Global Water

Instrumentation, Inc.

11390 Amalgam Way
Gold River, CA 95670
T: 800-876-1172
Int'l: (916) 638-3429, F: (916) 638-3270

PRODUCT NAME: 378 TEMPERATURE CONTROLLER

The model 378 is a high performance industrial grade digital indicating single set point PROPORTIONAL /ON - OFF controller for use with type K, J ,T and E thermocouple. Thermocouple gain and cold junction are automatically compensated by internal electrode circuits.

An accurate 1 mV per display count analog is provided to interface the instrument with a recorder, printer, and so on.

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I) Inspection

a) Your 378 TEMPERATURE CONTROLLER unit was carefully inspected and certified by our Quality Assurance Team before shipping. If any damage has occurred during shipping, please notify Global Water Instrumentation, Inc. and file a claim with the carrier involved.

II) Specifications

Model	Type	Range	Resolution	Accuracy
378KC	K	0 to 1000°C	1°C	± 0.50% ± 1 count
378KF	K	0 to 1999°F	1°F	± 0.50% ± 1 count
378JC	J	0 to 550°C	1°C	± 0.40% ± 1 count
378JF	J	0 to 1000°F	1°F	± 0.40% ± 1 count

On/Off control

Hysteresis: °C model 6°C (± 3°C)
°F model 10°F (± 5°F)

Proportional control

Proportional band	Adjustable from on/off to 100°C or 100°F with built in hysteresis
Cycle time	20 ± 3 second
Reset	Manual adjust

General

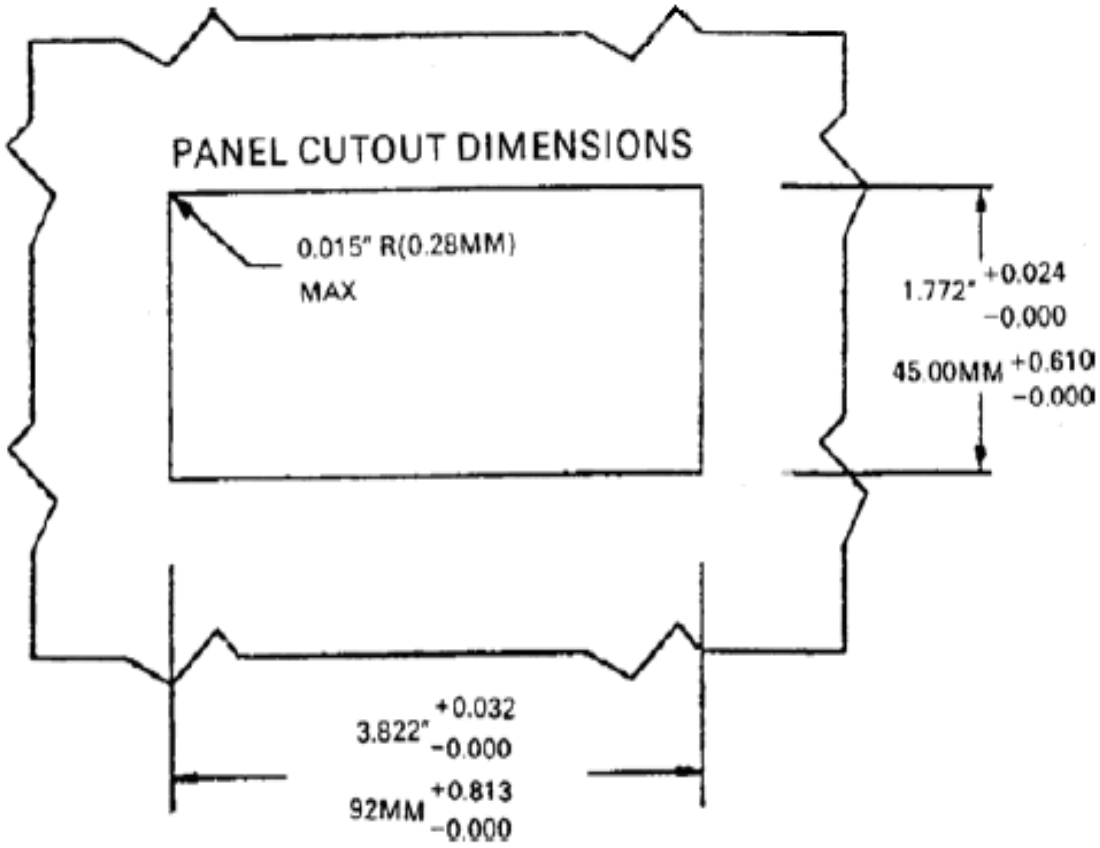
Operating temp.	0 to 40
Analog output	1 mV/count, ± 0.30% of span ± 1 mV
T/C burnout	Upscale
Output relay	8 A at 115 VAC, 4A at 230 VAC, resistive load
Power source	115/230VAC , ± 10% 50/60 Hz
Dimension	96mm X 48mm X 105mm
Weight	0.38 kgs

