JXDH-6002ⅢX(M)

DVB Demodulator Decoder

User Manual

V1.0

ChengDu Jiexun Electronics Co., Ltd

Contents

1. General Description

The JXDH-6002ⅢX(M)DVB Demodulator Decoder is a cost effective professional integrated receiver decoder. It is widely used in the satellite, cable and terrestrial TV network with different tuner frontend DVB-S2/S, DVB-C and DVB-T. It demodulates the RF signal to the transport stream with ASI output. With dual DVB common slots, JXDH-6002ⅢX(M)works with most of the well known CAS in the market and decrypts multiple services in a transport stream. The on board decoder can process a variety of digital video and audio formats in MPEG-4 AVC/H.264 and MPEG-2, in Standard Definition and in High Definition. The TV channel is decoded to digital and analog outputs, HDMI, YPbPr, CVBS, balanced and un-balanced audio. The powerful demodulation, decryption and decoding capabilities, combined with user friendly WEB GUI and SNMP based remote control makes this equipment one of the most competitive professional IRD in the market.
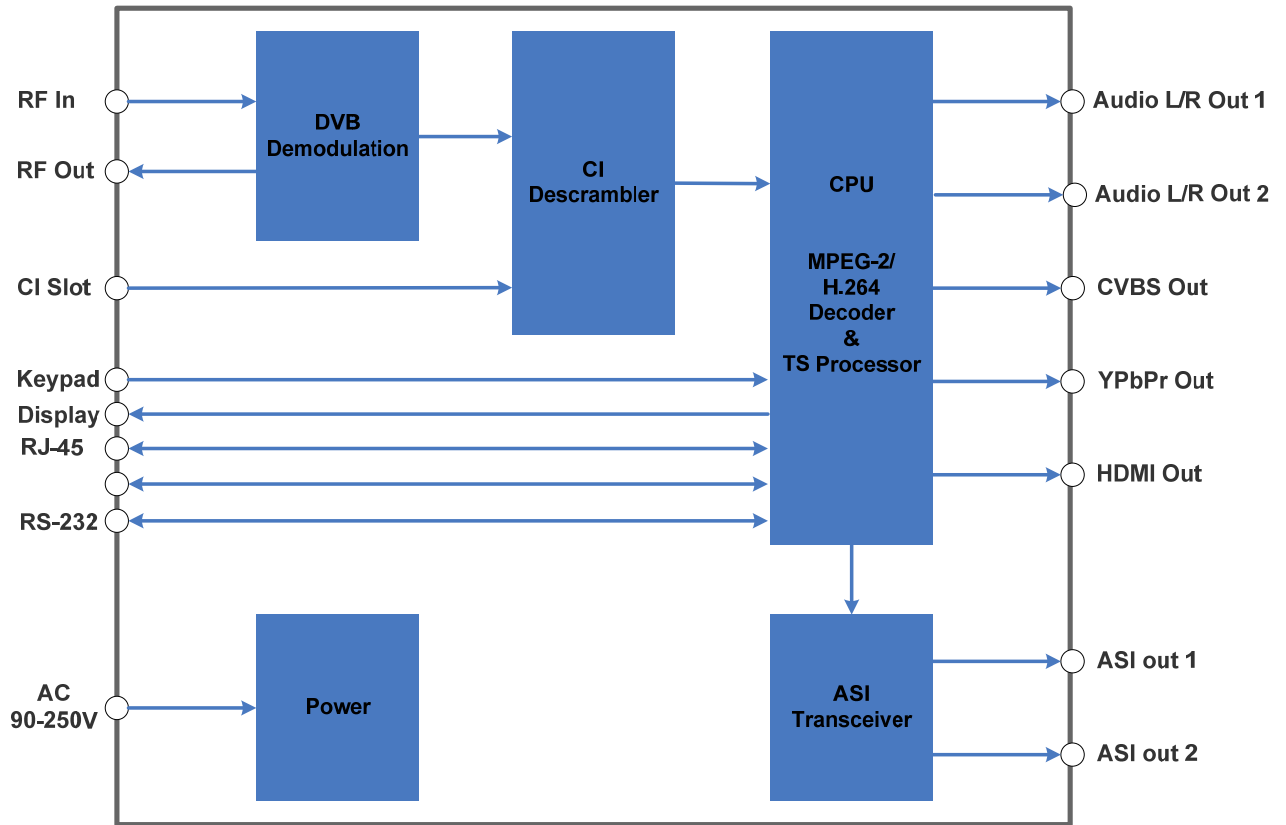
1.1 Characteristics

