

Multi-Channels IP to QAM Modulator

PIPQ6600

Main Application

- Digital headend system base on IP network
- Low cost Broadcast Application
- MPEG-TS transmission over low cost IP network

Product Profile

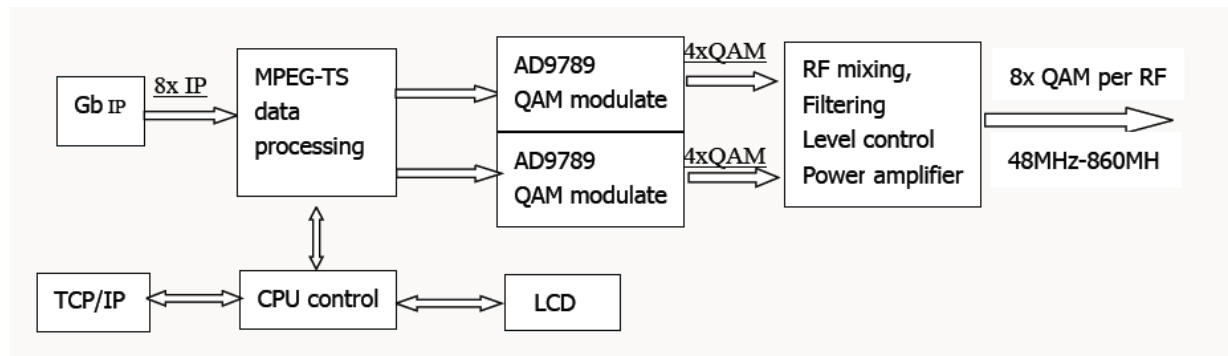
PIPQ6600 is designed as a highly integrated and low cost digital video gateway which 8 multiplexes broadcast content streamed per module over an IP network and then 8 QAM Modulate up converter output directly with output 4 adjacent channel RF carrier (30M~860M) through the one RF output interface (8 carriers QAM mixer,Filter,Gain attenuation)without multiplexing,scrambling the stream process. Routes Any or All Selected Transport Streams,The output is available on up to **24x separate IP address,Ports inputs** and **24 QAM** process(the 1U chassis for this modulator supports up to 3 modules).

This device is widely suitable for the high-end market, OEM user at present. It is a multiple IP QAM modulation device with easy operation, concise function, high integration, moderate price for users.

HighLights

- **Up to 3 QAM RF modulator module per chassis,each module with two quad QAM channels**
- **ITU-T,J.83A/B FEC encoding standard**
- **16QAM,32QAM,64QAM,128QAM,256QAM**
- **RF frequency:30-860MHz**
- **1xGbE IP(<=800Mbps) inputs per module,Processing module with three GbE ports**
- **Output signal bandwidth 4.83-8.05MHz, rolling coef:0.15(ITU-T J.83A) 5.714/5.967MHz, rolling coeff:0.13/0.18 (ITU-T J.83B)**
- **Output data symbol: 4.2~7Mbaud/s (8M BW) 4.2~5.260Mbaud/s(6M BW)**
- **Output level:82dBu-102dBu ,0.5step**
- **8 sets of PID filter and remapping per Module**
- **PCR correction function, can respectively check multiple PCR come from the input data accurately.**
- **Real-time detection and display for the inputsystem bitrate and effective rate.**
- **Electronic mixing, tracking filter, ensure excellent RF performance**
- **Temperature detection, active cooling, improve equipment performance and service**
- **Support Standard and High Definition**
- **MPEG-2,H.264,AVS,MPEG-4 Codec Format**
- **A fault alarm display**
- **Management via WEB and local front panel**

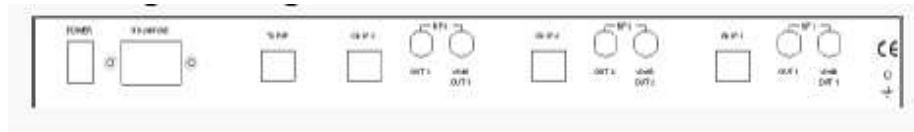
Hardware architecture diagram



Front panel



Rear Panel



System working process introduction

IP interface (TS) input to the data processing unit, first convert the IP interface data into TS stream data. After data processing, respectively convert to the modulation unit to mixing, RS error coding, QAM modulation, etc.. The RF processing unit mix each frequency point into two groups of four 6 MHz or 8 MHz adjacent intervals, the output of 30 to 860 MHz RF signal.

Data processing and transformation

Receive IP input signal via the IP interface, convert IP interface data into a number of parallel lines processing ,and then send to the modulation unit respectively.

IP processing

PIPQ6600 has a Gigabit Ethernet port, Ethernet packets exchange information through the GMII and FPGA interface by a PHY. The FPGA deal with the Ethernet packets received according to corresponding protocol processing.

For the ARP and ICMP, make a reply according to the stated IP address and relevant agreement.

For UDP, according to stated IP address and port number. take the load TS stream out, through the FIFO deposit to the corresponding address in DDR2DRAM.(a port corresponding to a QAM channel, occupy a period of address in DDR2DRAM).

When output, will take out the TS stream from the corresponding address to the corresponding FIFO first, then according to the QAM clock take out TS stream from the corresponding FIFO (without TS stream, filling empty bags), send to AD9789 after PCR correction and data processing.

Technical specification

Gigabit Ethernet Input

- 1 independent GbE IP inputs,multicast/unicast
- 1 x 1000Base-T,RJ45 ports
- Up to 800Mbps per port
- IP Encapsulation MPEG TS over UDP/IP up to 8 setperate TS/ IP
- MPEG Format 188 Bytes per TS packet

QAM RF Output

- Connector F-Type, 75 Ω
- 1 RF ports and 1 RF Monitor per module,
- Two of Quad QAM adjacent channels per RF port
- RF Output Level:82-102 dbuV(0.5dBuV step)
- RF frequency range: 30 to 860 MH, 1kHz steps
- QAM Constellations: 16,32, 64,128,256
- Bandwidth: 6Mhz or 8 Mhz
- QAM Encoding:ITU-T J.83 Annex A(DVB),Annex B
- RF Atteunator Adjustment Range: 0-20dB(8 QAM channels, step 0.5dB)
- Symbol rate range: 4.2~7Mbaud/s (8M BW) 4.2~5.260Mbaud/s(6M BW)
- RF Fine adjustments: -2.5-10.5 dB in 0.25dB steps (8 channels output range -2.5~ 2.5dB; 7-4 channels every reduce,the output can increase to 1dB; 3-1 channels every reduce, the output can increase to 1.5dB;software can automatic limited)
- Output Return Loss: 12dB
- Restrain Carrier:58dB
- MER: ≥ 38 dB
- SNR: ≥ 50 dB

Order Information

Types	QAM Model	GbE IP in	RF Port
PIPQ6608	1(8 QAM channel)	1	1
PIPQ6616	2(16 QAM channel)	2	2
PIPQ6624	3(24QAM channel)	3	3

MPEG-TS Processing

- PID Filter,Remapping
- Every independent IP address or port number corresponds to a QAM channel.

Management

- 100M Base-T Ethernet,RJ45,WEB(IE8.0 or above)
- 6 keys: UP, DOWN, LEFT, RIGHT, ENTER,ESC
- Front-Panel LCD configuration, LED indicate light

Environment

- Comply to GB13837-92 & GB8898-88 standard
- Power Supply: AC 90-250V 50/60Hz
- Power consumption: 30 W
- Operating temperature:-10 - 50°C
- Storage temperature: -10 - 75°C
- Dimensions: 400(L)x483(W)x44mm(H) (1RU)
- Weight: 6.5kg