

TRT-1R Slimline Touchscreen Thermostats

The TRT-1R series smart thermostats offer a modern flush mounted slim design look for heating or cooling control. The thermostats can be used for various zone or underfloor heating/cooling control applications. All TRT-1R series thermostats have 3.5" backlit colour touchscreen.

The TRT-1R family covers a wide range of power options.

The MOD models have built-in Modbus RTU communications and the BAC models provide BACnet MS/TP communications. The thermostats can also be configured to be used as a lighting and/or air conditioning interface.



Features

- 12VDC, 24VAC/DC or 90-250VAC Power Supply
- 3.5" Inch Backlit Touchscreen Display
- BACnet or Modbus Communication Models
- Heating and/or Cooling Control
- Flush Mounting in the UK or EURO Wall Mounting Box
- Attractive Modern Designer Look
- Built-In Temperature Sensor
- Two Remote NTC10 Sensors; external control (alternatively outside temp display) or floor sensor
- ECO, Off and Holiday Modes with Fabric Frost Protection
- 250V 7A Switched Output Relay Rating
- Digital Input for Overrides
- $\pm 2\%$ rH Relative Humidity Option

Ordering guide

		Type	0	1	2	3	4	5	6
0	Touchscreen room thermostats	6001						0	
1	Device type	Room thermostat, 2RI, 1DI, 1RO	TRT-1R	1					
2	Communication	No communication			A				
		Modbus	-MOD		M				
		BACnet	-BAC		B				
3	Power supply	24 Vac/dc	-24			2			
		12 Vdc	-12			1			
		90..250 Vac	-230			M			
4	Additional measurements	No additional measurement					0		
		Relative humidity	-RH				1		
5	Reserved							0	
6	Body colour	Chrome							0
		White (RAL 9010)	-W						W
		Black (RAL 8022)	-B						B

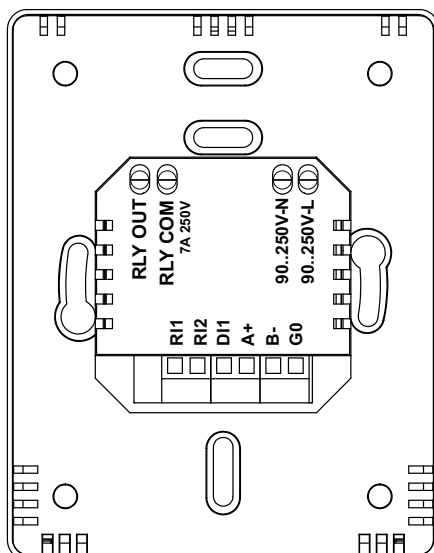
Technical Data

Power Supply	Power supply	Models -12: 12VDC -5%/+15% Models -24: 24VAC/DC -10%/+15% max. 80mA Models -M: 90..250VAC/DC 50/60Hz
	Power Consumption:	At 24VDC max 80mA
Display	Touchscreen	3.5" Backlit Touchscreen, 320 x 480 pixels, 255K colours
Signal Outputs	Relay Output	1 x 7A (res) 230Vac Relay, SPST
Signal Inputs	Built-In Sensor	0..50°C (32..122°F) $\pm 0.5^\circ\text{C}$ ($\pm 0.9^\circ\text{F}$) @ 25°C (@77°F)
	Resistive Inputs	2 x External NTC10K3A1 Sensor
	Digital Input	1 x Digital Input, Volt-Free Contact, Impedance <1KOhm

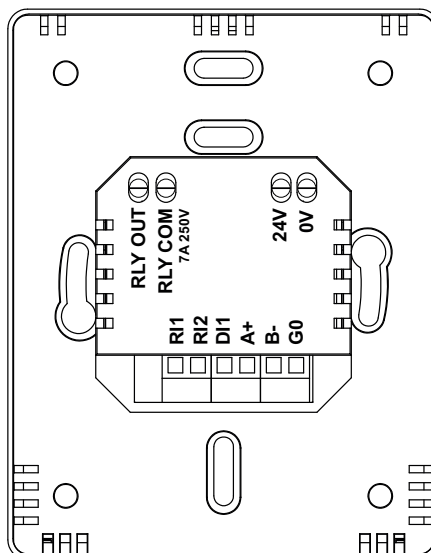
Optional Sensing	Humidity (RH Option)	
Characteristics	Range	0..100%rH
	Accuracy	±2% rH (within 20..80% rh)
Communication	Modbus (-MOD models)	
	Protocol	Modbus RTU
	Interface	RS485; maximum 63 devices
	Addressing	1..247 via Touchscreen
	Communication	9k6/19k2/38k4/57k6/76k8 Baud; Parity None/Even/Odd, 1 or 2 Stop Bits (adjustable through Touchscreen)
	BACnet (-BAC models)	
	Protocol	BACnet MS/TP
	Interface	RS485; maximum 63 devices
	MAC Addressing	1..127 via Touchscreen
	Device ID	Default 651000 + MAC Address, Adjustable
Communication	9k6/19k2/38k4/57k6/76k8 Baud; Parity None/Even/Odd, 1 or 2 Stop Bits (adjustable through Touchscreen)	
Connections	Terminal Connections (Relay & Power Supply)	Solid and Stranded Cable Maximum Size: Solid: 0.05-2.5mm ² , Stranded: 0.05-1.50mm ² / 14 to 30 AWG (UL) Rising Clamp: Size 2.5 x 2.2mm
	Terminal Connections (Low Voltage Terminals)	Solid and Stranded Cable; 90° Angle for Wiring Maximum Size: 0.05 to 1.5mm ² (EN ISO) / 14 to 30 AWG (UL) Rising Clamp: Size 2.5 x 1.9mm
Environmental Conditions	Operating	
	Temperature	0°C...+50°C (32..122°F)
	Humidity	0...95%rh (non-cond.)
Standards	CE Conformity	CE Directive 2004/108/EC (EMC), 2006/95/EC (LVD) EN61000-6-3: 2001 (Generic Emission) EN61000-6-1: 2001 (Generic Immunity) EN60730-1:2016 (Low Voltage) EN6100-4-2/4/5/11 (ESD, Transient, Surges, Interruptions)
	Degree of Protection	IP20
	Housing Material	Polycarbonate Plastics, Self Extinguishing
Housing	Mounting	Wall or Junction Box Mounting, Silver and Black W-Option: White Enclosure - Black Front B- Option: Black Enclosure - Black Front
	Dimensions	W88mm (3.46") x H112mm (4.41") x D43mm (1.68") Flush: W88mm (3.46") x H112mm (4.41") x D14.5mm (0.57")
	Weight	220g

Wiring Connections

90-250V MODEL WIRING



24V MODEL WIRING



90-250V Model Wiring

RLY OUT	250VAC/30VDC 7A (resistive) Rated Relay Output
RLY COM	250VAC/30VDC 7A (resistive) Rated Relay Common
0V-N	Power Supply Neutral (90-250V)
90..250V-L	Power Supply Live (90-250V)
RI1 (External Sensor 1)	Remote NTC10 Temperature Sensor Input
RI2 (External Sensor 2)	Floor NTC10 Temperature Sensor Input (or Outside Sensor)
DI1	Volt-Free Digital Input Contact (Holiday etc Override)
A+	Modbus / BACnet MS/TP RS485 A+ Connection
B-	Modbus / BACnet MS/TP RS485 B- Connection
G0	0V Common

24V Model Wiring

RLY OUT	250VAC/30VDC 7A (resistive) Rated Relay Output
RLY COM	250VAC/30VDC 7A (resistive) Rated Relay Common
0V	0V Supply
24V	24Vac/dc Supply
RI1 (External Sensor 1)	Remote NTC10 Temperature Sensor Input
RI2 (External Sensor 2)	Floor NTC10 Temperature Sensor Input (or Outside Sensor)
DI1	Volt-Free Digital Input Contact (Holiday etc Override)
A+	Modbus / BACnet MS/TP RS485 A+ Connection
B-	Modbus / BACnet MS/TP RS485 B- Connection
G0	0V Common (internally linked with 0V supply)

WARNING: Switch off the power before any wiring is carried out.

