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PART NUMBER 0830L-44A

ITEM NAME 830 NM NARROW LINEWIDTH LASER (HP VBG DIODE; MM FIBER)

# PRODUCT DATASHEET



#### **DESCRIPTION**

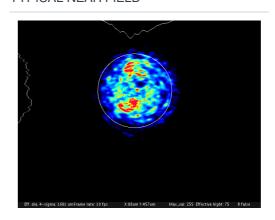
High power, narrow linewidth 830 nm infrared laser of the MatchBox series coupled with multi mode (MM) fiber. These lasers are used as compact and cost effective laser sources for industrial Raman  $spectroscopy\ applications.\ Internal\ o\ ptical\ power\ feedback\ ensures\ good\ power\ stability\ and\ On/Off$ repeatability over the lifetime of the laser.

#### **SPECIFICATIONS**

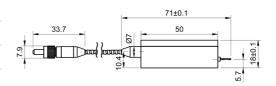
Specifications updated: 30 September 2020

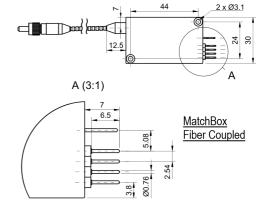
Central Wavelength, nm         829.7         830         830.3           Longitudinal modes         -         Narrow Spectrum         -           Spectral line width FWHM, pm         -         50         100           Output power, mW         -         350 1         500           Power stability, % (RMS, 8 hrs)         0.05         1 2         2           Power stability, % (peak-to-peak, 8 hrs)         0.1         2 3         3           Noise, % (RMS, 20 Hz to 20 MHz)         0.05         0.25 4         0.6           Transversal modes         -         Multiple         -           Control interface type         -         UART 5         -           Operation mode         -         APC (CW)         -           Modulation bandwidth, MHz         -         N/A 6         -           Input voltage, VDC         4.8         5         5.3           External power supply requirement         -         +5 V DC, 1.5 A         -           Dimensions, mm         -         50 x 30 x 18 7         -           Fiber Length, m         0.95         1         1.1           Heat-sinking requirement, °C/W         -         1         -           Optimum heatsink temperature, °C <th>Parameter</th> <th>Minimum Value</th> <th>Typical Value</th> <th>Maximum Value</th>	Parameter	Minimum Value	Typical Value	Maximum Value
Spectral line width FWHM, pm         -         50         100           Output power, mW         -         350 ¹         500           Power stability, % (RMS, 8 hrs)         0.05         1 ²         2           Power stability, % (peak-to-peak, 8 hrs)         0.1         2 ³         3           Noise, % (RMS, 20 Hz to 20 MHz)         0.05         0.25 ⁴         0.6           Transversal modes         -         Multiple         -           Control interface type         -         UART ⁵         -           Operation mode         -         APC (CW)         -           Modulation bandwidth, MHz         -         N/A ⁶         -           Input voltage, VDC         4.8         5         5.3           External power supply requirement         -         +5 V DC, 1.5 A         -           Dimensions, mm         -         50 x 30 x 18 ²         -           Fiber Length, m         0.95         1         1.1           Heat-sinking requirement, °C/W         -         1         -           Optimum heatsink temperature, °C         15         20         30           Warm up time, mins (cold start)         0.1         0.5         1           Temperature stabilization <td>Central Wavelength, nm</td> <td>829.7</td> <td>830</td> <td>830.3</td>	Central Wavelength, nm	829.7	830	830.3
Output power, mW         -         350 ¹         500           Power stability, % (RMS, 8 hrs)         0.05         1 ²         2           Power stability, % (peak-to-peak, 8 hrs)         0.1         2 ³         3           Noise, % (RMS, 20 Hz to 20 MHz)         0.05         0.25 ⁴         0.6           Transversal modes         -         Multiple         -           Control interface type         -         UART ⁵         -           Operation mode         -         APC (CW)         -           Modulation bandwidth, MHz         -         N/A ⁶         -           Input voltage, VDC         4.8         5         5.3           External power supply requirement         -         +5 V DC, 1.5 A         -           Dimensions, mm         -         50 x 30 x 18 ²         -           Fiber Length, m         0.95         1         1.1           Heat-sinking requirement, °C/W         -         1         -           Optimum heatsink temperature, °C         15         20         30           Warm up time, mins (cold start)         0.1         0.5         1           Temperature stabilization         -         Internal TEC         -           Overheat protection	Longitudinal modes	-		-