III) Mounting procedure

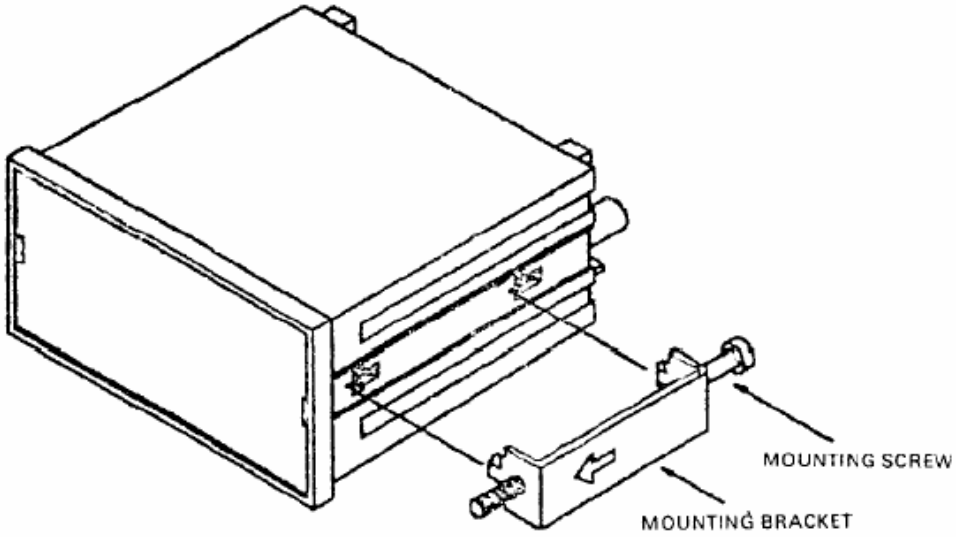
a) Make a cutout on any panel, with a thickness of 1/16 inch (1.5mm to 3/8 inch (9.5mm)). Refer to drawing 1.

b) Remove the mounting brackets assembly from the panel meter and insert the panel meter into the cutout. Refer to drawing 2.

c) Replace the mounting brackets assembly onto the panel meter and fasten the mounting screws to secure the panel meter to mounting panel .Refer to drawing 3.

