

# DCH-5000PE Multi-Standard to H.264 SD/HD Transcoder



The DCH-5000PE is a flexible platform which can trans-code any digital TV format to standard definition or high definition H.264/MPEG4 signal. It provides most of the digital TV inputs with DVB-S/S2, DVB-T/T2, DVB-C tuner, TS input from ASI or IP port. The on-board decoder works with all kinds of digital audio and video formats including MPEG2 and MPEG4/H.264 video, MPEG1 layer II audio and AAC. After the decoding to the digital TV base band, DCH-5000PE compresses it into H.264 SD or HD, and it processes the ancillary data including VBI Teletext, Subtitles. It supports also digital audios loop through function. The re-compressed H.264 transport stream is output to IP and ASI output.

The DCH-5000PE can also be used as a professional IRD that features a broadcast quality decoder for MPEG-2 and H.264 in both Standard Definition and High Definition formats, it provides a variety of industry standard digital and analog outputs, including analog video and audio, HD-SDI and ASI. The equipment also performs HD down-conversion and aspect ratio adaptation of SD/HD programs to generate professional quality digital video and audio outputs for easy integration with existing cable network infrastructure. Equipped with dual DVB common interfaces, DCH-5000PE supports most of the conditional access system in the market. The equipment is remotely controlled and supervised by SNMP and Web page. This IRD plus encoder architecture makes the DCH-5000PE an ideal product for digital TV MPEG2 to MEG4/H.264 migration.

## Main Feature

- Multi-standard to MPEG-4 AVC/H.264 trans-coding
- Multiple inputs DVB-S2/S/C/T/T2, TS/IP 10/100M, ASI, DS3 and E3
- Redundant inputs among Tuner, ASI and TS/IP
- SD/HD MPEG-2 and MPEG-4/H.264 digital Video decoding
- Digital audio loop through for trans-coding
- Digital audio down-mix and loop through over SDI embedded
- Multiple Analog and Digital Outputs for decoded signal, ASI, TS/IP, SDI, and CVBS
- Digital outputs for transcoded signal, ASI and TS/IP
- Flexible remultiplexing among ASI, Tuner and TS/IP Inputs
- 2 × DVB-CI Slots, Multi Programs, BISS-1 and BISS-E decryption
- Dynamic PMT detection and automatic updating
- VBI TELETEXT, EBU/ DVB Subtitle, Closed Caption pass through
- UDP/RTP & Unicast/Multicast SPTS and MPTS over IP I/O
- Built-in remultiplexer with PSI/SI re-generation
- Remote Control and Supervision by SNMP, HTTP WEB and Proprietary HDMS software
- On Site software update through IP
- RSSI, received Eb/No & BER monitoring

