Addendum
Version 3.0

Ver. 2.19 Firmware 03/24/2011

Preface

The T-32-P thermostat from iO HVAC is a standalone 24V thermostat with integrated RTU communications. This capability enables the T-32-P to be networked back to a suitably equipped DDC master system for control.

The EC-02 is an optional module that provides 0-10V outputs for Heating & Cooling valve control or a 0-10V outputs for economy cycle damper control and High Voltage high current volt free relays when switching line voltage is required.

When the T-32-P and EC-02 are "paired" they appear as one device on the network therefore this document treats both the T-32-P and EC-02 as if it is a single device when paired. In these circumstances the End Of Line (EOL) resistor switch on the T-32-P should be OFF and if necessary only the EOL should be used on the EC-02.

The information provided in this addendum should be used in conjunction with the T-32-P thermostat and EC-02 installer manuals.

Note:
Although you can poll the T-32-P and discover 225 points with active data listed in the tables below, there are many more points within the T-32-P not listed here. Many of these unlisted locations are used as internal flags or for service and advanced function testing and diagnosis. IF you alter any value not listed below erratic thermostat response may be experienced requiring a factory reset. There may be a fee for this service.

T-32-P Slave device

EC-02 Port 1 Slave Port (for connection to DDC master network)
Port 2 Master Port (for connection to T-32-P thermostat ONLY)

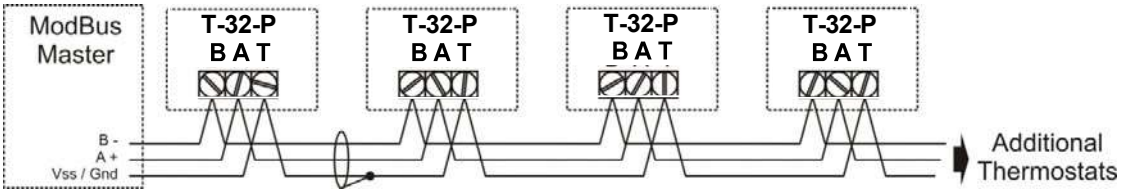
Protocol – Both devices

RTU Half Duplex
9600 Baud (4800 or 19200 can also be selected if required - see product installer manuals)
8 data bits
No parity
1 stop bit

Wiring Overview

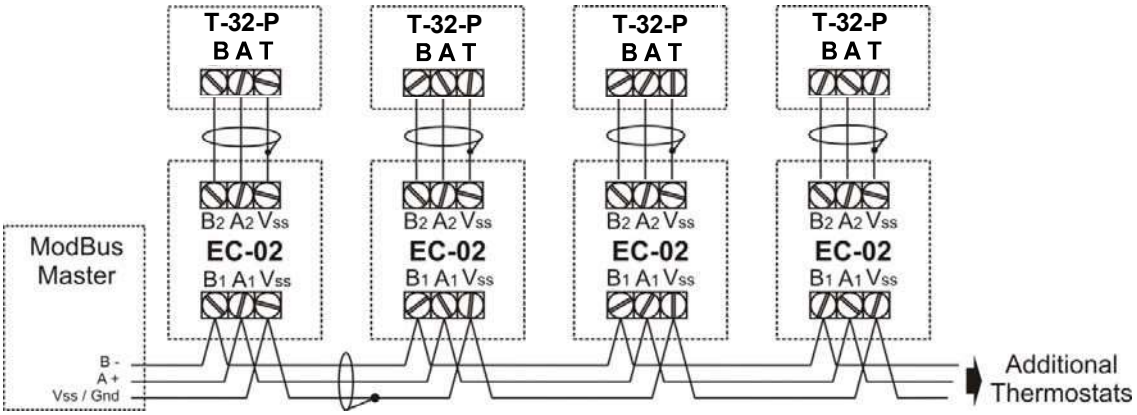
Three typical wiring diagrams are provided below as examples of wiring only. Please refer to the specific manual for each device for wiring to the various outputs of the devices to control equipment, vales or actuators etc.

Network of T-32-P only per node



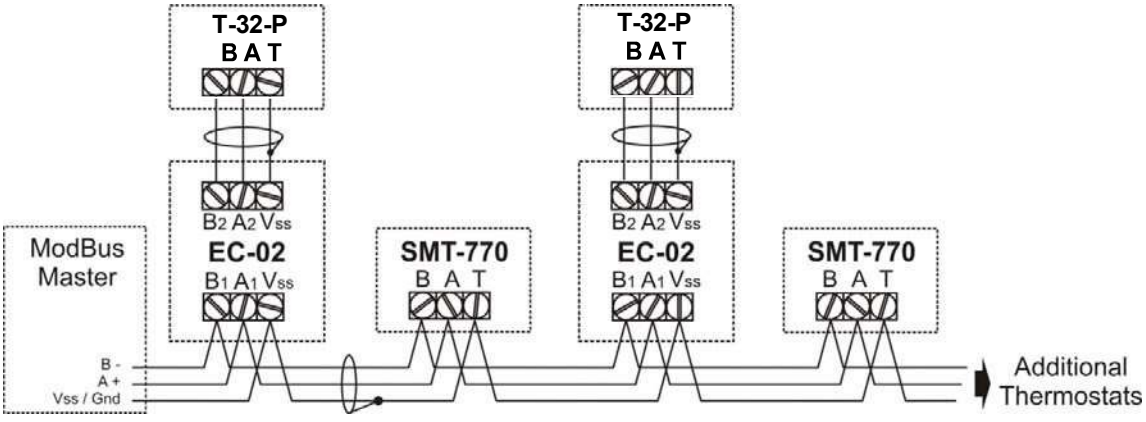
The last T-32-P may require the End Of line (EOL) resistor in circuit.

