

ERT50T Triac Noiseless Digital Room Thermostat for Underfloor Heating Applications



SSALU

Instruction Manual Model No ERT50T Triac



PRODUCT COMPLIANCE

This product complies with the essential requirements of the following EC Directives:

- Electro-Magnetic Compatibility directive 2004/108/EC
- Low Voltage Directive 2006/95/EEC
- EC Marking directive 93/68/EEC

SAFETY INFORMATION

These instructions are applicable to the Salus Controls model stated on the front cover of this manual only, and must not be used with any other make or model.

These instructions are intended to apply in the United Kingdom only, and should be followed along with any other statutory obligations.

This accessory must be fitted by a Competent person, and installation must comply with the guidance provided in the current editions of BS7671 (IEE Wiring Regulations) and Part 'P' of the Building Regulations. Failure to comply with the requirements of these publications could lead to prosecution.

Always isolate the AC Mains supply before opening or removing the unit from the wall or wall box.

Please leave these instructions with the end user where they should be kept in a safe place for future reference.

INTRODUCTION

A programmable thermostat is a device that combines the functions of both a room thermostat and heating controller into a single unit. The programmable thermostat is used to switch the heating system in your home on and off as needed. It works by controlling the temperature according to a series of programmed settings that take effect at different times of the day.

The ERT50T Triac from Salus Controls is a stylish and accurate digital room thermostat that is fitted with a large easy to read Liquid Crystal Display (LCD). The ERT50T Triac benefits from simple one-touch operation, and this controller has been specifically designed to be used with underfloor heating systems.

Features

- 12/24 Hour Clock with Daylight Saving feature
- Key lock Function
- 3 Preset and 2 User Profiles
- Comfort/Standard/Reduced Temperature Zones
- 2°C/4°C selectable Night Setback(NSB) and Communication Bus
- 8 different languages selection
- Solid State (Triac) output
- Auto/Manual Mode
- PWM or On/Off Output
- Heat/Cool selection
- Holiday Function
- Frost Protection



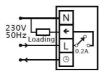
INSTALLATION

Please read the important safety information at the start of this manual before you begin to install the device.

The ideal position to locate the ERTSOT Triac digital room thermostat is about 1.5m above floor level. It should be mounted in a location where the thermostat is easily accessible, reasonably lit and free from extremes of temperature. The electrical connections to the ERTSOT Triac are made to the internal terminal strip. Connection details are shown below - no Earth connection is required for the correct and safe operation of the thermostat as the device is double insulated.

Terminal Connections

Terminal	Description	Terminal Block
N	Mains Neutral	
÷	Switched Output	ecee
L	Mains Live	N C L C
(1)	Temperature setback (230V AC input)	EFFE



After installing the ERTSOT Triac in a suitable location, wiring connections can be made as shown above. The following criteria apply to the installation:

- The incoming AC mains supply should be 230V AC and fused at 2 amps.
- Optimum cable size for installation is 1.5 mm²; wiring colours should be in accordance with the current requirements of the IEE Wiring Regulations.
- All wiring connections should be securely made, and be firmly terminated within each of the terminal screw clamps.

Do not restore the mains supply to the system until all associated items are fully installed.

NOTE: All electrical installation work should be carried out by a suitably qualified Electrician or other competent person. If you are not sure how to install this programmable thermostat consult either with a qualified electrician, heating engineer or your boiler / heating system supplier for advice on how to continue.

Do not remove or refit the **ERT50T** Triac wiring without the mains supply to the system being isolated.

SETTING MODES

When the ERT50T Triac is first powered up, the Start Up Display will be shown.



Basic Settings

Many of the **ERTSOT** Triac configuration and operating settings can be changed here. Press any key to turn on the backlight, press CANCEL key, press and hold the SELECT and CANCEL keys together to enter program setting press + or - key to "Basic Setting", and press SELECT.

To change any of the basic settings, press the SELECT this will access the Program/Basic settings menu.

Use the PLUS (+) or MINUS (-) keys to choose the item you want to change and press the SELECT key to change to the setting menu for that item. Pressing the CANCEL key will exit from this menu and return you to the previous menu.

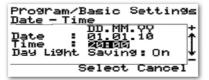
Program/Basic	Settings
Wate - Time Language Maintenance	\$
Select	Cancel

DATE AND TIME:

Press the PLUS or MINUS key to change the day setting, then SELECT to save your choice. Do exactly the same for the month and year. You can then choose whether to use a 12 or 24 hour time display (the default is 24 hour).



