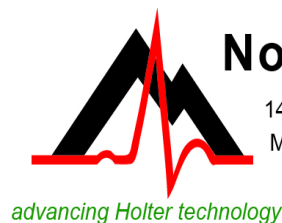
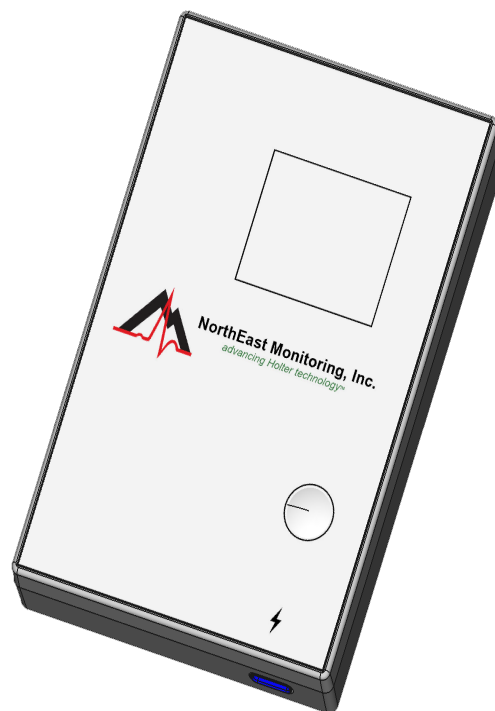


Gateway - FTP Technical Manual

for use with NorthEast Monitoring's
DR400 Wireless Recorders

Gateway 2



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1. Introduction to Wireless Event

The NorthEast Monitoring patch-style DR400 recorders come with a Wireless feature that uses Bluetooth technology to communicate with a paired device. For event transmission, the communication occurs between the recorder and a paired NorthEast Monitoring Gateway. Wireless transmission is initiated when the DR400 is in Event recording mode and there is event data to transmit.

For event recording, the patient is given a paired DR400 and Gateway. The Gateway can be carried on the person and/or be placed in a location in the home or another location. Once an event is recorded, the DR400 will attempt to locate the Gateway to transmit the event.

If the patient is away from the Gateway for an extended period of time, the recorder will continue to try to transmit at regular intervals. Once the patient is back in close proximity to the Gateway, and a transmission is successful, all events in memory will be sent at that time starting with the oldest.

During a successful wireless transmission, encrypted event data is sent via the airways through a cell phone signal to an FTP site identified on the recorder. When an event file is successfully received at the FTP site, the DR400 reads the file back, checks it, confirm it for accuracy and deletes the event(s) from its memory.

Once on the FTP site, the event files are copied to a temporary local location, and are then deleted from the FTP site. Each file is then decrypted and placed in a designated location for LX Event. Once the data is saved locally, you are able to access this data via the Incoming Files screen in LX Event.

2. The Gateway Transceiver

The Gateway Kit includes:

- Gateway (part number NEMP00539)
- AC Adapter (NEMP00571)

Gateway Specifications

- Voltage: 90-264 volts
- Frequency: 47 to 63 Hz.
- Maximum current: 2A at 5V DC
- Weight: 150 gms.
- Dimensions: 111.81mm x18.01mm x73.08mm (4.402" x 0.709" x 2.877")
- Operating temperature: 0 to 40 C

AC Adapter Specifications:

- Maximum current: .5A

FCC Class B digital device notice

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

This device complies with Part 15 of the FCC Rules and Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

(1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

The Gateway



The Gateway is a transceiver (transmitter + receiver) that communicates with the wireless recorder. The Gateway sends the encrypted event data via a wireless phone network to the receiving location. Both the recorder and the Gateway are able to transmit and receive data to ensure that encrypted data arrives at its desired location.

Data Security

For Wireless transmission via the Gateway, data is encrypted using symmetric 256-bit encryption key on the recorder and is sent in data block. One or more blocks can be sent at a time. Once the data is received via the Event Decoder, the encryption key will be used to decrypt the data into a readable format. The Key ID is visible on the both the recorder and the Event Decoder. The two Key IDs must match in order for files to be transferred and decryption to take place.

The Gateway Interface/Screen

The screen displays the battery charging status and signal strength.

The button does the following:

- short press causes a display refresh.
- 3-second press to turn on.
- 5-second press for clean shut down.
- 30-second press for forced shut down.

Charging the Gateway

Connect the gateway to the approved USB-C power supply (this connector is not polarized, so can be connected in either direction).

The gateway can be operated while charging, or on battery power once charged.

When connected to a charger, a plug symbol will appear to the right of the battery status indicator.

While charging, the plug symbol will be visible and the battery status indicator will have a lightening bolt within the outline of the battery.

