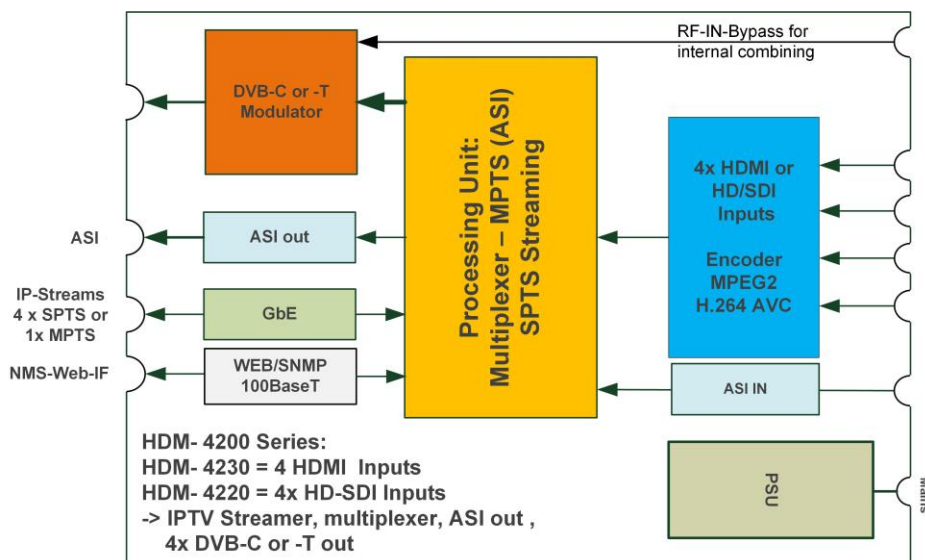


Encoder-Modulator



- 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 (MPEG4 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



BLANKOM® IPTV Headend Technology

Broadcast grade, high performance MPEG2 HD / MPEG4 HD Encoder Modulator (4 HDMI or 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); 4*SPTS or 1 MPTS out (RJ45, 100Mb/s)
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

Test examples of latency measured

These values are showing the progress from Encoding to Decoding

Decoding	Encoding Details					Average Latency (ms)
	Device	Resolution	Encoding Bit Rate	Low Latency Mode	Signal Source	
DVB-C HD STB	1080i@50	14M	MODE 1	HDMI	mpeg2	170
					H.264	347.5
				SDI	mpeg2	227.5
					H.264	367.5
			MODE 2	HDMI	mpeg2	222.5
					H.264	395
				SDI	mpeg2	240
					H.264	397.5
DVB-C HD STB	720p@50	14M	MODE 1	HDMI	mpeg2	85.75
					H.264	237.5
				SDI	mpeg2	127.5
					H.264	295
			MODE 2	HDMI	mpeg2	182.5
					H.264	277.5
				SDI	mpeg2	167.5
					H.264	325
DVB-C HD STB	576i@50	14M	MODE 1	HDMI	mpeg2	310
					H.264	600
				SDI	mpeg2	330
					H.264	620
			MODE 2	HDMI	mpeg2	270
					H.264	610
				SDI	mpeg2	280
					H.264	620

HDMI-Version

SDI-version

