

**EXTRA-TERRESTRIAL**  
**DIGIT**  
Company & product lines







ADVANCED  
BROADCASTING  
ELECTRONICS

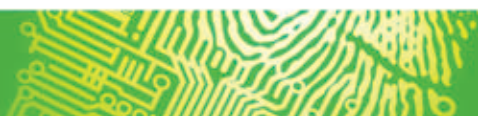
**ABE Elettronica**, a Company established in 1979, is one of the most known and appreciated European manufacturer of TV transmitters and microwave links.

For more than 30 years, ABE has been developing and producing a complete range of digital and analog TV equipment: **MPEG encoders and multiplexers, TV transmitters and transposers, microwave links in range up to 24GHz, satellite uplinks, antennas and radiation systems.**

ABE is acronym of **Advanced Broadcasting Electronics**, which reflects perfectly the flair of the company for original development and innovation. Thanks to the continuous investments in R&D, ABE increases constantly its own technological knowledge: innovation and excellence in product design are logical consequences of the careful study and accumulated experience of evolving technologies.

ABE equipment is today present and operating in more than 80 countries worldwide; an all Italian success story in the ideal field to emphasize know-how and work quality.





ABE Elettronica is situated in one of the centers of “hitech” development and production which surround the ancient city of Milan; known both for its excellent University and reputation for stimulating industry. Located in a modern and well-equipped factory on an entrepreneurial business estate, just off the Milan – Brescia road at Caravaggio, ABE is conveniently located for visitors by air, road or rail and can justly claim to be part of one of the most forward-looking industrial complexes in Europe.

**From its inception in 1979 and growth during the heady days of broadcasting expansion in Italy in the eighties, ABE now ranks with the foremost European manufacturers of television transmitters, microwave network communication systems and MPEG encoders.** The Company has an enviable niche in the national and international scenes, with exports running into eight figures annually.

**ABE has a flair for original development and innovation.** New technology is employed creatively to design new products and modernize existing ones. The range of digital and analog products available and ABE’s volume in regular manufacture are now greater than ever before.

ABE’s Sales Office will be pleased to provide up-to-the minute product information and detailed quotations for relevant equipment and systems. The company’s web site is user-friendly and provides full information about the latest products and opportunities.





## R&D @ ABE

ABE's Research & Development policy is based upon a careful analysis of market and customer needs, of technological possibilities, in order to plan and to direct the constant and considerable investment in professionally well-qualified Engineers, consultants and support personnel and equipment (instruments, test and measurement systems, production facilities).

For many years, ABE has been strongly engaged in applied research in digital technologies, in parallel with its continuous development of analog TV transmitting equipment. **Millions of Euro investments have allowed the company to develop, in its own laboratories, a complete leading-edge product line meeting the requirements of broadcasters facing the new "digital" frontier: from MPEG encoders, to multiplexers, to microwave links, up to high power transmitters for terrestrial broadcasting.**

ABE's R&D department mission includes the continuous research and application of the latest and best performing devices in order to improve the equipment specifications and, at the same time, to reduce the costs, increasing, in this way, the added value of **"Made in ABE."**

ABE is justly proud of its professional, high-performing and highly cost-effective range of RF products, both digital and analog, eminently suitable for today's and tomorrow's television broadcasters.





## ISO 9001

### PROFESSIONAL MANUFACTURING

ABE quality management system has been certified, since 1997, as compliant with the **ISO 9000 standard** and, since 2009, with the **UNI EN ISO 9001:2008** regulation. This certification, together with its accreditation and the Accredia registration, indicates achievement of consistently high standards of factory procedures and in-house quality.

This in turn signifies that all ABE products may be expected to exhibit consistently high performance and maintain reliability to their individual specifications.

Extensive use of latest mounting technologies ensures a high standard of consistency in electrical performance, rugged performance and reproducibility. The close attention paid to metrology at ABE - both in product testing and designed engineering - is also characteristic of ABE.

ABE's test laboratory includes an RF anechoic chamber which may be used for electromagnetic radiation measurements and for proving microwave systems up to 24 GHz. Specialized equipment is available for the detection and measurement of unwanted radiation or signals entering power supply systems, as well as for assessing the immunity of equipment to similar interference.

