



DynaLink Remote Genset Monitoring

Companion – Advanced Setup



Installation and User Manual – Revision 2.0
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This Manual

This manual covers miscellaneous advanced topics on the WS100 and WS200 units.

For more information on the WS100/WS200 refer to the main DynaLink user manual: MAN-0082.

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1. Cellular Communications

If you do not have Ethernet at your site you can use the WS200 with a GSM or GPRS cellular network to allow DynaLink to send alarms/logs and to access DynaLink from netbiter.net.

The WS200 only supports GSM or GPRS. Other types such as CDMA, WCDMA, HSPA/HSDPA, HSPA+ are not supported. Also newer "GSM" generations such as EDGE/EGPRS are not supported.

1. Check with your cellular provider to ensure it supports GSM or GPRS in your area. GPRS is recommended.
2. Obtain a SIM card from the cellular provider. This needs to be a data SIM card.
3. Obtain GSM or GPRS info.
 - a. For GPRS: Obtain the APN username and password if. Often the password is left blank.
 - b. For GSM: Obtain the data number, username, and password.
4. Insert SIM card into WS200 or the external modem if you are using the WS100.
5. Go to Setup>Modem. Click the **modem info** button to see if SIM card is working. First check the Signal Strength indicator at the bottom to ensure there is sufficient signal strength for communications.

If you are getting SIM_ERROR and "Unknown" for the Pin Status and Network status, try reopening the window a couple of times. If reopening the window does not work check that there is a SIM card inserted in the WS200 and that it is inserted correctly.

If no information is given for Manufacturer, Model, Revision, or IMEI the WS200 may be defective. Try opening and closing the window several times to see if the information appears. If the information is still not being displayed, contact Dynagen for further information.

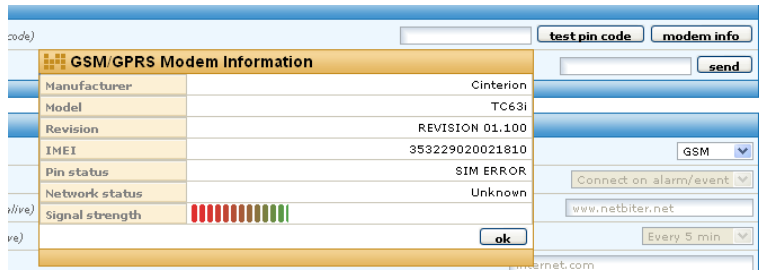


Figure 1 – Modem Info window is accessed by clicking on the modem info button in the Modem Menu. SIM card is working but not registered on cellular network.

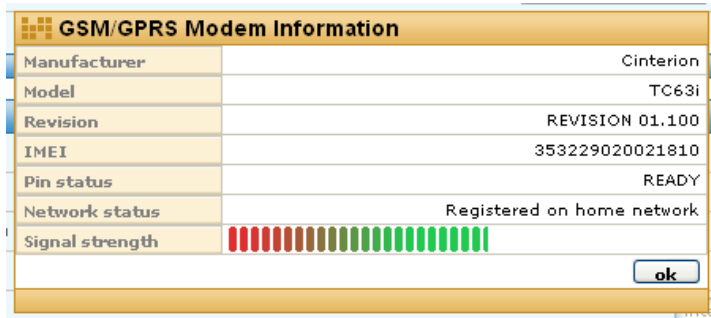


Figure 2 – SIM card registered on cellular network.

6. Check that the SIM card is registered on the network by checking the Network status field.

(Optional) Test the SIM card by entering a number of a cellular phone that has texting capabilities in the **Test SMS** box. SMS refers to Short Message Service otherwise known as text messaging.

7. Setup the GMS or GPRS as outlined in the sections below.

1.1 Cellular GPRS Setup



For GPRS you will need a data SIM card to allow DynaLink to send alarms and logs. Viewing GSC400 parameters also requires the www.netbiter.net service.