Typical Thermostat Home Screens

The images below illustrate the typical home screens on the TRT-1R thermostats. The screen is touch sensitive and shows the current status of the thermostat. Inside the red/blue/white ring the thermostat shows the current target temperature. The intensity of the red/blue ring changes based on the temperature differing from the target temperature.

The small circle indicates the current room temperature (and if enabled the floor temperature and/or outside temperature, and/or relative humidity via a smooth transition effect).

In the Cleaning Mode the number inside the large circle indicates the remaining cleaning time. The Boost icon changes to Cleaning icon and by pressing it the cleaning mode can be cancelled..

In the Holiday Mode the home screen shows the current ECO mode target temperature, and ECO icon. By pressing the Holiday Mode Icon, the holiday can be cancelled anytime.

ICON DESCRIPTION

- HEATING DEMAND
- COOLING DEMAND
- RELAY OFF (NO HTG/CLG)
- COMMS MESSAGE
- HOLIDAY MODE
- CLEANING MODE
- SCREEN LOCKED
- LIGHTS ON
- AIR/CON ON
- ERROR
- POWER OFF
- LOW/HIGH LIMIT APPLIED
- MAINTENANCE MODE
- BOOST MODE
- ECO MODE
- FROST PROTECTION ACTIVE
- SCREEN DIM ICON

HEATING DEMAND

BOOST BUTTON

STATUS INFORMATION BANNER

UNIT SELECTION

INTENSITY OF THE RED CHANGES DEPENDING ON DIFFERENCE BETWEEN TARGET AND ROOM, AT 2°C FULL RED

A/C AND LIGHTS STATUS AND ON/OFF SWITCH (VIA NETWORK FOR SYSTEMS ONLY)

INTENSITY OF THE BLUE CHANGES DEPENDING ON DIFFERENCE BETWEEN TARGET AND ROOM, AT 2°C FULL BLUE

TRANSITIONS BETWEEN ROOM - FLOOR - OUTSIDE IF FITTED / ENABLED

RELAY OFF, CLEANING ACTIVE

HOLIDAY, OFF MODE ON

CANCEL ECO

CANCEL HOLIDAY

FROST SETPOINT

CANCEL BY TOUCHING CLEANING ICON

THE SMALL INFO CIRCLE ACTS ALSO AS A TOUCH AREA FOR FURTHER SETTINGS

PRESS DIM BUTTON TO SWITCH BACKLIGHT OFF

Touchscreen

The TRT-1R room thermostat home screen has multiple touch sensitive areas that allow the thermostat settings to be changed.

- UP and DOWN arrows; to alter the current target temperature temporarily.
- SMALL ACTION CIRCLE (that contains current room temperature etc.); allows access to FURTHER SETTINGS AND INFORMATION screen.
- FUNCTION BASED ICON; in holiday mode shows the holiday icon from where the holiday mode can be cancelled, in cleaning mode shows the cleaning icon from where the mode can be cancelled; in BOOST mode shows the BOOST icon from where the output can be Boosted on; in OFF mode shows the OFF icon where the OFF mode can be cancelled.
- ECO icon; when ECO mode is on, the ECO mode can be cancelled from the button.
- A/C ICON; when AC is enabled the AC can be enabled/disabled from this icon (systems only).
- LIGHTS ICON; when LIGHTS are enabled, the lights can be enabled/disabled from this icon (systems only)
- UNIT ICON; if enabled from the unit icon the user can change between °C and °F for display

Touchscreen Backlight

The touchscreen backlight level can be adjusted through the maintenance mode. During the normal operation after 30 seconds of inactivity, the touchscreen dims to the "stand-by" level set. If the backlight level is set to 0, the screen backlight switches off.

By pressing the DIM icon when the screen is active the screen is immediately dimmed to the "stand-by" level. Pressing the DIM icon when the device is in the "stand-by level", switches the backlight OFF.

The screen backlight is automatically activated when it is touched.

Further Settings and Information

NOTE: To enter FURTHER SETTINGS screen, press SMALL ACTION CIRCLE (temperature display) on the home screen.

The FURTHER SETTINGS shows additional user settings options on the TRT-1R thermostats:-

- OFF icon to switch thermostat to OFF
- LOCK icon is used to lock the thermostat. Number of different lock modes options exist.
- HOLIDAY icon is used to switch the thermostat to holiday mode (ECO setpoint or Off Mode)
- CLEANING icon is used to enable timed cleaning mode.
- COG WHEEL icon allows entry to the maintenance mode.

FURTHER SETTINGS AND INFORMATION

ENTRY SCREEN

PRESS OFF BUTTON TO SWITCH THE THERMOSTAT OFF

LARGE CIRCLE CONTINUES TO DISPLAY CURRENT TARGET - TEMP DIFFERENCE

ACTIVATE FUNCTIONS BY SELECTING THE ICON

SELECT CLEANING ICON TO ENABLE CLEANING MODE. THE DISPLAY WILL COUNT DOWN FROM 30 SECONDS DURING WHICH ALL BUTTONS ARE DISABLED ALLOWING SCREEN CLEANING.

TO ENABLE A/C OR LIGHTS TOUCH THE ICON

USE ESC BUTTON TO SET OR WAIT FOR A TIME-OUT OR SELECT OTHER OPTION

TO ENABLE CLEANING MODE TOUCH THE ICON

SELECT LOCK ICON TO LOCK THE THERMOSTAT FROM TAMPERING

SELECT COG WHEEL TO ENTER MAINTENANCE MODE (REQUIRES PASSWORD)

ENTER HOLIDAY TIME OR JUST PRESS ENTER FOR HOLIDAY

ENTER LOCK CODE TO LOCK THERMOSTAT

ENTER LOCK CODE TO LOCK THE THERMOSTAT (DEFAULT 0000)

The FURTHER SETTINGS screen is protected by the Staff Code. As default the Staff Code is disabled (0000). If activated, the user will need to enter the *Staff Code* to enter the screen.

Temperature Displays

The TRT-1R thermostats show the measured temperatures inside the SMALL ACTION CIRCLE. The enabled temperatures rotate in and out in a sequence.



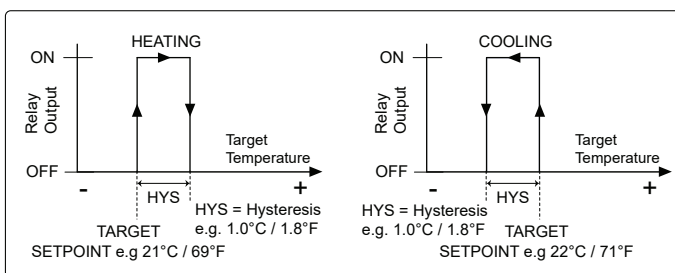
Room temperature is always displayed on the ACTION CIRCLE. The room temperature uses as default the built-in temperature sensor but can be configured to use an external sensor connected to RI1. The description for the room temperature can be changed via *Room Text* parameter in the configuration pages.

Floor Temperature is displayed on the ACTION CIRCLE if the MIN-MAX operation has been selected for the RI2 input (underfloor minimum/maximum control). The description for the floor temperature can be changed via *Floor Text* parameter in the configuration pages.

