



TRIAx

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IN

## Flow

The first TV Smart  
Headend

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## FLOW-IN2



### Dual universal input module (IN2)

The FLOW IN2 module's function is to tune two independent signals, each of which can be in DVB-T/T2 terrestrial, DVB-C cable, or DVB-S/S2 satellite format.

These signals are then processed and sent in SPTS (Single Program Transport Stream) form to an external network or other modules in the same headend via the backpanel of the Ikusi FLOW chassis.

<b>Model</b>	<b>FLOW-IN2</b>	
<b>Ref.</b>	4318	
<b>Inputs</b>		
Number of inputs connectors	2	
Number of tuners	2	
<b>Terrestrial mode</b>		
Frequency band	MHz	47 - 862
Supported standards	DVB-T/T2	
<b>Cable mode</b>		
Frequency band	MHz	47 - 862
Supported standards	DVB-C	
<b>Satellite mode</b>		
Frequency band	MHz	950 - 2150
Supported standards	DVB-S/S2	
<b>IPTV output</b>		
Total SPTS	62	
Transmission protocols	UDP	
SAP protocol	Yes	
Interface type	Gigabit Ethernet	
Standard	1000Base-T	

<b>General</b>		
Power supply voltage	Vdc	24
Power consumption	W	6.5
Operating temperature	°C	0 ... +45
Weight	g	328
Dimensions (Height x Width x Depth)	mm	125 x 27 x 210

## FLOW-IN4



### Quad universal input module (IN4)

The FLOW IN4 module's function is to tune four independent signals, each of which can be in DVB-T/T2 terrestrial, DVB-C cable, or DVB-S/S2 satellite format.

These signals are then processed and sent in SPTS (Single Program Transport Stream) form to an external network or other modules in the same headend via the backpanel of the Ikusi FLOW chassis.

<b>Model</b>	<b>FLOW-IN4</b>	
<b>Ref.</b>	4319	
<b>Inputs</b>		
Number of inputs connectors	2	
Number of tuners	4	
<b>Terrestrial mode</b>		
Frequency band	MHz	47 - 862
Supported standards	DVB-T/T2	
<b>Cable mode</b>		
Frequency band	MHz	47 - 862
Supported standards	DVB-C	
<b>Satellite mode</b>		
Frequency band	MHz	950 - 2150
Supported standards	DVB-S/S2	
<b>IPTV output</b>		
Total SPTS	60	
Transmission protocols	UDP	
SAP protocol	Yes	
Interface type	Gigabit Ethernet	
Standard	1000Base-T	

<b>General</b>		
Power supply voltage	Vdc	24
Power consumption	W	8
Operating temperature	°C	0 ... +45
Weight	g	460
Dimensions (Height x Width x Depth)	mm	125 x 27 x 210

## FLOW-SEC



### Security module (SEC)

The FLOW SEC decrypts multiple services received from the backpanel of the Ikusi FLOW chassis.

For decrypting services, the FLOW SEC has two Common Interface slots where CAMs may be inserted. The total number of decrypted services depends on the CAM in use, the number of services, and the quantity of data flowing through the module.

The FLOW SEC module can encrypt the services on the output headend.

Model	FLOW-SEC
Ref.	4311
<b>IPTV Inputs/outputs</b>	
Interface	Gigabit Ethernet
Standard	1000Base-T
VLAN support	Yes
Transmission protocols	UDP
<b>Common interface</b>	
Number of slots	2
Standard	EN50221
CAM Warm Reset	Yes
CAM Cold Reset	Yes
<b>Decryption</b>	
Channels of decryption capacity / CAM	2
Output SPTS per CAM	16
Total output SPTS	32
CAM reset on decryption failure	Yes

Encryption		
Supported DRMs	LG Pro:Idiom Samsung LINK Philips VSecure	
Simulcrypt interface	Yes	
Channel of encryption capacity	2	
SPTS per channel of encryption	Simulcrypt : 8 LG Pro:Idiom : 12 Samsung LINK : 16 Philips VSecure : 16	
General		
Power supply	VDC	24
Consumption (without CAM)	W	5.9
Operating temperature	°C	0 ... 45
Weight	g	328
Dimensions (Height x Width x Depth)	mm	125 x 27 x 210

## FLOW-ENC



### Quad HDMI encoder module (ENC)

The FLOW ENC can be configured to encode video content in a variety of resolutions and formats through the easy-to use Ikusi FLOW web interface. The encoded streams are then sent by ethernet over the Ikusi FLOW backpanel to external IPTV networks, or to other modules for further processing and inclusion in RF output multiplexes.

