2025 POWER METERS

2.0 Power Meters & Interfaces
Power Meter Finder

The table below lists the specs and features of Ophir Power Meters and PC Interfaces

	Centauri Single & Dual Channel	StarBright	Vega	Nova II	StarLite	Nova
Digital Display	Yes	Yes	Yes	Yes	Yes	Yes
Display Color	Color	Color	Color	Monochrome	Monochrome	Monochrome
Analog Display	Yes	Yes	Yes	Yes	Yes	No
Rechargeable Battery	Yes	Yes	Yes	Yes	Yes	Yes
Detector Support (see compatibility table below)						
Thermal Sensors	Yes	Yes	Yes	Yes	Yes	Yes
Photodiode Sensors	Yes	Yes	Yes	Yes	Yes	Yes
Pyroelectric Sensors	Yes	Yes	Yes	Yes	Yes	Yes
BeamTrack Sensors	Yes	Yes	Yes	Yes	Yes	No
Measurement Options						
Average Power	Yes	Yes	Yes	Yes	Yes	Yes
Energy per Pulse (Pyro. Sensors)	Yes	Yes	Yes	Yes	Yes	Yes
Single Shot Energy (Thermal Sensors)	Yes	Yes	Yes	Yes	Yes	Yes
Statistics	Yes	Yes	Yes	Yes	No	Yes
Analog Out	1V,2V,5V,10V	1V,2V,5V,10V	1V,2V,5V,10V	1V,2V,5V,10V	1V	1V
Trigger input & output	Yes	No	No	No	No	No
Real-Time Logging						
RS232	30Hz	30Hz	30Hz	30Hz	N/A	10Hz
USB	25,000Hz	5000Hz	2000Hz	2000Hz	20Hz*	N/A
Bluetooth	N/A	N/A	N/A	N/A	N/A	N/A
Ethernet	Yes	N/A	N/A	N/A	N/A	N/A
On-Board Data Storage	2GB	>10MB**	250kB	50kB	No	1kB
Automation Interface	Yes	Yes	Yes	Yes	Yes*	No
LabVIEW VI's	Yes	Yes	Yes	Yes	Yes*	Yes
Part number	7Z01700/ 7Z01701	7Z01580	7Z01560	7Z01550	7Z01565	7Z01500
Page in the catalog	173	175	177	179	181	183

* StarLite with USB enabled prestored (P/N 7Z01569) or with activation code (P/N 7Z11049) see page 182
** Depends on size of USB Flash Drive

Compatibility Table

Sensor \ Meter / Interface	Centauri	StarBright	Vega/ Nova II	StarLite	Nova	Juno	Juno+	Juno-RS	EA-1	Pulsar	Quasar	Legacy LaserStar
Supports full calibration curve for sensors so calibrated *	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	no
BeamTrack sensors	yes	yes	yes	yes	Power/Energy only	yes	yes	yes	yes	Power/Energy only	Power/Energy only	Power/Energy only
BC20 sensor	no	yes	yes	no	yes	yes	yes	no	no	no	no	yes
PD300-CIE sensor	yes	yes	yes	no	yes	yes	yes	yes	no	no	no	yes
PD300RM sensors	yes	yes	no	yes	no	no	yes	yes	no	no	no	no
PE-C Pyroelectric sensors	yes	yes	yes	yes	Needs adaptor (P/N 7Z08272) **Limited functions. See sensor page**	yes	yes	yes	yes	**Limited functions. See sensor page**	**Limited functions. See sensor page**	**Limited functions. See sensor page**
Legacy												
LP1 type Thermal sensors	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Previous generation Pyroelectric sensors (non PE-C)	no	no	yes	no	yes	yes	no	no	no	yes	yes	yes

* Some sensors are calibrated with a full spectral curve and the user selects any discreet, specific wavelength within the range. For other sensors, the specified spectral range is divided into regions, and the user is prompted to select the region (such as "<800nm"). For those sensors having the full curve, the table above shows which meters support the curve and prompt the user to select specific discreet wavelengths. When using meters that do NOT support this function, the user will only be able to select a number of specific wavelengths from within the range.

For latest updates, please visit our website: www.ophiropt.com

Juno	Juno+	Juno-RS	EA-1	Pulsar-1/2/4	Wireless Interface Quasar
N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A
Powered from USB	Powered from USB	12V	12V or PoE	12V	Yes
Yes	Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	No	No
Yes	Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes	Yes
Yes	Yes	Yes	Yes	Yes	Yes
No	1V, 2V, 5V, 10V	1V, 2V, 5V, 10V	No	No	No
No	No	No	No	Yes	No
N/A	N/A	500Hz	N/A	N/A	N/A
10,000Hz	10,000Hz	N/A	N/A	25,000Hz	N/A
N/A	N/A	N/A	N/A	N/A	500Hz
N/A	N/A	N/A	25,000Hz	N/A	N/A
No	No	N/A	N/A	No	No
Yes	Yes	Yes	Yes	Yes	No
Yes	Yes	No	No	Yes	No
7Z01250	7Z01252	7Z01254	7Z01240	7Z01203 / 7Z01202 / 7Z01201	7Z01300
187	188	189	190	191	192

Ophir power meters are true plug-and-play instruments. With all sensor information and calibration stored in the sensor plug, just plug in any one of over 150 Ophir sensors and the instrument is calibrated and configured to measure laser power and energy with that sensor.

Comparison of Hand Held Meters

Meter	Centauri	StarBright	Vega	Nova II	StarLite	Nova
Supported Sensors						
Standard Thermopile, Photodiode, PyroC sensors	X	X	X	X	X	"X (with adaptor)"
BeamTrack	X	X	X	X	X	
BC20		X	X	X		X
PD300-CIE	X	X	X	X		X
PD300RM	X	X			X	
Measurement Capabilities						
Parameter Configuration	X	X	X	X	X	X
Power & Energy	X	X	X	X	X	X
Exposure with Pyro	X	X	X	X		X
Position and Size with BeamTrack Sensors	X	X	X	X	X	
Beam Stability with BeamTrack Sensors	X	X	X	X		
Power From Pulse	X	X				
Irradiance		X			X	
Dosage		X			X	
Exposure with PD	X	X				
FAST Power	X					
POWER_SYNC (LowFreqPulse)	X	X				
Density	X	X	X	X		X
Scale Factor	X	X	X	X		X
Normalize	X	X	X	X		
Fixed Offset	X	X				
Mixing Functions Together	X	X				
Showing Function Results in Graphical Display	X	X	X	X	X	
PC Communication						
StarLab Support	X	X	X	X	X	
RS232	X	X	X	X		X
USB Communication	X	X	X	X	X [a]	
Ethernet	X					
LabVIEW Library	X	X	X	X	X	X
Max Real Time Delivery (points/s)	10,000 X 2 (PD) 25,000 X 2 (Pyro)	5,000	2,000	2,000	20	15
Graphical Displays Available at All Times						
Bargraph	X	X	X	X	X	X
Simulated Analog Needle	X	X	X	X	X	
Pass/Fail	X	X	X	X		
Line Graph for Both Power and Energy	X	X				
Pulse Chart for Both Power and Energy	X	X				
Real Time Statistics (not just when logging)	X	X				
Screen Specs						
Screen Size	7"	3.5"	3.5"	4"	3.5"	2"
Color Screen	X	X	X		X	
Other Features						
Analog Output (in Volts)	1, 2, 5, 10	1, 2, 5, 10	1, 2, 5, 10	1, 2, 5, 10	1	1
Raw Analog Output	X					
External Trigger	X					
TTL OUT	X					
Calibration Reminder	X	X	X	X		
Time Stamp	X	X				
Japanese	X	X	X	X	X	
Russian and Chinese	X	X			X	
French, Spanish, Italian, German, Korean	X					
Built in Help		X	X	X		

