Remote connectivity is becoming more of a central theme in new machinery specification. With the advent of 3rd party remote access devices the OEM can deliver remote connections to all of their ABB hardware and thus support it from anywhere in the world.

Introduction
This application note details how the Secomea SiteManager 1149 can be used to remotely connect a collection of ABB devices and the settings that will have to be made in the remote connection gateway manager and the ABB devices to allow a connection. The SiteManager has connections for Devices over USB, Serial and Ethernet. For more information on available devices and to secure your domain certificates go to: https://secomea.com/contact/international-distributors/. Up to 5 connections can be served by the SM1149 unit in question though up to 25 can be served by other units.

Pre-requisites
You will need to have the following to work through this application note:

- Secomea Sitemanager 1149
- LinkManager software loaded onto your PC and a valid certificate to use it.
- Your PC must be Windows 7, 8.1 or Windows 10.
- You must disconnect any other VPN services that might be running on you PC before connection as this may will disrupt the redirection.

Plus the relevant programming software
- A PC or laptop running Automation Builder 1.2 with Panel Builder 2.0.1 or later
- A copy of Drive Composer Pro 1.12 or later.
- A working knowledge of the ABB software you will use to manage the connection.

Plus the relevant hardware
- An AC500 PLC
- A CP600 HMI
- A Nextmove e100 controller
- A working knowledge of the hardware you plan to connect to

Explanation of system
The concept we are discussing in this app note is that of a remote connection gateway manager device hosting a connection which will appear to the remote user as if it is a local connection to their PC. There are several steps to get to this connection such as user authentication, setting up the connections in the SiteManager and logging on but once these have been completed the system topology as shown below can be used for a remote connection.

The SiteManager has 3 methods of connection to local hardware devices;

- via the DEV1 Ethernet port,
- via the SERIAL port to wired RS232 or 422/485 devices
- via the USB ports connected to USB devices.

There must also be a connection to the web either via;

- a local wired connection to a the company network,
- a Wifi connection into the company network via the UPLINK1 port
- a 3G/4G signal (additional SIM card required installed within the unit).

Before installation

Before the installation can begin you will need a ‘domain confirmation email’ and a ‘LinkManager User Certificate’ from the IT Manager at the point of purchase, your local Secomea partner (https://secomea.com/contact/international-distributors). This will confirm that your domain has been set up on their server and what the domain information is. This will all be arranged with your local Secomea partner during you the purchase of the first SiteManager unit.

Initial setup

Below are the steps required to configure the SiteManager:

- Download the ‘Appliance Launcher’ from here; https://support.secomea.com/kb/downloads
- Connect to locally to UPLINK1 port of SiteManager (this must be on same subnet as PC)
- UPLINK1 Port should be connected to a network that has access to the web
- DEV1 (Ethernet), USB or SERIAL port should be connected to the device in question.
- Power up with 24v dc and wait 1 minute
- Start Appliance Launcher
- Search form the SiteManager (software will use MAC scan to detect) and click next from the list once it’s detected.
- Follow the Appliance Launcher set up (see the example below)

An example of a configuration of the SiteManager via Appliance Launcher is shown below;
DEV 1 just needs to match the subnet of your devices – here if we were connecting to a default AC500 PLC the settings shown would be correct.

In WAN2 settings you would need to enter the SSID and password if using Wifi.

UPLINK is normally left as default which is set to DHCP, occasionally the end user site might want to specify an IP address to use or proxy for the internet connection.

The GateManager parameters are:

- Hostname in this case is the Secomea host in the cloud provided, so it will always be GM04.SECOMEA.COM (just select the DNS button and type the address in)
- Domain Token will always be your domain, as confirmed by your local Secomea partner. It will be in the form [Local Secomea partner].[Your domain]
- Finally give your SiteManager a name that you will recognise in the LinkManager to log into, e.g. Project number, name of Customer, etc.

Once the configuration is complete, finish off the configuration by rebooting the device. If all the details entered are correctly then you should be able to access and reconfigure any of the settings as well as add devices via the LinkManager cloud service which we will cover in the next section.

