

Kenwood Viking VM5x30 Interface for IP-224



PROPRIETARY NOTICE

The product information and design disclosed herein were originated by and are the property of Bosch Security Systems, Inc. Bosch reserves all patent, proprietary design, manufacturing, reproduction, use and sales rights thereto, and to any article disclosed therein, except to the extent rights are expressly granted to others.

COPYRIGHT NOTICE

Copyright 2019 by Bosch Security Systems, Inc. All rights reserved. Reproduction, in whole or in part, without prior written permission from Bosch is prohibited.

*All other trademarks are property of their respective owners.

WARRANTY NOTICE (LIMITED)

For warranty and service information, refer to www.telex.com/warranty.

FACTORY SERVICE CENTER

Factory Service Center
Bosch Security Systems, Inc.
Radio Dispatch Products
8601 East Cornhusker Highway
Lincoln, Nebraska, 68507

CONTACT INFORMATION

Sales:

Phone(800) 752-7560
Fax(402) 467-3279
E-mail..... TelexDispatch@us.bosch.com

Customer Service Repair:

E-mail..... repair@us.bosch.com
Phone.....(800) 553-5992

Technical Support:

Knowledge Database .. <http://knowledge.boschsecurity.com/>
LiveChat www.telex.com/us/dispatch/support
E-mail TelexDispatchtechsupport@us.bosch.com
Web www.telex.com

CLAIMS

No liability will be accepted for damages directly or indirectly arising from the use of our materials or from any other causes. Our liability shall be expressly limited to replacement or repair of defective materials.

OpenSSL Project

This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (<http://www.openssl.org/>). This product includes cryptographic software written by Eric Young (eyay@cryptsoft.com). This product includes cryptographic software written by Tim Hudson (tjh@cryptsoft.com).

Table of Contents

1.0 Introduction	5
2.0 Hardware Requirements	5
3.0 Software Requirements	5
4.0 Supported Features	6
5.0 Cable Diagram	7
6.0 Radio Programming Application Setup	8
6.1 Serial Communication	8
6.2 Serial Communications Setup	10
6.3 External PTT and COR Setup	10
6.4 Radio Buttons Setup	11
7.0 IP-224 Access Key Installation	12
8.0 IP-224 Setup	14
9.0 C-Soft Designer Setup	16

1.0 Introduction

The Kenwood Viking VM5x30 radio interface is designed as an add-on option in the Telex Radio Dispatch system. This application guide describes the Telex Radio Dispatch Kenwood Viking VM5x30 feature set and how to configure the interface for the IP-224 and C-Soft.

NOTE: For more information, see the IP-224 Technical Manuals (P/N F.01U.218.562), the C-Soft Software Console Administrator's Guide (P/N F.01U.218.561), and the radio manufacturer's technical documentation.

2.0 Hardware Requirements

- IP-224 Ethernet Adapter Panel (P/N F.01U.306.547)
- IP-224 Cable- Kenwood TK-X150/X180, 5X10, and NXDN radios (P/N F.01U.165.540)
- Kenwood Viking VM5x30 Radio

NOTE: See the IP-224 firmware release notes for the radio firmware revision tested.

3.0 Software Requirements

- C-Soft version 6.500 or later
- IP-224 version 2.500 or later
- IP-224 Advanced Interface Option (Export) or Advanced Interface Option (North American Access Key)
- Telex System Manager (TSM) 2.500 or later
- Windows 7 (32-bit or 64-bit)
- Windows 8.1
- Windows 10
- Kenwood Armada Fleet Management Software
- EFJ 3rd Party Interface option for radio

