STM-4D: ARC Solo Digital Temperature Module & Sensors

Installation and Operation Manual

BURK TECHNOLOGY

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Introduction

The STM-4D ARC Solo Digital Temperature Module connects up to four digital temperature sensors to the ARC Solo remote control system utilizing the rear panel SENSORS port and a supplied 4-way RJ11 Splitter.

Temperature output is user selectable to Fahrenheit or Celsius, based on the user setting in the setup section of the ARC Solo web page.

Firmware Requirements

The ARC Solo must have firmware 1.0.58 or higher to support the SENSORS One-Wire port for connecting your digital sensors.

Unpacking

The following items are included with your purchase of STM-4D:

- TEMP-OUTDOOR Digital Temperature Sensor

- RJ11 4-way splitter

- License key to activate the Sensors port on your ARC Solo

Extending Sensor Cables

Sensor cables up to 1000 feet long are supported without measurement degradation. 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. Digital sensor cabling may also be extended using RJ12 couplers, available from Burk Technology

Daisy-Chaining Sensors

Digital sensors may be daisy-chained to allow multiple sensors on a single wire run. See *Daisy-Chain Connection of Digital Sensors* for wiring details.

TEMP–OUTDOOR Sensor
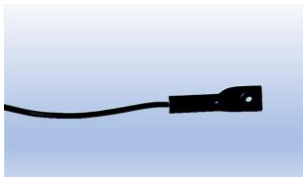
The TEMP-OUTDOOR digital outdoor temperature sensor is included with the STM-4D, and is intended for general purpose monitoring of equipment or ambient temperatures.

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 Burk's 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

Temperature sensors use RJ12 jacks for easy connection to the RJ splitter. Use the supplied 4-way RJ splitter or you can use the SENSORS port with couplers and splitters.

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 ARC Solo.
3. Plug the connector of the TEMP-OUTDOOR into one of the four available input jacks on the RJ11 Splitter. If an extension cable is required, only the center two conductors of an RJ12 cable need to be extended, corresponding to pins 3 and 4 on the RJ12 connector.

TEMP–INDOOR Sensor

You can use the Burk 25' 6-conductor cable (part number SENSOR CABLE) to connect the sensor to the ARC Solo. 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 ARC Solo splitter and pin 3 on the TEMP-INDOOR sensor connects to pin 4 on the ARC Solo splitter.

1. Secure the sensor in the desired location and connect an RJ12 cable.
2. Route the cable to the ARC Solo splitter.
3. Plug the connector of the TEMP-INDOOR into one of the four available input jacks on the splitter.

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.
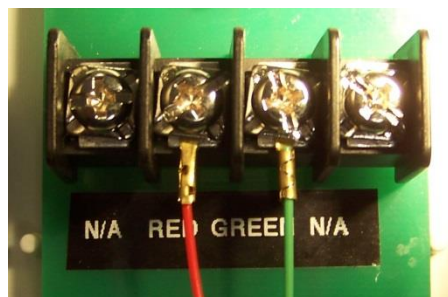
1. Position the back half of the enclosure against the surface where the TEMP-WALLMOUNT will mount.
2. Using the enclosure as a template, mark reference circles at each of the two mounting slots and the cable entry point.

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 ARC Solo RJ splitter, 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. Plug the connector of the TEMP-WALLMOUNT into one of the four available input jacks on the ARC Solo RJ splitter.

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. Plug the connector of the TEMP-STACK into one of the four available input jacks on the ARC Solo splitter.

Remote Control Setup

ARC Solo

- To enter your license key, go to the ARC Solo web page and select System/Basic Settings. Enter your license key in the Sensors Authorization box.
- To select between Fahrenheit or Celsius, go to the ARC Solo web page and select System/Basic Settings in firmware version 1.0.57 or System/Sensors in firmware version 1.0.58 or higher.
- To map the sensor to a meter channel, go to the ARC Solo web page and select system/sensors. Use the provided drop-down boxes to assign each active temperature sensor to an ARC Solo meter channel.

No calibration is necessary. Please refer to your ARC Solo manual for detailed instructions on meter setup.

Cable Orientation and Pinouts

The use of telephone style connectors for the sensors makes it possible to use standard telephone cables when connecting sensors to ARC Solo. However, it is important to verify the wiring of the cables to ensure proper operation.

The designation RJ25 or RJ12 refers to a 6-pin modular telephone connector with all six pins wired. This connector configuration is also referred to as 6P6C indicating six-position, six-conductor.

Certain telephone cables use "crossover" wiring in which pin 1 at one end of the cable connects to pin 6 at the far end, pin 2 connects to pin 5, and pin 3 connects to pin 4 as shown below:

Crossover Wiring

Burk's 25' SENSOR CABLE follows this convention. A crossover cable such as Burk's SENSOR CABLE must be used for the temp sensors to operate correctly.

