



ARK-X

SERIES

UNIVERSAL DRIVER

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ARK-X	SERIES
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ARK-X UNIVERSAL DRIVER

New Multiple Configuration Flexible Hardware Platform

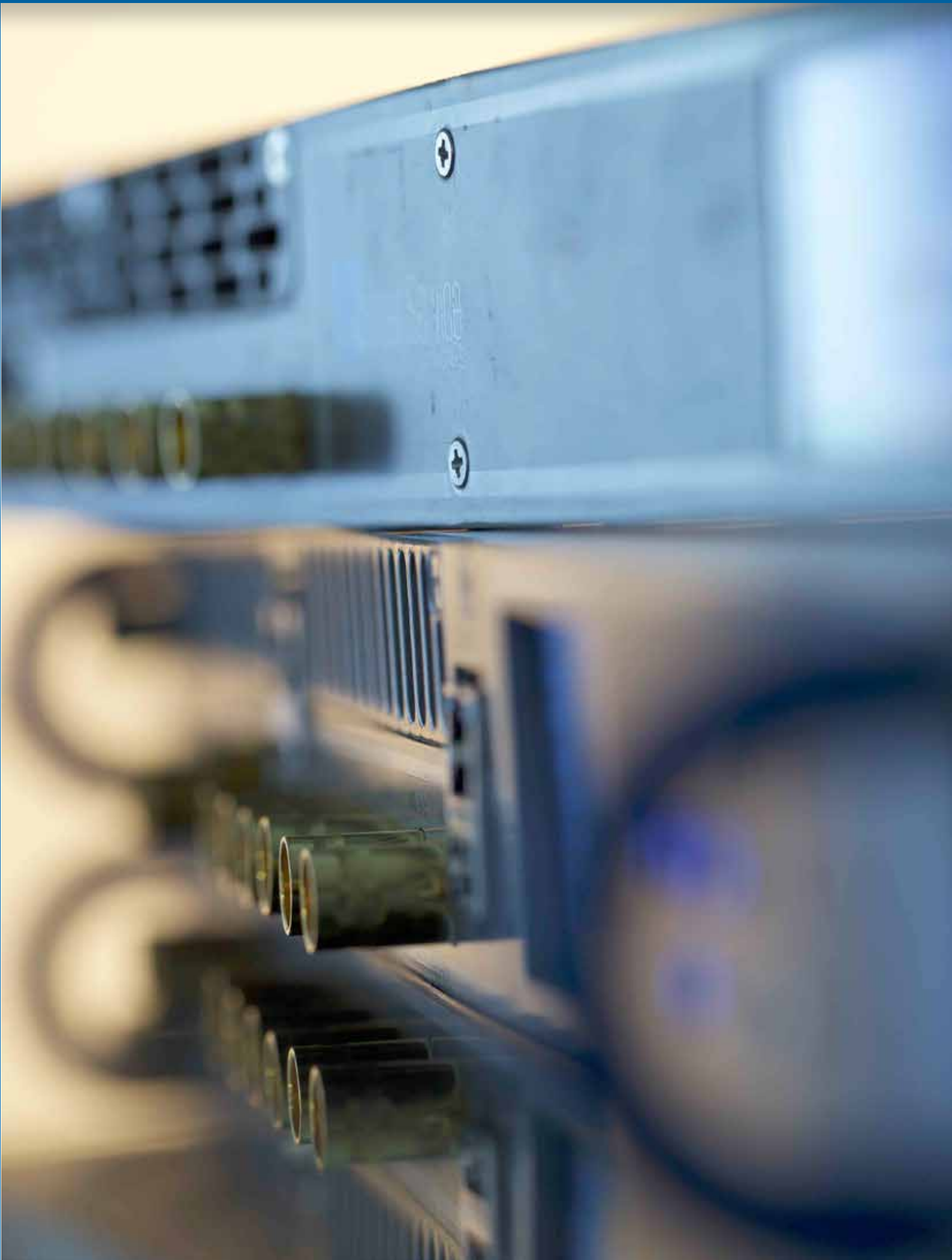
Multiple Front-End Boards

Flexible Software configuration and fully frequency agile

Transmitter, Gap Filler, Transposer, Re-Transmitter

Dual cast Analog + Digital Multi standard

Widely improved performances compared to ARK6



ARK-X

Features

Transmitter, Gap Filler, Transposer, Re-Transmitter Dual cast Analog + Digital Multi standard

ARK-X UNIVERSAL DRIVER can be customised in 5 different configurations.