Outside Temperature is displayed on the ACTION CIRCLE if RI1/RI2 has been selected or if the *Outside Temp Source* parameter has been set to Network and valid network value is sent to the thermostat. The description for the outside temperature can be changed via *Outside Text* parameter in the configuration pages. By changing the description the outside temperature display can be used to indicate many other types of measurements.

Temperature Modes

The thermostat controls to the target temperature by switching the relay ON/OFF as required. The control logic has hysteresis i.e. in the heating mode the temperature has to exceed the target setpoint plus the hysteresis to switch the relay OFF to prevent fast on/off's. In cooling mode this operates in reverse. The diagram below illustrates the temperature control operation.



The target temperature is typically adjusted by the user by pressing UP & DOWN buttons. The target temperature is changed in different operating situations;

- COMFORT MODE; target temperature as adjusted by the user (or via the networked system) and displayed on the screen
- ECONOMY MODE; target temperature switched to the ECONOMY setpoint
- OFF MODE; the thermostat is OFF, but FROST setpoint is active protecting the building

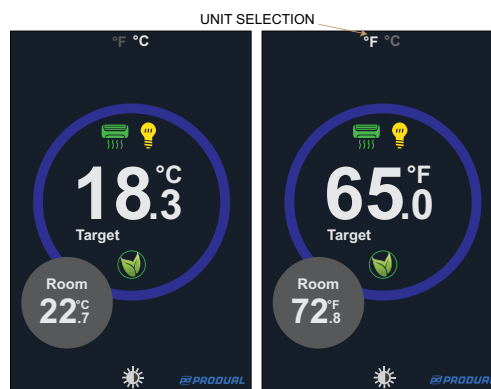
Centigrade to Fahrenheit Display

If Centigrade to Fahrenheit icon has been enabled it is possible on the front screen to change the units by touching this icon.

This option is particularly useful in hospitality applications where the client base is expected to be international.

In addition (from Fw 4.04 onwards) at the commissioning it is possible to select default units from parameter System/Native Units. When changing the Native Units the device carries out Factory Default reload using the selected units (for all relevant settings).

Warning: After changing the Native Units, the controller reloads defaults for ALL PARAMETERS. The Native Unit selection should be done at the start of the commissioning.



ECO Mode

The thermostat is switched to ECO mode via network or via digital input. The thermostat operates also in the ECO mode when the Holiday mode has been activated.

In the ECO mode the thermostat controls to the ECO heating/cooling setpoint and the current target setpoint is displayed on the screen.

When in the ECO mode, the ECO mode can be cancelled by pressing the ECO icon on the front screen. Last command controls the thermostat state i.e if the thermostat has been switched to ECO mode via a digital input or over the network, the user can cancel the mode through the touchscreen.



OFF Mode

The thermostats can be switched to OFF mode via the touchscreen, digital volt-free input (e.g. time clock) or via the communication network (system configuration). The thermostat switches also to OFF mode when the cleaning mode has been activated.

In the OFF mode the current Frost Setpoint is displayed as the target temperature.

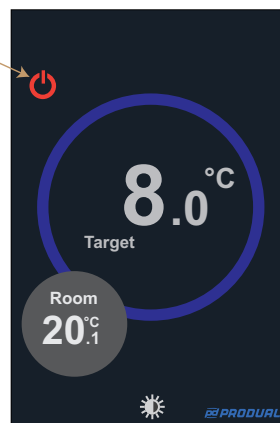
When in OFF mode if room temperature drops below the Frost Setpoint, the frost protection is activated, the SNOWFLAKE icon is displayed on the screen and the relay output is switched ON. When the temperature exceeds the frost setpoint plus two degrees, the frost condition is cleared.

The OFF mode can be cancelled by pressing the OFF icon. The system is designed so that the last command controls the current state. E.g. if the thermostat has been overridden to OFF mode via the network, or a digital input transition, the user can cancel the OFF mode by pressing the OFF icon. Similarly a networked thermostat driven to OFF mode by the user can be overridden back to COMFORT mode using the network master.

Note: The OFF mode button is as default available through the FURTHER SETTINGS screen. By activating the 'Show OFF Icon' parameter, the OFF icon is displayed on the front screen (as long as Boost button has not been activated).

When the device switches to OFF mode and then returns to the comfort mode, the setpoint is reset to the Nominal Setpoint setting. To disable this function (i.e. to retain last user setpoint), set the 'Setpoint Reset' parameter to disabled.

OFF CANCEL
ICON



Boost

The thermostat relay can be switched ON for a timed period by activating the BOOST function. The BOOST overrides the automatic temperature control and switches the output ON. As default the boost time is set to 0 (deactivated).

Holiday Mode

After entering FURTHER INFORMATION screen, by selecting the HOLIDAY icon, it is possible to set the number of days of holidays. The available range is 0-31 days. After setting the holiday, the thermostat immediately switches to OFF mode (alternatively TRT-1R can switch to ECO MODE during holidays, see configuration parameters).

By setting holiday to 0 or just by pressing ENTER button the thermostat switches to permanent HOLIDAY MODE. The HOLIDAY MODE can be cancelled by pressing the HOLIDAY ICON.

Cleaning Mode

After entering FURTHER INFORMATION screen, by selecting the CLEANING icon, it is possible to activate the cleaning mode. Initially the thermostat will enter a "Clean Screen" state where all touchscreen presses are ignored and 30 second countdown timer is displayed. This allows cleaning of the thermostat itself.

Once the "Clean Screen" timeout has expired the thermostat enters a "Cleaning" state during which control is automatically switched to the OFF/FROST mode and a countdown timer showing the cleaning time remaining is displayed on the home screen. The cleaning period can be set to 0..480 minutes via Maintenance Mode. If the cleaning period is set to 0 (default) only the "Clean Screen" function is applied.

A/C and Lights Enabled

It is possible to enable A/C and LIGHTS buttons. The buttons and their current status is displayed on the front screen.

The buttons are enabled through the Maintenance Mode in the Display settings.

Note: These options will only switch corresponding network variable on/off. The thermostat does not have any physical outputs to drive A/C or Lights.

LIGHTS
STATUS, AND
ON/OFF
SWITCH

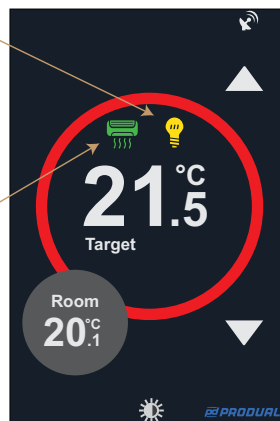
LIGHTS
ON

LIGHTS
OFF

A/C STATUS,
AND ON/OFF
SWITCH

A/C ON

A/C OFF



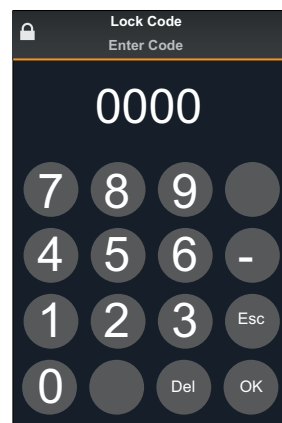
Lock Mode

After entering FURTHER INFORMATION screen, by selecting the LOCK icon it is possible to lock the thermostat. Now by entering the LOCK CODE, the thermostat lock state can be activated.

