run Time Valve for cooling	Holding	0 to 240 seconds	90	1 second	4 pipe dual coil floating cooling drive time.
2580	Two-pipe Single Coil Type	Holding	Heat&Cool = **1** HeatOnly = **2** CoolOnly = **3**	1	1	2-pipe single coil type
2578*	Fan coil Heating Floating Type	Holding	Direct = **1** Reverse = **2**	1	1	4 pipe dual coil floating heating drive type, 4 pipe single coil/ 2 pipe single coil floating valve drive type.
2579*	Fan coil Cooling Floating Type	Holding	Direct = **1** Reverse = **2**	1	1	4 pipe dual coil floating cooling drive time.
4453*	FanCoilHtgFloatingSyncEn	Coil	Disable = **0** Enable = **1**	1	1	4 pipe dual coil floating heating sync enable, 4 pipe single coil/ 2 pipe single coil floating valve sync enable.
4462*	FanCoilClgFloatingSyncEn	Coil	Disable = **0** Enable = **1**	1	1	4 pipe dual coil floating cooling sync enable.

Table 17 Equipment (Continued)

***Note: Supported only in TC3XXB models**						
Register Count = 1 Access = Read/Write Memory Type = Non Volatile						
Reg Address	**Name**	**Register Type**	**Range**	**Default**	**Scaling**	**Description**
4459	FanCoilClgONOFFCHAR	Coil	NormallyClosed = **0** NormallyOpen = **1**	0	1	4-pipe dual coil on/off Cooling valve characteristic
4458	FanCoilHtgONOFFCHAR	Coil	NormallyClosed = **0** NormallyOpen = **1**	0	1	4-pipe dual coil on/off heating valve characteristic, 4 pipe single coil/ 2-pipe single coil on/off valve characteristic
3707*	FanCoilClgValveMinimum Output	Holding	0 to 100 %	5	0.01 %	4 pipe dual coil floating Cooling valve minimum output when enabled.
3708*	FanCoilHtgValveMinimum Output	Holding	0 to 100%	5	0.01 %	4 pipe dual coil floating heating valve minimum output when enabled, 4 pipe single coil/2 pipe single coil floating valve minimum output when enabled.
5036	ChangeOver Valve Type	Coil	EnergizeOnHeat = **0** EnergizeOnCool = **1**	0	1	4-pipe single coil changeover valve type.
5037	Six-way Valve Output	Coil	0-10V = **0** 2-10V = **1**	1	1	6-way valve type
5038	Six-way Valve Drive Type	Coil	Direct = **0** Reverse = **1**	0	1	6-way valve direct/reverse enable flag
3766	Six-way Valve Heating Min Output	Holding	0 to 10 V	2	0.01 V	6-way valve heat min output
3767	Six-way Valve Heating Max Output	Holding	0 to 10 V	5.7	0.01 V	6-way valve heat max output
3768	Six-way Valve Cooling Min Output	Holding	0 to 10 V	6.3	0.01 V	6-way valve cool min output

Table 17 Equipment (Continued)

***Note: Supported only in TC3XXB models**						
Register Count = 1 Access = Read/Write Memory Type = Non Volatile						
Reg Address	**Name**	**Register Type**	**Range**	**Default**	**Scaling**	**Description**
3769	Six-way Valve Cooling Max Output	Holding	0 to 10 V	10	0.01 V	6-way valve cool max output

General

Table 18 General

Register Count = 1 Memory Type = Non Volatile Access = Read/Write						
Reg Address	**Name**	**Register Type**	**Range**	**Default**	**Scaling**	**Description**
4136	Temp. Units	Coil	Fahrenheit = **0** Celsius = **1**	0	1	Thermostat unit definition (Imperial/ Metric)
4137	Temp. Communiac tion Units	Coil	Fahrenheit = **0** Celsius = **1**	0	1	Thermostat communication unit definition (Imperial/ Metric).
3400	Backlight	Holding	20 to 100 %	80	1 %	Backlight
3452	Time Format	Holding	12 Hour = **0** 24 Hour = **1**	0	1	Time format
2505	Brand Type	Holding	Honeywell = **1** Alerton = **2** None = **3**	1	1	Vendor ID and vendor name will be changed when modify brand type.

Setpoints

Table 19 Setpoints

Register Count = 1							
Reg Address	**Name**	**Register Type**	**Access**	**Memory Type**	**Range**	**Scaling**	**Description**
1	Indoor Temperature	Input	Read	Volatile	-40 to 150 °F (-40 to 65°C)	0.01 °F	Space temperature
2	Indoor Humidity	Input	Read	Volatile	0 to 100 RH%	0.01 %	Space humidity
3	Effective Heat Setpoint	Input	Read	Volatile	40 to 120 °F (5 to 48 °C)	0.01°F	Effective heating setpoint
4	Effective Cool Setpoint	Input	Read	Volatile	40 to 120 °F (5 to 48 °C)	0.01°F	Effective cooling setpoint
5	Setpoint Status	Input	Read	Volatile	Occupied = **1** Unoccupied = **2** Temporary = **3** Standby = **4** Permanent = **5**	1	When the setpoint is adjusted by user, no_setpointsts shifts to 'Temporary'. When the setpoint is not adjusted it will represent the current system state.
439	Outdoor Temp	Input	Read	Volatile	-40 to 200 °F (-40 to 93 °C)	0.01	Outdoor air temperature.
440	Outdoor Humidity	Input	Read	Volatile	0 to 100 RH%	0.01	Outdoor air Humidity.
442	CO2 Level	Input	Read	Volatile		1	Space CO2

