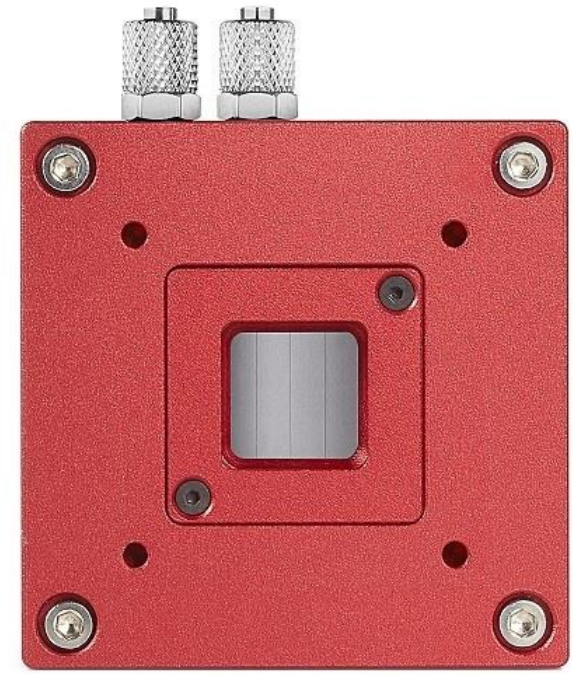
LASERPOINT

Edition 01 – 12/2023

BM-A-5W-14-TX-ENH
BM-A-5W-14-TX-E-PC
User Manual



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BM-A-5W-14-TX-ENH

User's Manual

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1. Safety notes

Before operating this instrument, carefully review the following safety information to avoid personal injury and prevent damage to this instrument or any sensor head connected to it. This instrument does not contain any user-serviceable parts.

The user of Power/Energy measurement instruments must be trained to the use of lasers and their associated risks (ref. EN 60825). LaserPoint is no way liable for any damage resulting from misuse, careless or use above rated limits for the instrument.

The measuring as well as the use of lasers is potentially dangerous. This instrument may operate over wavelengths including non-visible laser radiations.

Proper operating practice in accordance with laser manufacturer's recommendations is crucial; to ensure correct operating procedures, consult the laser manufacturer and your laser safety officer.

Eyewear and other personal protective equipment must be used in compliance with applicable laws and safety regulations.

Be extremely careful with radiation either back-reflected of back-scattered from detector surfaces, housings, mounts and stainless-steel post.

Operate this instrument only within the specified range of operating conditions.

Do not operate this instrument in critical medical environments, in wet or damp conditions or in an explosive atmosphere.

Do not operate this instrument if in suspect of damage or failures. Refer about damaged equipment to Laser Point for qualified service inspection.

2. Introduction to P/N BM-A-5W-14-TX-ENH

Blink model BM-A-5W-14-TX-ENH is a Fast response laser sensor for low power lasers, able to measure the energy of single laser pulses with repetition frequency up to 1 MHz for ultra-short pulsed lasers for laser beams with an average power up to 5W.
Its absorber spectral range is broadband, due to the thermal working principle.

3. Instrument Specifications

3.1. Operating Conditions

N°	PARAMETER	CONDITIONS	SYMB.	MIN	MAX	UNIT
1	Environment Temperature			10	30	°C
2	Relative Humidity	Non condensing		0	90	%

