E-SEQ-FRM
USER 7500
SPECIFICATION

Met One Instruments, Inc
1600 Washington Blvd.
Grants Pass, Oregon 97526
Telephone 541-471-7111
Facsimile 541-471-7116

Table of Contents

1. Overview

This document describes the implementation of the STD 7500 protocol used in E-SEQ-FRM.

2. Instrument Communication Modes

2.1. Overview

There are three modes of communication:

1. *User communication* – This is a user interactive mode using simple letter commands for ease of use.
2. *Computer communication* – This mode is used for computer-to-device communication. It includes a level of data integrity.
3. *Network communication* – This mode is used for computer-to-device communication with more than one device on a network.

2.2. User Communication

In the user communication mode (terminal mode), the user simply presses the Enter key, <cr>, three times to enter the mode. In this mode simple character commands can be issued with no <Esc> character required.

An asterisk character appears when entering terminal mode, and also after a command has completed. The asterisk indicates that the instrument is ready for a new command. Commands are echoed back from the instrument in this mode.

Pressing <Esc> or Q<cr> will exit terminal mode.

2.3. Computer Communication

In the computer communication mode the command format include a level of data integrity – checksum.

This mode is entered whenever an <Esc> character is sent to the instrument.

Character echo is suppressed in this mode.

2.3.1. **Computer Command Format**

The computer command has the following format:

```
<Esc>Cmd p1 p2*cs<cr>
```

Computer commands are prefaced with an `<Esc>` (0x1B) character followed directly by a command, `Cmd`, which is variable in length depending on the command. After the command characters there can be zero or more parameter fields, `p1 p2`. Each parameter field is delimited by one or more Space characters (0x20). The end of the message is signaled by the Checksum Delimiter character `*` (0x2A) followed by the checksum, `cs`, and finally terminated with a carriage return `<cr>` (0x0D) character.

A computer command example follows:

```
<Esc>RV 1*1234<cr>
```

All command responses are terminated with a checksum

```
RV 1 E-SEQ-FRM, 82465, R1.2.0*01832<cr><lf>
```

2.3.2. **Checksum Computation**

Checksum is calculated as the 16 bit unsigned integer sum of all of the characters after the `<Esc>` character up to but not Including the Checksum Delimiter Character `*` (0x2A). It is printed out as an ASCII decimal number.

The result is always 5 characters in length with leading zeros.

The checksum may be bypassed in the following manner: `*//<cr>`.

2.4. Network Communication

Refer to the 7500 Network Protocol Specification.

3. Command Summary

3.1. Command List

$ – User level password protected commands

Command	Description
#	Report MetRecord Revision
1	Report settings
2	Report All User data
3	Report New User data
4	Report Last User data
7	Report Alarm data
C	Clear data files – $
D	Get/Set date part of the real-time clock – $
H	Help menu
Q	Quit out of terminal mode
T	Get/Set time part of the real-time clock – $
CA	Clear the Alarm log – $
DS	Report data log channel descriptors
DT	Get/Set the date and time of the real-time clock – $
ID	Get/Set location ID or address – $
OI	Get output interval – $
OP	Get/Set operation command
PM	Get/Set PM Inlet type – $
PR	Print report
PW	Unlock protected commands
QH	Report current readings header
RQ	Report current readings without header
RV	Report Model/Part/Revision
SB	Get/Set baud rate – $
SS	Get Met One serial number
ST	Get sample time (data log period)
UN	Get/Set data log channel units

DDT	Get/Set default Event duration time – $
DRT	Get/Set default Event repeat time – $
DST	Get/Set default Event start time – $
SPW	Get/Set user password – $
XRD	Get Xmodem record descriptor report
XRF	Xmodem read file
RSCH	Report Event schedules
STDT	Get/Set standard temperature – $
DSCRC	Get the data log channel descriptors CRC
EVENT	Get the requested event report
XRDCRC	Get Xmodem record descriptor CRC

4. E-SEQ-FRM Commands

The command and responses shown below are for computer mode unless otherwise noted. User mode responses are more verbose and similar in nature.

