Getting Started

LUMENX

DESKTOP

Welcome to Lumen™X Programming Engine – Desktop Model

The LumenX Desktop is Data I/O's desktop version programming engine. Designed for programming first-article builds to validate functionality prior to high-volume production runs, it is the same programming engine used in the PSV7000 for seamless transfer from Engineering to Operations.

Using this Guide

Follow the steps in this guide to complete the following tasks:
- Setup LumenX (hardware, software, networking)
- Download Algorithms from Data I/O (run Algorithm Updater)
- Add Users (specify permissions by selecting a role)
- Create a Job (select device/algorithm, add image, save)
- Run a Job (select job, insert device(s) in socket, run job)
- Verify Job Completion (check job status, socket LED's)

983-5076-001C

Data IO

Contents of the Desktop Model

1. LumenX Desktop Programmer
2. Vacuum Tool Kit
3. Ethernet Cable
4. Power Cable
5. Customer Service Letter 983-0762-001 and conformance documents
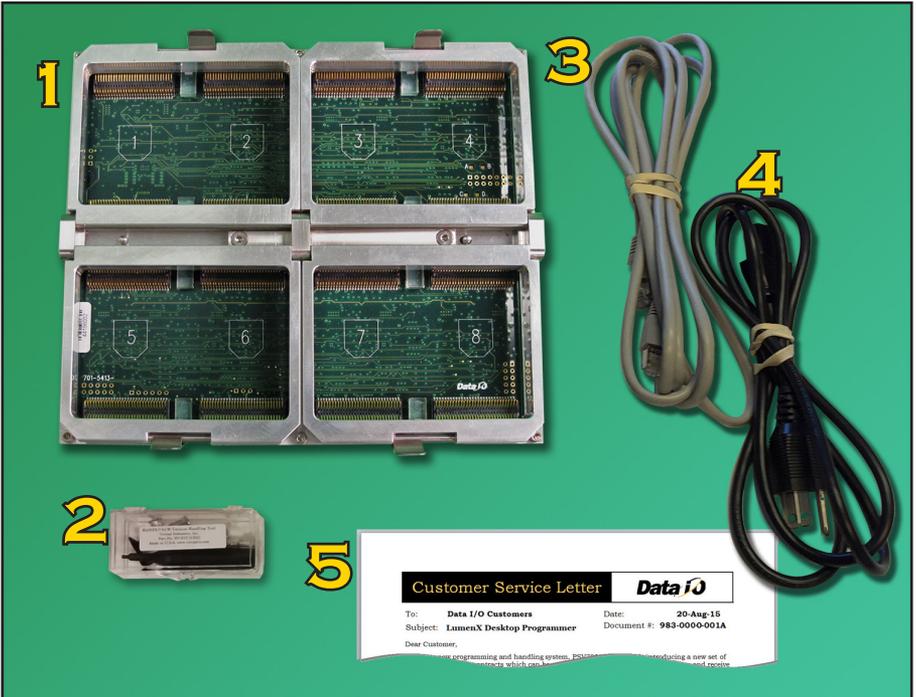

Figure 1:   Contents of LumenX Desktop. Potential Socket Adapter positions are numbered on the circuit boards and show the orientation of the chamfered corners.

Requirements

COMPUTER REQUIREMENTS
- OPERATING SYSTEM: Microsoft Windows 10 (32/64-bit)
- HARD DISK SPACE: 200 MB for LumenX Data Management Software
  - 2.0 GB for Algorithm files
  - 10.0 GB for programmer firmware (update packages)
  - 200 MB for SentriX Product Creator
  - also additional space for your jobs and image/data files
- TWO ETHERNET PORTS:
  - Access to your Corporate LAN / Internet access
  - A 1000 Mbps NIC (dedicated, private, Static IP Address) for LumenX
- OPTIONAL HARDWARE: 1000 Mbps Ethernet switch box if networking more than one programmer (each programmer requires a unique IP address).