These facilities go hand in hand with the **continuous development of manufacturing methods and new technology, ensuring the company stays right in the forefront of RF technology and high performance at all times.**

Customers may therefore be confident that ABE is following a well-controlled and systematic **quality strategy**, right through from initial design to manufacturing and testing, to packing and shipment and onwards to after-sales service!

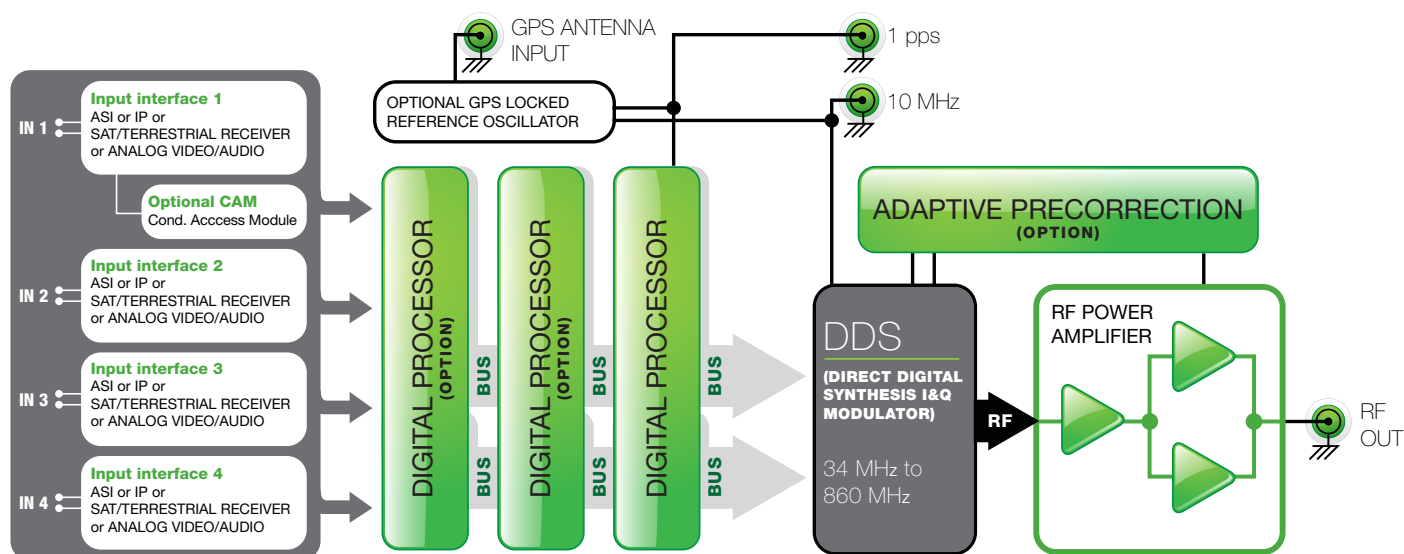


## MULTISTANDARD MULTIMODE DIGITAL & ANALOG TERRESTRIAL TV TRANSMITTER LINE

“MTX” SERIES

ABE Elettronica is proud to present the “MTX” Series of Transmitters - Transposers - Gap-fillers for **Analog** and **Digital** Terrestrial Television Broadcasting (**DVB-T/H, DVB-T2, ISDB-T/Tb, ATSC and other standards**). With the company’s 30 years of experience in this field, the “MTX” Series is the ultimate in technology, quality and performance; it is designed to take advantage of the excellence of the digital modulation systems to generate both **Analog** and **Digital** emissions.

This new “MTX” series of Transmitters - Transposers - Gap-fillers brings together the highly efficient and reliable ABE **MOS** and **LD-MOS** broadband Power Amplifiers with state-of-the-art technological solutions.