4.1. # – Request MetRecord Revision

Command	Description
#	Request the MetRecord Revision.

Response	Description
# 7500 r	7500 – This document number r – The revision of this document implemented in firmware

Example
#<cr> # 7500 C<cr><lf>

4.2. 1 – Report Settings

Command	Description
1	Report the settings.

Response

```
E-SEQ-FRM Settings Report
2017-05-31 08:43:56

      Firmware, 82465, R1.2.0
          FPGA, 82464, R1.0.0
       Display, 82451, R1.0
 Serial Number, A12345
       Unit ID, 1
     Baud Rate, 115200
  Data Average, 5 MIN
    Start Time, 00:00
      Duration, 01d 00h 00m
   Repeat Time, 01d 00h 00m
 PM Inlet Type, PM10
 Standard Temp, 25 C
   Beep Volume, 10
     USB Files, ALL
      USB Days, 0

  Name, Offset,  Slope
  Flow,  0.000,  1.000
    AT,  0.000
    FT,  0.000
    BT,  0.000
    BP,  0.000
    FP,  0.000
```

4.3. 2 – Report All Data

Command	Description
2	Report all the data. The 2 command always sends the data in CSV format.

Header Response: A report header is present for the CSV format when execute from terminal mode. It is suppressed in computer mode.

```
Data Report
2017-05-31 08:50:18
Location, 1, A12345

Time,AT(C),BP(mmHg),FT(C),Flow(lpm),Status
2017-05-31 08:50:00,+22.6,730.0,+23.6,16.67,00000
```

4.4. 3 – Report New Data

Command	Description
`3`	Report the new data since the last request.

Response:
The response is the same as the 2-command.

4.5. 4 – Report Last Data

Command	Description
`4`	Report the last data record.
`4 0`	Report all the data records.
`4 -1`	Report the new data records since the last request.
`4 n`	Report the last `n` hours where `n` is less than or equal to 2000.
`4 ts`	Request the last data since timestamp, where `ts` has the format `yyyy-MM-dd HH:mm:ss`.

Response:
The response is the same as the 2-command.

4.6. 7 – Report Alarm Events

Command	Description
7	Report all alarm events

Response:

```
Alarm Report
2017-05-31 09:02:47
Location, 1, A12345

Time,Alarm
2017-05-31 09:02:40,SENSOR RANGE,AT,-40.0
2017-05-31 09:02:40,SENSOR RANGE,FT,-40.0
2017-05-31 09:02:40,SENSOR RANGE,BT,-40.0
2017-05-31 09:02:40,SENSOR RANGE,BRH,0.0
2017-05-31 09:02:40,SENSOR RANGE,FP,228.0
2017-05-31 09:02:40,SENSOR RANGE,BP,228.0
2017-05-31 09:02:40,SENSOR RANGE,Flow,0.0
2017-05-31 09:02:40,SENSOR RANGE,AT,70.0
2017-05-31 09:02:40,SENSOR RANGE,FT,70.0
2017-05-31 09:02:40,SENSOR RANGE,BT,70.0
2017-05-31 09:02:40,SENSOR RANGE,BRH,100.0
2017-05-31 09:02:40,SENSOR RANGE,FP,818.0
2017-05-31 09:02:40,SENSOR RANGE,BP,818.0
2017-05-31 09:02:40,SENSOR RANGE,Flow,20.0
2017-05-31 09:02:40,FLOW FAILURE,0.0
2017-05-31 09:02:40,TEMP DELTA,5.1
2017-05-31 09:02:40,ELAPSED TIME,22:59:59,<,23:00:00
2017-05-31 09:02:40,ELAPSED TIME,25:00:01,>,25:00:00
2017-05-31 09:02:40,TRANSPORT,FILTER
2017-05-31 09:02:40,TRANSPORT,UP  TIMEOUT
2017-05-31 09:02:40,TRANSPORT,DOWN TIMEOUT
2017-05-31 09:02:40,TRANSPORT,STALL
2017-05-31 09:02:40,FLOW LINK DOWN
2017-05-31 09:02:40,POWER OUTAGE,Off,00:00:00,On,00:21:01
2017-05-31 09:02:40,MAINTENANCE
```

4.7. C – Clear Data Files

Command	Description
C Y	Clear the data files (5-Minuite Data, Event, Factory).