Note: (a) StarLite with USB enabled prestored (P/N 7Z01569) or with activation code (P/N 7Z11049) see page 182

Measuring Modes Available: Sensor Type / Device

Device	Sensor Type		
	Photodiode	**Thermopile / BeamTrack***	**Pyroelectric**
Centauri	Power Exposure Fast Power Low Freq Power	Power / Track* Energy Pulsed Power	Power Energy Exposure
StarBright	Power Exposure Low Freq Power	Power / Track* Energy Pulsed Power	Power Energy Exposure
Juno+	Power Low Freq Power	Power / Track* Energy Pulsed Power	Power Energy Exposure
Juno-RS	Power Low Freq Power	Power / Track* Energy Pulsed Power	Power Energy Exposure
Juno	Power Low Freq Power	Power / Track* Energy Pulsed Power	Power Energy Exposure (PyroC only)
EA-1	Power Low Freq Power	Power / Track* Energy	Power Energy
Nova II	Power	Power / Track* Energy	Power Energy Exposure
Vega	Power	Power / Track* Energy	Power Energy Exposure
StarLite	Power	Power / Track* Energy	Power Energy
Nova	Power	Power Energy	Power Energy
Pulsar	Power	Power Energy	Power Energy
Quasar	Power	Power Energy	Power Energy

* BeamTrack is the trademark name of the sensors that measure power, position and size. They include the Track measuring mode.

Terminology:

Energy - Measurements in Joules.

Exposure - Used to measure the sum of the energy (for Pyroelectric and Photodiode sensors).

Fast Power - Power measurement mode using fast sampling rate; used to measure laser modulation and flicker of LED light sources (for Photodiode sensors).

Low Freq Power - Power measurement mode optimized for VCSELs and similar pulsed sources, where low pulse rate and high pulse peak power would cause problems if measuring in regular power mode.

Power – Measurements in Watts.

Pulsed Power - Can display instantaneous power of a laser pulse. Power is calculated from energy when the length of the pulse is known (for Thermopile sensors).

Track - Used to measure beam position and beam size while measuring power (for Thermopile sensors).

Power Meters

Power Meters and PC Interfaces

Ophir power meters and PC interfaces work on the smart plug principle. This means that almost any Ophir power meter or PC interface can work – plug and play – with almost any of the wide range of Ophir sensors. Ophir power meters are also the most sensitive, lowest noise, most precisely calibrated units on the market thus giving the utmost performance from our smart sensors.

As for ease of use, only Ophir power meters have smart keys to give the easiest and most convenient user interface. The units also come with a versatile range of software to use seamlessly either with the Ophir software or the user's own.

Photodiode Sensors
Powers pW to Watts

Thermal Sensors
Powers mW to kW and single shot energy

Pyroelectric Sensors
Energies pJ to Joules
Rep rates to 25kHz

Power Meters
with USB/Ethernet/RS232

Computer Interfaces
with USB/Bluetooth/Ethernet/RS232

StarLite
basic

StarBright
added features

Vega
color

Juno
compact

Juno+
Incl. An Out

Pulsar
1, 2, 4 channels

Nova
rugged

Centauri
high end

Juno-RS
RS232

EA-1
Ethernet

Quasar
wireless

Software Solutions
StarLab, LabVIEW, StarCom, COM Object & StarViewer

LabVIEW

StarLab Software

StarViewer Android or iOS Applications

2.1 Power Meters
2.1.1 Centauri

Feature Rich Touchscreen Laser Power/Energy Meter

- Compatible with all standard Ophir Thermal, BeamTrack, Pyroelectric and Photodiode sensors
- Large 7" Full Color Touch Display
- Multilingual interface – English, French, Spanish, Italian, German, Russian, Japanese, Chinese and Korean
- Single and Dual Channel models available
- Various Displays: Bargraph, Analog Needle, Line Plot, Pulse Chart, Pass/Fail, Position, Stability, and Real Time Statistics
- Dual Channel Instrument supports Split and Merged Graphical Displays
- Sophisticated power and energy logging, including logging every pulse at up to 25000Hz with Pyro sensors
- Math functions: Density, Scale Factor, Normalize against base line, etc. Functions can be mixed together, displayed graphically, and can also be logged
- Math Channel allows comparison of two measurements
- Field upgrading of embedded software via USB Flash Drive
- 2GB internal storage and USB Flash Drive for ample data storage [a]
- USB, Ethernet and RS232 interfaces with StarLab PC application and User Commands document
- LabVIEW driver and COM Object Interface

- Pulsed Power measurements with Thermopile sensors
- Low Frequency Power with Photodiode sensors - power measurement based on pulse cycle (for VCSEL)
- Fast Power (10kHz) logging with Photodiode sensors
- Exposure measurement (Energy Summing) with Photodiode and Pyroelectric sensors
- Scalable Analog Output, TTL Output and External Trigger Input
- Loudspeaker for Audio Warnings

Centauri is the most feature rich desktop laser power/energy meter on the market. Just plug in one of the many Ophir sensors and you have a whole measurement laboratory at your fingertips. The bright color display gives unparalleled legibility and ease of interpreting information. Centauri has many on board features such as laser tuning, data logging, graphing, normalize, power or energy density, attenuation scaling, max and min limits. Centauri can also display the power or energy as a high resolution simulated analog needle display.

Centauri can be either battery operated or from an AC source with the charger plugged in at all times. Its bright display and user-selectable color format enables ease of use in dark room conditions or when wearing protective glasses.

The built-in USB, Ethernet and RS232 interfaces and StarLab PC software allow display and processing of data either in real time or from previously stored data. Results are displayed graphically on a PC. To support PC interfacing, LabVIEW drivers, a COM Object Interface and demo source code are provided.

The Centauri's dual channel capabilities enable the user to simply plug in any of Ophir's thermal, pyroelectric or photodiode sensors and measure the two channels independently, or a comparison between the two channels.

Centauri Screen Layout

The Centauri's 7" touch-screen provides ease-of-use at the tap of a finger. The display is carefully designed to provide easy reading of the laser measurement, quick access to configuration parameters as well as the ability to set up for more advanced work.


Info Panel. Includes channel (A or B), sensor name, and serial number.
Tap the menu icon at the right to easily access more functionality.

Sensor Settings. Displayed on screen and easily updated. Tap on a parameter to open a window that displays all of the options. Tap on the desired setting to reconfigure and get back to work. Settings are stored in the sensor's memory as the startup settings for the next measurement session.

Measurements. Numeric and Graphical display of reading. Tap Offset to reduce ambient environmental effects on the readings. Tap Zoom to focus the bargraph around the present measurement.

(a) USB Flash Drives of up to 32GB and FAT32 format only (Not exFAT nor NTFS formats).

Power Meters

Selected Screens

Analog needle display of power Persistence and min/max tracking.
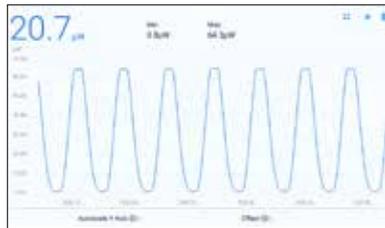
Line graph display of power.