Note: For the Secomea device we used for this application note the password is left at default which is the MAC Address 00C0A2011AF2. There is the option to change the password during the steps above. If it is lost you will need to send the device back to have the password reset.
Connecting to GateManager
As mentioned earlier once your domain is configured you will be sent a .gmc certificate along with logon credentials and a link to download LinkManager software which will need to be installed on the PC that requires the remote access.

Follow the steps below to contact and access the remote LinkManager cloud;

- Open the from Programs > LinkManager
- Icon will appear in the system tray
- Icon will go Green and Red once ready to connect
- Click on Icon – this will launch the (SiteManager GUI)
- LinkManager login page in your default browser
- Select the option ‘Certificates’

Then
- Enter the password that was selected during commissioning and then click on ‘Choose File’
- Point towards the .gmc certificate on your PC and select ‘Install’. This should now take you back the first login page
- You should now be able to select Login

You should now have access to the LinkManager Console. One the left you can see the Domain(s) you have access to and on the right you can see the connected Items in the selected domain;

In the example the domain token that was set up for is called AppliedAutomation.ABB so within the server – we have our own area for our devices to be connected and displayed. On the right you can see the connected Items in this domain - the PC that we dialled in with and the SiteManager named as we selected before; ABB_Secomea_1.
- Once we have gotten to this point we can now start adding connections to devices for remote access.

Adding connection agents to the SiteManager
Now we have a ‘remote’ connection to the SiteManager we can use it to configure the connections that it will serve to our PC. Though this is done via the cloud, these settings are being loaded into the SiteManager so all data and configuration is real time.

Please follow the steps below to configure the connections:

- In the LinkManager Domain window click on the globe icon next to the connect all icon.
- This should open a new web page within the LinkManager - Select Item 5. Device Agents from the list on the setup, which is named device agents, select the Fix or Edit button.
- On the next screen, select New.
- In the Device Name box give it a name eg “PLC”.
- Then select the Device Type – there are some ABB devices already installed in the unit (such as PLGs, Robots etc) but not all the ones we need are so some will need to be added via Custom (advanced) settings or scanning.
- Advanced settings can be accessed from a small list icon at the end of the row of the connection once added. The option is always in the same place regardless of protocol.

- The settings that can be made here for Ethernet are things such as:
  - Port forwarding
  - Setting the connection to always be live
  - Opening TCP, UDP or GTA ports
  - Enable WWW service – if device has a web page to allow access
  - Enable VNC (Virtual Network Computing) connection
  - Enable RDP (Remote Desktop Protocol) connection
  - Customer settings

- There are much fewer settings that can be made here for USB, these are done in the custom settings
  - From here you can change the data flow settings
  - You can use this to prioritise connection types

- Other than manually configuring these settings there is an inbuilt scanner utility to simplify this process that will detect any recognisable USB devices as soon as they are connected.
  - Devices detected will appear as ‘Unhandled xxx device’ in the ‘Device agents’ window when connected.
  - You can add items from here to the main list by using the ‘Add’ button.

Connecting to an AC500 PLC over Ethernet
To connect to an AC500 PLC remotely over Ethernet for remote programming only there is no special configuration required in the Automation Builder programming software as a selection of Device Type ABB and PLC will automatically open port 1201 which you need to establish a connection to the PLC. To configure the connection in the SiteManager make the settings shown below:

- Add a connection (as shown in section ‘Adding connection agents to the SiteManager’)
- Assign it a Device Name e.g. PLC
- Select Device type ABB and PLC from the drop down menus
- Go to advanced settings
- Then add the device address e.g. 192.168.0.10 (ABB default)
- Ensure Enable WWW service is ticked if you plan on using Web visualisations in the PLC.
- Press Save and the configuration is complete

If you wish to add a Mail server then the SMTP ports (or any other services that require ports to be opened) must be opened in ‘Extra Ports’ in advanced settings. As we can see from the AC500 SMTP Client, it uses port 25 so we must open this up for TCP and UDP communications in addition to the settings above.