Network of T-32-P, each with EC-02 Modules



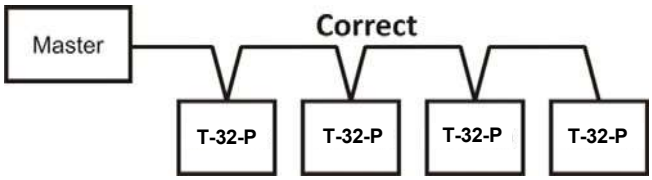
The Last EC-02 may require the End Of line (EOL) resistor in circuit.
All T-32-P EOL are OFF

Mixed network of T-32-P and EC-02 Modules

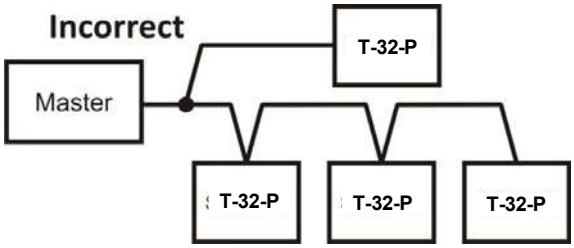


The last device in the network may require the End Of Line (EOL) resistor in circuit.

Wiring Examples

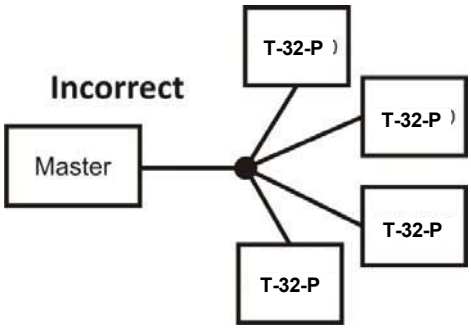


When wiring the T-32-P, it is important that you use screened cables. All screens should be joined together and grounded in 1 location only.



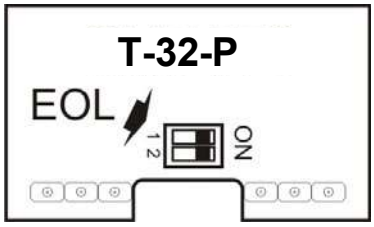
For long runs, the last device ONLY on any node should have the EOL (End Of line) resistor in circuit.

If the last device on the network is a T-32-P & EC-02 matched pair, then ONLY, then the EC-02 has the responsibility of having the EOL resistor in circuit.



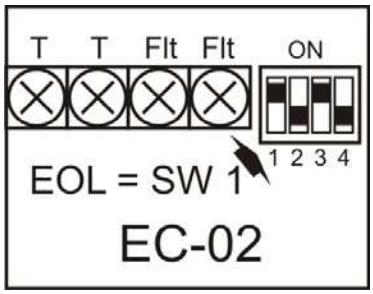
The T-32-P the EOL is located on the PCB near the connector pins. Switch 1&2 should be on to place the EOL resistor in circuit.

The EC-02 EOL resistor switch is located near the sensor and fault input terminals. Turn switch 1 on to place the EOL resistor in circuit.



Every device on the network should have a unique network address so that it can be identified and individually controlled by the Master device. If two devices share the same network address the network may not function.

Depending on a number of network conditions, a maximum of 32 T-32-P (with or without the EC-02 modules) can be on any single node.



Setting Network Address in the T-32-P *(See the T-32-P Installer manual for more detailed information)*

1. Enter the Installer Menu Option by pressing and holding the **"O/Ride"** button for 15 seconds.

2. When the LCD changes to read "88:15", use the "**+**"or "**–**"button to change the display to read "88:32" or your previously selected personal user number.

3. Tap the mode button to enter the Installer Menu Option and advance through the available installer options until you reach the menu item "AD XX". This is the current Address (Factory default is 7). Use the "**+**"or "**–**"button to change this number to your desired address for this thermostat.

4. Tap the fan button to exit the Installer Menu Option

Setting the Address in the EC-02 module *(See the EC-02 Installer manual for more detailed information)*

1. Simply apply power to the EC-02 (or cycle power to theEC-02) after the address has been set on the T-32-P. The EC-02 will query the T-32-P and match address and Baud rate with the thermostat.

2. After approximately 30 seconds the T-32-P & EC-02 will "pair" and appear as one device on a network.

3. If pairing is successful the green status LED on the EC-02 will blink on and off in a regular cycle. If the Status LED blinks 3 times then pauses, pairing is not yet complete or has been lost.

4. If pairing has not been confirmed after 2 or 3 minutes, cycle the power to the EC-02 to force a re-initialisation of the device

   (Note other blink codes indicate other faults - 3 blinks indicates loss of communications)

Object List:

Note:
The data provided below is dependant on the various operational modes of the T-32-P thermostat and/or EC-02 Module, for example if hardware switch on the T-32-P - SW1 =OFF (Single indoor fan speed mode) then setting the values of register 40010 (fan speed select) will have no effect on the operation of the T-32-P thermostat or the EC-02 module connected to it.

Object List for Function 1 "Coil Status" registers

Function group	Coil Status	
Type	Read only	
Address	00001	0 = G1 relay Off 1 = G1 relay On
	00002	0 = G2/Y2 relay Off 1 = G2/Y2 relay On
	00003	0 = G3/W2/OB relay Off 1 = G3/W2/OB relay On
	00004	0 = Y1 relay Off 1 = Y1 relay ON
	00005	0 = W1 relay Off 1 = W1 relay ON

Object List for Function 3 "Holding Registers"

Address	**40002**
Function	Thermostat Mode
Type	Read / Write
Values	0= Thermostat Mode is OFF 2= Thermostat Mode is Heat Only Mode 3=Thermostat Mode is Cool Only Mode 4=Thermostat Mode is Auto season Change over Mode 5=Thermostat Mode is Emergency Heat Mode

Comments

Changing this register value is dependent on other register values and hardware switches within the thermostat being set correctly, for example selecting value "1"(emergency Heat mode) will have no effect if register 40042 does not have value "1" set – Emergency Heat mode enable. Likewise, if register 4041 is set for cooling only mode then this is the only value than can be selected from this register. Also, if hardware switch 2 is OFF, (heat with add on cool mode), then register value 1 will have no effect. Invalid calls are ignored.

