IRD-2900 **Series**

Professional MPEG-2 DVB and ATSC Integrated Receiver Decoders

The professional IRD-2900 integrated receiver decoder is a broadcast-quality decoder, decryptor and interface converter that provides MPEG-2 and AVC SD decoding, advanced transport stream processing, cutting-edge IP processing technologies and variety of front-ends, including DVB-S2, MPEG over IP and more

Model descriptions

The IRD-2900 series features 3 distinct product lines:

- IRD-296x - Professional single 4:2:0 receiver decoder
- IRD-298x - Professional single 4:2:2/4:2:0 receiver decoder
- IRD-299x - Professional dual 4:2:0 receiver decoder

Series Highlights

- MPEG-2 DVB and ATSC decoding
- MPEG-4 field upgradeable (check availability)
- High quality video and audio outputs
- Variety of front-end options, including DVB-S (single or dual), DVB-S2 Professional, MPEG over IP, G.703, DS3-ATM, DSNG and ASI
- Dual MPEGoIP inputs support SPTS and MPTS, and provide link redundancy and logical source redundancy
- Pro-MPEG FEC ensures high video quality
- MPEGoIP output using Pro-MPEG encapsulation
- Service and PID dropping, PCR re-stamping and NULL stuffing (VBR-CBR) over ASI and IP out
- IP data output (MPE decapsulation)
- ASI transport stream input and output
- DVB common interface (2 slots)
- SDI, AES/EBU and analog outputs
- Up to 4 pairs of audio outputs support multiple decoding schemes
- VBI re-insertion in composite and SDI
- Genlock for high-end accurate frame and color synchronization
- Box redundancy support
- SNMP and web-based management
- Save/recall presets
- Embedded BISS Mode-1 and BISS-E (DSNG-CA)
- SW options permission - key-based upgrade

Business Benefits

Rich variety of models and front-end options enable creation of tailored solutions for each operator

Dual decoder saves space

Pay only for software options needed now; enable additional ones later

DVB-S2 receiver reduces satellite bandwidth expense

Enables cost-effective migration to IP networks

Service and PID filtering capabilities eliminate the need for stand-alone multiplexer unit

Easily integrates with market-leading network management systems

Smooth migration from MPEG-2 to MPEG-4

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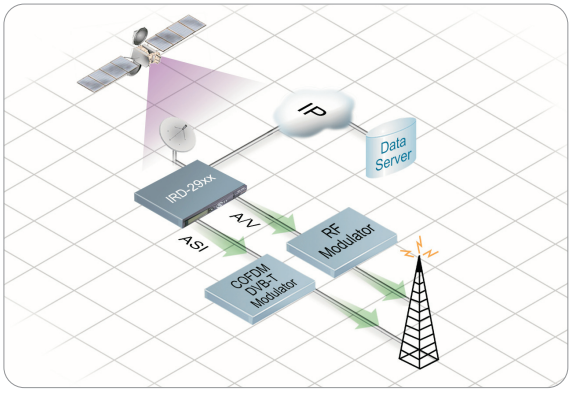
IRD-2900 **Series** Applications

Distribution for Terrestrial Broadcast

The IRD-2900 enables terrestrial distribution through output of analog audio and video signals to RF modulators for VHF/UHF terrestrial broadcast. It supports migration to DVB-T by providing digital ASI transport stream output to a CODFM modulator and DVB-T transmitter.

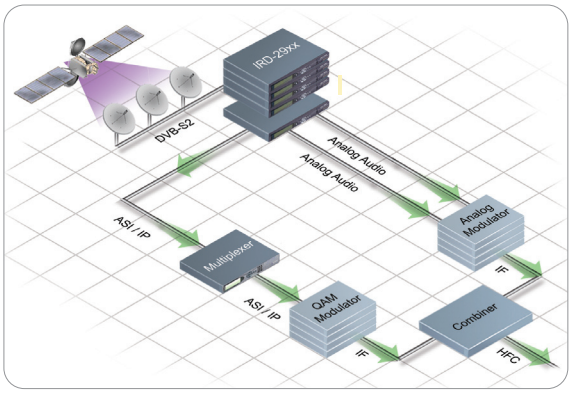
In addition to live broadcasting, the IRD-2900 supports extraction of encapsulated video content as MPE data for off-line distribution. This is particularly valuable for distribution of syndicated content to network affiliates.



