# EXFO

## X-Cite® 120 PC

**USER'S GUIDE**

# X-Cite 120 PC User's Guide

## Trademarks

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# 1    EXFO X-Cite 120 PC Message Reference

| Symbol | Message | Description |
|--------|---------|-------------|
| **XXXX.** | Lamp Hours | Displays the accumulated hours the lamp has been on |
| **XXX.X** | Exposure Time | Displays the time in seconds the shutter will remain open when activated. |
| **XXX** | Iris Setting | Displays the iris setting in a percentage of maximum. |
| Flashing "**XXX.X**" | Flashing display | The lamp is warming up. Warm up time is approximately 90 sec. |
| **bulb** | Bulb Error | Lamp installed incorrectly / Lamp did not strike or extinguished after striking |
| **cool** | Cool Warning | Lamp is too hot to strike. The lamp will automatically strike when it has reached optimum striking temperature |
| **old / bulb** | Alternating Old and then Bulb | The lamp has accumulated over 2000 hours. Lamp may be near end of life. |
| **end / bulb** | Alternating End and then Bulb | The lamp has accumulated over 4000 hours. The lamp will not strike. |
| **LOC** | Adjustment Locked | The UP/DOWN adjustment buttons have been locked. No changes can be made to the exposure time or iris setting. |
| **ULOC** | Adjustment Unlocked | The UP/DOWN adjustment buttons have been unlocked. Changes can be made to the exposure time and iris setting |
| **SFI** | Shutter Failure | The shutter has failed. Unit should be restarted.  If the error repeats unit should be serviced. |

See Section 13 for Troubleshooting.

## 2   Introduction

The X-Cite 120 PC represents a new standard in fluorescence illumination. It gives you the convenience and control never before available in a fluorescence illuminator and has been designed to let you focus your energy where it belongs, on obtaining the best possible results.  The X-Cite 120 PC joins the EXFO family of light systems offering the same high level of innovation, quality and reliability that our commercial customers have come to expect.  Since 1982, EXFO has combined next generation optical engineering, state-of-the-art electronics and fiber-optics to produce sophisticated technologies that employ light. Today EXFO is a leading developer of light based systems for sectors ranging from manufacturing to bio-medicine and we are unmatched in our commitment to quality and service.

The heart of the X-Cite120 PC is a proprietary 120-watt short arc lamp with an amazing 1500-hour typical lifetime. This extended lifetime is made possible by the proprietary thermal management system incorporated into the design. The lamp is mounted in an elliptical reflector with a proprietary coating to provide unequalled spectral and power output.  Standard features incorporated in the X-Cite 120 PC include: the pre-aligned Intelli-Lamp™ system, an accumulative lamp hour meter, a lamp status indicator and optional PC remote control via an RS-232 interface.

The X-Cite 120 PC is a high quality product which is designed and manufactured in accordance with ISO 9001, is CE marked and designed to meet applicable North American, EU and International standards.

We suggest that you read this manual to discover all features, and how to use them.

## 3    Checking the contents of the box

1. Carefully unpack the unit and accessories.
2. Store the packing material for future use.

**Box Contents:**

1.  EXFO X-Cite 120 PC illumination unit



2.  Lamp Module, EXFO X-Cite 120



3.  Collimating Adapter



4.  Light Guide, X-Cite 120
    (3mm x 1.5m or 3mm x 3.0m)



5.  Power Cord, IEC (grounded)

6.  CD-ROM, X-Cite 120 PC Control Panel
    Software

7.  Users Guide, X-Cite 120 PC

8.  Quick Start Guide, X-Cite 120 PC

9.  Foot Pedal Switch Assembly

10. Cable Assembly, 9 Pin (RS-232)

11. Hex Key, 3mm (Lamp access cover)

If your packaged unit is missing any of the above components,
call EXFO at (418) 683-0211or TOLL FREE 1-800-663-3936.

Any additional optional items purchased to customize the unit will also be present.

## 4   Unit Features

### 4.1  Front Panel

LED Status Indicators

LED display

MODE, UP / DOWN adjust buttons

X-Cite™ 120 PC
*Fluorescence Illumination System*

START / STOP button

Power on/off switch

### 4.2 Rear Panel

Air vents

Light guide port

EXFO

Model No.: XI120PC
Serial No.: XI120PC - 00000

Input: 100-240VAC,
50/60Hz, 2.4/1.0A
Fuse: 4.0 Amp, 250V fast
Lamp: 120W VIP

MADE IN CANADA

Analog Jack: Input Signal/ (Foot pedal connector)

RS-232 Port

AC Power Receptacle

Fuse Drawer

F4.0A 250V~

## 5  Safety Precautions

**The EXFO X-Cite 120 PC is equipped with two safety sensors to protect the user from accidental UV exposure.  In addition, please observe the following precautions during use.  This series of cautions, warnings and dangers relate to the operation and maintenance of the EXFO X-Cite 120 PC.  They are also presented throughout this User's Guide where necessary.**

**Warning**
Eye damage may result from directly viewing the light produced by the lamp used in this product. Always use protective eyewear and turn the lamp off before removing cover.

**Caution**
Never look into the light emitting end of the light guide. The light could severely damage the cornea and retina of the eye if the light is observed directly. Eye shielding must be used at all times as well as clothing to protect exposed skin.

**Warning**
Always make sure the light guide is properly inserted into the EXFO X-Cite 120 PC and the microscope prior to turning on power to the unit. This will minimize the risk of exposure to the UV light.

**Warning**
To reduce the risk of fire or shock, always replace the fuses with the same type and rating.

**Warning**
Disconnecting of main supply source is only possible by unplugging the power cord.

**Danger**
This unit contains HIGH VOLTAGE components. It is recommended that ONLY QUALIFIED TECHNICAL PERSONNEL perform any testing or repairs described in this manual. Disconnect the AC power cord from the unit before opening the cover of this unit. All cover screws must be replaced prior to applying power to the unit, or safety of the unit will be impaired.

**Monitoring the unit during manual operation**
The level of UV energy supplied by the EXFO X-Cite 120 PC is sufficient to ignite flammable substances. During manual operation, the unit must be attended at all times by a qualified operator. The unit must not be left unattended while turned on. If an operator leaves the work area of the unit, the lamp power switch must be turned off.

**Monitoring the unit during Automated operation**
The level of UV energy supplied by the EXFO X-Cite 120 PC is sufficient to ignite flammable substances. Therefore, when the unit is operated unattended in an automated environment, an alarm function must be provided by the user to indicate a malfunction in the associated equipment used.

**Warning**
**Hg – LAMP CONTAINS MERCURY, Manage in Accord with Disposal Laws, see:**
**www.lamprecycle.org or 1-800-668-8752**

**Danger**
When unpacking or installing the lamp, always wear protective clothing and a face mask. Operate lamp only in the EXFO X-Cite 120 PC lamp housing. This prevents direct viewing of the arc and in the case of lamp bursting, contains lamp particles. In the rare instance in which a lamp bursting occurs, and the mercury content is released, the following safety precautions are recommended: All personnel should be immediately evacuated from the area to prevent inhalation of the mercury vapor. The area should be well ventilated for a minimum of 30 minutes. After the lamp housing elements have cooled, the mercury residue should be collected with the use of a special absorbing agent available from laboratory equipment suppliers.

**Warning**
Should this EXFO X-Cite 120 PC unit be used in a manner not specified by EXFO, the protection provided by the equipment may be impaired.

**Warning**
The method in which lamps are disposed of must comply with local rules & regulations for disposal of hazardous materials. Lamps may be returned to EXFO providing they are returned in its original packaging. EXFO will dispose of them in the appropriate manner.

**Caution**
The lamp module's operational life can be significantly shortened if it is handled incorrectly. Do not touch the bulb's glass envelope or the inside surface of the reflector. Skin oils can cause the lamp module to fail prematurely.

**Caution**
Prior to opening the unit and handling the lamp module, allow the lamp module to cool down completely.

**Caution**
Any electronic equipment connected to the EXFO X-Cite 120 PC must be IEC950 certified.

**Cleaning:**

Clean exterior of the unit with a water dampened cloth and simple detergent only.

## 6    Installing the Lamp Module

1. Be sure the AC power cord is disconnected from the unit.
2. Using the 3mm hex key provided, remove the lamp access panel from the unit cover.

Lamp
Access
Cover

3. Carefully remove the lamp module from its container, holding only the ceramic components.

**Caution!**
The lamp module's operational life can be significantly shortened if handled incorrectly. Be sure only to handle the ceramic surfaces. Do not touch the bulb's glass envelope or the inside surface of the reflector. Skin oils can cause the lamp module to fail prematurely.

