**Power Supply Requirements**

Tx: Nominal 11.8 V @ 500 mA (Max 1.4 A)

Safe Operating Voltage 10-30 VDC (20-300 mA)

**Power Supply Protection and Precautions**

The K-Series radio modem will operate from a 10 to 30 volt (filtered) DC supply.

- The RF antenna system should be installed in accordance with the owner’s manual.
- In some circumstances the radio will indicate an error state. This is shown by the internal fuse is open. Successful power-up is indicated by the

**TVIEW+ Management Suite**

Radio Configuration

TVIEW+ offers a number of features including: Configuration (Local, or Remote - over-the-air), Remote Diagnostics Facilities and Firmware Upgrades.

Example: Local configuration session -

1. Attach the programming cable from a Port A RS232 Port to the System Port
2. Launch TVIEW+ & Select K-Series Programmer
3. Select Basic Mode or Advanced Mode (Some items not available in Basic)
4. Click on the “Read” icon
5. Change the configuration as required
6. Click on “Write” to write the parameters back to the radio

**Optimising the Antenna for Rx Signal**

When using a directional antenna, it will be necessary to align the antenna for the best received signal. This can be done using TVIEW+ Diagnostics or by measuring the RSSI output on Pin 9 of Port B which indicates signal strength. This voltage can be converted to dBm using the chart below.

**DC Power**

If all the LEDs are off, no DC power is reaching the radio modem or the internal fuse is open. Successful power-up is indicated by the

**Error LED Indications**

In some circumstances the radio will indicate an error state. This is shown as all green LEDs showing a continuous GREEN state for Remotes or an alternating Red/Green for Masters.

**LED Indicators**

When the transmitter is active the Peer/Tx LED is a RED state.

**Error LED Indications**

In some circumstances the radio will indicate an error state. This is shown as all green LEDs showing a continuous GREEN state for Remotes or an alternating Red/Green for Masters.

**Compliance Notices**

**FCC Part 15**

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

**ETSI EN 300 328 v1.8.1 COMPLIANCE NOTICE for 2.4GHz installations in Europe:**

- EIRP must be 36 dBm (4 Watts) of EIRP in the 2.4GHz band. Therefore, the sum of the transmitted power for all transmitters in the same bands in the same general area must not exceed 36 dBm (4 Watts). In order to meet these conditions, the distance between the transmitter and the receiver must be greater than 4 meters.

- To safely meet FCC RF exposure requirements for mobile transmitting devices, a separation distance of 23 cm or more should be maintained between the antenna of the device and the body of the person using the device. Also, when the device is on and not being used for telecommunications, it should be placed in a location where it will not receive any RF input.

**AUSALIAN COMPLIANCE NOTICE**

This device must not be co-located or operated in conjunction with any other antenna or transmitter.

**ETSI EN 300 328 v1.8.1**

This device must not be co-located or operated in conjunction with any other antenna or transmitter.

**Australia**

This device must not be co-located or operated in conjunction with any other antenna or transmitter.

**Contact Details**

**Technical Support**

- Technical support is available Monday to Friday 8:00am - 6:00pm Eastern Time
- Tel: within North America: 1-800-228-4876
- Direct Worldwide: 1-613-991-1943
- Email: SupportRJS@schneider-electric.com
- Technical Support Australia
- Inside Australia: 1300 349 223
- Email: au.support@schneider-electric.com

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Document number 014081652 | REV0 RESUS/EU/US

**Regulated Power Supply**

Rx: Nominal 13.8 V @ 120 mA

Safe Operating Voltage 10-30 VDC (20-300 mA)

- Pin 5 (SG) - signal ground.
- Pin 6 (TxD) - data input to the radio modem,
- Pin 7 (RxD) - data output from the radio modem
- Pin 8 (Pinout) - external PTT N/C

**RS232/RS485 Interface Cable**

- Interface cable is used to connect between the radio and the application device.
- Connection to the System Port is used for Programming / Configuration of the radio
- A regular flashing RED LED indicates the REMOTE is not synchronised to the radio configuration as the Subnet ID may not match the Master or their
- The RxD/TxD LEDs indicate data flow into and out of the two user

**RF Exposure**

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

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Confirm correct operation of the radio link by connecting the PC to Port A PC to your RTU with a serial cable.

Step 1 - RF and DC power connection

RF Connection

It is recommended that whip antennas are used to simulate a long-distance RF link. RF attenuators are far superior to antennas for short-distance testing, since the attenuation is suddenly reduced when both radios are consistent and is not subject to external interference. Alternatively 90dB of separation can be achieved with 50 ohm dummy loads or small whip antennas (minimum separation 5m/20ft).

1) If the TX power of each radio is set to 20dBm (100mW) then lowpower, low cost attenuators can be used.
2) Small whip antennas should only be used if the test area is known to be free from interference and signal into the receiving radio are no greater than -30dBm and TX power is set to 10dBm.

DC Power Connection

Ensure each radio is powered to verify the correct polarity and that power supply for has adequate current delivering capacity.

Step 2 - Power Up Radios

Nominal Power Supply Requirements 13.8V @500 mA

Apply DC power to the radios. The “Pwr” LED should be steady Green, if the radio is configured as a Remote (factory default) or flash Green then RED configured as a Master. If there is no LED indication, re-check the DC power cables and ensure the DC voltage is between 10V and 30V. The internal fuse may be open.

