

Displays



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

NOVA

- Leading and most popular Ophir display
- Compatible with all Ophir heads: thermal, pyroelectric and photodiode
- Single shot energy measurement with thermal heads
- Optional RS232 computer interface with Windows software
- 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



Compatible with the complete range of Ophir thermal (power and energy), pyroelectric and photodiode heads, Nova is truly versatile: measuring from pW to KW, μ J to 200J. With the optional scope adapter, you can connect your pyro head to an oscilloscope and see every pulse up to the maximum frequency permitted by the head.

Smart connector heads 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 exclusive autoranging tune screen displays laser power graphically and displays maximum power. Zoom and time scale can be adjusted by user.

Selected Screens

Digital Power Screen

- CW industrial, medical and scientific lasers
- picoWatt to 20KW with appropriate heads

Laser Tuning Screen or Power Log Screen (not shown)

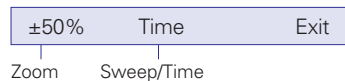
- Maximizing laser power
- User selected time period and zoom



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

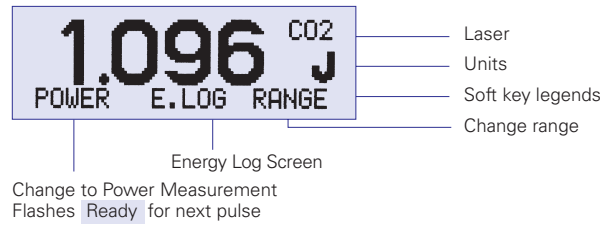


Press Menu button or soft keys to make legends visible.



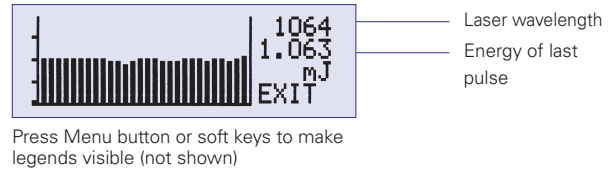
Energy Measurement Screen

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



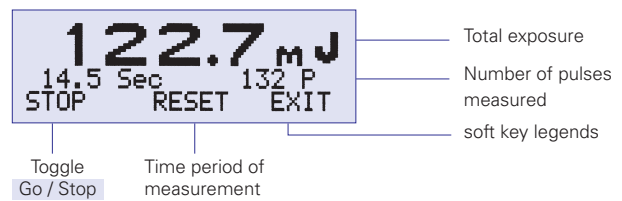
Energy Log Screen

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



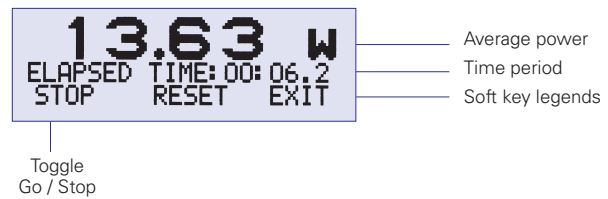
Pyroelectric Exposure Screen

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



Average Screen

- Thermopile, photodiode and pyroelectric heads
- Periodic (1/3 sec to 30 sec) or continuous (10 sec to 1 hour) average for fast-changing or slow-changing laser



Specifications

Display:	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. Analog output 1V f.s.
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: 203 x 95 x 38mm.
Battery:	Rechargeable 12 volts. 18 hours use between charges. Charger (included) also functions as AC adapter.
Head features:	Works with thermopile, pyroelectric, and photodiode heads. Automatic, continuous, background cancellation with PD300 heads. Submicrojoule and multikilohertz capability with model PE10 head. All heads use smart connector containing configuration information.
Program features:	Preferred startup configuration can be set by user. User can recalibrate power or energy. Response time. Zero offset.

Ordering Information		
Item	Description	Ophir P/N
Nova	Nova universal smart head display for thermal, pyroelectric and photodiode heads	1Z01500
Nova Soft Case	Soft carrying case for Nova or Orion. Can be belt mounted	1J04010
Nova Carrying Case	Carrying case 33x29x10 cm. For display and up to three heads	1J02079
Nova RS232 assemblies - allow Nova display to communicate with PC and be controlled by PC		
Nova RS232 Assembly	RS232 adapter with standard 2 meter cable (including software)	18105
Nova RS232 Assembly	RS232 adapter with 5 meter cable (including software)	181052
Nova RS232 Assembly	RS232 adapter with 8 meter cable (including software)	181051
Nova Battery Pack	Replacement battery pack for Nova	1Z11200

Orion

Family of Handheld Laser Meters

For those who do not need the multifunction, the RS232 computer interface or the single shot energy capability of the Nova, Ophir now offers the Orion series - a lower cost alternative.

