2.2.2 Compact Juno USB Interface

Convert your laptop or desktop PC into an Ophir sensor power/energy meter

- From sensor to interface to PC - no power source needed
- Plug and play with all standard Ophir smart sensors
- Position & size measurement with BeamTrack sensors
- Record every energy pulse at up to 10kHz
- Log power and energy, average, statistics, histograms and more with included StarLab application
- LabVIEW VIs and COM Object interface
- Very compact - is just an extension of the smart plug


Smart Sensor to Juno to PC

Ophir's basic smart compact Juno module turns your PC or laptop into a full fledged Ophir laser power/energy meter.
Just install the software, plug the sensor into the Juno module and connect the Juno with a standard USB cable to the PC USB port.
Using the Juno, you can connect several sensors to the PC by using one Juno module for each sensor and, if necessary, a USB hub.

LabVIEW

Juno operating with StarLab software
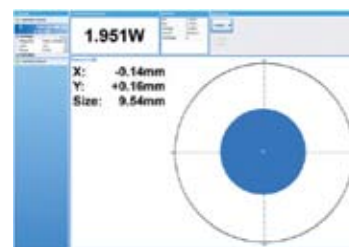
Juno with BeamTrack sensor and StarLab showing beam power, position and size
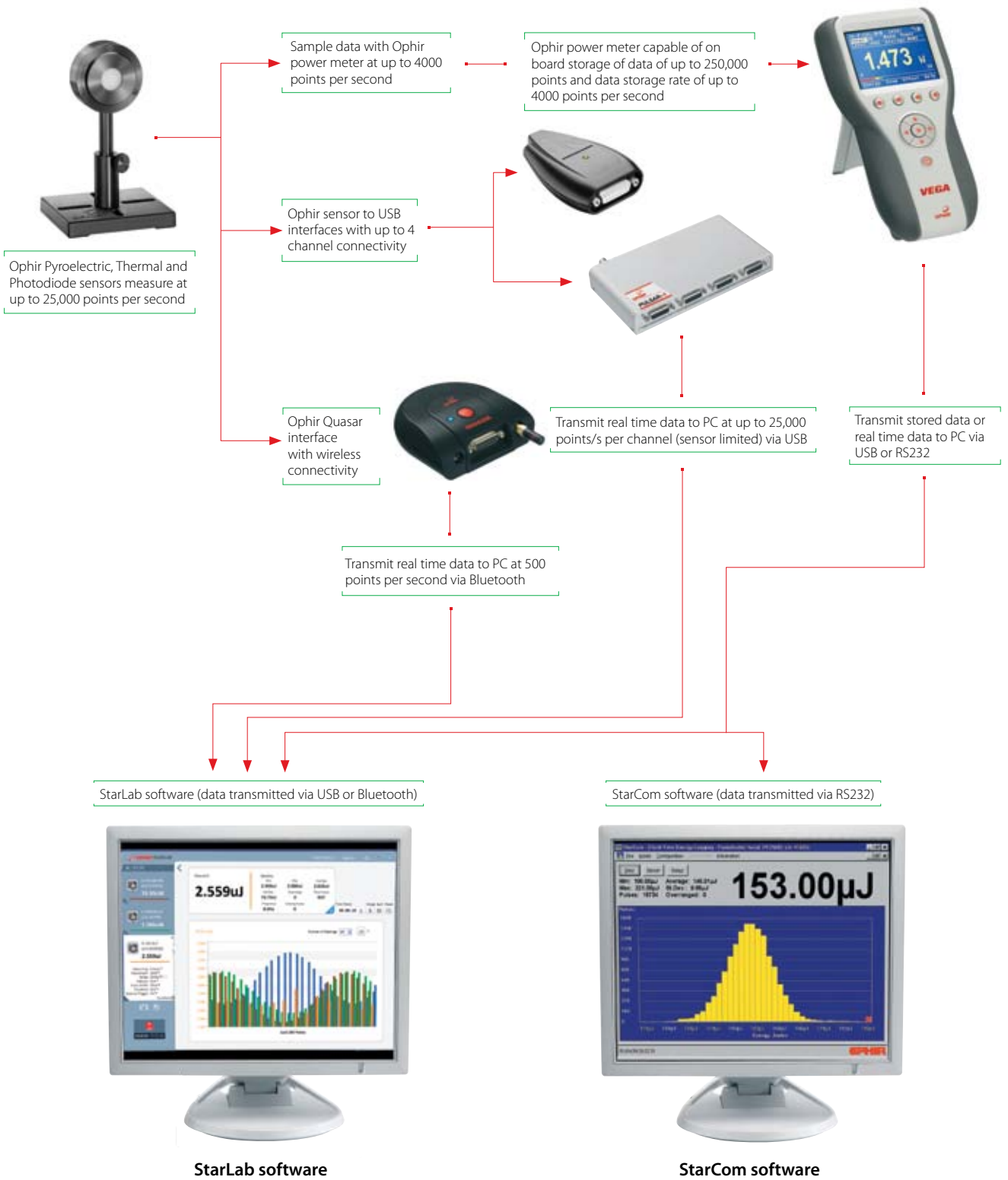
Specifications