4.0 Supported Features

Kenwood Viking VM5x30 Supported Features					
Feature	Analog Support	Digital Support	Feature	Analog Support	Digital Support
Channel/Talkgroup Change	Yes	Yes	GPS Read	No	No
Zone Change	No	No	GPS Trigger On/Off	No	No
Group Call	No	No	Monitor On/Off	Yes	Yes
Private Call	No	No	Radio Call Alert	No	No
ANI Decode	Yes	Yes	Radio Check	No	No
Call Alert Decode	No	No	Radio Select Call	No	No
Emergency Decode	Yes	Yes	Radio Remote Monitor	No	No
Status Message Decode	No	No	Radio Send Text Message	No	No
Text Message Decode	No	No	Radio Status (Send Status Message)	No	No
Query Encryption	Yes	Yes	Radio Status Request	No	No
Query Monitor	Yes	Yes	Scan Add/Delete	No	No
Query Scan	Yes	Yes	Scan On/Off	Yes	Yes
Query Talk Around	Yes	Yes	Talk Around On/Off	Yes	Yes
Emergency Acknowledgement	No	No			
Encryption On/Off	Yes	Yes			

5.0 Cable Diagram

The IP-224 Cable - Kenwood TK-X150/X180, 5X10, and NXDN radios allow the IP-224 to serially control a Kenwood Viking VM5x30 radio.

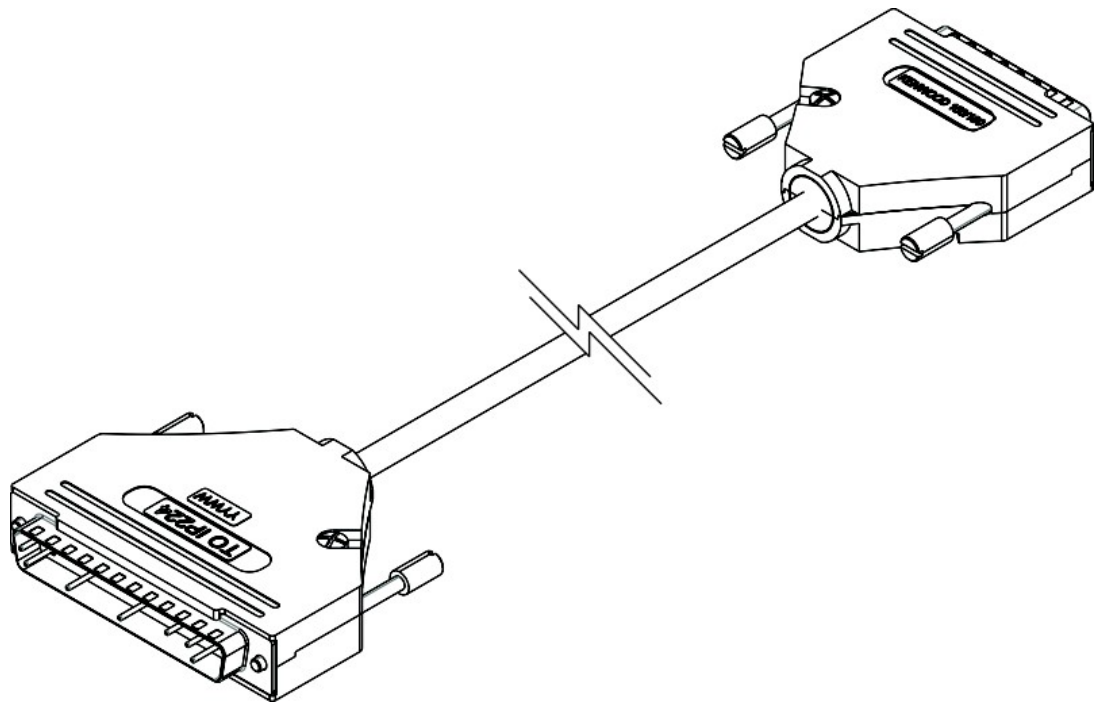


FIGURE 1. Kenwood Interface Cable

Cable diagram for Kenwood Viking VM5x30 Radio and IP-224 Interface			
Function	Kenwood Viking VM5x30	IP-224	Function
RXD2	PIN 2	PIN 17	RS-232/TTL TXD
TXD2	PIN 3	PIN 36	RS-232/TTL RXD
GND	PIN 7	PIN 29	GROUND
GND	PIN 7	PIN 5	PTT RELAY
Ext. MIC Input	PIN 6	PIN 1	TX+ AUDIO
RX Output	PIN 17	PIN 20	RX+ AUDIO
AUX Input	PIN 12	PIN 24	PTT RELAY N.O. CONTACT
AUX Output	PIN 20	PIN15	COR INPUT