The RJ12 Coupler supplied by Burk also has crossover wiring from one connector to the other.

Sensor Cable   **RJ12 Coupler**

Certain sensors including the TEMP-STACK, TEMP-OUTDOOR and TEMP-WALLMOUNT come pre-wired with a cable terminated in a male RJ12 connector. These connectors may be plugged directly into the front panel of the Climate Guard. If it becomes necessary to extend the length of one of these cables, care must be taken not to reverse the connector wiring. Non-reversing extension cables can be created by combining a SENSOR CABLE with an RJ12 COUPLER. Since each of these has crossover wiring, they provide a straight-through connection from end to end when connected together.

In other cases, such as the daisy-chain connection of multiple temperature or humidity sensors, a straight-through cable is required. In this type of cable, pin 1 at one end of the cable connects to pin 1 at the far end, pin 2 connects to pin 2, and so forth, as shown below:

Straight-through Wiring

The Burk 25' SENSOR CABLE – DAISY CHAIN and RJ12 SPLITTER each use straight-through wiring.

**Sensor Cable – Daisy Chain**   **RJ12 Splitter**

Daisy-Chain Connection of Digital Sensors

Multiple digital temperature sensors can be connected to ARC Solo using a daisy-chain arrangement. This can be accomplished by first plugging one RJ12 SPLITTER into each TEMP-INDOOR as shown below:

Plug one RJ12 Splitter into each Temp-Indoor Sensor

To connect multiple sensors, use a single SENSOR CABLE from the ARC Solo SENSORS port to the first digital sensor. Then use a SENSOR CABLE – DAISY CHAIN to connect each additional sensor to the daisy-chain as shown in the diagram below.
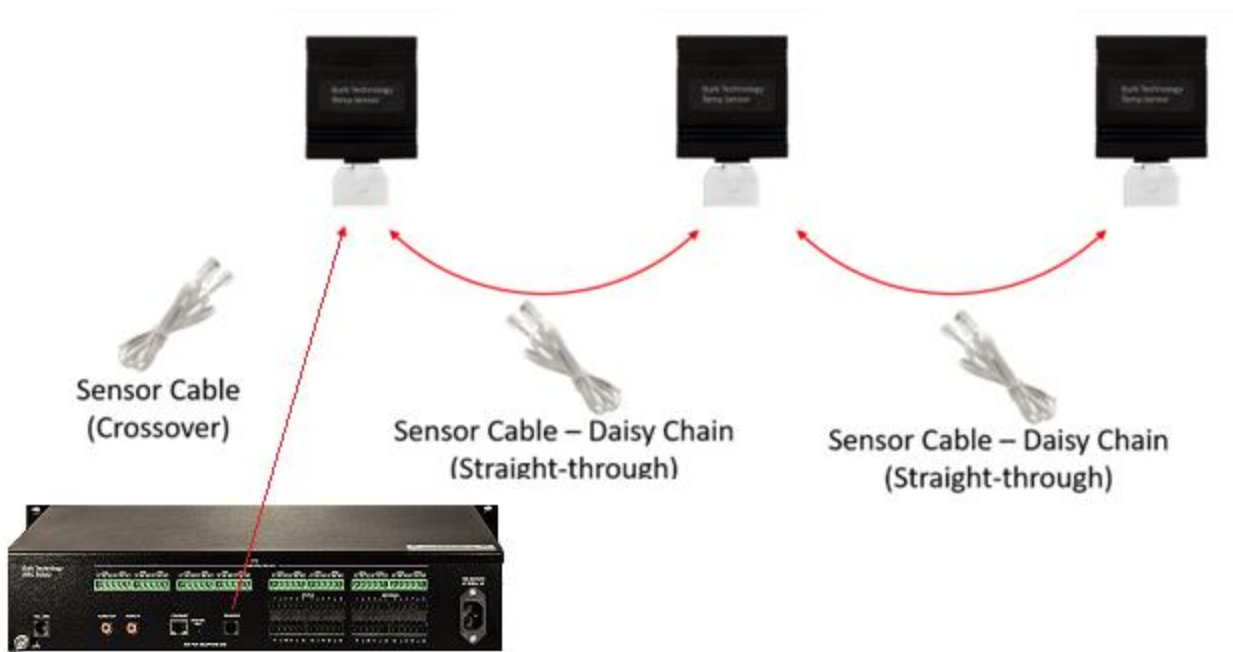
Daisy-Chain Wiring of Digital Sensors

Specifications

Connectors:

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

Temperature Range:

Sensors: -55°C to +125°C, ± 0.5C from –10C to 85C

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 STM-4D, 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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