

USER GUIDE

INDUSTRIAL DATA COMMUNICATIONS

SRM6220_(900MHz)

SRM6320_(2.4GHz)

Frequency Hopping Spread Spectrum
Advanced Ethernet Radio Modem



It is essential that all instructions contained in the User Guide are followed precisely to ensure proper operation of equipment.

Notes:

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Introduction

The SRM6220/SRM6320 modems are high performance, wireless radio modem designed for heavy-duty industrial data communications in the 902-928 MHz (SRM6220) and the 2.4 GHz (SRM6320) license-free bands. They employ advanced spread spectrum frequency hopping and error detection technology to achieve very reliable noise-and-interference immune operation. A high RF data rate of 188kbps and superior sensitivity provide ultra reliable data integrity. A line-of-sight range of 20+ miles that can be extended further with repeaters provides the user with unsurpassed flexibility and performance.

The SRM6220/SRM6320s can be operated in a number of different modes to satisfy a broad range of communications requirements. They can be configured for point-to-point or multi-point operation with an unlimited number of remote sites on a single Master, depending on data throughput requirements. Repeaters can be used in the system to extend range and eliminate dead RF zones that are blocked by obstructions.

An external antenna can be used with up to two hundred feet of coax. With an external antenna, radio modems can be located inside buildings or metallic enclosures, while the antenna can be located in a position to obtain line of sight.

The SRM6220/SRM6320s will operate in virtually any environment where Ethernet and/or Serial communications are required. The transceiver's Ethernet port is a standard 10Base-T connector with either a straight through or crossed selection. The serial ports are standard DB-9 DCE ports and a two position 485 port.

The user's guide covers the operating modes and configurations that are available to users of the SRM6220 or SRM6320. It also provides the user with bench testing instructions, technical information and specifications.

In some applications, the SRM6220/SRM6320s will come pre-configured for the application in which it is going to be used. Even though the modems has been pre-configured, the IP address is set to factory default and must be changed to prevent IP conflicts between modems.

The SRM6220/SRM63210's are enhanced versions of the SRM6210E/SRM6310E's and are fully backwards compatible and interchangeable, except for the unique features of the SRM6220/SRM6320.

Network Basics

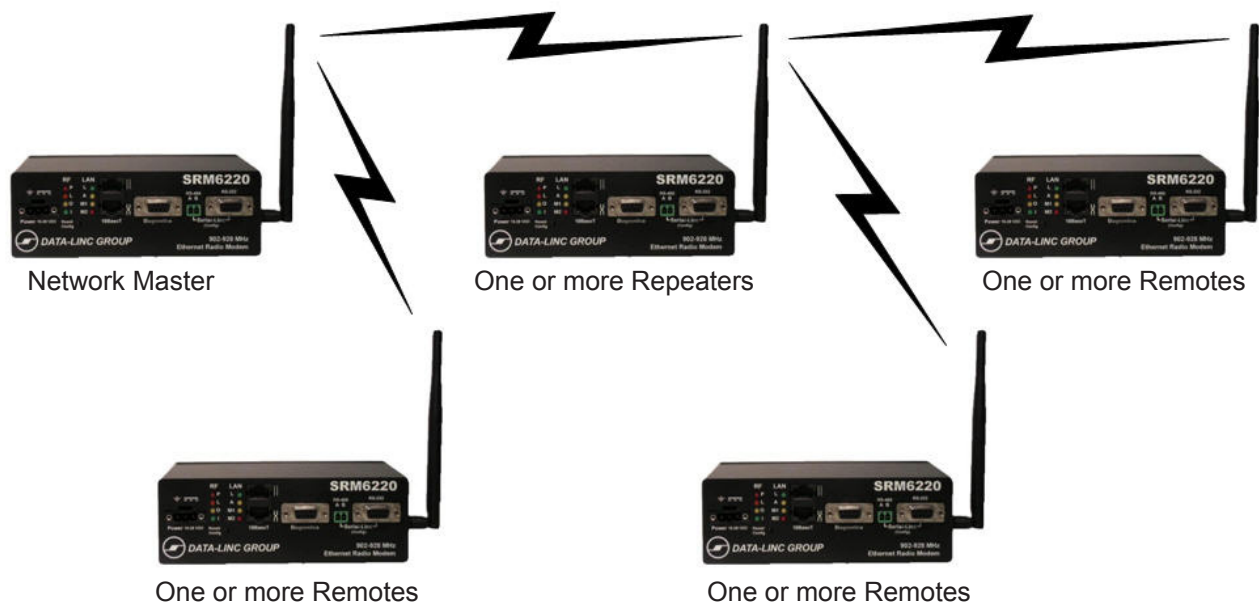
All SRM6220/SRM6320 radio networks will have one Master radio, at least one Remote and may or may not have repeaters. All SRM6220/SRM6320s can be configured as a Master, Remote or Repeater.

When configuring a network, it is important to note that Remotes are configured to talk to Masters or Repeaters. When using "Network ID" without Repeaters, nothing more than setting all modems in a network to the same Network ID is required. If Repeaters are being used, Network ID must also be accompanied by Subnet ID in order to dictate a Remotes path to the Master, whether it be directly to the Master or by way of a Repeater. When using "Radio Call Book" without Repeaters, all Remotes must have the Call Book number of the Master in their call books. When using Repeaters, Remotes must have the Call Book of the device they are directly connecting to in their call books. Remotes connecting to a Repeater will have that Repeater's Call Book entered and Remotes connecting to the Master will have the Masters Call Book entered. Repeaters can also be directed to connect to other repeaters in the same way. (See "Radio Settings" for more detail).

Figure 1



Figure 2



Data Communication Basics

The SRM6220/SRM6320s will carry both Ethernet and Serial communications. In either scenario, data being received by a Masters port(s) will be sent out [to] all Remotes in the network, and any data being received by the Remotes port(s) will be sent out [to] the Masters port(s). It is worth noting that Remotes cannot communicate with Remotes, so data being received by one Remote cannot be seen by another. When Repeaters are involved, they can be either passive or active. When passive, neither the Ethernet nor Serial ports are active. When active, both ports are functional. Please note that a Repeater will pass only data from its ports to the network Master, and only data from the network Master will be seen at the Repeaters ports.

Connections

Ethernet Connection

There are two 10BaseT ports on the SRM6220/SRM6320s. One port is a “straight through” port and the other is a “cross” port. Straight and cross is a reference to the type of Cat 5 cable needed when connecting the modem to a hub and/or switch. Only one port can be connected at any one time. When a correct connection is made, the LAN “L” LED (green) will light up.

