
THOR
Fiber
Catalog

Thor Broadcast

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Company Background

Thor Broadcast was founded in 2006 by a group of broadcast engineers with a background in fiber optic transport and electrical engineering. Thor is focused on bringing the worlds best components and optic modules together at a state of the art engineering facility in Southern California. Thor is a full service OEM equipment manufacturing company with full design, development, and custom solution capability. Thor is focused on providing commercial grade turn key video broadcasting systems as a fully integrated solution. Thor can provide all cables, adapters, hardware, and enclosures to fully support your installation. Every unit sold is backed by an industry leading 5 year warranty; with 24/7 remote support available for the life of the product.

BROADCAST VIDEO ENCODING SYSTEMS

Video Encoding TV Modulation– CREATE Your Own CATV QAM Cable or off air ATSC Channel

- *HD MPEG2 and H.264 Encoder & Modulator*
- *Encoding Latency 70ms*
- *Up to 4x HD-SDI Inputs*
- *Up to 4x HDMI Inputs*
- *1-4 CATV RF QAM output*
- *QAM or ATSC (8VSB) or DVB-T*
- *IPTV Output*
- *ASI output*
- *ASI Input for TS multiplexing*

Applications :

Hotels

Hospitality

Digital Signage

Education

Worship

Concert

Halls

Stadiums

Arenas

Malls

Live Events

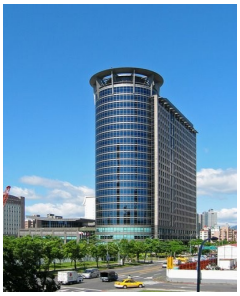
Airports

Campus

Surveillance

Corporate

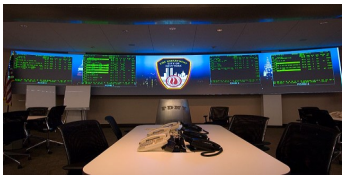










How to choose the right QAM-IP chassis for you in 4 easy steps:

1.Choose any INPUT

OR

AND

OR

AND

HDMI ***HD/SD-SDI*** ***YPbPr***

2.Choose a Modulation

DVB C Clear QAM Cable *OR* ATSC CERTIFIED DTV DIGITAL TELEVISION *OR* DVB T TERRESTRIAL

CABLE QAM ***ATSC—(8VSB)*** ***DVB-T***

3.Choose how many Channels:

1 CH

2 CH

4 CH

4.Choose Latency

STANDARD LATENCY 800ms **:** ***LOW LATENCY 70-250ms***

LOW LATENCY 70MS ENCODER MODULATOR CC

Ultra Fast Source to Display Digital Channel Modulation

ALL in ONE—HDMI / YPbPr to CATV RF/IPTV/ASI

Low Latency 4CH Encoder Modulator with separate analog CC input

- *4 HDMI INPUT*
- *4 YPbPr (Component) INPUT*
- *4 CVBS (Composite) INPUT*
- *4 CC (closed caption) INPUT*
- *4 Analog Audio inputs INPUT*
- *ASI INPUT*
- *1– 5 RF CATV QAM OUPUT*
- *IP OUTPUT UDP /RTP Unicast or Multicast*
- *ASI OUPUT*
- *MPEG2 or H.264 Video Encoding*
- *MPEG1, MPEG2 or Dolby AC3 Audio Encoding*
- *Ultra Low Latency 70—250ms*
- *QAM or ATSC or DVB-T or - (firmware dependent)*
- *NMS IP control*
- *LCD Display front panel control*
- *19" Rack mountable*
- *HDCP Compliant*

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WWW.THORBROADCAST.COM

ANY VIDEO SOURCE TO CATV RF, IP, ASI - QAM / ATSC / DVB-T

1-4 HD MPEG2/H.264 ENCODER + RF DIGITAL MODULATOR

- *1-4 HD VIDEO over Coax CATV RF distribution QAM or ATSC or DVB-T or S2*
- *1-4 HD Video IPTV Encoder –MPEG2 or H.264 (IP Ethernet Output)*
- *1-4 HD Video Contribution ASI Encoder MPEG2 or H.264 (ASI Output)*
- *SDI to RF*
- *SDI to IP*
- *ASI Multiplexer*
- *ASI cherry picker*
- *ASI to IP converter*

SDI IN

COAX RF OUT

HD/SD-SDI OPTIONS

1 SD/HD-SDI INPUT

H-1SDI-XX-IPLL

2 SD/HD-SDI INPUT

H-2SDI-XX-IPLL

4 SD/HD-SDI INPUT

H-4SDI-XX-IPLL

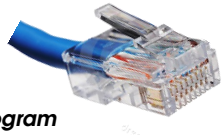
1 SD/HD-SDI +1 HDMI

H-1SDI-1HDMI –XX-IPLL

1 SD/HD-SDI +1 HDMI

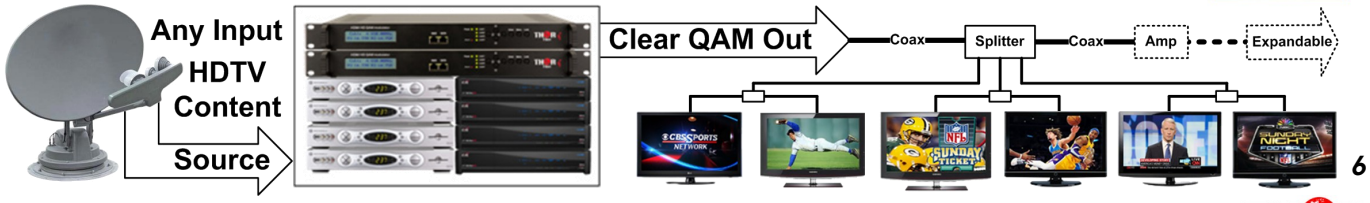
H-1SDI-1HDMI –XX-IPLL

- ***Conversions : SDI to RF, SDI to IP, SDI to ASI***
- *SDI Support : 720p/1080i/1080p60*
- *Create any 1-4 CATV RF TV channel—45-1000Mhz*
- *4 Programs on 1 CATV channel available*
- *RF Output : QAM-256/64 or Firmware for ATSC,*
- *DVB-T, DVB-S2 Available*
- *IPTV Output Unicast or Multicast IGMP UDP*
- *ASI TS Input for internal Ts multiplexing*
- *ASI Output with multiplexer cherry picking program*
- *Low Latency available 70-120ms available*
- *Dolby AC3 Audio available (AC3 model)*
- *MPEG2 Video or MPEG4 H.264 Encoding*
- *Front Panel LCD local control*



IPTV OUT

Full HD 1080



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CREATE YOUR OWN HD RF CHANNELS

HDMI IN

Encode, Modulate, Mux, and Distribution

HDMI OPTIONS

ALL in 1

4 HDMI INPUT

4 YPbPr (Component)

4 CVBS (Composite)

HDMI HIGH DEFINITION MULTIMEDIA INTERFACE (HDCP) USB H.264 MPEG-4/AVC Full HD 1080

1 HDMI INPUT

H-HDMI-XXIPLL

2 HDMI INPUT

H-2HDMI-XX-IPLL

4 HDMI INPUT

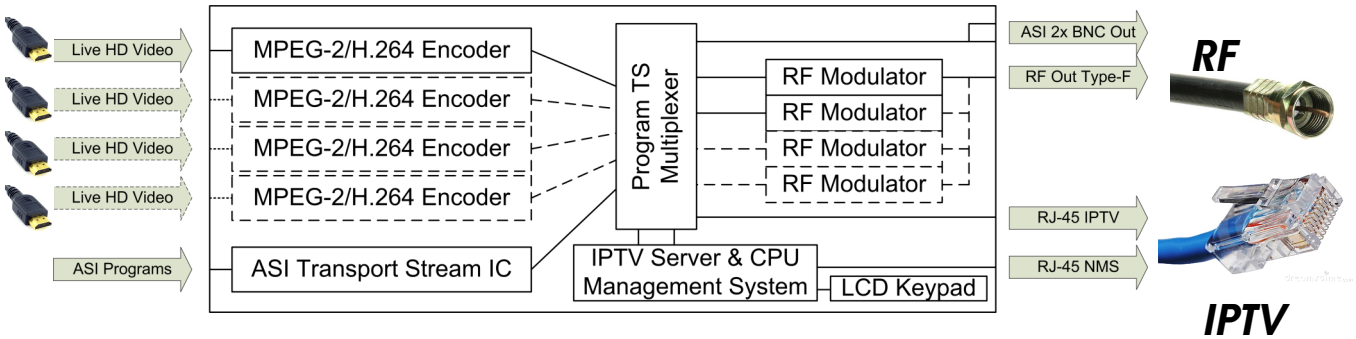
H-4HDMI-XX-IPLL

2 HDMI + 2 YPbPr

H-2HDMI-2YPBPR –XX-IPLL

4 RGB– (4 YPbPr)

H-4YPBPR -QAM-IPLL



Conversions : HDMI to RF, HDMI to IP, HDMI to ASI

: YPbPr to RF, YPbPr to IP, YPbPr to ASI

- *Hot swappable - SDI Card, HDMI Card, or YPbPr Card.*
- *Secondary HDMI input will automatically switch if video on primary inputs fail to be detected on single channel and dual channel chassis only*
- *Supports real time HD encoding for both MPEG-2 or H.264 codec's with multiple audio formats including Dolby AC3*
- *Configured and monitored via any standard web browser with secure password protected login*
- *Easy tech support via web and phone*
- *Low Latency is the ideal solution for Live Sports, Concerts, Event Halls for real time encoding at 70ms*
- *HDCP Compliant—Works with any DVD player or any STB*

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COMPACT DIGITAL HDTV - ENCODER / CATV MODULATOR

VQAM SYSTEM - COMPACT LOW COST COAX DISTRIBUTION

H-VQAM-SD : 1 CHANNEL CVBS ENCODER HDTV QAM or ATSC MODULATOR

- 1x SD CVBS In
- 1x Digital TV Ch
- QAM or ATSC
- QAM or ATSC or DVB-T

- 1 Channel MPEG-2 encoding with full PSIP & EPG data generation with PID mapping for QAM or ATSC
- Modulates standard definition (480i) digital TV channel in either Cable (QAM) or Free to Air (8VSB)
- Digital TV channels do not degrade with coax distance or require RF level adjustments, true DTV

H-VQAM-HD , 1 CHANNEL COMPACT HD HDMI, YPbPr, CVBS ENCODER HDTV MODULATOR

- 1x HDMI Input
- HDCP Compliant
- 1x Component
- 1x HDTV RF Channel
- QAM or ATSC or DVB-T

- QAM or ATSC
- DVB-C , DVB-T

- 1 Channel MPEG-2 or H.264 encoding for broadcast video from HDMI or Component inputs up to 1080p60
- 1 Channel MPEG-2 encoding with full PSIP & EPG data generation with PID mapping for QAM or ATSC
- Uses same high quality encoding and modulating firmware found on the rack mount QAM-IP Chassis

Channel Number	Center Frequency MHz	Channel Number	Center Frequency MHz	Channel Number	Center Frequency MHz	Channel Number	Center Frequency MHz
2	57	38	309	79	555	120	771
3	63	39	315	80	561	121	777
4	69	40	321	81	567	122	783
5	79	41	327	82	573	123	789
6	85	42	333	83	579	124	795
95	93	43	339	84	585	125	801
96	99	44	345	85	591	126	807
97	105	45	351	86	597	127	813
98	111	46	357	87	603	128	819
99	117	47	363	88	609	129	825
14	123	48	369	89	615	130	831
15	129	49	375	90	621	131	837
16	135	50	381	91	627	132	843
17	141	51	387	92	633	133	849
18	147	52	393	93	639	134	855
19	153	53	399	94	645	135	861
20	159	54	405	95	651	136	867
21	165	55	411	96	657	137	873
22	171	56	417	97	663	138	879
7	177	57	423	98	669	139	885
8	183	58	429	99	675	140	891
9	189	59	435	100	681	141	897
10	195	60	441	101	687	142	903
11	201	61	447	102	693	143	909
12	207	62	453	103	699	144	915
13	213	63	459	104	705	145	921
23	219	64	465	105	711	146	927