## KEY FEATURES

- Scalable architecture, capable of supporting both first and second generation analog and digital standards
- Multistandard analog modulation with digital processing (PAL/SECAM/NTSC B,G,D, I, K,K1, M, N standards supported)
- Multistandard digital modulation (DVB-T/H, DVB-T2, ISDB-T/Tb and other standards)
- Available configurations:  
Modulator - Transmitter - Transposer - Transmodulator - Gap-filler...
- Wide choice of input interfaces (ASI - Ethernet for T.S. over IP - DVB-S/S2 Multistream receiver, Digital Terrestrial Receiver, Video/Audio analog...)
- RF output: UHF, VHF Band I and Band III
- Frequency Agile Direct Digital Synthesizer with 1Hz resolution
- Adaptive precorrection option
- High efficiency 50V technology MOS and LD-MOS power amplifiers up to 20KW
- High degree of operational reliability: single or dual drive, passive stand-by systems (1+1 or N+1), multiple power amplifier versions
- User friendly local and remote control includes "on-board" display, WEB Server, SNMP and e-mail client



## MAIN BENEFITS

### FUTURE PROOF HIGH PERFORMANCE COST-EFFECTIVE SOLUTIONS:

- Open platform design; to satisfy both today's and tomorrow's needs
- The ultimate in technology, quality, performance and reliability
- Low cost of ownership, low capital cost, running expenses & maintenance

### EXTREME FLEXIBILITY:

- Complete range of options and configurations to satisfy any need
- Ultra-Compact versions, up to 1KW, integrating transmitter driver and power amplifier in a single rack drawer

### **"MTX" SERIES:** TAKE ADVANTAGE OF ANALOG TV TRANSMITTERS WITH DIGITAL PROCESSING



- Improved performance as digital processing introduces less noise and distortion and does not require any adjustment, calibration or re-calibration
- Several additional features and many more possibilities (e.g. built-in video test generator, linear and non-linear digital pre-correction, flexibility in modifying and correcting input and output signals, etc.)
- The same hardware to switch to digital modes, thus having a truly "digital ready" transmitter
- Greater ease of on-site upgrade





## VIDEO/AUDIO MPEG-2/4 SD/HD ENCODERS

"EMX" SERIES

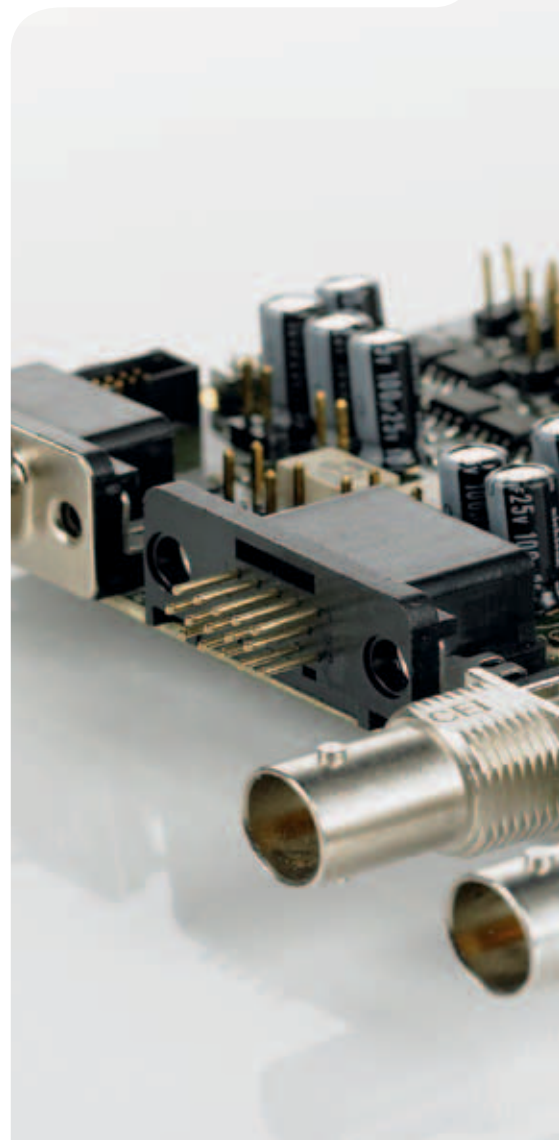
The **"EMX"** series is a high quality, professional, flexible and truly cost-effective solution that combines, in a single unit, one or more high performance MPEG-2 and/or MPEG-4 (H.264/AVC SD/HD) Encoders.

