ELSA-Q
Wireless PICK-to-LIGHT TAG & ALE

IOT-ENABLED WIRELESS PICKING SYSTEM FOR WAREHOUSE

Specialized IOT technology makes picking system wireless and easy-to-use

CO-EXISTS WITH Wi-Fi & BLUETOOTH

Unique radio spectrum for optimum coverage without interference from existing Wi-Fi, Bluetooth or Zigbee

INTERACTIVE ACTION CONFIRMATION

Patented network technology guarantees data link for task confirmation

ILLUMINATED SLICK PICK BUTTON

Tri-color illumination for sequential order picking

EXCEPTIONAL READABILITY AND DURABILITY

(Optional) High resolution glass top e-paper display for extended durability
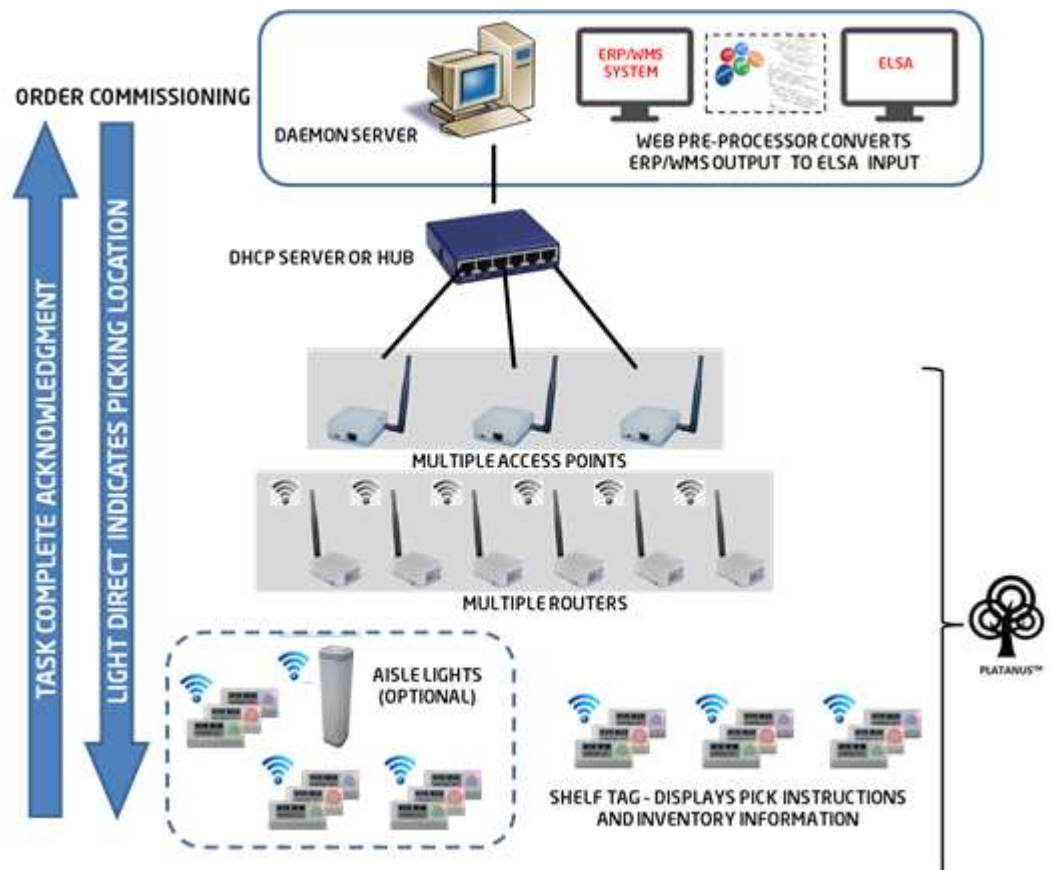
MULTIPLE YEARS OF BATTERY LIFE & ULTRA FAST RESPONSE

Ultra-low power protocol tuned to optimize the battery life and data transfer

Light-Directed Picking: Agile, Accurate and Adaptive

ERROR-FREE PICKING IN ORDER COMMISSIONING

ORDER COMMISSIONING

DAEMON SERVER

ERP/WMS SYSTEM

ELSA

WEB PRE-PROCESSOR CONVERTS ERP/WMS OUTPUT TO ELSA INPUT

DHCP SERVER OR HUB

MULTIPLE ACCESS POINTS

MULTIPLE ROUTERS

TASK COMPLETE ACKNOWLEDGMENT

LIGHT DIRECT INDICATES PICKING LOCATION

AISLE LIGHTS (OPTIONAL)

PLATANUS™

SHELF TAG - DISPLAYS PICK INSTRUCTIONS AND INVENTORY INFORMATION

M2COMM

Technical Specification

PLATANUS™

AISLE LIGHT
(OPTIONAL)

INFRASTRUCTURE

SIZE (W x H x T) mm	63 x 63 x 241.4
WEIGHT, gm	271.8
ANTENNA	EMBEDDED
LED INDICATORS	POWER: *GREEN*

NETWORK

INTERFACE	WIRELESS
PROTOCOL	PLATANUS SUB-GHz ISM (ELSA-Q SERIES)
OPERATION MODE	SELF-NETWORKING (AUTOMATIC CONNECTION BUILT-UP AND RECOVERY)
ENCRYPTION	AES 128-bit
TRANSMISSION RANGE	100 METERS (LINE OF SIGHT)

OPERATING CONDITIONS

|	
CONNECTED QUANTITY	100
OPERATING TEMP/HUMIDITY	0 ~ 40°C / 35 ~ 80%
STORAGE TEMP/HUMIDITY	-20 ~ 60°C / 35 ~ 80%
POWER	5V2A DC Jack
APPLICATIONS	WAREHOUSE PICKING SYSTEM, PHARMACY CABINET, INVENTORY MANAGEMENT

Device Setup :

Access Point Setting:
The Access Point has a wired connection to the base station (computer) and communicates wirelessly with the Router(s) via the M2COMM proprietary Platanus protocol.
The Access Point supports up to a total of 15 Routers and has an operating range from 0m to 100m; please refer to Section 2.7 *System Hardware Deployment* for guidance on the correct positioning of your Access Point.
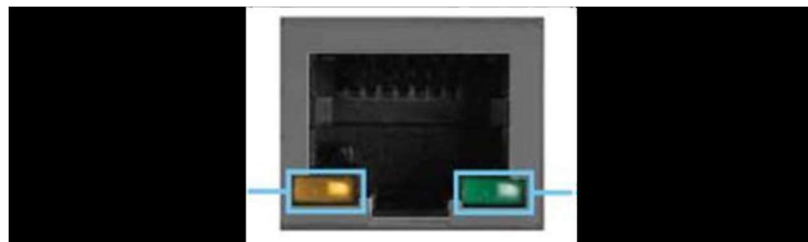

Status Indicators and Assembly
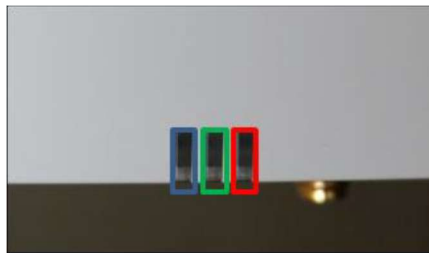
LED status functions;
Red – Power-on self test error
Green – Power on indicator
Blue – Network Connection, shall stay on while power is connected

Access Point - Network Port
GREEN network activity indicator—turns on when a cable connects the port to another Gigabit Ethernet port
YELLOW activity indicator—Flashes to indicate network activity over that port

Attach included Antenna

Plug one end of the supplied Cat 5E cable into the Access Point, the other end should be plugged into your computer.

Connect the supplied AC power adaptor as shown.
Use only the adapter that came with your Access Point.

Router Setting:

The Router(s) operate wirelessly, via the M2COMM proprietary Platanus protocol, with the Access Point and ESL Tags. Each Router supports up to a total of 1000 ESL Tags and has an operating range up to 100m; please refer to Section 2.7 ***System Hardware Deployment*** for guidance on the correct positioning of your Router.

Status Indicators and Assembly

LED status functions;
GREEN – Power on indicator
RED – SRAM test
BLUE – Network Connection, shall stay on while connected with an ASIA LIGHT Access Point. Shall flash slowly under the following conditions;

◆ When connecting to a network and under average RSSI qualification by Daemon
◆ When the Router reaches its maximum carrying capacity, e.g. connection with 1,000 tags
◆ When connected to network but the RSSI falls below -80dBm

Will flash quickly when the Router loses connection with the network, duration 30 minutes


Attach included Antenna

Connect the included AC power adaptor as shown.
Use only the adapter that came with your Router.