CATV QAM

Channel 2-158

Center Frequency

Annex B,

6 MHz

Channels

54 to 1002 MHz

Channel Number	Center Frequency MHz	Channel Number	Center Frequency MHz	Channel Number	Center Frequency MHz	Channel Number	Center Frequency MHz
7	177	57	423	98	669	139	885
8	183	58	429	99	675	140	891
9	189	59	435	100	681	141	897
10	195	60	441	101	687	142	903
11	201	61	447	102	693	143	909
12	207	62	453	103	699	144	915
13	213	63	459	104	705	145	921
23	219	64	465	105	711	146	927
24	225	65	471	106	717	147	933
25	231	66	477	107	723	148	939
26	237	67	483	108	729	149	945
27	243	68	489	109	735	150	951
28	249	69	495	110	741	151	957
29	255	70	501	111	747	152	963
30	261	71	507	112	753	153	969
31	267	72	513	113	759	154	975
32	273	73	519	114	765	155	981
33	279	74	525	115	771	156	987
34	285	75	531	116	777	157	993
35	291	76	537	117	783	158	999
36	297	77	543	118	789		

DVB-S2 SATTELITE ENCODER MODULATORS

Any HD video format Input—RF Satellite L-band DVB-S2 Output

- *Digital Video Broadcasting: Satellite RF output., Encoder with Uplink*
- *Thor Broadcast streams HD digital video Encoder to DVB-S RF output*
- *Video Encoder with Uplink Satellite Modulator for DVB-S2 RF output*
- *Single card chassis encoder multiplexer modulator system.*
- *Process signals up to full HD 1080p60 frame rates MPEG2 or H.264*
- *Audio encoding is based on embedded PCM input in the SDI video stream*
- *Audio Available codecs include MPEG1 Layer 2, MPEG2-AAV, and MPEG4-AAC*
- *Customizable encoder cards: HD-SDI, HDMI, RGB, & CVBS*

SNG News Gathering

BROADCAST VIDEO ENCODING US TV STANDARD CC & AC/3

ENCODERS FOR US TV'S HD-SDI INPUT

H-2HD-ENC:

2 CHANNEL HD-SDI CLOSED CAPTIONS & DOLBY AC/3

- 2x HD-SDI
- MPEG-2
- H.264
- Dolby AC/3

- Encodes 2 Channels of HD video from HD-SDI provides all codec's & services required for US broadcasters
- Generates standard ASI and IP streams that are compatible with all US broadcasting systems
- Ideal as a contribution encoder for affiliates or as a secondary program encoder for local modulators
- Supports Closed Captioning 708 standard & automatic 608 down conversion from SDI ancillary data
- Offers support for the Dolby AC/3 audio codec that is required by many cable systems in the USA

H-4HD-ENC-AC3:

4 CHANNEL HD-SDI ENCODER WITH CC & AC/3

- 4x HD-SDI
- MPEG-2
- H.264
- Dolby AC/3
- 608/708 CC
- ASI

- Same features as the two channel model, just with twice the program encoding capacity in 1RU chassis
- Front alarm indicator with toggle switch for audible alarm to indicate when video lock is lost or TS errors
- Managed through web browser on dedicated network port with all settings also available on front LCD
- Independent encoding parameters for each video input that are fully configurable for codec & bitrates
- Supports HD MPEG-2 encoding with the Dolby AC/3 audio codec and support for 708 closed captions

USA BROADCASTING STANDARDS MPEG-2 ENCODER

Supports US Broadcasting special requirement for Dolby AC/3

H-4HD-ENH-AC3:

4 CHANNEL HDMI ENCODER WITH AC3 & CC (1.5)

- *4x HDMI*
- *MPEG-2*
- *H.264*
- *Dolby AC/3*

- *Two or Four HDMI input hardware encoder for full HD program generation for US TVs and broadcasters*
- *Provides closed captioning support for HDMI sources that support CC, typically HDMI 1.5 or newer*
- *Combines all encoded programs on a single MPTS ASI output on mirrored BNC connectors*
- *Provides IP transport stream output as either MPTS or multiple SPTS UDP MPEG-TS IGMP streams*
- *Redundant hot stand by power supplies for unparalleled up time and broadcast system reliability*

H-4HD-ENS-AC3:

2X HDMI 2X HD-SDI ENCODER WITH CC & AC/3

- *2x HDMI*
- *2x HD-SDI*
- *MPEG-2*
- *H.264*

- *Combines 2 HDMI & 2 HD-SDI inputs for a total of 4 HD program encoders with full support for US TVs*
- *Provides support for MPEG-2 programs with 608 & 708 Caption support on HD-SDI and HDMI 1.5 up*
- *Managed through web browser on dedicated network port with all settings also available on front LCD*
- *Independent encoding parameters for each video input that are fully configurable for codec & bitrates*
- *Two independent 120-240 VAC power supplies in hot stand by mode with front panel indicators & alarm*

HIGH CAPACITY H.264 ONLY ASI / IP ENCODERS

8 X HDMI

For Highest Quality H.264 Live Video Encoding

H-8HD-EMH:

8 HD ENCODER & MULTIPLEXER WITH 8 HDMI INPUTS

- 8 HDMI Inputs
- MPEG-2 Out
- H.264 Out
- IP out
- ASI Out

- Independent encoding configuration provided for each input with video adjustments available
- Internal ASI Multiplexer provided for adding additional programming to the transport stream output
- ASI input provides ability to multiplex additional programming onto the encoded transport stream outputs
- Output is provided via mirrored ASI ports on BNC terminals as well as IP UDP or RTP streams on Gigabit

8 X HD/SD-SDI

H-8HD-EMS:

8 HD ENCODER & MULTIPLEXER WITH 8 HD-SDI INPUTS

- 8 HD-SDI Input
- 608/708 CC
- MPEG-2 Out
- H.264 Out
- IP out
- ASI Out

IPTV, ASI OUT

- Highest capacity H.264 HD encoding available with 8 HD-SDI inputs that support up to 1080p60
- Independent encoding configuration provided for each input with video adjustments available
- Internal ASI Multiplexer provided for adding additional programming to the transport stream output
- ASI input provides ability to multiplex additional programming onto the encoded transport stream outputs
- Output is provided via mirrored ASI ports on BNC terminals as well as IP UDP or RTP streams on Gigabit

CONTRIBUTION ENCODER

FULL FEATURE BROADCAST ENCODING

H-MPEG2-H264-E:

CONTRIBUTION ENCODER WITH CC SUPPORT

- HD-SDI Input
- HDMI Input
- 608/708 CC
- MPEG-2 Out
- H.264 Out
- IP out

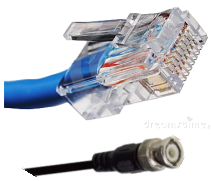
- *Designed for users who need support for closed captioning on many different input video types*
- *Ability to read 608 closed captioning line 21 data while encoding from different video sources*
- *Internal ASI Multiplexer provided for adding additional programming to the transport stream output*
- *Provides output on mirrored ASI terminals as well as IP streaming in both UDP and RTP protocols*
- *Accepts balanced or unbalanced analog audio as well as digital audio AES/EBU on XLR Breakout cables*

H-HDSDI-H264-E:

H.264 TRANSPORT ENCODER FOR HD VIDEO

- HD-SDI Input
- Multi Format
- H.264 Codec
- MPEG2
- ASI Out

- *Designed for transport of broadcast quality HD video for contribution where bandwidth is limited*
- *Provides inputs for HD-SDI, HDMI, Component, & and composite video with digital audio inputs*
- *Encodes any input to high level H.264 transport streams on ASI output & IP UDP or RTP streams*
- *Managed through internal web server system on separate dedicated NMS management port*



MULTI CHANNEL ANALOG ENCODERS

HIGH DENSITY SD ENCODING FOR CVBS (Baseband Video) Input

H-4AV-SDE

4 SD BROADCAST ENCODER 4 CHANNEL CVBS BASEBAND AV

- ATSC RF In
- IP In
- ASI In
- HD-SDI OUT
- HDMI OUT
- 32 TS Out
- IP Out
- ASI Out

- Accepts up to 4 channels of analog baseband video and stereo audio on BNC terminals
- Encodes and multiplexes inputs to H.264 transport streams on ASI and IP (UDP-TS) outputs
- Internal ASI multiplexer allows additional programming to be inserted to output on ASI input

H-8AV-SDE

8 SD BROADCAST ENCODER 8 CHANNEL CVBS BASEBAND AV

- 8x CVBS Input
- ASI & IP Out
- H.264 Codec
- MPEG2

- Accepts up to 8 channels of analog baseband CVBS and encodes to high level H.264 outputs
- Accept additional programming via ASI input port and multiplexes all streams to ASI & IP outputs
- Managed through Thor Network Management web server on dedicated NIC network interface
- Highest density broadcast quality encoder available with ASI multiplexer and both IP and ASI out

ASI EQUIPMENT ASI OVER DS3 OR IP

DVB-ASI PROGRAM STREAM MANAGMENT

DVB-ASI is a digital serial data stream containing only the raw data for encoded broadcast video. ASI is carried over a standard coax cable, usually with BNC connectors. The protocol supports single program streams, as well as multi program transport streams (MPTS). Multiple video programs can be combined up to a rate of around 210 Mbps of content. Thor manufactures a full line of equipment for processing, multiplexing, and transporting ASI.

- *80 Mbps IP*
- *1x ASI Input*
- *1x ASI Output*
- *Full Duplex TS*

H-1ASI-IP-B:

ASI to IP and IP to ASI Gateway

- *Used to transport ASI over local area networks or carrier class metro link WANs or VPNs*
- *Highly reliable broadcast transport when used with carrier class network equipment & links*
- *Provides duplex bi directional transport in real time for any ASI serial stream up to 80 Mbps*
- *Configuration available for monitoring and alarm indicating through network management system*

H-8ASI-IP: 8 ASI to ETHERNET IP TRANSPORT NETWORK GATEWAY

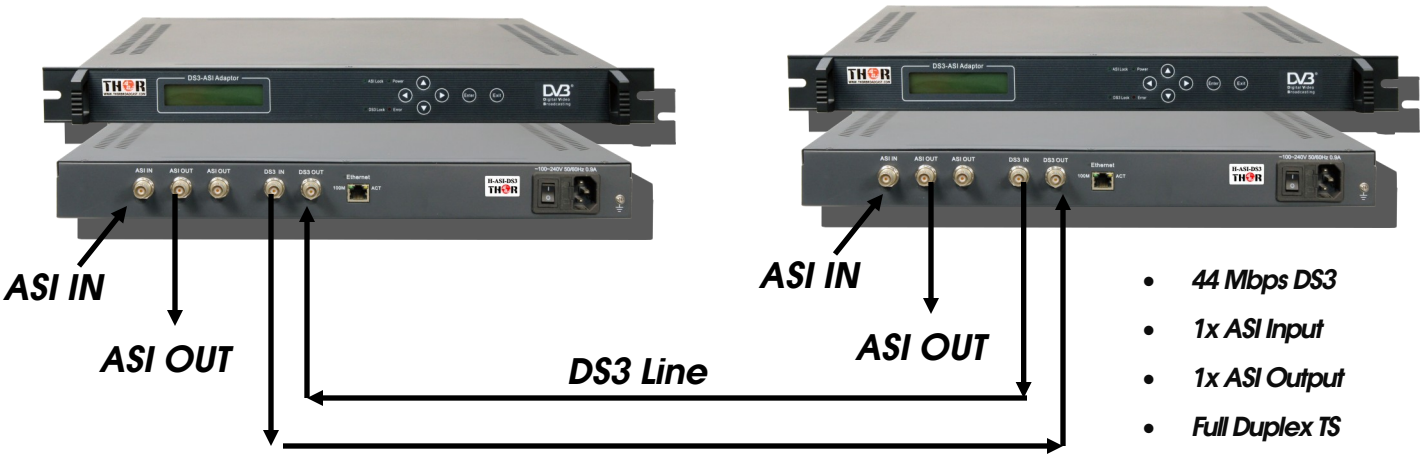
- *100 Mbps IP*
- *4x ASI Input*
- *4x ASI Output*
- *IP Input*
- *IP Output*