➢ Multiple tuner inputs DVB-S2/S, DVB-C, and DVB-T

➢ 2x DVB-CI Slots, Multi Programs, BISS-1 and BISS-E decryption

➢ SD/HD MPEG-2 and MPEG-4/H.264 digital video decoding

➢ Two digital audio channel decoding of MPEG1 Layer II and AAC

➢ Rich Analog and Digital Outputs including, CVBS, YPbPr, HDMI, XLR

➢ Remote Control and Supervision by SNMP, HTTP WEB

➢ Dynamic PMT auto detection and updating

➢ Support VBI TELETEXT, EBU/ DVB Subtitle, Closed Caption

➢ Configuration save and load after power off

1.2 Order Information

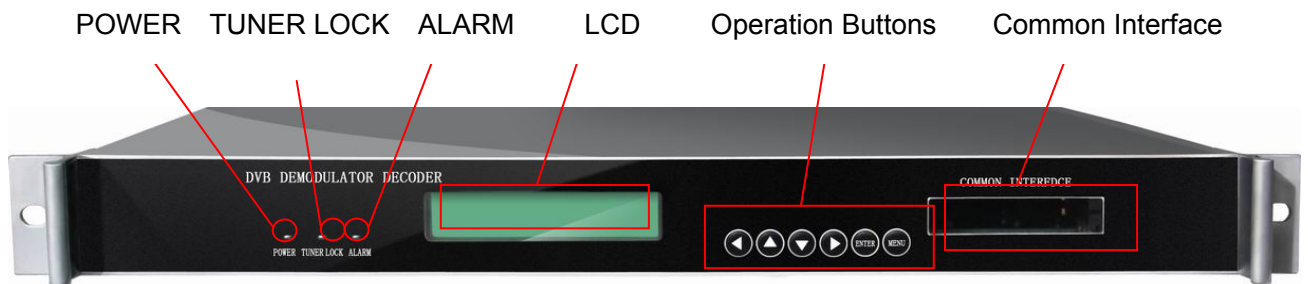| Model Interface	JXDH-6002ⅢX(M)		
Tuner	-C	-T	-S2
Common Interface	x2	x2	x2
ASI Output(mirrored)	x2	x2	x2
HDMI	x1	x1	x1
CVBS	x2	x2	x2
YPbPr	x1	x1	x1
Audio L/R	x2	x2	x2
Balanced audio XLR	x1	x1	x1
USB	x1	x1	x1

2. Block Diagram

3. Control with display and keypad

JXDH-6002ⅢX(M) series can be controlled by the keypad on front panel.

3.1 Front View

POWER   TUNER LOCK   ALARM   LCD   Operation Buttons   Common Interface

POWER	Power indicator, green light means power is OK
TUNER LOCK	Tuner lock indicator, green light means signal is locked; if there is no light, which means no signal input or wrong parameters setting.
ALARM	Alarm indicator
LCD	2 × 20 character LCD
Operation Buttons	〔◄〕〔▲〕〔▼〕〔►〕〔ENTER〕〔EXIT〕 buttons

〔▲〕〔▼〕 are used to up/down pages of menu or increase/decrease value when edit numbers

〔◄〕〔►〕 are used to move cursor

〔ENTER〕is used to enter sub menu or confirm operation

〔EXIT〕is used to return previous menu or cancel operation

Common Interface   PCMCIA Module slot
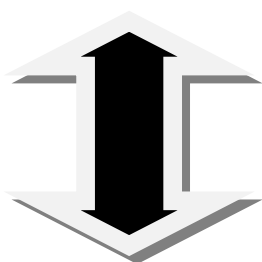
3.2 Rear Panel View

TUNER IN	Tuner signal input
TUNER OUT	Tuner signal loop through output port
USB	USB port for software upgrade
ASI OUT1	ASI output port
ASI OUT2	ASI output port (for back-up)
MGMT	LAN port for software update and remote control
CVBS2	CVBS2 BNC output port
YPBPR	YPBPR output port
CVBS1	CVBS1 RCA output port
L-Audio-R	2 Groups of RCA audio output port
HDMI	HDMI output port
RS-232	serial port for printing information
XLR L	XLR output port for balance audio L channel
XLR R	XLR output port for balance audio R channel
GND	Grounding terminal
Power Socket	AC 110~220V 50-60Hz input

Note: This RS-232 interface is a 9-pins female sub-D connector that is only used for factory software upgrade and configuration. You may not connect any cable to the RS-232 connector, as that could cause damage to the device.

