

2.2.3 Pulsar Multichannel and Triggered USB Interfaces

Convert your laptop or desktop PC into a multichannel power/energy meter

- From sensor to interface to PC
- 1,2 and 4 channel models
- Plug and play with most Ophir sensors
- Record every energy pulse at up to 25kHz
- Measure missing pulses & trigger output with external trigger
- Log power and energy, average, statistics, histograms and more with included StarLab application
- LabVIEW VIs, COM Object Interface and ActiveX software included



Smart Sensor to Pulsar to PC

Ophir's 1-4 channel Pulsar interface turns your PC or laptop into a full fledged Ophir multi-channel laser power/energy meter. Just install the software, plug the sensor into the Pulsar and the USB cable from the Pulsar to the PC USB port. With the Pulsar series, you can connect up to 4 sensors to each module, monitor each pulse at up to 25kHz and utilize external trigger.



LabVIEW



Pulsar-4 operating with StarLab software

Specifications

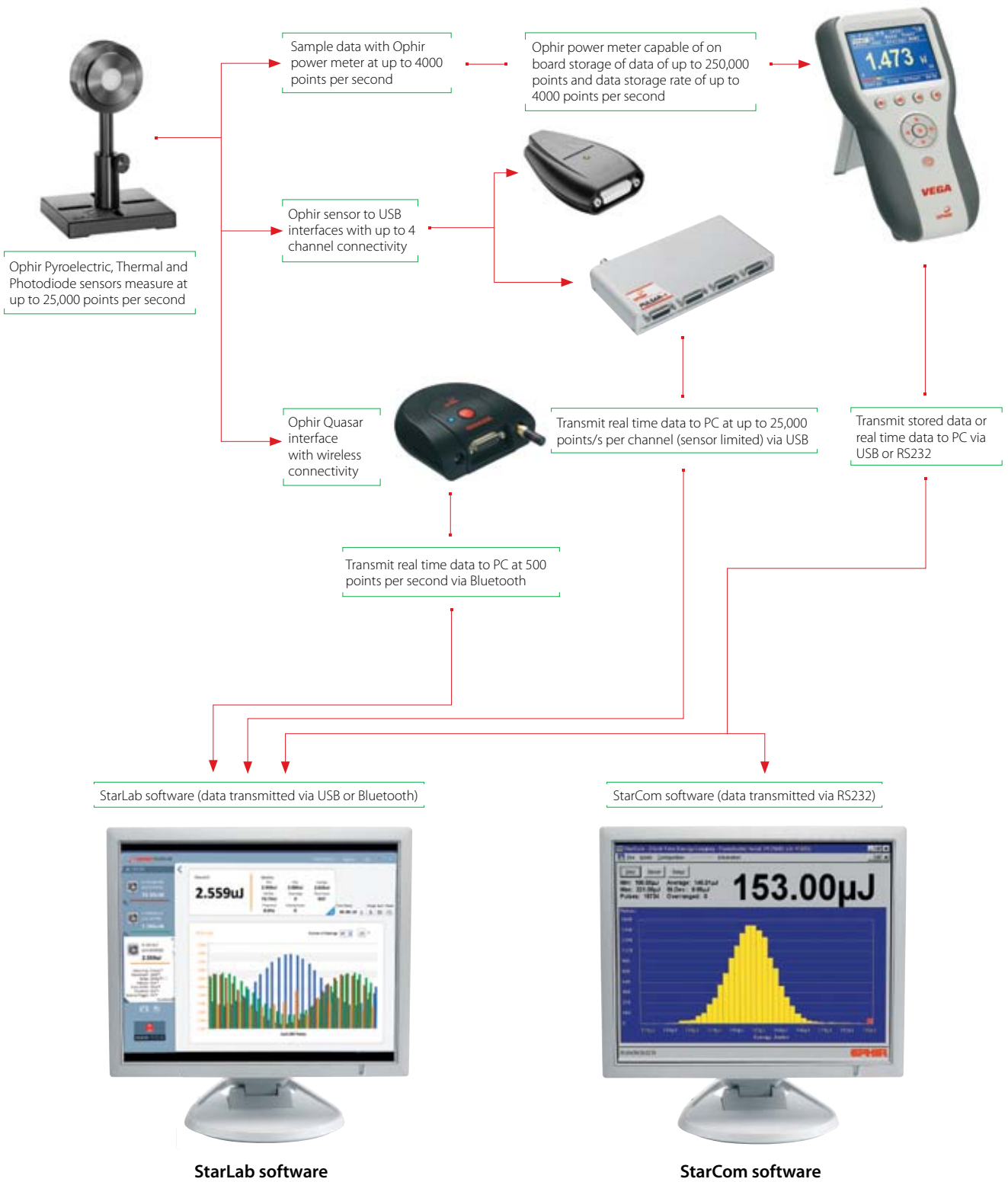
Power Measurement	
Power log period	5s to 500hr.
Energy Measurement	
Max real time data logging to PC	25,000Hz ^(a)
Trigger input and output	BNC trigger input to enable measurement of missing pulses or to select specific pulses. Can also be configured to give trigger output
Timing	Supports time stamp for each pulse - resolution 1µs
General	
Number of sensors supported	4 / 2 / 1 sensors per unit. Can combine several units with software for display of up to 8 sensors on one PC
Compatible sensors	Supports all standard Ophir pyroelectric, thermal and photodiode sensors ^(b)
Power supply	12V wall cube power supply plugs into jack on rear. The power supply can be ordered from your local distributor.
Dimensions	189 x 103 x 33mm
Notes:	(a) Limited by the maximum repetition rate of the sensor. At present only the PE9-F can operate up to 25000Hz (b) Not including RP, PD300-CIE and BC20 sensors

