

# NASA radio delivered for Europe's 2016 Mars orbiter

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The European Space Agency's ExoMars Trace Gas Orbiter, being assembled in France for a 2016 launch, will carry two Electra UHF relay radios provided by NASA. Credit: NASA/JPL-Caltech/ESA/TAS

(Phys.org) —The first of two NASA Electra radios that will fly aboard the European Space Agency's next mission to Mars has been delivered for installation onto the ESA ExoMars Trace Gas Orbiter (TGO).

The TGO is being assembled at Thales Alenia Space, in Cannes, France, for a 2016 launch opportunity. It will study the Martian atmosphere for the presence of methane and other gases that may be present in small concentrations. It will also deploy the ESA Schiaparelli Mars landing demonstration craft and provide communications support for ESA ExoMars Rover and a Russian Lander planned for launch in 2018.

Twin Electra ultra-high frequency (UHF) radios on the TGO will provide communication links with robots on the Martian surface—rovers or landers. Relay of information from Mars-surface craft to Mars orbiters, then from Mars [orbit](#) to Earth, enables receiving much more data from the surface missions than would otherwise be possible.

"We are fortifying our partnership with Europe to strengthen the Mars relay network together," said Phillip Barela of NASA's Jet Propulsion Laboratory, Pasadena, California, project manager for NASA's participation in ExoMars.

The Electra radio design from JPL includes special features for relay use between an orbiter and a rover or stationary lander. For example, it can actively adjust the data rate during a communication session—slower when the orbiter is near the horizon from the surface robot's perspective, faster when it is overhead.

NASA's Curiosity Mars rover and Mars Reconnaissance Orbiter already use Electra technology for relay of data. A NASA orbiter currently on the way to Mars, the Mars Atmosphere and Volatile Evolution (MAVEN) spacecraft, also carries an Electra radio. Plans call for the TGO to use its Electra radios for communication with ESA's 2018 ExoMars Rover and Russia's Lander as well as with NASA's 2016 Mars lander and 2020 Mars [rover](#). The first Electra radio for the TGO was delivered June 17, 2014. The second is on track for delivery in September.

The planned orbit for the TGO is an advantageous one for providing relay duty. It is similar to the Mars Reconnaissance Orbiter's at about 250 miles (400 kilometers) in altitude and nearly circular in shape. The mission will make use of Earth-based radio antenna networks operated by ESA, NASA and Russia.

Provided by NASA

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