Serial Connection

For serial communications, there are three serial ports. The “Diagnostics” port is for use with LincView OPC. This port will not pass any serial data on a SRM6220/SRM6320 network. The other two ports are the “Serial-Linc” ports. They are used for configuration when using SetLinc™ and to pass serial data on a SRM6220/SRM6320 network. The small port on the left (green connector) is for AE-485, and the DB-9 port on the right is for RS-232. Only one of these ports can be used at a time on any given modem, however both ports are tied together, so any data seen on one port is also on the other one. The “Diagnostics” and “Serial-Linc” ports are DCE ports so connection from either DB-9 port to a PC is done via a standard straight-through port.

Power Connection

The SRM6220/SRM6320s are DC powered and will accept 10 – 28 Volts DC. The connection is made via a three-screw type terminal block. The left most connection is for chassis ground, while the center and right hand connections are for powering up the modem. They are non-polarized, meaning that it is possible to connect positive and negative to either the center or right hand connectors.

Antenna Connection

The SRM6220/SRM6320s antenna connection is a standard thread SMA connector, connect either the supplied bench test antenna, or external antenna and coax (not included)

LED Indicators

There are two columns of LED indicators on the SRM6220/SRM6320s. The left hand column is labeled "RF" and its indicators provide information related to the radio section of the modem; the right hand column is labeled "LAN" and deals with the Ethernet section of the modem.

LED	Indication	Note
RF "P"	Modem Power	Should be on (red) at all times
RF "C"	RF Link	In all configurations this LED should be on (orange) except for Multi-Point Master where it will be off unless a Repeater or Remote is sending data to the Master.
RF "O"	Radio Transmitting Data	Should flash (yellow) when modem is transmitting data
RF "I"	Radio Receiving Data	Should flash (green) when modem is receiving data
LAN "L"	Lan Link	Should be on (green) when a proper LAN connection is made
LAN "A"	Lan Activity	Should flash (yellow) when the modem is receiving or sending network traffic
LAN "M1"	Reserved for Special Use	Not applicable for standard use
LAN "M2"	Configuration Mode	On solid (red) when the modem is in serial configuration mode

SRM6220 / SRM6320 Configuration

The SRM6220/SRM6320s can be configured by way of a web browser or by using the provided SetLinc™ software program. When using a web browser, it is necessary to enter the IP address of the modem into the address bar of the web browser. The default IP address is 192.168.3.1, so the IP address of the PC must be 192.168.3.x (where "x" is the fourth address digit). When using the SetLinc™ Utility, it does not matter what the IP address of the modem or PC is. However, no two radios in a given network can have the same IP address, so setting the IP address in all radios is required.

SetLinc™ Configuration

SetLinc™ is a utility program used to configure the SRM6220/SRM6320 radio modems. It runs from a PC; however it does not need to be installed on the PC. Instead, all that is needed is to copy the file from the supplied CD or Memory stick to a known location on the PC, click on the file, and the program will start and be ready to use.

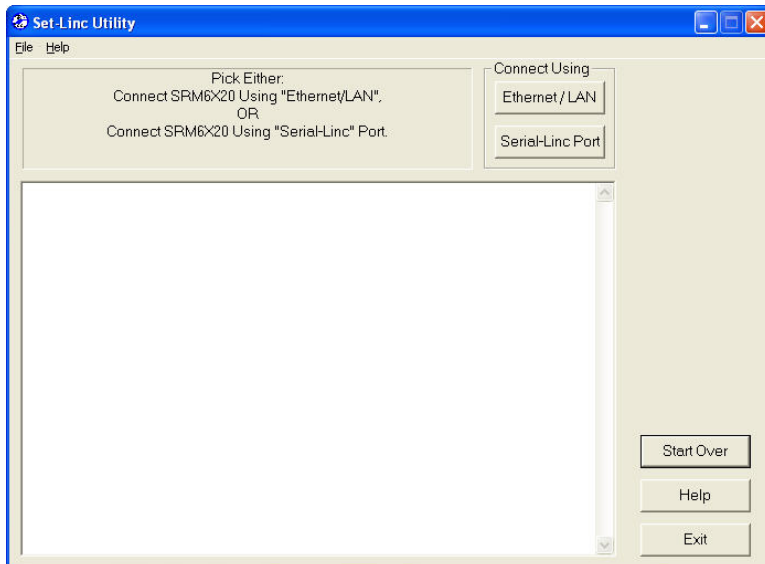
When using SetLinc™ you can connect to the SRM6220/SRM6320s either by the Ethernet port or the "Serial Linc" port. When using the Serial port, you will need to have access to the modem to activate the "config" button when prompted. When using the Ethernet connection, you do not have to have direct access to the modem; however you will be prompted to enter a password to gain access to the configuration menu. The default password is "default" and can be changed as needed. If the password has been changed and you do not know the password, you will be able to reset the password (along with the IP address); however it does require direct access to the modem (see "resetting password/IP address").

Once connected, there is no difference in the way the modem is configured. In this manual, we will discuss all of the needed configuration parameters assuming an Ethernet connection is used.

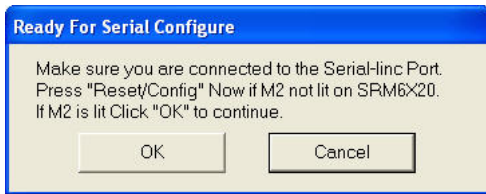
Note: Windows firewall may or may not prevent SetLinc from accessing the network. If you are unable to locate a modem that is known to be connected to the same network that SetLinc is connected to, check your security settings or contact your IT department.

Accessing the Modem

Once SetLinc™ is on the PC that will be used for configuring the SRM6220 or SRM6320 start the program. This will bring up the entry page. From this page you will need to select a "Connect Using" button. You can either select the "Ethernet/LAN" or "Serial-Linc Port".