3.3 Description of menu

Input	**Status**	to show the status of signal inputs for ASI, and TUNER
	DVB-S2/QPSK	This menu only is shown on JXDH-6002ⅢX(S2) model **LNB Frequency**: Input LNB frequency **Satellite Frequency**: Input downstream frequency of satellite **Symbol Rate**: Input symbol rate of satellite **LNB Voltage**: select the correct LNB voltage output of the F-connector: Off, 13 V, 18 V. <13V for Vertical/Left hand polarization, 18V for Horizontal/Right hand, OFF for LNB Power off.> **LNB 22KHz**: activate the LNB 22 kHz control signal to the LNB: On or Off. <22KHz control signal switches the LNB to receive high band if any> **DISQEC**: Can select OFF/Port A/Port B/Port C/Port D
	COFDM	This menu only is shown on JXDH-6002ⅢX(T) model Frequency: enter the proper frequency of the COFDM signal in MHz. Bandwidth: set the bandwidth from 6M/7M/8M
	QAM	This menu only is shown on JXDH-6002ⅢX(C) model Constellation: enter the modulation mode of the QAM signal. Frequency: enter the frequency of the QAM signal in MHz. Symbol Rate: edit the symbol rate to the proper value in KBaud.
	RSSI	to show the quality of receiving DVB-S2/S signal.

Output	**Status**	for monitoring the status of the decoder

	CI	CAM Name: display the CAM name in Slot1 and Slot2
		Setup: under this sub menu, you can see all program names from the tuner. All free programs are marked with 'Free' in the first row.
		To select which program to be de-encrypted, press the < ↑ > or < ↓ >-key to roll up and down the program names and press <ENTER>-key to change the status of the corresponding program (only encrypted program could be selected). Three different statuses could be set:
		    Slot 1 (de-encrypted with upper CAM inserted)
		    Slot 2 (de-encrypted with lower CAM inserted)
		    Bypass (no de-encryption).
		The status will be shown in the first row on the LCD display. Confirm this setup when leaving this sub menu, press <ENTER>-key to save or press <EXIT>-key to scrap.

