

Ophir VI s (Virtual Instruments) for LabVIEW

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Part I: Introduction

1) Overview

Ophir VIs Version 5.00 contains libraries that support communication with Ophir's Juno, Nova, LaserStar (both single and dual channel), USBI, Nova-II, and Vega instruments

These libraries contain components (sub-VI's) that drive and query the instruments' measurements. This allows the LabVIEW programmer to concentrate on his application without getting bogged down with Ophir's device dependent commands. Demo applications are provided, as well.

Libraries for Nova and LaserStar were developed in LabVIEW 6.1. These are identical to their Version 2.00 counterparts. They have been tested and found compatible with LabVIEW 7.0 and LabVIEW 8.6 as well.

The library for Nova-II, Vega, USBI, and Juno support (OphirInstr) was developed in LabVIEW 8.6.1 and has been tested with NI-VISA 4.6.2. It also includes support for the Single Channel LaserStar. This has been tested in LabVIEW 2009 as well.

The Nova VIs support Nova 2.92 and above. The LaserStar Single and Dual Channel VIs support LaserStar 1.75 and above. Nova-II is supported from version 1.47. USBI is supported from version 1.37. Vega is supported from version 1.85. Juno is supported from version 1.04.

The VI's of each instrument can be divided into 3 different groups.

- a) Communication Settings and Management
- b) Configuration Query and Control
- c) Measurement Query

A. Communication Settings and Management

1. Choice of RS232 or GPIB (LaserStar) or USB (Nova-II, USBI, Vega, and Juno)
2. USB channel number when more than one USB device is connected
3. RS232 Port Number and Baud Rate
4. GPIB Device Address (Default LaserStar GPIB Address is 10)
5. Send Message to the Device.
6. Receive Message from the Device

B. Configuration Query and Control

1. Query Head's ability to measure power, energy, and frequency
2. Force instrument into Power or Energy measurement mode

3. For LaserStar Dual-Channel it includes dual-channel Comparisons Capabilities (Power Ratio, Energy Ratio, Power Difference, Energy Difference, Dual-Channel Independent)

C. Measurement Query

The measurement VIs returns Value (Number and String) and Units being measured (e.g. "W" for Watts). They also give Device and Head Information like Type and Serial Numbers. For LaserStar they also provide remote range configuration.

2) Installation and Getting Started

Note: LabVIEW must be closed during installation.

2.1 For use with Nova:

1. Download the file **ophnova.exe**
2. Run the file with the following syntax: **ophnova.exe -d**
3. This will create the directory **OphirVi\Ophnova**
4. Copy the directory **OphirVi\Ophnova** to **..\LabVIEW\Instr.lib**

2.2 For use with LaserStar:

1. Download the file **ophlstar.exe**
2. Run the file with the following syntax: **ophlstar.exe -d**
3. This will create the directory **OphirVi\Ophlstar**
4. Copy the directory **OphirVi\Ophlstar** to **..\LabVIEW\Instr.lib**

2.3 For use with LaserStar Dual Channel:

1. Download the file **ophlstrd.exe**
2. Run the file with the following syntax: **ophlstrd.exe -d**
3. This will create the directory **OphirVi\Ophlstrd**
4. Copy the directory **OphirVi\Ophlstrd** to **..\LabVIEW\Instr.lib**

2.4 To use the new Instrument Library (for use with Single Channel LaserStar, Nova-II, Vega, or USBI):

1. Copy OphInstr.lib from your CD-Rom to your target directory
2. Run the **SwapINF** utility
 - o Install the self-extracting "SwapINF Utility" from this CD.
 - o Run the SwapINF utility and follow the on-screen instructions
 - o to configure the USB speaking device (USBI, Nova-II, Vega or Juno) for LabVIEW.
- 3 Note: OphInstr's Juno support is for Thermopile and Photodiode sensors only

2.5. The following documents are also available

ophirvis.pdf : Detailed explanation of Ophir Instrument VIs.
OphirVIs_installation.txt:

2.6. Open LabVIEW Application.

Getting Started

As noted above, each instrument library contains a general demo application VI. For those who plan on writing their own LabVIEW applications, we suggest working with our application first to get a "feel" for using our VIs .

Part II: Ophir Libraries

Topics

Visa Session

This is the VISA session returned by VISA Open. It is a unique logical identifier to a session. It is used in all instrument driver VIs to differentiate between different sessions of the instrument driver.

Note:

Each time this function is invoked a Unique Session is opened. It is possible to have more than one session open for the same resource.

dup Visa Session

This is a copy of the VISA session. It is used programmatically to pass the VISA Session to any calling VIs. It simplifies dataflow programming by providing an easy method of chaining VIs together, thereby simplifying the diagram's structure.

Error In

Error in is a cluster that describes the error status before this VI executes. If error in indicates that an error occurred before this VI was called, the VI will choose not to execute its function, but just pass the error through to its error out cluster. If no error has occurred, then this VI executes normally and sets its own error status in error out. Use the Oph Error Message VI to look up the error code and to display the corresponding error message.

Error Out

Error out is a cluster that describes the error status after this VI executes. If an error occurred before this VI was called, error out is the same as error in. Otherwise, error out shows the error (if any) that occurred in this VI. Use the Oph Error Message VI to look up the error code and to display the corresponding error message.

Head Type conventions in VIs

TH for ThermoPile
SI for PhotoDiode
PY for PyroElectric
NJ for NanoJoule-Meter
XX for No head in Device

VI Description Template

Template.vi: name of the VI

Description: short description of the VI

Input Parameters: List of the input parameters and specifications

Parameter Name (parameter type): Parameter Description

Output Parameters: List of the output parameters and specifications

Parameter Name (parameter type): Parameter Description

Other Details: additional information

Input and Output Variable Type

underline denotes one on these types.

<u>string</u> :	characters
<u>integer number</u> :	decimal number
<u>real number</u> :	floating point number
<u>Boolean</u> :	true/false

Oph Nova ConfigDevice.vi

Description: initializes the Nova Configuration.

Input Parameters:

Visa Session (Connection Required)

Measure Choice (default 0:Power) (integer number): Menu selects what to measure 0:power, 1:energy, 2: frequency

Error In

Output Parameters:

dup Visa Session

Units (string): Units currently being measured (Nova's response to "SI" command)

OK? (Boolean): True for Initialization success

Error Out

Other Details: For power: sends "FP" (Force Power) and "SI" (Send Units)

For energy: sends "FE" (Force Energy) and "SI" (Send Units)

For frequency: sends "SI" (Send Units)

After "FP" or "FE" and before "SI" we delay 0.5 sec to allow Nova to complete its change in configuration.

Oph Nova ConfigQuery.vi

Description: checks Nova's ROM version and the head's capabilities.

You can run this VI to ensure you can measure power, energy, or frequency before any low-level measurement VI.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Power? (Boolean): True when head can measure power

Energy? (Boolean): True when head can measure energy

Frequency? (Boolean): True when head can measure frequency

Supported Head In Device? (Boolean): True when there is a supported head in Nova

Error Out

Oph Nova EnergyDemo.vi

Description: The Demo measures energy with Thermopile head.