Table 19 Setpoints (Continued)

Register Count = 1							
Reg Address	**Name**	**Register Type**	**Access**	**Memory Type**	**Range**	**Scaling**	**Description**
5034	Standby Config	Coil	Read/ Write	Non Volatile	StandbyAsUnoccupied = **0** StandbyAsOccupied = **1** (Default 0)	1	Standby action
3256	Temporary cool setpoint adjustment	Holding	Read/ Write	Volatile	-45 to 45 **Δ**°F (-25 to 25 **Δ**°F)	0.01 °F	Temporary cool setpoint adjustment from user or from the supervisor.
3257	Temporary heat setpoint adjustment	Holding	Read/ Write	Volatile	-45 to 45°F (-25 to 25 **Δ**°F)	0.01 °F	Temporary heat setpoint adjustment from user or from the supervisor.

Indoor temperature limits

Table 20 Indoor temperature limits

Register Type = Holding Register Count = 1 Access = Read/Write Memory Type = Non Volatile Scaling = 0.01°F				
Reg Address	**Name**	**Range**	**Default**	**Description**
3254	IndoorTempHighLimit	90 to 150 °F (33 to 65°C)	90 °F (32.2 °C)	Space temperature alarm high limit
3255	IndoorTempLowLimit	0 to 60 °F (-17 to 15 °C)	45 °F (7.2 °C)	Space temperature alarm low limit
3332	DischargeTempHighLimit	70 to 180 °F (22 to 82 °C)	140 °F (60 °C)	Discharge air temperature alarm high limit
3333	DischargeTempLowLimit	35 to 65 °F (2 to 18 °C)	45 °F (7.2 °C)	Discharge air temperature alarm low limit
3770	Pipe Temp Heat Threshold	70 to 90 °F (22 to 32 °C)	80 °F (26.7 °C)	Pipe sensor threshold for heating
3771	Pipe Temp Cool Threshold	45 to 65 °F (8 to 18 °C)	60 °F (15.6 °C)	Pipe sensor threshold for cooling
3772	Pipe Temp High Limit	70 to 220 °F (22 to 104 °C)	180 °F (82.2 °C)	Pipe temperature alarm high limit
3773	Pipe Temp low Limit	30 to 60 °F (-1 to 15 °C)	40 °F (4.4 °C)	Pipe temperature alarm low limit
3774	PipeSpaceHeatTempOffset	5 to 10 Δ°F (3 to 5 Δ°C)	5 Δ°F (2.8 Δ°C)	2-pipe single coil hybrid control space temperature offset for heating
3775	PipeSpaceCoolTempOffset	-10 to -5 Δ °F (-5 to -2 Δ°C)	-5 Δ°F (-2.8 Δ°C)	2-pipe single coil hybrid control space temperature offset for cooling
2737	Outdoor Air Temp High Limit	70 to 150 °F (22 to 65 °C)	150 °F (65.5 °C)	Outdoor air temperature alarm high limit.
2738	Outdoor Air Temp Low Limit	-40 to 60 °F (-40 to 15 °C)	-40 °F (-40 °C)	Outdoor air temperature alarm low limit.

IO assignment

Table 21 IO assignment

Note: *Supported in TC3XXB models, not in TC3XXC models.				
Register Type = Holding Register Count = 1 Access = Read/Write Memory Type = Non Volatile Scaling = 1				
Reg Address	**Name**	**Range**	**Default**	**Description**
2026	UIO1	None = **1** 6-WayValve = **2** ModulatingCool = **3** ModulatingHeat = **4** ModulatingValve = **5** VariableSpeedFan = **6** DischargeAirSensor = **7** DrainPanSensor = **8** OccupancySensor = **9** ProofOfAirflow = **10** PipeSensor = **11** SpaceTempSensor = **12** ChangeoverSwitch = **13** ProofOfWaterFlow = **14*** OutDoorAirSensor = **15** ShutdownSensor = **16** Customized1 = **17** Customized2 = **18** Customized3 = **19**	1	None = 1 6-WayValve = 2 ModulatingCool = 3 ModulatingHeat = 4 ModulatingValve = 5 VariableSpeedFan = 6 DischargeAirSensor = 7 DrainPanSensor = 8 OccupancySensor = 9 ProofOfAirflow = 10 PipeSensor = 11 SpaceTempSensor = 12 ChangeoverSwitch = 13 ProofOfWaterFlow = 14 OutDoorAirSensor = 15 ShutdownSensor = 16 Customized1 = 17 Customized2 = 18 Customized3 = 19
2027	UIO2	None = **1** 6-WayValve = **2** ModulatingCool = **3** ModulatingHeat = **4** ModulatingValve = **5** VariableSpeedFan = **6** DischargeAirSensor = **7** DrainPanSensor = **8** OccupancySensor = **9** ProofOfAirflow = **10** PipeSensor = **11** SpaceTempSensor = **12** ChangeoverSwitch = **13** ProofOfWaterFlow = **14*** OutDoorAirSensor = **15** ShutdownSensor = **16** Customized1 = **17** Customized2 = **18** Customized3 = **19**	1	None = 1 6-WayValve = 2 ModulatingCool = 3 ModulatingHeat = 4 ModulatingValve = 5 VariableSpeedFan = 6 DischargeAirSensor = 7 DrainPanSensor = 8 OccupancySensor = 9 ProofOfAirflow = 10 PipeSensor = 11 SpaceTempSensor = 12 ChangeoverSwitch = 13 ProofOfWaterFlow = 14 OutDoorAirSensor = 15 ShutdownSensor = 16 Customized1 = 17 Customized2 = 18 Customized3 = 19