Pulse chart display of energy.

Display statistics of the present measurement session.

Pass/Fail screen. Excellent for QA purposes.

Power, Position, and Size measured with a BeamTrack sensor.

Two independent channels of measurement.

Two channels merging into one graph.

Two channels with a math comparison channel.

Specifications

Power Meter	Brilliant color touch-screen TFT 1064 x 600 pixel graphics LCD. Large 16mm digits.
Features	Many screen features including power with bar graph, energy, average, exposure, frequency, graphs, scaling, special units, and more.
I/O's	USB, Ethernet, RS232 and user selectable 1,2,5 and 10 Volt full scale analog output; TTL Output; External Trigger Input; Loudspeaker for Audio Warnings
Screen Refresh	15 times/sec
Case	Molded high impact plastic with optimized angle kickstand. Rubberized sides for easy grip and protection against damage.
Size	Compact 47mm L x 200mm W x 130mm
Weight	1kg
Battery	Rechargeable Li-ion batteries with typically 6 hours between charges. The charger also functions as an AC adapter.
Multisensor Option	Two sensors can be connected and measure independently, and with a mathematical comparison.
Data Handling	Data can be viewed on board or transferred to PC: On Board: Data stored to USB Flash Drive (Thumb Drive) at rates up to 25,000 points/s.
Sensor Features	Works with Thermopile, BeamTrack, Pyroelectric (PE-C series) and Photodiode sensors [a].
Program Features	Preferred start up configuration can be set by user.
Compliance	CE, UKCA, China RoHS

Note: (a) Not including BC20 sensor

Ordering Information

Item	Description	Ophir P/N
Centauri Single Channel	Centauri high end power meter for Thermal, BeamTrack, Pyroelectric and Photodiode sensors	7Z01700
Centauri Dual Channel	Dual Channel high end power meter for Thermal, BeamTrack, Pyroelectric and Photodiode sensors	7Z01701
Centauri Dual Channel Activation Code	Software activation code to field upgrade a Single Channel Centauri to Dual Channel capabilities	7Z11056
Centauri USB Cable	USB-A to MICRO-B cable (1 unit supplied with Centauri)	7E01279
Centauri RS232 Cable	D9 to 3.5mm plug cable (1 unit supplied with Centauri)	7E01213
N Polarity Power Supply/Charger	Power Supply/Charger AC/DC 12V 2A N-2.1x5.5 (1 unit supplied with Centauri)	7E05029
General Purpose I/O Connector	Used as analog output, external trigger output and TTL output plug (3 units supplied with Centauri)	7E02008

2.1.2 StarBright

Feature Rich Laser Power/Energy Meter

- Compatible only with all standard Ophir thermal, BeamTrack, pyroelectric (PE-C series only) and photodiode sensors
- Brilliant color large size TFT 320x240 display
- Choose between Digital with Bargraph, Analog Needle, Line Plot (for laser tuning), Pulse Chart, Pass/Fail, Position, Stability, Real Time Statistics displays
- Sophisticated power and energy logging, including logging every point at up to 5000Hz with Pyro sensors
- Math functions for advanced processing such as Density, Scale Factor, Normalize against base line, etc.
- Can mix functions together and display the results graphically. Function results can also be logged
- USB Flash Drive for nearly unlimited data storage
- USB and RS232 interfaces with StarLab PC application and User Commands (see User Commands document in website)
- LabVIEW driver and COM Object Interface
- Pulsed Power measurements with Thermopile detectors
- Low Frequency Power - power measurement from pulse cycle energy (for VCSEL)
- Exposure measurement (Energy Summing) with Photodiode and Pyroelectric sensors
- Select between English, Japanese, Russian, and Chinese interfaces
- Soft keys and menu driven functions with context sensitive help
- Compact handheld design with rubberized bumpers and optimized kickstand
- Backlighting and rechargeable battery
- Scalable Analog Output

StarBright is the most feature rich handheld laser power/ energy meter on the market. Just plug in one of the many Ophir sensors and you have a whole measurement laboratory at your fingertips. The bright color display gives unparalleled legibility and ease of interpreting information. StarBright has many on board features such as laser tuning, data logging, graphing, normalize, power or energy density, attenuation scaling, max and min limits. StarBright can also display the power or energy as a high resolution simulated analog needle display.

StarBright can be either battery operated or from an AC source with the charger plugged in at all times. Its bright display and user-selectable color format enables ease of use in dark room conditions or when wearing protective glasses.

The built-in USB and RS232 interfaces and StarLab PC software allow display and processing of data either in real time or from previously stored data. Results are displayed graphically on a PC. To support PC interfacing, LabVIEW drivers, a COM Object Interface and demo source code are provided.

StarBright Screen Layout

StarBright screen ergonomics raise the user experience to new levels. The display is carefully designed to provide easy reading of the laser measurement, quick access to configuration parameters as well as the ability to set up for more advanced work.

Select measurement mode (power, energy, etc.)

Sensor name and serial number

Measurement display area. User can select the display type. In this example, the user has chosen large numeric readout with real time statistics.
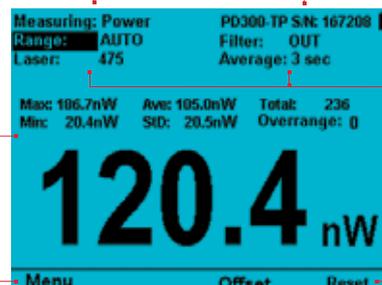
Configuration parameters for laser measurement. These settings are sensor specific and saved in the sensor's memory.

Press the Menu key to access additional StarBright functions including logging, pass/ fail inspection and math processing.

Softkeys for additional display functionality. In this example, press Offset to remove background noise from the measurement. Press Reset to clear the statistics and start over.

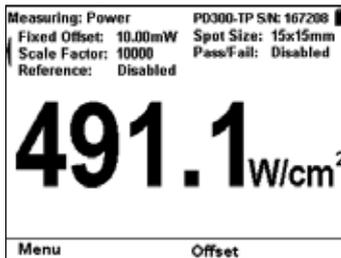Power Meters

Selected Screens
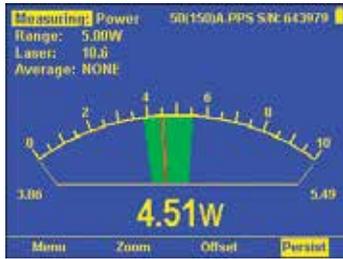
Analog needle display of power Persistence and min/max tracking.
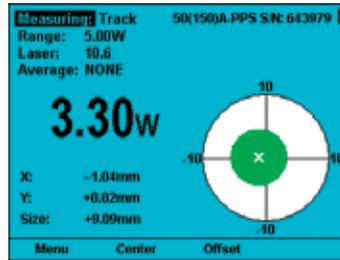
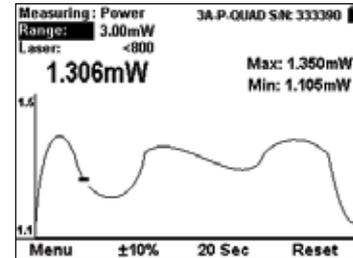**Power, Position, and Size measured with a BeamTrack sensor.**

Bargraph display of energy. Colors set for work with protective glasses.

Power density measured after rescaling the power measurement.