For outgoing connections (sending of alarms, logs, and the optional www.netbiter.net service) do the following:

1. Enter APN, username, and password under “Dial-up / GPRS Settings”.
2. Set the **Connection trigger** to “Always” if using the www.Netbiter.net service. If the **connection trigger** is set to “Always” you must set the **Ping timer**. The ping timer is used to send a few bytes of data to netbiter.net to keep the connection alive and the interval required varies depending on the cellular carrier.
3. After saving the settings it will ask you to reboot. Click the reboot button, wait two minutes, and the web browser should show the login screen again. Login.

To setup Netbiter.net do the following:

1. Go to Setup>Netbiter.net in the DynaLink menu and enable Netbiter.net, then enter the activation code that came with your device. Click save settings. If successful “Connected to server” should appear under “Netbiter.net status” after a few minutes.
2. Create an account on www.netbiter.net. You will need the Device ID and activation code that came with the DynaLink package. Refer to section 4 of the DynaLink User Manual (MAN-0083) for information setting up and using the netbiter.net account.

1.2 Cellular GMS Setup

See the next section below.

2. WS200 Cellular GSM / WS100 Dial-up Modem Setup

This section will explain how to:

1. WS100: Setup external RS232 Dial-up modem.
2. WS200: Setup the internal GSM cellular modem.
3. WS100/200: Access DynaLink on a remote PC using a dial-up modem.



GSM is a cellular 1G “dial-up” type data service and thus users are billed for the time that they are connected (not for the data they receive and send). For this reason it is not recommended to use GSM for the www.netbiter.net service.

2.1 Outgoing Communications (Alarms, Logs)

Outgoing access requires dial-up internet service from an ISP.

For outgoing connections (sending of alarms, logs, and www.netbiter.net service) do the following:

1. For WS100 only enter the BAUD rate and type of the external modem.
2. Enter the phone number, user name, and password.
 - a. For GSM use the phone number, username and password for the SIM card.
 - b. For a Dial-up modem, use the phone number, username, and password given by your dial-up ISP.
3. After saving the settings it will ask you to reboot. Click the reboot button, wait two minutes, and the web browser should show the login screen again. Login.

To access the DynaLink device on a remote computer, a modem to DynaLink connection is required. To do this the remote computer must have a dial-up modem and the DynaLink connected to an external modem (in the case of the WS100) or using the internal cellular modem (in the case of the WS200). Follow the below steps to setup this.

2.2 Setting up Remote Access

(Optional) The below steps are only necessary if you want to access DynaLink on a remote computer.

Only the WS200 has GSM cellular capability. Only the WS100 can interface with an external dial-up modem (via RS-232).

1. Configure the Dial-in section in the Setup>Modem page of the DynaLink.
 - a. The **Local IP Address** refers to the address of the DynaLink device. Any IP address can be entered here (it is customary to use 10.200.1.1).
 - b. The **Remote IP Address** refers to the address of the computer where you want to access DynaLink. Any IP address can be entered here with the following rules:
 - i. It can not be the same as the “Local IP Address” above.
 - ii. The first three numbers must be the same as the “Local IP Address” (e.g. if the Local IP Address is 10.200.1.1, the “Remote IP Address must be 10.200.1.X where X is any number from 2 to 250).
 - c. Enter a username and password for the dial up connection. You can pick any username or password. You will use these in setting up the remote computer.
2. Creating a dial-up connection to the DynaLink Device on a Remote PC

For Windows XP do the following:

(Vista / 7 users see below)

- a. Go to the Start Menu and select Control Panel
- b. Go to Network Connections
- c. Click New Connection Wizard
- d. The “Welcome to New Connection Wizard” window will appear. Click Next
- e. Select Connect to the Internet, and click Next
- f. Select Setup my connection manually, and click Next
- g. Select Connect using a dial-up modem
- h. Enter a name for your connection, and click Next
- i. Enter the phone number for the modem attached to the DynaLink, and click Next
 - i. For GMS, this is the phone number for your SIM card.
 - ii. For an analog modem, this is the phone number of the telephone line the modem is connected to.
- j. Select who should be allowed to use this connection, click Next
- k. In the next page:
 - i. Enter the User name that was set in the DynaLink (Dial-in section on the Setup>modem page)
 - ii. Enter the Password that was set in the DynaLink (Dial-in section on the Setup>modem page)
 - iii. Confirm the password.

