Configuration and installation of SQM-LE unit

Dr SO Chu-wing
The University of Hong Kong
1. Unboxing a package of Sky Quality Meter-LE+H+POE
2. Establish connection for configuration
3. SQM-LE configuration: Lantronix Device Installer (LDI)
4. SQM-LE configuration: XPort
5. SQM-LE configuration: Unihedron Device Manager (UDM)
6. Communication test of SQM-LE
7. Selection of a mounting location for SQM-LE
8. Installation of SQM-LE
9. SQM-LE cabling
10. SQM-LE testing
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1. Unboxing a package of Sky Quality Meter-LE+H+POE

cross-over cable (for direct connection only)

Power-over-Ethernet (PoE): TP-LINK TL-POE200

ethernet cable

Sky Quality Meter(SQM)-LE

Power adapter SQM-LE

Housing (H)
1. Unboxing a package of Sky Quality Meter-LE+H+POE

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2. Establish connection for configuration

2.1 Follow the example of cabling below:

Caution:
Please use wired connection for the desktop/laptop but not wifi.
2. Establish connection for configuration

2.2 click

2.3 type in “cmd”

2.4 run “cmd.exe”
2. Establish connection for configuration

2.5 Type “ipconfig” then pass enter
2.6 Look for the values of “Subnet Mark” and “Default Gateway” under ”Ethernet adaptor Local Area Connection”. These information will be used for configuring SQM-LE.
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3. SQM-LE configuration: Lantronix Device Installer (LDI)

3.1 download and install then run **Lantronix Device Installer (LDI)**:

Web setup (1.3 MB, requires internet access):


Stand-alone setup (70 MB, no internet access required to install):

http://unihedron.com/projects/darksky/cd/SQM-LE/windows/LDI/setup_di_x86x64cd_4.4.0.2RC3.exe

Select “Allow access” when asked for firewall permission:
3. SQM-LE configuration: Lantronix Device Installer (LDI)

3.2 run **LDI** > click “Search” near upper right to search for SQM-LE connected (the name is “Xport-XX”, where XX is a number)

3.3 expand the directory and click the IP address of the searched SQM-LE device
3. SQM-LE configuration: Lantronix Device Installer (LDI)

3.4 click “Assign IP” > “Assign a specific IP address” > “Next” to configure the IP address of SQM-LE
3. SQM-LE configuration: Lantronix Device Installer (LDI)

3.5 Configure the IP address according to the values of subnet mask and gateway of the network in the installation location:

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<td>network in the installation location:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subnet Mask#</td>
<td>255.255.255.0</td>
<td>255.255.255.0</td>
<td>255.255.0.0</td>
</tr>
<tr>
<td>Default Gateway^</td>
<td>192.168.2.1</td>
<td>192.168.0.1</td>
<td>192.168.0.1</td>
</tr>
<tr>
<td>configuring SQM-LE via LDI (“IP Settings”) :</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IP address*</td>
<td>192.168.2.104</td>
<td>192.168.0.100</td>
<td>192.168.0.200</td>
</tr>
<tr>
<td>Subnet mark#</td>
<td>255.255.255.0</td>
<td>255.255.255.0</td>
<td>255.255.0.0</td>
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* do not use the IP address which is occupied by other network devices (e.g. network printer) for SQM-LE
# subnet mask of SQM-LE should be the same as that of the network adopted
^ default gateway of SQM-LE should be the same as that of the network adopted (i.e., router’s IP)
3. SQM-LE configuration: Lantronix Device Installer (LDI)

3.6 Input the IP address, Subnet mark, and Default gateway then click “Next” > “Assign”

3.7 wait for the processing (a couple of minute)

Caution:
Values on this image are for preference only. Do not use them directly.
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4. SQM-LE configuration: XPort

4.1 click again the IP address of SQM-LE > click “Web Configuration” tab > click

4.2 leave the login username and password blank. Click “OK” to enter the XPort page.
4. SQM-LE configuration: XPort

4.3 click “Connection” under “Channel 1” on the right manual. Select “With Any Character” for the “Active Connect” under “Active Connection”
4.4 set the “Local Port” as 10001
4.5 set the “Remote Port” as 80
4.6 set “Remote Host” as (to be announced later)
4.7 set “Inactivity Timeout” under “Disconnect Mode” as 0:2
4.8 click “OK”
4.9 click “Apply Settings” then wait for the process to complete

For additional details, please refer to pages 43 to 44 of the manual:
4. SQM-LE configuration: XPort

