Moxa Remote Connect Gateway
User’s Manual

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The MRC gateway is a 2-port Ethernet device that creates a connection between Ethernet equipment installed at a remote site and the Moxa Remote Connect Platform. The remote connection normally occurs between a SCADA server and a device that belongs to a service engineer.
The MRC gateway supports a power input range from 12 to 36 VDC. Please ensure you use the correct power supply to power on the gateway. The MRC gateway also has an embedded DIN-rail mounting kit to allow the device to be mounted on a DIN-rail.
## LED Indicators

<table>
<thead>
<tr>
<th>LED Symbol</th>
<th>LED Name</th>
<th>Color</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="USB" /></td>
<td>USB</td>
<td>Green</td>
<td>Steady On: USB device is connected and working Off: USB device is not connected</td>
</tr>
<tr>
<td><img src="image" alt="Power" /></td>
<td>Power</td>
<td>Green</td>
<td>Steady On: The gateway is powered on Off: The gateway is powered off</td>
</tr>
<tr>
<td><img src="image" alt="Internet" /></td>
<td>Internet</td>
<td>Green</td>
<td>Off: WAN interface is not ready (DHCP failure, PPPoE failure, etc.) Blinking: Testing the Internet connection Steady On: Internet is available</td>
</tr>
<tr>
<td><img src="image" alt="Cloud Server" /></td>
<td>Cloud Server</td>
<td>Green</td>
<td>Off: Not connected to the MRC Server Blinking: Gateway is testing the MRC Server connectivity Steady On: MRC Server is connected</td>
</tr>
<tr>
<td><img src="image" alt="Activation Key" /></td>
<td>Activation Key</td>
<td>Green</td>
<td>Off: There is no activation key inside the gateway Blinking: The activation key is invalid Steady On: The activation key is valid and the gateway is activated</td>
</tr>
<tr>
<td><img src="image" alt="VPN Tunnel" /></td>
<td>VPN Tunnel</td>
<td>Green</td>
<td>Off: The VPN tunnel is down and remote access is not supported Blinking: The gateway is trying to establish a VPN tunnel Steady On: The gateway has successfully established a VPN tunnel</td>
</tr>
<tr>
<td><img src="image" alt="SIM Card" /></td>
<td>SIM Card</td>
<td>Green</td>
<td>Off: No SIM card Blinking: SIM card error Steady On: SIM card is ready</td>
</tr>
<tr>
<td><img src="image" alt="Cellular Signal" /></td>
<td>Cellular Signal</td>
<td>Green</td>
<td>There are three LEDs that display the signal strength of the cellular device. 3 LEDs On: Best signal quality</td>
</tr>
</tbody>
</table>
### LED Indicators

<table>
<thead>
<tr>
<th>LED Symbol</th>
<th>LED Name</th>
<th>Color</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2 LEDs On: Normal signal quality</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1 LED On: Bad signal quality (may cause no Internet connection)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0 LED On: Very bad signal quality (no Internet connection)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ethernet Speed</td>
<td></td>
<td>Ethernet port is connected at 10M speed (amber) or 100M speed (green) speed</td>
</tr>
</tbody>
</table>
The following topics are covered in this chapter:

- RESET Button
- WAN/LAN Ethernet Ports
- USB Interface
- Digital Input and Digital Output
RESET Button

The RESET button can perform three functions depending on how long the button is depressed for.

<table>
<thead>
<tr>
<th>Operation</th>
<th>LED Behavior</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Press and release</td>
<td>One LED is blinking</td>
<td>Reboot the MRC gateway</td>
</tr>
<tr>
<td>between 1 to 5 seconds</td>
<td>( )</td>
<td></td>
</tr>
<tr>
<td>Press and release</td>
<td>Two LEDs are blinking</td>
<td>Reset the login account and password to factory default</td>
</tr>
<tr>
<td>between 6 to 10 seconds</td>
<td>( and ( ) )</td>
<td>(admin/moxa)</td>
</tr>
<tr>
<td>Press and release</td>
<td>Three LEDs are blinking</td>
<td>Reset all configurations and remove the activation key.</td>
</tr>
<tr>
<td>between 11 to 15 seconds</td>
<td>( , , and ( ) )</td>
<td>Note: If the RESET button is depressed for longer than 15 seconds,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the MRC gateway will reboot without changing any settings.</td>
</tr>
</tbody>
</table>

WAN/LAN Ethernet Ports

There are two Ethernet ports, WAN and LAN, on the MRC gateway. The WAN connects to the network that provides Internet access to the MRC Server and the LAN connects to the field devices that require monitoring or connections. Users can expand the number of LAN connections by adding a switch that provides more Ethernet ports.
USB Interface

The USB interface supports FAT/FAT32/NTFS-formatted USB dongles for key activation and tunnel connectivity control.

