818P-XkW Series

High Power Thermal Detectors

User's Manual

Newport®
Experience | Solutions

Declaration of Conformity

We declare that the accompanying product, the model 818P, identified with the CE mark, meets the intent of the Electromagnetic Compatability Directive, 89/336/EEC and Low Voltage Directive 73/23/EEC.

Manufacturer's Name:	Newport Corporation
Manufacturer's Address:	1791 Deere Avenue Irvine, CA 92606 USA
Type of Equipment:	Laser Power Detector
Model No.:	818P
Year of test & manufacture:	2002

Standard(s) to which Conformity is declared:

Standard	Description	Performance Criteria
EN 61326 :1997	Limits and methods of measurement of radio interference characteristics of information technology equipment. Testing and measurements of conducted emission	Class A
EN 61326 : 1997	Limits and methods of measurement of radio interference characteristics of information technology equipment. Testing and measurements of radiated emission	Class A
EN 61000-4-2:1995	Electromagnetic compatibility (EMC) – Part 4: Testing and measurements techniques- Section 4.2: Electrostatic discharge.	Class B
EN 61000-4-3:1996	Electromagnetic compatibility (EMC) – Part 4: Testing and measurements techniques- Section 3: Radiated, Radio Frequency immunity.	Class A
ENV 50204: 1995	Radiated Electromagnetic field from digital radio telephones- immunity test 900MHz pulsed	Class A
EN 61000-4-4:1995	Electromagnetic compatibility (EMC) – Part 4: Testing and measurements techniques- Section 4: Electrical fast transient/burst immunity.	Class B
EN 61000-4-6:1996	Electromagnetic compatibility (EMC) – Part 4: Testing and measurements techniques- Section 6: Immunity to conducted Radio Frequency.	Class A

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).

Bruno Rety
Group Director of PPT Instrument and Motion Europe
Zone Industrielle
45340 Beaune-la-Rolande, France

Sean E. LeCave
Sr. Manager Quality

1791 Deere Avenue
Irvine, CA USA

Warranty

Newport Corporation warrants that this product will be free from defects in material and workmanship and will comply with Newport's published specifications at the time of sale for a period of one year from date of shipment. If found to be defective during the warranty period, the product will either be repaired or replaced at Newport's option.

To exercise this warranty, write or call your local Newport office or representative, or contact Newport headquarters in Irvine, California. You will be given prompt assistance and return instructions. Send the product, freight prepaid, to the indicated service facility. Repairs will be made and the instrument returned freight prepaid. Repaired products are warranted for the remainder of the original warranty period or 90 days, whichever first occurs.

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First printing 2008

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Newport Corporation
1791 Deere Avenue
Irvine, CA, 92606
USA

Part No. 90030459 rev C

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Service Information

This section contains information regarding factory service for the source. The user should not attempt any maintenance or service of the system or optional equipment beyond the procedures outlined in this

manual. Any problem that cannot be resolved should be referred to Newport Corporation.

Technical Support Contacts

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Zone Industrielle
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Telephone: +86-21-5046 2300
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Newport Corporation Calling Procedure

If there are any defects in material or workmanship or a failure to meet specifications, promptly notify Newport's Returns Department by calling 1-800-222-6440 or by visiting our website at www.newport.com/returns within the warranty period to obtain a **Return Material Authorization Number (RMA#)**. Return the product to Newport Corporation, freight prepaid, clearly marked with the RMA# and we will either repair or replace it at our discretion. Newport is not responsible for damage occurring in transit and is not obligated to accept products returned without an RMA#.

E-mail: rma.service@newport.com

When calling Newport Corporation, please provide the customer care representative with the following information:

- Your Contact Information
- Serial number or original order number
- Description of problem (i.e., hardware or software)

To help our Technical Support Representatives diagnose your problem, please note the following conditions:

- Is the system used for manufacturing or research and development?
- What was the state of the system right before the problem?
- Have you seen this problem before? If so, how often?
- Can the system continue to operate with this problem? Or is the system non-operational?
- Can you identify anything that was different before this problem occurred?

Table of Contents

List of Figures

List of Tables

1 Safety Precautions

1.1 General Safety

Do not use the 818P detector if it looks damaged, or if you suspect that the 818P is not operating properly.

Appropriate installation must be done for water-cooled and fan-cooled detectors. Refer to the specific instructions for more information. The user must wait for a while before handling these detectors after power is applied. Surfaces of the detectors get very hot and there is a risk of injury if they are not allowed to cool down.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, it is suggested to try to correct the interference by taking one or more of the following steps:

- Reorient or relocate the receiving antenna
- Increase the distance between the equipment and receiver
- Connect the equipment to an outlet that is on a different circuit than the receiver
- Consult the dealer or an experienced radio/TV technician for help

The following international symbols are used in this manual:

Refer to the manual for specific Warning or Caution information to avoid any damage to the product.

1.2 Diffusive Surface

When using the 818P-XKW be aware of the diffused back reflection ~ 10-15%.

1.3 Detector Temperature

Detectors can become hot enough during usage to cause burns.

2 General Information

2.1 Introduction

The Newport 818P-XKW Series power detector family includes 818P-3KW-60.

- The 818P-3KW-60 detector has dimensions of 127 mm x 127 mm and an aperture of 60 mm.
- The high power surface absorber sensors are designed for use at high average power densities

The 818P-XKW detectors can measure between:

- ±3 W (noise equivalent power) and 3000 W of average power for 818P-3KW-60.