Other settings of XPort (for information only)
4. SQM-LE configuration: XPort

Other settings of XPort (for information only)
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5. SQM-LE configuration:

Unihedron Device Manager (UDM)

5.1 download and install Unihedron Device Manager (UDM):
> run > click ”Find” near upper right

For additional details, please refer to pages 20 to 34 of the manual:
5. SQM-LE configuration: Unihedron Device Manager (UDM)

5.2 click “Report interval” tab, input “30” as below

For additional details, please refer to pages 20 to 34 of the manual:
5. SQM-LE configuration: Unihedron Device Manager (UDM)

5.3 click “Get Report Interval Info”

Make sure that the values of “in EEPROM” and in RAM” are both 30

For additional details, please refer to pages 20 to 34 of the manual:
5. SQM-LE configuration: Unihedron Device Manager (UDM)

5.4 click “Configuration” tab, then capture and send the screen to us for information.

For additional details, please refer to pages 20 to 34 of the manual:
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6. Communication test of SQM-LE

Conduct a communication test before installing the SQM-LE to outdoor:

Please contact Dr So:
Tel: 852 9447 2120 or
email: socw@connect.hku.hk or
skype: sochuwing

Install the SQM-LE to outdoor only when the communication is well established.
Once the “Interval Report” is running, avoid to get data from the device from software such as SQM reader or Unihedron Device Manager.
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7. Selection of a mounting location for SQM-LE

- Open outdoor space, such as rooftop
- Avoid artificial light nearby shining directly on SQM-LE
  - The light collective cone of SQM-LE of about 20 degrees away from the zenith.

artificial light stand **inside** the SQM-LE light cone

artificial light stand **outside** the SQM-LE light cone

Globe at Night - Sky Brightness Monitoring Network
7. Selection of a mounting location for SQM-LE

Make sure that there is no artificial light, including those be turned on automatically or manually in the evening, within the region of SQM-LE light collective cone.

Railings (possible mounting point of SQM-LE)
7. Selection of a mounting location for SQM-LE

- Safely first: make sure that the device is safe under severe weather conditions.
- Mount the device to a metal pole or railing.
  - **The sensor of SQM-LE should point directly to the zenith (directly "above" the location)**
- The ethernet cable can be routed from indoor to outdoor for power and internet connections.
  - Plug the injector unit of the PoE to the AC power supply and internet connection appropriately in indoor. Make sure that both power and internet connections are already on throughout the night.

After selecting a mounting location, take pictures showing the environment of the location and email pictures to Dr So for him to check whether the location is acceptable.
7. Selection of a mounting location for SQM-LE

- Railing
- Metal pole
- Metal pole
- Railing
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10. • SQM-LE testing
8. Installation of SQM-LE

Housing’s cover:
Point the sensor of SQM-LE directly to the glass window

Mount the housing to the pole

the light sensor of SQM-LE is here
8. Installation of SQM-LE
The output voltage of the splitter of PoE should be set as 5V but NOT 9V or 12V

set as 5V but NOT 9 V or 12V
8. Installation of SQM-LE
Insert the SQM-LE and PoE’s splitter unit to the housing

Make sure that there is no gap between the sensor and the glass window!

Put the SQM and PoE inside the box

Cover the lid

(this picture shows an old model of PoE)
8. Installation of SQM-LE

Point the sensor of SQM-LE directly to the glass window.

Align the SQMLE with the lens.

Make sure that there is no gap between the sensor and the glass window!
8. Installation of SQM-LE

Device supporting (optional)

(these pictures show an old model of PoE)
8. Installation of SQM-LE

Mount the housing to the pole

cable gland to seal the opening for ethernet cable
8. Installation of SQM-LE

Mount the housing to the pole

stainless steel hose / Jubilee clip
8. Installation of SQM-LE

Mount the housing to the pole

electrical tape (prefer outdoor quality) to seal the cover

cable ties (prefer outdoor quality)
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10. SQM-LE testing
9. SQM-LE cabling

**Inside the housing**

- SQM-LE
- Power cord
- Ethernet cable
- PoE splitter

**Cloud server on the internet (via port 80)**

- Network switch / hub / router
- Ethernet cable

**Set the output voltage as 5V**

- Cat 5 ethernet cable running from indoor to outdoor
- Power supply of PoE injector

**Globe at Night - Sky Brightness Monitoring Network**

User Workshop
Tokyo, Japan - Jan 7-9, 2015
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10. SQM-LE testing

After completing the above steps:

Please contact Dr So

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skype: sochuwing