SPECIFICATIONS:

- **Power Requirements**
  - Voltage: 9 to 24 V.D.C.(+/-10%)
  - Current: 500 Ma (MAX)
- **Serial Transmission Output**
  - ANSI Standards TIA/EIA-422-B Compliant
  - ANSI Standards TIA/EIA-485-A Compliant
  - Baud Rate: 19200
  - Data Bits: 8
  - Parity: None
  - Stop Bits: 1
- **Electrical Termination**
  - Screw Type Pluggable Terminal Blocks
  - 26-14 AWG Wire Size
  - Temperature Sensor Cable Length: 100FT (MAX)
- **Cable Entry**
  - Cable O.D. Range: 0.230-0.530 inches
  - "Build Up" Rubber Tape provided to support interface cables as small as 0.10" O.D.
- **Mounting**
  - Four 0.190" Diameter Mounting Holes
  - Hole to Hole Dimensions 4.53" Square
- **Temperature Sensor/s**
  - Housing: 3/8" Round Aluminum x 1.25" Long
  - 1 Built In & Up To 16 More Optional
  - Remote Sensor Cable Length: P/N Specific
  - Measurement Range: -55°C to +125°C
  - Accuracy -10°C to +85°C: ±0.5°C
  - Accuracy -55°C to -10°C/+85°C to +125°C: ±2°C
  - Resolution: 12 Bits (0.0625°C)
- **Base Unit Environmental**
  - -40° F to +122° F, 100% humidity, condensing
    (-40° C to +50° C, 100% humidity, condensing)
  - Enclosure Rating: IP66 (NEMA 4X)
- **Physical**
  - Enclosure Dimensions
    5.12" wide x 5.12" high x 2.95" deep (130mm wide x 130mm high x 75mm deep)
  - Weight: 1 LB (0.45 Kg)
  - Enclosure Color/Type: Light Gray/Polystyrene
  - Cable Gland Protrusion: 1.25" (31.75mm) Nominal
- **Approvals**
  - The WTM1 has been designed to meet or exceed CE, UL, & CSA safety requirements.

BCS Product Warranty

Bradshaw Communication Systems (BCS) products are warranted to be free from defects in material or workmanship for one (1) year from the date of sale to the original purchaser. Any part of the product covered by this warranty that, with normal installation and use, becomes defective will be repaired or replaced by BCS, at our option, provided the product is shipped insured and prepaid to: BCS Service Department, 6272 Old Dahlonega Hwy. Murrayville, Georgia 30564, USA. The product will be returned to you freight prepaid. This warranty does not extend to any BCS products that have been subjected to abuse, misuse, improper storage, neglect, accident, improper installation or have been modified, repaired or altered in any manner whatsoever, or where the serial number or date code has been removed or defaced. No employee, agent, dealer, or other person is authorized to give any warranties on behalf of BCS.

The foregoing limited warranty is the BCS sole and exclusive warranty and the purchaser's sole and exclusive remedy. BCS makes no other warranties of any kind, either express or implied, and all implied warranties of merchantability or fitness for a particular purpose are hereby disclaimed and excluded to the maximum extent of the law. BCS liability arising out of the manufacture, sale or supplying of products or their use or disposition, whether based upon warranty, contract, tort or otherwise, shall be limited to the repair or replacement of the product. In no event shall BCS be liable for special, incidental or consequential damages (including, but not limited to, loss of profits, loss of data or loss of use damages) arising out of the manufacture, sale or supplying of products, even if BCS has been advised of the possibility of such damages or losses. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state.

Products that are out of warranty may also be repaired by the BCS Service Department. The parts and labor involved in out of warranty and general repairs are warranted for 90 days when repaired by the BCS Service Department. All shipping charges in addition to parts and labor charges will be at the owner's expense. All returns require a Return Authorization Number that may be obtained by contacting the BCS Service Department prior to return of the product.

BRADSHAW COMMUNICATION SYSTEMS
6272 OLD DAHLONEGA HWY • MURRAYVILLE, GA USA • TEL 770-596-6581 • FAX 678-450-6965 • www.bcstech.com

WTM1

WEATHERPROOF TEMPERATURE MONITOR INSTALLATION MANUAL

PART NUMBERS:

- P/N 06-01000-1
  WTM1 Weatherproof Temperature Monitor Main Unit w/ 1 Cable Entry Gland
- P/N 06-02000-25
  Optional WTM1 Remote Sensor w/ 25FT Interface Cable
- P/N 06-02000-50
  Optional WTM1 Remote Sensor w/ 50FT Interface Cable
- P/N 06-02000-100
  Optional WTM1 Remote Sensor w/ 100FT Interface Cable

READ ALL INSTRUCTIONS CAREFULLY BEFORE INSTALLATION. SAVE THIS INSTALLATION MANUAL FOR FUTURE REFERENCE. INSTALLATION SHOULD ONLY BE PERFORMED BY QUALIFIED SERVICE PERSONNEL.