The 818P-XKW detectors are supplied with a 180 cm length flexible cable with output connection options of a DB-15 "intelligent" male connector.

NOTE

To eliminate possible damage, do not carry the detector using the connector cable.

For cases where Newport's Optical Power Meters don't automatically read the wavelength correction factor, you can use your detector's "*Personal wavelength correction™ Certificate*" to adjust the power you read to a power corrected for a particular wavelength.

Call your nearest Newport local offices or distributor to replace the sensor disk and/or to recalibrate the head.

2.2 Detector Connectors

2.2.1 DB-15 “Intelligent” Connector

The DB-15 male "intelligent" connector contains an EEPROM (Electrically Erasable Programmable Read-Only Memory) with different information related to the 818P-XKW Series detector head in use: detector model, calibration sensitivity, applicable scales and wavelength correction factor for up to 20 wavelengths.

This connector, available in the 818P-XKW , allows the monitors to adjust their characteristics automatically to the power sensor being connected. No calibration procedure is required when installing the power heads, allowing for faster set-up.

The DB-15 connector pin-out is composed of (see Fig. 1-1):

1-	USED BY OPTICAL POWER METER
2-	" " " " "
3-	" " " " "
4-	" " " " "
5-	" " " " "
6-	SIGNAL +
7-	USED BY OPTICAL POWER METER
8-	" " " " "
9-	" " " " "
10-	" " " " "
11-	" " " " "
12-	" " " " "
13-	SIGNAL -
14-	USED BY OPTICAL POWER METER
15-	" " " " "
SHELL -	BODY GROUND

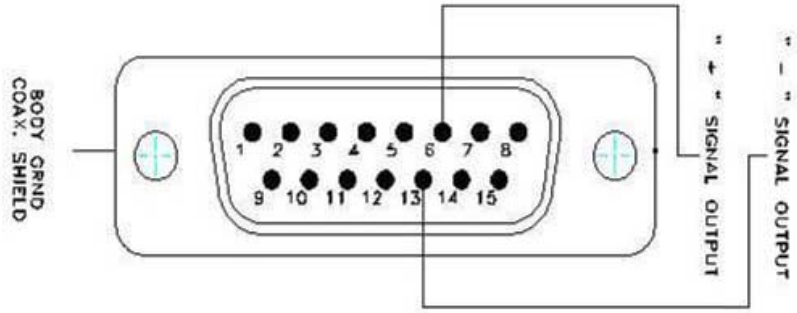

Figure 1 Db-15 Connector Pinout

2.2.2 USB Connector

The USB connector allows using the 818P-XKW on a PC. The PC interface, *PC INTERFACE FOR 818P-XKW*, features statistical calculation, graphics displays and data logging options. It also gives real time measurement of the cooling flow rate and temperature.

A standard USB cable of 5 meters is supplied with the 818P-XKW. If a longer cable is required, please contact Newport for more information.

A USB power adapter, P/N USB-CH must be ordered separately, to power up the device, if not powered through a PC.

2.2.3 Cooling Water Connection

The fluid used to cool the 818P-XKW must be clean water.

Water Fittings and tubing:

- The 818P-XKW is equipped with 3/8'' (OD) tube compression fittings.
- It can be used with plastic pressure tube systems (like PE tubes) or Copper tubes.
- The brass fittings and ferrules are not compatible with stainless steel tubes.

Water Quality:

- Use filtered (< 10µm) water to avoid any residue
- Distilled water can be used, but it is not recommended to use highly deionized ultra-pure water because the water cavity is not completely inert

Water Temperature:

- Water temperature stability is very important since variations (1 to 60 seconds) in the temperature can be interpreted as laser power fluctuation
- Regulate the temperature with a chiller or a re-circulator
- The water temperature can be monitored with the PC interface *PC INTERFACE FOR 818P-XKW*

Water Flow Rate:

- Flow rate stability is very important since the measured power is directly proportional to the flow. Variation (1 to 60 seconds) in the flow rate can be interpreted as laser power fluctuation
- The flow rate must be adjusted with a valve. A lower flow rate causes a slower response while increasing the signal to noise ratio. A higher flow rate causes a faster response, reducing signal to noise ratio
- The water flow rate can be monitored with the PC interface *PC INTERFACE FOR 818P-XKW*

NOTE

All the parameters should remain in the range stated in the specifications.

2.3 818P-XkW Series Specifications

Model	818P-3KW-60
Aperture Diameter	60 mm
Spectral Range	0.19 - 20 µm
Power Noise Level	± 3 W
Typical Rise Time (0 – 95 %)	7 s
Sensitivity	0.5 mV/W
Calibration Uncertainty	± 5 % @ 1.064 µm
Linearity	± 2%

with Power	
Repeatability (Precision)	± 2%
Max. Average Power (continuous)	3,000 W
Max. Average Power (5 min.)	4,000 W
Max. Average Power Density [1), 2)]	10 kW/cm² (0.5 kW) 3 kW/cm² (3 kW)
Dimension (mm)	127 (H) x 127 (W) x 74 (D)
Weight (head only)	1.8 kg
Cooling	Water
Required cooling flow	4 – 6 LPM < ± 1 LPM/min [3)]
Temp of cooling water	15 - 25 °C < ± 3 °C/min [3)]
Pressure Drop	< 6 psi
Recommended load Impedance	> 100 kΩ
Output Impedance	< 70 Ω
Linearity vs beam dimension	± 1.0 %
PCB electrical supply	USB
Maximum current consumption	30 mA
Max output signal	2.0 V

Note:

[1)] Refer to section 4 for more details on the appropriate beam size in function of measured power.

