Winbox Technologies EVO1-L TurnKey

Future TV OEM Reference Device
Based on Microsoft Embedded Windows CE
Full-Size Form Factor

Product Data Sheet

The world's richest Windows CE Set-Top-Box
Suitable for Hybrid TV Solutions, Premium PVR/DVRs, Twin-Tuner-Set-Top-Boxes, internet streaming, IPTV, VOD, internet on TV, DMA and Home Networking Business Cases

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Introduction

About EVO1-L

EVO1-L is the perfect base for more sophisticated device categories like Hybrid (DVB plus broadband IP) Set-Top-Boxes, Hybrid-PVRs / DVRs and Home Media Servers and features both a comprehensive dual-tuner DVB part including DVB CA/CI security and also a full-featured IP part supporting DRM, HTML, uPnP and many more functionalities that make the EVO1-L the richest Windows CE Future TV device currently available.

Winbox Technologies TurnKeys

EVO1-L is a OEM TurnKey product from Winbox Technologies. A TurnKey product consist out of hardware, software and OEM production services and enables our customers to get a mass-market ready product with the shortest possible time-to-market and near to zero upfront investments / NREs. The line-up of Winbox Technologies TurnKeys currently includes:

EVO1-XS	World's smallest Windows CE based IPTV / VOD / DMA device with integrated WLAN, Windows Media Codecs, DRM, Media Connect
EVO1-S	Compact Windows CE based IPTV / VOD / DMA device with USB 2.0 support, Windows Media Codecs, DRM, Media Connect
EVO1-M	Mid-size Windows CE based DVB/IP Hybrid Zapper device with USB 2.0 support, Windows Media Codecs, DRM, Media Connect
EVO1-L	Full-size Windows CE based DVB/IP Hybrid PVR/DVR with integrated harddrive and DVB-CA/CI security, Windows Media Codecs, DRM, Media Connect

Besides TurnKey products (EVO-Series), Winbox Technologies also offers all technology modules as license products to allow in-house developments. Further more, Winbox Technologies offers Professional Services for customization, e.g. of the user-interface or I/O interfaces and the complete OEM Product Services handling.

Further information on all our products is available from our Sales Team.

About Winbox Technologies

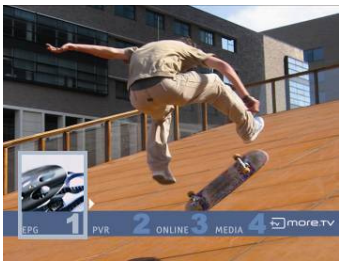
Winbox Technologies (formerly known as TeleGent) is the leading provider of OEM technology solutions for Windows Embedded based TV-centric consumer electronics. IPTV receivers, video on demand systems (VoD), harddisk videorecorders (PVR / DVR), connected TV-sets and set-top-boxes can be realized with less development investments and time by using Winbox Technologies' products. Customers can either source so called "TurnKeys" which contain a complete OEM solution including hardware, software and production services or license specific technology modules for in-house development. Partners and customers include Microsoft, NXP, ASUS, Sling Media, Medion and ProSiebenSat.1.

EVO1-L use cases

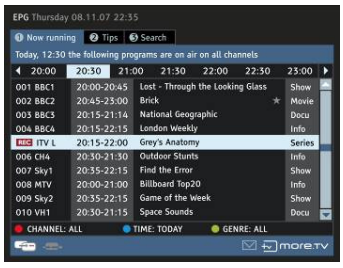
Seamless integration of Free-TV, Pay-TV, IPTV, Web-TV, VOD

One of the most interesting use cases is the completely seamless integration of all possible TV sources currently available: EVO1 L supports (depending on configuration) multiple DVB-S / T or C tuners for digital TV reception. With the built-in conditional access support (e.g. Conax) and common interface modules, EVO1 L can be not just used for Free-To-Air (FTA) television but also for all kinds of operator driven and Pay-TV scenarios.

On top of the standard broadcast TV sources, EVO1-L can handle all kinds of IP based sources such as multicast IPTV streaming in different codecs, web-TV, VOD scenarios using standard servers with Windows Media codecs and Windows Media DRM or the integration with proprietary VOD systems like Seachange. To keep all that content and functionality highly usable for the consumer, EVO1 L supports seamless channel lists and EPG views that can display DVB-T based channels next to IP based sources.