- *Transport up to 4 ASI inputs as SPTS or MPTS program streams over Ethernet IP networks*
- *Managed & monitored remotely through Thor network management software web interface*
- *Sends all programs over IP network as a single multiplexed transport stream*
- *Can be configured to remove null packets for transport and reinsert on output for CBR*
- *Front panel display with LED indicators for input detect / lock on all four ASI inputs on back panel*

MANAGED ASI PROCESSORS

H-ASI-DS3-B:

DUPLEX –Bidirectional ASI TRANSPORT OVER 44Mbps DS3



- 44 Mbps DS3
- 1x ASI Input
- 1x ASI Output
- Full Duplex TS

- Used to transport ASI over a 44 Mbps DS3 or T3 carrier class level 3 TDM network connection
- Highly reliable video transport for broadcast, almost as reliable as direct optical fiber connection
- Provides duplex bi directional transport in real time for any ASI serial stream up to 40 Mbps
- Configuration available for monitoring and alarm indicating through network management system

H-8ASI-MUX

ASI MULTIPLEXER - 8 INPUT 4 OUTPUT (2x2)

- 8x ASI Input
- 4x ASI Output
- IP Managed
- Dual Path Out

- Accept & parse up to 8 ASI inputs as SPTS or MPTS single program or multi program streams
- Managed & monitored remotely through Thor network management software web interface
- Process MPTS & cherry pick individual programs via PID & remap output PID table for EPG
- Provides two independent output pipes with individual program selection on mirrored outputs
- Front panel display with LED indicators for input detect / lock on all eight ASI inputs on back panel

MANAGED ASI PROCESSORS

ASI MULTIPLEXING & DISTRIBUTION

H-ASI-AMP-1X8 1x8 ASI Distribution Amplifier

- *1 ASI Input*
- *8x ASI Output*
- *IP Managed*
- *Dual Path In*

- *Accept & parse 1 ASI single or multi program inputs at up to 210 Mbps each*
- *Either ASI input can be routed to any of the ASI outputs for flexible matrix routing*
- *Remotely managed and monitored with Thor network management software and web interface*
- *Full function front key pad and LCD allows full local control without the use of a computer*
- *Outputs up to 16 relocked and regenerated ASI outputs with a very clean signal for long cable runs*

H-ASI-AMP-2X8 2x8 ASI Distribution Amplifier

- *2x ASI Input*
- *16x ASI Out*
- *IP Managed*
- *Dual Path In*

- *Accept & parse 2 ASI single program or multi program inputs at up to 210 Mbps each*
- *Either ASI input can be routed to any of the ASI outputs for flexible matrix routing*
- *Remotely managed and monitored with Thor network management software and web interface*
- *Full function front key pad and LCD allows full local control without the use of a computer*
- *Outputs up to 16 relocked and regenerated ASI outputs with a very clean signal for long cable runs*

INTERGRATED RECEIVER DECODER IRD

DECODERS / RF /ASI /IP Receiver

Integrated Receiver Decoder (IRD) devices are professional broadcast tuners designed to accept and process programming from RF carriers, IPTV streams, and ASI program lineups. Thor IRDs are available for every major world modulation standard. Most IRDs are designed for Satellite DVB-S2 programming, however Thor also now offers the same power and flexibility with tuners for ATSC and QAM lineups.

Program Decoding to HD-SDI, HDMI, YPbPr, & CVBS with Toslink and XLR audio also to ASI and IP

Equipped with every major video signal output, including HD-SDI, Thor H-HD-IRD units can provide HD video to any display or professional video system. Also available are modern digital audio outputs on both optical Toslink and XLR connectors. Dolby AC/3 audio pass through is standard, and closed caption support for both 608 and 708 captioning systems is present. The V3 platform adds a front panel LCD video display for confidence monitoring, as well as an internal program multiplexer for combining content from both ASI and IP sources simultaneously. The web interface displays all available programs and corresponding PID's. Each program can be independently added to either the ASI or IP outputs. The all selected programs are multiplexed into a single MPTS output. Additionally, the IP output can be configured for up to 32 SPTS single program stream outputs, each with different address and port settings. This allows the V3 system to be used as an intelligent ASI to IP or RF to IP Gateway with add drop and ASI multiplexing capabilities. Combined multi program transport streams carried over IP can also be separated into their corresponding single program streams. The RF tuner can be configured for QAM, 8VSB (ATSC), DVB-T, DVB-C, or DVB-S2 signal sources. Two CAS card slots allow decoded of encrypted programming. Thor HD-IRD units can be used for converting broadband programming to uncompressed HD video, as well as multiplexing and retransmitting programs to both ASI and IP outputs. Thor HD-IRD systems are a reliable and versatile platform for broadcast program decoding and TS protocol conversion.

ADVANCED SATELLITE, IP & ASI DECODER

IRD Systems for DVB-S2 Satellite TV

H-IRD-V2

V2 IRD WITH DVB-S2 TUNER FOR 8VSB OTA CHANNELS

- DVB-S2
- IP Input
- AS I Input

- HD-SDI Out
- HDMI Output
- YPbPr Output
- IP Output—unicast or multicast
- ASI Output
- 2x CAM/CAS
- BISS Support

- Industry standard DVB-S2 Satellite TV carrier IRD for tuning and decoding of HD programming over satellite
- Standard application Broadcast Decoder for converting IPTV, DVB-ASI, or DVB-S2 programming to HD-SDI video
- Supports encrypted program stream delivery via BISS pre exchange key or via dual CAM/CAS PCMCIA slots
- Managed and configured via any standard web browser with full feature support on front panel & LCD display
- Full feature IPTV receiver decoder on dedicated RJ-45 port with separate IP address independent from management

H-IRD-V1

HD-SDI BROADCAST DECODER FOR SATELLITE & IPTV SDI OUTPUTS

- DVB-S2 Input or
- ATSC Input or
- QAM Input
- IP Input
- AS I Input

HD-SDI Out

- HDMI Output
- YPbPr Output
- IP Output—unicast or multicast
- ASI Output

- Broadcast receiver decoder for IPTV, DVB-ASI, or DVB-S2 programming with HD-SDI output 1080i60
- Multiple applications for receiving programming and decoding to high quality digital video outputs
- Configured via on screen menu generated on any of the units video outputs, controlled via keypad

H-STB– XX ATSC or QAM or S2 HIGH DEFINITION SET TOP BOX TUNER

- DVB-S2 Input or
- ATSC input or
- QAM I input

- HDMI Out
- Component
- CVBS Out
- To slink Audio

- Used to tune and decode digital TV channels from sources in either clear QAM or 8VSB (ATSC) carriers
- Configuration provided via on screen menu from any video output including HDMI with digital audio

IRD RECEIVERS FOR ATSC & CLEAR QAM

QAM & ATSC IRD'S

H-IRD-V3-XX XX= S2 or ATSC or QAM

V3 IRD WITH ATSC or DVB-S2 or QAM TUNER FOR 8VSB OTA CHANNELS

- *DVB-S2 Input or*
- *ATSC Input or*
- *QAM Input*
- *IP Input*
- *AS I Input*
-
- *HD-SDI Out*
- *HDMI Output*
- *YPbPr Output*
- *IP Output—uncast or multicast*
- *ASI Output*
- *FRONT LCD MONITOR*

- *Possible Applications :*
- *RF -(DVB-S2 or ATSC or QAM) → to SDI , HDMI, YPbPr*
  - *to IP*
  - *To ASI*

ASI to → SDI , HDMI , YPbPr
IP

IP to → SDI , HDMI , YPbPr
ASI

- *Tunes and demodulates any L-Band frequency DVB-S2 or off Air ATSC or Cable TV QAM standard program stream*
- *Advanced application Broadcast Decoder for converting IPTV, DVB-ASI, or DVB-S2 programming to HD-SDI video*
- *Supports encrypted program stream delivery via BISS pre exchange key or via dual CAM/CAS slots*
- *Provides full TS processing capabilities for ASI and IP streams for managing up to 32 broadcast streams*
- *Highest quality HD-SDI output with support for resolution and frame conversations for up to 1080p60*
- *Tunes and demodulates entire RF carrier and processes all MPTS programs individually*
- *Can decode any selected program to any of the HD video outputs while streaming remaining programs*
- *Output is provided as IPTV stream in UDP MPEG-TS format as well as MPTS ASI program streams*

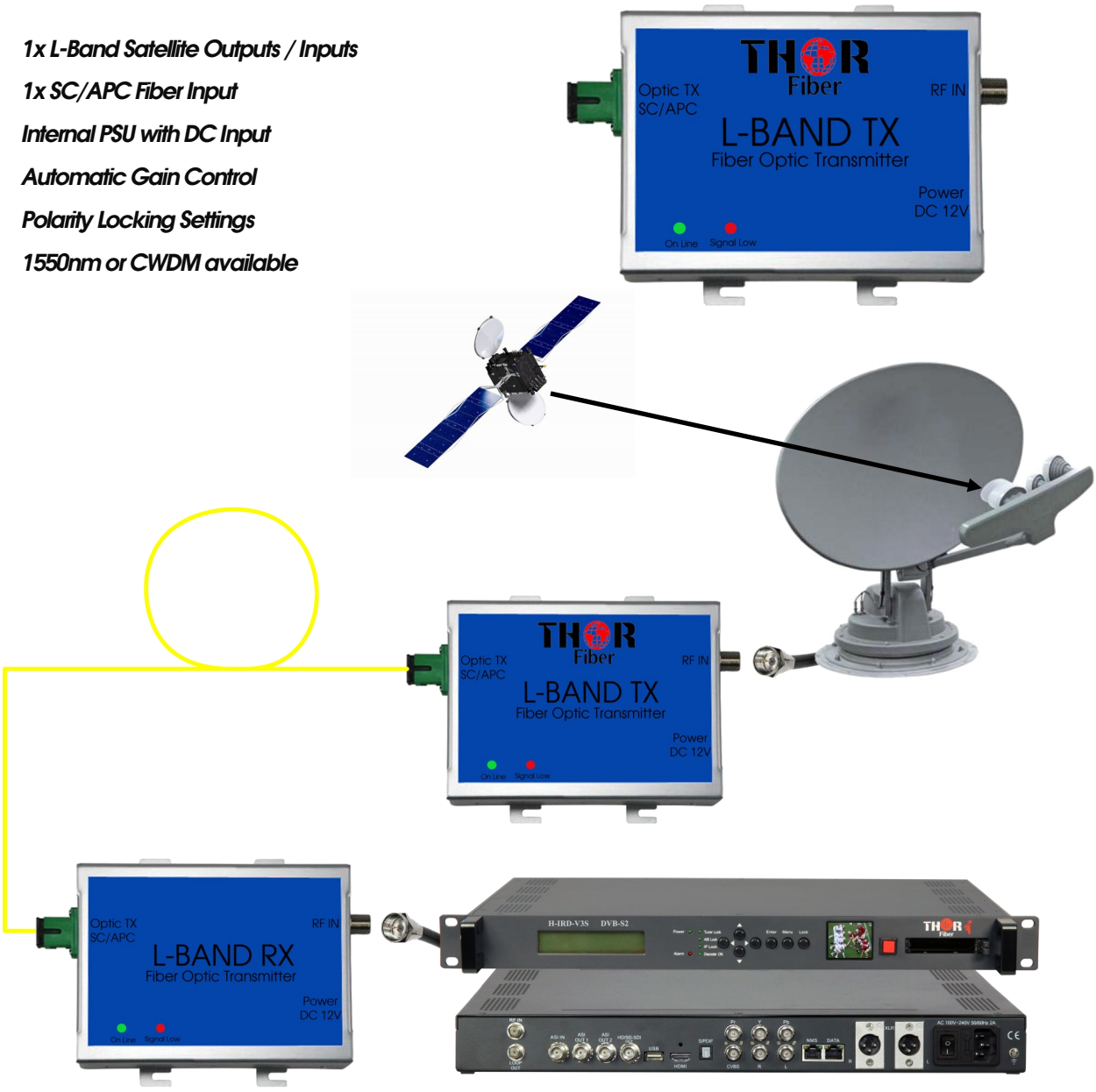
MULTIPLE RADIO FREQUENCY (RF) OVER FIBER