4. Open the lamp bracket arm by pulling towards you and to the right.

Lamp
bracket

Lamp
Power
connector

Lamp spring
clamp

Lamp
bracket arm

Intelli-Lamp
connector
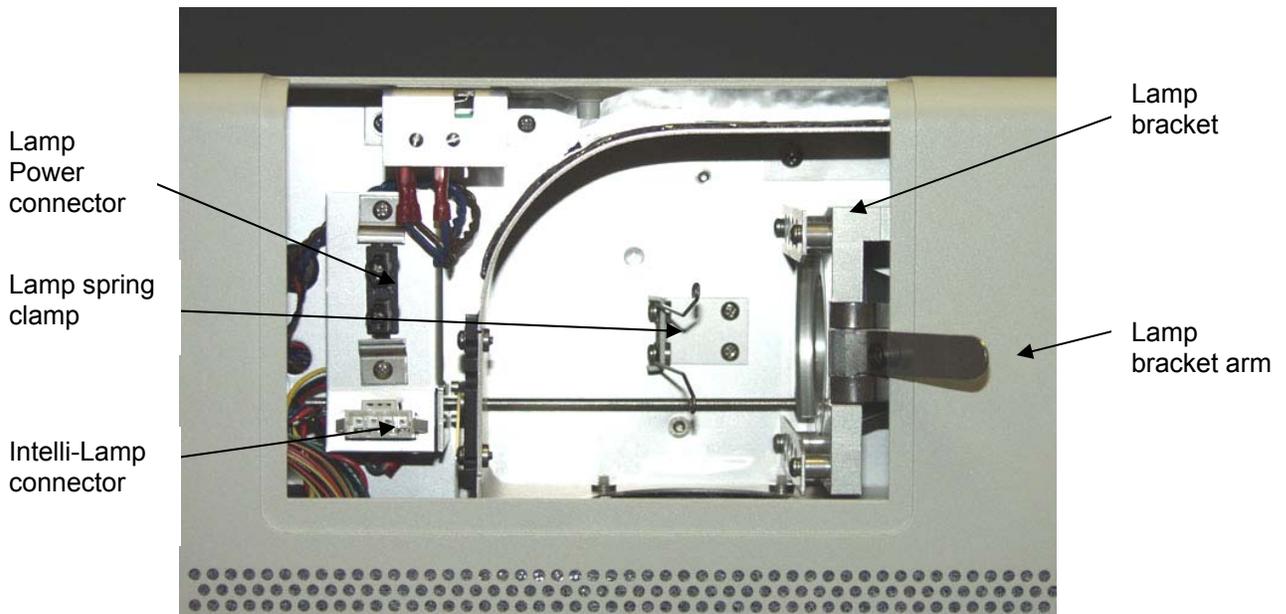
5.  Position the lamp so that the two leading edges of the lamp ceramic mount slide into the groove of the lamp bracket. The middle of the lamp should be in position to fit into the spring clamp.

    *Tip: Make sure that the "This side out" label is facing outwards before trying to insert the lamp as illustrated below.*
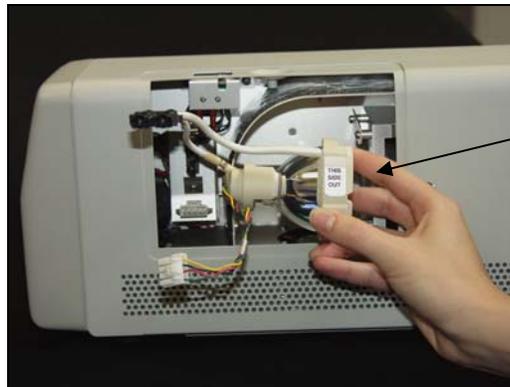


6.  Slide the lamp all the way in so that both leading edges of the lamp ceramic mount are in the groove of the lamp bracket. The middle of the lamp will snap into the spring clamp. Close the lamp bracket arm.

7.  Locate the 4-pin Intelli-Lamp sensor connector (c/w multi-colored wiring harness) at the rear of the lamp module and connect it to its mate located on the lamp-housing wall.
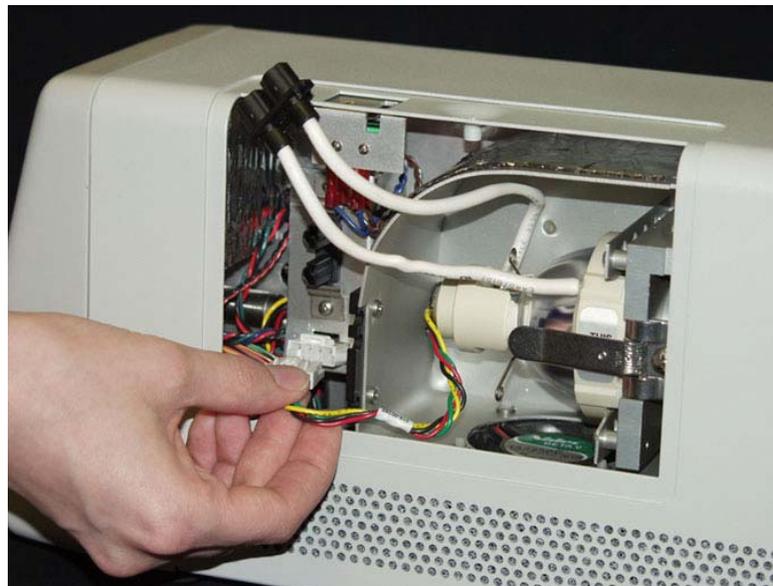
*Tip:* *the Intelli-lamp connector will only attach in the correct orientation. If you are having difficulty attaching the connector, try rotating it by 180°*

8. Attach the 2-pin lamp power connector to its mate on the lamp-housing wall.



*Tip:* *the 2-pin lamp power connector will only attach in the correct orientation. If you are having difficulty attaching the connector, try rotating it by 180°*

9. Ensure the Intelli-Lamp sensor and the lamp power leads are secured into the appropriate alignment grooves of the lamp housing as illustrated below.
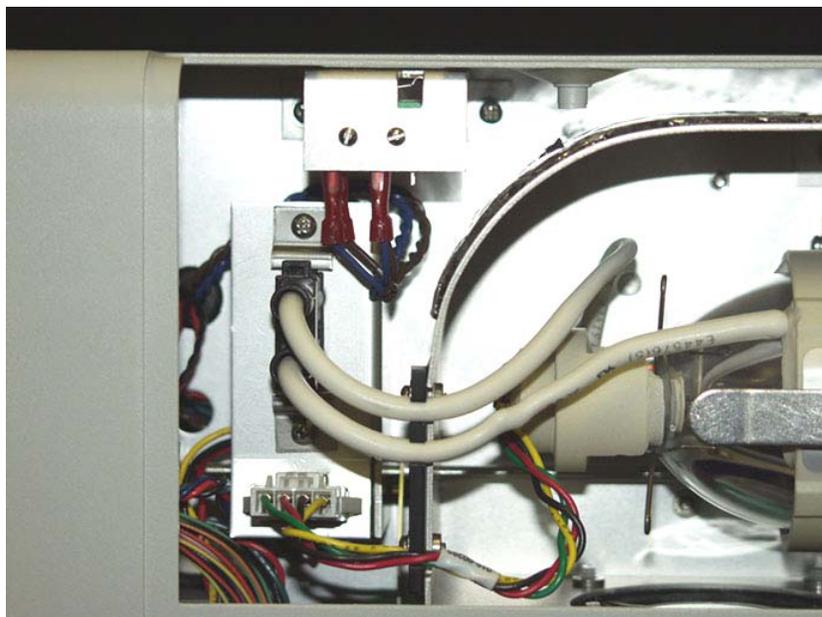
10. Replace the lamp access side panel and tighten the fastening screw.

   *Note: If the lamp module has been installed incorrectly the message "bulb" will appear on the display and a continuous audible beep will be heard after the 90 second warm-up cycle has been completed.*

## 7   Inserting and Removing the Light Guide

1. Make sure that power is off to the X-Cite 120 PC unit.

2. Ensure that the protective end caps are removed from both the input and output ends of the light guide prior to installation.

3. Insert the light guide into the light guide retainer located on the back panel of the unit. Push the light guide in until it seats with a second positive "click".



   *Tip: When the light guide is fully inserted, the line on the light guide insertion label will be right up against the light guide port.*

4. During installation or removal, grasp the light guide on the strain-relief nearest the input end of the light guide.

   *Note: never grip the light guide during installation or removal by any other part other than the strain relief portion*

5. To remove the light guide, firmly grip the strain relief near the light guide retainer and pull out firmly.

   *Note: the EXFO X-Cite 120 PC is designed for use with a 3mm liquid light guide.  EXFO can not guarantee the performance of the X-Cite 120 PC if using light guides other than those supplied by EXFO.*

## 8   Installing the Collimating Adapter

1.  Ensure that the power is off on the X-Cite 120 PC unit.

2.  The existing lamp housing must be removed from the microscope before the collimating adapter can be mounted. Do not discard the existing mounting hardware, since it will be used to secure the collimating adapter to the microscope.

4.  Remove the collimating adapter from its packaging.

    *Note: the collimating adapter has been set at the factory. No adjustments by the customer are required.*

5.  Insert the flange portion of the collimating adapter into the lamp port of the microscope.  Using the existing hardware, tighten the screw(s) until the flange is fully secured.

    *Note: the installation of the collimating adapter will vary with microscope models.*

6.  Remove the protective cap from the output end of the light guide. Insert the light guide into the input portion of the collimating adapter until it is flush with the adjustable insert.  Secure the light guide to the collimating adapter by tightening the thumbscrew.  Do not over tighten.

    *Note: the light guide has a bend radius of 1.6 inches (40.0mm). Exceeding this radius will result in permanent damage to the light guide.*
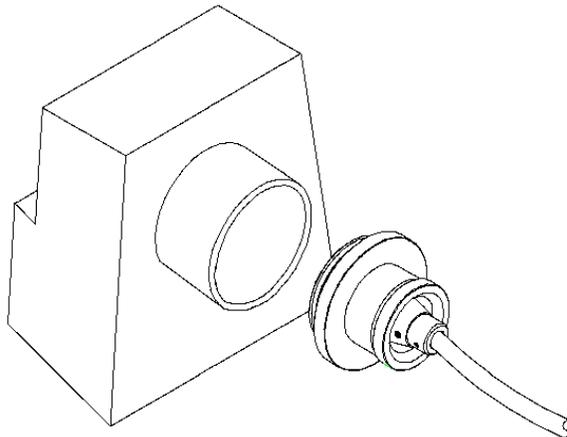
## 9 Powering Up and Powering Down

1. Plug the X-Cite 120 PC unit into a properly grounded AC outlet.

2. Ensure that the lamp and light guide have been properly installed and that the lamp access cover is securely fastened.