Table 21 IO assignment (Continued)

Note: *Supported in TC3XXB models, not in TC3XXC models.				
Register Type = Holding Register Count = 1 Access = Read/Write Memory Type = Non Volatile Scaling = 1				
Reg Address	**Name**	**Range**	**Default**	**Description**
2904	UIO3	None = **1** 6-WayValve = **2** ModulatingCool = **3** ModulatingHeat = **4** ModulatingValve = **5** VariableSpeedFan = **6** DischargeAirSensor = **7** DrainPanSensor = **8** OccupancySensor = **9** ProofOfAirflow = **10** PipeSensor = **11** SpaceTempSensor = **12** ChangeoverSwitch = **13** ProofOfWaterFlow = **14*** OutDoorAirSensor = **15** ShutdownSensor = **16** Customized1 = **17** Customized2 = **18** Customized3 = **19**	1	None = 1 6-WayValve = 2 ModulatingCool = 3 ModulatingHeat = 4 ModulatingValve = 5 VariableSpeedFan = 6 DischargeAirSensor = 7 DrainPanSensor = 8 OccupancySensor = 9 ProofOfAirflow = 10 PipeSensor = 11 SpaceTempSensor = 12 ChangeoverSwitch = 13 ProofOfWaterFlow = 14 OutDoorAirSensor = 15 ShutdownSensor = 16 Customized1 = 17 Customized2 = 18 Customized3 = 19
2028	DO1	None = **1** HeatingOn/Off = **2** HeatingFloatingOpen = **3*** CoolingFloatingOpen = **4*** ValveOn/Off = **5** ValveFloatingOpen = **6*** ChangeoverValve = **11** FanCommand = **12** HighSpeedFan = **13** MediumSpeedFan = **14** LowSpeedFan = **15** AuxiliaryHeat = **16** HeatStage1 = **30** ValveStage1 = **32**	2	None = 1 HeatingOn/Off = 2 HeatingFloatingOpen = 3 CoolingFloatingOpen = 4 ValveOn/Off = 5 ValveFloatingOpen = 6 ChangeoverValve = 11 FanCommand = 12 HighSpeedFan = 13 MediumSpeedFan = 14 LowSpeedFan = 15 AuxiliaryHeat = 16 HeatStage1 = 30 ValveStage1 = 32
2029	DO2	None = **1** HeatingFloatingClose = **7*** CoolingFloatingClose = **8*** CoolingOn/Off = **9** ValveFloatingClose = **10*** ChangeoverValve = **11** FanCommand = **12** HighSpeedFan = **13** MediumSpeedFan = **14** LowSpeedFan = **15** AuxiliaryHeat = **16** CoolStage1 = **31** ReversingValve = **34***	9	None = 1 HeatingFloatingClose = 7 CoolingFloatingClose = 8 CoolingOn/Off = 9 ValveFloatingClose = 10 ChangeoverValve = 11 FanCommand = 12 HighSpeedFan = 13 MediumSpeedFan = 14 LowSpeedFan = 15 AuxiliaryHeat = 16 CoolStage1 = 31 ReversingValve = 34

Table 21 IO assignment (Continued)

Note: *Supported in TC3XXB models, not in TC3XXC models.				
Register Type = Holding Register Count = 1 Access = Read/Write Memory Type = Non Volatile Scaling = 1				
Reg Address	**Name**	**Range**	**Default**	**Description**
2030	DO3	None = **1** CoolingFloatingOpen = **4*** ChangeoverValve = **11** FanCommand = **12** HighSpeedFan = **13** MediumSpeedFan = **14** LowSpeedFan = **15** AuxiliaryHeat = **16** HeatStage1 = **30** CoolStage1 = **31** WaterFlowValve = **33*** Dehumidifier = **35*** Humidifier = **36***	1	None = 1 CoolingFloatingOpen = 4 ChangeoverValve = 11 FanCommand = 12 HighSpeedFan = 13 MediumSpeedFan = 14 LowSpeedFan = 15 AuxiliaryHeat = 16 HeatStage1 = 30 CoolStage1 = 31 WaterFlowValve = 33 Dehumidifier = 35 Humidifier = 36
2031	DO4 (TC300B-G/ TC320B-G is DIO1, and TC300C-G/ TC320C-G is DO4)	None = **1** CoolingFloatingClose = **8*** ChangeoverValve = **11** FanCommand = **12** HighSpeedFan = **13** MediumSpeedFan = **14** LowSpeedFan = **15** AuxiliaryHeat = **16** DischargeAirSensor = **18*** DrainPanSensor = **19*** OccupancySensor = **20*** ProofOfAirflow = **21*** PipeSensor = **22*** SpaceTempSensor = **23*** ChangeoverSwitch = **24*** ProofOfWaterFlow = **25*** OutdoorAirSensor = **26*** ShutdownSensor = **27*** Dehumidifier = **35*** Humidifier = **36*** Customized1 = **37*** Customized2 = **38*** Customized3 = **39***	1	None = 1 CoolingFloatingClose = 8 ChangeoverValve = 11 FanCommand = 12 HighSpeedFan = 13 MediumSpeedFan = 14 LowSpeedFan = 15 AuxiliaryHeat = 16 DischargeAirSensor = 18 DrainPanSensor = 19 OccupancySensor = 20 ProofOfAirflow = 21 PipeSensor = 22 SpaceTempSensor = 23 ChangeoverSwitch = 24 ProofOfWaterFlow = 25 OutdoorAirSensor = 26 ShutdownSensor = 27 Dehumidifier = 35 Humidifier = 36 Customized1 = 37 Customized2 = 38 Customized3 = 39