Wideband RF Signal RFoG Transport Over Single Fiber

Satellite L-Band RF 850mhz to 2100Mz Over the fiber up to 80Km

F-LBAND-Tx & F-LBAND-Rx

- *1x L-Band Satellite Outputs / Inputs*
- *1x SC/APC Fiber Input*
- *Internal PSU with DC Input*
- *Automatic Gain Control*
- *Polarity Locking Settings*
- *1550nm or CWDM available*



The L-Band fiber optic Transmitter/Receiver pair are used for transporting RF Satellite signals in the L Band over fiber from the antenna to the satellite receiver. L-band RF signals have a very limited range over coaxial cable, typically no more than a few hundred feet. By transporting the L-Band RF signal over an optical fiber this range can be extended to over 50 miles. Fiber optic cables are much smaller and easier to work with than traditional copper coax. Additionally our units provides optional 13/18V LNB power as well as Automatic Gain Control (AGC) to manage RF input level. Fiber optic transport of satellite signals is useful in many applications, such as transportation of signals from a remote satellite farm to a broadcaster's headend, uplink and downlink applications, and DBS services.

SATELLITE TV - 4 CHANNEL OPTICAL LINKS UP TO 80KM

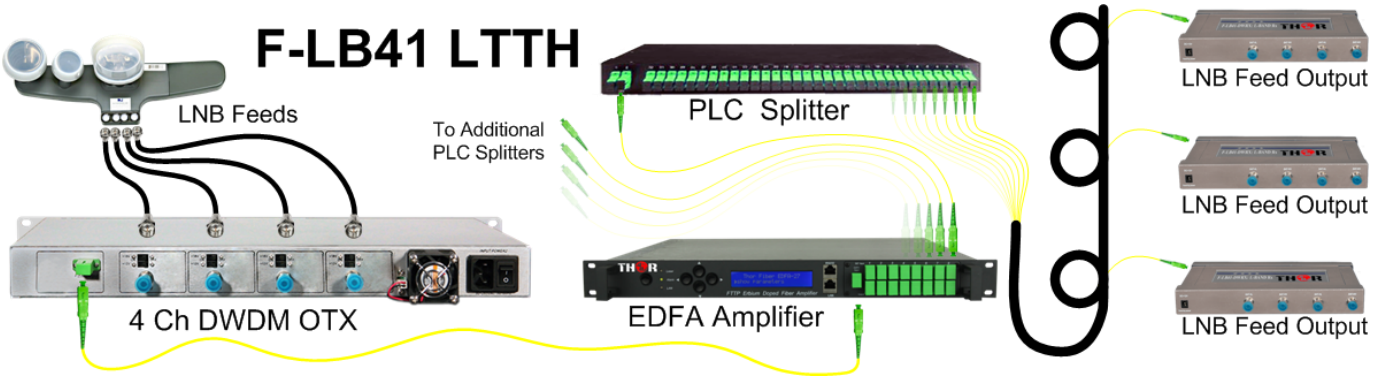
4 L-Band LNB's Over Fiber

- *4x L-Band Satellite Outputs / Inputs*
- *1x SC/APC Fiber Input*
- *Internal PSU with DC Input*
- *Automatic Gain Control*
- *Polarity Locking Settings*
- *CWDM or DWDM*
- *Distance up to 80Km*
- *13V DC or 18V DC to LNB*
- *22Khz control tone*

F-L41B-CWRX , F-L41B-CWTX:

4 Channel to 1 Fiber CWDM L-Band Satellite TV Transmitter and Receiver

- *Rack mount 4 Channel optical RF receiver for L-Band and RF carriers in the 50-3000 MHz range*
- *Internal optical DE multiplexer for use with Thor CWDM based LB41 or L41B transmitters*
- *Can be ordered for specific CWDM channels or RF frequency ranges for specific applications*
- *Provides 4 independent RF over fiber optical receiver circuits from a single fiber SC/APC input*
- *Basic unmanaged system with signal detect LEDs and polarity locker 13-18VDC & 22KHz tone*
- *Standard Type-F television coax connectors for inputs with 75 Ohm termination*
- *Can be ordered for specific CWDM channels and with higher power optics for more output*



Designed for both remote location of satellite antennas or distribution of satellite content signals from a single antenna to multiple distributed locations. Combines multiple L-Band fiber optic transmitters and receivers in a single enclosure with optical filters to multiplex the signals to a single fiber. Both CWDM and DWDM versions are available for compatibility with EDFA optical amplifiers. Thor L-Band category transmitters have model numbers that indicate their configuration. For example, the F-LB41-CWTX system indicates that the unit is a managed 4 channel CWDM optical transmitter with 1 fiber output. Whereas the F-L41B-CWTX is an L-Band 4 channel 1 fiber basic CWDM transmitter; meaning there is no network management or RS-232 control. L-Band distribution or transport systems from Thor are available in any channel configuration and with any type of market available optics systems. The below example describes a basic satellite antenna remote location setup. With proper inputs, this allows the antenna array to be located up to 10 miles away from the receiver.

SATELLITE TV 6 CHANNEL OPTICAL LINKS UP TO 80KM OVER SINGLE FIBER

Managed 6 Channel LNB's L-Band Single Fiber Transmitter and Receiver

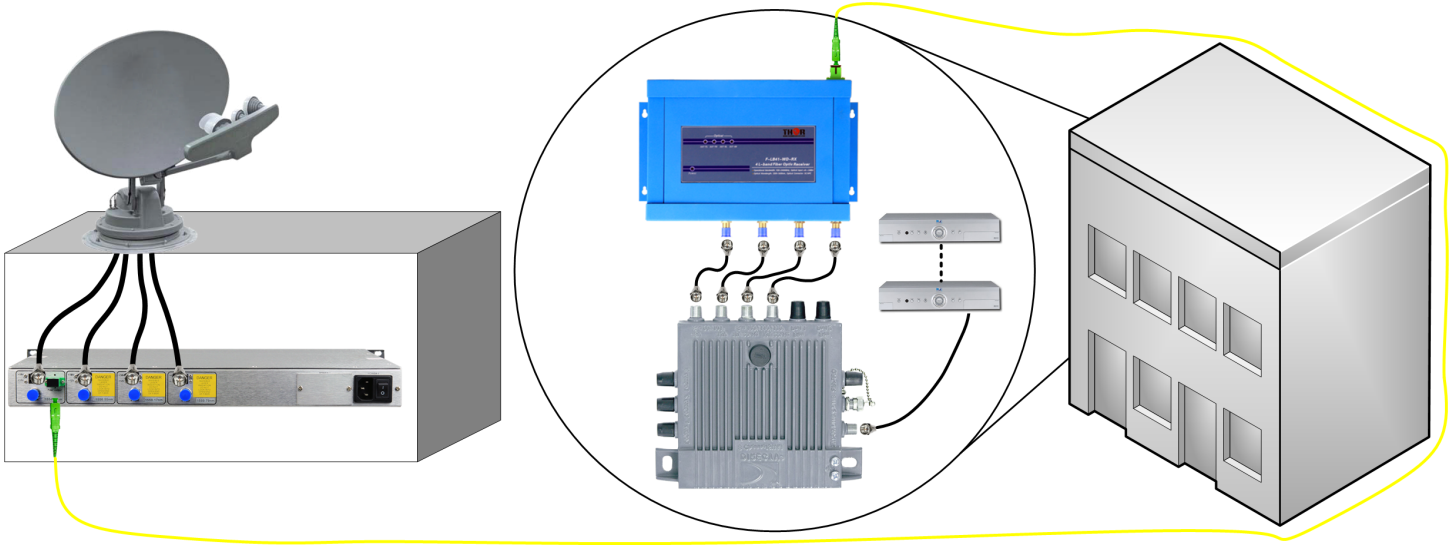
F-6LB-1SMF-CWTX:

Managed CWDM L-Band

F-6LB-1SMF-DWTX:

Managed DWDM L-Band

- *Supports satellite TV systems with up to 6 LNBs over a frequency range of 50-3000 MHz over single fiber*
- *Network management system & SNMP for monitoring signal level and optical parameters*
- *Supports remote serial control and monitoring via RS232 on front panel RJ-45 connector*
- *Six independent RF circuits with DIP switches for powering LNBs & locking polarity*
- *Wide use of alternate applications for RFoG systems requiring support for 50-3000 MHz*
- *Fully DWDM based signals that can be optically amplified through EDFA systems for FTTH*
- *Same LB61 configuration single fiber SC/APC output and rear panel polarity locking DIP switches*
- *6x L-Band Satellite inputs with 1x SC/APC Fiber Output*



- *High density compact 6 channel RF receiver with internal CWDM/DWDM de Mux and passive routing*
- *Wideband frequency response of 50-3000 MHz for ideal integration in RFoG applications*
- *Can be custom ordered for alternate CWDM/DWDM channel configurations for use with any system*
- *Easy to read indicator LEDs for all six optical channels with link lock and indicators for Hi/Low*