Distribution to Cable Headend

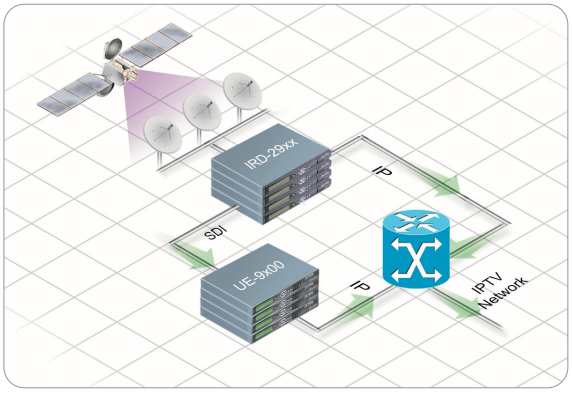
The IRD-2900 receives and decrypts DVB-S or DVB-S2 content. Content to be distributed as analog is decoded by the IRD-2900, then modulated by an analog modulator for distribution. For distribution as digital content, the IRD converts the content to ASI or IP format, which is then multiplexed by a Scopus IVG (Integrated Video Gateway) and output for cable distribution via a QAM modulator.

This solution supports digital simulcast of content in analog and digital formats for cost-effective network migration to all-digital format.



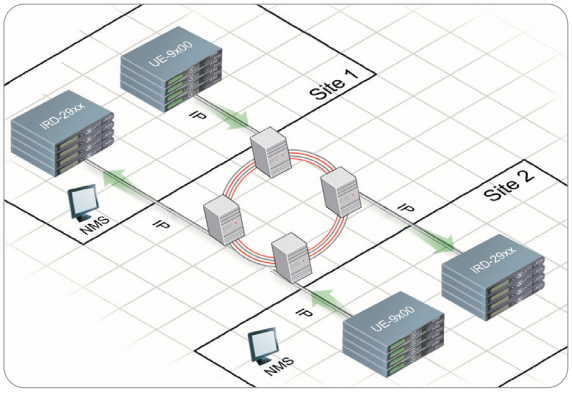
Distribution to IPTV Headend

The IRD-2900 receives and decrypts DVB-S or DVB-S2 content, and outputs content both over IP for streaming and over SDI for re-encoding. When streaming content, the device can be configured to filter and forward only a subset of the programs in the TS, for output over the IP interface. The filter is applied either to services (dynamic), or to PIDs (static). The output TS is configured as either VBR or CBR, with NULL stuffing enabling it to fit a configured Bandwidth. The IRD-2900 can also decapsulate IP over MPEG (MPE) and output it over an IP network.



IP Contribution

The IRD-2900 enables cost-efficient contribution of high-quality video content via IP networks. The IRD offers extensive advanced IP functionalities including configurable de-jittering buffers that facilitate trade-offs between latency and network burstiness resiliency; Pro-MPEG FEC (forward error correction) for excellent packet loss recovery; dual Ethernet inputs for link redundancy protection against failure of directly connected switches; dual sources over IP for logical redundancy protection against source failure.



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IRD-2900 **Series**
Features and Options

Transport Stream Interface Option

DVB-S Single Input
- Single L-Band RF input with LNB control and loop-through output
- Connector: F-type, 75 ohm
- Frequency range: 950 - 2150 MHz
- RF input level: (-65) to (-25) dBm
- Constellation: QPSK
- Symbol rate: 1 - 45 Msym/s
- FEC: All ratios compliant with standard
- LNB power: 13VDC, 18VDC / 350mA or off, 22KHz or off

DVB-S Dual Selectable Input
- Dual L-Band RF input with LNB control and loop-through output
- Manual selection of active input
- Same characteristics as DVB-S single input

DVB-S2 Single Input
- Single L-Band RF input with LNB control and loop-through output
- Connector: F-type, 75 ohm
- Frequency range: 950 - 2150 MHz
- RF input level: (-65) to (-25) dBm
- Constellation: QPSK, 8PSK (16APSK Optional)
- Symbol rate: 1 - 45 Msym/s
- FEC: All ratios compliant with standard
- FEC Blocks: Short and normal
- Roll off: 0.2, 0.25 and 0.35
- Mode: CCM (VCM, ACM Optional)
- Pilots: On & off
- Data rate: 100 Kbps - 100 Mbps
- LNB power: 13VDC, 18VDC / 350mA or off, 22KHz or off