- iv. Uncheck the checkboxes, if this isn't the primary Internet connection
- v. Click Next
- l. Check the check box to add a shortcut to your desktop
- m. Click Finish

For Windows Vista / 7 do the following:

1. Click Start
2. Click Control Panel
3. Click the Network and Internet icon
4. Click the Network and Sharing Center icon.
5. Click Set up a connection or network
6. A new window will pop up asking you to choose the connection option. Click Set up a dial-up connection then click Next
7. In the next page:
 - a. Enter the phone number for the modem attached to the DynaLink, and click Next
 - i. For GMS, this is the phone number for your SIM card.
 - ii. For an analog modem, this is the phone number of the telephone line the modem is connected to.
 - b. Enter the User name that was set in the DynaLink (Dial-in section on the Setup>modem page)
 - c. Enter the Password that was set in the DynaLink (Dial-in section on the Setup>modem page)
 - d. If you want all users with access to your computer to be able to access DynaLink check the box beside "Allow other people to use this connection."
 - e. Click Connect (in the next screen you will be given option to skip connection).
8. Windows will attempt to connect to DynaLink. If you don't want to connect at this time, click Skip.
9. The next screen tells you how to connect next time (Click the Start button, Click Connect to, Click on the connection you just created). Click Close.

2.3 Logging on to the DynaLink Device Remotely

To access the DynaLink web interface:

1. Click on the dial-up shortcut on your desktop you created above and click connect. Wait until a connection is established.
2. Then use Firefox or Internet Explorer and enter the IP address you entered in the WS100 "Local IP Address" field and press enter. The DynaLink interface should appear.

3. Tested Modems with the WS100

In general all modems that support the Hayes AT command set (i.e. Hays compatible) will work with the WS100. You must ensure the modem has a RS232 interface which most do.

The following two modems were tested at Dynagen and found to work with the WS100 out of the box:

1. Hays Accura – Model 15328 from Zoom Telephonics Inc.
2. TRENDnet TFM-560X

3.1 Communication Methods

There are multiple ways for a computer to communicate with DynaLink. This section will explain the various options so you can pick the one that best matches your application.

Regardless of the communication option, the DynaLink must be initially configured over a wired Ethernet network or direct Ethernet connection to a computer.

3.1.1 Wired Ethernet Connection to Computer

This option, shown in Figure 3 below, is the simplest. Connect an Ethernet cable from the Ethernet port on a single computer to the Ethernet port on the DynaLink. You can access the DynaLink from a single computer up to 328 feet (100 meters) away.

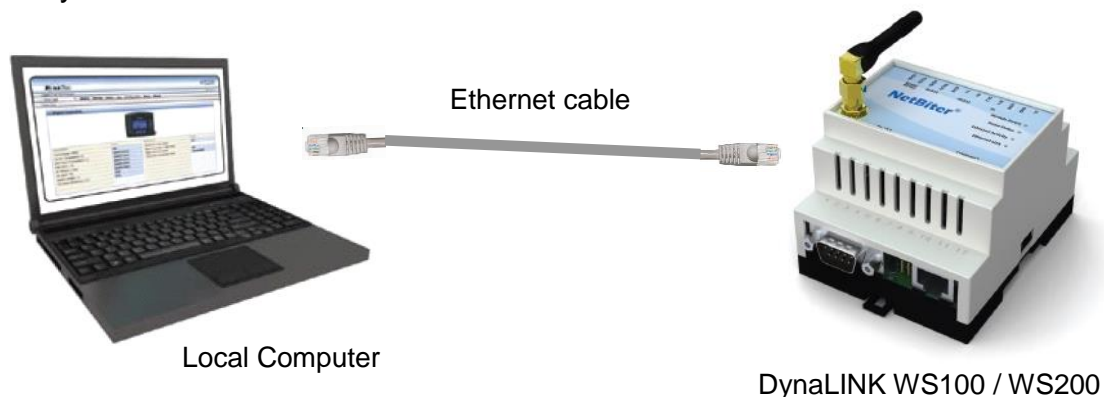


Figure 3 – Direct connection to computer.

