Mimer III SoftLine

Connecting radios all over the world

Mimer SoftLine

Technical description and set-up instructions



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Mimer SoftLine is a special version of the Mimer SoftRadio network interfaces, where connection is point to point without having a PC as a dispatcher.



This is for example useful for bridging radio systems together, or cross patching between systems.

Certain radios can also be remote controlled using their own control head at the dispatch end, instead of using a PC software as you do with Mimer SoftRadio.

Mimer SoftLine is also used in cases where you need to upgrade from old leased lines to IP connections but still keep the radio equipment at each end.

This paper describes the basics and how to set up the system.

Please also refer to the web pages <u>www.lse.se/softline</u>.

And to the pages with cable diagrams and setup information: <u>www.lse.se/cables</u>



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2 General

The Mimer SoftLine interfaces basically transfers three types of signals between two points using an IP network connection.

- Audio input and output.
- Full duplex RS232 serial data at 1200-19200 baud.
- Digital I/O. There are two inputs and two outputs that are connected back-to-back.



This can be used in a number of ways, both for radio systems and for other purposes. Often the setup is used for bridging radio systems or for cross patching of radio systems. It is also used for eliminating old 2 or 4-wire leased lines and instead use LAN, WAN or the Internet.

A number of readymade cable kits are available for different use.

2.1 Audio input and output

The gain is factory set to 1:1 and the maximum level is set to +2dBm@600 ohm.

Interface type 3009/10, includes line transformers, is factory set to -10dB@600 ohm (typically replacing a land line).

Interface type 3009/21 is factory set for microphone and speaker levels (typically connecting two radios back-to-back).

The audio levels in/out of the interface can be adjusted with the setup software. This is described further down in this manual.

The default setting is that Audio data starts when the internal AF detector senses an AF signal at the input. The threshold for this can be set using the Mimer Network Interface Setup program. In some setups the audio line is full duplex.

2.2 Asynchronous RS232

The Baud rate for this link can be set to from 1200baud to 19200baud using the Mimer Network Interface Setup program.

There is an internal buffer in the interface that collects data from the input and transfers it to the other end within 50ms if the data stream stops.

2.3 Digital I/O

There are two inputs and two outputs that are connected back-to-back.

They can be used for a number of remote-control purposes.

When connecting two radios back-to-back over a SoftLine the squelch (or other logic receive indication) on one radio can through the I/O's trigger the PTT on the other radio and vice versa. As an alternative an audio detect (vox) in the interface at the receiver can be used for triggering PTT on the other radio.

Information about Pin-out and the use of the I/O's can be found on the web pages. In special setups the information will be sent with the equipment.

3 Examples of SoftLine use

Below are some examples of how to use SoftLine in your radio systems.



Using IP instead of an old analogue leased line connection between operator and base station.

This is also useful if you cannot use copper connections and need to convert the connections to fibre.



Connection of two radios as a cross patch. The radios can be at the same location or at totally different locations. In this case a Tetra radio and an Airband radio.



Remote operation of a radio using only a microphone and speakers. For operators that do not want to have a PC as the operator interface.

4 First setup

Before setting up the system over the Internet and/or at the end user. Please connect the two interfaces to each other with a TP cable or over a local LAN. Connect the other equipment at each end, test the functionality and see that it works as intended.

The interfaces are normally delivered to work as a pair over a LAN or with a direct cable, with the format 192.168.0.xxx, in the IP settings. If this is adequate no settings needs to be done.

5 Setting up the interfaces

Before the interfaces are installed in the customers IP network, they need to be configured using the program "Mimer Network Interface Setup".

This configuration involves setting the IP-addresses that are going to be used.

