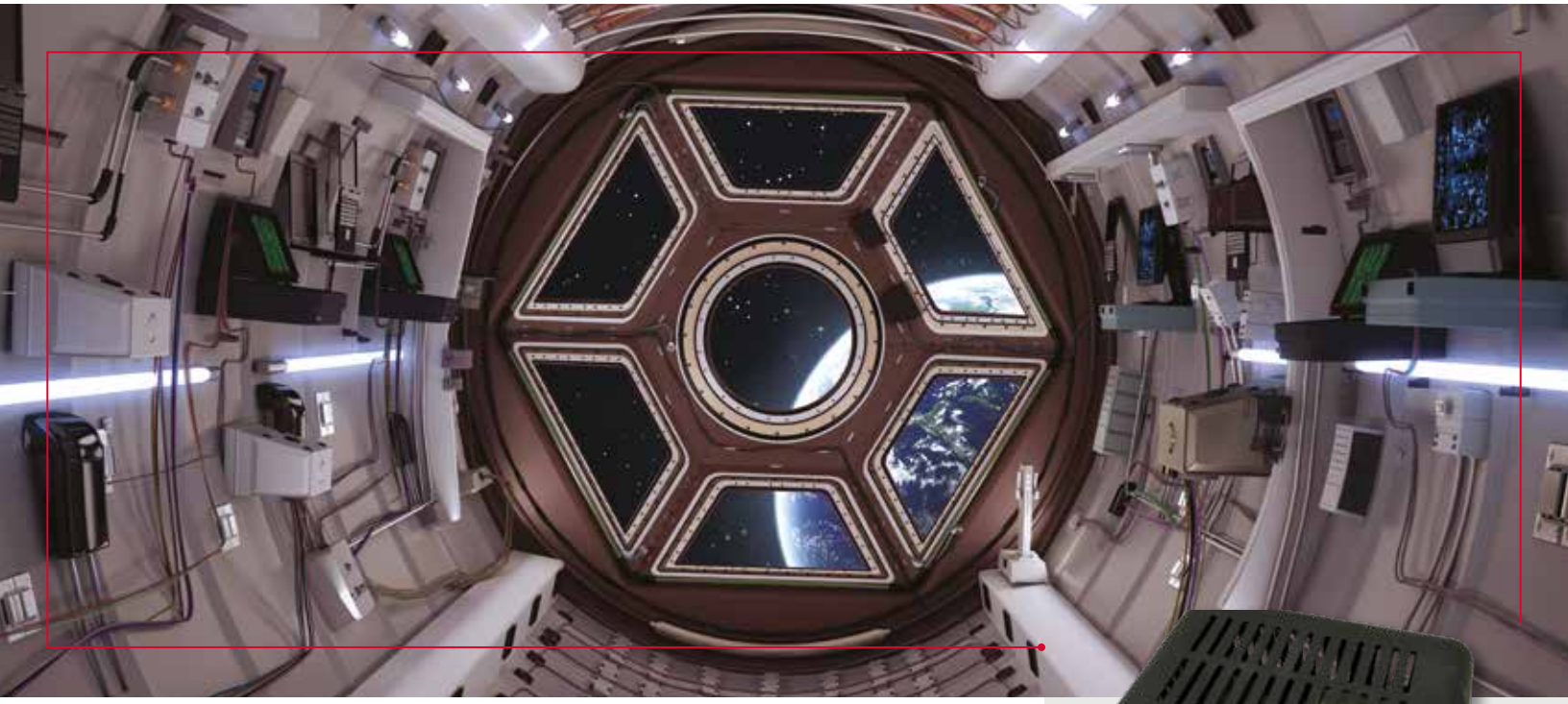

COLLINS COMMERCIAL SPACE SMOKE DETECTOR (CSSD)

ADVANCED SMOKE DETECTION FOR CREWED SPACE MISSIONS

Proven safety solutions for commercial space travel

Collins Aerospace smoke detection systems have helped keep people safe on aircraft and in space for decades. With the growing interest in space exploration across the private sector, we're taking proven technology that's enabled astronauts to safely live in space and offering it for a broader set of crewed space applications.