### APPLICATIONS

- Digital Terrestrial & Satellite TV Broadcasting Head-ends
- Digital Satellite Uplinks for Distribution and Contribution
- DSNG Mobile news gathering
- Digital Microwave Links (Mobile and Fixed - STL)
- Webcasting Encoding - IP Streaming

### KEY FEATURES

- 1 to 4 real time MPEG video/audio Encoders in a single 1U Rack drawer
- MPEG-4 H.264/AVC Encoder ranging from SD (Standard Definition) to full HD (High Definition)
- MPEG-2 MP@ML 4:2:0 Encoder up to full D1 resolution
- SDI/HD-SDI inputs with embedded or separate AES-EBU audio (analog SD Video and Audio inputs also available)
- Teletext or Closed Captioning extraction from video and reinsertion in the Transport Stream
- A re-multiplexing option to combine more units
- ASI and/or Ethernet (Transport Stream over IP) output and input interface options
- User configurable Encoders settings + easy to recall pre-defined factory settings
- Versions with embedded Digital Modulator (e.g.: DVB-S/S2 - see DME series)
- User friendly local and remote control includes "on-board" display, WEB Server, SNMP and e-mail client
- Available as OEM units





# TRANSPORT STREAM MULTIPLEXERS/RE-MULTIPLEXERS

"MUX" SERIES

ABE's "MUX" Transport Stream Multiplexer/Re-Multiplexer series is a high quality, professional, flexible and cost-effective solution. The Multiplexer combines the output of different Encoders, producing a multi-program Transport Stream; it can also "re-multiplex" existing Transport Streams, adding or deleting programs and including or modifying tables.

## ✓ KEY FEATURES

- Up to 8 ASI Transport Stream inputs (standard version)
- PID Filtering and automatic Transport Stream adaptation (with PCR time re-stamping)
- NIT (Network Information Table) and SDT (Service Description Table) insertion and/or modification
- EIT (Event Information Table) and TDT (Time and Date Table) insertion
- Dynamic EIT option with specific management software (PC based)
- MHP (Multimedia Home Platform) support (associate carousels and other MHP tables to programs)
- Configuration and management software (PC based)
- ASI and/or Ethernet (Transport Stream over IP) output and input interface options
- User-friendly local and remote controls include "on-board" display, WEB Server, SNMP and e-mail client
- Available as OEM units

# TRANSPORT STREAMS ADAPTERS

FOR TERRESTRIAL SINGLE FREQUENCY NETWORKS (SFN)