Address	**40003**
Function	Fan Mode
Type	Read / Write
Values	0= Fan Mode is Auto (Cycles with heat and cool) 1= Fan Mode is ON

Address	**40004**
Function	Program Hold
Type	Read / Write
Values	0 = Hold function OFF 1 = Temporary Hold 2 = Permanent Hold

Comment

This register only has effect if hardware DIP switch 6 & 8 is ON – Thermostat in residential Programmable mode

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Address	**40005**
Function	Heat Set Temperature HOLD value
Type	Read / Write
Values	Deg C Subtract 20 from value then divide by 2 to get Deg C value. Deg F 1:1

Comments

This register is only used when the thermostat is in manual or programmable **TWO** set point mode. See Installer manual

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Address	**40006**
Function	Cool Set Temperature HOLD value
Type	Read / Write
Values	Deg C Subtract 20 from value then divide by 2 to get Deg C value. Deg F 1:1

Comments

This register is only used when the thermostat is in manual or programmable **TWO** set point mode. See Installer manual

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Address	**40010**
Function	Fan Speed
Type	Read / Write
Values	1 = Low Speed 2 = Medium Speed 3 = High Speed 4 = Auto Speed

Comments

Thermostat hardware switch must be ON – 3 speed fan mode for this register to have effect. Values in this register are stored until DIP switch 1 is in the correct position.

Address	**40011**
Function	Day Cool Set Temp
Type	Read / Write
Values	Range deg C 30~94 255=OFF Subtract 20 from value then divide by 2 to get Deg C value Range deg F 41 ~ 98 255=OFF 1:1

Comments

Thermostat hardware DIP switch 6 must be off and 8 must be on for this function to have effect. Manual Day/Night mode

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Address	**40012**
Function	Day Heat Set Temp
Type	Read / Write
Values	Range deg C 20~90 0=OFF Subtract 20 from value then divide by 2 to get Deg C value Range deg F 32 ~ 95 0=OFF 1:1

Comments

Thermostat hardware DIP switch 6 must be off and 8 must be on for this function to have effect. Manual Day/Night mode

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Address	**40013**
Function	Night Cool Set Temp
Type	Read / Write
Values	Range deg C 30~94 255=OFF Subtract 20 from value then divide by 2 to get Deg C value Range deg F 41 ~ 98 255=OFF 1:1

Comments

Thermostat hardware DIP switch 6 must be off and 8 must be on for this function to have effect. Manual day/Night Mode

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Address	**40014**
Function	Night Heat Set Temp
Type	Read / Write
Values	Range deg C 20~90 0=OFF Subtract 20 from value then divide by 2 to get Deg C value Range deg F 32 ~ 95 0=OFF 1:1

Comments

Thermostat hardware DIP switch 6 must be off and 8 must be on for this function to have effect. Manual Day Night Mode

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Address	**40015**
Function	Single temperature Set point / Manual mode
Type	Read / Write
Values	Range deg C 30~90 Subtract 20 from value then divide by 2 to get Deg C value Range deg F 41 ~ 95

Comments

Thermostat hardware DIP switch 6 &8 must be off for this function to have effect.

Address	**40016**
Function	8 DIP switch settings
Type	Read Only
Values	Sw1 On = 1
	Sw2 On = 2
	Sw3 On = 64
	Sw4 On = 4
	SW5 On = 8
	SW6 **OFF** = 16
	Sw7 On = 128
	SW8 **OFF** = 32

Comments

This is a simple binary count. The order and function of the switches need to be considered, as they are not logical. Some switch functions add to the sum, others subtract from the sum. This is as a consequence of the internal decoding of these switches for thermostat operation.

Address	**40017**
Function	Single temperature Set point / Start –Stop Programmable mode
Type	Read / Write
Values	Range deg C 30~90
	Subtract 20 from value then divide by 2 to get Deg C value
	Range deg F 41 ~ 95

Comments

The thermostat must be in Commercial start / stop programmable mode. Thermostat hardware DIP switch 6 must be ON and 8 must be off for this function to have effect.

Address	**40018**
Function	Start / Stop after hours initiate
Type	Read / Write
Value	0 = Timer OFF
	1 = Timer Running

Comments

The thermostat must be in Commercial start / stop programmable mode. Thermostat hardware DIP switch 6 must be ON and 8 must be off for this function to have effect.

Address	**40019**
Function	Current running program
Type	Read only
Value	0 = Thermostat is in manual mode
	1 = Program event 1
	2 = Program event 2
	3 = Program event 3
	4 = Program event 4
	5 = Program event “Start”
	6 = Program event “Stop”

Address	**40020**
Function	SMT-770 Sentinel Point.
Type	Read only
Value	Pre 2.17 = 77
	2.17+ = 78

Comments

This register is to permit suitably programmed master devices to automatically identify the SMT-770 on a network.

Address	**4021**
Function	Installer menu security PIN
Type	Read / Write
Values	Range 00 ~ 99 2 digits only Enter Decimal Value for PIN

Address	**40022**
Function	ModBus Address
Type	Read / Write
Values	Range 1 – 32 (Zero is prohibited) Enter Decimal Value for Address

Comments
Changing this value via the network will require your network to be reset to the to the new value

Address	**40023**
Function	Lock Level
Type	Read / Write
Values	Range 0 to 6 (see installer manual for lock values)

Address	**40024**
Function	Thermostat Temperature display mode
Type	Read / Write
Values	0 = Display room and set temperature on LCD 1 = Display set temperature only on LCD

Address	**40025**
Function	Room Sensor Calibration value
Type	Read / Write
Values	Deg C range 0-90= +/- 4.5c in 0.1 deg steps. (value 45 = No offset)

Deg F range 0-90 = +/- 9F in 0.2 deg steps. (value 45 = No offset)

Address	**40026**
Function	TT terminal Functions
Type	Read / Write
Values	0 = Outside Air Temperature Display 1 = Remote Temperature Input 2 = Averaging Temperature sensor Input 3 = Thermostat remote On/Off mode 4 = Thermostat Occupancy input Mode 5= Duct Air sensor reading (supply air temperature monitoring) 6= 2 Pipe mode. -Remote sensor temp sets t'stat mode) (2.19+ firmware)

Comments
Value 5 is intended to permit the SMT-770 to broadcast the A/C system supply air temperature to the network so that correct A/C operation can be verified remotely.

