This file is a COM port sniffer session record during Vaisala MI70 Link (SW) communication with Vaisala HM70 instrument/HMP70 probe.

Key:

- **Yellow** = Send
- **Green** = Receive
- **Blue** = Notes

Serial Port Settings:
Termination: \n, (LF, &H0A, ASC(10))
Timeout: 100 ms
Baud: 19200 (default is 9600)
Data bits: 8
Parity: none
Stop bits: 1
Flow control: Xon/Xoff

Communication:
1.) Loop send [SUB][CR] up to 200 times. Monitor receive register. Received data always ends with [SUB].

```
y<CR>
...loop <=200 times &H255+%H13 to get HM70 attention...y<CR>
<CR><LF>
```

line opened for operator commands &BEL&CR<LF>

2.) Send “echo off” command to disable copy of sent data to receive buffer.

```
ECHO OFF<CR> ...disable COM port echo
<CR>
ECHO OFF<CR><LF>
Echo is:<HT>OFF<CR><LF>
<SUB>
```

3.) Get instrument and sensor model numbers.

```
VERS<CR> ...get instrument & sensor model numbers
MI70 2.05<CR><LF>
HMP70<STX>Bc<SOH> 3.09<CR><LF>
<SUB>
```

4.) Get instrument and sensor serial numbers.

```
SNUM<CR> ...get instrument & sensor serial numbers
Serial nr:<HT>C3610021<CR><LF>
Probe snr:<HT>C3140010<CR><LF>
<SUB>
```

5.) Get sensor last calibration date & by who.

```
CAL<CR> ...query calibration data
Probe cal:<HT>8/17/2007 (Vaisala/HEL)<CR><LF>
<SUB>
```

6.) Close communications with instrument.

```
EXIT<CR> ...close communications
line closed<CR><LF>
```
7.) Get or Set instrument measurement configuration.

Commands:
UNIT[CR] (reads current measurement status)
UNIT X X X X X X X X X X [CR] (sets measurement status, see table below)

Response:
place:/option: (Option 0 means measurement is disabled, value after 2nd tab is current setting, only three (3) can be active at a time.)

<table>
<thead>
<tr>
<th>Position</th>
<th>Command</th>
<th>Option 0</th>
<th>Option 1</th>
<th>Option 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RH (Relative Humidity)</td>
<td>Off</td>
<td>%</td>
<td>N/A</td>
</tr>
<tr>
<td>2</td>
<td>T (Temperature)</td>
<td>Off</td>
<td>Celsius</td>
<td>Fahrenheit</td>
</tr>
<tr>
<td>3</td>
<td>Td/f (Frostpoint Temperature)</td>
<td>Off</td>
<td>Celsius</td>
<td>Fahrenheit</td>
</tr>
<tr>
<td>4</td>
<td>T (Dewpoint Temperature)</td>
<td>Off</td>
<td>Celsius</td>
<td>Fahrenheit</td>
</tr>
<tr>
<td>5</td>
<td>a (absolute humidity)</td>
<td>Off</td>
<td>g/m³</td>
<td>gr/ft³</td>
</tr>
<tr>
<td>6</td>
<td>x (mixing ratio)</td>
<td>Off</td>
<td>g/kg</td>
<td>gr/lb</td>
</tr>
<tr>
<td>7</td>
<td>Tw (wet-bulb temperature)</td>
<td>Off</td>
<td>Celsius</td>
<td>Fahrenheit</td>
</tr>
<tr>
<td>8</td>
<td>H (humid air volume/dry air volume)</td>
<td>Off</td>
<td>ppm</td>
<td>N/A</td>
</tr>
<tr>
<td>9</td>
<td>pw (vapor pressure)</td>
<td>Off</td>
<td>hPa</td>
<td>psi</td>
</tr>
<tr>
<td>10</td>
<td>pws (saturated vapor pressure)</td>
<td>Off</td>
<td>hPa</td>
<td>psi</td>
</tr>
<tr>
<td>11</td>
<td>h (enthalpy [heat content])</td>
<td>Off</td>
<td>kJ/kg</td>
<td>Btu/lb</td>
</tr>
<tr>
<td>12</td>
<td>aw (water activity)</td>
<td>Off</td>
<td>unitless</td>
<td>N/A</td>
</tr>
</tbody>
</table>
UNIT Command Examples:

UNIT<CR> ...get configuration settings (in this case: RH %, T °C, x g/kg)
RH<HT>RH<HT>1<HT>%<CR><LF>
T<HT>T<HT>1<HT>°C<HT>°F<CR><LF>
a<HT>a<HT>1<HT>g/m³<HT>gr/ft³<CR><LF>
x<HT>x<HT>1<HT>g/kg<HT>gr/lb<CR><LF>
T<STX>d<SOH><HT>T<STX>d<SOH><HT>0<HT>°C<HT>°F<CR><LF>
T<STX>d/f<SOH><HT>T<STX>d/f<SOH><HT>0<HT>°C<HT>°F<CR><LF>
T<STX>d/SoH<HT>T<STX>d/SoH<HT>0<HT>°C<HT>°F<CR><LF>
H<HT>H<HT>2<HT>ppm<CR><LF>

UNIT 1 1 0 0 0 0 0 0 0 0 0 0 <CR> ...set configuration settings (in this case: RH %, T °C, x g/kg)
RH<HT>RH<HT>1<HT>%<CR><LF>
T<HT>T<HT>1<HT>°C<HT>°F<CR><LF>
a<HT>a<HT>1<HT>g/m³<HT>gr/ft³<CR><LF>
x<HT>x<HT>1<HT>g/kg<HT>gr/lb<CR><LF>
T<STX>d<SOH><HT>T<STX>d<SOH><HT>0<HT>°C<HT>°F<CR><LF>
T<STX>d<SoH<HT>T<STX>d<SoH<HT>0<HT>°C<HT>°F<CR><LF>
H<HT>H<HT>2<HT>ppm<CR><LF>

9.) Set MI70 date/time. This command is used to synchronize MI70 date/time with PC date/time.
TIME 10 5 10 14 46 0<CR> ...set MI70 date/time, yy mm dd HH mm ss <SUB>

10.) Set measurement interval.
SEND 60<CR> ...set for 60 second measurement interval, starts & returns first data
10-05-10 13:50:24<HT>18.60<HT>23.44<HT>3.33<HT><CR><LF>
SEND 5<CR> ...set for 5 second measurement interval, returns first data
10-05-10 13:52:50<HT>18.60<HT>74.15<HT>23.29<HT><CR><LF>

11.) Get measurement results. Send every measurement period.
SEND<CR> ...get periodic reading
12.) Full Example.

12.1.) Initialize & get model/serial number & sensor calibration data.

```
y<CR>
...loop <=200 times &H255+&H13 to get HM70 attention...
y<CR>
<CR><LF>
line opened for operator commands<BEL><CR><LF>
0><SUB>
ECHO OFF<CR>  ...disable COM port echo
<CR>
ECHO OFF<CR><LF>
Echo is:<HT>OFF<CR><LF>
<SUB>
VERS<CR>  ...get instrument & sensor model numbers
MI70 2.05<CR><LF>
HMP70<STX>Bc<SOH> 3.09<CR><LF>
<SUB>
SNUM<CR>  ...get instrument & sensor serial numbers
Serial nr:<HT>C3610021<CR><LF>
Probe snr:<HT>C3140010<CR><LF>
<SUB>
CAL<CR> ...query calibration data
Probe cal:<HT>8/17/2007 (Vaisala/HEL)<CR><LF>
<SUB>
EXIT<CR> ...close communications
line closed<CR><LF>
```
12.3.) Initialize & start measurement, get periodic measurement data, stop measurement.

```tag
y<CR>
...loop <=200 times &H255+&H13 to get HM70 attention...
```

```tag
y<CR>
Enter opened for operator commands<BEL><CR><LF>
0<SUB>
ECHO OFF<CR> ...disable COM port echo
```

```tag
ECHO OFF<CR><LF>
Echo is:<HT>OFF<CR><LF>
<SUB>
TIME 10 5 10 14 47 57<CR> ...measurement start date/time, yy mm dd HH mm ss
<SUB>
SEND 5<CR> ...set for 5 second measurement interval
```

```tag
10-05-10 13:52:50<HT>18.60<HT>74.15<HT>23.29<CR><LF>
<SUB>
SEND<CR> ...get periodic reading
```

```tag
10-05-10 13:53:00<HT>18.59<HT>74.13<HT>23.27<CR><LF>
<SUB>
SEND<CR> ...get periodic reading
```

```tag
10-05-10 13:53:05<HT>18.59<HT>74.13<HT>23.27<CR><LF>
<SUB>
SEND<CR> ...get periodic reading
```

```tag
10-05-10 13:53:10<HT>18.60<HT>74.14<HT>23.29<CR><LF>
<SUB>
SEND<CR> ...get periodic reading
```

```tag
10-05-10 13:53:15<HT>18.58<HT>74.15<HT>23.27<CR><LF>
<SUB>
EXIT<CR> ...close communications
```

```
line closed<CR><LF>
```