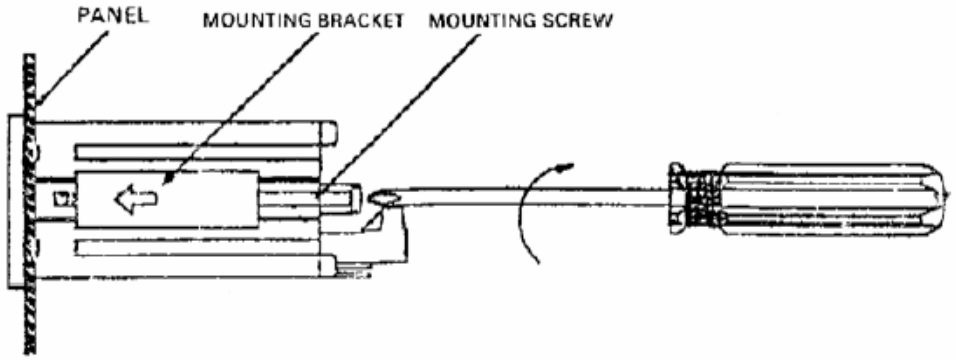


Panel cutout Drawing 1



Panel meter with mounting bracket and screw

Drawing 2



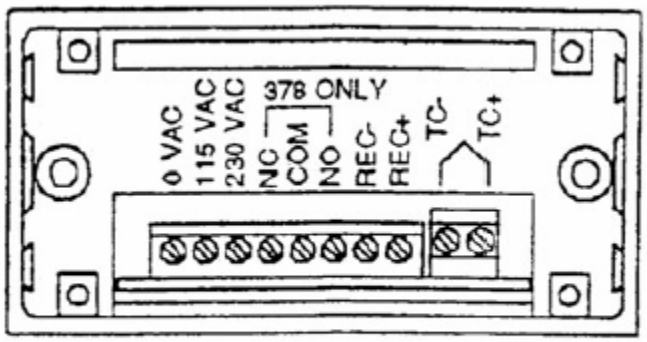
Mounting method

Drawing 3

IV) Wiring diagram

a) Connect the AC line to the rear of the instrument. The model 378 can be used with 115/230 VAC 50/60Hz, refer to drawing 4.

b) Connect the two thermocouple leads to the rear of the instrument .Be sure to observe the correct polarity of the thermocouple leads. Refer to drawing 4.



Wiring diagram Drawing 4

V) Analog voltage output

a) The analog voltage output can be used to interface with instruments such as recorder, printer, remote indicator, 4 to 20 mA converter, etc.

b) The following rules must be observed in order to avoid reading inaccuracies or possible damage to the instrument.

1. If grounded or naked thermocouple is used, the interface device's circuit common mustn't be connected to earth ground.

2. The input impedance of the interface device must be greater than 10 K Ohms.

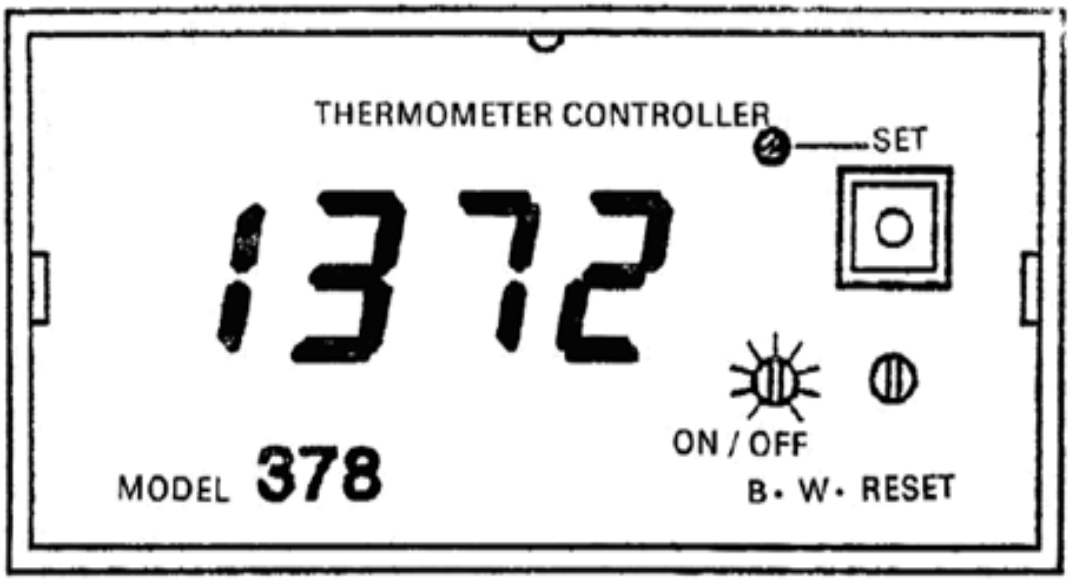
3. Be sure that the AC line voltage is never connected to the analog output.

VI) Controller action

a) The Model 378 is a single set point Proportional/On-off controller. The proportional bandwidth is adjustable from On-off to 100°C or 100°F. with built-in hysteresis. The cycle time is factory set to 20-second ± 3 seconds. Refer to drawing 6 (Page 8) for proportional controller timing.

VII) Bandwidth adjust

a) Set the B.W. adjust control on the front panel to the desired Proportional Bandwidth. The controller action will be On-off when the B.W. adjust control is fully counter clockwise. Refer to drawing 5.