Defaults: COM2: Port and 9600:Baud Rate (in Oph Nova InitCom.vi)

You can change the default values in Oph Nova InitCom.vi

You can also connect different values in Oph Nova GeneralDemo.vi Back Panel to Oph Nova InitCom.vi

Input Parameters: none

Output Parameters: none

Other Details: You can optionally display energy Ready for ThermoPile heads

Oph Nova EnergyFlag.vi

Description: checks if Nova has measured a new energy pulse.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Energy Flag? (Boolean): True if Nova has measured new energy.

Error Out

Oph Nova EnergyMethod.vi

Description: Returns appropriate energy-measurement-method.

Input Parameters:

Head Type (string): Received from the Nova (see Head Type conventions in Topic Section)
(Connection Required)

Error In

Output Parameters:

Energy Method (integer number): energy-measurement-method.

0:no method, 1: ThermoPile head, 2: PyroElectric and NanoJoule-Meter head.

Error Out

Oph Nova EnergyReady.vi

Description: checks if Nova is ready to measure a new energy pulse.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Energy Ready? (Boolean): rue if Nova is ready to measure new energy pulse.

Error Out

Other Details: EnergyReady works only with ThermoPile head.

Oph Nova ErrorMessage.vi

Description: contains all the Ophir device-specific error codes and descriptions.

Use this VI after executing several instrument driver VIs to recognize and display errors that may have occurred

Input Parameters:

Visa Session

Type of Dialog: selects the style of dialog to display when an error occurs. 0: no dialog at all, 1: a dialog with an OK button, or 2: a dialog with a Continue and Stop button.

User-defined Codes: Each code corresponds to an error message stored at the same index in User-defined descriptions.

User-defined Descriptions: Each description corresponds to an error number stored at the same index in user-defined codes.

Error In

Output Parameters:

dup Visa Session

Status (Boolean): True if an error occurred

Error Message: Description of any error that occurred

Error Out

Oph Nova Extract.vi

Description: takes a string containing several numbers and extracts those numbers into an array.

Input Parameters:

String (string): all of the following formats are recognized: 123 1.23 1.23e2 1.23E2

Output Parameters:

Single Precision Array

Other Details: No spaces or other characters may appear within the number, but any characters may appear before or after the number.

Oph Nova GeneralDemo.vi

Description: The Demo enables measurement of power, energy, or frequency.

Defaults: COM2: Port and 9600: Baud Rate (in Oph Nova InitCom.vi)

You can change the default values in Oph Nova InitCom.vi

You can also connect different values in Oph Nova GeneralDemo.vi Back Panel to Oph Nova InitCom.vi

The measurement possibilities are: power, energy, and frequency.

Input Parameters: none

Output Parameters: none

Oph Nova HeadCapa.vi

Description: checks head capabilities. It uses "HI" (Head Information) command and analyzes 8 characters (last part of the Nova's response to "HI" command).

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Power? (Boolean): True when head can measure power.

Energy? (Boolean): True when head can measure energy.

Frequency? (Boolean): True when head can measure frequency.

Temperature? (Boolean): True when head can measure temperature

Supported Head In Device? (Boolean): True when there is a supported head in Nova

Error Out

Oph Nova HeadInfo.vi

Description: gets head information with "HI" command.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Head Info (string): Returns the Nova's response.

Head Type (string): Returns TH for ThermoPile, SI for PhotoDiode, PY for Pyroelectric, NJ for NanoJoule-Meter, and XX for No head in Nova.

Capabilities String (string): Returns 8 characters, last part of the Nova's response to "HI" command.

Error Out

Oph Nova InfoStrings.vi

Description: builds array of Strings for information display in Menu Control.

Input Parameters:

Instrument Info (string): (Connection Required) Nova's response to "II" command

Head Info (string): (Connection Required) Nova's response to "HI" command

Error In

Output Parameters:

Strings Array: Returns array of Strings that contains Nova type and Nova serial number, head name and head serial number.

Error Out

Oph Nova InitCom.vi

Description: opens the communication session with the Nova.

Input Parameters:

Visa Session

Port Number (default 2:COM2) (integer number): 1: COM1 2: COM2

Baud Rate (default 3:9600) (integer number): 0:300, 1:1200, 2:4800, 3:9600 or 4:19200 bps

Error In

Output Parameters:

dup Visa Session

Error Out

Oph Nova InitMeasure.vi

Description: gets User choice and configures the Nova for specified measurement.

Input Parameters:

Visa Session (Connection Required)

Measure Choice (default 0:Power) (integer number) : Menu selects what to measure

0:power, 1:energy, 2:frequency

Error In

Output Parameters:

dup Visa Session

Units (string): Units currently being measured (Nova's response to "SI" command)

OK? (Boolean): True when Measure Choice is possible and Configuration update is OK.

Power Method (integer number): power-measurement-method.

0:no method, 1:ThermoPile and PhotoDiode, 2: PyroElectric and NanoJoule-Meter head.

Energy Method (integer number): energy-measurement-method.

0:no method, 1: ThermoPile head, 2: PyroElectric and NanoJoule-Meter head.

Error Out

Oph Nova InstrInfo.vi

Description: gets Nova's response to "II" command (Instrument Information).

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Instrument Info (string): Returns the Nova's response to "II" command.

Error Out

Oph Nova Measure.vi

Description: executes measurement specified in Measure Choice.

Input Parameters:

Visa Session (Connection Required)

Measure Choice (default 0:Power) (integer number): Menu selects what to measure

0:power, 1:energy, 2:frequency

Power Method (integer number): power-measurement-method.

0:no method, 1:ThermoPile and PhotoDiode, 2: PyroElectric and NanoJoule-Meter head.

Energy Method (integer number) : energy-measurement-method.

0:no method, 1: ThermoPile head, 2: PyroElectric and NanoJoule-Meter head.

Error In

Output Parameters:

dup Visa Session

Value Number (real number): is the measurement value

Value String (string): Is the measurement string (*OVER for Overrange measure).

Error Out

Oph Nova Over.vi

Description: checks if the input String contains OVER and returns True for Overrange

Input Parameters:

Value String (string): (Connection Required) is the measurement string received from the Nova

Output Parameters:

Overrange (Boolean): True when Value String contains *OVER

Oph Nova PowerDemo.vi

Description: The Demo enables power measurement and displays results.

Defaults: COM2: Port and 9600: Baud Rate (in Oph Nova InitCom.vi)

You can change the default values in Oph Nova InitCom.vi

You can also connect different values in Oph Nova GeneralDemo.vi Back Panel to Oph Nova InitCom.vi

Input Parameters: none

Output Parameters: none

Oph Nova PowerMethod.vi

Description: Returns appropriate power-measurement-method.

