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HUB97

Theory of Operation

**Version 0.1
5/13/2004**

N. Pederson

Revision History

Version	Date	Author	Comments
0.1	04/19/2004	N. Pederson	First Draft

Broadcast Sports Inc
Model HUB97 FCC ID:KTB-HUB97

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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.

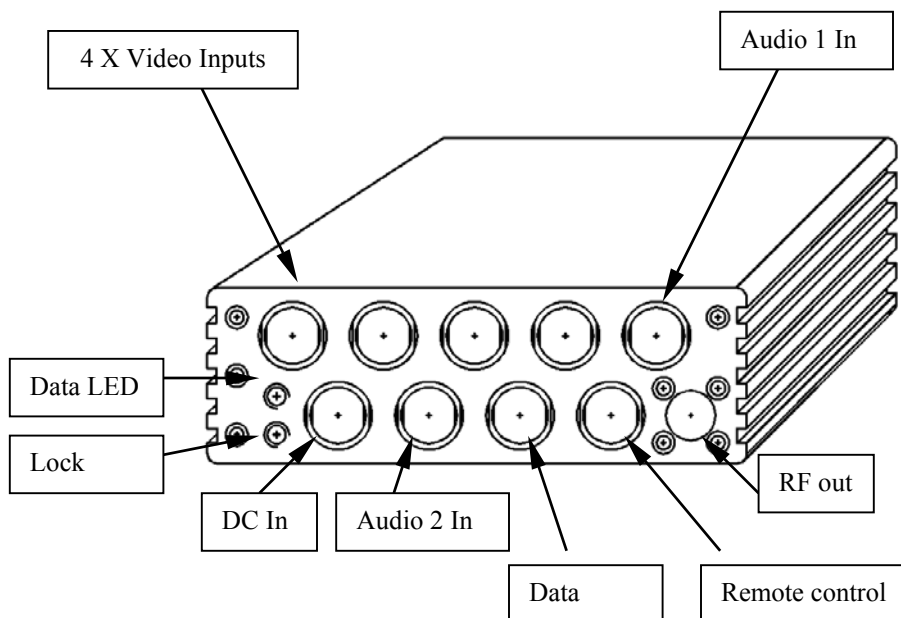
Changes or modifications not expressly approved by the manufacture could void the user's authority to operate the equipment.

INTRODUCTION

The HUB97 is a portable video transmitter specifically designed to meet the growing needs of the mobile television broadcast industry. The unit is TYPE ACCEPTED per CFR 47, Part 74, Subpart F and functions as a stand alone transmitter for a TV ENG station. The transmitter has 16 preset channels including those in the RF ENG 2.0 GHz. and 2.5 GHz. bands as well as 2 channels in the 2.3 GHz. band. Optionally, the device can be factory tuned to any frequency between 1999 to 2500 Mhz in 250 kHz steps in accordance with FCC specifications.

The HUB97 features several capabilities which make it an ideal building block for a modular system requiring high density packaging. Four NTSC video inputs allow the user to easily switch between four video sources with no transmission delays. Additionally, a programmable audio sub carrier provides for the transmission of voice or telemetry. An RS-422 interface enables the unit to be remotely operated and provides control of all internal functions and status monitoring. The unit's small size and functional interface make it readily chassis mountable.

HUB97 FRONT VIEW



Note: When the top LED is illuminated, valid RS-422 data is being received.

When the bottom LED is illuminated, the RF power amp is enabled.

HUB97 Transmitter Specification

TYPICAL SPECIFICATIONS

Video Characteristics

Video Input Frequency	DC to 5.5 Mhz.
Video Input Impedance	75 ohms unbalanced
Video Input Level	1 Volt p-p
Video Pre-emphasis	CCIR 405-1 525

Audio Characteristics Channel 1 and 2

Audio Bandwidth	20 to 15 kHz
Audio Input Impedance	24k ohms
Audio Pre-emphasis	50 microseconds
Sub carrier Deviation	150 kHz @ 1000 Hz
Sub Carrier Frequency	4 Mhz. to 7 Mhz. in 10 kHz steps

Video Performance

Differential Phase	less than 1 deg.
Differential Gain	less than 1%
Frequency Response	- 1dB at 5.5 Mhz
Signal to Noise	63 dB unweighted

RF Characteristics

Video Deviation	8 Mhz/Volt p-p @ 761.6 kHz
Frequency Stability	+/- .005 %
Frequency Range	1.99 Ghz to 2500 Ghz in 250 Khz steps
RF output Power	+32 dBm (1.5 Watts) typ.

General Characteristics

Operating Temperature	-10 to +50 °C, output inhibited below -10 °C
Power Requirements	+11.6 to 15 Vdc @ 0.75 amps