[2)] 1.064, 1.08 & 10.6 µm

[3)] On a period > 1 minute

Specifications are subject to change without notice.

3 Operating Instructions

In order to ensure a long lifetime of accurate measurements, it is recommended that 818P-XKW is held within the following ambient conditions:

- Storage environment temperature: 10 to 65°C, RH < 90%
- Operating environment temperature: 15 to 28ºC, RH < 80%

It is possible to store and operate your Newport 818P wattmeter beyond this range. For any specific requirement, please contact your local Newport representative.

Connect the detecting head (equipped with 3/8'' tube fittings) to a water cooling supply.

NOTE

Ensure that the connection is water-tight by cutting the end of the tube perpendicular to the tubing. The portion of the outer tubing wall that slips into the fitting must not be deformed or damaged.

- To connect the detector head fittings to the water supply tubing: unscrew the two parts of the fitting, push the tubing into the part not connected to the detector until it comes to the end of the fitting, then screw in the two parts of the fitting.
- **The direction of flow through the head is very important. The measured power will be negative if the direction is inverted.**
- Once you have connected the fittings, check them for leaks. If you find a leak, check to see if the tubes are pushed in far enough and that the tubing has not been damaged.
- To disconnect the detector head fittings, remove the water pressure and drain the water from the tubing. Unscrew the two parts of the fitting and pull out the tubing.

NOTE

Water will usually remain in the detector head after it is disconnected. It is possible to remove it by blowing it out, but be careful not to blow the water on yourself or on the detector aperture. Dry the detector body and absorber off before storing it.

- Be sure that flow rates satisfy the minimum values, as indicated on the specifications page.
- Time variations in water flow rates or water temperature will cause corresponding oscillations in measurements.
- **The water temperature and flow rate can be monitored with the PC interface *PC INTERFACE FOR 818P-XKW.***

For the most accurate measurements, center the beam on the sensor face. The beam diameter on the sensor should ideally be the same size as the beam diameter of the original calibration, which corresponds to >98% encircled power centered on 70-90% of the sensor's surface (this complies with the International Electrotechnical Commission standard #1040: "Power and Energy Measuring Detector..."). Refer to the calibration certificate for the exact calibration beam diameter.

WARNING

Be careful not to exceed the maximum levels and densities stated in the specifications, refer to section 4, Damage to the optical absorber material, for detailed information.

Strong fluctuations in the zero level are usually caused by one of the following:

1. **Rapid fluctuations in water temperature**
2. **Rapid fluctuations in the water flow rate**

3.1 Interfacing with Newport Optical Power Meters

To operate the 818P-XKW detector, connect the detector head to the input socket of the monitor using the DB15 cable. A separate USB power supply, Model USB-CH is also required to operate the PCBA in the head.

Before taking measurements, block off the detector head to prevent it from sensing heat from random sources. To obtain an accurate reading, the monitors must be zero adjusted.

Allow the detector head to thermally stabilize before making any measurements. Let the signal stabilize for a few seconds before adjusting the offset. Refer to the monitor's operating instructions for further details.

3.2 Interfacing with a Voltmeter

1. The 818P-XKW must be powered from a PC via the USB port or with an optional USB power adapter.

2. Connect the power head to a precision microvoltmeter, or data acquisition system, with a load impedance that is >100 kΩ. Because of the very low voltages at lower power levels for some of these detectors, analog or digital filtration may be required to remove ambient electromagnetic interference.

3. Put the power head into the laser beam path (the laser beam must be contained within the sensor area) for about a minute.

4. Switch on the voltmeter and adjust its voltage range to the range required for the measurement. To determine the voltage range to be measured, refer to the detector head specifications:

Vout = (expected power) x (sensitivity of power detector)

5. Block off any laser radiation to the detector .

6. Wait until the signal has stabilized, then measure the zero level voltage offset from the detector .

7. Apply the laser beam to the power head.

8. Wait until the signal has stabilized (between one to three minutes for optimum measurements), then measure the voltage output from the detector.

9. The measured power is calculated as follows:

Measured power [W] = (output voltage [V] - zero level voltage [V]) / sensitivity [V/W]

= 1000 x (Vout [mV] - Vzero level [mV]) / sensitivity [mV/W]

3.3 Interfacing with a PC

This section describes in detail the first group of menus essential to the PC INTERFACE FOR 818P-XKW operation. The display menu lets you view the status and your measurement in various ways. Use the settings menu during setup to set the best parameters for the measurement task at hand. It provides the flexibility to accommodate a wide variety of measurement conditions.

The water temperature and flow rate are displayed in real-time at the bottom of the interface.