DVB - DSNG Input
- Constellations: QPSK, 8PSK and 16QAM
- Frequency Range: 950-2150 MHz
- Symbol rate range: 1-45 Msym/s
- Two L-and RF 75 ohm inputs with LNB control

MPEGoIP Input
- Two physical links: 10/100 Base-T, RJ-45 - one active at a time
- Two logical sources (sockets) - one active at a time
- Physical link and logical source redundancy (coupled)
- De-jittering buffer size: configurable 0-2000mSec.
- Encapsulation type: UDP and RTP (Automatic detection)
- TS bit rate: Up to 44 Mbps
- SPTS / MPTS
- Unicast/multicast
- IGMPv2
- Forward Error Correction (FEC):
  - ProMPEG CoP3r2
  - Maximum input bit-rate: 25Mb/s
  - Columns only FEC protection
  - Matrix dimensions: Columns: 1-20, Rows: 4-20 Columns*Rows = 100 (Automatic detection)

Telecom G.703 Input
- Unframed PDH Data rates: E1,E2 or E3
- FEC (optional): DVB-C FEC
- Loop-through output

DVB - PDH Input
- Interface: ATM AAL-1
- Data rates: DS3 or E3
- Loop-through output

DVB - ASI Input
- Interface: Copper, BNC 75 ohm
- TS bit rate: Up to 100 Mbps (Byte and burst mode)

DVB - ASI Output
- 2 ASI connectors: Copper, BNC 75 ohm
- ASI options:
  - ASI out 1: stream with decrypted selected program, output stream and loop-through
  - ASI out 2: stream with decrypted selected program, output stream

MPEGoIP Output
- SPTS / MPTS
- TS bit rate: Up to 85 Mbps
- Encapsulation: UDP
- All programs and PIDs present in the output TS
- Interface: 10/100 Base-T, RJ-45

Advanced processing options

Service and PID filtering
- Active on ASI and IP outputs
- PCR re-stamping
- VBR and CBR modes (NULL stuffing)
- Forward only and filter only modes
- Dynamic Service filtering (tracks PIDs' modifications
- Static PID filtering

Data
- High speed data: RS-422 up to 20Mbps, RJ-45
- IP data out: Up to 60Mbps, MPE decapsulation

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IRD-2900 **Series**
Features and Options

Video Decoding

MPEG-2 Decoding:

- Maximum TS decoding bit rate: 108 Mbps
- Video Formats:
  - PAL-B/G/I/M/N/D, NTSC, SECAM L/B/G/K1
  - Russian SECAM D/K (composite video only)
- Decoding:
  - 4:2:0 MP@ML (1.5-15 Mbps)
  - 4:2:2 PP@ML (1.5-50 Mbps)
- Video resolution interpolation: Pan-Scan, letter box or pass-through
  - Aspect ratios: 4:3/16:9
  - Aspect ration 14:9 by signaling over VBI video index

Graphic processing: OSD, DVB subtitling, EBU (Teletext) subtitling (optional)

H.264 SD Decoding*:

- Decoding profile: MP@L3.0
- Video Formats: PAL & NTSC

Audio Decoding

- Musicam
- Dolby Digital (AC-3) pass-through
- Dolby Digital (AC-3) LT/RT downmixing
- Linear PCM (SMPTE 302M 2000), Dolby-E pass-through

Video and Audio Outputs

Video

- Up to 3 composite video interfaces
- OSD only on monitoring output
- GenLock input and loop-through output
- Genlock Sync lock resolution: +/- 37nSec

Audio

- Up to 4 analog audio stereo pair balanced interfaces
- Up to 4 digital audio AES/EBU-SPDIF interfaces
- Modes: stereo, joint stereo, dual channel, single channel
- Max output level: +18 dBu analog, 0 dBFs digital
- Attenuation control: -64 dB to 0 dB / mute

Front Panel Monitoring

- Video monitor output connector
- Audio monitor output connector

VBI Re-insertion

- All VBIs adhere to relevant standards including line numbers
- In composite video and embedded in SDI
- WST Teletext and inverted Teletext
- WSS, VPS, VITC, CC, AMOL I, AMOL II (Nielsen), TV-Guide, V-CHIP
- Enhanced VITS with built-in generator