- Orion TH for measuring power with all Ophir thermal heads
- Orion PE for measuring energy with Ophir pyroelectric heads
- Orion PD for photodiode heads featuring full wavelength correction
- Soft keys, menu-driven graphic display with analog output and backlight



OrionTH

- Supports over 50 Ophir thermal heads- μ W to 20KW
- Fast response power measurement with auto or manual ranging
- Corrected for major laser wavelengths
- Laser tuning screen to maximize laser power
- Offset background at the push of a button

Orion PE

- Supports all Ophir pyroelectric heads and PD10 nanojoule meter
- Measures laser energy from nJ to 60J
- Frequencies up to 5KHz
- Energy logging statistics
- Built-in wavelength correction

Orion PD

- Supports all Ophir photodiode heads-200-1800 nm
- Wavelength corrected at 1nm increments with user selected favorite wavelength for ease of use
- pW to 3W with appropriate heads Patented dynamic background subtraction
- Display Watts or DBm
- Auto or manual range
- Laser tuning screen to maximize laser power

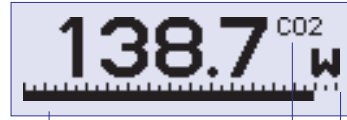
Selected Screens

Digital Bargraph Power Screen



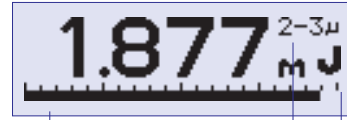
Bargraph Wavelength correction Units

Digital Bargraph Power Screen



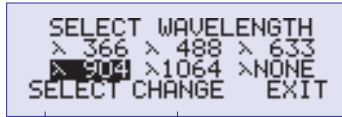
Bargraph Wavelength correction Units

Digital Bargraph Energy Screen



Bargraph Wavelength correction Units

Wavelength Selection Screen



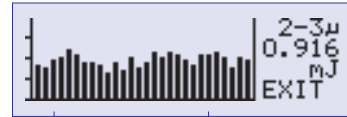
Select wavelength Change wavelength to different value

Laser Tuning Screen



Zoom Time scale

Energy Logging Screen



Pulse energies (scrolls when full)

Specifications

Display	High legibility 32 x 122 pixel graphics supertwist LCD with electroluminescent backlight.
Analog output	1 Volt full scale
Case	Molded high-impact plastic with kickstand and EMI conductive shielding to CE standards.
Size	Very compact: 203 x 95 x 38mm
Battery	Rechargeable with 18 hours operating time per charge. Charger (included) also functions as AC adapter.
Software features	Preferred startup configuration can be set by user and stored in head smart plug. Orion can be zeroed at the press of a button. Complete plug-and-play operation. All calibration and configuration information is read from the head smart plug.

Ordering Information		
Item	Description	Ophir P/N
Orion TH	Orion smart head display for thermal heads and BC20 heads	1Z01801
Orion PD	Orion smart head display for photodiode heads	1Z01803
Orion PE	Orion smart head display for pyroelectric heads	1Z01802
Orion Soft Case	Soft carrying case for Nova or Orion. Can be belt mounted.	1J04010
Orion Carrying Case	Carrying case 33x29x10cm. For display and up to three heads.	1J02079
Orion Battery Pack	Replacement battery pack for Orion	1Z11200

NOVA II

Versatile Laser Power/Energy Display

- Compatible with all Ophir thermal, pyroelectric and photodiode heads
- Large high definition LCD display
- Choice of digital or analog needle display
- 2 position kickstand
- Backlighting and rechargeable battery
- Analog output
- Log every point at up to >1000Hz with pyro heads
- Non volatile data storage up to 50,000 points
- Laser tuning screen and power and energy log
- USB and RS232 output to PC with statistics package
- NIST traceable and CE marked
- Soft keys and menu driven functions with on-line help
- Many software features such as density, min/max, scaling etc.