Address	**40027**
Function	(un) occupied mode Heat set point
Type	Read / Write
Values	Range deg C 20~90 0=OFF Subtract 20 from value then divide by 2 to get Deg C value Range deg F 32 ~ 95 0=OFF 1:1

Address	**40028**
Function	(un) occupied mode Cool set point
Type	Read / Write
Values	Range deg C 30~94 100=OFF Subtract 20 from value then divide by 2 to get Deg C value Range deg F 32 ~ 95 100=OFF 1:1

Address	**40029**
Function	Thermostat Display Units
Type	Read / Write
Values	0 = Deg F 1 = Deg C

Address	**40030**
Function	Heating (or High) Set Limit
Type	Read / Write
Values	Range deg C 20~90 Subtract 20 from value then divide by 2 to get Deg C value Range deg F 32 ~ 95 1:1

Address	**40031**
Function	Cooling (or Low) Set Limit
Type	Read / Write
Values	Range deg C 30~94 Subtract 20 from value then divide by 2 to get Deg C value Range deg F 32 ~ 95 1:1

Address	**40032**
Function	Thermostat Stage 1 Span (Hysteresis)
Type	Read / Write
Values	1= +/- 0.5C (1F) 2 = +/- 1.0c (2F) 3= +/- 1.5c (3F)

Address	**40033**
Function	Thermostat Stage 2 Span (Hysteresis)
Type	Read / Write
Values	1= +/- 0.5C (1F) 2 = +/- 1.0c (2F) 3= +/- 1.5c (3F)

Address	**40034**
Function	Optimised Start (Adaptive Recovery)
Type	Read / Write
Values	0 = Off 1 = ON

Address	**40035**
Function	Anti freeze function
Type	Read / Write
Values	0 = Off 1 = ON (room temp will not be permitted to fall below 5c / 41f)

Address	**40036**
Function	Filter Waring Reminder
Type	Read / Write
Values	0 = Off (9max) Register value X 100 hours

Address	**40037**
Function	Fan Options
Type	Read / Write
Values	0 = No advanced fan option selected 1 = Fan will continue to run after cooling but stop after heating 2 = Fan will continuously run from Start or 1st to stop or 4th program. 3 = Combination of both 1 & 2 mode above.

Comments
Fan must be in Fan On mode for this register to have effect. Register 4003 must ="1"

Address	**40038**
Function	Fan Purge Period
Type	Read / Write
Values	0 to 5 minutes (0 = off)

Address	**40039**
Function	After hours / Program override period
Type	Read / Write
Values	0 to 24 (12 hours in 30 minute intervals)

Comments
Thermostat hardware DIP sw6 must be ON for this function to operate.
Used to set after hours run period in commercial mode (Sw 6 = ON Sw 8=OFF)
Used to select the program override period in residential mode Sw6 = ON Sw8=ON Selecting "0" sets override to expire at next program change.

Address	**40040**
Function	Dead Band
Type	Read / Write
Values	C = 0~5c in 0.5c steps (eg 3=1.5c) F = 0~9F in 1 deg F steps

Address	**40041**
Function	Thermostat permitted Modes
Type	Read / Write
Values	0 = Auto (Both Heat & Cool modes can be selected 1 = Cool only operation permitted 2 = Heat only operation permitted 3 = Manual mode (2.19+ firmware)

Address	**40042**
Function	W2 Relay Function (Heat Pump mode only)
Type	Read / Write
Values	0 = 3rd Stage Heat 1 = Emergency Heat Mode 2 = Add on heat mode 3=Both electric and fossil fuel control. 4=Fossil Fuel Function

Address	**40043**
Function	Clock type
Type	Read / Write
Values	0 = 12 hour (AM/PM) 1 = 24 hour 2= Clock display not shown on the LCD

Comments
Selecting value "2" will still broadcast the thermostat clock to the network. It is simply hidden on the LCD.

Address	**40044**
Function	TT Terminal sensor calibration
Type	Read / Write
Values	Deg C range 0-90= +/- 4.5c in 0.1 deg steps. (value 45 = No offset) Deg F range 0-90 = +/- 9F in 0.2 deg steps. (value 45 = No offset)

Comments
This register only applies when register 40026 is set for value "0", "1","2" or "5"

Address	**40045**
Function	Cool Inhibit on outside air temp
Type	Read / Write
Range	0~37C (32 ~ 99F)
Values	Deg C Subtract 20 from value then divide by 2 to get Deg C value. Deg F 1:1

Comments
Register 40026 must be set for value "0" and the outside air sensor must be fitter for this function to operate.

Address	**40046**
Function	Heat Inhibit on outside air temp
Type	Read / Write
Range	0~37C (32 ~ 99F)
Values	Deg C Subtract 20 from value then divide by 2 to get Deg C value. Deg F 1:1

Comments
Register 40026 must be set for value "0" and the outside air sensor must be fitter for this function to operate.

Address	**40047**
Function	High Balance Point
Type	Read / Write
Range	0~37C (32 ~ 99F) 200 = Function off (2.19+ firmware)
Values	Deg C Subtract 20 from value then divide by 2 to get Deg C value. Deg F 1:1

Comments
Register 40026 must be set for value "0" and the outside air sensor must be fitter for this function to operate.

Address	**40048**
Function	Low Balance Point
Type	Read / Write
Range	-9.5~25C (15 ~ 77F) 0 = Function off (2.19+ firmware)
Values	Deg C Subtract 20 from value then divide by 2 to get Deg C value. Deg F 1:1

Comments
Register 40026 must be set for value "0" , the outside air sensor must be fitter and register 40042 must also be set for value "2"for this function to operate.

Address **40049**

Function Stop Mode Cooling

Type Read / Write

Range deg C 30~94 200=OFF

Subtract 20 from value then divide by 2 to get Deg C value

Range deg F 41 ~ 98 100=OFF 1:1

Comments

Thermostat hardware 6 must be on and hardware switch 8 must be off (commercial programmable mode) to use this function.

Address **40050**

Function Stop Mode Heating

Type Read / Write

Range deg C 20~90 0=OFF

Subtract 20 from value then divide by 2 to get Deg C value

Range deg F 32 ~ 95 0=OFF 1:1

Comments

Thermostat hardware 6 must be on and hardware switch 8 must be off (commercial programmable mode) to use this function.

Address **40051**

Function Service Mode

Type Read / Write

0 = Service Mode OFF

1 = Service Mode On

Address **40052**

Function Timed upstage Delay period

Type Read / Write

0~90 minutes in 5 minute steps

Address **40054**

Function Day / Night mode change

Type Read / Write

0 = Night Mode

1 = Day Mode

Comments

Thermostat hardware switch 6 must be off and switch 8 must be on (2 set point manual mode) to use this function.