Power Measurement	
Power log period	5s to 500hr.
Energy Measurement	
Max real time data logging to PC	10,000Hz (a)
Trigger input and output	N.A.
Timing	Supports time stamp for each pulse - resolution 10µs
General	
Number of sensors supported	One sensor 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, BeamTrack and photodiode sensors (b)
Power supply	Powered from USB
Dimensions	76 x 55 x 22mm
Notes:	(a) This is the data logging rate for every single point in turbo mode. Above that rate, the instrument will sample points but not log every single point (b) Not including RP, PD300-CIE and BC20

Ordering Information

Item	Description	Ophir P/N
Juno	Compact module to operate one Ophir sensor from your PC USB port. Comes with software. Max repetition rate for every pulse 10kHz. Powered from PC USB port	7Z01250
Juno USB cable	USB-A to MINI-B Cable (1 unit supplied with Juno)	7E01217

2.2 PC Interfaces

2.2.1 PC Connectivity Options for Power/Energy Measurement

Sample data with Ophir power meter at up to 4000 points per second

Ophir power meter capable of on board storage of data of up to 250,000 points and data storage rate of up to 4000 points per second

1.473 W

VEGA

Ophir Pyroelectric, Thermal and Photodiode sensors measure at up to 25,000 points per second

Ophir sensor to USB interfaces with up to 4 channel connectivity

Ophir Quasar interface with wireless connectivity

Transmit real time data to PC at up to 25,000 points/s per channel (sensor limited) via USB

Transmit stored data or real time data to PC via USB or RS232

Transmit real time data to PC at 500 points per second via Bluetooth

StarLab software (data transmitted via USB or Bluetooth)

StarCom software (data transmitted via RS232)

2.559uJ

153.00µJ

StarLab software

StarCom software

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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 [c]	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.

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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
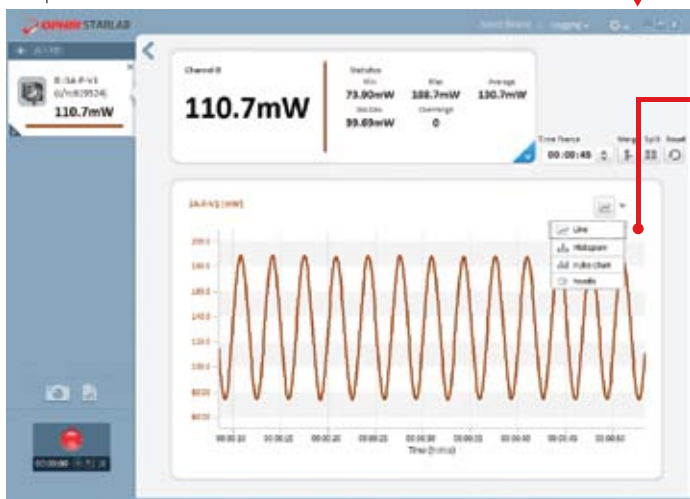- Easily exported to an Excel spreadsheet