Response
C Y

Example
C Y<cr> C Y<cr><lf>

4.8. D – Request or Set the Date Only

Command	Description
D	Request the date part of the real time clock.
D yyyy-MM-dd	Set the date part of the real time clock.

Response
D yyyy-MM-dd

Parameter	Description
yyyy	Years 2000 – 2037
MM	Months 1 – 12
dd	Days 1 – 31

Example
D<cr> D 2013-01-08<cr><lf> D 2013-01-08<cr> D 2013-01-08<cr><lf>

4.9. H – Help Menu

Command	Description
H	Report the help menu.

Response
E-SEQ-FRM Help Menu 1 - Report Settings 2 - Report All Data 3 - Report New Data 4 - Report Last Data 7 - Report Alarm Log C - Clear Data Log CA - Clear Alarm Log DT - Set Date/Time OI - Set Output Interval QH - Report Data Record Header RV - Report Model/Part/Revision RQ - Report Current Readings

4.10. Q – Exit User Mode

Command	Description
Q	Exit User mode and enter Computer mode.

Response	Description
Q Exit Terminal Mode	The command was successful.

Example
Q<cr> Q Exit Terminal Mode<cr><lf>

4.11. T – Request or Set the Time Only

Command	Description
T	Request the time part of the real time clock.
T HH:mm:ss	Set the time part of the real time clock.

Response	Description
T HH:mm:ss	HH – Hours 0 – 23. mm – Minutes 0 – 59. ss – Seconds 0 – 59, this parameter is optional. When omitted the value will be 0.

Example
T<cr> T 13:18:38<cr><lf> T 14:13:12<cr> T 14:13:12<cr><lf>

4.12. CA – Clear Alarm Log

Command	Description
CA Y	Clear the alarm log.

Response
CA Y

Example
CA Y<cr> CA Y<cr><lf>

4.13. Field Descriptors

Retrieval commands are used to query the instrument for Descriptor Information Table. These commands can be accessed by any serial device such as a data logger or software.

Information can be retrieved in either in single line responses or in bulk. Single line responses are needed for devices with limited serial input buffer sizes.

4.13.1. DS 0 – Query Abbreviated Descriptor Information

Command	Description
`DS 0`	This command returns the general header information.

Response	Description
`DS n,id,r`	The response will indicate the general descriptor information. `n` – Number of field descriptor lines available. `id` – Location ID `r` – Reserved for future use. 0 is the default.

Example
`DS 0<cr>` `DS 6,1,0<cr><lf>`

4.13.2. **DS c – Specific Descriptor Information**

Command	Description
`DS c`	This command returns the specific channel header information in the Descriptor Information Table. `c` – Channel number.

Response
`DS c,FieldName,MeasureType,units,prec,math,max,min`

Parameter	Description
`c`	Field number – 1 based.
`FieldName`	Field name string in printable ASCII. This is the user selected name for the measurement. Example: AT1 for air temp, FT1 for flow temp, etc.
`MeasureType`	Measurement type string in printable ASCII See the definitions in Appendix A of the 7500 Protocol document
`units`	Engineering units string in printable ASCII. See the definitions in Appendix B of the 7500 Protocol document.
`prec`	Display value precision.
`math`	Math type field. Vector (V), Scalar (S), Total (T), Minimum (MIN), Maximum (MAX), Standard Deviation (STD), Bitwise OR (OR), No Math (NO).
`max`	Maximum measurement value.
`min`	Minimum measurement value.