Computer Configuration for ASIA LIGHT Installation :

It can be seen in the diagram below that the system architecture consists of several key components; a single or multiple Access Points, several Routers, multiple End Devices (ESL tags) and the Platanus Daemon program running on a desktop.

This ASIA LIGHT demo installation is designed to use either a static IP address for a single Access Point or a dynamic IP address when multiple Access Points are installed.
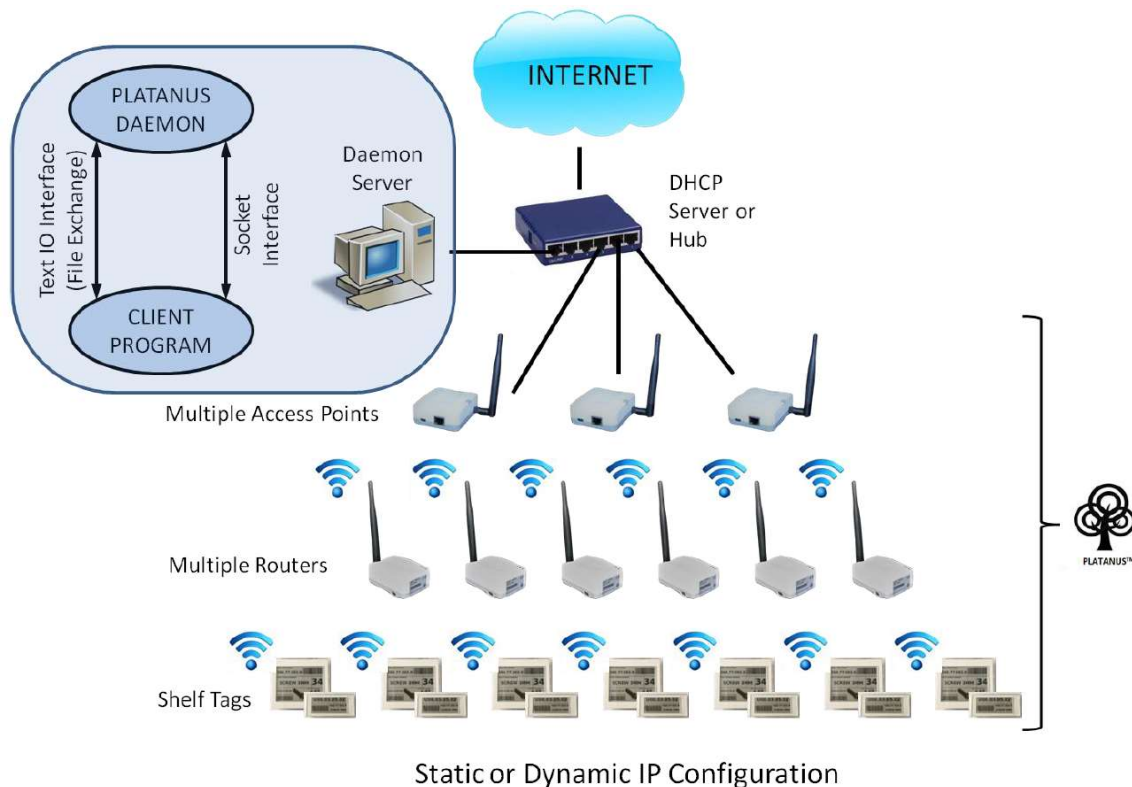

IP Address Configuration (Static IP)

**Ensure that your Access Point is connected to your computer.**

Your M2COMM Access Point comes pre-configured with a default IP Address **(192.168.2.1)** and therefore prior to installing the M2COMM ASIA LIGHT firmware and software (reference Section 3.2) it is necessary to modify the IP Address of the Ethernet port on your computer that is cabled to the M2COMM Access Point so that they can communicate with one another.

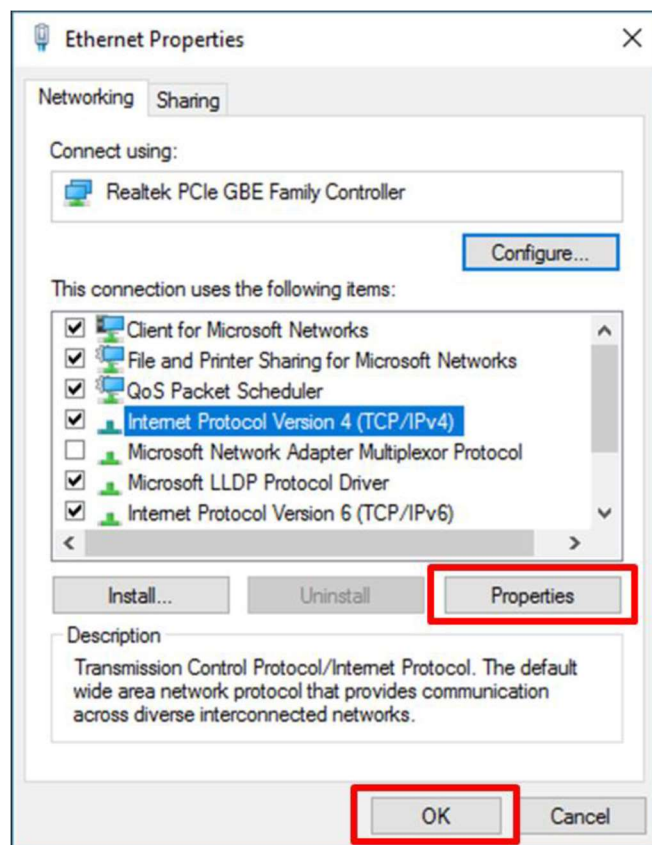***Ensure that your Access Point is connected to your computer.***

On your computer open the ***Control Panel – Network and Internet – Network and Sharing Center***
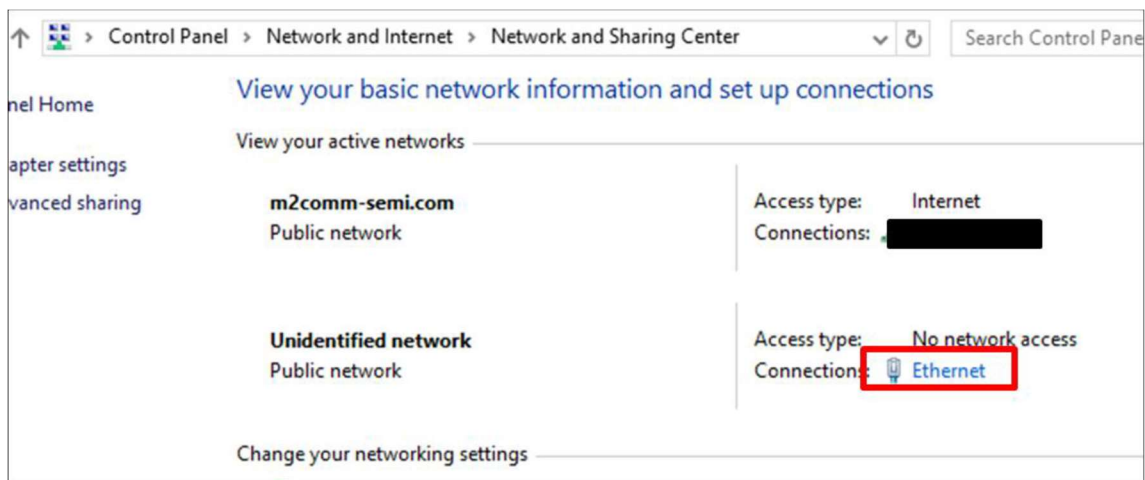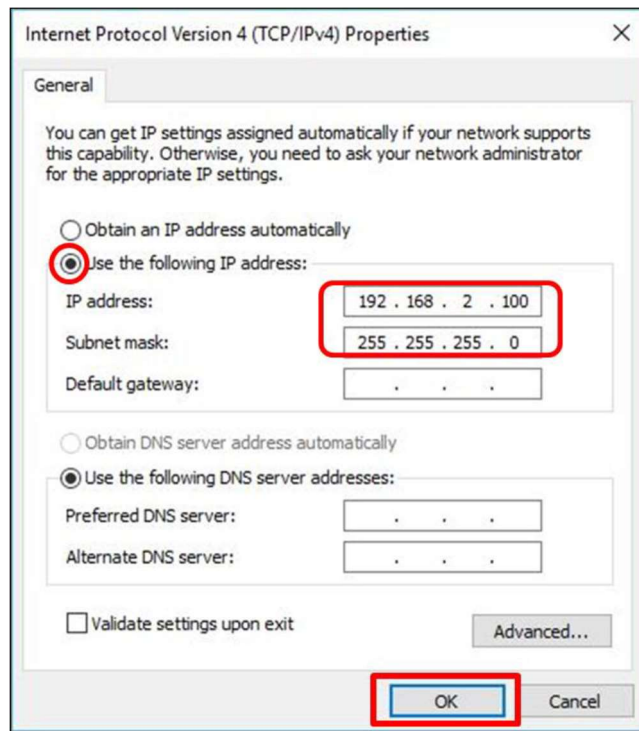

