

CONTROLLER CONNECTION EXAMPLES



In this Chapter...

CLICK PLC Connection via Cellular Router SE-SL3011-4GG	3-2
Before You Begin	3-2
Setup	3-2
BRX PLC Connection via WiFi Router SE-SL3011-WF	3-5
Before You Begin	3-5
Setup	3-5
C-more® HMI Connection via Wired Router SE-SL3011	3-9
Before You Begin	3-9
Setup	3-9

CLICK PLC Connection via Cellular Router SE-SL3011-4GG

The cellular StrideLinx VPN router is a valuable option when:

- There is no existing internet available at the remote site, or
- The network policies at the remote site prohibit connection of third-party devices. Although the StrideLinx solution is IT friendly, using only outbound request for connection, it may be the case that local policies prohibit any such connection.

In such cases, if an AT&T phone can get a signal at the location of the router, your SE-SL3011-4GG router can provide you the remote access you need.

This example will step you through connecting to a CLICK PLC via the cellular router, model SE-SL3011-4GG



NOTE: Regarding Ethernet access to a CLICK PLC

If you intend to take advantage of any methods of remote access to the PLC, you need to consider the security exposure in order to minimize the risks to your process and your PLC.

Security should always be carefully evaluated for each installation. Refer to the "Security Considerations for Control Systems Networks" section of Appendix B.

Before You Begin

1. Locate the Enabling Elements SIM kit provided with the router.
2. Know your CLICK network settings.
3. Have your SE-SL3011-4GG router, LTE antennas and USB stick available.

Setup

Remember that you can't browse across the VPN to the router's LAN network, so the CLICK must be configured and the network settings known before you configure your router.

Configure the CLICK Network Settings

For our example, we'll configure CLICK as follows:

- IP Address: 192.168.140.19
- Subnet mask: 255.255.255.0
- Default Gateway: 192.168.140.1 (the router's LAN IP address) This must be on the same subnet as the CLICK

1. In the CLICK software, select Setup > Com Port Setup > Ethernet Port 1 Setup (button) and enter the IP address, subnet mask and default gateway settings.

Com Port Setup Details

Port: Port1 Protocol: Modbus

Network Address Configuration

Use default fixed address

Set manually

IP Address: 192 . 168 . 140 . 19

Subnet Mask: 255 . 255 . 255 . 0

Default Gateway: 192 . 168 . 140 . 1

Wiring Details

Port1 Ethernet (Non isolation)

8 pin female modular (RJ45)

Note: This port works with both patch (straight) and cross cables.

Configuration as Client (Master)

Timeout(0-30000ms): 1000 ms

Retries(0-10): 2

Server Inactivity Timeout(0-3600sec): 60 sec

Configuration as Server (Slave)

TCP Port Number(0-65535): 502

Maximum Concurrent Sessions: 3

Client Inactivity Timeout(0-3600sec): 60 sec

OK Cancel Help

2. Click OK in the setup dialog and the subsequent dialog.
3. Write the project to the PLC.

Configure Your SE-SL3011-4GG Router

1. Activate the Enabling Elements SIM kit provided with the router through <https://enablingelements.com/stridelinx/>.

Steps 2 through 16 are outlined in detail in Chapter 2. If you have already completed router activation, please proceed to step 17.

2. Create your StrideLinx account at www.StrideLinx.com, as discussed in Chapter 2.
3. From **Fleet Manager**, select **Tools** in the left menu, and select **[Start configuration]** on the **Router config file** card.
4. Select the connection type “**Cellular network**”.
5. Enter the provider’s **APN** and the SIM card’s **PIN code** (if applicable).