Input Parameters:

Head Type (string): Received from the Nova (see Head Type conventions in Topic Section) (Connection Required)

Error In

Output Parameters:

Power Method (integer number): power-measurement-method.

0:no method, 1:ThermoPile and PhotoDiode, 2: PyroElectric and NanoJoule-Meter head.

Error Out

Oph Nova PyroEnergy.vi

Description: returns energy measurement from Nova with PyroElectric and NanoJoule-Meter head.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Value Number (real number): is the measurement value

Value String (string): Is the measurement string (*OVER for Overrange measure).

Error Out

Other Details: The VI uses "SE 10" command: sends energy with time-out of 10 * 100 ms = 1 second.

If no energy has been measured, Nova returns "?TIMEOUT: NO PULSE".

Oph Nova PyroPower.vi

Description: returns power measurement from Nova with PyroElectric and NanoJoule-Meter head.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Value Number (real number): is the measurement value

Value String (string): is the measurement string (*OVER for Overrange measure).

Error Out

Other Details: The VI uses "SP 10" command: sends power with time-out of 10 * 100 ms = 1 second.

If no power has been measured, Nova returns "?TIMEOUT: NO PULSE".

Oph Nova SendFrequency.vi

Description: returns frequency measurement from Nova.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Value Number (real number): is the measurement value

Value String (string): is the measurement string (*OVER for Overrange measure).

Error Out

Oph Nova SendPower.vi

Description: returns power measurement from Nova.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Value Number (real number): is the measurement value

Value String (string): is the measurement string (*OVER for Overrange measure).

Error Out

Oph Nova SendReceive.vi

Description: sends command to Nova and returns the Nova's response.

Input Parameters:

Visa Session (Connection Required)

Command (string): (Connection Required) accepts every Ophir Communication command

Error In

Output Parameters:

dup Visa Session

Frame Output (string): Returns the Nova's response.

Error Out

Oph Nova StringToValue.vi

Description: Conversion of Value String into Value Number.

Input Parameters:

Frame (string): (Connection Required) received from Nova (i.e. * 1.234e-3).

Error In

Output Parameters:

Value Number (real number): value number.

Error Out

Oph Nova Terminal.vi

Description: The Terminal enables the PC to communicate with the Nova via the RS232 cable.

To issue a command just type it in the Command Control and press "Enter" on the keyboard or with the mouse press on Send Button.

The Terminal will display the response in Nova Response field.

(See the Ophir Software Manual for a full description of Ophir Communication commands)

Input Parameters: none

Output Parameters: none

Oph Nova ThermoEnergy.vi

Description: returns energy measurement from Nova with ThermoPile head.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Value Number (real number): is the measurement value

Value String (string): is the measurement string (*OVER for Overrange measure).

Error Out

Oph LaserStar ConfigDevice.vi

Description: initializes the LaserStar configuration.

Input Parameters:

Visa Session (Connection Required)

Measure Choice (default 0:Power) (integer number) : Menu selects what to measure

0: power, 1: energy, 2: frequency

Error In

Output Parameters:

dup Visa Session

Units (string): Units currently being measured (LaserStar's response to "SI" command)

OK? (Boolean): True for Initialization success

Error Out

Other Details: For power: sends "FP" (Force Power) and "SI" (Send Units)

For energy: sends "FE" (Force Energy) and "SI" (Send Units)

For frequency-sends "SI" (Send Units)

After "FP" or "FE" and before "SI", we delay 0.5 sec to allow LaserStar to complete its change in configuration.

Oph LaserStar ConfigQuery.vi

Description: checks LaserStar's ROM version and head capabilities.

You can run this VI to ensure you can measure power, energy or frequency before any low-level measurement VI.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Power? (Boolean): True when head can measure power

Energy? (Boolean): True when head can measure energy

Frequency? (Boolean): True when head can measure frequency

Supported Head In Device? (Boolean): True when there is a supported head in LaserStar

Error Out

Oph LaserStar EnergyDemo.vi

Description: The Demo enables energy measurement with ThermoPile , PyroElectric and NanoJoule-Meter head.

Defaults: COM2: Port and 9600: Baud Rate (in Oph LaserStar InitCom.vi)

You can change the default values in Oph LaserStar InitCom.vi

You can also connect different values in Oph LaserStar GeneralDemo.vi Back Panel

to Oph LaserStar InitCom.vi

Input Parameters: none

Output Parameters: none

Other Details: You can optionally display energy ready for ThermoPile head

Oph LaserStar EnergyFlag.vi

Description: checks if LaserStar has measured a new energy pulse.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Energy Flag? (Boolean): True if LaserStar has measured a new energy pulse.

Error Out

Oph LaserStar EnergyReady.vi

Description: checks if LaserStar is ready to measure a new energy pulse.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Energy Ready? (Boolean): True if LaserStar is ready to measure a new energy pulse.

Error Out

Other Details: EnergyReady works only with ThermoPile head.

Oph LaserStar ErrorMessage.vi

Description: contains all the Ophir device_specific error codes and descriptions.

Use this VI after executing several instrument driver VI's to recognize and display any errors that may have occurred

Input Parameters:

Visa Session

Type of Dialog: selects the style of dialog to display when an error occurs. 0: no dialog at all, 1: a dialog with an OK button, or 2: a dialog with a Continue and Stop button.

User-defined Codes: Each code corresponds to an error message stored at the same index in User-defined descriptions.

User-defined Descriptions: Each description corresponds to an error number stored at the same index in user-defined codes.

Error In

Output Parameters:

dup Visa Session

Status (Boolean): True if an error occurred

Error Message: Description of any error that occurred

Error Out

Oph LaserStar Extract.vi

Description: takes a string containing several numbers and extracts those numbers into an array.

Input Parameters:

String: all of the following formats are recognized: 123, 1.23, 1.23e2, 1.23E2

Output Parameters:

Single Precision Array

Other Details: No spaces or other characters may appear within the number, but any characters may appear before or after the number.

Oph LaserStar GeneralDemo.vi

Description: The Demo enables measurement of power, energy, or frequency.

Defaults: COM2: Port and 9600: Baud Rate (in Oph LaserStar InitCom.vi)

You can change the default values in Oph Nova InitCom.vi

You can also connect different values in Oph LaserStar GeneralDemo.vi Back Panel to Oph LaserStar InitCom.vi

The measurement possibilities are: power, energy, and frequency.

You can change the current range with Double-Click on the desired range

Input Parameters: none

Output Parameters: none

Oph LaserStar HeadCapa.vi

Description: checks head capabilities. It uses "HI" (Head Information) command and analyzes 8 characters (last part of the LaserStar's response to "HI" command).

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Power? (Boolean): True when head can measure power.

Energy? (Boolean): True when head can measure energy.

Frequency? (Boolean): True when head can measure frequency.

Temperature? (Boolean): True when head can measure temperature

Supported Head In Device? (Boolean): True when there is a supported head in LaserStar

Error Out

Oph LaserStar HeadInfo.vi

Description: gets head information with "HI" command.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Head Info (string): returns the LaserStar's response.