Conditional Access

Embedded DVB Descrambling

- BISS Mode-1
- BISS-E
- CAS-5000
- Conax

DVB-CI

- Interface: Two CI slots EN-50221
- Maximum decrypted programs: one for single decoder, two for dual decoder
- Maximum TS bitrate - 72 Mbps
- CA methods: Multicrypt, Simulcrypt
- CAS: Viaccess®, Irdeto®, Conax®, MediaGuard® Nagravision®,

Control and Monitoring

Local

- Easy-to-use graphical panel
- Advanced satellite scanning
- Operates in service and PID modes
- 2 GPI dry contacts for various status and fault indications

Enhanced DVB Monitoring

- Front panel display: signal quality, Eb/N0, BER, ASI format, network and service information, CA information, CI slots, video and audio decoded information

Remote

- SNMP management
- Web-based management
- Telnet
- Terminal via RS-232 or RS-485
- Software download

Over the Air

- Software download

Configuration Backup

- Presets
  - Number of presets: 50
  - Each preset saves/recalls one service relevant parameters
- Complete Configuration
- Saves/recalls complete configuration using FTP

Compliance

EMC

- EN55013 (CISPR 13)
- EN55020 (CISPR 20)
- EN55022 (CISPR 22)
- EN55024 (CISPR 24)
- FCC part 15 (class B)

Safety

- EN60950
- CB (IEC60950)
- UL60950
- cTUVus

Environment

Operation

- Temperature: 0°C - 50°C
- Humidity: 5% - 90% (non-condensing)

Storage and Transportation

- Temperature: -40°C - 70°C
- Humidity: 0% - 95% (non-condensing)

Physical Characteristics

Size

- 1RU unit (19” rack)
- Dimensions (H x W x D): 4.4 cm x 48.3 cm x 35.7 cm (1.75” x 19” x 14”)

Weight

- 3.5 kg (7.7 lbs)

Power

- Voltage: - 100V-240V AC, 50/60Hz
- Power consumption: Up to 50W max

* Please consult Scopus Sales team

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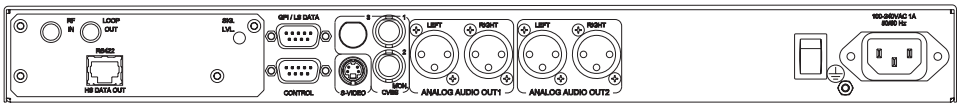
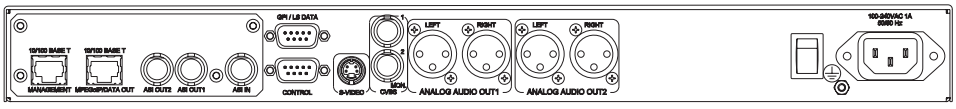
Professional 4:2:0 IRD



IRD-2960



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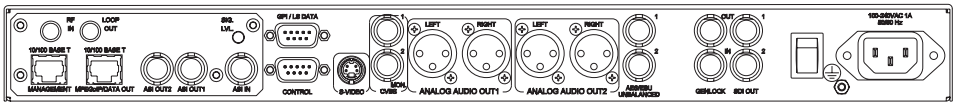
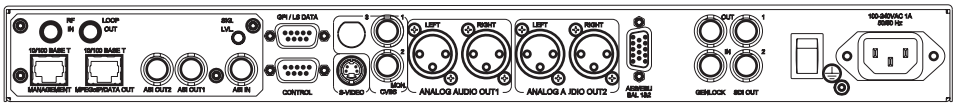
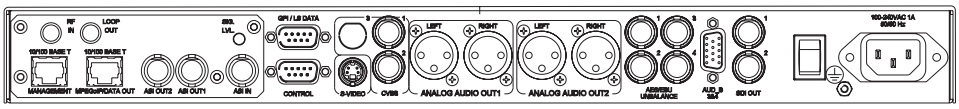


