

Subsea Qualified SFP Modules

Model 922 Optical Transceivers

Focal Technologies Corporation, a Moog Inc. company, has over 30 years of expertise in supplying standard and custom products for harsh environment applications and is a leading manufacturer of high performance and high quality multiplexers. Contact Focal for any assistance in selecting the best solution for your requirements.



Model 922-SFP (Small Form-factor Pluggable) modules are rugged and proven optical transceivers for Focal's Subsea Oilfield Communications (SOC) product line. These API/ISO qualified components are available in various optical wavelengths with 100 Mbps and 1000 Mbps data rates suitable for Ethernet links of up to 200 km on singlemode fiber. SFP variants include dual fiber configurations and bidirectional modules for operation over a single fiber. Qualified subsea optical couplers may be added for redundancy or to optically combine multiple Ethernet links via CWDM (Coarse Wavelength Division Multiplexing) on a single fiber.

Focal's 922-SFP modules are qualified and tested for use in permanent subsea installations, ensuring reliable operation over extended service life. The availability of extensive design testing and qualification reports, plus Focal's experienced engineering staff, simplifies system level analysis, lowers operational costs, and reduces technical risks during all project phases.

Features

- Link distances up to 200 km
- Single or dual fiber modules
- Qualified to ISO 13628-6 / API 17F
- Digital diagnostics
- High MTBF and long life
- High performance optimized for subsea controls and harsh environments

Benefits

- Standard qualified modules reduce costs and risks versus industrial products
- Product life cycle is handled by Focal, including part obsolescence and requalification
- Locked parts list, full traceability and factory acceptance testing ensure consistency and reliability

Applications

- Subsea communications and sensor networks
- Subsea drilling and production controls
- Subsea Electronics Modules (SEM) and other subsea distribution nodes

Specifications

Qualified Optical SFP Modules, Singlemode, 100Base-FX

Part Number	Range (km)	Wavelength (nm)	Data Rate (MBAud)	No. Fibers	Optical Power Budget (dB)	Operating Case Temperature (°C)
922-5101-01	100	1550	125	2	≥ 31	-40 to +85
922-5101-02	200	1550	125	2	≥ 46	-18 to +85
922-5101-03	50	1310 Tx / 1550 Rx	125	1	≥ 31	-40 to +85
922-5101-04	50	1550 Tx / 1310 Rx	125	1	≥ 31	-40 to +85
922-5101-05	100	1551 (CWDM) ¹	125	2	≥ 32	-5 to +85

Qualified Optical SFP Modules, Singlemode, 1000Base-X and 100Base-FX

Part Number	Range (km)	Wavelength (nm)	Data Rate (MBAud)	No. Fibers	Optical Power Budget (dB)	Operating Case Temperature (°C)
922-5102-00	100	1551 (CWDM) ¹	125 / 1250	2	≥ 32 dB	-40 to +85
922-5102-01	50	1490 Tx / 1550 Rx	125 / 1250	1	≥ 24 dB	-40 to +85
922-5102-02	50	1550 Tx / 1490 Rx	125 / 1250	1	≥ 24 dB	-40 to +85

Qualified Optical SFP Modules, General Specifications

Qualification	API-17F, ISO 13628-9, Q1 levels Custom qualification programs and Environmental Stress Screening (ESS) available.
Package	SFP per Multi-Source Agreement (MSA) with diagnostics per SFF-8472. All fiber connectors are LC type.
Range	Maximum dispersion-limited distance over singlemode fiber, Corning SMF-28e or equivalent.
Rx Wavelength	Dual fiber SFPs have broadband receivers (1200 to 1620 nm). Bidirectional (Bidi) SFPs receive on one wavelength (Rx), as indicated. A minimum attenuation may be required during testing.
Reliability	Typical MTBF > 10 ⁶ hours, median life > 25 years at +40 °C. Consult Focal for detailed analysis and test reports (e.g. qualification, ALT).

¹ Additional CWDM wavelengths, per ITU G.694.2 grid, are available on request.