1. If your Modbus BAUD rate or device address differs from steps (1) to (3) above:
 - a. Go to Setup>Modbus. Change the BAUD rate here. Note that the RA-400 only supports 9600 and 19200.
 - b. Go to Configuration> Devices. There will be two devices already added there (RA-400 and GSC400). Click edit and change the device Modbus address for each as desired.

3.1.2 Wired Ethernet Connected to Switch or Router

The next step up is to use a switch or router to connect one or more DynaLink devices to one or more local computers. The DynaLink and PCs are connected to the LAN ports of the router or switch.

In effect, this creates a local network (LAN) and allows multiple local computers to communicate with one or more DynaLink devices. The Ethernet cable run can be 328ft between the router and computer and an additional 328ft between the router and DynaLink. This can double the length from the computer(s) to the DynaLink when compared to the wiring option described in the previous section (2.2.1).

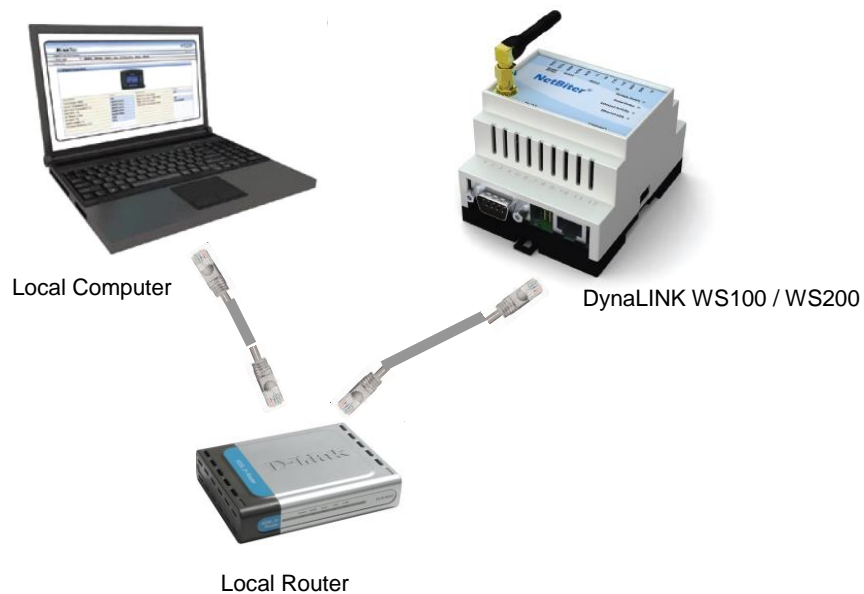


Figure 4 – Local Ethernet Setup

3.1.3 Wired Ethernet Setup with Internet Access

By setting the DynaLink to a static IP address and setting up port forwarding on the local router it is possible to allow a computer anywhere in the world, with access to the internet, to communicate with the DynaLink (see section **Error! Reference source not found.** on page **Error! Bookmark not defined.**).

Note that the internet service provider must provide a static public (WAN) IP address or a dynamic DNS service must be used in order to access the DynaLink device on a remote computer.

