AVONLEA SERVICES

SORCERER

Installation Guide

Table of Contents

1. Introduction

1.1. Overview

SORCERER is a collection of decoders for modes found in the ELF-SHF range. These work in tandem with proprietary intelligent bit parsers automatically identifying targets of interest.
(ie - country and specific service as well as identifying data link protocols, compression schemes, file formats, and cryptographic formats in use.

These feature:

- No proprietary hardware
- The most comprehensive collection of current, on-air modes (no defunct modes!)
- Superb demodulation, decoding and parsing of ELF-SHF modes
- Run multiple decoders simultaneously
- Unmatched decoder performance in weak/poor conditions
- Hundreds of parsers always available - run multiple per decoder
- High-speed constellation display
- Offline or Online Analysis
- Flexible variety of outputs to support cryptanalysis
- Continuous development - new modes added throughout the year
- Custom demodulators, decoders and parsers available upon request

The decode modules are selected based on the requirements of Avonlea Services' customer requirements and the realities of what is actually currently on air in these spectra.

It is Avonlea Services' goal to provide a collection of decoders and parsers simply not found in any product offered by competitive manufacturers. Customization and Prioritization of decode modules in currently in progress in possible and to this end Users should contact Avonlea Services for details of special contracts.

1.2. System requirements

The following minimum system requirements are recommended:

Pentium-class CPU , 1.0 GHz+
128MB+ RAM
Standard AC97 soundcard
OS - Microsoft Windows 98, 98SE, 2000, XP(with sp1/sp2/sp3)

1.3. Avonlea Services contact details

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FAX: +1 406.794.0794

Email: info@avonlea-services.com

Website www.avonlea-services.com

1.4. Trademarks

All Names and Trademarks are acknowledged.

2. Installation

2.1. Preliminary

In keeping with Windows practise it is prudent to close all applications before undertaking the installation.

Software license protection is effected by use of the supplied USB dongle.

The dongle (WIBU-Key manufactured by WIBU Systems) is pre-programmed and transparent to the user. The user receives one dongle per license.

Before it can be used its driver must be installed. This is part of the Sorcerer installation package.

2.2. Installation

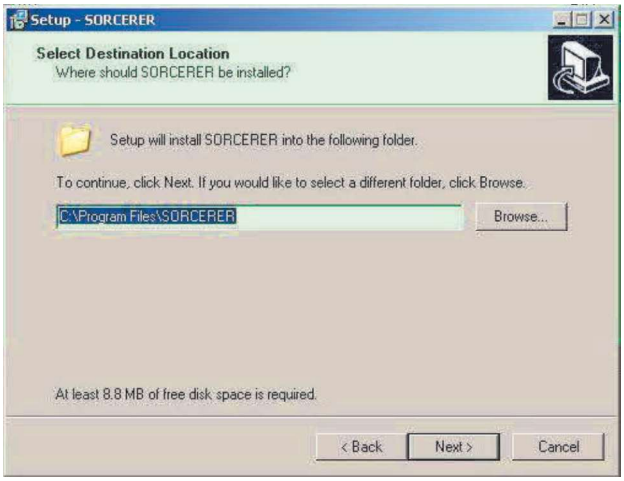
DO NOT plug in the dongle at this stage.

The Sorcerer installation program is the self-installing application Sorcerer-setup-1.0.0.exe.

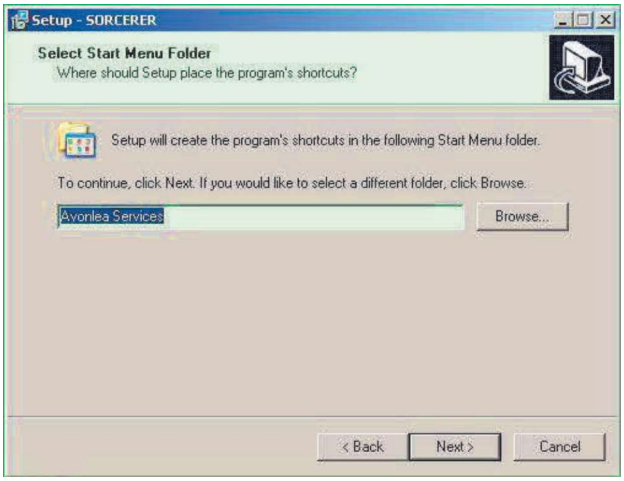
Double-click Sorcerer-setup-1.0.0.exe to commence installation.

The Welcome panel opens.

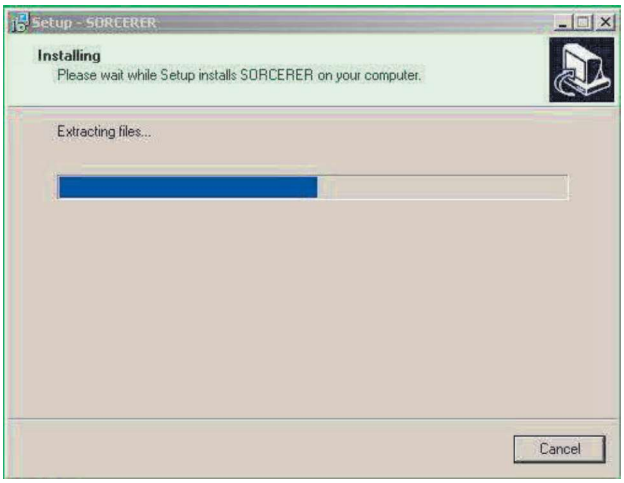
The user may select the default application folder, or designate an alternative.



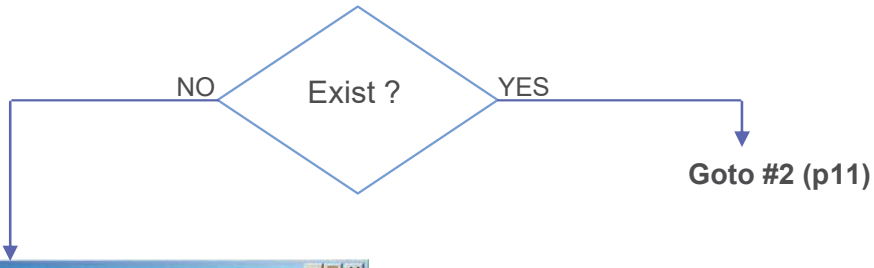
The user may select the default Start Menu folder, or designate an alternative.



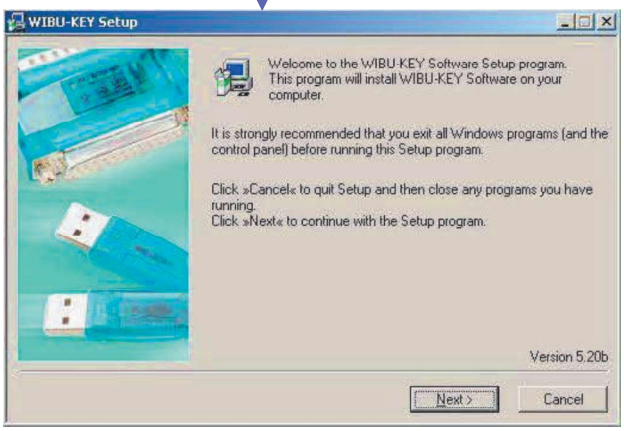
The setup wizard undertakes file extraction.



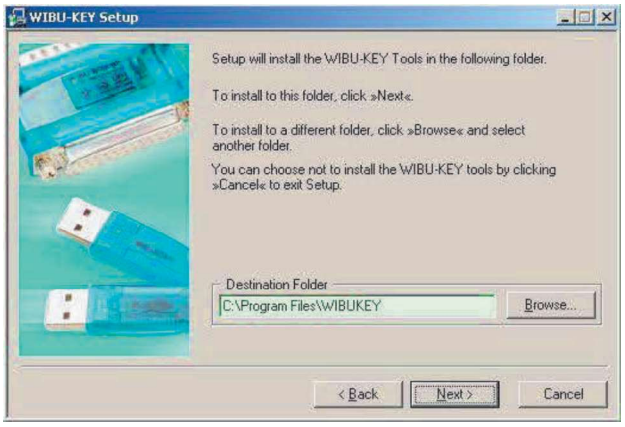
An automatic check is made as to the current existence of WIBU-Key drivers on the host PC.



