Professional Digital Decoder

User’s Manual

DCH-4000P

http://www.pbi-china.com
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1. Warning

* Please refer to the explanation below before operating to avoid user hurt or device breakdown. Please do NOT power on before safety installation procedure checking.

⚠️ **Danger! Electricity!**
Please use the outlet with the grounded pin. If not use the machine for a long period, please pull out the power plug from the outlet to avoid the damage by the lightening or electric wave. Make proper layout of circuitry to protect the machine from the destruction by hoof or extrusion and impact by something laid on it.

🚫 **Depart From Dampness!**
Do not use the machine in the area with high humidity or put it in the water or wet place.

🚫 **No pressing heavily!**
Please do NOT put too much pressure on the machine.

🚫 **No touching!**
Please do NOT touch the machine during thunderstorm.

⚠️ **Urgent instance!**
Please pull out the plug in any following cases:
1. Wire or plug is damaged.
2. Filtered by the liquid, or fall into water.
3. Poured by rain or water.
4. Drop from a high place or the chassis is broken.

🚫 **No Dismantle!**
1. Please do NOT dismantle the machine by yourself.
2. Please do NOT change the parts by yourself. If the machine cannot work, please call the agent and professional repairer.

Product specification and appearance are based on the actual product purchased; any changes will not be notified accordingly.
2. Introduction

DCH-4000P is a professional IRD with a variety of input (including DVB over ASI, IP, QPSK, QAM, COFDM and DS3) and output (CVBS, SDI, ASI, DS3 and IP) combinations. An appropriate IP port equipped as an option supports DVB over IP applications. LAN control and monitoring are achieved with TCP/IP, SNMP and HDMS*.

(*Headend Devices Management System, a PBI's proprietary software)

2.1. Features:

Fully complies with MPEG-2, MP@ML and DVB-S/-T/-C standards
IP input or output with UDP/RTP (optional)
Multicast and Unicast on IP
Supports PAL, NTSC or SECAM
Supports various Conditional Access systems
SDI video output with digital audio embedded
Two sets of independent ASI outputs
Automatic PMT update
Compatible with Multiple De-encrypt CI modules
DS3 I/O for TS (optional)
Switchable audio sound track
Teletext VBI, EBU subtitle and DVB subtitle
Upgradeable through LAN
Easy-to-use LCD menu

2.2. Options:

DVB-S, DVB-T or DVB-C tuner input
High Speed 100M Base-T IP output
High Speed 100M Base-T IP input
DS3 I/O card
3. Appearance Introduction

3.1. Front Panel List

Figure 3.1 Front Panel of DCH-4000P

(1) PBI logo
(2) Power LED
(3) Tuner lock LED
(4) Alarm LED
(5) LCD (20x2 characters)
(6) Control Panel
(7) Common Interface (×2 slots)

3.2. Rear Panel List

Figure 3.2 Rear Panel of DCH-4000P
(1) TS/IP Input/Output interface
(2) XRL L interface
(3) XRL R interface
(4) RGB/YUV interface (G/Y)
(5) RGB/YUV interface (B/U)
(6) RGB/YUV interface (R/Y)
(7) CVBS1 interface
(8) L-Audio-R interface
(9) CVBS2 interface
(10) ASI IN interface
(11) ASI/SDI Output interface
(12) ASI Output interface
(13) RS-232 interface
(14) Ethernet interface
(15) Tuner Out interface
(16) Tuner In interface
(17) Power socket
(18) ON/OFF switcher

3.3. Usage of Control Buttons

**Figure 3.3 Control Unit**

- **ENTER** Call the menu and confirm the performance
- **EXIT** Go back to the previous menu or cancel the operation
- ▲▼ Zapping or switch the options of the menu and modify the values of options
- ◀▶ Move cursor Left /Right
4. Operation on Front Panel

After power on and connecting necessary cables, the LCD will display below information:

There are three submenus in Main Menu, including **Inputs**, **Outputs** and **System**.

### 4.1. Inputs Menu

Under Inputs Menu, the user could monitor configure the parameters of the Tuner and IP input settings.

There are three submenus in Inputs menu, including **Status**, **QPSK** and **Ethernet**. Press **ENTER** button to enter edit mode. Press ▲&▼ buttons to move cursor and use ▲&▼ button to modify the value. Press **ENTER** button to confirm the operation and **EXIT** button to cancel.

**Note**: The IP could be configured by user.
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Press **ENTER** button to enter the edit mode. Use ↑↓←→ to key in the value. Press **ENTER** to confirm and **EXIT** to cancel.

Press **ENTER** button to enter the edit mode. Use ↑↓ to modify the value. Press **ENTER** to confirm and **EXIT** to cancel.

Press **ENTER** button to enter the edit mode. Use ↑↓←→ to modify the value. Press **ENTER** to confirm and **EXIT** to cancel.

Use ↑↓←→ to modify the source gateway.

Show the source Mac address. This option cannot be configured by user.

Use ↑↓←→ to modify the value.

Use ↑↓←→ to modify the value of the UDP Port.

User can configure the protocol to be **UDP** or **RTP**.