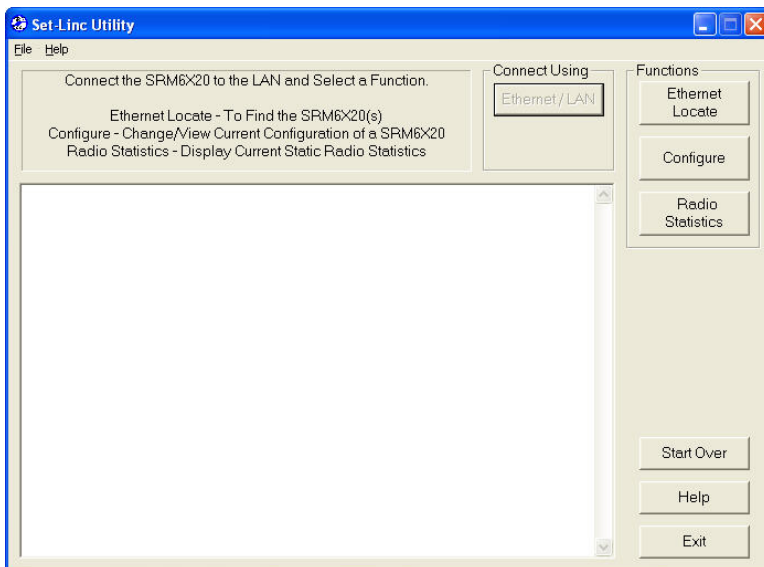


If you choose the serial port option, you will be prompted to make sure you are connected to the “Serial-Linc Port”. Press the “OK” button if the M2 LED on the SRM6220 or SRM6320 is lit otherwise push the “Reset/Config” button on the front of the modem. Once the button is pushed you will be brought to the main configuration page.

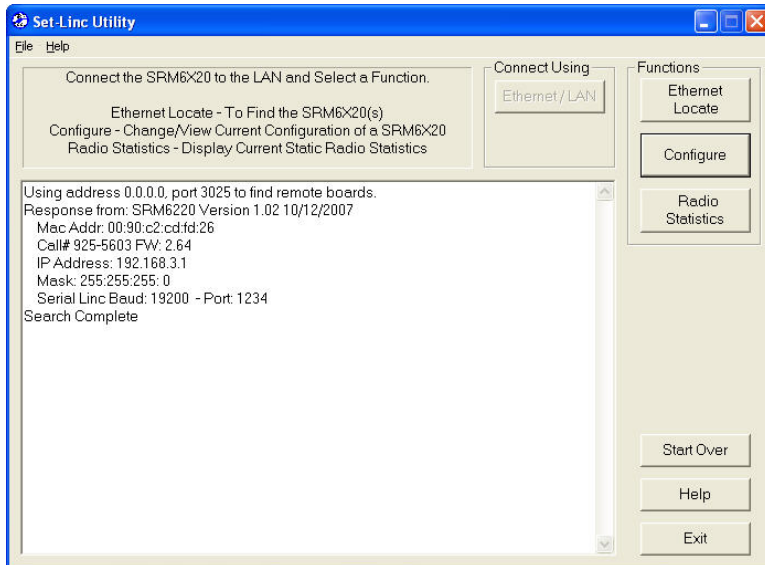


Note: Pushing the “Reset/Config” button puts the modem into configuration mode used with the serial port and turns the M2 LED on. When in this mode the modem will not operate. This should only be done when configuring the modem. The best practice is to push the “Reset/Config” button, once prompted to by the software.

To connect via the Ethernet connection, from the entry page click on the “Ethernet/LAN” button. You will then go to the locate page. From there click on the “Ethernet Locate” button.

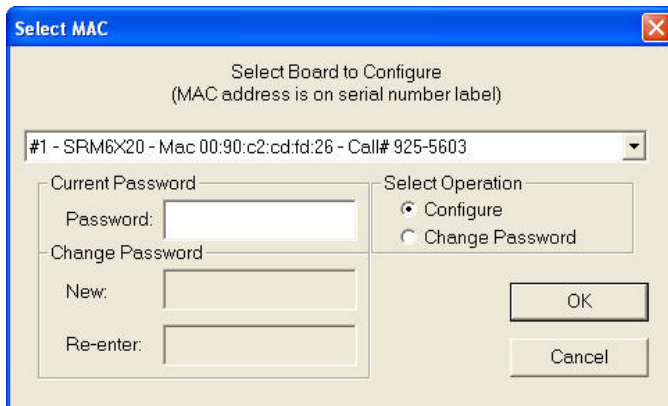


Any unit that is connected via Ethernet (either directly or on a Local Area Network) will appear in the display window with basic information about the unit. This information will include the IP address, MAC address and the unit's "Call" number. To select a particular device, click on the "Configure" button and a window will open with the MAC address and Call number of the different units.



Note: you will not be able to configure any radio across the wireless link.

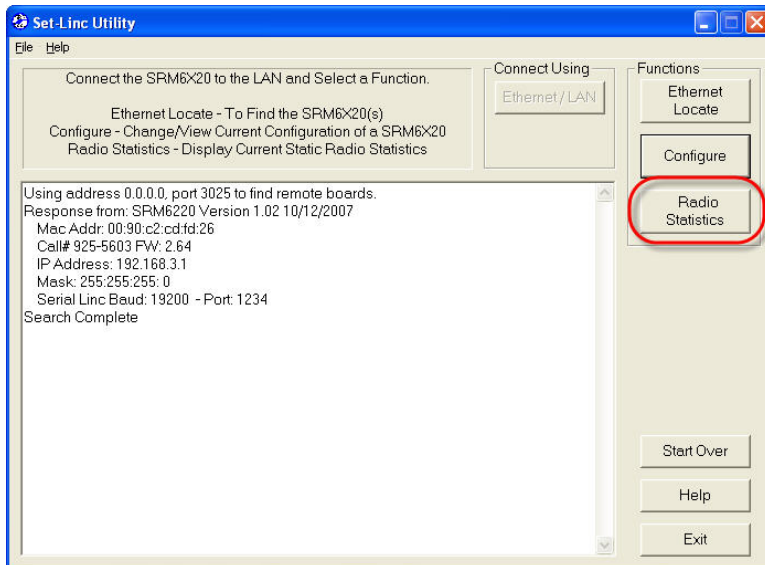
Select the unit you wish to configure, enter the unit's password into the Password box and select "OK". The default password is "default".



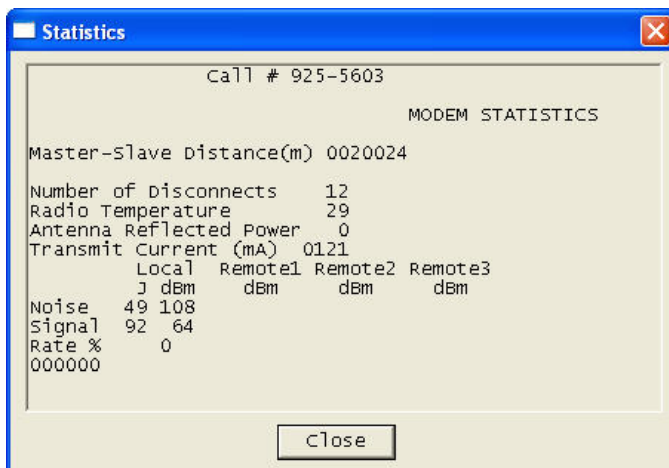
If you would like to change the password, select the "Change Password" button, enter the new password in the "New" box and re-enter the new password in the "Re-enter" box.

