# 230V TRA-20A-STAT Operating Instructions

Heat Mat
Ice & Snow Systems

Heat Mat's Industrial TRA-20A-STAT thermostat provides a simple to use solution to controlling your trace heating system. Ideal for pipe temperature, or air temperature sensing applications, the controller contains three separate heater outputs and has a maximum capacity of 20Amp. Each controller is supplied within an IP67 enclosure and benefits from a large red LED display making monitoring and installing your system worry free.
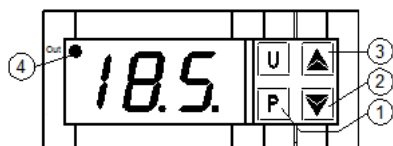
Front panel key:
1. Programming Button Used for setting the set point temperature and for programming the parameters
2 - Down Arrow Used for decreasing the set values
3 - Up Arrow Used for increasing the set values
4 - Output Display Indication the thermostat has switched on power

INSTALLATION OF SENSOR
Each thermostat is supplied with a 1.5m NTC probe as standard, this is suitable for measuring both air and pipe temperature and can be extended if required using a low resistance twin core cable. When mounting the probe onto pipework it is advisable to use either cable ties or aluminium tape. The temperature probe should be securely mounted on the opposite side of the pipe to the heating cable.

PROGRAMMING THE ADVANCE SETTINGS
1. To access the thermostat's advance settings you will need to remove the clear front cover with a cross-head screwdriver. Once removed, press and hold the P button for 5 seconds and the thermostat will show the text rP.
Press the P button once and then the number 0 will appear. You need to enter a password to continue. Use the up arrow to increase this value to 281 and then press P once to gain entry to the settings menu. The thermostat will then enter the programming menu.
2. Using the up or down arrow scroll through to the required setting (see key below) and then press the **P** button to access the value to change. Once selected the screen will alternate between the settings code and the settings value.
3. Use the **UP** and **DOWN** buttons to programme your desired value.
4. Once the desired value has been reached, press the **P** button to save the changes.
5. The changes will be saved and it is now possible to scroll through and programme another setting as described above.
6. To exit the menu system do not touch any buttons for 10 seconds, and the thermostat will revert to displaying the current measured temperature.

ADVANCED SETTINGS TABLE AND DESCRIPTIONS
The default values listed in the table below are pre-set on the unit and are suitable for some applications, however all values can be changed to suit your individual requirements. Please see the suggested settings included in the table for guidance.

	Settings Code	Description	Range	Factory default settings	Suggested pipe settings for frost protection		Suggested settings for hot water maintenace
					When sensing pipe temperature	When sensing air temperature	
1	S LS	Minimum temperature setting	-58 to HS	-50	0 °C	0 °C	55 °C
2	S HS	Maximum temperature setting	LS to 199	109	10 °C	10 °C	65 °C
3	S P	Set point/desired temperature	LS to HS	0.0	5 or 7 °C	3 °C	60 °C
4	rd	Increase/decrease in temperature before system switches off - hysteresis	N/A	2°C	2 °C	2°C	2 °C
5	rt1	Activation time of output if probe is damaged	oF to 99 mins.	99	oF	oF	oF

ERROR CODES

| Error	Reason	Action
E1 - E1	The probe may be disconnected, have a short circuit, or may measure a value outside the range allowed	Check the probe is connected and the resistance corresponds to the value below
EPR	Internal memory error	Check and re-programme the advance settings

TROUBLESHOOTING

If you are experiencing problems setting your desired set point/maintenance temperature (SP) check that your desired temperature is above the minimum temperature setting (LS) and below the maximum temperature setting (HS). **Please note the on/off switch**
can be used to force power for testing.

WIRING DIAGRAM
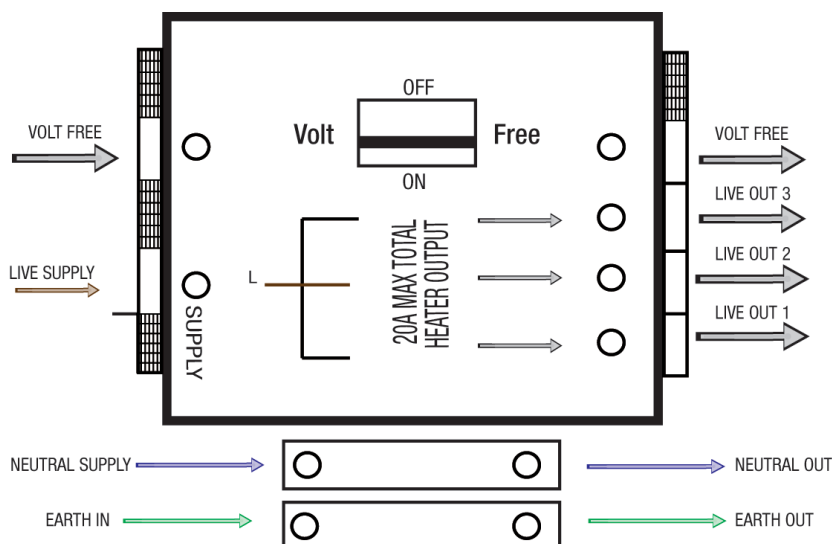
TECHNICAL DATA

Display: Red 17.7mm high LED
Set Range: NTC -50 °C to 109 °C
Operating temp: 0 to +50 °C
Accuracy: 1 degree
Resolution: 0.1 degree C
Enclosures: IP67, polycarbonate box with clear lid
Dimensions: 125mm x 125mm x 100mm
Cable Entries: 6 x 16mm/20mm dual size knockouts
Power Rating: 20 amp 230 vac
Consumption: 2va
Probe Length: 1.5 m
Sensor Type: NTC 10k ohms @ 25 °C IP68 sealed

ELECTRICAL DATA

Power supply: 230 VAC +/- 10%
Frequency AC: 50/60 Hz
Power consumption: 3 VA approx.
Input: 1 input for temperature probes: PTC (KTY 81-121, 990W @ 25 °C) or NTC (103AT-2, 10KW @ 25 °C)
Input for temperature probe NTC (103AT-2, 10KOhm @ 25ºC)
Output: 1 relay output SPDT - No
Electrical life of outputs: 50000 op. (om. VDE)
Action type: type 1.B (EN 60730-1
Overvoltage category: II
Protection class: Class II

MECHANICAL DATA

Housing: Self-extinguishing plastic, UL 94 V0
Pollution situation: 2
Operating temperature: 0 T 50 °C
Operating humidity: < 95 RH% without condensation
Storage temperature: -10 T +60 °C

FUNCTIONAL FEATURES

Temperature Control: ON/OFF mode
Measurement range: -50 to 109 °C
Display resolution: 1° or 0,1° (range 99.9 ...19.9 °)
Overall accuracy: +/- (0,5 % fs + 1 digit)
Sampling rate: 130 ms.
Display: 2 ½ Digit Red h 17.7 mm
Software class and structure : Class A
Compliance: ECC directive 89/336 (EN55022: class B; EN61000-4-2: 8KV air, 4KV cont.; EN61000-4-3: 10V/m; EN61000-4-4: 2KV supply, inputs, outputs;   EN61000-4-5: supply 2KV com. mode, 1 KV\ diff. mode; EN61000-4-6: 3V), 2006/95/CE (EN 60730-1, EN 60730-2-7, EN 60730-2-9)

Call Heat Mat on: 01444 247020
for installation advice

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