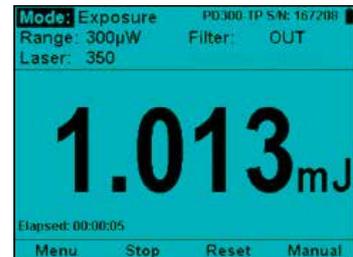**Data logs filed to USB Flash Drive. Can be viewed in StarLab or Excel.**

Line graph display of power. Wraps back to start for continuous display.

Pulse chart display of power.

Power measurement of laser pulse. For use with high-power pulsed lasers.

Exposure measurement (energy summing) with photodiode sensor.

Specifications

Power Meter	Brilliant color TFT 320 x 240 pixel graphics LCD. Large 16mm digits.
Features	Many screen features including power with multicolor bar graph, energy, average, exposure, frequency, graphs, scaling, special units, and more.
Outputs	USB, RS232 and user selectable 1, 2, 5 and 10 Volt full scale analog output.
Screen Refresh	15 times/sec
Case	Molded high impact plastic with optimized angle kickstand. Rubberized sides for easy grip and protection against damage.
Size	Folds to a compact 212mm L x 114mm W x 40mm H
Weight	0.470 kg
Battery	Rechargeable Li-ion batteries with typically 8 hours between charges. The charger can be ordered from your local distributor. The charger also functions as an AC adapter.
Data Handling	Data can be viewed on board or transmitted to PC: On Board: Data stored to USB Drive (Thumb Drive) at rates up to 5000 points/s.
Sensor Features	Works with Thermopile, BeamTrack, Pyroelectric (PE-C series) and Photodiode sensors. Works with our PD300RM sensors.
Program Features	Preferred start up configuration can be set by user. User can recalibrate power, energy, response time and zero offset.
Compliance	CE, UKCA, China RoHS

Ordering Information

Item	Description	Ophir P/N
StarBright	StarBright universal power meter for Thermal, BeamTrack, Pyroelectric and Photodiode sensors	7Z01580
Carrying Case	Carrying case 38x30x11 cm. For power meter and up to 3 sensors	1J02079
StarBright USB Cable	USB-A to MICRO-B cable (1 unit supplied with StarBright)	7E01279
StarBright RS232 Cable	D9 to 3.5mm plug cable (1 unit supplied with StarBright)	7E01213
StarBright Battery Pack	Replacement battery pack for StarBright	7E14008
P Polarity Power Supply/Charger	Power Supply/Charger AC/DC 12V 2A P-1.35x3.5 (1unit supplied with StarBright)	7E05047
Standard Analog Output Connector	2.5mm mono jack (1unit supplied with StarBright)	7E02008

Power Meters

For latest updates, please visit our website: www.ophiropt.com

2.1.3 Vega

Color Screen Laser Power/Energy Meter

- Compatible with all standard Ophir thermal, BeamTrack, pyroelectric and photodiode sensors
- Brilliant color large size TFT 320x240 display
- Compact handheld design with rubberized bumpers and optimized 2 position kickstand
- Choice of digital or analog needle display
- Illuminated keys for working in the dark
- Select between English and Japanese interfaces
- Analog output
- Log every point at up to 4000Hz with pyro sensors
- Non-volatile data storage up to 250,000 points
- Laser tuning screen and power and energy log
- USB and RS232 interfaces with StarLab and StarCom PC applications, LabVIEW driver and COM Object Interface (see pages 194-200)
- Soft keys and menu driven functions with on line help
- Many software features such as density, min/max, scaling etc.

The Vega is a very versatile and sophisticated handheld laser power/energy meter. Just plug in one of the many Ophir sensors and you have a whole measurement laboratory at your fingertips. The bright color display gives unparalleled legibility and ease of interpreting information. The Vega has many on board features such as laser tuning, data logging, graphing, normalize, power or energy density units, attenuation scaling, max and min limits. The Vega can also display the power or energy with a high resolution simulated analog needle display.

The Vega can be operated either by battery or from an AC source with the charger plugged in at all times. Its bright display and backlit keys allow easy use in dark room conditions or with laser glasses on.

The built-in USB and RS232 interfaces and StarLab and StarCom PC software allow on-line processing of data or processing previously stored data; results are displayed graphically on a PC. To support PC interfacing, LabVIEW drivers and COM Object Interface are provided.
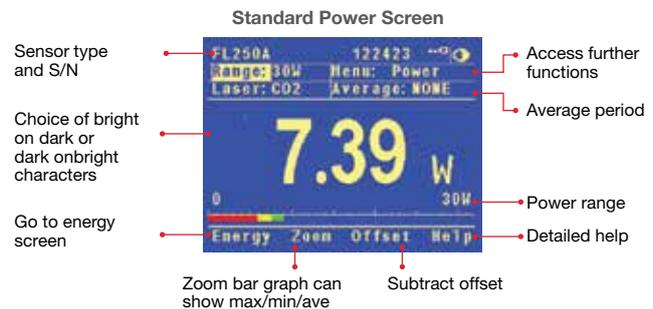
StarLab Software

Selected Screens

Digital Power Screen and Color Functions

- Choice of bright on dark or dark on bright characters
- Optimize colors for use with laser eye protection glasses
- Can average over selected period. Useful for unstable lasers
- Bar graph can show max / min / average in different colors

Standard Power Screen

Sensor type and S/N

Choice of bright on dark or dark on bright characters

Go to energy screen

Zoom bar graph can show max/min/ave

Access further functions

Average period

Power range

Detailed help

Subtract offset

BeamTrack Power/Position/Size Screen

- Monitoring of laser beam size
- Accurate tracking of beam position to fractions of a mm
- Beam position and wander
- All the other features of standard power/energy meters

BeamTrack Power/Position/Size Screen

Sensor type and S/N

Power measurement

Position and size measurement with BeamTrack sensor

Soft Keys

Measurement parameters

Position and size graph

Analog Power Screen

- Perfect for adjusting and maximizing laser power
- Persistent graphical display allows tracking of minimum maximum values measured
- Large analog needle with small digital display as well

Choice of smaller display with range, menu, laser and average headers.

Energy/Limits Screen

- Pulsed energy sensors (single or repetitive) and thermal sensors (single shot only)
- Frequency measurement with pulsed energy sensors
- Limits screen with bright colored warning

Energy threshold

Energy range

Energy Logging Screen

- Pyroelectric and thermal sensors
- Continuous scroll with up to 100 points on screen
- Full statistics
- Store data onboard and recall

Enlarge variation pulse to pulse

Additional Functions

- Press the menu choice on the main screen and many more options pop up as shown
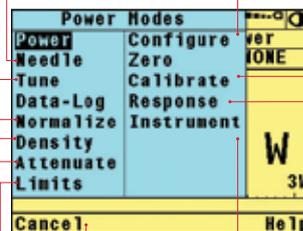
Choose analog needle screen