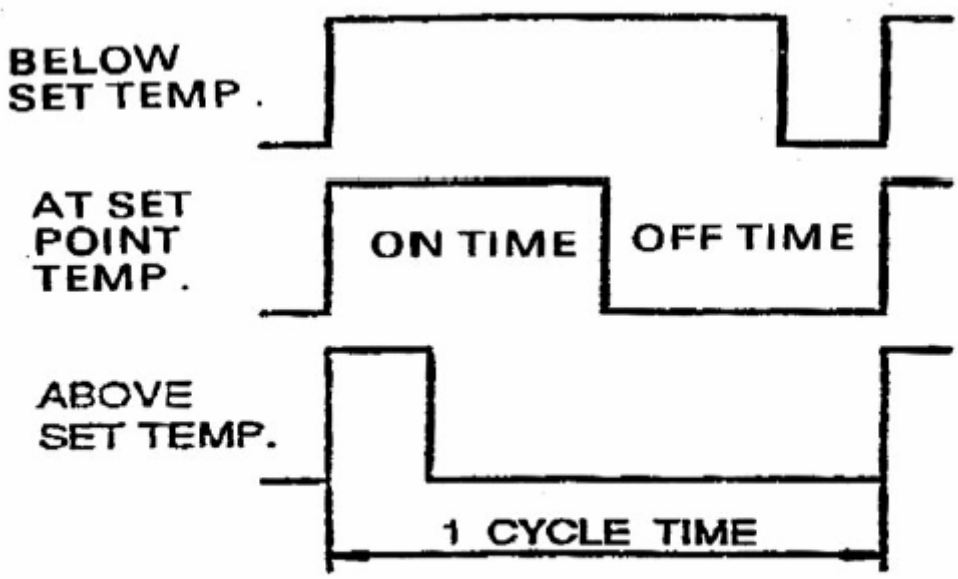
Front panel Drawing 5

VIII) Controller set and reset

a) Press the Set point switch on the front panel. The meter indicates the temperature value of the set point. Refer to drawing 5.

b) Adjust the Set control on the front panel for the desired temperature value.

c) Release the Set point switch, the meter again indicates the process temperature value.



Proportional controller timing Drawing 6

d) The process temperature may settle at any value within the proportional band.

e) Adjust the Reset control clockwise if the process temperature is less than the set temperature. The Reset control is disengaged for On/off control.

f) Repeat Step 5 (e) until the process temperature is equal to the set temperature.

IX) Relay and front panel led format

a) Connect the heater circuit to the N.O. and COM terminals of the relay. Make sure that the load doesn't exceed the rating of the relay, 8 A at 115VAC and 4A at 230VAC. The relay rating is for resistive load only.

b) The LED on the front panel will be On when the relay is energized .Power is delivered to the heater through the N.O. and COM terminals of the relay.

X) Thermocouple burn out protection

a) The thermocouple burn out normally would result in an open circuit. The meter will be roll up scale, exceeding the set point and de-energized the relay. Power to the heater will be cut off.

XI) Trouble Shooting

Other issues

a) Call us for tech support: 800-876-1172 or 916-638-3429 (many problems can be solved over the phone). Fax: 916-638-3270 or Email: **globalw@globalw.com.**

   Be prepared to describe the problem you are experiencing including specific details of the application and installation and any additional pertinent information.

b) In the event that the equipment needs to be returned to the factory for any reason, please call to obtain an RMA# (Return Material authorization). Do not return items without an RMA# displayed on the outside of the package.

   Clean and decontaminate the 378 TEMPERATURE CONTROLLER if necessary.

   Include a written statement describing the problems.

   Send the package with shipping prepaid to our factory address. Insure your shipment, as the warranty does not cover damage incurred during transit.

c) When calling for tech support, please have the following information ready;

   1. Model #.
   2. Unit serial number.
   3. P.O.# the equipment was purchased on.
   4. Our sales number or the invoice number.
   5. Repair instructions and/or specific problems relating to the product.

XII) Warranty

a) Global Water Instrumentation, Inc. warrants that its products are free from defects in material and workmanship under normal use and service for a period of one year from date of shipment from factory. Global Water's obligations under this warranty are limited to, at Global Water's option: (I) replacing or (II) repairing; any products determined to be defective. In no case shall Global Water's liability exceed the products original purchase price. This warranty does not apply to any equipment that has been repaired or altered, except by Global Water Instrumentation, Inc., or which has been subject to misuse, negligence, or accident. It is expressly agreed that this warranty will be in lieu of all warranties of fitness and in lieu of the warranty of merchantability.

The warranty begins on the date of your invoice.