3. Set the mains power switch (I / O), located on the front panel to the "I" ON position and check the fan for airflow.

4. The lamp will automatically turn on within 20 seconds and the LAMP indicator LED on the front panel will illuminate. The display will flash for the warm-up period of 90 seconds.  The display will stop flashing when the warm-up cycle has been completed. Wait until the warm up cycle has been completed before using the X-Cite   120 PC to perform an exposure.

   *Note:  If the lamp is turned off, and an attempt is made to turn it back on before it has fully cooled, the "**cool**" message will appear on the display.  The lamp will automatically re-strike when the lamp has cooled.*

5. To power down the unit, set the mains power switch (I / O), to the "O" OFF position.

## 10 Adjusting the Light Output Intensity

Your X-Cite 120 PC system includes an iris adjustment to control the amount of light output from the unit. Adjustments to the output can only be made when the X-Cite 120 PC unit is in Intensity Mode.

*Note: When the unit is connected to a PC or the front panel has been manually locked, exposure settings can not be adjusted from the X-Cite 120 PC front panel buttons.*

1.  Set your EXFO X-Cite 120 PC to Intensity Mode by pressing the Mode button until the LED display shows 3 digits "**XXX**".  The three digit number shown will indicate the iris setting as a percentage of maximum.

    > **Warning**
    >
    > *UV light and high levels of visible light will be emitted from the light guide. Opening the shutter on the X-Cite 120 PC without the light guide properly installed in the unit and in the microscope can increase your risk of exposure to UV light.*

2.  Press the START /STOP button to open the shutter. The OPEN LED indicator on the front panel will illuminate.

3.  Press the UP button to increase the light output or press the DOWN button to decrease the light output. The percentage of the iris opening displayed will increase or decrease to 0%, 12%, 25%, 50% or 100% each time the UP or DOWN button is pressed.

    *Note: No light will be emitted from the unit when the iris opening is set to 0% or if the START /STOP button has not been pressed to activate the shutter.*

4.  Press the START /STOP BUTTON to close the shutter. The OPEN indicator LED will turn off once the shutter has closed.

    *Note: While in Intensity Mode, pressing the START/STOP button will manually open the shutter. The shutter will remain open until the START/STOP button is pressed once again to close the shutter. Use this mode to override the timer function if manual operation of the shutter is required.*

## 11  Timed Exposures

Your X-Cite 120 PC system includes a timer to automatically close the shutter after a user selected amount of time. Adjustments to the exposure time can only be made when the X-Cite 120 PC unit is in Timer Mode and the shutter is closed.

***Note:*** *When the unit is connected to a PC or the front panel has been manually locked, exposure settings can not be adjusted from the X-Cite 120 PC front panel buttons.*

### 11.1  Adjusting the Exposure Time

1. Set your X-Cite 120 PC to Timer Mode by pressing the Mode button until the four digits are displayed as "**XXX.X**"   The number shown will indicate the exposure time in seconds and tenths of a second.

2. Press the UP button to increase the exposure time by 1/10 sec, or press the DOWN button to decrease the exposure time by 1/10 sec.

   ***Note:*** *the minimum available exposure time is 0.2 seconds*

3. For coarse adjustments, press and hold the UP or DOWN button to rapidly increase or decrease the exposure time.

### 11.2  Running a Timed Exposure

1. Ensure that your X-Cite 120 PC unit is set in the timer mode or lamp hour mode as per section 11.1.

2. Press the START /STOP button. The shutter will open and the exposure time will begin to count down. When the exposure time has elapsed to zero, the shutter will close and the timer mode will automatically reset to the preset value.

   ***Note:*** *The OPEN LED indicator will illuminate when the shutter is open*

   *If the X-Cite 120 PC is in timer mode, and a timed exposure is activated, the display will show the elapsed time while the shutter is open.*

   *To stop a timed exposure during an exposure cycle, press the START /STOP button. The shutter will immediately close and the exposure time will reset. The OPEN    indicator will turn off.*

## 12  Additional Functions

### 12.1  Viewing the Accumulated Lamp Hours

Your X-Cite 120 PC system automatically accumulates the number of hours that the lamp is on and shows this information on the LED display. The lamp hours are shown when the unit is in Lamp Hour mode.

Set your X-Cite 120 PC to Lamp Hour Mode by pressing the Mode button until the four digits are displayed as "**XXXX.**" *(a flashing decimal point to the right).* This shows the number of accumulated hours on the lamp.

*Note: Pressing the START/STOP button while in Lamp Hour mode will open the shutter for the pre-set Exposure Time (see Section 11).*

### 12.2  Locking/ Unlocking the Up/ Down Adjustment Buttons

Your X-Cite 120 PC system allows you to lock or disable the Up/ Down buttons located on the front display panel. When the system lock has been engaged, no adjustments to the time exposure or iris opening can be made. This can help to ensure constant exposures when the X-Cite 120 PC is utilized by multiple operators.

To Lock the Up/ Down push buttons:

1)  Push and hold the Mode button

2)  While pressing the Mode button, press the following sequence of buttons:

   **DOWN - UP - UP – UP**

3)  After 2 seconds the message "**LOC**" will momentarily appear for 2 seconds then vanish

To Unlock the Up/ Down push buttons:

1)  Push and hold the Mode button

2)  While pressing the Mode button, press the following sequence of buttons:

   **DOWN – UP – UP – UP**

3)  After 2 seconds the message "**ULOC'** will momentarily appear for 2 seconds then vanish.

Once the system is unlocked, all of the front panel buttons will perform as per their    normal function.

### 12.3  Using the Foot Pedal/ Remote Device

To use a foot pedal or other remote control device to control the shutter on your X-Cite 120 PC system, insert a 3.5mm audio style plug into the jack located on the rear panel.

*Note: Any connections to the remote jack must use a shielded cable*

Depressing the foot pedal, or providing a momentary contact closure, will provide the same function as pressing the start/ stop button. The shutter will open as per the current mode setting of the unit.

The foot pedal connector, a 3.5mm audio style jack, has the following pin-out connections:

| Connection Point: | Signal Name: |
|---|---|
| Outer rim | Common (GND) |
| Center pin | Positive input, active low |

## 13  Troubleshooting

**Service to be completed by qualified repair personnel only!**

**If the unit fails to power up, use the following checklist to eliminate the most common causes of problems.  Check that:**

1.  The AC power cord is securely plugged into a functional AC wall plug.

2.  The AC power cord is securely plugged into the AC inlet on the rear of the unit.

3.  The mains AC power switch is in the ON position.

**If the unit still does not power-up:**

4.  Check both mains power fuses by first disconnecting the power cord. Then carefully remove the fuse drawer assembly below the AC inlet on the rear of the unit. If the fuse(s) is/ are open, replace with the same type (4A, 250 V, Fast acting).

**If the LED display lights and the fan starts, but the lamp won't turn on, check if:**

1.  The LED display indicates the "**bulb**" message and the system begins to beep. This indicates that no lamp has been detected. Check if the lamp has been installed correctly.  Refer to Section 6 – Installing the Lamp Module.

2.  The LED display indicates the "**bulb**" message after a 20 or 30 sec. delay and the system begins to beep. This indicates that the lamp has failed to strike. It may be a result of the lamp reaching end of life or that the lamp access cover is not secured properly in place. Press the START/STOP button to clear the audible alarm. Power down the unit, remove the lamp access cover and replace securely, tightening the fastening screw in place. Wait a few minutes and turn power on to the unit. If it still does not strike, replace the lamp.

3.  The LED display indicates the "**cool**" message. This indicates the lamp is too hot to strike. The lamp will automatically strike when it has cooled.

4.  The LED display indicates alternately "**end**" then "**bulb**". This indicates that the lamp has accumulated over 4000 hours and will not strike. The lamp module must be replaced.

**If the light intensity is too low, check that:**

1.   The light guide has been fully inserted into the light guide retainer.

2.  The X-Cite 120 PC unit includes an iris adjustment. Change the system to Intensity Mode and adjust the % of iris opening using the UP button to increase the illumination. See section 10 – Adjusting the Light Output Intensity

3.  There are no foreign substances on the emitting end of the light guide.

4.  There are no bends, kinks, or other physical damage to the light guide. Replace the light guide if there is any physical damage.

5.  The LED display indicates alternately "**old**" then "**bulb**". This indicates that the lamp has accumulated over 2000 hours and may require replacement.

It may be necessary to replace the lamp or the light guide. Contact your sales representative for information on purchasing a new lamp or light guide.

**If the LED display indicates "SFI":**

1.  This indicates there is a shutter failure. Power down the unit wait 1 minute and turn the power back on. If the unit once again displays the shutter failure message, contact your local EXFO Service Center.

**If the LED display does not light:**

1.  If the fan is functional, power down the unit, wait approximately 20 seconds then power it up again

2.  If the problem persists, contact your local EXFO Service Center.

**If either Fan does not work properly**

1.  If the LED display is functional, power down the unit, wait approximately 20 seconds then power it up again

2.  If the problem persists, contact your local EXFO Service Center.

## 14  Messages / Indicators

The EXFO X-Cite 120 PC display and LED indicators provide information to the user to aid in unit operation and to advise when certain conditions exist.  The following is a collective listing of messages and their meanings.

