OPERATING MANUAL

TCAT-2LV
CONTROLLER

CONTENTS

TCAT-2 CONTROLLER

1.0 GENERAL DESCRIPTION

1.1 The TCAT-2 is a general purpose autotuning controller for a variety of laboratory applications.

The TCAT-2AC provides two time-proportioning controlled AC outlets for the control of resistive loads such as heat lamps or warming blankets. It can also be adapted to many different types of load (maximum 500 Watts.)

The TCAT-2LV provides a low voltage DC output for electrically sensitive applications where AC frequencies will interfere with monitoring devices. It can be supplied with a variety of different DC power supplies depending on the load requirements. The TCAT-2LV uses a dual set point control circuit to prevent a heating element from overshooting the control point. This is recommended in applications such as animal warming tables or blankets where thermal lag in the control system is an issue and might lead to burns.

The TCAT-2DF combines features of both the instruments described above.

A type T thermocouple probe is used as the temperature feedback sensor and any of Physitemp's extensive line of probes can be used for this application.

All the TCAT-2 instruments operate on a 110V - 230V AC supply.

2.0 UNPACKING AND CHECKING THE PACKAGE CONTENTS

The following items should be found in the packing box:

TCAT-2 controller
AC Line cord
Probes and other items as ordered.

3.0 SETTING UP THE TCAT-2LV CONTROLLER

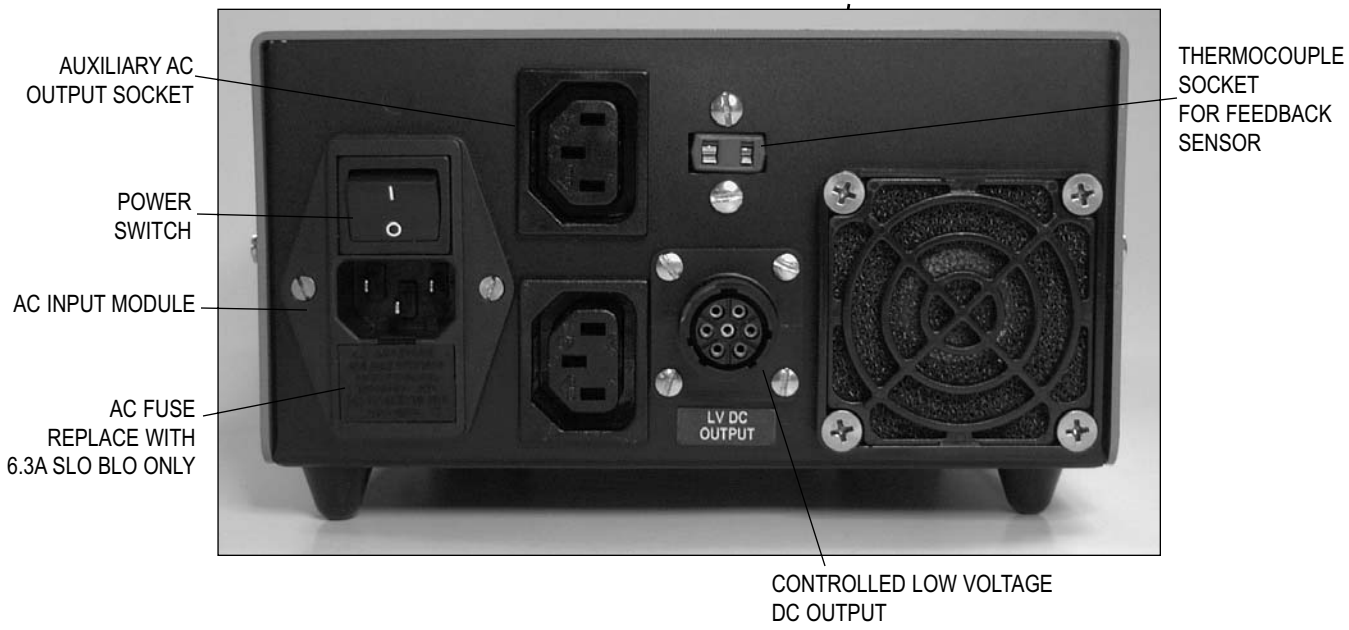
3.1 Connect a suitable load to the LVDC output

3.2 Insert a type T thermocouple feedback sensor into the blue socket. Ensure that the sensor tip is securely attached to the load at an appropriate location. Call our Engineering Applications Department (1-800-452-8510) for more information on sensor placement.