The New ARK-X UNIVERSAL DRIVER can be configured with just software selection and implements **DVB-T/T2, ATSC, ISDB-T, DTMB, ATV modulations.**

it can be used as a **Transmitter, Gap Filler, Heterodyne Transposer, Regenerative Transmitter, Dual Cast Analog + Digital Multistandard**

ARK-X UNIVERSAL DRIVER allows the **selection of operation modes and total remote control:**

- remotely, using a dry contact;
- via TCP/IP, using a LAN connection, web graphic interface and a standard web browser
- via built-in SNMP;
- via a dedicated command inserted into the transport stream.

ARK-X UNIVERSAL DRIVER optimizes the investments of both international broadcasters, reducing the transmitter types and national broadcasters, thanks to its versatility in operation modes and configuration.

ARK-X UNIVERSAL DRIVER is future-proof and guarantees a perfect upgrade path for new modulation schemes that will be delivered.

The previous series ARK-6 can be upgraded to the new features.

New improved features compared to the previous series:

- Color large-sized display with important monitoring measures: spectrum, constellation, etc
- Upgrade through USB
- Upgrade through OTA
- Licensing upgrade
- T2 + T2 lite simultaneous mode
- ISDB-Tb De-Compressor Embedded
- Property Crest Factor optimization algorithm (PAPR equivalent)
- Powerful pre-corrections to improve efficiency
- GPS Glonass, Galileo, BeiDou integrated
- 2 input IP redundant with seamless switch (GBE Gigabit Ethernet)
- Pluggable Front End
- New user-friendly web interface
- Backward full compatibility with all ARK 6 based TX
- Energy-saving system (automatic power reduction scheduler)
- Anti-thief system
- ATSC 3.0 ready

Main Common Features

- ASI MPEG-2 TS seamless input.
- MPEG-2 TS over IP TS 102 034 V1.5.2 (2014-04).
- MPEG-2 TS encapsulated in RTP (Real-time Transport Protocol according to RFC 3550 TS 102 034, clause 7.1.1. FEC management SMPTE 2022-1 (Pro MPEG CoP 3).
- IGMPv2/v3 support.
- MFN and SFN operations.
- Internal GPS / Glonass receiver.
- Internal clock: Oven Controlled OCXO oscillator (10 MHz and 1 PPS).
- Output clock: 1 PPS and 10 MHz.
- Bit rate adaptation plus PCR re-stamping.
- RF main and monitoring outputs (Spectrum, MER, Constellation).
- Test Modes:
 - CW insertion
 - Null packet insertion
- Linear and non-linear Adaptive digital pre-correction circuits, when operated as transmitter.
- Linear and non-linear digital pre-correction circuits, when operated as repeater.
- Embedded HTTP server
- Management: Embedded SNMP v3 server - Embedded Web server.
- GbE Ports: GbE 1: 10/100/1000 Base T Management port.
- Redundancy: Input autoswitch algorithm supported.
- Security: Authentication for GUI access supported.

Main Features DVB-T/T2 Version

- Signal modulation compliant with:
 - ETSI EN 300 744 v16.1
 - ETSI EN-302 755 (DVB-T2) standard 1.4.1
 - ETSI TS 101 191 v1.4.1 (SFN)
- T2-MI compliant with ETSI EN-102 773 V1.4.1 (T2-MI) standard
- T2-MI input over IP or ASI
- ETR290 and T2-MI alarms
- Full Single-PLP compatibility (including MISO and PAPR reduction)
- Capable to transmit MPLP, Up to 16 PLP
- Bit rate adaptation plus PCR restamping in S-PLP
- Modulated DVB-T2 RF signal input (VHF/UHF) – when operating as repeater.

Main Features ISDB-Tb Version

- Signal modulation compliant with:
 - ABNT NBR 15601 & ABNT NBR 15608-1 (ISDB-Tb)
- BTS Input over ASI and over IP
- Modulated ISDB-Tb RF signal Input in rebroadcasting mode
- Emergency flag management (detection and insertion)
- Test Modes:
 - CW insertion
 - Null packet insertion, separated for each Layer
- Remux capabilities (optional):
 - BTS generation from input TS/BTS
 - Up to 2 input sources to build each Transmission Layer
 - PID filtering and remapping
 - Internal Carousel Editing, Store and Playing
 - IIP (including SFN information) insertion
 - BTS Compressor /De-Compressor Embedded