<b>Model</b>	<b>FLOW-ENC</b>	
<b>Ref.</b>	<b>4315</b>	
<b>Input</b>		
Number of video-audio digital inputs	4	
Input video format	HDMI	
Video standard	V1.4	
Digital audio	Yes (HDMI)	
<b>Compression</b>		
Video compression	MPEG2 MP@ML, H.264/MPEG4 AVC MP L4.1	
Audio compression	MPEG1 layer II, MPEG2_LE_ACC, MPEG4_HE_AAC	
Video quality	SD and HD (480i, 576i, 480p, 576p, 720p50, 720p60, 1080i50, 1080i60, 1080p25, 1080p30)	
Image format	4:3 / 16:9	
Video codec	MPEG2, H.264	
H.264 Profile	MPEG4 AVC MP, HP	
H.264 Level	3.0, 3.1, 3.2, 4.0, 4.1, 4.2	
Video Bitrate	MPEG2 H.264	kbps
		2000-15000 2000-19000
Audio codec	MPEG1 Layer II MPEG2 AAC LE MPEG2 AAC HE MPEG4 AAC LE MPEG4 AAC HE	
Audio Bitrate		kbps
		96, 128, 160, 192, 224, 256, 320, 384
Coding format	CBR in MPEG2 VBR in H.264	

<b>IPTV output</b>		
SPTS (Single Program Transport Stream)		4
Transmission protocols		UDP
SAP protocol		Yes
Interface		Gigabit Ethernet
Standard		1000Base-T
<b>General</b>		
Power supply voltage	V <sub>dc</sub>	24
Consumption	W	12 with four 1080i60 inputs in H.264
Operating temperature	°C	0 ... +45
Weight	g	525
Dimensions (Height x Width x Depth)	mm	125 x 27 x 210

## FLOW-OUT



### Universal output module (OUT)

The FLOW OUT module generates 4 or 6 RF carriers (depending on the selected mode) in DVB-T, DVB-C or J.83 Annex B format.

When OUT4 mode is selected, 4 RF carriers will be generated. Each carrier can convey up to 8 television or radio services (SPTS).

When OUT 6 mode is selected, 6 RF carriers will be generated, each one with 6 television or radio services (SPTS) as maximum.

Each Ikusi Flow headend may have several OUT modules, whose RF carriers are all combined and amplified by the FLOW BASE.

Model		FLOW-OUT
Ref.	4313	
<b>Input IPTV</b>		
Interface type	Gigabit Ethernet	
Standard	1000Base-T	
VLAN support	Yes	
<b>RF output</b>		
Number of outputs RF carriers	4 in OUT4 mode 6 in OUT6 mode	
Number of SPTS per RF carriers	8 in OUT4 mode 6 in OUT6 mode	
Total SPTS	32 in OUT4 mode 36 in OUT6 mode	
Standards supported	DVB-T EN 300 744 DVB-C EN 300 429 J.83 Annex B	
MER	dB	> 42
<b>General</b>		
Power supply voltage	V <sub>dc</sub>	24
Power consumption	W	21,5
Operating temperature	°C	0 ... +45
Weight	g	400
Dimensions (Height x Width x Depth)	mm	125 x 27 x 210

## FLOW-HUB



### Control module (HUB)

The FLOW HUB is the central connecting element of the Ixusi FLOW headend, with a dual routing and control function. It routes the ethernet traffic in the headend, both internally between modules, and between the modules and the outside world. It also performs centralized management and configuration of the entire Ixusi FLOW headend and exposes the web interface for configuration and control through dedicated Wi-Fi and wired ethernet connections.

It is also able to detect existing RF channels in a network to avoid using them in the headend out.

