

## Selenio M400™

The Selenio M400™ is a broadcast-grade, satellite integrated receiver/decoder (IRD) that supports a wide range of global standards for video and audio compression. It sports a highly robust set of standard features, including DVB-S/S2 demodulation capabilities and inputs for DVB-ASI and IP. Every unit supports MPEG-2 and H.264 video compression — from the 4:2:2 format to SD and HD formats — as well as MPEG, Dolby® Digital AAC and SMPTE 302 audio systems.

Building on the industry-leading Imagine Communications experience in multichannel audio transport, this IRD features the AVTrack™ frame-alignment system for Dolby® E audio alignment, and is available with a factory-fitted option for an integrated Dolby® E decoder.

The Selenio M400 supports vertical ancillary data space (VANC) transport, wide-screen signaling (WSS), active format description (AFD) and other related data signals, as well as DVB fixed-key decryption (BISS) and DVB Common Interface (DVB-CI) descrambling methods.

The Selenio M400 is the ideal solution for on-the-fly, multiformat, multi-standard contribution and distribution environments. With a full arsenal of supported standards and features, the Selenio M400 is up to the task, for every feed, every day.



### Product Features

- Bitstream Input/Output Capabilities
  - DVB-S, DVB-S2 satellite demodulator (standard)
  - DVB-ASI input and output (standard)
  - Dual IP SMPTE 2022-1 inputs
  - DVB fixed-key (BISS) decryption (standard)
  - DVB common interface module slot (option)
  - Smart PID filtering to output selected streams on ASI
- Video Compression Formats
  - MPEG-2 MP@ML, MP@HL (standard)
  - MPEG-2 422P@ML, 422P@HL (option)
  - H.264 MP@L3, MP@L4.1 (standard)
  - H.264 422P@L3, 422P@L4.1 [eight-bit] (option)
- Audio Compression Formats
  - AAC-LC, HE-AAC v2 2.0 and 5.1 decode (standard)
  - MPEG-1 Layer 2 decode (standard)
  - Dolby® Digital (AC-3) 2.0 and 5.1 decode (standard)
  - SMPTE 302 PCM and Dolby® E passthrough with AVTrack™ (standard)
  - One Dolby® E integrated decoders (option)

- Data/Ancillary Capabilities (standard)
  - VANC processing
  - AFD and WSS
  - Teletext
  - VBI
- Video/Audio Output Capabilities
  - Dual SDI/HD-SDI video outputs 1080i/720p/625i/525i 50/59.94 Hz
  - Four stereo pairs of assignable embedded audio (optional Dolby®-E SIMM enables four additional audio stereo pairs)

The Selenio M400 receiver/decoder is offered with several options. The standard base unit — M400-STD (4:2:0) — can optionally support DVB-compliant descrambling and conditional access. The professional unit incorporates 4.2.2. support, and offers options for DVB-compliant descrambling and conditional access, integrated Dolby® E audio decoding, advanced demodulation schemes and multiple methods of system configuration and control.

A sample listing of chassis types and features is shown below:

Feature	HALRM400-IRD	CAM-OPT	PRO-OPT	AUD-OPT	DBE-OPT *
H.264 SD/HD support	X				
MPEG-2 SD/HD support	X				
4:2:2 support			X		
HD to SD/SD to HD Scaling					
Audio input Channels	2			+2	+1
Simultaneous audio sample rate converter with AES output channels	4				
Embedded audio output stereo pairs (optional Dolby®-E SIMM enables four additional audio stereo pairs)	4				
Dolby® E with AVTrack™					X
IP support	X				
DVB-compliant descrambling and conditional access		X			
DVB-S/DSNG (QPSK - 8 PSK - 16 QAM - 16 APSK)					
DVB-S [45 Mbaud] / DVB-S2 [10-30 Mbaud] (QPSK - 8 PSK)	X				