The Nova II is the most versatile and sophisticated handheld laser power/energy meter on the market. Just plug in one of the many Ophir smart heads and you have a whole measurement laboratory at your fingertips.

Besides measuring power or energy from pJ and pW to hundreds of Joules and thousands of Watts, 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. For those who prefer an analog display, 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 display in low light conditions.

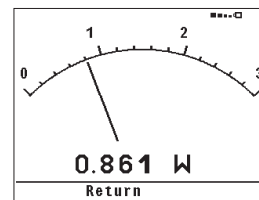
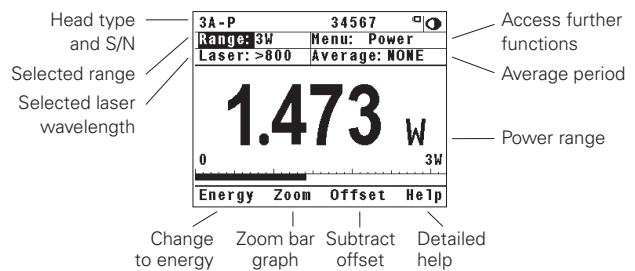
Selected Screens

Digital Power Screen

- CW industrial, medical and scientific lasers
- pW to 20KW with appropriate heads
- Can average over selected period. Useful for unstable lasers.
- Fast response bar graph

Analog Power Screen

- Perfect for adjusting and maximizing laser power
- Large analog needle with small digital display as well

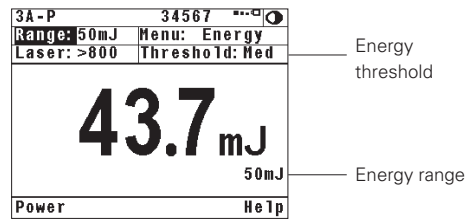


Choice of smaller display with range, menu, laser and average headers

Selected Screens

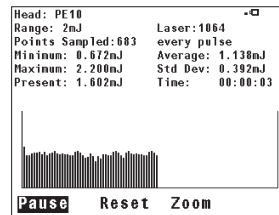
Energy Screen

- Pyroelectric heads (single or repetitive) and thermal heads (single shot only)
- Frequency measurement with pyroelectric heads



Energy Logging Screen

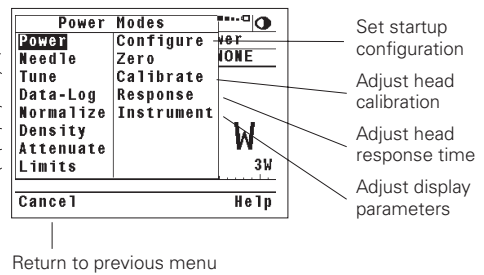
- Pyroelectric and thermal heads
- Continuous scroll with up to 100 points on screen
- Full statistics
- Store data onboard and recall



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



Specifications

Display:	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 117mm Wx 40mm H
Battery:	Rechargeable NiMH batteries with typically 18 hours between charges. Charger (included) also functions as an AC adapter.
Data handling	Both USB communications with data transmission rate of >1000 points/s and RS232 with 19200 baud rate. Non volatile on board storage of up to 54000 data points in up to 10 files. Data can be viewed on board or transmitted to PC.
Head features:	Works with thermopile, pyroelectric and photodiode heads. Automatic continuous background cancellation with PD300 heads. Submicrojoule and multikilohertz capability with pyroelectric heads.
Program features:	Preferred startup configuration can be set by user. User can recalibrate power, energy, response time and zero offset.

Ordering Information		
Item	Description	Ophir P/N
Nova II	Nova II universal smart head display for thermal, pyroelectric and photodiode heads	1Z01550
Nova Carrying Case	Carrying case 46x35x13 cm. For display and up to three heads	1J02079
Nova II USB Cable	USB to mini D/N cable	1E01205
Nova II RS232 Cable	D9 to mini D/N cable	1E01206
Nova II Battery Pack	Replacement battery pack for the Nova II	1Z05055