Head Type (string): returns TH for ThermoPile, SI for PhotoDiode, PY for PyroElectric, NJ for NanoJoule -Meter head, and XX for No head in LaserStar.

Capabilities String (string): Returns 8 characters, last part of the LaserStar's response to "HI" command.

Error Out

Oph LaserStar InfoStrings.vi

Description: builds array of Strings for information display in Menu Control.

Input Parameters:

Instrument Info (string): (Connection Required) LaserStar's response to "II" command

Head Info (string): (Connection Required) LaserStar's response to "HI" command

Error In

Output Parameters:

Strings Array: Returns array of Strings that contains LaserStar type and LaserStar serial number, head name and head serial number.

Error Out

Oph LaserStar InitCom.vi

Description: opens the communication session with the LaserStar.

Input Parameters:

Visa Session

GPIB/RS232 (default False) (Boolean): GPIB(True) RS232(False)

Device Address (default: 10) (string): LaserStar Device address is 10

Port Number (default 2:COM2) (integer number): 1:COM1 2:COM2

Baud Rate (default 3:9600) (integer number) : 0:300, 1:1200, 2:4800, 3:9600, 4:19200 or 5:38400 bps

Error In

Output Parameters:

dup Visa Session

Error Out

Oph LaserStar InitMeasure.vi

Description: gets User choice and configures the LaserStar for specified measurement.

Input Parameters:

Visa Session (Connection Required)

Measure Choice (default 0:Power) (integer number): Menu selects what to measure

0:power, 1:energy, 2:frequency

Error In

Output Parameters:

dup Visa Session

Units (string): Units currently being measured (LaserStar's response to "SI" command)

OK? (Boolean): True when Measure Choice is possible and Configuration update is OK.

Power Method (integer number): power-measurement-method.

0:no method, 1:ThermoPile and PhotoDiode, 2: PyroElectric and NanoJoule-Meter head.

Error Out

Oph LaserStar InstrInfo.vi

Description: gets LaserStar's response to "II" command (Instrument Information).

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Instrument Info (string): returns the LaserStar's response to "II" command.

Error Out

Oph LaserStar Measure.vi

Description: executes measurement specified in Measure Choice.

Input Parameters:

Visa Session (Connection Required)

Measure Choice (default 0:Power) (integer number) : Menu selects what to measure

0:power, 1:energy, 2:frequency

Power Method (0) (integer number): power-measurement-method.

0:no method, 1:ThermoPile and PhotoDiode, 2: PyroElectric and NanoJoule-Meter head.

Error In

Output Parameters:

dup Visa Session

Value Number (real number): is the measurement value

Value String (string): is the measurement string (*OVER for Overrange measure).

Error Out

Oph LaserStar Over.vi

Description: checks if the input String contains OVER and returns True for Overrange.

Input Parameters:

Value String (string): (Connection Required) is the measurement string received from the LaserStar

Output Parameters:

Overrange (Boolean): True when Value String contains *OVER

Oph LaserStar PowerDemo.vi

Description: The Demo enables power measurement and display results.

Defaults: COM2: Port and 9600: Baud Rate (in Oph LaserStar InitCom.vi)

You can change the default values in Oph LaserStar InitCom.vi

You can also connect different values in Oph LaserStar GeneralDemo.vi Back Panel to Oph LaserStar InitCom.vi

Input Parameters: none

Output Parameters: none

Oph LaserStar PowerMethod.vi

Description: Returns appropriate power-measurement-method.

Input Parameters:

Head Type (string): Received from the LaserStar (see Head Type conventions in Topic Section) (Connection Required)

Error In

Output Parameters:

Power Method (integer number): power-measurement-method.

0: no method, 1: ThermoPile and PhotoDiode, 2: PyroElectric and NanoJoule-Meter head.

Error Out

Oph LaserStar PyroPower.vi

Description: returns power measurement from LaserStar with PyroElectric and NanoJoule-Meter head.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Value Number (real number): is the measurement value

Value String (string): is the measurement string (*OVER for Overrange measure).

Error Out

Oph LaserStar RangeList.vi

Description: inserts the ranges in an array of strings and the Symbols to add to these ranges in an array of numbers.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Strings Array: Returns array of Strings that contains ranges.

Symbols Array: Returns array of Symbol Numbers. (0 for No Symbol, 1 for Checked Symbol)

First Index (integer number): Index of first range; -2 for dBm, -1 for AUTO, and 0 for first index

Error Out

Oph LaserStar RangeModif.vi

Description: modifies the current measurement range of head.

Input Parameters:

Visa Session (Connection Required)

Range Number (integer number): from -2 to 6 (-2 dBm, -1 AUTO, 0-6 manual ranges)

Error In

Output Parameters:

dup Visa Session

OK? (Boolean): True for range change success.

Error Out

Oph LaserStar SendEnergy.vi

Description: returns energy measurement from LaserStar.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Value Number (real number): is the measurement value

Value String (string): is the measurement string (*OVER for Overrange measure).

Error Out

Oph LaserStar SendFrequency.vi

Description: returns frequency measurement from LaserStar.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Value Number (real number): is the measurement value

Value String (string): is the measurement string (*OVER for Overrange measure).

Error Out

Oph LaserStar SendPower.vi

Description: returns power measurement from LaserStar for ThermoPile or Photodiode head.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Value Number (real number): is the measurement value

Value String (string): is the measurement string (*OVER for Overrange measure).

Error Out

Oph LaserStar SendReceive.vi

Description: sends command to LaserStar and returns the LaserStar's response.

Input Parameters:

Visa Session (Connection Required)

Command: string (Connection Required) accepts every Ophir Communication command

Error In

Output Parameters:

dup Visa Session

Frame Output (string): Returns the LaserStar's response.

Error Out

Oph LaserStar StringToValue.vi

Description: Conversion of Value String into Value Number.

Input Parameters:

Frame (string): (Connection Required) received from LaserStar. (i.e. * 1.234e-3)

Error In

Output Parameters:

Value Number (real number): value number.

Error Out

Oph LaserStar Terminal.vi

Description: The Terminal enables the PC to communicate with the LaserStar via RS232 or GPIB.

To issue a command just type it in the Command Control and press "Enter" on the keyboard or click on the Send button.

The Terminal will display the response in LaserStar response field.

(See the Ophir Software Manual for a full description of Ophir Communication commands)

Input Parameters: none

Output Parameters: none

Oph LaserStarD ConfCommand.vi

Description: executes Force Configuration of the LaserStar.