Example
`DS 3<cr>` `DS 3,BP,BP,mmHg,1,S,825.0,200.0<cr><lf>`

4.13.3. **DS – Request All Descriptor Information**

Command	Description
DS	This command returns all of the general and header information. The command can be used for devices that have a large serial input buffer size.

Example
DS<cr> DS 1,Time,TIME,,0,NO,0,0<cr><lf> DS 2,AT,AT,C,1,S,70.0,-50.0<cr><lf> DS 3,BP,BP,mmHg,1,S,825.0,200.0<cr><lf> DS 4,FT,AT,C,1,S,70.0,-50.0<cr><lf> DS 5,Flow,FLOW,lpm,2,S,30.00,0.00<cr><lf> DS 6,Status,INFO,,0,OR,0,0<cr><lf>

4.13.4. **DSCRC – Descriptor table CRC**

Command	Description
DSCRC	This command returns the instrument descriptor table CRC. The intent is for the system or software to query and save this CRC. The value is then compared on subsequent reads to check for any instrument configuration changes. If the CRC does not match the previous CRC then check for a change in the field configuration parameters.

Response	Description
DSCRC hhhh	hhhh – The CRC value in hexadecimal.

Example
DSCRC<cr> DSCRC 2E65<cr><lf>

4.14. DT – Request or Set the Date and Time

Command	Description
`DT`	Request the date and time part of the real time clock.
`DT yyyyMMddHHmmss` `DT yyyy-MM-dd HH:mm:ss`	Set the date and time part of the real time clock.

Response
`DT yyyy-MM-dd HH:mm:ss`

Parameter	Description
`yyyy`	Years 2000 – 2037
`MM`	Months 1 – 12
`dd`	Days 1 – 31
`HH`	Hours 0 – 23
`mm`	Minutes 0 – 59
`ss`	Seconds 0 – 59

Example

```
DT<cr>
DT 2013-01-08 11:39:23<cr><lf>

DT 2013<cr>
DT 2013-01-01 00:00:00<cr><lf>

DT 20130108<cr>
DT 2013-08-08 00:00:00<cr><lf>

DT 2013-01-081141<cr>
DT 2013-01-08 11:41:00<cr><lf>
```

4.15. ID – Request or Set the Location ID

Command	Description
`ID`	Request the Location ID.
`ID id`	Set the Location ID. The range is 1 to 999.

Response	Description
`ID id`	`id` – The location ID. The ID value is three characters with leading zero's.

Example

`ID<cr>`
`ID 001<cr><lf>`
 	
`ID 2<cr>`
`ID 002<cr><lf>`

4.16. OI – Request or Set the Output Interval

Command	Description
`OI i`	Set Output Interval. This command is provided for compatibility with 7500 protocol masters which expect to turn off output with this command. Where i is the Interval. 0=No volunteered output, 1=Output at end of measurement.

Response	Description
`OI i`	Where i is the Interval. 0=No volunteered output, 1=Output at end of measurement.

Example

`OI<cr>`
`OI 0<cr><lf>`
 	
`OI 1<cr>`
`OI 1<cr><lf>`

The volunteered output occurs every 5-minutes. The report output is the same as the 2, 3, or 4 commands.
`2017-05-31 09:15:00,+22.6,729.9,+23.8,16.67,00000,*02460<cr><lf>`

4.17. OP – Request or Set the Operation State

Command	Description
`OP`	Request the current operation state.

`OP n`	Set the operation state where `n` is
	`0 = Stopped`
	`1 = Waiting`
	`2 = Sampling`
	`3 = Wait Complete`
	`4 = Finished`
	`5 = Error`
	`6 =`
	`7 = Pause Start`
	`8 = Pause Waiting`
	`9 = Paused`

Response	Description
`OP n-state`	`n` – the current state enumerator `state` – the name of the current state

Example
`OP<cr>` `OP 2-Sampling<cr><lf>`

4.18. PM – Request or Set the PM Inlet Type

Command	Description
PM	Request the current default PM Inlet Type.
PM e	Set the PM Inlet type where n is 1-PM2.5 VSCC 2-PM2.5 SCC 3-PM2.5 WINS 4-PM10 5-PM1 SCC 6-TSP

