AMETEK NCC Digital Temperature Indicators, Controllers and Timers allow the constant monitoring of temperature for various equipment applications. These controls are built to withstand rugged environments and still remain accurate, providing a high level of quality performance.

AMETEK NCC offers impressive factory back-up support and our parts inventory and product availability is unsurpassed. With over 250 stocking distributor outlets, serious downtime problems can virtually be eliminated. Technical assistance for design and engineering help is readily available through our **toll free number:** 800-323-2593.

Common Applications:

- *Walk-in Refrigerators*
- *Coolers/Freezers*
- *Food Warmers*
- *Convection Ovens*
- *Testing Chambers/Ovens*
- *Dry Cleaning Machinery*
- *Testing (Brew Temperature)*
- *Commercial Dishwashers*
- *Coffee Urns*
- *Heating and Air Conditioning Testing*
- *Kitchen Grease Filters*
- *Heat Sensitive Equipment*

TEMPERATURE MONITORS/CONTROLS

Panel Mount Digital Thermometer
Models TM165 and TM166

FEATURES

- *Heavy-duty stainless steel front plate and all metal case for rugged environments*
- *Easy-to-read digital display*
- *Temperature sensing range of -25ºF to 99ºF (-32ºC to 38ºC)*
- *Front panel selectable ºF to ºC operation*
- *Alarm temperature setting; programmable via front panel buttons*
- *Alarm relay*
- *Low voltage AC or DC operation*
- *TM166 fits in a standard electrical box*

National Controls' panel mount thermometer allows the constant monitoring of temperature in critical environments and equipment, enabling a higher degree of operating efficiency.

The high temperature alarm alerts personnel to a high temperature condition, protecting temperature sensitive equipment and operations. When the temperature rises to the setpoint temperature, the display flashes and an audible alarm sounds. When the temperature falls below the setpoint temperature, the alarm condition ceases. If during the alarm condition, it is desired to turn off the alarm, depressing the front panel push-button will interrupt the audible alarm for approximately 2-1/2 hours, but the display will continue to flash.

The heavy-duty stainless steel front plate protects the unit from mechanical shock and abuse, and is designed to blend visually with other stainless steel equipment.

The thermometer can be mounted directly on the equipment it is monitoring, or on a remote panel up to 250 feet away. The thermometer is powered from low-voltage AC or DC, thus eliminating the high costs of installation to NEC or other high voltage electrical standard wiring.

The control can also detect an open or shorted temperature probe. If the probe is open or shorted the display will show PRB, the alarm will sound and the relay contacts will close. The alarm will continue to sound until the probe error condition is corrected. In addition, the output relay's contacts will close during a high temperature ALARM condition.

Setting the High Temperature Alarm: On the front of the TM165 and TM166 there are up and down arrow buttons for changing the set point temperature. The set point can be adjusted to any temperature within the specified range of that particular model.

Setting ºF or ºC Operation: Using the front panel buttons the display can be adjusted to display temperature in ºF or ºC.

SPECIFICATIONS

Temperature Sensing Range: -25ºF to 99ºF (-32ºC to 38ºC)

Temperature Reading Accuracy: ±3ºF (2ºC)

Resolution: ±1ºF or ºC

Setpoint Range: -15ºF to 50ºF (-26ºC to 10ºC)

Input Voltage: 10.5 to 28 VAC, 50/60 Hz or 12 to 28 VDC

Power Consumption: 5 VA max at 28 VAC

Operating Temperature Range: 0ºC to 65ºC

Output Relay: Form A relay contact, 1 A max. at 30 VAC or DC

Temperature Probe: NTC thermistor, 3000 ohms at 25ºC, J-Curve

ORDERING INFORMATION

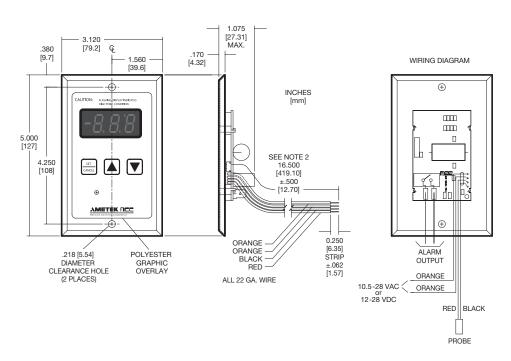| MOUNTING CONFIGURATION	PART NUMBER
Customer Panel Cutout	TNC-TM165-010
Standard Utility Box	TNC-TM166-010
Surface Mount Enclosure for TM165 Only, Single	TNC-TM165-KTA
Surface Mount Enclosure for TM165 Only, Dual	TNC-TM165-KT2A