Power stability, % (RMS, 8 hrs)         0.05         1 2         2           Power stability, % (peak-to-peak, 8 hrs)         0.1         2 3         3           Noise, % (RMS, 20 Hz to 20 MHz)         0.05         0.25 4         0.6           Transversal modes         -         Multiple         -           Control interface type         -         UART 5         -           Operation mode         -         APC (CW)         -           Modulation bandwidth, MHz         -         N/A 6         -           Input voltage, VDC         4.8         5         5.3           External power supply requirement         -         +5 V DC, 1.5 A         -           Dimensions, mm         -         50 x 30 x 18 7         -           Fiber Length, m         0.95         1         1.1           Heat-sinking requirement, °C/W         -         1         -           Optimum heatsink temperature, °C         15         20         30           Warm up time, mins (cold start)         0.1         0.5         1           Temperature stabilization         -         Internal TEC         -           Overheat protection         -         Yes         -           Storage temperature, °C (	Spectral line width FWHM, pm	-	50	100
Power stability, % (peak-to-peak, 8 hrs)         0.1         2 ³         3           Noise, % (RMS, 20 Hz to 20 MHz)         0.05         0.25 ⁴         0.6           Transversal modes         -         Multiple         -           Control interface type         -         UART ⁵         -           Operation mode         -         APC (CW)         -           Modulation bandwidth, MHz         -         N/A ⁶         -           Input voltage, VDC         4.8         5         5.3           External power supply requirement         -         +5 V DC, 1.5 A         -           Dimensions, mm         -         50 x 30 x 18 ²         -           Fiber Length, m         0.95         1         1.1           Heat-sinking requirement, °C/W         -         1         -           Optimum heatsink temperature, °C         15         20         30           Warm up time, mins (cold start)         0.1         0.5         1           Temperature stabilization         -         Internal TEC         -           Overheat protection         -         Yes         -           Storage temperature, °C (non-condensing)         -         50	Output power, mW	-	350 <sup>1</sup>	500
Noise, % (RMS, 20 Hz to 20 MHz)         0.05         0.25 <sup>4</sup> 0.6           Transversal modes         -         Multiple         -           Control interface type         -         UART <sup>5</sup> -           Operation mode         -         APC (CW)         -           Modulation bandwidth, MHz         -         N/A <sup>6</sup> -           Input voltage, VDC         4.8         5         5.3           External power supply requirement         -         +5 V DC, 1.5 A         -           Dimensions, mm         -         50 x 30 x 18 <sup>7</sup> -           Fiber Length, m         0.95         1         1.1           Heat-sinking requirement, °C/W         -         1         -           Optimum heatsink temperature, °C         15         20         30           Warm up time, mins (cold start)         0.1         0.5         1           Temperature stabilization         -         Internal TEC         -           Overheat protection         -         Yes         -           Storage temperature, °C (non-condensing)         -         50	Power stability, % (RMS, 8 hrs)	0.05	1 <sup>2</sup>	2
Transversal modes         -         Multiple         -           Control interface type         -         UART <sup>5</sup> -           Operation mode         -         APC (CW)         -           Modulation bandwidth, MHz         -         N/A <sup>6</sup> -           Input voltage, VDC         4.8         5         5.3           External power supply requirement         -         +5 V DC, 1.5 A         -           Dimensions, mm         -         50 x 30 x 18 <sup>7</sup> -           Fiber Length, m         0.95         1         1.1           Heat-sinking requirement, °C/W         -         1         -           Optimum heatsink temperature, °C         15         20         30           Warm up time, mins (cold start)         0.1         0.5         1           Temperature stabilization         -         Internal TEC         -           Overheat protection         -         Yes         -           Storage temperature, °C (non-condensing)         -         50	Power stability, % (peak-to-peak, 8 hrs)	0.1	2 <sup>3</sup>	3
Control interface type         -         UART <sup>5</sup> -           Operation mode         -         APC (CW)         -           Modulation bandwidth, MHz         -         N/A <sup>6</sup> -           Input voltage, VDC         4.8         5         5.3           External power supply requirement         -         +5 V DC, 1.5 A         -           Dimensions, mm         -         50 x 30 x 18 <sup>7</sup> -           Fiber Length, m         0.95         1         1.1           Heat-sinking requirement, °C/W         -         1         -           Optimum heatsink temperature, °C         15         20         30           Warm up time, mins (cold start)         0.1         0.5         1           Temperature stabilization         -         Internal TEC         -           Overheat protection         -         Yes         -           Storage temperature, °C (non-condensing)         -10         -         50	Noise, % (RMS, 20 Hz to 20 MHz)	0.05	0.25 4	0.6