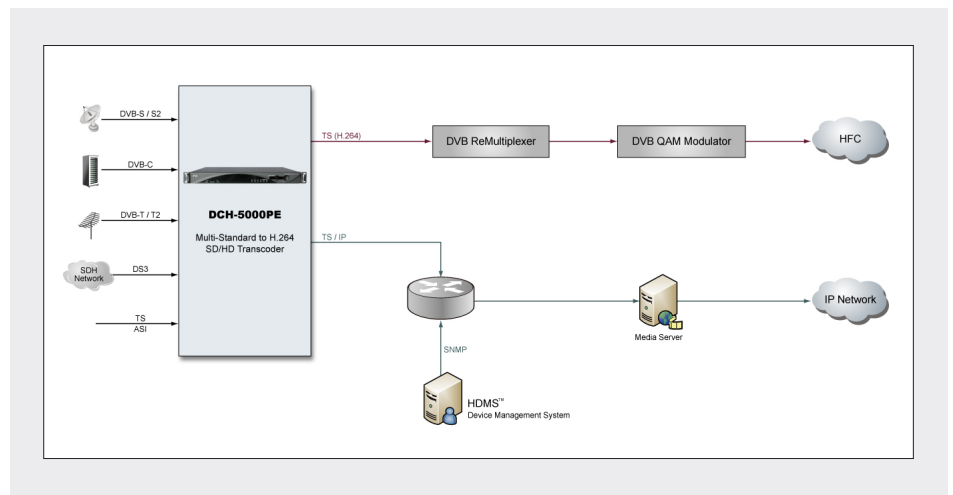
### Multiple Inputs and Outputs



### 2x DVB-CI Slots, Multi Programs decryption



### Remote Control and Supervision by SNMP, HTTP WEB and Proprietary HDMS software



## Specification

|  |   |
|--|---|
| <b>Tuner Input</b>                                 |   |
| <b>DVB-S/S2 Tuner Input (ISI Factory Optional)</b> |   |
| Connector Type                                     | 1 × F type female 75 Ω for Input, 1 × F type female 75 Ω for loop through output  |
| Input Frequency Range                              | 950 ~ 2150MHz   |
| Input Level  | -25 ~ -65dBm  |
| Symbol Rate  | 2 ~ 45MBaud   |
| Roll-off Factor                                    | DVB-S QPSK: 0.35<br>DVB-S2 8PSK: 0.35, 0.25, 0.2  |
| FEC Code Rate                                      | DVB-S QPSK: 1/2, 2/3, 3/4, 5/6, 7/8<br>DVB-S2 QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10<br>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  |
| ISI ID   | 1 ~ 255 user configurable   |
| <b>DVB-C Tuner Input</b>                           |   |
| Connector Type                                     | 1 × F type female 75 Ω for Input, 1 × F type female 75 Ω for loop through output  |
| Input Frequency                                    | 48 ~ 860MHz   |
| Input Level  | 45 ~ 75dB μV  |
| Symbol Rate  | 1 ~ 7MBaud (ITU J.83 Annex A)   |
| Constellation                                      | 16/32/64/128/256QAM   |
| Bandwidth  | 6MHz/7MHz/8MHz  |
| Input Return Loss                                  | 7dB (typ.)  |
| <b>DVB-T/T2 Tuner Input</b>                        |   |
| Connector Type                                     | 1 × F type female 75 Ω for Input, 1 × F type female 75 Ω for loop through output  |
| Input Frequency                                    | 104~860MHz (VHF/UHF)  |
| Input Level  | -20 ~ -70dBm (Quasi Error Free, QEF)  |
| Constellation                                      | DVB-T: QPSK/16-QAM/64-QAM;<br>DVB-T2: QPSK, 16QAM, 64QAM, 256QAM  |
| Bandwidth  | 6MHz/7MHz/8MHz  |
| FFT Mode   | DVB-T: 2K/8K<br>DVB-T2: 1K, 2K, 4K, 8K, 16K, 32K  |
| Guard Interval                                     | DVB-T: 1/4, 1/8, 1/16, 1/32<br>DVB-T2: 1/4, 5/32, 1/8, 5/64, 1/16, 1/32, 1/64, 1/128  |
| FEC Code Rate                                      | DVB-T: 1/2, 2/3, 3/4, 5/6, 7/8<br>DVB-T2: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6  |
| Input Return Loss                                  | 7dB (typ.)  |
| <b>ASI Input</b>                                   |   |
| Connector Type                                     | 1 × BNC, 75 Ω   |
| Standard   | DVB-ASI, EN50083-9  |
| TS Processing                                      | Re-multiplexing of ASI, Tuner, and TS/IP Inputs   |
| <b>DS3 Input (Option)</b>                          |   |
| Connector Type                                     | 2 × BNC Female, 75 Ω, including loop through  |
| Standard   | Compliant with ITU-T G.703  |
| Frame Structure                                    | Compliant with ITU-T G.752 and ITU-T G.804  |
| Bit Rate   | 44.736Mb/s  |
| <b>TS over IP</b>                                  |   |
| Connector Type                                     | 2 × RJ-45, 10/100 Base-T for TS/IP  |
| TS/IP1   | TS/IP interface for decoding  |
| TS/IP2   | TS/IP interface for transcoding   |
| Useful bit rate                                    | 70Mb/s for 10/100 Base-T  |
| Protocol   | UDP / RTP, Multicast / Unicast, IGMPv2, ARP   |
| <b>TS Processing</b>                               |   |
| TS Input Management                                | Remux and demux between Tuner / DS3 (optional) / E3 (optional), ASI and TS/IP Inputs  |
| TS Output Management                               | Remux and demux for mirrored ASI outputs  |
| Service and PID management                         | Remux, filtering and remapping  |
| PSI/SI   | PSI/SI table regeneration, NIT and SDT edition, LCN Edition and Re-generation   |
| Descrambler  | DVB Common Scrambling Algorithm (CSA)   |
| BISS Mode  | BISS-1, BISS-E  |
| Common Interface                                   | Double PCMCIA slots, compatible with major CA CAMs in the market  |