ELECTRICAL REQUIREMENTS
- OPERATING VOLTAGE: 110–240 VAC
- POWER CONSUMPTION: 100 watts max
- FREQUENCY RANGE: 50 to 60 Hz

ENVIRONMENTAL REQUIREMENTS
- OPERATING TEMPERATURE:
  - +10° to +30° C (50° to 86° F)
- HUMIDITY: ≤ 90%

PROGRAMMING REQUIREMENTS
- Your target device(s)
- Socket Adapter for the device
- LumenX Algorithm for the device
- A ground connection

Safety First

CAUTION: Electrostatic Discharge Hazard! Electrostatic Discharge (ESD) may damage equipment and integrated circuits. Discharge static electricity to a common ground. Use ESD prevention devices that contain a 1 M-ohm to 10 M-ohm current-limiting resistor.

WARNING: Electric Shock Hazard! Injury or death may result from contact to parts inside the programmer. Do not remove covers. No user-serviceable parts.

1. Set Up and Configure LumenX Hardware

1-1. Plug the power cable into the LumenX and into a 120-240 VAC outlet.

1-2. Recommended: Plug in a wrist ground strap to prevent electrostatic discharge.

1-3. To install a Socket Adapter, pull out slightly on any spring clip on the LumenX and lift open the socket clamp. One clamp secures two Socket Adapters (okay to program with only one Socket Adapter).
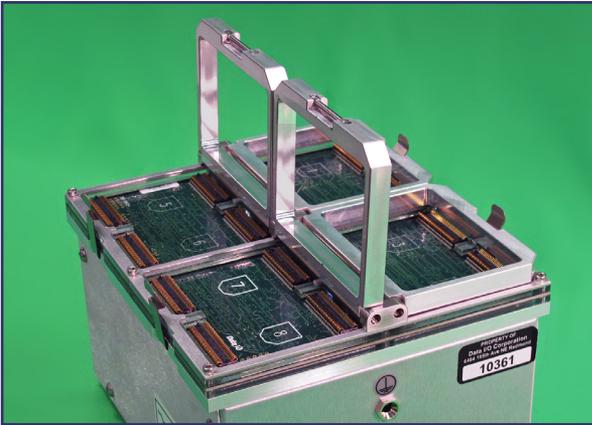

Figure 2:   Two socket clamps are open.

CAUTION: Possible machine damage! Bent or damaged pins can reduce yields or prevent programming. Do not touch connector pins.

1-4. Rotate the Socket Adapter so the chamfered (angled) corners match the diagram on the circuit board; refer to Figure 2 & Figure 4. Position all locations in the same orientation.

NOTE: The adapter must align with the guide pin at each corner with the holes in the adapter. Refer to Figure 3.
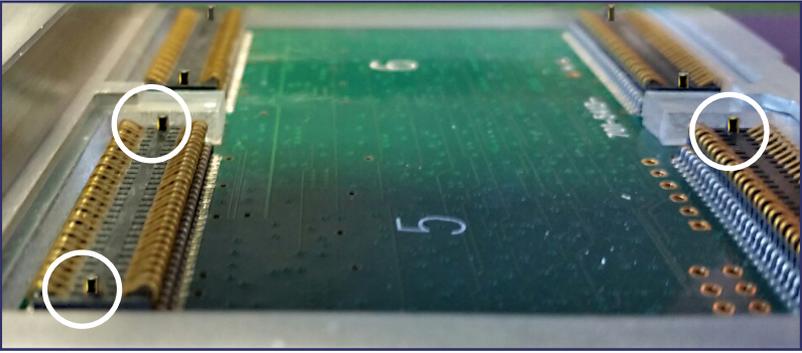
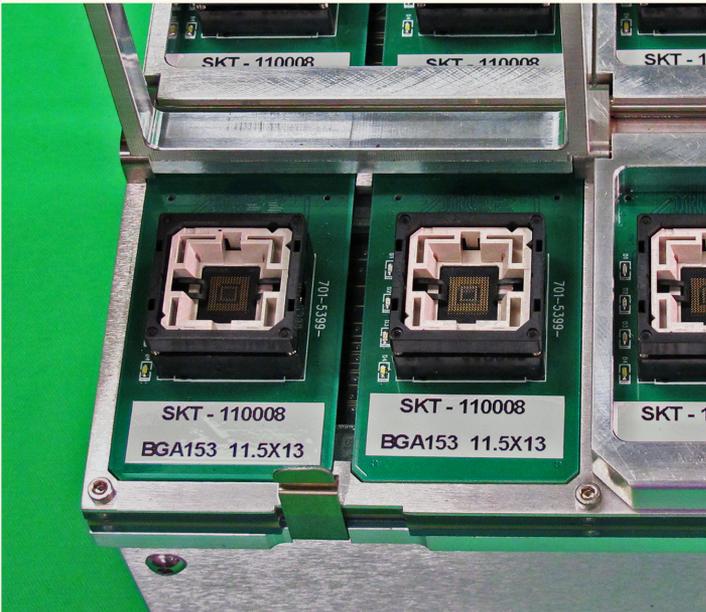Figure 3:   Alignment pins (three of the four shown, circled).