To test the connection;
- connect the PLC to DEV1 port on the SiteManager
- Go to advanced settings
- Press the Ping Button at the bottom of the screen.
- You should get a response if the connection is good

Now the connection is configured you can set up a connection to the device;
- Go Back to the LinkManager web page
- We should see now that the connected PLC appears as a connection in the ABB_Secomea_1 SiteManager.
- We can now click on this PLC connection and the SiteManager will make this device available
- This connection is now available to be used with Automation Builder (you can quickly test this using the IP Configuration tool, when you scan you should see the remote PLC is visible)

Connecting to a CP600 HMI over Ethernet
To connect to a CP600 HMI over Ethernet for remote programming there is no special configuration required in the Automation Builder programming software as a selection of Device Type ABB and PLC will automatically open port 1201 which you need to establish a connection to the HMI. To configure the connection in the SiteManager make the settings shown below;

- Add a connection (as shown in section ‘Adding connection agents to the SiteManager’)
- Name it a Device Name e.g. HMI
- Select Device type ABB and PLC from the drop down menus
- Go to advanced settings
- Then add the device address e.g. 192.168.0.50 (configured on the unit)

- Ensure Enable VNC service is ticked if you plan on using remote VNC dial in to control and/or view HMI program.
- Press Save and the configuration is Complete

If you wish to add a Mail server then the SMTP ports (or any other services that require ports to be opened) must be opened in ‘Extra Ports’ in advanced settings. As we can see from the CP600 SMTP Client it uses port 25 so we must open this up for TCP and UDP communications in addition to the settings above.

Once these settings are saved we should end up with a connection as shown below.

To test the connection;

- Connect the HMI to DEV1 port
- Go to advanced settings
- Press the Ping button at the bottom of the screen.
- You should get a response if the connection is good

Now the connection is configured we can set up a connection to the device;

- Go back to the LinkManager web page
- We should see now that the connection HMI appears as a connection in the ABB_Secomea_1 SiteManager.

- We can now click on this HMI connection and the SiteManager will make this device available
- This connection is now available to be used with Panel Builder. We can quickly test this by going to the download tool and clicking the dropdown button. If detected the HMI should show up expressed as HMI@[IP Address].

- Once this connection is established you can download and manage the remote CP600 HMI.

If you wish to launch the CP600 webpage you can do this via clicking on the globe icon next to the connection.
This will launch device webpage in your browser

- Username is admin
- Password is admin
- From here you can manage the internal data of the HMI

If you wish to launch the CP600 VNC you can do this via clicking on the PC icon next to the connection

Many compatible VNC viewers are available for free download (for example, TightVNC). The viewer selected by the user should allow a remote connection to the HMIs running program.

Connecting to a MotiFlex e180 or MicroFlex e190 servo drive over Ethernet

In the following example a MotiFlex e180 drive is used as an example but the exact same steps can be followed for a MicroFlex e190 as well. To connect to an e180 servo drive remotely over Ethernet for remote programming and diagnostics there are a
few settings you must change in Workbench to avoid any problems in connection. As these settings are saved from your last connection in Workbench it’s best you make these settings when connected to another drive locally first, then disconnect and connect to the remote e180 using the new settings. The settings are as described below:

- Connect to local drive as per normal
- Right click in terminal window and change the update rates to 5000ms;

As there may be a delay in Ethernet communications the time outs governing these connections must be increased. To do this in Workbench go to Tools > Options > Timeouts Tab – Increase all Timeouts as shown below.

- Exit Workbench Project – don’t save

Once Workbench is ready to connect we can go about setting up our connection in the SiteManager. To do this make the settings shown below;

- Add a connection (as shown in section ‘Adding connection agents to the SiteManager’)
- Name it a Device Name e.g. e180
- Select Device type ABB and PLC from the drop down menus
- Go to advanced settings
- Then add the device address e.g. 192.168.0.1 (to match the default e180 configuration)

Ensure Enable WWW service is ticked if you plan on using the e180 web pages.
- Press Save and the configuration is Complete

Once these settings are saved we should end up with a connection as shown below.

To test the connection;
- connect the Drive to DEV1 port
- Go to advanced settings
• Press the Ping Button at the bottom of the screen.
• You should get a response if the connection is good

Now the connection is configured you can set up a connection to the device;
• Go Back to the LinkManager Webpage
• We should see now that the connection PLC appears as a connection in the ABB_Secomea_1 SiteManager.

