NEON Sensor Command, Control and Configuration – Soil Temperature Profile

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See Configuration Management System for Approval History.

Change Record

REVISION	DATE	ECO #	DESCRIPTION OF CHANGE
A	06/11/2013	ECO-00466	Initial Release

TABLE OF CONTENTS

LIST OF TABLES

1   DESCRIPTION

1.1   Purpose

This document specifies the command, control, and configuration details for operating the Soil Temperature Profile assembly and sensor.   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 are identified.

1.2   Scope

This document specifies the command, control, and configuration that is needed for operating the Soil Temperature Profile assembly. It does not provide implementation details, except for cases where these stem directly from the sensor conditions as described here. This document assumes that soil temperature will be measured using a Thermometrics Climate PRT Probe (NEON P/N: 0303550001, 0303550002, or 0303550003 depending on required cable length) (AD[02]). There is no firmware associated with this assembly.

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 ATBD for Soil Temperature Profile (document number TBD)

2.2   Reference Documents

RD [01]	NEON.DOC.000008 NEON Acronym List
RD [02]	NEON.DOC.000243 NEON Glossary of Terms
RD [03]	
RD [04]	

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 Temperature Profile data product (NEON.DOM.SIT.DP0.00068.REV.001.HOR.VER.001). A description of how sensor readings shall be converted to the soil temperature profile data product is presented in the associated ATBD (AD[05]). The TIS assembly used to generate this data product consists of n temperature sensors. The number of temperature sensors per profile may differ among soil plots, but typically a profile will consist of 8 temperature sensors.

4 OVERVIEW OF SENSOR CONFIGURATION

4.1 Temperature sensors

Sensor configuration settings are shown in the table below.

Table 1. Temperature sensor configuration settings.

Parameter	Default Setting
Acquisition rate: Temperature	0.1 Hz
Raw data measurements	Temperature 1 - ohms (NEON.DOM.SIT.DP0.00068.REV.001.HOR.VER.001) … Temperature n - ohms (NEON.DOM.SIT.DP0.00068.REV.001.HOR.VER.00n)

5 COMMAND AND CONTROL

There is no command and control for this assembly.