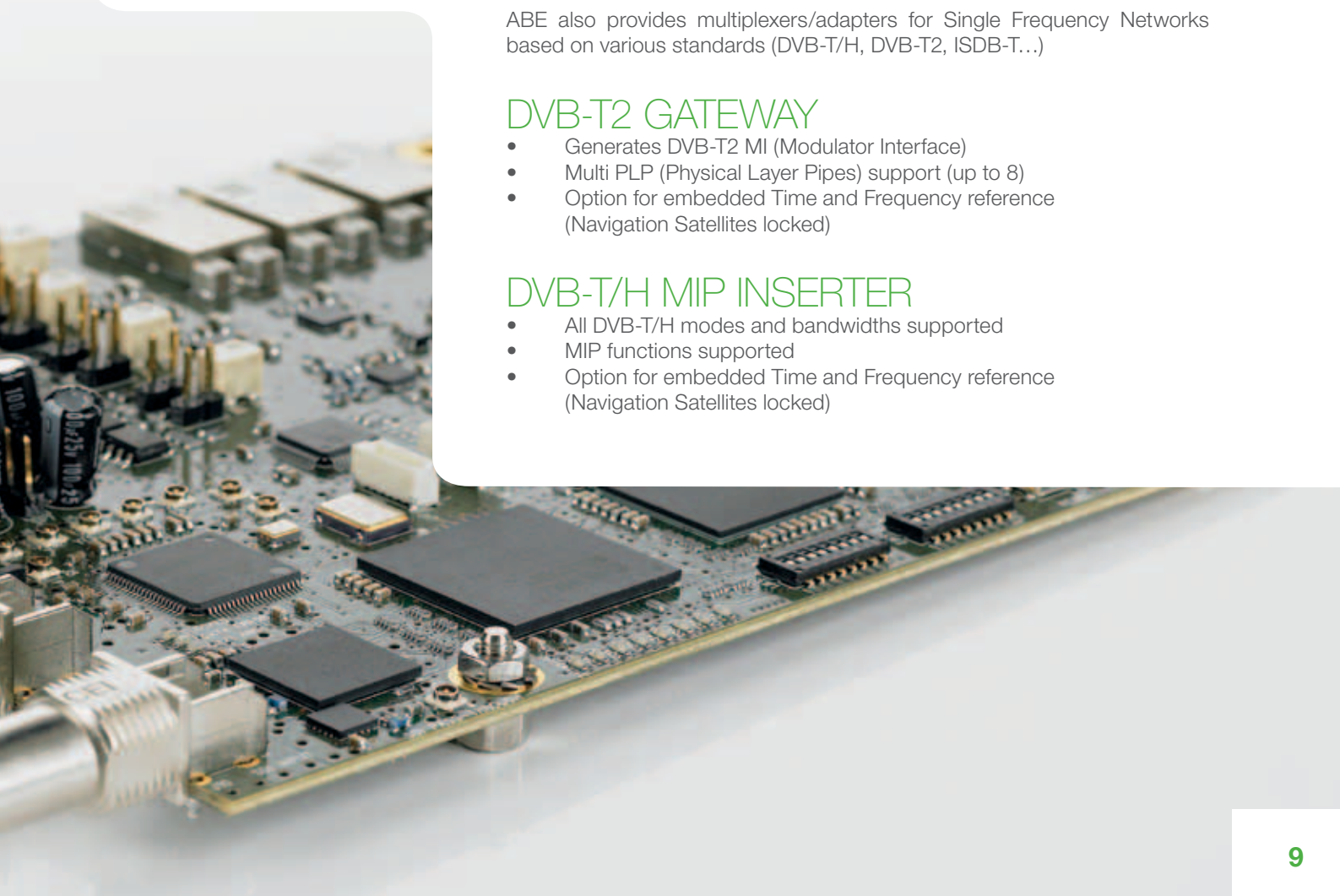
ABE also provides multiplexers/adapters for Single Frequency Networks based on various standards (DVB-T/H, DVB-T2, ISDB-T...)

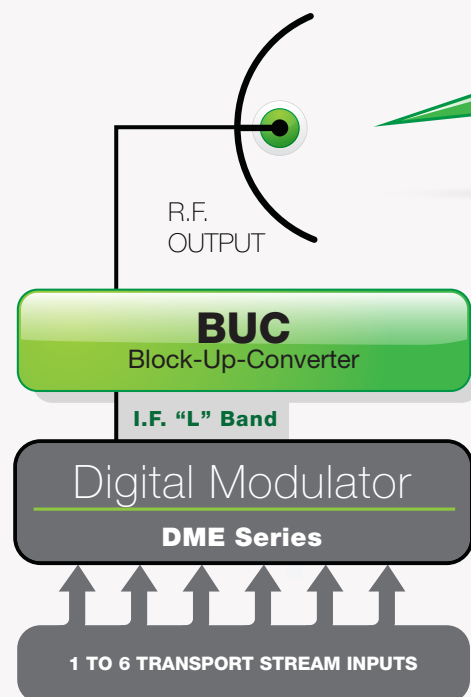
## DVB-T2 GATEWAY

- Generates DVB-T2 MI (Modulator Interface)
- Multi PLP (Physical Layer Pipes) support (up to 8)
- Option for embedded Time and Frequency reference (Navigation Satellites locked)

## DVB-T/H MIP INSERTER

- All DVB-T/H modes and bandwidths supported
- MIP functions supported
- Option for embedded Time and Frequency reference (Navigation Satellites locked)





## DIGITAL TV MICROWAVE LINKS FOR FIXED (STL) & MOBILE APPLICATIONS

“DML” SERIES

The innovative “DML” series of Digital Microwave Links for fixed and mobile applications represents the latest development resulting from on ABE’s digital and microwave technological knowledge and experience, with thousands of units produced since 1982, when it started with its first “PM” Link series. These are agile synthesized Digital Links (also usable with analog signals); they are extremely compact, flexible and competitively priced. The “DML” series represents a big step towards the diffusion and application of the latest digital technologies.

