Serial telemetry reading and display

1. External constraints

We suppose a serial stream of data received on a COM port of a PC. These data are separated by ; and each telemetry line ends with a specific symbol (‘end’). Within each ; the telemetry packet has a key :value format. The serial wireless imposes the additional constraint that the telemetry arrive splitted in several sub lines :

key1:value1;key\n  
2:value2;end\n

1. Specifications

This tool should read a serial stream of data from a UAV telemetry link as described in section 1. The user prescribes a list of variables to be displayed. These data can be displayed on digital indicators, or on x-y plots.

The x-y plots are displayed on a given number of plot sheets, each sheet being composed of several x-y plots, each plot being composed of several curves. These curves are updated in real-time at a rate between 1Hz and 10Hz. The y scale of each plot can be automatically defined based on the min and max value of the curve, or can be fixed by the user. The width of the 0time window displayed along the x-axis can be selected by the user.

At the right of each plot and indicator, a legend gives the name of the displayed data.

1. Design

Errors to be handled :

* Unreceived characters, leading to:
  + Broken key
  + Broken value
  + Broken or missing end
  + Missing :
  + Missing ;
  + Empty line