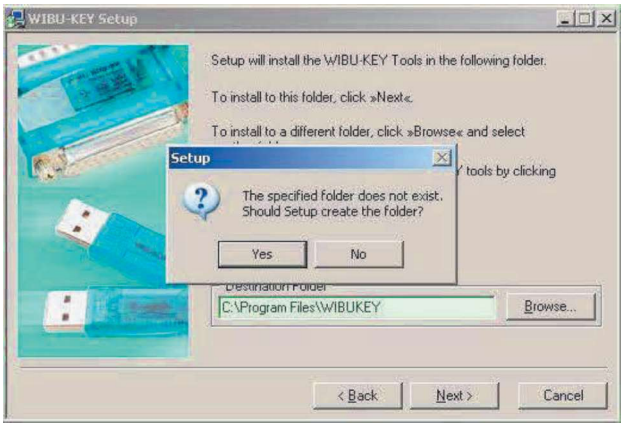
#1



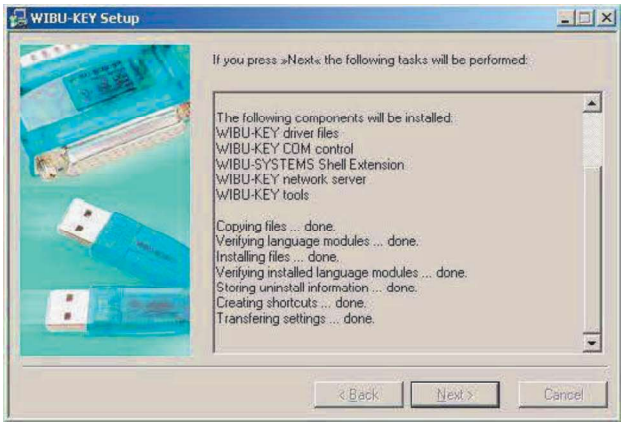
The WIBU-Key software installation program opens.



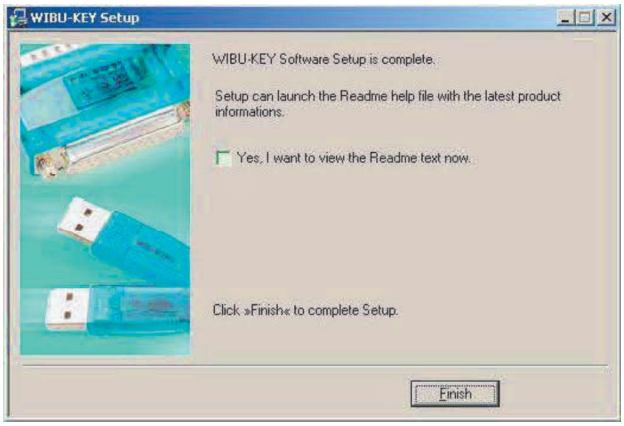
A default folder is presented. The user may change to an alternative if so required.



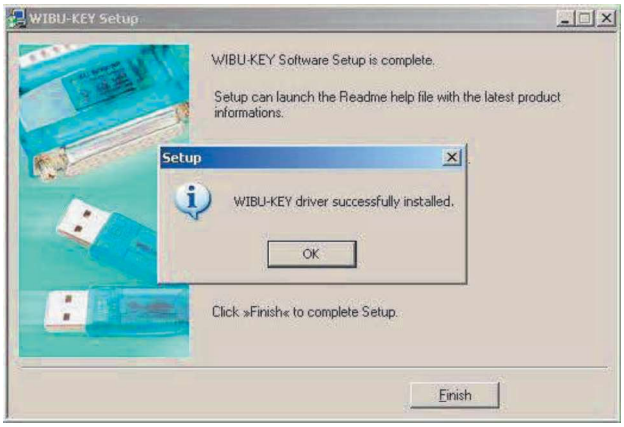
The user has the ability of permitting (or not) the program to create the folder if it does not exist.



The user is advised as to the tasks about to be undertaken, and on clicking Next the wizard will perform these and report done as completed.



The program advises that the software setup is complete and offers the user, via a checkbox selection the Readme help file.



Finally the WIBU-Key driver is indicated as having been successfully installed.

Click OK.

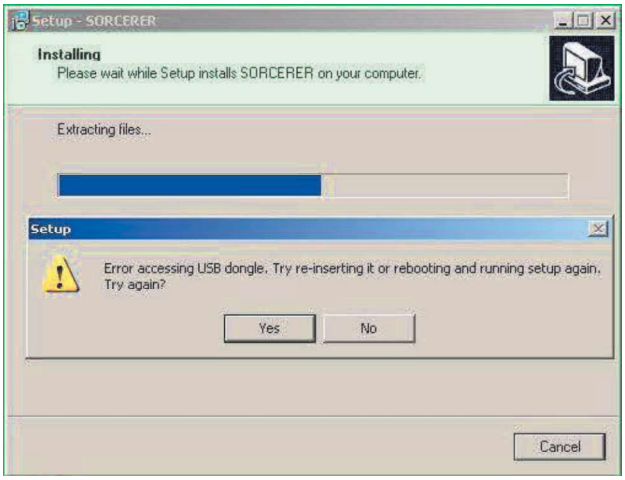
#2

A check is made as to whether a WIBU-Key is plugged into a USB port on the host PC. Since it is not the following error appears.

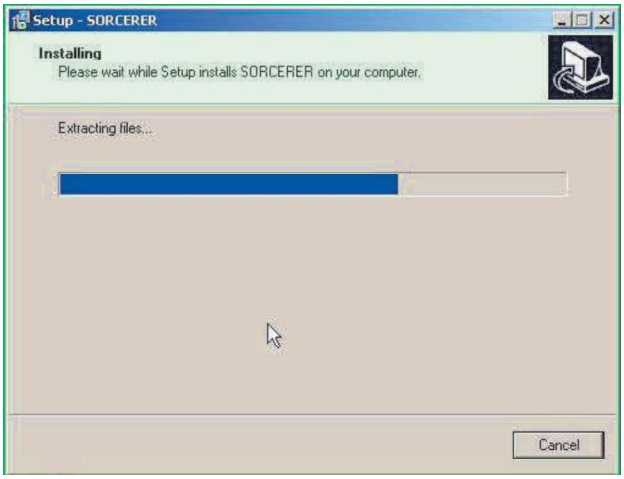
Now plug in the dongle to the appropriate USB port. Allow the operating system to flag New Hardware Device, locate and install its drivers and confirm it is ready for use.

Then click Yes. Then follows one or more audio "dings".

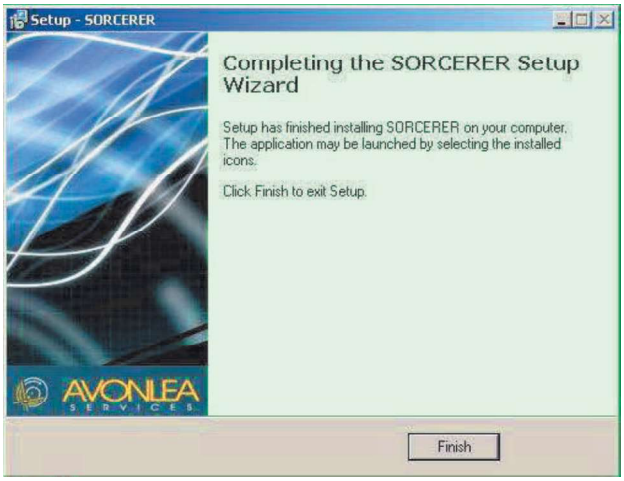
If this error appears try again clicking Yes.



The Sorcerer setup wizard continues installing.



On completion click Finish.



A new shortcut icon will be found on the Desktop.

2.3. Finalizing installation

After installing the Sorcerer package restart the PC.

Operation of Sorcerer is discussed in the two companion manuals (supplied as .pdf files)

Avonlea Sorcerer User Manual_General_26Jun09
Avonlea Sorcerer User Manual_Decoder Modules_26Jun09

2.4. Important notes pertaining to installation.

a. To run Sorcerer must have access to the same WIBU-Key used to install it.

b. Sorcerer can be installed only once on a single computer with a single key. However it can be run as many times as required i.e. one can have several instance running concurrently and used to run different receivers, etc.

c. If one reinstalls Sorcerer on the same host all settings and user files (eg hfdl.dat, recordings, logs) will be kept intact.

d. In the case of problems with setup not recognizing the WIBU-Key uninstall any version of WIBU-Key drivers which may be installed, reboot and run setup again.