The time is set in the same way as the date – use the PLUS or MINUS keys to change the setting, and save by pressing SELECT.



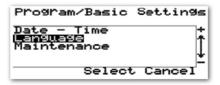
The last menu item is Daylight Saving – by default this is turned on. Change the setting using the PLUS or MINUS keys, then press the SELECT key to save the settings and return to the Program/Basic settings menu.



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LANGUAGE:

The **ERT50T** Triac is programmed to operate in eight different languages (the default is English). If you wish to change the language used, select Language from the Program/Basic Settings screen.



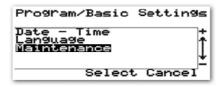
Select your choice of language with the PLUS or MINUS keys, then press SELECT to save your choice and return to the Program/Basic Settings screen.



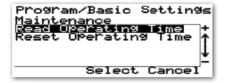
Pressing CANCEL will return to the previous screen without saving any changes.

MAINTENANCE:

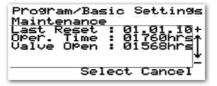
The Maintenance menu allows you to view operating times for the heating system. The ERT50T Triac will record operating time up to a maximum of 99,999 hours.



Select the Read Operating Time entry to see a summary of the system operating times.



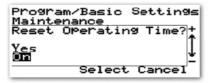
This screen will show the date the operating times were last reset, total operating time and total actuator open time.



The timers can be reset by selecting the Reset Operating Time item



Select Yes and then press the SELECT key to reset the timers to 0.



Press the CANCEL key to return to the previous menu.

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CONTROL SETTINGS

The Control menu allows changes to the Temperature Span, Communications, Frost Protection, Output, Valve Protection and Temperature Offset settings.

To access this menu, select the Control item from the Program menu.



Temperature Span:

The first setting that can be changed is Temperature Span. The default setting is 0.5 °C, but this can be changed to 1.0 °C. Press the SELECT key to save your changes.



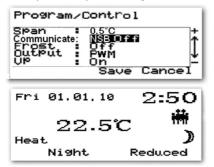
COMMUNICATIONS:

The Communicate menu item has several setting options, some of which are only relevant when there is more than one thermostat in the installation and they are configured in a Master/Slave relationship. Night Setback or Communication is only activated when Holiday or Reduced modes are turned on. When Night Setback is active, Crescent icon turns on and will only operate if a connection is made to the Setback terminal.

Option	Function
NSB On	Night Setback mode ON
NSB Off	Night Setback mode OFF
COM Off	Heat/Cool Control + Night Setback OFF
COM 4C	Heat/Cool Control + Night Setback 4 °C
COM 2C	Heat/Cool Control + Night Setback 2 °C

The COM signal controls not only the Night setback function, but also the Heat/Cool selection to any slave thermostats – if you have any Salus Controls ERT22 or ERT32 thermostats installed in the system, the ERT50T Triac can control them from the communications terminal.

The first option allows you to turn Night Setback on or off.

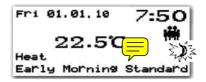


You can then change the communications options by using the PLUS and MINUS keys. The available options are COM Off, COM 4C and COM 2C.



If COM Off is selected, no setback signal will be sent to the Slave thermostat. With COM 4C or COM 2C selected the slave thermostat temperature will be reduced or increased by $4 \circ C$ or $2 \circ C$, depending on whether the system is in Heating or Cooling mode.

After choosing your option, press the SELECT key to save your selection and exit from the menu. When Night Setback is NOT active, the crescent icon flashes.



FROST PROTECTION:

Selecting the Frost item in the menu allows you to turn the frost protection mode of the ERTSOT Triac on or off (the default setting is On).



The Frost Protection mode temperature is preset at 5 °C; this temperature is factory set and cannot be adjusted.

The Frost Protection mode indicator $\frac{1}{2}$ will flash to indicate Frost Protection mode is active.

OUTPUT:

By selecting the Output menu item, you can change the control method used by the programmable thermostat - either Pulse Width Modulation (PWM) or On/Off. The default setting is PWM.



PWM only functions when the controller is operating in Heat mode.

VALVE PROTECTION FUNCTION:

The Valve Protection (VP) function is provided as a way to avoid the control valve from sticking or seizing when not being used for long periods (e.g. during the summer).



This function is enabled by turning the Valve Protection feature on or off using the PLUS or MINUS keys (default setting is On).

