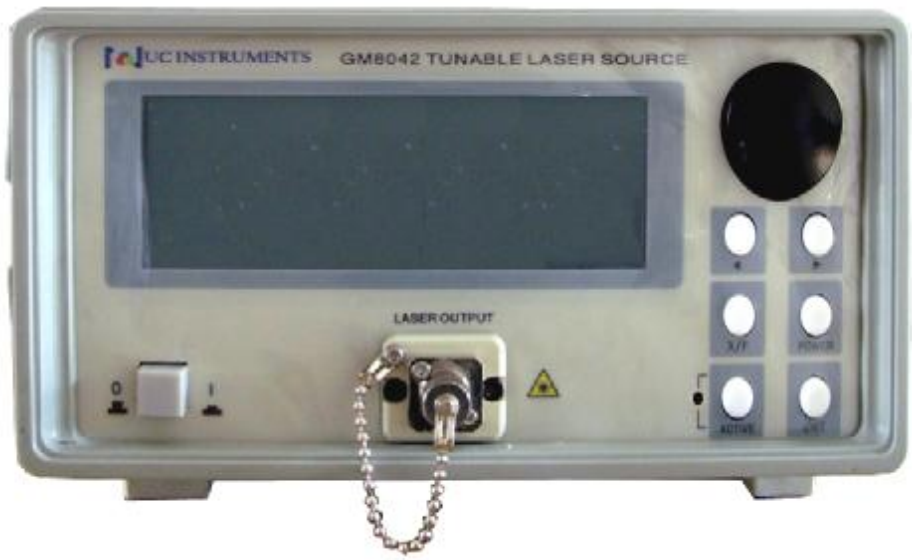
GM8042 Desktop Tunable Laser Source

Programming Guide

July, 2011



UC INSTRUMENTS CORP.

Notices

Subject Matter

The material in this document is subject to change without notice.

UC Instruments Corp. makes no warranty of any kind with regard to this printed material, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose.

UC Instruments Corp. shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this material.

Warranty

This UC Instruments Corp. product is warranted against defects in material and workmanship for a period of one year from date of shipment. During the warranty period, UC INSTRUMENTS CORP. will, at its option, either repair or replace products that prove to be defective.

For warranty service or repair, this product must be returned to a service facility designated by UC Instruments Corp. Buyer shall prepay shipping charges to UC Instruments Corp. and UC Instruments Corp. shall pay shipping charges to return the product to Buyer. However, Buyer shall pay all shipping charges, duties, and taxes for products returned to UC Instruments Corp. from another country.

UC Instruments Corp. warrants that its software and firmware designated by UC Instruments Corp. for use with an instrument will execute its programming instructions when properly installed on that instrument. UC Instruments Corp. does not warrant that the operation of the instrument, software, or firmware will be uninterrupted or error free.

Limitation of Warranty

The foregoing warranty shall not apply to defects resulting from improper or inadequate maintenance by Buyer, Buyer-supplied software or interfacing, unauthorized modification or misuse, operation outside of the environmental specifications for the product, or improper site preparation or maintenance.

No other warranty is expressed or implied. UC Instruments Corp. specifically disclaims the implied warranties of Merchantability and Fitness for a Particular Purpose.

Exclusive Remedies

The remedies provided herein are Buyer's sole and exclusive remedies.

UC Instruments Corp. shall not be liable for any direct, indirect, special, incidental, or consequential damages whether based on contract, tort, or any other legal theory.

Assistance

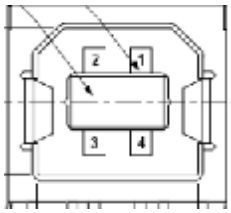
Product maintenance agreements and other customer assistance agreements are available for UC Instruments Corp. products. For any assistance contact the UC Instruments Corp. Maintenance Service Center.

CONTENTS

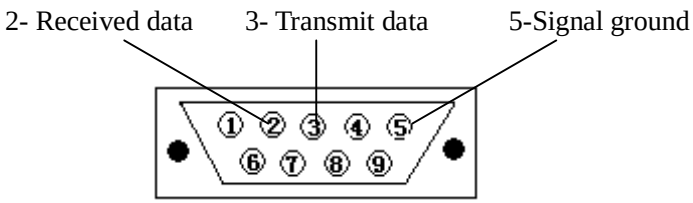
Communication Ports

USB Port

Standard four-core B type USB port.