Radio Statistics

SetLinc™ allows you to access the SRM6220/SRM6320s' basic radios diagnostics. To access this information, click on the "Radio Statistics" button from the screen that comes up after you select the method you will be using to connect to the modem.



These statistics provide some basic information, such as received signal strength and average noise level.



Note: that in a Multi-Point Master modem, the only statistic that is valid is the noise.

Setting Up the Modem

Configure Parameters

File Help

Radio Call #: 925-5603 - Ver: 2.64

IP Settings
 IP Address: 192 168 3 1
 Net Mask: 255 255 255 0

Serial Linc Settings
☐ Change Baud Rate: 19200
 Port Number: 1234

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Change Configuration
 Cancel Changes
 Reset to Factory Configuration
 Edit Advanced Options

Radio Settings
 Operation Mode: 2 - Point to MultiPoint Master Freq Key: 12
 Network System Type: Network ID Callbook
 Repeater(s) in System: ☐
 Remote / Repeater Mode: ☐
 Network ID Number: 255 Subnet Xmit: 15 Subnet Recv: 15

SRM6220 / SRM6320

IP settings:

No two modems in a given network can have the same IP address, nor can any modem have the same IP address as any network device that is connected via the LAN connection. Because of this you must change the IP address of the modem from its default address. To do this simply enter a new IP address in the "IP Address" box. For further information on correct IP addressing, please contact your IT administrator.

Serial Linc Settings:

If you're going to use the Serial port on the modems for data communications, you will need to set the modem's baud rate and port numbers. If you're going to use the modems as serial bridges (serial port on the Master to serial port(s) on the Remote(s) or vice-versa), then the baud rate needs to match the baud rate of the device it is attached to, and the port numbers need to match between the Master and any Remote using the Serial port. If you have Remotes in the network that you do not want to pass the serial data being sent by the Master, change those Remote's port numbers to something other than what the Master's port number is set to.

Radio Settings:

Operation Mode:

You will need to set the modem's operation mode depending on what role it plays in the network. It will either be a Master, Remote, or Repeater in either a Point-to-Point or Multi-point network. Note: Even if there are only two modems in a network, you can still set the modems up as Multi-point devices. In doing this, if you ever add remotes to the network you will not have to change the configuration of the existing modems. To set the operation mode, open the pull down box and select the operation mode you will be configuring the modem as.

Freq Key:

The SRM6220/SRM6320s have 15 different "Frequency Keys". These "Keys" are different frequency algorithms that the modems use as hopping patterns. With this feature, you can have multiple networks operating in close proximity to each other while minimizing frequency interference. All modems in a given network need to have the "Freq Key" set to the same number. To do this, open the pull down box and select a number.

Network System Type:

There are two different ways to set the addressing used by a SRM6220 or SRM6320 radio network. The two types are "Network ID" and "Callbook". Because Network ID is easier to set up and more flexible when adding and/or replacing modems in a network, it is the preferred method.

Network ID:

When using Network ID, all devices in a given radio network must have the same Network ID number set in the modem. If there are no Repeaters in the system there is nothing more to configure. If you are using Repeaters, you must direct any Remotes, whether or not they are going to use the Repeater, or go directly to the Master (Remotes in a network with Repeaters do not have to go through the Repeater). If the network has multiple Repeaters, the Repeaters also need to know if they are going directly to the Master, or if they are linking through other Repeaters. The combinations are limitless. To do this, the "Subnet ID's" needs to be set up. What the Subnet ID does is tell a given modem what "Receive ID" it will listen to, and what "Transmit ID" to transmit on. These two settings are labeled "Subnet Xmit" (transmit) and "Subnet Recv" (receive). To disable Subnet ID, the settings for both the Xmit and Recv must be set to "15". To enable Subnet ID, set either or both settings to something other than "15". A setting of "Xmit = 0 / Recv = 0" will set the modem to "roaming" which is not commonly used (for more information on Roaming contact Data-Linc Group Customer support)

When using Subnet ID, the Masters Xmit and Recv are always set to "15". A Remote's Xmit will also always be set to "15". A Repeater that is going to be connecting directly to a Master will have its Recv set to "15" and its Xmit set to "1", if it is the only Repeater or the first Repeater in the network. If there is more than one Repeater, decide which Repeater is number two, three, etc... and set the Xmit to "2", "3", etc... In doing this you are setting up the "Transmit ID" that Remotes and/or other Repeaters will use to "Listen" to that modem. Any Remote in a network with Repeaters will have its Recv set to the number that its Repeater is using as its Xmit. See the examples below.

Network without Repeaters:

Master	Remote
Net ID=1234 <ul style="list-style-type: none">• Xmit=15• Recv=15	Net ID=1234 <ul style="list-style-type: none">• Xmit=15• Recv=15



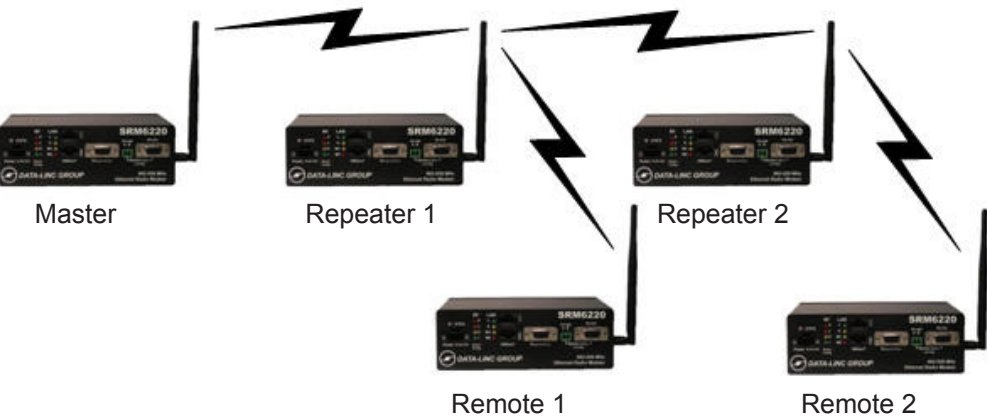
Network with one Repeater:

Master	Repeater	Remote
Net ID=1234 <ul style="list-style-type: none">• Xmit=0• Recv=0	Net ID=1234 <ul style="list-style-type: none">• Xmit=1• Recv=0	Net ID=1234 <ul style="list-style-type: none">• Xmit=15• Recv=1



Network with two Repeaters:

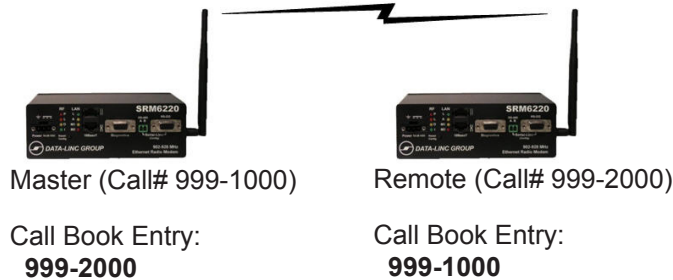
Master	Repeater 1 (Connects to Master)	Repeater 2 (Connects to Repeater 1)	Remote 1 (Connects to Repeater 1)	Remote 2 (Connects to Repeater 2)
Net ID=1234 <ul style="list-style-type: none">• Xmit=0• Recv=0	Net ID=1234 <ul style="list-style-type: none">• Xmit=1• Recv=0	Net ID=1234 <ul style="list-style-type: none">• Xmit=2• Recv=1	Net ID=1234 <ul style="list-style-type: none">• Xmit=15• Recv=1	Net ID=1234 <ul style="list-style-type: none">• Xmit=15• Recv=2



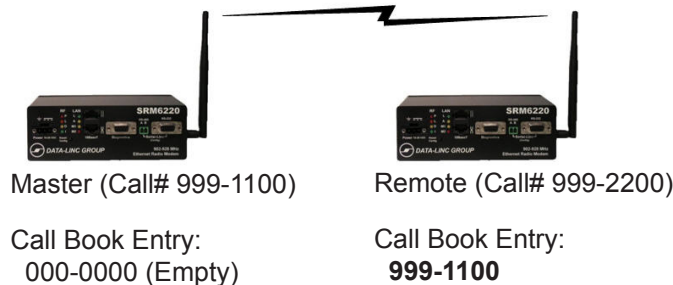
Callbook:

Each SRM6220 and SRM6320 has a unique "Callbook" number (9xx-xxxx). This number is a seven digit unique number that cannot be duplicated.

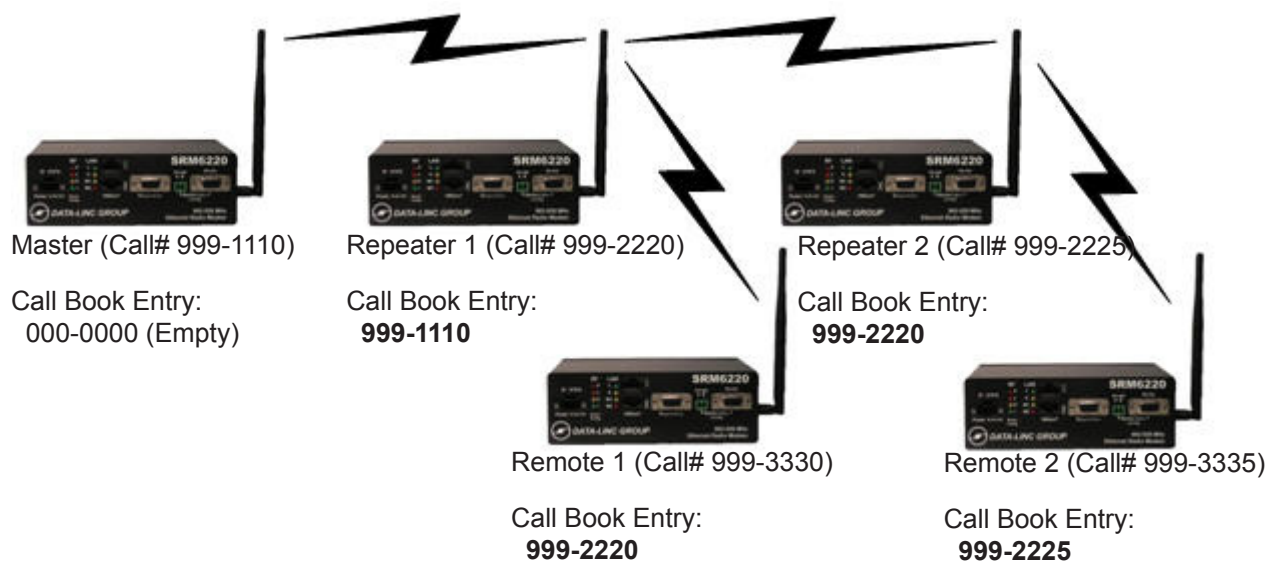
In a Point-to-Point network, the callbook number of the Master radio is in the Remote's callbook table, and the Remotes callbook number is in the Masters callbook table. If Repeaters are used, their callbook number would go in the "Repeater Number" location.



When using Callbook addressing in a Multi-Point network, it is important to remember that you are addressing towards the Master radio. In a network without Repeaters, the Remotes have the Master's callbook in their callbook table, and the Master has no entry.



When using Repeaters, any modem (Repeaters and/or Remotes) that are connecting to the Master will have the Master's callbook number in their table. Any modems that are connecting through Repeaters (Repeaters and/or Remotes) will have the callbook number of that Repeater in their tables.



Repeater(s)

When configuring a network with one or more Repeaters, select the check box for “Repeater(s) in System”.

When configuring a Repeater for a Multi-Point network, and that Repeater also needs to act as a Remote (the ports need to be active), select the “Remote/Repeater Mode” check box.

Advanced Settings

Note: The Advanced Settings are for experienced users, and in most cases these settings have been optimized at the factory, and do not need to be changed. Before making the changes here please contact our Customer Support team at: 425-882-2206

To gain access to the Advanced Settings, click on the "Edit Advanced Options" button on the right hand side of the screen. When done with the settings, you can either leave the menu window open, or close it; when asked if you would like the changes to be saved select "Yes". If you do not want to make the changes simply close the window (click on the "Close Advanced Options" button) and say "No" when asked if you want to save the changes. In doing this, any setting that was changed will revert back to how it was set before the window was opened.