### KEY FEATURES

- Capable of carrying up to 6 different MPEG Transport Streams
- Transparent mode, to carry SFN Transport Streams
- High capacity: a total net bit rate of over 100Mbit/s in a 28MHz RF bandwidth
- Frequency Agile in its range (typically 500MHz)
- Several frequency ranges available (6, 7, 8, 10, 13, 14 GHz - others on request)
- Fixed (STL) and mobile (with tripods) applications
- RF heads for outdoor and indoor applications
- Standard input/output interface: ASI - On request: Ethernet for T.S. over IP
- Analog Video/Audio in/out interfaces (versions with embedded MPEG codecs)



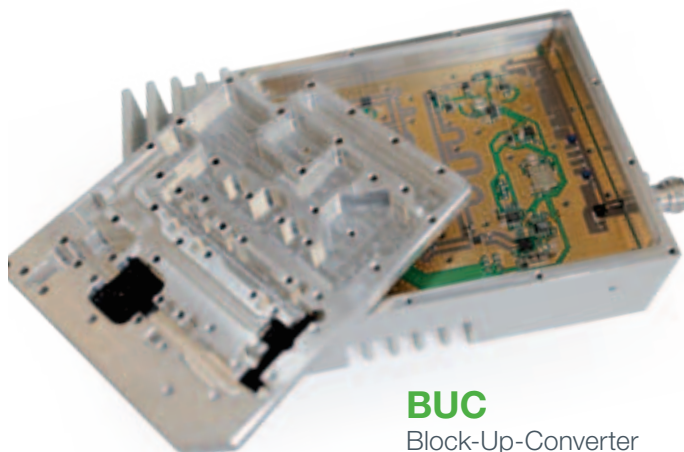
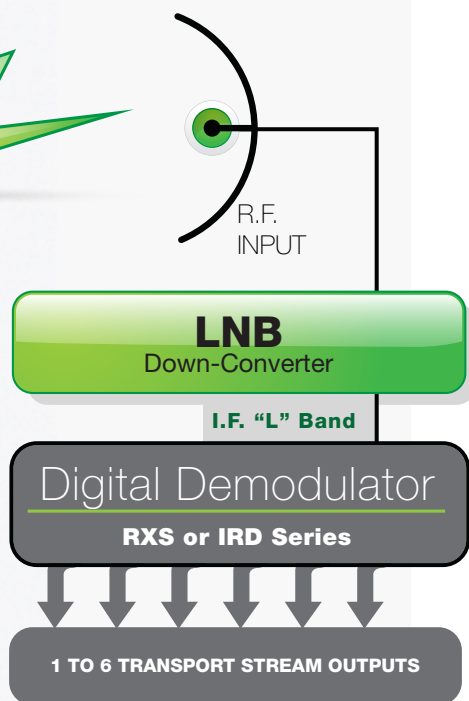
## **+ MAIN BENEFITS**

### **USING THE MOST ADVANCED STANDARD (DVB-S2) FOR BACKHAULING AND CONTRIBUTION IN TELEVISION BROADCASTING**

- NO proprietary modulation schemes and FEC codes (DVB-S2 modulation schemes up to 32APSK are employed)
- NO proprietary aggregation systems - The aggregation of the Transport Streams (up to 6) is made by employing the DVB-S2 MULTISTREAM mode
- NO proprietary encryption: DVB-S2 Physical Layer scrambling is implemented

### **EFFICIENT USE OF THE ELECTROMAGNETIC SPECTRUM**

- No overhead for encapsulation to carry multiple Transport Streams
- Very high efficiency Forward Error Correction Codes (LDPC + BCH)
- No fixed capacity: parameters (bandwidth, FEC codes, etc.) are optimized in order to obtain the best performance based on the available bandwidth and needed capacity



**BUC**  
Block-Up-Converter



## DVB-S/S2 MODULATORS + MPEG ENCODERS

“DME” SERIES

The “**DME**” series is a high quality, professional, flexible and truly cost-effective solution for Digital Satellite Uplinks (Broadcasting, Distribution, Contribution, DSNG/ENG Mobile news gathering) and terrestrial Microwave Links.

