136 MULTIMET USER 7500

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 7500 protocol used in the Auto Met 500 Series.

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*1234<cr>
```

All command responses are terminated with a checksum

```
RV 092, 99999-1, R9.9.9*1234<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>`.

3. Command Summary

3.1. Command List

Command	Description
#	Request MetRecord Revision
1	Request settings report
2	Request All User data report
3	Request New User data report
4	Request Last User data report
C	Clear data log file
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
Z	Enable remote control
DS	Report data log channel descriptors
DT	Get/Set the date and time of the real time clock
ES	Get/Set the Ethernet serial on/off
ID	Get/Set location ID or address
MA	Get/Set Modbus Address
MP	Get/Set Modbus Port
NW	Set Network Mode
OI	Get output interval
PR	Print report: 0 – Settings, 1 – User
PW	Unlock protected commands
QH	Report current readings header
RQ	Report current readings without header
RS	Report Settings
RV	Report Model/Part/Revision
SB	Get/Set baud rate
SS	Get Met One serial number
ST	Get/Set sample time (data log period)
UN	Get/Set data log channel units

CHN	Set Channel Name
CHU	Set Channel Units
TZO	Get/Set the time zone offset for devices connecting to the cloud
XRF	Xmodem read file
XRD	Get Xmodem record descriptor report
MDMP	Get/Set the modem port
DSCRC	Get the data log channel descriptors CRC
MODEM	Get/Set the modem connection type if applicable
XRDCRC	Get Xmodem record descriptor CRC

4. 136 MultiMet 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 3<cr><lf>

4.2. 1 – Report Settings

Command	Description
1	Report the settings.

Response

```
AutoMet+ Settings Report
2014-10-29 10:23:41

      Firmware, 10723-1, R0.2.1
       Digital, 1 MSO, 10463-03, R1.0.3.0e
 Serial Number, N0000
      Location, 1
Main Port Baud, 38400
  Printer Baud, 9600
 485 Port Baud, 9600
    Extra Baud, 9600
   Modbus Port, MAIN
Modbus Address, 1

   LCD Timeout, 10 MIN
Average Period, 1 MIN
 Input Voltage, 5.000
Output Voltage, 1.000

  ALARM 1 Chan, 01 WS
             LO, 00000.0
             HI, 00000.0
           Type, OFF
    Delay Mode, NO TIMEOUT/DELAY
       Timeout, 0
         Delay, 0

  ALARM 2 Chan, 01 WS
             LO, 00000.0
             HI, 00000.0
           Type, OFF
    Delay Mode, NO TIMEOUT/DELAY
       Timeout, 0
         Delay, 0

  Auto Reports
      Main Fmt, METRECORD
     Main Type, OFF
    Main Intvl, 1 SEC
     Print Fmt, METRECORD
    Print Type, OFF
   Print Intvl, 1 SEC
        UIM ID,
```

```
     Chan7 X10, NO
    Chan8 X100, NO

Chan, Src,     Name,      Units, Prec, FS Volts, Min Engr, Max Engr, Math
 1,   Dig.  ,  WS       , m/s    , 1,    2.5,    000000.0, 000050.0, Avg
 2,   Dig.  ,  WD       , Deg    , 0,    2.5,    00000000, 00000360, Vect
 3,   Dig.  ,  AT       , C      , 1,    2.5,    -00040.0, 000060.0, Avg
 4,   Dig.  ,  RH       , %      , 0,    2.5,    00000000, 00000100, Avg
 5,   Dig.  ,  BP       , mbar   , 1,    2.5,    000500.0, 001100.0, Avg
 6,   Cnt1  ,  WS010    , M/S    , 1,
 7,   Chan1 ,  Gust     , m/s    , 1,    2.5,    000000.0, 000050.0, Avg
 8,   Sen8  ,  WD 020   , DEG    , 0,    5.0,    00000000, 00000360, Vect
 9,   Rain  ,  RN       , IN     , 2,
10,   Chan2 ,  SIGMA    , Deg    , 0,    2.5,    00000000, 00000360, Vect
11,   Sen17 ,  BV       , V      , 2,    2.5,    00000.00, 00018.00, Avg


Out, Src,       Min Engr, Max Engr
 1,   Chan 1 ,  000000.0, 000001.0
 2,   Chan 2 ,  00000000, 00000360
 3,   Chan 3 ,  000000.0, 000001.0
 4,   Chan 4 ,  00000000, 00000001
 5,   Chan 5 ,  000500.0, 000500.0
 6,   Chan 6 ,  000000.0, 000001.0
 7,   Chan 7 ,  000000.0, 000000.0
 8,   Chan 8 ,  00000000, 00000001
 9,   Chan 9 ,  00000.00, 00001.00
10,   Chan 10,  00000000, 00000001
11,   Chan 11,  00000.00, 00018.00
12,   Chan 12,  00000000, 00000360
```