3. Connection Considerations

3.1. Receiver outputs

Receivers may offer a selection of outputs:

LINE OUTPUT,
EXTERNAL SPEAKER,
HEADPHONES,
RECORD.

The preferred option is **Line Output** where the front panel control AF GAIN normally has no effect on this output and whose level is determined by an internal preset.

3.2. Computer inputs

The user's audio input will either be via

LINE IN, or
MIC.

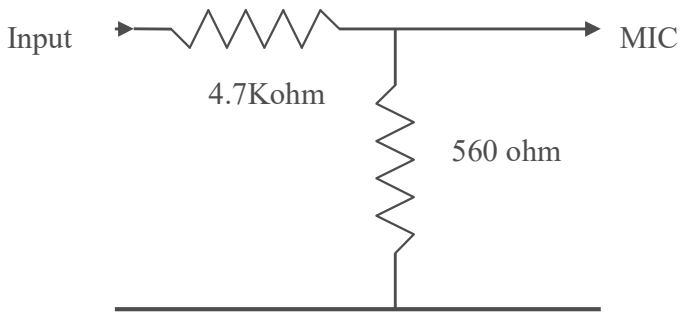
The preferred **Line In** is invariably a 2-channel stereo input on a 3.5mm (1/8") plug. There are three connections

Tip	Left channel
Ring	Right channel
Sleeve	Ground.

MIC inputs (also 3.5mm(1/8")) in the case of laptops/notebooks may cause a problem being the only option. MIC sockets can also be 2-contact (tip and sleeve) or 3-contact. In general terms laptops are 2-contact and soundcards in PCs are 3-contact. 3-contact MIC inputs are unlikely to support a second (right) channel.

The user should therefore to ascertain from manufacturer's literature what is relevant to specific computers.

A MIC input, driven from a receiver or line, can very easily be overloaded. A simple attenuator is recommended.



3.3. Sorcerer Structure

Currently it is not possible to have different configurations on a single PC. The sound card is opened by Sorcerer in mono and the settings are shared. A change in the future may be considered under ongoing developments.

3.4. Discriminator Source

For connection to receivers for monitoring on VHF paging signals and maritime AIS/DSC the signal source should be from the receiver's discriminator. This ensures the signal is not distorted by the receiver's audio circuits.

Local modification maybe necessary if the manufacturer has not made the discriminator output available. In this case a useful reference may be found at
http://www.discriminator.nl/ais/index-en.html

4. Receiver Control Information Library

This section outlines connection information relating to Specific Manufacturer/Models

4.1. AOR

4.1.1. AR3000A:

Frequency coverage of 100khz..2036Mhz

RS-232 parameters: 9600 baud, 8 data bits, No Parity, 1 Stop bit

4.1.2. AR5000:

RS-232 parameters: 19,200 baud, 8 data bits, No Parity, 2 Stop bits

4.1.3. AR8600:

Frequency range is 530Khz..2040Mhz

RS-232 parameters: 9600 baud, 8 data bits, No Parity, 2 Stop bit, Radio Address 00.

The RS232 parameters may be defined using the CONFIG menu. Baud rates (transfer speed) may be set to 4800, 9600 or 19200bps. It is also possible to set an 'address' to facilitate connection of up to 99 units to a single port for custom operation, the addresses may be set between the limits of 01 to 99 with 00 representing single radio operation. For Centurion at this time, select 00 for single radio operation. 19,200 baud 8N2 XFLOW (Xon/Xoff)

4.1.4. AR8600MK2:

Frequency range is 100khz..3000Mhz

RS-232 parameters: 9600 baud, 8 data bits, No Parity, 2 Stop bit, Radio Address 00.

The RS232 parameters may be defined using the CONFIG menu. Baud rates (transfer speed) may be set to 4800, 9600 or 19200bps. It is also possible to set an 'address' to facilitate connection of up to 99 units to a single RS-232 port for custom operation, the addresses may be set between the limits of 01 to 99 with 00 representing single radio operation. For Centurion at this time, select 00 for single radio operation. 19,200 baud 8N2 XFLOW (Xon/Xoff).

Use also for AR8200MK3 - Frequency range 530 Khz..3000MHz.

4.1.5. SR2000

RS-232 parameters: 19200 baud, 8 data bits, No Parity, 2 Stop bit.

4.1.6. SR2200

RS-232 parameters: 57600 baud, 8 data bits, No Parity, 2 Stop bit.

4.2. Cubic

4.2.1. CDR3250, CDR3280:

The CDR-3250 is a remote control only receiver, while the CDR-3280 can be controlled locally or remotely, thus the two selections due to the remote start and stop commands.

RS-232 parameters: 19,200 baud, 8 data bits, No Parity, 1 Stop bit, Radio Address 001, Bus Type RS-232, Bus Sharing enabled

These parameters are changed from the keypad on the front panel of the CDR-3280 receiver.

To change the parameters for the CDR-3250 set the DIP switches as referenced in section AN-2A of the manual. Behind the removable front panel there are two 8 position DIP switches used to set parameters required for remote control operation, one dip switch is for the Communications Bus Address and the other is for the Communications Protocol as follows:

Communications Address:

For Address 1 set the SW2-8 ON.

Communications Protocol:

For RS-232 operation, set DIP Switch SW1-2 to OFF
Set switch SW1-4 to OFF for 8 Data Bits-No Parity-1 Stop Bit

19,200 baud set SW1-5 & SW1-8 set to ON and SW1-6 & SW1-7 set to OFF

4.2.2. CDR3550, CDR3580:

These units support IEEE-488, RS-232 and RS-422 directly. NOTE: IEEE-KIT-001 is required to modify the receiver itself from RS-232 to IEEE operation.

RS-232 parameters: 19,200 baud, 8 data bits, No Parity, 1 Stop bit, Radio Address 001

Operating frequency entered below 20Mhz will result in setting the receiver to 20Mhz, likewise, an operating frequency entered in excess of 1200Mhz will result in setting the receiver to 1200Mhz as coded.

Note: The manual states that whenever the operating mode is changed to CW, USB, or LSB while the bandwidth is set to a value greater than 15 kHz, the bandwidth is changed to 15kHz. This new bandwidth will remain in effect if the mode is then changed back to AM or FM.

The IF bandwidth selections are: 1, 2, 3, 5, 6, 10, 15, 25, 30, 35, 50, 60, 100, 150, 180, 240Khz, coding for support of IF BW selection is predicated on user entered Bandwidths where following entered BW frequency ranges cause the radio filter selection as follows:

>= 180001hz = 240.0khz filter
>= 150001hz and <= 180000hz = 180.0khz filter
>= 100001hz and <= 150000hz = 150.0khz filter
>= 60001hz and <= 100000hz = 100.0khz filter
>= 50001hz and <= 60000hz = 60.0khz filter
>= 35001hz and <= 50000hz = 50.0khz filter
>= 30001hz and <= 35000hz = 35.0khz filter
>= 25001hz and <= 30000hz = 30.0khz filter
>= 20001hz and <= 25000hz = 25.0khz filter
>= 15001kz and <= 20000hz = 20.0khz filter
>= 10001hz and <= 15000hz = 15.0khz filter
>= 6001kz and <= 10000hz = 10.0khz filter
>= 5001hz and <= 6000hz = 6.0khz filter
>= 3001hz and <= 5000hz = 5.0khz filter
>= 2001hz and <= 3000hz = 3.0khz filter
>= 1001hz and <= 2000 = 2.0Khz filter
<= 1000hz = 1.0Khz filter

NOTE: The receiver provides five sub octave bandpass preselector filters from 93Mhz to 1200 MHz. Frequencies from 20 to 93 MHz are filtered by one bandpass filter. Filter selection is automatic with tuned frequency selection.