When enabled, the VP function will turn on the thermostat output to operate the control valve for a period of 5 minutes every week - the Valve Protection function will still operate even if the room temperature is higher than 35 °C.

TEMPERATURE OFFSET:

The Temperature Offset menu item is an adjustable setting that allows calibration of the controller to match the ambient temperature. The Offset can be adjusted between -3.5 °C and +3.5 °C in 0.5 °C steps.

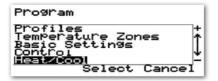
Use the PLUS and MINUS keys to adjust the Offset setting, and save your changes by pressing the SELECT key. After saving the setting, the ERT50T Triac will revert back to the Program menu.



Pressing CANCEL will return you to the Program menu without saving your changes.

HEAT/COOL:

The Heat/Cool menu allows you to select the ERT50T Triac's operating mode (heating or cooling).



Select your choice of mode using the PLUS and MINUS keys, and save using the SELECT key.



Changing the operating mode will also exchange the Comfort with Reduced temperature settings. The ERTSOT screen will look like this in Heating mode:

...and like this when in Cooling mode.

AFTER INSTALLATION:

After completing installation and powering up the ERT50T Triac for the first time the thermostat will behave in the following way: the installed firmware version will be displayed, the backlight will turn on and then the Start Up display will be shown prompting you to select the Language and to set the Date and Time. After making these selections, the <u>ERT50T</u> Triac will be in Home Display mode:



Program/Basic Settings Time DD.MM. ЮI .01.10 Light Saving: On Select Cancel

If the Reset Button is pressed, the ERT50T Triac will behave in the same way as described above, except that most previously saved user setting will remain.

Function	Factory Default Value	
Operation Mode	Normal	
Room Temperature	24 °C, updated within 5 seconds	
Display Mode	Full Screen	
Date Format	DD/MM/YY	
Clock	00:00 (24 hour)	
Day	Fri 01/01/10	
Key Lock	Off	
Holiday On/Off	Off	
Program On/Off	On	
Language	English	
Timers	0 hours	
Heat/Cool	Heat	
Span	0.5 °C	
NSB (setback)	Off	
Frost Protection	Off	
Output Mode	PWM	
Valve Protection	On	
Offset	0 °C	
Output	Off	
LCD Backlight	Off	
Daylight Saving	On	

N.B: Please be aware that after a Reset, the ERT50T Triac output relay may turn ON if the room temperature is lower than the Set Point temperature.

USER INTERFACE AND CONTROLS:

The status and operation of the ERTSOT Triac can be clearly seen on the large orange backlit Liquid Crystal Display (LCD) - this display allows the user to see at a glance the current status of the heating system.



There are few user controls for the ERT50T Triac, making the controller very easy to operate.

The MENU, PLUS (+), MINUS (-) and RESET keys are easily accessible on the front panel of the controller, just below the display. The SELECT and CANCEL keys are accessible after opening the hinged cover on the front of the controller.

These controls are shown below, along with a description of each of their functions.

USER CONTROL FUNCTION SUMMARY:

Key/Operation	Symbol	Functions
MENU key	Menu	Activates the menu function of th <mark>e ERT50T</mark> Triac
MINUS (-) key	-	Decreases the selected setting
PLUS (+) key	•	Increases the selected setting
RESET button		Resets the controller to default (original factory) settings
SELECT key	select	Selects or saves the currently highlighted menu or setting
CANCEL key	cancel	Cancels the current selection or exits the active menu

OPERATION

As previously described, the **ERT50T** Triac is configured and adjusted by the use of an intuitive user interface with a minimal number of user controls, and the backlit LCD gives a highly visible, easily readable indication of the thermostat status.

LCD INDICATOR FUNCTION SUMMARY:

Indicator	Symbol	Function
FROST (left hand side – flashing)	≭≍	Indicates frost protection mode is active.
CRESCENT	•	Indicates setback temperature mode is active.
TEMPERATURE	24°C	Indicates either current room temperature default is 24°C or set point temperature.
COOLING	≭	Indicates cooling mode is active.
HEATING	8	Indicates heat control mode is active.
KEY LOCK	0	Indicates key lock is turned on.
MANUAL	ŧ	Indicates the controller is operating in manual mode.
HOLIDAY	Ť	Indicates holiday mode is active.
FAMILY	tř††	Preset (predefined) profile for family environments.
SINGLE	Ŷ	Preset (predefined) profile for single user environments.
OFFICE		Preset (predefined) profile for office environments.
NAME 1	4	User definable and re-nameable profile.
NAME 2	0	User definable and re-nameable profile