Input Parameters:

Visa Session (Connection Required)

Command Input: Force Configuration command "FC L A B" for Dual Channel mode "FP" or "FE" for Single Channel mode (Connection Required)

Mode (default:0): Menu selects Channel mode 0: Single Channel mode (working only with one head), 1: Dual Channel mode (working with two heads)

Channel (default:0): Menu selects Channel 0: Channel A, 1: Channel B (for Single Channel mode only)

Error In

Output Parameters:

dup Visa Session

OK? (Boolean): True for Initialization success

Units Channel A (string): Units currently being measured (LaserStar's response to "SI" command) at Channel A

Units Channel B (string): Units currently being measured (LaserStar's response to "SI" command) at Channel B

Error Out

Other Details:

After "FP" or "FE" or "FC L A B" and before "SI", we delay 0.5 sec to allow LaserStar to complete its change in configuration.

Oph LaserStarD ConfigDevice.vi

Description: configures the LaserStar.

Input Parameters:

Visa Session (Connection Required)

Measure Choice (default 0: Power A) (integer number): Menu selects what to measure

0: Power A, 1: Energy A, 2: Frequency A, 3: Power B, 4: Energy B, 5: Frequency B, 6: Power Ratio A/B, 7: Power Ratio B/A, 8: Power Difference A-B, 9: Power Difference B-A, 10: Energy Ratio A/B, 11: Energy Ratio B/A, 12: Energy Difference A-B, 13: Energy Difference B-A, 14: Independent Power A Power B, 15: Independent Energy A Energy B, 16: Independent Power A Energy B, 17: Independent Energy A Power B

Error In

Output Parameters:

dup Visa Session

OK? (Boolean): True for Initialization success

Units Channel A (string): Units currently being measured (LaserStar's response to "SI" command) at Channel A

Units Channel B (string): Units currently being measured (LaserStar's response to "SI" command) at Channel B

Error Out

Other Details: see ConfCommand.vi for Configuration commands

Oph LaserStarD ConfigQuery.vi

Description: checks LaserStar's ROM version and head capabilities.

You can run this VI to ensure you can measure power, energy, or frequency on each channel and head comparisons before any low-level measurement VI.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Power A? (Boolean): True if head can measure power for channel A

Energy A? (Boolean): True if head can measure energy for channel A

Frequency A? (Boolean): True if head can measure frequency for channel A

Temperature A? (Boolean): True if head can measure temperature for channel A

Power B? (Boolean): True if head can measure power for channel B

Energy B? (Boolean): True if head can measure energy for channel B

Frequency B? (Boolean): True if head can measure frequency for channel B

Temperature B? (Boolean): True if head can measure temperature for channel B

Power Compare? (Boolean): True if head can measure power ratio and power difference

Energy Compare? (Boolean): True if head can measure energy ratio and energy difference

Supported Head In A? (Boolean): True when there is a supported head in Channel A

Supported Head In B? (Boolean): True when there is a supported head in Channel B

Error Out

Oph LaserStarD EnergyFlag.vi

Description: checks if LaserStar has measured a new energy pulse.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Energy Flag? (Boolean): True if LaserStar has measured a new energy pulse.

Error Out

Oph LaserStarD EnergyReady.vi

Description: checks if LaserStar is ready to measure a new energy pulse.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Energy Ready? (Boolean): True if LaserStar is ready to measure a new energy pulse.

Error Out

Other Details: EnergyReady works only with ThermoPile head.

Oph LaserStarD ErrorMessage.vi

Description: contains all the device-specific specific error codes and descriptions.

Use this VI after executing several instrument driver VIs to recognize and display any error that may have occurred

Input Parameters:

Visa Session

Type of Dialog: selects the style of dialog to display when an error occurs. 0: no dialog at all, 1: a dialog with an OK button, or 2: a dialog with a Continue and Stop button.

User-defined Codes: Each code corresponds to an error message stored at the same index in User-defined descriptions.

User-defined Descriptions: Each description corresponds to an error number stored at the same index in user-defined codes.

Error In

Output Parameters:

dup Visa Session

Status (**Boolean**): True if an error occurred

Error Message: Description of any error that occurred

Error Out

Oph LaserStarD Extract.vi

Description: takes a string containing several numbers and extracts those numbers into an array.

Input Parameters:

String: The following formats are recognized: 123, 1.23, 1.23e2, 1.23E2

Output Parameters:

Single Precision Array

Other Details: No spaces or other characters may appear within the number, but any character may appear before or after the number.

Oph LaserStarD GeneralDemo.vi

Description: The Demo enables measurement of power, energy, or frequency on either or both channels.

Defaults: COM2: Port and 9600: Baud Rate (in Oph LaserStarD InitCom.vi)

You can also connect different values in Oph LaserStarD GeneralDemo.vi Back Panel to Oph LaserStarD InitCom.vi

The measurement possibilities are: power, energy, frequency, power ratio, power difference, energy ratio, energy difference and independent mode.

You can change the current range of either head with Double-Click on the desired range

Oph LaserStarD HeadCapa.vi

Description: checks head capabilities. It uses "HI" (Head Information) command and analyzes 8 characters (last part of the LaserStar's response to "HI" command).

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Power? (**Boolean**): True when head can measure power.

Energy? (**Boolean**): True when head can measure energy.

Frequency? (**Boolean**): True when head can measure frequency.

Temperature? (**Boolean**): True when head can measure temperature

Supported Head In Device? (**Boolean**): True when there is a supported head in LaserStar

Error Out

Oph LaserStarD HeadComp.vi

Description: checks comparison for heads.

Input Parameters:

Head Type 1 (default XX: No head) (string): that contains head type
Capabilities string 1 is the last part (8 characters) of the response to "HI" command
Head Type 2 (default XX: No head) (string) : that contains head type
Capabilities string 2 is the last part (8 characters) of the response to "HI" command

Output Parameters:

Power Compare? (Boolean): True when head can measure power ratio and difference
Energy Compare? (Boolean): True when head can measure energy ratio and difference
Two Heads In? (Boolean): True when 2 heads are in LaserStar

Other Details: for head type see Head Type conventions in Topic Section

Oph LaserStarD HeadInfo.vi

Description: gets head information with "HI" command.

Input Parameters:

Visa Session (Connection Required)
Error In

Output Parameters:

dup Visa Session
Head Info (string): returns the LaserStar's response.
Head Type (string): returns TH for ThermoPile, SI for PhotoDiode, PY for PyroElectric , NJ for NanoJoule-Meter head and XX for no head in LaserStar.
Capabilities String (string): returns 8 characters, last part of the LaserStar's response to "HI" command.
Error Out

Oph LaserStarD InfoStrings.vi

Description: builds array of Strings for information display in Menu Control.

Input Parameters:

Instrument Info Channel A (string): (Connection Required)
Instrument Info Channel B (string): (Connection Required)
LaserStar's response to "II" command
Head Info Channel A (string): (Connection Required)
Head Info Channel B (string): (Connection Required)
LaserStar's response to "HI" command
Error In

Output Parameters:

Strings Array: Returns array of Strings that contains LaserStar type and LaserStar serial number, head name and head serial number at both Channel A and Channel B.
Error Out

Oph LaserStarD InitCom.vi

Description: opens the communication session with the LaserStar.