Table 21 IO assignment (Continued)

Note: *Supported in TC3XXB models, not in TC3XXC models.				
Register Type = Holding Register Count = 1 Access = Read/Write Memory Type = Non Volatile Scaling = 1				
Reg Address	**Name**	**Range**	**Default**	**Description**
2032	DO5 (TC300B-G/ TC320B-G is DIO1, and TC300C-G/ TC320C-G is DO4)	None = **1** ChangeoverValve = **11** FanCommand = **12** HighSpeedFan = **13** MediumSpeedFan = **14** LowSpeedFan = **15** AuxiliaryHeat = **16** DischargeAirSensor = **18*** DrainPanSensor = **19*** OccupancySensor = **20*** ProofOfAirflow = **21*** PipeSensor = **22*** SpaceTempSensor = **23*** ChangeoverSwitch = **24*** ProofOfWaterFlow = **25*** OutdoorAirSensor = **26*** ShutdownSensor = **27*** Dehumidifier = **35*** Humidifier = **36*** Customized1 = **37*** Customized2 = **38*** Customized3 = **39***	12	None = 1 ChangeoverValve = 11 FanCommand = 12 HighSpeedFan = 13 MediumSpeedFan = 14 LowSpeedFan = 15 AuxiliaryHeat = 16 DischargeAirSensor = 18 DrainPanSensor = 19 OccupancySensor = 20 ProofOfAirflow = 21 PipeSensor = 22 SpaceTempSensor = 23 ChangeoverSwitch = 24 ProofOfWaterFlow = 25 OutdoorAirSensor = 26 ShutdownSensor = 27 Dehumidifier = 35 Humidifier = 36 Customized1 = 37 Customized2 = 38 Customized3 = 39

IO status

Table 22 IO status

Register Count = 1 Access = Read/Write Memory Type = Volatile					
Reg Address	**Name**	**Register Type**	**Range**	**Scaling**	**Description**
7	UIO3 Output	Input	-40 to 260	0.01	Universal output shared to network.
10	UIO1 Output	Input	-40 to 260	0.01	Universal output shared to network.
11	UIO2 Output	Input	-40 to 260	0.01	Universal output shared to network.
6074	DO1 Output	Discrete	Off = **0** On = **1**	1	Digital output shared to network.
6075	DO2 Output	Discrete	Off = **0** On = **1**	1	Digital output shared to network.
6076	DO3 Output	Discrete	Off = **0** On = **1**	1	Digital output shared to network.
6077	DO4 Output (TC300B-G/ TC320B-G is DIO1, and TC300C-G/ TC320C-G is DO4.)	Discrete	Off = **0** On = **1**	1	Digital Output shared to network.
6078	DO5 Output (TC300B-G/ TC320B-G is DIO2, and TC300C-G/ TC320C-G is DO5)	Discrete	Off = **0** On = **1**	1	Digital Output shared to network.

Internet weather info

Table 23 Internet weather info

Register Count=1 Access=Read/Write Memory Type=Non Volatile						
Reg Address	**Name**	**Register Type**	**Range**	**Default**	**Scaling**	**Description**
106	CountryCode	Input	None = **0** NorthAmerica = **1** LatinAmerica = **2** Europe = **3** META = **4** AsiaPacific = **5**	0	1	Universal output shared to network.

Multi-sensor settings

Table 24 Multi-sensor settings

Register Count=1 Access=Read/Write Memory Type=Non Volatile Register Type=Holding					
Reg Address	**Name**	**Range**	**Default**	**Scaling**	**Description**
2130	Multi Temperature Sensor Control	Average = **1** Min = **2** Max = **3** Smart = **4**	1	1	Main control sensor configuration
3033	Local Sensor Temp Weight	0 to 10	10	0.01	A weighted average allows individual sensors to have more influence on the average calculation. Sensor 1 is the local on-board temperature sensor.
3034	Address 2 Temp Weight	0 to 10	10	0.01	A weighted average allows individual sensors to have more influence on the average calculation. Sensor 2 is the remote TR40 Sylk temperature sensor with Addr 2.
3035	Address 3 Temp Weight	0 to 10	10	0.01	A weighted average allows individual sensors to have more influence on the average calculation. Sensor 3 is the remote TR40 Sylk temperature sensor with Addr 3.
3036	Address 4 Temp Weight	0 to 10	10	0.01	A weighted average allows individual sensors to have more influence on the average calculation. Sensor 4 is the remote TR40 Sylk temperature sensor with Addr 4.
3037	Address 5 Temp Weight	0 to 10	10	0.01	A weighted average allows individual sensors to have more influence on the average calculation. Sensor 5 is the remote TR40 Sylk temperature sensor with Addr 5.
2077	Multiple Humidity Sensor Control	Average = **1** Min = **2** Max = **3** Smart = **4**	1	1	Humidity sensor configuration
3181	Local Sensor Humidity Weight	0 to 10	10	0.01	A weighted average allows individual sensors to have more influence on the average calculation. Sensor 1 is the local on-board Humidity sensor.