Band	Frequency (MHz)
1	20-93Mhz
2	93-156Mhz
3	156-260Mhz
4	260-430Mhz
5	430-720Mhz
6	720-1200Mhz

4.2.3. LCR2000, LCR2400:

The LCR/SMR-2000 is a remote control only receiver, while the LCR/SMR-2400 can be controlled locally or remotely, thus the two selections due to the remote start and stop commands.

These receivers support computer control of RX volume, as such the Centurion volume slider control is supported. The range is from -39 to 60db with 0db about the center of the range of the slider control.

RS-232 parameters: 19,200 baud, 8 data bits, No Parity, 1 Stop bit, Radio Address 001, Bus Type RS-232, Bus Sharing enabled

The RS-232 Serial interface parameters are changed from the keypad on the front panel of the LCR/SMR-2400 receiver.

To change the parameters for the LCR/SMR-2000 set the DIP switches as referenced in section 3-6 of the manual. Rear panel contains two 8 position DIP switches used to set parameters required for remote control operation, one dip switch is for the Communications Bus Address and for the Communications Protocol as follows:

Communications Address: For Address 1 set the SW2-8 ON.

Communications Protocol: For RS-232 operation, set DIP Switch SW1-2 to OFF, Set switch SW1-4 to OFF for 8 Data Bits-No Parity-1 Stop Bit, 19,200 baud set SW1-5 & SW1-8 set to ON and SW1-6 & SW1-7 set to OFF

4.2.4. LCR3000, LCR3400, SMR3000, SMR3400:

RS-232 parameters: 19,200 baud, 8 data bits, No Parity, 1 Stop bit, Radio Address 001

These units support IEEE-488, RS-232 and RS-422 directly. NOTE: IEEE-KIT-001 is required to modify the receiver itself from RS-232 to IEEE operation.

Operating frequency entered below 20Mhz will result in setting the receiver to 20Mhz, likewise, an operating frequency entered in excess of 3000Mhz will result in setting the receiver to 3000Mhz as coded.

NOTE: Centurion radio control panel will at present, only accept an entry to 2147Mhz.

NOTE: The manual states that whenever the operating mode is changed to CW, USB, or LSB while the bandwidth is set to a value greater than 15 kHz, the bandwidth is changed to 15kHz. This new bandwidth will remain in effect if the mode is then changed back to AM or FM or PM.

NOTE: The IF bandwidth selections are: 1, 2, 3, 5, 6, 10, 15, 25, 30, 35, 50, 60, 100, 150, 180, 240Khz

4.2.5. R2411:

RS-232 parameters: 19,200 baud, 8 data bits, No Parity, 1 Stop bit, Radio Address 001

The R-2411/U supports 6 filters where x of Wx for the filter selection can range from 0..5 depending on the particular receiver configuration where 0 is the narrowest filter and 5 is the widest.

The 1st IF at 40.455Mhz is 10Khz minimum.

The 2nd IF at 455Khz has the selectable IF filters, the standard values are
0 = 500hz,
1 = 1000hz,
2 = 3000hz,
3 = 8000hz.

4.2.6. R3030STX1, R3030STX2, R3030STX3:

RS-232 parameters: 19,200 baud, 8 data bits, No Parity, 1 Stop bit, Radio Address 001

R-3030, R-3080, R-3090 and R-2307/U:

I have not been able to determine all the differences with these receivers, some are one receiver in a half unit and some are two receivers in a full 19 inch rack. The R-2307/U is in military dress.

All use GPIB standard and require an optional RS-232 interface for serial communications.

The standard model requires 1 Start of Message (STX) character sent in the beginning of each data string, special order models may have 2 or 3 STX characters sent. As such we have provided R3030STX1, R3030STX2 and R3030STX3 for selection accordingly.

The R-3030 supports 6 filters where x of Wx for the filter selection can range from 0..5 depending on the particular receiver configuration where 0 is the narrowest filter and 5 is the widest.

These are selectable at the time of order. There were 10 filter values available:

300hz, 500hz, 1000hz, 2000hz, 2700hz, 3200hz, 4000hz, 6000hz, 8000hz and 16000hz

We shall assume the following as standard:

0= <500 as either 300hz or 500hz
1= >501 <= 1000 as 1000hz
2= >1001 <= 2000 as 2000hz
3= >2000 <= 2700 as 2700hz
4= > 2701 <=3200 as 3200hz
5= > 3201 <= 9000 as 4000hz or 6000hz or 8000hz
6= 16000hz

4.2.7. R3030ASTX1, R3030ASTX2, R3030ASTX3:

RS-232 parameters: 19,200 baud, 8 data bits, No Parity, 1 Stop bit, Radio Address 001

The R-3030A is more like the R-2411/U than the R-3030 series. The standard model requires 1 Start of Message (STX) character sent in the beginning of each data string, special order models may have 2 or 3 STX characters sent. As such we have provided R3030ASTX1, R3030ASTX2 and R3030ASTX3 for selection accordingly.

Filter choices are different than the R-2411/U, they are 0 = 500hz, 1 = 1000hz, 2 = 3200hz, 3 = 6000hz.

Unlike the other models, you can use 0.5, 1.0, 3.2 or 6.0kHz BW on any mode - CW, USB, LSB, FM or AM.

The control interface in the A's is dual, independent RS-422s which is readily applicable to PC-control unlike the other options in the 3030 family.

4.2.8. R3050STX1:

RS-232 parameters: 19,200 baud, 8 data bits, No Parity, 1 Stop bit, Radio Address 001

R-3050 operating frequency entered below 5khz will result in setting the receiver to 5khz, likewise, an operating frequency entered in excess of 30Mhz will result in setting the receiver to 30Mhz as coded.

4.3. Drake

4.3.1. R8:

RS-232 parameters: 9600 baud, 7 data bits, Even Parity, 1 Stop bit, RTS/CTS handshaking

NOTE: Sample Drake R8 used for development would not properly function with most commands, however other units may.

4.3.2. R8A:

RS-232 parameters: 9600 baud, 8 data bits, No Parity, 1 Stop bit

4.3.3. R8B:

RS-232 parameters: 9600 baud, 8 data bits, No Parity, 1 Stop bit

4.4. FairHaven

4.4.1. RD500VX:

RS-232 parameters: 19,200 baud, 8 data bits, No Parity, 2 Stop bits

4.5. Harris Radio Corporation

4.5.1. RF590:

RS-232 parameters: 19,200 baud, 7 data bits, Odd Parity, 1 Stop bit, Radio Address 1

The RR590 selection supports the “HARRIS RADIO REMOTE CONTROL PROTOCOL (HRRCP) NUMBER: 10472-7260 REVISION: 1.0 DATE: September 13, 1995” protocol which supports the R-590, R-590A, R-2368B(V)1/URR, R-2368(A)/URR, 2368B(V)3/URR, AN/R-2368 /w RF-596A-02 Digitally Tuned Pre-selector, R-2557A/URC and possibly others.

For these radios, to select Harris HRRCP protocol the A14 board jumper at J20 must be set to jumper pins 2 and 3. On older units, revision E and below, there is no jumper, instead, a jumper wire may be soldered connecting U26-10 to U26-8 that must be removed.

4.5.2. RF590A:

RS-232 parameters: 19,200 baud, 7 data bits, Odd Parity, 1 Stop bit, Radio Address 1

Selection RF590A supports the ASCII protocol for RF590A, R-2368B(V)1/URR and possibly other units of revision F and above with firmware 208N or above. To select Harris ASCII protocol the A14 board jumper at J20 must be set to jumper pins 1 and 2. On older units, revision E and below, there is no jumper, instead, a jumper wire must be soldered connecting U26-10 to U26-8 for the ASCII protocol.

4.6. Icom

NOTE: All ICOM receivers are coded to use factory addresses. The R75 and R8500 support AGC control, however no other ICOM receivers provide AGC control over the computer bus.

4.6.1. ICR71:

Supports R71A/E/D at address “1A” hex.

RS-232 parameters: 9600 baud, 8 data bits, No Parity, 1 Stop bit

The ICOM UX-14 is required for PC control, it supports 300, 1200 and 9600 baud.

The R-71 does not support ATTN over the bus.

4.6.2. ICR72:

RS-232 parameters: 9600 baud, 8 data bits, No Parity, 1 Stop bit

4.6.3. ICR75:

RS-232 parameters: 19,200 baud, 8 data bits, No Parity, 1 Stop bit

Supports AGC SLOW, MEDIUM, FAST and OFF.