Digital Input and Digital Output

There is one DI and one DO on the bottom of the MRC gateway. The DI is used to control the connection for the tunnel to the MRC Server. The DO can be used as an alarm when the remote access tunnel is active.
The MRC gateway provides a secure web console to perform configurations. After you have connected a laptop to the LAN port, open your browser and type in the default web console address to access the web GUI: 
http://192.168.127.254

Default username: admin  
Default password: moxa

After you successfully login to the web console, you will see the management portal of the MRC gateway.
Click "Edit" to change the password.
The following topics are covered in this chapter:

- Activate a Gateway
- Activation Option #1
- Activation Option #2
- Activation Option #3
The MRC gateway has a wizard to assist users complete the configuration settings. There are three ways to connect your MRC gateway to the MRC server.

Activate a Gateway

Below are the three options to register the MRC gateway.

<table>
<thead>
<tr>
<th>Option</th>
<th>Scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1: I have an activation key</td>
<td>You get a string from the MRC server administrator in order to activate your gateway.</td>
</tr>
<tr>
<td>#2: I have an activation key in a USB storage device</td>
<td>You get a file from the MRC server administrator in order to activate your gateway.</td>
</tr>
<tr>
<td>#3: I do not have an activation key</td>
<td>You get activating information from the MRC server administrator to manually activate your gateway.</td>
</tr>
</tbody>
</table>

Activation Option #1

When choosing option 1, users need to copy the string (activation key) and paste it into the MRC gateway.
Moxa Remote Connect Gateway

Activation Wizard

When choosing Option #1, follow the wizard to finish the gateway activation.

Input the activation key.

Select the time zone where you will install the gateway.

On the last step, please click “Initialize Now” to activate your gateway. (Remember to first connect your gateway to the Internet.)
**Activation Option #2**

When choosing Option #2, the MRC gateway will execute the auto configuration exchange with the MRC server. Users should insert the USB drive that has the activation file stored on it. Then, follow the wizard to finish activating your gateway.

Confirm your USB dongle has the correct activation key installed.

Make sure that the USB Key is inserted to MRC-1002.

Select the time zone where you will install the gateway.
On the last step, please click “Initialize Now” to activate your gateway. (Remember to first connect your gateway to the Internet.)

**Activation Option #3**

When choosing option #3, you need to fill in all the necessary information retrieved from the MRC Server administrator step by step.
Step 1:

Input the MRC server IP address or domain name, service port, the Group Code, and a user-defined gateway name. The gateway name must be unique in the MRC server. If activation is not successful, it is possible that you registered your gateway with an existing name already stored in the MRC server. If you have any further issues please contact your MRC server administrator.

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Server IP Address/Port</td>
<td>The IP Address or the host domain name and the service port of the MRC server.</td>
</tr>
<tr>
<td>Group Code</td>
<td>The unique code to register the MRC gateway to the device group in the MRC server.</td>
</tr>
<tr>
<td>Gateway Name</td>
<td>The unique name of the MRC gateway within the same device group in the MRC Server.</td>
</tr>
</tbody>
</table>

NOTE  
The Group Code is provided by your MRC Server administrator. If you are the MRC Server administrator, please check “Group Code” in the MRC Server.

Step 2:

Choose the network scenario for your gateway’s Internet installation.
**Mode** | **Scenario**
---|---
WAN-LAN Mode | Connect an external ADSL modem, cable modem, or Internet WIFI router to establish remote access.
WAN-LAN Mode with NAT | Use the existing factory network to access the Internet in order to establish remote access. Keep the device communicating to the factory network by using NAT.
Transparent-LAN Mode | Use the existing factory network to access the Internet in order to establish remote access. Keep the LAN device communication transparent to the factory network.
Cellular-WAN Mode | Use cellular as Internet access. The two Ethernet ports are both LAN ports that can be used for connecting to local devices.