Response	Description
OP e-name	n – the PM Inlet type enumerator name – the name of the PM Inlet type

Example
PM<cr> PM 1-PM2.5 VSCC<cr><lf> PM 4<cr> PM 4-PM10<cr><lf>

4.19. PR – Print Report

Command	Description
`PR f`	Print report where f is the file number. 0 – Settings 1 – Data File 2 – Alarm File 3 – Factory File
`PR f 0`	Report all the data.
`PR f -1`	Report the new data since the last request.
`PR f n`	Report the last `n` hours where `n` is less than or equal to 2000.
`PR f ts`	Request the last data since timestamp, where `ts` has the format `yyyy-MM-dd HH:mm:ss`.

4.20. PW – Unlock User Commands

Command	Description
`PW nnnn`	This command `Unlocked` the user protected commands. The command and screen password is the same.

Response	Description
`Unlocked`	If the user password is correct, you will see this response.

Example
`PW 1234<cr>` `Unlocked<cr><lf>`

4.21. QH – Report Data Record Header

Command	Description
`QH`	Report data record header.

Response
`Time,AT(C),BP(mmHg),FT(C),Flow(lpm),Status`

4.22. RQ – Request Last Record

Command	Description
RQ	Request the last measurement record.

Response:
The response is the same as the 4-command.

Example:
RQ<cr> 16:25:15,+24.7,728.0,+25.9,16.67,00000,*02441

4.23. RV – Report Model, Firmware, Revision

Command	Description
RV	Request the model number, firmware part number, and revision string. Instruments with more than one processor or programmable devices will include more than one part number and revision on the next subsequent lines.

Response	Description
m, p, r	m – Device model name. p – Firmware part number. r – Firmware revision.

Example
RV<cr> E-SEQ-FRM, 82465, R1.2.0<cr><lf> FPGA, 82464, R1.0.0<cr><lf> Display, 82451, R1.0<cr><lf>

4.23.1. RV 0 – Request the number of processor/devices supported

Command	Description
RV 0	Request the number of processor or programmable devices.

Response	Description
RV n	n – Number processor or programmable devices.

Example
RV 0<cr> RV 3<cr><lf>

4.23.2. **RV n – Request individual processor/device information**

Command	Description
`RV n`	Request the model number, firmware part number, and revision for a specified processor or programmable device `n`.

Response	Description
`RV e m, p, r`	`e` – Device enumerator. `m` – Device model name. `p` – Firmware part number. `r` – Firmware revision.

Example

`RV 1<cr>`
`RV 1 E-SEQ-FRM, 82465, R1.2.0<cr><lf>`
 	
`RV 3<cr>`
`RV 3 Display, 82451, R1.0<cr><lf>`

4.24. SB – Request or Set the Serial Baud Rate

Command	Description
SB	Request the serial baud rate setting.
SB m	Set the serial baud rate where m is 3-2400,4-4800, 5-9600,6-19200,7-38400,8-57600,9-115200.

Response	Description
SB m-name	m – Serial baud rate enumerator. name – enumerator name.

Example
SB<cr> SB 5-9600<cr><lf> SB 6<cr> SB 6-19200<cr><lf>

4.25. SS – Get the Serial Number

Command	Description
SS	Get the serial number.

Response	Description
SS A99999	

Example
SS<cr> SS A99999<cr><lf>

4.26. ST – Request the Sample Time

Command	Description
ST	Request the Sample Time. It is fixed at 1-5 MIN.

Response	Description
ST e-v	e – The enumerator value. v – The current sample time value.

Example
ST<cr> ST 5-1 HR<cr><lf>

4.27. DDT – Request or Set Default Event Duration Time

Command	Description
`DDT`	Request the default Event duration time.
`DDT xxd yyh zzm`	Set the default Event duration time. Where `xxd` – `xx` is the number of days `yyd` – `yy` is the number of hours `zzm` – `zz` is the number of minutes The range is 1-minute to 30-days.