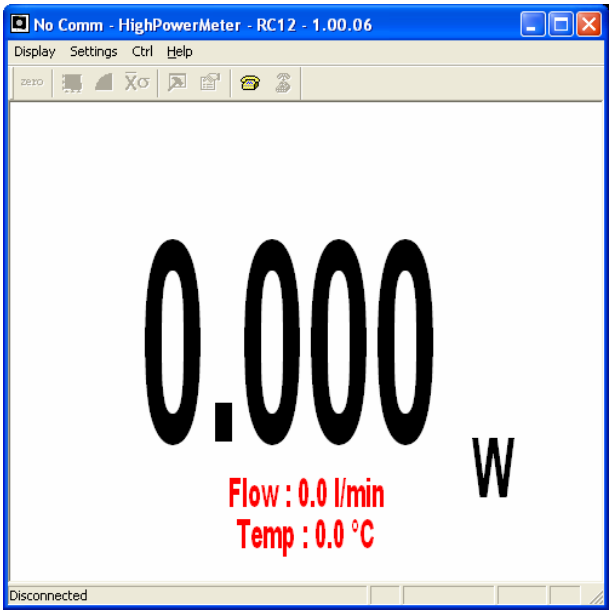

Figure 2 PC Interface for 818P-XkW

3.3.1 PC Interface for 818P-XKW Warnings

The PC Interface show cooling water status in real time.

- The flow rate and temperature are shown in black fonts in normal conditions (FIG 2.2 A).
- If the water temperature is not stable a message will appear (FIG 2.2 B).
- If the flow rate (FIG 2.3 A) or temperature (FIG 2.3 B) are too high or low the fonts will change to red as a warning that the measurements will be affected.

