

Micro Specialties, Inc.

P.O. Box 871077
Wasilla, Alaska 99687-1077
Ph: 907-373-7424
Fax: 907-376-2894
Micro-Specialties.com

Data Collector processing for MicroMet MBTU10X

The MicroMet Meteor Burst Data Modem (MBTU10X) is designed to transport data messages produced by a data collector or data logger such as the Campbell Scientific CR10X. MicroMet receives data messages from the data collector on its second serial data port (J4). MicroMet sets this port's data rate at 1200 BPS, 8 bits, no parity, and 1 stop bit. All data logger input is processed by MicroMet's command processor in exactly the same manner as with the primary serial port at J3. MicroMet has a special command for data logger generated data messages (444), and the data logger must be programmed to submit each data message to MicroMet in the correct syntax, which varies with the MicroMet revision:

MBTU10X Revision 1.XX

Revision 1.XX expects the following message syntax:

444,JJJ,HHMM,s1,s2...snCRLF

Where:

444 is the new-message command
JJJ is the Julian day of the year. (001 is January 1st)
HHMM is the 24 hour clock time of day. (1200 is noon)
sX is a data point value in the range of 0 through 4095
CRLF is a Carriage Return, Line Feed sequence.

Revision 1.XX allows only **one** data message of up to **16 data points** in its queue at a time. Each new data message will replace any message which has not been delivered.

MBTU10X Revision 2.XX

Revision 2.XX expands the data collector's control over message delivery by allowing it to set the message's group number and priority. Message groups can be in the range of 1 through 15, and Message Priority may be set in the range of 1 through 10, with 1 being the highest priority. MicroMet maintains a **10 message prioritized, last-in-first-out (LIFO) message queue**, wherein the queue is ordered first by priority, then by age. The highest priority messages are delivered first, and within each priority, the newest messages are delivered first. Message grouping, allows the data collector to produce a number of different data groups of up to **15 data points** per group. Each data message has a time-to-live (TTL) of exactly one day. Message TTL expires after 1440 minutes, and when a message's TTL expires, that message is immediately dequeued. Messages also have a duty cycle limit, such that if a message is transmitted too many times without a delivery acknowledgement, the message will be automatically dequeued. Revision 2.03 keeps track of, and reports message TTL and duty cycle expirations. See the Revision 2.XX Addendum for more details.

Revision 2.XX expects the following message syntax:

444,P,JJJ,HHMM,G,s1,s2...snCRLF

Where:

444 is the new-message command
P is the message priority (1 through 10)
JJJ is the Julian day of the year. (001 is January 1st)
HHMM is the 24 hour clock time of day. (1200 is noon)

G is the message group (1 through 15)
sX is a data point value in the range of 0 through 4095
CRLF is a Carriage Return, Line Feed sequence.

Data points must be integer values in the range of 0 to 4095. Any non-integer values are truncated by MBTU10X to integer size (40.99 becomes 40).

Message fields may be comma or space delimited.

The general process, in the data collector, looks like this:

- ❑ Assign the data storage ID of 444.
- ❑ Every few seconds:
 1. Read the sensors.
- ❑ Every hour:
 1. Calculate and save the hourly summary values to input locations.
 2. Scale the input locations for transport (0-4095) and output them to the serial port.
 3. Output a CRLF sequence to the serial port.
- ❑ Every day at midnight:
 1. Calculate and save the daily summary to input locations