4.6.4. ICR7000:

RS-232 parameters: 9600 baud, 8 data bits, No Parity, 1 Stop bit

4.6.5. ICR7100:

RS-232 parameters: 9600 baud, 8 data bits, No Parity, 1 Stop bit

4.6.6. ICR8500:

RS-232 parameters: 19,200 baud, 8 data bits, No Parity, 1 Stop bit

Supports AGC OFF and AGC ON for SLOW, MEDIUM and FAST.

4.6.7. ICR9000:

RS-232 parameters: 19,200 baud, 8 data bits, No Parity, 1 Stop bit

4.6.8. PCR1000:

RS-232 parameters: 9600 baud, 8 data bits, No Parity, 1 Stop bit, RTS/CTS handshaking.

At program start the receiver is always at the last frequency, mode and audio level used.

The PCR-1000 provides two AGC settings, OFF and ON for all else.

The PCR-1000 supports 2.8Khz, 6.0Khz, 15.0Khz, 50Khz and 230Khz IF bandwidths and all entries for BW are correlated to the following bins:

User selected BW <= 3.2Khz then BW = 2.8Khz
User selected BW >3.2Khz and <= 12.0Khz then BW = 6.0Khz
User selected BW >12.0Khz and <=15.0Khz then BW = 15.0Khz
User selected BW >15.0Khz and <= 50.0Khz then BW = 50Khz
User selected BW >50Khz then BW = 230Khz

4.6.9. PCR1500:

Also supports the R-1500 and R-2500.

RS-232 parameters: 38,400 baud, 8 data bits, No Parity, 1 Stop bit, RTS/CTS handshaking.

At program start the receiver is always set to 10Mhz USB to initialize the receiver and the receiver audio is set to a medium listening level which can thereafter be used adjusted.

The PCR-1500, R-1500 and R-2500 provides two AGC settings, OFF and ON for all else.

The PCR-1500, R-1500 and R-2500 support 2.8Khz, 6.0Khz, 15.0Khz, 50Khz and 230Khz IF bandwidths and all entries for BW are correlated to the following bins:

User selected BW <= 3.2Khz then BW = 2.8Khz

User selected BW >3.2Khz and <= 12.0Khz then BW = 6.0Khz
User selected BW >12.0Khz and <=15.0Khz then BW = 15.0Khz
User selected BW >15.0Khz and <= 50.0Khz then BW = 50Khz
User selected BW >50Khz then BW = 230Khz

The ICOM “USB Audio Codec” must NOT be selected as the default system Sound Device else Centurion will not be able to initialize the selected sound device.

Also, the “USB Audio Codec” can not be used as the Sound Device for processing audio within Centurion at this time.

4.7. JRC

4.7.1. NRD345:

RS-232 parameters: 4800 baud, 8 data bits, No Parity, 1 Stop bit

4.7.2. NRD525:

RS-232 parameters: 1200 baud, 8 data bits, No Parity, 1 Stop bit

NOTE: The NRD-525 EPROM needs updating for computer control if the unit does not already have the RS-232C Interface Unit CMH-532 installed and serial number is BR36071 through BR36120 Each time the numerical key 8 is pressed with the MEMO switch depressed, 300 bauds and 1200 bauds is selected by turns. Accordingly, the vacum fluorescent display indicates 300 and 1200 by turn.

4.7.3. NRD535:

RS-232 parameters: 4800 baud, 8 data bits, No Parity, 1 Stop bit

Wideband scanning will cause continual operation of the RF input bandpass filter relays. These may be bypassed permanently by setting User Definition 2 to 0 (Bypass Filter).

4.7.4. NRD535D:

RS-232 parameters: 4800 baud, 8 data bits, No Parity, 1 Stop bit

INTER provides an SSB range for BW of: 1000-2200 hz, whereas WIDE provides an SSB range for BW of: 2200-5500 hz.

Wideband scanning will cause continual operation of the RF input bandpass filter relays. These may be bypassed permanently by setting User Definition 2 to 0 (Bypass Filter).

4.7.5. NRD545:

RS-232 parameters: 4800 baud, 8 data bits, No Parity, 1 Stop bit.

Wideband scanning will cause continual operation of the RF input bandpass filter relays. These may be bypassed as follows:

a. Permanently by setting User Setup 24 to 0 (Pass), or
b. In short-term by executing FUNC then ATT on front panel. This is cleared by repeating sequence. It is also cleared by power OFF/ON cycle.

4.8. Racal

4.8.1. RA2091:

RS-232 parameters: 19200 baud, 8 data bits, No Parity, 1 Stop bit, Receiver Address 10

No information on the radio to PC RS-232 cable assembly for the RA2091 is available at this time.

The Racal RA-2091 VHF Communications Receiver Covers 20-400 Mhz in four bands using two interchangeable RF tuner heads. Tuner Head one covers 20-40 Mhz and 40-90Mhz, Tuner Head two covers 90-195 Mhz and 195-400 Mhz. AM, FM, CW, and Pulse operating modes. Other features include BFO, Noise Limiter, Tuning and Signal Strength Meter, AGC, Carrier Operated Relay, and externally available IF and Video/Audio outputs. Bandwith 6, 20, 50, 300 Khz.

4.8.2. RA2309B:

RS-232 parameters: 19200 baud, 8 data bits, No Parity, 1 Stop bit, Receiver Address 10

No information on the radio to PC RS-232 cable assembly for the RA2309B is available at this time.

The Racal RA-2309B VHF/UHF Synthesised Communications Receiver capable of working up to 1000MHz. The RA-2309 is the updated version of the earlier RA-2091 communications receiver.

The receiver covers 20-1000MHz in six bands using three interchangeable RF tuner heads.

Tuner Head #1 "RA-2294" covers 20-40MHz and 40-90MHz,
Tuner Head #2 "RA-2295F covers 90-195MHz and 195-400MHz.
Tuner Head #3 "RA-2296 covers 400-650MHz and 650-1000MHz.

4.8.3. RA3711:

RS-232 parameters: 9200 baud, 8 data bits, No Parity, 1 Stop bit, Receiver Address 10

These units support RS-232 and RS-423 directly and IEEE-488 as an option. Direct support has been coded for operation using RS-232 at 9,600 8N1 using radio address 10. Modes supported: CW, AM, FM, LSB, USB, ISB

The RA3711 is a single (1) receiver. Operating frequency entered below 500Khz will result in setting the receiver to 500Khz, likewise, an operating frequency entered in excess of 40Mhz will result in setting the receiver to 40Mhz as coded.

4.8.4. RA3712:

RS-232 parameters: 9200 baud, 8 data bits, No Parity, 1 Stop bit, Receiver Address 10

These units support RS-232 and RS-423 directly and IEEE-488 as an option. Direct support has been coded for operation using RS-232 at 9,600 8N1 using radio address 10. Modes supported: CW, AM, FM, LSB, USB, ISB

The RA3712 is a (2) dual receiver. Operating frequency entered below 500Khz will result in setting the receiver to 500Khz, likewise, an operating frequency entered in excess of 40Mhz will result in setting the receiver to 40Mhz as coded.

4.8.5. RA3721:

Supports RA3721, RA3722(2 receivers), RA3723, RA3724(2 receivers), frequency coverage is 20-1000Mhz, CW, AM, LSB, USB, ISB, FSK, NBFM

RS-232 parameters: 19200 baud, 8 data bits, No Parity, 1 Stop bit, Receiver Address 10

No information on the radio to PC RS-232 cable assembly is available at this time.

IF BW: 75hz-30Khz, Max BW HF option is 12khz, WB FM option 280Khz, all automatic.

4.8.6. RA3791:

Supports RA3791 and RA3792, frequency coverage is 10Khz - 30MHz

RS-232 parameters: 9600 baud, 8 data bits, No Parity, 1 Stop bit, Receiver Address 10

4.8.7. RA6775:

RA6775 frequency coverage is 5Khz - 34MHz.

RS-232 parameters: 9600 baud, 8 data bits, Odd Parity, 2 Stop bits, Receiver Address 10.

4.8.8. RA6778:

RA6778C frequency coverage is 10khz - 30 Mhz.