Main Features ATSC Version

- Compliant to ATSC A/53 and A/65 standard
- Compliant to A/153 ATSC-MH standard
- SMPTE310, RF, SSI Input:
 - Support 4 ASI input
 - Support 4 SSI input
 - Support 2 ASI output
 - Support 2 MPEG over IP input/output channels on GBE port 2-3
- Enable/Disable of cable equalizer bypass on input ASI ports
- One RF input to operate in rebroadcasting mode.
- Support the Editing of Virtual Channel Table in Translator mode
- Supports a measure board for the monitoring of the modulated signal: SNR, BER, SER e LOCK
- Amber switching implemented as a search for valid input when the priority one is not locked.
- Test modes: CW, Force Null Packets and PRBS
- Redundancy: Input auto-switch algorithm supported
- Option A/110b compliant for SFN transmission
- Option: A/110b compliant for STL with ATSC-MH transmission





ARK-X

Configurations



1. Transmitter Only Version

Main Common Features

- ASI MPEG-2 TS seamless input.
- MPEG-2 TS over IP TS 102 034 V1.5.2 (2014-04) seamless Input.
- MPEG-2 TS encapsulated in RTP (Real-time Transport Protocol according to RFC 3550 TS 102 034, clause 7.1.1. FEC management SMPTE 2022-1 (Pro MPEG CoP 3).
- IGMPv2/v3 support.
- MFN and SFN operations.
- Internal GPS / Glonass receiver.
- Internal clock: Oven Controlled OCXO oscillator (10 MHz and 1 PPS).
- Output clock: 1 PPS and 10 MHz.
- Bit rate adaptation plus PCR re-stamping.
- RF main and monitoring outputs (Spectrum, MER, Constellation).
- Test Modes:
 - CW insertion
 - Null packet insertion
- Linear and non-linear Adaptive digital pre-correction circuits, when operated as transmitter.
- Linear and non-linear digital pre-correction circuits, when operated as repeater.
- Embedded HTTP server
- Management: Embedded SNMP v3 server - Embedded Web server.
- GbE Ports: GbE 1: 10/100/1000 Base T Management port.
- Redundancy: Input autoswitch algorithm supported.
- Security: Authentication for GUI access supported.

2. Transmitter with Satellite Receiver

DVB-S2 Input Configuration - Satellite Input Specifications

- N. SAT Inputs: 1
- Connector type: F Female
- Input impedance: 75 ohm
- Input level: -81 dBm up to -17 dBm
- Supported symbol rates: 1 to 45 Msymb/s (DVB-S) / 1 to 67.5 (DVB-S2 depending on modulation scheme).
- DiSEqC: 2.0
- TS interface: broadcast reception and ISI filtering supported.
- Supported standards: ETSI EN 302 307 V1.1.1 (DVB-S2)

3. Transmitter with Satellite Receiver with DEC

DVB-S2 Input and CAM Configuration - Satellite and CAM Specifications

- N. SAT Inputs: 1
- Connector type: F Female
- Input impedance: 75 ohm
- Input level: -81 dBm up to -17 dBm
- Supported symbol rates: 1 to 45 Msymb/s (DVB-S) / 1 to 67.5 DVB-S2 depending on modulation scheme).
- DiSEqC: 2.0
- TS interface: broadcast reception and ISI filtering supported.
- Common Interface:
- N° card slots: 1 - Type: PCMCIA
- Supported standards: ETSI EN 302 307 V1.1.1 (DVB-S2)

4. Transposer and Re-Transmitter (Regenerative)

Transposer and Re-Transmitter (Regenerative) Configuration - Terrestrial RF IN Specifications

- N. RF Inputs: 1
- Connector type: N Female
- Input impedance: 50 ohm
- Input level: -81 dBm up to -17 dBm
- Supported standards: DVB-T/H, DVB-T2, ATSC, ISDB-T

Front End Option

- Digitizer with Analog A/V Inputs Configuration
- SAT without CAM receiver
- SAT with CAM receiver
- T2/ ATSC/ ISDB- Tb Receiver for Transposer, Re-Transmitter, Gap Filler

5. Transmitter with Analog A/V Inputs

Digitizer with Analog A/V Inputs

- Inputs: 4 SDI, 2 CVBS and 2 L/R
- Supported Composite Standards: NTSC CVBS, PAL (B, D, G, H, I, M, N) CVBS
- Supported SDI Standard: SMPTE 259M-C – Component 4:2:2, 270Mb/s for 525 and 625 lines, 13.5 MHz sampling, 4x3 and 16x9 aspect ratios.
- Outputs: 1 RF, 1 RF Monitor - 2 SDI for inputs bypass
- Test modes: CW, CW AV, Mute Audio Carrier, Mute Audio, Audio Test Tone, Video In, SMPTE Bars, Horizontal Bars, Red Field, ITS0, ITS1, ITS2, ITS3, ITS4.
- A/V Inputs Specifications:
 - Analog Video input:
 - N°Inputs: 2 CVBS
 - Connector type: BNC
 - Input impedance: 75 ohm
 - Supported video standards: PAL B,D,G,H,I,M,N, NTSC
 - Analog Audio input
 - N°Inputs: 2 L/R couples
 - Connector type: XLR3 (Cannon f)
 - Input impedance: 600 Ohm balanced
 - Input Level: +6dBm +/- 6 dB