6. When using a cellular connection, the **IP address** and **DNS server** will be automatically assigned via DHCP, and **HTTP Proxy** will be disabled.
7. **Local control over remote accessibility**, if enabled, will allow you to enable/disable the VPN connection via a wired digital input on the router. Wiring details are in Chapter 1.
8. Enter a **unique IP address** for the LAN side of the router (machine network). This must match the default gateway entered in the CLICK PLC setup (192.168.140.1 in this example).
9. Click [**Download file**] to download the generated file and save it to the root directory of a USB flash drive. Note that the filename on the USB drive must be exactly **router.conf** with no added characters, in case your browser added a suffix.
10. **Install** the VPN Client on your PC. (This step must be repeated for any new PC where you will use your StrideLinx account.)
11. **Mount** and **wire** your SE-SL3011-4GG router, and **connect** the LTE antenna.
12. **Power on** your StrideLinx router.
13. **Insert** the **USB flash drive** into the StrideLinx router's USB port.
14. Wait around **2 minutes** for the StrideLinx router to configure and register itself. After the router is successfully registered and connected to the StrideLinx Cloud, the Status LED will be on steady blue and the Signal LED will be on steady blue/violet/red depending on network signal strength.



NOTE: It's best practice to remove the config file from the USB after the router has been registered so that on power up the router boots from the current configuration rather than the initial configuration.

15. From **Fleet Manager**, select **Devices** , and look for a yellow bar at the top of your devices list, saying "New device". It also mentions your router's serial number (e.g. 17055202), which you can verify with the serial number on the side of the router. This yellow bar also shows up in the StrideLinx Portal app.
16. Click the yellow bar, name your device as you see fit and select [**Activate**].
17. Now, your router will appear in the Devices list in your StrideLinx account.
18. Select the router from the list of devices, then click the CONNECT icon.

Configure the CLICK Software to Access the CLICK PLC via VPN

1. Open the CLICK software on your PC and select the "Connect to PLC" button.
2. Select Port Type = Ethernet and select the Outside this LAN radio button, then the Add... button.
3. Enter a Link Name and the CLICK IP address defined previously (192.168.140.19 in this example), then click OK.
4. Highlight your target CLICK in the devices list, then click the CONNECT button.

You should now be successfully connected to the CLICK PLC from a remote PC through the VPN.

BRX PLC Connection via WiFi Router SE-SL3011-WF

The WiFi StrideLinx VPN router is a valuable option when:

- Client mode - Wired internet access is not available to the equipment panel, or would be impractical to install.
- Access point mode - VPN connections to multiple devices is desired without wiring Ethernet cable to each.
- Client mode - Local operators want to limit access to a machine network by using their smartphone as a WiFi hotspot. This allows the StrideLinx WiFi router to connect as a client and establish a VPN connection to the StrideLinx Cloud on an as-needed basis.

This example will step you through connecting to a BRX PLC via the WiFi router, model SE-SL3011-WF, in client mode. Internet access will be via the WiFi connection, and the BRX PLC will be connected to a LAN port on the router. The router's Ethernet WAN port will be disabled.



NOTE: Regarding Ethernet access to a BRX PLC

If you intend to take advantage of any methods of remote access to the PLC, you need to consider the security exposure in order to minimize the risks to your process and your PLC.

Security should always be carefully evaluated for each installation. Refer to the "Security Considerations for Control Systems Networks" section of Appendix B.

Before You Begin

1. Know your BRX network settings
2. Know the SSID and password for the WiFi access point at your BRX location
3. Have your SE-SL3011-WF router, WiFi antenna and USB stick available

Setup

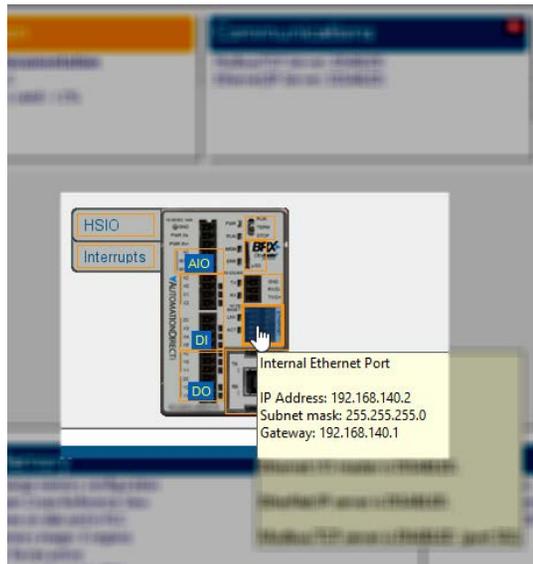
Remember that you can't browse across the VPN to the router's LAN network, so the BRX PLC must be configured and the network settings known before you configure your router.

