

HRSC

High Resolution Stereo Camera

The High Resolution Stereo Camera HRSC is one of the instruments on the ESA MarsExpress mission. It is imaging the entire planet in full colour, 3D and with a resolution of about 10 meters.

The imaging electronics of the HRSC are based on the principle of a linescan (pushbroom) camera. This means, only a line is exposed to the light and not an area like in normal cameras. One CCD-line of the HRSC consists of 5184 light-sensitive pixels. The HRSC has nine of these lines. This means each read-out process creates nine independent lines. The CCDs are situated perpendicular to the flight direction and are read-out in at variable frequency, which is adjusted to the ground velocity of the spacecraft. During imaging operations this creates images in four colors and a digital elevation mode.

The SRC is the second part of the HRSC camera system and is working with an area-sensor. This means, the light intensity is measured by a matrix of 1024 X 1032 elements. The ground resolution is 2 meters.

Jena-Optronik developed and manufactured "the eyes" of MarsExpress, namely the lens systems for both the HRSC and SRC camera channels.