3.2. Maximum Ratings

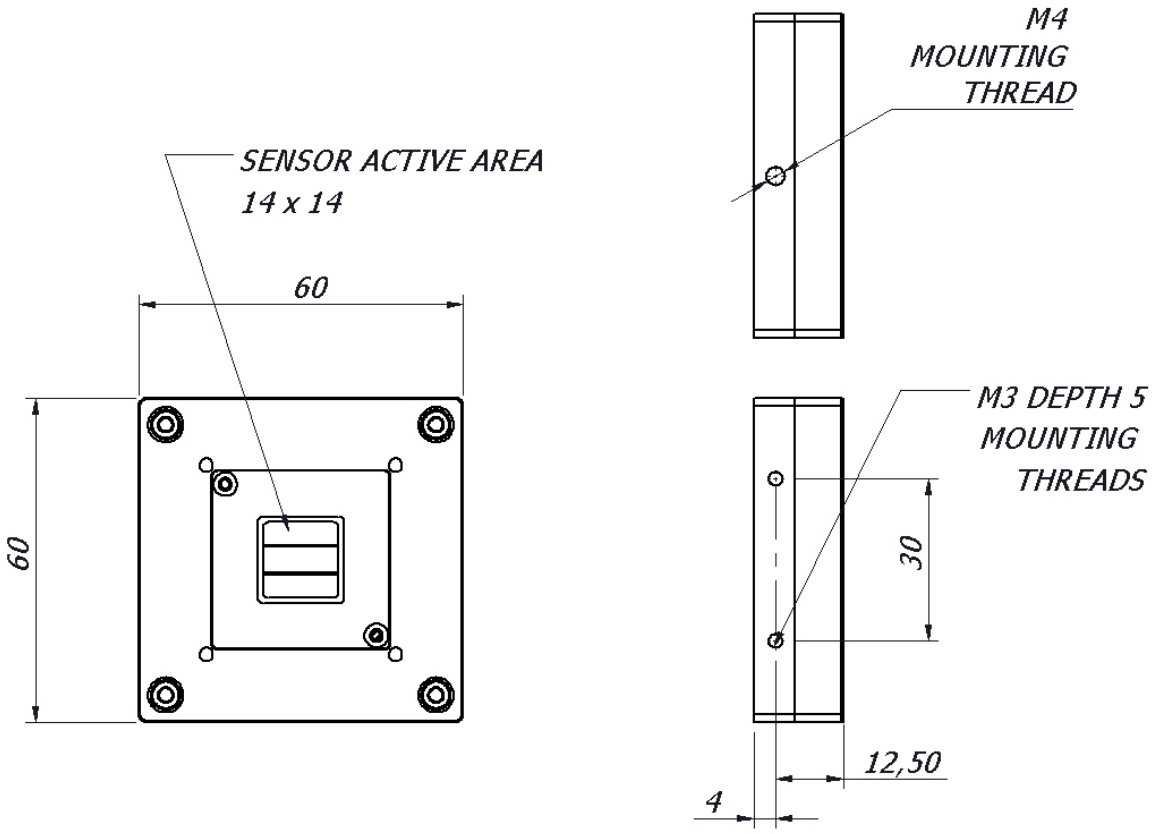
N°	PARAMETER	CONDITIONS	SYMB.	MAX	UNIT
1	Max Power (max 2 sec exposure, max 20% duty cycle)	E_P=1 mJ, τ_P=200ns	P_O	15	W
2	Max Avg Power Density	E_P=1 mJ, τ_P=200ns P_O=5W	D_{PO}	0.1	kW/cm^2
3	Max Energy Density	4ns @1064nm	D_t	35	mJ/cm^2
4	Maximum Energy per pulse	4ns @1064nm, single shot	D_{Ep}	10	mJ
5	Sensor Max temperature			60	°C

3.3. Optical and Electrical Specifications

N°	PARAMETER	CONDITIONS	SYMB.	MIN	TYP	MAX	UNIT
1	Absorber spectral range		λ	0.1	-	10.6	µm
2	Calibration spectral range*		λ_c	-	0.355, 0.532, 1.07; 10.6	-	µm
3	Average Power		P_O	-	-	5	W
4	Energy Single Shot	1064nm, τ_P < 10 ns 1064nm, τ_P = 10 µs	E_p	0.25 20	-	40 1000	µJ µJ
5	Sensitivity	R_L (single channel): 50 Ω R_L (single channel): 1 MΩ	S_{1064}	- -	2 4	- -	mV/W mV/W
6	Calibration Accuracy on Energy and Power			-	-	±5	%
7	Measurable Rep. Rate	$\tau_P \leq 4$ ns	f_{rep}	0**,1e-3***	-	1	MHz
8	Decay Time	$\tau_P \leq 4$ ns	T_{100-10}	-	260	-	ns
9	Spatial Uniformity	ø = 3mm; 80% Active Area	σ_{xy}	-	-	±5	%
10	Minimum beam diameter		ø	3	-	-	mm
11	Power Linearity		σ_p	-	-	±2.5	%
12	Energy Linearity	Vs pulse duration	σ_{Ep}	-	-	±2.5	%
13	Linearity vs T_{OP}		σ_{Top}	-	-	±2.5	%
14	Coating Type		T	-	T	-	-
15	NEP (with dedicated electronics)	B_W = 250 MHz		-	0.1	-	W
16	Diffuser		D	-	N	-	Y/N