Model	FLOW-HUB	
Ref.	4314	
<b>Wi-Fi interface</b>		
Interface type	Wireless LAN	
Standard	Wi-Fi	
Radio band	GHz	2,4
Reception/Transmission mode	SISO	
TX power	dBm	-18
RX power	dBm	-96
Connection	SDIO controller	
Layer 3 addresses assignment	SoftAP / DHCP	
Security	WPA 2.0	
<b>External ethernet interface (control)</b>		
Number of interfaces	1	
Interface type	Gigabit Ethernet	
Standard	1000BASE-T	
VLAN support	IEEE VLAN	
<b>External ethernet Output (TV)</b>		
Number of interfaces	2	
Interface type	Gigabit Ethernet	
Standard	1000BASE-T	
VLAN support	IEEE VLAN	
<b>Backpanel ethernet interface</b>		
Number of interfaces	10	
Interface type	Gigabit Ethernet	
Standard	1000BASE-T	
VLAN support	IEEE VLAN	

<b>RF channels detection</b>		
<b>Terrestrial input</b>		
Supported standards	DVB-T/T2	
Frequency band	MHz	47 - 862
Input level in BASE	dBµV	> 45
<b>Cable input</b>		
Supported standards	DVB-C	
Frequency band	MHz	47 - 862
Input level in BASE	dBµV	> 50
<b>General</b>		
Power supply voltage	V <sub>dc</sub>	24
Power consumption	W	11
Remote mode	IP (Wi-Fi or BASE-T)	
Operating temperature	°C	0 ... +45
RF input connectors (backpanel)	F (x1)	
External ethernet frontal connector (control)	RJ-45 single	
External ethernet frontal connector (TV)	RJ-45 dual	
USB frontal connector (control)	Type-A socket	
Weight	g	454
Dimensions (Height x Width x Depth)	mm	125 x 27 x 210



# FLOW-BASE



## Backpanel (BASE)

The FLOW BASE incorporates a hybrid ethernet/RF backpanel unique to Ikusi FLOW, and manages the RF connectivity and energy use of all elements in the headend. The intelligent chassis controls all RF signals, power supply, and module hot-swap functions.

- An integrated multiswitch automatically routes satellite signals to the modules that require them.
- Universal F type connectors allow easy attachment to premises cabling.

A lightweight and robust design offers easy installation in a rack environment without the use of tools, and is also suitable for wall mount installations. Its modular structure allows it to be configured to meet almost any customer requirement.

Model		FLOW-BASE
Ref.		4312
<b>Terrestrial / Cable mode</b>		
Number of inputs		2
Frequency range	MHz	47 - 862
Input level	dB $\mu$ V	40 - 90 *
Impedance	$\Omega$	75
<b>Satellite mode</b>		
Number of inputs		8
Frequency range	MHz	950 - 2150
Input level	dB $\mu$ V	40 - 98
Impedance	$\Omega$	75
<b>Output</b>		
Number of outputs		1
Output frequency range	MHz	47 - 862
Output level adjustment	dB $\mu$ V	78 - 108
Output level stability	dB	$\pm$ 1
Spurious signal in band	dBc	< -60
Broadband noise ( $\Delta$ 5 MHz)	dBc	< -65
Impedance	$\Omega$	75
Output test	dB	-30
<b>General</b>		
Power supply voltage	VDC	24
Power consumption	W	10

\* In order to avoid issues on the satellite reception, the terrestrial signal level can't exceed 80 dB $\mu$ V. Use an external attenuator if necessary.

<b>Preamplifier powering</b>		
Inputs		TV1 and TV2
Adjustable voltage	Vdc	12/24
Max consumption per input	mA	100
<b>Universal / Quattro LNB powering</b>		
Inputs		SAT1 and SAT2
Voltage	Vdc	13V - 18V (selectable)
Tones insertion	kHz	0 - 22 (selectable)
Max consumption per input	mA	300
<b>Quattro LNB powering</b>		
Inputs		SAT3 to SAT8
Voltage	Vdc	12
Total max consumption	mA	600
Operating temperature	$^{\circ}$ C	0 ... +45
Mounting type		Wall-fixing / 19" Rack
Input/Output RF connectors		F (12)
Weight	kg	5
Dimensions (Height x Width x Depth)	mm	175 x 487.5 x 319

## FLOW-PSU



Power supply module (PSU)

The FLOW PSU delivers power to the headend efficiently and reliably. It has the capacity to power the most demanding headend configuration.

