Sensor Puck Functional Requirements

Revision

1.0 First draft Friday, January 17, 2003
1.1 Integrated comments from Lance M. Friday, January 31, 2003
1.2 Integrated comments from Mark C. Thursday, February 13, 2003

Introduction

The SIAM software is required to support “plug-and-work” configuration for sensors. The “plug-and-work” requirement as defined by the SIAM project is

> In response to a user-initiated command, a MOOS node shall be capable of determining which devices are currently present on all instrument ports, and the node shall automatically carry out any necessary configuration actions. In cases where an appropriate device is installed on the port's instrument, the node shall be capable of reading device ID and other associated data from the device itself, by-passing the need for manually-generated configuration information on the node. It shall also be possible to override this automatic device identification process for a specific port, through manual "pre-configuration" of the node.

The puck is a small persistent memory store that can reside on of very near a sensor. A host platform can query the puck for sensor specific information that may include an I.D., metadata, etc. and then switch the puck off and communicate directly with the sensor. The following requirements are for the puck hardware and it’s associated interfaces.

Requirements

- The puck shall store the information in the persistent storage in a flat binary format.

- The puck’s communication protocol shall allow the amount of persistent storage required to be scaled to the needs of the application. The SIAM project will initially require a minimum of 1 Megabyte of storage.

- The information (i.e. I.D., metadata, etc.) will be writable to the pucks persistent storage via the puck’s serial interface.

- The host must be able to communicate with the puck within one second of power up.

- The host must be able to communicate directly with the sensor once the information is retrieved from the puck.

- The puck shall support RS-232 and RS-485 half-duplex serial interfaces.

- The puck shall require no more than five wires for operation, specifically

RS-232	RS-485
TX	A
RX	B
Signal Common	Signal Common
Power	Power
Power Common	Power Common

- The puck shall require no more than 1 watt during reading or writing of information and no more than 30 milli-watts after it has been switched off.

- The puck shall operate between 8 – 16 VDC.
- The puck shall operate within 0° F and 100° F.
- The puck shall operate in a 1-atm environment.
- The puck will not be larger than 2.0 “ X 3.0” X 0.5 “.