Figure 4:   Note chamfered (angled) corners on Socket Adapters fit into programmer body. (One clamp is open.)

1-5. Close the socket clamp.

2. Install Data I/O Software

2-1. Visit **http://www.dataio.com/Support/LumenX-Release** and click **Download LumenX Software Release**.

2-2. Select **Save file** and then **OK** to download the **LumenXDataManagementSoftware.zip** file.

2-3. Right-click the downloaded zip file and select **Extract All**. Ex:
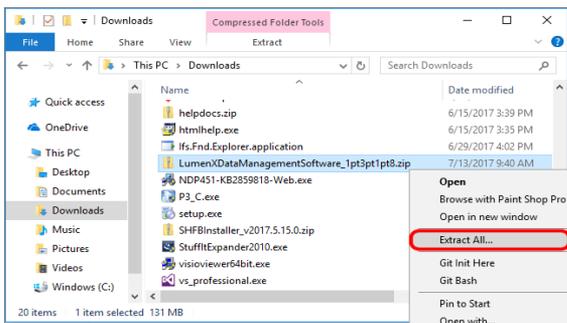
Figure 5:   Extract All files.

2-4. Locate the folder where you extracted the files, right-click the **LumenXDataManagement_version.exe** file, and then click **Run as administrator**.
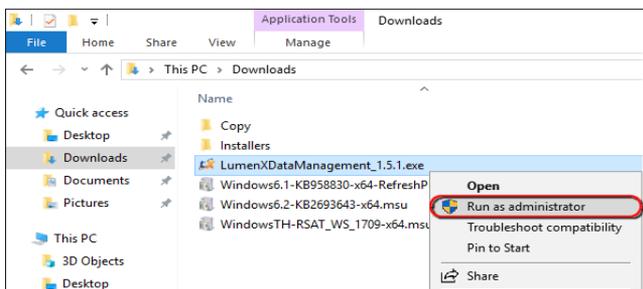
Figure 6:   The **Run As Administrator** command is in the right-click submenu.

2-5. Proceed through the Setup Wizard and accept all defaults.

3. Configure LumenX Network Connection

Configure the Host PC's network adapter for a static Ethernet connection to the programmer.

3-1. Open the Windows Control Panel and click *Network and Internet* > *Network and Sharing Center*.

3-2. Click *Change Adapter Settings*.

3-3. Right click the *Local Area Connection* (for the LumenX programmer) > *Properties*.

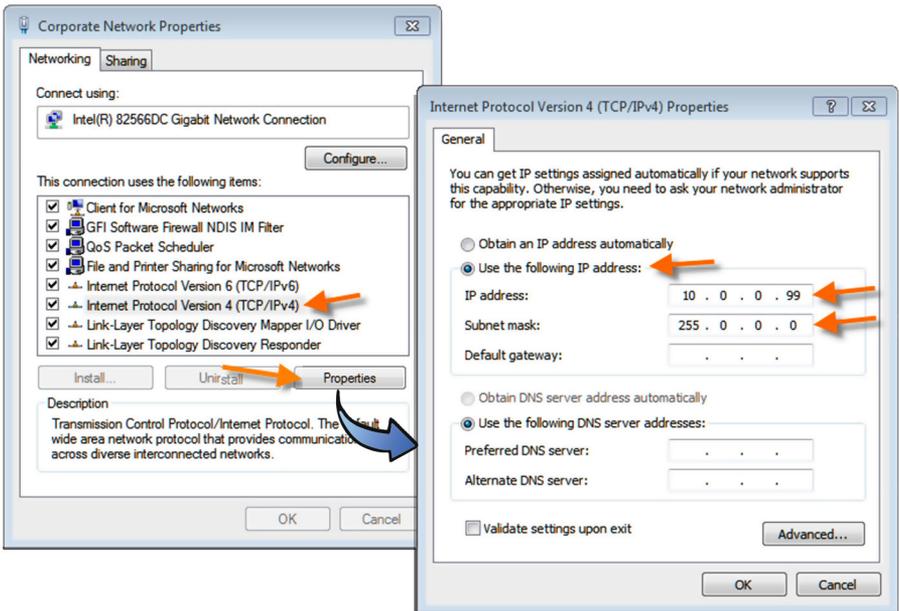**3-4.** Select *Internet Protocol Version 4 (TCP/IPv4)* from the list and click *Properties*.