**Step 3:**

Select the Internet Access method for your MRC gateway.
WAN-LAN Mode, WAN-LAN Mode with NAT, Transparent-LAN Mode:
### Setting Static IP

<table>
<thead>
<tr>
<th>Internet IP Setting:</th>
<th>Static IP</th>
<th>DHCP</th>
<th>PPPoE</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP Address:</td>
<td>IP Address</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subnet Mask:</td>
<td>Subnet Mask</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gateway:</td>
<td>IP Address</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**DNS Server (Optional for DHCP or PPPoE)**

- **DNS Server1:** DNS Server IP Address
- **DNS Server2:** DNS Server IP Address
- **DNS Server3:** DNS Server IP Address

### Setting DHCP

<table>
<thead>
<tr>
<th>Internet IP Setting:</th>
<th>Static IP</th>
<th>DHCP</th>
<th>PPPoE</th>
</tr>
</thead>
</table>

**DNS Server (Optional for DHCP or PPPoE)**

- **DNS Server1:** DNS Server IP Address
- **DNS Server2:** DNS Server IP Address
- **DNS Server3:** DNS Server IP Address
### Setting PPPoE

<table>
<thead>
<tr>
<th>Internet IP Setting:</th>
<th>Static IP</th>
<th>DHCP</th>
<th>PPPoE</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>User Name:</th>
<th>PPPoE User Name</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Password:</th>
<th>PPPoE User Password</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Host Name:</th>
<th>PPPoE Host Name</th>
</tr>
</thead>
</table>

#### DNS Server (Optional for DHCP or PPPoE)

<table>
<thead>
<tr>
<th>DNS Server1:</th>
<th>DNS Server IP Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNS Server2:</td>
<td>DNS Server IP Address</td>
</tr>
<tr>
<td>DNS Server3:</td>
<td>DNS Server IP Address</td>
</tr>
</tbody>
</table>
Cellular-WAN Mode:

To ensure the stability of cellular connection, please enable "Cellular Keep Alive" and "Cellular Watchdog"

1) "Cellular Keep Alive" keeps checking the cellular availability and once it fails, the MRC gateway will try to reconnect to the cellular base station.

2) "Cellular Watchdog" keeps monitoring the internal cellular module status and once the module is abnormal, the MRC gateway will reset the module.

Step 4:

Input the LAN settings and the management IP for your MRC gateway. The MRC gateway’s management IP and subnet must be the same as the network where your local devices are located.
Step 5:

Configure your local devices for remote access. Click “+” to add a local device.

Input the name of a local device and its IP address. Select “Ping Check” or “Port Link” for the MRC gateway to check the health status of your device by PING or Port Link On/Off events. You can disable the Health Check function if you want.

Users can configure a maximum of 25 local devices for remote access through the MRC Suite.
Step 6:
Select the time zone where you will install the gateway.

On the last step, please click “Initialize Now” to activate your gateway. (Remember to first connect your gateway to the Internet.)
The following topics are covered in this chapter:

- Activation Status
- Tunnel Control
Activation Status

On the “Gateway” settings page, you can check the activation status of your MRC gateway. You can also configure the remote access capability of your MRC gateway.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent Connection</td>
<td>The MRC gateway automatically establishes the tunnel for remote access whenever a connection to the Internet is available.</td>
</tr>
<tr>
<td>Controlled by USB key</td>
<td>The MRC gateway initializes the tunnel for remote access only when a USB dongle (loaded with the gateway’s activation key) is inserted into the gateway.</td>
</tr>
<tr>
<td>Controlled by DI ON</td>
<td>The MRC gateway initializes the tunnel for remote access only when a DI (digital input) has been detected.</td>
</tr>
</tbody>
</table>

Tunnel Control

Users can configure the method for how the MRC gateway establishes a tunnel for remote access.

Click on “ ” to change the tunnel control settings. There are three tunnel control options:
Network

The following topic is covered in this chapter:

- Scenario Setting
Users can change the network scenario settings and check the WAN/LAN status from the Network settings page.