Configure the BRX PLC Network Settings

For our example, we'll configure BRX PLC as follows:

- IP Address: 192.168.140.19
- Subnet mask: 255.255.255.0
- Default Gateway: 192.168.140.1 (the router's LAN IP address) This must be on the same subnet as the BRX PLC

1. In the Do-more! Designer software, connect to your BRX PLC.
2. Click on the ethernet port in the image of your PLC on the Do-more! Designer dashboard, select “Edit IP configuration” and enter the IP address, subnet mask and default gateway settings.

A screenshot of the 'Setup Node and IP Address' dialog box. The dialog has a title bar with a close button. It contains the following fields:

- Module ID: 0
- Name: H1-DM1x
- Description: Do-more PLC!
- IP Address: 192 . 168 . 140 . 2
- Subnet Mask: 255 . 255 . 255 . 0
- Gateway: 192 . 168 . 140 . 1

A note at the bottom right reads: "NOTE: For CPUs without an Ethernet port, these fields aren't used for configuration, but are still available as variables in status memory and can be used for identification." The OK button is highlighted with a mouse cursor.

3. Click OK in the setup dialog.
4. Write the project to the PLC.

Configure Your SE-SL3011-WF Router

1. Create your StrideLinX account at www.StrideLinX.com, as discussed in Chapter 2. *Steps 2 through 15 are outlined in detail in Chapter 2. If you have already completed router activation, please proceed to step 16.*
2. From **Fleet Manager**, select **Tools**  in the left menu, and select **[Start configuration]** on the **Router config file** card.
3. Select the connection type “**Wireless network**”.
4. Enter the **Network name (SSID)** and **Password** for your wireless network.
5. When using a wireless connection, the **IP address** and **DNS server** will be automatically assigned via DHCP, and **HTTP Proxy** will be disabled.
6. **Local control over remote accessibility**, if enabled, will allow you to enable/disable the VPN connection via a wired digital input on the router. Wiring details are in Chapter 1.
7. Enter a **unique IP address** for the LAN side of the router (machine network). This must match the default gateway entered in the BRX PLC setup (192.168.140.1 in this example).
8. Click **[Download file]** to download the generated file and save it to the root directory of a USB flash drive. Note that the filename on the USB drive must be exactly **router.conf** with no added characters, in case your browser added a suffix when saving the file.
9. **Install** the VPN Client on your PC. (This step must be repeated for any new PC where you will use your StrideLinX account.)
10. **Mount** and **wire** your SE-SL3011-WF router, and **connect** the WiFi antenna.
11. **Power on** your StrideLinX router.
12. **Insert** the **USB flash drive** into the StrideLinX router’s USB port.
13. Wait around **2 minutes** for the StrideLinX router to configure and register itself. After the router is successfully registered and connected to the StrideLinX Cloud, the Status LED will be on steady blue.



NOTE: It's best practice to remove the config file from the USB after the router has been registered so that on power up the router boots from the current configuration rather than the initial configuration.

14. From **Fleet Manager**, select **Devices** , and look for a yellow bar at the top of your devices list, saying “New device”. It also mentions your router’s serial number (e.g. 17055202), which you can verify with the serial number on the side of the router. This yellow bar also shows up in the StrideLinX Portal app.
15. Click the yellow bar, name your device as you see fit and select **[Activate]**.
16. Now, your router will appear in the Devices list in your StrideLinX account.
17. Select the router from the list of devices, then click the CONNECT icon.

Configure the Do-more! Designer Software to Access the BRX PLC via VPN

1. Open the BRX Do-more! Designer software on your PC and select “New Link” from the Links panel on the lower left of the Launchpad tab.
2. Click the “Link Editor...” button.
3. Select the PLC family (Do-more! BRX Series in this example) and PLC Type.
4. Click the “Port” tab, select Ethernet and enter the BRX IP address defined previously (192.168.140.19 in this example).
5. Enter a Name and Description for this PLC link, then click ACCEPT.
6. Double-click the new entry in the Links list to connect to the BRX PLC.

You should now be successfully connected to the BRX PLC from a remote PC through the VPN.