### 1.  "XXXX."
A flashing decimal point to the right of the four numbers on the display advises the user that the unit is in Lamp Hour Mode.  See Section 12.1, Viewing the Accumulated Lamp Hours.

### 2.  "XXX.X"
A decimal point to the left of the furthest right digit of the four digits on the display indicates the unit is in Timer Mode.  The number shown will indicate the exposure time in seconds and tenth of seconds.  See Section 11, Timed Exposures.

### 3.  " XXX "
Three digits on the display indicate unit is in Intensity Mode.  The three digit number shown will indicate the percent iris opening.  See Section 10, Adjusting the Light Output.

### 4.  "bulb"
The "bulb" message advises the user that the bulb has failed to ignite or extinguished after striking.

If the bulb message appears immediately and is accompanied by an audible beeping, this indicates that the lamp has not been installed correctly or that the wrong bulb type has been installed.  See Section 6, Installing the Lamp Module.

If the bulb message appears after about 25 seconds and is accompanied by an audible beeping, this indicates that the lamp has failed to strike. It may be a result of the lamp reaching end of life or that the lamp access cover is not secured properly in place. Press the START/STOP button to clear the audible alarm. Power down the unit, remove the lamp access panel and replace securely, tightening the fastening screw in place. Wait a few minutes and turn power on to the unit. If it still does not strike, replace the lamp.

### 5.  " old / bulb"
The "old" and then "bulb" message appear in alternating sequence for about 10 seconds when power is first turned on to the unit if the accumulated lamp hours have exceeded 2000 hours.    When this message occurs, it is recommended that the lamp be replaced soon.

### 6.  " end / bulb"
The "end" and then "bulb" message appear in alternating sequence when power is first turned on to the unit if the accumulated lamp hours have exceeded 4000 hours. This indicates that the lamp has reached the end of safe life. If the lamp hours reach 4000 hours, safety measures will prevent the lamp from striking. The lamp must be replaced at this point.

### 7. "cool"

The "cool" message advises the user that the lamp must cool down before re-ignition.  It appears on the display when power is turned on to the unit and the lamp is too hot to strike. Striking the lamp when it is too hot will reduce lamp life. The lamp will automatically strike once it has reached optimum temperature.

### 8. "LOC"

The LOC message appears for about 2 seconds when the UP/DOWN adjustments are initially locked. It also appears if the up or down button is pressed while they are locked,   advising the user that these functions are locked out.  See Section 12.2 – Locking and Unlocking the UP/DOWN Adjustment Buttons.

### 9. "ULOC"

The ULOC message appears for about 2 seconds after unlocking the UP/DOWN adjustment buttons to advise the user they have been unlocked. See Section 12.2 – Locking and Unlocking the UP/DOWN Adjustment Buttons.

### 10.  "SFI"

The "SFI" message appears if there is a shutter failure. Power down the unit, wait a minute and turn power on to the unit. If the unit displays a shutter failure again, contact your local EXFO Service Centre to have your unit serviced.

### 11. LAMP

The LAMP indicator is the top of two green LED's located to the left of the display. The LAMP LED illuminates when the lamp is on. The LAMP LED will flash when the lamp is warming up.

### 12. OPEN

The OPEN indicator is the bottom of two green LED's located to the left of the display. The OPEN LED illuminates when the shutter is open.

### 15  Clearing an Audible Alarm

The EXFO X-Cite 120 PC provides an audible alarm to alert the user of various error conditions. The following conditions will cause the unit to indicate an alarm condition:

       i)       Lamp fail to strike
      ii)      Lamp access door not correctly installed
    iii)      Intelli-lamp sensor/ connection failure
    iv)      Shutter position failure

To clear the audible alarm:

1. Press the START/STOP button

# 16  Technical Specifications

## 16.1  Lamp module
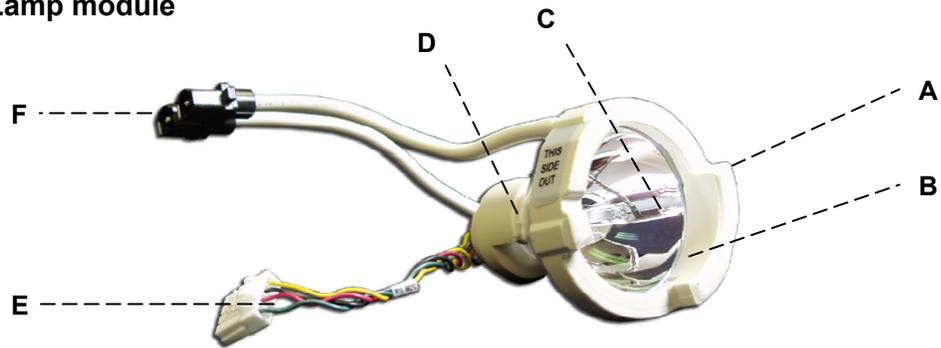


**A, D**: Ceramic Components. **B:** Reflector. **C**:  Bulb.
**E**:  Intelli-Lamp Connector. **F**:  Lamp Power Connector

**Lamp Module**            High Pressure 120 Watt metal halide short arc

**Lamp Module Life**       1500 hours (typical)

**Warm Up**               90 seconds (typical)

### 16.2  Light Guide

**Light Delivery**
Flexible liquid filled light guide 1.5m or 3m in length with a core diameter of 3mm. Custom light guides are also available.

**Liquid Light Guide End Fitting**
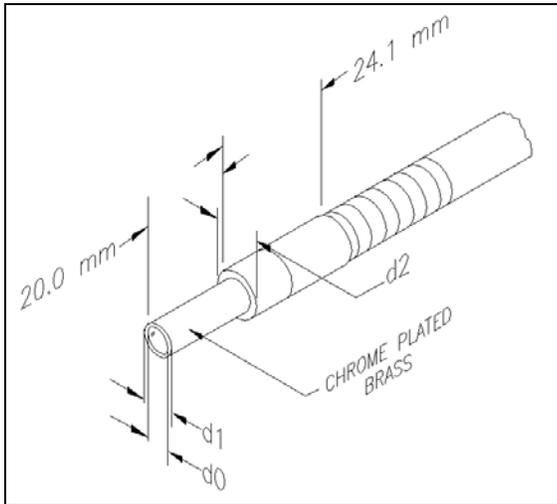


**Liquid Light Guide Dimensions in mm**

| Core | End Fitting | End Fitting | Minimum Bend Radius(mm) |
|---|---|---|---|
| d0 | d1 | d2 | |
| 3 | 5 | 9 | 40 |

### 16.3  Power Input

| | |
|---|---|
| **Power Supply:** | High efficiency, switch mode, constant power output |
| **Input Voltage:** | 100-240 Vac, 50/60Hz |
| **Current:** | 2.4 – 1.0A   (100-240V) |
| **Input Surge:** | 50A max.  (cold start) |
| **Protection:** | Short circuit auto-recovery |
| | Over voltage (up to 135%, +/- 5% of nominal) |
| | EMI filtering integrated into the power supply |
| | Power supply has integrated thermal cutoff |
| **Fuse Rating:** | Dual fuse system: each fuse rated at F4A 250V |
| | (Fast acting type) |

### 16.4  Lamp power (electrical)

| | |
|---|---|
| **Lamp Voltage:** typical | 85V RMS, square wave, 50% duty cycle, 1.4A |
| **Output Power:** | Lamp: nominal 120W |
| **Max. Lamp Voltage:** | 115V RMS |
| **Lamp Drive Frequency:** | 500Hz |
| **Line Regulation:** | From min Vin to max Vin lamp: +/-2% |
| **Ripple Current to Lamp:** | < 5% |

### 16.5  Environmental Conditions

| | |
|---|---|
| **Operating Temperature:** | 40º C max. |
| **Altitude:** | 2000m max. |
| **Humidity:** | 95% RH (non-condensing) |
| **Over voltage Category:** | II |
| **Pollution Degree:** | 2 |

### 16.6  Transport and Storage Conditions

| | |
|---|---|
| **Temperature**: | -40 to 70 degrees Celsius |
| **Relative Humidity**: | 10% to 100% (non-condensing) |
| **Atmospheric Pressure**: | 500 to 1060 kPa |

## 16.7 Regulatory Compliance

$C\,\epsilon$

**Complies to the following directives/standards:**

**Council Directive 73/23/EEC**    Low Voltage Directive
**Council Directive 89/336/EEC**    EMC Directive

| | |
|---|---|
| **EN/ IEC 61010-1: 2001** | Safety Requirements for electrical equipment for measurement, control and laboratory use Part 1: General requirements |
| **CAN /CSA 1010.1-1992** | Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use Part 1; General Requirements. |
| **UL Std No 61010A-1** | Electrical Equipment for Laboratory Use, Part 1: General Requirements |

**FCC Class B Digital Device or Peripheral – Information to User**

*Note:* *This equipment has been tested and found to comply with the limits for a Class B digital devices, 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 instruction manual, 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, the user is encouraged to try to correct the interference by one or more of the following measures:*

- *Reorient or relocate the receiving antenna*
- *Increase the separation between equipment and receiver*
- *Connect the equipment into an outlet on a circuit different from that to which the receiver is connected*
- *Consult the dealer or an experienced radio/ TV technician for help*

*Warning:* Changes or modifications not expressly approved by EXFO PSD could void the user's authority to operate the equipment.