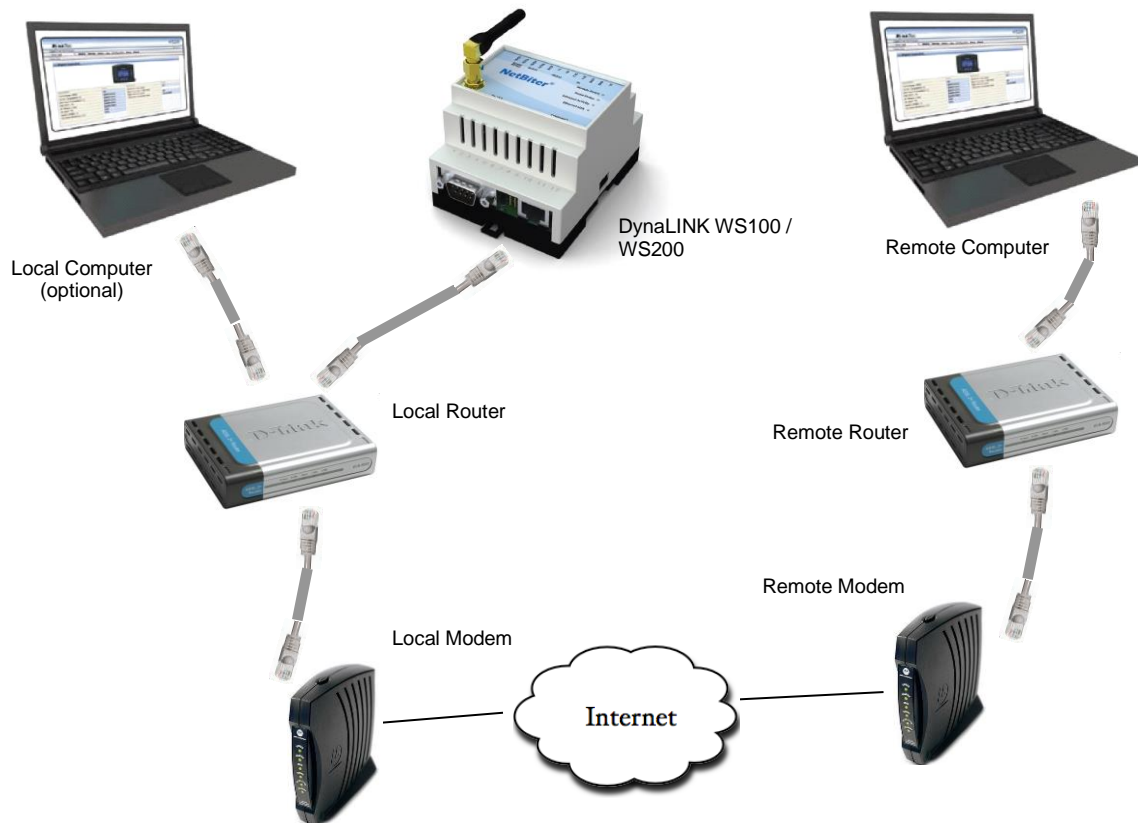


Figure 5 – Wired Ethernet Network with Internet Access

3.1.4 Phone Line Dial-up – WS100 Only

This section only applies to the WS100. The WS200 does not support external RS-232 modems.

In areas with no Ethernet network and where setting up an Ethernet connection is not possible or desirable, a Dial-up modem can be connected to a DynaLink WS100 via a RS-232 connection. The dial-up modem can then be connected to a phone line. **Any RS-232 analog modem that supports Hayes commands is compatible with the WS100.** The remote computer will also need a built in or external dial-up modem.

