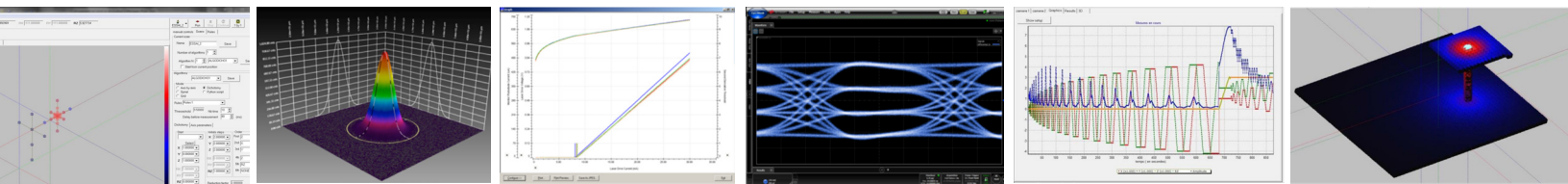


Instruments and Motion Solutions for the Telecom/Datacom Market



Introduction

Telecommunications/ data communications, also known as telecom/datacom, is the exchange of information over significant distances by electronic means and refers to all types of voice, data and video transmission. This is a broad term that includes a wide range of information transmitting technologies such as telephones (wired and wireless), microwave communications, fiber optics, satellites, radio and television broadcasting, the internet and telegraphs.

A complete, single telecommunications circuit consists of two stations, each equipped with a transmitter and a receiver (the transmitter and receiver at any station may be combined into a single device called a transceiver). The medium of signal transmission can be via electrical wire or cable, optical fiber, electromagnetic fields or light. The free space transmission and reception of data by means of electromagnetic fields is called wireless communications.



The simplest form of telecommunications takes place between two stations, but it is common for multiple transmitting and receiving stations to exchange data among themselves. Such an arrangement is called a telecommunications network. One of the trending technologies of modern Telecom/ Datacom industry is silicon photonics, where data is transferred among computer chips by optical means.

Optical fiber is used to overcome the limitations of copper and support faster interconnects between data centers. Combining laser and silicon technology results in higher propagation speed compared to electrical current (ability to carry more data in less time compared with electrical conductors). Thus, the effective implementation of silicon photonics technology would dramatically increase the processing speed and power of computers.

The other hot topic is 400Gb/s transmission speed.

Network carriers continue to face the bandwidth and capacity demand in metro, regional and long-haul networks as the traffic driven by more and more video streaming, cloud computing, social media, mobile data delivery and IoT grows. Optical transport of per-channel bit rate beyond 100 Gb/s is now under active R&D to sustain the traffic growth, improve spectral efficiency and lower cost per bit in fiber transmission. In that respect, 400-Gb/s data rate per channel emerged as a natural and promising step

At Newport Corporation we provide a wide variety of Instruments and Motion products to assist with any step in the generation of devices in the Telecom / Datacom industry, covering from device design all the way to final testing.


Process

In this brochure we will touch base on 3 main stages in the development of devices for Telecom/ Datacom applications and the recommended products at each of these stages: R & D, Assembly/Production and Test



R&D

The illustration for the R&D stage features a central figure of a person in a suit and yellow hard hat. Surrounding this figure are various icons: a wrench, gears, a red triangle ruler, a yellow pencil, and a rolled-up document. Dashed lines connect these elements, suggesting a process of design and engineering.



Assembly/
Production

The illustration for the Assembly/Production stage shows a central figure of a person in a red apron and yellow hard hat. The figure is surrounded by icons representing manufacturing: a wrench, a screwdriver, a checklist, and gears. A dashed diamond shape encloses the central figure and tools, indicating the assembly process.



Test

The illustration for the Test stage depicts a central figure of a person in a suit and yellow hard hat sitting at a desk with a laptop. The figure is surrounded by icons representing testing and quality control: a lightbulb, a gear, a checklist, and a box with two upward arrows. Dashed lines connect these elements, suggesting a process of verification and testing.