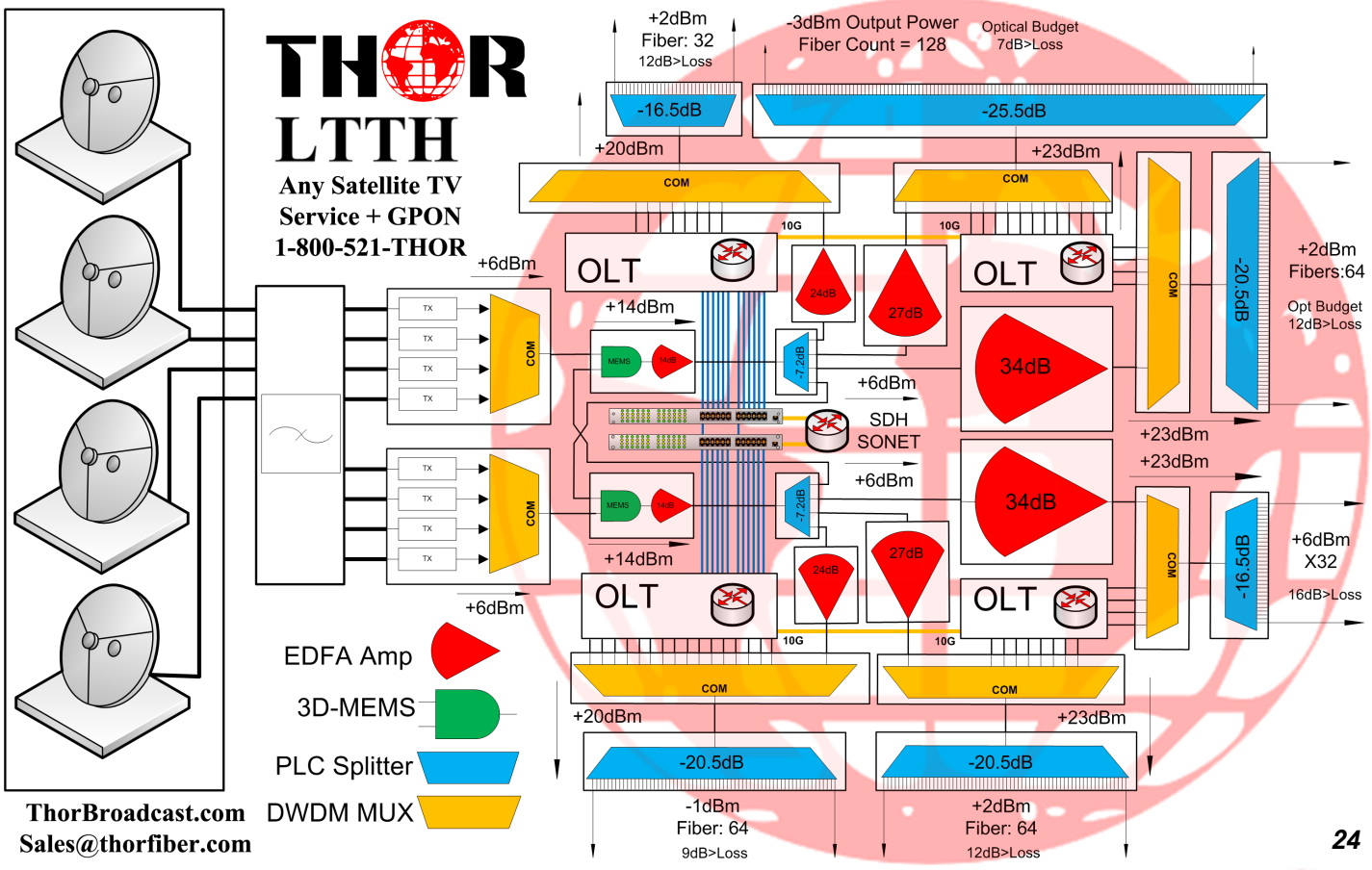
L-BAND TO THE HOME ARCHITECTURE

HIGH CAPACITY SATELLITE TV WITH FIBER OPTIC INTERNET

- *Free Design for Any Size System*
- *Complimentary Consultation*
- *24/7/365 Live Technical Support*
- *Fully Customizable Architecture*

- *Complimentary design service for turn key systems that fit your existing fiber infrastructure*
- *LTTH allows a single master antenna to deliver full content satellite service to thousands locations from 1 antenna*
- *Bonded high speed gigabit optical networking internet service for triple play offering*
- *Thor LTTH offers redundancy for all components with auto healing ability during fault*
- *Compatible with all satellite TV services including free to air satellites & multiple services*

L-BAND TO THE HOME SATELLITE TV SERVICE WITH GPON INTERNET



AUTO HEALING LTTH WITH GPON INTERNET

High Capacity Satellite TV with Fiber Optic Internet

LTTH L-Band to the Home

Deliver any count satellite services to up to 50,000 subscribers

- *Bundle high speed gigabit optical internet service with full satellite TV programming content*
- *Deliver full content identical end user service for thousands from 1 centrally managed antenna*
- *Each optical receiver delivers identical signals from master LNB arrays to feed local multi-switch*
- *Redundant LTTH multi transmitter DWDM transmitters & auto sensing 3D MEMS switches*
- *Optional power to antenna or LNB options for integration in existing RF systems*

L-Band Distribution Amp -

Redundant Transmitters -

Optical Fall Over Switch -

EDFA Pre Amplifier -

Primary Launch EDFA -

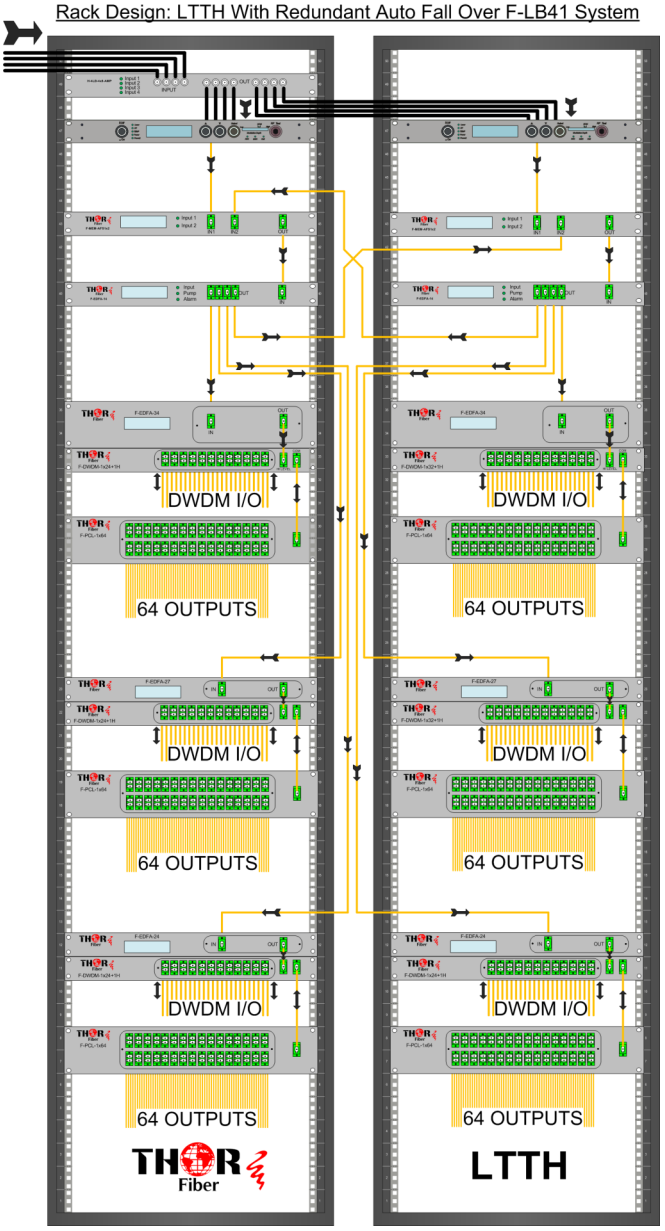
Optical Passives for GPON -

Thousands of Subscribers -

Auto healing redundancy -

- *Full Design Service For Any Scale*
- *Integrate Internet with Sat TV*
- *Triple Play Service with Satellite*
- *Common Community Antenna*
- *True Fiber to the Customer Service*

Rack Design: LTTH With Redundant Auto Fall Over F-LB41 System



1 GPS OVER FIBER

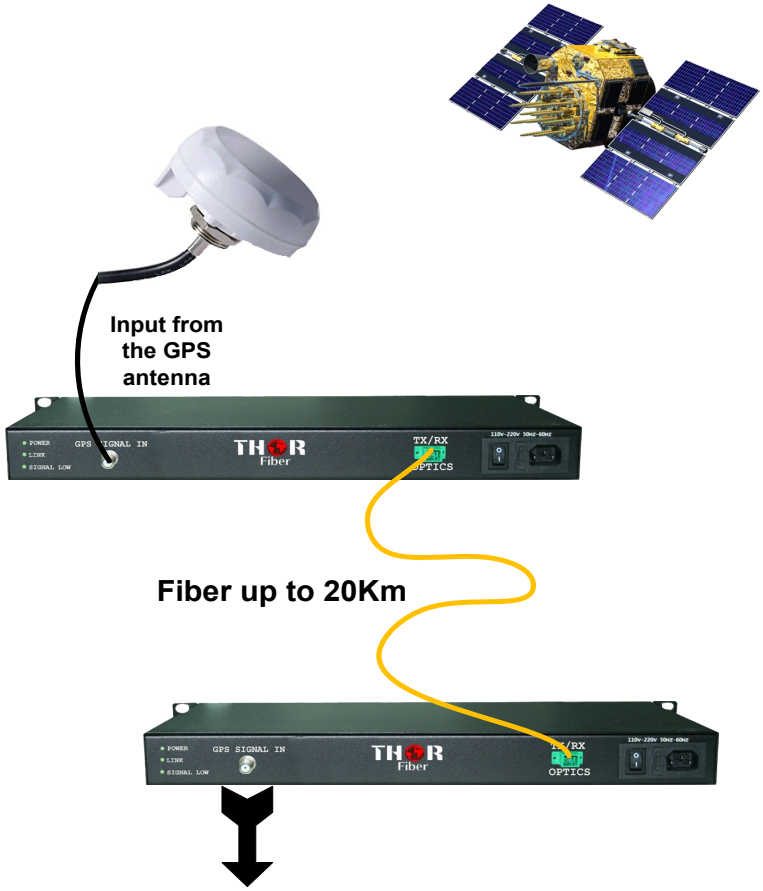
Single GPS Systems

F-GPS-TX , F-GPS-RX

- *1 GPS Antenna Satellite Inputs*
- *1x SC/APC Fiber Output*
- *1 RF N type RF connector*
- *Polarity Locking Settings*
- *5V DC power to the antenna*

GPS Fiber Optic Transmitter and Receiver

- *Supports satellite GPS frequency range of 1200-1700 MHz*
- *supplies the 5 volts to each antenna*
- *Easy to read indicator LEDs for all six optical channels with link lock and indicators for Hi/Low*
- *Can be custom ordered for alternate CWDM channel configurations for use with any system*
- *LEDs reflecting the failures from the top box and its own diagnostics.*
- *19" rack*
- *Internal 110-220V AC power supply*



4 GPS OVER 4 FIBERS

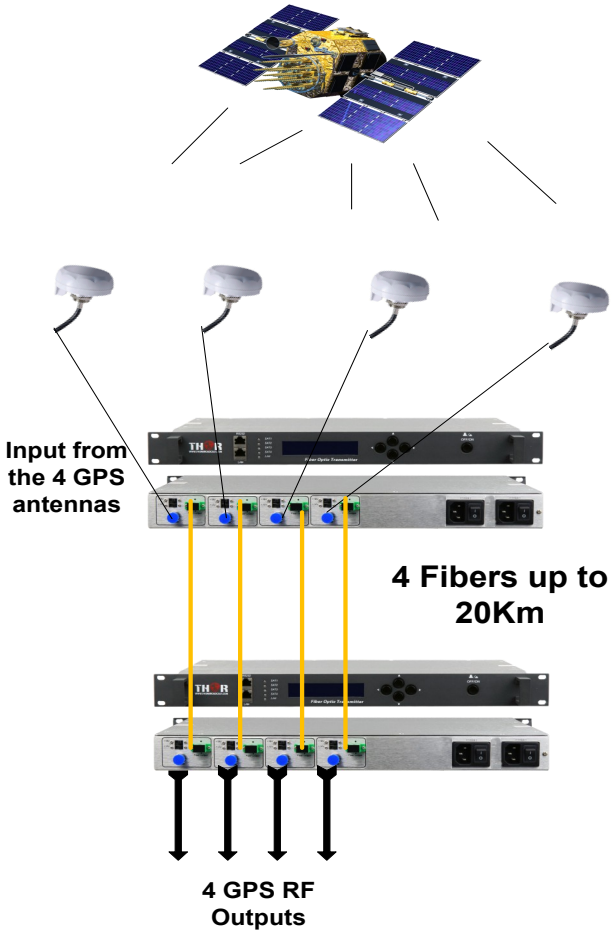
Redundant 4 GPS Systems

- 4 GPS Antenna Satellite Inputs
- 4 x SC/APC Fiber Output
- 4 RF N type RF connector
- Polarity Locking Settings
- 5V DC power to the antenna
- Up to 20Km
- Redundant power supply
- Available 4 GPS over 1 fiber (CWDM)