• We can now click on this connection and the SiteManager will make this device available
• This connection is now available to be used with Workbench

To connect to the e180 follow the steps below;
• Ping device from the Windows Menu;

• A response should be seen;

• Open Workbench
• Start Online Project
• Currently we cannot add the LinkManager adapter to the workbench Ethernet settings so we have to add the controller manually. To do this go to ‘Add Specific controller’ in the ‘Select connection’ window.
• Enter the settings below;

• Click on the ‘MotiFlex e180 on 192.168.0.1’ that now should appear in the list
- Connection may take a short while but should connect.
- This connection is now ready to be used for remote connection and diagnostics

If you wish to launch the e180 webpage you can do this via clicking on the Globe icon next to the connection

- This will launch device webpage in your browser
- From here you can manage the internal data and diagnostics of the e180

Connecting to an ESB-2, e100 and e150 range of Motion products over USB
A wide range of ABB motion products have a USB port on them including Nextmove ESB-2, NextMove e100, MicroFlex e100, MicroFlex e150). In the below example we are using the example of connecting a Nextmove e100 though this connection will work for any ABB motion product that supports USB.

To connect to a NextMove e100 remotely over USB there are a few settings you must change in Workbench to avoid any problems. As these settings are saved from your last session in Workbench its best you make these settings when connected to any device locally first, then disconnect and connect to the remote e180 as using the new settings. The settings are as described below:

- Connect to local drive as per normal
- Right click in terminal window and change the update rates to 5000ms;
- As there may be a delay in USB communications the time outs governing these connections must be increased. To do this in Workbench go to Tools > Options > Timeouts Tab – Increase all Timeouts as shown below.
- Exit Workbench Project – don’t save

Once workbench is ready to connect we can go about setting up our connection in the SiteManager. To do this make the settings shown below;

- Add a connection (as shown in section ‘Adding connection agents to the SiteManager’)
- Name it a Device Name eg NextMove
- Select Device type Custom and USB from the drop down menus
- Go to advanced settings
- Then add the USB Vendor:Product ID: type ‘12AF:0001’. 12AF is the vendor ID for ABB Motion products and ID 0001 is correct for all e100 products (0003 for e150 products).
- In Custom settings type ‘|all’. This will attempt optimization of data flow in both directions
- Press Save and the configuration is Complete

Once these settings are saved we should end up with a connection as shown below.

NB: The connection as configured above will work for any e100 product connected over USB.

Now the connection is configured you can set up a connection to the device;
Go Back to the LinkManager Webpage
We should see now that the connection Nextmove appears as a connection in the ABB_Secomea_1 SiteManager.

We can now click on this connection and the SiteManager will make this device available. After a few seconds out PC should show that the device has been recognised.

This connection is now available to be used with Workbench.

To connect to the Nextmove follow the steps below:
- Open Workbench
- Select ‘Start Online Project’
- Click on the ‘NextMove e100B on USB node 1’ that now should appear in the list

Connection may take a short while but will connect.
This connection is now ready to be used for remote connection and diagnostics.

This connection can also be used for a redirected connection to EPL slaves connected to the master.
- To use this open Mint Machine Centre – go to USB and click Scan

Then any drives connected to the NextMove e100’s EPL network should appear and can be connected to.

Connecting to an ACSx80 Drive via a USB connection on the BCBL-01
In the below example we are using an ACS380 though this connection will work for any drive in the ACSx80 product range (ACS380, ACS580 and ACS880). The cable we are using; the BCBL-01 is a USB to serial converter with an RJ45 connector on the end to connect directly with the drive.

Note: We cannot currently connect via the USB port on ACS-CPI keypad as we cannot adjust the timeouts for this device.

To connect to an ACS380 remotely over USB we must ensure that our PC has the driver installed for the BCBL-01.

- To do this simply plug it in to your PC and the drivers will install. If you experience any problems ensure you are connected to the internet and try again.
- Once installed we will need to change the driver settings to accommodate the delays incurred by a remote connection. To do this we must open Control Panel > System > Device Manager and navigate to the ‘Ports’ section and look for ‘USB serial port’
- Click on the USB serial port and go to advanced;
- From here you can configure the operation of the USB to serial converter. Set the number of transmit and receive bytes to 64, Latency timer to 30ms and the Min Read and write Timeouts to 1500ms;
- Accept all changes and close the dialog boxes

We are now ready to configure the BCBL-01 in the SiteManager so disconnect it from your PC.