RS-232 parameters: 19200 baud, 8 data bits, No Parity, 1 Stop bit, Receiver Address 10.

4.8.9. RA6790GM:

Supports RA6790GM and R-2174(A)/URR receiver.

RS-232 parameters: 19200 baud, 8 data bits, No Parity, 1 Stop bit, Receiver Address 10.

Computer control requires installation of the optional A6A1 Microprocessor Board. For RS-232 operation soldered jumpers need to be in place on the A6A1 Microprocessor Board as follows: Link1 Install, Link2 Open, Link3 Install, Link4 Install, Link5 Install, Link6 Open. The receiver to PC RS-232 cable, it must be wired for Receiver Address 10, 19200 baud, 8 data bites, No Parity, 1 Stop Bit. In addition, a specially-wired receiver to PC RS-232 cable is required and available from Avonlea.

4.8.10. RA6793:

Supports RA6793, RA6793A, RA6793A-6 (R-2320/URR)

RS-232 parameters: 19200 baud, 8 data bits, No Parity, 1 Stop bit, Receiver Address 10

Supports RA6793, RA6793A, RA6793A-6 (R-2320/URR) - RA6793 frequency coverage is 500Hz - 30MHz.

The RA6793 uses a DB25 on the radio for computer interfacing. On the RA6793x receivers Communication Card A6A1, internal jumper settings for 232C operation need to installed as follows:
Link1 Install
Link2 Open
Link3 Install
Link4 Install
Link5 Install
Link6 Open

4.8.11. RA6830JD:

RS-232 parameters: 19200 baud, 8 data bits, No Parity, 1 Stop bit, Receiver Address 85

Radio Address from factory cabling (standard 25 pin DIN connector) is default as 85 and has been coded for Radio Control. Serial port parameters are 19200 8N1 which are S1 switch selected as 1,2 and 3 OPEN for 19200, 4 OPEN for 1 stop bit, 5 DONT CARE, 6 CLOSED for NO PARITY, 7 and 8 CLOSED for 8 data bits. Links in radio for RS-232 operation are: LINK2, LINK4, LINK7

4.9. Rohde & Schwarz

NOTE: For R&S models offering ISB-L/U and ISB-U/L, at present using ISB-L/U for ISB

4.9.1. EB200:

RS-232 parameters are: 115200 baud, 8 data bits, No Parity, 1 Stop bit, RTS/CTS hardware handshaking

With the EB200, the RS-232 interface is standard. The 9-pin RS232 connector (designation X9) is located at the rear panel of the unit and a null modem cable is required with RTS-CTS handshake the RTS and CTS lines must also be cross-connected.

The selection of "RS232 STANDARD" with its parameters is made in the SETUP:REMOTE(RS232) menu.

4.9.2. EK890:

All EK890 selections support the EK890, EK891 Search Receiver, EK893 is a triple receiver using a separate serial port for each receiver.

For all EK890 selections the RS-232 parameters are: 9600 baud, 7 data bits, Even Parity, 1 Stop bit, RTS/CTS hardware handshaking, Radio Address 1.

Check the following radio settings on the receiver before running:

- S3 to Position 9. (9600 baud, Even Parity, 1 stop bit)
- S4 to Position 0. (RS232 CTS RTS handshake) Flow control RTS/CTS enabled.
- Jumper X3 to 1-2

The EK890 provides IF BW filter selections of: 200hz, 600hz, 1500hz, 3100hz, 6000hz, 10000hz. which are configured in Centurion as bins for selection, If 200hz or less is entered, the 200hz filter is selected. If 201hz is entered, the 600hz filter is selected.

The EK890 family of receivers offer various IF bandwidth options. The EK890 series of receivers are available in three standard models with 2, 3 and 6 IF bandwidth options (there are also special order bandwidth units that we cannot address unless the user provides the configuration information as to the number of filters and each filters bandwidth) when ordered the receivers have a part number of EK890-xx, where the -xx is the option number for the corresponding standard filters. Each EK890_xx selection is to those standard filter options.

NOTE: EK890 and EK890_04 are the same model according to advertising material available from research.

EK890_02:

EK890_02 = 3100hz and 10000hz

EK890_03:

EK890_03 = 600hz, 3100hz and 10000hz

EK890_04:

EK890_04 = 200hz, 600hz, 1500hz, 3100hz, 6000hz, 10000hz

EK890_12:

EK890_12 = 3100hz and 10000hz

EK890_13:

EK890_13 = 600hz, 3100hz and 10000hz

EK890_14:

EK890_14 = 200hz, 600hz, 1500hz, 3100hz, 6000hz, 10000hz

EK890_35:

EK890_35 = 300hz, 600hz, 1800hz, 2400hz, 3400hz, 10000hz

EK890_36:

EK890_36 = 300hz, 600hz, 1500hz, 2400hz, 3400hz, 10000hz

EK890_37:

EK890_37 = 150hz, 300hz, 600hz, 1500hz, 2400hz, 10000hz

EK890_38:

EK890_38 = 150hz, 300hz, 600hz, 1500hz, 3400hz, 10000hz

EK890_39:

EK890_39 =300hz, 600hz, 1000hz, 1500hz, 2400hz, 10000hz

EK890_43:

EK890-43 = 600hz, 3100hz, 10000hz

EK890_53:

EK890-53 = 600hz, 3100hz, 10000hz

4.9.3. EK895:

RS-232 parameters are: 19,200 baud, 8 data bits, No Parity, 1 Stop bit, RTS/CTS hardware handshaking, Radio Address 1.

4.9.4. EK896:

RS-232 parameters are: 19,200 baud, 8 data bits, No Parity, 1 Stop bit, RTS/CTS hardware handshaking, Radio Address 1.

4.9.5. EK895Q:

RS-232 parameters are: 19,200 baud, 8 data bits, No Parity, 1 Stop bit, RTS/CTS hardware handshaking, Radio Address 1.

EK895Q supports the Quasi-bandwidth Continuous IF Bandwidth Control Option for EK895 - R&S P/N EK895S7. The latest data sheets state "this option is now standard in receiver the EK896". The Quasi-continuous tuning option provides 128 steps available from 100-9000 hz for the EK895 receiver. This software option allows the fine selection of the IF bandwidth between 100 Hz and 9 kHz in 128 steps and thus permits optimization of the bandwidth required for the different types of modulation or of the adjacent-channel suppression. This option increases the 13 standard bandwidths to 128 bandwidths. This option has to be indicated when ordering the relevant receiver (factory installation).

4.9.6. EK896Q:

RS-232 parameters are: 19,200 baud, 8 data bits, No Parity, 1 Stop bit, RTS/CTS hardware handshaking, Radio Address 1.

EK896Q supports the Quasi-bandwidth option as detailed in EK895Q above.

4.9.7. EK2000:

RS-232 parameters are: 9600 baud, 7 data bits, Even Parity, 1 Stop bit, Radio Address 1.

4.9.8. EM050:

RS-232 parameters are: 9600 baud, 8 data bits, No Parity, 1 Stop bit.

The “SERIAL X13b” connector must be used for the RS232 interface port. A serial null-modem cable (RxD, TxD crossed), 9-pin female to 9-pin female with Serial Adapter X13B to 9-pin male must be used.

4.9.9. ESMB12:

RS-232 parameters are: 115,200 baud, 8 data bits, No Parity, 1 Stop bit, RTS/CTS hardware handshaking.

With the ESMB Model 12, the RS-232 interface is standard, on other models it is an option.

The 9-pin RS-232 connector (designation X9) is located at the rear panel of the unit and a null modem cable is required with RTS-CTS handshake the RTS and CTS lines must also be cross-connected (RxD, TxD crossed), 9-pin female to 9-pin female Serial Adapter X13B to 9-pin male

The selection of "RS232 STANDARD" with its parameters is made in the SETUP:REMOTE(RS232) menu.

NOTE: If the receiver is being operated with option ESMBHF (up to 30 MHz), an IF selection of ±5 kHz will be effective. However, the selection of IF bandwidth =9 kHz won’t be suppressed. That is pointed out at by flashing of the bandwidth value. Then the IF-bandwidth is limited to ±5 kHz. This is also valid for the 10.7-MHz-wideband output (X5).

