

Optical CrossLinks, Inc.

Preliminary Product Brief

Compact Multi-mode Star Couplers -- 8x8 and beyond Connectorized with Custom Variations and Packaging

Product Summary

Compact 8x8 multi-mode star coupler mixers are available with very small footprint, low excess optical loss, and excellent balanced outputs for each of the 8 inputs that distribute light uniformly to all 8 outputs. The fully connectorized less than 7.5 cm long pencil sized package uses standard MT connectors in industry standard housings for coupling to 62.5 micron core fibers. Asymmetric or symmetric star couplers are created with inputs and outputs up to 32. We incorporate as appropriate waveguide designs and MT ferrules capable of 12 over 12 configurations. More port counts may require a greater device length depending on guide configurations and port count. Applications include optical data link interconnections and distribution, such as industrial, home, school, or central office systems; high-speed computers; or for aerospace flight control or monitoring systems where weight and size requirements and high performance considerations are paramount.

Packaging and connectorization designs are configurable to meet your current or anticipated application requirements for self-supporting fully robustized components. For direct board or substrate mounting special package options are available. A special board packaged unit is shown in Figure 1. A range of input or output ports is available for these custom signal mixing distribution devices going from a few to many or vice versa creating splitting and/or combining

functionality. Array stacking of star couplers is also possible using Optical CrossLinks MT like custom ferrules as needed for coupling.

Figure 1. 8x8 Star Coupler with MT ferrules



Thus, the OXL family of star coupler configurations is most amenable to a broad range of customer specific designs and packaging options for meeting diverse application requirements. Representative custom design options are summarized below.

Key Customer Benefits

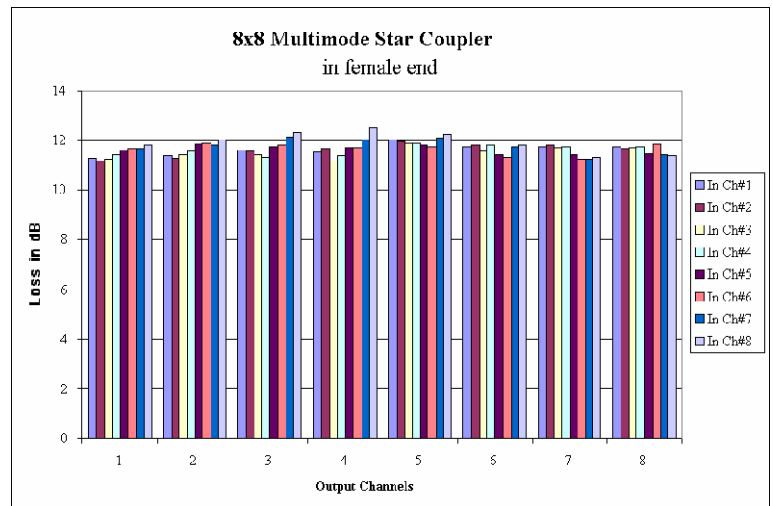
- Compact small footprint providing space saving
- Low weight and shock independence
- Low excess loss for all data link application wavelengths
- Superior balance for uniform outputs for each signal input
- Robust packaging with conventional industry connector capability

Optical CrossLinks develops and produces custom optical interconnection point to point links, distribution links or waveguide devices using proprietary polymer waveguide technology, materials and custom fiber ribbonization all fully connectorized with standard or custom proprietary approaches as needed.

Specification Highlights for 8x8 star coupler-----

- Standard fully connectorized 8x8 coupler is < 7.5 cm long and < 1 cm diameter
- Connectorized excess loss < 3dB at nominal 800 to 850 nm for 8x8 star coupler mixer of 9 dB. For 980nm excess loss is < 3.5 dB. Fundamental signal loss is 9dB.
- Standard connectorization using MT ferrules for input and output with latchable flexible housings like MPX, MPO's etc., all for coupling to/from standard 62.5/125 micron MM fiber
- No polarization loss has been measured to date due to Optical CrossLinks unique process forming homogeneous polymer MM guides
- Excess loss for larger port count couplers is expected; for example a 16x16 star would have ~ 0.5 dB additional excess loss but still ~3 dB at the 800 to 850nm range

- Excellent balance < ± 0.5 dB at all wavelengths
- Robust component packaging for stand alone components with optional hermetic sealing
- Thermal cycling stability from -45C to 95 C
- Performance not impacted by shock or inertial issues



Additional technical information: Figure 2

Balanced output bar graph shows typical loss for each of 8 inputs and all 8 outputs at nominal 830nm region with excellent balance within ± 0.5 dB

Representative Custom Options enabled by OXL's unique technology-----

- Star couplers symmetric or unsymmetric with port counts from 4, 8, 16 or 32 are configurable similar to the current 8x8 standard version, all using MT ferrule style input/outputs with either standard coupling or custom configured coupling for port counts over 12
- Multiple input splitter like configurations with star coupling mixing distribution built-in such as 2 x 16 etc.
- Custom waveguide design configurations to provide variations port to port for unbalanced distribution
- Packaging modifications for custom mounting and attaching to boards or substrates
- Special substrate packaged mounting for on board distribution or board to off board edge connectorization
- Input / output guide design variations to optimize for single direction devices and optimized fiber-coupling for custom applications
- Guide designs for coupling to non-standard core fibers
- Stacked multiple star coupler configurations with common connectors for fiber ribbon

Ordering Information: The 8x8 star coupler part number for ordering is OXL-STC8/8RP-S. Call or email the contacts below for pricing and discussion on specific modifications or custom developments.

Contact regarding orders or for more information:

Optical CrossLinks, Inc., 206 Gale Lane, Kennett Square, PA, 19348: 610 444 9469 or sales@opticalcrosslinks.com ----see <http://www.opticalcrosslinks.com>

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