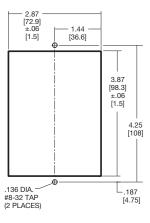| ACCESSORY	PART NUMBER
6' Refrigerator / Freezer Probe	ASP-TM165-011
20' Refrigerator / Freezer Probe	ASP-TM165-012
60' Refrigerator / Freezer Probe	ASP-TM165-013
Transformer (UL Class II Secondary)	B10-NO120-011
Stainless Steel Enclosure for TNC-TM165-010 Only, Single	BOX-TM100-010
Stainless Steel Enclosure for TNC-TM165-010 Only, Dual	BOX-TM100-020

The TM165 and TM166 panel mount digital thermometers are available in two distinct sizes. When ordering the thermometers, be sure to select the above depending on your specific application (refer to actual dimensions at right).

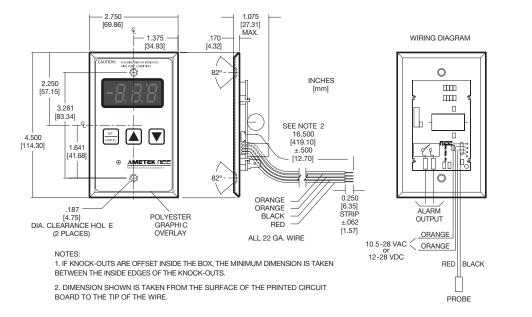*Note: The TM165 can be used as a substitute for the TM100 in certain applications.*

Model TM165

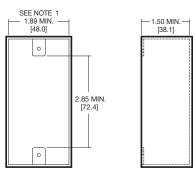3.120 [79.2]
1.560 [39.6]
.380 [9.7]
.170 [4.32]
1.075 [27.31] MAX.
5.000 [127]
4.250 [108]

CAUTION: FLASHING DISPLAY INDICATES HIGH TEMP. CONDITION
SET CANCEL
AMETEK ncc
National Controls Corporation

.218 [5.54] DIAMETER CLEARANCE HOLE (2 PLACES)
POLYESTER GRAPHIC OVERLAY

INCHES [mm]

SEE NOTE 2
16.500 [419.10]
±.500 [12.70]

ORANGE
ORANGE
BLACK
RED

0.250 [6.35] STRIP ±.062 [1.57]

ALL 22 GA. WIRE

WIRING DIAGRAM

ALARM OUTPUT
ORANGE
ORANGE
10.5-28 VAC or 12-28 VDC
RED   BLACK
PROBE

2.87 [72.9] ±.06 [1.5]
1.44 [36.6]
3.87 [98.3] ±.06 [1.5]
4.25 [108]

.136 DIA. #8-32 TAP (2 PLACES)
.187 [4.75]

SUGGESTED PANEL CUTOUT

Model TM166

2.750 [69.86]
1.375 [34.93]
.170 [4.32]
1.075 [27.31] MAX.
2.250 [57.15]
3.281 [83.34]
4.500 [114.30]
1.641 [41.68]
82°
82°

CAUTION: FLASHING DISPLAY INDICATES HIGH TEMP. CONDITION
SET CANCEL
AMETEK ncc
National Controls Corporation

.187 [4.75] DIA. CLEARANCE HOLE (2 PLACES)
POLYESTER GRAPHIC OVERLAY

INCHES [mm]

SEE NOTE 2
16.500 [419.10]
±.500 [12.70]

ORANGE
ORANGE
BLACK
RED

0.250 [6.35] STRIP ±.062 [1.57]

ALL 22 GA. WIRE

WIRING DIAGRAM

ALARM OUTPUT
ORANGE
ORANGE
10.5-28 VAC or 12-28 VDC
RED   BLACK
PROBE

SEE NOTE 1
1.89 MIN. [48.0]
2.85 MIN. [72.4]
1.50 MIN. [38.1]

MINIMUM INTERIOR DIMENSIONS FOR INSTALLATION INTO A STANDARD UTILITY BOX

NOTES:
1. IF KNOCK-OUTS ARE OFFSET INSIDE THE BOX, THE MINIMUM DIMENSION IS TAKEN BETWEEN THE INSIDE EDGES OF THE KNOCK-OUTS.

2. DIMENSION SHOWN IS TAKEN FROM THE SURFACE OF THE PRINTED CIRCUIT BOARD TO THE TIP OF THE WIRE.