

MetHumi – Humidity Device for Mars MetNet Lander

M. Genzer, J. Polkko, A.-M. Harri, W. Schmidt, J. Leinonen, T. Mäkinen and H. Haukka

Finnish Meteorological Institute, Helsinki, Finland (maria.genzer@fmi.fi)

Abstract

MetNet Mars Mission [1] focused for Martian atmospheric science is based on a new semihard landing vehicle called the MetNet Lander (MNL) (see Figure 1). The MNL will have a versatile science payload focused on the atmospheric science of Mars. The scientific payload of the MetNet Mission encompasses separate instrument packages for the atmospheric entry and descent phase and for the surface operation phase.

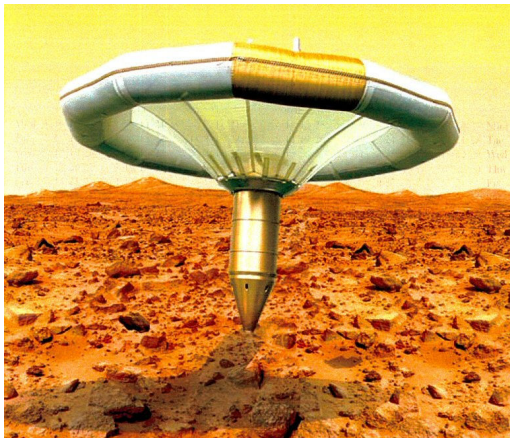


Figure 1: MetNet Lander.

MetHumi (see Figure 2) is the humidity sensor of MetNet Lander designed to work on Martian surface. It is based on Humicap® technology developed by Vaisala, Inc. MetHumi is a capacitive type of sensing device where an active polymer film changes capacitance as function of relative humidity. One MetHumi device package consists of one humidity transducer including three Humicap® sensor heads, an accurate temperature sensor head (Thermocap® by Vaisala, Inc.) and constant reference channels. MetHumi is very small, lightweight and has low power consumption. It weighs only about 15 g without

wires, and consumes 15 mW of power. MetHumi can make meaningful relative humidity measurements in range of 0 – 100%RH down to -70°C ambient temperature, but it survives even -135°C ambient temperature.

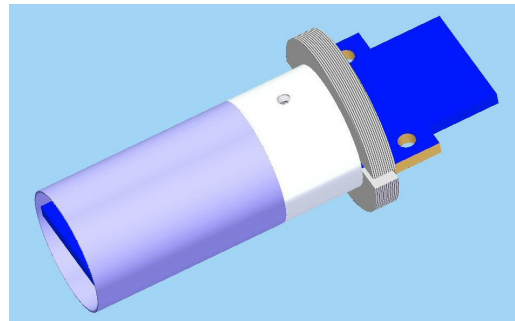


Figure 2: MetHumi humidity device design.

References

[1] <http://metnet.fmi.fi>