BCS reserves the right to change specifications contained herein without notice. (Release Date: 01JUN06)

BRADSHAW COMMUNICATION SYSTEMS
6272 OLD DAHLONEGA HWY • MURRAYVILLE, GA USA • TEL 770-596-6581 • FAX 678-450-6965 • www.bcstech.com

DESCRIPTION:

The WTM1 Weatherproof Temperature Monitor, developed by Bradshaw Communication Systems, is a serial interfaced temperature monitoring unit providing both local ambient temperature monitoring as well as remote temperature monitoring capability via optional remote temperature sensors. The base unit is supplied with a built in local temperature probe which measures temperature at the unit. As few as one and a many as sixteen additional temperature sensor/s can optionally be added to provide additional remote monitoring.

The WTM1 is housed in an IP66/NEMA 4X enclosure, thus supporting the most rugged outdoor applications. The WTM1 is provided with one factory installed watertight cable entry gland to support the interface cable. Each optional remote temperature sensor is provided with it's own supporting cable gland. Up to four additional cable glands can be supported by the base unit by means of existing knockout holes. Since the optional temperature sensors are connected in a parallel 3-wire buss configuration, additional sensors in excess of four will require external user supplied terminations by means of two primary host cables routed from the WTM1. All optional temperature sensors are connected to two separate connectors (Bank 1 & Bank 2), each capable of supporting up to eight sensors each. Rubber 'build up" tape is provided with both the WTM1 and with each optional temperature sensor to support round and irregular cable outside diameters down to 0.10 inch. WTM1 electrical terminations are provided via internal screw type pluggable terminal blocks, providing fast, easy, and accurate termination of interface wiring.

Each digital temperature sensor has a unique 64-bit serial number stored onboard and this serial number is permanently marked on the exterior of each temperature sensor. This allows each sensor to be identified individually while on the parallel 3-wire buss.

With a temperature measurement range of -55°C to +125°C and an accuracy of 0.5°C from -10°C to +85°C on each temperature sensor, the WTM1 provides great flexibility for use in many applications. Temperature sensor resolution is provided in 0.0625°C increments.

The WTM1 serial data is sent (unsolicited) as a "readable" hexadecimal data frame for each sensor. Each frame consists of a fixed start byte, 8 bytes containing the serial number for a given sensor, and finally 9 bytes containing the temperature data and CRC. Each temperature sensor is polled by the WTM1 and its data frame transmitted consecutively until all connected temperature sensors have been polled, then an approximate 5-second delay will occur until the start of the next polling/transmission cycle. This cycle then continues as long as power is supplied to the WTM1. The serial output of the WTM1 is compliant with ANSI Standards TIA/EIA-422-B and TIA/EIA-485-A.

Refer to the WTM1 Serial Interface Protocol Document for further definition of the WTM1 serial output.

Visual monitoring of functionality is provided on the main board by means of two LED indicators. One indicating the WTM1 is operating and the second indicating the WTM1 is polling temperature sensor/s.

INSTALLATION:

Mount the WTM1 in an easily accessible location. 8-32 Socket Head Cap Screws and associated hardware are normally used to secure the WTM1 to a mounting bracket or similar. Refer to the WTM1 Outline Mounting Drawing (provided separately) for mounting dimensions and verify the WTM1 is securely mounted. Open the cover to the WTM1. Install the interface cable through the WTM1 cable gland. Use the supplied cable "build-up" tape for cable O.D.s under 0.23 inches to ensure a watertight seal. Electrically connect WTM1 TB1 per the WTM1 Installation Figure & WTM1 Termination Table below. TB2 and TB3 may also be terminated at this time if optional remote temperature sensors were purchased. Multiple wires may be installed in each terminal depending upon wire gauge used. If more than four optional remote sensors are implemented, the user will need to provide an additional junction box and wire connectors to allow the full complement of 16 optional remote sensors to be utilized.

Once the terminations are complete, apply power, and check for the DS1 Micro Run LED to flash at a rate of about once per second. This indicates the microprocessor is running. Each time a sensor is polled and it's data transmitted, the DS2 Sensor Read LED will flash. The WTM1 should now be functioning correctly. As long as power is supplied to the WTM1, it will continuously poll the built in temperature sensor as well as any additional remote sensors and continuously transmit each sensor's temperature data over the RS422 serial output. Make note of the WTM1 local sensor serial number on the label inside the cover and/or on each remote sensor. Refer to the WTM1 Serial Interface Protocol Document for protocol definition.

Close the cover securely to ensure a watertight seal (DO NOT OVERTIGHTEN COVER SCREWS OR ENCLOSURE DAMAGE WILL RESULT!).

WTM1 TERMINATION TABLE

TB1	1	2	3	4
FUNCTION	+9-24VDC	Return (GND)	RS422 TD(A)/TX(-)	RS422 TD(B)/TX(+)

TB2 & TB3	1	2	3
FUNCTION	Remote Sensor +5V	Remote Sensor Data	Remote Sensor Gnd.
WIRE COLOR	RED	BLUE (or BLACK)	SHIELD (or DRAIN)