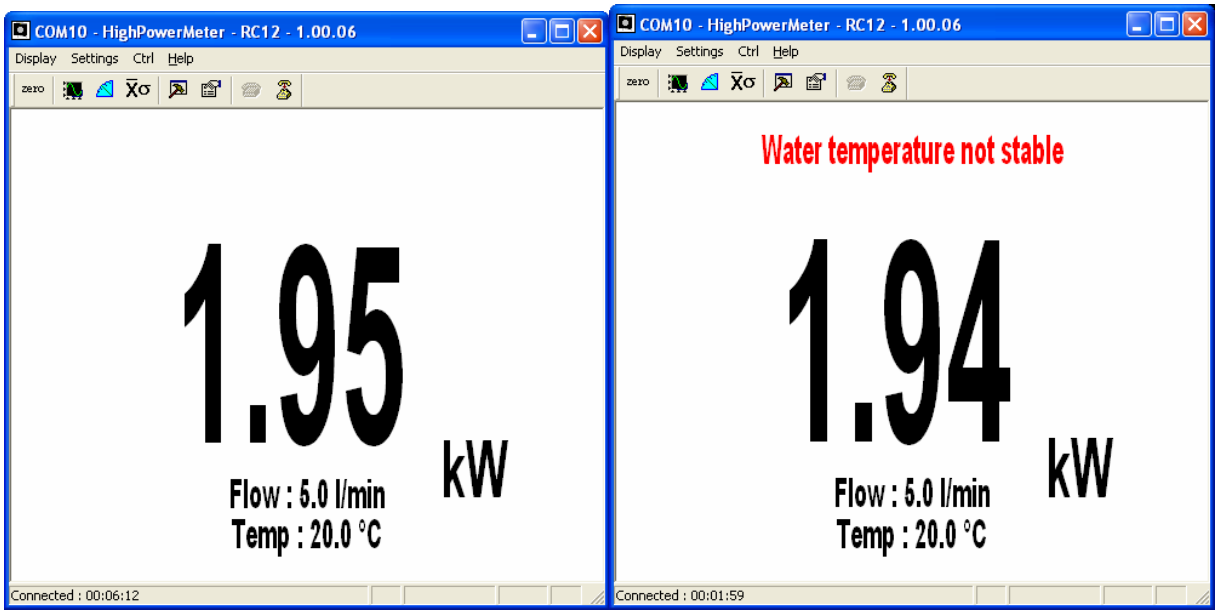

Figure 3 A & B PC Interface for 818P-XKW Interface Warnings

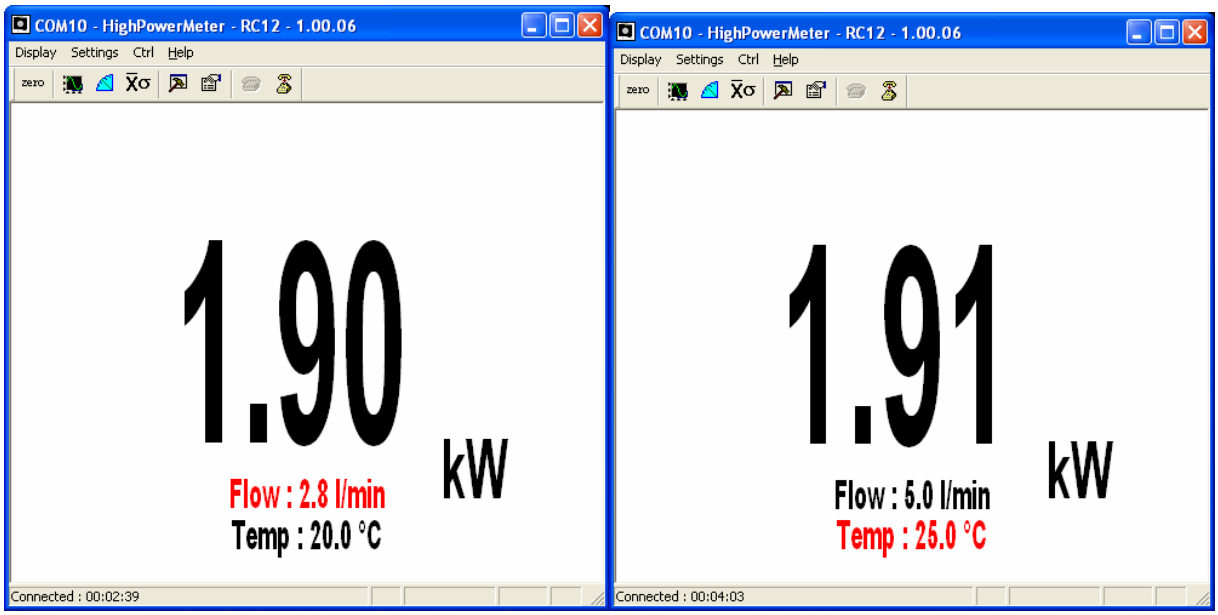

Figure 4 A & B PC Interface for 818P-XKW Interface Warnings

3.3.2 PC Interface for 818P-XkW Shortcut Buttons

To access certain features with a single click instead of having to enter the menus, PC INTERFACE FOR 818P-XKW has 8 shortcut buttons on its main window. From left to right, those buttons access: *Zero Offset*, *Display - Histogram*, *Display - Tuning Needle*, *Display - Statistics*, *Display - Status*, *Settings - Data Sampling*, *Ctrl - Communication - Connect*, *Ctrl - Communication-Disconnect.*

Figure 5 PC Interface for 818P-XkW Shortcut Buttons

3.3.2.1 Zero

This feature resets the zero reading level to compensate for electronic offsets in the 818P-XKW and thermal noise in the environment of the detector. When the 818P-XKW receives the associated command, it subtracts the power reading on all its internal hardware scales. Subsequent measurements will be relative to this zero power level. Use this function once your power meter has achieved thermal equilibrium to ensure accurate measurements.

3.3.3 Display Menu

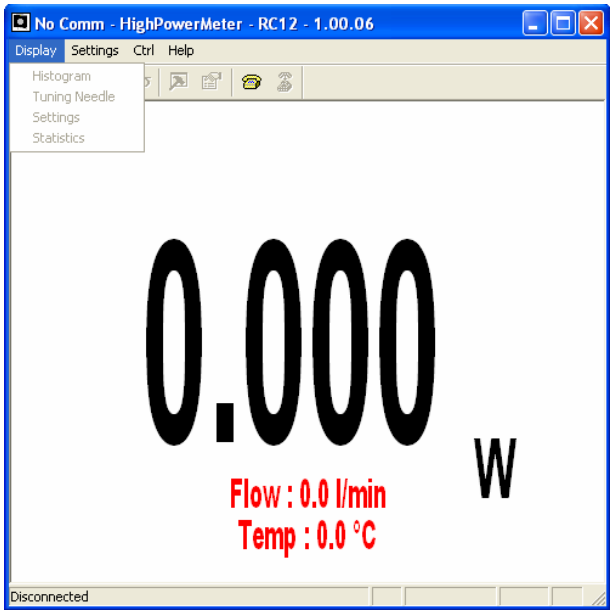

Figure 6 PC Interface for 818P-XkW Display Menu

3.3.3.1 Display – Historgram

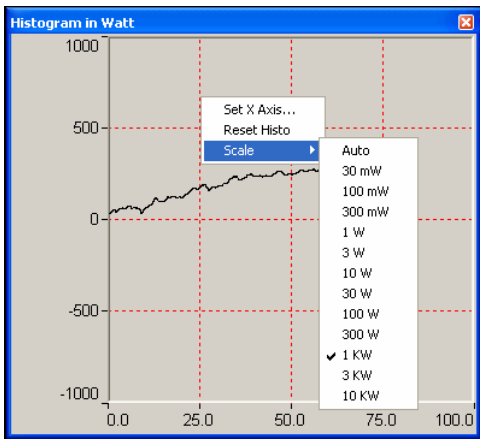

Figure 7 Histogram Chart

Right-click on the histogram to set the time period to view (Set X Axis…), reset the display or select a scale. Note that the Auto-Scale on the histogram starts from the lowest scale and only does scale-ups. This is made to select the best scale for the user without frequent scale oscillations.

3.3.3.2 Display – Tuning Needle

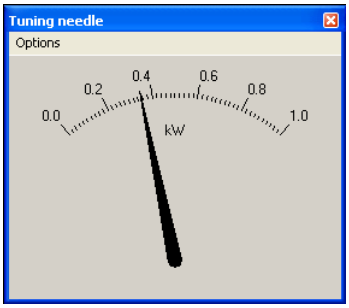

Figure 8 Tuning Needlet

Right-click on the Tuning Needle to select a scale. The autoscale(default) mode is useful when the measurement variations are small, because it will zoom on the best possible scale, but will oscillate with large variations. Use a fixed scale in this case.

3.3.3.3 Display – Setting Status

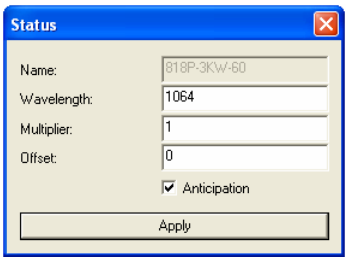

Figure 9 Setting Status Window

The Settings window displays various settings.

3.3.3.3.1 Status – Wavelength

Use The Wavelength menu to select the power wavelength at which the detector is to be used. It applies a correction to adjust for the variation in responsivity at different wavelengths. When a new thermal detector is plugged in, the calibration wavelength is the default selection.