Table 24 Multi-sensor settings (Continued)

Register Count=1 Access=Read/Write Memory Type=Non Volatile Register Type=Holding					
Reg Address	**Name**	**Range**	**Default**	**Scaling**	**Description**
3180	Address 2 Humidity Weight	0 to 10	10	0.01	A weighted average allows individual sensors to have more influence on the average calculation. Sensor 2 is the remote TR40 Sylk humidity sensor with Addr 2.
2009	Control Sensors	LocalSensor = **1** RemoteSensor = **2** MultiSensors = **3**	1	1	Temperature/ Humidity sensor selection

Occupancy setpoints

Table 25 Occupancy setpoints

Register Type = Holding Register Count = 1 Access = Read/Write Memory Type = Non Volatile Scaling = 0.01				
Reg Address	**Name**	**Range**	**Default**	**Description**
3007	Occupied Heat Setpoint	40 to 99 °F (5 to 37 °C)	68°F (20°C)	Occupied heating setpoint
3004	Occupied Cool Setpoint	40 to 99 °F (5 to 37 °C)	76 °F (24.4 °C)	Occupied cooling setpoint
3008	Standby Heat Setpoint	40 to 99 °F (5 to 37 °C)	65 °F (18.3 °C)	Standby heating setpoint
3005	Standby Cool Setpoint	40 to 99 °F (5 to 37 °C)	80 °F (26.7 °C)	Standby cooling setpoint
3009	Unoccupied Heat Setpoint	40 to 99 °F (5 to 37 °C)	55 °F (12.8 °C)	Unoccupied heating setpoint
3006	Unoccupied Cool Setpoint	40 to 99 °F (5 to 37 °C)	85 °F (29.4 °C)	Unoccupied cooling setpoint

Special functions

Table 26 Special functions

Register Count = 1 Access = Read/Write Memory Type = Non Volatile						
Reg Address	**Name**	**Register Type**	**Range**	**Default**	**Scaling**	**Description**
3725	PipePurge Time	Holding	0 to 5 minutes	5	0.01 minute	Pipe purge duration
3779	Purge Interval	Holding	0.5 to 2 hours	0.5	0.01 hour	Pipe purge interval
2925	Valve Cycle	Holding	1Min/24Hours = **1** 2Min/24Hours = **2** Disable = **3**	1	1	Valve cycle type
3780	Heat Time Out	Holding	1 to 4 hours	4	0.01 hour	When heating keep working for timeout time check whether pipe temperature meet pipe sensor threshold.
5053	Hybrid Control Enable Heat	Coil	Off = **0** On = **1**	1	1	2-pipe single coil heat hybrid control enable flag
5054	Hybrid Control Enable Cool	Coil	Off = **0** On = **1**	1	1	2-pipe single coil cool hybrid control enable flag

Table 26 Special functions (Continued)

Register Count = 1 Access = Read/Write Memory Type = Non Volatile						
Reg Address	**Name**	**Register Type**	**Range**	**Default**	**Scaling**	**Description**
2945	CoolTime Out	Holding	1 to 4 hours	4	0.01 hour	When heating/ cooling keep working for timeout time check whether pipe temperature meet pipe sensor threshold.

Service mode

Table 27 Service mode

***Note: Supported only in TC3XXB models**						
Register Count = 1 Access = Read/Write Memory Type = Volatile						
Reg Address	**Name**	**Register Type**	**Range**	**Default**	**Scaling**	**Description**
4006	SeviceModeEn	Coil	NoOverride = **0** Service = **1**	0	1	Service mode network input to felicitate installer during commissioning/ maintenance to shutdown all equipment.
2926	SeviceFan	Holding	Off = **1** On = **2** Low = **3** Medium = **4** High = **5**	1	1	Fan speed configuration network input for single/ two/three speed fan when service mode is enabled.
3085	ServiceFanSpeed	Holding	0 to 100%	0	0.01%	Fan speed configuration network input for variable speed fan when service mode is enabled.
5042	ServiceHeatOnOff	Coil	Off = **0** On = **1**	0	1	On/Off heat valve status network input when service mode is enabled.
5043	ServiceCoolOnOff	Coil	Off = **0** On = **1**	0	1	On/Off cool valve status network input when service mode is enabled.
2922	ServiceHeatFloating	Holding	Off = **1** Open = **2** Close = **3**	1	1	Floating heat valve status network input when service mode is enabled.
2923	ServiceCoolFloating	Holding	Off = **1** Open = **2** Close = **3**	1	1	Floating cool valve status network input when service mode is enabled.
3776	ServiceModulatingHeat	Holding	0 to 100 %	0	0.01 %	Modulating heat valve status network input when service mode is enabled.
3777	ServiceModulatingCool	Holding	0 to 100 %	0	0.01 %	Modulating cool valve status network input when service mode is enabled.
3778	ServiceSixWayValve	Holding	0 to 10 V	0	0.01 V	6-way valve status network input when service mode is enabled.
5044	ServiceAuxHeat	Coil	Off = **0** On = **1**	0	1	Auxiliary heat status network input when service mode is enabled.