RS232 Serial Port



The DB9 connector and pin assignments for GM8042

Communication setting:

1 Start bit, 8 Data bit, 1 Stop bit, No parity checking. Baud rate: 115200 bps.

Syntax

Commands format

The following symbols describe the syntax of commands in the following chapters.

The command is case-insensitive and can be written in upper case or in lower case or in both upper and lower case.

Example The command
SOURCE : STATE OFF
can also be written in lower case as
source : state off
or it can be written as
SOURCE : State off

Put a colon (**:**) before a component to indicate a move to the next level of the combination.
Example SOURCE : FREQUENCY : OFFSET ?

A command message is ended by a carriage return and a line feed character (\CR\LF).

The response format specifies what the instrument returns in response to a query. All responses are terminated with '\CR\LF >'.

For the query command, if normal, the instrument returns response value with 'CR\LF>', if an error occurs, then returns 'CR\LF'.

For the written command, if normal, the instrument returns 'CR\LF >', if an error occurs, then returns 'CR\LF'.

<…>	The characters between angled brackets show the kind of data that you require, or that you get in a response. You don't type the angled brackets in the actual message.
[…]	The characters between square brackets show optional information that you can include with the message.
/	The oblique line shows an either-or choice of data, for example, a/b means either a or b, but not both simultaneously.

All characters not between angled brackets are terminal symbols and must be sent exactly as shown. Items between angled brackets are not- terminal symbols, descriptions of these items follow the syntax description.

Spaces are ignored, they can be inserted to improve readability.

Data type

Boolean	this can be data (ON or OFF), or a number. In a response you get 0, for OFF, or 1, for ON.
Value	is numeric data in one of the forms described below.

Commands Lists

Common Commands

Command	Function
*IDN?	Identification query

***IDN?**

Syntax *IDN?

Response UC Instruments, GM8042 Tunable Laser Source,
SN:GG042744001,HW Revision 1.00, ** Firmware Revision 1.00

UC Instruments: Manufacturer

GM8042 Tunable Laser Source: Instrument model

*****SN: GG042744001: Serial number of this instrument

*****HW Revision 1.00: Hardware revision

**Firmware Revision 3.00: Software revision

Description The *IDN? query gets the instrument identification over the interface.

Source Commands

Command	Function
SOURCE	
: STATE ?	
: STATE	<BOOLEAN>
: FREQUENCY ?	
: FREQUENCY	<VALUE>
: FREQUENCY ? MAX /MIN	
: FREQUENCY MAX /MIN	
: WAVELENGTH ?	
: WAVELENGTH	<VALUE>
: WAVELENGTH? MAX /MIN	
: WAVELENGTH MAX /MIN	
: POWER?	
: POWER	
: UNIT ?	
: UNIT	< W/DBM >

SOURCE: STATE?

Syntax SOURCE : STATE?
Response < Boolean >

Description This command returns the current setting for the state of the laser source. ON means the source is enabled. OFF means the source is disabled.

Example
```
SOURCE : STATE ?
ON
>
```

SOURCE: STATE

Syntax SOURCE : STATE <Boolean>
Description This command sets the state of the source output signal. You specify the state as a Boolean. OFF, or 0, disables the source. ON, or 1, enables the source.

Example
```
SOURCE : STATE 0
>
```

SOURCE: FREQUENCY ?

Syntax	SOURCE : FREQUENCY ?
Response	< VALUE >
Description	This command returns the setting for the frequency of modulation of the output of the source module. The returned value is in GHz.
Example	SOURCE : FREQUENCY ? 191200.0GHz >

SOURCE: FREQUENCY

Syntax	SOURCE : FREQUENCY < VALUE >
Description	This command sets the frequency of the amplitude modulation of the source output signal. The unit is default to GHz, so you do not specify the unit in this command message.
Example	SOURCE : FREQUENCY 191200 >

SOURCE: FREQUENCY? MAX /MIN

Syntax	SOURCE : FREQUENCY ? MAX / MIN
Response	<VALUE>
Description	This command returns the range setting of frequency for source module. *MAX* represents the maximum of frequency. *MIN* represents the minimum of frequency. The returned value is in GHz.
Example	SOURCE : FREQUENCY? MAX 196585.2GHz > SOURCE : FREQUENCY? MIN 191194.0GHz >

SOURCE: FREQUENCY MAX /MIN

Syntax	SOURCE : FREQUENCY MAX / MIN
Description	This command sets the current frequency to maximum or minimum for the source module. The maximum and minimum of frequency depend on the source module you use. *MAX* represents the maximum. *MIN* represents the minimum.
Example	SOURCE : FREQUENCY MAX >

SOURCE: WAVELENGTH?

