Teledyne Analytical Instruments

4000 Series analyzer Remote Protocol
Software revision 4.09
7/24/07

On startup, the following messages are displayed:

"4000 HC Monitor   "<CR><LF>
"V4.02 3/13/04 15:12 "<CR><LF>

(this is an example of an older version of software)

note that <CR> means Carriage return and is ascii 13 (hex 0Dh)
note that <LF> means Carriage return and is ascii 10 (hex 0Ah)

Debug Messages:
There are several debug messages that can be disabled
or must be ignored.

  1)
  RealTime FID output

  Description:
     There are 2 parts to this message. First, an integer
     number that is counting upward by one for each output value.
     Second, a scaled, unitless number that shows the relative
     output of the FID.

  example:
     "12:   82085"<CR><LF>
     ('12', is the 12th data point int the series)
     (82085 is the relative FID output, max 350000, min -350000)

  note:
     This output may be disabled by pressing the DOWN key on the front
     panel during the main operating screen. When this output is disabled,
     the Standard Data output is enabled. For your purposes, the Standard Data
     is required.

  2)
  Cycle Summation Data

Description:
    At the end of each cycle, data is rapidly emitted related to the data and
    calculations for that cycle. The initial string pattern may include the following:

    "FW:"
    "BK:"
    "G##" (where '#' is an integer number 0 - 9).

    The end of the message is followed by <CR><LF> (see above).

note:
    These messages might not be defeatable and should be ignored.

Standard Message:

  - The standard message is sent once approximately every 2 seconds.
  - It is only sent when the Realtime FID output is disabled (see above).
  - The Standard message rotates through all active Gasses of interest.

In the menu, under GROUP SETUP, each gas is assigned a 3 character string.
This is done at the factory, but may be changed by the user. It is ok to
change these strings, however, changing other parameters in the group setup
can affect the operation of the analyzer and should be done with caution.

Example:

"PRO   0.00ppm R2 AL--" <CR><LF>
"ETH   0.00ppm R2 AL--" <CR><LF>

Description:

Field 1:
    The first field has the 3 character gas identifier, followed by one or more
    spaces or tab characters.

Field 2:
    The second field has the gas concentration

    If the range is PPB (parts per billion) the number is integer (no decimal)
    unless it meets or exceeds 1.0 ppm.

    If the range is 1.0 ppm or greater, the number will include a decimal point.

    the number is followed by 'ppb', 'ppm', or '%'. (There may or may not be
    spaces separating the final numeric and the unit identifier).

In the case that the number represents a concentration greater than 100%, the following string will be sent rather than the concentration and unit:

"OutOfRng",

Field 3:
The third field is the Range for that particular gas.

It is composed of the 'R' character immediately followed by '1', '2', or '3'.

Field 4:
The fourth field is the Alarms field.
It is composed of the characters "AL" immediately followed by '-', '1', or '2'.

if alarm 1 is alarming , but not alarm 2, the following would be sent:
"AL1-"

if alarm 2 is alarming , but not alarm 1, the following would be sent:
"AL-2"

if both alarms 1 and 2 are alarming the following would be sent:
"AL12"

if either:
"AL--"

Termination:
the <CR><LF> is sent at the end of each message.