Service Menu overlay on TV picture



Premium EPG content and functionality.

IP VOD integration

Home Networking

Thanks to Windows Media Connect technology, devices based on the EVO1 Platform integrate with Windows PCs automatically. The uPnP based detection eliminates configuration almost completely because a PC with a Microsoft operating system (XP SP2 or later, Vista, Home Server or Windows Media Player 11) automatically detects EVO1 Platform devices on WLAN or cable networks.

Shared photos, music files or videos can then be easily accessed with the EVO1-L remote on a TV in a living room or any other location. The NXP Nexperia processor guarantees the crystal-clear, high-performance display of media content. Thanks to its compact dimensions, the EVO1-L can be discretely located behind your television or display. A separate infrared transmitter guarantees reception of the signals from the remote control.

Video on Demand

Drawing on full standard-compliant HTML support, Windows Media and secure DRM, the EVO1 platform enables our OEM customers to offer premium content business models. In addition to their own media content, consumers can seamlessly access these offers at the click of a button – at any time. This is ensured by the integration of the market-leading Windows Media DRM rights management system for premium content. All EVO1 Platform-based products, which use the

Windows CE operating system and NXP Nexperia series processors exclusively, are outstanding playback stations for high-quality video and TV content therefore.

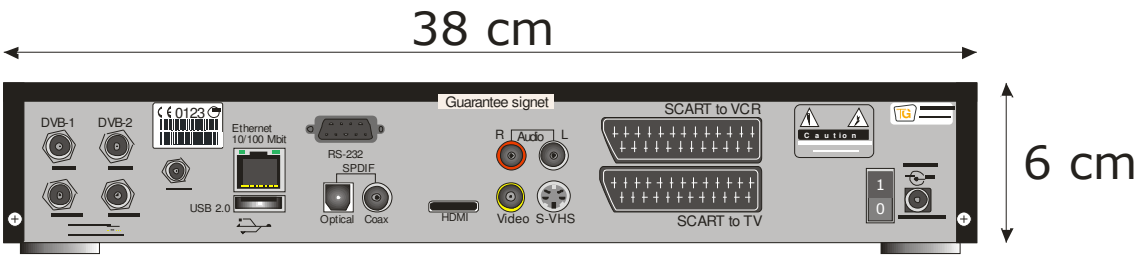
Value-Added Services

EVO1 series is a perfect launching pad for further services: both, HTML / webbased applications (like VOD and E-Commerce stores) and native applications can be easily realized. Existing examples from Winbox Technologies customers include rich "TiVo"-style premium EPGs with full series assistants and remote programming, self-learning program assistants based on artificial intelligence or Windows Live Messenger Integration - to just to name few.

To discuss individual service integration, please contact our sales department.

Physical Design

Mechanical Design and Dimension (380 x 253 x 60 mm)



Reference Remote Control

Other models and designs available on request.

Customization

As with all EVO1 models, also EVO1-L was build with the goal in mind to allow Winbox Technologies to customize their OEM solutions in many aspects like User Interface, custom service integration or individual housings. Winbox Technologies provides experienced and dedicated resources in its professional services unit that have already helped a lot of customers to get to exactly their EVO1 based product.