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
2014-10-29 10:25:38
Station, 1, N0000

TIME,WS (m/s),WD (Deg),AT (C),RH (%),BP (mbar),WS010 (M/S),Gust (m/s),WD 020 (DEG),RN (IN ),SIGMA (D
eg),BV (V  ),STAT
```

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.
4 n	Report the last n -records where n is less than or equal to the maximum amount of records stored in the device.

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

4.6. C – Clear Data Log

Command	Description
C Y	Clear the data log.

Response
C Y

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

4.7. 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>

4.8. H – Help Menu

Command	Description
H or ?	Report the help menu.

Response

```
 1 - Report Settings
 2 - Report All Data
 3 - Report New Data
 4 - Report Last Data
 C - Clear Data File
 D - Set Date
 T - Set Time
 Q - Quit Out of Terminal Mode
DT - Set Date/Time
ID - Set Location ID
PR - Print Report
QH - Report Data Record Header
RQ - Request Current Data Record
RV - Report Model/Part/Revision
SB - Set Baud Rate
SS - Get Serial Number
ST - Set Sample Time
```

4.9. 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>`

4.10. 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>`

4.11. Z – Enable Remote Control

Command	Description
Z	Enables the Remote Control, which displays the text being shown on the AutoMet's display. Note: <ESC><cr> will end the remote control session.

Response

```
▉CLOCK              SETUP CLOCK
 SAMPLE
 FLOW           SET DATE AND TIME
 CALIBRATION
 INLET HEATER
 SENSORS
 INTERFACE
▼SERIAL PORTS        SELECT     EXIT
```

4.12. 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.

4.12.1. 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 13,001,0<cr><lf>`

4.12.2. **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,WD,NA,Deg,0,V,0,360<cr><lf>`

4.12.3. **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
DS 2,WS,NA,m/s,1,S,0.0,50.0
DS 3,WD,NA,Deg,0,V,0,360
DS 4,AT,NA,C,1,S,-40.0,60.0
DS 5,RH,NA,%,0,S,0,100
DS 6,BP,NA,mbar,1,S,500.0,1100.0
DS 7,WS010,NA,M/S,1,S,0.0,100.0
DS 8,Gust,NA,m/s,1,S,0.0,50.0
DS 9,WD 020,NA,DEG,0,V,0,360
DS 10,RN,RN,IN ,2,S,0.00,100.00
DS 11,SIGMA,WD,Deg,0,STD,0,360
DS 12,BV,NA,V  ,2,S,0.00,18.00
DS 13,STAT,INFO,,0,NO,0,0
```

4.12.4. **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 F69F<cr><lf>

4.13. 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>

4.14. ES – Request or Set the Ethernet Serial

Command	Description
`ES e`	Turn the Ethernet Serial On/Off `e` – enumerator, `0 = OFF, 1 = ON`

Response	Description
`ES e-n`	`e` – enumerator setting `n` – the setting value

Example

`ES<cr>`
`ES 0-OFF<cr><lf>`
 	
`ES 1<cr>`
`ES 1-ON<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. MA – Request or Set the Modbus Address

Command	Description
MA	Request the Modbus address.
MA a	Set the Modbus address. The range is 1 to 247.