The units consist of a high performance DVB-S/DSNG/S2 Multistandard Modulator with up to four MPEG-2 and/or MPEG-4 (H.264/AVC SD/HD) Encoders in a single 1U rack chassis.

A “DME” unit, combined with a BUC and a parabolic antenna for the chosen frequency range (usually Ku or C band), makes a complete satellite uplink solution.

### ✓ KEY FEATURES

- DVB-S / DSNG / S2 Modulator having “L” band or 70MHz output for BROADCAST and DSNG applications
- All modulation schemes supported (QPSK, 8PSK, 16APSK and 32APSK)
- Multistream option, with the possibility of transmitting up to 6 different Transport Streams simultaneously
- Digital non-linear pre-correction to linearize Power Amplifiers (HPA) to obtain better performance (power, MER, shoulders...)
- Up to 4 real time MPEG-2 (MP@ML - 4:2:0) and/or MPEG-4 (H.264/AVC SD/HD) video/audio Encoders
- User-friendly local and remote controls include “on-board” display, WEB Server, SNMP and e-mail client
- Available as OEM units

## DVB-S/S2 MULTISTREAM RECEIVER

“RXS” SERIES

The “**RXS**” series units are professional Satellite/Microwave Receivers and De-modulators for Backhauling, Contribution and Distribution.

### ✓ KEY FEATURES

- DVB-S/S2 receiver - demodulator for Broadcast and DSNG applications supporting all modulation schemes (QPSK, 8PSK, 16APSK and 32APSK)
- Supports Multistream mode (up to 6 different Transport Stream outputs)
- Decryption options: PL (Physical Layer) de-scrambler; CAM Slots
- Wide dynamic IF “L” Band input level range (-10 to -80dBm) and adaptive equalization
- User friendly local and remote control includes “on-board” display, WEB Server, SNMP and e-mail client
- Available as OEM units

## ABE ALSO PROVIDES

INTEGRATED RECEIVERS – DECODERS (“IRD” SERIES)

- Input interface options: DVB-S/S2 - ASI - Ethernet (TS over IP)
- Output interface options: ASI - Ethernet (TS over IP)
- Decoding: MPEG-2 & MPEG-4 with analog and digital outputs (HD - SD)







### VHF & UHF ANTENNA PANELS “LB” SERIES

The “LB” series of ABE antenna panels, of rugged construction, designed to be durable and resistant to extreme weather conditions and last for many years, are the basic units from which more complex antenna systems may be built. They are designed to provide radiation patterns for the best performance in the areas to be served.

The “LB” antenna panels are broadband, to cover the entire VHF or UHF band, can be supplied for horizontal or vertical polarization, have a standard -3dB beam-width of 60° and can accept input powers up to 2KW per panel. The panels are also available as OEM units.

#### COMPONENTS - ACCESSORIES

ABE also manufactures and supplies the components and accessories for the use and installation of its antenna panels and transmitting arrays:

- Power splitters
- Feeding cables
- Connectors and Adapters
- Air-dielectric cable de-hydrators
- Phase controlled interconnecting cables
- Mechanical supports for antennas, dividers, cables etc.

### TRANSMITTING ARRAYS

The antenna arrays are designed by ABE using interactive CAD-CAE systems, which, by accurately calculating the electrical length of the distribution cables and the disposition of the panels, can obtain directional or omnidirectional horizontal radiation patterns. Vertical electrical beam tilt and null-filling, if required, can also be incorporated.