User can choose **Auto, Disable** and **Fixed Rate**.
4.2. Outputs Menu

Under Outputs Menu, the user could configure the settings of output programs, such as the source signal for CI (CI Source), video standard, aspect ratio, DVB/EBU Subtitle, Audio mode and language, the source for ASI/SDI output, SDI output with or without audio embedded etc.

There are five submenus in Outputs menu, including Status, CI, Decoder, ASI and ASI 2/SDI. Press ENTER button to enter edit mode. Use & button to move cursor and use & button to edit the value. Press ENTER button to confirm the operation and EXIT button to cancel.

- Show the information of outputs.
- Show the information of CI. If there is no CAM card in CI Slot, it will show No Module on the LCD. If there is, it will show the information of CAM card.
- Use ▲▼ to change the CI source. There are TUNER, ASI Input and IP to choose.
There are Auto, SECAM, NTSC and PAL to choose.

There are 4:3 Full, 16:9 Full and 4:3 Letter box to choose.

Use ▲▼◄► to change the letters to spell the language.
E.g.: To choose English subtitle, please spell eng.

Change the subtitle priority. There are DVB First and EUB first to choose.

Use ▲▼◄► to modify the audio level.

There are Stereo, Left, Right and Mono to choose in Audio mode.

Use ▲▼◄► to change the letters to spell the language.

Use ▲▼ to change the ASI Source.
There are Tuner, ASI Input, CI De-encrypted and IP to choose.

User could select Bypass or 188.
4.3. System Menu

Under System Menu, the user could configure the IP address, unit name of the DCH-4000P, or recover to the factory default settings, also the user could configure the TS/IP convertor to be IP input or output.

There are six submenus in System menu, including Local Setup, Trap IP Addr, Unit Name, Properties, Factory Settings and Machine Type. Use ENTER button to enter edit mode. Press ▼ button to move cursor and use ▲▼ button to modify the value. Press ENTER button to confirm the operation and EXIT button to cancel.
Show the IP address, network mask and gateway of the DCH-4000P itself. Press ENTER to enter the edit mode. Use ▲▼◄► to modify them.

Press ENTER to enter the edit mode. Use ▲▼◄► to modify the value to set the Trap IP address.

The user could change unit name. The default is DCH-4000P.

Show the DCH-4000P Mac address. This option cannot be edited.

Show the FW version and SW version of DCH-4000P. This option cannot be edited.

Press ENTER button to recover to factory default settings; Press EXIT button to cancel.
5. Frequently Asked Question

1. Why is there no display on LCD?
   *Answer:* Please check whether the power supply is connected well first. If not, insert it well and switch on.

2. Why is there no input signal?
   *Answer:* Please check whether the input cable in connected well first. If not, insert it well. If it is connected well, please check whether there is any damage on it. If there is, please change a good cable.

3. Why can't the Tuner be locked?
   *Answer:* Please check the settings of the Tuner; be sure the settings are correct to receive the satellite signal come from the LNB.

4. Why can't the ASI be locked?
   *Answer:* Please check the BNC cable first, make sure the cable is connected well and there are programs transmitted to DCH-4000P via the BNC cable.

6. Appendix

6.1. Specification

<table>
<thead>
<tr>
<th>QPSK Demodulation &amp; FEC Parameters</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Frequency Range</td>
<td>C &amp; Ku Band, 950–2150MHZ</td>
</tr>
<tr>
<td>Input Level</td>
<td>-25dBm ~ -65dBm</td>
</tr>
<tr>
<td>Input Impedance</td>
<td>75ΩF type</td>
</tr>
<tr>
<td>Symbol Rate</td>
<td>2~45Mb/s (SCPC or MCPC)</td>
</tr>
<tr>
<td>Rolling Off Factory</td>
<td>0.20 or 0.35</td>
</tr>
<tr>
<td>Punctured Rates</td>
<td>1/2, 2/3, 3/4, 5/6, 6/7, 7/8</td>
</tr>
<tr>
<td>Reeds Salomon Decoding</td>
<td>204, 188, T = 8 &amp; I=12</td>
</tr>
</tbody>
</table>
### DVB-C QAM Demodulation

<table>
<thead>
<tr>
<th>Connector</th>
<th>IEC, Female (7/8MHz) or F Female (6MHz) Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Symbol Rate Range</td>
<td>1<del>7Mbs (PAL), 1</del>6Mbps (NTSC)</td>
</tr>
<tr>
<td>Demodulation</td>
<td>16/32/64/128/256 QAM</td>
</tr>
<tr>
<td>Tuner Bandwidth</td>
<td>6 MHz or 7 MHz or 8 MHz factory optional</td>
</tr>
<tr>
<td>FEC Decoder</td>
<td>1/2, 2/3, 3/4, 5/6, 7/8; K=7</td>
</tr>
<tr>
<td>Frequency Range</td>
<td>50~860MHz</td>
</tr>
<tr>
<td>Digital Signal Input Level</td>
<td>-15~15dBmV</td>
</tr>
<tr>
<td>Input Impedance</td>
<td>75ΩF-type</td>
</tr>
</tbody>
</table>