Response	Description
MA a	a – The Modbus address.

Example
MA<cr> MA 1<cr><lf> MA 2<cr> MA 2<cr><lf>

4.17. MP – Request or Set the Modbus Port

Command	Description
MP	Request the Modbus port.
MP e	Set the Modbus port, where e is 0-RS-232, 1-ETHERNET, 2-COM 3

Response	Description
MP e-n	e – The enumerator setting. n – The port name

Example
MP<cr> MP 0-RS-232<cr><lf> MP 1<cr> MP 1-ETHERNET<cr><lf>

4.18. NW – Set Network Mode

Command	Description
NW	Request the measurement concentration setting.
NW m	Set the network mode where m is 0-Off, 1-On.

Response	Description
NW 0	.

Example
NW<cr> NW 0 <cr><lf> <Esc>A NW 0*cs<cr> NW 0<cr><lf>

4.19. 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. Use SR command. Where i is the Interval. 0=No volunteered output, 1=Output at end of measurement.

Response	Description
OI 1	Response is the same whether setting or getting the parameter

Example
OI<cr> OI 1<cr><lf> OI 0<cr> OI 0<cr><lf>

4.20. PR – Print Report

Command	Description
`PR f`	Print report where f is the file number. 0 – Settings 1 – Data
`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`.

4.21. PW – Unlock Factory Commands

Command	Description
`PW n`	This command `Unlocked` the user protected commands.

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

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

4.22. QH – Report Data Record Header

Command	Description
`QH`	Report data record header.

Response
`TIME,WS (m/s),WD (Deg),AT (C),RH (%),BP (mbar),WS010 (M/S),Gust (m/s),WD 020 (DEG),RN (IN ),SIGMA (Deg),BV (V  ),STAT`

4.23. RQ – Request Last Record

Command	Description
RQ	Request the instantaneous measurement record.

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

Example:
RQ<cr> 2014-10-29 10:55:43,00001.3,0000049,+0013.9,0000088,00979.4, 00000.3,00001.6,0000104,0000.00,0000049,0015.01,00000,*05546

4.24. RS – Report Settings

Command	Description
RS	Report the settings.

Response:
The response is the same as the 1-command.

4.25. 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
RV m, p, r	m – Device model name. p – Firmware part number. r – Firmware revision.

Example
RV<cr> 136 MultiMet, 10581, R1.0.0<cr><lf>

4.25.1. 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 1<cr><lf>

4.25.2. **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 1 136 MultiMet, 10581, R1.0.0<cr><lf>`

4.26. 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 2-1200,3-2400,4-4800, 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>

4.27. SS – Get the Serial Number

Command	Description
SS	Get the serial number.

Response	Description
SS A99999	

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

4.28. ST – Request or Set the Sample Time

Command	Description
ST	Request the Sample Time.
ST e	Set the Sample Time. e – the Sample Time, where e is 0-1 MIN,1-5 MIN,2-10 MIN, 3-15 MIN,4-30 MIN,5-60 MIN

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

Example
ST<cr> ST 5-60 Min<cr><lf> ST 1<cr> ST 1-5 Min<cr><lf>

4.29. 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 1-a,...`	Returns the available units for the channel/field units. See Appendix C for a list of the approved unit codes. `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 3<cr>`
`UN 3 1-ug/m3,2-mg/m3<cr><lf>`
 	
`UN 1<cr>`
`UN 1 0-N/A<cr><lf>`

4.30. UN c u – Set Specific Channel Field Units

Command	Description
`UN c u`	Set the channel/field units. `c` – Desired channel/field `u` – Enumerated unit (1, 2, 3 etc.) Enumerators are 1 based. Sending a 0 enumerator to this command will echo back the current setting with no changes.