Mimer Network Interface Setup - Version: 4.0.16.13	- 🗆 X	Mimer Network Interface Setup - Version: 4.0.16.13						
e Help		File Help						
onnected Units:	IP of this computer: 192 168 0 89	Connected Units: IP of this com	puter: 192 168 0 89					
0: 102 IP: 192.158.0.102	Netmask of this computer: 255 255 255 0	ID: 101 IP: 192.168.0.101 Update the list Netmask of this com	puter: 255 255 255 0					
0: 109 IP: 192.168.0.109	Set above subnet address on all Mimer units	ID: 103 IP: 192.168.0.103 ID: 100 IP: 102.168.0.100 Set above sur	bnet address on all Mimer units					
2 111 IP: 192.168.0.111 0: 112 IP: 192.168.0.112	This function sets the IP address on all Mimer units connected to this network so they will be accessible for the setup program.	D: 110 IP: 192.1680.110 ID: 111 IP: 192.1680.111 ID: 111 IP: 192.1680.111 Select a unif from the isdance the stup program.	This function sets the IP address on all Mimer units connected to this network so they will be accessible for the setun program.					
ettings for the selected unit	Audio-buffer delay:	Settings for the selected unit	Audio-buffer delay:					
ID: 102 SerNr: 2681 Set a	all values to defaults 4	ID: 101 SerVir: 2680 Set all values to defaults	4					
ID String: Mimer	Delay: 128 ms	ID String: Mimer	Delay: 128 ms					
Password: secret-1 Crea	ate random password AF detect:	Password: secret-1 Create random password	AF detect:					
IP address: 192 168 0 102 MAC: 00:5	50:C2:7D:DA:88 Using RF-detect input!	IP address: 192 168 0 101 MAC: 00:50:C2:7D:DA:87	Using RF-detect input!					
Netmask: 255 255 255 0		Netmask: 255 255 0						
Gateway: 192 168 0 1		Gateway: 192 168 0 1						
TCP server port: 20901 Softwar	are rev: 5.066	TCP server port: 20901 Software rev: 5.066						
Mimer SoftLine		Mimer SoftLine						
Type of unit: COM-port Bau O Server 1200 © Client 2400 • Alson • Alson	udrate	Type of unit: COM-port Baudrate © Server 1200 38400 Clent Q400 57500						
IP address to server: 192 168 0 101 09600 0 Remote ID: 101 0 19200 0	50000 Read settings from unit	9600 9000 9600 50000 8emote ID: 102	Read settings from unit					
	Write changes to unit		Write changes to unit					
Advanced	Let	Advanced	Exit					

Typical settings in the Server and Client interfaces.

5.1 Connect your PC

You need to connect your PC in the same local LAN as the network interface. Then you can do the setup using the program "Mimer Interface Setup".

If you don't see the interface listed in the "Connected Units" list, then check:

- That your PC's IP port has an address in the same subnet as the interface.
- That your Windows firewall is not blocking the connection.

5.2 Server – Client

One of the interfaces shall be set as a server and the other as a client. The IP address of the server needs to be known. The client can have any IP address,

although it needs to be set to an address that fits in the network where it is connected.

Typically one interface (the client) is placed in a local network and accesses the other interface through a router. In this case the address of the router needs to be set in the Default Gateway parameter of the client.

The other interface may be placed at a remote site and is usually connected through a router that interfaces to the internet connection. This remote router needs to be configured to forward IP data on a specific IP port to the local IP address of that SoftLine interface. That interface shall be configured as a server and set to listen to the same port that is forwarded. Also, the address of the router needs to be set in the Default Gateway parameter of the interface.



Example of setting in a local LAN. (Also, the default setting when delivered)



Example of settings for a Mimer SoftLine connection over internet via routers in both ends.

5.3 Audio Buffer Delay

Another parameter that may need an adjustment is the buffer delay. For use in a local network or over a microwave link it can be set to a low value like 2-4. For a connection over internet that may show large time jitters the buffering delay may need to be set as high as 16 to achieve a stable audio transfer. The buffer delay need only be set on the client. The server will use the same delay setting as the client after the connection is established.