## Specifications

*Specifications and designs are subject to change without notice*

Receiver	
Connectors	F-Type (up to 4)
Input Impedance	75 ohms
Baud Rate Range	2 to 45 Mbaud (DVB-S/DSNG), 10 to 30 Mbaud (DVB-S2)
Modulation	QPSK (DVB-S), QPSK/8 PSK QPSK/8 PSK (DVB-DSNG/S)
Inner Code	
DVB-S	QPSK 1/2, 2/3, 3/4, 5/6, 6/7, 7/8 8 PSK 2/3
DVB-S2	QPSK 1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 5/6, 8/9, 9/10 8 PSK 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
Outer Code	204, 188 Reed-Solomon per EN 300 421
L-Band Frequency Range	0.9400 to 2.1500 GHz (In 0.0005 GHz steps)
Maximum Total Input Power	-25 dBm
Minimum Signal Level	-55 dBm

Video Output: Serial Digital Interface	
Standard	HD-SDI and SDI (SMPTE 292M/259)
Connector	BNC (2)
Formats	1080i/59.94, 1080i/50, 720p/59.94, 720p/50, 480i/59.94, 525i/50
MPEG-2 and H.264 Video Decoding	
MPEG-2 Profiles	Main profile at main level (NTSC/PAL) Main profile at high level (HD) 4:2:2 profile at main level (SD) 4:2:2 profile at high level (HD)
H.264 Profiles	Main profile at level 3.1 High profile at level 4.2 (Broadcast HD) 4:2:2 profile at level 4.2 (8-bit only)
Maximum Video Elementary Stream Bitrate	108 Mb/s
Audio	
Bitstream Decoding Formats Supported	Dolby® Digital AC-3 2.0 Dolby® Digital AC-3 5.1 MPEG-1 layer 2 SMPTE 302M (Dolby® E compatible), IEC 958 Dolby® E integrated decode (optional) Advanced audio coding low complexity (AAC-LC) 2.0 and 5.1 High-efficiency AAC version 1 (2.0) and version 2 (HE-AAC v2 2.0) HE-AAC 5.1
Digital Audio Output Format	AES/EBU as per SMPTE 276 Embedded as per SMPTE 299 Passthrough encoding audio (SMPTE 337) with no restrictions
Reference Input	
Type	Blackburst composite video
Reference Connector	BNC with passive loopthrough
Standard	SMPTE RP 154
Control LAN Interfaces	
Type	10/100Base-T Ethernet (IEEE 802.1)
Connector	RJ-45
Transport Stream Interface	
Connector	2 BNCs (1 in/1 out) and 2 RJ-45
Physical Layer Interface	DVB-ASI (auto-sensing)
DVB-ASI Transport Stream Data Rate	0 to 214 Mb/s
IP Transport Stream Data Rate	0 to 120 Mb/s
IP over Ethernet	10/100/1000Base-T Ethernet (IEEE 802.1)
FEC	SMPTE 2022
General Specifications	
Ambient Temperature:	
Operating	41° to 104° F (5° to 40° C)
Non-Operating	104° to 149° F (40 to 65° C)
Humidity	5% to 95% non-condensing
Physical Characteristics	
Form Factor	1RU 1.73 in. (4.4 cm)
	Standard EIA 19-in. rackmount
Dimensions (H x W)	1.73 x 17 in. (4.4 x 43.18 cm)
Weight	10 lbs (4.4 kg)

Electrical	
Maximum Power	100 W
Voltage	100 to 240 VAC
Supply Frequency	50 to 60 Hz
Power Plug	IEC-C-13
Protection	2 A @ 250 V GMC time delay fuse
Cooling	Front intake, rear exhaust @ 10 CFM

## Ordering Information

Standard Models	
HALRM400-STD-A	NetPlus M400 4:2:0 HD and SD MPEG-2 and H.264 decoder system with additional audio support
Professional Models	
HALRM400-PRO	NetPlus M400 4:2:0/4:2:2 HD and SD MPEG-2 and H.264 decoder system
HALRM400-PRO-CA	NetPlus M400 4:2:0/4:2:2 HD and SD MPEG-2 and H.264 decoder system with conditional access module support and additional audio support
HALRM400-PRO-E	NetPlus M400 4:2:0/4:2:2 HD and SD MPEG-2 and H.264 decoder system with Dolby® E decoding support