Response	Description
`UN c 1-a`	Returns the enumerator and unit name after the change. `c` – channel/field `1-a` – The enumerator and unit name

Example

`UN 3 1<cr>`
`UN 3 1-ug/m3<cr><lf>`
 	
`UN 4 0<cr>`
`UN 4 2-mg/m3`

4.31. CHN – Set Channel Name

Command	Description
`CHN c n`	Set the channel/field name. `c` – Desired channel/field `n` – Desired name (WS, WD, AT, RH, etc.)

Good Response	Description
`CHN Name Saved`	Returns this response if the channel name was changed successfully.

Bad Response	Description
`CHN Out of Range`	Returns this response if the channel # supplied was out of range. Valid channels are 1-16.

Example

`CHN 8 WS<cr>`
`CHN Name Saved<cr><lf>`
 	
`CHN 8 WD<cr>`
`CHN Name Saved<cr><lf>`

4.32. CHU – Set Channel Units

Command	Description
`CHU c u`	Set the channel/field name. `c` – Desired channel/field `u` – Desired Units Name (V, C, DEG, etc.)

Good Response	Description
`CHU Unit Saved`	Returns this response if the channel units were changed successfully.

Bad Response	Description
`CHU Out of Range`	Returns this response if the channel # supplied was out of range. Valid channels are 1-16.

Example

`CHU 8 MPH<cr>`
`CHU Unit Saved<cr><lf>`
 	
`CHU 8 DEG<cr>`
`CHU Unit Saved<cr><lf>`

4.33. TZO – Request or Set the Time Zone Offset

Command	Description

`TZO HH:mm`	Get/Set the Time Zone Offset.
	`HH` – Offset hours, `-12` to `14`
	`mm` – Offset minutes, `00` to `59`

Response	Description
`TZO UTC +HH:mm`	`+` - Sign of the hours `HH` – Current Offset Hours `mm` – Current Offset Minutes