3.3 Connect the AC power cord to the AC input module and to any suitable AC outlet.

3.4 The auxiliary AC output socket is available for additional equipment and is activated by the input module power switch.

REAR PANEL CONNECTIONS



4.0 OPERATING INSTRUCTIONS

The instruction label from the top of the instrument is reprinted here in case it is ever defaced.

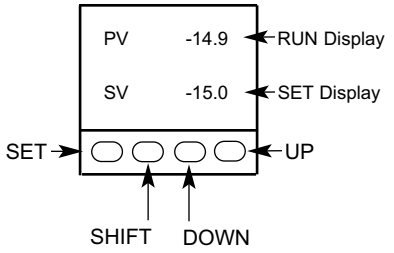
FEEDBACK SENSOR **AUXILIARY OUTPUT** **OFF/ON POWER SWITCH**

TCAT-2LV CONTROLLER

OPERATING INSTRUCTIONS

The TCAT-2 Controller parameters are set at the factory for the specific load supplied with it. If the TCAT-2 has not been so supplied, see the Operating Manual for adjustment of the control parameters

1. Connect the thermocouple sensor to the blue Feedback Sensor Socket on the rear panel and position the sensor.
2. Connect the load (heating pad or blanket) the Low Voltage 7-pin Output Socket on the rear of the controller
3 Connect the controller power cord to a suitable AC outlet.
4. Turn on controller Power Switch (rear panel).
5. Set the control temperature:
   a) Press SHIFT. A digit will flash.
   b) Use UP and DOWN buttons to change the flashing digit. Press SHIFT again to select the next digit.
   c) When all digits are changed, press SET to enter new control temperature.



SPECIFICATIONS:

Operating Range: -200°C to +400°C

Resolution: 0.1°C

AC Input Voltage: 110-130VAC or 220-240VAC, 50 or 60Hz (see Operating Manual)

SPECIAL DISPLAY INDICATIONS:

Red lamp will be illuminated when power is being supplied to load.

VIEWING ANGLE

The two front feet can be flipped down to adjust the viewing angle. Rotate feet down and towards the front until they lock in position. To return to original position, pull down slightly, then rotate back.

Serial Number:

9010

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154 Huron Avenue
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Made in USA

5.0 SPECIFICATIONS TCAT-2LV

Operating Range:	-200°C to +400°C
Digital Readout Resolution:	0.1°C
AC Input Voltage:	100 - 130VAC or 200 - 240VAC, 50 or 60Hz user selectable Fused input module, (6.3Amp, 5 x 20mm fuse)
Output:	Via LVDC power supply
Size:	7 3/8”wide x 10” deep x 4 3/8' high
Weight:	2.8 lbs
Other features:	Special Display Indications: Red lamp will be on when load is being controlled Adjustable viewing angle

6.0 MAINTENANCE, WARRANTY AND SERVICE

6.1 WARRANTY

Physitemp Instruments Inc. warrants this system to be free from defects in material or workmanship for 12 months from date of shipment. Repair or replacement will be made at no charge at the discretion of Physitemp if the defect is not the result of misuse or abuse. Physitemp accepts no consequential liability for delay in delivery, alleged faulty performance of the product or any other cause.

Cables and probes are considered expendable and are not covered by this warranty.

6.2 REPAIRS AND RECALIBRATION

For technical applications information on this instrument contact us at:

Tel: 1-800-452-8510 or 1-973-779-5577
Fax: 1-973-779-5954
E-mail: info@physitemp.com

In the event that any part of this system is to be returned for repair or recalibration, please pack it with care (in the original packing material if possible) and send it prepaid to:

Service Department
PHYSITEMP INSTRUMENTS INC
154 Huron Avenue
Clifton, NJ 07013 USA

Please include with the instrument:

1. A note describing any problems encountered
2. The name and telephone number of a person we can contact
3. The complete return address for shipping.

For your protection, please pack the item carefully and insure against possible damage or loss. Physitemp will not be responsible for damage resulting from careless packaging. Please return freight prepaid.