## 17  RS-232 Specifications

### 17.1  Introduction

The X-Cite 120 PC software is designed to provide remote control of the microscope illumination system from a PC.

The X-Cite 120 PC software requirement specification detailed below describes the communication protocol between the X-Cite 120 PC unit and the PC.

### 17.2  Serial RS-232 Interface

The RS-232 serial interface is used to allow data to be transferred to and from a PC to perform a variety of functions, all of which are initiated by a program that executes on the PC.

### 17.3  Communication Protocol (PC Version)

This section provides the detail description of the commands between the X-Cite 120 PC unit and PC.

| Command | Description |
|---------|-------------|
| Connect | Verifies communication between the PC and the X-Cite 120 PC.  Returns an error if communication is not established. |
| Lock Front Panel | Locks the X-Cite 120 PC front panel buttons.  A "LOC" message is flashed on the display for a few seconds.  The display defaults to lamp hour mode. |
| Unlock Front Panel | Unlocks the X-Cite 120 PC front panel buttons. |
| Get Software Version | Returns the software version from the X-Cite 120 PC. |
| Get Lamp Hours | Returns the accumulated lamp hours from the X-Cite 120 PC. |
| Get Unit Status | Returns the current X-Cite 120 PC status (panel lock/unlock, alarm conditions, shutter position, lamp on/off & shutter faults).  Refer to Appendix 1 for details. |
| Clear Alarm | Clears the alarm beeper if the alarm is active. |
| Run a timed exposure | Opens the X-Cite 120 PC shutter/iris to the set intensity for the set exposure time.  The intensity and time must be set by the user (see commands below).  The system will use the previously saved settings when this command is activated. |

| Command | Description |
|---|---|
| Open Shutter | Opens the X-Cite 120 PC shutter/iris to the set intensity until a close command is received. |
| Close Shutter | Closes the X-Cite 120 PC shutter. |
| Get Intensity Level | Returns the current X-Cite 120 PC iris intensity setting (0%, 12%, 25%, 50% or 100%). |
| Set Intensity Level (Shutter Closed) | Sets the X-Cite 120 PC iris to the specified intensity (0%, 12%, 25%, 50% or 100%).  The shutter remains closed. The setting will be saved until the next Set Intensity Level command is received. |
| Set Intensity Level (Shutter Opened) | Sets the X-Cite 120 PC iris to the specified intensity (0%, 12%, 25%, 50% or 100%).  The shutter remains open. The setting will be saved until the next *Set Intensity Level* command is received. |
| Get Exposure Time | Returns the current X-Cite 120 exposure time (0.2s to 999.9s). |
| Set Exposure Time | Sets the X-Cite 120 PC exposure time to the specified value (0.2s to 999.9s).  The setting will be saved until the next *Set Exposure Time* command is received. |
| Turn Lamp ON | Switches the lamp on if no alarms are detected. Lamp must have been previously turned off. |
| Turn Lamp OFF | Switches the lamp off.  The system power remains on. |

### 17.3.1   Com Port Configuration:

- Baud rate:        9600
- Data bits:        8
- Parity:           None
- Stop bits:        1
- Flow Control:     None

### 17.3.2   Message Format and Protocol:

All commands sent to the X-Cite 120 PC must be a carriage return terminated ("\r" in C code or chr$(13) in basic code). The following commands listed are based on C code.

When the carriage return character (CR) is received and there is no error in the command, the X-Cite 120 PC will acknowledge with a carriage return ("\r").

If there is an error, the X-Cite 120 PC will acknowledge with "e\r".

#### 17.3.2.1   Connect:

| Sequence Order | Command | Data | Direction |
|---|---|---|---|
| Byte 1-3 | Connect | "tt\r" | From PC |
| Byte 1-2 | CR or ERR | "\r" or "e\r" | To PC |

### 17.3.2.2    Lock Front Panel:

| Sequence Order | Command | Data | Direction |
|---|---|---|---|
| Byte 1-3 | Lock | "ll\r" | From PC |
| Byte 1-2 | CR or ERR | "\r" or "e\r" | To PC |

### 17.3.2.3    Unlock Front Panel:

| Sequence Order | Command | Data | Direction |
|---|---|---|---|
| Byte 1-3 | Unlock | "nn\r" | From PC |
| Byte 1-2 | CR or ERR | "\r" or "e\r" | To PC |

### 17.3.2.4    Get Software Version:

| Sequence Order | Command | Data | Direction |
|---|---|---|---|
| Byte 1-3 | Get | "vv\r" | From PC |

If there was an error the ERR command is sent

| | | | |
|---|---|---|---|
| Byte 1-2 | ERR | "e\r" | To PC |

Otherwise, the following bytes are sent

| | | | |
|---|---|---|---|
| Byte 1-2 | Software Version | 2 digits (value: 10 to 99) | To PC |
| Byte 3 | CR | "\r" | To PC |

***Example****: If "vv\r" is sent from PC and "10\r" is received by PC, the software version is 1.0.*

### 17.3.2.5    Get Lamp Hours:

| Sequence Order | Command | Data | Direction |
|---|---|---|---|
| Byte 1-3 | Get | "hh\r" | From PC |

If there was an error the ERR command is sent

| | | | |
|---|---|---|---|
| Byte 1-2 | ERR | "e\r" | To PC |

Otherwise, the following bytes are sent

| | | | |
|---|---|---|---|
| Byte 1-4 | Lamp Hours | 1-4 digits (value: 0 to 9999) | To PC |
| Byte 2 or 3 or 4 or 5 | CR | "\r" | To PC |

***Example:*** *If "hh\r" is sent from PC and "100\r" is received by PC, the lamp hours are 100 hours.*

### 17.3.2.6    Get Unit Status:

| Sequence Order | Command | Data | Direction |
|---|---|---|---|
| Byte 1-3 | Get | "uu\r" | From PC |

If there was an error the ERR command is sent

| | | | |
|---|---|---|---|
| Byte 1-2 | ERR | "e\r" | To PC |

Otherwise, the following bytes are sent

| | | | |
|---|---|---|---|
| Byte 1-2 | Unit Status | 1- 2 digits (value: 0 to 63) | To PC |
| Byte 2 or 3 | CR | "\r" | To PC |

*Note: Please refer to "Unit Status Table" for detail (Section 17.7).*

*Example: If "uu\r" is sent from the PC and "50\r" is received by the PC, the unit status is as follows:*
> *Alarm - Off; Shutter Home – Pass; Lamp – On; Lamp Ready – Yes; Shutter – Close; Front Panel - locked.*

### 17.3.2.7    Clear Alarm:

| Sequence Order | Command | Data | Direction |
|---|---|---|---|
| Byte 1-3 | Clear Alarm | "aa\r" | From PC |
| Byte 1-2 | CR or ERR | "\r" or "e\r" | To PC |

### 17.3.2.8    Run a timed exposure:

| Sequence Order | Command | Data | Direction |
|---|---|---|---|
| Byte 1-3 | Open | "oo\r" | From PC |
| Byte 1-2 | CR or ERR | "\r" or "e\r" | To PC |

*Note:  If the shutter is already open, the command will be ignored.*

### 17.3.2.9    Open Shutter:

| Sequence Order | Command | Data | Direction |
|---|---|---|---|
| Byte 1-3 | Open | "mm\r" | From PC |
| Byte 1-2 | CR or ERR | "\r" or "e\r" | To PC |

*Note: If the shutter is already open, the command will be ignored.*

**17.3.2.10    Close Shutter:**

| Sequence Order | Command | Data | Direction |
|---|---|---|---|
| Byte 1-3 | Close | "zz\r" | From PC |
| Byte 1-2 | CR or ERR | "\r" or "e\r" | To PC |

*Note: If the shutter is already closed, the command will be ignored.*

**17.3.2.11    Get Intensity Level:**

| Sequence Order | Command | Data | Direction |
|---|---|---|---|
| Byte 1-3 | Get | "ii\r" | From PC |

If there was an error the ERR command is sent

| | | | |
|---|---|---|---|
| Byte 1-2 | ERR | "e\r" | To PC |

Otherwise, the following bytes are sent

| | | | |
|---|---|---|---|
| Byte 1 | Iris Position | 1 digit (value: 0, 1, 2, 3,4) | To PC |
| Byte 2 | CR | "\r" | To PC |

*Note: value 0 – 0%; value 1 – 12%; value 2 – 25%; value 3 – 50%; value 4 – 100%*

*Example: If "ii\r" is sent from PC and "4\r" is received by PC, the intensity level is 100%.*

**17.3.2.12    Set Intensity Level:**

| Sequence Order | Command | Data | Direction |
|---|---|---|---|
| Byte 1 | Set | "i" | From PC |
| Byte 2 | Iris Position | 1 digit (value: 0, 1, 2, 3, 4) | From PC |
| Byte 3 | End | "\r" | From PC |
| Byte 4 | CR or ERR | "\r" or "e\r" | To PC |

*Note: value 0 – 0%; value 1 – 12%; value 2 – 25%; value 3 – 50%;*

*value 4 – 100%*

*Example: If "i4\r" is sent from PC and "\r" is received by PC, the intensity level is set to 100%.*

### 17.3.2.13 Get Exposure Time:

| Sequence Order | Command | Data | Direction |
|---|---|---|---|
| Byte 1-3 | Get | "cc\r" | From PC |

If there was an error the ERR command is sent

| Sequence Order | Command | Data | Direction |
|---|---|---|---|
| Byte 1-2 | ERR | "e\r" | To PC |