5.4 Audio levels

Behind the "Advanced" key in the software are settings for audio in/out of the interface. These are normally factory set and seldom needs adjustment. If you do need to change the settings, first make a note of the original values, so that you can revert back to them if needed.

Advanced settings										
Adjust the Network Interface AF gain										
Note that these settings rarely need to be changed from the default values. These levels shall only be change by a qualified technician with suitable test equipment at hand.										
Incoming AF to interface 248										
Ok Cancel										

5.5 AF Detect

In for example cross patch solutions the AF Detect on one radio is used for triggering the PTT on the other radio. On radios with a logical output saying "I am receiving" similar to the Squelch output or PL-detect on old analogue radios, this is used.

At delivery it will be factory set if the AF detect will be done through a logical I/O from the radio, or if the interface shall measure the AF-level (vox control).

5.6 Messages at setup

There are some helpful messages that can be read during setup, when using the Interface Setup software. Connect a PC to the LAN where you have the interface and check the message line marked Connection Status. These messages can be found on version 4.0.17.8 and forward.

Logged in – The two interfaces are connected.

Not Connected – The two interfaces are not connected.

Wrong Password – The IP path is setup, but the password in the client interface setup was not accepted by the server interface.

Connected Units:						IP of this c	omputer:	192	168	0	89
ID: 103 IP: 192.168.0 ID: 104 IP: 192.168.0	Initial feature Initial feature Dir 103 Pr: 192, 168, 0, 103 Initial feature Dir 104 Pr: 192, 1680, 103 Initial feature Dir 104 Pr: 192, 1680, 101 Initial feature Dir 104 Pr: 192, 1680, 101 Initial Print Dir 114 Pr: 192, 1680, 101 Initial Print Dir 114 Pr: 192, 1680, 101 Initial Print Select a unit from the list above Servir: Settings for the selected unit Initial Print ID String: Softline Cirent Padress: 192, 1688, 0 Netmask: 255, 255, 255 Gateway: 192, 168, 0 TCP server port: 20903 Wimer Softlune Type of unit: Server © Cirent IP address to server: 192, 168, 0 103				he list Netmask of this compute				255	255	0
ID: 110 IP: 192.168.0		Set above	Set above subnet address on all Mimer units								
ID: 112 IP: 192.168.0 ID: 113 IP: 192.168.0	.112 .113	~				This function sets connected to this	the IP ac	ldress o so they	on all Mir will be a	mer units accessib	s le fr
Select a unit from the lis	t abov	e				the setup program	۱.				
Settings for the selecte	d unit					Audio-buffer delay:					
ID:	104	٢	Ser	Nr: 279	7	Set all values to defaul	ts	4			
ID String:	Soft	ine cl	ien]		Delay	: 128 m	ıs	
Password:	Password: secret-3					Create random passwo	rd	AF detect:			
IP address:	192	168	0	104	MAC	00:50:C2:7D:DA:FC		Using	RF-det	ect inpu	t!
Netmask:	255	255	255	0]						
Gateway:	192	168	0	1]			Monito	or TX au	dio	
TCP server port:	2090	3			S	oftware rev: 5.074			tive		
	Mimer SoftLine										
			it:		COM-po	t Baudrate					
	Os	erver			0 1200	0 38400					
		lient		_	0 4800	0 76200					
IP address to server:	192	168 0	10	03	<u> </u>	O 50000	1	R	ead set	tings fro	m ur
Remote ID:	103				• 1920	0 () 115200	1				
Connection Status:	Logge	d in.							Write ch	hanges t	o un
		Advar	ced				1			Evit	

6 Special versions of Mimer SoftLine

SoftLine has been tailor made to specifically connect some radios to their standard control heads over long distances.

Usually only a distance of up to 10 meters is possible with the standard equipment from the manufacturers.

With SoftLine you can have the control head on the other side of the world.

6.1 Mimer SoftLine Motorola analogue

Through the use of a specially designed version of the Mimer SoftLine Network Interface, a remote control can be set up for a Motorola GM380 or GM1280 radio and its standard control head.

