

180° Optical Hybrids - COH180

Compact free-space optical system for polarization-diverse detection

Exail's COH180 is a 180° optical hybrid that enables polarization-diverse detection by performing four 180° phase stepped interferences between the signal and a Local Oscillator (LO). This product is purely passive and athermal. Its compact design and customization abilities makes it very simple to integrate in every optical system.



Features

- Single or Dual polarization models
- Extremely compact design
- Thermal stability
- Single Mode and polarization maintaining output fiber versions
- Optical wavebands covered: from visible to IR
- Highly customizable

Applications

- Coherent Detection
- Optical communication systems
- QPSK and QAM
- Optical Coherence Tomography (OCT)
- LiDAR systems
- Quantum Communications
- Laser communications
- Satellite constellation

Options

- Optimized Uniformity (U)
- Design for space application (BBM2)

Related Equipment

- VODL: Variable Optical Delay Line
- WT-MINT widely tunable delay line interferometer
- MINT delay line interferometer
- Modulators QKD

COH180 - 180° OPTICAL HYBRID - PERFORMANCE HIGHLIGHTS

Parameter	Symbol	Description	Unit	Comment
Options	U	Optimized Uniformity		
	O	Standard		
Phase shift between I & Q	-	180 ± 2	-	
Packaging size	-	70 x 52 x 10	mm ³	
Excess Insertion loss	IL	2.0	dB	Including 3 dB of natural losses
IL dual uniformity	Δdual	< 1.0	dB	Between balance outputs
Skew	-	< 1	ps	
ORL	-	35	dB	

COH180

180° Optical hybrid

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Max	Unit
Maximum input power	OP _{in}	-	300	mW
Storage temperature	STR	-40	+80	°C
Humidity	RH	5	85	%
Fiber Bend Radius	-	20	-	mm

OPERATING CONDITIONS

Parameter	Symbol	Min	Typ	Max	Unit	Conditions/Remarks
Operating temperature range	OTR	0	-	70	°C	-
Operating wavelength (λ)	OWR	1260	1310	1360	nm	O-Band
		1360	1410	1460	nm	E-Band
		1460	1495	1530	nm	S-Band
		1529	1547	1565	nm	C-Band
		1520	1575	1630	nm	C+L-Band

OPTICAL CHARACTERISTICS

Parameter	Option	Min	Typ	Max	Unit	Conditions/Remarks
Excess Insertion loss ⁽¹⁾ ⁽²⁾ ⁽³⁾	-	-	1.0	2.0	dB	Including 3 dB or 6 dB of natural losses
IL Uniformity (ΔIL) ⁽¹⁾ ⁽²⁾	-	-	0.8	1.5	dB	
UL Dual Uniformity ⁽¹⁾ ⁽²⁾ (Δdual)	-	-	0.5	1.0	dB	Between balanced outputs
Skew ⁽³⁾	-	-	0.5	1.0	ps	Measured at connectors end
Optical return Loss (ORL)	-	35	-	-	dB	

⁽¹⁾ measured over OTR and OWR for all states of polarization
⁽²⁾ from Signal of Local Oscillator ⁽³⁾ for all outputs ⁽³⁾ from Signal of Local Oscillator ⁽³⁾ for all outputs

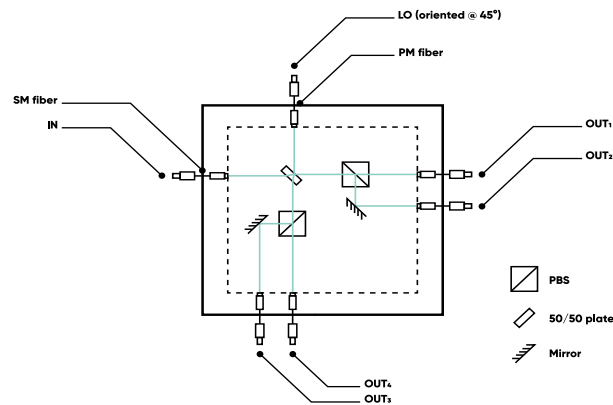
SIZE & DIMENSIONS

Parameter	Symbol	Min	Typ	Max	Unit	Conditions/Remarks
Fiber pigtail length	-	0.9	1.0	1.1	m	Other lengths on request

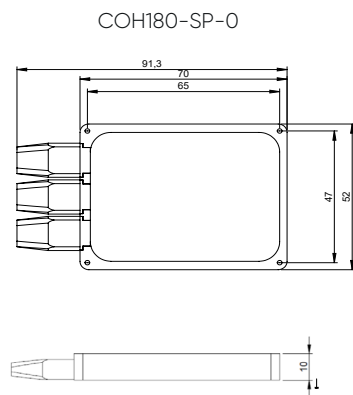
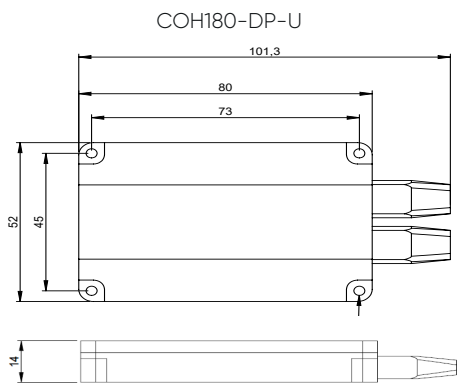
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Block Diagrams



Package layout



Ordering information