Address **40055**

Function Display firmware revision number

Type Read Only

Address **40057**

Function Remote OFF Status

Type Read Only

0 = Mode is selected by user

1= Thermostat held OFF (word OFF flashing in LCD)

Comments

Only valid when TT=OFF.

Address **40058**
Function Start Stop Mode Override
Type Read / Write
0= Normal (thermostat internal time clock schedule running)
1 = Start Mode (thermostat locked into Start Program)
2 = Stop Mode (thermostat locked into Stop Program)

Comments
Thermostat hardware DIP switch 6 must be on and 8 must be off to use this function.

Address **40059**
Function Thermostat Sample Rate
Type Read / Write
1 = 10mS Sample Rate (64 seconds temperature averaging period)
2 = 20mS Sample Rate (2 min 8 seconds temperature averaging period)
3~8 ….
9=90mS Sample Rate (9 min 36 seconds temperature averaging period)

Comments
The SMT-770 thermostat takes 640 room temperature readings (samples) and uses the running averaging of these samples for the room temperature. The longer the sample rate setting the slower the thermostat response to room temperature fluctuations. Default is 4

Address **40060**
Function Thermostat Baud Rate
Type Read / Write
1 = 4.8K
2 = 9.6K
3 = 19.2K

Comments
Note: Changing this value via will disconnect this device from the network. All devices on a network should use the same network settings. This includes the maser and all slaves.

Address **40061** (2.19+ firmware)
Function Start Program default Start Temperature
Type Read / Write
Range deg C 15~35 0=OFF
Subtract 20 from value then divide by 2 to get Deg C value
Range deg F 1:1 59 ~ 95 0=OFF

Address **40062** (2.2+ firmware)
Function Coil Override mode
Type Read / Write (2.2+ Firmware)
0 = Thermostat controls coils
1 = Modbus controls coils

Comments
A "1" must be sent to the thermostat at least once every 4 minutes to hold this function.
Loss of Modbus for 5 for minutes (or loss of power) auto resets this menu to "0" – thermostat controls coils

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Address **40064** (2.2+ firmware)
Function Stage 3 (heating) Span
Type Read / Write
1= +/- 0.5C (1F)
2 = +/- 1.0c (2F)
3= +/- 1.5c (3F)

Address	**40065**	(2.2+ firmware)
Function		Smart Upstage delay period
Type		Read / Write
		0 (Function Off) to 15 mins

Comments
This sets the minimum amount of time the SMT-770 thermostat will wait before bringing on subsequent stages of heating and cooling.

Address	**40070**	(2.2+ firmware)
Function		TT Input status
Type		Read Only
		0 = TT terminals Open circuit
		1 = TT terminals Shorted

Comments
This register permits the Modbus master to monitor the TT terminal status regardless of the TT function

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Address	**40305**	
Function		Day
Type		Read / Write
		0 = Monday ……
		6 = Sunday

Address	**40306**	
Function		Real Time Clock Hour
Type		Read / Write
		0 = 0….
		9=9am
		10 ~ 15 Not used
		16 = 10am….
		25 = 7pm
		26 ~ 31 Not used
		32 = 8pm….
		35 = 11pm
		See Appendix A below for more detail on this function.

Address	**40307**	
Function		Real Time Clock Minute
Type		Read / Write
		0 = 0min ….
		9=9 min
		10 ~ 15 Not used
		16 = 10 min….
		25 = 19 min
		26 ~ 31 Not used
		32 = 20 min……
		41=29 min
		42 ~47 Not Used
		48=30 min….
		57 = 39 min
		58 ~ 63 not used
		64 = 40
		73=49
		74 ~ 79 Not used
		80=50
		89 =59 mins
		See Appendix B below for more information on this function

Address	**40308**		
Function		Real Time Clock Seconds	
Type		Read Only	
		(See register 40307 above or appendix B below for a table of values)	
Address	**40310**		
Function		Fitted Temperature Sensor Value Deg C	
Type		Read Only	
		Subtract 20 from register value then divide by 2 = room temp deg C	
Ver. 2.16+		Subtract 80 from register value then divide by 2 = room temp deg C	1
Address	**40311**		
Function		Fitted Temperature Sensor Value Deg F	
Type		Read Only	
		Displays Deg F value	
Ver. 2.16+		subtract 40 from register value	
Address	**40313**		
Function		Outside Air Temperature Sensor Deg C	
Type		Read Only	
		Subtract 20 from register value then by 2 = room temp deg C	
Ver. 2.16+		Subtract 80 from register value then divide by 2 = room temp deg C	
Address	**40314**		
Function		Outside Air Temperature Sensor Deg F	
Type		Read Only	
		Displays Deg F value	
Ver. 2.16+		subtract 40 from register value	
Address	**40316**		
Function		Room Temperature shown on LCD - Deg C (0.5c)	
Type		Read Only	
		Subtract 20 from register value then by 2 = room temp deg C	
Ver. 2.16+		Subtract 80 from register value then divide by 2 = room temp deg C	
Address	**40317**		
Function		Room Temperature shown on LCD -Deg F (0.5f)	
Type		Read Only	
		Displays Deg F value	
Ver. 2.16+		subtract 40 from register value	
Address	**40318**		
Function		Current ACTIVE thermostat set temp (both Deg C & F)	
Type		Read Only	
		C=Subtract 20 from register value then by 2 to get set temp in C	
		F= 1:1	
Address	**40319**		
Function		Current Cooling set temp (both Deg C & F)	
Type		Read Only	
		C=Subtract 20 from register value then by 2 to get set temp in C	
		F= 1:1	

Address **40318**
Function Current Heating set temp (both Deg C & F)
Type Read Only
C=Subtract 20 from register value then by 2 to get set temp in C
F= 1:1

Address **40330**
Function Dec C room sensor RAW decimal value display
Type Read Only
22.3c= 3
24.7c= 7 etc

Comments
This only displays the decimal value of any temperature – this register's primary function is for data exchange between the STM-770 thermostat and the EC-02 Module.