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Technical Data

Hardware Specifications

Item	Product Feature	Description
1.1	**Core System**	
1.1.1	CPU Speed	280 MHz
1.1.2	Media Core Speed	270 MHz
1.1.3	Supported TV System	PAL / NTSC
1.1.4	Memory Size	256 MB
1.1.5	Memory Type	DDR RAM 400 MHz
1.1.6	NAND Flash	64 MB
1.1.7	LAN Ethernet	RJ45 10/100Mbps
1.1.8	WLAN by Mini PCI (option) / TG220W	IEEE 802.11 b/g/n compliant
1.1.9	2 xUSB	2.0 compliant
1.1.10	IR	RC6 PHILIPS
1.1.11	DVB (RF Interface) option	DVB-T single/dual NIM // DVB-C single/dual NIM DVB-S on request
1.1.12	Conditional Access Slot	Transport stream from first tuner
1.1.13	SMART Card	ISO-7816 (T0/T1 Protocol)
1.2	**Power**	
1.2.1	Power Input	12V DC
1.2.2	Power Consumption	Max 50 W
1.2.3	Power Type	External switch mode power adaptor (35W)
1.2.4	Isolation Resistance	> 5M ohm at 500Vdc @ 3A-261DA12-050
1.2.5	Isolation Voltage	2.2kVdc , 1.5kVac @ 3A-261DA12-050
1.3	**LAN Interface**	
1.3.1	One Fast Ethernet Port	10/100Mbps
1.3.2	Standard Compliance	IEEE 802.3 compliant
1.4	**A/V Interface**	
1.4.1	1 x Stereo Audio L/R Output	RCA output
1.4.2	1 x SPDIF out	optical
1.4.3	1 x Composite Video Output	PAL / NTSC CVBS
1.4.4	1 x S-Video Output	PAL / NTSC S-Video
1.4.5	1 x SCART to TV 1 x SCART loop thru	PAL composite / RGB / S-Video
1.4.6	1 x HDMI digital out	With HDCP
1.5	**Serial ports(Optional)**	
1.5.1	Serial Port	RS232 (9 Sub-D)
1.5.2	Serial Port	RS232 internal for debugging (reduced)
1.6	**RF Interface**	
1.6.1	One or two RF IN ports	DVB-T or DVB-C (DVB-S customized option)
1.6.2	One or two pass through RF OUT	DVB-T or DVB-C (DVB-S customized option)
1.6.3	Standard compliant with	DVB-T: ETS 300 744 DVB-C: ETS 300 429

Software Feature Sets

Item	Product Feature	
2.1	**Operating System**	
2.1.1	Windows CE 5.0	
2.2	**OS Default Features**	
2.2.1	Internet Explorer 6.0 with TV Style Navigation extension	
2.2.2	Microsoft Media Player	
2.2.3	Microsoft DRM 10 (Janus) (based on contract)	
2.2.4	Connectivity (LAN/WLAN) Support	
2.2.5	Streaming Support (MMS)	
2.3	**Additional Applications (optional / available on customer request)**	
2.3.1	Update mechanism	
2.3.2	First time Installation wizard	
2.3.3	TurnKey Application Set for Digital-TV-Set-Top-Box	
2.3.4	TurnKey Application Set for Digital-TV PVR / DVR	
2.3.5	TurnKey Application Set for Internet TV / VOD / HTML	
2.3.6	TurnKey Application Set for DMA / Windows Media Connect	
2.4	**Video Decoder***	
2.4.1	MPEG2	Up to 1080i
2.4.2	MPEG4 ISO/IEC 14496-2 Simple profile @L1-L5	Up to 4 Mbps
2.4.3	MPEG4 ISO/IEC 14496-2 Advanced Simple profile @L1-L5	Up to 4 Mbps
2.4.4	MPEG4 Part 10 /AVC Main Profile H.264 @L1	Up to 2,5 Mbps
2.4.5	Windows Media Video WMV 7-10 Standard	ASF Media Streaming Format Main Profile @ ML up to 4Mbps 720 x 480
2.4.6	Resolution	Maximum 720 X 576
2.5	**Audio Decoder***	
2.5.1	MPEG-1 Audio	ISO/IEC 11172-3 Layer III (MP3)
2.5.2	MPEG-1 Audio	ISO/IEC 14496-3 AAC
2.5.3	Dolby AC3 + Dolby Digital	
2.5.4	Windows Media Audio WMA 7-10	Standard

* further codecs are also available and can be integrated on request

Safety/ EMC Requirements

Item	Product Feature	Description
3.1	**Safety Requirements**	
3.1.1	CCC	73/23/EEC 93/68/EEC EN60065:2002
3.2	**EMC Certification**	
3.2.1	CE	EN 55022:1998+A1:2000+A2:2003 Class B EN 55024: 1998+A1:2001+A2:2003