13.) List of saved files in MI70 memory. List of files is zero-based, listed in order of newest first. Below represents file #0, #1 and #2. If a new recording is initiated, then it will replace file #0 and the existing file numbers will increment by +1.

```tag
DIR<CR> ...get list of files in MI70 memory
```

```tag
```
14.) Download file from MI70 memory. Below downloads data from file #0.
14.1.) First line is date/time [TAB] date/time [TAB] # of data points [TAB] 2-byte hex, first 2 digits represent interval unit of measure (02=seconds, 04=minutes, 08=hours), second 2 digits represent interval timing (&H05=DEC5, &H0F=DEC15, &H01=DEC1). Example: “040F”=15 minute measurement increment.
14.2.) Second and third lines show what is being measured, and the unit of measure. RH in % and Temperature in °C in this case.
14.3.) Remainder is the measured data points for the indicated file.

```
PLAY 0<CR>  ...download data from file #0 in MI70 memory
<HT>RH<HT>T<CR><LF>
<HT>%<HT>°C<CR><LF>
10-05-19 12:45:29<HT>89.31<HT>84.26<HT><CR><LF>
10-05-19 13:00:29<HT>79.93<HT>87.14<HT><CR><LF>
10-05-19 13:15:29<HT>79.70<HT>87.20<HT><CR><LF>
10-05-19 13:30:29<HT>79.58<HT>87.23<HT><CR><LF>
10-05-19 13:45:29<HT>79.56<HT>87.20<HT><CR><LF>
10-05-19 14:00:29<HT>79.54<HT>87.21<HT><CR><LF>
10-05-19 14:15:29<HT>79.61<HT>87.21<HT><CR><LF>
10-05-19 14:30:29<HT>79.64<HT>87.17<HT><CR><LF>
10-05-19 14:45:29<HT>79.58<HT>87.16<HT><CR><LF>
10-05-19 15:00:29<HT>79.60<HT>87.17<HT><CR><LF>
10-05-19 15:15:29<HT>79.61<HT>87.17<HT><CR><LF>
10-05-19 15:30:29<HT>79.47<HT>87.17<HT><CR><LF>
10-05-19 15:45:29<HT>79.43<HT>87.19<HT><CR><LF>
10-05-19 16:00:29<HT>84.33<HT>85.20<HT><CR><LF>
10-05-19 16:15:29<HT>84.50<HT>85.16<HT><CR><LF>
10-05-19 16:30:29<HT>84.60<HT>85.21<HT><CR><LF>
10-05-19 16:45:29<HT>84.53<HT>85.22<HT><CR><LF>
10-05-19 17:00:29<HT>84.55<HT>85.23<HT><CR><LF>
10-05-19 17:15:29<HT>84.74<HT>85.23<HT><CR><LF>
10-05-19 17:30:29<HT>84.76<HT>85.23<HT><CR><LF>
10-05-19 17:45:29<HT>84.77<HT>85.24<HT><CR><LF>
10-05-19 18:00:29<HT>85.02<HT>85.23<HT><CR><LF>
10-05-19 18:15:29<HT>84.97<HT>85.24<HT><CR><LF>
10-05-19 18:30:29<HT>85.02<HT>85.24<HT><CR><LF>
10-05-19 18:45:29<HT>85.13<HT>85.23<HT><CR><LF>
10-05-19 19:00:29<HT>85.07<HT>85.25<HT><CR><LF>
10-05-19 19:15:29<HT>85.10<HT>85.23<HT><CR><LF>
10-05-19 19:30:29<HT>85.09<HT>85.24<HT><CR><LF>
10-05-19 19:45:29<HT>85.17<HT>85.24<HT><CR><LF>
10-05-19 20:00:29<HT>85.07<HT>85.25<HT><CR><LF>
10-05-19 20:15:29<HT>85.17<HT>85.26<HT><CR><LF>
10-05-19 20:30:29<HT>85.16<HT>85.25<HT><CR><LF>
10-05-19 20:45:29<HT>85.21<HT>85.26<HT><CR><LF>
10-05-19 21:00:29<HT>85.15<HT>85.25<HT><CR><LF>
10-05-19 21:15:29<HT>85.25<HT>85.25<HT><CR><LF>
10-05-19 21:30:29<HT>85.35<HT>85.22<HT><CR><LF>
10-05-19 21:45:29<HT>85.33<HT>85.24<HT><CR><LF>
10-05-19 22:00:29<HT>85.39<HT>85.21<HT><CR><LF>
10-05-19 22:15:29<HT>85.30<HT>85.24<HT><CR><LF>
10-05-19 22:30:29<HT>85.40<HT>85.24<HT><CR><LF>
```
15.) Delete file from MI70 memory. Below deletes file #0.

DEL 0<CR> ...delete file #0 from MI70 memory
OK<CR><LF>
<SUB>