



Encoder

At present, Communicate has 4 types of encoders as E201P, E202, E203AC and E601. Expand the functions of E201P satisfying with the customers' demands, in which E202 supporting two video/audio encoding, and supporting SDI audio embed, E203AC supporting surround AC3 5.1 encoding and SDI audio embed.

E601 encoder is Communicate's new encoder adopting H.264 compressive encoding technology in 2007. The arithmetic of H.264 is more excellent with higher compression efficiency and more effective use of transformation bandwidth and storage space.

E201P E202 E203AC

E201P, E202 and E203AC encoders have adopted advanced encoding technique with excellent encoding quality and efficiency that having a close structure. The outputs could connect with any multiplexers, scramblers and modulators that compatible with DVB standard.

1. MPEG-2 4:2:0 MP@ML video encoding, MPEG-1 Layer II audio encoding (sampling frequency 32KHz, 44.1KHz, 48KHz)
2. Video format: NTSC/PAL; motion estimation range: $\pm 200H$, $\pm 128V$
3. Supporting various open and close GOP structure (I, IP, IBP, IBBP), self-adjusting field frame (AFF)
4. Supporting mono, double mono and stereo
5. Data ratio control: VBR, CBR
6. Outputs of IP encoding satisfying with UDP and RTP protocol
7. Local monitor: buttons and LCD display screen; Remote monitor: TCP/IP, SNMP protocol
8. Software updates: flash hardware, RS-232, TCP/IP

General features

1RU, 5kg
484mm(W) 44mm(H) 306mm(D)
AC100V-240V, 50Hz/60Hz, 25W

Main features

Encoders List

Type	Bitrate	Resolution	Inputs	Outputs interface
E201P Professional-level	1.5~15 Mb/s	NTSC/PAL: D1, halfD1, SIF , Q-SIF	Video: CVBS, S-video Audio: analog non-balanced	DVB: 2 ASI ports (BNC)
E202 Broadcasting-level	Continuous adjusting		Video: CVBS, component, SDI Audio: analog balanced and non-balanced, digital AES-EBU	DVB: 2 ASI ports (BNC) IP: Ethernet (RJ45) Option: SPI (DB25) Telecom: E2/E3/DS3(BNC)
E203AC Broadcasting-level	2.5~15 Mb/s Continuous adjust	NTSC/PAL: D1, halfD1, SIF	Video: CVBS, SDI Audio: analog balanced, digital AES-EBU, SDI, SPDIF/PCM, SPDIF/AC3 5.1 sound code	DVB: 2 ASI ports (BNC) IP: Ethernet (RJ45)



E601H.264

E601H.264 Encoder is the newest product of Communicate in 2007 adopting H.264 compression standard. It supports stereo, MPEG-1 Layer2 audio coding and ACC coding. Its coding efficiency has been improved so much that the existing infrastructures of operators can transfer much higher quality of content with much lower cost of transferring broadcasting-level video on cable, satellite and telecom network. At the same time, it is very applicable at IPTV, remote TV, video storage broadcasting and news transfer etc.

Main features

1. High performance encoder with close structure and DVB standard
2. Supporting MPEG-4 part 10 MP@L1~3 video

TechniqueParameters

Input format	Video	CVBS, S-video (RCA), SDI audio embedded (BNC)
	Audio	XLR and RCA, supporting SDI audio embedded
Output format	TS output	2 ASI outputs(188), supporting E.1 interface compatible withG.703
Remote control and IP output (RJ45)	IP output	Direct IP encapsulation output, MPEG2 TS over IP
	Remote control	Supporting TCP/IP protocol and standard WEB control interface module Supporting SNMP, simple SNMP agency installed inside
Output data rate		10Mbps in maximum
Video encoding	Encoding technique	Supporting MPEG-4 part 10 MP@L1~3, Supporting FULL D1real-time encoding
	Definition	PAL: 720 (704,352) /576 (288), NTSC: 720 (704, 352) /480 (240)
	GOP structure	Supporting I, B, P frame, GOP can be configured
	Data rate control	VBR, CBR
	motion estimation	±112H, ±48V
Audio Encoding	Encoding technique	Supporting MPEG-1 Layer2, Supporting AAC using software encoding
	Sampling frequency	32KHz, 44.1KHz, 48KHz
	Channel	Supporting mono, double mono and stereo
Others	Supporting multiplexing of MPEG4 video and audio compressing data stream, supporting DVB packing Supporting PSI information table: PAT, PMT Supporting SI information table: Provider Name and Service Name within SDT Supporting DTS and PTS Supporting PCR adjustment, re-set PCR anew, precision of PCR compatible with DVB standard(<500ns)	

encoding

3. Supporting stereo audio coding
4. Supporting MPEG-1 Layer2 audio and ACC coding
5. Input interface: CVBS, S-video, component, SDI audio embedded
6. Supporting MBAFF, supporting within-ring de-blocking filter
7. Supporting E.1 output of G.703 standard
8. IP encoding output satisfying with UDP and RTP protocol
9. Local monitor: buttons and LCD display screen, remote monitor: TCP/IP, SNMP protocol
10. Supporting auto-retain when the power is off, supporting operation log