PC INTERFACE FOR 818P-XKW only allows you to choose values that fall within the detector's range. If you select or enter a value that is not valid, a menu pops up to signal the error and PC INTERFACE FOR 818P-XKW automatically selects the default value. That is the wavelength used for calibration at Newport during manufacture or subsequent service.

The 818P-XKW automatically recognizes every power detector, for accurate auto-calibration. More importantly, it takes advantage of our *Personal wavelength correction*™: it reads the memory in the *Smart Interface* connector to provide a wavelength correction based on spectral data measured from that specific detector. Your measurements across the band have never been this precise and easy.

When working at a wavelength not available in the Wavelength menu, use the custom option. If you choose custom, a dialog box appears where you can enter a wavelength. The wavelength you enter must be within the range of valid wavelengths. The 818P-XKW interpolates a wavelength correction factor using the pre-programmed data in the detector's EEPROM.

3.3.3.3.2 Status – Corrections

The user can apply one multiplier and one offset to the detector reading. Correction factors are most useful when sampling a percentage of a powerful laser beam or correcting for absorption along an optical chain. The Status window displays the values of correction factors that are being applied to the measurements. To activate the correction factor, select Status in the Display Menu and then select Multiplier or Offset. A dialog box opens where you enter the correction value in percentage or as an absolute value. This number will then multiply, or add to the actual measured value to calculate the corrected value. PC INTERFACE FOR 818P-XKW will then display the corrected value.

Note that the Statistics are computed for the corrected values only.

To disable the correction factor, do a Display – Status – 1 & 0.

3.3.3.3.3 Status – Anticipation

Thermal power detectors are inherently slow. The 818P-XKW uses an algorithm to significantly accelerate the response. This is called "anticipation". By default, this option is enabled. The reasons for disabling the anticipation are to slow down the response and to lower the noise level.

3.3.3.4 Display – Statistics

The statistics window displays the current statistics. See section 3.3.4.1 to set the data sampling parameters. See section 3.3.5.3 to learn how to start and stop the statistics.

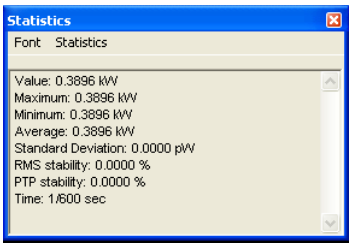

Figure 10 Statistics Window

Statistical Parameters	Definition
Maximum value	Highest value in the sample period, E_{max} or P_{max}
Minimum value	Lowest value in the sample period, E_{min} or P_{min}
Average value	Rolling average of values in the sample, E_{avg} or P_{avg}
Standard Deviation	A measure of the spread of the data around the average. $STD=\sqrt{\frac{n\sum x^2-\left(\sum x\right)^2}{n(n-1)}}$
RMS stability	Root mean square stability represents the standard deviation as a percent of the average. $RMS=\frac{STD}{E_{avg}}\times 100$, $RMS=\frac{STD}{P_{avg}}\times 100$
PTP Stability	Shows the spread between the highest and lowest point in the sample as a percent. $PTP=\frac{E_{\max}-E_{\min}}{E_{avg}}\times 100$, $PTP=\frac{P_{\max}-P_{\min}}{P_{avg}}\times 100$
Time	Time elapsed since beginning the sample.

Table 1 Statistical Values

3.3.4 Settings Menu

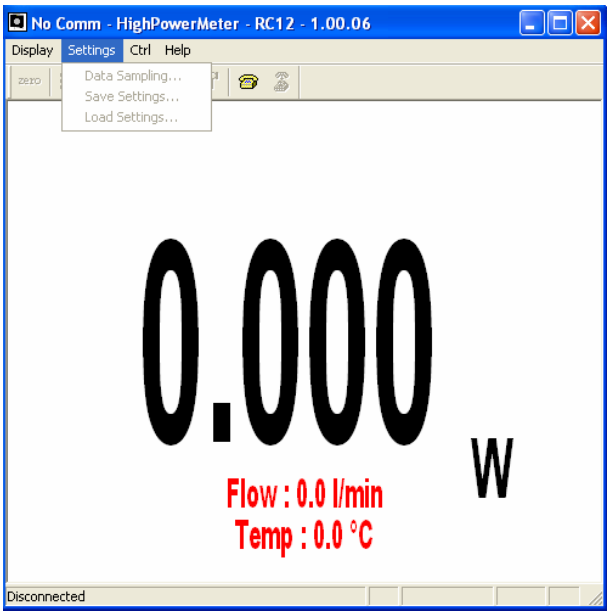

Figure 11 Settings Menu

Items in the Settings menu define user-adjustable parameters.

3.3.4.1 Settings – Data Sampling

The Data Sampling parameters are used for calculating the statistics (see section 3.3.3.4) and for data acquisition (see section 3.3.5.2). PC INTERFACE FOR 818P-XKW uses default sampling parameters unless you set them yourself. You can set PC INTERFACE FOR 818P-XKW either to calculate the statistics for a single sample and stop or to repeat continuously. Take data for a few seconds or a few weeks. You have the flexibility to handle any application, from analyzing a single short pulse with high resolution to sampling performance over a period of months.

The statistical parameters that are calculated are listed in Table 2.

Figure 12 shows the window for setting the data sampling parameters. Table 2 describes the parameters. When finished setting them, click save to activate the parameters.