Laserstar

Versatile Laser Power/Energy Meter

- Two models available: dual and single channel
- Single channel model can be upgraded to dual channel
- Compatible with all Ophir thermopile, pyroelectric, photodiode and RP heads
- Large LCD display
- Backlighting and rechargeable battery
- Screen graphics and statistics (std dev, min, max)
- Analog output
- Built-in RS232 interface
- Log every data point at >1500Hz with pyroelectric heads
- Non-volatile data storage up to 50,000 points
- Laser tuning screen and power log
- Audio sound for laser tuning and low battery
- Statistics package
- GPIB option (IEEE488.1)
- NIST traceable
- CE marked
- Soft keys, menu-driven

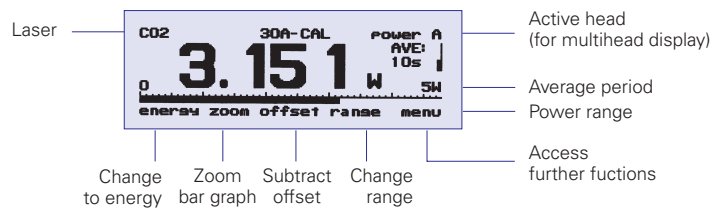


The dual channel model enables user to simply plug in any of Ophir's thermal, pyroelectric, photodiode or RP heads and measure two channels independently, or the ratio or difference between them in real time. Accessory plugs are also available to convert your Laserstar into a voltmeter or temperature probe.

Up to 10 data files (54,000 points total) can be stored for onboard review or downloading to computer even if Laserstar has been switched off. The built-in RS232 interface and StarCom PC software allow on-line processing of data or processing previously stored data; results are displayed graphically on a PC.

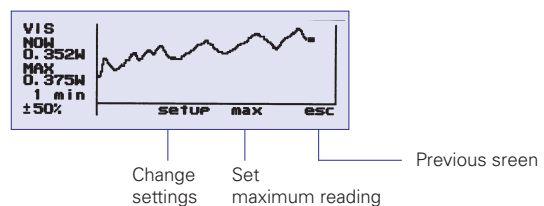
Digital Power Screen

- CW industrial, medical and scientific lasers
- pW to 20KW with appropriate heads
- Can average over selected period Useful for unstable lasers
- Fast response bar graph



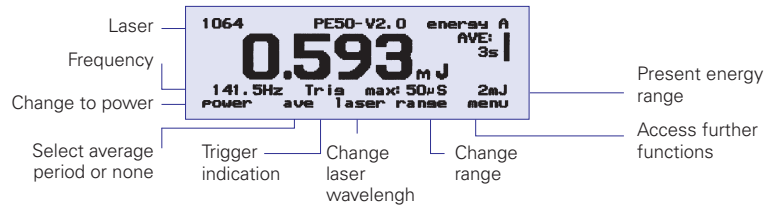
Laser Tuning Screen or Power Log Screen (not shown)

- Maximizing laser power
- User selected time period and zoom
- Option of audio tune tone



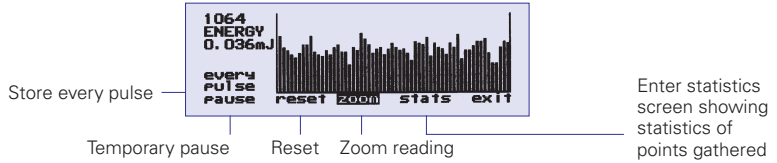
Energy Measurement Screen

- Pyroelectric and thermal heads – single pulse
- Pyroelectric frequency measurement



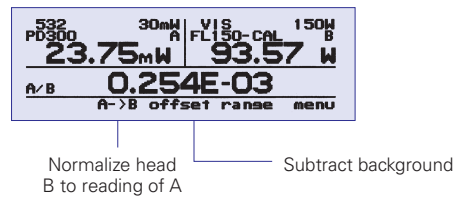
Energy Log Screen

- Pyroelectric heads
- Thermal heads – successive single pulses
- Continuous scroll
- Energy statistics



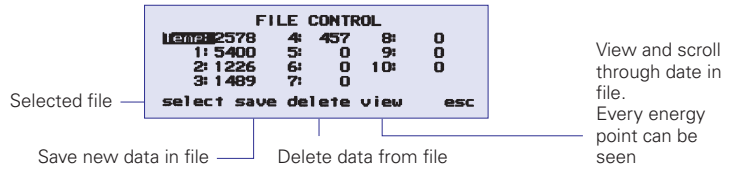
Ratio Screen

- Two independent heads
- Measure ratio, sum, difference
- Normalize one head to the other