General features

1RU, 5kg

484mm(W) 44mm(H) 306mm(D)

AC100V-240V, 50Hz/60Hz



(M108C, M108CS, M208) Multiplexer

M108C, M108CS, M208 are Communicate's third generation of embedded products which can multiplex 8 SPTS or MPTS into one MPTS. Telecom output interfaces (DS3/E3) can be selected. M108CS multiplexer built in scrambling module that compatible with DVBsimulcrypton standard, could carry on DVB common scrambling.

Main features

1. M108CS multiplexer support DVB Common Scramble, and support the scrambling based on the service and component
2. Supporting SPTS multiplexing and MPTS re-multiplexing (MPTS can be selected totally or partially)
3. Telecom output interfaces (DS3/E3) can be selected
4. Multiplexing of the elementary stream and manual reconfiguration services. Two different elementary streams can be combined into a new service. The program with multi-sound can be decomposed into video service and audio broadcasting. Data elementary and video/audio program can be combined into application mode of TV and data interchange
5. Random data insertion and IP data input (supporting MPE, Data Piping protocol)
6. PSI/SI information analysis and edit function, input stream error warning
7. Precious query of the actual input bit rate of each PID
8. Transmitting private PID, updating STB with STB-Loader in air
9. Choosing to send any table of PSI/SI information
10. Buffer output design, supporting bandwidth protection function
11. Low delay, the delay less than 100ms for MPEG-2 program
12. PCR adjustment
13. Real-time monitor of every input status, supporting remote update, powerful and human-machine friendly control and monitor interface

Monitor

Local: buttons and LCD display screen

Remote: Ethernet (TCP/IP) and SNMP

Software update

Flash hardware, RS-232, TCP/IP

General features

1RU, 4Kg

430mm(W) 44mm(H) 450mm(D)

AC100V-240V, 50Hz/60Hz, 30W

Technique Parameters

PCR precision	<100 ns
Input interface	DVB standard ASI interface, BNC
Impedance of input interface	75Ω
Package length of input	188 or 204 byte
Output interface	DVB standard ASI interface, BNC
Impedance of output interface	75Ω
Package length of output	188 or 204 byte



Multiplexers List

Type	Characteristic	Height	Input	Output	Max effective data rate
M108C	High degree of integration	1U	8 ASI	2 ASI multiplexing outputs 8 loop outputs (optional)	155Mbps
M108CS	High degree of integration built in scrambler			4 ASI outputs in all: 2 multiplexing outputs and 2 multiplexing/scrambling outputs (scrambling or partial scrambling can be set)	155Mbps / Scrambling 58Mbps
M208	High degree of integration Having 2 independent ASI outputs			4 ASI multiplexing outputs, 2 independent ASI outputs	180Mbps



S100 Scrambler

S100 Scrambler is a 1RU highly integrated product, which scrambles digital TV program. It supports DVB simulcrypt scrambling standard. The CW generator embedded in S100 transfers fixed or variable CW to scramble TS or elementary stream.

Main features

1. Supporting DVB hardware scrambling
2. Supporting DVB common scrambling arithmetic
3. Supporting DVB Simulcrypt interface, supporting 4 simulcrypt CA at the same time
4. DVB scrambling for the appointed program stream or elementary stream
5. Supporting Scrambling of video and audio separately besides of program stream
6. PSI/SI information analysis function
7. Input stream error warning
8. Sending fixed or variable control word
9. Supplying open CA interface
10. Supporting EMM and ECM insertion
11. Data Injecting from exterior or network
12. PCR correction

Monitor

Ethernet (TCP/IP) SNMP

Software update

Flash hardware RS-232 Ethernet (TCP/IP)

General features

1RU, 4kg
484mm(W) 44mm(H) 390mm(D)
AC100V-240V, 50Hz/60Hz, 20W

S100 Interfaces List

	Interface	Data rate	Packet length(byte)	Other
Input	1ASI, loop out (BNC, 75Ω)	155Mbps	188or 204	Maximum PID length, 72
Output	2ASI (BNC, 75Ω)	58Mbps	188or204	



A201 ASI Switcher

A201 ASI Switcher is compatible with DVB standard, which can perform both automatic and manual switch functions. 2 different (or same) ASI inputs, 2 same ASI outputs.