Research and Development

During the R&D stage, engineers are tasked to evaluate and verify new technologies or new design concepts. One of the challenges is to complete this task in shortest amount of time to move quickly into production, while guaranteeing precise characterization and analysis of new devices. To assist with this task here is the list of products we offer, that provide comprehensive characterization of beam and are easy to setup and use.

Laser Diode Controllers, Mounts, and Optical Power/Wavelength Meters

- Proven Laser Diode Protection to ensure your device is not damaged or destroyed during critical characterization and analysis tests.
- Reliable, stable, and precise performance to ensure the data you are collecting is accurate
- Applications and technical support to assist you with challenges and questions encountered along the way

Laser Diode Mount

Provide a compact, easy-to-use solution for laser diode fixturing



Telecom Laser Diode Mounts



Multi-Channel Telecom Laser Diode Mounts



ILX Lightwave LDC-3726

Laser Diode Controller

Combination of a precision current source and thermoelectric temperature controller that is optimized for laser diode control in the telecom/datacom space



ILX Lightwave OMH6727B and OMM6810B

Optical Power/Wavelength Meter and Measurement Head

Allows laser diode designers to analyze the power and wavelength performance of a device in a single solution. Capable of measuring the typical telecom/datacom wavelengths of 1310nm and 1550nm.

Power Meters and Detectors

Enable beam power detection and measurements.

- Up to 10 kHz data acquisition rate
- USB, RS-232, and GPIB communication available
- High speed analog output available
- Trigger in/out available
- Superb sensitivity and accuracy



Newport 1936-R & 818-SL/DB with an Ophir 3A-IS-IRG and StarBright

Beam Profilers

Accurately capture and analyze spatial distribution.

- Quantitative beam measurements
- NIST Traceable power/energy output data
- Quantify beams Special distribution
- Quick and easy pass/fail testing
- Real time visual and numerical feedback



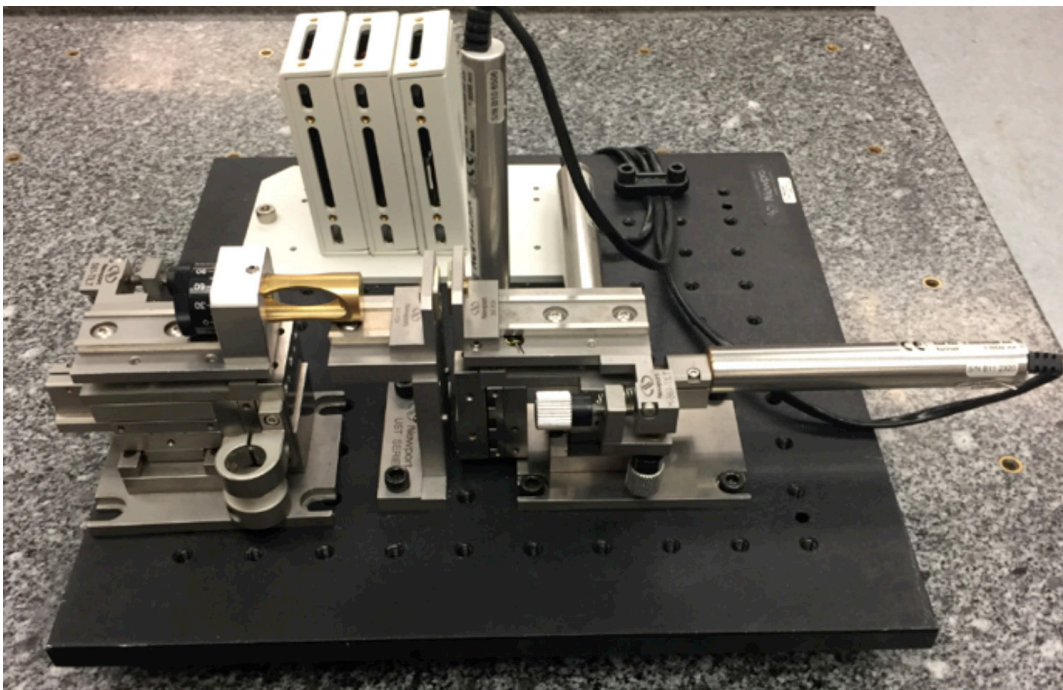
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Motion Control Systems

Featuring an easy to use, compact and inexpensive motion solution, consisting of ultra-precision 561/562 series manual stages and Conex-TRA motorized actuators to allow overcoming a difficult task of aligning or attaching a fiber optic to a laser diode or an optical waveguide. Basic alignment algorithms can be implemented using the supplied SW drivers. Another option is to get the APOGEE software.