Otherwise, the following bytes are sent

| Sequence Order | Command | Data | Direction |
|---|---|---|---|
| Byte 1-4 | Exposure Time | 1-4 digits (value: 2 to 9999) | To PC |
| The last byte | CR | "\r" | To PC |

***Example:*** *If "cc\r" is sent from PC and "10\r" is received by PC, the exposure time is 1.0 second.*

### 17.3.2.14 Set Exposure Time:

| Sequence Order | Command | Data | Direction |
|---|---|---|---|
| Byte 1 | Set | "c" | From PC |
| Byte 2-5 | Exposure Time | 4 digits (value: 0002 to 9999) | From PC |
| Byte 6 | End | "\r" | From PC |
| Byte 1-2 | CR or ERR | "\r" or "e\r" | To PC |

***Example:*** *If "c0010\r" is sent from PC and "\r" is received by PC, the exposure time is set to 1.0 second.*

### 17.3.2.15 Turn Lamp ON:

| Sequence Order | Command | Data | Direction |
|---|---|---|---|
| Byte 1-3 | Turn Lamp ON | "bb\r" | From PC |
| Byte 1-2 | CR or ERR | "\r" or "e\r" | To PC |

### 17.3.2.16 Turn Lamp OFF:

| Sequence Order | Command | Data | Direction |
|---|---|---|---|
| Byte 1-3 | Turn Lamp OFF | "ss\r" | From PC |
| Byte 1-2 | CR or ERR | "\r" or "e\r" | To PC |

## 17.4 Communication Protocol (MAC Version)

**MAC Interface**

OS Compatability:
- MAC OS 10
- MAC OS 9

USB adapter type:
- Keyspan, P/N USA-19H
- Adapter information can be found at:
  http://www.keyspan.com/products/usb/USA19HS/

Command timing and execution duration areas per the RS-232 specified requirements. See section 17.

**Data Types:**

**Defined Types**

---

**E_XC_Intensity Level**

Constants for intensity levels for the lamp.
typedef enum {
   E_XC_Intensity0 = 0,
   E_XC_Intensity12 = 1,
   E_XC_Intensity25 = 2,
   E_XC_Intensity50 = 3,
   E_XC_Intensity100 = 4  } E_XC_IntensityLevel;

These constants are the results returned from all the function to indicate success or failure.

Constants

E_XC_Intensity0
      lamp intensity of 0%
E_XC_Intensity12
   lamp intensity of 12%
E_XC_Intensity25
   lamp intensity of 25%
E_XC_Intensity50
   lamp intensity of 50%
E_XC_Intensity100
   lamp intensity of 100%

---

**E_XC_ResultCode**

Constants for result codes.
typedef enum {

E_XC_ResultOK = 0,
E_XC_ResultDeviceError = -1,
E_XC_ResultSystemError = -2,
E_XC_ResultParamError = -99  } E_XC_ResultCode;

These constants are the results returned from all the function to indicate success or failure.

Constants

E_XC_ResultOK
        function completed successfully
E_XC_ResultDeviceError
        function failed because of a device error
E_XC_ResultSystemError
        function failed because of a system error
E_XC_ResultParamError
        function failed because of an error in at least one of the parameters passed
    to it

Functions:

XC_CopySerialPorts
XC_Connect
XC_Disconnect
XC_LockFrontPanel
XC_UnlockFrontPanel
XC_GetSoftwareVersion
XC_GetLampHours
XC_GetUnitStatus
XC_ClearAlarm
XC_RunTimedExposure
XC_OpenShutter
XC_CloseShutter
XC_GetIntensityLevel
XC_SetIntensityLevel
XC_GetExposureTime
XC_SetExposureTime
XC_TurnLampOn
XC_TurnLampOff

---

**XC_ClearAlarm**

E_XC_ResultCode XC_ClearAlarm(
);

Clears the alarm beeper on the "X-Cite 120 PC" device if the alarm is active.

*function result*
   E_XC_ResultOK on success or error type E_XC_Result...Error

---

**XC_CloseShutter**

E_XC_ResultCode XC_CloseShutter(
);

---

Closes the "X-Cite 120 PC" device's shutter/iris.

*function result*
    E_XC_ResultOK on success or error type E_XC_Result...Error

---

### XC_Connect

E_XC_ResultCode XC_Connect(
  CFStringRef inPort );

Connects to the "X-Cite 120 PC" device and verifies communication between the device and your computer.

Parameter Descriptions

*inPort*
    Port name to connect to the device with.
*function result*
    E_XC_ResultOK on success or error type E_XC_Result...Error

---

### XC_CopySerialPorts

CFArrayRef XC_CopySerialPorts(
);

Copies a list of available serial ports.

*function result*
    An array of serial port names that are available.

---

### XC_Disconnect

E_XC_ResultCode XC_Disconnect(
);

Disconnects from the "X-Cite 120 PC" device.

*function result*
    E_XC_ResultOK on success or error type E_XC_Result...Error

---

### XC_GetExposureTime

E_XC_ResultCode XC_GetExposureTime(
  float *outTime );

Returns the current exposure time (in seconds) for the "X-Cite 120 PC" device.

Parameter Descriptions

*outTime*
    A pointer to a float that will hold the current exposure time (in seconds).
*function result*
    E_XC_ResultOK on success or error type E_XC_Result...Error

---

**XC_GetIntensityLevel**

E_XC_ResultCode XC_GetIntensityLevel(
    E_XC_IntensityLevel *outLevel );

Returns the current iris/intensity setting from the "X-Cite 120 PC" device.


Parameter Descriptions

*outLevel*
    A pointer to a intensity variable that will contain the current intensity level on exit.
*function result*
    E_XC_ResultOK on success or error type E_XC_Result...Error

---

**XC_GetLampHours**

E_XC_ResultCode XC_GetLampHours(
    int *outHours );

Returns the accumulated lamp hours for the current bulb from the "X-Cite 120 PC"
device.


Parameter Descriptions

*outHours*
    A pointer to an integer that will contain the accumulated lamp hours.
*function result*
    E_XC_ResultOK on success or error type E_XC_Result...Error

---

**XC_GetSoftwareVersion**

E_XC_ResultCode XC_GetSoftwareVersion(
    char *outVersion );

Returns the software version of the "X-Cite 120 PC" device.


Parameter Descriptions

*outVersion*
    A pointer to a char array that will hold the version string (must be at least 2 chars).
*function result*
    E_XC_ResultOK on success or error type E_XC_Result...Error

---

**XC_GetUnitStatus**

E_XC_ResultCode XC_GetUnitStatus(
    bool *outLocked,
    bool *outLampReady,
    bool *outLampOn,
    bool *outShutterHome,
    bool *outShutterOpen,
    bool *outAlarmOn );

Returns the current status indicators from the "X-Cite 120 PC" device.


Parameter Descriptions

*outLocked*
> True if the front panel is locked.

*outLampReady*
> True if the lamp is warmed up and ready.

*outLampOn*
> True if the lamp is on.

*outShutterHome*
> True if the shutter/iris fault exists.

*outShutterOpen*
> True if the shutter/iris is open.

*outAlarmOn*
> True if the alarm is on.

*function result*
> E_XC_ResultOK on success or error type E_XC_Result...Error

---

**XC_LockFrontPanel**

E_XC_ResultCode XC_LockFrontPanel(
);

Locks the front panel on the "X-Cite 120 PC" device.

*function result*
> E_XC_ResultOK on success or error type E_XC_Result...Error

---

**XC_OpenShutter**

E_XC_ResultCode XC_OpenShutter(
);

Opens the "X-Cite 120 PC" device's shutter/iris to the set intensity until a close command is sent.

*function result*
> E_XC_ResultOK on success or error type E_XC_Result...Error

---

**XC_RunTimedExposure**

E_XC_ResultCode XC_RunTimedExposure(
);

Opens the "X-Cite 120 PC" shutter/iris to the set intensity level for the set exposure time. The intensity and time must be set by the user. The system will user the previously saved settings when this command is activated

*function result*
> E_XC_ResultOK on success or error type E_XC_Result...Error

---

### XC_SetExposureTime

E_XC_ResultCode XC_SetExposureTime(
   float inTime );

Set the exposure time for the "X-Cite 120 PC" device. The setting will be saved until the next SetExposureTime call is sent.

Parameter Descriptions

*inTime*
   The exposure time (in seconds) to set, from 0.2s to 999.9s.
*function result*
   E_XC_ResultOK on success or error type E_XC_Result...Error

---

### XC_SetIntensityLevel

E_XC_ResultCode XC_SetIntensityLevel(
   E_XC_IntensityLevel inLevel );

Sets the current iris/intensity setting for the "X-Cite 120 PC" device. The setting will be saved until the next SetIntensityLevel call is sent.

Parameter Descriptions

*inLevel*
   The intensity/iris value to set the device to.
*function result*
   E_XC_ResultOK on success or error type E_XC_Result...Error

---

### XC_TurnLampOff

E_XC_ResultCode XC_TurnLampOff(
);

Turns the "X-Cite 120 PC" device's lamp on.

*function result*
   E_XC_ResultOK on success or error type E_XC_Result...Error

---

### XC_TurnLampOn

E_XC_ResultCode XC_TurnLampOn(
);

Turns the "X-Cite 120 PC" device's lamp off.

*function result*
   E_XC_ResultOK on success or error type E_XC_Result...Error

---

### XC_UnlockFrontPanel

E_XC_ResultCode XC_UnlockFrontPanel(
);

Unlocks the front panel on the "X-Cite 120 PC" device.

