

#### Mini MICRO PULSE LIDAR SYSTEM

System Information MiniMPL 5032

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# Instrument Configuration

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MiniMPL-532 Serial No. 5032

Model number	MiniMPL-532-C
Customer purchase order number	436310
Laser emission wavelength	532 nm
Laser repetition rate	2500 Hz
Optimal laser output range	4 µJ
Laser type	AOTK SuperD-M-532
Laser serial number	1600056
Detector module number	SPCM-AQRH-14-FC
Detector head serial number	27421-1
AMCS card serial number	006
MPL software version	SigmaMPL 2015R2.0
Interference filters	Lot 123569 #7 Lot 106456 #18
Temperature during collimation	20.1 °C

#### **MiniMPL OPTICAL REQUIREMENTS**

Transmitted Beam Properties		Sigma Measurement	
Wavelength	532.1 nm		
Laser repetition rate	4KHz/2.5KHz		
Eye safety	ANSI Class II		
Transmit/Receive telescope diameter	80 mm		
Laser output energy	3.5-4uJ	3.6 μJ	
Laser energy monitor minimum reading	<0.35uJ	0.68 μJ (Variance Noted)	
Laser pulse width	<25 nsec (< 15 nsec preferred)	7.2 ns	
Laser ND filter attenuation	20%-70%	69 %	
Laser trigger pulse width	0-400us	240 μs	
Laser blur 1/e^2 encircled energy (at	< 30 urad	21 7 urad	
ideal/alignment temperature)		21.7 μ.00	
Transmitter efficiency	>70% (from after beam expander	73 45 %	
	to telescope exit)		
Alignment temperature	19.0 °C - 24.0 °C	20.1 °C	

#### **Receiver Properties**

Field of view	200-240 μrad full angle	200.8 μrad	
Laser-FOV boresight centering accuracy	+/- 10 μrad	2.3 μrad	
	Each filter: < <u>0.2 nm FWHM</u> . Out of	Filter 1 efficiency: 68.6 %	
Spectral filtering (2 filters in series)	band rejection > 1e-5 from 300-	Filter 2 efficiency: 61.1 %	
	1200 nm, > 50% transmission at	Measured transmission of filter pair in	
	laser wavelength.	series in fiber assembly tube: 29.53 %	
LC contrast ratio	>100:1	313	
LC switching time	Visual inspection. Attach the		
	transition graph in the file list.	122 us	
	0-100% transition <200us	155 μs	
	(10%-90% transition<100us)		
Overall receiver efficiency	> 20% (including detector		
	quantum efficiency: > 10%)		
	Breakdown of each stage:	20.22.%	
	Telescope to before fiber	20.22 /6	
	assembly: 75%		
	Fiber assembly: 30%		
Detector dark counts	Min of top 3 reading < 100 Hz in		
	the default noise	< 100 Hz	
Afternulse	Min of top 3 reading < 500 Hz in		
	the default noise for MPL		
	transmitted laser energy of 3.5-4		
Alterpuise	uJ/pulse. Max number of		
	saturated bins: 1, signal fall off (to		
	at least 10%) by bin:3		
Afterpulse without LC	Required if afterpulse exception is	N/A	
	requested		



## MiniMPL Transmitter—Receiver Boresight Co-Alignment



## **Energy Monitor Calibration**

### **Narrowband Filter Data**





## **Detector Specifications**

dentification Part Number:	SPCM-AORH	-14-F	с		
Module Serial Num	ber: 27421-1				
Performance Data					
Parameters	Minimum	Me	asured	Maximum	Units
Dark Count			17	100	Hz
Maximum Light Count	10		44.5		MHz
Dead Time (@ < 1 Mc/s)			20,1	40	ns
Pulse Width			6.6		ns
Connectorized PD @ 550nm	45		48	1000	%
Correction factor: - @ 5 Mc/s (See attached curve) - @ 10 Mc/s			1.18 1.38	1.67	••••
Total After-pulse: 100ns to 500ns			0.1	1	%
Sating Information					
Parameters	Minin	num	Typical	Maximum	Units
Gate Turn On/Off (50 ohm input)					
Disable = TTL Low	1	••	26	32	ns
Enable = TTL High		••	52	61	ns
Gate Thrshold Voltage (@ Vsupply =	5V)				1972
Low Level (Sink Current > 90 mA)		0		0.8	V
High Level (Sink Current < 30 mA)		2		5.25	v
Tested by: L.Demers	Date:	Date: 10-Jul-15			
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