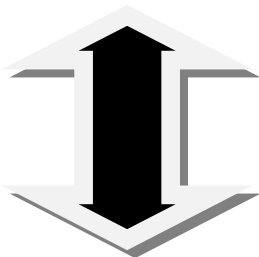|		

	Decoder	**Program**: under this sub menu, you will see all program names from Tuner. Use the < ↑ > or < ↓ >-key to roll up or down between the program names. A few seconds after the program being selected, the A/V signal will be delivered to the related connectors on the back panel.
		Video: You can configure the video parameters of programs in this submenu. Press the <ENTER>-key to confirm and press the <EXIT>-key to cancel.
		    Video Standard: you can select Auto or 576i 25 or 480i 29.97 or 576p 50 or 480p 60 or 720p 50 or 720p 59.94 or 720p 60 or 1080i 25 or 1080i 29.97 or 1080i 30 for the composite video output.
		    Screen: select the screen mode: Auto, 4:3 Full, 16:9 Full or 4:3 Letterbox.
		    DVB Subtitle Lang: select the language of DVB Subtitle.
		    EBU Subtitle Lang: select the language of EBU Subtitle.
		    Subtitle Priority: configure the priority of Subtitle; choose whether DVB or EBU should be first.
		    Fail Mode: set display method on TV when there is no vedio. you can select Black screen, Still picture, or No sync
		    Close Caption：Select 'OFF' will turn off the caption and select 'ON' will turn on the caption.
		    VBI Mode：Select 'DISABLE' will disable the VBI mode and select 'ENABLE' will enable the VBI mode.
		    CVBS SUB PAL: set the subtile of CVBS port in PAL standard. You can set to PALBDGHI or PALN or PALN_C or SECAM
		    CVBS SUB NTSC: set the subtile of CVBS port in NTSC standard. You can set to NTSCM or NTSCM_J or NTSCM_443 and PALM
		Audio: You can configure the audio settings in the submenu.
		    Audio1 Level: modify the audio1 level within this range: 0~99**.**
		    Audio1 Mode: select Stereo, Left, Right or Mono for soundtracks.
		    Audio1 Priority: select the priority of the audio.
		    Audio2 Level: modify the audio2 level within this range: 0~99.
		    Audio2 Mode: select Stereo, Left, Right or Mono for soundtracks.
		    Audio2 Priority: select the priority of the audio.
		    Audio Config: you can set as Two PID or One PID
		    HDMI/AES Embeded: select from PCM or Compressed. Select Compressed to enable HDMI Dolby pass-through. Otherwise select PCM.
		Biss：It includes Biss Mode, Biss 1 Setup and Biss E Setup
		    Biss Mode：Set Biss mode, can select 'OFF', 'Biss E' or 'Biss 1'
		    Biss 1 Setup：set Biss 1 (password is required)
		    Biss E Setup：set Biss E (ID number and password are required)
		A/V Alarm Switch: there are two switches control the alarm separately:
		    Video Alarm: enable or disable the video alarm.
		    Audio Alarm: enable or disable the audio alarm.

System	**Local Setup**	**IP Address**: The IP address for the unit. **Network Mask**: The network mask for the subnet to which the unit is connected. **Gateway**: The gateway for the network to which this unit is connected.
	Trap IP	The JXDH-6002ⅢX(M) provides a Monitor Center IP address. You can set this to be the same IP address of the Monitor Center, which is typically a PC in order to allow the device to send messages to the monitor center.
	Unit Name	The JXDH-6002ⅢX(M) allows you to edit the unit name which is displayed on the front panel LCD. Default name is 'Digital TV Processor". The unit name should be within 20 characters in ASCII format.
	Properties	**MAC address**: Factory-set MAC address is guaranteed to be unique. You cannot configure this address. **FW Version**: the version of the FPGA software (note that this version number will be changed automatically according to the TS/IP settings ('IP In' or 'IP Out'). **SW Version**: the version of the main software.
	Factory Settings	All the user configurable parameters will be set to the factory default settings, including IP address and the unit name.
	USB Upgrade	**USB Status**: it can check the status of USB stick in USB port when you make upgrade **Force upgrade**: It will force upgrade the file in USB stick
	Ntp set	you can sync device with your NTP(Network Time Protocol) server **NTP Server IP**: set the IP address of NTP server **NTP Interval(s)**: Set the NTP interval time **Time Zone**: set the time zone of your location **Date**: set the date **Time**: Set the time **Get Time from Server**: Get time from NTP server directly
	HTTP Login	Modify the username and password for the WEB management. The default username: root The default password: 12345
	Machine Type	not open to customer

4. Control with web server

JXDH-6002ⅢX(M) can be controlled by WEB. User can type IP address of JXDH-6002ⅢX(M) in browser. It will show login pop-up. The default user name is root and password is 12345. If you forget this username and password, you can use front panel button to change it. You can set it in System→HTTP login menu. The parameters are the same as Chapter 3.3.

4.1 Status

User can monitor the working status of output and input. You also can set auto refresh time here. "Status Refresh" is used to refresh status manually.

Digital TV Processor - 10.10.160.218 - Status

Style: White ▼

Status	
Tuner	
CI	**Output Status**
Decoder	
BISS	**Warning** Video: No Input TS
System	Audio: No Input TS
	PMT PID [ ] Program Number [ ]
	Input Status
	Tuner C/N (dBuV) 76.0
	Auto Refresh
	Frequency Every 20 seconds ▼ Status Refresh

4.2 Input

Set parameters for tuner input. Click "Apply" button to submit, or click "Cancel" button to cancel