Ordering Information

Item	Description	Ophir P/N
Pulsar-4	Module to operate up to 4 Ophir sensors from your PC USB port. Comes with software. Max repetition rate for every pulse 25kHz. Has external trigger capability. Powered from wall cube power supply (can be ordered from your local distributor).	7Z01201
Pulsar-2	Same as above but for 2 channels only	7Z01202
Pulsar-1	Same as above but for 1 channel only	7Z01203
Pulsar USB Cable	USB-A to B cable (1 unit supplied with Pulsar)	7E01202
USB Interface (USB) legacy	Legacy smart sensor to USB interface with similar performance to Juno but larger size. Has analog output. See summary page 112 for specifications	7Z01200

2.2 PC Interfaces

2.2.1 PC Connectivity Options for Power/Energy Measurement



2.2.5 Summary of Computer Options for Ophir Meters and Interfaces

Communications

With Ophir RS232, USB, Bluetooth and GPIB communication options you can transfer data from the sensor to the PC in real time or offline. You can also control your Ophir power meter from the PC.

- USB standard on Nova II, Vega, StarBright (optional on StarLite) power meters and Juno, Pulsar and USBI PC interfaces
- Bluetooth wireless on the Quasar interface
- RS232 standard with the Laserstar, Nova II, Vega and StarBright optional on the Nova
- GPIB optional with the Laserstar