Laser tune screen with continuous graph

Normalize so present reading is 1.00

Enter beam diameter and read in units of W/cm^2 or J/cm^2

Put in factor to read input power with attenuator or beam splitter

Set for alarm if preset min or max limits exceeded

Return to previous menu

Set startup configuration

Adjust sensor calibration

Adjust sensor response time

Adjust power meter parameters

Specifications

Power Meter	Brilliant color TFT 320 x 240 pixel graphics LCD. Large 16mm digits. High resolution analog needle also can be chosen.
Features	Many screen features including power with multicolor bar graph, energy, average, exposure, frequency, graphs, scaling, special units, and more. Complete on line context sensitive help screens.
Outputs	USB, RS232 and user selectable 1, 2, 5 and 10 Volt full scale analog output.
Screen Refresh	15 times/sec
Case	Molded high impact plastic with optimized angle two level kickstand. Rubberized sides for easy grip and protection against damage.
Size	Folds to a compact 210mm L x 109mm W x 36mm H
Weight	0.470 kg
Battery	Rechargeable NiMH batteries with typically 18 hours between charges. The charger can be ordered from your local distributor. The charger also functions as an AC adapter.
Data Handling	Data can be viewed on board or transmitted to pc: On Board: Non-volatile storage of up to 250,000 data points in up to 10 files. Max onboard data logging rate 4000 [a] points/s and Max data logging rate to the PC 2000 [a] points/s.
Sensor Features	Works with Thermopile, BeamTrack, Pyroelectric (PE-C series) and Photodiode sensors [b].
Program Features	Preferred start up configuration can be set by user. User can recalibrate power, energy, response time and zero offset.
Compliance	CE, UKCA, China RoHS

Note: (a) The above refers to the rate of logging every single point in turbo mode. Above that rate, the instrument will sample points but not log every single point
Note: (b) Not including PD300RM sensors

Ordering Information

Item	Description	Ophir P/N
Vega	Vega color universal power meter for standard thermal, BeamTrack, pyroelectric and photodiode sensors	7Z01560
Carrying Case	Carrying case 38x30x11 cm. For power meter and up to 3 sensors	1J02079
USB Cable for Vega	USB to mini DIN cable (1 unit supplied with Vega)	7E01205
RS232 Cable for Vega	D9 to mini DIN cable (1 unit supplied with Vega)	7E01206
Battery Pack for Vega	Replacement battery pack for the Vega	7E14007A
N Polarity Power Supply/Charger	Power Supply/Charger AC/DC 12V 2A N-2.1x5.5 (1 unit supplied with Vega)	7E05029
Standard Analog Output Connector	2.5mm mono jack (1 unit supplied with Vega)	7E02008

2.1.4 Nova II

Versatile Laser Power/Energy Meter

- Compatible with all standard Ophir thermal, BeamTrack, pyroelectric and photodiode sensors
- Large high definition LCD display
- Choice of digital or analog needle display
- 2 position kickstand
- Backlighting and rechargeable battery
- Select between English and Japanese interfaces
- Analog output
- Log every point at up to 4000Hz with pyro sensors
- Non-volatile data storage up to 59,400 points
- Laser tuning screen and power and energy log
- USB and RS232 interfaces with StarLab and StarCom PC applications, LabVIEW driver and COM Object Interface (see pages 194-200)
- Soft keys and menu driven functions with on line help
- Many software features such as density, min/max, scaling etc.

The Nova II is a very versatile and sophisticated handheld laser power/energy meter. Just plug in one of the many Ophir sensors and you have a whole measurement laboratory at your fingertips. The Nova II has many on-board features such as laser tuning, data logging, graphing, normalize, power or energy density units, attenuation scaling, max and min limits. The Nova II can also display the power or energy with a high resolution simulated analog needle display. The Nova II can be operated either by battery or from an AC source with the charger plugged in at all times. Its backlight allows illumination of the power meter in low light conditions. The built-in USB and RS232 interfaces and StarLab and StarCom PC software allow on-line processing of data or processing previously stored data; results are displayed graphically on a PC. To support PC interfacing, LabVIEW drivers and COM Object Interface are provided.
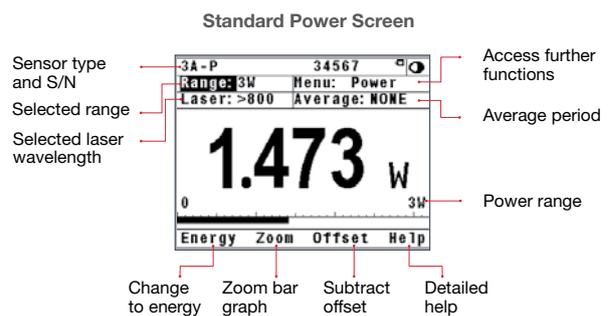
StarLab Software

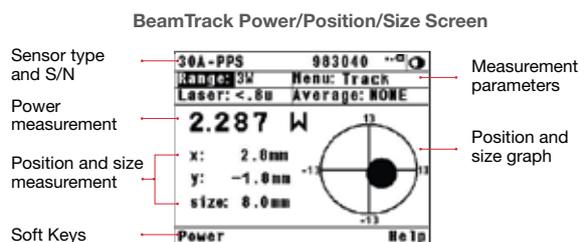## Power Meters

Selected Screens

Digital Power Screen

- CW industrial, medical and scientific lasers
- pW to Multi kW with appropriate sensors
- Can average over selected period. Useful for unstable lasers
- Fast response bar graph

Standard Power Screen

Sensor type and S/N
Selected range
Selected laser wavelength
Access further functions
Average period
Power range
Change to energy
Zoom bar graph
Subtract offset
Detailed help

BeamTrack Power/Position/Size Screen

- Monitoring of laser beam size
- Accurate tracking of beam position to fractions of a mm
- Beam position and wander
- All the other features of standard power/energy meters

BeamTrack Power/Position/Size Screen

Sensor type and S/N
Power measurement
Position and size measurement
Soft Keys
Measurement parameters
Position and size graph

Analog Power Screen

- Perfect for adjusting and maximizing laser power
- Large analog needle with small digital display as well
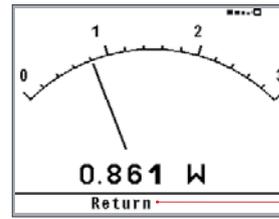
Choice of smaller display with range, menu, laser and average headers

Energy Screen

- Pulsed energy sensors (single or repetitive) and thermal sensors (single shot only)
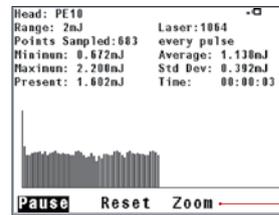- Frequency measurement with pulsed energy sensors
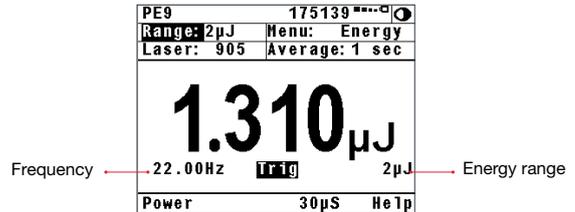
Frequency

Energy range

Energy Logging Screen

- Pyroelectric and thermal sensors
- Continuous scroll with up to 100 points on screen
- Full statistics
- Store data onboard and recall

Enlarge variation pulse to pulse

Additional Functions

- Press the menu choice on the main screen and many more options pop up as shown
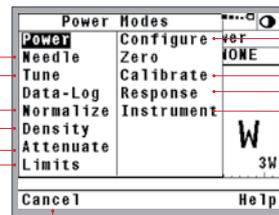
Choose analog needle screen
Laser tune screen with continuous graph
Normalize so present reading is 1.00
Enter beam diameter and read in units of W/cm² or J/cm²
Put in factor to read input power with attenuator or beam splitter
Set for alarm if preset min or max limits exceeded

Set startup configuration
Adjust sensor calibration
Adjust sensor response time
Adjust power meter parameters
Return to previous menu