C-more® HMI Connection via Wired Router SE-SL3011

The wired StrideLinx VPN router is a valuable options when:

- Adding a third-party device to the remote network is permitted.

This example will step you through connecting to a *C-more* HMI via the wired router, model SE-SL3011. Internet access will be via the wired WAN connection, and the *C-more* HMI will be connected to a LAN port on the router.



NOTE: Regarding Ethernet access to a C-more panel

If you intend to take advantage of any methods of remote access to the panel, you need to consider the security exposure in order to minimize the risks to your process and your C-more panel.

Security should always be carefully evaluated for each installation. Refer to the "Security Considerations for Control Systems Networks" section of Appendix B.

Before You Begin

1. Know your *C-more* network settings.
2. Have your SE-SL3011 router and USB stick available.
3. Have an established StrideLinx Cloud account set up.

Setup

Remember that you can't browse across the VPN to the router's LAN network, so the *C-more* HMI must be configured and the network settings known before you configure your router.

Configure the C-more HMI Network Settings

For our example, we'll configure *C-more* HMI as follows:

- IP Address: 192.168.140.19
 - Subnet mask: 255.255.255.0
 - Default Gateway: 192.168.140.1 (the router's LAN IP address) This must be on the same subnet as the *C-more* HMI
1. In the *C-more* HMI panel setup software, select Setup > Touch Panel Network > Ethernet Port.
 2. Check Save Settings to Project, and select the Use the following IP address radio button.
 3. Enter the network settings shown at the beginning of this example, and select OK.
 4. Select SEND project to *C-more* panel.

Configure Your SE-SL3011 Router

1. Create your StrideLinx account at www.StrideLinx.com, as discussed in Chapter 2. *Steps 2 through 14 are outlined in detail in Chapter 2. If you have already completed router activation, please proceed to step 15.*
1. From **Fleet Manager**, select **Tools**  in the left menu, and select **[Start configuration]** on the **Router config file** card.
2. Select the connection type “**Wired network**”.
3. Enter the details for how your StrideLinx router will connect to the internet. In most cases, you can **obtain an IP address automatically, automatically assign your DNS server via DHCP**, and leave **HTTP Proxy disabled**. If you will be using port forwarding, though, we strongly advise you to configure a static IP address. Configuring a static IP address will also require that you set a custom DNS server. If you are unsure about what to configure or enter, please consult the local IT administrator.
4. **Local control over remote accessibility**, if enabled, will allow you to enable/disable the VPN connection via a wired digital input on the router. Wiring details are in Chapter 1.
5. Enter a **unique IP address** for the LAN side of the router (machine network). This must match the default gateway entered in the *C-more* HMI setup (192.168.140.1 in this example).
6. Click **[Download file]** to download the generated file and save it to the root directory of a USB flash drive. Note that the filename on the USB drive must be exactly **router.conf** with no added characters, in case your browser added a suffix when saving the file.
7. **Install** the VPN Client on your PC. (This step must be repeated for any new PC where you will use your StrideLinx account.)
8. **Mount** and **wire** your SE-SL3011 router, and **connect** Ethernet cables.
9. **Power on** your StrideLinx router.
10. **Insert** the **USB flash drive** into the StrideLinx router’s USB port.
11. Wait around **2 minutes** for the StrideLinx router to configure and register itself. After the router is successfully registered and connected to the StrideLinx Cloud, the Status LED will be on steady blue.



NOTE: It's best practice to remove the config file from the USB after the router has been registered so that on power up the router boots from the current configuration rather than the initial configuration.

12. Activate the router.
13. Now, your router will appear in the Devices list in your StrideLinx account.
14. Select the router from the list of devices, then click the CONNECT icon.

Configure the C-more Programming Software to Access the C-more Panel via VPN

1. Open the **C-more** software on your PC and select “Read From Panel”.
2. Select the Ethernet radio button and click Browse.
3. Click the Remote Link List tab, then the Add... button.
4. Enter a Link Name (for identifying the panel in this list only) and the **C-more** IP address defined previously (192.168.140.19 in this example), then click OK.
5. Highlight your target **C-more** panel in the devices list, then click the CONNECT button.

You should now be successfully connected to the **C-more** HMI panel from a remote PC through the VPN.