4.9.10. ESMC_R2

RS-232 parameters are: 115,200 baud, 8 data bits, Even Parity, 2 Stop bits, RTS/CTS hardware handshaking, Address 98.

The option ESMC-R2 for RS232C/RS422/RS485 for computer operation is required. Serial bus remote control: ESMC-R2 The interface and its operating mode can be selected by means of coding switch 26 (Fig.2-4.2) (see section 5.3). The baud rate is set via referring table (see 5.3.4) by means of coding switch 25 (Fig. 2-4.2). The address is set with the two coding switches ADR 00 to 99 (Fig. 2-4.2, item 27) giving tens and unit values.

X6 RS 232 connector is the RS232 interface port. The cable is TXD to RXD crossed, RTS to CTS crossed.

The ESMC is equipped with demodulators for AM, FM, LOG and PULSE modes.SSB reception for LSB/USB and A1 is optional. The ESMC may be equipped with up to 5 IF bandwidths between 500 Hz and 8 MHz.

The Basic unit (with tuner 1) 20 MHz to 650 MHz. Tuner 0 0.5 MHz to 30 MHz (optional). Tuner 2 650 MHz to 1300 MHz (optional). ESMC-FE (Tuner 3) 1300 MHz to 3000 MHz (optional)

4.10. Rockwell-Collins

NOTE: The serial interface for most units is EIA RS-422 using balanced voltage digital interface which consists of a four-wire connection to a DB37 37-pin connector in accordance with EIA Standard RS-449 (with the RS-422 interface) mounted on the receiver rear panel. The RS-422 interface implements Send Data (SD) circuit, Receive Data (RD) circuit, and Signal Ground (SG) circuit of the RS-449 standard. Serial command data are received on the RD circuit, and status information is transmitted on the SD circuit. The data circuits operate at selectable data rates up to 19200 baud. High impedance data receivers and tri-state drivers are used to permit a number of receivers to be connected in parallel and addressed on a common data bus. The receiver is considered to be a data terminal equipment (DTE) in the sense of the RS-449 standard. For these units an RS-232 to RS-422 converter will be required. However, the HF-2050 units with the built in pre-selector also featured an RS-232 interface option.

4.10.1. HF2050:

Supports HF-2050 and Canadian military nomenclature: R-5099/U, R-5099A/U, and R-5104/GRC-508 Radio Receiver.

RS-232 parameters: 19,200 baud, 8 data bits, No Parity, 1 Stop bit, Radio Address 15

Radio Address 15 (Factory default address): Address 15 which results as the default address if no address straps are installed in the receiver. Status responses are returned by the receiver to commands.

4.10.2. HF2050BRD:

Supports HF-2050 and Canadian military nomenclature: R-5099/U, R-5099A/U, and R-5104/GRC-508 Radio Receiver.

RS-232 parameters: 19,200 baud, 8 data bits, No Parity, 1 Stop bit, Radio Address 00

Address 00 which is defined as the broadcast address to which will control any/all receivers regardless of its address. No status responses are returned by the receiver for commands for unit address 00, since doing so would cause all receivers to transmit status simultaneously on the same bus.

4.11. Selenia - (Marconi Selenia Communications)

4.11.1. R1022N:

RS-232 parameters: 19,200 baud, 8 data bits, No Parity, 1 Stop bit, Radio address 1.

Receiver covers 10Khz to 30Mhz supporting LSB, USB, ISB, CW, FM, AM

4.12. TCI

4.12.1. TCI4070:

See RACAL model RA6830JD [Sect. 14.2.8.11]

4.12.2. TCI8172:

RS-232 parameters: 19,200 baud, 8 data bits, No Parity, 1 Stop bit

TCI 8172, covers 1.5-30Mhz but is optimized for operation between 3-27MHz supporting AM, CW, LSB and USB. There is no ISB support.

RS-232 serial port wiring is pins 2(RX), 3(TX) and 5(GND) of J2.

Dip Switch settings are S1 are 11100000 (1 is up 0 is down) (19200,8,N,1) Address A

Audio Connector J3, Speaker Pin 1, Line out pair pins 3, 4 and Aux pair pins 6, 7

4.12.3. TCI8173:

Supports: 8074, 8173, 8173A, 8173B, 8174

RS-232 parameters: 19,200 baud, 8 data bits, No Parity, 1 Stop bit

TCI 8074 and 8174 cover 1.5-30MHz (option 10 kHz-30MHz, 8074 units offer 2-45Mhz option an can contains 4 receivers) AM, CW, LSB, USB and ISB

TCI 8173, 8173A, 8173B cover 1.5-30MHz (option 10 kHz–30 MHz) for AM, CW, LSB, USB and ISB

RS-232 serial port wiring is pins 2(RX), 3(TX) and 5(GND) of J2.

Dip Switch settings are S1 are 11100000 (1 is up 0 is down) (19200,8,N,1) Address A

Audio Connector J3, Speaker Pin 1, Line out pair pins 3, 4 and Aux pair pins 6, 7

4.13. Ten-Tec

4.13.1. RX330:

RS-232 parameters: 38,400 baud, 8 data bits, No Parity, 1 Stop bit, Radio Address 1.

4.13.2. RX331:

RS-232 parameters: 38,400 baud, 8 data bits, No Parity, 1 Stop bit, Radio Address 1.

4.13.3. RX340:

RS-232 parameters: 38,400 baud, 8 data bits, No Parity, 1 Stop bit, Radio Address 1.

4.13.4. RX350:

RS-232 parameters: 57,600 baud, 8 data bits, No Parity, 1 Stop bit, Radio Address 1

IF BW filters are configured in bins, any value entered shall be correlated to the next closest filter supported by the receiver as listed in the user manual.

4.14. Watkins-Johnston

All WJ receivers must have their Address switches set for the Device Address of "Single Drop" at this time as no addressing is being used.

ALL WJ for all receivers except where noted, if the value entered for bandwidth is not a standard IF bandwidth (see documentation), the standard IF bandwidth that is greater in value and closest to the requested IF bandwidth will be selected per the following chart below. Thus a request for a 3000hz BW setting will result in 3000hz, but 3100hz will result in 3200hz.

FILT#. FREQ.	FILT#. FREQ.
001 = .056 kHz	034 = 1.00 kHz
002 = .063 kHz	035 = 1.10 kHz
003 = .069 kHz	036 = 1.20 kHz
004 = .075 kHz	037 = 1.30 kHz
005 = .081 kHz	038 = 1.40 kHz
006 = .088 kHz	039 = 1.50 kHz
007 = .094 kHz	040 = 1.60 kHz
008 = .100 kHz	041 = 1.80 kHz
009 = .113 kHz	042 = 2.00 kHz
010 = .125 kHz	043 = 2.20 kHz
011 = .138 kHz	044 = 2.40 kHz
012 = .150 kHz	045 = 2.60 kHz
013 = .163 kHz	046 = 2.80 kHz
014 = .175 kHz	047 = 3.00 kHz
015 = .188 kHz	048 = 3.20 kHz
016 = .200 kHz	049 = 3.60 kHz
017 = .225 kHz	050 = 4.0 kHz
018 = .250 kHz	051 = 4.40 kHz
019 = .275 kHz	052 = 4.80 kHz
020 = .300 kHz	053 = 5.20 kHz
021 = .325 kHz	054 = 5.60 kHz
022 = .350 kHz	055 = 6.00 kHz
023 = .375 kHz	056 = 6.40 kHz
024 = .400 kHz	057 = 7.20 kHz
025 = .450 kHz	058 = 8.00 kHz
026 = .500 kHz	059 = 8.80 kHz
027 = .550 kHz	060 = 9.60 kHz
028 = .600 kHz	061 = 10.4 kHz
029 = .650 kHz	062 = 11.2 kHz
030 = .700 kHz	063 = 12.0 kHz
031 = .750 kHz	064 = 12.8 kHz
032 = .800 kHz	065 = 14.4 kHz
033 = .900 kHz	066 = 16.0 kHz

4.14.1. HF1000A:

RS-232 parameters: 9600 baud, 8 data bits, No Parity, 1 Stop bit

Support is provided for BW from 0hz-8Khz. AGC of SLOW, MEDIUM, FAST and OFF being the same as SLOW.