Once fully charged, the plug symbol will remain and the lightening bolt within the battery outline will be replaced with a full battery indicator.

If the charging cable is removed when fully charged and then re-connected, it may take several minutes to indicate full charge again as the internal battery charger must go through it's top off cycle to indicate it is fully charged.

Under normal operating conditions, the battery is capable of providing power to the gateway for greater than one day. However, it is recommended to plug the gateway in overnight when the patient is not ambulatory so that there is no inconvenience of needing to charge it during the day.

3. Pair DR400 with Gateway

For DR400 recorders to transmit event data, the DR400 must first be paired with a Gateway. The DR400 and Gateway can only be paired with one other at any given time.

urlkey file

In order to pair a DR400 with a Gateway, your organization must obtain a urlkey.dat file from NorthEast Monitoring and the urlkey file must be placed in the directory where the PCPatch utility exists. The Pair Gateway button will be enabled only if the urlkey.dat file exists in the bin or Remote directory where the PCPatch.exe file is running.

The Pairing Process

1. Turn on the Gateway by holding down the button for three (3) seconds until the Gateway starts up. At that point you should see the battery indicator and the signal strength appear on the LED screen.
2. Using the docking station, attach the DR400 to the PC via a USB port, and start the PC Patch utility.
3. Go to the Settings screen and click on the “Pair Gateway” button. Once pairing is confirmed, compare the S/N on the Gateway with the Gateway value in PC Patch.

If the “Pair Gateway” button is not enabled, this means that the urlkey.dat file has not been saved in the appropriate directory.

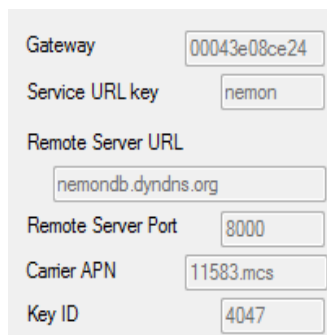
Also, the wireless settings that are programmed into your site’s urlkey.dat file, are visible on the PCPatch Settings screen.

All of these settings must match the settings in the FTP receiving location in order for wireless transmission to take place.

- Service URL key - Your unique identifier

- Remote Server URL- FTP Server’s fixed IP-address or domain name.
- Remote Server Port - defaults to 21 or whatever is required
- Carrier APN
- KEY ID - The receiving center identifier, which is an ID for the actual unique 256-bit encryption key for files sent via the Gateway/FTP.

If the data is incorrect or you do not have a urlkey.dat file, contact NorthEast Monitoring or your distributor for assistance.



The screenshot shows the PCPatch Settings screen with the following fields and values:

Field	Value
Gateway	00043e08ce24
Service URL key	nemon
Remote Server URL	nemondb.dyndns.org
Remote Server Port	8000
Carrier APN	11583.mcs
Key ID	4047

4. Receiving Events via FTP

System Requirements

The computer at the Service/institute where the events are to be received, must have the following minimal capabilities:

- Windows 10 or Windows 11 Operating System;
- Eight (8) GB of RAM memory;
- Twenty (20) GB of available disk storage;
- Broadband Internet connection
- Access to Port 21
- FTP server capability - Internal or commercially hosted FTP site

The Transmitting Process

1. The DR400 records an event
2. The DR400 is ready to send an event and attempts to connect to the paired Gateway
3. If paired Gateway is found, the decrypted event is transmitted via the wireless network
4. The FTP site receives two files for each event file
5. The Event Decoder utility that is running the background uses WinSCP to move the file to the local PC and decrypts the file
6. The event file is placed in a designation location where the LX Event Incoming screen can access it
7. User opens LX Event Incoming files screen and assigns event to active patient.

The ETel Installer

The ETel utility must be installed on the local PC. The Etel Installer includes 3 pieces of software that support the Event process:

1. The Event Decoder - the Event Decoder runs in the background and will restart when you reboot your PC. The Event decoder calls WinSCP download the event files from the FTP site, and then decrypts the files using your unique urlkey.dat file, and places the files into the Incoming Files folder for LX Event to retrieve.
2. WinSCP, and FTP client, runs in the background. The Event Decoder uses it to move the files from the FTP site to the local PC.

3. The ETel utility is used for the MCT process. Once an event procedure has been started, it can be used to update settings, request MCT ECG data or to view settings of the recorder.

Installing the Utilities

Contact Northeast Monitoring Support to get a copy of the ETel installer. Install the utility on a PC where the LX Event software resides. By default, the installer will create and be installed in the C:\nm\eventpgm directory.