Figure 7:   Network Settings.

3-5. Select *Use the following IP address*.

3-6. Enter IP address **10.0.0.99**, and Subnet mask **255.0.0.0**.

3-7. Click *OK* and *Close*.

4. LumenX Connectivity

4-1. Connect the Ethernet cable between the PC and the programmer.

4-2. With your target Socket Adapter(s) installed and the power cable plugged in, turn ON the power switch on the side of the programmer.

> NOTE: Before proceeding, **wait until the white LED on each socket adapter goes off.** Socket Adapter LEDs will illuminate during startup and then go off when done.

4-3. Open the Windows command prompt (***cmd.exe***) via the Start menu or keyboard shortcut.

4-4. To test connectivity with the LumenX unit, send a ***ping*** command to its IP address (type ***ping 10.0.0.10***) , and press Return. Note that this IP address is different than the one you just entered into the Internet Protocol dialog.

4-5. If there is a reply from the LumenX programmer, connectivity is good.
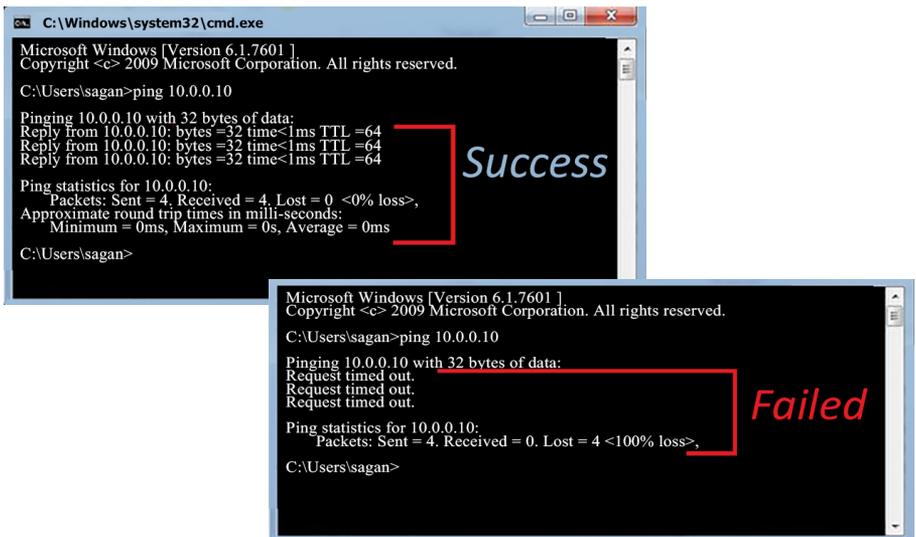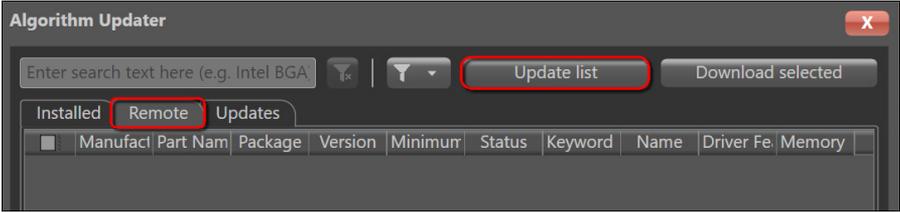

Figure 8: Examples of communication success and failure in ***cmd.exe***. For errors, see Troubleshooting later in this document.