Using your computer mouse, click on ***Ethernet***
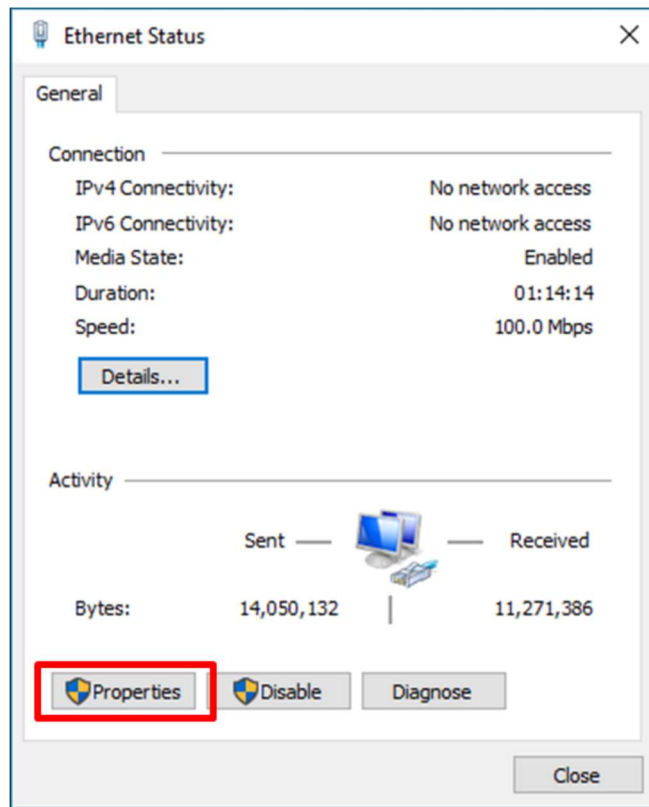
Select *Properties*

Select *Internet Protocol Version 4 (TCP/IPv4),* and select *Properties*

Check *Use the following IP address* and enter information shown above. Select *OK* to apply new settings (All open windows can now be closed)

IP Address Configuration (Dynamic IP)
For installations that contain multiple Access Points an external TCP/IP Ethernet hub is required; setting up the IP address for each Access Point will require modification of the ASIA LIGHT Daemon Integration file, please refer to **UG-ASIA LIGHT001: ASIA LIGHT Daemon Integration Guide** for further details.

Getting Install Software

Due to the Confidential and Proprietary nature of core elements within the ASIA LIGHT Operating System, we currently **DO NOT** offer public access to the install software download.

We respectfully ask that customers who have purchased M2COMM hardware contact our support staff who will direct you to a secure location from which you can obtain the install package.

Please contact us at **support@m2comm.co**

The downloaded installation package will be saved to your Windows downloads folder

Software Installation

On your computer go to the Windows Downloads folder and locate the ASIA LIGHT executable file, (Please note; filename shown is an example, actual build number 1.0 (594) maybe different).
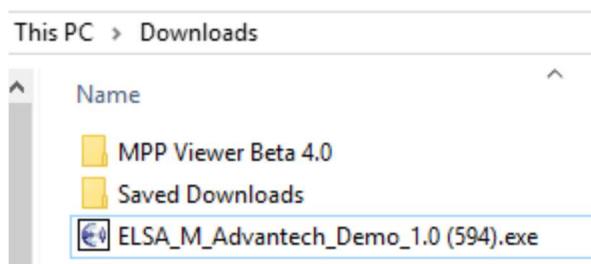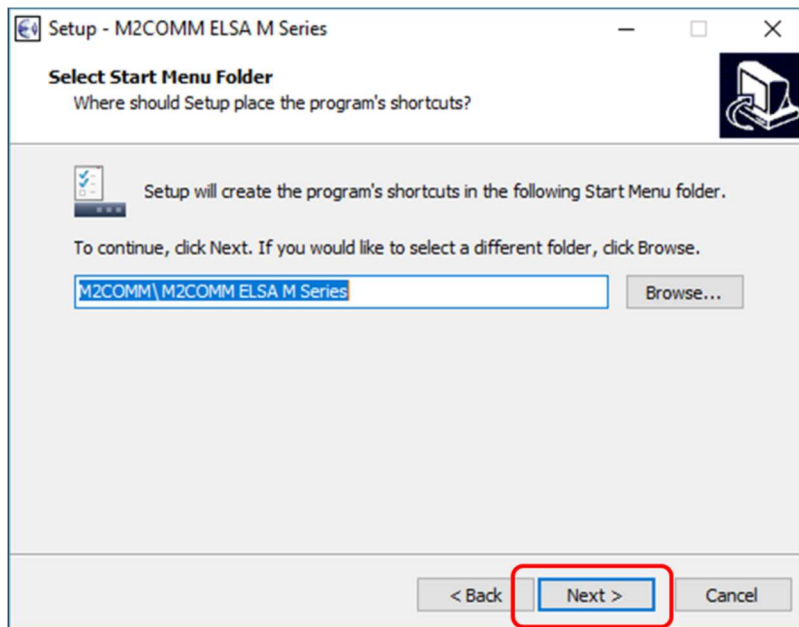

Double-click file to begin the installation.