The radio and the control head can be separated by a standard CAT5 cable of up to 150m or you can use a standard LAN to expand the range even further. You can also use the Internet for longer expansions.

With SoftLine Motorola you can have more than one control head attached to one radio and even mix control heads with the software solution Mimer SoftRadio.

At the control head side, the standard speaker and microphone can be used.

The Mimer Network Interface has a built-in speaker amplifier to get the audio level right.



Remote control of Motorola radio with standard control head.

6.1.1 Setup

Please note that the radio and the control head shall be equipped as if they were remote controlled with a cable kit. The kit for this is: RLN4780.

No special programming is needed in the radio.

The Control head and the network interface at that end will need a power supply of 12VDC and at least 2A.

6.2 Mimer SoftLine Sepura

Through the use of a specially designed version of the Mimer SoftLine Network Interface, a remote control can be set up for the Sepura SRG3500/3900 Tetra terminal and its standard control head.

The radio and the control head can be separated by a standard CAT5 cable of up to 150m or you can use a standard LAN to expand the range even further. You can also use the Internet for longer expansions.

At the control head side, the standard speaker and microphone can be used.

The Mimer Network Interface has a built-in speaker amplifier to get the audio level right.



Remote control of Sepura Tetra radio with standard control head.

6.2.1 Setup

The Control head and the network interface at that end will need a power supply of 12VDC and at least 2A.

No special programming is usually needed in the radio.

Both ports on the radio will work (depends also on radio programming). A standard control head can be connected in parallel for local use.

6.3 Mimer SoftLine Icom Marine

Through the use of a specially designed version of the Mimer SoftLine Network Interface, a remote control can be set up for the Icom Marine radios IC-M423, M424, M400BB, M506 and M510 (and -g and -e-versions) with their standard Command microphone.

The radio and the Command microphone can be separated by a standard CAT5 cable of up to 150m or you can use a standard LAN to expand the range even further. You can also use the Internet for longer expansions.

An extra separate loudspeaker can be connected at the Command microphone side if needed.

When using the Icom marine radio the standard radio front panel and microphone can be used in parallel with the remote control (not applicable on M400BB).



Remote control of Icom Marine radio with Command microphone.

6.3.1 Setup

Before setting up the remote control, connect the Command microphone directly to the radio and let them "shake hands" so that they surely have the same firmware versions and work together.

The Command microphone and the network interface at that end will need a power supply of 12VDC and at least 2A.

No special programming is needed in the radio.

Note that power to the Command Microphone is not active unless there is a functioning connection between the interfaces over the IP network.

6.4 Mimer SoftLine Motorola MTM5500

Through the use of the Mimer SoftLine Network Interfaces and a specially designed version of interfaces, a remote control can be set up for the Motorola MTM5500 with its standard Control head and microphone.

The radio and the Control Head can be separated by standard CAT5 cables of up to 150m or you can use a standard LAN-switch to expand the range even further.

The remote setup uses two connections. One is the standard Mimer SoftLine connection. This can be set to be used on any LAN or even the Internet. The other connection however is "dictated" by Motorola. The Ip-addresses can't be changed and therefor it will only work in a direct setup in your own LAN.

The solution is delivered with modems to be used over a fibre connection for customers that do not want copper wire connection.

If the MTM5500 is set up for use with two control panels, the standard radio front panel and microphone can be used in parallel with the remote control.



Remote control of Motorola MTM5500 over fibre.

6.4.1 Setup

The Remote control head and the network interfaces at that end will need a power supply of 12VDC and at least 2A.

Mimer SoftLine Setup

THIS MANUAL WILL HELP WITH:

- UNDERSTANDING THE SOFTLINE
 PRODUCT
- EXAMPLES OF USE
- SETUP INSTRUCTIONS FOR LAN, WAN AND THE INTERNET



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