Data I/O Corporation

5. Download Algorithms from Data I/O

5-1. Start LumenX Data Management Software.

5-2. Click the *Tools* menu at the top, then click *Algorithm Updater*.

**5-3.** In Algorithm Updater, click the *Remote* tab, then click *Update list*.

**5-4.** After the list updates, check the top-most box in the first column, then click *Download selected*.
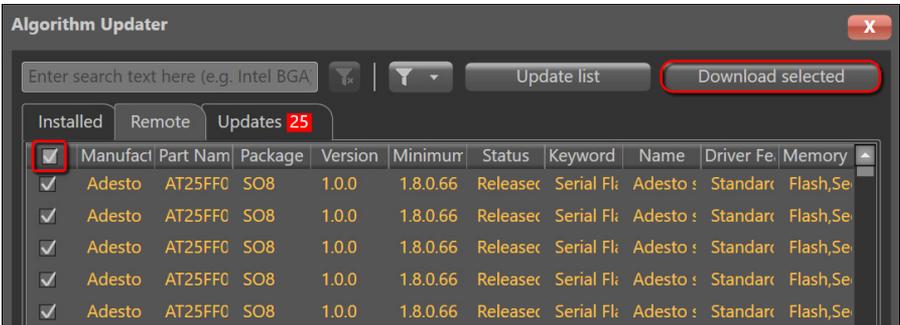
6. Update Programmer Firmware

6-1. From the *Tools* menu at the top, click *Update Programmer(s)*.

6-2. In the left pane, check the box for the programmer to update.

6-3. From the *Choose Update Version To Install* drop-down list, select the update version to apply, then click *Update*.
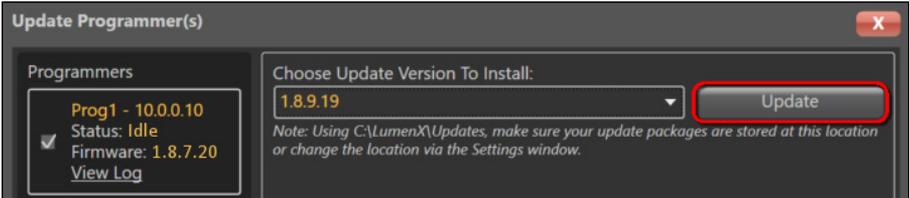
6-4. In the left pane, verify that the *Status* of the programmer changes:

- Idle > Updating > Verifying > Rebooting > Idle

6-5. In the left pane under *Programmers*, verify that the *Firmware* version is updated.
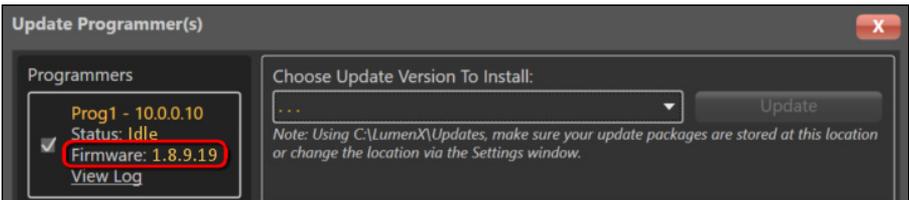
Congratulations! Your system is now prepared for device programming. Before you run a programming job, it is strongly recommended that you first configure role-based authentication for all LumenX users.

7. Add Users to Secure Roles

Enable *Basic Authentication* to secure your installation.

7-1. From the **Settings** menu at the top, click **Users**.

7-2. In the **User Authentication** dialog, click **Settings** in the lower-right corner.

7-3. In the **Settings** dialog, from the **Authentication Type** drop-down list, select **Basic Authentication**, and then click **Save**.

7-4. Close and restart LumenX Data Management Software.

7-5. At the **Login** screen, use the default **Administrator** account to login (default password = *dataio*).

Change the default *Administrator* password to secure your installation.

7-6. In the **User Authentication** dialog, select the **Administrator** account, and at the bottom of the screen, click **Edit user**.

7-7. In the **Edit User** dialog, enter and confirm a new password, and then click **Save**.

To add a user and specify their role:

7-8. On the **User Authentication** tab, in lower-left, click **Add user**.