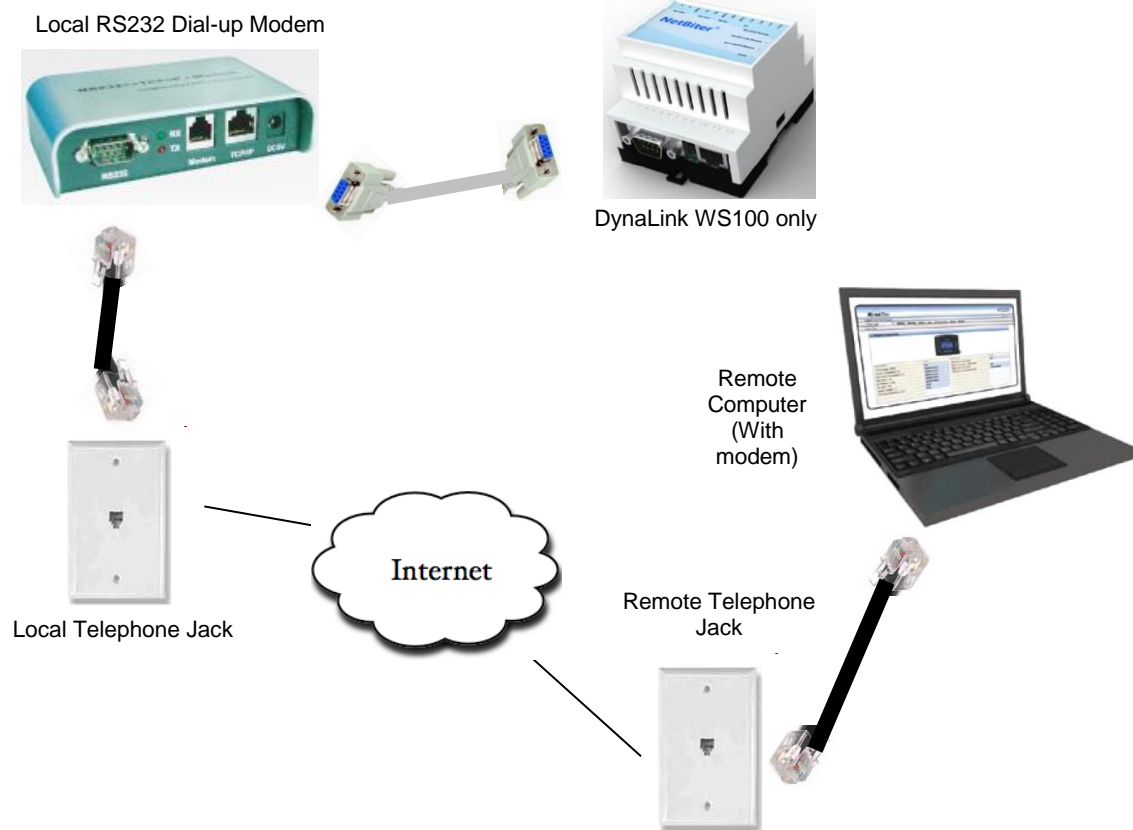


Figure 6 – Dial-up Modem with phone line.

3.1.5 Cellular Internet Access – GPRS Networks

The DynaLink WS200 has an internal cellular modem built in with support for GPRS.

This type of modem is useful for genset locations with no phone or internet service or where they are not practical (i.e. mobile generators). It can be used for outgoing communications (having the WS200 e-mail alarms and logs to personnel). If incoming communications (viewing parameters/alarms on the WS200) are required the netbiter.net service must be used.

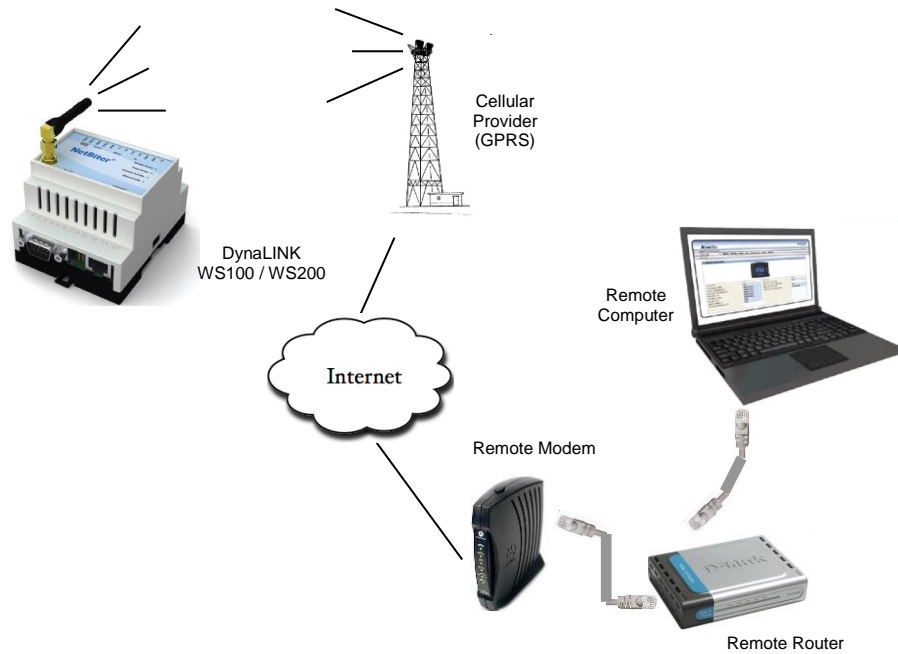


Figure 7 –GPRS Cellular Network

3.1.6 Cellular Internet Access – GSM Networks

GSM is a cellular network technology that allows for data communication with a dial-up modem. Like GPRS, this is useful in areas that do not have Ethernet access such as mobile generators.