ARK-X Series

Models	Output Band	Working Class	Dimensions	Output Connector	Cooling	DVB W rms	ISDB-T W rms	DTMB W rms	ATSC W rms	ATV ps	MER dB	Shoulders (@ Fo 3.5 MHz ATSC) or (@ Fo 4.3 MHz DVB) or (@ Fo 3.3 MHz ISDB-T)
ARK-X 000/U	UHF	A	1 RU	N	Air	1mw	1mw	1mW	1mw	1mW	> 40	-39
ARK-X 000/V	VHF (I)	A	1 RU	N	Air	1mw	1mw	1mW	1mw	1mW	> 40	-39
ARK-X 000/I	VHF (III)	A	1 RU	N	Air	1mw	1mw	1mW	1mw	1mW	> 40	-39
ARK-X 050/U	UHF	A	1 RU	N	Air	5	5	5	6	10	> 40	-39
ARK-X 050/V	VHF (I)	A	1 RU	N	Air	5	5	5	6	10	> 40	-39
ARK-X 050/I	VHF (III)	A	1 RU	N	Air	5	5	5	6	10	> 40	-39

Specifications and characteristics are subject to change without notice.

ARK-X

Configurations

Standard Front-End	Standard					
	ATV	DVB-T/H	DVB-T2	ISDBT	ATSC	DTMB
None	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter	Transmitter
Digitalizer A/V Input option	Transmitter with A/V analog inputs	Transmitter with A/V analog inputs (*)	Transmitter with A/V analog inputs (*)	Transmitter with A/V analog inputs (*)	Transmitter with A/V analog inputs (*)	Transmitter with A/V analog inputs (*)
DVB-S/S2	✘	Transmitter with DVB-S/S2 RF input	Transmitter with DVB-S/S2 RF input	Transmitter with DVB-S/S2 RF input	Transmitter with DVB-S/S2 RF input	Transmitter with DVB-S/S2 RF input
DVB-S/S2 + CAM	✘	Transmitter with DVB-S/S2 RF input (with CAM)	Transmitter with DVB-S/S2 RF input (with CAM)	Transmitter with DVB-S/S2 RF input (with CAM)	Transmitter with DVB-S/S2 RF input (with CAM)	Transmitter with DVB-S/S2 RF input (with CAM)
DVB-T/T2	✘	Re-Transmitter/ Transposer / GapFiller Echo Canceller	Re-Transmitter/ Transposer / GapFiller Echo Canceller	✘	✘	✘
ISDBT	✘	✘	✘	Re-Transmitter/ Transposer / GapFiller Echo Canceller	✘	✘
ATSC	✘	✘	✘	✘	Re-Transmitter/ Transposer / GapFiller Echo Canceller	✘
DTMB	✘	✘	✘	✘	✘	Transposer / GapFiller Echo Canceller

(*) In case of Dual cast ATV+DTV operation mode

ARK-X Configurations:

Automatic
Digital/AnalogTransposer
Translator
Gap FillerRegenerative
Transmitter

Transmitter

SAT RX
with CAM

SAT RX

AV > SDI > MOD > RF

RF > IF > RF

RF > ASI > MOD > RF

IP + ASI > MOD > RF

SAT > TS > MOD > RF

SAT > TS > MOD > RF



I/O Specifications		
	Front	
RF Front-End input	Please refer to various configurations for a complete description of all the available front-end modules	
GPS RF Input	N° Inputs: 1 Sensitivity: -165dBm Connectors: TNC/SMA	
RF Output Monitor	N° Inputs: 1 Level: -40dB Connectors: SMA	
Gigabit Ethernet	N° Connectors: 3 Connector: RJ45 Supported standards: IEEE 802.3	
ASI Output Monitor	Connectors used for monitoring purposes: N° outputs: 2 Connector type: BNC Input impedance: 75 ohm Input voltage: 800 mVpp (500 to 1200mVpp) Supported standards: CEI EN 50083-9	
ASI/BTS/SSI/SDI Input	Connectors used as ASI, SMPTE-310 or SDI: N° Inputs: 4 Connector type: BNC Input impedance: 75 ohm Input voltage: 800 mVpp (500 to 1200mVpp)	Supported standards: CEI EN 50083-9 SMPTE 310 SMPTE 259M
	Back	
Opto TLC - DB15	N° Inputs: 4 Connectors: SUB-D 15p Female Max current: -5 mA	
Relays TLS - DB25	N° Outputs: 4 Connectors: SUB-D 25p Female Max voltage: 125VAC / 60VDC @ 0,3A – 30VDC @ 1A	
DB9 – RS232	N° inputs: 1 Connectors: SUB-D 9p Female Speed: up to 230400 bps 8-bit data No parity bits 1 stop bit	
DB9 – RS485 CAM BUS	N° inputs: 1 Connectors: SUB-D 9p Female	
10 MHz Input	N° Inputs: 1 Connector: BNC Input impedance: 50 ohm Input voltage: 2 Vpp	
1PPS Input	N° Inputs: 1 Connector: BNC Input impedance: 50 ohm Input voltage: TTL (min 1,7V) Pulse width: 100us	
10 MHz Output	N° Outputs: 1 Connector: SMB Output impedance: 50 ohm Output voltage: TTL (min 2,4V) Output voltage: 2 Vpp	
1PPS Output	N° Outputs: 1 Connector: SMB Z load: 50 ohm Output voltage: TTL (min 2,4V) Pulse width: 100us	
RF Measure board inputs Linear /Non linear precorrections	N° Inputs: 2 Connector type: SMA Input impedance: 50 ohm Input level: -40 dBm up to -8.5 dBm	Supported standards: DVB-T/T2 ISDB-T ATSC
RF Output	N° Outputs: 1 Connector: N	





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Configurations

ARK-X Series - DTV Specifications

DTV Specifications		
Standards		DVB-T, DVB-T2, DVB-H, ISDB-T, ISDB-TB, ATSC, ATSC Mobile DTV, DTMB
Channel bandwidth	DVB-T, DVB-H	5/6/7/8 MHz
	DVB-T2	1.7/5/6/7/8 MHz
	ISDB-T, ISDB-TB	6 MHz
	ATSC	6 MHz
	DTMB	6/8 MHz
Inputs	DVB-T, DVB-H	4 × ASI (HP/LP), 75 BNC,
		2 × RJ-45
	DVB-T2	4 × ASI (HP/LP), 75 BNC,
		2 × RJ-45
	ISDB-T, ISDB-TB	4 × BTS, 75 BNC,
		2 × RJ-45
	ATSC	2 × SMPTE310M or 2 × ASI, 75 BNC
		2 × RJ-45
	DTMB	4 × ASI (HP/LP), 75 BNC,
		2 × RJ-45
Digital audio broadcasting/Mobile TV in the VHF range		
Standards		DAB, DAB+, T-DMB (on request)
Channel bandwidth		1.5 MHz
Inputs		2 × ETI, 75 BNC/high impedance
		2 × RJ-45

Specifications may be subject to change without notice

ARK-X Series - ATV Specifications

Analog TV Specifications		
		ITU-R BT 470.7
Analog TV	standards	B/G, D/K, M, M1, N, I, I1
	Color transmission	PAL, NTSC, SECAM (not available)
	Sound transmission	IRT dual-sound coding, FM single sound and NICAM728 (13 dB/20 dB), FM single sound(-10 dB)
	Inputs	1 × video (75 BNC), 2 × audio (bantam)
Video	Video input	0,5 to 1,5 V
	Regulation of output power	+/- 3%
	Variation of output power	+/- 2%
	Differential gain	+/- 3%
	Differential phase	+/- 3°
	Low frequency linearity	8%
	ICPM	+/- 2°
	S/N	>60 dB
	K Factor	2%
	20 T	3%
	Spurious and Harmonics radiation	>60 dB
	In Channel IMD	> 58 dB
Sound	Modulation capability	+/- 120 KHz
	Monoaural input	settable 0 to 12 dBm
	Pre-Emphasys	75 / 50 S
	Frequency response	+/- 0,5 dB from 30 to 15000 Hz
	Harmonic distorsion	0,5% from 30 to 15000 Hz
	FM Noise	60 dB with de-emphasis
	AM Noise	50 dB from 30 to 15000 Hz
	Synchronous AM noise (parasitic AM)	> 50 dB
	IRT Sound	available on request
	NICAM Sound	available on request

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