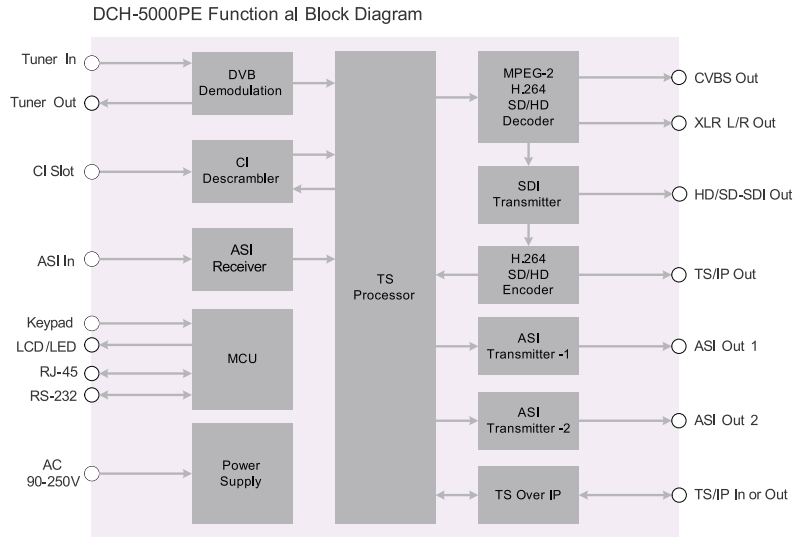
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|----------------------------------|--|
| <b>Digital Video Decoding</b>    |  |
| Video Standard                   | MPEG-2(MP@ ML for SD, MP@HL for HD)<br>MPEG 4/H.264 AVC Part 10 (MP@L3 for SD, HP@L4.1 for HD)   |
| Video PID Bit Rate               | < 80Mb/s   |
| SDI Video Resolution             | 1080i × 30, 1080i × 29.97, 1080i × 25, 720p × 60<br>720p × 59.94, 720p × 50, 576i × 25, 480i × 29.97 (only 576i × 25 or 480i × 29.97 is when transcoding mode is selected)                         |
| <b>SDI Output</b>                |  |
| Connector Type                   | BNC Female, 75 Ω   |
| Serial Interface                 | SMPTE 259M, 270 Mb/s (10bit)   |
| Level                            | 800mV p-p  |
| <b>Digital Audio Decoding</b>    |  |
| Connector Type                   | SDI BNC Female, 75 Ω   |
| Number of Outputs                | 1 × digital audio* are decoded, 1 × digital audio loop through   |
| Sampling Rate                    | 32, 44.1 and 48KHz   |
| Audio Bit Rate                   | 32, 64, 96, 128, 160, 192, 224, 256, 288, 320, 352, 384, 416 and 448 kb/s for MPEG-1 Layer I<br>32, 48, 56, 64, 80, 96, 112, 128, 160, 192, 224, 256, 320 and 384 kb/s for MPEG-1 Layer II         |
| Output Level                     | 1Vpp   |
| Output Format                    | XLR Balance Audio  |
| Load Impedance                   | 110 Ω (with cable adaptors)  |
| <b>Audio Video Compression</b>   |  |
| <b>Video compression</b>         |  |
| Analog Video format              | PAL, NTSC, SECAM   |
| Compression Standard             | H.264, High Profile Level 4.0  |
| Video Resolution                 | 1080i (1920/1440 × 1080) @25Hz, 29.97Hz, 30Hz: SMPTE 274M<br>720p (1280 × 720) @50Hz, 59.94Hz, 60Hz: SMPTE 296M<br>480i (720 × 480) @29.97Hz: SMPTE 125M<br>576i (720 × 576) @25Hz: ITU-R BT.656-4 |
| Aspect Ratio                     | 4:3/16:9 selectable  |
| Video Encoding Bit rate          | 2Mbps ~20Mb/s  |
| <b>Audio Compression</b>         |  |
| Compression Standard             | MPEG-1 Layer I, II   |
| Audio Sampling Rate              | 32K, 44.1K, 48K  |
| Compression Bit Rate             | 32, 64,128, 192, 256, 384Kbps  |
| <b>ASI Output</b>                |  |
| Connector Type                   | 2 × BNC Female, 75 Ω   |
| ASI OUT1                         | output for demodulated signal source   |
| ASI OUT2                         | output for trans-coded service   |
| Standard                         | DVB-ASI, EN50083-9   |
| TS Processing                    | TS re-multiplexing among tuner, TS/IP and ASI inputs   |
| <b>Analog Video Output</b>       |  |
| CVBS Connector                   | 1 × BNC 75 Ω   |
| Video Standard                   | NTSC, PAL, and SECAM   |
| Signal Level                     | 1000mVp-p ± 30mV   |
| Frequency Response               | <0.5dB, ≥-4dB at 5.5MHz  |
| Chroma-Luma Delay                | < ± 30 ns  |
| Field Time Distortion            | <2%  |
| Line Time Distortion             | <1%  |
| Short Time distortion            | <2%  |
| Differential Gain                | <4%  |
| Differential Phase               | <5   |
| Signal to Noise Ratio            | >55 dB (luminance weighted)  |
| <b>Analog Audio Output</b>       |  |
| Connector type                   | DB-9 Connector   |
| Output Impedance                 | 600 Ω (balanced)   |
| Output mode                      | Left, Right, Dual Mono, Stereo   |
| Number of Outputs                | 1 pairs of stereo audio outputs  |
| <b>Ancillary Data Processing</b> |  |
| Subtitle                         | DVB/EBU  |
| VBI                              | Teletext, WSS, VFD, VPS  |