PROFILES:

The ERTSOT Triac has a number of preset profiles that simplify installation and setup. The profiles contain default settings that should meet the majority of needs in a range of environments, meaning that the controller can work 'out of the box' with no reprogramming. The five preinstalled profiles are:

FAMILY	t iti t
SINGLE	Ť
OFFICE	
NAME 1	Ą
NAME 2	0

Each profile has settings for 7 weekdays, 6 different times of day and 3 different temperature zones:

Time of Day	Start	End
Early Morning	06:00	08:00
Morning	08:00	12:00
Noon	12:00	14:00
Afternoon	14:00	18:00
Evening	18:00	23:00
Night	23:00	06:00

Temperature Zone (heating mode)	Setting
Standard	20.0 °C
Comfort	24.0 °C
Reduced	16.0 °C

Programming the ERT50T Triac is very easy, and only needs you to select a combination of times of day and temperature zone, as in these examples:

Early Morning	06:00	08:00	Comfort
Morning	08:00	12:00	Standard
Noon	12:00	14:00	Comfort
Afternoon	14:00	18:00	Standard
Evening	18:00	23:00	Comfort
Night	23:00	06:00	Reduced

Example 1 - Profile=Family, Days=Mon-Fri

Example 2 - Profile=Single, Days=Mon-Fri

Early Morning	06:30	07:30	Comfort
Morning	07:30	12:00	Standard
Noon	12:00	15:00	Comfort
Afternoon	15:00	16:00	Standard
Evening	16:00	00:00	Comfort
Night	00:00	06:30	Reduced

EVERYDAY FUNCTIONS (EDF)

The ERT50T Triac gives the user the option of three different idle screen display modes, depending on the user's preference: Full screen, Selected screen or Basic Screen. In all three idle screen modes, the displayed temperature is the current room temperature.

Full Screen:

In full screen mode the weekday, date, time, temperature, heat or cool, time of day, temperature zone and profile are displayed.



Selected Screen:

In selected screen mode the weekday, date, time, temperature, heat or cool and profile are displayed.



Basic Screen:

In basic screen mode only the temperature, heat or cool and profile are displayed.



MANUAL CHANGES

Pressing the CANCEL button twice will allow you to access the Menu screen as shown here.



Pressing the PLUS or MINUS keys will allow you to change the set temperature up or down as shown in the examples below:





This change to the set temperature will temporarily overwrite the programmed set temperature – at the next programmed switch point, the programmed temperature will become active.

Pressing the MENU key will allow you to change display, profile and holiday settings.

Menu	
Change Display Change Profile Change Holiday Program On	₩ i ţ
Select	Cancel

Change Display:

Select an option by using the PLUS or MINUS keys and pressing the SELECT key.



Change Profile:

As previously, select an option by using the PLUS or MINUS keys and pressing the SELECT key.



Change Holiday:

The Holiday function allows the user to decrease the room temperature down to the 'Reduced' temperature for a programmed period of time. The user has to set the Holiday period Start and End times.



As normal, change the selected option by using the PLUS or MINUS keys, and confirm the selection using the SELECT key.

After changing the minutes part of the End time, you can save your settings by pressing the SELECT key, or press the CANCEL key to exit without saving.



The Setback function will still operate in Holiday mode. At the end of the Holiday period, normal programmed control will resume.

After saving the Holiday settings, the display will return to the menu screen. If Holiday is turned On, the full screen display will show the Holiday function icon.

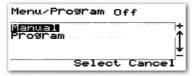


PROGRAM ON/OFF:

You have the option to turn off Program mode and use the ERTSOT Triac in Manual mode. To turn Program mode off, use the PLUS or MINUS keys to select the Program Off menu item, then press the SELECT key.

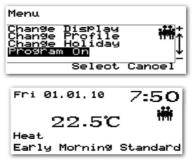


This will then allow you to access the Manual/Program menu screen: use the PLUS and MINUS keys to select your option and press SELECT to confirm.



Choosing Program Off will stop the ERT50T Triac operating in Programmed mode until the user selects Program On again. Any previous Holiday mode settings will be cancelled, and Holiday mode cannot be selected until Program On is reselected.

Select the Program On menu item to resume Programmed control and return to the active programmed profile.

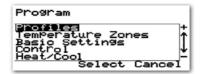


PROGRAMMING

The **ERT50T** Triac makes programming a very straightforward operation because of the intuitive menu structure. To access the Programming menu, you need to press the CANCEL key, and then press the SELECT and CANCEL keys together.