The lock mode can be configured to work in different ways:-

- DISABLED: Lock Mode Icon Not Available
- ON/OFF/BOOST ONLY: Allows On/Off/Boost Buttons Only
- ADJUST ONLY: Allows Temperature Adjustment, Or Optional Lights/AC Buttons Only
- NO INPUT: All Buttons Locked

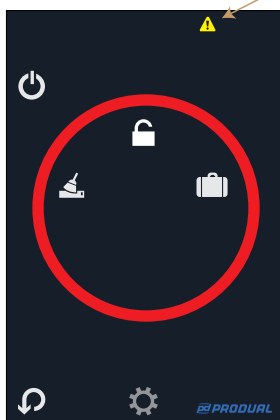
If the lock code is set to 0000 (default), there is no need to enter the lock code and the lock code entry screen is bypassed.



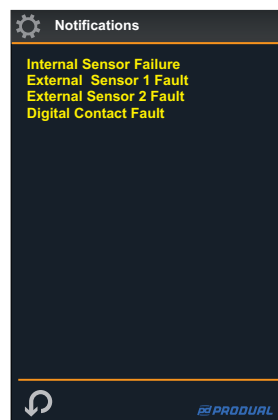
Lock Mode Options	Icon Active					
	Lock	Up and Down	Boost / OFF	ECO / Cleaning	AC	Lights
DISABLED	NO	YES	YES	YES	YES	YES
ON/OFF ONLY	YES	NO	YES	NO	YES	YES
ADJUST ONLY	YES	YES	NO	NO	NO	NO
NO INPUT	YES	NO	NO	NO	NO	NO

Alarm Display

FURTHER SETTINGS AND INFORMATION



SELECT ALARM ICON FOR MORE INFORMATION



When entering FURTHER INFORMATION AND SETTINGS screen and an alarm is active, select the alarm icon for more information.

The typical alarm reasons are:

- External sensor 1 (RI1) fault (when activated; out of range)
- External sensor 2 (RI2) fault (when activated; out of range)
- Internal sensor fault
- Digital Input Contact Fault Alarm

External Sensor RI1 & RI2 Inputs

A remote NTC10k3 sensor can be connected to these inputs to used for the temperature control and monitoring purposes. The options are:-

- DISABLED: RI is disabled.
- MAIN CONTROL: RI is used for the main temperature control.
- MIN-MAX: RI is used for the underfloor minimum/maximum temperature limiting control.
- OUTSIDE: RI is used to display (Outside) Temperature on the ACTION CIRCLE. It is possible to change the text to indicate alternative measurement.
- NETWORK: RI is available over the communication network for system purposes.

Note: If both RI1 and RI2 inputs are set to outside, the RI2 input takes the precedence

Outside Temperature Source

It is possible to configure the thermostat to show the outside temperature from the External Sensor inputs RI1 or RI2. In networked systems it is also possible to send the outside temperature from the network by configuring the *Outside Temp Source* parameter as *Network*.

DI1 Digital Volt-Free Input

The digital volt-free contact can be used to override the thermostat to ECO and OFF/FROST modes. The configuration options are:-

- Close for ECO Mode
- Open for ECO Mode
- Close for OFF/FROST Mode
- Open for OFF/FROST Mode
- Heating/Cooling (Change-Over Configuration)
- Alarm
- Network

"Close For" Configuration - The digital volt-free contact can be linked to e.g. external timer to switch the thermostat to ECO/OFF mode during the timed period.

"Open For" Configuration - The digital volt-free input can be used to activate ECO or OFF mode when the contact opens. In this mode it can be connected to a window switch or door card switch.

Heating/Cooling Change-Over Configuration - The digital input can be used to override from heating to cooling mode. The thermostat works in the heating mode when the contact is open, and in the cooling mode when the contact is closed.

Alarm Configuration - when the contact closes the "DI Contact Alarm" alarm message is displayed on the screen.

Network option is selected when the digital input is used for monitoring purposes only.

Humidity Measurement and Display (-RH option)

The models with RH option have a 2%RH accurate humidity sensor for room space humidity measurement. The humidity reading is displayed inside the SMALL ACTION CIRCLE (display as default enabled, option to disable through configuration pages) and available over the communication network.

Underfloor Heating/Cooling Control

When underfloor high/low limit sensor is fitted, the thermostat monitors the floor temperature.

If in HEATING CONTROL in COMFORT/ECO/BOOST modes:

- The relay is switched OFF if the Max. Floor Temp Limit is exceeded
- The relay switches back ON if the floor temp drops 1°C (Hysteresis) below the Max Temp Limit
- The relay is switched ON if the Floor Temperature drops below the Min Floor Temp Limit. This override is removed if the Floor Temperature exceeds 1°C the Min Floor Limit (Hysteresis)

This high limit is typically used to protect the floor surface. The minimum temperature limit is typically used in bathrooms to provide minimum comfort level for bare feet and to dry up water.

If in COOLING CONTROL in COMFORT/ECO/BOOST modes:

- The relay is switched OFF if the temperature drops below the Min. Floor Temp Limit
- The relay switches ON with the temperature exceeds 1°C (hysteresis) above the Min Floor Temp Limit

The low limit is typically used to prevent condensation.

The hysteresis is adjustable. To indicate the limit being active, the thermostat home screen shows a limit icon next to setpoint.

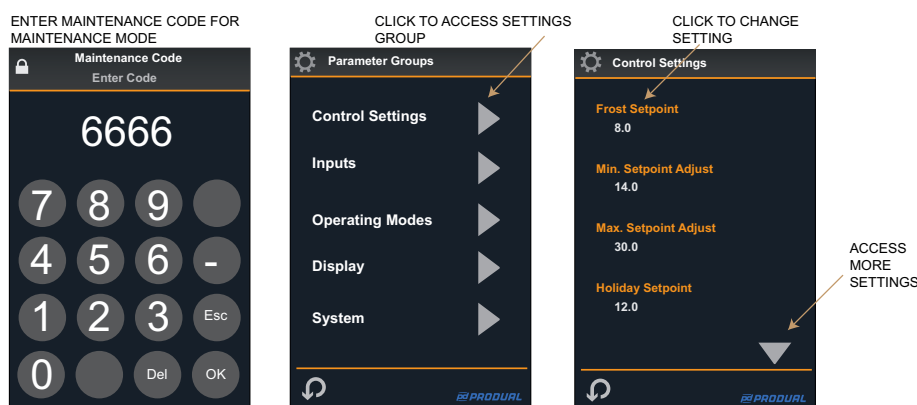
Touchscreen Calibration

The touchscreen can be re-calibrated by pressing the screen on power-up. Alternatively the calibration screen is activated by pressing the screen after exiting the System Configuration after which the device performs soft reset. Calibrate the screen by swiping to the all four edges of the screen and then press OK to accept the new settings.

Language Selection

The TRT-1R user pages can be displayed in different languages by selecting the language from the System Configuration pages.

Configuration Parameters



The TRT-1R thermostats are configured to operate in different modes via the configuration parameters accessible through the maintenance mode.

To enter the maintenance mode click the COG WHEEL icon in the FURTHER SETTINGS SCREEN and enter the maintenance mode password (default 6666).

Note: The maintenance mode password can be changed in the configuration settings. Make sure that you note the new password if changed. If the Maintenance Code is set as 0000, the Maintenance Code entry screen is bypassed (i.e. no protection).