Ophir Power Meter and Interface Specifications

Model	Nova	Laserstar	Nova II / Vega	StarBright	StarLite	Pulsar-1, 2 or 4	Juno	USB interface (legacy)	Quasar Bluetooth
Communication method	RS232	RS232 / GPIB	USB / RS232	USB / RS232	USB ^(d)	USB	USB	USB	Bluetooth
Power Measurement									
Power log period	5s to 24hr.	12s to 600hr.	12s to 600hr.	1s to 1000hr.	N.A	5s to 500hr.	5s to 500hr.	5s to 500hr.	5s to 500hr.
Max points stored onboard	300	5400	Nova II 5400 Vega 27000	unlimited	N.A	N.A	N.A	N.A	N.A
Max points direct on PC	unlimited	unlimited	unlimited	unlimited	N.A	unlimited	unlimited	unlimited	unlimited
Analog output	1V F.S.	1V F.S.	1V, 2V, 5V, 10V F.S.	1V, 2V, 5V, 10V F.S.	1V F.S.	N.A	N.A	1V F.S.	N.A
Energy Measurement									
Max real time data logging to PC	>10Hz	>30Hz RS232 >1500Hz GPIB ^(a)	>2000Hz USB ^(a) >30Hz RS232	5000Hz USB 30Hz RS232	20Hz ^(c)	25,000Hz ^(a)	10,000Hz ^(a)	2000Hz ^(a)	500Hz
Max onboard data logging rate	>10Hz	>1500Hz ^(a)	4000Hz ^(a)	5000Hz	N.A	N.A	N.A	N.A	N.A
Data transfer rate of a data file from instrument to PC	~50 points/s	~500 points/s	~500 points/s	~500 points/s	N.A	N.A	N.A	N.A	N.A
Max points stored onboard	1000	59,400	Nova II 59,400 Vega 250,000	unlimited	N.A	N.A	N.A	N.A	N.A
Trigger input and output	N.A	N.A	N.A	N.A	N.A	BNC trigger input to enable measurement of missing pulses. Can also be configured to give trigger output	N.A	N.A	N.A
Timing - time stamp for each pulse	N.A	N.A	N.A	resolution 1µs	N.A	resolution 1µs	resolution 10µs	resolution 50ms	resolution 10ms
General									
Automation interface	no	no	yes	yes	yes ^(c)	yes	yes	yes	no
LabVIEW Vis	yes	yes	yes	yes	yes ^(c)	yes	yes	yes	no
Maximum baud rate	19200 ^(b)	38400	38400	115200	N.A	N.A.	N.A.	N.A.	N.A.
PC file format	Text files, spreadsheet compatible ASCII								
Number of sensors supported	One sensor per unit.	One sensor per unit for single channel mode. Two sensors per unit for dual channel mode.	One sensor per unit. Can combine several units with software for display of up to 8 sensors on one PC	One sensor per unit. Can combine several units with software for display of up to 8 sensors on one PC	One sensor per unit. Can combine several units with software for display of up to 8 sensors on one PC	4 / 2 / 1 sensors per unit. Can combine several units with software for display of up to 8 sensors on one PC	One sensor per unit. Can combine several units with software for display of up to 8 sensors on one PC	One sensor per unit. Can combine several units with software for display of up to 8 sensors on one PC	One sensor per unit. Can combine several units with software for display of up to 7 Quasars on one PC
Compatible sensors	Supports most Ophir pyroelectric, thermal and photodiode sensors								
Power supply	Powered from internal rechargeable battery power supply	Powered from internal rechargeable battery power supply	Powered from internal rechargeable battery power supply	Powered from internal rechargeable battery power supply	Powered from internal rechargeable battery power supply	12V wall cube plugs into jack on rear	Powered from USB	Powered from USB	Powered from internal rechargeable battery power supply
Dimensions	205 x 95 x 39mm	228 x 195 x 54mm	208 x 117 x 40mm	213 x 113 x 40mm	213 x 113 x 40mm	189 x 103 x 33mm	76 x 55 x 22mm	155 x 90 x 34mm	96 x 95 x 36mm

Notes:

(a) The above refers to the rate for logging every single point in turbo mode. Above that rate, the instrument will sample points but not log every single point.

(b) For pyroelectric sensors, maximum guaranteed baud rate is 9600.

(c) StarLite must be USB enabled in order to work with StarLab. If your StarLite has not been USB enabled, please contact your Ophir distributor in order to obtain a USB Activation Code.

2.3 Software Solutions

2.3.1 StarLab

StarLab turns your PC into a laser power/energy multi-channel station

Extensive Graphic Display of Data

- Line Plot, Histogram, Bar chart, Simulated Analog Needle
- Multiple data sets on one graph or separate graphs on the same screen

Advanced Measurement Processing

- Power/Energy Density, Scale Factor, Normalize against a reference
- Multi-channel comparisons
- User defined mathematical equations: channels A/B, (A-B)/C etc.
- Position & size measurement with BeamTrack sensors

Data Logging for Future Review

- Can be displayed graphically or saved in text format
- Easily exported to an Excel spreadsheet

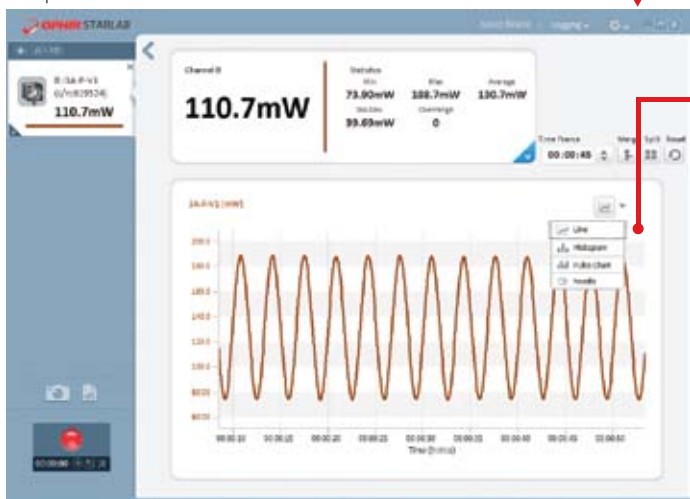
Fully supports StarBright, StarLite, Vega, Nova-II, Pulsar, Juno and USBI devices with all standard Ophir sensors