F-4GPS-TX

Managed 4 GPS Fiber Optic Transmitter and Receiver

- Supports satellite GPS frequency range of 1200-1700 MHz
- Supplies the 5 volts to each antenna
- Easy to read indicator LEDs for all six optical channels with link lock and indicators for Hi/Low
- Can be custom ordered for alternate CWDM channel configurations for use with any system
- LEDs reflecting the failures from the top box and its own diagnostics.
- 19" rack
- Internal 110-220V AC power supply
- IP NMS Available (optional)



50-3000MHZ RF OUTDOOR ENCLOSURES

Weatherized & Waterproof Outdoor Transmitters

F-L11B-COTS

Single L-band Outdoor Rated Flexible Enclosure

- 1 Optical Tx or Rx
- 1x SC/APC Fiber I/O
- Multi Format System
- Fully Customizable

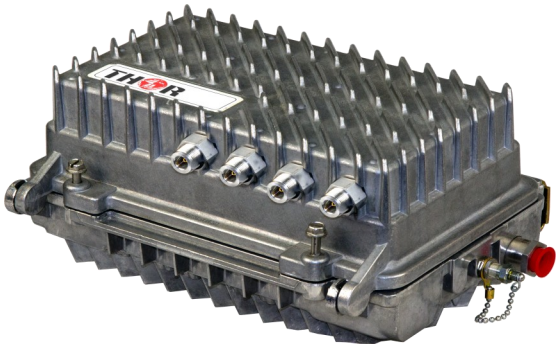
- All weather outdoor transmitter for single channel RF within frequency range of 50-3000 MHz
- Highly flexible platform can be ordered with a variety of connectors and optics modules
- Backed by industry leading 5 year warranty from Thor for guaranteed return on investment
- Used for a wide range of applications requiring Radio Frequency RF over fiber or DAS
- Supports wideband RF carriers for RFoG systems using signals in the 50-3000 MHz range

2 / 4 L-band Channel Outdoor Enclosure System

- 2 or 4 Optical Tx or Rx
- 1x SC/APC Fiber I/O
- Bi-Directional RF

F-L21B-COTS

F-L41B-COTS



- Dual module outdoor enclosure for Thor RF over fiber transmitter or receiver circuits
- Can be configured for bi directional transport for use in Distributed Antenna Systems
- Many configurations available with support for a wide range of RF & power connectors
- Available in application specific configurations with customizable RF parameters & filters
- 4 Channel Satellite TV or L-Band over fiber transmitter with DWDM optics for use with EDFAs
- Internal DWDM multiplexer combines all 4 optical RF signals on a single fiber SC/APC output
- DIP switches for each input provide 13 or 18VDC and 22 KHz tone signal for polarity locking

FIBER OPTIC CABLES AND JUMPERS

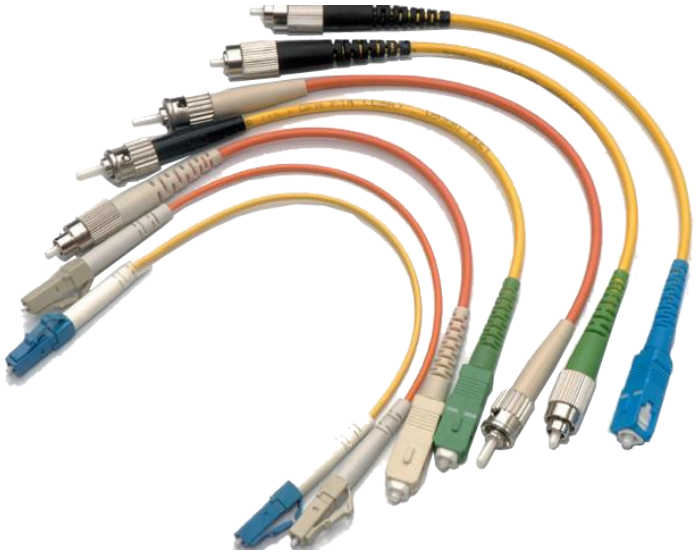
Fiber Cable in Any Configuration

- *Any Cable, Any Length*
- *Hard to Find Cables*
- *Custom Applications*
- *Specified Ratings Cable*

Fiber Cables

- *Thor can provide any fiber cable needed for any application including direct burial and aerial*
- *Pre terminated in any length or with any strand count manufactured to any required standard*
- *Eliminates the need to have a specialized fiber technicians for cable termination or splicing*
- *Tested to work with Thor equipment and allows for turn key complete systems from one order*

- *Convert Fiber Connectors*
- *Connect Dissimilar Fibers*
- *Order Exact Length Patches*
- *Eliminate Headend Clutter*



Fiber Jumpers

- *Available with any fiber connector on both ends, simple solution for adapting connectors*
- *Can be used to adapt a flat fiber termination to an angle polished APC type termination*
- *Available in any configuration , length, fiber type, or jacket by individual request*

RF CABLE & TERRESTRIAL BROADBAND OPTICAL TRANSMISION

1550nm or 1310nm Single mode RF Broadband Transmitter

F-RFTX-1310: Managed 1310nm Broadband RF Transmitter

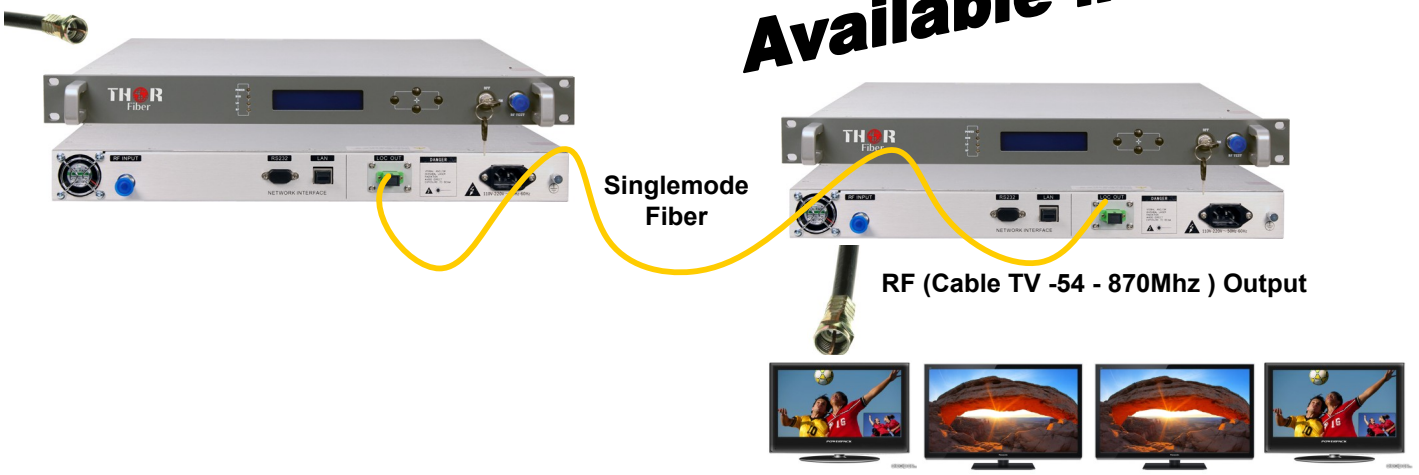
- *1x RF CATV Input 45-1000Mhz*
- *1x SC/APC Fiber Output*
- *1 Internal PSU, 2 Optional*
- *Polarity Locking Settings*
- *1310nm or 1550nm*

Thor broad line of F-RF products are used for cable and free to air TV broadband signals. These systems act as fiber extenders, allowing distribution to much further locations than coax would allow. Can be used to transport a cable TV connection at one location to any other location connected by Single mode fiber cable. Thor F-RF systems are available in a broad range of specifications for use in specific applications. A dedicated team of optical engineers are available to speak with for consolation on fiber to the home equipment or Thor turn key systems. In addition to free consultation and design, 24/7 Gold Support is available. Link distances past 100 miles are possible with correctly tuned EDFA amplifiers.

- *Designed for world standards cable TV signals in the broadcast 45-900 MHz frequency range*
- *Converts full bandwidth broadband with support for full bit rate saturated channel lineups*
- *Available in 5 industry standard laser optics power ratings for use with PLC optical couplers*
- *Fully managed system with remote monitoring and alarm support and RS-232 on DB-9 Serial*
- *Laser arming switch with key lock to ensure safety, high power outputs drive up to 32 receivers*

Available in 1550nm!
Available in DWDM!

RF (Cable TV -54 - 870Mhz) Input



F-RF CABLE & TERRESTRIAL BROADBAND

RF Fiber Optic Broadband Receiver 45-900MHz

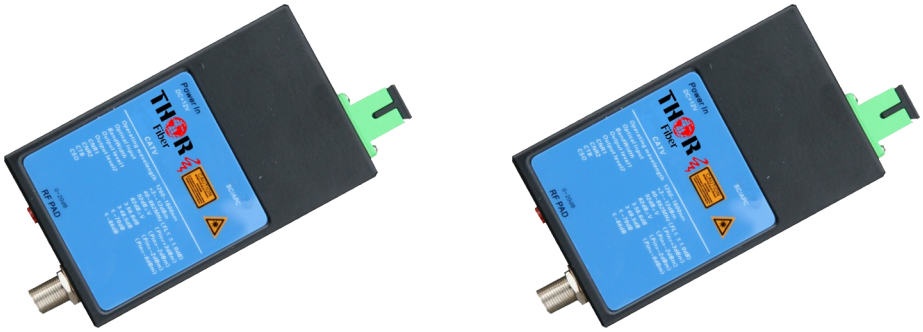
F-RF-RX-RM — Fiber Optic RF Broadband receiver—Rack Mount Automatic Gain Control

- 1 Fiber Input—SC/APC
- RF (coax Output)
- Automatic Gain Control

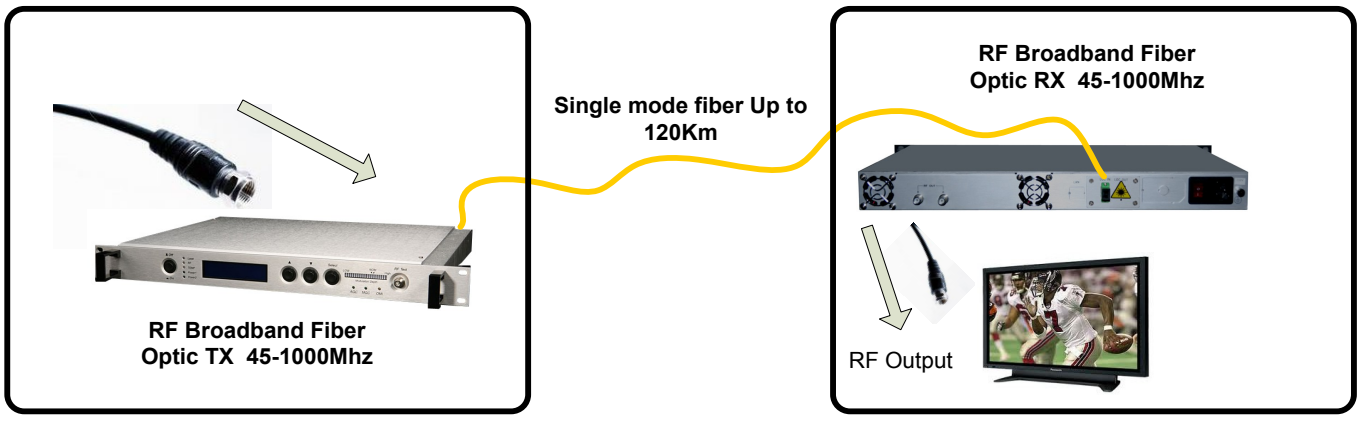
- Industrial rack mounded television broadband optical RF receiver with automatic gain
- Available with redundant inputs as well as secondary PSU for ultimate system reliability
- Managed via front panel keypad and LCD with front facing alarm and status LEDs
- Supports full broadband cable or broadcast standard RF output on frequency 45-900MHz