Specifications

Power Meter	High legibility 320 x 240 pixel graphics LCD with switchable electroluminescent backlight. Large 18mm digits. High resolution analog needle also can be chosen.
Features	Many screen features including power with bar graph, energy, average, exposure, frequency, graphs, scaling, special units, and more. Complete on line context sensitive help screens.
Outputs	USB, RS232 and 1, 2, 5 and 10 volt full scale analog output.
Screen Refresh	15 times/sec
Case	Molded high impact plastic with two level kickstand.
Size	Folds to a compact 208mm Lx 110mm Wx 43mm H
Weight	0.550 kg
Battery	Rechargeable NiMH batteries with typically 18 hours between charges. The charger can be ordered from your local distributor. The charger also functions as an AC adapter.
Data Handling	Data can be viewed on board or transmitted to PC: On Board: Non-volatile storage of up to 54000 data points in up to 10 files. Max onboard data logging rate 4000 [a] points/s and Max data logging rate to the PC 2000 [a] points/s.
Sensor Features	Works with Thermopile, BeamTrack, Pyroelectric (PE-C series) and Photodiode sensors [b].
Program Features	Preferred startup configuration can be set by user. User can recalibrate power, energy, response time and zero offset.
Compliance	CE, UKCA, China RoHS

Note: (a) The above refers to the rate of logging every single point in turbo mode. Above that rate, the instrument will sample points but not log every single point
Note: (b) Not including PD300RM sensors

Ordering Information

Item	Description	Ophir P/N
Nova II	Nova II universal power meter for standard thermal, BeamTrack, pyroelectric and photodiode sensors	7Z01550
Carrying Case	Carrying case 38x30x11 cm. For power meter and up to three sensors	1J02079
Nova II USB Cable	USB to mini DIN cable (1 unit supplied with Nova II)	7E01205
Nova II RS232 Cable	D9 to mini DIN cable (1 unit supplied with Nova II)	7E01206
Battery Pack	Replacement battery pack for the Nova II	7E14007A
N Polarity Power Supply/Charger	Power Supply/Charger AC/DC 12V 2A N-2.1x5.5 (1 unit supplied with Nova II)	7E05029
Standard Analog Output Connector	2.5mm mono jack (1 unit supplied with Nova II)	7E02008

For latest updates, please visit our website: www.ophiropt.com

2.1.5 StarLite

Low Cost Laser Power / Energy Meter

- Compatible with all standard Ophir Thermal, BeamTrack, Pyroelectric (PE-C series only) and Photodiode sensors
- Brilliant large size TFT 320x240 display
- Compact handheld design with rubberized bumpers and optimized kickstand
- Choice of digital or analog needle display
- Select between English, Japanese, Russian and Chinese interfaces
- Analog output
- Easy to use soft keys
- Easy measurement configuration with context sensitive help
- Backlighting and rechargeable battery
- Single shot energy measurement with thermal sensors
- Power averaging
- Resizable Screen graphics
- EMI rejection
- Optional software package for USB communication with our StarLab PC suite. For USB options see "Ordering Information" table in the next page

StarLite is a low cost power / energy meter capable of measuring power or energy from pJ and pW to hundreds of Joules and thousands of Watts. It also supports position and size measurement with the BeamTrack family of sensors. StarLite can also display the power or energy with a high resolution simulated analog needle display.

All StarLite measurement screens can be configured to either show the measurement parameters or to hide them in order to maximize the graphical and numeric displays.
StarLite can be operated either by battery or from an AC source with the charger plugged in at all times. Its backlight allows illumination of the power meter in low light conditions.
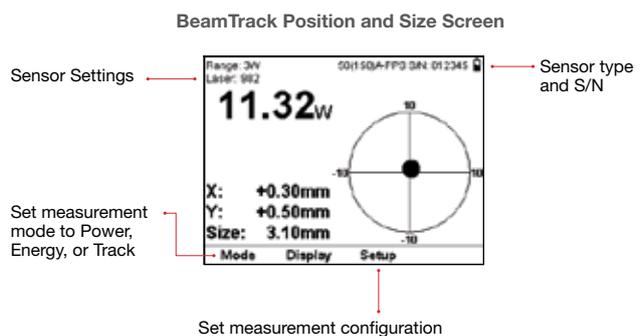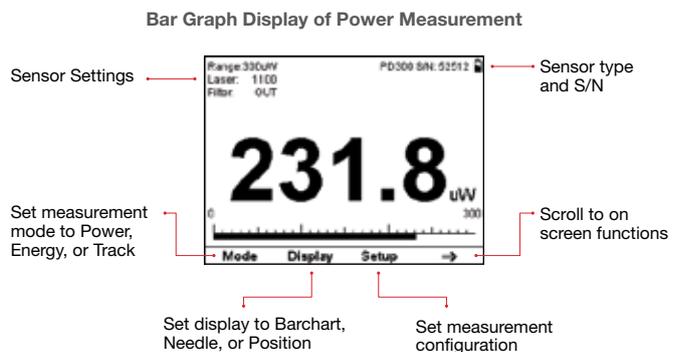

Selected Screens

Digital Power Screen

- CW industrial, medical and scientific lasers
- pW to Multi kW with appropriate sensors
- Can average over selected period. Useful for unstable lasers
- Fast response bar graph

Bar Graph Display of Power Measurement

Sensor Settings

Sensor type and S/N

231.8 uW

Set measurement mode to Power, Energy, or Track

Scroll to on screen functions

Set display to Barchart, Needle, or Position
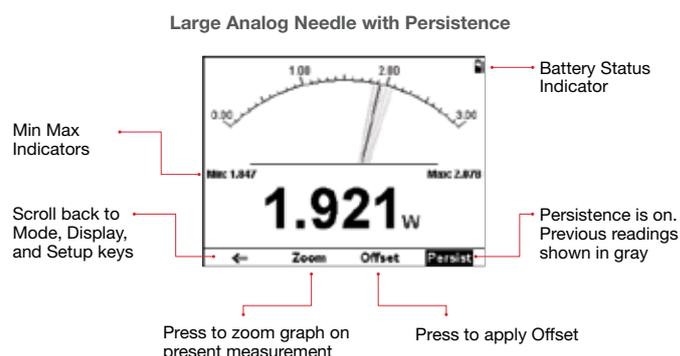
Set measurement configuration

BeamTrack Power/Position/Size Screen

- Monitoring of laser beam size
- Accurate tracking of beam position to fractions of a mm
- Power measured at the same time

BeamTrack Position and Size Screen

Sensor Settings

Sensor type and S/N

11.32 W

X: +0.30mm
Y: +0.50mm
Size: 3.10mm

Set measurement mode to Power, Energy, or Track
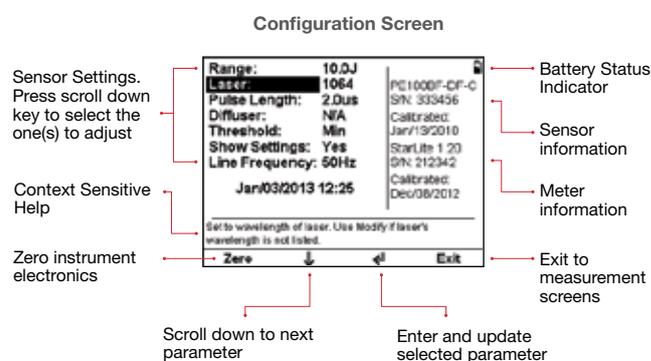
Set measurement configuration

Analog Needle Screen

- Perfect for adjusting and maximizing laser power or energy
- Persistent graphical display allows tracking of minimum maximum values measured
- Large analog needle with small digital display as well