6.0 Radio Programming Application Setup

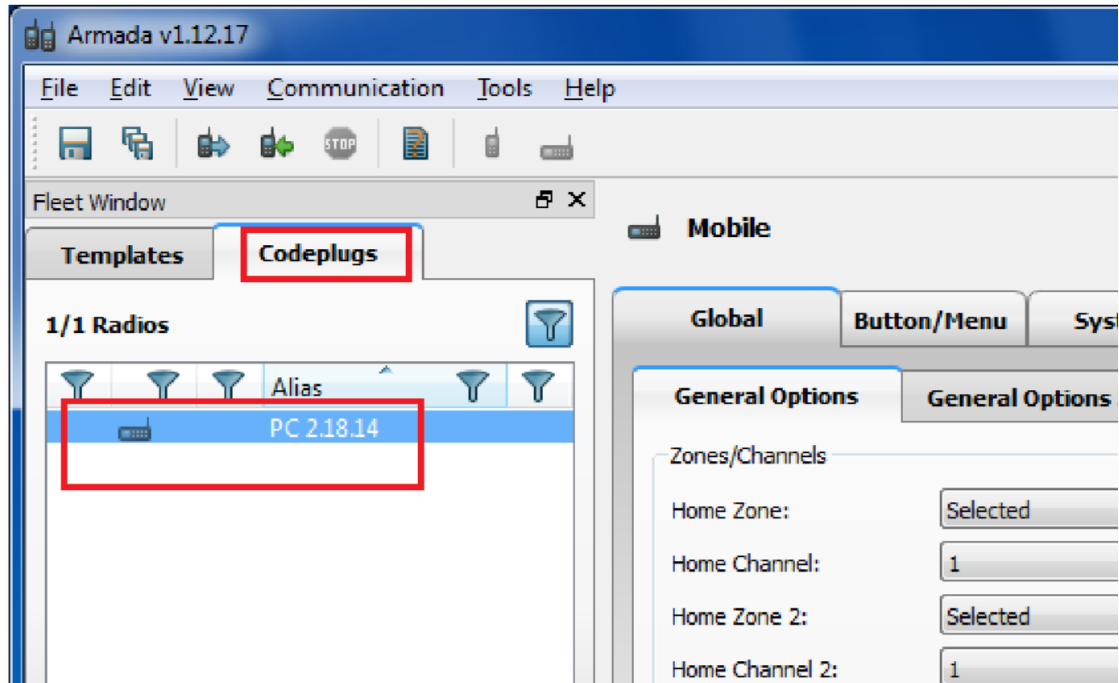
The Armada Fleet Management Software is used to configure the Kenwood Viking VM5x30 radio to interface properly with the IP-224.

6.1 Serial Communication

To verify **Serial Communications are enabled**, do the following:

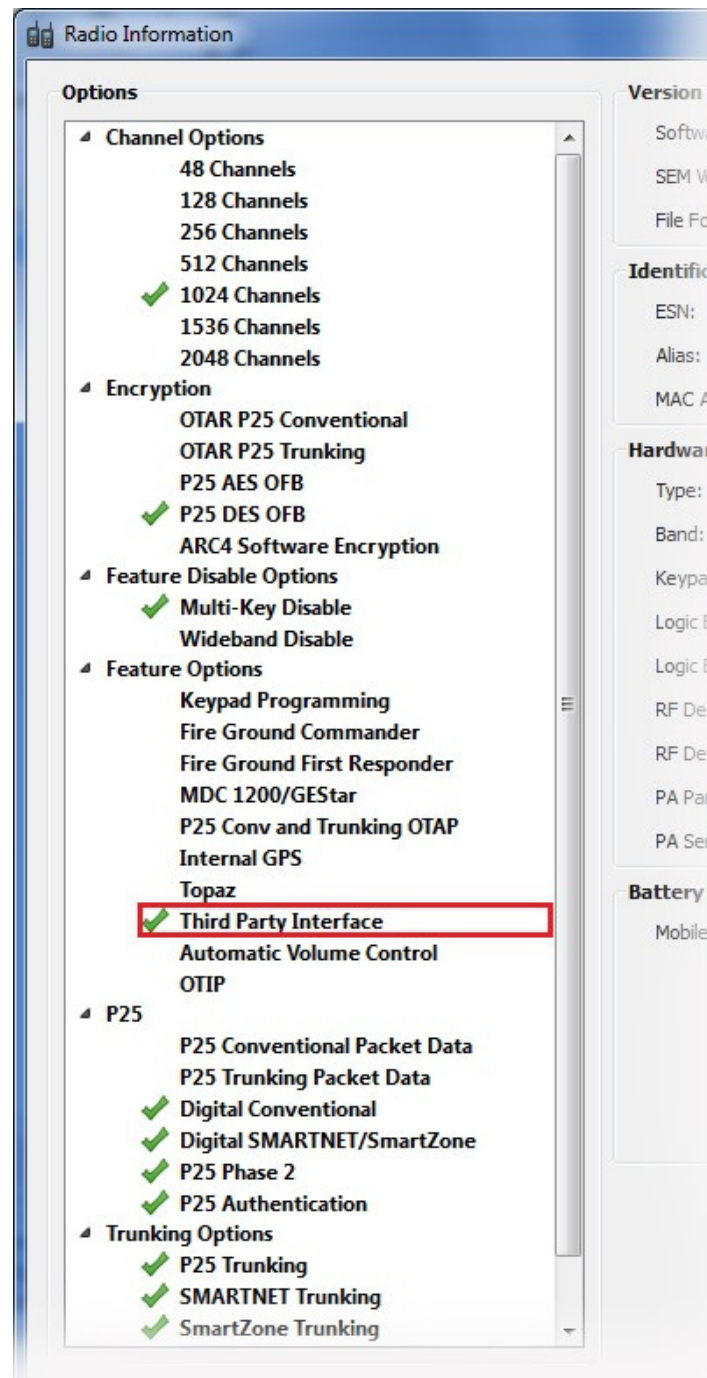
1. Open the **Armada Fleet Management Software**.
2. Click the **Codeplugs** tab.

The Codeplugs page appears.



3. Right-click the **Codeplug icon**.
A drop down menu appears.

4. From the drop down menu, select **Properties**.
The Radio Information window appears.



5. Under Feature Options, verify the **Third Party Interface** option has a check mark.
If yes, continue
OR
If no, contact an EFJohnson representative for instructions.

6.2 Serial Communications Setup

To **configure the Serial Communications**, do the following:

1. From the top navigation, select **Global | Mobile Options**.
The Mobile Options window appears.

The screenshot shows the 'Mobile Options' configuration window. The 'General Options' tab is active. Under 'External Serial Connector', 'Serial Connection' is set to 'None' and 'Baud Rate' is set to '19200'. The 'Pins' section shows a table of pin configurations. Pin 12 is set to 'External PTT' (Input) and Pin 20 is set to 'Output Busy' (Output, Low). The 'Remote Control Head Pins' section shows 'CH1 Input 1' and 'CH1 Input 2' both set to 'Disabled'.

Pin	Function	I/O	Active	Debounce (ms)
Pin 4	Disabled		Low	10
Pin 8	Disabled		Low	10
Pin 12	External PTT	Input	Low	10
Pin 13	Disabled		Low	10
Pin 15	Disabled		Low	
Pin 16	Disabled		Low	
Pin 20	Output Busy	Output	Low	10
Pin 21	Disabled		Low	10
Pin 22	Disabled		Low	10
Pin 23	Disabled		Low	10
Pin 24	Disabled		Low	0

Pin	Function	I/O	Active	Debounce (ms)
CH1 Input 1	Disabled			0
CH1 Input 2	Disabled			0

2. In the Serial Connection field, select **None**.
3. In the Baud Rate field, select **19200**.

6.3 External PTT and COR Setup

To **configure the External PTT and COR**, do the following:

1. From the top navigation, select **Global | Mobile Options**.
The Mobile Options window appears.
2. In the Pin 12 field, select **External PTT**.
3. In the Pin 20 field, select **Output Busy**.
4. In the Active field of Pin 20, select **Low**.