It is not recommended to use the optional www.netbiter.net service with GSM as the service requires an always on connection and GSM users are billed for the time they use.

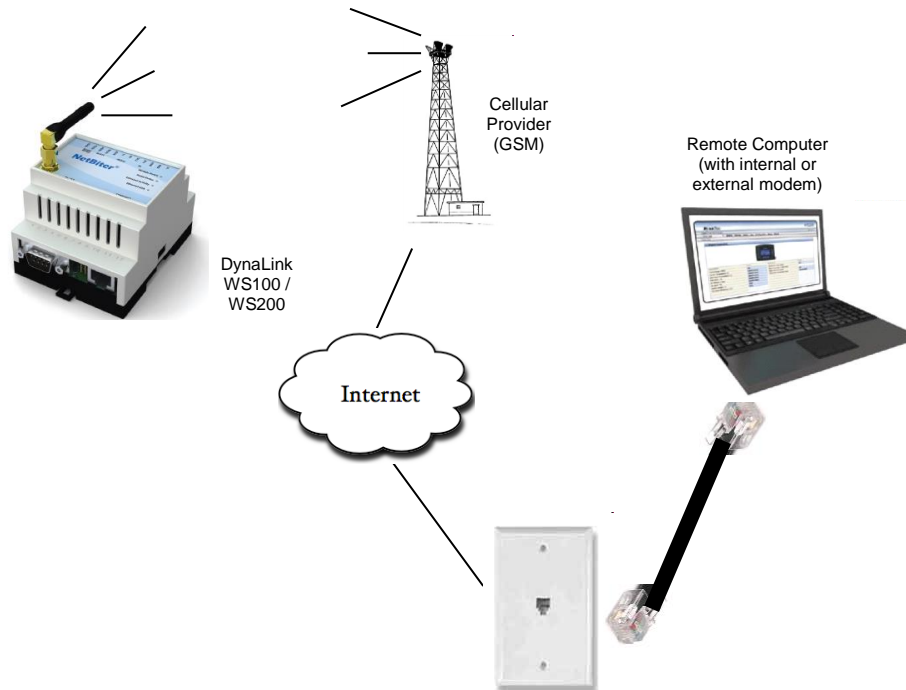


Figure 8 –GSM Cellular Networks

3.2 Alarm Configuration



Up to 64 alarms can be set on a single WS100 or WS200 device.

This section will cover how to modify, delete, and add alarms. The DynaLink WS100 and WS200 come configured out of the factory with all the alarms configured for one GSC400 at address 1.

Note that the DynaLink device polls every 30s for alarm status so it may miss intermittent GSC400 warnings.

The following sections will refer to Figure 9.

The screenshot shows the NetBiter WS200 web interface. The top navigation bar includes 'Status', 'Devices', 'Alarm', 'Log', 'Configuration', 'Setup', and 'About'. The 'Alarm' section is active, showing 'Alarm Settings' and 'Alarm Configuration'.

Alarm Settings

Alarm Type	Status
SMS alarm	Disable
Email alarm	Enable
SNMP alarm	Disable
Manual alarm acknowledge	Disable

Alarm Configuration

ID	Description	Device	Action
1	High Engine Temperature Warning	GSC400	edit delete
2	Low Oil Pressure Warning	GSC400	edit delete
3	Low Fuel Level Warning	GSC400	edit delete
...
55	Auxiliary Failure	GSC400	edit delete
56	Under Frequency Failure	GSC400	edit delete
57	Over Frequency Failure	GSC400	edit delete
58	Config Fail 1	GSC400	edit delete
59	Config Fail 2	GSC400	edit delete

Figure 9 – Alarm Setup Page

3.2.1 Deleting an Alarm

An alarm can be deleted by clicking the delete button [7] next to the alarm. The alarms are listed below the "Alarm Settings" section in the "Alarm Configuration" section.