Data Storage and Transmission

- Non-volatile storage of power and energy logging data
- Store in up to 10 files and transmit to
- PC using StarCom Windows program provided



Specifications

Display	High legibility 64 x 240 pixel graphics supertwist LCD with switchable, electroluminescent backlight which operates from charger or battery. Large 17mm digits. Screen refresh 15Hz.
Features	Many screen features including: power with bargraph, energy, average, exposure, frequency, graphs and more. Analog output 1 volt F.S.
Case	Molded high-impact plastic with swivel display and EMI conductive shielding, to allow use even in proximity to pulsed lasers.
Size	Folds to a compact 228mm W x 195mm L x 54mm H.
Battery	Rechargeable 18 hours between charges. Charger (included) also functions as AC adapter.
Multihead option	Two heads can be connected and measure independently, or the ration, sum or difference of the two can be displayed.
Data handling	Built-in RS232 communications at up to 19200 baud. Non-volatile on-board data storage in 10 files of up to 54000 points total. Data can be viewed on-board or transmitted to PC.
Head features	Works with thermal, pyroelectric and photodiode heads. Automatic, continuous, background cancellation with PD300 heads. Submicrojoule and multikilohertz capability with pyroelectric heads.
Program features	User can update calibration information. Preferred startup configuration can be set by user. User can recalibrate power, energy, response time and zero offset.

Ordering Information		
Item	Description	Ophir P/N
Laserstar	Laserstar single channel universal smart head display for thermal, pyroelectric, photodiode and RP heads	1Z01600
Laserstar 2 Channel	Laserstar with dual channel capability including ration and difference measurement	1Z01601
Laserstar Hard Case	Hard case 46x35x13cm. For display and up to three heads	1Z09101
Laserstar AN adapter	Laserstar analog output adapter. Plugs into D25 output and provides analog output from BNC plug (1 unit supplied with Laserstar)	1Z11004
Laserstar 2 Ch AN Out	Laserstar AN adapter but for dual channel Laserstar (1 unit supplied with Laserstar)	1Z11005
Laserstar 2 Ch Upgrade	Upgrade single channel Laserstar to dual channel version (contact agent for details)	18121
Laserstar Battery Pack	Replacement battery pack for Laserstar	1Z14006
Laserstar RS232 Cable	D25 to D9 cable	1Z10032
Laserstar IEEE Option	IEEE GPIB adapter for Laserstar	18300
Laserstar IEEE Upgrade Kit	Upgrade for existing Laserstar	18301

AN/2, AN/2E

Low-cost Analog and Digital Display for Ophir Thermal and Photodiode Heads

- Both analog and digital display
- Smart connectors
- User Recalibration
- Menu driven
- User recalibration
- EMI rejection
- Autoranging, autozeroing and averaging
- Backlight and rechargeable battery
- AN/2 is compatible with all Ophir thermal heads
In addition, AN/2E measures energy and operates with photodiode heads



Specifications

Display:	Large 11 x 4.5 cm analog meter with 0-3 and 0-10 scales and bright backlight. In addition, 8 segment alphanumeric display.
Features:	Auto and manual power ranging, averaging of power over defined period, user recalibration, zero offset, laser wavelength correction, analog output (1 volt full scale).
Case:	Molded, high-impact plastic with kickstand and EMI conductive shielding to allow use even in proximity to pulsed lasers.
Size:	Compact, 130mm W x 91 mm H x 180mm D. Easy view angle of 20° with kickstand down or 60° with stand up.
Battery:	Rechargeable 12 volts, 12 hours use between charges. Charger included. Also functions as AC adapter.
Head features:	All heads use smart connector containing configuration information. Measure mW to KW, mJ to hundreds of J with Ophir thermal heads. Automatic background cancellation with PD300 and PD300-3W.
Software features:	Save latest configuration for startup next time. User can recalibrate power, energy or meter calibration. Response time adjustment. Zero offset. Average power.