*function result*
    E_XC_ResultOK on success or error type E_XC_Result...Error

## 17.5  Command Timing Specification

There are four levels of timing to which the end-user must adhere in order to ensure reliable performance of the system, Port Timeout, Pre-Write Delay, Post-Write Delay and Post-Read Delay.

Port Timeout refers to the minimum amount of time required for data to be received by the PC. Failure to adhere to this requirement will result in dropped responses as well as other undesirable effects if further attempts to communicate with the unit are made.
The Pre-write delay begins immediately after the execution of one command. Once this delay has passed, the next command may be sent. Failure to adhere to this delay will result in dropped commands.

The Post-Write delay is required primarily for the "Set Intensity Level" command. Once this command is sent, the Post-Write delay begins and the user cannot poll for system response until the delay has expired. Failure to adhere to this requirement will result in dropped responses as well as other undesirable effects if further attempts to communicate with the unit are made.

The Post-Read delay begins immediately after unit response from a particular command is received. Once the delay has expired, the user may continue executing commands.  Failure to adhere to this requirement will result in dropped commands and responses.

### Command Set Timing

| Command | Port Timeout | Delay Type | Delay |
|---|---|---|---|
| Connect | 30mS | Pre-Write | 50mS |
| Lock Front Panel | 30mS | Post-Read | 1000mS |
| Unlock Front Panel | 30mS | Pre-Write | 50mS |
| Get Software Version | 30mS | Pre-Write | 50mS |
| Get Lamp Hours | 30mS | Pre-Write | 50mS |
| Get Unit Status | 30mS | Pre-Write | 50mS |
| Clear Alarm | 30mS | Pre-Write | 50mS |
| Run a timed exposure | 30mS | Post-Read | 250mS |
| Open Shutter | 30mS | Post-Read | 250mS |
| Close Shutter | 30mS | Post-Read | 250mS |
| Get Intensity Level | 30mS | Pre-Write | 50mS |
| Set Intensity Level (Shutter Closed) | 30mS | Post-Write | 50mS |
| Set Intensity Level (Shutter Opened) | 30mS | Post-Write | 600mS |
| Get Exposure Time | 30mS | Pre-Write | 50mS |
| Set Exposure Time | 30mS | Pre-Write | 50mS |
| Turn Lamp ON | 30mS | Pre-Write | 50mS |
| Turn Lamp OFF | 30mS | Post-Read | 50mS |

## 17.6  Graphical User Interface

When the X-Cite 120 PC is connected to a PC, the unit front panel will be automatically locked. The unit status will be sampled at twice per second.

The following screen shot is the GUI application window which will appear on the user's PC.
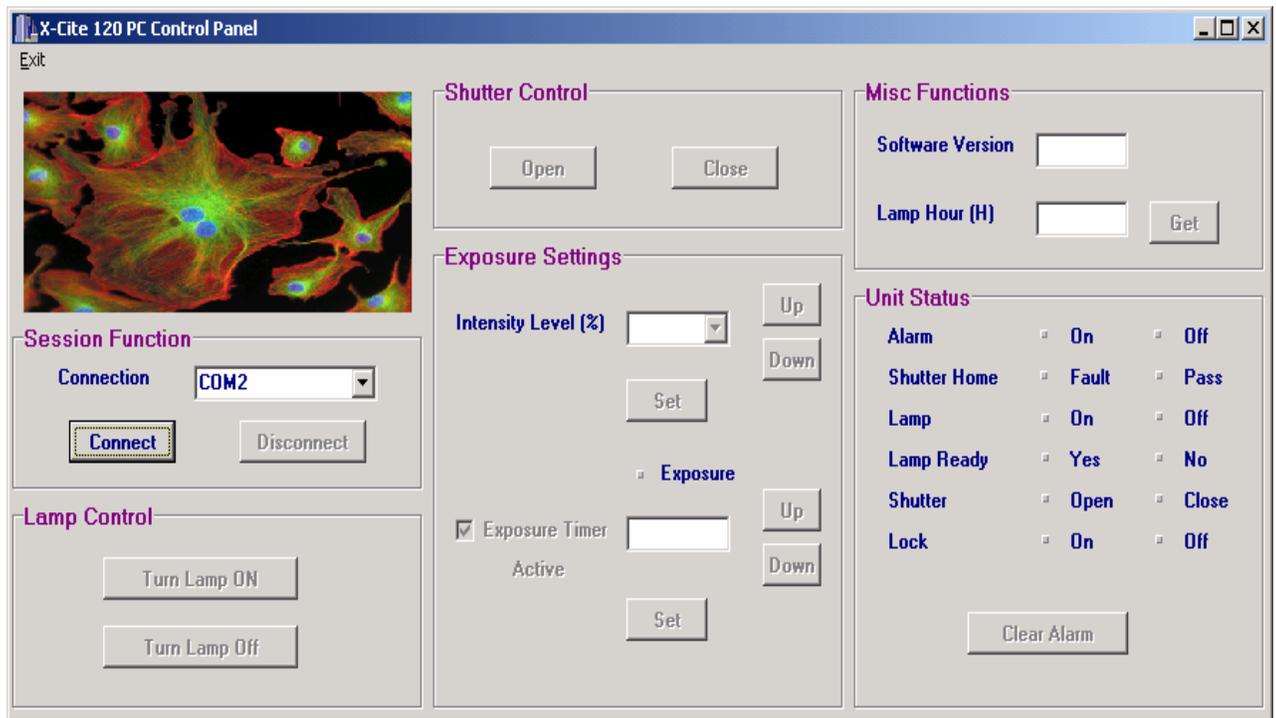


*Note:* For detailed GUI operating instructions refer to Section 18.

## 17.7  Sample Code

Example Borland C++ code for command "Connect"

```
void __fastcall TForm1::Cmd1Click(TObject *Sender)
{
        signed char Tries = 4;              // Try 4 times communication before
                                            // declaring no response from the unit.
        Screen->Cursor = crHourGlass;       // Show hourglass cursor
        Application->ProcessMessages();

        while (Tries--){
                ComPort->FlushInBuffer();
                ComPort->FlushOutBuffer();
                UnitResponse == "";
                ComPort->PutChar(0x74);             //    Command    "t"    -
"Connect"
```

```
                ComPort->PutChar(0x74);              //   Command   "t"   -
"Connect"
                ComPort->PutChar('\r');              // Command "\r"
                TimeOut = false;
                TimeOutTimer = 1 ;                   // Wait for response from
unit
             while (TimeOutTimer) Application->ProcessMessages();

           if (UnitResponse == "e\r")               //   Unit   got   wrong
command
           {
                MessageDlg("Command  is  wrong", mtError, TMsgDlgButtons()
<< mbCancel, NULL);
                Screen->Cursor = crDefault;
                return;
           }
            else if (UnitResponse == "\r")          //   Unit   got   correct
command
           {
                Cmd1->Enabled = false;
                Cmd3->Enabled = true;
                Cmd4->Enabled = true;
                Cmd5->Enabled = true;
                Cmd6->Enabled = true;
                Cmd7->Enabled = true;
                Cmd8->Enabled = true;
                Cmd9->Enabled = true;
                Cmd10->Enabled = true;
                Cmd11->Enabled = true;
                Cmd12->Enabled = true;
                Cmd13->Enabled = true;
                Screen->Cursor = crDefault;
                return;
           }
        }

      if (TimeOut)                                   //   Unit   did   not   get
command
            MessageDlg("No response from Unit", mtError, TMsgDlgButtons() <<
mbCancel, NULL);

      Screen->Cursor = crDefault;
      Application->ProcessMessages();
}
```