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

Flexible Display Options with StarLab
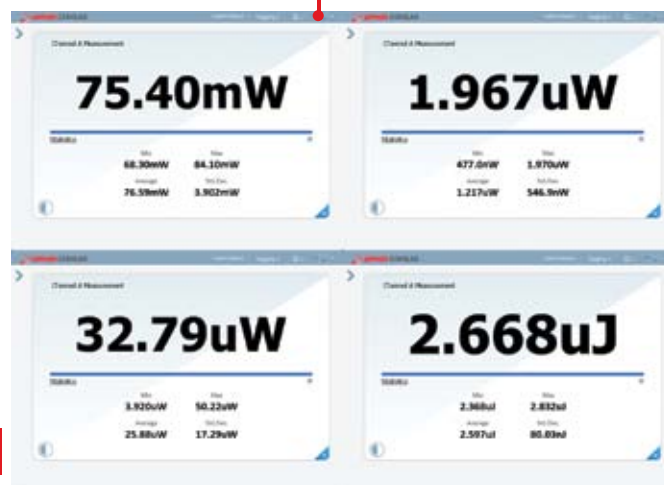
Choose which channels to display
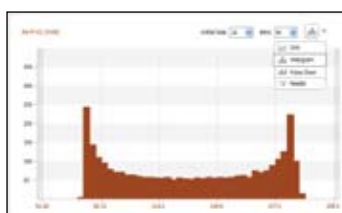