Digital TV Processor - 10.10.160.218 - Tuner

Style: White ▼

Status	
Tuner	
CI	**DVB-S**
Decoder	
BISS	LNB Frequency (MHz) 5150
System	Satellite Frequency(MHz) 3840
	Symbol Rate (KBaud) 27500
	LNB Voltage OFF ▼
	LNB 22KHz OFF ▼
	DiSEqC DiSEqC OFF ▼
	Apply Cancel

4.3 CI

Set parameters for CI slots. Click "Apply" button to submit, or click "Cancel" button to cancel

Digital TV Processor - 10.10.160.218 - CI

Style: White ▾

Status	
Tuner	**CI**
CI	
Decoder	● Slot 1 [No Module] ● Slot 2 [No Module]
BISS	
System	

Index	Program	Select

[Apply] [Cancel]

4.4 Decoder

Set parameters for decoder. Click "Apply" button to submit, or click "Cancel" button to cancel

Digital TV Processor - 10.10.160.218 - Decoder Play

Style: White ▾

Status	**Audio Video Decoder Play**
Tuner	
CI	**Program Selection**
Decoder	
BISS	Current Program [_____]
System	
	Program List [TS Invalid]

A/V Alarm Switch

Video Alarm [Enable ▾]

Audio Alarm [Enable ▾]

[Apply] [Cancel]

Digital TV Processor - 10.10.160.218 - Audio

Status
Tuner
CI
Decoder
BISS
System

Audio   **Video**   **Decoder Play**

Audio1 Output

Audio Level	49
Audio Mode	Stereo ▼
Audio Priority	0/unknown ▼

Audio2 Output

Audio Level	49
Audio Mode	Stereo ▼
Audio Priority	0/unknown ▼

Audio Config

Audio Config	Two Pid ▼

HDMI/AES Embedded

HDMI/AES Embedded	PCM ▼

Apply   Cancel

Digital TV Processor - 10.10.160.218 - Video

Status
Tuner
CI
Decoder
BISS
System

Audio   **Video**   **Decoder Play**

Video Output

Video Standard	Auto ▼
Screen	Auto ▼
DVB Subtitle Language	off ▼
EBU Subtitle Language	off ▼
Subtitle Priority	DVB First ▼
Fail Mode	Black Screen ▼
Close Caption	OFF ▼
VBI Mode	Disable ▼
CVBS SUB PAL	PALBDGHI ▼
CVBS SUB NTSC	NTSCM ▼

Apply   Cancel

4.5 BISS

Set parameters for BISS. Click "Apply" button to submit, or click "Cancel" button to cancel

Digital TV Processor - 10.10.160.218 - BISS Mode

Style: White ▾

Status	
Tuner	
CI	**BISS Mode**
Decoder	
BISS	BISS Mode Mode 0 ▾
System	

Apply   Cancel

4.6 System

Set parameters for system. Click "Apply" button to submit, or click "Cancel" button to cancel

Digital TV Processor - 10.10.160.218 - Device

Style: White ▾

Device   Version   Network   Login

Device Information

Status	
Tuner	Unit Name Digital TV Processor
CI	Serial Number 1123456789abc
Decoder	
BISS	
System	

Apply   Cancel   Default

Digital TV Processor - 10.10.160.218 - Version

Style: White ▼

Status	Device Version Network Login
Tuner	
CI	**Version**
Decoder	
BISS	Main Version 31PR000E Web Version 0106
System	Linux Version 01 Decoder Version 0e

Digital TV Processor - 10.10.160.218 - Network

Style: White ▼

Status	Device Version Network Login
Tuner	
CI	**Network**
Decoder	
BISS	**Local Setting**
System	IP Address 10 . 10 . 160 . 218
	Subnet Mask 255 . 255 . 255 . 0
	Gateway 10 . 10 . 80 . 1
	MAC Address 11:20:22:00:22:66
	Alarm Setting
	Trap IP Address 10 . 10 . 70 . 66
	Apply Cancel

Digital TV Processor - 10.10.160.218 - Login

Style: White ▾

| Status | Tuner | CI | Decoder | BISS | System |

Device   Version   Network   Login

Login

Login ID   [   ]

Login Password [   ]

