Successful launch of the first Arab mission to Mars

The launch of the United Arab Emirates probe for the first Arab mission to Mars was successful. The probe aims to study the weather and climate in the red planet. The combined efforts of the citizens of the Emirates under the tutelage of the wise leadership brought about the achievement of this milestone. The below enumerates the most important information about the Probe of Hope.

The probe was built at the Mohammed Bin Rashid Space Center, over a period of 6 years by 200 engineers and other vital administrators. It was developed by the University of Colorado, Arizona State University and the University of California Berkeley. The probe will monitor daily and seasonal weather cycles, events in low weather such as dust storms, and how the weather will change in different Mars regions. The probe will be used to try to answer scientific questions about why the atmosphere of Mars has lost hydrogen and oxygen in space and why extreme weather changes in the planet. The probe is expected to reach its orbit around Mars in February 2021, and this coincides with the celebration of the 50th anniversary of the UAE's golden jubilee.

The arrival date for the 493 million km flight of the probe is supposed to be on February 2021 which corresponds to the fiftieth anniversary of the union of the UAE.

The Mars "Probe of Hope" aims to provide the the first integrated picture of the atmosphere of Mars. Three modern scientific devices were specially designed to complete this mission and to study the various aspects of the Martian atmosphere.

Scientific devices:

Infrared Spectroscopy (EMIRS):
This device contains a rotating mirror that allows the device to perform surveys of Mars and acts as an infrared thermometer. It is designed to provide a better understanding of the energy balance in the current climate in Mars by describing the state of the lower layer of the Martian atmosphere and the processes that affect the planet's day cycle. Our understanding of energy balance will help us determine the sources of energy on Mars and how they are consumed, along with our understanding of how the lower atmosphere of the Red Planet responds to solar radiation throughout the day and in different seasons. Specifically, this scale will be used to investigate the thermal condition of the lower atmosphere, the geographical distribution of dust, water vapor and water ice.

Digital Exploration Camera (EXI):
A multi-wavelength radiation camera, capable of taking 12-megapixel images while maintaining the radiological gradient necessary for detailed scientific analysis. It was developed through a collaboration between the Mohammed Bin Rashid Space Center and the Atmospheric and Space Physics Laboratory. The camera was designed to be flexible in choosing the image resolution, focus areas, number of frames, bandwidth and a large memory to retain the captured images. The lens is composed of two double lenses with two separate beams paths. It is a compound type lens used to capture high-resolution, low-distorted images of Mars. The short focal length of the lens can reduce the amount of time required to be exposed to a very short time for capturing still images while orbiting around the planet.

The camera sensor consists of a 12-megapixel monochrome matrix of 3: 4 dimensions. The image can be captured and stored on the memory chip so that the image size and accuracy can be controlled, which reduces the data transfer rate between the probe and the ground control center. The sensor can capture 180 HD pictures at a time, and this means you can shoot a 4K movie if you like.

The use of separate filters is an additional feature that can provide better accuracy for each color. It also provides more accurate details in the image, which contribute to reducing the degree of uncertainty when measuring radiation for scientific imaging. As for the UV lens, the frequency range for short wavelengths will be between (245-275) nanometers, while the frequency range for long waves will be between (305 - 335) nm, while for the other lens system, the frequency of the red color will be (625 - 645) nm and color. Green (506 - 586) nm and blue (405 - 469) nm.

Ultraviolet Spectroscopy (EMUS):
This device is a long-range ultraviolet imaging spectrometer that can measure ultraviolet rays that lie in the range between 100 to 170 nanometers, with a spectral accuracy of 1.3 to 1.8 nanometers. He thus can make the required measurements of hydrogen gas, oxygen and carbon monoxide within the mission.

This spectroscope consists of a monocular telescope that feeds the Roland circle imaging spectrometer, which is equipped to process and locate photons. The accuracy of the spectrometer in determining the places for distances less than 300 km from the surface, which is sufficient distance to distinguish the spatial difference between the thermal cover of Mars, which is at a height (100 - 200 km), and the outer shell, which is located at an altitude of more than 200 km meters. The results of the spectrometer will include no less than 6 images

The Martian thermal envelope in each orbital period around the planet, and at least 6 internal forms of the oxygen and hydrogen halos, and 5 external images of the hydrogen halos in one cycle. This device was designed in partnership between the Mohammed Bin Rashid Space Center, the Laboratory for Atmospheric and Space Physics at the University of Colorado, and the Laboratory of Space Science at the University of California - Berkeley.

Categories:

Hope probe

Red planet