Response	Description
`DDT xxd yyh zzm`	Returns the default Event duration time. `xxd` – `xx` is the number of days `yyd` – `yy` is the number of hours `zzm` – `zz` is the number of minutes

Example

`DDT<cr>`
`DDT 01d 00h 00m<cr><lf>`
 	
`DDT 00d 23h 00m<cr>`
`DDT 00d 23h 00m<cr><lf>`

4.28. DRT – Request or Set Default Event Repeat Time

Command	Description
`DRT`	Request the default Event repeat time.
`DRT xxd yyh zzm`	Set the default Event repeat time. Where `xxd` – `xx` is the number of days `yyd` – `yy` is the number of hours `zzm` – `zz` is the number of minutes The range is 1-minute to 30-days.

Response	Description
`DRT xxd yyh zzm`	Returns the default Event duration time. `xxd` – `xx` is the number of days `yyd` – `yy` is the number of hours `zzm` – `zz` is the number of minutes

Example

`DRT <cr>`
`DRT 01d 00h 00m<cr><lf>`
 	
`DRT 03d 00h 00m<cr>`
`DRT 03d 00h 00m<cr><lf>`

4.29. DST – Request or Set Default Event Start Time

Command	Description
`DST`	Request the default Event start time.
`DST hh:mm`	Set the default Event start time. Where `hh` – `hh` is the hour number from 00 to 23. `mm` – `mm` is the minute number from 00 to 59.

Response	Description
`DST xxd yyh zzm`	Returns the default Event start time. `hh` – `hh` is the hour number `mm` – `mm` is the minute number

Example

`DST <cr>`
`DST 00:00<cr><lf>`
 	
`DST 12:00<cr>`
`DST 12:00<cr><lf>`

4.30. UN c – Request Specific Channel Available Field Units

Command	Description
`UN c`	Request the list of available channel/field units. `c` – Desired channel/field

Response	Description
`UN c e-name,...`	Returns the available units for the channel/field units. `1-a` – The enumerator and name `...` – More enumerators and names If a field has no units associated with it, a single response with an enumerator of 0 is returned with a unit name of N/A

Example

`UN 2<cr>`
`UN 2 1-C<cr><lf>`
 	
`UN 1<cr>`
`UN 1 0-N/A<cr><lf>`

4.31. SPW – Request or Set the User Password

Command	Description
SPW	Request the user password.
SPW wxyz	Set the user password, where w,y,x,z are digits from 1 – 9.

Response	Description
SPW ----	---- - The user password has not been entered and therefore cannot be shown.
SPW wxyz	wxyz – The current user password.

Example
SPW<cr> SPW ----<cr><lf> PW 1234<cr> PW Unlocked<cr><lf> SPW<cr> SPW 1234<cr><lf> SPW 1122<cr> SPW 1122<cr><lf>

4.32. XRD – Request the Xmodem Record Descriptors

Refer to the ***File Record Descriptor Specification*** document for more information.

Command	Description
`XRD e`	Request the X-modem record descriptors, where `e` is `1=data file record`.

Response	Description
	Go to Wikipedia for more information on the XMODEM protocol – http://en.wikipedia.org/wiki/XMODEM

Example

```
XRD 1<cr>
XRD 1,3,6,1,LE
1,Time,,0,NO,DATETIME,1.0E+00,0.0E+00,2.5E+00
2,Status,,0,OR,UINT32,1.0E+00,0.0E+00,2.5E+00
3,AT,C,1,S,FLOAT,1.0E+00,0.0E+00,2.5E+00
4,BP,mmHg,1,S,FLOAT,1.0E+00,0.0E+00,2.5E+00
5,FT,C,1,S,FLOAT,1.0E+00,0.0E+00,2.5E+00
6,FLOW,lpm,2,S,FLOAT,1.0E+00,0.0E+00,2.5E+00
```

4.33. RSCH – Report Event Schedule

Command	Description
RSCH	Report the event schedule.

