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Keysight Technologies
81663A DFB Laser
8165xA Fabry-Perot Lasers

Data Sheet



KEYSIGHT TECHNOLOGIES
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Introduction

The Keysight 81663A high power DFB laser source modules provide stable narrow-linewidth output at key selected wavelengths.

The Keysight 8165xA Fabry-Perot Laser Sources are available as single or dual wavelength sources, are insensitive to back reflections, and are stabilized for short and long term applications.

The DFB and FP Laser Source modules are part of the flexible Keysight Lightwave Solution platform and have a futureproof design that allows for easy firmware upgrades.

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Technical Specifications

Fabry-Perot source module specifications (high-power modules, +13 dBm)

Specifications describe the instrument's warranted performance. They are verified at the end of a 2-meter-long patchcord and are valid after warm-up and for an attenuation setting of 0.0 dB. All modules are equipped with straight output connectors.

	81655A	81656A	81657A
Type		**Fabry-Perot Laser**	
Center wavelength[1]	1310 nm ±15 nm	1550 nm ±15 nm	1310/1550 nm ±15 nm
Fiber type	Standard single-mode 9/125 µm		
Spectral bandwidth (rms) [1, 2]	< 5.5 nm	< 7.5 nm	< 5.5 nm/7.5 nm
Output power	> +13 dBm (20 mW)		
Output connector[3]	straight contact		
CW power stability [4, 5]			
Short term (15 minutes)	< ± 0.005 dB Typical < ±0.003 dB with coherence control active		
Long term (24 hours)	Typical ± 0.03 dB		
To back reflection (RL ≥ 14 dB)	Typical ± 0.003 dB		
Dimensions (H x W x D)	75 mm x 32 mm x 335 mm (2.8" x 1.3" x 13.2")		
Weight	0.5 kg		
Recalibration period	2 years		
Operating temperature	0 °C to 45 °C		
Humidity	Non-condensing		
Warm-up time	60 minutes[4]		

Table 2. Technical specifications for Fabry-Perot source modules (high-power modules, +13 dBm)

Supplementary Performance Specifications

Internal digital modulation mode

270 Hz, 330 Hz, 1 kHz, 2 kHz and free selection 200 Hz to 10 kHz. All output signals are pulse shaped, duty cycle 50%.

Internal coherence control for linewidth broadening.

Output attenuation

The output power of all source modules can be attenuated from 0 dB to 6 dB in steps of 0.1 dB.

Laser safety information

All laser sources listed above are classified as Class 1M according to IEC 60825-1 (2007). All laser sources comply with 21 CFR 1040.10 except for deviations pursuant to Laser Notice No. 50, dated 2007-June-24.

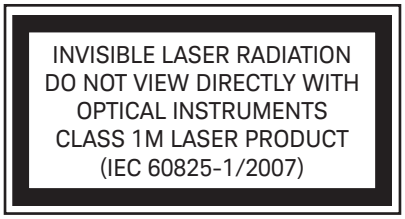


Figure 2. Laser classification label for Class 1M

1. Center wavelength is shown on display
2. RMS: root mean square
3. Connector interface not included.
4. Warm-up time 20 min, if previously stored at the same temperature.
5. Controlled environment (ΔT = ± 1 °C)

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Technical Specifications

DFB source module specifications

Specifications describe the instrument's warranted performance. They are verified at the end of a 2-meter-long patchcord and are valid after warm-up and for an attenuation setting of 0.0 dB.

	81663A Option 131	81663A Option 149	81663A Option 151	81663A Option 155	81663A Option 162
Center wavelength [1,2]	1310 nm ± 5 nm	1490 nm ± 3 nm	1510 nm ± 3 nm	1550 nm ± 3 nm	1625 nm ± 3 nm
	Options 131, 149, 151, 155, and 162				
Type	**CW DFB laser with built-in isolator**				
Tuning range	Typical > ± 500 pm				
Display resolution	10 pm				
Repeatability[4]	± 5 pm (typical ± 2 pm)				
Stability (15 minutes) [3,4]	± 5 pm (typical ± 2 pm)				
Stability (24 hours) [3,4]	typical ± 5 pm				
Fiber type	Panda PMF 9 / 125 µm				
Output connector [6]	Angled contact				
Power					
Maximum output [5]	Typical > +13 dBm (20 mW)				
CW stability (15 minutes) [4]	Typical ±0.003 dB				
CW stability (24 hours) [3,4]	Typical ±0.01 dB				
Side mode suppression ratio (SMSR) [5]	Typical 45 dB				
Polarization extinction ratio (PER)	Typical > 20 dB				
Dimensions (H x W x D)	75 mm H x 32 mm W x 335 mm D (2.8" x 1.3" x 13.2")				
Weight	0.5 kg				
Recalibration period	2 years				
Operating temperature	15 °C to 35 °C				
Humidity	Non-condensing				
Warm-up time [3]	60 minutes				

Table 3. Technical specifications for DFB source modules.

Supplementary Performance Characteristics

- Internal digital modulation mode: Free selection 200 Hz to 100 kHz. All output signals are pulse shaped duty cycle 50%.
- Internal coherence control for linewidth broadening.
- ON-switching with fast output-power stabilization < 20 s.
- Output power "attenuation" at default wavelength 6 dB in steps of 0.1 dB.
- Tuning speed over full range 30 s.
- Polarization maintaining fiber orientation: TE mode in slow axis, in line with connector key.

Laser safety information

The 81663A DFB Laser Sources listed above are classified as Class 1M according to IEC 60825-1 (2007).

All laser sources comply with 21 CFR 1040.10 except for deviations pursuant to Laser Notice No. 50, dated 2007-June-24.

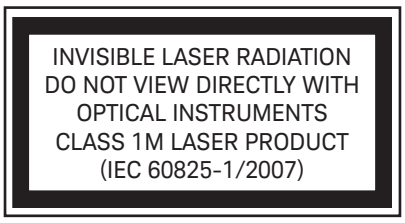


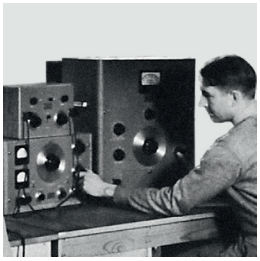
Figure 3. Classification label for 1M lasers.

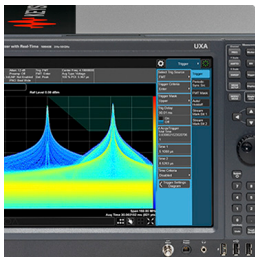
1. Center wavelength is shown on display as default.
2. Via GPIB tuning resolution < 10 pm.
3. If previously stored at the same temperature 20 minutes.
4. Controlled environment (ΔT = ± 1 °C).
5. At maximum power setting and default wavelength at the end of a 2 m SM patchcord.
6. Connector interface not included.

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