Ordering Information		
Item	Description	Ophir P/N
AN/2	AN/2 Analog/digital CW power for thermal heads	1Z01400
AN/2E	AN/2E Analog/digital power and energy meter for thermal heads and power meter for photodiode heads	1Z01401
AN/2 Upgrade Kit	Field upgrade AN/2 to AN/2E (contact agent for details)	1Z01403

Ophir's PC Connectivity Options for Power/Energy Measurement



Ophir Pyroelectric, Thermal and Photodiode Laser Power/Energy Heads. Voltage, Temperature probes Peak Power Meters etc. All of them plug and play.

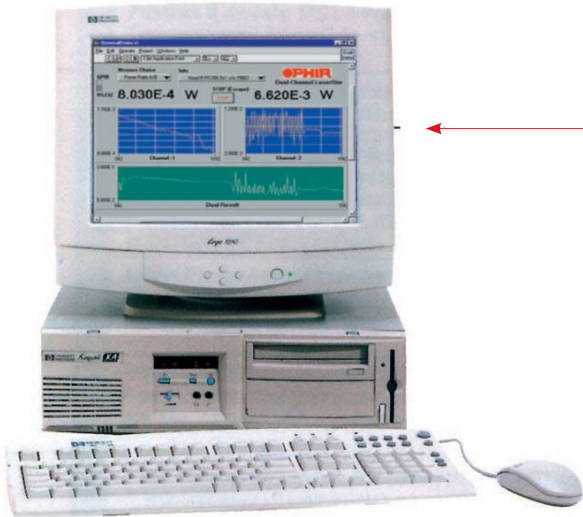
1000 data points per second into onboard storage with Ophir PE heads

>1500 real time data points per second with IEEE GPIB
>30/s with RS232

Download up to 50,000 points of stored data to PC and Printer



Laserstar or Nova or Nova II display (2 channels with Laserstar dual channel)
Nonvolatile on board storage up to 50,000 data points



StarCom: basic software for Ophir Nova II, Laserstar and Nova displays.
Plots power graphs, energy histograms, stores data to file.

LabVIEWVI's: For building applications with LabVIEW that interface to Ophir displays

Computer Options for Ophir Displays

Communications

With Ophir RS232, USB and GPIB communication options you can transfer data from the instrument to PC in realtime or offline. You can also control the instrument from the PC.

- RS232-Standard with Laserstar and Nova II, optional on Nova
- GPIB-Optional with Laserstar
- USB-Standard on Nova II and USB Interface

StarCom

StarCom is a full featured data interface for the Laserstar, Nova II RS232 and Nova power and energy meters. Use StarCom for Windows to plot power graphs, energy histograms and store data to file. With the dual channel LaserStar, you can also display ratio and difference data. For further details see page 83.

Download the StarCom software from Ophir’s website www.ophiropt.com

USB Software

The USB Software is a software package for Ophir instruments using USB communications. It is applicable to the USB Interface and the Nova II when operating via USB. Further details on the USB Interface and the software on page 85.

Ophir VIs

With Ophir LabVIEW VIs you can build a wide variety of LabVIEW applications for the Ophir Displays using GPIB or RS232.

Download Ophir VIs from Ophir’s website www.ophiropt.com

Data Transfer Specifications				
Display Type	Nova RS232	Nova II RS232 Laserstar RS232	Nova II USB Laserstar GPIB	USB Interface
Power measurement:				
Power log period	5s to 25hr.	12s to 600hr.	12s to 600hr.	5s to 500hr.
Max points stored onboard	300	6000	6000	N.A.
Max points direct to PC file	unlimited	unlimited	unlimited	unlimited
Energy measurement:				
Max real time data logging to PC	>10Hz	>30Hz	Novall>2000Hz ¹ Laserstar >1500Hz ¹	2000Hz ¹
Max onboard data logging rate	>10Hz	Novall >1000Hz ¹ Laserstar >1500Hz ¹	Nova II 4000Hz ¹ Laserstar >1500Hz ¹	N.A.
Data transfer from instrument to PC	seconds	~500 points/s	~500 points/s	N.A.
Max points stored onboard	1000	50,000	50,000	N.A.
General:				
Maximum baud rate	19200 ²	38400	N.A.	N.A.
PC file format	Pure text files, spreadsheet compatible			

1 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.

Turbo mode is not available when in dual channel mode.