Address **40331**
Function Dec F room sensor RAW decimal value display
Type Read Only
77.6F = 6
69.4F = 4 etc

Comments
This only displays the decimal value of any temperature – this register's primary function is for data exchange between the STM-770 thermostat and the EC-02 Module.

Address **40332**– Valid only when EC-02 board fitted
Function Dec C Outside Air sensor RAW decimal value display
Type Read Only
22.3c = 3
24.7c = 7 etc

Comments
This only displays the decimal value of any temperature – this register's primary function is for data exchange between the STM-770 thermostat and the EC-02 Module.

Address **40333**– Valid only when EC-02 board fitted
Function Dec F Outside Air sensor RAW decimal value display
Type Read Only
77.6F = 6
69.4F = 4 etc

Comments
This only displays the decimal value of any temperature – this register's primary function is for data exchange between the STM-770 thermostat and the EC-02 Module.

Address **40334**
Function Deg C room temp decimal value as shown on LCD
Type Read Only
22.3c = 3
24.7c = 7 etc

Comments
This only displays the decimal value of any temperature – this register's primary function is for data exchange between the STM-770 thermostat and the EC-02 Module.

Address **40335**
Function Deg F room temp decimal value as shown on LCD
Type Read Only
77.6F = 6
69.4F = 4 etc

Comments
This only displays the decimal value of any temperature – this register's primary function is for data exchange between the STM-770 thermostat and the EC-02 Module.

Address	**40339**
Function	Economy PCB call Economy Fan ON
Type	Read EC-02 – Write SMT-770 0= Economy Fan Off 1= Economy Fan On

Comments
This register's primary function is for data exchange between the STM-770 thermostat and the EC-02 Module.

Address	**40340**
Function	LCD Segments display
Type	Read EC-02 – Write SMT-770 Function called by EC-02 Board only 0=No message display 1= Economy mode active 2= Economy board fault is active 3 = Economy mode and fault is active.

Comments
This register's primary function is for data exchange between the STM-770 thermostat and the EC-02 Module. It can also be used as a flag to indicate a Ec-02 fault input is active or the SMT-770/Ec-02 is using outside air for cooling (economy mode active)

Address	**40341**
Function	Enable outside air temperature display
Type	Read EC-02 – Write SMT-770 Writes the outside air temperature

Comments
This register's primary function is for data exchange between the STM-770 thermostat and the EC-02 Module.
Normally this register shows 255 = no sensor fitted. 1= show outside air temp. Outside air temperature value taken from register 40342

Address	**40342**
Function	EC-02 outside air Sensor Deg C
Type	Read EC-02 – Write SMT-770 Writes Outside air sensor reading to SMT-770 LCD 80 = 0C +/- 2 for every +/-1C shown on LCD

Comments
This register's primary function is for data exchange between the STM-770 thermostat and the EC-02 Module.
40341 must be set to 1 for this register to function

Address	**40343**
Function	EC-02 outside air Sensor Deg F reading
Type	Read EC-02 – Write SMT-770 Writes Outside air sensor reading to SMT-770 LCD 40 = 0F +/- 1 for every +/-1F shown on LCD

Comments
This register's primary function is for data exchange between the STM-770 thermostat and the EC-02 Module.
40341 must be set to 1 for this register to function

Address **40344**
Function EC-02 outside air Sensor Deg C decimal reading
Type Read EC-02 – Write SMT-770
Writes Outside air sensor decimal 0.X reading to SMT-770 LCD

Comments
This register's primary function is for data exchange between the STM-770 thermostat and the EC-02 Module.
40341 must be set to 1 for this register to function

Address **40345**
Function EC-02 outside air Sensor Deg F decimal reading
Type Read EC-02 – Write SMT-770
Writes Outside air sensor decimal 0.X reading to SMT-770 LCD

Comments
This register's primary function is for data exchange between the STM-770 thermostat and the EC-02 Module.
40341 must be set to 1 for this register to function

Address **40346**
Function Factory Test Mode
Type Read only
0 = OFF
1 = Display DIP Switch Configuration
2 = Relay Test mode (Will cycle all 5 relays on and off sequentially)

Address **40347** (2.19+ Firmware)
Function Display delta room / set temp
Type Read only
100 = set point = room temp
+1 for every 0.1 C room temp is greater than set temp
-1 for every 0.1C room temp is less than set temp

Address **40350** (2.17+ Firmware)
Function Raw Room temperature in 0.1c Deg C
Type Read only
(Raw-400) / 10

Comments
This is the raw value as measured by the thermostat sensor, fast updating - this value may NOT be shown on the thermostat LCD

Address **40351** (2.17+ Firmware)
Function Raw Room temperature in 0.1c Deg F
Type Read only
(Raw-400) / 10

Comments
This is the raw value as measured by the thermostat sensor, fast updating - this value may NOT be shown on the thermostat LCD

Address **40354** (2.17+ Firmware)
Function Display Room in 0.1c Deg C
Type Read only
(Raw-400) / 10

Comments
This value is shown on the thermostat LCD

Address **40355** (2.17+ Firmware)
Function Display Room in 0.1c Deg F
Type Read only
(Raw-400) / 10

Comments
This value is shown on the thermostat LCD

Address	**40356**	(2.2+ Firmware)
Function		TT terminal temperature value 0.1c Deg F
Type		Read only
		(Raw-400) / 10
		Range -30 to 95c (-20 to 200F)

Address	**40513**	
Function		Monday 1st Period (or Start Program) Hour
Type		Read / Write
		See setting hour in appendix A below

Address	**40514**	
Function		Monday 1st Period (or Start Program) Minute
Type		Read / Write
		See setting minute value in appendix B below

Address	**40515**	
Function		Monday 1st Period Cool Set Temperature
Type		Read / Write
		See setting Temperature in appendix C below

Address	**40516**	
Function		Monday 1st Period Heat Set Temperature
Type		Read / Write
		See setting Temperature in appendix C below

Address	**40519**	
Function		Monday 2ndPeriod Program Hour
Type		Read / Write
		See setting hour in appendix A below

Address	**40520**	
Function		Monday 2ndPeriod Minute
Type		Read / Write
		See setting minute value in appendix B below