6.4 Radio Buttons Setup

To **configure the Radio Buttons**, do the following:

1. Open the **Armada Fleet Management Software**.
2. Click the **Button/Menu** tab.
The Button/Menu page appears.
3. In the Interface Type field, select **Kenwood Control Head 19**.
4. From the System Types, select the **desired system**.

Under Button Assignments

5. From the F1 drop down menu, select **Emergency Clear**.
6. from the F3 drop down menu, select **Repeater TA**.
7. From the F4 drop down menu, select **Clear/Secure**.
8. From the F5 drop down menu, select **Scan**.
9. From the F6 drop down menu, select **Monitor**.
10. Repeat **steps 2-9** to configure additional systems.

Radio Type: VM5000 / VM6000 / VM7000 Interface Type: Kenwood Control Head 19

Global **Button/Menu** Systems Zones Channels

System Types:

Conventional

Global Button/Menu

☐ Load Menu from Last Selection

Copy Paste

Buttons Menu Aliases Accessories

Conventional ▾

Button Assignments

Select: Zone Up

Up: Channel Up

Down: Channel Down

Plus (+): Volume Up

Minus (-): Volume Down

F1: Emergency Clear

F2: Home

Radio View

KENWOOD

Button Menu

F3	F4	F5	F6
Repeater TA	Clear/Secure	Scan	Monitor

Add Delete

7.0 IP-224 Access Key Installation

The Kenwood Viking VM5x30 radio interface requires an additional Advanced Interface Option (Export) or Advanced Interface Option (North American) on the IP-224.

NOTE:

- The Advanced Interface Option (Export) or Advanced Interface Option (North American) Access Key must be purchased before you can activate the Kenwood VM5x30 Serial Type. The Advanced Interface Option (Export) or Advanced Interface Option (North American) requires an access key to be generated specifically for each IP-224
- If the Advanced Interface Option (Export) or Advanced Interface Option (North American) Access Key was purchased as a factory installation [(F.01U.347.906) IP-224 Radio Gateway Advanced Options Export or (F.01U.347.907) IP-224 Radio Gateway Advanced Options NA (factory installed)], the access key was activated by the factory prior to shipping.
- Activating the Advanced Interface Option (Export) or Advanced Interface Option (North American) via the IP-224 web interface is only required if this is a field installation [(F.01U.343.868) IP-224 Field Code Advanced Options Export or (F.01U.343.869) IP-224 Field Code Advanced Option NA (customer purchased option)].

To activate the **Advanced Interface Option (Export)** or **Advanced Interface Option (North American)** Access Key, do the following:

1. Open the **IP-224** webpage.
2. From the left navigation, select **Advanced Features**.
The Additional Features page appears.
3. In the Access Key field, enter the **32-character access key**.
4. Click the **Submit** button.
The changes are sent to the IP-224 in temporary storage.

TELEX
Radio Dispatch

Name: Telex IP-224
MAC: 00:0B:7C:70:2F:DC
HW: 1.010 FW: 2.401
SN: 224187792 Checksum: 9D1C24C6

admin | Logout

TELEX IP-224

- Home
- Ethernet Setup
- Multicast Setup
- Hardware Setup
- Gain Setup
- Per Line Setup
- Crosspatch Setup
- Account Management
- Backup & Restore
- Firmware Upgrade
- Additional Features**
- Save Parameters
- System Status

ACCESS ADDITIONAL FEATURES

Access Key:

Feature Name	State
Advanced Interface Option (North American)	Enabled

Serial Type	Available
EFJ 5300/VMx00	Yes
Hytera MD782	Yes
Hytera MT680	Yes
Icom	Yes
IDEN	Yes
Kenwood 5x10	Yes
Kenwood NEXEDGE	Yes
Kenwood NX-5x00	Yes
Kenwood VM5x30	Yes
Kenwood x150	Yes
Kenwood x180	Yes
Kenwood x80	Yes
Kenwood x90	Yes
MOTOTRBO Interface*	Yes
MTRBi	Yes
PowerTrunk	Yes
Sepura	Yes
Serial Over IP	Yes
Sprint Direct Connect	Yes
Tait TM91xx/TM94xx	Yes
Tait TM93xx	Yes
Telex Generic	Yes
Serial Protocol Version 1	Yes
Serial Protocol Version 2	Yes

* MOTOTRBO Interface is only available on one line with the Advanced Interface Option (North American)

5. From the left navigation, select **Save Parameters**.
The Save Parameters page appears.
6. Click the **Save Parameters** button.
Changes are now permanently saved to the IP-224 console.

8.0 IP-224 Setup

To configure the IP-224, do the following:

1. Open the **IP-224 web application**.
The IP-224 web page appears.
2. From the left navigation, select **Multicast Setup**.
3. Select the **Auto Configuration** check box.

The screenshot shows the Telex IP-224 Multicast Setup web application. The browser address bar shows the URL: `https://172.19.210.210/cgi-bin/multicast_setup.cgi`. The page header includes the Telex logo and the text "Radio Dispatch". The left navigation menu is titled "TELEX IP-224" and includes links for Home, Ethernet Setup, Multicast Setup (selected), Hardware Setup, Gain Setup, Per Line Setup, Crosspatch Setup, Account Management, Backup & Restore, Firmware Upgrade, Additional Features, Save Parameters, and System Status. The main content area is titled "LINE SETUP" and contains a table for configuring two lines. The "Auto Configuration" checkbox is checked. Below the "LINE SETUP" table is the "IP RECORDER SETUP" table. Both tables have a "Submit" button at the bottom.

TELEX IP-224

Name: Telex IP-224
MAC: 00:08:7C:70:2F:DC
HW: 1.010 FW: 2.401
SN: 224187792 Checksum: 9D1C24C6

admin | Logout

Submit

Auto Configuration: ☒

LINE SETUP

Line:	Line Enable:	Line Name:	Line Type:	Serial Type:	Vocoder Type:
1	☒	Line 1	Console Mode	Off	TELEX 32K
2	☒	Line 2	Local Mode	Kenwood VM5x30	TELEX 32K

Line:	Mcast Enable:	RX Mcast:	RX Port:	TX Mcast:	TX Port:	TX Group Port A:	TX Group Port B:	TTL:
1	☒	225.8.11.81	18054	225.8.11.81	18072	0	0	6
2	☒	225.8.11.81	1055	225.8.11.81	1074	0	0	6

IP RECORDER SETUP

Line:	Mcast Enable:	Line Name:	Vocoder Type:	Mcast Address:	Outgoing Port:	TTL:
1	☐	Recorder 1	TELEX 32K	225.8.11.81	2250	6
2	☐	Recorder 2	TELEX 32K	225.8.11.81	2251	6

Submit

© Copyright 2019 Bosch Security Systems, Inc. All Rights Reserved.

Under LINE SETUP

4. From the Serial Type drop down menu, select **Kenwood VM5x30** on the desired lines.
5. In the RX Mcast field, enter **Receive Multicast IP Address**.
6. In the RX Port field, enter the **Receive Multicast Port number**.
7. In the TX Mcast field, enter the **Transmit Multicast IP Address**.
8. In the TX Port field, enter the **Transmit Multicast Port number**.

9. Click the **Submit button**.
The changes are sent to the IP-224 in temporary storage.
10. From the left navigation, select **Per Line Setup**.
The Per Line Setup window appears.