|                                 |   |
|---------------------------------|---|
| Closed Caption                  | EIA 608, EIA 708, EIA 608-to-708                                    |
| <b>Redundancy</b>               |   |
| Redundancy Port                 | between Tuner, ASI inputs and TS/IP                                 |
| Switching Condition             | TS Sync Loss  |
| Switching Mode                  | Main, Spare   |
| <b>Control &amp; Monitoring</b> |   |
| 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  |

|                       |  |
|-----------------------|--|
| <b>Physical</b>       |  |
| Dimension             | 44mm × 420mm × 430mm   |
| Weight                | 4.5Kg Net, 6.2Kg Gross   |
| Power Supply          | AC 90V ~ 250V, 50/60Hz   |
| Power Consumption     | 27W (exclusive of LNB power)   |
| Operating temperature | 0 ~ 45°C   |
| Storage temperature   | -10 ~ 60°C   |
| Operating Humidity    | 10 ~ 90%, non-condensed  |
| <b>Certification</b>  |  |
| 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  |
| LVD                   | EN 60950-1:2006 + A11:2009   |

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

### Block Diagram



### Order Information

| Functionality                     | Model | DCH-5000PE-XX |       |       |        |        |
|-----------------------------------|-------|---------------|-------|-------|--------|--------|
|                                   |       | -S2           | -C    | -T    | -T2    | -DS3   |
| Tuner Input                       |       | DVB-S2        | DVB-C | DVB-T | DVB-T2 | DS3/E3 |
| ASI Input                         |       | x1            | x1    | x1    | x1     | x1     |
| DVB Common Interface              |       | x2            | x2    | x2    | x2     | x2     |
| Built-in Remultiplexer            |       | •             | •     | •     | •      | •      |
| ASI Output (mirrored)             |       | x2            | x2    | x2    | x2     | x2     |
| SDI                               |       | x1            | x1    | x1    | x1     | x1     |
| CVBS (BNC)                        |       | x1            | x1    | x1    | x1     | x1     |
| Balanced Audio XLR (DB-9)         |       | x1            | x1    | x1    | x1     | x1     |
| 100M TS/IP for decoding output    |       | •             | •     | •     | •      | •      |
| 100M TS/IP for transcoding output |       | •             | •     | •     | •      | •      |

• Standard configuration

### Back panel Interface