Address	**40521**	
Function		Monday 2ndPeriod Cool Set Temperature
Type		Read / Write
		See setting Temperature in appendix C below

Address	**40522**	
Function		Monday 2ndPeriod Heat Set Temperature
Type		Read / Write
		See setting Temperature in appendix C below

Address	**40525**	
Function		Monday 3rd Period Program Hour
Type		Read / Write
		See setting hour in appendix A below

Address	**40526**
Function	Monday 3rd Period Minute
Type	Read / Write
	See setting minute value in appendix B below

Address	**40527**
Function	Monday 3rd Period Cool Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40528**
Function	Monday 3rd Period Heat Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40531**
Function	Monday 4th Period (Or Stop Program) Program Hour
Type	Read / Write
	See setting hour in appendix A below

Address	**40532**
Function	Monday 4thPeriod (or Stop Program) Minute
Type	Read / Write See setting minute value in appendix B below

Address	**40533**
Function	Monday 4thPeriod Cool Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40534**
Function	Monday 4thPeriod Heat Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40537**
Function	Tuesday 1st Period (or Start Program) Hour
Type	Read / Write
	See setting hour in appendix A below

Address	**40538**
Function	Tuesday 1st Period (or Start Program) Minute
Type	Read / Write
	See setting minute value in appendix B below

Address	**40539**
Function	Tuesday 1st Period Cool Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40540**
Function	Tuesday 1st Period Heat Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40543**
Function	Tuesday 2nd Period Program Hour
Type	Read / Write
	See setting hour in appendix A below

Address	**40544**
Function	Tuesday 2nd Period Minute
Type	Read / Write
	See setting minute value in appendix B below

Address	**40545**
Function	Tuesday 2nd Period Cool Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40546**
Function	Tuesday 2nd Period Heat Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40549**
Function	Tuesday 3rd Period Program Hour
Type	Read / Write
	See setting hour in appendix A below

Address	**40550**
Function	Tuesday 3rd Period Minute
Type	Read / Write
	See setting minute value in appendix B below

Address	**40551**
Function	Tuesday 3rd Period Cool Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40552**
Function	Tuesday 3rd Period Heat Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40555**
Function	Tuesday 4th Period (Or Stop Program) Program Hour
Type	Read / Write
	See setting hour in appendix A below

Address	**40556**
Function	Tuesday 4th Period (or Stop Program) Minute
Type	Read / Write
	See setting minute value in appendix B below

Address	**40557**
Function	Tuesday 4th Period Cool Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40558**
Function	Tuesday 4th Period Heat Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40561**
Function	Wednesday 1st Period (or Start Program) Hour
Type	Read / Write
	See setting hour in appendix A below

Address	**40562**
Function	Wednesday 1st Period (or Start Program) Minute
Type	Read / Write
	See setting minute value in appendix B below

Address	**40563**
Function	Wednesday 1st Period Cool Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40564**
Function	Wednesday 1st Period Heat Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40567**
Function	Wednesday 2nd Period Program Hour
Type	Read / Write
	See setting hour in appendix A below

Address	**40568**
Function	Wednesday 2nd Period Minute
Type	Read / Write
	See setting minute value in appendix B below

Address	**40569**
Function	Wednesday 2nd Period Cool Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40570**
Function	Wednesday 2nd Period Heat Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40573**
Function	Wednesday 3rd Period Program Hour
Type	Read / Write
	See setting hour in appendix A below

Address	**40574**
Function	Wednesday 3rd Period Minute
Type	Read / Write
	See setting minute value in appendix B below

Address	**40575**
Function	Wednesday 3rd Period Cool Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40576**
Function	Wednesday 3rd Period Heat Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40579**
Function	Wednesday 4th Period (Or Stop Program) Program Hour
Type	Read / Write
	See setting hour in appendix A below

Address	**40580**
Function	Wednesday 4th Period (or Stop Program) Minute
Type	Read / Write
	See setting minute value in appendix B below

Address	**40581**
Function	Wednesday 4th Period Cool Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40582**
Function	Wednesday 4th Period Heat Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40585**
Function	Thursday 1st Period (or Start Program) Hour
Type	Read / Write
	See setting hour in appendix A below

Address	**40586**
Function	Thursday 1st Period (or Start Program) Minute
Type	Read / Write
	See setting minute value in appendix B below

Address	**40587**
Function	Thursday 1st Period Cool Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40588**
Function	Thursday 1st Period Heat Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40591**
Function	Thursday 2nd Period Program Hour
Type	Read / Write
	See setting hour in appendix A below

Address	**40592**
Function	Thursday 2nd Period Minute
Type	Read / Write
	See setting minute value in appendix B below

Address	**40593**
Function	Thursday 2nd Period Cool Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40594**
Function	Thursday 2nd Period Heat Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40597**
Function	Thursday 3rd Period Program Hour
Type	Read / Write
	See setting hour in appendix A below

Address	**40598**
Function	Thursday 3rd Period Minute
Type	Read / Write
	See setting minute value in appendix B below

Address	**40599**
Function	Thursday 3rd Period Cool Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40600**
Function	Thursday 3rd Period Heat Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40603**
Function	Thursday 4th Period (Or Stop Program) Program Hour
Type	Read / Write
	See setting hour in appendix A below

Address	**40604**
Function	Thursday 4th Period (or Stop Program) Minute
Type	Read / Write
	See setting minute value in appendix B below

Address	**40605**
Function	Thursday 4th Period Cool Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40606**
Function	Thursday 4th Period Heat Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40609**
Function	Friday 1st Period (or Start Program) Hour
Type	Read / Write
	See setting hour in appendix A below

Address	**40610**
Function	Friday 1st Period (or Start Program) Minute
Type	Read / Write
	See setting minute value in appendix B below

Address	**40611**
Function	Friday 1st Period Cool Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40612**
Function	Friday 1st Period Heat Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40615**
Function	Friday 2nd Period Program Hour
Type	Read / Write
	See setting hour in appendix A below

Address	**40616**
Function	Friday 2nd Period Minute
Type	Read / Write
	See setting minute value in appendix B below

Address	**40617**
Function	Friday 2nd Period Cool Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40618**
Function	Friday 2nd Period Heat Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40621**
Function	Friday 3rd Period Program Hour
Type	Read / Write
	See setting hour in appendix A below