CONTROL SETTINGS		
Parameter Name	Description	Range
Nominal Setpoint	Nominal Setpoint	0.0...95.0°C/°F (Default 21.0°C)
ECO Heating Setpoint	ECO Mode Heating Setpoint	0.0...95.0°C/°F (Default 16.0°C)
ECO Cooling Setpoint	ECO Mode Cooling Setpoint	0.0...95.0°C/°F (Default 28.0°C)
Frost Setpoint	Night Frost Setpoint (OFF Mode)	0.0...95.0°C/°F (Default 8.0°C)
Min Setpoint Adj	Minimum Adjustable Setpoint	0.0...95°C/°F (Default 14.0)
Max Setpoint Adj	Maximum Adjustable Setpoint	0.0...95°C/°F (Default 30.0)
Hysteresis	Temperature Control Hysteresis	0.0...20.0°C/°F (Default 1.0°C)
Control Type	Heating and/or Cooling Control (change-over via Digital input or over the communications network)	0 = Heating Control (default) 1 = Cooling Control 2 = Heating/Cooling Change-Over
Min Limit	Underfloor Heating Minimum Limit Setpoint	0.0...95.0°C/°F (Default 18.0°C)
Max Limit	Underfloor Heating Maximum Limit Setpoint	0.0...122.0°C/°F (Default 30.0°C)
Limit Hysteresis	Underfloor Heating Control Hysteresis	0.0..10.0 (default 1.0)
Setpoint Reset	Activates Setpoint Reset on Transition to OFF (Fw 4.04 onwards)	0 = Enabled (Default) 1 = Disabled

INPUTS		
Parameter Name	Description	Range
RI1 Mode	Remote Temperature Sensor RI1 Mode (status monitoring over the network is active for all active modes)	0 = Disabled (Default) 1 = Main Control 2 = Min-Max (Floor Sensor) 3 = Outside Temperature (Display) 4 = Network 5 = Not in Use (IR Control)
RI2 Mode	Remote Temperature Sensor RI1 Mode (status monitoring over the network is active for all active modes)	
Digital Input Mode	Digital Input Operation (status monitoring over the network is active for all modes)	0 = Disabled (no TRT-1R effect) 1 = Close for ECO 2 = Open for ECO 2 = Close for OFF/FROST 3 = Open for OFF/FROST 4 = Heating / Cooling Mode 5 = DI Contact Alarm 6 = Network
Digital Input Delay	Digital Input Delay Timer (transition from active to non-active)	0..7200 seconds (Default 0s)
Outside Temp Source	Source for the Outside Temperature Display	0 = Built-In Sensor 1 = Network Sensor
Internal Sensor Cal	Internal Sensor One Point Compensation	-10.0..+10.0 °C/°F
RI1 Cal	Sensor Connected to RI1 Calibration	-10.0..+10.0 °C/°F
RI2 Cal	Sensor Connected to RI2 Calibration	-10.0..+10.0 °C/°F
Humidity Cal	Humidity Calibration	-10.0..+10.0 % rH

OPERATING MODES		
Parameter Name	Description	Range
Lock Mode	Lock Operation	0 = Disabled (default) 1 = On/Off/Boost Workable Only 2 = Temp Adjust Only Available 3 = No Input - All Buttons Disabled
Lock Code	Lock Mode Password	0000 - 9999 (default 0000)
Cleaning Time	Cleaning Mode Running Time	0..480 minutes (Default 30)
Relay 1 Mode	Select Relay Operation (Main Loop)	0 = Control Normally Open (Default) 1 = Control Normally Closed
Relay 2 Mode	Select Relay Operation for the Infrared Control (Relay 2) - Not Applicable for TRT-1R	0 = Control Normally Open 1 = Control Normally Closed
Boost Time	Boost Mode Running Time	0..480 minutes (Default 0) 0 = Disabled
Holiday Mode	Holiday Mode Override Target	0 = Off Mode (default) 1 = ECO Mode

DISPLAY		
Parameter Name	Description	Range
Brightness	Backlight Brightness	0..20 (default 5)
Enable Lights	Enable Lights Icon / Network Variable	0 = Disabled (default) 1 = Enabled
Enable AC	Enable AC Icon / Network Variable	0 = Disabled (default) 1 = Enabled
Enable Holiday	Enable Holiday Icon	0 = Disabled 1 = Enabled (default)
Humidity Display	Enable / Disable Humidity Display (if option fitted)	0 = Disabled 1 = Enabled (default)
Show Unit Swap	Enable Temperature Display Unit Selection Button (°C/°F)	0 = Disabled (default) 1 = Enabled
Zone 1 Text	Description for the Room Sensor (Built-In Sensor / RI1)	1 = Room (Default) 2 = Floor 3 = Outside 4 = Zone 1 5 = Zone 2 6 = Zone 3 7 = Bathroom 8 = Sauna 9 = Bedroom 10 = Kitchen 11 = Cooler 12 = Flow 13 = Hot Water 14 = Tank 15 = Pool
Zone 2 Text	Description for the Floor Sensor (RI2) Default; 2 = Floor Note: Disabled removes Floor Text and Measurement from Display	0 = Disabled 1 = Room 2 = Floor 3 = Outside 4 = Zone 1 5 = Zone 2 6 = Zone 3 7 = Bathroom 8 = Sauna 9 = Bedroom 10 = Kitchen 11 = Cooler 12 = Flow 13 = Hot Water 14 = Tank 15 = Pool
Zone 3 Text	Description for the Outside Sensor (RI1 / RI2 / Network Value) Default; 3 = Outside Note: Disabled removes Outside Text and Measurement from Display	0 = Disabled 1 = Room 2 = Floor 3 = Outside 4 = Zone 1 5 = Zone 2 6 = Zone 3 7 = Bathroom 8 = Sauna 9 = Bedroom 10 = Kitchen 11 = Cooler 12 = Flow 13 = Hot Water 14 = Tank 15 = Pool
Show Off Icon	Shows OFF Icon on the Home Screen (Fw 4.04 onwards)	0 = Disabled (Default) 1 = Enabled

SYSTEM		
Parameter Name	Description	Range
Address	Modbus Address (Only Modbus versions) BACnet MAC Address (Only BACnet versions)	0..247 (Default 1) 0..127 (Default 1)
Baud Rate (Only Modbus/BACnet versions)	Modbus / BACnet Baud Rate	0 = 9600 (Default) 1 = 19200 2 = 38400 3 = 57600 4 = 76800
Parity (Only Modbus/BACnet versions)	Parity	0 = None (Default) 1 = Odd 2 = Even
Stop Bits (Only Modbus/BACnet versions)	Stop Bits	0 = 1 Stop Bit (Default) 1 = 2 Stop Bits
Device ID (Only BACnet versions)	BACnet Device ID	0..4,194,303 (Default Auto=651001)
Service Pin (Only BACnet versions)	Bacnet Service Pin (when activated the device sends BACnet I-AM message)	0 = Disabled (default) 1 = Enabled
Maintenance Code	Maintenance Mode Password	0000 - 9999 (default 6666)

SYSTEM		
Parameter Name	Description	Range
Staff Code	Staff Page Password - Access Password to Further Settings Screen	0000 - 9999 (default 0000 = disabled)
Language	Default Language for User Screens	EN = English (Default) FI = Finnish SE = Swedish IT = Italian NL = Dutch FR = French
Screen Refresh Rate	Refresh Rate of the LCD Screen	0 = Fast (default) 1 = Medium 2 = Slow
Reload Default	Reload Factory Default Settings	0 = Off (default) 1 = On
Version	Software Version	x.xx (Modbus/BACnet)

NOTE: If the communication settings have been changed they are activated upon exiting the Maintenance Mode - the device carries out a soft reset. Alternatively power cycle will activate the new communication settings.

Parameter Storage

The configuration parameters are stored in the non-volatile memory. When the changes are carried out via the display, the parameters are stored in the non-volatile memory when the controller returns to a normal display mode. If the changes are carried out over the network (Modbus or BACnet), then "NonVol Update" register/object is required to be forced on to save the changes. The register will automatically return to normal state when using Modbus. In BACnet the object needs to re-triggered.