Assembly/Production

In the Assembly/Production stage, the objective is to build many devices in the shortest possible amount of time. Achieving repeatable and reliable results is the main challenge in this stage. Newport Corporation provides modular systems to allow multiple controls and functions within a single instrument, large scale test systems, precise motion solutions and instruments to ensure reliable, stable and precise performance.

Modular Laser Diode Controllers

Allow users to drive current and control temperature of up to 16 devices and optimize laser diode design for longevity and performance.

- Modular systems to allow multiple controls and functions within a single instrument
- Interface options to allow remote instrument control
- Reliable, stable, and precise performance to ensure the data you are collecting is accurate
- Applications and technical support to assist you with challenges and questions encountered along the way



ILX Lightwave LDC-3916 Laser Diode Controller

Power Meters and Detectors

Enable beam power detection and measurements.

- Up to 10 kHz data acquisition rate
- USB, RS-232, and GPIB communication available
- High speed analog output available
- Trigger in/out available
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Newport 1830-R and 918D-IS-IG

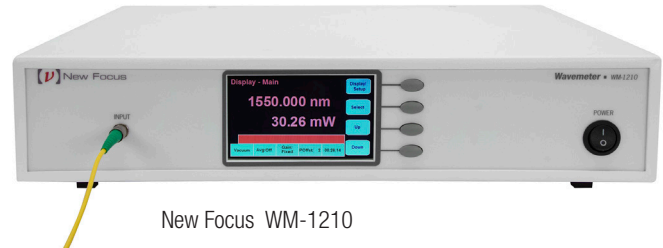


Ophir PD300-IRG and JUNO – compact USB interface virtual laser power meter

Wavemeters

Enable high accuracy and high resolution measurements of CW laser source wavelength for research, OEM and production applications.

- Wavelength monitoring of devices including DFB Lasers, Tunable Lasers and VCSELs
- Accurate wavelength calibration of tunable and swept laser sources
- Accurate calibration of OSAs and other test equipment
- Spectroscopy and other scientific wavelength characterization



Motion Control Systems

Motion control systems used in production phase exhibit high reliability, fast motion and stability. Solutions can range from the ultra-precision XMS stages to VP-25 compact XYZ systems to hexapods. These stages are known for their outstanding bi-directional repeatability and minimum incremental motion, which are critical specifications for assembly phase. With an XPS Universal Motion Controller, basic to complex alignment algorithms can be implemented using the supplied SW drivers. Another option is to get ready to use APOGEE software to facilitate starting up a production line.

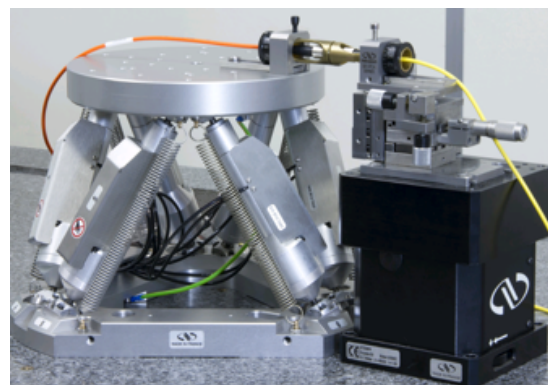
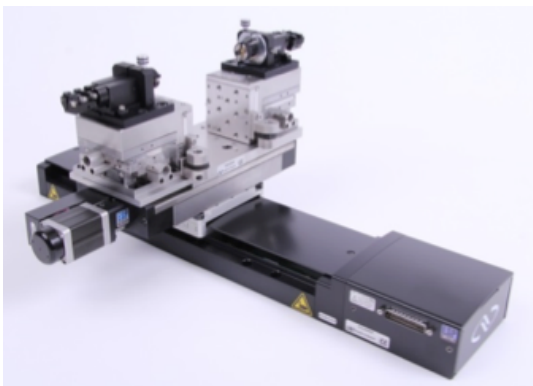
- Compact multi axis systems
- Highly reliable, fast and stable
- Outstanding bi-directional repeatability and MIM
- Easy to use alignment software option
- Software drivers to develop customized programs for OEM