Operation mode         -         APC (CW)         -           Modulation bandwidth, MHz         -         N/A 6         -           Input voltage, VDC         4.8         5         5.3           External power supply requirement         -         +5 V DC, 1.5 A         -           Dimensions, mm         -         50 x 30 x 18 7         -           Fiber Length, m         0.95         1         1.1           Heat-sinking requirement, °C/W         -         1         -           Optimum heatsink temperature, °C         15         20         30           Warm up time, mins (cold start)         0.1         0.5         1           Temperature stabilization         -         Internal TEC         -           Overheat protection         -         Yes         -           Storage temperature, °C (non-condensing)         -10         -         50	Transversal modes	-	Multiple	-
Modulation bandwidth, MHz         -         N/A <sup>6</sup> -           Input voltage, VDC         4.8         5         5.3           External power supply requirement         -         +5 V DC, 1.5 A         -           Dimensions, mm         -         50 x 30 x 18 <sup>7</sup> -           Fiber Length, m         0.95         1         1.1           Heat-sinking requirement, °C/W         -         1         -           Optimum heatsink temperature, °C         15         20         30           Warm up time, mins (cold start)         0.1         0.5         1           Temperature stabilization         -         Internal TEC         -           Overheat protection         -         Yes         -           Storage temperature, °C (non-condensing)         -10         -         50	Control interface type	-	UART <sup>5</sup>	-
Input voltage, VDC         4.8         5         5.3           External power supply requirement         -         +5 V DC, 1.5 A         -           Dimensions, mm         -         50 x 30 x 18 7         -           Fiber Length, m         0.95         1         1.1           Heat-sinking requirement, °C/W         -         1         -           Optimum heatsink temperature, °C         15         20         30           Warm up time, mins (cold start)         0.1         0.5         1           Temperature stabilization         -         Internal TEC         -           Overheat protection         -         Yes         -           Storage temperature, °C (non-condensing)         -10         -         50	Operation mode	-	APC (CW)	-
External power supply requirement         -         +5 V DC, 1.5 A         -           Dimensions, mm         -         50 x 30 x 18 7         -           Fiber Length, m         0.95         1         1.1           Heat-sinking requirement, °C/W         -         1         -           Optimum heatsink temperature, °C         15         20         30           Warm up time, mins (cold start)         0.1         0.5         1           Temperature stabilization         -         Internal TEC         -           Overheat protection         -         Yes         -           Storage temperature, °C (non-condensing)         -10         -         50	Modulation bandwidth, MHz	-	N/A <sup>6</sup>	-
Dimensions, mm         -         50 x 30 x 18 7         -           Fiber Length, m         0.95         1         1.1           Heat-sinking requirement, °C/W         -         1         -           Optimum heatsink temperature, °C         15         20         30           Warm up time, mins (cold start)         0.1         0.5         1           Temperature stabilization         -         Internal TEC         -           Overheat protection         -         Yes         -           Storage temperature, °C (non-condensing)         -10         -         50	Input voltage, VDC	4.8	5	5.3
Fiber Length, m  O.95  1  1.1  Heat-sinking requirement, °C/W  -  Optimum heatsink temperature, °C  15  20  30  Warm up time, mins (cold start)  O.1  Temperature stabilization  -  Internal TEC  Overheat protection  -  Storage temperature, °C (non-condensing)	External power supply requirement	-	+5 V DC, 1.5 A	-
Heat-sinking requirement, °C/W - 1	Dimensions, mm	-	50 x 30 x 18 <sup>7</sup>	-
Optimum heatsink temperature, °C 15 20 30  Warm up time, mins (cold start) 0.1 0.5 1  Temperature stabilization - Internal TEC -  Overheat protection - Yes -  Storage temperature, °C (non-condensing) - 50	Fiber Length, m	0.95	1	1.1
Warm up time, mins (cold start)  Temperature stabilization  - Internal TEC  Overheat protection  - Yes  - Storage temperature, °C (non-condensing)  - 10  - 50	Heat-sinking requirement, °C/W	-	1	-
Temperature stabilization - Internal TEC -  Overheat protection - Yes -  Storage temperature, °C (non- condensing) - 50	Optimum heatsink temperature, °C	15	20	30
Overheat protection - Yes - Storage temperature, °C (non- condensing) - 50	Warm up time, mins (cold start)	0.1	0.5	1
Storage temperature, °C (non-condensing) -10 - 50	Temperature stabilization	-	Internal TEC	-
condensing)	Overheat protection	-	Yes	-
Net weight, kg 0.1 0.12 0.14	•	-10	-	50
	Net weight, kg	0.1	0.12	0.14