Table 27 Service mode (Continued)

***Note: Supported only in TC3XXB models**						
Register Count = 1 Access = Read/Write Memory Type = Volatile						
Reg Address	**Name**	**Register Type**	**Range**	**Default**	**Scaling**	**Description**
5045	ServiceChangeOver	Coil	Off = **0** On = **1**	0	1	Changeover valve status when service mode is enabled.
4019	ServiceHeatStage1	Coil	Off = **0** On = **1**	0	1	Heat stage 1/Heat pump heat/cool stage 1 status network input when service mode is enabled.
5046	ServiceCoolStage1	Coil	Off = **0** On = **1**	0	1	Cool stage 1 status network input when service mode is enabled.
5047	ServiceValveStage1	Coil	Off = **0** On = **1**	0	1	Modulating valve stage 1 status network input when service mode is enabled.
5048	ServiceValveOnOff	Coil	Off = **0** On = **1**	0	1	Modulating valve status network input when service mode is enabled.
2924*	ServiceValveFloating	Holding	Off = **1** Open = **2** Close = **3**	1	1	Floating valve status network input when service mode is enabled.
3786	ServiceValveModulating	Holding	0 to 100	0	0.01	Modulating valve status network input when service mode is enabled.
4022*	ServiceReversingValve	Coil	Off = **0** On = **1**	0	1	Reversing valve status when service mode is enable.
5058*	ServiceWaterFlowValve	Coil	Off = **0** On = **1**	0	1	WaterFlow valve status when service mode is enable.
4023*	ServiceDehumidifier	Coil	Off = **0** On = **1**	0	1	Dehumidifier status when service mode is enable.
4024*	ServiceHumidifier	Coil	Off = **0** On = **1**	0	1	Humidifier status when service mode is enable.

Discharge air control

Table 28 Discharge air control

Register Count = 1 Access = Read/Write Memory Type = Non Volatile						
Reg Address	**Name**	**Register Type**	**Range**	**Default**	**Scaling**	**Description**
3623	Discharge Air Heat Setpoint	Holding	75 to 180 °F (24 to 82 °C)	85 °F (29.4 °C)	0.01°F	Discharge air control maximum heating setpoint.
3624	Discharge Air Cool Setpoint	Holding	40 to 80 °F (5 to 26 °C)	55°F (12.8 °C)	0.01°F	Discharge air control minimum cooling setpoint.
4454	Discharge Air control switch	Coil	Off = **0** On = **1**	0	1	Discharge air control enable flag.
3709	Discharge Air Heat Offset	Holding	0 to 90 Δ°F (0 to 50 Δ°C)	0 Δ°F (0 Δ°C)	0.01Δ°F	Discharge air control heating initial offset.
3710	Discharge Air Cool Offset	Holding	0 to 40 Δ°F (0 to 22 Δ°C)	0 Δ°F (0 Δ°C)	0.01Δ°F	Discharge air control cooling initial offset.
3711	Discharge Air Cool Throttling Range	Holding	0 to 30 Δ°F (0 to 16 Δ°C)	6 Δ°F (3.3 Δ°C)	0.01Δ°F	Discharge air control cooling throttling range.
3712	Discharge Air Cool Integral Time	Holding	0 to 5000 seconds	300	1 second	Discharge air control cooling integral time.
3714	Discharge Air Heat Throttling Range	Holding	0 to 30 Δ°F (0 to 16 Δ°C)	6Δ°F (3.3 Δ°C)	0.01	Discharge air control heating throttling range.
3715	Discharge Air Heat Integral Time	Holding	0 to 5000 seconds	300	1 second	Discharge air control heating integral time.

Sylk calibration offsets

Table 29 Sylk calibration offsets

Register Type = Holding Register Count = 1 Access = Read/Write Memory Type = Non Volatile					
Reg Address	**Name**	**Range**	**Default**	**Scaling**	**Description**
3023	Local sensor Temp Offset	-10 to 10 Δ°F (-5 to 5 Δ°C)	0 Δ°F (0 Δ°C)	0.01 °F	Local onboard temperature sensor calibration offset
3103	Local sensor Hum Offset	-10 to 10 RH%	0 RH%	0.01 %	Local onboard humidity sensor calibration offset
3024	Sylk Addr.2 Temp Offset	-10 to 10 Δ°F (-5 to 5 Δ°C)	0 Δ°F (0 Δ°C)	0.01 °F	TR40_2/ TR-21 Temperature calibration offset
3025	Sylk Addr.2 Hum Offset	-10 to 10 RH%	0 RH%	0.01 %	TR40_2 Humidity calibration offset

Table 29 Sylk calibration offsets (Continued)