2 For pyroelectric heads, maximum guaranteed baud rate is 9600

RS232 Module for Nova

Plug-in module allows transfer of power and energy data to computer and remote control of display from computer. Includes manual and StarCom Windows based application program (refer to page 72).



IEEE488 for Laserstar

Kit to upgrade existing Laserstar displays to operate with IEEE GPIB protocol. The kit is installed by the local agent and allows operation either with existing RS232 or IEEE. The kit also includes the latest version of StarCom for Windows. With GPIB you can handle over 1500 data points per second in realtime either to store onboard or send to PC. Along with the StarCom software you also get VI (Virtual Instruments) software modules which allow you to build LabVIEW applications (refer to page 78).



Carrying Cases

Soft case for Nova display. Can be worn on belt. (refer to page 72).

Carrying case for Nova display and up to 3 heads (refer to page 72)

Hard case for LaserStar display and up to 3 heads. (refer to page 78)



Hard Case



Carrying Case

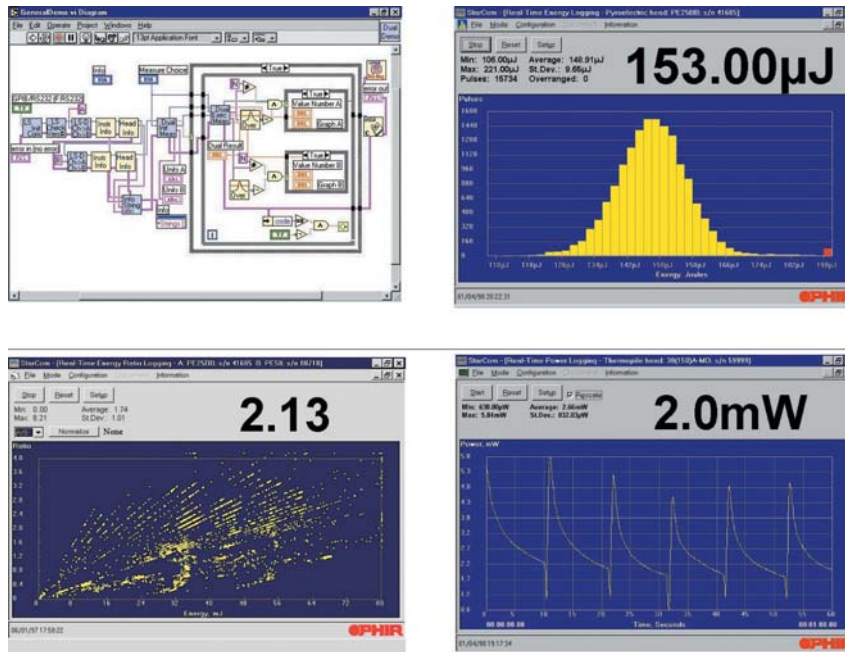


StarCom PC Software and LabVIEW VIs for Ophir Displays Connected to PC

The Ophir StarCom software is included with all Ophir displays having computer communication capability and can be downloaded from the Ophir website.

As illustrated below, StarCom can display power or energy graphs in real-time or download them from the instrument. It can store the data -in text format for use in Excel or other programs - on the PC for later recall.

In addition, LabVIEW VIs for Ophir displays are available for download from the Ophir website.



Laser Power & Energy

Heads

Displays

Beam Profile Wavelength

Integrated Systems

OEM Products

Ordering Information		
Item	Description	Ophir P/N
StarCom Software	Windows software for Ophir Smart displays	1Z12006

Smart Head to USB Interface

Convert your PC or Laptop Into an Ophir Smart Head Power/Energy Meter

- From head to interface to PC - no power source needed
- Almost unlimited number of heads will work with one PC
- Plug and play with all Ophir smart heads
- Log power and energy, average, statistics, histograms and more
- Includes analog output
- Full speed, USB 1.1 device
- Active X software provided

Smart Head to USB interface



The Ophir Smart Head to USB interface turns your PC or laptop into a full fledged Ophir multichannel laser power/energy meter. Just install the software, plug the head into the interface box and the USB cable from the box to the PC USB port. Each head needs one interface box. By using USB hubs one or several heads can be connected to the PC and used simultaneously.



USB Interface PC Software

The software supplied with the USB Interface allows you to measure, analyze and record power and energy from any Ophir smart head without needing a display.