7-9. In the **Add User** dialog, complete all of the fields, and from the **ROLE** drop-down list, select the appropriate role for the user:

User Role	Permissions
Supervisor	*Add, Delete, Modify* users and their roles (N/A for Active Directory). *Create, Compose, Load,* and *Run* jobs.
Creator	*Create, Compose, Load,* and *Run* jobs. Cannot manage users.
Technician	*Load* job files, *Set* root repository location, *View* job settings and data (read-only), *Create* job packages.
Operator	*Load* and *Run* jobs only.

7-10. In the lower-right corner, click **Save**.

7-11. To add more users, repeat steps 8 through 10 for each user.

8. Create and Run a Job

8-1. At the main window, click *New*.

8-2. On the *Devices* page, select a device for your programming job, and then click *Next*.

8-3. On the *Algorithms* page, select an algorithm (even if there is only one available), and then click *Next*.

8-4. On the *Create Job* page, type a programming job name, a job description, and any operator notes.

8-5. In the *Device* group, click the *Settings* drop-down and select the desired functions for the programming job (for example: Device Erase) as determined by the device and algorithm.
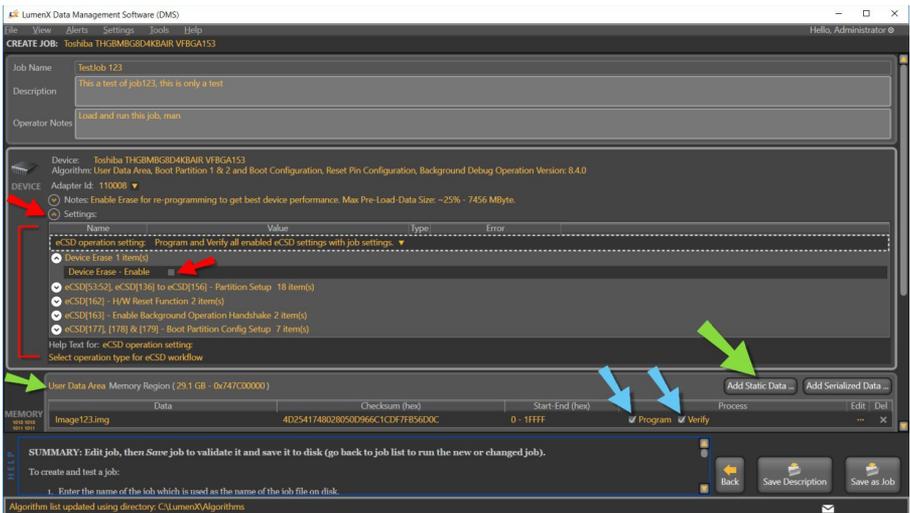

At the Create Job window, select the settings (special features) desired (orange arrows), as well as adding data—your image file—(green arrow) and processes for the image file (blue arrows).

8-6. In the *Memory Region* group, for the *User Data Area* partition, add the image file by clicking *Add Static Data* > *Browse*, navigate to your image file, select it, and then click *Open*.

8-7. Insert device(s) into the target programmer by manually actuating the socket and using the vacuum tool to place the device. Pin 1 location is indicated on the Socket Adapter board.

8-8. At the application window, make sure the correct programmer displays a check mark (left column) and click *Run* to start downloading and programming.
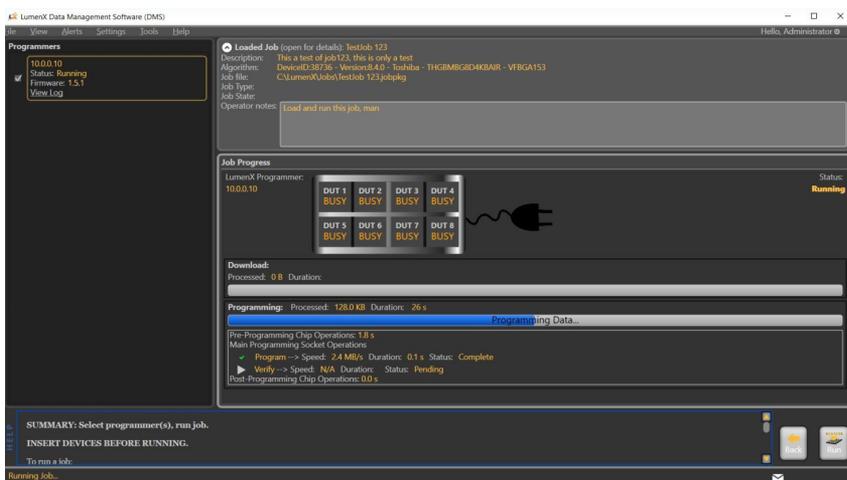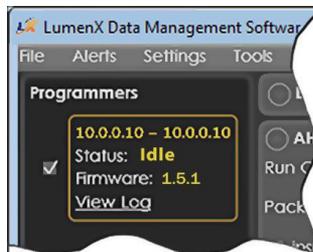