Main features

1. Compatible with DVB standard, TS compatible with EN50083 standard
2. Supporting both automatic and manual switch
3. Supporting automatically switched based on RS232 or PID judgement
4. Supporting the direct passing through function when power is off
5. Switch time < 250ms

General features

1RU, 4kg
484mm(W) 44mm(H) 370mm(D)
AC100V-240V, 50Hz/60Hz, 5W

A201 Interface Introduction

	Interface	Bit - rate
Input	2 ASI (BNC, 75Ω)	214Mbps
Output	2 ASI(BNC, 75Ω)	214Mbps



QAM Modulator Q101

Q101 QAM Modulator is a broadcasting-level digital QAM modulator which modulates SPTS and MPTS coming from encoder, multiplexer, DVB gateway, scrambler and video server etc supplies with output of IF or RF.

Main features

1. 16/32/64/128/256 modulation
2. Supporting 3 types of PID filter/selection mode
3. Supporting SI information table editing (NIT, SDT) and customizing
4. Supporting log operation and events record
5. IF or RF output can be selected
6. According to ITU-T J.83 DVB-C standard
7. High precision PCR adjusting, the precision of PCR <100 ns
8. Intelligent cushion control function (low delay, resistance of instantaneous overloading)
9. Temperature monitor protection function
10. -20dB testing output (F type)
11. ASI input loop output (BNC)
12. Parameter setting through the LCD in front
13. 10/100M Ethernet control interface
14. Supporting hot copy and auto level control
15. Operation password setting

General features

1RU, 5kg
 484mm(W) 44mm(H) 400mm(D)
 AC100V-240V, 50Hz/60Hz, 30W

RF Output Parameters

Symbol rate	1 ~ 7 M
Frequency	48~860MHz
Frequency adjusting step	0.1 MHz
Frequency deviation	<15 KHz
Bandwidth	8MHz
Level	45~61dBmV (average)
Return loss	<14dB
MER	>35dB (IF output testing)
SNR	< 48dB
Autocorrelation restraint rate	>55dB
PCR precision	<100 ns
Phase noise	<-65 dB @1kHz <-85 dB @10kHz <-105 dB @100kHz

Q101 Interface Introduction

1 ASI data input (with 1 loop output)	1 RF output (with 1-20dB video monitor interface)	1 IF output
BNC, 75 Ω	F, 75 Ω	F, 75 Ω
188/204 byte Package length self-identify	16/32/64/128/256 modulating	0~40dBmV output range 0.75dB step
0.5~200Mb/s bit rate	48~860MHz output frequency	1k~44MHz output frequency 1kHz step



T204 DS3(E3)/ASI Net Adapter

T204 DS3(E3)/ASI Net Adapter is used for the conversion between DS3(E3) signal and ASI signal. T204A has 1 DS3(E3) input, 1 DS3(E3) loop back and 2 ASI outputs. And T204D has 1ASI input, 1ASI loop back and 2 DS3(E3) outputs.

Main features

1RU, 6Kg
350mm(W) 44mm (H) 450mm (L)
AC100V-240V, 50Hz/60Hz, 5W

T204 Interface Introduction

DS3(E3) interface	ASI interface
According to DVB standard According to G.703 standard	According to DVB/MPEG2 ASI TS standard
75Ω BNC	75Ω BNC
B3ZS (HDB3) Encoding	8B/10B coding
RS decode: Reed-Solomon RS(204, 188, 8)	1~41Mbps available bit-rate
Interweave depth:12	
Channel decoding: de-interweave + de-Solomon + wipe off noise	



I200 SI Injector

I200 SI Injector packets the IP input of the service information and EPG information into the standard TS format that output from 8 ASI. It is an important component of SI-EPG system.

I200 injects individual information for different multiplexers with satisfaction of the flexibility and the stable running status of SI-EPG system. ASI expander is not needed since the SI injector has 8 ASI output interfaces and each connects with one multiplexer separately and only outputs the needed SI. The operation becomes simple because of no need of PID filter and mapping again. The expansion of EPG system only needs increasing injectors.

Main features

1RU, 4kg
484mm(W) 44mm(H) 370mm(D)
AC100V-240V, 50Hz/60Hz, 20W

I200 Interfaces Introduction

IP interface	ASI output interface
1 IP interface (RJ45)	8 ASI outputs (BNC, 75Ω)
Bit-rate 13Mbps	Bit-rate 13Mbps Output format 188/204

Note: 1 ASI input or 1 IP output function can be selected. The data rate of input is 150Mbps. The package length is 188 or 204.