BTU-4D/BTU-4D-I Digital Temperature Unit & Sensors

Installation and Operation Manual

BURK TECHNOLOGY

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Introduction

The BTU-4D Burk Digital Temperature Unit (120 V) and the BTU-4D-I Digital Temperature Unit, International (220V) connect up to four digital temperature sensors to the ARC Plus, ARC Solo, ARC-16 or GSC 3000/VRC 2500 remote control system. Sensor cables up to 1000 feet long are supported without measurement degradation. Line voltage telemetry is also built in.

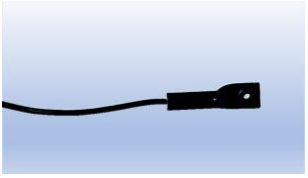
Each temperature output supplies 10mV per degree Fahrenheit or Celsius, based on a jumper setting on the BTU-4D/BTU-4D-I.

The BTU-4D/BTU-4D-I is supplied with:

- One 120 V AC power adapter for BTU-4D or a 220V AC power adapter for BTU-4D-I
- One TEMP-OUTDOOR sensor for either Farenheit or Celcius temperature measurement
- One 6-terminal Phoenix-style plug for connection to monitoring equipment

You can extend any of the sensors with a standard RJ-12 (6-conductor) or RJ-11 (2-conductor) cable. Ensure that the two center pins (3 and 4) are connected; connection of the remaining pins is not required.

TEMP–OUTDOOR Sensor



The TEMP-OUTDOOR digital outdoor temperature sensor is included with the BTU-4D/BTU-4D-I systems, and is intended for general purpose monitoring of equipment or ambient temperatures.

The TEMP-OUTDOOR sensor is attached to 25’ of cable with an RJ-12 connector on the end. The sensor has a mounting ring and gasket to accommodate #6 or #8 hardware. The sensing elements are sealed for added protection from dirt and moisture.

TEMP–INDOOR Sensor

The TEMP-INDOOR Sensor is a general-purpose, digital, indoor temperature sensor tailored for monitoring ambient temperatures within a room or in an equipment rack. Cables are not supplied with this sensor — order the Burk 25' 6-conductor cable with RJ-12 connectors on both ends (part number SENSOR CABLE) or supply your own.

TEMP–WALLMOUNT Sensor

The TEMP-WALLMOUNT Sensor is housed in a 2 5/8" x 5" enclosure with air vents to facilitate sensing of the environment.

14' of cable is provided with an RJ-12 connector on one end. The TEMP-INDOOR has a large, easy to connect barrier strip that accommodates flat or Phillips type screwdrivers.

TEMP–STACK Sensor

The TEMP-STACK Sensor is a digital stack temperature sensor designed for sensing heat within the air ducting of your equipment.

The TEMP-STACK Sensor is attached to 25' of cable with an RJ-12 connector.

The sensor is mounted in the tip of a 3/8" diameter chrome tube. The supplied mounting hardware consists of a base and a compression fitting to allow the sensor to be secured at variable depths. This allows the installer to locate the sensor up to 9 1/2" from the equipment wall, well within the airflow being monitored.

Installation

BTU-4D/BTU-4D-I – Burk Digital Temperature Unit

Temperature sensors use RJ12 jacks for easy connection to the BTU-4D/BTU-4D-I. Each sensor input is numbered for reference. The four inputs are independent, and can be used in any order.

Connect the output of the BTU-4D/BTU-4D-I to your remote control equipment using the provided 6-position Phoenix-style connector.

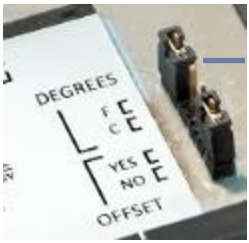
Pin	Usage
1	Sample from temperature sensor #1
2	Sample from temperature sensor #2
3	Sample from temperature sensor #3
4	Sample from temperature sensor #4
5	Sample from AC line monitor (power supply voltage)
6	Ground connection for all samples

The ground connection is shared by the five outputs of the BTU-D/BTU-4D-I.