You may be asked for permission to allow the program to make changes to your computer; you must agree to this to enable installation to start.
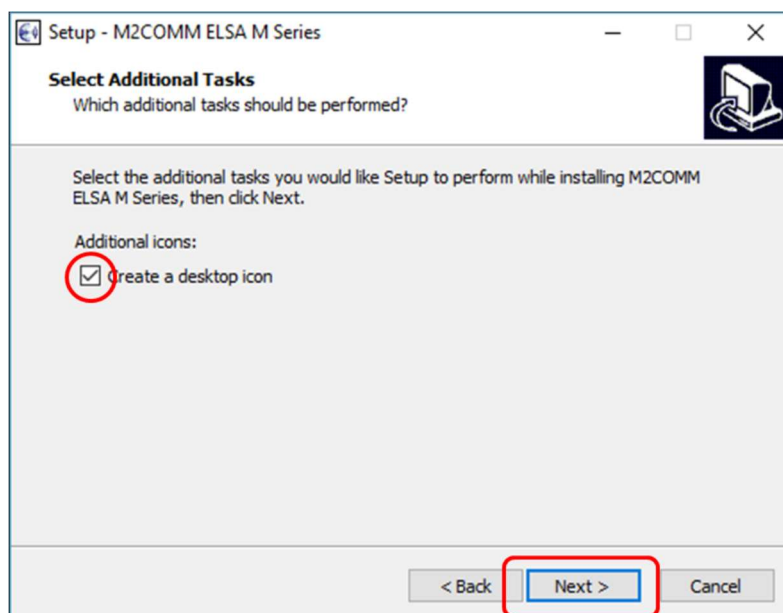
Follow the on-screen instructions and refer to this manual at anytime during installation for additional information.
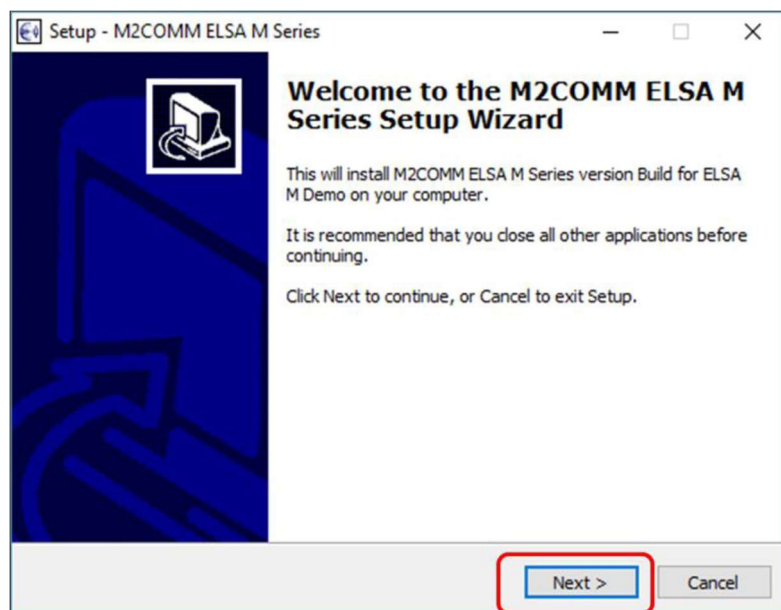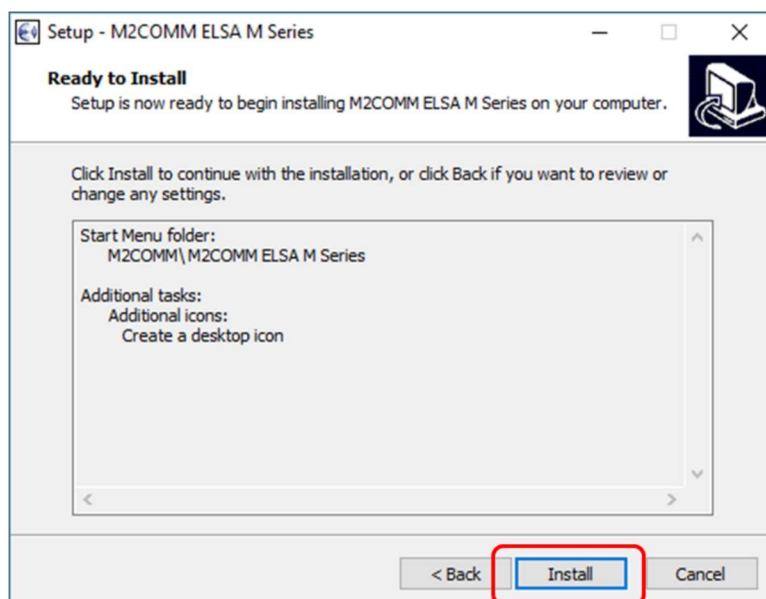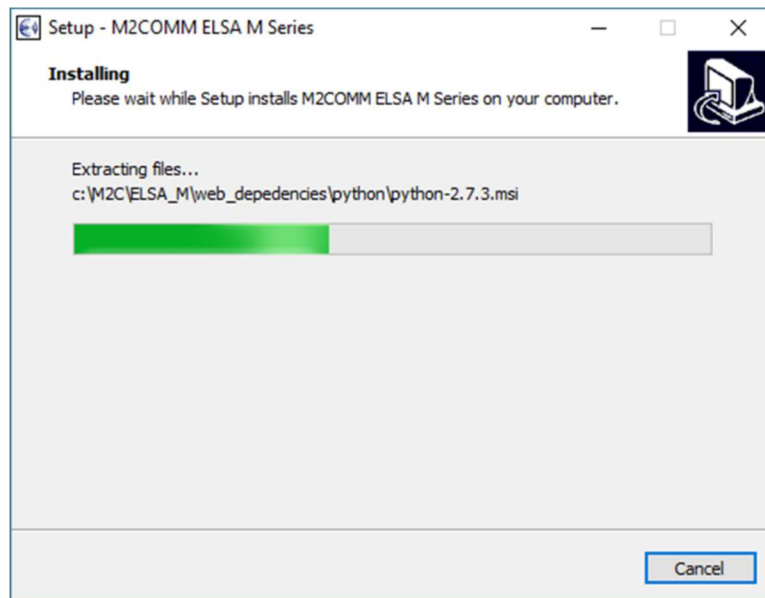

Click *Next>* to continue

Click *Next>* to continue

Creation of a desktop icon is optional; Click *Next>* to continue


Click *Install* to continue

During this stage of the installation it is highly likely that your computer screen may change color (Blue) and that a new dialogue pop-up box will appear.

DON'T PANIC!

Whilst extracting the files required for the installation the ASIA LIGHT program checks your computer to ensure that it has the core *Python 2.7* libraries and modules installed, if it does not find them it will automatically redirect you to the *Python 2.7* install page (That's the blue screen you maybe currently seeing).

This is a onetime check and install, you will not see this again unless you install the ASIA LIGHT program on another computer.
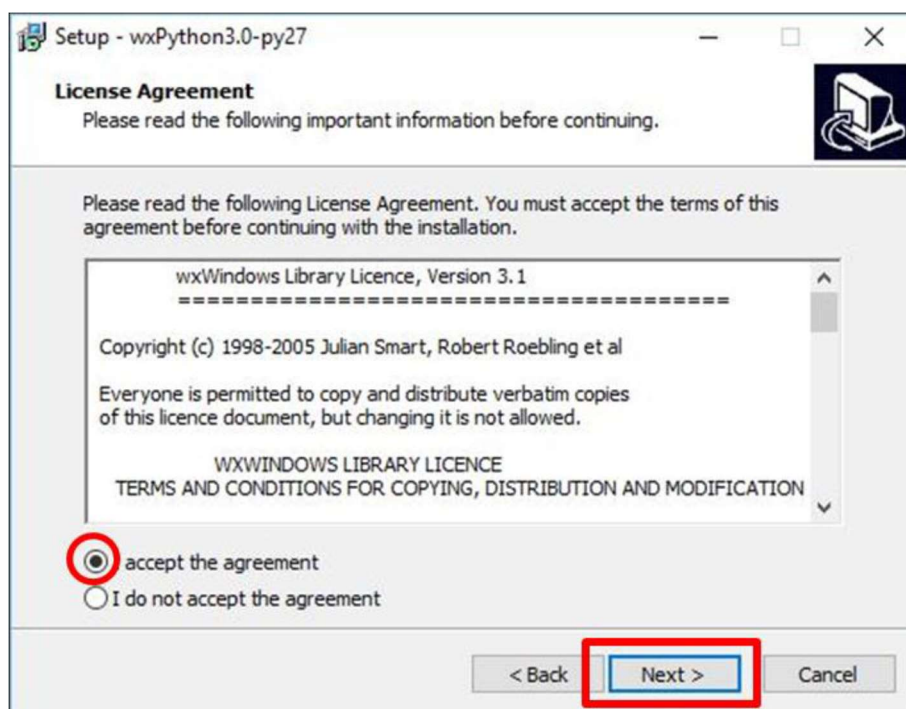
Please agree to the *Python 2.7* installation and allow it to run, upon completion the installation of your ASIA LIGHT program will continue and you will see the next dialogue screen.
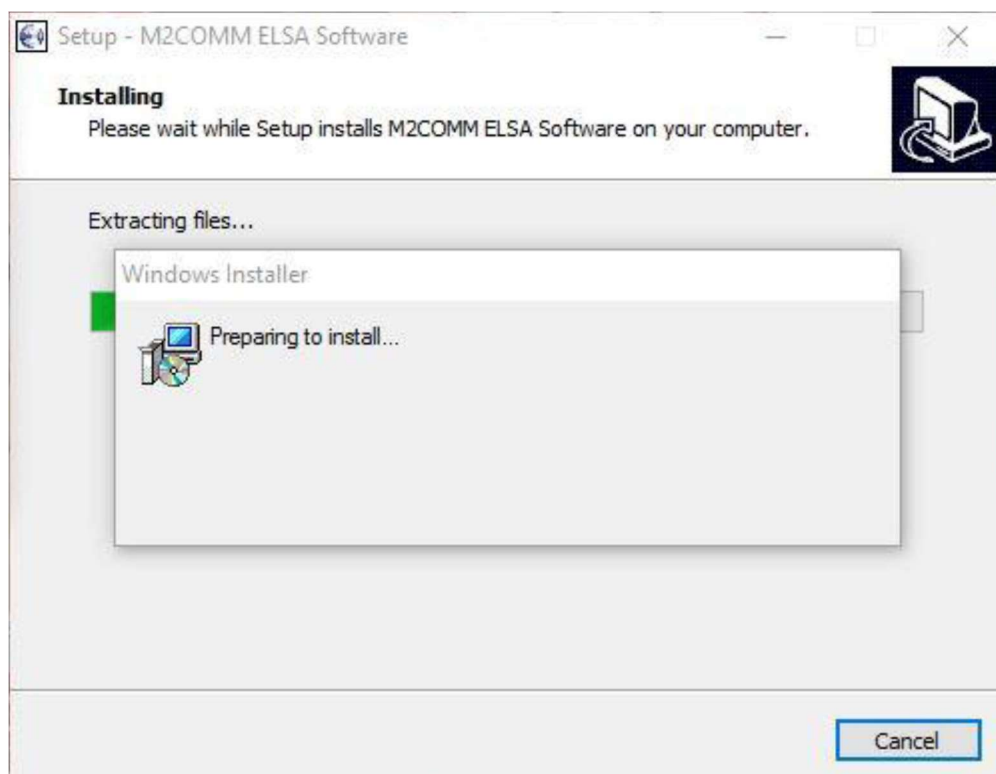
Nothing to do here please be patient.
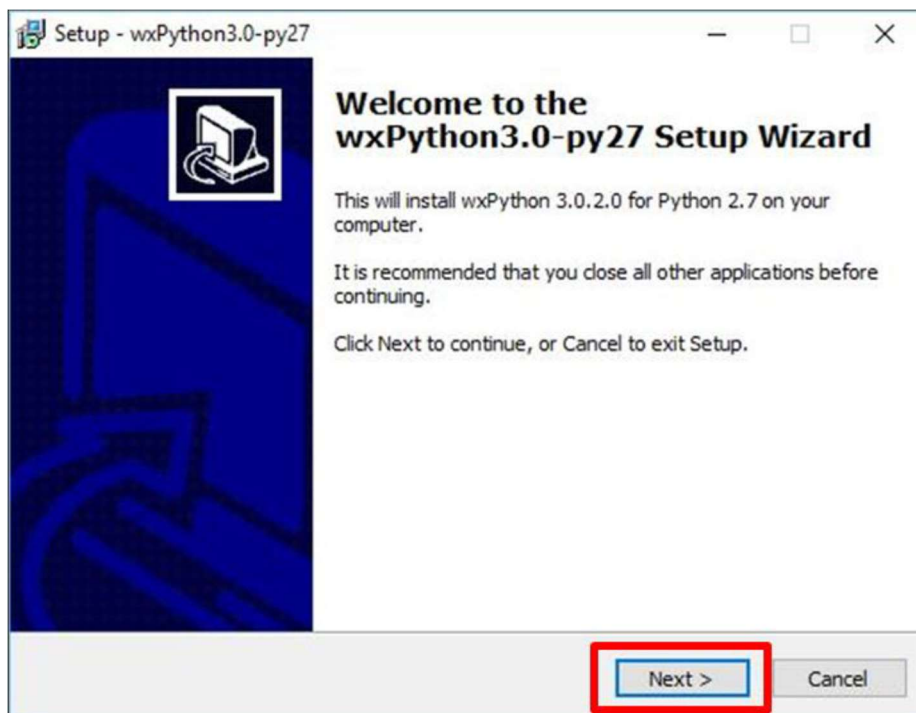
Click *Next>* to continue