Min Packet & Max Packet

The Min and Max Packet settings allow the user to designate the size of the packets (in bytes) used by the radio modem in its communication link. Because the packet size is defined by the SRM6220/SRM6320s' onboard processor, these setting should not be changed. The only time it may be necessary to change these settings is if the SRM6220/SRM6320s are being added to a network of SRM6210E/SRM6310Es that have different Min and Max Packet values.

Retry TO (Time Out)

The Retry Time Out setting allows you to set the number of "hops" that a Remote (or Repeater) must miss from its network Master before it will drop its connection and go into acquisition mode. The default setting is 255. When the SRM6220/SRM6320s are in an application where it will not move, or if it moves, but only to connect to the network Master (or a specific Repeater), then you should not change this setting. However, if your application involves Remote's that are mobile and need to change from a Repeater to another Repeater and/or the network Master, then lowering this setting can help speed up the process of the Remote changing its Master. The minimum setting is 8.

RF Power

The SRM6220/SRM6320s are variable output power radios with 1 Watt being the maximum power (1/2 Watt for the SRM6320). The power settings range from the lowest setting, 1, to the highest setting, 10. The default setting is 10, and for most applications there is no need to change this. Even with radios that are close together, there is no harm in leaving the radios at full power. If the modems are in applications where conserving power is needed, lowering the power can be a consideration.

RF Data Rate

The SRM6220/SRM6320s radios will operate at two RF data speeds. The default setting of "2" sets the modem to its higher speed. This optimizes the modem's throughput. A setting of "3" will slow down the RF speed, and, in some cases, help the modem in "difficult" RF environments but will lower the data throughput. In a Multi-Point network, all modems in the network must be set to the same RF speed.

High Noise

The High Noise setting can help the radio with noise rejection, but does so at a cost of range and data throughput. If a high noise environment is suspected, this setting can be used, but should be checked to see if it has a positive effect (does the perceived problem get better?).

Number of Repeaters

This setting tells modems in a given network that Repeaters are being used. You will find that this setting will set itself when you check the "Repeater(s) in System" check box.

Master Packet Repeat

In a Multi-Point network, the network Master does not know how many [?]s and Repeaters there are. Because of this, there is no "packet acknowledgment" and no way for the Master to know if a receiving radio received the sent packet. To ensure reliable communications, the Master will resend each packet a defined number of times. The Master Packet Repeat setting defines the number of packet repeats. For optimum throughput, the default setting is "1" and should be changed only if the modems are in "harsh" RF environments (high noise, long range, etc.). Please note that setting the MPR to a higher number will reduce the throughput and should only be done if a performance problem is detected.

Remote Retry

Network Masters will acknowledge a packet sent by a Remote (see Master Packet Repeat), so there is no need to resend packets blindly. However, in large networks the Master may not receive the packet and/or the may not hear the Master's acknowledgment. To deal with this the Remote can be set to resend the packet if it does not receive the acknowledgment from the Master. The Remote will keep resending the packet only until it receives the acknowledgment, or the number set in the "Retry" box is reached. The default setting is 9.

Repeater Freq

In a Multi-Point network all modems are using the same Frequency Key (hopping pattern) to stay synchronized. In most cases no two radios will be trying to transmit on the same frequency at the same time. However, in networks with two or more Repeaters, there can be frequency collisions between Repeaters and/or the network Master. Setting the "Repeater Freq" setting in the Repeaters in this type of network to "1", and setting the Repeater's "Frequency Keys" to different settings from each other and from the network Master will prevent the frequency collisions.

Remote/Repeater

The SRM6220/SRM6320s have the advantage of being able to use Repeaters that can also act as Remotes. This allows the use of locations where a radio is deployed to also be used as a Repeater site, without having to have two radio modems. Setting the "Remote/Repeater" to "1" enables the data ports on a Multi-Point Repeater. Please note that the modem's primary setting is as a Multi-Point Repeater not a Multi-Point Slave. You will find that this setting will set itself when you check the "Repeater/Remote mode" check box.

Diagnostics

The SRM6220/SRM6320s are fully compatible with LincView OPC diagnostic software. They can be connected to the PC running LincView OPC via either a serial connection or via an Ethernet connection. When setting up an SRM6220 or SRM6320 network Master to run diagnostics, the "Diagnostics" setting needs to be set to either "1" for a serial connection or "129" for an Ethernet connection.

Note: For serial connections, the default setting is "1" which will give a diagnostics packet to the software at every frequency hop. In large networks this might affect the overall system performance. Increasing the number of hops before a packet is delivered can help improve the performance in these situations. To do this increase the Diagnostics setting. For a serial connection the setting ranges from 1 to 60.

MAC Filter

When enabled, the MAC filter monitors the Ethernet traffic that is on the LAN side of the modem, and filters out traffic where the destination and source addresses are both on the LAN side. This limits the amount of traffic that is broadcast across the limited bandwidth of the radio.

Note: Not all network traffic that is not destined to cross the RF link will be filtered. Broadcast and Unicast packet (as well as others) will not be blocked by the MAC filter. If the SRM6220/SRM6320s are connected to anything other than a dedicated network, it is strongly recommended that a managed switch be placed in front of the modem, and any traffic not supposed to cross the radios be blocked.

Hop Table Versions (SRM6220 only)

The SRM6220 has 7 different hop table settings (all within 902 – 928 MHz). These settings allow you to alter the frequencies used by the 15 different Frequency Keys. These hop tables can be used to meet international regulations, or in the case where many different networks are co-located, they can be used to set different networks to use different frequencies. The different tables are:

Selection	Name	Band
0	Standard	Full 902-928 MHz
1	Australia	910-928 MHz
2	International	902-928 MHz, 16 fewer frequencies than full Standard set
3	Taiwan	916-920 MHz (May not be legal for use in Taiwan)
4	New Zeland	921-928 MHz
5	Notch	902-928 MHz, center frequencies of 911-919 notched out
6	Brazil	902-915 MHz

Note: All radios in a given network must be set to the same “Hop Table”

Frequency Zones (SRM6220 only)

Frequency Zones allows for the division of the 902-928 MHz frequency range to be divided into 16 smaller frequency ranges, each having 7 channels. This function can be used when many networks are co-located, or if there is other equipment in the area that operates in some segment of the 902-928 MHz band, and the SRM6220 might cause problems with this equipment. The SRM6220 comes set with all zones enabled, and, unless there are reasons to do otherwise, should not be changed. If it is necessary to disable a “zone”, uncheck the box for that zone. Please note, in North America, a minimum of 50 channels (8 zones) must be used at all times.