Setup screen

One of the above screens is maximized

You may choose to display them separately

Maximize one of the sources
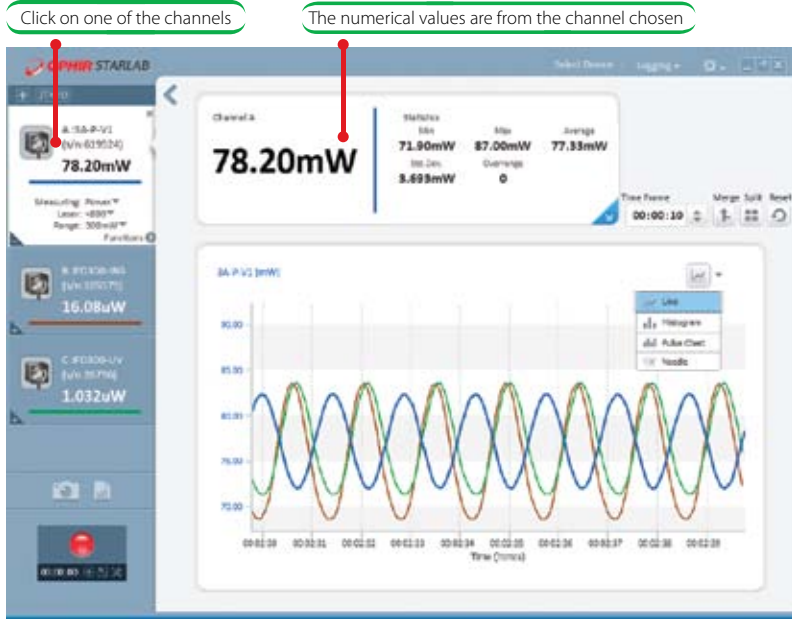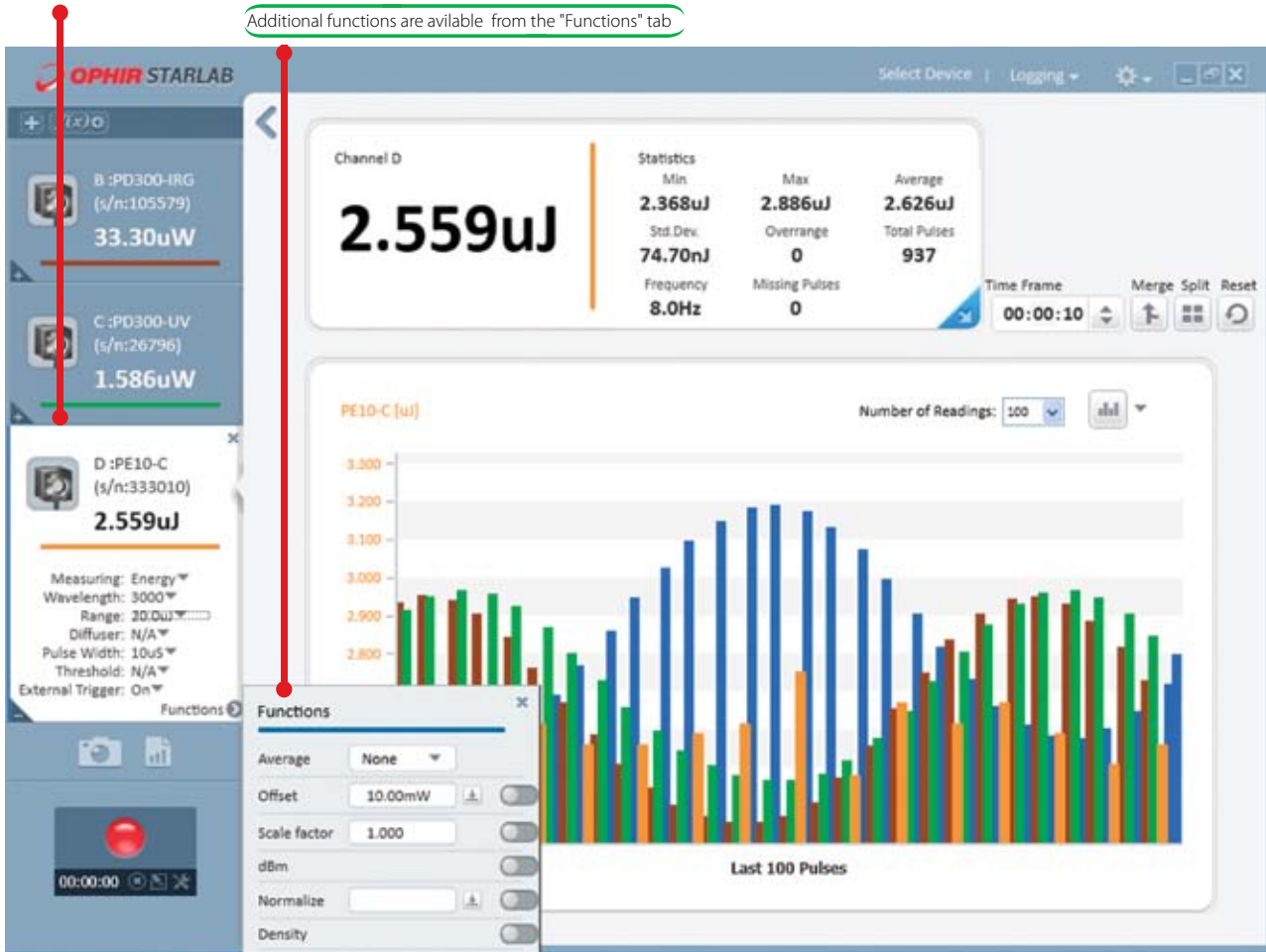