FUNCTION TONE SETUP

Jump to Entry: << < 1 to 10 > >>

Boot Up Frequency: 1

Entry	Enable	Relay	Relay Group	Relay Time (ms)	Digital Output	CTCSS Freq	CTCSS Default	System	Chan
1	☒		1	0	0	0	☐	1	1
2	☒		1	0	0	0	☐	1	2
3	☒		1	0	0	0	☐	1	3
4	☒		1	0	0	0	☐	1	4
5	☒		1	0	0	0	☐	1	5
6	☒		1	0	0	0	☐	1	6
7	☒		1	0	0	0	☐	1	7
8	☒		1	0	0	0	☐	1	8
9	☒		1	0	0	0	☐	2	1
10	☒		1	0	0	0	☐	2	2

Under Function Tone Setup

11. In the System Column field, enter the **desired radio system/zone**.
12. In the Chan Column field, enter the **desired radio channel**.
13. Click the **Submit button**.
The changes are sent to the IP-224 in temporary storage.
14. From the left navigation, select **Save Parameters**.
The Save Parameters page appears.
15. Click the Save Parameters button.
Changes are now permanently saved to the IP-224 console.

9.0 C-Soft Designer Setup

The Per Line Parameters window is used to configure C-Soft to IP-224 communications.

To **configure the Per Line Parameters**, do the following:

1. Open **C-Soft Designer**.
2. From the Edit menu, select **Setup Per Line Parameters**.
The Per Line Parameters window appears.

Line Number	Line Type	Line Name	Rx Multicast Address	Rx Port	Tx Multicast Address	Tx Port	Base Radio IP	TTL	Packet Delay	Echo Packets Enable	Options	Freqs	Signal Setup	SIP
1	Telex	Line 1	225.8.11.81	1054	225.8.11.81	1073	0.0.0.0	6	10	☐	Options	Freqs	Signal Setup	SIP
2	Telex	TK-5x30	225.8.11.81	1055	225.8.11.81	1074	0.0.0.0	6	10	☐	Options	Freqs	Signal Setup	SIP
3	Telex	Line 3	225.8.11.81	1056	225.8.11.81	1075	0.0.0.0	6	10	☐	Options	Freqs	Signal Setup	SIP
4	Telex	Line 4	225.8.11.81	1057	225.8.11.81	1076	0.0.0.0	6	10	☐	Options	Freqs	Signal Setup	SIP
5	Telex	Line 5	225.8.11.81	1058	225.8.11.81	1077	0.0.0.0	6	10	☐	Options	Freqs	Signal Setup	SIP
6	Telex	Line 6	225.8.11.81	1059	225.8.11.81	1078	0.0.0.0	6	10	☐	Options	Freqs	Signal Setup	SIP
7	Disabled	Line 7	225.8.11.81	1060	225.8.11.81	1260	0.0.0.0	6	10	☐	Options	Freqs	Signal Setup	SIP
8	Disabled	Line 8	225.8.11.81	1061	225.8.11.81	1261	0.0.0.0	6	10	☐	Options	Freqs	Signal Setup	SIP
9	Disabled	Line 9	225.8.11.81	1062	225.8.11.81	1262	0.0.0.0	6	10	☐	Options	Freqs	Signal Setup	SIP
10	Disabled	Line 10	225.8.11.81	1063	225.8.11.81	1263	0.0.0.0	6	10	☐	Options	Freqs	Signal Setup	SIP

3. In the Rx Multicast Address field, enter the **Receive Multicast IP Address** of the connected IP-224.
4. In the Rx Port field, enter the **Receive Multicast Port number** of the connected IP-224.
5. In the Tx Multicast Address field, enter the **Transmit Multicast IP Address** of the connected IP-224.
6. In the Tx Port field, enter the **Transmit Multicast Port number** of the connected IP-224.
7. In the Base Radio IP field, enter the **IP Address** of the connected IP-224.
8. Click the **Close button**.

NOTE: The Multicast settings of IP-224 and C-Soft must match for the interface to function properly. Verify the RX and TX Multicast Addresses match, as well as the RX and TX ports.

NOTES

Suggestions or comments:

Contact technical support with suggestions or comments concerning this application note.

Technical Support:

Email: TelexDispatchtechsupport@us.bosch.com

Fax: 1-402-467-3279

Bosch Security Systems, Inc

8601 East Cornhusker Highway

Lincoln, Nebraska 68507

Phone: (800) 752-7560 **Fax:** (402) 467-3279

Email: Telexdispatch@us.bosch.com