Item	Product Feature	Description
		EN 61000-3-2:2000 EN61000-3-3:1995+A1:2001
3.3	**Environmental Specifications**	
3.3.1	Operating Temperature	0C ~ 40 C
3.3.2	Storage Temperature	-10C ~ 70C
3.3.3	Operating Humidity Range	20% ~ 80%

Performance/National Test Requirements

Item	Product Feature	Description
4.1	**Demodulating**	
4.1.1	Frequent Range	DVB-T: 45MHz ~ 860MHx DVB-C : 47MHz ~ 866MHz
4.1.2	QAM Mode	DVB-T: QPSK,16QAM,64QAM DVB-C : 16QAM , 64QAM,128QAM,256QAM
4.1.3	Signal Strength	DVB-T : maximum receiver signal input level : -20dBm minimun receiver signal input level : -92dBm @ QPSK , 1/2 code rate DVB-C: input level 47dBuV ~ 70dBuV @ 75 ohm
4.1.4	Symbol Rate	DVB-C: 4M symbols/s ~ 7.2M symbols/s
4.1.5	RF Input	DVB-T : IEC female IEC 60169-2.connector , input impedance 75 ohm DVB-C : IEC female IEC 60169-2 connector , input impedance 75 ohm
4.1.6	RF Output	DVB-T : IEC male IEC 60169 connector DVB-C : IEC male IEC 60169 connector
4.1.7	Channel Bandwidth	DVB-T : 8MHz DVB-C : 8MHz
4.1.8	RS Encoding	DVB-T : code rate 1/2 , 2/3, 3/4 , 5/6 , 7/8
4.1.9	Interleaving Depth	DVB-T : inner interleaving , symbol interleaving DVB-C : convolution interleaving
4.2	**PAL output**	
4.2.1	Output Level	White luminance amplitude : 630mV ~ 770 mV Yellow luminance amplitude :419mV ~ 511mV Cyan luminance amplitude : 331mV ~ 405mV Green luminance amplitude : 277mV ~ 239mV Magenta luminance amplitude : 195mV ~ 239mV Red luminance amplitude : 141mV ~ 173mV Blue luminance amplitude : 54mV ~ 66mV Black luminance amplitude : -5mV ~ 5 mV
4.2.2	Synchronization Level	270mV ~ 330mV
4.2.3	Outband rejection Ratio	NA
4.2.4	Frequency Response	< 2MHz : +/- 0.5 dB 4MHz ,~ 4.8MHz : +/- 1 dB 5.8MHz : -8dB ~ 0dB
4.2.5	Differential Gain	< 10%p-p
4.2.6	Differential Phase	<10 degree p-p

Item	Product Feature	Description
4.2.7	SNR (Weight)	< -50dB
4.2.8	Luminance Nonlinearity	< 5% p-p
4.2.9	Chroma/Luminance Gain Inequality	-5% ~ 5%
4.2.10	Chroma/Luminance Delay Inequality	-30ns ~ 30ns
4.2.11	K-factor	-5% ~ 5%
4.3	**L/R audio output**	
4.3.1	Output Level	1.8Vrms ~ 2.2Vrms
4.3.2	Distortion Factor	THD < 0.1%
4.3.3	Frequency Response	-2dB ~ 2dB for 40Hz ~ 20KHz
4.3.4	SNR (Weight)	> 65dB
4.3.5	Cross Talk	<-70dB
4.3.6	Phase Separation -> difference	Phase difference < 10 degree
4.3.7	Level Difference	<0.2dB

Accessories

Item	Product Feature	Description
5.1	**Hardware**	
5.1.1	RF Loop Cable	10 cm
5.1.2	SCART Cable	Separate packed 1,5 meter (black)
5.1.3	Ethernet Cable	Separate packed 5 meter (grey)
5.1.4	Remote Control	PHILIPS rondo RC152 (grey)
5.1.5	2 x AAA 1,5 Volt Battery	Registered for the Germany GRS
5.1.6	EVO1 3.0 STB	Separate packed (black)
5.2	**Packing / Paper**	
5.2.1	Full color retail carton	OEM
5.2.2	User Manual	German / English (other languages available on request)
5.2.3	Inlet	

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