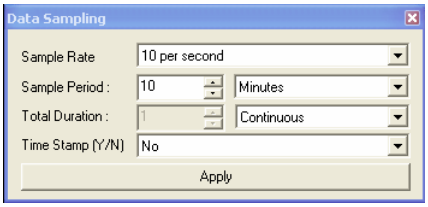

Figure 12 Data Sampling Parameter Window

Parameter	Choices	Description
Sample Rate	10Hz to 1 per hour	Sets the number of points (measurements) per second: 10 per second, 1 per second, 1 per 10 seconds, 1 per minute, 1 per 10 minutes, 1 per hour.
Sample Period	Integer 1 to 1000000000	The time over which samples are to be averaged. Sets the number of samples used in the average and standard deviation. *[for example, for each average to be based on 5 minutes of data, set to 5 minutes].*
Sample period units	Second, Minute Hour, Day, Week	Sets the time period for the value entered above.
Total Duration	Integer 1 to 1000000000	The time period for which samples are reported (to the display and output). Select a time period or a number of points *[for example, report statistics for 24 hours].* Often the total duration and sample period will be the same. PC INTERFACE FOR 818P-XKW automatically clears and recalculates the statistics at the end of each sample period unless you manually stop it.
Total Duration units	Continuous Periods	To make the statistics stop after one sample period, select "1" and "Period."
Time Stamp	Yes No	To have a time stamp appear with the acquired data, select "yes" and click "save". This is a relative time stamp that always begins at zero.

Table 2 Data Sampling Parameters

3.3.4.2 Settings – Save and Load User Settings

PC INTERFACE FOR 818P-XKW can remember and recall the settings of any number of users. You can share the 818P-XKW without the hassle of having to re-enter your settings. As an alternative, you can program it so that you can easily switch between different measurement applications without having to re-enter your settings. This option is activated under the Save Settings or Load settings menu items.

When you select settings, a dialog box appears so that you can save your settings to a file. Give the settings a file name and type. To use established settings, select Load Settings, a dialog appears. Select the file.

3.3.5 Ctrl Menu

This section gives a complete description of the Control menu available on PC INTERFACE FOR 818P-XKW.

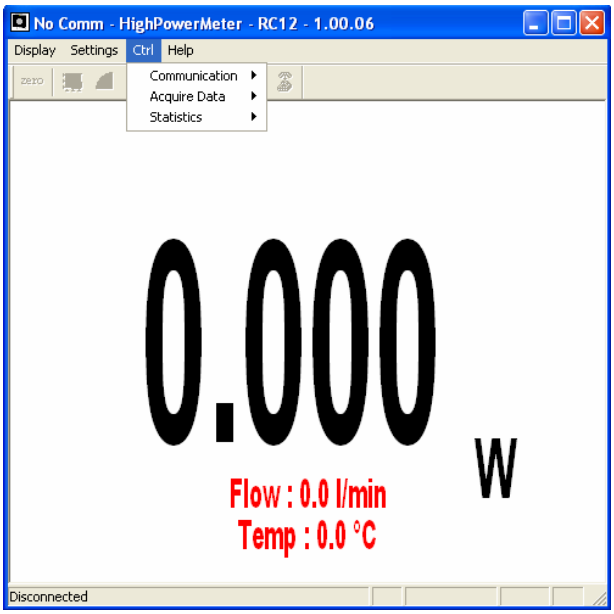

Figure 13 Ctrl Menu

3.3.5.1 Ctrl – Communication

The communication item is mostly used to Connect to the 818P-XKW after starting PC INTERFACE FOR 818P-XKW. To use the COM port for another application without closing PC INTERFACE FOR 818P-XKW, click Ctrl / Communication / Disconnect.

3.3.5.2 Ctrl – Acquire Data

This item is used to save raw data (only), statistics (only), or both raw data and statistics in an output file. When you select Start Saving Raw Data, a dialog box appears. Type in the filename that you choose, then select save. PC INTERFACE FOR 818P-XKW begins storing raw data according to your Data Sampling settings (see section 3.3.4.1). If you will be putting the information into a spreadsheet, use the “Save Both” option. All the raw data will be at the top of the file, while all the statistical information will be at the bottom of each period. The Stop Saving command stops the data recording but the 818P-XKW will continue to provide measurements to the display.

3.3.5.3 Ctrl – Statistics

1. Select Start to start collecting statistics(when stopped) or to restart them when already in progress.
2. Select Stop to freeze the statistics.

3.3.6 Help – About

This item is helpful to check the software version (About Application…). If you should need help or additional information on the 818P-XKW or any Newport products, do not hesitate to contact us. We will be glad to help you.

3.4 USB Driver Installation and COM Port Verification

3.4.1 USB Driver Installation

Plug the 818P-XKW into a USB port on the PC. If the PC supports USB 1.1, Windows detects the new device and prompts you for the software drivers. A window will open that says Found New Hardware – USB Device and after several seconds to a minute, the Found New Hardware Wizard will appear.

Insert the NEWPORT Software CD-ROM if not done already.

For Windows 2000, XP or Vista: Cancel the wizard and execute the Auto installer "USB driver installer-r2" in the USB Driver folder from the CD-ROM.

Please note that old monitors without the (R2) at the end of the product name need a different USB drivers which are available on our web site. They do not support Windows VISTA, unless noted on the web site.