Lightweight, low-profile, reliable

The Collins Commercial Space Smoke Detector (CSSD) is now available for crewed commercial space missions. The CSSD is compact, weighs less than two pounds, and is designed to self-test every 15 minutes to validate performance. It's also proven to withstand the range of temperatures and atmospheric conditions encountered in low earth orbit and lunar space environments.

Built for safety and longevity

Designed with crew safety in mind, the CSSD has rounded corners and no exposed edges, which means it can do its job without becoming an on-board hazard. Best of all, it's built to last, with no in-flight or preventative maintenance required.

As both private and government organizations expand the number of crewed astronaut missions headed to explore low-earth orbit and deep space beyond, Collins Aerospace is ready to help. Our proven smoke detection technology provides safety assurance and peace of mind so everyone onboard the spacecraft can focus on their critical mission objectives and the extraordinary journey ahead.

KEY FEATURES & BENEFITS

- Compact and lightweight
- Pre-ignition and smoke particle detection
- Self-diagnostic sequence ensures operational integrity
- Proven performance in harsh atmospheric conditions
- No special maintenance or crew access required
- Expected performance life of 58,000 flight hours over a ten year period

collinsaerospace.com

Collins Aerospace

Essential life support for crewed space missions

While the Collins CSSD is a modular, stand-alone solution, it can easily integrate into more extensive spacecraft architectures, such as the Collins Aerospace Environmental Controls and Life Support System (ECLSS). The Collins CSSD smoke detection technology is already in use on the Boeing CST-100 Starliner and Lockheed Martin's Orion crew transport vehicles.

GENERAL

Part Number	420000-001
Dimension Envelope	8.59" L x 6.76" W x 3.16" H
Envelope Volume	183.5 in^3
Weight	1.8 lbm

DETECTION

Dynamic Range	0-5% obscuration/ft at 890nm
No Detect Output	<1 VDC
Detection Output	1-4 VDC
Detection Threshold	1.5% obscuration/ft at 890nm

BUILT-IN TEST

BIT Output	5 VDC output for 1 second indicates BIT pass
Power-On	Performed within 3 minutes of power being applied
Continuous	Performed every 15 minutes when powered

POWER

Input Power	18-32 VDC
Power Consumption	1 W max
Connection	13 pin D38999 connector (shared with data)

DATA

Output	0-5 VDC proportional to obscuration
Connection	13 pin D38999 connector (shared with power)

MECHANICAL

Mounting	4 x ¼-28 bolts
Sample Draw	None; external flow necessary for operation (minimum 10 ft/min flow velocity)
Access	No crew access required; exposed edges and corners rounded
Inadvertent Crew Induced Load	<154 lbf

ENVIRONMENTAL

Temperature Range	40-120°F
Pressure Range	3-17 psia (max 30psia/min rate of change)
Humidity Range	0-100% (non-condensing)
Fluid	Air (up to 30% O2 at a pressure of 10.2 psia)
Radiation Environment	Mixture of commercial and MIL grade components; power cycle to recover from upset (Total Dose and SEU TBD)
Acceleration	Quasi-static limit load of 59 G in 3 component axes (both positive and negative)
Vibration	9.8 Grms (PSD available)
Shock	1-10kHz; Max Velocity 61.4 in/sec (shock response spectrum available)

RELIABILITY

Mean Time Between Failures	>1,000,000 hours
In-Flight Maintenance	None
Preventative Maintenance	None
Service Life	>15 years
Shelf Life	4 years
Operational Life	>58,000 flight hours over a 10 year period

Specifications subject to change without notice.

Collins Aerospace

COLLINS AEROSPACE

800.321.2223 | +1.319.295.5100
fax: +1.319.378.1172
space@collins.com
collinsaerospace.com/Space