Mars is one of the smallest planets of the solar system and the Martian bow shock has a large curvature having consequences on the structure of its foreshock. The Venusian and Terrestrial foreshocks have been extensively studied and present similarities. A recent experimental investigation of particle populations in the Martian foreshock by Yamauchi et al. 2010, based on Mars Express observations, has evidenced differences with the Venusian and Terrestrial cases. We present a global view of the Martian ion foreshock provided by combining three-dimensional self-consistent hybrid simulations and test-particle simulations. We characterize the foreshock by its main ionic populations: reflected protons and alphas from the solar wind and pick up ions produced by the ionization of the Martian neutral corona. Reflection regions on the bow shock, reflection rates, local energy spectra, and local distribution functions will be presented demonstrating the effects of the large curvature of the bow shock. Similar effects are expected at the Hermean bow shock.