Syntax SOURCE : WAVELENGTH?
Response < VALUE >

Description This command returns the setting for the wavelength of the output of the source module. The returned value is in nm.

Example SOURCE : WAVELENGTH?
1525.0000nm
>

SOURCE: WAVELENGTH

Syntax SOURCE : WAVELENGTH < VALUE >

Description This command sets the wavelength of the output signal. The unit is default to nm, so you do not specify the unit in this command message.

Example SOURCE : WAVELENGTH 1550
>

SOURCE: WAVELENGTH? MAX /MIN

Syntax SOURCE : WAVELENGTH? MAX / MIN
Response <VALUE>

Description This command returns the range setting of wavelength for source module. *MAX* represents the maximum of wavelength. *MIN* represents the minimum of wavelength. The returned value is in nm.

Example SOURCE : WAVELENGTH? MAX
1568.0000nm
>

SOURCE : WAVELENGTH? MIN
1525.0000nm
>

SOURCE: WAVELENGTH MAX /MIN

Syntax SOURCE : WAVELENGTH MAX / MIN

Description This command sets the current wavelength to maximum or minimum for the source module. The maximum and minimum of wavelength depend on the source module you use. *MAX* represents the maximum. *MIN* represents the minimum.

Example SOURCE : WAVELENGTH MAX
>

SOURCE : POWER : UNIT?

Syntax	SOURCE : POWER : UNIT ?
Response	< dBm /W>
Description	This command returns the units of power of laser source.
Example	SOURCE : POWER : UNIT ? dBm >

SOURCE : POWER: UNIT

Syntax	SOURCE : POWER: UNIT < dBm /W >
Description	This command sets the displayed units of power of laser source.
Example	SOURCE : POWER : UNIT W >

SOURCE : POWER?

Syntax	SOURCE : POWER?
Description	This command returns the setting for the power of the source module. The units for returned value is either dBm or mW, which is determined by the command " SOURCE : POWER: UNIT ".
Example	SOURCE : POWER ? 13.01 dBm >

Sweep Commands

Command	Function
SWEEP	
:ININTIATE	
:ABORT	
:FREQ:START ?	
:FREQ:START	<VALUE>
:FREQ:STOP ?	
:FREQ:STOP	<VALUE>
:FREQ:STEP ?	
:FREQ:STEP	<VALUE>
:FREQ:PAUSE?	
:FREQ:PAUSE	< VALUE>
:WAVE:START ?	
:WAVE:START	<VALUE>
:WAVE:STOP ?	
:WAVE:STOP	<VALUE>
:WAVE:STEP?	
:WAVE:STEP	<VALUE>
:MODE?	
:MODE	<VALUE>

SWEEP : INITIATE

Syntax SWEEP : INITIATE

Description This command starts a sweep performing for source module.

Example SWEEP : INITIATE
Done>

SWEEP : ABORT

Syntax SWEEP : ABORT
Response < Sweep: Abort Ok >

Description This command aborts the sweep performing for source module.

Example SWEEP : ABORT
Sweep:Aborted
>

SWEEP : FREQ: START ?

Syntax SWEEP : FREQ : START ?
Response < VALUE >

Description This command returns the setting value of the frequency at which the sweep begins for the source module. The returned value is in GHz. No unit is returned in the response message.

Example SWEEP : FREQ : START ?
191200.0
>

SWEEP : FREQ : START

Syntax SWEEP : FREQ : START < VALUE >

Description This command sets the frequency at which the sweep begins for the source module. The default unit is GHz. Don't attach the unit in the command message.

Example SOURCE1 : SWEEP : FREQ : START 191000
>

SWEEP : FREQ: STOP ?

Syntax SWEEP : FREQ : STOP ?
Response < VALUE >

Description This command returns the setting value of frequency at which the sweep ends for the source module. The returned value is in GHz. No unit is returned in the response message.

Example SWEEP : FREQ : STOP?
196000.0
>

SWEEP : FREQ: STOP

Syntax SWEEP : FREQ : STOP < VALUE >

Description This command sets the frequency at which the sweep ends for the source module. The default unit is GHz. Don't attach the unit in the command message.