APPENDIX 1:
Installation instructions for HP-1M and HP-4M warming plates for use with TCAT-2LV and TCAT-2DF controllers

Check contents of package carefully to verify contents comprising:

1. HP-1M or HP-4M Warming Plate
2. 3 foot long connector cable (Other lengths can be made to order)

INSTALLATION INSTRUCTIONS

1. Attach the round 7-pin connector to mating socket on rear of TCAT-2LV or TCAT-2DF. The connector is mechanically polarized to prevent incorrect insertion. Once inserted, rotate the outer ring at the tip of the connector 90° in a clockwise direction to lock in place.

2. Attach opposite end of cable to the HP-1M warming plate. This connector is also polarized to prevent incorrect insertion and has a built-in locking tab to prevent accidental removal. To disconnect from warming plate press down the locking tab and pull back.

3. A Platinum RTD Sensor built into the plate signals the controller to prevent it from overheating. Power to the plate is interrupted if the plate temperature exceeds 44° centigrade. If higher plate control temperatures are required, please call our service department for instructions on how to change the set point.

4. A second sensor (Type T thermocouple), described in the Operating Manual for TCAT-2LV and TCAT-2DF, provides feedback control in the system. For rats this would normally be RET-1 or RET-2ISO flexible rectal probes and for mice the RET-4 can be used.

If you have questions about a specific application, please call our engineering department at 1-800-452-8510 or 1-973-779-5577, ext 115. Or e-mail us at info@physitemp.com

SPECIFICATIONS

Plate size:	HP-1M:	4.37” wide x 8.5” long x .025” thick
	HP-4M:	1.5” wide x 4” long x .025” thick
Power requirements:	12VDC @2Amps (25watts)	
Sensor:	Ceramic encapsulated Platinum RTD sensor, nominal resistance 100Ohms @ 0°C	

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APPENDIX 2

Installation Instructions for WB-1 and WB-2 Warming Blankets for TCAT-2LV and TCAT-2DF Controllers

FIR infrared technology is one of the most safe and effective methods for staying warm and for animal therapy in the 21st century. The cells of all life forms on earth will naturally activate and flourish when radiated by FIR. FIR technology is a special technology that guarantees the full effects of heat radiation and penetration. Infrared warming can penetrate cells deep under the skin, up to 3 or 5 cm. FIR technology assists with bone calcification and heat moxibustion. It assists in speeding up blood circulation so that nutrients are supplied to critical parts of the body more quickly. It also speeds us metabolism, strengthening the immune system against disease. Through infrared warming, it will also diminish inflammation, relieve aches and pains, kill bacteria, reduce bruising and heal wounds.

PRODUCT FEATURES

The WB-1 and WB-2 can be used as warming devices or assist in body therapies. They are made of carbon fiber materials that can radiate strong FIR energy. They are composed of a soft folding and durable material and are extremely water resistant. The material cannot become oxidized in air. The WB-1 and WB-2 have large warming capacities, small volume and are very light-weight.

TECHNICAL DATA

Rating Voltage:	7.4V
Overall Dimensions:	WB-1: 8 x 6 inches
	WB-2: 14 x 14 inches
Output Power:	15W Maximum for WB-1
	25W maximum for WB-2
Efficiency of output power:	>98%

OPERATING PROCEDURE

1) Connect the WB-1 or WB-2 extension lead to the rear of the TCAT-2LV or TCAT-2DF controller supplied with it. Do not connect to any other controller than the one with which it was originally supplied. Attach the round 7-pin connector to mating socket on rear of the controller. The connector is mechanically polarized to prevent incorrect insertion. Once inserted, rotate the outer ring at the tip of the connector 90° in a clockwise direction to lock in place.

2) Place the WB-1 or WB-2 in a location to begin warming or so an animal can rest on it. Do not apply the warming blanket to a haemophile or to animals that tend to bleed.

3 If any problems are encountered, do not disassemble or try to refit the device yourself. Please stop using the device immediately to avoid further problems during application. The WB-1 and WB-2 are designed especially for animals and cannot be used for other purposes.

4) To clean the warming blanket just wipe it with an alcohol soaked towel.

If you have questions about a specific application, please e-mail us at info@physitemp.com or call our engineering department at 1-800-452-8510 or 1-973-779-5577, ext 115.

WARRANTY

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