Modbus Registers

The controller supports the following Modbus registers and function codes. The default communication speed is 9600 bps, 8 data bits, Parity None and 1 Stop Bit. The default Modbus Slave address is 1. The device Parity can be changed between Odd, None and Even. The baud rate is selectable between 9600, 19200, 38400, 57600 and 76800 bps. The table shows the register offsets starting from 0 (0 Base) register address. For example, the Temperature is read from Modbus register 100 using Function Code 04. Some Modbus masters will require one to be added to Modbus registers (i.e. 1 Base). In this case Function Code 04, register 101 needs to be entered. .

Register	Parameter Description	Data Type	Raw Data	Range
	FUNCTION CODE 01 - READ COILS FUNCTION CODE 05 - WRITE SINGLE COIL FUNCTION CODE 15 - WRITE MULTIPLE COILS			
100	Off Mode Override		0..1	Off - On
101	ECO Mode Override		0..1	Off - On
102	Heating/Cooling Mode (change-over mode)		0..1	0 = Heating, 1 = Cooling
	FUNCTION CODE 02 - READ DISCRETE INPUTS			
100	Digital Input Status		0..1	Off - On
101	Relay Output Status		0..1	Off - On
102	Holiday Mode Status		0..1	Off - On
103	Light Switch Status		0..1	Off - On
104	A/C Switch Status		0..1	Off - On
105	Cleaning Mode Status		0..1	Off - On
106	Screen Lock Status		0..1	Off - On
107	Boost Status		0..1	Off - On
108	ECO Mode Status		0..1	Off - On
109	Frost Status		0..1	Off - On
	FUNCTION CODE 04 - READ INPUT REGISTERS			
100	Built-In Temperature Measurement	Signed 16	-400...3020	-40.0...150.0°C (-40.0...302.0°F)
101	External Temperature Measurement (Resistive Input 1)	Signed 16	-400...3020	-40.0...150.0°C (-40.0...302.0°F)
102	Underfloor Temperature Measurement (Resistive Input 2)	Signed 16	-400...3020	-40.0...150.0°C (-40.0...302.0°F)
103	Current Calculated Setpoint (°C)	Signed 16	-400...3020	-40.0...150.0°C (-40.0...302.0°F)

Register	Parameter Description	Data Type	Raw Data	Range
104	Thermostat Current Mode	Unsigned 16	0..3	0 = Comfort 1 = ECO 2 = Frost 3 = Boost
105	Relative Humidity Measurement (with RH option)	Unsigned 16	0..1000	0..100.0 %rH
106	Alarm State	Unsigned 16	0..256	Bit 0 - Internal NTC Bit 1 - RI1 Bit 2 - RI2 Bit 3 - Humidity Sensor Bit 4 - DI1 Bit 5 - DI2 (Not Applicable) Bit 6 - Time Lost
107	Discrete Input Registers (Bit 0 = DI1, Bit1 = Relay, Bit 2 = Holiday etc.)	Unsigned 16	0..65,535	N/A
111	Comfort Mode User Setpoint [Nominal Setpoint + User Adjustment) (°C) (Fw 4.04 onwards)	Signed 16	-400...3020	-40.0...150.0°C (-40.0...302.0°F)
112	Room Control Temperature (Fw 4.04 onwards)	Signed 16	-400...3020	-40.0...150.0°C (-40.0...302.0°F)
113	Floor Control Temperature (Fw 4.04 onwards)	Signed 16	-400...3020	-40.0...150.0°C (-40.0...302.0°F)
114	Outside Display Temperature (Fw 4.04 onwards)	Signed 16	-400...3020	-40.0...150.0°C (-40.0...302.0°F)
200	Firmware Version	Unsigned 16	N/A	N/A
	FUNCTION CODE 03 - READ HOLDING REGISTERS FUNCTION CODE 06 - WRITE SINGLE HOLDING REGISTER FUNCTION CODE 16 - WRITE MULTIPLE HOLDING REGISTERS			
100	Nominal Setpoint	Unsigned 16	0...950	0.0...95.0°C/°F (Default 20°C)
101	ECO Heating Setpoint	Unsigned 16	0...950	0.0...95.0°C/°F (Default 16°C)
102	ECO Cooling Setpoint	Unsigned 16	0...950	0.0...95.0°C/°F (Default 28°C)
103	Frost Setpoint	Unsigned 16	0...950	0.0...95.0°C/°F (Default 8°C)
104	Minimum Setpoint	Unsigned 16	0...950	0.0...95.0°C/°F (Default 14°C)
105	Maximum Setpoint	Unsigned 16	0...950	0.0...95.0°C/°F (Default 30°C)
106	Hysteresis	Unsigned 16	0..200	0.0..20.0°C/°F (Default 1.0°C)
107	Rin1 Remote Temperature Sensor Mode	Unsigned 16	0..5	0 = Disabled (Default) 1 = Main Control 2 = Min-Max (Floor Sensor) 3 = Outside Temperature (Display) 4 = Network 5 = Not in Use (IR Control)
108	Rin2 Underfloor Temperature Sensor Mode	Unsigned 16	0..5	
109	Control Type	Unsigned 16	0..2	0 = Heating Control (default) 1 = Cooling Control 2 = Heating/Cooling Change-Over
110	Min Floor Temp Limit	Unsigned 16	0...950	0.0...95.0°C/°F (Default 18.0°C)
111	Max Floor Temp Limit	Unsigned 16	0...1220	0.0...122.0°C/°F (Default 30.0°C)
112	Floor Limit Hysteresis	Unsigned 16	0...100	0.0..10.0 (default 1.0)
113	Digital Input Mode	Unsigned 16	0..7	0 = Disabled 1 = Close for ECO (Default) 2 = Open for ECO 3 = Close for OFF/FROST 4 = Open for OFF/FROST 5 = Heating / Cooling Mode 6 = Digital Input Alarm 7 = Network
114	Digital Input Delay	Unsigned 16	0..7200	0..7200 seconds (Default 0s)
115	Enable Lights Symbol	Unsigned 16	0..1	0 = Disabled (default) 1 = Enabled
116	Enable AC Symbol	Unsigned 16	0..1	0 = Disabled (default) 1 = Enabled

Register	Parameter Description	Data Type	Raw Data	Range
118	Lock Mode	Unsigned 16	0..3	0 = Lock mode disabled (default) 1 = On/Off/Boost workable only 2 = Temp settings only available 3 = All buttons disabled
119	Enable Temperature Units Swap	Unsigned 16	0..1	0 = Disabled (default) 1 = Enabled
120	Sensor Calibration	Signed 16	-100..+100	-10.0..+10.0 °C/°F
121	RI1 Sensor Calibration	Signed 16	-100..+100	-10.0..+10.0 °C/°F
122	RI2 Sensor Calibration	Signed 16	-100..+100	-10.0..+10.0 °C/°F
123	Humidity Sensor Calibration	Signed 16	-100..+100	-10.0..+10.0 %rH
124	Humidity Display	Unsigned 16	0..1	0 = Disabled 1 = Enabled (default)
125	Cleaning Mode Time	Unsigned 16	0..480	0..480 minutes (Default 0)
126	Boost Mode Time	Unsigned 16	0..480	0..480 minutes (Default 0) 0 = Disabled
127	Backlight	Unsigned 16	1..20	0..20 (default 5)
128	Relay Control Mode	Unsigned 16	0..1	0 = Normally Open (Default) 1 = Normally Closed
129	Lock Mode Password	Unsigned 16	0..9999	0000...9999
130	Maintenance Mode Password	Unsigned 16	0..9999	0000...9999
131	Override A/C	Unsigned 16	0..2	0 = None (default) 1 = Override On 2 = Override Off
132	Override Lights	Unsigned 16	0..2	0 = None (default) 1 = Override On 2 = Override Off
133	Override Lock Mode	Unsigned 16	0..2	0 = None (default) 1 = Lock Screen 2 = Cancel Lock Mode
134	Enable Holiday Symbol	Unsigned 16	0..1	0 = Disabled 1 = Enabled (default)
135	Holiday Mode Target	Unsigned 16	0..1	0 = OFF/Frost Mode (default) 1 = ECO Mode
136	Relay Network Override (Overrides the relay drive directly)	Unsigned 16	0..2	0 = No Override (Default) 1 = Override Relay On 2 = Override Relay Off
137	Staff Code	Unsigned 16	0..9999	0000...9999
138	Language	Unsigned 16	0..5	0 = English (Default) 1 = Finnish 2 = Swedish 3 = Italian 4 = Dutch 5 = French
139	Zone 1Text (Room Sensor Description)	Unsigned 16	1..15	1 = Room (Default) 2 = Floor 3 = Outside 4 = Zone 1 5 = Zone 2 6 = Zone 3 7 = Bathroom 8 = Sauna 9 = Bedroom 10 = Kitchen 11 = Cooler 12 = Flow 13 = Hot Water 14 = Tank 15 = Pool