## 17.8  Unit Status Table

| Data | Lock Bit 5 | | LampReady Bit 4 | | Home Bit 3 | | Shutter Bit 2 | | Lamp Bit 1 | | Alarm Bit 0 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Decimal | On | Off | Yes | No | Fault | Pass | Open | Close | On | Off | On | Off |
| 0 |  | X |  | X |  | X |  | X |  | X |  | X |
| 1 |  | X |  | X |  | X |  | X |  | X | X |  |
| 2 |  | X |  | X |  | X |  | X | X |  |  | X |
| 3 |  | X |  | X |  | X |  | X | X |  | X |  |
| 4 |  | X |  | X |  | X | X |  |  | X |  | X |
| 5 |  | X |  | X |  | X | X |  |  | X | X |  |
| 6 |  | X |  | X |  | X | X |  | X |  |  | X |
| 7 |  | X |  | X |  | X | X |  | X |  | X |  |
| 8 |  | X |  | X | X |  |  | X |  | X |  | X |
| 9 |  | X |  | X | X |  |  | X |  | X | X |  |
| 10 |  | X |  | X | X |  |  | X | X |  |  | X |
| 11 |  | X |  | X | X |  |  | X | X |  | X |  |
| 12 |  | X |  | X | X |  | X |  |  | X |  | X |
| 13 |  | X |  | X | X |  | X |  |  | X | X |  |
| 14 |  | X |  | X | X |  | X |  | X |  |  | X |
| 15 |  | X |  | X | X |  | X |  | X |  | X |  |
| 18 |  | X | X |  |  | X |  | X | X |  |  | X |
| 19 |  | X | X |  |  | X |  | X | X |  | X |  |
| 22 |  | X | X |  |  | X | X |  | X |  |  | X |
| 23 |  | X | X |  |  | X | X |  | X |  | X |  |
| 26 |  | X | X |  | X |  |  | X | X |  |  | X |
| 27 |  | X | X |  | X |  |  | X | X |  | X |  |
| 30 |  | X | X |  | X |  | X |  | X |  |  | X |
| 31 |  | X | X |  | X |  | X |  | X |  | X |  |
| 32 | X |  |  | X |  | X |  | X |  | X |  | X |
| 33 | X |  |  | X |  | X |  | X |  | X | X |  |
| 34 | X |  |  | X |  | X |  | X | X |  |  | X |
| 35 | X |  |  | X |  | X |  | X | X |  | X |  |
| 36 | X |  |  | X |  | X | X |  |  | X |  | X |
| 37 | X |  |  | X |  | X | X |  |  | X | X |  |
| 38 | X |  |  | X |  | X | X |  | X |  |  | X |
| 39 | X |  |  | X |  | X | X |  | X |  | X |  |
| 40 | X |  |  | X | X |  |  | X |  | X |  | X |
| 41 | X |  |  | X | X |  |  | X |  | X | X |  |
| 42 | X |  |  | X | X |  |  | X | X |  |  | X |
| 43 | X |  |  | X | X |  |  | X | X |  | X |  |
| 44 | X |  |  | X | X |  | X |  |  | X |  | X |
| 45 | X |  |  | X | X |  | X |  |  | X | X |  |
| 46 | X |  |  | X | X |  | X |  | X |  |  | X |
| 47 | X |  |  | X | X |  | X |  | X |  | X |  |
| 50 | X |  | X |  |  | X |  | X | X |  |  | X |
| 51 | X |  | X |  |  | X |  | X | X |  | X |  |
| 54 | X |  | X |  |  | X | X |  | X |  |  | X |
| 55 | X |  | X |  |  | X | X |  | X |  | X |  |
| 58 | X |  | X |  | X |  |  | X | X |  |  | X |
| 59 | X |  | X |  | X |  |  | X | X |  | X |  |
| 62 | X |  | X |  | X |  | X |  | X |  |  | X |
| 63 | X |  | X |  | X |  | X |  | X |  | X |  |

## 18  Graphical User Interface for X-Cite 120 PC Control Panel

The purpose of the GUI (Graphical User Interface) is to provide control of the X-Cite 120 PC functions via a remote PC.

### 18.1  X-Cite 120 PC Software Minimum PC Configuration Requirements

The following are the minimum requirements for a PC to be used with the X-Cite 120 PC Control Panel software:
- 300+ MHz recommended Pentium or equivalent processor
- 32 MB RAM
- 10 MB available storage for software installation
- 20MB additional storage (suggested) for your data files
- SVGA video 800 X 600 resolution, 8-bit color (16-bit color or better recommended)
- Available RS-232 COM port required for one-time setup procedure and for remote unit operation

Operating System Requirements:
- Microsoft Windows® 95, 98, NT, 2000, ME or XP

### 18.2  Installing X-Cite 120 PC Control Panel Software

Perform the following to install the X-Cite 120 PC software:
1) Turn on the PC to be used with the X-Cite 120 PC system
2) Shut down any other Windows programs currently in use
3) Insert the X-Cite 120 PC Control Panel software CD in the CD-ROM drive of your PC
4) Right-click your mouse on the Windows Start button and select Explore
5) Left-click on Explore and select (D:)
6) Double click on SETUP.EXE
7) Next follow the setup instructions as they appear by clicking "next" each time the user prompt appears, until the installation has been completed and "finish" appears. Click on "finish" to complete the installation.
8) To access the control panel software program, click on the Windows Start menu and select: programs/ X-Cite 120 PC Control Panel►/ X-Cite 120 PC Control Panel. A screen with a title bar displaying "X-Cite 120 Control Panel" will appear on your monitor. Refer to Section 17.5 for sample screen shot of the X-Cite 120 PC application window.

### 18.3 X-Cite 120 PC Connection

1) Connect the rear panel RS-232 port on the X-Cite 120 PC unit to an available COM port on your PC using the 9 pin cable assembly supplied.
2) Ensure that your X-Cite 120 PC unit is plugged in a functional AC outlet.
3) Turn on the front panel power switch and wait until the 90 second warm-up period has been completed (front display has stopped flashing).
4) Next, on the GUI, in the "Session Function" control block, click your mouse on the "Connection" list box to select the appropriate COM port link. Select "COM 1" or "COM 2", etc.
5) Next, click on the "Connect" button. If the wrong COM Port number has been selected, then the following error message will appear: "No response from unit". If this occurs click on "Cancel" and re-select the appropriate COM port.

*Note: Once the appropriate link has been established all the functional buttons on the graphical user interface will become enabled (high-lighted). Disabled (non-functional) control buttons are grayed out.*

### 18.4  Controlling Unit Functions via the Graphical User Interface

Once a COM link has been established between the X-Cite 120 PC unit and the user's PC, the front panel controls and rear panel analog jack controls become disabled. The display will indicate elapsed lamp hours only. The Unit Status indicator on the GUI will indicate Lock "On".

#### 18.4.1  Lamp On/ Off Control

The lamp in the X-Cite 120 PC is turned on automatically once the front panel power switch on the unit is set to the ON position.
To remotely turn the lamp off, click on the "Turn Lamp Off" button in the *Lamp Control* section on the GUI. The following message will be displayed: "Are you sure you want to turn the lamp off?" Click on "Yes" to confirm. The lamp will shut off and the *Unit Status* indicators will confirm by showing *Lamp* "Off" and *Lamp Ready* "No". To turn the lamp back on, click on the "Turn Lamp On" button.

*Note: During the lamp warm-up cycle, or if the lamp is to hot to strike, both "Lamp On" and "Lamp Off" buttons will be disabled until the warm-up/ cooling cycle has been completed.  Once the "Turn Lamp On" button has been selected, the lamp will turn on automatically when the unit has cooled to the appropriate temperature.*

#### 18.4.2  Exposure Settings: Intensity Level

Intensity level can be selected by the following 2 different methods:

*Method 1:* Click on the "Up/ Down" buttons located right of "Intensity Level (%)" to select the desired level (0, 12, 25, 50 or 100).

*Method 2:* Click on the arrow of the "Intensity Level (%)" list box. Once the desired value has been selected, click on the "Set" button to enter the value. Once the "Set" button becomes disabled, the intensity level has been entered.

***Note:*** *If 0% is selected the shutter will not open and the error message will appear: "Intensity level is 0, shutter will not open". If this occurs click on "Cancel" and reset the intensity level at 12% or greater.*

### 18.4.3  Exposure Settings: Exposure Timer

Ensure that the check box next to "Exposure Timer Active" has been *selected*. Exposure time can be selected by the following 2 different methods:

*Method 1:* Select exposure time by clicking on the "Up/ Down" buttons located right of the "Exposure Timer". The exposure time will change in increments of 1 second. If a value outside of acceptable limits is chosen, the error message: "Value is outside allowable range" will appear. Select "Cancel" and re-enter a value within the allowable range.

***Note:*** *If another value is not selected, the X-Cite 120 PC will automatically retain the value that was previously selected prior to the error message being displayed.*

*Method 2:* Click with your mouse on the "Exposure Timer" list box and type in the desired value. Click on the Set button, once the button is disabled the selected value has been entered. The allowable exposure range by this method is 0.2 to 999.9 seconds.  If a value outside the range is entered, an error message "Value is outside allowable range" will appear. Select "Cancel" and re-enter an acceptable value.

***Note:*** *If another value is not selected, the X-Cite 120 PC will automatically retain the value that was previously selected prior to the error message being displayed.*

### 18.4.4  Exposure Settings: Disabling Exposure Timer

To disable the exposure timer, *de-select* the checkbox next to "Exposure timer active". This will allow the shutter to remain in the open or closed position as per the shutter control, without any set timing function.

### 18.4.5  Shutter Control

To activate the shutter control once the appropriate intensity and exposure settings have been entered, click on the "Open" button in the "Shutter Control" section.

*Note: During a timed exposure cycle, when the shutter is open, a red bullet will appear next to "Exposure". Unit Status indicator will display Shutter "Open".*

After the exposure cycle has been completed, the shutter will close and the exposure time will automatically reset. The Unit Status indicator will display Shutter "Close". To close the shutter during an exposure cycle, click on the "Close" button.

### 18.4.6  Alarm Function

The following conditions will cause the unit to indicate an alarm condition:
- i) Lamp fail to strike
- ii) Lamp access door not correctly installed
- iii) Intelli-lamp sensor/ connection failure
- iv) Shutter position failure

The alarm condition is indicated by a repeating audible beep from the X-Cite 120 PC unit. The *Unit Status* indicator on the GUI will display *Alarm "On"*. To clear the alarm signal, click on the "Clear Alarm" button. The audible alarm on the unit will cease and the *Unit Status* indicator will display *Alarm "Off"*.
In addition to clearing the alarm signal on the GUI, the X-Cite 120 PC unit must have the front panel power switch reset to clear the alarm condition. The fault which caused the original alarm condition must be corrected prior to resuming normal operation.

*Note: The "Unit Status" indicators on the GUI may be beneficial in diagnosing any potential causes relating to the alarm condition. Refer to Section 13 for additional information on troubleshooting.*

### 18.4.7  Accumulated Lamp Hours

The X-Cite 120 PC's accumulated lamp hours are indicated in the "Misc. Functions" section of the GUI.  When the COM link for the unit has been established, the GUI will automatically update the unit's accumulated lamp hours. To update the accumulated lamp hours during remote operation, click on the "Get" button.

## 19  Contact Information

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## 20  EXFO Service Centers

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