## TYPICAL NEAR FIELD



### **DRAWING**





Max. power consumption, W	0.4	2	10
Warranty, months (op. hrs)	-	14 (10000) <sup>8</sup>	-
RoHS	-	Yes	-
CE compliance	-	- General Product Safety Directive (GPSD) 2001/95/EC - (EMC) Directive 2004/108/EC	-
Laser Safety Class	-	3B	-
OEM lasers are not compliant with	-	IEC60825- 1:2014 (compliant using additional accessories)	-
Country of origin	-	Lithuania	-

<sup>&</sup>lt;sup>1</sup> The optical power can be tuned from virtually 0% to 100%. However, other specifications, such as central wavelength, power stability, noise, polarization ratio, beam shape, quality and circularity are not guaranteed at power levels other than factory preset power. Significantly worse power stability is to be expected at very low power levels, e.g. <3% from specified nominal power.

Note: Product specifications are subject to change without prior notice to improve reliability, function or design or otherwise.

<sup>&</sup>lt;sup>2</sup>The long term power test is carried out at constant laser body temperature (+/-0.1 °C) using an optical power meter with an input bandwidth of 10 Hz. The actual measurement rate has a period of about 20 seconds to 1 minute.

<sup>&</sup>lt;sup>3</sup>The long term power test is carried out at constant laser body temperature (+/-0.1 °C) using an optical power meter with an input bandwidth of 10 Hz. The actual measurement rate has a period of about 20 seconds to 1 minute.

 $<sup>^4</sup>$  Noise level is measured with a fast photodiode connected to an oscilloscope. The overall system bandwidth is from 2 kHz to 20 MHz.

 $<sup>^{5}</sup>$  Break-out-boxes AM-C8 and AM-C3 can be used for conversion of UART communication to either USB or RS232.

 $<sup>^6\,</sup>TTL$  digital modulation up to 10 MHz.

 $<sup>^{7}\,\</sup>mathrm{Excluding}$  control interface pins and an output window/fiber assembly.

 $<sup>^{\</sup>rm 8}\,\rm Whichever$  occurs first. The laser has an integrated operational hours counter.