N7710C
Fixed-Wavelength Laser Source

Fabry-Pérot Laser Sources Provide Stable Power Reference

Introduction

The Keysight N7710C Fixed-Wavelength Laser Source offers highly stable optical output power for use as a reference in calibration setups for handheld test equipment, or for generating a reference signal with the help of an optical modulator. Due to its Fabry-Pérot spectrum, the laser helps mitigate interference effects in the optical path, harnessing the reference power level against fluctuations that are common to test configurations using narrow-linewidth lasers.

N7710C with option 085 (top) is equipped with an 850 nm FP laser and multimode optical fiber output, suitable for 802.3ae. N7710C with option 135 (bottom) consists of two FP lasers, one at 1310 nm and one at 1550 nm wavelength, each equipped with polarization-maintaining single mode fiber (PMF) outputs.

KEYSIGHT

Definitions

Generally, all specifications are valid at the stated operating and measurement conditions and settings, with uninterrupted line voltage.

Specifications (Guaranteed)

Describes warranted product performance that is valid under the specified conditions. Specifications include guard bands to account for the expected statistical performance distribution, measurement uncertainties changes in performance due to environmental changes and aging of components.

Typical Values (Characteristics)

Characteristics describe the product performance that is usually met but not guaranteed. Typical values are based on data from a representative set of instruments.

General Characteristics

Give additional information for using the instrument. These are general descriptive terms that do not imply a level of performance.

Technical Specifications

Description	N7710C-085	N7710C-135
Fiber type	OM3 MM fiber, graded index, 50/125 µm	Panda polarization maintaining fiber, single mode, 9/125 µm
Output connector	Straight contact (requires 81000xI connector interface)	Angled contact (requires 81000xI connector interface)
Center wavelength	850 nm ± 10 nm	1310 nm ± 10 nm 1550 nm ± 10 nm
Spectral bandwidth (RMS) [1]	< 5 nm	< 5 nm (1310 nm) < 5 nm (1550 nm)
Output power	> +3 dBm (2.5 mW)	> +13 dBm (20 mW)
CW power stability (15 minutes) [2, 3]	< ± 0.15 dB Typical < ± 0.1 dB	< ± 0.005 dB, typical < ± 0.003 dB (1310 nm) < ± 0.010 dB, typical < ± 0.007 dB (1550 nm) Characteristic < ± 0.005 dB [5]
Ditto, coherence control active [2 3]	Typical < ± 0.15 dB	Typical < ± 0.003 dB (1310 nm) Typical < ± 0.006 dB (1550 nm)
CW power stability (24 hours) [2, 3]	Typical < ± 0.2 dB	Typical ± 0.02 dB
Ditto, coherence control active [2 3]	Typical < ± 0.15 dB	Typical ± 0.02 dB
Stability to back reflection [4]	Characteristic ± 0.05 dB	Characteristic ± 0.005 dB (1310 nm) Characteristic ± 0.003 dB (1550 nm)
Power setting range	0 dBm to +3 dBm	0 dBm to +13 dBm
Laser safety information	All laser sources specified by this data sheet are classified as Class 1M according to IEC 60825-1:2014 and EN 60825-1:2014/A11:2021. All laser sources comply with 21 CFR 1040.10 except for deviations pursuant to Laser Notice No. 50, dated 2007, June 24.	

1. RMS: Root Mean Square.
2. With output enabled. Warm-up time 60 minutes, if previously stored at the same temperature. Measured at maximum output power.
3. Controlled environment (ΔT = ± 1 K)
4. RL ≥ 14 dB.
5. After initial warm-up and 3 minutes after laser activation.