Address	**40622**
Function	Friday 3rd Period Minute
Type	Read / Write
	See setting minute value in appendix B below

Address	**40623**
Function	Friday 3rd Period Cool Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40624**
Function	Friday 3rd Period Heat Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40627**
Function	Friday 4th Period (Or Stop Program) Program Hour
Type	Read / Write
	See setting hour in appendix A below

Address	**40628**
Function	Friday 4th Period (or Stop Program) Minute
Type	Read / Write
	See setting minute value in appendix B below

Address	**40629**
Function	Friday 4th Period Cool Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40630**
Function	Friday 4th Period Heat Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40633**
Function	Saturday 1st Period (or Start Program) Hour
Type	Read / Write
	See setting hour in appendix A below

Address	**40634**
Function	Saturday 1st Period (or Start Program) Minute
Type	Read / Write
	See setting minute value in appendix B below

Address	**40635**
Function	Saturday 1st Period Cool Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40636**
Function	Saturday 1st Period Heat Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40639**
Function	Saturday 2nd Period Program Hour
Type	Read / Write
	See setting hour in appendix A below

Address	**40640**
Function	Saturday 2nd Period Minute
Type	Read / Write
	See setting minute value in appendix B below

Address	**40641**
Function	Saturday 2nd Period Cool Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40642**
Function	Saturday 2nd Period Heat Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40645**
Function	Saturday 3rd Period Program Hour
Type	Read / Write
	See setting hour in appendix A below

Address	**40646**
Function	Saturday 3rd Period Minute
Type	Read / Write
	See setting minute value in appendix B below

Address	**40647**
Function	Saturday 3rd Period Cool Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40648**
Function	Saturday 3rd Period Heat Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40651**
Function	Saturday 4th Period (Or Stop Program) Program Hour
Type	Read / Write
	See setting hour in appendix A below

Address	**40652**
Function	Saturday 4th Period (or Stop Program) Minute
Type	Read / Write
	See setting minute value in appendix B below

Address	**40653**
Function	Saturday 4th Period Cool Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40654**
Function	Saturday 4th Period Heat Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40657**
Function	Sunday 1st Period (or Start Program) Hour
Type	Read / Write
	See setting hour in appendix A below

Address	**40658**
Function	Sunday 1st Period (or Start Program) Minute
Type	Read / Write
	See setting minute value in appendix B below

Address	**40659**
Function	Sunday 1st Period Cool Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40660**
Function	Sunday 1st Period Heat Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40663**
Function	Sunday 2nd Period Program Hour
Type	Read / Write
	See setting hour in appendix A below

Address	**40664**
Function	Sunday 2nd Period Minute
Type	Read / Write
	See setting minute value in appendix B below

Address	**40665**
Function	Sunday 2nd Period Cool Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40666**
Function	Sunday 2nd Period Heat Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40669**
Function	Sunday 3rd Period Program Hour
Type	Read / Write
	See setting hour in appendix A below

Address	**40670**
Function	Sunday 3rd Period Minute
Type	Read / Write
	See setting minute value in appendix B below

Address	**40671**
Function	Sunday 3rd Period Cool Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40672**
Function	Sunday 3rd Period Heat Set Temperature
Type	Read / Write
	See setting Temperature in appendix C below

Address	**40675**	
Function		Sunday 4th Period (Or Stop Program) Program Hour
Type		Read / Write
		See setting hour in appendix A below

Address	**40676**	
Function		Sunday 4th Period (or Stop Program) Minute
Type		Read / Write
		See setting minute value in appendix B below

Address	**40677**	
Function		Sunday 4th Period Cool Set Temperature
Type		Read / Write
		See setting Temperature in appendix C below

Address	**40678**	
Function		Sunday 4th Period Heat Set Temperature
Type		Read / Write
		See setting Temperature in appendix C below

Appendix A Setting the Hour value.

0 = 0 am	6 = 6 am	18 = 12 noon	24 = 6 pm (1800)
1 = 1 am	7 = 7 am	19 = 1 pm (1300)	25 = 7 pm (1900)
2 = 2 am	8 = 8 am	20 = 2 pm (1400)	32 = 8 pm (2000)
3 = 3 am	9 = 9 am	21 = 3 pm (1500)	33 = 9 pm (2100)
4 = 4 am	16 = 10 am	22 = 4 pm (1600)	34 = 10 pm (2200)
5 = 5 am	17 = 11am	23 = 5 pm (1700)	35 = 11 pm (2300)

Appendix B Setting the Minute value.

0 = 0 min	32 = 20 min	64 = 40 min
1 = 1 min	33 = 21 min	65 = 41 min
2 = 2 min	34 = 22 min	66 = 42 min
3 = 3 min	35 = 23 min	67 = 43 min
4 = 4 min	36 = 24 min	68 = 44 min
5 = 5 min	37 = 25 min	69 = 45 min
6 = 6 min	38 = 26 min	70 = 46 min
7 = 7 min	39 = 27 min	71 = 47 min
8 = 8 min	40 = 28 min	72 = 48 min
9 = 9 min	41 = 29 min	73 = 49 min
16 = 10 min	48 = 30 min	80 = 50 min
17 = 11 min	49 = 31 min	81 = 51 min
18 = 12 min	50 = 32 min	82 = 52 min
19 = 13 min	51 = 33 min	83 = 53 min
20 = 14 min	52 = 34 min	84 = 54 min
21 = 15 min	53 = 35 min	85 = 55 min
22 = 16 min	54 = 36 min	86 = 56 min
23 = 17 min	55 = 37 min	87 = 57 min
24 = 18 min	56 = 38 min	88 = 58 min
25 = 19 min	57 = 39 min	89 = 59 min

Appendix B Setting the Temperature value.

Deg C Subtract 20 from value then divide by 2 to get Deg C value.
Deg F 1:1

If you change the register value in any address not listed above, extremely erratic thermostat response may result requiring a factory re-set of all thermostat functions.

Great care has been taken in the preparation of this addendum.
iO HVAC Controls takes no responsibility for errors or omissions contained in this document. It is the responsibility of the user to ensure this thermostat, or equipment connected to it is operating to their respective specifications and in a safe manner.

Due to ongoing product improvement iO HVAC Controls reserves the right to change the specifications of the T-32-P thermostat (or its components) or the EC-02 module without notice.

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