Input Parameters:

Visa Session
GPIB/RS232 (default False) (Boolean): GPIB (True) RS232 (False)
Device Address (default: 10) (string): LaserStar Device address is 10.
Port Number (default 2:COM2) (integer number): 1: COM1, 2: COM2
Baud Rate (default 3:9600) (integer number): 0: 300, 1: 1200, 2: 4800, 3: 9600, 4: 19200 or 5: 38400 bps
Error In

Output Parameters:

dup Visa Session
Error Out

Oph LaserStarD InitMeasure.vi

Description: gets User choice and configures the LaserStar for specified measurement.

Input Parameters:

Visa Session (Connection Required)

Measure Choice (default 0: Power A) (integer number): Menu selects what to measure
0: Power A, 1: Energy A, 2: Frequency A, 3: Power B, 4: Energy B, 5: Frequency B,
6: Power Ratio A/B, 7: Power Ratio B/A, 8: Power Difference A-B, 9: Power Difference B-A,
10: Energy Ratio A/B, 11: Energy Ratio B/A, 12: Energy Difference A-B, 13: Energy
Difference B-A, 14: Independent Power A Power B, 15: Independent Energy A Energy B,
16: Independent Power A Energy B, 17: Independent Energy A Power B

Error In

Output Parameters:

dup Visa Session

Units Channel A (string): Units currently being measured (LaserStar's response to "SI" command) at Channel A

Units Channel B (string): Units currently being measured (LaserStar's response to "SI" command) at Channel B

OK? (Boolean): True when Measure Choice is possible and Configuration update is OK.

Power Method (integer number): power-measurement-method.

0: no method, 1:ThermoPile and PhotoDiode, 2: PyroElectric and NanoJoule-Meter.

Error Out

Oph LaserStarD InstrInfo.vi

Description: gets LaserStar's response to "II" command (Instrument Information).

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Instrument Info (string): returns the LaserStar's response to "II" command.

Error Out

Oph LaserStarD Measure.vi

Description: executes measurement specified in Measure Choice.

Input Parameters:

Visa Session (Connection Required)

Measure Choice (default 0: Power A) (integer number): Menu selects what to measure
0: Power A, 1: Energy A, 2: Frequency A, 3: Power B, 4: Energy B, 5: Frequency B,
6: Power Ratio A/B, 7: Power Ratio B/A, 8: Power Difference A-B, 9: Power Difference B-A,
10: Energy Ratio A/B, 11: Energy Ratio B/A, 12: Energy Difference A-B, 13: Energy
Difference B-A, 14: Independent Power A Power B, 15: Independent Energy A Energy B,
16: Independent Power A Energy B, 17: Independent Energy A Power B

Power Method (default:0) (integer number): power-measurement-method.

0:no method, 1:ThermoPile and PhotoDiode, 2: PyroElectric and NanoJoule-Meter.

Error In

Output Parameters:

dup Visa Session

Dual Result is the operation Ratio or Difference result

Value Number A (real number): is the measurement value for Channel A

Value String A (string): Is the measurement string for Channel A

Value Number B (real number): is the measurement value for Channel B

Value String B (string): Is the measurement string for Channel B

Error Out

Other Details: Value String returns *OVER or OVER for Overrange measure.

Oph LaserStarD NrgCmp.vi

Description: returns True when both heads can measure Energy.

Input Parameters:

Capabilities string 1 (default 00000000) (string): Last part of the LaserStar's response to "HI" command (Head Information)

Capabilities string 2 (default 00000000) (string): Last part of the LaserStar's response to "HI" command (Head Information)

Output Parameters:

OK: True if both heads can measure energy

Oph LaserStarD Over.vi

Description: checks if the input String contains OVER and returns True for Overrange.

Input Parameters:

Value String (string): (Connection Required) is the measurement string received from the LaserStar

Output Parameters:

Overrange (Boolean): True when Value String contains *OVER or OVER

Oph LaserStarD PowerMethod.vi

Description: Returns appropriate power-measurement-method.

Input Parameters:

Head Type (string): received from the LaserStar (see Head Type conventions in Topic Section) (Connection Required)

Error In

Output Parameters:

Power Method (integer number): power-measurement-method.

0:no method, 1: ThermoPile and PhotoDiode, 2: PyroElectric and NanoJoule-Meter.

Error Out

Oph LaserStarD PyroPower.vi

Description: returns power measurement from LaserStar with PyroElectric and NanoJoule-Meter.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Value Number (real number): is the measurement value

Value String (string): is the measurement string (*OVER for Overrange measure).

Error Out

Oph LaserStarD RangeList.vi

Description: inserts the ranges in an array of strings and the Symbols to add to these ranges in an array of numbers.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Strings Array: Returns array of Strings that contains ranges.

Symbols Array: Returns array of Symbol Numbers. (0 for No Symbol, 1 for Checked Symbol)

First Index (integer number): Index of first range; -2 for dBm, -1 for AUTO, and 0 for first index

Error Out

Oph LaserStarD RangeModif.vi

Description: modifies the current measurement range of head.

Input Parameters:

Visa Session (Connection Required)

Range Number (integer number): from -2 to 6 (-2 dBm, -1 AUTO, 0-6 manual ranges)

Error In

Output Parameters:

dup Visa Session

OK? (Boolean): True for range change success

Error Out

Oph LaserStarD SelectChannel.vi

Description: Set channel-specific commands to work with Channel A or B.

Input Parameters:

Visa Session (Connection Required)

Channel Name (default: A) (string): A for Channel A or B for Channel B

Error In

Output Parameters:

dup Visa Session

OK? (Boolean): True for "CH" (CHange Channel) command success.

Error Out

Oph LaserStarD SendBoth.vi

Description: SendBoth.vi returns two current measurement values from LaserStar.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Value Number A (real number): is the measurement value for Channel A

Value String A (string): Is the measurement string for Channel A

Value Number B (real number): is the measurement value for Channel B

Value String B (string): Is the measurement string for Channel B

Error Out

Other Details: The Format of LaserStar's response is: * Value1 Value2

For each Value:

When Overage: Over instead of value

When no new measurement: N instead of value.

Oph LaserStarD SendEnergy.vi

Description: returns energy measurement from LaserStar.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Value Number (real number): is the measurement value

Value String (string): Is the measurement string (*OVER for Overage measure).

Error Out

Oph LaserStarD SendFrequency.vi

Description: returns frequency measurement from LaserStar.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Value Number (real number): Is the measurement value

Value String (string): Is the measurement string (*OVER for Overrange measure).

Error Out

Oph LaserStarD SendPower.vi

Description: returns power measurement from LaserStar with ThermoPile or PhotoDiode head.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Value Number (real number): is the measurement value

Value String (string): Is the measurement string (*OVER for Overrange measure).

Error Out

Oph LaserStarD SendReceive.vi

Description: sends command to LaserStar and returns the LaserStar's response.