Next we must configure our SiteManager connection. To do this make the settings shown below;

- Go to SiteManager Agents page (as shown in section ‘Adding connection agents to the SiteManager’)
• Plug BCBL-01 into either USB port on the SiteManager
• Press Refresh
• Device should appear as an Unhandled USB Device (showing the FTDI default values)

![USB Device Table]

• Click ‘Add’
• This will move it into the list below as a CUSTOM USB Device

It will automatically add the correct settings for the USB Vendor: Product ID: type of ‘0403:6001 |all’. 0403 is the vendor ID for ABB Drive products and ID 6001 is correct for the BCBL-01. If it does not add this data manually as shown above.
• Name it in ‘Device Name’ eg ACSx80
• Add ‘ACS380 drive’ in Comment
• Press Save and the configuration is Complete
• Once these settings are saved we should end up with a connection as shown below.

![Device Configuration]

Now the connection is configured you can set up a connection to the device;
• Go Back to the LinkManager Webpage
• We should see now that the connection ACx380 now appears as a connection in the ABB_Secomea_1 SiteManager.

![Connection Status]

• We can now click on this connection and the SiteManager will make this device available.
• This connection is now available to be used with Drive Composer on your PC

Connecting to an ACSx80 Drive over Ethernet
To connect to an ACS880 drive remotely over Ethernet there are no special settings that have to be made in Drive Composer. However the drive does require that a FENA-x1 Ethernet module be added and configured. In the below instance the module is fitted in Slot B and is a FENA-21.

- Fit FENA-21 module
- Power drive up
- Enable slot

- Configure address eg 192.168.0.40

Once Drive Composer Pro is ready to connect we can go about setting up our connection in the SiteManager. To do this make the settings shown below;

- Add a connection (as shown in section ‘Adding connection agents to the SiteManager’)
- Name it a Device Name e.g. ACS880
- Select Device type ABB and PLC from the drop down menus
- Go to advanced settings
- Then add the device address e.g. 192.168.0.40 (To match ACS880 configuration)

Ensure Enable WWW service is ticked if you plan on using the FENA-x1 webpage.

Press Save and the configuration is Complete

To test the connection;

- connect the Drive to DEV1 port
- Go to advanced settings
- Press the Ping Button at the bottom of the screen.
- You should get a response if the connection is good

Now the connection is configured you can set up a connection to the device;

- Go Back to the LinkManager Webpage
- We should see now that the connection PLC appears as a connection in the ABB_Secomea_1 SiteManager.

We can now click on this connection and the SiteManager will make this device available. The FENA-21 module should show active communications;
This connection is now available to be used with DriveComposerPro

To connect to the ACS880 follow the steps below:

- Ping device from the Windows Menu;
- A response should be seen;
- Open DriveComposer Pro
- Start Online Project - This will connect to the drive over Ethernet
- Connection may take a short while but should connect.
- This connection is now ready to be used for remote connection and diagnostics

If you wish to launch the ACS880 webpage you can do this via clicking on the Globe icon next to the connection

- This will launch device webpage in your browser
- From here you Default user name: Admin.
- Password: The last six digits of the MAC ID of the adapter module, without hyphens.

**Connecting multiple devices at once**

It is common that a connection to all of the hardware on the machine is beneficial simultaneously, in this case we have all or some of the 5 devices available to connect to.
To provide a simultaneous connect to multiple devices we must simply connect them all to the SiteManager and then select the option for ABB_Secomea_1 <Connect all>.

In this instance we can see that the CP600 HMI, ACS380 and NextMove e100 are all available to connect at the same time;

It should be noted that connecting multiple devices at once will effect the delays in the connections provided by the SiteManager.

**Note on emails**

Once the email system is set up it’s worth sending a test email to see how your mail system accepts the email – as it’s not from a ‘trusted source’ it may be possible it will end up in your junk email folder – if this is the case then please create an exection for emails from this source.

**Contact us**

For more information please contact your local ABB representative or one of the following:

new.abb.com/motion  
new.abb.com/drives  
new.abb.com/drivespartners  
new.abb.com/PLC

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