RX304/RX334/RX364 Technical Description

1. Power Supply

The video recording transmitter operates at 12V DC with a dedicated switching DC power adapter which rectifies and regulates the input 100-240V AC, 50/60Hz to 12V DC with maximum 5A output current.

2. On/Off Switch

When the switch is pressed to "On" side, the power transmitter will start booting. The Power LED in the front panel will light up in blue while other LEDs will scanning until booting is finished.

The Power board will regulate the input 12V DC to 3.3V (U4, D4, L2) and 5.5V (U1, D5, L1) and provide these voltages to the Main board (CONN2). Also 12V and 5V DC is supply to the removable hardisk and built-in CD writer. (CONN5, CONN6)

3. Alarm/Relay/RS485 Port

The transmitter has alarm detection and relay switch control function. The alarm signals are input from J1 and filtered and compared with predefined voltage levels to detect the alarm state (U7). The state is digital and feed to the main processor through JP11. Meanwhile, control signals from the main processor will control the relays (RL1-RL4) and provide a dry contact on/off control through the connector J1.

The transmitter can send and receive signal from peripherals with RS485 interface. Digital data from the main processor (through JP11) is shift to RX485 differential signal by transceiver (U8) and connect to the peripherals through CONN3.

4. Video Port and Audio Port

The main function of the recording transmitter is performing live video display, video recording and video transmission. Analog video is input from (CONN4, CONN5) and filtered by the passive components and feed into U7 and U8. U7 and U8 will digitized the analog video and then send to U1 for digital compression. For live video display, digitized video will loopback to U8 and encode to composite video format. The resulting analog video is output to CONN5. For video recording, compressed video will send to U2 and stored to hardisk through JP20. For video transmission, compressed video is send to U2 and then send to remote clients through Ethernet transceiver U26 and CONN9.

Audio is input from CONN3 and digitized by U5. The resulting signal is send to U1 for compression and then sends to U2 for storage and transmission.

5. Main Processor

U2 is the main processor which will perform compressed video and audio storage and transmission. The main processor is powered by U47 with core voltage 1.8V and clocked by Y2 and Y4. The booting information is provided by U24 and U28. The main processor has several port attached with it such as CONN9 for Ethernet connection, JP18 for USB device connection, and J1 for RS232 device connection.

The main processor is connected to the power board by JP1 for alarm status input and relay control output. The RS485 signal is send to power board by JP1 as well. JP3 is used for connecting the main processor and the panel board which will perform key detection for user interaction and LED on/off control.

6. Compression Unit

U1 is the compression unit which will perform raw digital video and audio compression. The compression unit is powered by U43 with core voltage 1.4V, and clocked by OSC1. Temporary compression data is stored in U13 and U14 by the compression unit.

7. Component Description

Power Board:

Category	Label	Description	Description
IC	U1	Voltage regulator	5V voltage regulator
IC	U4	Voltage regulator	3.3V voltage regulator
IC	U7	Voltage comparator	Voltage comparator with 4 bit output
IC	U8	RS485 transceiver	Duplex RS485 transceiver
Inductor	L1, L2	Inductor	High current inductor
Diode	D4, D5	Diode	High current diode
Connector	CONN2	Connector	ATX power connector
Connector	CONN5, CONN6	Connector	Hardisk and CD writer power connector
Connector	CONN3	Connector	RS485 connector
Connector	J1	Connector	DB37 connector
Connector	JP11	Connector	40 pin connector

Main Board:

Category	Label	Name	Description	Description
IC	U1	DM642A	Compression unit	General purpose digital signal processor
IC	U2	EP9315	Main processor	ARM architecture processor
IC	U5	TLV320A23	Audio codec	Audio analog to digital converter
IC	U7	TW2804	Video codec	Video analog to digital converter
IC	U8	TW2824	Video codec	Video analog to digital converter

IC	U24, U28	JL28F640J3C	Memory	Non-volatile memory
IC	U47	FAN1117AD-1.8	Voltage regulator	1.8V voltage regulator
IC	U43	TPS54310PWP	Voltage regulator	1.4V voltage regulator
IC	U13, U14	HY57V283220	Memory	Random access memory
Connector	CONN3	CONN_RCA1X3	RCA connector	RCA audio connector
Connector	CONN4, CONN5	CONN_BNC3X2 CONN_BNC3X2	BNC connector	BNC video connector
Connector	CONN9	CONN_RJ45_FRE_E5TAB-GTL7Y5	RJ45 connector	RJ45 Ethernet connector
Connector	J1	DB9	RS232 connector	RS232 connector
Connector	JP1	BOX HEADER20X2	Connector	40 pin connector
Connector	JP3	BOX HEADER13X2	Connector	26 pin connector
Connector	JP18	CONN_USB_DUAL	Connector	USB connector
Crystal	Y2	32.768kHz	32.768k	32.768k Hz crystal
Crystal	Y4	14.7456MHz	14.745M	14.745M Hz crystal
Oscillator	OSC1	220MHz	25M	25M Hz oscillator