The *Job Progress* dialog displays the following status:

DUT = *Device Under Test* = Socket
IDLE = the job is downloading or there is no activity in the slots.
BUSY = the job is programming.
PASS = the programming job has successfully completed.
FAIL = if errors occur.

9. Verify Job Completion

9-1. In the upper-left corner under *Programmers*, verify that the *Status* entry shows *Done*.

9-2. In the *Job Progress* pane, verify that the status of each *LumenX Programmer* (socket) shows **PASS**.

9-3. If an error occurs, click one of the two alert indicators:
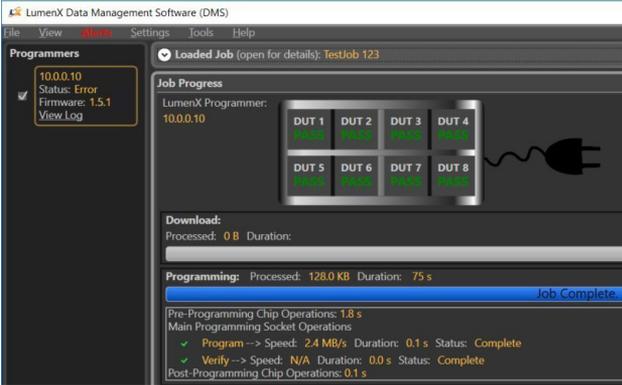
Job has completed and PASSED.
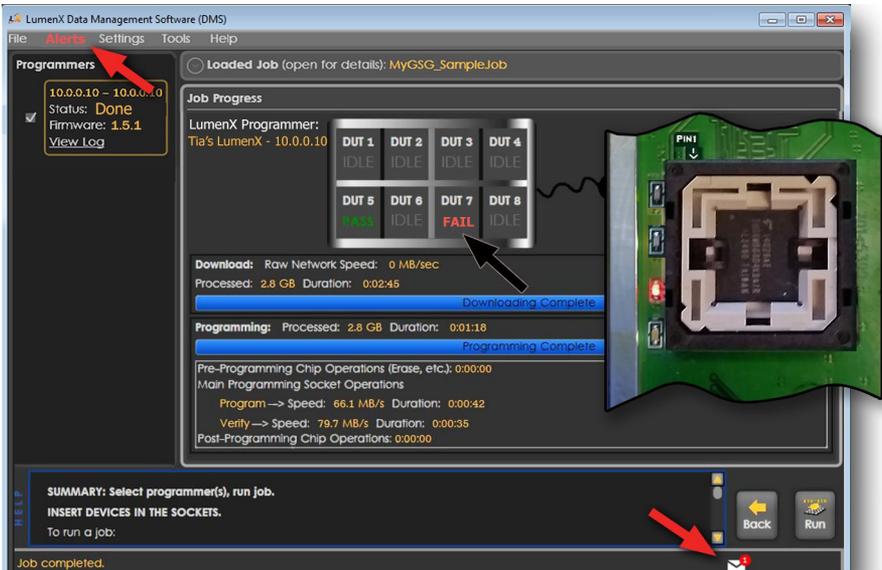
Click the Error Alerts (red arrows) to read the message. Each Socket Adapter's red LED also illuminates if an error occurs.