At the end of this process, a new serial COM port will be added to the list of communication ports. It may be used as any other serial port. You will need to know the COM port number to set up the serial connection to the 818P-XKW.

3.4.2 COM Port Verification

To verify the USB installation and find the COM port number click:

Start → Settings → Control Panel → System → Device Manager

(Instructions may vary a bit by operating system and version. For Win2000/XP there is an additional step (is there an extra step – if so what is it – or an extra click?- on my system it's an extra click) between Control Panel and System.)

Scroll down to Ports (COM & LPT) and double click that line. One of the options should be.

USB-to-Serial Port (COM#).

Note the COM port number. You need it for the next step.

3.5 Serial Commands

818P-XKW Series are automatically sending data through serial port at 9.5 Hz (push mode). There is no need to ask for readings.

The 818P-XKW sends the following data:

Data	ID	Units
Power	Pw=	Watts
Water Temperature	Tin=	Celsius
Water Flow	F=	Liters per minute

Example) Pw= 0.0 Ti= 20.000 F= 0.000

818P-XKW communication parameters:

a. Bits per second: 57600

b. Data bits : 8

c. Parity: None

d. Stop bits: 1

e. Flow control: None

Serial Commands List:

The star (*) is part of each command and the commands are case sensitive.

Command	Description	Applies to
***RST**	Hardware Reset The 818P-XKW will return to default settings.	USB and DB-15 connector
***VER**	Returns information about 818P-XKW type and firmware version Example: 818P-XKW, Version X.XX.XX	USB only
***F01**	Returns information about 818P-XKW Serial number, calibration wavelength (nm), DB15	USB only

	sensitivity (mV/W) Example: SerialNumber: 123456, Lambda : 1064, Sensitivity: 0.X00000	
***F02**	Returns information about 818P-XKW current status Current wavelength (nm), Thermal offset (W), Offset factor (W), Multiplication factor and Anticipation status (On/Off). Example: Wavelenght: 1064, Thermal Offset : 0, Offset : 0, Multiplier : 1, Anticipation: On	USB only
***PWC**	To set the Wavelength Wavelength correction command (5+ characters). Example : *PWC00808 to selects the wavelength 808 nm	USB only
***OFF**	Sets the thermal (zero) offset See section **Erreur ! Source du renvoi introuvable.**	USB only
***MUL**	Modifies the multiplication factor (+ 8 characters) Example : *MUL1.00E+01 selects a multiplication factor of 10 *MUL10.00000 selects a multiplication factor of 10	USB only
***ADD**	Modifies the offset factor (8 characters) Example : *OFF2.00E+02 selects a user offset of +200 watts *OFF-200.000 selects a user offset of -200 watts	USB only
***ANE**	Enable the anticipation (default) See section 3.3.3.3.3	USB and DB-15 connector
***AND**	Disable the Anticipation See section 3.3.3.3.3	USB and DB-15 connector

Please note that you must type the exact number of characters or numerical values required and don’t put any space between characters or numerical values.

4 Damage to the Optical Absorber

The 818P-XKW Series are high power meters that can measure up to 3 kW. The beam diameter should always be as large as possible to avoid damage to the absorber. We recommend between 70% and 90% of the nominal head aperture to be filled, **e.g. 4-5 cm in diameter for the 818P-3KW-60.**

Laser	818P-3KW-60		
Beam Power [kW]	**Damage Threshold [1] [kW/cm²]**	**Damage 1/e² Beam Diam. [2), 3)] [cm]**	**Min. 1/e² Beam Diam. [2), 3), 4)] [cm]**
0.5	**10**	**0.4**	**0.5**
1	**6**	**0.7**	**0.9**
2	**4**	**1.1**	**1.6**
3	**3**	**1.6**	**2.3**

In the event of major damage to the coating, the 818P-XKW Series sensors can be recoated. Contact your local Newport representative for information on repair and recalibration.

[1)] Peak Intensity.

[2)] For Gaussian beam profile, the peak intensity is twice the beam power.

[3)] Diameter of a circle corresponding to 86% of the entire beam power.

[4] Including a security factor of 50%

4.1 Service Form

Newport Corporation
U.S.A. Office: 800-222-6440
FAX: 949/253-1479

Name _____ **Return Authorization #_____**
(Please obtain RA# prior to return of item)

Company _____
(Please obtain RA # prior to return of item)

Address _____ _____Date _____

Country _____ Phone Number _____

P.O. Number _____ FAX Number _____

Item(s) Being Returned:

Model # _____ Serial # _____

Description _____

Reason for return of goods (please list any specific problems):

5 Appendix – Disassembly Instructions

NOTE

These disassembly instructions are intended only for recycling at the end of the product lifetime.

For troubleshooting or servicing, users should contact the local Newport Corporation representative. There are no user serviceable parts inside the equipment.

Attempting to self-service the unit will void the warranty.

5.1 Recycling and separation procedure for WEEE directive 2002/96/EC:

This section is used by the recycling center when the detector reaches the end of its life. the calibration seal or opening the monitor will void the detector warranty.

The complete Detector contains:

1 Detector with wires or DB-15

1 Instruction Manual

1 calibration certificate

5.2 Separation:

Paper: Manual and certificate

Wires: Cable Detector

Printed circuit board:

Inside the Detector,

DB-15, no need to separate (less then 10 cm^2)

Aluminum: Detector casing

Plastic: parts inside the Detector

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