The BTU-4D and BTU-4D-I are powered by an external AC power adapter.

- The power adapter supplied with the BTU-4D accepts 120VAC input and provides 12VAC to the power input jack of the BTU-4D.
- The power adapter supplied with the BTU-4D-I accepts 220V input and provides 12VAC to the power input jack of the BTU-4D-I.

The DEGREE jumper controls the sensor temperature output (Farenheit/Celsius).



Select F (Farenheit) or C (Celsius)

- F (for Fahrenheit) reads 10 mv per degree. 700 mv = 70 degrees F
- C (for Celsius) reads 10 mv per degree. 200 mv = 20 degrees C

Each temperature sensor must be connected to one of the four RJ12 Sensor jacks on the BTU-4D/BTU-4D-I. The pin numbers for the Sensor jacks are as shown in the diagram on the next page. Only two connections are required for the temperature sensors: pin 3 for signal and pin 4 for ground.

Connect sensor to one of four jacks

Pin 3: Signal
Pin 4: Ground

TEMP–OUTDOOR Sensor

1. Attach the ring of the TEMP-OUTDOOR with the supplied #6 sheet metal screw, or use any existing post, hook or machine screw.
2. Route the cable to the BTU-4D/BTU-4D-I.
3. Disconnect the AC adapter from the BTU-4D/BTU-4D-I.
4. Plug the connector of the TEMP-OUTDOOR into one of the four available input jacks on the BTU-4D/BTU-4D-I. If an extension cable is required, only the center two conductors of the RJ12 cable need to be extended, corresponding to pins 3 and 4 on the RJ12 connector.

5. Connect the output sample pin associated with the appropriate input jack from the BTU-4D/BTU-4D-I to the remote control equipment.
6. Plug the AC adapter into the BTU-4D/BTU-4D-I.

TEMP–INDOOR Sensor

You can use the Burk 25’ 6-conductor cable (part number SENSOR CABLE) to connect the sensor to the BTU-4D/BTU-4D-I. If a different cable is used, note that only two conductors are required, corresponding to pins 3 and 4 on the RJ12 connector. The cable must reverse the connections from one end to the other so that pin 4 on the TEMP-INDOOR sensor connects to pin 3 on the BTU-4D/BTU-4DI, and pin 3 on the TEMP-INDOOR sensor connects to pin 4 on the BTU-4D/BTU-4DI.

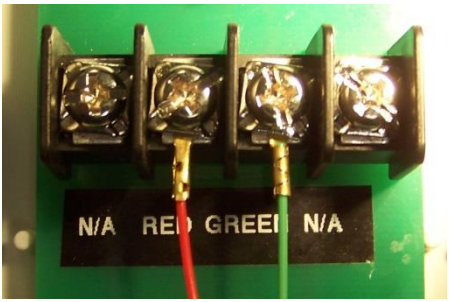
1. Secure the sensor in the desired location and connect an RJ12 cable.
2. Route the cable to the BTU-4D/BTU-4D-I.
3. Disconnect the AC adapter from the BTU-4D/BTU-4D-I.
4. Plug the connector of the TEMP-INDOOR into one of the four available input jacks on the BTU-4D/BTU-4D-I.
5. Connect the output sample pin associated with the appropriate input jack from the BTU-4D/BTU-4D-I to the remote control equipment.
6. Plug the AC adapter into the BTU-4D/BTU-4D-I.

TEMP–WALLMOUNT Sensor

The TEMP-WALLMOUNT comes with a 14’ cable prewired to its internal terminal block, as shown below :

Terminal	Usage
1	No Connection
2	Red
3	Green
4	No Connection

For long cable runs,you can supply your own wiring. In this case, connect terminal pin 2, as shown below, to pin 3 (signal) on the BTU-4D/BTU-4D-I, and connect pin 3 on the terminal block to pin 4 (ground) on the BTU-4D/BTU-4D-I.