The following table defines the Frequency Zones:

Zone Number	Beginning Freq. MHz	Ending Freq. MHz	# of Channels
0	902.2464	903.6288	7
1	903.8592	905.2416	7
2	905.4720	906.8544	7
3	907.0848	908.4672	7
4	908.6976	910.0800	7
5	910.3104	911.6928	7
6	911.9232	913.3056	7
7	912.5360	914.9184	7
8	915.1488	916.5312	7
9	916.7616	918.1440	7
10	918.3744	919.7568	7
11	919.9872	921.3696	7
12	921.6000	922.9824	7
13	923.2128	924.5652	7
14	924.8256	926.2080	7
15	926.4384	927.8208	7

Note: All radios in a given network must be set with the same “Frequency Zones”.

Resetting the IP address and Password

If you need to reset the SRM6220/SRM6320's IP address and password, and you don't have access to SetLinc™ via a serial connection, you can hold the "Reset/Config" button (below the LEDs) while powering the modem up. When the "M1" LED flashes, the address and password have been reset to factory default. The IP address will now be "192.168.3.1" and the password will be "default".

Web Browser Configuration

To configure the SRM6220/SRM6320 via a web browser, you must be connected to the modem's Ethernet port, know the IP address of the modem and know the password. The default IP address is "192.168.3.1" and the default password is "default".

Note: When using the default IP address, the IP address of the PC must be 192.168.3.x (where "x" is the fourth address digit).

Once connected to the SRM6220/SRM6320 that you would like to configure, or connected to the network that the modem is on, enter the IP address of the modem. This will bring up a password prompt screen.

The screenshot shows a Windows Internet Explorer window titled "Configuration - Windows Internet Explorer". The address bar displays "http://192.168.3.1/". The page content includes the "DATA-LINC GROUP" logo and the title "Ethernet Radio Modem". Below this, the heading "Password" is followed by the text "Radio Call Number: 925-5603 Version: 2.64". A table with three columns: "Name", "Value", and "Description" is present. The first row contains "Password" in the "Name" column, an empty text input field in the "Value" column, and "Enter Configuration Pages" in the "Description" column. Below the table are "Submit" and "Reset" buttons. The browser's status bar at the bottom shows "Done", "Internet", and "100%" zoom.

Name	Value	Description
Password	<input type="text"/>	Enter Configuration Pages

Note: To change the password in the SRM6220/SRM6320 you must use the supplied SetLinc™ configuration util-

After supplying the password, you will be brought to the “Change DLG Radio Settings” screen.

Name	Value	Description
Operation Mode	2	0-P to P Master 1-P to P Remote 2-P to MP Master 3-P to MP Remote 5-P to P Repeater 7-P to MP Repeater
RF Power	2	1 - 10 , 10 = Max
Call Book 0	0000-0000	Entry 0
Repeater	0000-0000	Repeater - Callbook Entry 0
FreqKey	12	0 - 14 , Hop Pattern to use
Hop Version	0	0-Standard/2.4 Table 0 1-Australia/2.4 Table 1 2-International/2.4 Lower 1/3 3-Taiwan/2.4 Middle 1/3 4-New Zealand/2.4 Upper 1/3 5-Notch Avoid Middle 6-Brazil/2.4 Not Used
Max Packet Size	9	0 - 9 , Data Packet Size
Min Packet Size	0	0 - 9 , Data Packet Size
RF Data Rate	2	2-Normal 3-Low
Retry TimeOut	255	8 - 255, Reconnect TimeOut

From this screen, you can make changes to the basic radio's configuration. For details of the different parameters, please see descriptions in the first part of this manual.

To configure the IP address, MAC filter and serial port settings, click on the "IP & Serial Linc Config" button on the left side of the screen.

Configuration - Windows Internet Explorer

http://192.168.3.1/

DATA-LINC GROUP

Ethernet Radio Modem

[Radio Config](#)

[IP & Serial Linc Config](#)

IP & Serial Linc Configuration

Radio Call Number: 925-5603 Version: 2.64

Name	Value	Description
Set IP Address	192.168.3.1	Format :XXX.XXX.XXX.XXX
Set Netmask	255.255.255.0	Format :XXX.XXX.XXX.XXX
Set Baud Rate	4	0-1200 Baud 1-2400 Baud 2-4800 Baud 3-9600 Baud 4-19200 Baud 5-38400 Baud 6-115200 Baud
Set Port to Connect to	1234	
MAC Filter	0	0 Disabled 1 Enabled

Submit Reset

From this screen you can enable the MAC filter, set the IP address and configure the serial port.

Testing the Connection

The SRM6220/SRM6320s have two basic methods of testing the link between modems. Using the set IP address you can ping the modem from either the LAN connection or across the wireless connection. If a Remote is connected to a Master and the RF path is connected, you will be able to ping the Remote from the Master and the Master from the Remote. You cannot ping Remotes from Remotes. When the network has Repeaters, the Repeaters can also be pinged (from the Master only) as long as the Repeaters ports are active (see Advanced configuration). However, if your network has Repeaters without active ports, and you can ping any Remotes that are linked to the Master via the Repeater(s) then the Repeaters are functioning correctly.

Another method of testing the SRM6220/SRM6320s' connection is a serial loop back test. Because the SRM6220/SRM6320s work with both Ethernet and Serial communications, doing a serial loop back test is possible. Even if your application is not using the serial ports, these are always active and can be used to test the connection path. To do a loop back test, connect a terminal program (such as HyperTerminal) on either the Master or one of the Remotes in a network. On the other end of the connection path jumper pins "2" and "3" of the DB-9 "Serial Linc" port. Configure the terminal program to run at the same speed the serial ports are configured to run at (the default speed is 19.2Kbaud) and, using the computers keyboard, type. The characters you type should echo back to you.