Register	Parameter Description	Data Type	Raw Data	Range
140	Zone 2 Text (Floor Sensor Description) Default: 2 = Floor Note: Disabled removes the text and the Floor measurement from the display.	Unsigned 16	0..15	0 = Disabled 1 = Room 2 = Floor 3 = Outside
141	Zone 3 Text (Outside / Network Sensor Description) Default: 3 = Outside Note: Disabled removes the text and the Floor measurement from the display.	Unsigned 16	0..15	4 = Zone 1 5 = Zone 2 6 = Zone 3 7 = Bathroom 8 = Sauna 9 = Bedroom 10 = Kitchen 11 = Cooler 12 = Flow 13 = Hot Water 14 = Tank 15 = Pool
142	Outside Temperature Source	Unsigned 16	0..1	0 = Built-In Sensor (Default) 1 = Network Sensor
143	Outside Air Temperature - Network Write	Signed 16	-580...1220	-58.0...122.0°C/°F (Default 0.0)
162	Setpoint Reset from Comfort to OFF (Fw 4.04 onwards)	Unsigned 16	0..1	0 = Enabled (Default) 1 = Disabled
163	Show OFF Icon on the HOME screen (Fw 4.04 onwards)	Unsigned 16	0..1	0 = Disabled (Default) 1 = Enabled
164	Thermostat Mode Override (Fw 4.04 onwards)	Unsigned 16	0..3	0 = Comfort 1 = ECO 2 = Frost 3 = Boost (Read Only)
300	Modbus Address	Unsigned 16	0..247	0..247 (Default 1)
301	Modbus Baud Rate	Unsigned 16	0..4	0 = 9600 (Default) 1 = 19200 2 = 38400 3 = 57600 4 = 76800
302	Modbus Parity	Unsigned 16	0..2	0 = None (Default) 1 = Odd 2 = Even
303	Stop Bits	Unsigned 16	0..1	0 = 1 Stop Bit (Default) 1 = 2 Stop Bits
304	Screen Refresh Rate	Unsigned 16	0..2	0 = Fast (Default) 1 = Medium 2 = Slow
400	Force Reset	Unsigned 16	0..1	0 = Normal 1 = Force Reset
401	Non Volatile Memory Update	Unsigned 16	0..1	0 = Normal 1 = Update
403	Force Factory Defaults	Unsigned 16	0..1	0 = Normal 1 = Force Factory Defaults

Legacy Modbus Registers The below Modbus registers are duplicate registers for legacy product support.

Register	Parameter Description	Data Type	Raw Data	Range
	FUNCTION CODE 01 - READ COILS FUNCTION CODE 05 - WRITE SINGLE COIL			
3	Relay Output (Read Only, Relay Mode=Control) Relay Output Override (Relay Mode=Network)		0..1	Off - On
	FUNCTION CODE 04 - READ INPUT REGISTERS			
0	Built-In Temperature Measurement	Signed 16	-400...3020	-40.0...150.0°C (-40.0...302.0°F)

Register	Parameter Description	Data Type	Raw Data	Range
1	Underfloor Temperature Measurement (Resistive Input 2)	Signed 16	-40...302	-40...302
FUNCTION CODE 03 - READ HOLDING REGISTERS FUNCTION CODE 06 - WRITE SINGLE HOLDING REGISTER FUNCTION CODE 16 - WRITE MULTIPLE HOLDING REGISTERS				
1	Unit Status. Reports Day/ECO status. Can be used to override to ECO. Reset locally.	Unsigned 16	0..1	0 = Day 1 = Night ECO Mode
2	Nominal Setpoint	Unsigned 16	0...95	0...95°C/°F (Default 20°C)
14	Minimum Setpoint	Unsigned 16	0...95	0...95°C/°F (Default 14°C)
15	Maximum Setpoint	Unsigned 16	0...95	0...95°C/°F (Default 30°C)
16	Hysteresis	Unsigned 16	0..20	0...20°C/°F (Default 1°C)
18	Frost Setpoint	Unsigned 16	0...95	0...95°C/°F (Default 8°C)
19	Modbus Address	Unsigned 16	0..247	0..247 (Default 1)

BACnet Interoperability Building Blocks Supported (Annex K)

Application Service	Initiate	Execute	BIBB
ReadProperty		Yes	DS-RP-B
ReadPropertyMultiple		Yes	DS-RPM-B
WriteProperty		Yes	DS-WP-B
ReinitializeDevice		Yes	
Who-Is		Yes	DM-DDB-B
I-Am	Yes		
Who-Has		Yes	DM-DOB-B
I-Have	Yes		
DeviceCommunicationControl		Yes	DM-DCC-B

BACnet Standard Object Types Supported

No dynamic Creation or Deletion supported. Objects, and object instances, are assigned to fixed functions within the proprietary control application of the product as follows

Object	Number Of Instances	Instance Assignments
Device Object	1	
Analog Input	7	AI(0) – Room Temperature AI(1) - Outside Temperature AI(2) - Floor Temperature AI(3) - Current Active Setpoint AI(4) - Humidity Measurement AI(5) – RI1 External Sensor 1 AI(6) – RI2 External Sensor 2
Analogue Value	13	AV(0) – Not Applicable (Target SP1) AV(1) – Not Applicable (Target SP2) AV(2) – Not Applicable (Target SP3) AV(3) – Not Applicable (Target SP4) AV(4) – ECO Heating Setpoint AV(5) – ECO Cooling Setpoint AV(6) – Frost Setpoint AV(7) – Min Floor Limit AV(8) – Max Floor Limit AV(9) – LCD Brightness AV(10) - Control Hysteresis AV(11) - Network Temp AV(12) - Nominal Setpoint
Binary Input	3	BI(0) – Digital Input (DI1) BI(1) – Cleaning Mode Status BI(2) – Boost Mode Status

Object	Number Of Instances	Instance Assignments
Binary Output	9	BO(0) – Relay Output BO(1) - OFF Mode BO(2) - ECO Mode BO(3) – Light Switch Status BO(4) – AC Switch Status BO(5) – Lock Screen BO(6) – Heating/Cooling Change-Over BO(7) - Non Volatile Update (updates setpoints/configuration parameters) BO(8) - Not Applicable (Hold)
MutliState Input	2	MSI(0) - Device Mode (1=Comfort, 2=ECO, 3=OFF) MSI(1) - Alarm

Device Object Properties

Property Name /ID	Attributes	Range	Default
Object Identifier	R/W		20
Object Name	R/W	32 Characters Max	Concatenation of product type and MAC address i.e. "TRT-1R001"
Object Type	R		Device
System Status	R		STATUS_OPERATIONAL
Vendor Name	R		Produal Oy
Vendor Identifier			783
Model Name	R		SRT5
Protocol Version	R		1
Protocol Revision	R		10
Max APDU Length	R		480
Segmentation Support	R		No
APDU Timeout	R		6000 ms
Number APDU Retries	R		3
MaxMaster	R		127
Max_Info_Frames	R		1
Database Revision	R		0

App_Config Object

NOTE: Application Configuration Object exposes the configuration parameters over the BACnet. However please check if your BACnet client can support Proprietary Object types to be able to access these parameters. Alternatively set the configuration parameters through the TRT-1R touchscreen.

