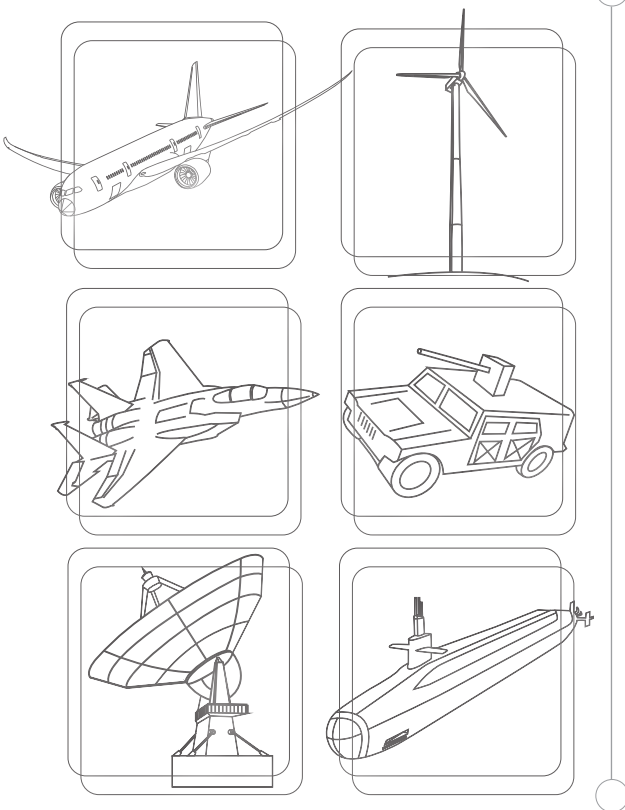


# COTSWORKS®

## RUGGED OPTICAL COMPONENTS TRANSCEIVERS, CABLING, SUBSYSTEMS

### FOR HARSH ENVIRONMENTS

COTSWORKS creates rugged optical components for harsh environments. Founded in 2006, COTSWORKS, LLC provides optical transceivers, fiber optic cables, network subsystems, and integration services to manufacturers in the commercial aerospace, military aerospace and tactical, oil and gas, and related harsh environment industrial markets. Company headquarters are located in Northeast Ohio with direct customer support in Germany serving the EMEA regions. The primary facility houses 20,000 square feet of state of the art secure and monitored administrative, design, and manufacturing space. AS9100 certified, ISO 9001 registered, ATEX-approved, COTSWORKS services the avionics and rugged electronics network communication needs of today and tomorrow.



COTSWORKS is an agile developer of rugged optical communication devices through multi-discipline engineering expertise. Our engineering disciplines include laser packaging, opto-electronics, mechanical engineering, electrical design and layout engineering, firmware development, chemical engineering of coatings and optical materials, and system level test. We understand how semiconductor lasers operate over time and temperature because our products use only the highest quality lasers, directly from the wafer with the best optical alignment. We connect them with rigid and rigid-flex board designs that operate over Industrial or Military temperature specifications. We design our metal housings to perform well even in noisy environments like aircraft flight decks, airplane core communications, ground/air/sea/subsea data links, and industrial application networks. COTSWORKS develops most of our test fixtures and perform Parylene deposition coating in-house.

COTSWORKS can support the toughest of rugged network needs while maintaining a Commercial Off The Shelf cost structure. Our factory produces thousands of parts each month of Optoelectronic and Interconnect products. We enable today's avionic and rugged electronics OEMs to make their products lighter, faster, have increased EMI immunity, and have denser I/O than legacy copper links.



AS9100  
Aerospace



ISO 9001  
Quality

## FOUR OPTICAL TRANSCEIVER FORM FACTORS: RJ, RCP, LAC AND SFF

All the transceivers offer operation at Industrial Temperature in MIL 883 or 810 type environments. They differ in electrical interfaces enabling pluggable, surface mount, or thru hole solder attach. Optical interfaces include industry standard LC, a unique metal LC, ARINC 801, or pigtailed.

## AEROSPACE GRADE OPTICAL INTERCONNECTS

Terminated rugged fiber cables with MIL or ARINC termini and connectors are made to meet and exceed industry certifications including robust supply chain and manufacturing traceability. Standard or unique components are used to meet shock, vibration, temperature, mechanical force, or custom environmental profiles.



# INTERNATIONAL STANDARDS

COTSWORKS tests transceivers at the component level, intermediate level, and in final inspection. All standard data and supplemental documentation is available upon request. COTSWORKS will design and build custom optical components to meet your system requirements. COTSWORKS aims to supply products that are of the highest quality and have the lowest failure rates within the industry.

## RJ



The RJ operates with LED, VCSEL, FP or DFB lasers. Multimode or single mode cable networks will benefit from the miniature form factor and surface mount leads with screws to secure the module mid or edge of board at 100Mbps to 10Gbps speeds. A 1x12 connector connects to an i2C bus for above industry standard accurate Built-In-Test. The RJ has metal LC receptacles.

## RCP & RCP+



The RCP™ and RCP+ offer 5 and 10Gbps performance on multimode cabling with extra output power and wider operating temperatures. A single mode version supports CWDM wavelengths at 3 Gbps and 10 Gbps with an APD option. The RCP is a pluggable transceiver via a recessed electrical connector and screw mounts. Optically, the RCP leverages ARINC 801 standard receptacles for locking termini.

## LAC: LRU ACTIVE CABLE



The LAC™ offers the most flexible way to add optical connectivity to a Line Replaceable Unit (LRU). It requires the least amount of PCB space (just the electrical connector/ mount), offers excellent thermal management by maximizing airflow, and has a built-in separable fiber cable making repair easier and enabling the use of passive and industry standard box level connectors instead of expensive/EMI susceptible Active Connectors. The copper flex interface supports appropriate pluggable, surface mount, or thru-hole electrical connectors.



## SFF

The SFF or Small Form Factor is a ruggedized industry standard form factor. The electrical connection is two rows of thru-hole headers with five pins for data and power and an additional two on each row for built-in test features. The unique case design helps with EMI performance and thermal management. A screw mount holds the optics in place in metal LC receptacles.

## CABLE ASSEMBLIES



COTSWORKS specializes in securing fiber cables to transceivers inside of LRUs. These assemblies are easier to order, more reliable, and offer better optical performance. Many termini and cabling options are available, as well as consulting, to help OEMs find the right solution. Our unique termini and accessories such as the LC801- which converts LC receptacles to ARINC 801, the LC-R - which locks LCs in place with a screw, or the TAO - which makes ARINC 801s push-pull style, make the silicon to glass interfaces of transceivers more reliable as well as separable.

## MEDIA CONVERTERS



A network extension of the RJ or SFF (SFPs as well), the Lightning Stick™ (LS) is an in-line Ethernet media converter with 10/100/1000BaseT to 100/1000 BaseX fiber support. Software included makes the LS into a test device with logging, scripting, and TDR features. The internal assembly can be added into an LRU with industrial temperature support. A quad port version is available as well as custom optical and electrical I/O.