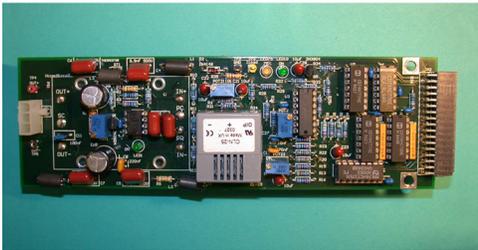
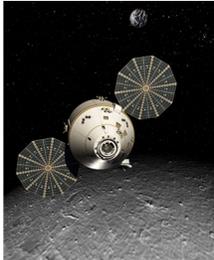
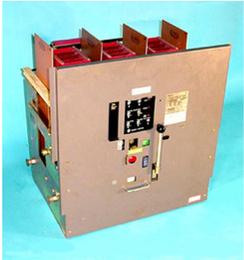




John F. Kennedy Space Center's Programmable Miniature Aerospace Low Voltage Circuit Breaker



BENEFITS

- Remote monitoring and control
- Measures load resistance
- Locates faults
- Light weight
 - Compact
 - Low profile

opportunity

The National Aeronautics and Space Administration (NASA) seeks partners interested in the commercial application of a programmable miniature aerospace circuit breaker conceived by engineers at Kennedy Space Center. There are remotely operating circuit breakers available from industry however, many are bulky, heavy and not suitable for aerospace use. A programmable miniature aerospace circuit breaker can save test preparation and execution time where technicians are required to be "on station" in crew cockpits and ground operating consoles to position circuit breakers during test, checkout, and launch operations. For complex aerospace flight and ground systems, a method for switch scan and control is needed to provide assurance of proper switch positions from pre-launch checkout and servicing, launch, ascent, orbit, de-orbit, landing/touchdown and recovery. Switch functions can be serviced for scan and control with present technology.

APPLICATIONS

The miniature circuit breakers can be used in:

- Aircraft and Transportation Industry
- Aerospace Vehicles and Equipment
- Ground Support Equipment

TECHNOLOGY STATUS

- Patent pending
- U.S. patent
- Copyrighted
- Available to license
- Available for no-cost transfer
- Seeking industry partner for further codevelopment

Technology Details

The programmable miniature aerospace circuit breaker permits remote OPEN-CLOSED functional control, reset and monitoring, along with the ability to set or select lower trip current and trip curve values for circuit protection during initial testing. A default higher setting is provided for normal use for critical pre-launch and launch circuit protection. The device, while open, can provide resistance readings on the load side to assure no faults are present prior to closing the breaker. Should a fault be detected, a time domain reflectometry feature can provide assistance for troubleshooting and resolving the fault. From the line side, a voltage reading can be taken to assure the proper voltage is present prior to closing the breaker. Additional operating features include measurement of steady state and transient currents power redundancy features can be tested and managed by remotely isolating power sources. As an operational feature, the circuit breaker functions can read the circuit load resistance and check for proper line voltage prior to energizing the circuit. This feature alone will save hours of pretest setup time. Another time saving and safety feature is the ability to remotely position circuit breakers in their proper position for the various phases of testing and inflight phases.

Partnership Opportunities

NASA is seeking partners interested in further developing and marketing the programmable miniature aerospace low voltage circuit breaker. If your company is interested in this new technology, or if you desire additional information, please reference Case Number KSC-12742 and contact:

Jeff Kohler
Innovative Partnerships Program
Mail Code: ESC-22
Kennedy Space Center, FL 32899
Telephone: (321) 861-7158
Fax: (321) 867-2050
jeffrey.a.kohler@nasa.gov

National Aeronautics and Space Administration

John F. Kennedy Space Center
Kennedy Space Center, FL 32899
www.nasa.gov/centers/kennedy

www.nasa.gov