Elecraft K3S Schematics

This document contains the schematics for the Elecraft K3S Transceiver and its internal options. The schematics are preceded by a Block Diagram for context.

The schematics are ordered as the basic K3S/10, then various options.

BLOCK DIAGRAM

K3S/10

RF Board  Main module
Mixer  High dynamic range 1st mixer
Crystal Filter  Roofing filter
KIO3B  I/O module with USB
KXV3B  Transverter Interface, 12m-6m Preamp, Rx Ant Switch w/K144XV Support
KANT3  Antenna Connector if no KAT3 installed
KNB3  Pre-IF Noise Blanker
KREF3  Reference oscillator, Tx mixer/Filter, Rx 2nd Mixer
KSYN3A  High-Performance Synthesizer
Front Panel  Control logic
DSP  Digital Signal Processing
10-watt PA  Low power amplifier

OPTIONS

KBPF3A  General Coverage Receiver Bandpass Filters
KAT3A  100-watt Antenna Tuner
DVR  Digital Voice Record/Playback
KPAIO3 A  Part of 100-watt PA
KPA3A  Part of 100-watt PA (MOSFET)
AuxDSP  Part of KRX3 Second Receiver
KRX3A  Part of KRX3 Second Receiver
K3EXREF  Frequency Locking for Reference Oscillator
K144XV  Internal 2m Module
K144RFLK  Frequency Locking for K144XV

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Sigs shown active high.

<table>
<thead>
<tr>
<th>P3-PRES</th>
<th>SEL-USB</th>
<th>Config</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0</td>
<td>RS232-P3-K3</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>USB-K3 only</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>RS232 to P3</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>USB K3/K3S to P3 daisy chain</td>
</tr>
</tbody>
</table>

RS232 daisy chain
USB standalone
Invalid
USB K3/K3S to P3 daisy chain
LINE_IN+

LINE_IN-

LINEOUT_R

LINEOUT_L

BK_MIC_AF+

BK_MIC_AF-

LIN_SW is high when Line In is plugged in.
J24 Connection to P3 using P3 Cable (PC via USB)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
<th>Direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>P3 Present</td>
<td>Grounded in cable</td>
</tr>
<tr>
<td>2</td>
<td>PC TXD</td>
<td>Out to P3/PC-3</td>
</tr>
<tr>
<td>3</td>
<td>K3S RX</td>
<td>In From P3/XCVR-3</td>
</tr>
<tr>
<td>4</td>
<td>Signal Ground</td>
<td>In From P3/XCVR-3</td>
</tr>
<tr>
<td>5</td>
<td>PC RXD</td>
<td>In From P3/PC-2</td>
</tr>
<tr>
<td>6</td>
<td>K3S TX</td>
<td>Out to P3/XCVR-2</td>
</tr>
<tr>
<td>7</td>
<td>DTR</td>
<td>In From P3/PC-2</td>
</tr>
<tr>
<td>8</td>
<td>RTS</td>
<td>n.c.</td>
</tr>
</tbody>
</table>

J24 Connection to PC RS-232 using Std Cable

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
<th>Direction</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>P3 Present</td>
<td>n.c.</td>
</tr>
<tr>
<td>2</td>
<td>K3S RX</td>
<td>Out to PC</td>
</tr>
<tr>
<td>3</td>
<td>Signal Ground</td>
<td>n.c.</td>
</tr>
<tr>
<td>4</td>
<td>PC RXD</td>
<td>Out From P3/PC-2</td>
</tr>
<tr>
<td>5</td>
<td>K3S TX</td>
<td>In From P3/PC-2</td>
</tr>
<tr>
<td>6</td>
<td>DTR</td>
<td>In From P3/PC-2</td>
</tr>
<tr>
<td>7</td>
<td>RTS</td>
<td>In From P3/PC-2</td>
</tr>
</tbody>
</table>

ACC Pin: Function | Direction
--- | ---
1 FSK In | In
2 Aux Bus | In/Out
3 Band Out 1 | Out
4 PTT In | Out
5 Common | In
6 Dig Out 0 | Out
7 K3 On / TX INH | Out/In
8 Power On | In
9 Band Out 2 | Out
10 Key Out LP | Out
11 Dig Out 1 | Out
12 Common | Out
13 Band Out 0 | Out
14 Band Out 3 | Out
15 ALC In | In

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KIO3B Digital I/O Module

Drawn: M. Zilmer, R. Heineck
Rev: E850646
Sheet 1 of 1
** Increases REF level for use with KSYN3A synthesizers.
NOTES: Controls are dual pots.
Appendix B

KBP3A

NOTE: K1-K8 are shown in the RESET position.
All relays are mounted on the back side of the PCB.
NOTES: PCB Revision XC

Title: K3 AUX DSP: Power

Size: A

Document Number: 2004051101

Date: Monday, July 17, 2017

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