4.14.2. SI8726:

RS-232 parameters: 19,200 baud, 8 data bits, No Parity, 1 Stop bit

SI-8726 (2 receivers) which requires two serial ports. Frequency coverage is 5 kHz to 30 MHz with 1-Hz tuning resolution. 66 IFBWs up to 16 KHz, AM, FM, CW, USB, LSB & ISB detection modes.

4.14.3. WJ8604:

Serial Interface 1 : RS-232 parameters: 19,200 baud, 8 data bits, No Parity, 1 Stop bit

Serial Interface 1 must be utilized as no hardware handshaking is being utilized, simple three wire interface is all that is required. RS-232 Port parameters are 19,200 8N1. No addressing is being used. However, the receivers interface needs to be configured using 8-position DIP switch A1S3, which is accessed through a plate on the bottom of the receiver. A label mounted next to the plate details the possible configurations of the DIP switch. Address 0 (A1S3, positions 1 thru 5 all OFF) needs to be selected which does not require frame or address information. The receiver responds to all commands and queries.

4.14.4. WJ8604SI2:

Serial Interface 2 : RS-232 parameters: 230,400 baud, 8 data bits, No Parity, 1 Stop bit, RTS/CTS hardware handshaking.

Serial Interface 2 must be utilized as Hardware Handshaking is being utilized. RS-232 Port parameters are 230,400 8N1. No addressing is being used. However, the receivers interface needs to be configured using 8-position DIP switch A1S3, which is accessed through a plate on the bottom of the receiver. A label mounted next to the plate details the possible configurations of the DIP switch. Address 0 (A1S3, positions 1 thru 5 all OFF) needs to be selected which does not require frame or address information. The receiver responds to all commands and queries.

4.14.5. WJ8607:

Serial Interface 1 : RS-232 parameters: 9600 baud, 8 data bits, No Parity, 1 Stop bit

Serial Interface 1 must be utilized as no hardware handshaking is being utilized, simple three wire interface is all that is required. RS-232 Port parameters are 9,600 8N1. Serial Port interface type selection is made by switch A1S3 where position 8 set to "ON" and selects a fixed rate of 9600 baud for Serial Interface 1.

4.14.6. WJ8609:

Serial Interface: RS-232 parameters: 9600 baud, 8 data bits, No Parity, 1 Stop bit

Serial Interface connector A1J7 is used. RS-232 Port parameters are 9,600 8N1.

4.14.7. WJ8611:

RS-232 parameters: 38,400 baud, 8 data bits, No Parity, 1 Stop bit

AGC of SLOW, MEDIUM, FAST and OFF being the same as SLOW.

NOTE: Tunes over a 2 to 1000 MHz frequency range, with a 10 Hz tuning resolution. As such have coded to limit frequency entry to that range.

NOTE: ISB forces the unit into the 6.40 kHz IF BW

NOTE: Selects an IF bandwidth by specifying its size in MHz. If the specified size is not a standard IF bandwidth the command is ignored and the EXE error bit is set in the Event Summary Register. As such I have coded BW bins and whatever value for BW is entered will pigeon holed into the following bins where whatever value entered for BW will result in the filter of equal or next highest value per the WJ-8611 supported list of filter selections below:

FILTER		FREQ.
0000.00020	=	20hz
0000.00050	=	50hz
0000.00100	=	100hz
0000.00320	=	3.2khz
0000.00500	=	5.0khz
0000.00640	=	6.4khz
0000.00800	=	8.0khz
0000.01000	=	10.0khz
0000.01500	=	15.0khz
0000.02000	=	20.0khz
0000.03000	=	30.0khz

0000.03500 = 35.0khz
0000.05000 = 50.0khz
0000.06000 = 60.0khz
0000.10000 = 100.0khz
0000.15000 = 150.0khz
0000.20000 = 200.0khz

4.14.8. WJ8654:

RS-232 parameters: 19,200 baud, 8 data bits, No Parity, 1 Stop bit

Frequency range supported: 500khz-2400Mhz.

Standard: 20 to 1000 MHz
HF extended: 0.5 to 1000 MHz
VHF extended: 20 to 2400 MHz
HF & UHF extended: 0.5 to 2400 MHz

AM, FM, LSB, USB, CW & IFT detection modes, 4 selectable BW: 3.2 kHz to 100 kHz.

4.14.9. WJ8654_3:

RS-232 parameters: 19,200 baud, 8 data bits, No Parity, 1 Stop bit

AM, FM detection modes, 4 selectable BW: 300 kHz to 12 MHz

4.14.10. WJ8654A:

RS-232 parameters: 19,200 baud, 8 data bits, No Parity, 1 Stop bit

AM, FM, LSB, USB, CW & IFT detection modes, 4 selectable BW: 3.2 KHz to 300 KHz.

4.14.11. WJ8710A:

RS-232 parameters: 19,200 baud, 8 data bits, No Parity, 1 Stop bit

Frequency coverage 5 kHz to 30 MHz in 1-Hz steps.
Digital filtering provides 66 IF BWs up to 16 kHz with exceptional shape factors
AM, FM, CW, USB, LSB & ISB detection modes

4.14.12. WJ8711:

RS-232 parameters: 9600 baud, 8 data bits, No Parity, 1 Stop bit

IF BW from 100hz-13Khz. per research.

NOTE: manual states ISB, LSB, or USB forces 3.20 kHz IF BW.

4.14.13. WJ8711A:

RS-232 parameters: 9600 baud, 8 data bits, No Parity, 1 Stop bit

IF BW is limited from 1hz to 16Khz.

AGC of SLOW, MEDIUM, FAST and OFF being the same as SLOW.

4.14.14. WJ8723:

RS-232 parameters: 19,200 baud, 8 data bits, No Parity, 1 Stop bit

Support provided for BW from 0hz-16Khz.

AGC of SLOW, MEDIUM, FAST and OFF being the same as SLOW.

4.15. Yaesu

4.15.1. FRG9600:

RS-232 parameters: 4800 baud, 8 data bits, No Parity, 2 Stop bit

In the standard North American version FRG-9600 frequency coverage for all modes is 60-460Mhz and extended frequency coverage except for SSB is from 460-905Mhz. However, overseas models cover 20-950Mhz and the units shipped to North America can be so modified easily. This changes the range to 20-460Mhz with SSB and 460-950Mhz without SSB operation.

As such, taking into account the world market, the operating frequency supported is 20-950Mhz where a frequency entered below 20Mhz will result in setting the receiver to 20Mhz, likewise, an operating frequency entered in excess of 950Mhz will result in setting the receiver to 950Mhz as coded.

If the FRG-9600 is actively scanning frequencies via its own internal scanning capability when commands are sent to it, they may be ignored. Internal scanning should be halted before external commands are sent over the RS-232 port.

The FRG9600 requires an external (Yaesu model FIF-232C P/N D3000307) TTL-to-RS-232C level adapter which allows external control by computer. The FIF-232C converts between the 0/+5 volts at the CAT jack of the radio and the +15/-15 volts used by IEEE-standard RS-232C serial ports commonly used on personal computers. An opto-isolator in each data line of the FIF-232C enhances immunity to noise. The connector on the FGR9600 is a 6 pin DIN type.

4.16. ISB/PM support

All existing radio make/models within the radio control library which have the capability have been updated in support of ISB and PM as follows:

ISB: Independent Sideband

CUBIC R3050
CUBIC LCR2000
CUBIC LCR2400

R&S EK895
R&S EK895Q
R&S EK896
R&S EK896Q
R&S EK2000

NOTE: R&S models offer ISB-L/U and ISB-U/L, at present using ISB-L/U for ISB

RACAL RA3711
RACAL RA3712
RACAL RA6790GM

NOTE: For the RACAL RA3711, RA3712 and RA6790GM, ISB operation is an optional mode.

TEN TEC RX-330
TEN TEC RX-331
TEN TEC RX-340

W&J HF1000
W&J WJ8611 NOTE: ISB forces the unit into the 6.40 kHz IF BW
W&J WJ8711 NOTE: manual states ISB, LSB, or USB forces 3.20 kHz IF BW.
W&J WJ8711A
W&J WJ8723-4

PM: Phase Modulation

CUBIC LCR-3000
CUBIC LCR-3400
CUBIC SMR-3000
CUBIC SMR-3400

-009