1. Position the back half of the enclosure against the surface where the TEMP-WALLMOUNT will mount.
2. Using the enclosure as a template, mark reference circles at each of the two mounting slots and the cable entry point.
3. Set aside the enclosure and drill a hole at the cable entry location.
4. Mount two screws in the wall, or into wall anchors, leaving at least 1/8” from the wall to the underside of the screw head.
5. Test fit the enclosure back half against the wall. Check for a secure fit, still allowing for removal of the TEMP-WALLMOUNT from the wall.

6. From the location of the BTU-4D/BTU-4D-I , route the TEMP-WALLMOUNT cable through the wall and the rear of the enclosure. The length of the cable does not affect calibration, and it may be extended as required.
7. Attach the cable to the terminal block on the front half of the TEMP-WALLMOUNT.
8. Secure the two halves of the TEMP-WALLMOUNT using the 3/4" screws, being careful not to over tighten them.
9. Place the TEMP-WALLMOUNT against the wall and secure it to the mounting screws.
10. Disconnect the AC adapter from the BTU-4/BTU-4D-I.
11. Plug the connector of the TEMP-WALLMOUNT into one of the four available input jacks on the BTU-4D/BTU-4D-I .
12. Connect the output sample pin associated with the appropriate input jack from the BTU-4D/BTU-4D-I to the remote control equipment.
13. Plug the AC adapter into the BTU-4D/BTU-4D-I.

TEMP–STACK Sensor

1. Select a location on the equipment ducting that is flat and able to support the weight of the TEMP-STACK and its mounting hardware. Make certain there are no obstructions on the inside of the ducting or cavity.
2. Using the mounting base as a template, mark the location of all mounting holes.
3. Drill or cut a hole approximately 3/4" in diameter for the TEMP-STACK probe.
4. Thread the 3/8" brass pipe fitting onto the base, and secure the base to the surface using the supplied sheet metal screws.
5. Insert the TEMP-STACK into the brass mount and secure it with the locking nut. Be certain to not tighten excessively, as this may deform the compression sleeve. Check for a secure fit, still allowing for adjustment of the probe depth.
6. Disconnect the AC adapter from the BTU-4D/BTU-4D-I .
7. Plug the connector of the TEMP-STACK into one of the four available input jacks on the BTU-4D/BTU-4D-I. If an extension

cable is required, only the center two conductors of the RJ-25 cable need to be extended, corresponding to pins 3 and 4 on the RJ-25 connector.

8. Connect the output sample pin associated with the appropriate input jack from the BTU-4D/BTU-4D-I to the remote control equipment.
9. Plug the AC adapter into the BTU-4D/BTU-4D-I.

Remote Control Setup

ARC Plus

Note: The meter type must be set to "Degree" and the voltage range set to "-10 to 10".

Configure the ARC Plus to show one decimal place (000.0). No calibration is necessary. Please refer to your ARC Plus manual for detailed instructions.

Note for Plus-X 300 Configuration:

Configure the OFFSET Jumper to use the BTU –4D/BTU-4D-I with a Plus-X 300, which does not support negative voltage metering. The jumper adds 2 V to the F or C output.

- On F, 2700 mv (2.700 V) = 70 degrees F
- On C, 2200 mv (2.200 V) = 20 degrees C

Set OFFSET Jumper to YES for Plus-X 300

To read a temperature using offset, configure the channel for the temperature, the same as any other Plus-X device (for example, Meter Channel 1). Then create a second channel configured to a virtual source with the expression M1-200.

ARC Solo

Note: The meter type must be set to "Degree" and the voltage range set to "-10 to 10".

Configure the ARC Solo to show one decimal place (000.0). No calibration is necessary. Please refer to your ARC Solo manual for detailed instructions.

ARC-16

Note: The meter type must be set to "MV" (pre-5.x firmware) or "DEG" (5.x or later firmware).