IRD-2962

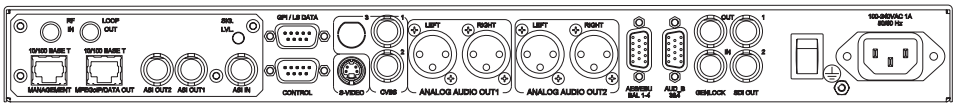


IRD-2963

Professional 4:2:2 IRD

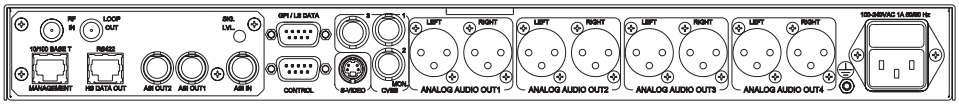


IRD-2980

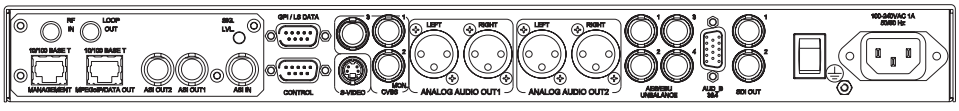


IRD-2981

Professional 4:2:0 dual decoder



IRD-2990



IRD-2991

IRD-2900 **Series**
Configurations & Ordering Information

How to order the IRD model

1. Select IRD-2900 Transport Stream interface card:
   - None
   - DVB-S IN
   - DVB-S Dual IN
   - DVB-S2 IN
   - DVB - DSNG IN
   - MPEG over IP IN
   - G.703 IN (future)

2. Select IRD-2900 model and software options

	Single 4:2:0 Decoder				Single 4:2:2 Decoder		Dual 4:2:0 Decoder	
	2960	2961	2962	2963	2980	2981	2990	2991
Integrated Transport Stream Interfaces								
DVB-ASI Input	-	L	L	L	L	L	L	L
DVB-ASI outputs	-	L	L	L	L	L	L	L
MPEGoIP output	-	L	L	L	L	L	-	L
Video Decoding Outputs and Options								
Number of decoders	1	1	1	1	1	1	2	2
Number of Composite video Interfaces	2	2	2	2	2	2	3	3
Front Panel Monitoring Connectors	-	-	Y	Y	Y	Y	-	-
Number of SDI Interfaces	-	-	2	2	2	2	-	2
SDI with embedded VBI and up to 4 stereo channels	-	-	Y	Y	Y	Y	-	-
Second SDI with embedded VBI and up to 4 stereo ch.1	-	-	-	-	-	-	-	Y
Russian SECAM D/K (composite video only)	L	L	-	-	-	-	L	-
Decoding: 4:2:2 PP@ML (1.5 - 50 Mbps)	-	-	-	-	Y	Y	-	-
GenLock input and loop-through output	-	-	L	L	-	Y	-	-
Audio Decoding Outputs and Options								
Number of Analog Audio Balanced interfaces	2	2	2	2	4	4	4	4
Active first analog stereo	Y	Y	Y	Y	Y	Y	Y	Y
Active second analog stereo	Y	Y	Y	Y	Y	Y	Y	Y
Active third analog stereo	-	-	-	-	L	L	Y	Y
Active fourth analog stereo	-	-	-	-	L	L	Y	Y
Number of AES/EBU-SPDIF Audio Unbalanced Interfaces	-	-	2	-	4	-	-	4
Number of AES/EBU-SPDIF Audio Balanced Interfaces	-	-	-	2	-	4	-	-
Active first and second AES/EBU-SPDIF	-	-	Y	Y	Y	Y	-	Y
Active third AES/EBU-SPDIF	-	-	-	-	L	L	-	Y
Active fourth AES/EBU-SPDIF	-	-	-	-	L	L	-	Y
Number of stereo channels embedded in SDI	-	-	2	2	4	4	-	2
Dolby Digital (AC-3) Pass-through	-	-	Y	Y	Y	Y	-	Y
Dolby Digital (AC-3) LT/RT Downmixing	L	L	L	L	L	L	L	L
Linear PCM (SMPTE 302M), Dolby-E Pass-through	-	-	-	-	L	L	-	L
Data Output								
RS-422 High speed data	Y	-	-	-	-	-	Y	-
RS-422 Low speed data	Y	Y	Y	Y	Y	Y	Y	Y
IP data (MPE decapsulation)	-	L	L	L	L	L	-	L
Advanced Features								
ProMPEG FEC (CoP3v2)	-	L	L	L	L	L	-	L
IP dual inputs- for link and source redundancy	-	L	L	L	L	L	-	L
Service and PID filtering	-	L	L	L	L	L	-	L
H.264 (One program only)	Y*	Y*	Y*	Y*	-	-	-	-
Control & Monitoring								
SNMP control	-	Y	Y	Y	Y	Y	Y	Y
Web based management	-	Y	Y	Y	Y	Y	Y	Y

L – License permission Y – Included in basic configuration - – Not supported * – Please consult Scopus Sales team

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