If either of these tests fail, go back to the configuration portion of this manual and confirm that the modems are configured correctly and/or contact Data-Linc Group's Customer Support Team (425)882-2206

Technical Specifications

	SRM6220	SRM6320
Input Voltage Range	9-30 VDC	
Power Consumption	8 Watts Max (2 Watts Min.)	
Transmitter Output Power	1 Watt Max (10 Steps)	500 mW Max (10 Steps)
Transmitter Modulation	GFSK, 144 Kbps-188 Kbps	
Receiver Sensitivity	-110 dBm @ 10-4 raw BER -108 dBm @ 10-6 raw BER	-107 dBm @ 10-4 raw BER -105 dBm @ 10-6 raw BER
Operating Frequency	902-928 MHz ISM Band (No FCC site licence required)	2400-2483.5 MHz ISM Band (No FCC site licence required)
Operating Temperature Range	-40 - 167 F (-40 - 75 C)	
Operating Humidity	0 - 95% (non-condensing)	
RF Data Error Detect / Correction	32 bit CRC, Resend on Error	
RF Data Encryption	Substitution, Dynamic Key	
RF Data Rate	188 Kbps	
RF Range	Rated 25 miles (40 km) with line-of-sight, 35 miles (56 km) with line-of-site under optimal conditions; (farther with repeaters)	Rated 10 miles (16 km) with line-of-sight; (farther with repeaters)
Maximum Data Throughput	110 Kbps (in point-to-point mode)	
Ethernet Connection	Two RJ-45 Ports [One Straight / One Crossed Over] (Only one port can be used at a time)	
Serial Connections	Application Data [Either RS-232 DB-9 Female DCE Port <u>or</u> RS-485 Terminal Block] Diagnostics Data [RS-232 DB-9 Female DCE Port]	
Power Connection	3 Position Pluggable Terminal Block	
Antenna Connection	Standard Thread SMA	
Operating Modes	Point-to-Point, Point-to-Multipoint, Repeater, Repeater/Remote	
Enclosure Material	18 Gauge Steel	
Enclosure Dimensions	2.25" x 3.625" x 6.30" (5.72 x 9.21 x 16.0 cm)	
Mounting Options	Two L Brackets for Back or Bottom mounting (DIN clip bracket available)	
Weight	1.94 lbs. (0.88 kg.)	

Technical Support

Data-Linc Group maintains a fully trained staff of service personnel who are capable of providing complete product assistance. They can provide you with technical, application and troubleshooting, spare parts and warranty assistance. Our technical staff are based in Bellevue, Washington USA and may be reached at (425) 882-2206 or e-mail support@data-linc.com

Product Warranty

Data-Linc Group warrants equipment of its own manufacture to be free from defects in material and workmanship for one year from date of shipment to original user. Data-Linc Group will replace or repair, at our option, any part found to be defective. Buyer must return any part claimed defective to Data-Linc Group, transportation prepaid.

Return Material Authorization

If a part needs to be sent to the factory for repair, contact Data-Linc Group's corporate office and request a Return Material Authorization (RMA) number. The RMA number identifies the part and the owner and must be included with the part when shipped to the factory.

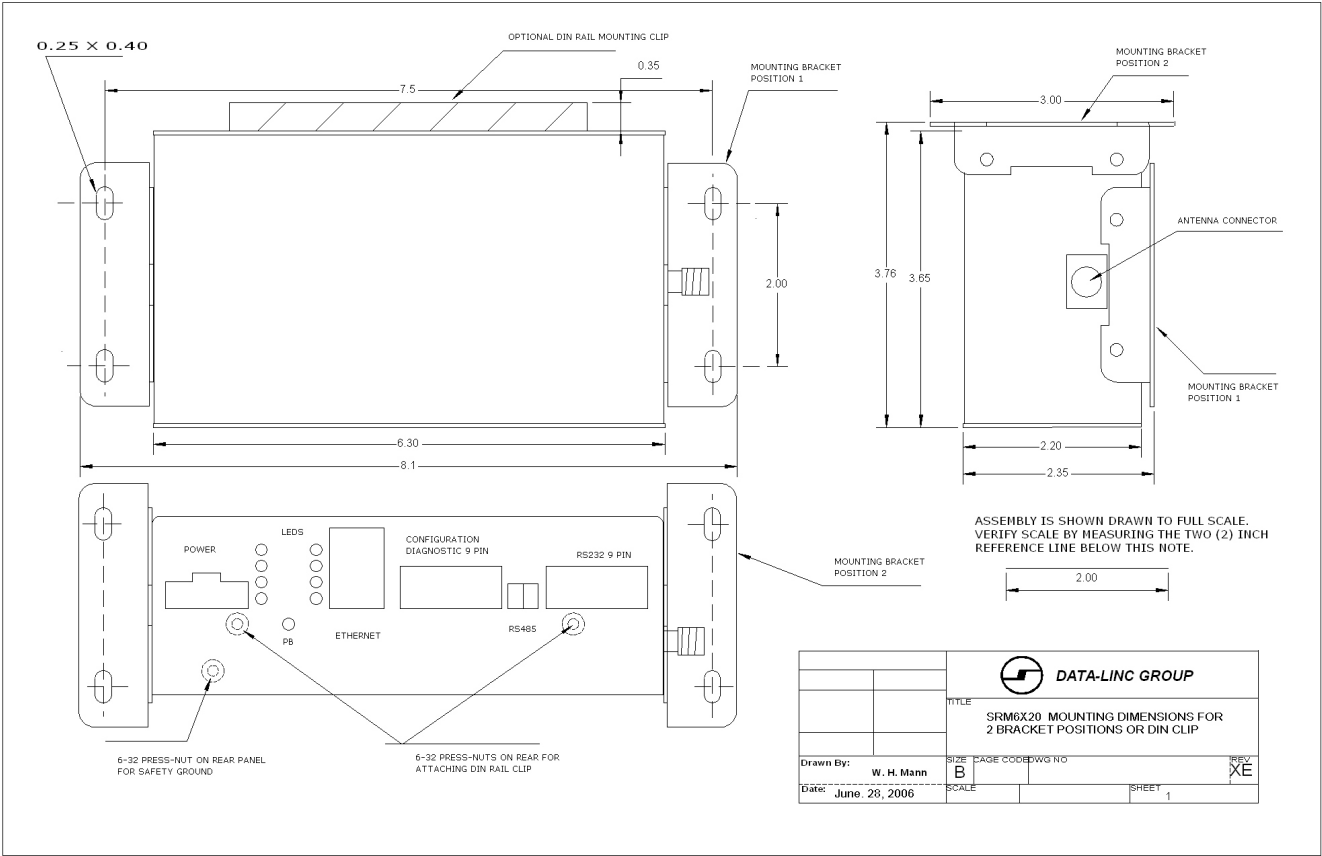
Contact Information

Corporate Office

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Bellevue, Washington 98006 USA

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Web site: www.data-linc.com

Appendix A : Enclosure Dimensions



Note: Enclosure Size, Mounting Holes and Locations may change without notice, contact Data-Linc Group (425) 882-2206 for the latest Enclosure Dimensions.