APOGEE features

- Multiple search algorithms, combination possible
- Single to multi-channel
- Single and Double-ended devices
- Vision and instrument compatible
- Simulation mode



Newport can also supply full motion systems including the isolation and the structure.



Test

In the Test stage, the goal is to get quality finished goods. The challenges are moving high volume finished devices thru test to ensure functionality and reliability. We offer proven laser diode protection to ensure devices are not damaged and destroyed during test, LIV capable instruments to allow performance validation, high speed photodetectors and photo receivers , as well as power meter, detectors and beam profilers.

- Proven Laser Diode Protection to ensure your device is not damaged or destroyed during test
- Large scale test systems to allow testing and burn-in of multiple devices
- LIV capable instruments to allow performance validation
- Reliable, stable, and precise performance to ensure the data you are collecting is accurate
- Applications and technical support to assist you with challenges and questions encountered along the way

Single Shelf Test System – Allows the user to test reliability and performance of multiple laser diodes in a production environment. Testing at various currents, temperatures, analyzing output power (i.e. LIV curves), and running long term burn-in provides useful information for optimizing performance and eliminating infant mortalities of laser diodes that are often embedded into a transceiver or other device.



ILX Sentinel Series LRS-9434 Laser Diode Reliability and Burn-In System



ILX Sentry LRS-9434SS Laser Diode Testing System

High Speed Photodetectors and Photoreceivers

Serve as O/E converter for oscilloscopes, network analyzers and spectrum analyzers.

- Visible and NIR versions
- Switchable DC-coupled or AC-coupled output versions
- Single mode and Multimode fiber connector options
- High speed with high dynamic range
- Instrument quality linear photoreceiver in small package
- Low-noise amplifier
- Ultra high speed photodetectors
- High sensitivity throughout spectrum
- Easy-to-use, self-contained module



High Speed Photodetectors



High Speed Photoreceivers



Newport 1936-R & 818-SL/DB with an Ophir 3A-IS-IRG and StarBright

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- NIST Traceable power/energy output data
- Quantify beams Special distribution
- Quick and easy pass/fail testing
- Real time visual and numerical feedback
- Increased testing throughput
- Report generation



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Quick Reference Selection Guide

Research and Development	Assembly/Production	Final Test
CONEX-TRA/Conex-LTA Motorized Actuators	XMS/VP-25 Linear Stages	Sentry Single Shelf LD Tester Benchtop
562 Manual Stages Ultra Align Precision XYZ Stages	HXP50 Hexapod	1474A Photoreceiver
LDM Laser Diode Mounts	XPS Controller	1544 High Speed Photoreceivers
LDC3726 Laser Diode	Juno, PD300-IRG	2936-R Power Meter 918D-IS-IG Detector
1936-R Power Meter 818-SL/DB Detector	1830-R Power Meter 918D-IS-IG Detector	StarLite Power Meter PD300-IRG
SP928, XC-130 Beam profilers	WM-1210 Wavemeter	SP928, XC-130 Beam Profilers
OMM 6810 Power/Wavelength Meter	LDC 3900 Modular LD Controllers	1784 VCSEL Fiber Coupled Laser Source
StarBright Power Meter 3A-IS-IRG		

Note: Newport has wide variety of products for every stage described above. Our applications and technical support engineers are always there to assist you with challenges and questions encountered along the way, so please don't hesitate to contact us as tech@newport.com to discuss your application needs.



For More Information, visit us at
www.newport.com

