

SDI-12 Support Group  
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### **Minutes from the 2012 Technical Committee Meeting**

The SDI-12 Support Group's Technical Committee held its annual meeting on Monday, November 12, 2012. This meeting was held in conjunction with the American Water Resources Association's (AWRA) annual conference, which was held at the Hyatt Regency Riverfront Hotel, in Jacksonville, Florida. The posted agenda for the meeting was:

#### **I. Clarifications of Existing Specification**

1. The current specification requires support of aC! command with something other than zero parameters, but no such explicit requirement for the aM! command. Does explicit support of aM! need to be specified?
2. Clarification of section 1.0. Should the line mentioning 200 feet be removed? Or reworded in some way? Section 1.0 is seen before 3.0 leaving the impression that SDI-12 only works up to 200 feet.
3. Add an appendix or other text to provide installation guidance to users about an acceptable SDI-12 cable length for their systems.

#### **II. Enhancements to the Specification**

1. Remove the 20 limit for nn for the maximum number of parameters that can be returned from the C series of commands.
2. If the limit of 20 is removed from the sensor response, do any changes need to be made to the data recorder requirements?
  - a. Left the same
  - b. Increased
  - c. Explicit data recorder requirement eliminated.
3. Adding a means to return parameter labels/codes and/or units.
4. Adding a means to support sensor contained documentation of commands

#### **Companies on the Technical Committee Represented at the Meeting**

Sutron Corporation, Jerry Calhoun, Chairman of the Technical Committee  
NR Systems, Inc., Mike Jablonski, Chairman of the SDI-12 Support Group  
Hach Company, Tom Benson  
USGS, Hydrologic Instrumentation Facility, Gerald Kunkle  
Campbell Scientific, Inc., Joe Thurston

## Others Present at the Meeting

Design Analysis Associates, Inc., Mike Nelson

### Clarifications to the SDI-12 Specification

#### aM! Command

After a discussion on the aM! command, the committee agreed that the SDI-12 Specification makes it clear that all sensors must respond to the aM! command, because section 4.4.5 says, "It (the aM! command) returns the time until one or more measurements will be ready and the number of measurements that it will make."

The specification also makes it clear that to comply with version 1.2 of SDI-12, a sensor having no data for the additional M commands must return a0000<CR><LF> to the data recorder, because section 4.4.9 says, "If a sensor has no data defined for an additional measurement command, it should return a0000<CR><LF>, saying it has zero data values ready. Not responding to the command is not acceptable."

The committee also found an error in section 4.4.5, Table 9. It says "n - the number of measurement values the sensor will make and return in one or more subsequent D command; n is a single digit integer with a valid range on 0 to 9. " It should say, "1 to 9," not "0 to 9." This will be corrected.

Conclusion. The proper responses to the additional M and additional MC, for sensors that do not support these commands, are:

#### a) Additional M commands

Version 1.0, 1.1	no response is acceptable, or a0000<CR><LF>
Version 1.2, 1.3	a0000<CR><LF>

#### b) Additional MC commands

Version 1.0, 1.1, 1.2	no response is acceptable, or a0000<CRC><CR><LF>
Version 1.3	a0000<CRC><CR><LF>

#### Cable Length

The technical committee decided to change this statement in section 1.0:

"Use of a single data recorder with multiple sensors on one cable."

To:

"Use of a single data recorder with multiple sensors on one cable (see section 3.0 for details)."

The technical committee decided to remove this statement from section 1.0, because a maximum cable length of 200 feet is not always a limiting constraint:

"Up to 200 feet of cable between a sensor and a data recorder."

The committee decided not to add an appendix or other text to provide installation guidance to users about an acceptable SDI-12 cable length for their systems. This is because the endless permutations of cables, topologies, and sensors. It was thought that sensor manufacturers could better provide the relevant information tailored to their particular sensor's power requirements and therefore greatly reduce the complexity presented to the user.

### **Remove Limit of 20 Parameters in Response to the C Series of Commands**

The committee determined that the limit of 20 parameters should be removed. The committee further determined that this change does not change the SDI-12 requirements or cause any existing SDI-12 devices to become non-compliant. Therefore this change does not need to be presented to the SDI-12 Support Group Membership for a formal vote.

The committee decided to delete the following phrase from Table 10 in section 4.4.7:

"(a data recorder must be able to read and store at least 20 parameters from a sensor, nn=20)"

The committee decided to delete this paragraph from section 4.4.7:

"The maximum number of data values a sensor can return for nn is 20. A data recorder is also required to store 20 data values. Future versions of SDI-12 may increase this to a maximum of up to 99 data values."

The following text will be added in its place:

"The data recorder documentation should document the number of data values that can be returned in response to a C command."

The committee also decided to change the following sentence in section 4.4.7:

"See the send data command, aD0!, aD1! ... aD9! for examples of this command."

To:

"See the send data command, aD0!, aD1! ... aD9!, section 4.4.8 for the data requirements."

### **Other**

Section 4.4.8 title should read: Send Data Command (aD0!, aD1!...aD9!). This is to be consistent with other usages of this nomenclature in other parts of the specification.

## **Conclusions about Clarifications to the SDI-12 Specification**

All of the above changes will be made to the January 3, 2012 version of the SDI-12 specification and a new revision of version 1.3 will be released.

### **Changes to the SDI-12 Specification**

#### **Adding a Means to Return Parameter Labels/Codes and/or Units**

The technical committee held a long discussion on this topic.