Socket Adapter LEDs

Green = PASS

Yellow = BUSY

Red = FAIL
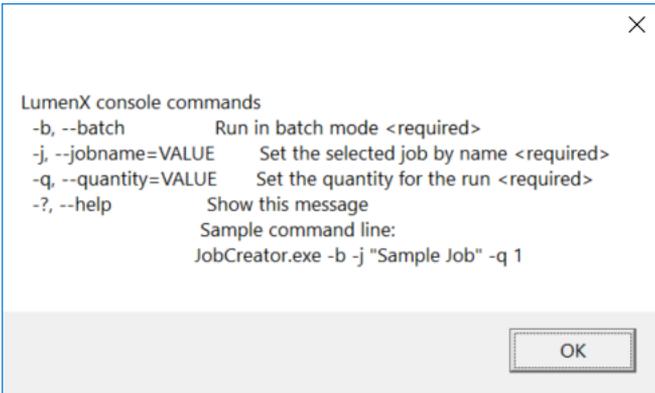
White = CONTINUITY ERROR

All LEDs will light simultaneously at startup and go off when the startup process is complete.

Command Line Usage

LumenX DMS offers command line access to automate and script the scheduling of job runs (which can minimize operator errors). To use the LumenX Command Line Interface:

1. Open a command prompt window and use the "**cd**" command to change directories to *C:\Program Files\Data IO\LumenX*.

2. Type this command: *JobCreator.exe -b -j "My Job ABC" -q 500*
   - **-b**: specifies the **b**atch user
   - **-j**: specifies the **j**ob name
   - **-p**: specifies the job by file path
   - **-q**: specifies the **q**uantity to program

3. Press ENTER.

4. LumenX DMS opens to the *Loaded Job* screen.

5. In the lower-right corner, click *Run*.

For Help within the command line window, type *JobCreator.exe -help*.


```
LumenX console commands
  -b, --batch          Run in batch mode <required>
  -j, --jobname=VALUE      Set the selected job by name <required>
  -q, --quantity=VALUE     Set the quantity for the run <required>
  -?, --help         Show this message
                  Sample command line:
                  JobCreator.exe -b -j "Sample Job" -q 1
```

Troubleshooting Network Connections

If you receive error messages when programming, follow the steps below to check your network connections.

1. Open Windows **cmd.exe** and ping the programmer: **ping 10.0.0.10**.

2. If response is '*timed out*' then close Job Creator, disconnect your network cable from your PC and re-insert it.
    -Ping the programmer again from the command prompt. If the request is '*timed out*' follow steps 4 and 5 below until you receive a reply.

3. Disable and re-enable your local Network via the control panel.
    -Ping the programmer again from the command prompt.

4. Cycle the power on the programmer.
    -Ping the programmer again from the command prompt.

5. Power cycle the PC (shutting down the usual way).
    -Disconnect and reconnect the Ethernet cable.
    -Ping the programmer again from the command prompt.

6. Reset the network connection:
    -Click the *Start* button > *Control Panel* > *Network and Internet* > *Network and Sharing* > *Change Adapter Settings*.

    -Right-click *Local Area Connection* (programmer network) > *Disable.*

    -Right-click *Local Area Connection* (programmer network) > *Enable.*

Technical Support

To contact your local representative, please perform a lookup at:
- `http://www.dataio.com/Contact-Us/Representative-Search`

To submit a service request (requires account registration), please login to our MAX Customer Portal:
- `https://myaccount.dataio.com`

FOR QUICK ACCURATE SUPPORT, PLEASE PROVIDE THE FOLLOWING:

- LumenX Desktop Serial number (see label)
- Software Version (*Help > About*)
- Detailed description of the problem you are experiencing (if any)
- Error messages (if any)
- Device manufacturer, part number, package style and number of pins (if device related)
- Name, telephone number, address, and e-mail address

Contact Sales

For specific questions about our products and services, please visit:
- `http://www.dataio.com/Contact-Us/Sales`

For all general inquiries, please visit:
- `http://www.dataio.com/Contact-Us`

Self Help

To learn more about our products and services, please visit:
- `http://www.dataio.com/Support/Technical-Library`

Ultrafast e-MMC programming

LUMEN X

A DESKTOP PROGRAMMING ENGINE THAT INTEGRATES INTO THE
PSV7000 PROGRAMMING AND HANDLING SYSTEM

Data I/O