	Property Name /ID	Attributes	Range	Default
Required Object Properties	Object Identifier	R		proprietary-128
	Object Name	R/W		"App_Config"
	Object Type	R		proprietary-128
Optional Properties	None			

	Property ID	Description	BACnet Data Type	Range
Proprietary Properties	30106	Alarm State	Unsigned	0 = No Fault 1 = Internal sensor fault 2 = RI1 fault 3 = Internal sensor & RI fault 4 = RI2 fault 5 = Internal Sensor & RI2 fault 6 = RI1 & RI2 fault 7 = Internal sensor, RI1 & RI2 Fault
	40101	ECO Heating Setpoint	REAL	0.0...95.0°C/°F (Default 16°C)

40102	ECO Cooling Setpoint	REAL	0.0...95.0°C/°F (Default 28°C)
40103	Frost Setpoint	REAL	0.0...95.0°C/°F (Default 8°C)
40104	Minimum Setpoint	REAL	0.0...95.0°C/°F (Default 14°C)
40105	Maximum Setpoint	REAL	0.0...95.0°C/°F (Default 30°C)
40106	Hysteresis	REAL	0.0..20.0°C/°F (Default 1.0°C)
40107	Rin1 Remote Temperature Sensor Mode	Unsigned	0 = Disabled (Default) 1 = Main Control
40108	Rin2 Underfloor Temperature Sensor Mode	Unsigned	2 = Min-Max (Floor Sensor) 3 = Outside Temperature (Display) 4 = Network 5 = Not in Use (IR Control)
40109	Control Type	Unsigned	0 = Heating Control (default) 1 = Cooling Control 2 = Heating/Cooling Change-Over
40110	Min Floor Temp Limit	REAL	0.0...95.0°C/°F (Default 18.0°C)
40111	Max Floor Temp Limit	REAL	0.0...122.0°C/°F (Default 30.0°C)
40012	Floor Hysteresis	REAL	0.0..10.0 (default 1.0)
40113	Digital Input Mode	Unsigned	0 = Disabled 1 = Close for ECO (Default) 2 = Open for ECO 3 = Close for OFF/FROST 4 = Open for OFF/FROST 5 = Heating / Cooling Mode 6 = Digital Input Alarm 7 = Network
40114	Digital Input Delay	Unsigned	0..7200 seconds (Default 0s)
40115	Enable Lights Symbol	Unsigned	0 = Disabled (default) 1 = Enabled
40116	Enable AC Symbol	Unsigned	0 = Disabled (default) 1 = Enabled
40118	Lock Mode	Unsigned	1 = Lock mode disabled (default) 2 = On/Off/Boost workable only 3 = Temp settings only available 4 = All buttons disabled (no input)
40119	Temperature Unit Selection	Unsigned	0 = Disabled (default) 1 = Enabled
40120	Internal Sensor Calibration	REAL	-10.0..+10.0 °C/°F
40121	RI1 Sensor Calibration	REAL	-10.0..+10.0 °C/°F
40122	RI2 Sensor Calibration	REAL	-10.0..+10.0 °C/°F
40123	Humidity Sensor Calibration	REAL	-10.0..+10.0 °C/°F
40124	Humidity Display	Unsigned	0 = Disabled 1 = Enabled (default)
40125	Cleaning Mode Time	Unsigned	0..480 minutes (Default 0)
40126	Boost Mode Time	Unsigned	0..480 minutes (Default 0)
40127	Backlight	Unsigned	0..20 (default 5)
40128	Relay Control Mode	Unsigned	0 = Normally Open (Default) 1 = Normally Closed
40129	Lock Mode Password	Unsigned	0000...9999 (Default 0000)
40130	Maintenance Mode Password	Unsigned	0000...9999 (Default 6666)
40134	Enable Holiday Symbol	Unsigned	0 = Disabled 1 = Enabled (Default)
40135	Holiday Mode Target	Unsigned	0 = OFF/Frost Mode (Default) 1 = ECO Mode
40137	Staff Access Code	Unsigned	0000...9999
40138	Language	Unsigned	0 = English 1 = Finnish 2 = Swedish 3 = Italian 4 = Dutch 5 = French

	40139	Zone 1 Text (Room Sensor Description)	Unsigned	1 = Room (Default) 2 = Floor 3 = Outside 4 = Zone 1 5 = Zone 2 6 = Zone 3 7 = Bathroom 8 = Sauna 9 = Bedroom 10 = Kitchen 11 = Cooler 12 = Flow 13 = Hot Water 14 = Tank 15 = Pool
	40140	Zone 2 Text (Floor Sensor Description) Default: 2 = Floor Note: Disabled removes the text and the Floor measurement from the display.	Unsigned	0 = Disabled 1 = Room 2 = Floor 3 = Outside 4 = Zone 1 5 = Zone 2 6 = Zone 3 7 = Bathroom 8 = Sauna 9 = Bedroom 10 = Kitchen 11 = Cooler 12 = Flow 13 = Hot Water 14 = Tank 15 = Pool
	40141	Zone 3 Text (Outside / Network Sensor Description) Default: 3 = Outside	Unsigned	0 = Disabled 1 = Room 2 = Floor 3 = Outside 4 = Zone 1 5 = Zone 2 6 = Zone 3 7 = Bathroom 8 = Sauna 9 = Bedroom 10 = Kitchen 11 = Cooler 12 = Flow 13 = Hot Water 14 = Tank 15 = Pool
	40142	Outside Temperature Source	Unsigned	0 = Internal Sensor (Default) 1 = Network Temperature
	40160	Not Applicable (Relay 2 Mode)	Unsigned 16	
	40162	Setpoint Reset from Comfort to OFF (Fw 4.04 onwards)	Unsigned	0 = Enabled (Default) 1 = Disabled
	40163	Show OFF Icon on the HOME screen (Fw 4.04 onwards)	Unsigned	0 = Disabled (Default) 1 = Enabled
	40300	MAC Address	Unsigned	0..127 (Default 1)
	40301	BACnet Baud Rate	Unsigned	0 = 9600 (Default) 1 = 19200 2 = 38400 3 = 57600 4 = 76800
	40302	Parity	Unsigned	0 = None (Default) 1 = Odd 2 = Even
	40303	Stop Bits	Unsigned	0 = 1 Stop Bit (Default) 1 = 2 Stop Bits
	40304	Screen Refresh Rate	Unsigned	0 = Fast (Default) 1 = Medium 2 = Slow
	40400	Force Reset	Unsigned	0 = Normal (Default) 1 = Force Reset
	40401	Non Volatile Memory Update	Unsigned	0 = Normal 1 = Update
	40403	Force Factory Defaults	Unsigned	0 = Normal (Default) 1 = Force Factory Defaults

NOTE: Information is subject to change without prior notice.

Dimensions

