Soil Radiation Biological Temperature Sensor Command, Control and Configuration Document

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See Configuration Management System for Approval History

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A	05/28/2013	ECO-00648	Initial Release

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1 DESCRIPTION

1.1 Purpose

This document specifies the command, control, and configuration details for operating a NEON sensor used for instrumental observations. It includes a detailed discussion of all necessary requirements for operational control parameters, conditions/constraints, set points, and any necessary error handling. All Level 0 Data Products generated by the sensor should be identified. The raw data are compensated by the DAS, but received at HQ for further processing as L0 unfiltered and uncorrected data product until its associated algorithms are applied to produce a QA/QC'd L1 data product in Standard Scientific Units.

1.2 Scope

The expectation is that the Apogee Instruments SI-111 Precision Infrared Radiometer (NEON P/N: 0303220001; no firmware required) will be used to make the measurements of soil radiation biological temperature (AD [01]). The reference document for the Apogee Instruments SI-111 Precision Infrared Radiometer is RD [03].

This document specifies the command, control, and configuration that is needed for operating this sensor. It does not provide implementation details, except for cases where these stem directly from the sensor conditions as described here.

2 RELATED DOCUMENTS AND ACRONYMS

2.1 Applicable Documents

AD [01]	NEON.DOC.000001	NEON Observatory Design (NOD) Requirements
AD [02]	NEON.DOC.000291	NEON Configured Sensor List
AD [03]	NEON.DOC.005003	NEON Scientific Data Products Catalog
AD [04]	NEON.DOC.005005	NEON Level 0 Data Products Catalog
AD [05]	NEON.DOC.XXXXXX	NEON Soil Radiation Biological Temperature ATBD (TBW)

2.2 Reference Documents

RD [01]	NEON.DOC.000008	NEON Acronym List
RD [02]	NEON.DOC.000243	NEON Glossary of Terms
RD [03]	Campbell Scientific, Inc., Apogee Instruments, Inc. (2010). Instruction Manual: SI-111 Precision Infrared Radiometer. Campbell Scientific, Inc. (CSI) 815 West 1800 North Logan, Utah 84321 United States.	

2.3 Acronyms

Acronym	Explanation
ATBD	Algorithm Theoretical Basis Document
C^3	Command, Control, and Configuration Document
SOP	Standard Operating Procedures
QA/QC	Quality Assurance/Quality Control
TIS	Terrestrial Instrument System
L0	Level 0
L1	Level 1
ENG	NEON Engineering group
CI	NEON Cyberinfrastructure group
DPS	NEON Data Products group
CVAL	NEON Calibration, Validation, and Audit Laboratory

2.4 Verb Convention

“Shall” is used whenever a statement expresses a convention that is binding. The verbs “should” and “may” express non-mandatory provisions. “Will” is used to express a declaration of purpose on the part of the design activity.

3 INTRODUCTION

The sensor configuration and sensor command and control described here are related to the soil radiation biological temperature and associated sensor body temperature data products (AD[02]). A description of how sensor readings shall be converted to soil radiation biological temperature in degrees Celsius is presented in the associated ATBD (AD[05]). Data products are listed in Table 1.

Table 1. L0 Data Products.

L0 Data Product	NEON	DOM	SIT	DPL	PRN	REV	SPN	HOR	VER	REP
Soil Radiation Biological Temperature	NEON.	DXX.	XXX.	DP0.	00105.	001.	001.	001.	000.	001
Sensor Body Temperature	NEON.	DXX.	XXX.	DP0.	00105.	001.	002.	001.	000.	001

4 OVERVIEW OF SENSOR CONFIGURATION

The infrared broadband radiation biological temperature data product and sensor body temperature data product shall be unfiltered and uncorrected thermistor and thermopile output in Ω and mV, respectivley.

Table 2. Sensor configuration settings.

Parameter	Default Setting
Biological temperature: Acquisition rate	1 Hz
Sensor body temperature: Acquisition rate	1 Hz
Data acquired from sensor	Biological temperature (mV); Sensor body temperature (Ω);
Measurement mode	Run

5 COMMAND AND CONTROL

5.1 Error handling

This sensor provides no error notification.

5.2 Sensor <device> controls specification

This sensor has no associated devices.

6 APPENDIX & BIBLIOGRAPHY

N/A