* Other wavelengths on request.
** Bare sensor
*** With dedicated HSM electronics

3.4. Mechanical Specifications



N°	PARAMETER	TYP.	UNIT
1	Outer Dimensions	60x60x16.5	mm
2	Weight	130	g
3	Active Area	14x14	mm
4	Connection Cable Length	2	m
5	Connector Type	Hirose IX	-
8	Available Absorber Types	Broadband λ = 1064nm → S_{1064} λ = 355nm → $S_{355} = S_{1064} / 0.85$ λ = 10.6µm → $S_{10600} = S_{1064} / 3.5$ (10.6µm Reflectivity Warning)	
9	Packing	Antistatic Bag With Label	-

4. Operating Instructions

Operate within the specified laser damage thresholds.
Keep clean and do not touch the active area.

5. Electrical Connections and Filters

It is recommended that both output channels are first filtered using 200 MHz low pass filters.
The total output signal can be then extracted as the differential signal between the two signal cables.
Output signal must be sampled with a minimum rate of 500 MSps.
Peaks of typical signals range from few mVolts to few Volts.
The calculated peaks areas are proportional to the pulse energy.
Peak values are also proportional to pulse energy, but are dependent on energy power density, hence dependent on laser pulse duration.

6. Warranty

P/N BM-A-5W-14-TX-ENH is covered by one-year warranty from the date of shipment.
Warranty applies against material and/or workmanship defects, provided that the instrument has been used under specified operating conditions; the warranty does not cover damages related to accident or misuse.
During the warranty period Laser Point srl will repair or, at their option, replace any P/N BM-A-5W-14-TX-ENH or components that proves to be defective provided the parts are returned, shipping prepaid to Laser Point Customer Service or to another facility, authorized by Laser Point.
Any attempt by an unauthorized person or entity to alter or repair the product voids its warranty.
No other expressed warranty is given by Laser Point.
Customers must fill in and mail the warranty card in order to validate the guarantee.
In case of instrument malfunctioning or failure, contact Laser Point directly or its local distributor to obtain a Return Material Authorization Number (RMA).
The material should be returned, transportation and insurance prepaid, to:

Laser Point srl
Customer Service
Via Burona, 51
I-20055 Vimodrone
Italy
E-mail:
sales@LaserPoint.it

Laser Point assumes no risk for the possible damage during shipping.

7. Limited Liability

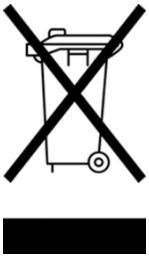
For a free of charge warranty service, please provide a description of failure or encountered problems when filling the RMA request form.
Laser Point will, at its option, repair or replace the defective product free of charge. However, if Laser Point determines that the failure was caused by misuse, alterations, accident or abnormal condition of operation or handling, Customer will be billed for the repair and the repaired product will be returned to Customer, transportation and insurance prepaid.

8. Compliance to RoHS Directive (RoHS 2015/863)

The European (RoHS) Directive about Restriction of Hazardous Substances (RoHS 2015/863) aims to minimise the environmental impact of waste of electrical and electronic equipment by reducing the quantities of four heavy metals and two brominated flame retardants.
Laser Point P/N BM-A-5W-14-TX-ENH is a product compliant to RoHS European Directive.

9. European Union WEEE Directive (WEEE 2012/19/EU)

The European Waste Electrical and Electronic Equipment (WEEE) Directive (WEEE 2012/19/EU) is represented by a crossed-out garbage container label (see below). The purpose of this directive is to avoid the disposal of WEEE as unsorted municipal waste and to facilitate its separate collection.



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