It is necessary for you to check *I accept the agreement* before the **Next>** button becomes active.
Click *Next>* to continue
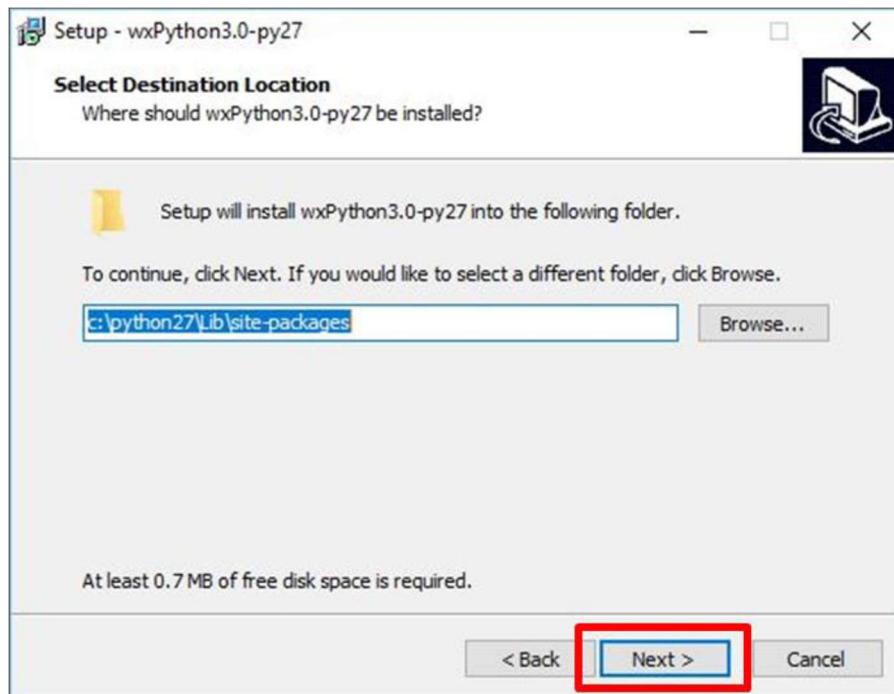
wxPython3.0-py27 is the M2COMM additional software that works with the core *Python2.7* program. Please accept the default folder location for your Python installation, and then click *Next>* to continue
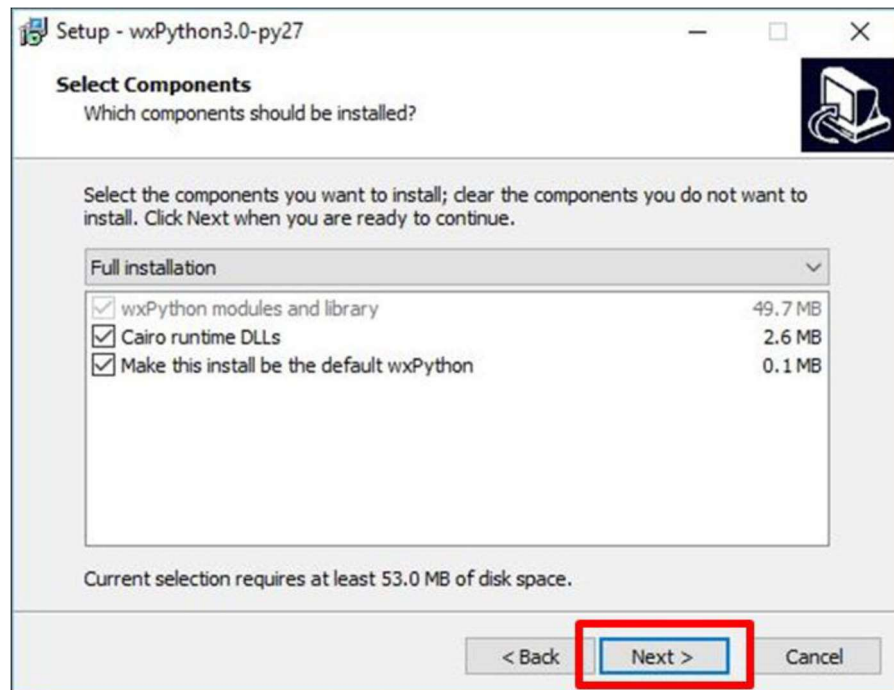
Please accept the dialogue box recommendations as shown above
Click *Next>* to continue
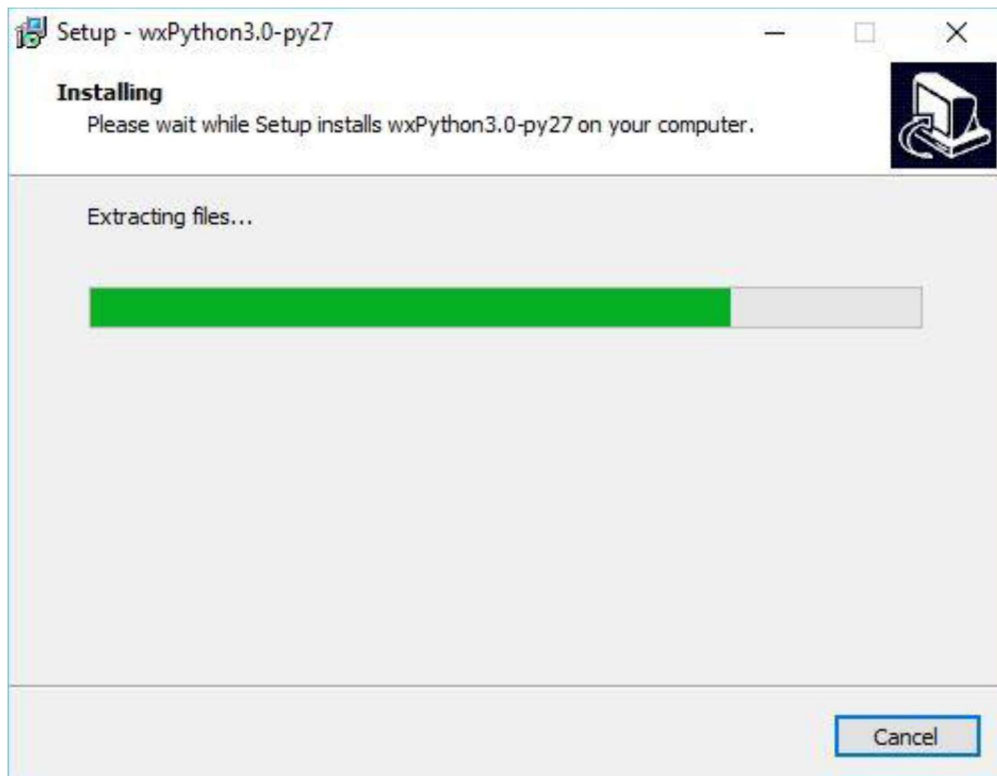
Almost done please be patient.
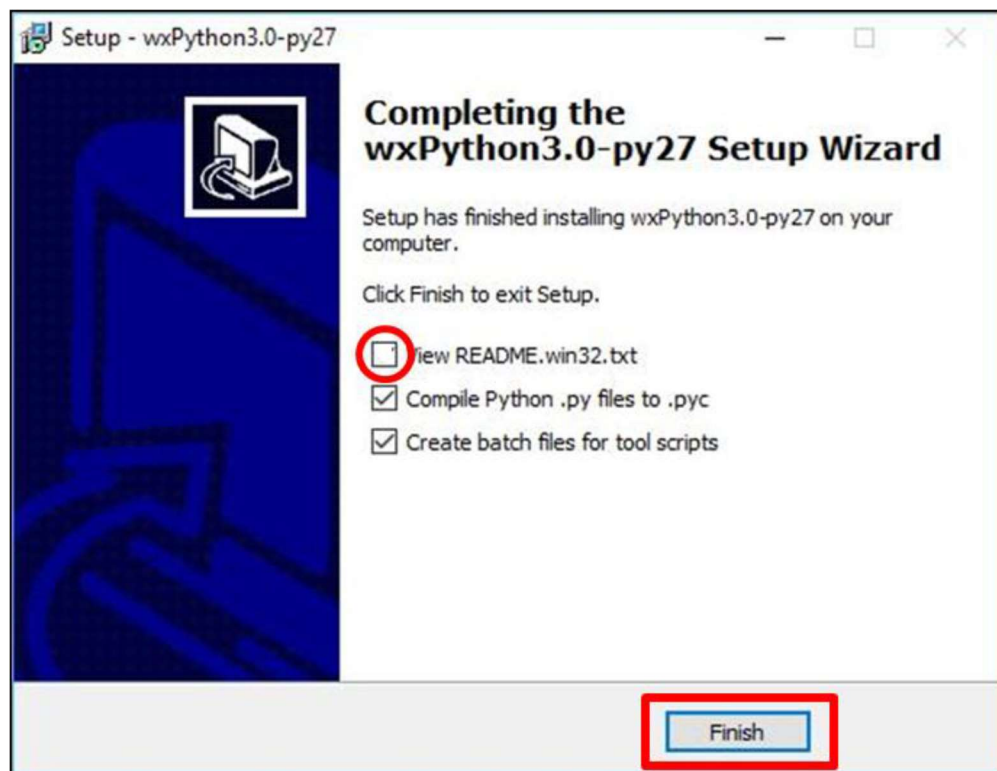
It is not necessary to view the **README.win32.txt** file, but we add the option here for IT and System Administrators who wish to review it. **For most users this can be un-checked.**
Leave the other two boxes checked as these are required by the installation
Click **Finish** to exit Python set-up and continue to the final stage of ASIA LIGHT installation
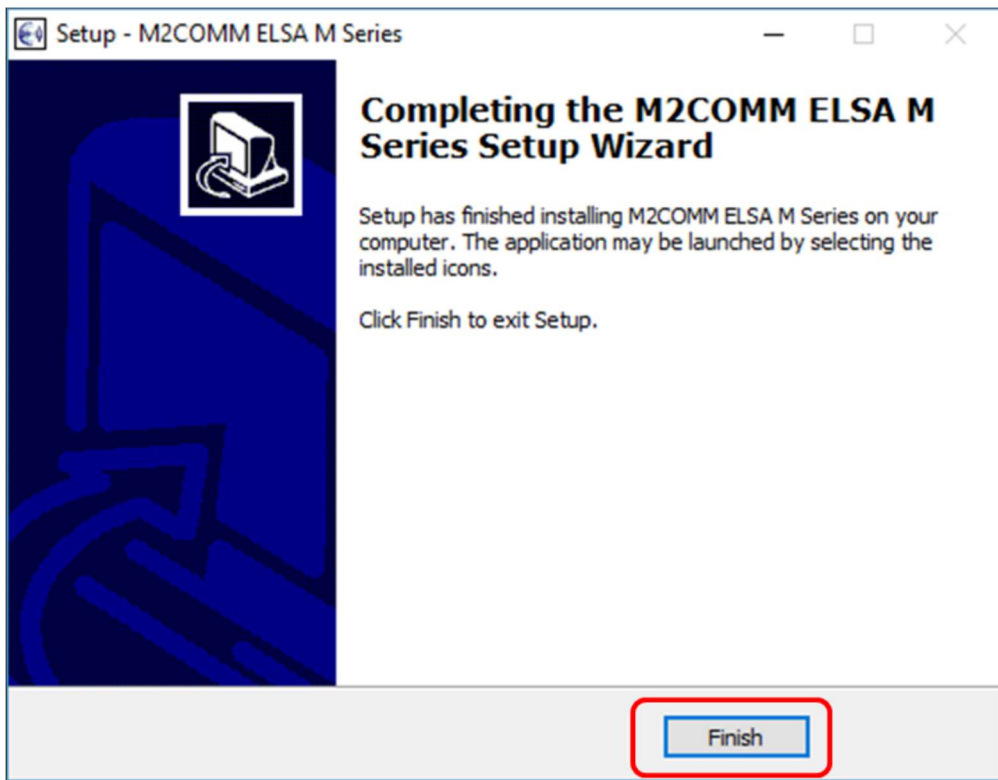
Click *Finish* to exit setup