Configure the ARC-16 to show the decimal point one digit to the left (if true input value = 700 [MV/DEG], displayed value = 70.0 [MV/DEG]). No calibration is necessary. Please refer to your ARC-16 manual for detailed instructions on moving the decimal point display location.

GSC3000/VRC2500

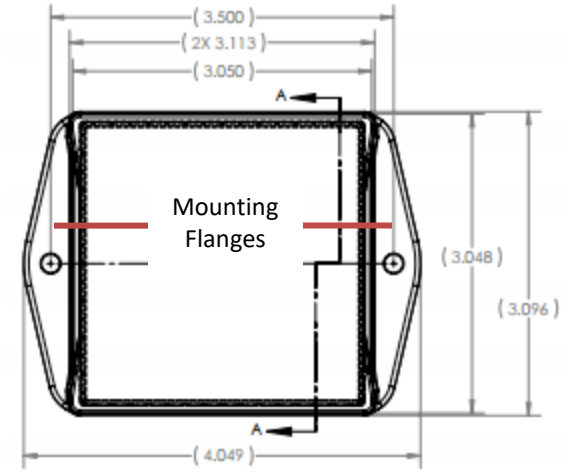
Note: The meter type should be set to "-5 to +5" to allow for negative and positive temperature readings.

Calibrate the desired channel(s) to read the actual temperature (if true input value = 0.70 [Volts], calibrate value = 70 [Degs]). The displayed value must be static (no fluctuations) during calibration. Please refer to your GSC300 or VRC2500 manual for detailed instructions on calibrating metering channels.

Specifications

Dimensions

Overhead View



Side View

0.95” (2.41 cm) H

3.113” (7.91 cm) W (excluding mounting flanges)

4.049” (10.284 cm) W (including mounting flanges)

3.01” (7.65 cm) D

BTU-4D/BTU-4D-I Power:

12VAC wall adapter (provided)

Connectors:

4 RJ12 jacks for use with TEMP-INDOOR, TEMP-OUTDOOR, TEMP-STACK, and TEMP-WALLMOUNT sensors.

6-position Phoenix-style connector providing four temperature samples, one AC line sample, and one ground.

Temperature Range:

BTU-4D: 0C to 40C
Sensors: -55°C to +125°C, ± 0.5C from –10C to 85C
10mV output per degree Fahrenheit or Celsius, based on jumper setting

AC Voltage:

BTU-4D: 22.6 mV per AC volt ± 3%, 100VAC to 140VAC
BTU-4D-I: 11.3 mV per AC volt ± 3%, 200VAC to 240VAC

Cables:

TEMP-INDOOR: Requires Burk SENSOR CABLE, not included
TEMP-WALLMOUNT: Includes 14’ prewired cable
TEMP-OUTDOOR: Includes 25’ prewired cable
TEMP-STACK: includes 25’ prewired cable

Getting Help

For technical support, please email support@burk.com or call our direct technical support line at 978-486-3711. We will be glad to assist you. The technical support office is open Monday – Friday, 9AM to 5PM Eastern Time.

Warranty

Burk Technology, Inc. warrants the BTU-4D/BTU-4D-I , TEMP-INDOOR, TEMP-OUTDOOR, TEMP-WALLMOUNT AND TEMP-STACK to be free of defects in materials and workmanship for a period of 24 months from the date of purchase. Equipment will be repaired or replaced at the option of Burk Technology and returned freight prepaid to the customer. Damage due to abuse or improper operation or installation of the equipment or caused by fire or flood or harsh environment is not to be covered by this warranty. Damage in shipping is not the responsibility of Burk Technology. A return authorization must be obtained before returning any equipment. Materials returned under this warranty must be shipped freight prepaid and insured in the original shipping carton or suitable substitute to Burk Technology, Inc., 7 Beaver Brook Road, Littleton, MA 01460. Repairs not covered under this warranty will be made at prevailing shop rates established by Burk Technology.

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