Large Analog Needle with Persistence

Battery Status Indicator

Min Max Indicators

Scroll back to Mode, Display, and Setup keys

Persistence is on. Previous readings shown in gray

1.921w

← Zoom Offset Persist

Press to zoom graph on present measurement

Press to apply Offset

Configuration Screen

- Easy adjustment of all measurement configuration parameters
- Context sensitive help for selected parameter
- Sensor and meter information provided

Configuration Screen

Sensor Settings. Press scroll down key to select the one(s) to adjust

Context Sensitive Help

Zero instrument electronics

Battery Status Indicator

Sensor information

Meter information

Exit to measurement screens

Scroll down to next parameter

Enter and update selected parameter

Specifications

Power Meter	High legibility TFT 320 x 240 pixel graphics LCD. Large 16mm digits. High resolution analog needle also can be chosen.
Features	Power, single shot energy, energy and frequency of high rep rate lasers, position, and size.
Outputs	1V Full Scale analog output.
Screen Refresh	15 times/sec
Case	Molded high impact plastic with optimized angle kickstand. Rubberized sides for easy grip and protection against damage.
Size	Folds to a compact 211mm L x 114mm W x 40mm H
Weight	0.470 kg
Battery	Rechargeable Li-ion batteries with typically 8 hours between charges. The charger can be ordered from your local distributor. The changer also functions as an AC adapter.
Sensor Features	Automatic continuous background cancellation with PD300 sensors. Submicrojoule and multikilohertz capability with pulsed energy sensors.
Sensor Compatibility	Works with standard Thermopile, BeamTrack, Photodiode and Pyroelectric (PE-C series) [a] sensors. Works with our PD300RM sensors.
Compliance	CE, UKCA, China RoHS

Note: (a) Not including BC20 and PD300-CIE sensors

Ordering Information

Item	Description	Ophir P/N
StarLite	StarLite universal power meter for Thermal, BeamTrack, Pyroelectric and Photodiode sensors	7Z01565
StarLite with USB enabled	StarLite universal power meter with USB enabled	7Z01569
StarLite USB Activation Code	Software Activation Code that enables the StarLite meter to communicate in USB with our StarLab software suite	7Z11049
Carrying Case	Carrying case 38x30x11 cm. For power meter and up to 3 sensors	1J02079
USB Cable for StarLite	USB-A to MICRO-B cable (1 unit supplied with StarLite)	7E01279
Battery Pack for StarLite	Replacement battery pack for the StarLite	7E14008
P Polarity Power Supply/Charger	Power Supply/Charger AC/DC 12V 2A P-1.35x3.5 (1 unit supplied with StarLite)	7E05047
Standard Analog Output Connector	2.5mm mono jack (1 unit supplied with StarLite)	7E02008

2.1.6 NOVA

Compact and Durable Power / Energy Meter

- Compact and durable
- Compatible with all standard Ophir sensors: thermal, pyroelectric* and photodiode
- Single shot energy measurement with thermal sensors
- Optional RS232 interface with StarCom PC application and LabVIEW driver (see pages 194-200)
- Power and energy logging with graphical display and statistics
- Power averaging
- Easy to use soft keys, menu-driven
- Screen graphics
- Backlight and rechargeable battery
- Analog output
- EMI rejection

RS232 cable for Nova

Compatible with the complete range of Ophir thermal (power and energy), pyroelectric and photodiode sensors, Nova is truly versatile: measuring power or energy from pJ and pW to hundreds of Joules and thousands of Watts. With the optional scope adapter, you can connect your pyro sensor to an oscilloscope and see every pulse up to the maximum frequency permitted by the sensor.

Smart connector sensors automatically configure and calibrate Nova when plugged in. Soft keys guide you through the screen graphics. Finished working? Your configuration can be saved for future use.

Nova's autoranging tune screen displays laser power graphically and displays maximum power. Zoom and time scale can be adjusted by user.

The optional RS232 interface and StarCom PC software allow on-line processing of data or processing previously stored data; results are displayed graphically on a PC. To support PC interfacing, LabVIEW drivers are provided.
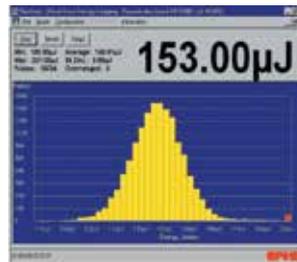
StarCom Software
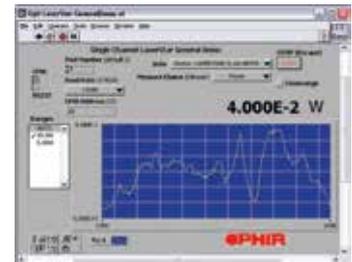
LabVIEW

Selected Screens

Digital Power Screen

- CW industrial, medical and scientific lasers
- pW to multi kW with appropriate sensors

Laser →
Units (W or dbm) →
Bargraph (with zoom) →

Press Menu button or soft keys to make legends visible (not shown).

Laser Tuning Screen or Power Log Screen (not shown)

- Maximizing laser power
- User selected time period and zoom
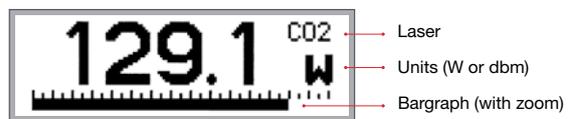
Laser →
Max power →
Units →

Press Menu button or soft keys to make legends visible.

±50%	Time	Exit
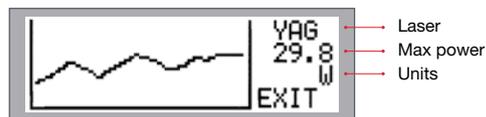
Zoom   Sweep/Time
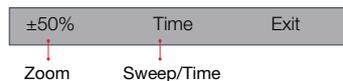
* PE-C series of pyroelectric sensors are compatible with Nova, when used with an additional adapter (P/N 7Z08272) – see page 141.

Power Meters

## Energy Measurement Screen

- Pyroelectric and thermopile sensors-single pulse
- Pyroelectric frequency measurement (not shown)

Display labels (right):
- Laser
- Units
- Soft key legends
- Change range

Display labels (bottom):
- Change to Power Measurement Flashes Ready for next pulse
- Zoom bar graph
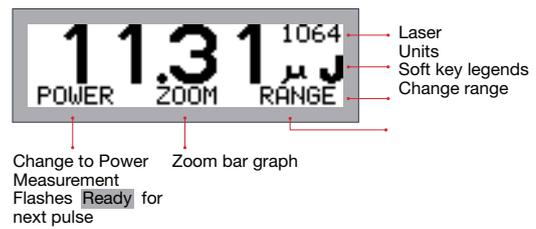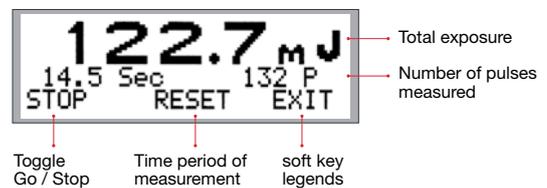
Energy Log Screen

- Pyroelectric sensors
- Thermopile sensors-successive single pulses
- Continuous scroll
- Energy statistics

Display labels (right):
- Laser wavelength
- Energy of last pulse

Press Menu button or soft keys to make legends visible (not shown)
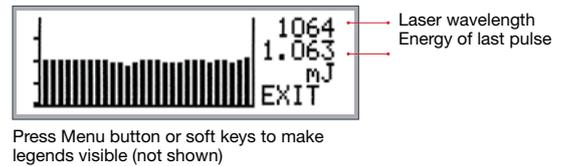
Pyroelectric Exposure Screen