Model		FLOW-PSU
Ref.		4308
Type		Switched-mode
Mains power supply voltage (50-60 Hz)	VAC	100 - 240
Output voltage	V	24
Maximum power	W	180
Efficiency	%	90
Operating temperature	°C	0 ... +45
Weight	g	840
Dimensions (Height x Width x Depth)	mm	125 x 38 x 210

## FLOW-PSU REDUNDANT



Redundant power supply module (FLOW RPSU REDUNDANT).

The FLOW RPSU REDUNDANT provides the power required for the most exigent headend, ensuring uninterrupted power in the event of failure of one of the two available power supplies. The damaged power supply can be changed without disconnecting the headend from the power.

The FLOW RPSU REDUNDANT integrates two identical power supplies in a 1RU (rack unit) chassis.



Model		FLOW-RPSU REDUNDANT
Ref.		4320
Type		Switched-mode
Input voltage (50-60 Hz)	VAC	100 - 240
Output voltage	V	24
Maximum power	W	180
Efficiency	%	90
Power factor		0.96
Number of redundant power supplies		2
Operating temperature	°C	0 ... +45
Weight	kg	3.3
Dimensions	mm	485 x 242 x 56

## FLOW-COVER



Cover to the chassis (COVER)

The FLOW COVER includes 5 variable-speed fans to automatically maintain the modules installed in the headend within their designed temperature ranges.

A unique magnetic connection system allows the FLOW COVER to be attached or removed as needed, easily and without tools.

Model		FLOW-COVER
Ref.		4316
Power supply voltage	Vdc	24
Power consumption	W	11
Operating temperature	°C	0 ... +45
Number of fans		5
Weight	g	1000
Dimensions (Height x Width x Depth)	mm	175 x 487 x 30

# FLOW-STB-4K IP HDMI



### Set-Top Box (STB)

- **FLOW-STB-4K IP HDMI** is a cost-effective UHD IPTV/OTT set-top box intended for medium to large sized operators and telecommunication service providers. It has 1 GB RAM and 4 GB flash memory, which is good enough for playback and storage of the latest high-quality video formats, like HEVC video.

<b>Model</b>	<b>FLOW-STB-4K IP HDMI</b>	
<b>Ref.</b>	<b>4328</b>	
<b>Hardware</b>		
Chipset	Amlogic S905X2 18400 DMIPS	
Processor	ARM Cortex-A53 Quad Core CPU 1900 MHz	
RAM	GB	1
Flash memory	GB	4
<b>Software</b>		
Operating system	Linux 4.9	
MW/UI	Built-in Media Portal with WebKit-based IPTV-functionality HTTP 1.1, HTML 4.01 XHTML 1.0/1.1; DOM 1, 2, 3, CSS 1, 2, 3; XML 1.0, XSLT 1.0, XPath 1.0; SOAP 1.1; JavaScript ECMA-262, revision 5; Media JavaScript API; C layer SDK	
<b>Interfaces</b>		
Digital AV		HDMI 2.1
Ethernet	Mbps	100
USB		USB 2.0 x1 ; USB 3.0 x1
<b>Supported Audio-Video formats</b>		
Audio codecs	MPEG L1/L2/L3, AAC-LC, HE AAC V1/V2, APE, FLAC, Dolby Digital Plus™	
Audio formats	AC3, AAC, APE, FLAC, M4A, MP3, OGG, WAV	
Video modes	PAL, NTSC, 576p, 720p, 1080p, 1080i, 2160p	
Video codecs	H.265 (HEVC), H.264 (AVC), MPEG-1/2, MPEG-4, XviD, 3D video support	
Video containers	MTS, AVI, MPEG, MP4, MOV, MKV, M2TS, VOB	
Image formats	JPEG, PNG, BMP, RAW	
Subtitles	DVB, PGS, SRT, SSA/ASS, SUB, Teletext subs, WebVtt, Closed Caption	
Playlist formats	M3U, M3U8, PLS, CUE	
<b>General</b>		
Power Supply	DC	5V, 2A
Operating temperature	°C	1 ... 40
Dimensions (width x depth x height)	mm	120 x 78 x 21
Weight	g	110
Package contents	FLOW-STB-4K IP HDMI, user manual, HDMI cable, Power adapter, remote control, 2 AAA batteries, packaging	