Example SWEEP : FREQ : STOP 196000
>

SWEEP :FREQ : STEP ?

Syntax SWEEP : FREQ : STEP ?
Response < VALUE >

Description This command returns the size of the change in the frequency for each step of a stepped sweep for the source module. The returned value is in GHz. No unit is returned in the response message.

Example SWEEP : FREQ : STEP?
1000.0
>

SWEEP :FREQ: STEP

Syntax SWEEP : FREQ : STEP < VALUE >

Description This command sets the size of the change in the frequency for each step of a stepped sweep for the source module. The default unit is GHz. Don't attach the unit in the command message.

Example SWEEP : FREQ : STEP 1000
>

SWEEP :FREQ : PAUSE?

Syntax SWEEP : FREQ : PAUSE ?
Response <VALUE>

Description This command returns the interval time between two steps of a stepped sweep for the source module. The returned value is in second. No unit is returned in the response message.

Example SWEEP : FREQ : PAUSE?
1
>

SWEEP :FREQ : PAUSE

Syntax SWEEP : FREQ : PAUSE <VALUE>

Description This command sets the interval time between two steps of a stepped sweep for the source module. The default unit is second. Don't attach the unit in the command message.

Example SWEEP : FREQ : PAUSE 1
>

SWEEP :WAVE : START?

Syntax SWEEP : WAVE : START ?
Response < VALUE >

Description This command returns the setting value of the wavelength at which the sweep begins for the source module. The returned value is in nanometer. No unit is returned in the response message.

Example SWEEP : WAVE : START ?
1525.000
>

SWEEP : WAVE: START

Syntax SWEEP : WAVE : START < VALUE >

Description This command sets the wavelength at which the sweep begins for the source module. The default unit is nanometer. Don't attach the unit in the command message.

Example SWEEP : WAVE : START 1525
>

SWEEP : WAVE: STOP ?

Syntax SWEEP : WAVE : STOP ?
Response < VALUE >

Description This command returns the setting value of wavelength at which the sweep ends for the source module. The returned value is in nanometer. No unit is returned in the response message.

Example SWEEP : WAVE : STOP?
1568.000
>

SWEEP : WAVE: STOP

Syntax SWEEP : WAVE : STOP <VALUE>

Description This command sets the wavelength at which the sweep ends for the source module. The default unit is nanometer. Don't attach the unit in the command message.

Example SWEEP : WAVE : STOP 1568
>

SWEEP : WAVE:STEP ?

Syntax SWEEP : WAVE : STEP ?
Response < VALUE >

Description This command returns the size of the change in the wavelength for each step of a stepped sweep for the source module. The returned value is in nanometer. No unit is returned in the response message.

Example SWEEP : WAVE : STEP?
0.01
>

SWEEP : WAVE: STEP

Syntax SWEEP : WAVE : STEP < VALUE >

Description This command sets the size of the change in the wavelength for each step of a stepped sweep for the source module. The setting minimum is 0.01. The default unit is nanometer. Don't attach the unit in the command message.

Example SWEEP : WAVE : STEP 0.02
>

SWEEP : MODE?

Syntax SWEEP : MODE ?
Response < 1, N >

Description This command returns the sweep mode for the source module. The returned values are separated by a comma. The first value is a constant as 1. The second value, N represents sweep mode, 0 is for frequency sweep, 1 is for wavelength sweep.

Example SWEEP : MODE?
1, 0
>

SWEEP : MODE

Syntax SWEEP : MODE < 1, N >

Description This command sets the sweep mode for the source module. The setting values are separated by a comma. The first value is a constant as 1. The second value, N represents sweep mode. Set N to 0 for frequency sweep. Set N to 1 for wavelength sweep.

Example SWEEP : MODE 1, 0
>

UC INSTRUMENTS CORP. CONTACT INFORMATION

UC INSTRUMENTS CORPORATION
Add: 37498 Glenmoor Dr., Fremont, CA 94536 USA
Tel: +1-510-366-7353
Fax: +1-510-353-1809
Email: sales@ucinstruments.com
Website: www.ucistruments.com

MAINTENANCE SERVICE CENTER,GUILIN,CHINA
Address： No.16 Yi Feng south road, GuiLin, China
Tel: +86 773 5850657
Fax: +86 773 5814532
Website: www.ucigl.com