The final conclusion was to see if the capability for a sensor to return data labels meets the needs of the user community. The approach is to define a means to return units or labels for the values. This would be done by adding new commands that consist of adding an L suffix to existing measurement commands to request the information for the values returned by that command. The response would indicate how long it will take the sensor to prepare the response and the number of labels. Then the labels could be queried via the D commands. The response length limits for the D commands should be observed. Labels would reside in the same parameter position as the data they label, but they do not have to be returned by the same D command. It is recommended that the sensor provide an extended command that allows the default label, be they units or sensor type, to be changed to a label most appropriate for the user's application. The sensor has the option of not supporting data labels, in which case it would respond that it would have zero data values available in 000 seconds.

The implementation of this would be considered a new version of the specification. The plan is to:

- 1) Review the approved approach with the USGS water quality community to determine whether the outline addresses their data identification needs.
- 2) If the outline addresses their needs, then the technical committee will refine it into actual specification changes.
- 3) The changes would then be put out to the SDI-12 Support Group Membership for a vote. If approved, then they would be incorporated into a new version of the specification.

#### **Adding a Means to Support Sensor Contained Documentation of Commands**

The committee discussed this issue. The operational objective, however, was not clear enough to proceed further on.

#### **Additional items**

A suggestion was made to include an appendix with a checklist of specification requirements segregated by sensor and data recorder. The intention is to provide a quick checklist that a manufacturer (or user) could use for SDI-12 verification. The technical committee decided that this would be useful. The plan is for each technical committee member to generate a list. These will then be combined and sent out to the entire technical committee for review. Once the technical committee has

come to agreement, the lists would be added as appendices to the current specification version as a new revision of the version.

Mike Nelson (Design Analysis Associates, Inc.) volunteered and was accepted as a new member of the SDI-12 Support Group's technical committee. All current members of the Technical Committee have expressed a desire to serve for another one year term.

The Technical Committee currently has the following members:

Jerry Calhoun, Sutron Corporation (Chairman)  
Paul Campbell, Environment Canada  
Albrecht Dorr, OTT Messtechnik  
Mike Fleming, Stevens Water  
Mike Jablonski, NR Systems  
Roy Johnson, USGS  
Mike Nelson, Design Analysis Associates, Inc.  
Joe Thurston, Campbell Scientific

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### **Minutes from the 2012 General Meeting of the SDI-12 Support Group**

The SDI-12 Support Group held its annual meeting on Tuesday, November 13, 2012. This meeting was held in conjunction with the American Water Resources Association's (AWRA) yearly conference, which was held at the Hyatt Regency Riverfront Hotel, in Jacksonville, Florida. The posted agenda for the meeting was:

1. Welcome and Introductions
2. Report from the technical committee and open discussion on SDI-12
3. Report on the corporate status of the SDI-12 Support Group
4. Financial Report
5. Selection of Board Members for 2012-2013

#### **Attendance**

Mike Jablonski, NR Systems, Inc. Chairman of the SDI-12 Support Group  
Jerry Calhoun, Sutron Corporation, Chairman of the Technical Committee

#### **Report from the Technical Committee**

No report was needed as both Mike Jablonski and Jerry Calhoun both attended the Technical Committee meeting on November 12.

#### **Corporate Status of the SDI-12 Support Group**

Mike Jablonski reported that the SDI-12 Support Group is good standing with the Internal Revenue Service as a tax exempt non-profit corporation and the Group also remains in good standing with state of Utah Department of Commerce and the Utah State Tax Commission.

#### **Financial Report**

Mike Jablonski reported that, at present, the Support Group has \$ 4,266.14 in cash.

Mike Jablonski reported that he had paid the American Water Resources Association (AWRA) \$545.00 for a full registration for the 2012 conference, because AWRA provided meeting rooms for the 2012 meetings of the SDI-12 Support Group at the Hyatt, in Jacksonville, Florida. This payment was made on November 12, 2012.

Mike also reviewed a profit and loss statement, which covers the time from November 1, 2010 to present. November 1, 2010 was chosen because the last financial report made to the group was for the period ending on October 31, 2012. (The SDI-12 Support Group did not meet in 2011.)

Other upcoming expenses will be reimbursement to NR Systems, Inc., and to Sutron Corporation to pay the travel expenses to the 2012 meetings in Florida. Mike reported that the Group has sufficient funds for these upcoming expenses.

Mike reported a loss of \$ 1,799.60 since November 1, 2012 to present, because revenue from dues payments was low for the past two years. Revenue was \$ 2,700 and expenses were \$ 4,499.60. All revenue was from membership dues. Expenses were:

- \$ 300.00 donations to AWRA's scholarship fund
- \$ 525.00 conference registration fee for the 2010 AWRA conference
- \$ 1,264.24 travel expenses for Mike Jablonski to attend the 2010 meetings
- \$ 347.87 travel expenses for Jerry Calhoun's to attend the 2010 meetings
- \$ 2,062.49 to Amass Data Technologies for web-site maintenance and hosting for several years

\$ 4,499.60 Total

The Support Group is in the black (\$ 4,266.14 in cash), because in years prior to 2010 membership dues exceeded expenses.

Mike and Jerry agreed to seek revenue from dues by e-mailing a request to dues to all past and present members of the Support Group in December, 2012, and again in January 2013. A hard copy of a dues request will be mailed to those on the mailing, that do not respond to the first two requests, in February of 2013. All dues received in response to these solicitations will be for the 2013 calendar year.

### **Selection of Board Members for 2012-2013**

Mike Jablonski agreed to serve another one year term as the chairman of the SDI-12 Support Group.

Jerry Calhoun agreed to remain on the Board of Directors for another year.

Mike and Jerry decided to remove William Thomas (Amass Data Technologies) from the Board of Directors. This is because William has not been active in the Support Group for many years.

Mike will check with the Utah State Department of Commerce to see if it is permissible for him to serve as both the president and the secretary of the corporation. If not, a third board member will be added to the Group.

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