Example

`TZO<cr>`
`TZO UTC +00:00<cr><lf>`
 	
`TZO 8:13<cr>`
`TZO UTC +08:13<cr><lf>`

4.34. 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 1,3,13,1,BE*00830
1,TIME,,0,S,DATETIME,1.000000E+00,0.000000E+00,2.500000E+00*03202
2,STAT,,0,OR,UINT32,1.000000E+00,0.000000E+00,2.500000E+00*03126
3,WS,m/s,1,S,FLOAT,1.000000E+00,0.000000E+00,2.500000E+00*03128
4,WD,Deg,0,V,FLOAT,1.000000E+00,0.000000E+00,2.500000E+00*03117
5,AT,C,1,S,FLOAT,1.000000E+00,0.000000E+00,2.500000E+00*02905
6,RH,%,0,S,FLOAT,1.000000E+00,0.000000E+00,2.500000E+00*02880
7,BP,mbar,1,S,FLOAT,1.000000E+00,0.000000E+00,2.500000E+00*03255
8,WS010,M/S,1,S,FLOAT,1.000000E+00,0.000000E+00,2.500000E+00*03214
9,Gust,m/s,1,S,FLOAT,1.000000E+00,0.000000E+00,2.500000E+00*03383
10,WD 020,DEG,0,S,FLOAT,1.000000E+00,0.000000E+00,2.500000E+00*03273
11,RN,IN ,2,T,FLOAT,1.000000E+00,0.000000E+00,2.500000E+00*03079
12,SIGMA,DEG,0,STD,FLOAT,1.000000E+00,0.000000E+00,2.500000E+00*03463
13,BV,V  ,2,S,FLOAT,1.000000E+00,0.000000E+00,2.500000E+00*03039
```

4.35. 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

4.36. MDMP – Request or Set the Modem Port

Command	Description
`MDMP e`	Get/Set the modem port e – enumerator for port, `0-MAIN, 1-COM1, 2-COM2`

Response	Description
`MDMP e-n`	e – enumerator setting n – name of port

Example

`MDMP<cr>`
`MDMP 0-MAIN<cr><lf>`
 	
`MDMP 1<cr>`
`MDMP 1-COM1<cr><lf>`

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 F69F<cr><lf>

4.38. MODEM – Request or Set the Modem Connection Type

Command	Description
MODEM e	Get/Set the modem connection type e – enumerator for connection type, 0-NONE, 1-GSM, 2-CDMA

Response	Description
MODEM e-n	e – enumerator setting n – name of connection type

Example
MODEM<cr> MODEM 0-NONE<cr><lf> MODEM 1<cr> MODEM 1-GSM<cr><lf>

4.39. RNRST – Request or Set the Rain Reset Setting

Command	Description
`RNRST e`	Get/Set the rain reset setting e – enumerator for connection type, `0-AVG PERIOD`, `1-MIDNIGHT`

Response	Description
`RNRST e-n`	e – enumerator setting n – name of connection type

Example

`RNRST<cr>`
`RNRST 0-AVG PERIOD<cr><lf>`
 	
`RNRST 1<cr>`
`RNRST 1-MIDNIGHT<cr><lf>`

4.40. XRDCRC – Get Xmodem record descriptor CRC

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

5. Modbus Map

This section will cover the AutoMet 500 Series Modbus Map.

5.1. 3x Modbus Map

Modbus Name	Addr	Name	Type	Points	Notes
MB_Word_1	0	1	word	1	Known value for easier Byte Order configuration
MB_Dword_1_9	1	123456789	dword	2	Known value for easier DWord Order configuration
MB_Float_123456	3	123456.0	float	2	Known value for easier Float Order configuration
MB_String	5	"ABCDE"	string	3	Fixed String value for configuring
MB_Year	100		word	1	Currrent Time Year
MB_Mon	101		word	1	Currrent Time Month
MB_Day	102		word	1	Current Time Day
MB_Hour	103		word	1	Current Time Hour
MB_Min	104		word	1	Current Time Min
MB_Sec	105		word	1	Time - Sec
MB_DateTime	106		dword	2	Unix Timestamp (Seconds since Jan 1 1970)
MB_N_Chan	200		word	1	Number of Channels in Data Logger
MB_Serial	201		string	4	Serial Number (8 Bytes including 0 terminator)
MB_Rev	205		string	20	Auto Met + Revistion String
MB_DigitalRev	225		string	20	Digital Sensor Revision
MB_Chan_N	300		word	1	Channel Number of Description information (Future Feature)
MB_Chan_Name	301		string	5	Channel Name String
MB_Chan_Unit	311		string	4	Channel Units String
MB_Chan_Prec	315		word	1	Precision
MB_Chan_Math	316		word	1	Math Type enumerator
MB_Inst_Time	1000		dword	2	Current Timestamp (Unix)
MB_Inst_Stat	1002		dword	2	Status Word
MB_Inst_sen1	1004		float	2	Sensor 1 data
MB_Inst_sen2	1006		float	2	Sensor 2 data
MB_Inst_sen3	1008		float	2	Sensor 3 data
…			float	2	More Sensors as necessary
MB_Inst_senN	10xx		float	2	Last Sensor as indicated by MB_N_Chan (200)

MB_Avg_Time	2000		dword	2	Current Timestamp (Unix)
MB_Avg_Stat	2002		dword	2	Status Word
MB_Avg_sen1	2004		float	2	Sensor 1 data
MB_Avg_sen2	2006		float	2	Sensor 2 data
MB_Avg_sen3	2008		float	2	Sensor 3 data
…			float	2	More Sensors as necessary
MB_Avg_senN	20xx		float	2	Last Sensor as indicated by MB_N_Chan (200)

5.2. 4x Modbus Map

Name	Address	Type	Points	Description
Modbus Address	0	Int16	1	Modbus address
Byte Order	1	Int16	1	Value 1 to 4
Year	100	Uint16	1	Set time Year
Month	101	Uint16	1	Set time Month
Day	102	Uint16	1	Set time Day
Hour	103	Uint16	1	Set time Hour
Minute	104	Uint16	1	Set time Minute
Second	105	Uint16	1	Set time Second
Date/Time	106	Uint32	2	Set Unix time (Seconds since Jan 1 1970)