Example

```
RSCH<cr>
RSCH 01,P2940269,0-NO,2017-06-03 00:00,01d 00h 00m,1-PM2.5 VSCC,2-25 C
RSCH 02,P2940270,0-NO,2017-06-04 00:00,01d 00h 00m,1-PM2.5 VSCC,2-25 C
RSCH 03,P2940271,0-NO,2017-06-05 00:00,01d 00h 00m,1-PM2.5 VSCC,2-25 C
RSCH 04,P2940272,0-NO,2017-06-06 00:00,01d 00h 00m,1-PM2.5 VSCC,2-25 C
RSCH 05,P2940273,0-NO,2017-06-07 00:00,01d 00h 00m,1-PM2.5 VSCC,2-25 C
RSCH 06,P2940274,0-NO,2017-06-08 00:00,01d 00h 00m,1-PM2.5 VSCC,2-25 C
RSCH 07,P2940275,0-NO,2017-06-09 00:00,01d 00h 00m,1-PM2.5 VSCC,2-25 C
RSCH 08,P2940276,0-NO,2017-06-10 00:00,01d 00h 00m,1-PM2.5 VSCC,2-25 C
RSCH 09,P2940277,0-NO,2017-06-11 00:00,01d 00h 00m,1-PM2.5 VSCC,2-25 C
RSCH 10,P2940278,0-NO,2017-06-12 00:00,01d 00h 00m,1-PM2.5 VSCC,2-25 C
RSCH 11,P2940279,0-NO,2017-06-13 00:00,01d 00h 00m,1-PM2.5 VSCC,2-25 C
RSCH 12,P2940280,0-NO,2017-06-14 00:00,01d 00h 00m,1-PM2.5 VSCC,2-25 C
RSCH 13,P2940281,0-NO,2017-06-15 00:00,01d 00h 00m,1-PM2.5 VSCC,2-25 C
RSCH 14,P2940282,0-NO,2017-06-16 00:00,01d 00h 00m,1-PM2.5 VSCC,2-25 C
RSCH 15,P2940283,0-NO,2017-06-17 00:00,01d 00h 00m,1-PM2.5 VSCC,2-25 C
RSCH 16,P2940284,0-NO,2017-06-18 00:00,01d 00h 00m,1-PM2.5 VSCC,2-25 C
```

4.34. XRF – Xmodem Read File

Refer to the ***File Record Descriptor Specification*** document for more information.

Command	Description
`XRF e ts te`	Request the data file in binary xmodem protocol where `e` is `1=data file` and `ts` (optional) is the start timestamp and `te` (optional) is the end timestamp.

Response	Description

4.35. STDT – Request or Set the Standard Temperature

Command	Description
`STDT`	Request standard temperature.
`STDT e`	Set the standard temperature, where `e` is `0-0 C,1-20 C,2-25 C`.

Response	Description
`STDT e-n`	`e` – the standard temperature enumerator `n` – the standard temperature value name

Example

`STDT <cr>`
`STDT 2-25 C<cr><lf>`
 	
`STDT 1<cr>`
`STDT 1-20 C<cr><lf>`

4.36. EVENT – Request Event Report

Command	Description
`EVENT`	Requests the previous event report.
`EVENT 0`	Request the current running event (if valid).
`EVENT n`	Requests the previous event report `n` events back.
`EVENT ts`	Request the last event since timestamp, where `ts` has the format `yyyy-MM-dd HH:mm:ss`.