Flexible Display Options with StarLab

Choose which channels to display



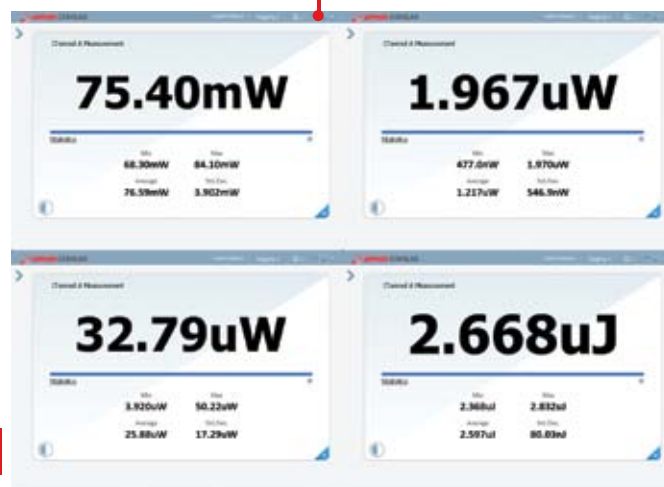
Setup screen



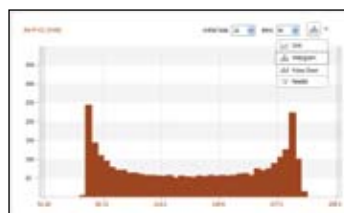
One of the above screens is maximized

You may choose to display them separately

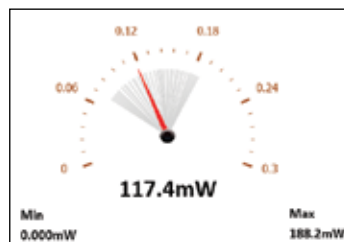
Maximize one of the sources



Choose line graph

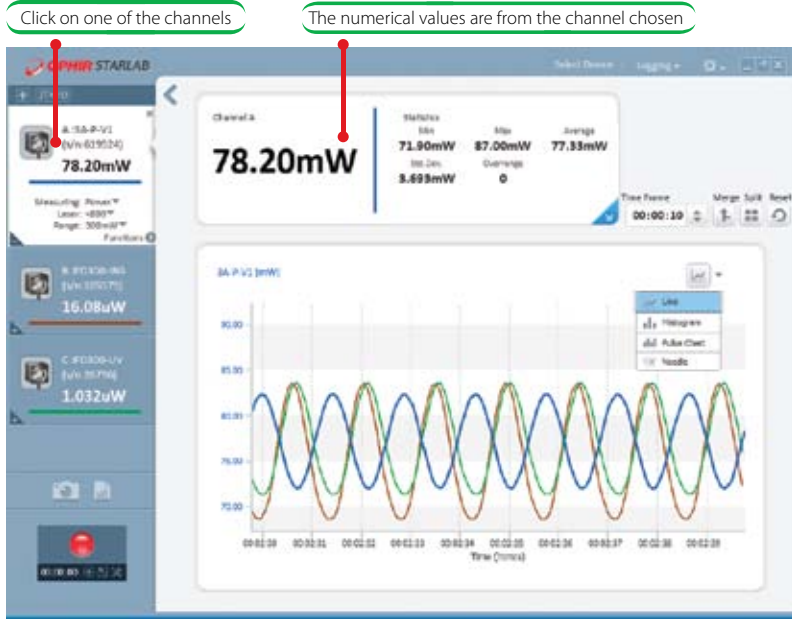


or histogram



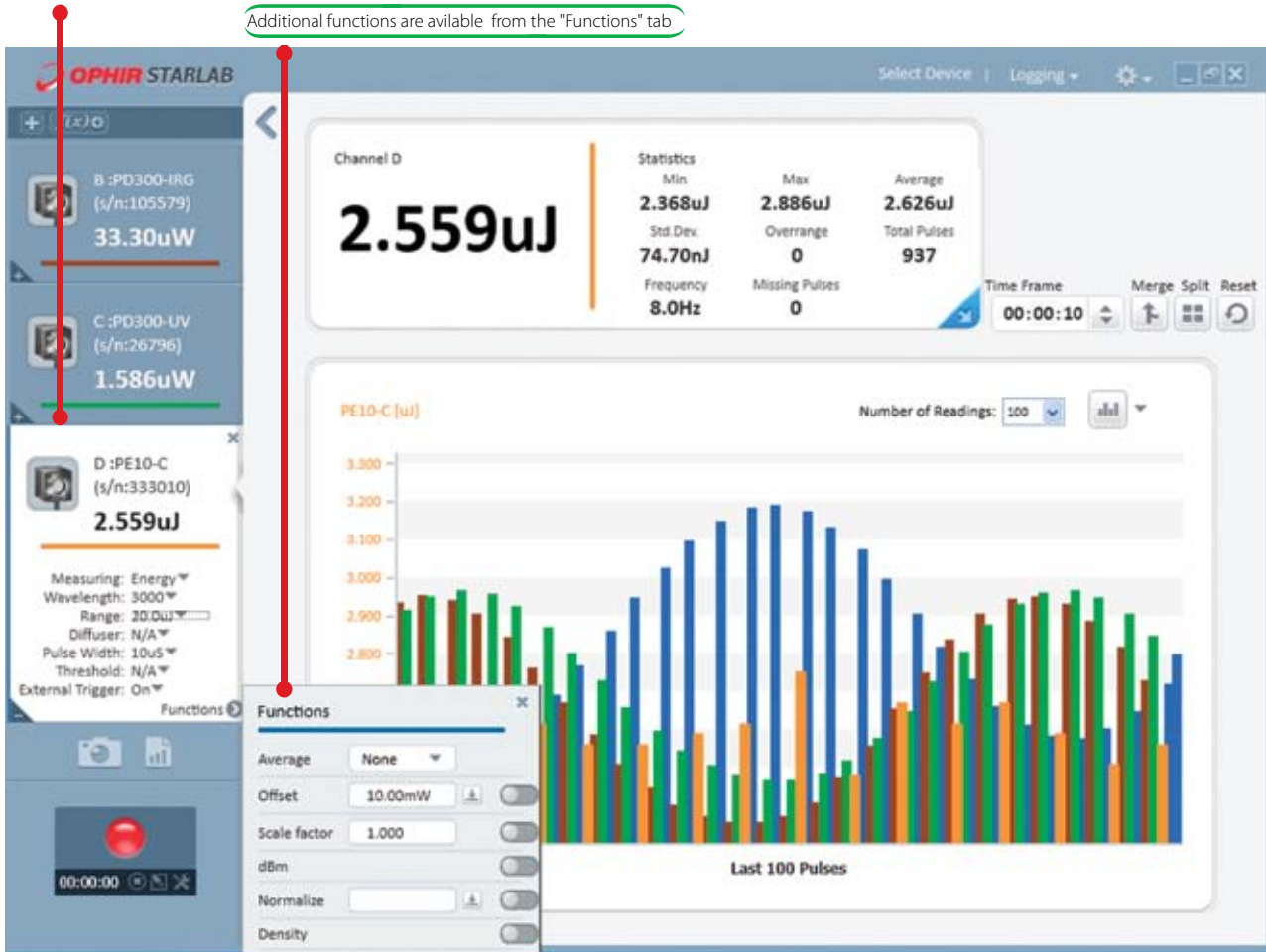
or needle display

Multiple Sensors displayed together



Here multi line graph display has been chosen

Settings and functions may be opened to adjust then minimized as needed



Here multi line histogram display has been chosen

Functions and Logging

Functions

Click on f(x) to open another trace combining measured values

Define function combining measured values