F-RF-Rx-MR: Broadband Optical RF Mini Receiver

- Low Cost Receiver
- High Sensitivity
- RFoG Compatible



- Compact low cost full bandwidth optical receiver for television signals within 45-900 MHz
- Good receiver sensitivity of approximately –9 dBm optical input power threshold
- Single mode fiber input on industry standard SC/APC with 75 Ohm Type-F output
- Output RF power level adjustable with manual gain control & optical signal status LED



EDFA OPTICAL AMPLIFIERS FOR DWDM

Amplify Any Incoming 1550nm Signal Optically

F-EDFA—XX EDFA OPTICAL AMLIFIER

- XX- +10 to +24 dBm Output
- SC/APC Fiber In & Out
- RS-232 & NMS SNMP

- Managed EDFA optical amplifier available in power ratings from +10 to +24 dBm output
- Front panel LCD with output power level compared to input signal detect power level
- Alarm indicators for low optical power or for failure of the primary pump laser system
- Remotely monitored and configured with network management and RS-232 serial port

F-EDFA-27-C1x8

- FTTH
- FTTC
- LTTH
- LTTP

Eight Output EDFA with CWDM Passives for GPON

- High power FTTH type EDFA with 8 output ports and integrated CWDM passives
- Allows OLT / ONU connection for internet service in passive optical PON networks
- Remotely managed and monitored with network management and serial RS-232
- Front facing display with power level indicators and multiple failure alarm indicators
- Available in any optical passive configuration with power ratings from +10 to +29 dBm

FTTH BROADBAND ORIGINATION GEAR

RF Transmitter and Launch EDFA for Large Scale FTTH

- FTTH
- FTTC
- LTTH
- LTTP

F-RF-T-1550-8-6

Niobium Crystal Externally Modulated Optical RF Transmitter

- *Cleanest possible optical RF modulation available with current technology, lowest noise figures*
- *Internal EDFA preamplifier with 1x8 PLC coupler for 8 outputs at +6 dBm for launch EDFAs*
- *Proves a signal clean enough to drive over 4096 optical receiver modules after launch EDFAs*
- *External modulation required for RF signals that are amplified through more than 3 EDFAs*
- *Fully managed with network management system, alarm reporting, and RS-232 serial port*

F-EDFA-16-WDM-36

Primary Launch EDFA System up to 36 dBm Output

- Up to +36 dBm
- Most Powerful
- Primary EDFA

- *Most powerful EDFA optical amplifier for FTTH available with up to +36 dBm power output*
- *Available in custom configurations and optics packages for CWDM or DWDM integration*
- *Proves service for 512 subscribers when used with 1x32 PLC couplers during fiber distribution*
- *Remotely monitored and configured with network management system and RS-232 Serial*
- *Contact Thor today for free design and consultation on fiber to the home service delivery*

RETURN PATH EQUIPMENT FOR VOD/PPV

Supports 5-45 MHz path from receiver nodes

F-8RP-RX: 8 Channel 5-45MHz Return Path Optical receiver

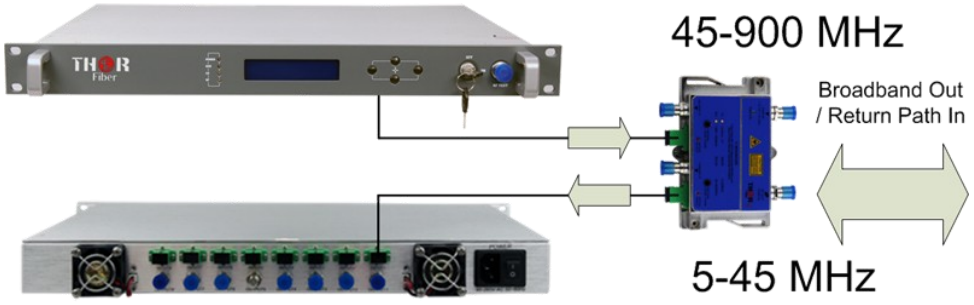
- *8x Return Path Circuits*
- *8 Fiber Inputs, 8 RF Out*

- *8 Independent RF optical receivers for video on demand or pay per view return path signal*
- *Allows cable head end operators ability to receive information sent back from cable STB box*
- *Used for 2 fiber FTTH or with external optical passives, compatible with CWDM or DWDM*
- *Network management option for remote monitoring as well as RS-232 serial control RJ-45*
- *Rear gain controlled outputs with front facing adjustable taps for monitoring or manual patch*

Fiber Optic RF Receiver 54-870 MHz and Return Path RF Transmitter 5-45Mhz

- *Many Configurations Available*
- *General Purpose Mininode*
- *Supports 5-45 MHz Return Path*

F-MININODE:



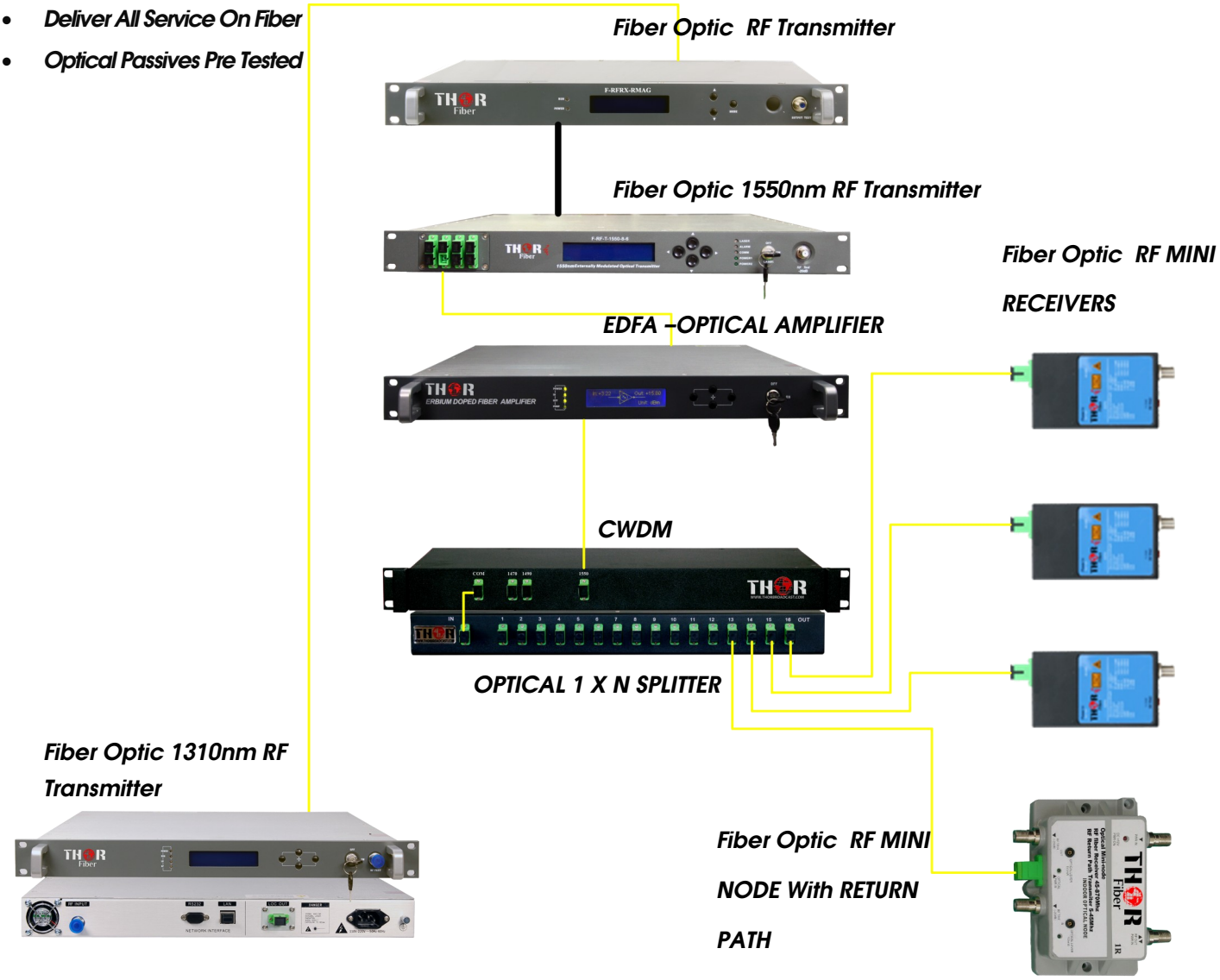
- *Dual optical ports for receiving television on 45-900 MHz and transmitting 5-45 MHz return path*
- *Available in custom configurations and optics packages for CWDM or DWDM integration*
- *Internal band pass filter with multiple taps for support of any world standard broadcast TV system*
- *Allows customer premise equipment to communicate with cable operators headend for VOD/PPV*
- *Simple to use low cost node unit for integration into campus or municipal hybrid fiber coax systems*

HIGH QUALITY LOW LOSS RF OVER FIBER

Transmit Television & Cable Broadband Fiber To the Home

- All FTTH Components
- Provide Triple Play Service
- Bundle Cable & Internet
- Deliver All Service On Fiber
- Optical Passives Pre Tested

EXAMPLE APPLICATION CATV RF OPTICAL DISTRIBUTION



Small 16 Note Fiber to the Home System

- *Fiber to the home systems need to be custom tailored to each individual application. Thor manufactures custom RF over fiber systems for everything from small MDU's all the way up to whole cities. Typically with a Fiber to the Home system the RF is on the 1550 nm band. Most GPON systems use the 1310 and 1490 bands for Ethernet communication. The reason that 1550 is reserved for the RF is that RF over fiber is particularly sensitive to loss. The RF optical signal needs to be much stronger than the corresponding GPON data signals. Optical channels in the 1550 nm band can be easily amplified with EDFA fiber amplifiers. EDFA's are needed on any FTTx application with more than 32 endpoints. Due to the nature of these systems, it is best to contact a sales representative to determine which equipment will best suit your needs.*

OPTICAL PLC COUPLERS & SPLITTERS, CWDM, DWDM MUX / DEMUX

Low Insertion Loss Splitting Of Optical Signals To Many Outputs

F-PLC-1xXX 1x2,1x4, 1x8, 1x16, 1x32 Fiber Optic Splitter—Coupler

- 1 Fiber optic input SC/APC or ST, or FC
- 2 or 4 or 8 o16 or 32 Outputs
- 19" Rack-mountable
- Support 1310,1550, CWDM, DWDM

- Any Passive Configuration
- Custom Order Optical Filters
- High Quality Metal Enclosure
- Latest Generation Optics
- Manufactured to Specification

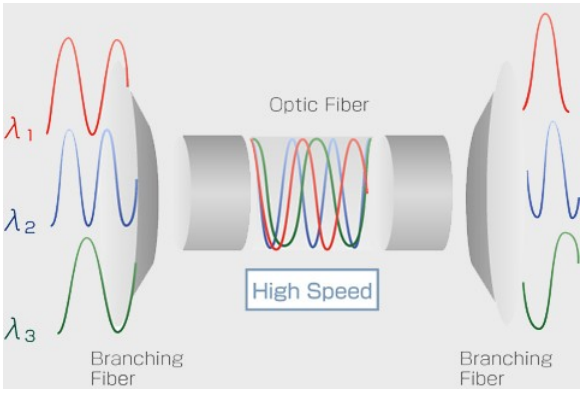
ID	Ports (#)	Loss (dB)
1x2	2	4.7 dB
1x4	4	8.4 dB
1x8	8	10.5 dB
1x16	16	13.5 dB
1x32	32	16.5 dB

F-CWDM-1xXX 2CH, 4 CH, 8CH, 16CH CWDM or DWDM Optical MUX / DEMUX

F-DWDM-1xXX

- 1 Fiber optic input SC/APC or ST, or FC
- 2 or 4 or 8 OUTPUT
- 19" Rack-mountable
- Supports CWDM 1470nm, 1490nm, 1510nm,1530nm, 1550nm,1570nm, 1590nm, 1610nm
- DWDM

ID	Ports (#)	Loss (dB)
1x2	2	1.4 dB
1x4	4	1.6 dB
1x8	8	1.8 dB
1x16	16	4.3 dB
1x32	32	6.5 dB



- Available for any CWDM or DWDM channel combination or fiber connector type
- Very low insertion loss of approximately 2.0 dB per optical channel or optical port
- Optical CWDM or DWDM passives can be integrated into most fiber equipment
- High quality rack mount enclosures available for added flexibility in system design

1, 2, 4, 8, 16 ASI OR HD-SDI FIBER OPTIC TRANSPORT

Single Fiber Transport for1-16 individual ASI's or SD/HD-SDI's

- 1 Fiber optic input SC/APC or ST, or FC
- 1 or 2 or 4 or 8 or 16 ASI inputs / Outputs
- 1 or 2 or 4 or 8 SDI inputs / Outputs
- 19" Rack-mountable
- Fiber optic distance up to 80KM

1 SDI to fiber

2 SDI to fiber

4 SDI to fiber

Thor part numbers F-8SDI-Tx and F-8SDI-Rx are standard configuration Fiber Optic Transmitter and Receivers for Serial Digital signals up to 3G-SDI running at 3.0 Gbps. This system can be ordered with any standard CWDM optics package, and internal passives are available by request. This is an 8 Channel system based on a standard 40km platform. No configuration or management is needed, as the system automatically adjusts to any input signal type regardless of bit rate or protocol. Easy to read LED indicators for Input Signal Detect and optical link are present for all channels.