Input Parameters:

Visa Session (Connection Required)

Command (string): (Connection Required) accepts every Ophir Communication command

Error In

Output Parameters:

dup Visa Session

Frame Output (string): Returns the LaserStar's response.

Error Out

Oph LaserStarD StringToValue.vi

Description: Conversion of Value String into Value Number.

Input Parameters:

Frame (string): (Connection Required) received from LaserStar. (i.e. * 1.234e-3)

Error In

Output Parameters:

Value Number (real number): value number.

Error Out

Oph LaserStarD Terminal.vi

Description: Terminal enables the PC to communicate with the LaserStar via RS232 or GPIB. To issue a command just type it in the Command Control and press "Enter" on the keyboard or with the mouse press on Send Button. The Terminal will display the response in LaserStar Response field.

(See the Ophir Software Manual for a full description of Ophir Communication commands)

Input Parameters: none

Output Parameters: none

Ophir ConfigDevice.vi

Description: initializes the instrument configuration.

Input Parameters:

Visa Session (Connection Required)

Measure Choice (default 0:Power) (integer number) : Menu selects what to measure

0: power, 1: energy, 2: frequency

Error In

Output Parameters:

dup Visa Session

Units (string): Units currently being measured (Instrument's response to "SI" command)

OK? (Boolean): True for Initialization success

Error Out

Other Details: For power: sends "FP" (Force Power) and "SI" (Send Units)

For energy: sends "FE" (Force Energy) and "SI" (Send Units)

For frequency-sends "SI" (Send Units)

After "FP" or "FE" and before "SI", we delay 0.5 sec to allow the Instrument to complete its change in configuration.

Ophir ConfigQuery.vi

Description: checks instrument's ROM version and head capabilities.

Run this VI to ensure that you can measure power, energy or frequency before any low-level measurement VI.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Power? (Boolean): True when head can measure power

Energy? (Boolean): True when head can measure energy

Frequency? (Boolean): True when head can measure frequency

Supported Head In Device? (Boolean): True when there is a supported head attached to the Instrument

Error Out

Ophir EnergyDemo.vi

Description: The Demo enables energy measurement with Thermopile, Pyroelectric and nanoJoule-Meter head.

Factory Defaults: for device communication: USB communication with Nova-II

Input Parameters: none

Output Parameters:

Measurements (displayed on the front panel)

Error Codes (if any, displayed on the front panel)

Ophir EnergyFlag.vi

Description: checks if the instrument has measured a new energy pulse.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Energy Flag? (Boolean): True if the instrument has measured a new energy pulse.

Error Out

Ophir EnergyReady.vi

Description: checks if the instrument is ready to measure a new energy pulse.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Energy Ready? (Boolean): True if the instrument is ready to measure a new energy pulse.

Error Out

Other Details: EnergyReady works only with Thermopile heads.

Ophir ErrorMessage.vi

Description: contains all the Ophir device_specific error codes and descriptions.

Use this VI after executing several instrument driver VI's to recognize and display any errors that may have occurred

Input Parameters:

Visa Session

Type of Dialog: selects the style of dialog to display when an error occurs. 0: no dialog at all, 1: a dialog with an OK button, or 2: a dialog with a Continue and Stop button.

User-defined Codes: Each code corresponds to an error message stored at the same index in User-defined descriptions.

User-defined Descriptions: Each description corresponds to an error number stored at the same index in user-defined codes.

Error In

Output Parameters:

dup Visa Session

Status (Boolean): True if an error occurred

Error Message: Description of any error that occurred

Error Out

Ophir Extract.vi

Description: takes a string containing several numbers and extracts those numbers into an array.

Input Parameters:

String contains a series of numbers: all of the following formats are recognized: 123, 1.23, 1.23e2, 1.23E2

Output Parameters:

Single Precision Array

Other Details: No spaces or other characters may appear within the number, but any character may appear before or after the number.

Ophir GeneralDemo.vi

Description: The Demo enables measurement of power, energy, or frequency.

Factory Defaults: for device communication: USB communication with Nova-II

The measurement possibilities are: power, energy, and frequency.

You can change the current range with Double-Click on the desired range

Input Parameters: none

Output Parameters:

Measurements (displayed on the front panel)

Error Codes (if any, displayed on the front panel)

Ophir HeadCapa.vi

Description: checks head capabilities. It uses "HI" (Head Information) command and analyzes 8 characters (last part of the instrument's response to "HI" command).

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Power? (Boolean): True when head can measure power.

Energy? (Boolean): True when head can measure energy.

Frequency? (Boolean): True when head can measure frequency.

Temperature? (Boolean): True when head can measure temperature

Supported Head In Device? (Boolean): True when there is a supported head in LaserStar

Error Out

Ophir HeadInfo.vi

Description: gets head information with "HI" command.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Head Info (string): returns the instrument's response.

Head Type (string): returns

- TH for Thermopile
- SI for Photodiode
- PY for Pyroelectric
- NJ for NanoJoule -Meter head
- No head in instrument.

Capabilities String (string): Returns 8 characters, last part of the instrument's response to "HI" command.

Error Out

Ophir InfoStrings.vi

Description: builds array of Strings for information display in Menu Control.

Input Parameters:

Instrument Info (string): (Connection Required) instrument's response to "II" command

Head Info (string): (Connection Required) instrument's response to "HI" command

Error In

Output Parameters:

Strings Array: Returns array of Strings that contains instrument's type and instrument's serial number, head name and head serial number.

Error Out

Ophir InitCom.vi

Description: opens the communication session with the instrument. This VI must be called before any other VI that attempts communication the instrument.

Input Parameters:

Visa Session

Communication (select USB for USBI or Juno; USB or RS232 for Nova-II or Vega; GPIB or RS232 for LaserStar)

USB Channel Number:

GPIB Device Address (default: 10) (string):

RS232 Port Number (default 2:COM2) (integer number): 1:COM1 2:COM2

RS232 Baud Rate (default 3:9600) (integer number): 0:300, 1:1200, 2:4800, 3:9600, 4:19200 or 5:38400 bps

Error In

Output Parameters:

dup Visa Session

Error Out

Ophir InitMeasure.vi

Description: gets User choice and configures the instrument for specified measurement.

Input Parameters:

Visa Session (Connection Required)

Measure Choice (integer number): Menu selects what to measure

- 0:power (default)
- 1:energy
- 2:frequency

Error In

Output Parameters:

dup Visa Session

Units (string): Units currently being measured (instrument's response to "SI" command)

OK? (Boolean): True when Measure Choice is possible and Configuration update is OK.

Power Method (integer number): power-measurement-method.

- 0:no method
- 1:Thermopile and Photodiode
- 2: Pyroelectric and NanoJoule-Meter.

Error Out

Ophir InstrInfo.vi

Description: gets instrument's response to "II" command (Instrument Information).

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Instrument Info (string): returns the instrument's response to "II" command.

Error Out

Ophir Measure.vi

Description: executes measurement specified in Measure Choice.