### DVB-T COFDM Demodulation

<table>
<thead>
<tr>
<th>Connector</th>
<th>IEC, Female (7/8MHz) or F Female (6MHz) Input</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 IF Loop through</td>
<td>Yes</td>
</tr>
<tr>
<td>Frequency Range</td>
<td>470-862MHz, 174-230MHz</td>
</tr>
<tr>
<td>Input Symbol Rate Range</td>
<td>4.98~31.67Mbit/s (8MHz bandwidth)</td>
</tr>
<tr>
<td>Constellation</td>
<td>QPSK, 16-QAM, 64-QAM</td>
</tr>
<tr>
<td>Tuner Bandwidth</td>
<td>8MHz</td>
</tr>
<tr>
<td>Digital Signal Input Level</td>
<td>-20 to -75dBmV</td>
</tr>
<tr>
<td>Input Impedance</td>
<td>75Ωunbalanced</td>
</tr>
<tr>
<td>FFT mode</td>
<td>2K/8K</td>
</tr>
<tr>
<td>Guard Interval</td>
<td>1/4, 1/8, 1/16, 1/32, off</td>
</tr>
<tr>
<td>FEC Code Rate</td>
<td>1/2, 2/3, 3/4, 5/6 and 7/8</td>
</tr>
</tbody>
</table>

### DS3 Input

| Input Impedance | 75Ω |
| Connector | BNC |
| Maximum Input Code Rate | 44.736Mbit/s |
| Format | Unframed Framing according to G.804/G.752 (DS3) |

### DS3 Loop Through Output

| Impedance | 75Ω |
| Connector | BNC |
| Maximum Output Code Rate | 44.736Mbit/s |
| Format | Unframed Framing according to G.804/G.752 (DS3) |

### TS over IP Output

| Connector | 100base-T RJ45 |
| Output Bit Rate | 70Mbits/s Max. |
| UDP/RTP | Multicast or Unicast |
| Multicast Control Protocol | IGMPV2 |

### I/O Interface on back panel

| LNB I/O | 1×Input, 1×loop through output |
| RS-232 | 1×9-pin D-sub male |
| RJ45 | 1×Ethernet control port, 1×TS over IP output (factory optional) |
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#### ASI input
1

#### ASI output
2×Redundant output

#### SDI output
1 (user optional)

#### RGB output
1×RCA

#### CVBS output
1×RCA, 1×BNC

#### Audio XRL Balance Output
1

### General

#### Operating Temperature
0-45°C

#### Storage Temperature
-20~70°C

#### Humidity
<85%

#### Power Supply
Ac 90V~260V  50Hz/60Hz

#### Dimensions
483mm×255mm×44mm

#### Approximately Net Weight
5Kg

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### 6.2. Option List

<table>
<thead>
<tr>
<th>Function</th>
<th>DCH.4000P 30</th>
<th>DCH.4000P 41</th>
<th>DCH.4000P 42</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP Output (TS)</td>
<td>S</td>
<td>S</td>
<td>S</td>
</tr>
<tr>
<td>IP Input (TS)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>DVB-S Input</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>DVB-S2 Input</td>
<td>✓</td>
<td>✓</td>
<td>-</td>
</tr>
<tr>
<td>DVB-C Input</td>
<td>✓</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>DVB-T Input</td>
<td>✓</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>FCMCIA Slot</td>
<td>✓</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>ASI TS Input/Output</td>
<td>✓</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Audio Embedded SDI Output</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ethernet Remote Control</td>
<td>✓</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>BNC Video Output</td>
<td>✓</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>A/V Output</td>
<td>✓</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Balance XRL Audio Output</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Simucrypt Compliant</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

✓ Standard
7. Technology Support

ADD: Room216 Floor2B, Dingjun Building,
No. 75 SuZhou Street,
Beijing, 100080, China
TEL: +86-10-6263-8833
FAX: +86-10-6263-7776
E-mail: mkt@pbicn.com

8. DVB-S2 Input Menu

When use DVB-S2 input, there will be some differences in input menu. Please refer to below menu tree for more details.

Inputs
DVB-S2

- LNB Frequency
  - 5150MHz

- Satellite Frequency
  - 4000MHz

- Symbol Rate
  - 26850Kbaud

- LNB Voltage
  - Off

- LNB 22KHz
  - Off

Press ENTER button to enter the edit mode. Use ↑↓←→ to modify the value. Press ENTER to confirm and EXIT to cancel.

User can configure Off, 13V and 18V.

Use ↑↓ to change On or Off.
### Demodulator Mode

**DVB-S**

Use ▲▼ to change demodulator mode to DVB-S or DVB-S2.

### Operation Mode

**QPSK 1/2**

There are 14 operation modes: eight QPKS (1/2, 2/3, 3/4, 3/5, 4/5, 5/6, 8/9, 9/10) and six 8PSK (2/3, 3/4, 3/5, 5/6, 8/9, 9/10)

### Pilot

**On**

Use ▲▼ to change demodulator

### Roll-off Factor

**0.2**

There are three factors: **0.2, 0.25** and **0.35**.