Step 3 - Setup for Radio Configuration

Connect the Master radio to the computer using the TView+ Programming and Diagnostics cable by inserting the DB-9 adapter in the PK serial port and the RJ-45 connector to the systems port as shown in the following figures.

Note: For more details on programmer & diagnostics connection, see over, or consult the K-Series User Manual and TView User Manual.

Step 4 - Start TView+ Management Suite on your PC

Select the K-Series Click on the K-Series Programmer Button to start the K-Series specific configuration program. The following screen will then be shown.

4.1 Select K-Series

4.2 Read Radio Configuration

Click on the “Read” icon to show the configuration of the radio. The “connection” symbol in the top right hand corner of the screen will turn from Red to Green to indicate a successful configuration connection.

4.3 Apply Wizard

The Wizard facility is the quickest way to configure the bulk of the radio configuration parameters. Click on the Wizard icon. The Configuration Wizard Screen will appear.

8.2 Set Alarm Limits

Adjust the TxPwr alarm limits to High = 17dBm and Low = 13dBm since the radio TX power was set to 15dBm in step (5).

8.4 - Controller Settings

The TView+ diagnostics controller has several settings which must be configured to be compatible with the radio which is connected to the computer running diagnostics.

Select Settings > Controller Settings from the File menu.

1) Enable Trunk Stream Connection: This option should be ticked when connected to the “System Port” on an K-Series radio.
2) Com Port: Select the serial port you have connected to the radio to your PC.
3) Speed: This should be set to 19200 bps.

8.3 Add Radios to Database

Add the two radios you wish to monitor with TView+ diagnostics software to the database using the File -> Add/Edit/Delete option. To add a new radio, click on Add New button. Enter an appropriate Unit Name, Location, and the Unit Serial Number.

Select the Radio Model and Type as “K-Series” & “Master” for the Master Radio and “Remote” for the Remote Radio. The communications port should be set to Serial.

8.5 Configure Remote Radio

Note: On initial power-up the Configuration Wizard will be displayed. This is the default configuration. Do not delete or edit this configuration unless you wish to change the original settings. The Configuration Wizard data window will be cleared.

1) SubNet ID: The SubNet ID should be descriptive e.g. “K-Series” or “Master”. It MUST be identical in both Master and Remote radios for correct operation to occur. For best performance do not leave at the factory default settings. Up to 20 printable characters can be used. Example: “Murray Network” - will have a different Hopping Pattern to “Murray System” and “Murray Network”.

2) Set Main Radio

Click on the “Remote” icon to select the Remote Radio. The SubNet ID should be descriptive e.g. “K-Series” or “Remote”. It MUST be identical in both Master and Remote radios for correct operation to occur. For best performance do not leave at the factory default settings. Up to 20 printable characters can be used. Example: “Murray Network” - will have a different Hopping Pattern to “Murray System” and “Murray Network”.

4.4 Select Point to Point

Click on (1) Point to Point Link (FTP) master or remote) using the unit you are configuring. This will preconfigure the radio to a known working configuration.

The Wizard does not set the SubNet ID or Tx Power. This is done in step (5).

Step 5 - Select SubNet ID and Tx Power

1) Set SubNet ID

Spread Spectrum radios use a Frequency Hopping Pattern which determines which frequencies are used and in what order. Interference from other systems is minimized by selecting a unique Hopping Pattern not used by other radios in the area.

K-Series radios derive their hopping pattern from the SubNet ID. The SubNet ID should be descriptive for the radio link. It is highly recommended that both radios are configured to the same SubNet ID for best performance. For more details on programmer & diagnostics connection, see over, or consult the K-Series User Manual and TView User Manual.

3.5 Set Tx Power

To start the test select Txp Power to 15dBm

3.6 Click on the “White” button to send this configuration to the radio.

Step 6 - Configure Remote Radio

Repeat steps (3) to (6) for the Remote radio.

Step 7 - Verify Modem Operation

The radio modems are now ready for operation. Allow 15 seconds for the Remote radio to synchronise with the Master radio.

7.1 Master Tx

Press LED will be Green but flash Red once per second.

7.2 Remote Rx

Press LED will be Green and Sync/NoRx LED will flash Green once per second.

Hazardous Locations

Groups A, B, C & D Hazardous Locations

Applications to models KR900-xxxxx-E (CSA Marked)

The transceiver has been recognised for use in Class I, Division 2, Groups A, B, C & D hazardous locations or non-hazardous locations only. Such locations are defined in Article 500 of the US National Fire Protection Association (NFPA) publication NFPA 70, otherwise known as the National Electrical Code and in Section 19 of the Canadian Standards Association C22.1 (Canadian Electrical Code).

The transmitter has been recognised for use in this hazardous locations by the Canadian Standards Association (CSA) and the Canadian Standards Association C22.2 No. 213-M1987 and UL Standard 1604 subject to the following conditions of approval.

1. The radio modem must be installed in a suitable enclosure so that a tool is required to gain access for disconnection of antenna, power and communication cables.
2. The antenna, DC power and interface cables must be routed through conduit in accordance with the National Electrical Codes.
3. Installation, operation and maintenance of the radio modem shall be in accordance with the radio modem’s user manual and the National Electrical Codes.
4. Tampering or substitution of any radio components may adversely affect the safe use of the radio modem in hazardous locations and may void the approval.
5. A power connector with locking screws as supplied by Trio Datacom MUST be used.

Failure to follow these instructions can result in death or serious injury, and equipment damage.