Register Type = Holding Register Count = 1 Access = Read/Write Memory Type = Non Volatile					
Reg Address	**Name**	**Range**	**Default**	**Scaling**	**Description**
3100	Sylk Addr.2 CO2 Offset	-100 to 100ppm	0	0.01 ppm	TR40_2 CO2 calibration offset
3026	Sylk Addr.3 Temp Offset	-10 to 10 Δ°F (-5 to 5 Δ°C)	0 Δ°F (0 Δ°C)	0.01 °F	TR40_3 Temperature calibration offset
3027	Slyk Addr.4 Temp Offset	-10 to 10 Δ°F (-5 to 5 Δ°C)	0 Δ°F (0 Δ°C)	0.01 °F	TR40_4 Temperature calibration offset
3028	Sylk Addr.5 Temp Offset	-10 to 10Δ°F (-5 to 5 Δ°C)	0 Δ°F (0 Δ°C)	0.01 °F	TR40_5 Temperature calibration offset
3029	Sylk Addr.8 Temp Offset	-10 to 10Δ°F (-5 to 5 Δ°C)	0 Δ°F (0 Δ°C)	0.01 °F	C7400S outdoor air temperature calibration offset.
3030	Sylk Addr.8 Hum Offset	-10 to 10 RH%	0 RH%	0.01 %	C7400S outdoor air humidity calibration offset.
3031	Sylk Addr.10 Temp Offset	-10 to 10 Δ°F (-5 to 5 Δ°C)	0 Δ°F (0 Δ°C)	0.01 °F	C7400S Discharge Air Temperature calibration offset
3032	Sylk Addr.10 Hum Offset	-10 to 10 RH%	0 RH%	0.01 %	C7400S Discharge Air Humidity calibration offset

Sensor fault settings

Table 30 Sensor fault settings

***Note: Supported only in TC3XXB models**					
Register Count = 1 Access = Read/Write Memory Type = Non Volatile Scaling = 1					
Reg Address	**Name**	**Register Type**	**Range**	**Default**	**Description**
4159	Occupancy Sensor Fail Detect Enable	Coil	Disable = **0** Enable = **1**	1	Occupancy sensor fail Detect enable
3262	Occupancy Sensor Fail Detect Fallback	Holding	InvalidValue (Null) = **0** LastKnownGoodValue = **1** FixedValue = **2**	2	Occupancy sensor fail detect fallback
2921	Occupancy Sensor Fail Detect Fallback Value	Holding	Occupied = **1** Unoccupied = **2** Bypass = **3** Standby = **4** NoOverride = **5**	5	Occupancy sensor fail detect fallback value
3263	Occupancy Sensor Fail Detect Delay	Holding	0 to 3600 seconds	300	Occupancy sensor fail detect delay
4164	Shut Down Fail Detect Enable	Coil	Disable = **0** Enable = **1**	1	Shut down fail detect enable
3273	Shut Down Fail Detect Fallback	Holding	InvalidValue (Null) = **0** LastKnownGoodValue = **1** FixedValue = **2**	2	Shut down fail detect fallback
2165	Shut Down Fail Detect Fallback Value	Holding	Normal = **0** Shutdown = **1**	0	Shut down fail detect fallback value
3274	Shut Down Fail Detect Delay	Holding	0 to 3600 seconds	300	Shut down fail detect delay
4169*	WS Hp Enable State Fail Detect Enable	Coil	Disable = **0** Enable = **1**	1	Network Fail Detection will be enabled only if network point is considered for sharing.
3284*	WS Hp Enable State Fail Detect Fallback	Holding	InvalidValue (Null) = **0** LastKnownGoodValue = **1** FixedValue = **2**	2	Network Fail Detection Fall back value.
2170*	WS Hp Enable State Fail Detect Fallback Value	Holding	WSHPSystemEnable = **0** WSHPSystemDisable = **1**	0	Applicable only if Network Fail Fall back value is configured to Fixed value.
3285*	WS Hp Enable State Fail Detect Delay	Holding	0 to 3600 seconds	900 seconds	Network Fail Detection delay in seconds.

Sylk sensor configuration

Table 31 Sylk sensor configuration

Register Count = 1 Access = Read/Write Memory Type = Non Volatile Scaling = 1					
Reg Address	**Name**	**Register Type**	**Range**	**Default**	**Description**
3732	Sylk Addr.2 Sensor Type	Holding	TR40 = **1** TR50 = **2**	1	Sylk bus addr-2 device type
2085	Sylk Addr.2 Config	Holding	NotConfigured = **1** TempOnly = **2** TempHum = **3** TempHumCO2 = **4** TempCO2 = **5**	1	Sylk bus addr-2 device enable/ disable
4147	Sylk Addr.3 Config	Coil	Disable = **0** Enable = **1**	0	Sylk bus addr-3 device enable/ disable
4148	Sylk Addr.4 Config	Coil	Disable = **0** Enable = **1**	0	Sylk bus addr-4 device enable/ disable
4149	Sylk Addr.5 Config	Coil	Disable = **0** Enable = **1**	0	Sylk bus addr-5 device enable/ disable
4151	Sylk Addr.8 Config	Coil	Disable = **0** Enable = **1**	0	Sylk bus addr-8 device enable/ disable
4153	Sylk Addr.10 Config	Coil	Disable = **0** Enable = **1**	0	Sylk bus addr-10 device enable/ disable

User permission

Table 32 User permission

Register Type = Holding Register Count = 1 Access = Read/Write Memory Type = Non Volatile					
Reg Address	**Name**	**Range**	**Default**	**Scaling**	**Description**
3401	User Persona	**BIT0** = Installer **BIT1** = Advanced **BIT2** = Basic **BIT3** = Visitor	0x03	1	User Persona
3402	Basic User Permission	**BIT1** = System Mode **BIT2** = Override **BIT3** = Alert View **BIT5** = Temp. Unit **BIT12** = Brightness **BIT15** = FanSpeedConfig	0xffff	1	Basic User Permission. 0xFFFF indicates 0b1111111111111111. Enabling a bit in the range enables corresponding permission.
3403	Advanced User Permission	**BIT0** = Setpoint **BIT6** = Schedule	0xffff	1	Advanced User Permission. 0xFFFF indicates 0b1111111111111111. Enabling a bit in the range enables corresponding permission.