Apply   Cancel

5. Technical Specification

Tuner Input	
DVB-S/S2 Tuner Input	
Connector Type	1 x F type female 75Ω for Input, 1 x F type female 75Ω for loop through output
Input Frequency Range	950 ~ 2150MHz
Input Level	-25 ~ -65dBm
Symbol Rate	5 ~ 45MBaud/s for QPSK
	10 ~ 31MBaud/s for 8PSK
Roll Off Factor	DVB-S QPSK: 0.35
	DVB-S2 8PSK: 0.35, 0.25, 0.2
Punctured Rates	DVB-S QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 8/10
	DVB-S2 8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
LNB Polarity Selection Voltage	0, 13V, 18V selectable
LNB Band Selection Tone	0/22KHz selectable
Satellite Selection Command	DiSEqC 1.0
DVB-C Tuner Input	
Connector Type	1 x F type female 75Ω for Input, 1 x F type female 75Ω for loop through output
Input Frequency	48~860MHz
Input Level	45~ 75dBuV
Symbol Rate	1~7MBaud (ITU J.83 Annex A)
Constellation	16/32/64/128/256QAM
Bandwidth	6MHz/7MHz/8MHz
Input Return Loss	7dB (typ.)
DVB-T Tuner Input	
Connector Type	1 x F type female 75Ω for Input, 1 x F type female 75Ω for loop through output
Input Frequency	104~862MHz (VHF/UHF)
Input Level	-20 ~ -70dBm (Quasi Error Free, QEF)
Constellation	DVB-T: QPSK/16-QAM/64-QAM
Bandwidth	6MHz/7MHz/8MHz

FFT Mode	DVB-T: 2K/8K
Guard Interval	DVB-T: 1/4, 1/8, 1/16, 1/32
FEC Code Rate	DVB-T: 1/2, 2/3, 3/4, 5/6, 7/8
Input Return Loss	7dB (typ.)

TS Processing

Descrambler	DVB Common Scrambling Algorithm (CSA)
BISS Mode	BISS-1, BISS-E
Common Interface	Dual PCMCIA slots, compatible with major CA CAMs in the market

ASI Output

Connector type	2 x BNC Female, 75Ω
Standard	DVB-ASI, EN50083-9

TS over IP Output

Connector Type	1 × RJ-45, 10/100M for TS/IP, share with management port
Useful Bit Rate	≤25Mb/s
Protocol	UDP / RTP, Multicast

HDMI Output (for 3100P-50xx)

Standard HDMI	1x HDMI 1.3 interface (no 1080p)
Video Resolution	1080i x 30, 1080i x 29.97, 1080i x 25, 720p x 60, 720p x 59.94, 720p x 50, 480p x 60, 576p x 50, 576i x 25, 480i x 29.97
Audio Embedded	one digital audio pass through

Digital Video Processing

Video Standard	MPEG-2(MP@ ML for SD, MP@HL for HD) MPEG 4/H.264 AVC Part 10 (MP@L3 for SD, HP@L4.1 for HD)
Video PID Bit Rate	< 80Mb/s

Digital Audio Processing

Number of Outputs	2x digital audio PIDs are decoded*
Sampling Rate	32, 44.1 and 48KHz
Audio Bit Rate MPEG-1 Layer I	32, 64, 96, 128, 160, 192, 224, 256, 288, 320, 352, 384, 416 and 448 kb/s for
	32, 48, 56, 64, 80, 96, 112, 128, 160, 192, 224, 256, 320 and 384 kb/s for MPEG-1 Layer II

Analog Video Output

YPbPr Connector	1 set of RCA, 75Ω
CVBS Connector	1 × BNC 75Ω, 1 x RCA 75Ω
Video Standard	NTSC, PAL, and SECAM
YPbPr Resolution	1080i x 30, 1080i x 29.97, 1080i x 25, 720p x 60, 720p x 59.94, 720p x 50, 480p x 60, 576p x 50, 576i x 25, 480i x 29.97
Signal Level	I.0 Vp-p±5%
Frequency Response	<±I dB, at 5.5 MHz for PAL/SECAM, 4.2MHz for NTSC and 15MHz for HD YPbPr
Chroma-Luma Delay	<±30 ns
Field Time Distortion	<2%
Line Time Distortion	< 1%
Short Time Distortion	<2%
Differential Gain	<3%
Differential Phase	<2°
Signal to Noise Ratio	>55 dB (luminance weighted)

Analog Audio Output

Connector type	1x XLR Male Socket, 2 pairs of RCA audio
Output Impedance	600Ω (balanced)
Output mode	Left, Right, Dual Mono, Stereo
Number of Outputs	2 pairs of stereo audio outputs (2 Audio PIDs are decoded).