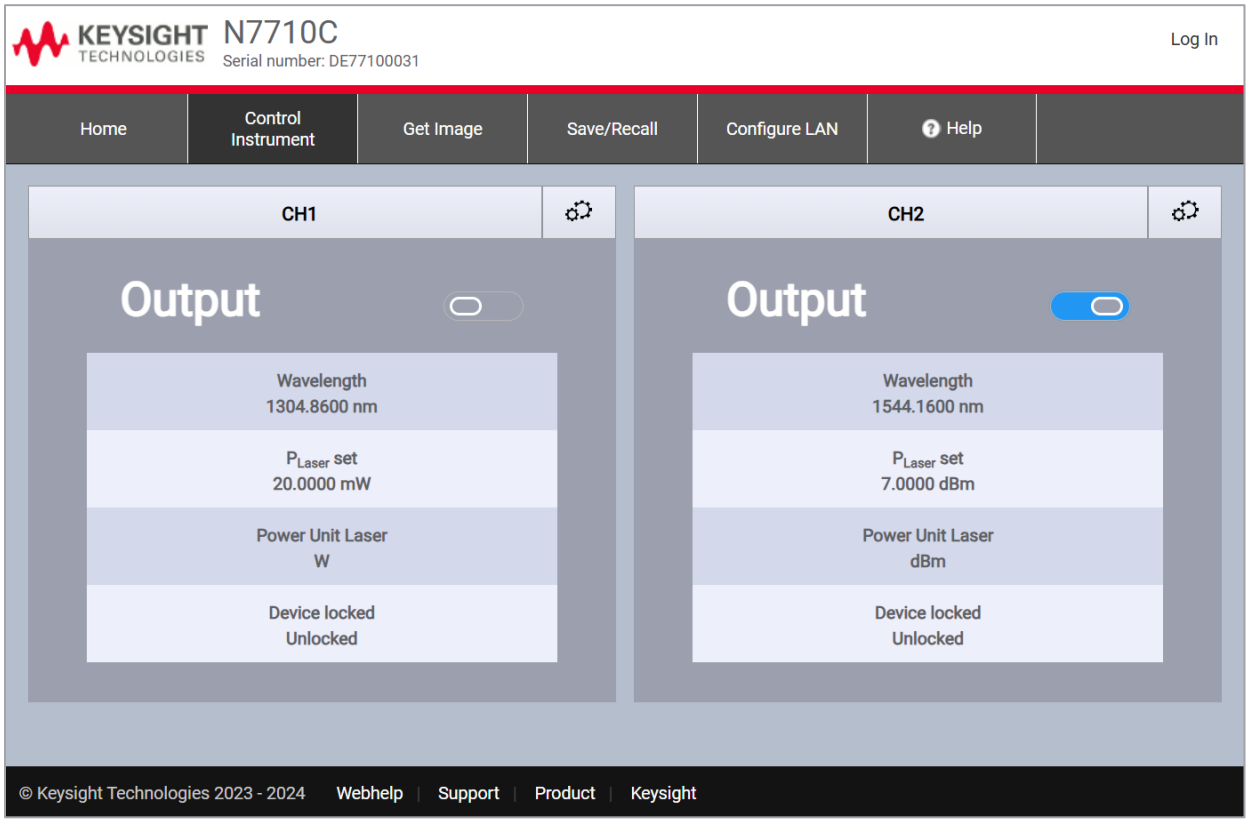
General Specifications

Description	N7710C
Line power	AC 100 V to 240 V ± 10%, 50/60 Hz, 60 VA max.
Operating temperature	+10 °C to +35 °C
Operating humidity	≤ 80%, non-condensing
Storage temperature	–40 °C to +70 °C
Max. operating altitude	2000 m (6000 ft)
Warm-up time	30 minutes
Recommended recalibration period	2 years
Dimensions	420 mm × 212 mm × 43 mm (excluding front and back rubber cushions and connectors)
Weight	3 kg (6 lbs)
User Interface	**N7710C**
LAN access (1 Gbit/s): HTTP VXI-11 SCPI-telnet SCPI-raw HISLIP	IPv4 and IPv6 Socket connection: http://<ip_address> or http://<host_name> port 111 (IPv4 only) port 5024 port 5025 port 4880
USB access (USB 2.0)	Remote NDIS (virtual Ethernet link over USB); USB Mass Storage functions (read-only); USBTMC

Ordering Information

Product/Option	Description
N7710C	Laser source
Option	**Wavelength Selection (must choose one)**
N7710C-085	Fabry-Perot laser, 850 nm, MM fiber, straight contact connector
N7710C-135	Fabry-Perot lasers, 1310 nm/ 1550 nm, PM fiber, angled contact connector
Product	**Required Accessories**
81000xI	One (1) 81000xI connector interface is required for option N7710C-085; Two (2) 81000xI connector interfaces are required for option N7710C-135
Product/Option	**Recommended Accessories**
N7799C-1CM	Rack mount kit for 2 half-width instruments, 1 rack height unit. Includes low profile rails, fitted to Keysight System II racks with 24-inch-spaced mounts. Requires Filler Kit N7799C-0CM for mounting single instrument.
N7799C-0CM	Filler Kit for N7799C-1CM. Required for single half-width instrument; includes front panel and base plate.
N7799C-DOC	Documentation of N77-C Platform, Physical Medium
	Included Accessories
	Test report Keysight safety leaflet, China RoHS Addendum USB-A to USB-B cable, 2 m/ 7 ft Ethernet LAN cable. CAT-6, RJ45 plugs, 2 m/ 7 ft Country-specific power cord

User Interface Screen Captures



The N7710C fixed-wavelength laser's graphical user interface offers detailed information about the instrument hardware and firmware version, and the instrument's address settings. In addition to each channel's optical output power setting and center wavelength, the panel provides access to coherence control settings. Separate tabs allow changing LAN address settings and opening the context-sensitive help system. Responsive design ensures that the display adjusts to the browser window and the chosen zoom factor, allowing you to comfortably arrange multiple instrument views on one screen.

Web User Interface but No LAN?

Connect instrument and PC via USB. The instrument shows up as a new drive: double-click the shortcut on that drive. This lets any modern browser open a connection to the instrument: the graphical user interface appears. It's as simple as that!

For More Information

To find more optical test instruments, check the following links:

Optical test instruments: www.keysight.com/find/oct

Tunable laser sources: www.keysight.com/find/tls

Coherent transmission test instruments: www.keysight.com/find/n4391c

Lightwave component analyzers: www.keysight.com/find/lca