You can log the data from each head simultaneously to file. You can tile up to 4 heads at once on the PC screen or view them individually. ActiveX software is also provided so that you can control the USB interface from your own software.

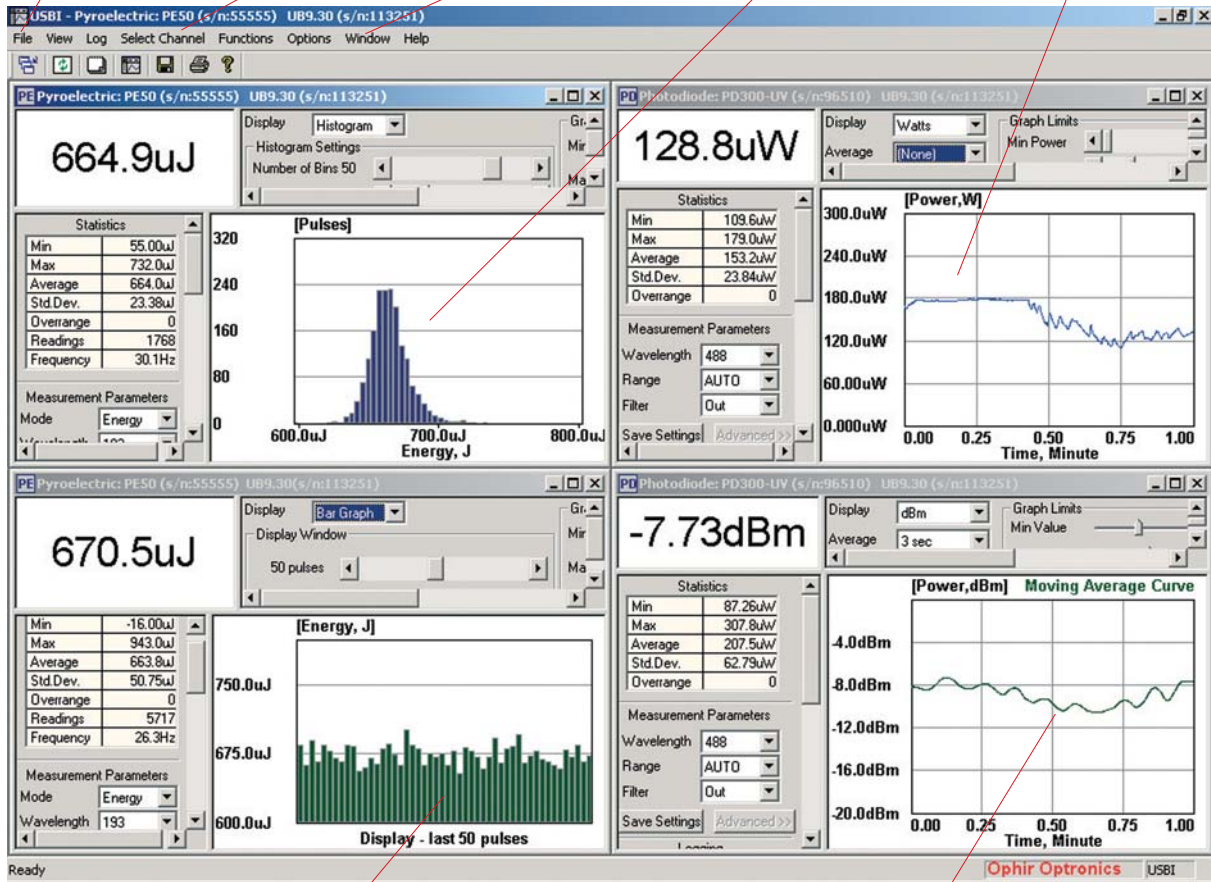
Open save and print log files

Select which heads are operating now

Arrange different head windows to tile or full screen

Energy measurement with histogram of pulses per energy interval

Power measurement without averaging



Energy measurement with energy vs. time display

Power measurement in dBm with moving average graph

Laser Power & Energy

Heads

Displays

Beam Profile Wavelength

Integrated Systems

OEM Products

Ordering Information

Item	Description	Ophir P/N
Smart head to USB interface	Module to operate Ophir smart heads from your PC USB port. Comes with software	1Z01200