The Program menu has five options: Profiles, Temperature Zones, Basic Settings, Control and Heat/Cool. Here we will only cover programming the Profiles and Temperature Zones, as the other settings have been covered elsewhere.



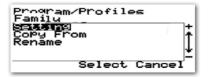
Profiles:

Selecting the Profile menu item from the Program screen will open a new menu listing the five installed Profiles.



Use the PLUS or MINUS keys to select the profile that you want to work with, and press the SELECT key to open the setting menu for that profile. Press the CANCEL key to exit to the previous menu without making changes.

Each profile contains the settings for the six times of day for each day of the week and connects one of the three temperature zones to each programmed step.



First of all choose if you want to program weekdays, weekends or individual days of the week - you can also start with weekday settings and later change the settings for a single day, or start with Monday and copy these settings into the other days.



Next, you can set the switching point for the time of day:



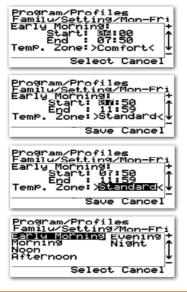
For every time of day you need a Start and End time (there cannot be any gaps between each End time and the next Start time).



After selecting the menu item the cursor will be at the first field next to the Start time for Early Morning – this will be set at its default setting. The default Start and End times are:

Time of Day	Start	End
Early Morning	06:00	08:00
Morning	08:00	12:00
Noon	12:00	14:00
Afternoon	14:00	18:00
Evening	18:00	23:00
Night	23:00	06:00

Use the PLUS or MINUS keys to change the highlighted setting, and press the SELECT key to confirm the setting and move to the next setting. Press the CANCEL key to exit to the previous menu without making changes. An example of setting changes is shown in the following images:



Pressing the SELECT key will save your changes and return you to the Time of Day setting menu. You use exactly the same procedure to alter time settings for weekends.

The procedure for setting times for a single day is basically the same. Select Single Day from the Setting menu then choose the Day you would like to programme.



Press the SELECT key on the highlighted day and change the time settings as you did previously.



Once an individual day has been programmed, you can copy the settings to other days very easily by using the Copy menu item.



In this example, we will copy the settings we made earlier for Monday, and copy them to Sunday.



Press the SELECT key with Monday highlighted, then use the PLUS or MINUS keys to scroll to Sunday. Press the SELECT key again and all the settings will be copied.

It is also possible to copy settings from one profile to another by using the Copy From menu item – please be aware that this function only allows you to copy settings from profile to profile: you cannot copy settings within a profile using this option.



In this example, we will copy the settings from the Office profile into the Family profile:

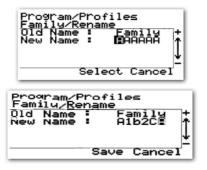
Highlight the profile you want to copy from using the PLUS or MINUS keys then press the SELECT key to copy the profile settings.



You can also if you wish rename a profile by using the Rename menu item.



Each profile can be renamed with a maximum of six characters (letters and numbers): in this example we will rename the Family profile to A1b2CA.



Use the PLUS or MINUS keys to change each character and confirm your choice with the SELECT key. On reaching the last character, the option to save the new name will appear – press the SELECT key to save your changes, or CANCEL to exit without saving.

TEMPERATURE ZONES:

The ERT50T Triac has three pre-programmed temperature zone settings – the default settings of Heating Mode for each zone are:

Temperature Zone	Setting
Standard	20.0 °C
Comfort	24.0 °C
Reduced	16.0 °C

The settings for each zone can be changed by selecting the Temperature Zones menu item. Pressing the SELECT key will access the Temp. Zones setting menu.



Each zone temperature can be changed using the PLUS or MINUS keys. Pressing the SELECT key will move to the next zone setting.



The settings for each zone cannot be set lower than 10 °C or set higher than 35 °C.

Program/TemP. Zones	
Comfort : 24,0 % Standard : 20.0 % Reduced : 16 . 0 %	ţ
Select Cance	ı–

After setting the Reduced temperature setting, pressing the SELECT key will save your choices and exit back to the previous screen.

OTHER FUNCTIONS AND CONTROLS Backlight

The backlight of the **ERTSOT** Triac is switched on automatically whenever any of the keys are pressed. The backlight will remain illuminated for approximately 10 seconds after the last key press. If the room temperature is higher than 35 °C, the backlight will blink on and off.