The installer will put a shortcut in the startup list so it will start on booting the computer. It assumes that xx\ftp\event is the location where the "incoming files" go and that the program will be in xx\eventpgm. Further one has to put the urlkey.dat file in xx\eventpgm. xx\ is by default c:\nm\

Note: You must put a copy of your urlkey.dat file into the directory with the Event Decoder Utility in order for it to run

FTP user name and password

Once the urlkey.dat file is in the directory, run event-code with the argument "user password" to identify your FTP site's logon credentials. You will then need to use these to set up the FTP site that you will be using to transmit event.

To do this, open the Command prompt, go to c:\nm\evenpgm and run:

```
c:\nm\eventpgm>eventdecode user password
```

Your response will look something like this:

```
NorthEast Monitoring EventDecode version 1.00
Jul 12 2021
service url: ABCDE
urlkey Key ID 1234
ftp server ftp.ftpnemon.com port 21
user ufr2xrnd@ftpabcde.com
password AfRSD9eZ
```

The user name that you use to access your FTP site may incorporate the user identified by the decoder utility, and may not be the same exact string.

5. Set up and test the Process

Before your first event procedure, you will need to set up the system and then test to ensure that everything is working correctly. We also recommend that you do a quick test at the start of every procedure to ensure that the DR400 and Gateway are communicating as required.

Set up the system as follows:

1. Get a preconfigured urlkey.dat file, password and username from NorthEast Monitoring.
2. Set up your FTP site using the username and password.
3. Install the PCPatch and copy the urlkey.dat file into the installation directory. The default location is c:\nm\bin.
4. Install the ETel utility, which includes WinSCP and Event Decoder, and copy the urlkey.dat file into that directory. The default location is c:\nm\eventpgm.
5. Install LX Event.

Test the set up:

1. Fully charge both the DR400 and Gateway.
2. Turn on the Gateway by holding down the button for about 3 seconds. When the Gateway starts up, you should see the battery indicator and the signal strength on the screen. Ensure that the signal strength has at least...
3. Using the docking station, attach the DR400 to the PC via a USB port, and start the PC Patch utility.
4. On the PC Patch window, click on "Erase DR400".
5. Use the PCPatch to pair the DR400 with the Gateway. Do this by going to the Settings screen clicking on the "Pair Gateway" button. Once pairing is confirmed, compare the S/N on the Gateway with the Gateway value in PC Patch.
6. While still on the Settings screen, confirm that the DR400 recording mode is set to Event and the Event settings are what you prefer. If using MCT, be sure that MCT check time is not set to "20" or more. Click "Update Recorder and Close" to save all of the settings to the DR400.
7. On the main screen, enter the new Patient ID by clicking on the "New patient" button.

8. Click on "Start DR400" and follow the prompts. Once completed, remove the DR400 from the docking station. The DR400 starts flashing green at startup.

Confirm set up by recording and sending event

This process should be completed at the start of each new procedure to ensure that the DR400 and Gateway are paired and that events can be received.

1. If not running, start the ETel utility so that you can verify that the files are downloading to your local system.
2. With Gateway turned on and in room, create a manual event by pressing the "Press" button on the DR400. Once the green light stops flashing on the DR400 (about 90 seconds), the recorder will attempt to transmit the manual event.
3. After a minute, the ETel process will decrypt and move the event file to the LX Event folder. Open the LX Event utility and go to the Incoming Files window to view the file.
4. If you do not see a file in the Incoming Files window in LX Event, go to c:\nm\ftp\event to see the event file is there. If it is there, the LX Event may be looking for incoming files in a different location.

Troubleshooting

If the test did not work the first time, try transmitting again by recording a second manual event. If the second time does not work, there may be a problem, such as:

1. The DR400 has not started recording. If not recording, you can start the DR400 by holding down the "Press" button until the green light goes out and the DR400 starts to flash.
2. The Gateway is not turned on. When turned on, you should see the signal and battery levels on the screen.
3. The Gateway signal is not strong enough. How does the signal level appear on the Gateway?
4. The DR400 and the Gateway are not paired. If paired, you should see the SN of the DR400, but turning on/off the Gateway. Additionally, confirm that the Gateway SN is on the DR400 by using the PCPatch.
5. The FTP site is not set up properly

6. You can also run a test. Record an event on the DR400, and closely observe the screen on the Gateway. The number on the screen should change. If there is no change, they Gateway and DR400 may not be paired. If the number does change, call NorthEast support for assistance.
7. Login to your FTP site to view the files. There will be 2 files for each event. One file ends in “dat” and the other “cmd”. (You may need to “refresh” to see the files once they appear.) If they are there, the event decoder may not be running. Contact NorthEast support for assistance.

9. Event Wireless Process Flow-chart