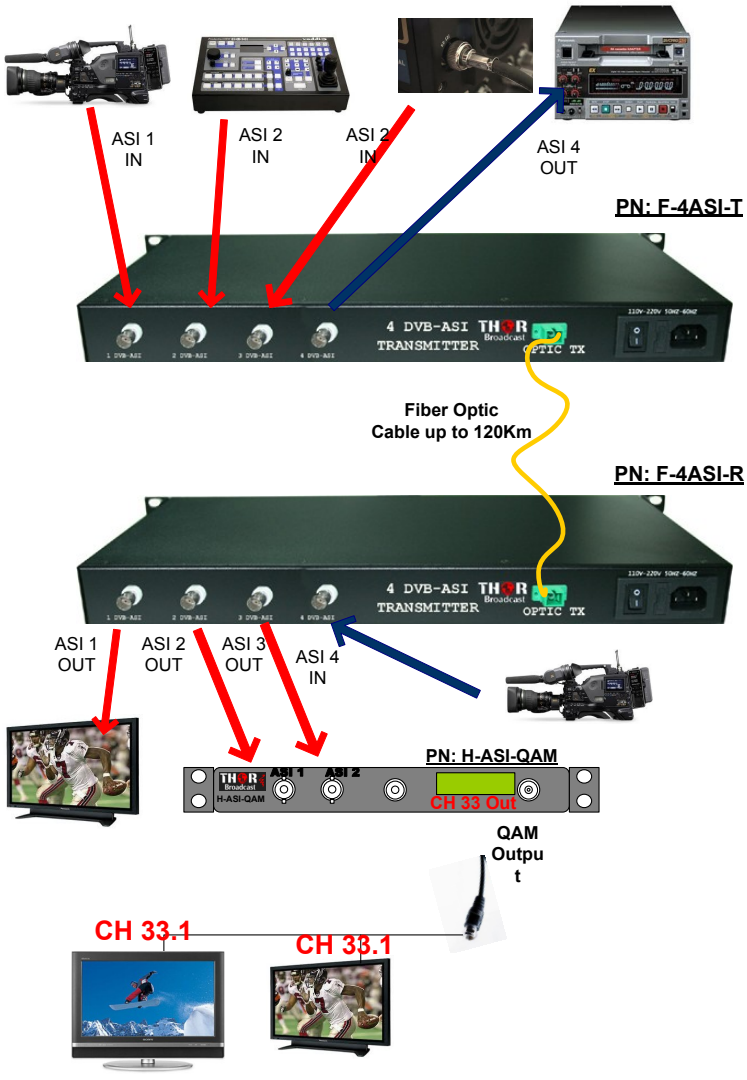
Thor part number F-xSDI-Tx/Rx designates a fiber optic transmitter or receiver used to transport serialized digital signals up to 3.0 Gbps. Any channel configuration up to 16 channels per fiber can be designated by value "x". Units can be configured to transport any number of SDI channels in either direction up to a total of 16 per fiber. For even higher densities, DWDM systems are available by request. Thor uses high quality DFB lasers for maximum reliability and distance, with off the shelf models functioning up to 80km when used with single mode fiber. F-SDI systems will transport any digital signal from 1 Mbps to 3.0 Gbps independent of protocol or standard. These systems can be used for anything from 3G-SDI (SMPTE 424M) to multi rate DVB-ASI down to single program at low bit rates. F-SDI units incorporate industry standard internal CWDM modules for compatibility with such as Python™ systems. This standardization allows Thor F-SDI equipment to be used in conjunction with other commercial off the shelf transmitters or receivers from other vendors, including Python™ series equipment. All outputs are automatically re clocked to eliminate problems with jitter and to allow for long cable runs out of the receiver. Applications range from live broadcast and Electronic News Gathering to government and scientific research applications. Contact a Thor Sales Representative today for more information on system design and equipment compatibility.

F-XXSDI-TX /RF ***F-XXSDI-TX /RF***

4 DVB-ASI or SD-SDI fiber optic transport

It can be setup us a :

Uni- directional or bi -directional Link

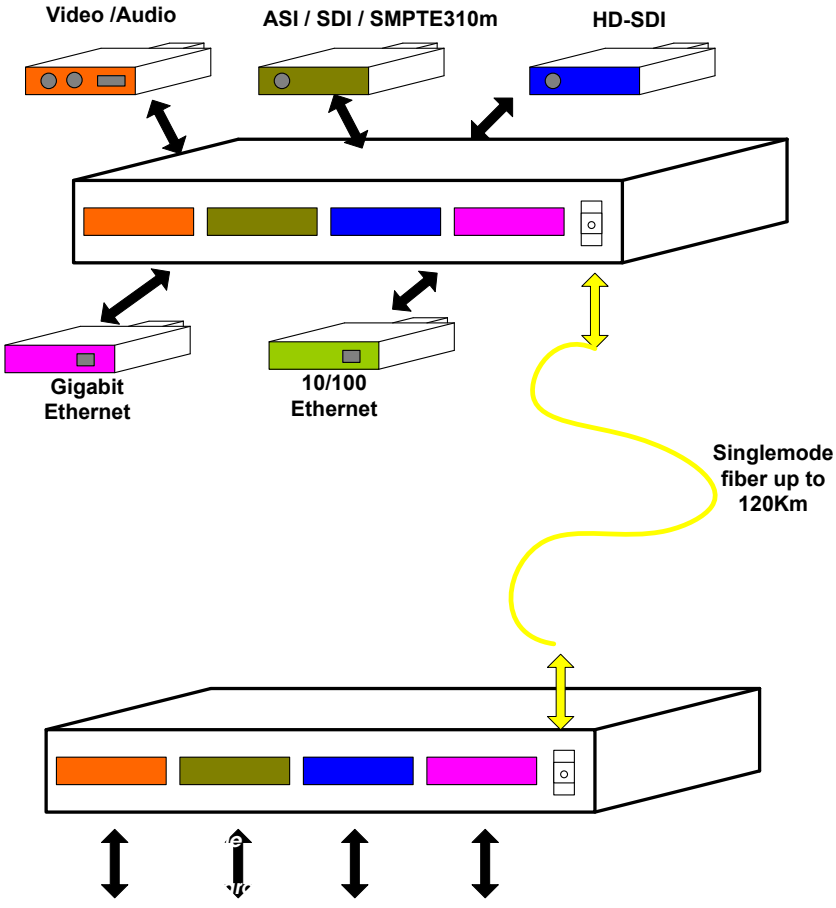


CUSTOM MULTIPLEXED CHASSIS SYSTEM

Multiplex Optically any Signal over the single fiber

F-CHASSIS-4:

- *Live event conferencing with live HD video and audio to multiple classrooms or buildings*
- *Perfect for campus or business centers that require live distribution of HD audio and video*
- *Zero delay from encoding or decoding; unlike network video IP systems or wireless solutions*
- *Fully customizable for any type of video system or fiber infrastructure, free quote & consultation*



- *Available expansion ports*
- *Zero video delay <0.1 MS*
- *Highly Reliable System*
- *5 year warranty from Thor*
- *Free quote & consultation*
- *Every component necessary*
- *Auto redundancy available*

HD-SDI CWDM	*1 or 2 per card*	*1 or 2 Optical Ch*
3G-SDI CWDM	*1 or 2 per card*	*1 or 2 Optical Ch*
CVBS CWDM	*2 Video 4 Audio*	*1 Optical Ch*
Gigabit Ethernet	*1 RJ-45 per card*	*2 Optical Ch*
ASI or SMPTE310m	*1 or 2 per card*	*1 or 2 Optical Ch*

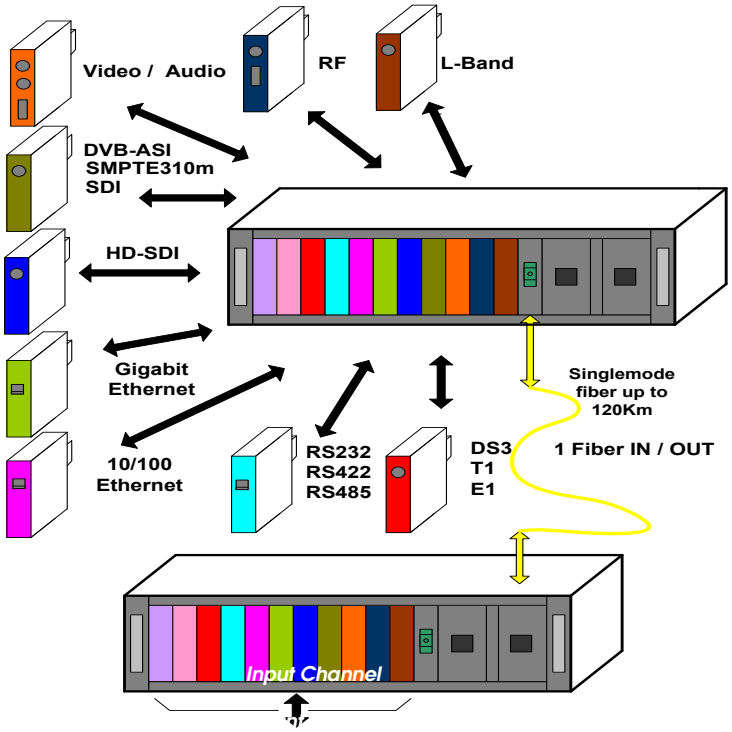
F-CHASSIS CUSTOMIZABLE CARD CAGE SYSTEM

Flexible Optical Multiplexing & Transport Platform Any signal over the single

F-CHASSIS-12: *Twelve Slot Universal Card Cage*

- *Available in any combination of Thor chassis system optical card modules or optics*

- *Highest capacity optical fiber multiplexing systems with optional redundant power supply*
- *Supports up to 24 channels of 3G-SDI video in a single 3RU chassis and a single fiber output*



HD-SDI CWDM	*1 or 2 per card*	*1 or 2 Optical Ch*
3G-SDI CWDM	*1 or 2 per card*	*1 or 2 Optical Ch*
CVBS CWDM	*2 Video 4 Audio*	*1 Optical Ch*
Gigabit Ethernet	*1 RJ-45 per card*	*2 Optical Ch*
ASI or SMPTE310m	*1 or 2 per card*	*1 or 2 Optical Ch*

OPTICAL - IP -RF -BROADCAST VIDEO TRANSPORT

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