Input Parameters:

Visa Session (Connection Required)

Measure Choice (integer number) : Menu selects what to measure

- 0:power
- 1:energy
- 2:frequency

Power Method: power-measurement-method.

- 0:no method
- 1:Thermopile and Photodiode
- 2: Pyroelectric and nanoJoule-Meter head.

Error In

Output Parameters:

dup Visa Session

Value Number (real number): is the measurement value

Value String (string): is the measurement string (*OVER for Overrange measure).

Error Out

Ophir Over.vi

Description: checks if the input String contains OVER and returns True for Overrange.

Input Parameters:

Value String (string): (Connection Required) is the measurement string received from the instrument

Output Parameters:

Overrange (Boolean): True when Value String contains *OVER

Ophir PowerDemo.vi

Description: The Demo enables power measurement and display results.

Factory Defaults: for device communication: USB communication with Nova-II

Input Parameters: none

Output Parameters:

Measurements (displayed on the front panel)

Error Codes (if any, displayed on the front panel)

Ophir PowerMethod.vi

Description: Returns appropriate power-measurement-method.

Input Parameters:

Head Type (string): Received from the instrument

Error In

Output Parameters:

Power Method (integer number): power-measurement-method.

- 0: no method
- 1: Thermopile and Photodiode
- 2: Pyroelectric and nanoJoule-Meter head.

Error Out

Ophir PyroPower.vi

Description: returns power measurement from instrument with Pyroelectric and nanoJoule-Meter head.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Value Number (real number): is the measurement value

Value String (string): is the measurement string (*OVER for Overrange measure).

Error Out

Ophir RangeList.vi

Description: inserts the ranges in an array of strings and the Symbols to add to these ranges in an array of numbers. Uses "AR" command (All Ranges)

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Strings Array: Returns array of Strings that contains ranges.

Symbols Array: Returns array of Symbol Numbers.

- 0 for No Symbol
- 1 for Checked Symbol)

First Index (integer number): Index of first range;

- -2 for dBm
- -1 for AUTO
- 0 if first range is numeric

Error Out

Ophir RangeModif.vi

Description: modifies the current measurement range of head.

Input Parameters:

Visa Session (Connection Required)

Range Number (integer number): from -2 to 6 (-2 dBm, -1 AUTO, 0-6 manual ranges)

Error In

Output Parameters:

dup Visa Session

OK? (Boolean): True for range change success.

Error Out

Ophir SendEnergy.vi

Description: returns energy measurement from instrument.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Value Number (real number): is the measurement value

Value String (string): is the measurement string (*OVER for Overrange measure).

Error Out

Ophir SendFrequency.vi

Description: returns frequency measurement from instrument.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Value Number (real number): is the measurement value

Value String (string): is the measurement string (*OVER for Overrange measure).

Error Out

Ophir SendPower.vi

Description: returns power measurement from the instrument for Thermopile or Photodiode head.

Input Parameters:

Visa Session (Connection Required)

Error In

Output Parameters:

dup Visa Session

Value Number (real number): is the measurement value

Value String (string): is the measurement string (*OVER for Overrange measure).

Error Out

Ophir SendReceive.vi

Description: sends command to the instrument and returns its response.

Input Parameters:

Visa Session (Connection Required)

Command: string (Connection Required) accepts every Ophir Communication command

Error In

Output Parameters:

dup Visa Session

Frame Output (string): Returns the instrument's response.

Error Out

Ophir StringToValue.vi

Description: Converts String to Number.

Input Parameters:

Frame (string): (Connection Required) received from instrument. (i.e. * 1.234e-3)

Error In

Output Parameters:

Value Number (real number): value number.

Error Out

Ophir Terminal.vi

Description: The Terminal enables the PC to communicate with the instrument via RS232, GPIB, or USB.

To issue a command just type it in the Command Control and press “Enter” on the keyboard or click on the Send button.

The Terminal will display the response in the instrument response field.

(See the Ophir Software Manual for a full description of Ophir Communication commands)

Input Parameters: none

Output Parameters: none

Appendix:

A) LaserStar Dual Channel Mode Head Comparisons

Table of comparisons in LaserStar Dual Channel Mode

TH: ThermoPile
SI: PhotoDiode
PY: PyroElectric
NJ: NanoJoule-Meter

PA/PB: Power Ratio
PA-PB: Power Difference
EA/EB: Energy Ratio
EA-EB: Energy Difference

T: True for possible
F: False for not possible

Heads	1	2	PA/PB	PA-PB	EA/EB	EA-EB
	TH	TH	T	T	T	T
	SI	SI	T	T	F	F
	PY	PY	F	F	T	T
	NJ	NJ	F	F	T	T
	PY	NJ	F	F	T	T
	TH	SI	T	T	F	F
	XX	all	F	F	F	F

B) Ophir Communication Commands used by the VIs

AR All Ranges
CH CHange channel
CR Channel Read
EF Energy Flag
ER Energy Ready
FC Force Configuration
HI Head Information
II Instrument Information
SB Send Both
SE Send Energy
SF Send Frequency
SI Send unIts
SP Send Power
VE VErsion
WN Write range

See StarCom User Manual Appendix A for a full description of these and other Ophir Communication Commands.

C) Ophir VIs Error Messages

Error #	Description	Comment
-1301	Instrument Version not Valid for Vis	
-1302	No Head attached to Device	
-1303	No Head plugged in Device Channel A	LaserStar Dual
-1304	No Head plugged in Device Channel B	LaserStar Dual
-1305	No Heads attached to Device	LaserStar Dual
-1310	Head cannot measure power	
-1311	Head cannot measure energy	
-1312	Head cannot measure frequency	
-1313	Head in channel A cannot measure power	LaserStar Dual
-1314	Head in channel A cannot measure energy	LaserStar Dual
-1315	Head in channel A cannot measure frequency	LaserStar Dual
-1316	Head in channel B cannot measure power	LaserStar Dual
-1317	Head in channel B cannot measure energy	LaserStar Dual
-1318	Head in channel B cannot measure frequency	LaserStar Dual
-1319	Cannot measure power ratio	LaserStar Dual
-1320	Cannot measure power difference	LaserStar Dual
-1321	Cannot measure energy ratio	LaserStar Dual
-1322	Cannot measure energy difference	LaserStar Dual
-1325	Invalid Energy-Measurement-Method	Nova
-1326	Invalid Power-Measurement-Method	
-1327	Energy Ready not Valid for this Head	
-1328	Energy Flag Failed	
-1330	"FP" Command Failed	
-1331	"FE" Command Failed	
-1333	Head isn't measuring Frequency	
-1335	"FP" or "FE" Command Failed	
-1336	Force Dual Configuration Failed	LaserStar Dual
-1338	Write Range Failed	Instrument, LaserStar Dual
-1339	Measurement Failed	
-1340	Device not in Dual Channel Mode	LaserStar Dual
-1341	Device not found.	Ophir Instrument

Note: for all Libraries VISA Error Codes -10738077360 to -1073807231