Table 32 User permission (Continued)

Register Type = Holding Register Count = 1 Access = Read/Write Memory Type = Non Volatile					
Reg Address	**Name**	**Range**	**Default**	**Scaling**	**Description**
3406	Visitor Permission	None	0xffff	1	Visitor Permission. 0xFFFF indicates 0b1111111111111111. Enabling a bit in the range enables corresponding permission.

Operating settings

Table 33 Operating settings

***Note: Supported only in TC3XXB models**						
Register Count = 1 Access = Read/Write Memory Type = Non Volatile						
Reg Address	**Name**	**Register Type**	**Range**	**Default**	**Scaling**	**Description**
2008	System Mode	Holding	Auto = **1** Cool = **2** Heat = **3** Ventilation = **4** Off = **5** Emergency heat = **6***	1	1	The system switch may be used by the contractor or occupant to change the operation of the unit. not support emergency heat.
3010	Bypass Time	Holding	0 to 1080 minutes	180 minutes	1 minute	Unoccupied override time
3102	Temporary Setpoint Offset Limit	Holding	0 to 45 Δ°F (0 to 25 Δ°C)	30 Δ°F (16.7 Δ°C)	0.01 °F	This point is used to limit the range of user adjustable setpoint.
3012	Cooling Min Setpoint	Holding	50 to 99°F (10 to 37 °C)	50 °F (10 °C)	0.01 °F	Minimum cool setpoint of thermostat
3013	Heating Max Setpoint	Holding	40 to 90 °F (5 to 32 °C)	90 °F (32.2 °C)	0.01 °F	Maximum heat setpoint of thermostat
3723	System Switch	Holding	**BIT0** = Auto **BIT1** = Heat&Cool **BIT2** = Ventilation **BIT3** = Off **BIT4** = EmergencyHeat*	15	1	To limit available user configurable options. BIT 3 Off must be set as 1.
4135	Override State	Coil	OverrideOff = **0** OverrideOn = **1**	0	1	Thermostat bypass override
3735	Override Type	Holding	Permanent = **1** Temporary = **2**	2	1	Thermostat override Type

CHAPTER

5 NETWORK INPUTS & OUTPUTS

Topics covered

Network

Network

Table 34 Network

Register Count = 1 Access = Read/Write Memory Type = Volatile						
Reg Address	**Name**	**Register Type**	**Range**	**Default**	**Scaling**	**Description**
455	WIFI RSSI (Applicable only to TC320B-G/ TC320C-G thermostats)	Input		0	1	WiFi RSSI (Received Signal Strength Indicator) value.

Network inputs

Table 35 Network inputs

***Note: Supported only in TC3XXB models**						
Register Count = 1 Access = Read/Write Memory Type = Volatile						
Reg Address	**Name**	**Register Type**	**Range**	**Default**	**Scaling**	**Description**
2801	Current Schedule State	Holding	Occupied = **1** Unoccupied = **2** Bypass = **3** Standby = **4** NoOverride = **5**	5	1	Current schedule state from network.
2802	Next Schedule State	Holding	Occupied = **1** Unoccupied = **2** Bypass = **3** Standby = **4** NoOverride = **5**	5	1	Next schedule state from network.
3001	EffTUNCOS	Holding	0 to 11520 minutes		1 minute	TUNCOS is the difference between the future change in event & current event in minutes.
2803	ApplicationMode	Holding	Auto = **1** Cool = **2** Heat = **3** FanOnly = **4** Off = **5** EmergencyHeat = **6***	1	1	Effective application mode from network. This value will not be persisted over power cycle.
4001	BypassState	Coil	Disable = **0** Enable = **1**	0	1	Net bypass input to enable bypass timer
2806	Occupancy Sensor State	Holding	Occupied = **1** Unoccupied = **2** Bypass = **3** Standby = **4** NoOverride = **5**	5	1	Network occupancy sensor state
3089	Outside Temperature	Holding	-40 to 200 °F (-40 to 93 °C)		0.01	Outdoor air temperature from network input.
3194	Outside Humidity	Holding	o to 100 %RH		0.01	Outdoor air humidity from network input.
4004	Shutdown State	Coil	Normal = **0** Shutdown = **1**	0	1	System shutdown input from network.
2080	SpaceRH	Holding	0 to 100 RH%		0.01%	Space humidity network input

Table 35 Network inputs (Continued)

***Note: Supported only in TC3XXB models**						
Register Count = 1 Access = Read/Write Memory Type = Volatile						
Reg Address	**Name**	**Register Type**	**Range**	**Default**	**Scaling**	**Description**
2104	SpaceTemp	Holding	-40 to 150 °F (-40 to 65 °C)		0.01°F	Space temperature network input
4025*	WSHP Enable State	Coil	WSHPSystemEnable = **0** WSHPSystemDisable = **1**		1	This point is considered for network point sharing of water source heat pump enable network input.
2038	Run Time Reset	Holding	Normal = **1** FanReset = **2** CoolReset = **3** HeatingReset = **4**	1	1	Runtime accumulate reset network input.
3724	DAT sensor	Holding	-40 to 200 °F (-40 to 93 °C)		0.01°F	Discharge air temperature network input
2912	Pipe Temp Mode	Holding	NoUse = **1** Cool = **2** Heat = **3**	1	1	Pipe temperature mode network input

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