Choose line graph

or histogram

or needle display

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Multiple Sensors displayed together

Click on one of the channels

The numerical values are from the channel chosen

Here multi line graph display has been chosen

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

Additional functions are avilable from the "Functions" tab

Here multi line histogram display has been chosen

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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

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

Logging

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 B:Vega Thermopile 3A-P-V1 (s/n:999999)  VG2.31 (s/n:657028)
:Channel A:Juno Photodiode PD300 (s/n:694646)  JN1.24 (s/n:606180)
:Math M:(A-B)^2

:Channel B: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 B      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
        0.193  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
```
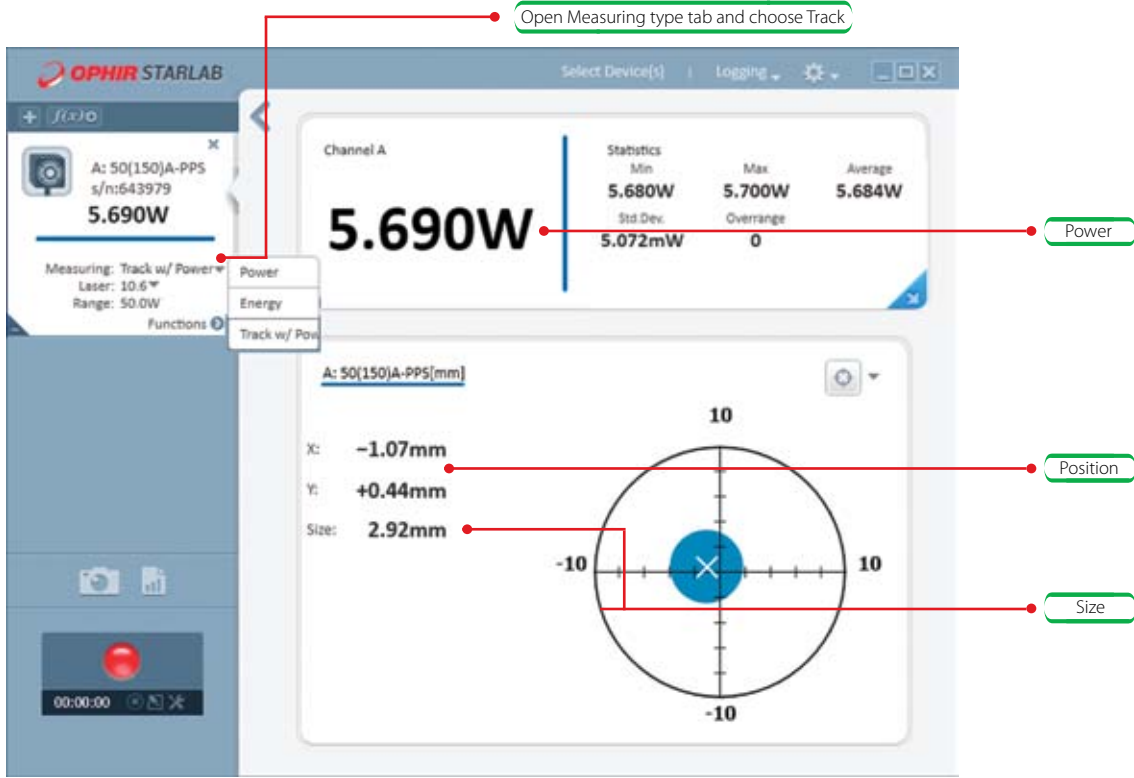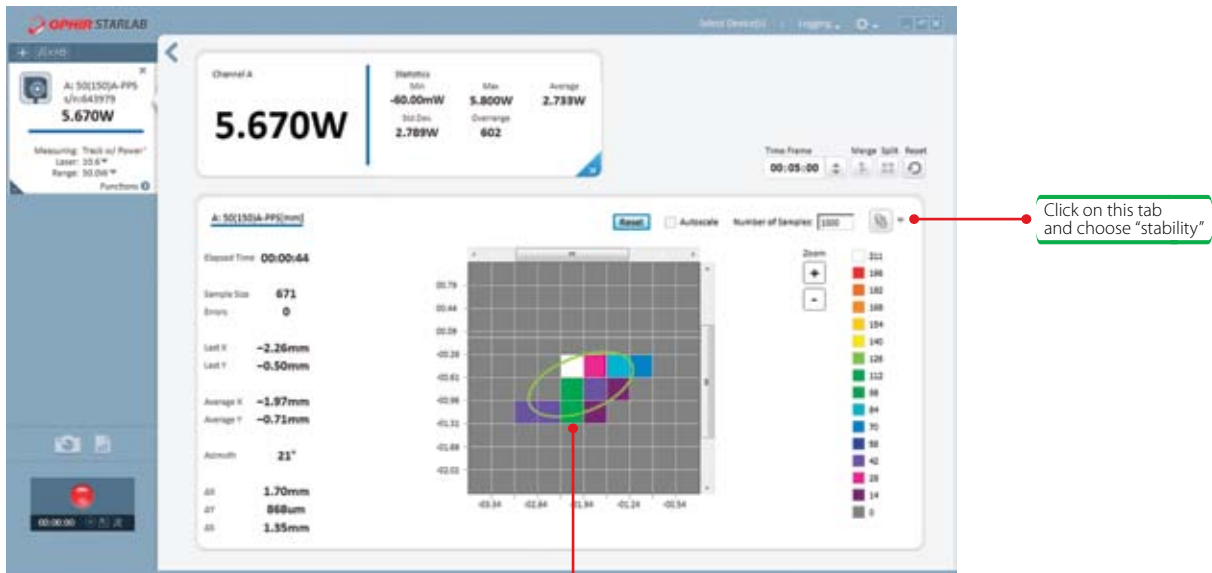
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BeamTrack Power/Position/Size Screens

Power / Position / Size screen

Position stability screen

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