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External Cabling Protection for USCRN Installations

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1. Introduction

The United States Climate Reference Network (USCRN) program is deploying over 100 automated meteorological stations across the United States.[1] These stations are designed to provide accurate long-term information that will improve the assessment of climatic trends.

The baseline configuration[2] of a USCRN station consists of a 3-meter tower on which the meteorological sensors are mounted, with the exception of the precipitation gauge, which is installed within a shield approximately 60 feet from the tower (Figure 1). The USCRN stations were initially installed without a protective covering of the external cables, but several instances of rodent damage[3] to the cabling prompted a plan to protect the cables.

Figure 1: A typical USCRN installation (Stillwater 5 WNW, OK). The meteorological sensors and datalogger are mounted on the 3-meter tower, inside the green-fenced area. Protection is used on the cabling that runs from the datalogger to the cross-members on which the instruments are mounted. (Note: The installation in the photograph is shown before the protection was installed.)

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[1]Helfert, Michael R., M. J. Changery, D. R. Easterling, et. al., 2004, January 12-16, Climate Reference Network stations: location, location, location, Proceedings: Eighth Symposium on Integrated Observing and Assimilation Systems for Atmosphere, Oceans, and Land, American Meteorological Society, Seattle, WA, Session 5.3.

[2] USCRN. USCRN Site Information Handbook, NOAA/NESDIS CRN Series X030, NOAA-CRN-2002-0002R0UD0 (December 2002), 28 pp.

[3] The Anomaly Tracking System is described in US Climate Reference Network (USCRN), Handbook for Manual Quality Monitoring June 11, 2003. The Anomaly Tracking System Report number DEMO-0105, June 3, 2003, Wolf Point 34 NE, MT is available upon request.

2. Materials Required

The USCRN cabling protection consists of 3 sections of Split Wire Loom, Aluminum Plated, sold commercially as Convoshield Al[4]:

- 2-each 3.5'lengths of 3/8" ID Convoshield, part # WL0375-41CHR (color = chrome)
- 1-each 3.5' length of 3/4" ID Convoshield, part # WL075-41CHR (color = chrome)

These materials cost less than $50.

3. Installation

The sections of loom extend out of the datalogger enclosure (Figure 2) and up the north leg of the tower with a drip loop at the top of the loom. One piece of the 3/8" loom contains the antenna (transmitter) cable. The other piece of 3/8" loom contains the cables for the GPS antenna and the anemometer. The 3/4" piece contains the cables for the 3 aspirated shields, 3 PRT temperature sensors, pyranometer, and the infrared temperature sensor.

In addition to protecting the cabling from small-animal damage, the covering also shields the cables from potential damage from sunlight.

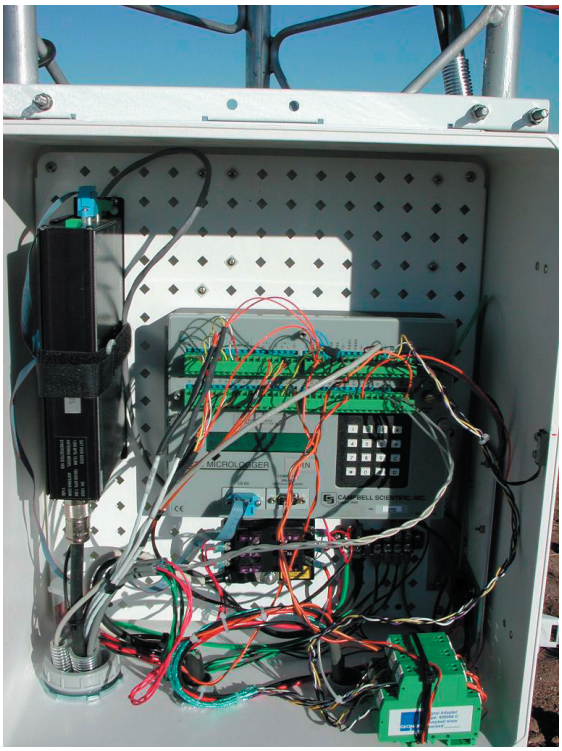

Figure 2: The 3 lengths of loom terminate in the datalogger enclosure (bottom left of photo).

Figure 3: Completed installation of the protection of the cabling

[4] Information available at www.cableorganizer.com/convoshield .

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