The ASIA LIGHT Demo Web Portal has now been installed on your computer and you should now be able to locate his icon (for launching the application) on your computer screen.

You are now ready to launch the ASIA LIGHT Demo Web application.

Setting Up the Asia Light Web Portal

Ensure that your ASIA LIGHT Access Point is connected to your computer that the Router(s) and tags are installed throughout your premises and are powered on.
NOTE: All tags must be "awake" prior to starting the ASIA LIGHT web portal for the first time.

ASIA LIGHT Start-Up Tasks
On your desktop double-click on the M2COMM ASIA LIGHT icon to launch the application service.
These next few tasks will only need to be performed the first time you access the ASIA LIGHT Web Portal and are required to enable system device deployment.
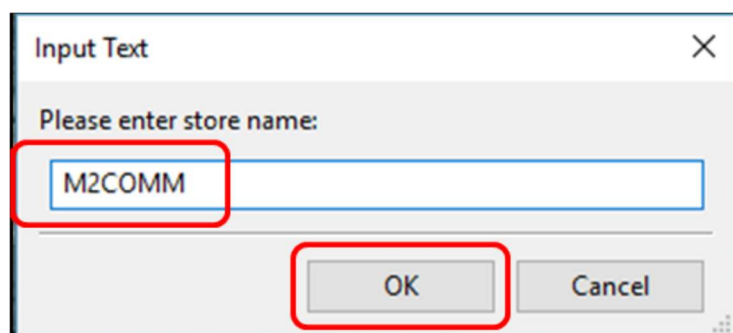
Please type in the name of your business, store, premises, etc and click **OK** to continue.
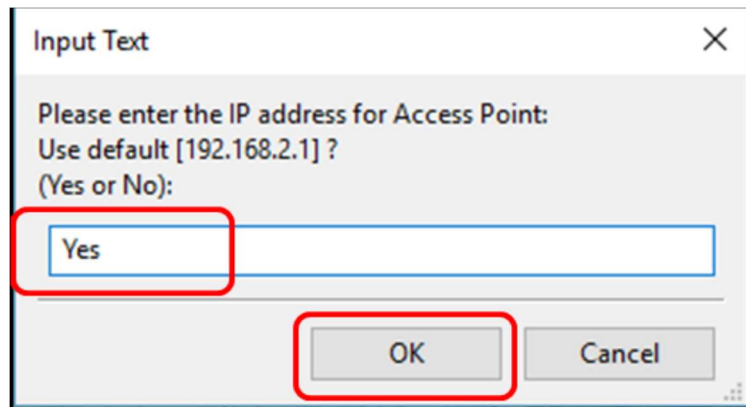
NOTE: Your computer has already been configured to work with the default setting for the Access Point (see *Computer Configuration for System Installation* Section 0).