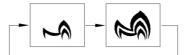
The backlight will not illuminate if there is no mains supply to the controller.

Control Status

The ERT50T Triac indicates on the LCD the control status by using a selection of display icons.

Heating:

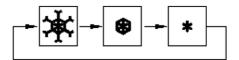
The display will show the word 'Heat' and an animated flame icon when in HEATING mode.





Cooling:

The display will show the word 'Cool' and an animated snowflake icon when in COOLING mode.

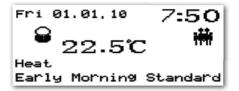




KEY LOCK

The **ERT50T** Triac has a Key lock function that helps to prevent accidental changes to the controller settings. Key lock is turned on or off by pressing and holding the PLUS and MINUS keys together for a few seconds.

When Key lock is active, the Key lock indicator will be displayed on the left side of the display:



If you press any of the keys when Key lock is active, the screen display will change:



Press the PLUS and MINUS keys together for a few seconds to turn Key lock off.

POWER MONITOR

The ERTSOT Triac monitors the incoming AC mains supply. If the power fails or is turned off, the controller will behave in the following way:

- LCD display turn off
- · All outputs (triac and relay) will turn off
- All settings (including time and date) will be saved to the internal EEPROM

RESET BUTTON

The Reset Button is provided as a way to restore the controller once the unit fails to function. Some settings may be lost and cannot be restored.

ENERGY TIP

One way to set and use your room thermostat is to find the lowest temperature setting that you are comfortable with, and then leave it set at this temperature. You can do this by setting the room thermostat to a low temperature, (for example 17 °C) and then increasing the setting by one degree each day until you are comfortable with the room temperature - you won't have to adjust the thermostat further, as adjustment above this setting will waste energy: a 1 °C increase in temperature is equal to 3% of your heating costs.

MAINTENANCE

The ERTSOT Triac digital room thermostat requires no special maintenance. Periodically, the outer casing can be wiped clean using a dry cloth (please DO NOT use solvents, polishes, detergents or abrasive cleaners, as these can damage the thermostat).

There are no user serviceable parts within the unit; any servicing or repairs should only be carried out by Salus Controls or their appointed agents.

Should the ERT50T Triac room thermostat fail to function correctly, check:

- Mains supply to the ERT50T Triac is switched on.
- · Heating system is switched on.
- If the ERT50T Triac is still not functioning correctly, press the Reset Button.

WARRANTY

Salus Controls warrants that this product will be free from any defect in materials or workmanship, and shall perform in accordance with its specification, for a period of two years from the date of purchase. Salus Controls sole liability for breach of this warranty will be (at its option) to repair or replace the defective product.

PRODUCT SPECIFICATION

ERT50T TRIAC
Programmable digital room
thermostat designed for
underfloor heating or
cooling applications.

Programming

Programming Modes: User selectable for 7 weekdays, 6 different times of day, 3 different temperature zones and 5 different profiles.

Override Facility: User selectable programme override facility.

Holiday Facility:

User selectable option to temporarily override selected programme

Clock

Format: Accuracy:

User selectable 12 or 24 hour format ± 1 minute per month Clock retention duration: typ. 8 hours

Power Supply Power Source:

230V AC / 50Hz

Memory Backup Type:

Electrically Erasable Programmable Read Only Memory (EEPROM)

Switching - Control

Switching Voltage Switching Current: Type: 230V AC / 50Hz 0.2A Triac

Switching - Setback

Switching Voltage:	230V AC / 50Hz
Туре:	Relay

Operation

Control Method: 2. On – Off control 1. PWM control (default)

Temperature Measurement

Temperature display range:5.0 °C - 45.0 °CTemperature display resolution:0.5 °C

Temperature setting range:10.0 °C - 35.0 °CTemperature setting resolution:0.5 °C

Frost protection setting: 5.0 °C

Environment

Operating Temperature:	0 °C to + 40 °C
Storage Temperature:	- 20 °C to + 60 °C

ERT50T TRIAC Warranty

Salus Controls warrants that this product will be free from any defect in materials or workmanship, and shall perform in accordance with its specification, for a period of two years from the date of purchase. Salus Controls sole liability for breach of this warranty will be (at its option) to repair or replace the defective product.

Customer Name:
Customer Address:
Post Code: Tel No:
Email:
Engineers Company:
Tel No:
Email:
Intallation Date:
Engineers Name:
Engineers Signature:

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