# FLOW-DEVICE-MGR



## Management software (MGR)

The new functionality integrated into Ikusi Flow allows the STB-IP to be controlled in a centralized way.

Model	FLOW-DEVICE-MGR
Ref.	4317

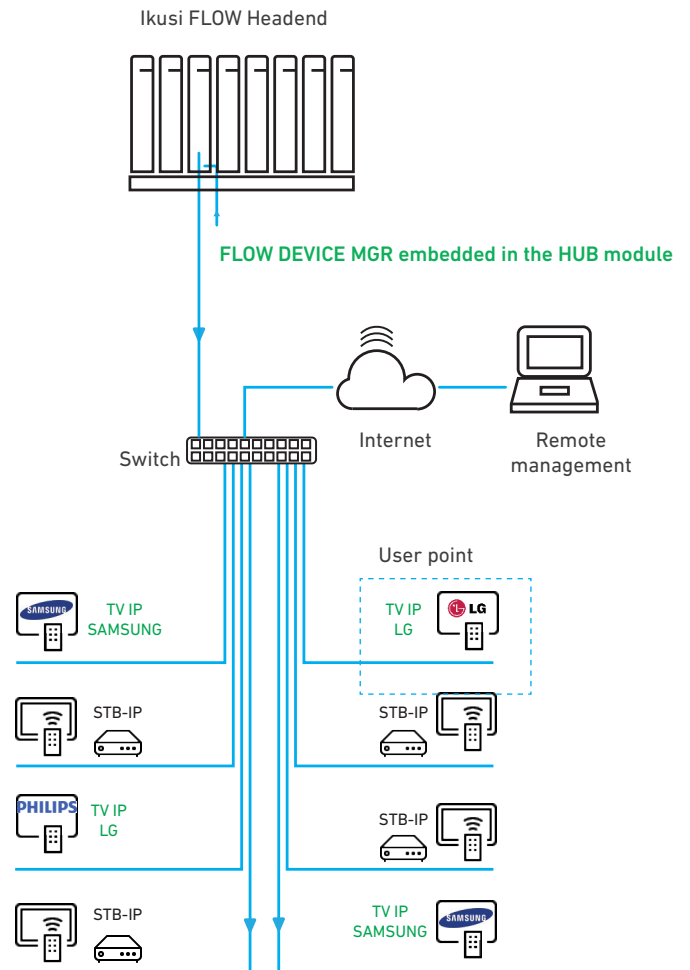
### Main features

- Integrated into the control module (HUB) of Ikusi Flow.
- It is activated through a license that never expires and does not need renewal.
- FLOW DEVICE MGR generates a list of multicast channels for the STB-IP from Ikusi flow
- This list is generated automatically in case of any change in the headend.
- When STB-IP is connected, the headend assigns automatically an IP address (DHCP protocol).
- In the same IP assignment response, the URL to which it should connect is indicated in order to download the updated channel list.
- The default channel that should be shown on the STB at startup, can be centrally fixed.

### Supported devices

- FLOW STB
- FLOW STB AC3+
- LG TV with HCAP HTML5 API
- Samsung TV with H.BROWSER API\*
- Philips TV with JAPIT API

\* Remote switch off or switch on of Samsung TVs is not supported





**High density**  
Small footprint per channel  
Capable of processing more than 200 SD services or 120 HD services



**Multistandard**  
Ikusi Flow adapts to your present and to your future



**Content driven**  
Manages content and not technical parameters  
User friendly interface which minimizes configuration time



No need for additional licenses



**One platform for all your TV needs**  
Designed to convert any TV input into any TV output standard



**Double secure**  
Premium content always protected by including DRM protection



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