Type **Yes** and click **OK** to continue

Note: If your computer IP has not been changed to match the default requirements or if you select **No** to the above then the installation will stop.

Before the Web Portal service begins you may receive a Windows Security Alert pop-up as shown below
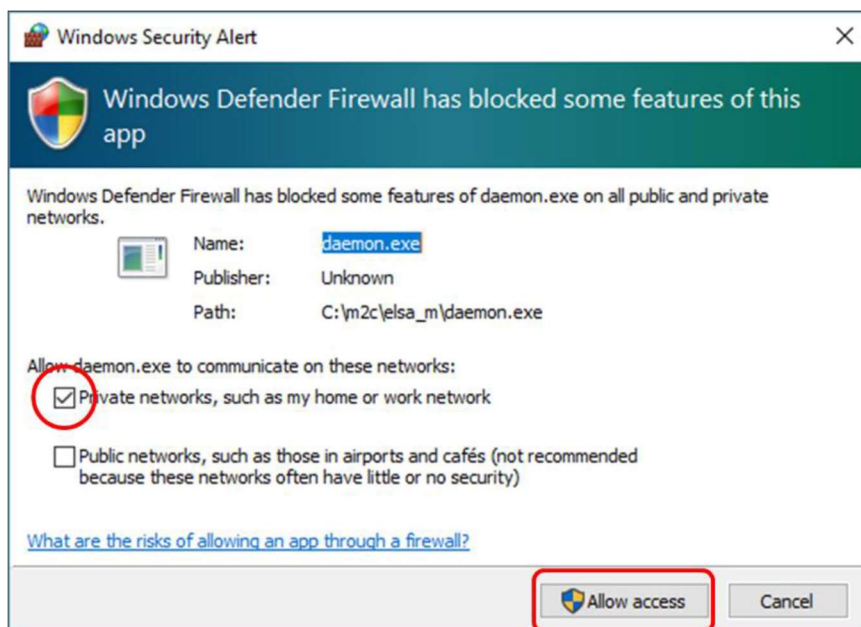
Please check the box for Private networks and then "Allow access"

On your computer desktop locate the hidden icons on your Windows task bar, (the up arrow in the bottom right corner of your screen)
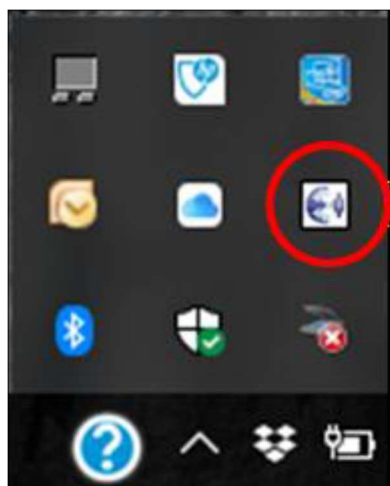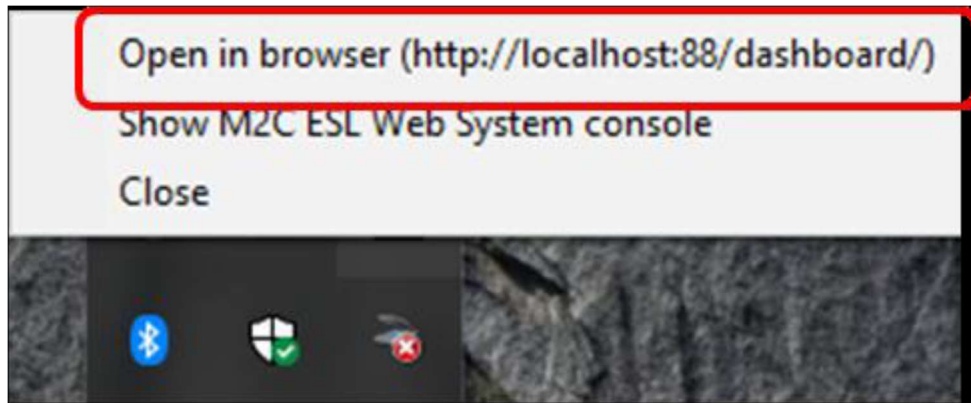
Using your mouse, right click the icon and select *Open in browser (http://localhost:88/dashboard/),* the ASIA LIGHT web browser login page will now appear on your screen.

ASIA LIGHT Web Portal Login
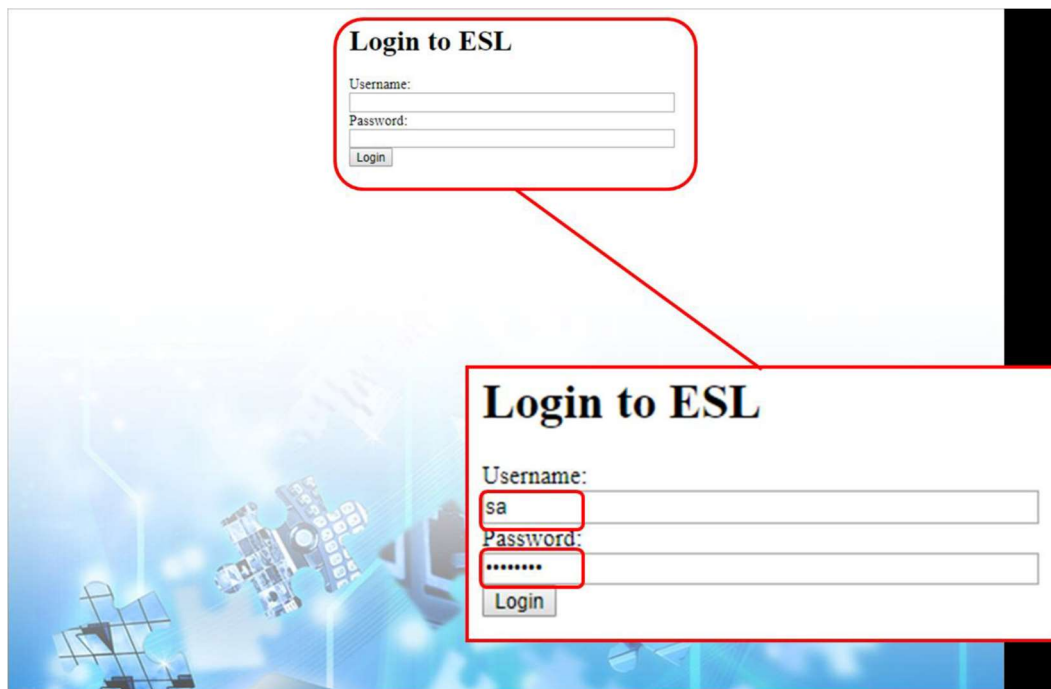
ASIA LIGHT has three user profiles available for granting or restricting access to areas of the application.
Super Admin
Default Username: **sa**
Default Password: **passw0rd**
We recommend that the username and password be changed as soon as possible after logging into the system, for details on how to change username and password refer to **Changing Your Password** (APPENDIX-B) of this manual

Admin
Default Username: **admin**
Default Password: **admin**
We recommend that the username and password be changed as soon as possible after logging into the system, for details on how to change username and password refer to *Changing Your Password* (APPENDIX-B) of this manual

User
Users have limited access to the system, with some areas being completely off-limits.
Usernames and passwords are set by *Super Admin* and cannot be changed by User

The following table shows the default privileges of each of the three user profiles.

		Super Admin	Admin	User
Maintenance	System Commands	✓	✓	✗
	User account creation and/or password change	✓	✗	✗
	Database Backup	✓	✓	✗
	Tag Behavior	✓	✓	✗
	Email Settings	✓	✓	✗
Inventory	New Product	✓	✓	✓
	Delete	✓	✓	✓
	Import	✓	✓	✓
	Back-up to file	✓	✓	✓
ESL Management	Push	✓	✓	✓
	Query	✓	✓	✓
	Reboot	✓	✓	✗
	Battery Threshold	✓	✓	✗
	Image Push	✓	✓	✗
	Show Barcode	✓	✓	✓
	Delete	✓	✓	✗
	Disassociate	✓	✓	✓
	Import Association	✓	✓	✓
	Sync Database	✓	✓	✓
	Barcode Association	✓	✓	✓
Layout	Export Layout Profile	✓	✓	✗
	Import Layout Profile	✓	✓	✗
	Remove Profile	✓	✓	✗
	Generate Layout Preview	✓	✓	✗
	New Layout	✓	✓	✗
	Remove Selected Layout	✓	✓	✗
	Remove All Layouts	✓	✓	✗

It's recommended that the first time you login into the system that you use the pre-installed Super Admin profile.