### Scenario Setting

Click “…” to change the tunnel control settings and click “Next” to continue inputting settings.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>WAN-LAN Mode</td>
<td>Connect an external ADSL modem, cable modem, or Internet WIFI router to establish remote access.</td>
</tr>
<tr>
<td>WAN-LAN Mode with NAT</td>
<td>Use the existing factory network to access the Internet in order to establish remote access. Keep the device communicating to the factory network by using NAT.</td>
</tr>
<tr>
<td>Transparent-LAN Mode</td>
<td>Use the existing factory network to access the Internet in order to establish remote access. Keep the LAN device communication transparent to the factory network.</td>
</tr>
<tr>
<td>Cellular-WAN Mode</td>
<td>Use cellular as Internet access. The two Ethernet ports are both LAN ports that can be used for connecting to local devices.</td>
</tr>
</tbody>
</table>

**WAN-LAN Mode:**
Step 1: Setup Internet access
Setting Static IP

Internet IP Setting: ☑ Static IP ☑ DHCP ☑ PPPoE

IP Address: IP Address

Subnet Mask: Subnet Mask

Gateway: IP Address

DNS Server (Optional for DHCP or PPPoE)

DNS Server1: DNS Server IP Address

DNS Server2: DNS Server IP Address

DNS Server3: DNS Server IP Address

Setting DHCP

Internet IP Setting: ☑ Static IP ☑ DHCP ☑ PPPoE

DNS Server (Optional for DHCP or PPPoE)

DNS Server1: DNS Server IP Address

DNS Server2: DNS Server IP Address

DNS Server3: DNS Server IP Address

Setting PPPoE

Internet IP Setting: ☑ Static IP ☑ DHCP ☑ PPPoE

User Name: PPPoE User Name

Password: PPPoE User Password

Host Name: PPPoE Host Name

DNS Server (Optional for DHCP or PPPoE)

DNS Server1: DNS Server IP Address

DNS Server2: DNS Server IP Address

DNS Server3: DNS Server IP Address

Step 2: Setup the management IP address for LAN (must be the same subnet as the local network devices).
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Click "Next" and wait for the configurations to change.

**WAN-LAN Mode with NAT:**
Step 1: Setup Internet access.

Step 2: Setup management IP address for LAN (must be the same subnet as local network devices).

Click "Next" and wait for the configurations to change.
Transparent-LAN Mode:

Step 1: Setup the unified interface for Internet access and LAN management IP address (must be the same as local devices’ subnet).

Click "Next" and wait for the configurations to change.
Cellular-WAN Mode:

In this mode, the two Ethernet ports are operating as two LAN ports and your MRC gateway will use cellular to access the Internet.

Step 1: Setup cellular for Internet access. There are two pre-defined carriers in the system, “AT&T” and “Verizon”. If your cellular provider is not in the list, please choose “Generic”.
**APN:** Input the APN Access Point Name. (Provided by your carrier.)

**PIN:** Input the PIN code to unlock your SIM card. (Provided by your carrier)

**Username/Password:** Input username and password for Internet access. (Provided by your carrier)

**Cellular Keep Alive:** When the cellular drops Internet access, the MRC gateway will restart the cellular connection to the carrier.

**Cellular Watchdog:** When the cellular system stops working, the MRC gateway will restart the cellular hardware to re-initialize the connection.

Step 2: Setup management IP address for LAN (must be the same subnet as local network devices).

Click “Next” and wait for the configurations to change.
The following topic is covered in this chapter:

- Local Device
Local Device

Users can locally add or remove Ethernet devices that are available for remote access. After modifying the local device list, the MRC gateway will automatically push the configuration back to the MRC server.

**NOTE** The MRC gateway must have the capability to access the Internet when performing this configuration.

Click “+” to add more devices; click “-” to remove the selected device. After adding a new device and pressing the “OK” button, the configurations will automatically update to the configurations on the MRC server.

Input the name of the device and select the IP Ethernet device or L2 Ethernet device type. Then, input the IP address or MAC address for your device. If “Auto IP Mapping” configuration is enabled, you can choose any of the IP addresses in the virtual IP list for your IP Ethernet device. For the last step, you can choose “Health Check” function and select PING or port link to check the status of the device.
Users can also setup service-based access control of the devices. For example, you can limit the HTTP web service of the local device so that only Engineer A can have access to it. Therefore, other engineers will not be able to access that device’s HTTP web service.

NOTE  The allowed client list is referring to the client list in the client management page.
The following topic is covered in this chapter:

- Service
Service

Users can change the time zone if the gateway was moved to a location in a different time zone. This will reflect the local time when auditing the event logs.

Click "" to change the settings.
Users can obtain the system information locally and upgrade the firmware of the gateway.

If necessary, users can reset the gateway to default settings or reboot the gateway.
Are you sure you want to reboot the device?

Note: During the reboot process, you will be logged out of the device. You must wait until the process is complete before you can log into the device again.