Encoder-Modulator

- **HDM-4220C** = 4x HD-SDI with DVB-C out (consider for orders: T = DVB-T output)
- **HDM-4230C** = 4x HDMI with DVB-C out
  - MPEG2 & MPEG4 AVC/H.264 HD/SD encoding
  - Enhanced video buffer (for SDI interface), selectable switching of video sources
  - MPEG1 Layer II, MPEG2-AAC, MPEG4-AAC, AC3 2.0 (Optional) audio encoding
  - Up to 1920x1080@50P/60P (MPEG AVC/H.264)
  - Up to 1920x1080@50I/60I supported (MPEG2 HD)
  - 4x HDMI or SDI input
  - 1x ASI input for re-multiplex; 1x RF input for mixing
  - Simultaneously encoding with more than 10Mbps
  - DVB-C/DVB-T/ATSC-T/ISDB-T RF out Selectable (factory)
  - IP stream output: 4x SPTS or 1x MPTS
  - Low Latency – see data-table last page
  - LCN support (Logical Channel Number) in NIT
  - Excellent modulation quality MER ≥ 42dB
  - RF Frequency range 30...960Mhz
  - LCD, Remote control and firmware updates by
  - Web based management

A mixed installation of 1 dual HD-SDI and 1 dual HDMI Module is possible but need to be mentioned when ordering

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**BLANKOM® IPTV Headend Technology**

Broadcast grade, high performance MPEG2 HD / MPEG4 HD Encoder Modulator (4 HDMI ro HD-SDI to RF output). The HDM-4220C and 4230C series products are BLANKOM’s new breakthrough all-in-one devices which integrate encoding (MPEG-2 HD, MPEG-4/AVC H.264) and modulating to convert AV signals into DVB-C/DVB-T/ATSC-T/ISDB-T RF output.

Equipped with 4 HDMI channels input, 1 ASI input and an output with 2 parallel ASI ports as well as 1x IP with UDP Streaming (4xSPTS or 1 x MPTS) port.

Flexible change of encoding modules (HDMI/SDI/...) as needed to order from factory.

Its output signals are usually received by TVs or STBs and IPTV receiver.
## TECHNICAL SPECIFICATIONS

### Encoding Section

**Video**
- **Encoding**: MPEG2, MPEG4 AVC/H.264
- **Input**: HDMIx4 (or SDIx4)
- **Resolution**:
  - 1920*1080_60P, 1920*1080_50P, (for MPEG4 AVC/H.264 only)
  - 1920*1080_60i, 1920*1080_50i, 1280*720_60P, 1280*720_50P
  - 720*480_60i, 720*576_50i
- **Low Latency modes**: Normal, mode 1, mode 2

**Audio**
- **encoding**: MPEG1 Layer II, MPEG2-AAC, MPEG4-AAC, AC3 2.0 (Optional)
- **Sample rate**: 48KHz
- **Bit rate**: 64kbps, 96kbps, 128kbps, 192kbps, 256kbps, 320kbps

### Modulator Output

**DVB-C**
- **Standard**: J.83A, J.83B, J.83C
- **MER**: ≥42dB
- **RF frequency**: 4 carriers combined output; 30...960MHz, 1KHz step
- **RF output level**: -30...-10dbm (77...97 dbµV), 0.1db step
- **Symbol rate**: 5.000...9.000Msps adjustable

**DVB-C Annex A (J.83A)**
- **Constellation**: 16/32/64/128/256QAM
- **bandwidth**: 8MHz

**DVB-C Annex B (J.83B) US**
- **Constellation**: 64QAM/ 256QAM
- **bandwidth**: 6MHz

**DVB-C Annex C (J.83C)**
- **Constellation**: 64QAM/ 256QAM
- **bandwidth**: 6MHz

**DVB-T**
- **Standard**: EN300744
- **Bandwidth**: 6M, 7M, 8M
- **Constellation**: QPSK, 16QAM, 64QAM,
- **Code rate**: 1/2, 2/3, 3/4, 5/6, 7/8.
- **Guard Interval**: 1/32, 1/16, 1/8, 1/4
- **Transmission Mode**: 2K, 8K
- **MER**: ≥42dB
- **RF frequency**: 30...960MHz, 1KHz step
- **RF Out**: COFDM DVB-T out
- **RF output level**: -30...-10dbm (77...97 dbµV), 0.1db step

**ATSC – upon request**

**ISDB-Tb as well**

### System

- **Local interface**: LCD + control buttons
- **Remote management**: Web NMS
- **output**: ASI out (BNC type);
- **NMS interface**: RJ45, 100Mb/s
- **Language**: English

### General

- **Power supply**: AC 100V...240V
- **Dimensions**: 420*400*44mm
- **Weight**: 4.5 kgs
- **Operation temperature**: 0...45°C

*Specifications are subject to change without notice.*
### Test examples of latency measured

*These values are showing the progress from Encoding to Decoding*

<table>
<thead>
<tr>
<th>Decoding Device</th>
<th>Resolution</th>
<th>Encoding Bit Rate</th>
<th>Low Latency Mode</th>
<th>Signal Source</th>
<th>Encoding Type</th>
<th>Average Latency (ms)</th>
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<tbody>
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