3.2.2 Modifying an Alarm

To modify an alarm, click the edit button [6] next to the alarm. To add a new alarm scroll down to the end of the alarm list and click the “add alarm parameter” button. In both cases a new window will pop up as shown in Figure 10.

Figure 10 – Edit/Add Alarm Window

Refer to Figure 10 as you follow along:



Note: It is recommended to only change only the Alarm Properties section when you are modifying an alarm. The other sections (1 to 7 in Figure 10 above) are for advanced users only.

1. Alarm Class [8] – by default Dynagen sets all alarms are to Class 1. You may set the class from 1 to 10. DynaLink uses the alarm class to determine which user(s) receives the alarm notification. The administrator, when adding a user, picks which alarm classes a user receives.
2. Severity [9] – You can also select the severity of the alarm (Warning, Major, Critical, etc).
3. Description [10] – This is the text that is displayed in the alarm list and alarm history views.
4. Subject [11] – The text to display in the SMS and E-mail subject line.
5. Message [12] – The text to display in the SMS and E-mail body.

6. Once you are finished making changes, click the “save settings” [13] button or if you want to discard any changes you made click the “back” button next to it.

The DynaLink device comes preconfigured to alarm on all GSC400 warnings and failures. However there are some events (such as generator shutdown and startup) that you may want to alarm on. You will have to set these alarms yourself. Below are examples of possible alarms you may want to set and Table 1 describes how to set these. You may have to delete existing alarms before creating new ones.

1. Generator Started – There is no alarm for this directly but the Warm-up feature can be used. The alarm is active as long as the warm-up is active. The GSC400 warm-up time must be set to at least 30s, ideally 60s or more.
2. Generator Shutdown – The Cool-down feature can be used for this. The GSC400 cool-down time must be set to at least 30s, ideally 60s or more. The alarm is active as long as the cool-down is active. Note that cool-down can be skipped in certain circumstances. “GSC400 in OFF Mode” and “GSC400 in AUTO Mode” alarms below should be set to catch all cases.
3. GSC400 Sleeping/in menu system – When the GSC400 is in the OFF mode after a certain amount of time of inactivity it goes into the sleep mode. This also applies if someone is accessing the GSC400 menu system. The alarm is active as long as one of these two conditions applies.
4. GSC400 in OFF Mode – Applies when the GSC400 is in the OFF mode.
5. GSC400 in AUTO Mode – Applies when the GSC400 is in the AUTO mode.
6. GSC400 in RUN Mode – The alarm remains active while the generator is running. This is similar to the “Generator Started” alarm above but in this case the alarm remains active as long as the generator is running.
7. Failure Occurred – The alarm is active whenever the GSC400 shuts down on failure.
8. Warning Occurred – The alarm is active whenever there is a warning.
9. All GSC400 parameters (AC Voltage, engine speed, etc) are located in the “Engine Generator Parameters” Group. You can set alarms on these if desired.

Table 1 – Additional Alarms

DynaLink Desired Alarm	Number from Figure 10.					
	1	2	3	4	5	6
	Device	Group	Parameter	Trigger	Trig Type	Trig Value
Warm-up Entered	GSC400	System Control Status	GSC400 Mode Detail	Equal to	Value	22
Cool-down Entered	GSC400	System Control Status	GSC400 Mode Detail	Equal to	Value	25
GSC400 is sleeping or in menu system	GSC400	System Control Status	GSC400 Mode	Equal to	Value	144
GSC400 in OFF Mode	GSC400	System Control Status	GSC400 Mode	Equal to	Value	147
GSC400 in Auto Mode	GSC400	System Control Status	GSC400 Mode	Equal to	Value	150
GSC400 in Run Mode	GSC400	System Control Status	GSC400 Mode	Equal to	Value	156
Failure Occurred	GSC400	System Control Status	Active Failure	Not Equal	Value	255
Warnings Present	GSC400	System Control Status	Active Warning	Equal to	Value	5
GSC400 Parameters	GSC400	Engine Generator Parameters	Depends on required parameter	As desired.	Value	As desired.