Baseband Data Output

Subtitle	DVB/EBU
VBI	Teletext, WSS, VFD, VPS
Closed Caption	EIA 608, EIA 708, EIA 608-to-708

Control & Monitoring	
Connector Type	1×RJ-45, 10/100M, for equipment IP Control
Remote Control	SNMP, HTTP Web, Proprietary HDMS Network System Management Software
Local Control	LCD display and 6-key keypad
Serial Port	1×RS-232 9-pin D-sub, for debug use only
Equipment Upgrade	FTP loader or USB

Physical	
Dimension	44mm×483mm×255mm
Weight	2.4Kg Net, 4.4Kg Gross
Power Supply	AC 90V～260V, 50/60Hz
Power Consumption	24W
Operating temperature	0 ~ +45℃
Storage temperature	-10~+50℃
Operating Humidity	20~90%, non-condensed

Certification
EMC: EN 55024:1998+A1:2001+A2:2003, EN 55022:2006+A1:2007, EN 61000-3-2:2006, EN 61000-3-3:2008
FCC: Part 15 Class B
LVD: EN 60950-1:2006 + A11:2009

* For more information about digital audio, please contact our sales representative.

6. Default Device Parameters On Delivery

Main Menu	Sub-menu Parameter	Factory defaul settings
Input	**Status**	TUNER unlock
	DVB-S2/QPSK	This menu only is shown on JXDH-6002ⅢX(S2) model **LNB Frequency**: 5150MHz **Satellite Frequency**: 3840MHz **Symbol Rate**: 27500KBaud **LNB Voltage**: OFF **LNB 22KHz**: OFF **DISQEC**: DISQEC OFF
	COFDM	This menu only is shown on JXDH-6002ⅢX(T) model Frequency: 794MHz. Bandwidth: 6M
	QAM	This menu only is shown on JXDH-6002ⅢX(C) model Constellation: 64. Frequency: 50000KHz. Symbol Rate: 6875KBaud.
	RSSI	to show the quality of receiving DVB-S2/S signal.

Output	Status	PMT: --- PN:--- A/V:---/--- Video: No input TS Audio: No input TS

	CI	CAM Name: CI slot1 no module, CI slot2 no module Setup: free

	Decoder	**Program**: Invalid
		Video:
		    Video Standard: Auto
		    Screen: Auto
		    DVB Subtitle Lang: eng
		    EBU Subtitle Lang: eng
		    Subtitle Priority: DVB first
		    Fail Mode: Black screen
		    Close Caption：OFF
		    VBI Mode：Disable
		    CVBS SUB PAL: PALBDGHI
		    CVBS SUB NTSC: NTSCM
		Audio:
		    Audio1 Level: 49.
		    Audio1 Mode: Stereo.
		    Audio1 Priority:
		    Audio2 Level: 49.
		    Audio2 Mode: Stereo.
		    Audio2 Priority:
		    Audio Config: Two PID
		    HDMI/AES Embeded: PCM
		Biss：
		    Biss Mode：OFF
		    Biss 1 Setup：************** (password is required)
		    Biss E Setup：************** (ID number and password are required)
		 A/V Alarm Switch:
		    Video Alarm: enable.
		    Audio Alarm: enable

System	**Local Setup**	**IP Address**: 10.10.70.48 **Network Mask**: 255.255.255.0 **Gateway**: 1.0.0.0
	Trap IP	10.10.70.1
	Unit Name	Digital TV Processor
	Properties	**Main software version**: 31PRXXXX **MAC Address**: show mac address of 3100P **Linux Version**: version number **Decoder Version**: version number
	Factory Settings	
	USB Upgrade	
	Ntp Set	**NTP Server IP**: 10.10.80.245 **NTP Interval(s)**: 600 **Time Zone**: GMT +8:00 **Date**: 2000-1-1 **Time**: 00:00:00
	HTTP Login	Modify the username and password for the WEB management. The default username: root The default password: 12345
	Machine Type	not open to customer