New trace is now added per defined function

Logging

Files are stored here. They may be viewed graphically OR numerically

Click on log button and logging of values starts



```

:PC software:starLab version 3.00 build 19
:Logged:25/05/2014 at 09:33:22
:channel 8:vega Thermopile 3A-P-V1 (s/n:999999) VU2.31 (s/n:657028)
:channel A:Juno Photodiode PD300 (s/n:694646) JN1.24 (s/n:606180)
:Math M:(A-B)*2

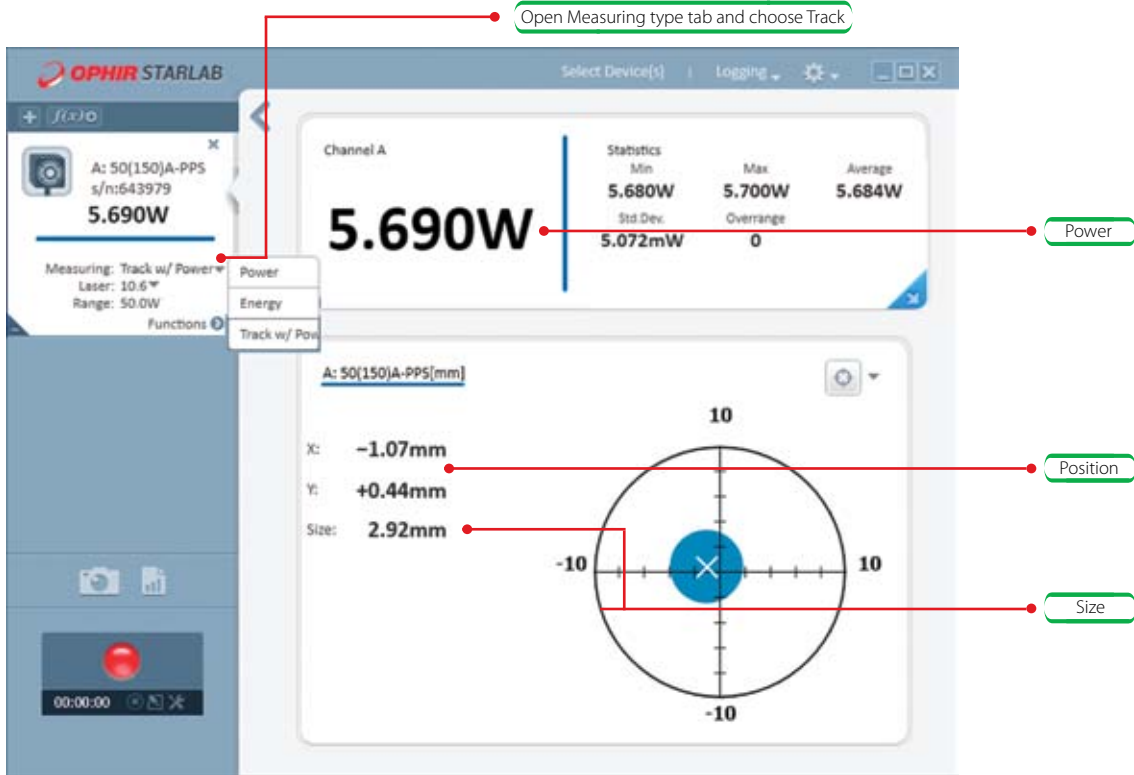
:channel 8:statistics
:Min:3.440mw
:Max:12.22mw
:Average:7.882mw
:Std.Dev.:3.078mw
:Overrange:0

:First Pulse Arrived : 25/05/2014 at 09:33:22.562000

```

Timestamp	Channel 8	F(B)	Channel A	Math M
0.000	1.762e-002	6.620e-003		
0.064	1.836e-002	7.360e-003		
0.128	1.911e-002	8.110e-003		
0.136			1.067e-002	6.554e-006
0.192	1.986e-002	8.860e-003		
0.203			8.480e-003	1.444e-007
0.256	2.057e-002	9.570e-003		
0.269			6.540e-003	9.181e-006
0.321	2.123e-002	1.023e-002		
0.354			4.900e-003	2.841e-005
0.384	2.182e-002	1.082e-002		
0.406			3.550e-003	5.285e-005
0.449	2.232e-002	1.132e-002		
0.865	2.291e-002	1.191e-002		
0.870			3.400e-004	1.339e-004
0.928	2.258e-002	1.158e-002		
0.936			3.600e-004	1.259e-004
0.993	2.216e-002	1.116e-002		
1.003			4.800e-004	1.141e-004
1.056	2.164e-002	1.064e-002		
1.070			7.600e-004	9.761e-005
1.120	2.104e-002	1.004e-002		
1.136			1.340e-003	7.569e-005
1.184	2.038e-002	9.380e-003		
1.203			2.370e-003	4.914e-005
1.664	1.558e-002	4.580e-003		

BeamTrack Power/Position/Size Screens



Power / Position / Size screen



Position stability screen

Displays beam center wander weighted for dwell time at each position