The web portal will open in your browser; default page is System Overview as shown below;
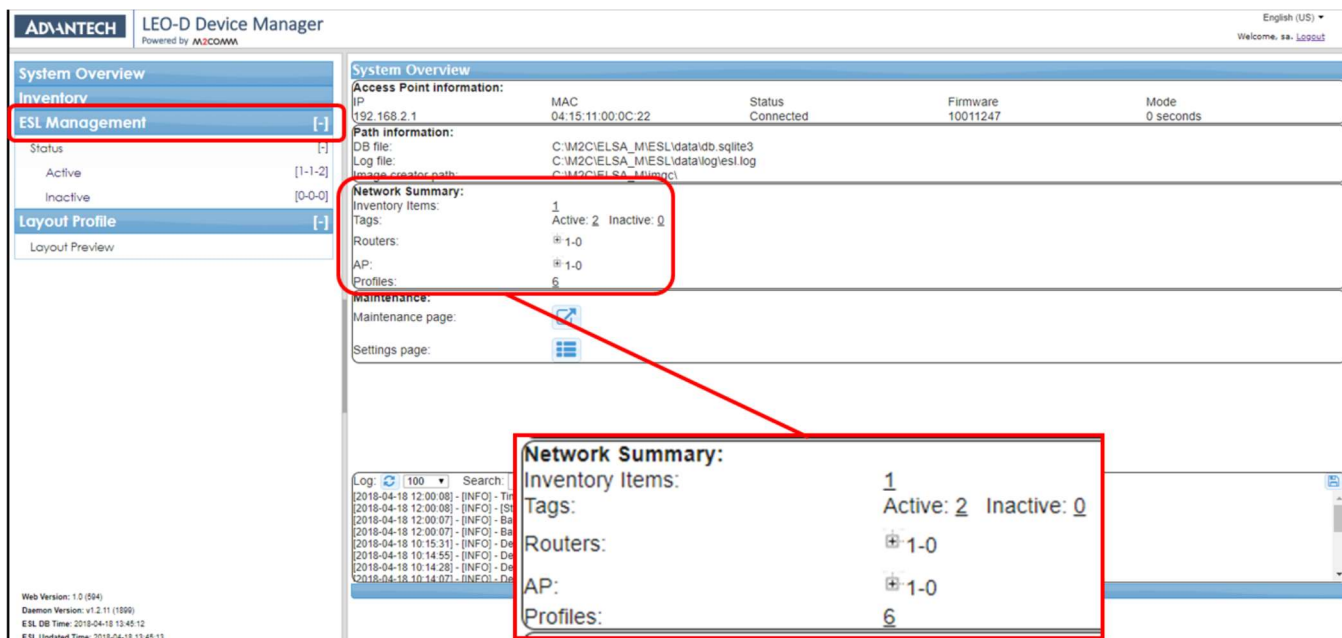
The Asia Light Access Point, Router(s) and Tags will auto-connect with the web portal and are shown under Network Summary. For detailed information of the hardware select the ESL Management tab.
To indicate that your tags have successfully connected to the ASIA LIGHT web portal the display will change
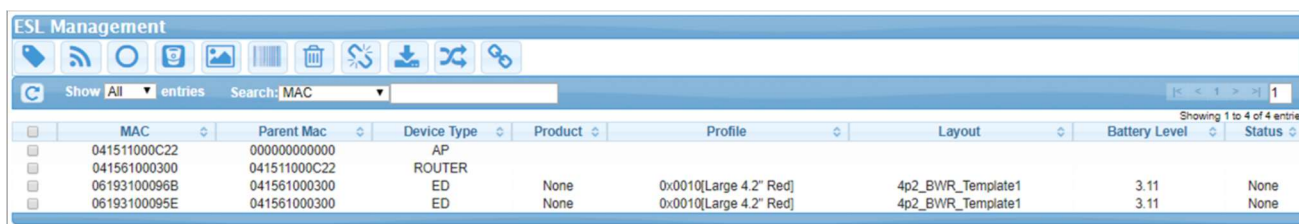
For the purposes of this guide we have created an ASIA LIGHT system that comprises;
1x AP (Access Point)
1x Router
2x ED (End Devices or Tags)
At this time no product has been associated with the tags, this will be covered in the next section.

LED Control Request

LED Control Response		
Attribute	**Format**	**Function**
id	Number	32 bits long number
type	String	"warehouse.led.control"
ledConfig	**Object**	**LED Configuration object**
color	String Array	Array of the following strings "BTN_RED", "BTN_BLUE", "BTN_GREEN", "CORNER_RED" EX. to turn on corner LED and red slick button set color to ["CORNER_RED", "BTN_RED"]
mode	String	"ON" / "OFF" / "BLINK-FAST" - blinks every 0.2 second "BLINK-NORMAL" - blinks every 1 second "BLINK-SLOW" - blinks every 5 seconds
data	Object Array	See follows
Key	String	Product key
result	String	"SUCCESS" / "FAIL"
result	String	"SUCCESS" / "FAIL" while checking "ledConf"

Example	{
	"id":1,
	"type":"warehouse.led.control",
	"ledConfig":{
	"color":["CORNER_RED","BTN_RED"],
	"mode":"BLINK-NORMAL"
	},
	"data":[{"key":"a001","result":"SUCCESS"},
	{...}
	],
	"result":"SUCCESS"}	

LED Control Response

Aislelight LED Control

User can control ALE LED of product by warehouse.ale.led.control
User select LED mode to determine blink method of LED, BLINK-SLOW is more power saving than others mode.

Aislelight LED Control Request		
Attribute	**Format**	**Function**
id	Number	32 bits long number
type	String	"warehouse.ale.led.control"
func	String	"MAC"
ledConfig	**Object**	**LED Configuration object**
color	String Array	Array of the following strings "ALE_RED", "ALE_BLUE", "ALE_GREEN", there are three LEDs which are different colors, RED, BULE, GREEN. each LED of ALE are controlled independently.
mode	String	"ON" / "OFF" / "BLINK-FAST" - blinks every 0.2 second "BLINK-NORMAL" - blinks every 1 second "BLINK-SLOW" - blinks every 5 seconds
data	String Array	Array of MAC address of ALE

Example	```{
	    "id": 1,
	    "type":"warehouse.ale.led.control",
	    "func":"MAC",
	    "ledConfig": [
	        { "color": "ALE_RED", "mode": "ON"}
	        ],
	    "data": ["041331000D21"]
	}```	

Aislelight LED Control Request

Attribute	Format	Function
— Aislelight LED Control Response		
id	Number	32 bits long number
type	String	"warehouse.ale.led.control"
ledConfig	Object	LED Configuration object
color	String Array	Array of the following strings "ALE_RED", "ALE_BLUE", "ALE_GREEN", there are three LEDs which are different colors, RED, BULE, GREEN. each LED of ALE are controlled independently.
mode	String	"ON" / "OFF" / "BLINK-FAST" - blinks every 0.2 second "BLINK-NORMAL" - blinks every 1 second "BLINK-SLOW" - blinks every 5 seconds
data	Object Array	See follows
Key	String	mac of aislelight
result	String	"SUCCESS" / "FAIL:cause"
result	String	"SUCCESS" / "FAIL" while checking "ledConf"

Example	<pre>{
	  "id": 1,
	  "type": "warehouse.ale.led.control",
	  "func": "MAC",
	  "ledConfig": [</pre>	

```
      {
        "color": "ALE_RED",
        "mode": "BLINK-NORMAL"
      }
    ],
    "data": [
      {
        "key": "041331000D21",
        "result": "SUCCESS"
      }
    ],
    "result": "SUCCESS"
}
```

Aislelight LED Control Response

Notification API
Users may setup a post server to receive notifications from the M2C Services.
This function currently only supports HTTP Posts with an "application/json" header

Setup Notification Server Request		
Attribute	**Format**	**Function**
id	Number (1 - 65535)	Job ID, used to track the job status
type	String	"system.config.notification"
config	Object Array	Detailed entries for each object are listed below
url	String	Notification Server URL
method	String	HTTP Method used. Currently support for "POST" only.

Example	{
	    "id": 1,
	    "type":"system.config.notification",
	    "config": {
	      "url":"http://localhost:10000",
	      "method":"POST"
	    }
	}	

FCC Statement:
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, 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 instructions, 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 the 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.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and a human body.