- Sum or average energies over user selected time period / number of pulses
- Medicine, photolithography

Display labels (right):
- Total exposure
- Number of pulses measured

Display labels (bottom):
- Toggle Go / Stop
- Time period of measurement
- soft key legends

Average Screen

- Thermopile, photodiode and pyroelectric sensors (Does not operate with PE-C series of pyroelectric sensors)
- Periodic (1/3 sec to 30 sec) or continuous (10 sec to 1 hour) average for fast-changing or slow-changing laser

Display labels (right):
- Average power
- Time period
- Soft key legends

Display labels (bottom):
- Toggle Go / Stop

Specifications

Power Meter	High legibility 32 x 122 pixel graphics supertwist LCD with switchable electroluminescent backlight. Large 12mm digits.
Features	Many screen features: including power with bar graph, energy, average, exposure, frequency, graphs, and more.
Outputs	RS232 and analog output 1V f.s. (optional)
Screen Refresh	15 times / sec.
Case	Molded high-impact plastic with kickstand and EMI conductive shielding, to allow use even in proximity to pulsed lasers.
Size	Very compact: 205mm L x 95mm W x 39mm H.
Weight	0.550 kg
Battery	Rechargeable 12 volts. 22 hours use between charges. The charger can be ordered from your local distributor. The charger also functions as AC adapter.
Data Handling	Data can be viewed on board or transmitted to PC: On Board: Max data logging rate >10 points/s Transmitted to PC: Data transmission rate of ~50 points/s. RS232 baud rate of 19200
Sensor features	Works with standard Thermal [a], Pyroelectric [b] and Photodiode [c] sensors.
Program features	Preferred startup configuration can be set by user. User can recalibrate power or energy. Response time. Zero offset.
Compliance	CE, UKCA, China RoHS

Note: (a) When operating with BeamTrack sensors, measures Power & Energy only
Note: (b) In order to operate with the new Pyroelectric (PE-C series) sensors, Nova needs an adapter (see ordering information below)
Note: (c) Not including PD300RM sensors

Ordering Information

Item	Description	Ophir P/N
Nova	Nova power meter for standard thermal, pyroelectric and photodiode sensors	7Z01500
Nova PE-C Adapter	Adapter to allow Nova to operate with PE-C series pyroelectric sensors. Plugs between Nova D15 socket and PE-C D15 plug	7Z08272
Carrying Case	Carrying case 38x30x11cm. For display and up to three sensors	1J02079
Nova RS232 assemblies - allow Nova power meter to communicate with PC and be controlled by PC		
Nova RS232 Assembly	RS232 adapter with standard 2 meter cable (including software) (see page 185)	7Y78105 [a]
Nova RS232 Assembly	RS232 adapter with 5 meter cable (including software)	7Y71052 [b]
Nova RS232 Assembly	RS232 adapter with 8 meter cable (including software)	7Y71051 [c]
Battery Pack	Replacement battery pack for Nova	7E14005A
N Polarity Power Supply/Charger	Power Supply/Charger AC/DC 12V 2A N-2.1x5.5 (1 unit supplied with Nova)	7E05029
Standard Analog Output Connector	2.5mm mono jack (1 unit supplied with Nova)	7E02008

Note: (a) P/N 7Y78105 replaces P/N 78105
Note: (b) P/N 7Y71052 replaces P/N 781052
Note: (c) P/N 7Y71051 replaces P/N 781051

2.1.7 Accessories

Power Supply/Charger

Negative Polarity Power Supply/Charger for Centauri, Vega, Nova II, LaserStar, Nova, EA-1, Pulsar and Quasar
Positive Polarity Power Supply/Charger for StarBright and StarLite & Power Supply/Charger for Juno-RS
Push-Pull 2 Pin Power Supply for IS1.5-VIS-FPD-800 & IS1.5-IRG-FPD-800

Analog Output Connectors & Cables

Replacement standard analog output plug for most Ophir meters.
Replacement analog output plug for LaserStar and for Juno-RS.

Juno-RS Analog Output Cable   **Standard Analog Output Connector**   **LaserStar Analog Output Connector**

StarLite USB Activation Code

Software Activation Code that enables the StarLite meter to communicate in USB with our StarLab software suite.

Centauri Dual Channel Activation Code

Software activation code to field upgrade a Single Channel Centauri to Dual Channel capabilities.

USB Cables for Meters & Interfaces

Cables for communicating with the PC in USB – for use with our StarLab application, COM Objects, LabVIEW and to upgrade Firmware files.

Ethernet Cable

Ethernet cross cable for communicating with an Ethernet network or direct to a PC for initial setup of the device – can be used with our StarLab or OphirEthernetApp applications or with customer's own software.

RS232 Cables for Meters & Interfaces

Cables for communicating with the PC in RS232 – for use with our StarCom application or to use our RS232 command set.

RS232 Module for Nova

Plug in module allows transfer of power and energy data to PC and remote control of power meters from PC. Includes manual and StarCom application program (refer to page 199).

Carrying Cases

Carrying case for StarBright, StarLite, Vega, Nova II or Nova power meters and up to 3 sensors.

Power Meters

Ordering Information

Item	Description	Ophir P/N
N Polarity Power Supply/Charger	Power Supply/Charger AC/DC 12V 2A N-2.1x5.5	7E05029
P Polarity Power Supply/Charger	Power Supply/Charger AC/DC 12V 2A P-1.35x3.5	7E05047
Push-Pull 2 Pin Power Supply	Push-Pull 2 Pin Power Supply 12V 2A	7E05047A
Juno-RS Power Supply/Charger	Power Supply/Charger AC/DC 12V 2A 2.5x5.5x13.8 S	7E05093
Standard Analog Output Connector	2.5mm mono jack	7E02008
LaserStar Analog Output Connector	Analog Output plug for LaserStar	7Z11004
Juno-RS Analog Output Cable	Cable Coax BNC-M to SMA-M RG-174 2 meter	7E01541
StarLite USB Activation Code	Software Activation Code that enables the StarLite meter to communicate in USB with our StarLab software suite	7Z11049
Centauri Dual Channel Activation Code	Software activation code to field upgrade a Single Channel Centauri to Dual Channel capabilities	7Z11056
Centauri / StarBright / StarLite USB Cable	USB-A to MICRO-B cable	7E01279
Nova II / Vega USB Cable	USB to mini DIN cable	7E01205
Juno / Juno+ / EA-1 USB Cable	USB-A to MINI-B Cable	7E01217
Pulsar USB Cable	USB-A to B cable	7E01202
Ethernet Cable	Ethernet Cross Cable	7E01192
Juno-RS RS232 Cable	D9 Male/Female 1.8-2 meter	7E11216
Centauri / StarBright RS232 Cable	D9 to 3.5mm plug cable	7E01213
Nova II / Vega RS232 Cable	D9 to mini DIN cable	7E01206
Nova RS232 Module	RS232 adapter with 2 / 5 / 8 meter cable (including software)	7Y78105 / 7Y71052 / 7Y71051 [a]
LaserStar RS232 Cable	RS232 D9 to D25 Cable	7E01121
Carrying Case for StarBright, StarLite, Vega, Nova II and Nova	Carrying case 38x30x11 cm. For Power Meter and up to three sensors	1J02079

Note: (a) 7Y78105 (was 78105), 7Y71051 (was 781051), 7Y71052 (was 781052), 7Y78300 (was 78300)