Example

```
EVENT 5<cr>
Event,5
Filter ID,2004
Status,Finished
Start,2016-08-08 00:00:16
Stop,2016-08-08 06:00:01
Elapse,05:59:45
Unit ID,120
Serial Number,U17120
Firmware,82465,R0.2.0.1a
PM Type,PM2.5 VSCC
Standard Temp,25 C
Vol Act,5.996
Vol Std,5.965
CV,0.4
Flow,16.67
Std Dev,0.07
Ambient Temp Avg,14.7
Ambient Temp Max,17.3,2016-08-08 00:00:22
Ambient Temp Min,12.5,2016-08-08 05:53:08
Barometric Pres Avg,730
Barometric Pres Max,730,2016-08-08 05:59:47
Barometric Pres Min,730,2016-08-08 04:20:21
Filter Temp Avg,15.5
Filter Temp Max,19.1,2016-08-08 00:00:20
Filter Temp Min,13.1,2016-08-08 05:54:39
Warning Delta Temp,Yes,2016-08-08 00:00:18
Delta Temp Max,1.8,2016-08-08 00:00:18
Warning Flow,Yes,15.02,2016-08-08 00:00:18
Warning Elapse,Yes,25:59:45,>,25:00:00
Power Failure,1,2016-08-08 00:00:18
Power Failure,2,2016-08-09 01:00:31
```

Event Errors	Description
`Event,File Empty`	Occurs when there are no events in the unit.
`Event,No Record`	Occurs when the requested event doesn't exist.
`Event,No Current Event`	Occurs when the current event is requested but there is not current event active.

Delta Temp Warning Response: The delta temp warning response will vary depending on the condition of the warning.	
`Warning Delta Temp,No`	Occurs when there is no delta temperature warning.
`Warning Delta Temp,Yes,ts`	Occurs when there is a delta temperature warning and displays the timestamp `ts` at which the warning occurred in the format of `yyyy-MM-dd HH:mm:ss`

Flow Warning Response: The flow warning response will vary depending on the condition of the warning.	
`Warning Flow,No`	Occurs when there is no flow warning.
`Warning Flow,Yes,v,ts`	Occurs when there is a flow warning and displays the value of the flow `v` at timestamp `ts` at which the warning occurred in the format `yyyy-MM-dd HH:mm:ss`

Elapse Time Warning Response: The elapse warning response will vary depending on the condition of the warning.	
`Warning Elapse,No`	Occurs when there is no elapse warning.
`Warning Elapse,Yes,ts,<,23:00:00`	Occurs when there is a elapse warning and the elapse time `ts` was less than 23 hours in the time format `HH:mm:ss`
`Warning Elapse,Yes ts,>,25:00:00`	Occurs when there is a elapse warning and the elapse time `ts` was longer than 25 hours in the time format `HH:mm:ss`

Power Failures Response: The power failures response varies depending on how many power failures occurred during the event. Up to 10 power failures can be displayed.

```
Power Failure,1,2016-08-08 00:00:00
Power Failure,2,2016-08-08 01:00:00
Power Failure,3,2016-08-08 02:00:00
Power Failure,4,2016-08-08 03:00:00
Power Failure,5,2016-08-08 04:00:00
Power Failure,6,2016-08-08 05:00:00
Power Failure,7,2016-08-08 06:00:00
Power Failure,8,2016-08-08 07:00:00
Power Failure,9,2016-08-08 08:00:00
Power Failure,10,2016-08-08 09:00:00
```

4.37. DSCRC – Channel Descriptor table CRC

Command	Description
`DSCRC`	This command returns the channel descriptor table CRC. The intent is for the system or software to query and save this CRC. The value is then compared on subsequent reads to check for any instrument configuration changes. If the CRC does not match the previous CRC then check for a change in the field configuration parameters.

Response	Description
`DSCRC hhhh`	`hhhh` – The CRC value in hexadecimal.

Example
`DSCRC<cr>` `DSCRC 2E65<cr><lf>`

4.38. XRDCRC – Request the Xmodem File Descriptor CRC

Refer to the ***File Record Descriptor Specification*** document for more information.

Command	Description
`XRDCRC 1`	Request the file descriptor CRC.

Response	Description
`XRDCRC f hhhh`	`f` – the file number. `hhhh` – the file record descriptor CRC value in hexadecimal.

Example
`XRDCRC 1<cr>` `XRDCRC 1 CBE0<cr><lf>`