REL M KNG Series
Interface for IP-224

American Communication Systems
Discover the Power of Communications™
http://www.ameradio.com
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WARNING

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Do not open the unit. No user serviceable parts are contained within. Bosch cannot be responsible for damage. If the unit is opened, the warranty can be voided.
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1.0 Introduction

This application guide describes the Telex Radio Dispatch RELM KNG Series feature set and how to configure the interface for the IP-224 and C-Soft.

2.0 Hardware Requirements

- IP-224 Ethernet Adapter Panel (P/N F.01U.306.547)
- IP-224 to RELM KNG Series Interface Cable
  **NOTE:** Telex Radio Dispatch does not manufacture an interface cable. See the Cable Diagram section for details on creating one.
- RELM KNG Series Radio

3.0 Software Requirements

- C-Soft version 6.500 or later
- IP-224 version 2.100 or later
- Telex System Manager (TSM) version 2.000 or later
- Windows 7 (32-bit or 64-bit)
- Windows 8.1
## 4.0 Supported Features

<table>
<thead>
<tr>
<th>Feature</th>
<th>Analog Support</th>
<th>Digital Support</th>
<th>Feature</th>
<th>Analog Support</th>
<th>Digital Support</th>
</tr>
</thead>
<tbody>
<tr>
<td>Channel/Talkgroup Change</td>
<td>Yes</td>
<td>Yes</td>
<td>Emergency Acknowledgement</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Zone Change</td>
<td>Yes</td>
<td>Yes</td>
<td>Encryption On/Off</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Zone Change</td>
<td>Yes</td>
<td>Yes</td>
<td>GPS Read</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Group Call</td>
<td>No</td>
<td>No</td>
<td>GPS Trigger On/Off</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Private Call</td>
<td>No</td>
<td>No</td>
<td>Monitor On/Off</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Private Call</td>
<td>No</td>
<td>No</td>
<td>Monitor On/Off</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Group Call</td>
<td>No</td>
<td>No</td>
<td>Monitor On/Off</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Private Call</td>
<td>No</td>
<td>No</td>
<td>Monitor On/Off</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>ANI Decode</td>
<td>Yes</td>
<td>Yes</td>
<td>Radio Check</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Emergency Decode</td>
<td>Yes</td>
<td>Yes</td>
<td>Radio Enable/Disable</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Status Message Decode</td>
<td>No</td>
<td>No</td>
<td>Radio Select Call</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Text Message Decode</td>
<td>No</td>
<td>No</td>
<td>Radio Remote Monitor</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Query Encryption</td>
<td>Yes</td>
<td>Yes</td>
<td>Radio Send Text Message</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Query Monitor</td>
<td>Yes</td>
<td>Yes</td>
<td>Radio Status (Send Status Message)</td>
<td>No</td>
<td>No</td>
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<tr>
<td>Query Scan</td>
<td>Yes</td>
<td>Yes</td>
<td>Scan Add/Delete</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Query Talk Around</td>
<td>Yes</td>
<td>Yes</td>
<td>Scan On/Off</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Talk Around</td>
<td>Yes</td>
<td>Yes</td>
<td>Talk Around On/Off</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
5.0 Cable Diagram

By using the table below, customers will need to manufacture the IP-224 to RELM KNG Series radio interface cable to serially control the RELM BK Radio KNG Series radio.

TABLE 1. RELM KNG Series to IP-224 Wire Connections

<table>
<thead>
<tr>
<th>RELM KNG Series</th>
<th>Pin Name</th>
<th>DB25 Pin</th>
<th>DB37 Pin</th>
<th>Pin Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACC_MIC</td>
<td>19</td>
<td>1</td>
<td></td>
<td>TX+ Audio</td>
</tr>
<tr>
<td>Ground</td>
<td>8</td>
<td>2</td>
<td></td>
<td>TX- Audio</td>
</tr>
<tr>
<td>ACC_PTT</td>
<td>12</td>
<td>24</td>
<td></td>
<td>PTT Relay N.O. Contact</td>
</tr>
<tr>
<td>OPT_1_Output</td>
<td>23</td>
<td>15</td>
<td></td>
<td>COR Input</td>
</tr>
<tr>
<td>ACC_R232_RXD</td>
<td>18</td>
<td>17</td>
<td></td>
<td>RS-232 TXD</td>
</tr>
<tr>
<td>ACC_R232_TXD</td>
<td>16</td>
<td>36</td>
<td></td>
<td>RS-232 RXD</td>
</tr>
<tr>
<td>Ground</td>
<td>8</td>
<td>29</td>
<td></td>
<td>Ground</td>
</tr>
<tr>
<td>ACC_Audio_Out</td>
<td>6</td>
<td>20</td>
<td></td>
<td>RX+ Audio</td>
</tr>
<tr>
<td>Ground</td>
<td>8</td>
<td>21</td>
<td></td>
<td>RX- Audio</td>
</tr>
<tr>
<td>Connect to Pin 21 of DB25</td>
<td>7</td>
<td></td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>Connect to Pin 7 of DB25</td>
<td>21</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
6.0  Radio Programming Application Setup

The Radio Editing Software (RES) is used to configure the RELM KNG Series radio to interface properly with the IP-224.

6.1  Serial Communications Setup

To configure the Serial Communications, do the following:

1. Using the USB programming cable, connect the radio to the computer running the RES software.
2. Turn on the radio and click the Read Radio button to read the current radio settings.
3. Click the Global tab.  
   *The Global page appears.*
4. Click the Common tab.
   *The Common page appears.*
5. Click the **User Preferences** button.  
*The Additional Common Settings window appears.*

6. From the Accessory Baud Rate drop down menu, select **9600**.  
7. Select the **Enable IP 224** check box.  
8. Clear the **Enable ACU 1000** check box.  
9. Close the **Additional Common Settings** window.  
10. Click the **Conventional** tab.  
*The Conventional page appears.*

11. Clear the **Tone Remote Interface** check box.  
12. Click the **Write Radio** button to write the current radio settings.
6.2 COR Setup

To configure the COR Setting, do the following:

1. From the top navigation, select Global ->Common.

2. Click the Mobile I/O button. The Mobile I/O Common Settings window appears.

3. From the Output 1 Mode drop down menu, select Active Rx.
4. Select the Mobile check box.
5. From the Output 1 Active Level drop down menu, select Low.
7.0 IP-224 Setup

To configure the IP-224, do the following:

1. Open the IP-224 web application.
   *The IP-224 Window appears.*
2. From the left navigation, select Multicast Setup.

3. Select the Auto Configuration check box.

**Under LINE SETUP**

4. From the Serial Type drop down menu, select Telex Generic.
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 **Hardware Setup**.

![Hardware Setup](image-url)

**Under Serial Protocol Setup**

11. From the Serial Mode drop down menu, select **RS-232**.
12. From the Baud Rate drop down menu, select **9600,N,8,2**.
13. Click the **Submit button**.
   
   *The changes are sent to the IP-224 in temporary storage.*
14. From the left navigation, select **Per Line Setup**.
   
   *The Per Line Setup window appears.*
Under Function Tone Setup

15. In the System Column field, enter the system function tone.
16. In the Chan Column field, enter the channel function tone.
17. Click the Submit button.
   The changes are sent to the IP-224 in temporary storage.
18. In the left navigation, select Save Parameters.
   The Save Parameters page appears.
19. Click the Save Parameters button.
   Changes are now saved permanently to the IP-224 console.
8.0 C-Soft Designer Setup

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

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

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

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 RX and TX Ports.
Notes:
Suggestions or comments:
Contact technical support with suggestions or comments concerning this application note.

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