#### CONSULTANCY, SERVICES & SOLUTIONS OFFERED:

- Antenna array design, including complex systems and 3D analysis
- A Detailed Terrain Model of the entire planet to calculate coverage areas and interference
- Complete Network planning, design and optimization
- Single Frequency Networks (SFN) parameters management and interference analysis



## TIMING REFERENCE SATELLITE LOCKED

“GPS - GNS” SERIES

The “**GPS - GNS**” Series is a new concept GNSS (Global Navigation Satellite System) receiver/synchronizer (using GPS and/or GLONASS satellites) generating time and frequency signals (1PPS and 10MHz) suitable for equipment that needs a high precision clock reference and for the stable synchronization of telecommunication equipment, including broadcasting Single Frequency Networks (SFN). This innovative product series has unique special features, with proprietary algorithms, to prevent network de-synchronization (Holdover error recovery, Single satellite operation, Fast cold start-up, Zero cumulated error, etc.) and is available in redundant configurations and as OEM parts.



### KEY FEATURES

- High sensitivity and fast acquisition GNSS (Global Navigation Satellite System) receiver
- Single satellite reception operation
- Zero Cumulated error and Fast cold start-up functions
- High stability and low phase noise 10MHz oven oscillator
- Long hold-over time (up to a pre-set limit) and hold-over error recovery (up to a pre-set limit)
- Multiple outputs (1pps / 10MHz)
- Redundant configurations for satellite receivers, oven oscillators and power supplies
- User friendly local and remote control includes “on-board” display, WEB Server, SNMP and e-mail client
- Stand-Alone 19” 1U high Rack drawer
- Available as OEM units

## OEM PERSONALIZED

MODULES, BOARDS & PRODUCTS

ABE designs, develops and manufactures the majority of its “ABE” branded products in-house; these include sub-assemblies, boards, modules, firmware, software etc. ABE, under specific NDA or Partnership Agreements, can provide other manufacturers with a wide range of transmission technology:

- Boards - Digital Modulators, MPEG Encoders, Multiplexers, Interfaces, GPS receivers, etc.
- Modules - power amplifiers, directional couplers, etc.
- Complete OEM branded products - TV Transmitters, Microwave Links, Antennas, etc.

A partnership with ABE, a reliable, ISO 9001 certified company with over 30 years experience, can deliver strong business benefits in terms of cost and time to market. Contact us today to discover how easy and convenient a partnership with ABE can be.

## ABE ALSO PROVIDES

DIGITAL OFDM ENG MICROWAVE LINKS AND MMDS SOLUTIONS







## PROFESSIONAL TRAINING COURSES

ABE Elettronica is pleased to offer professional technical training courses to enable operators to become familiar with the technology underlying the company's products. With a standard duration of 4 to 5 days, each course deals with the theory, design and practical aspects of digital and analog TV Transmitters/Transposers, microwave links, radiation systems, and MPEG encoders and multiplexers. The techniques of video, audio and RF measurement are thoroughly covered in the appropriate sections, with the opportunity to try out some of the latest test equipment. The detailed content of each course can be customized to suit the particular needs of those attending.

Qualified engineers or technicians should find the theoretical ground covered by the course to be a useful refresher, with a particular emphasis on the principles based on which the company's products are designed.

The course includes hands-on training, designed to give participants the necessary basis to undertake the fault diagnosis, repair and calibration of the equipment in its standard configuration. This provides a degree of familiarity which can prove crucial when confronted with equipment needing attention for the first time. The options available to maintenance personnel will be discussed in real-life scenarios, with reference to the information presented on display panels and front panel indicators. Participants will be taught how to restore normal service in the shortest time, with informed discussions about the alternatives which present themselves in particular circumstances. Included in this part of the training will be the ability to monitor and adjust transmitters and links equipment, both on-site and remotely, using ABE's Network Management system.

Further information on ABE's Training Courses availability and prices may be obtained from the Sales Office, with updates available on the web site.



## CONSULTANCY & TECHNICAL SUPPORT

Besides commercial services, the ABE Network of Agents, Dealers and Distributors, which is present in all Continents, also provides, consulting and technical support, including the supervision of installations. Whenever advisable or necessary, the Network is directly supported by ABE Headquarters engineers who make their knowledge and expertise, acquired in over thirty years, with thousands of installations, available.

The ABE after sales service, which integrates the Agents/Dealers/Distributors Network, also provides Customers with valuable technical support.

Information, Software and  
Interactivity at a click:  
**<http://www.abe.it>**

From ABE'S web-site you can download:

Full TECHNICAL DOCUMENTATION and product innovation news for Digital and Analog TV Transmitters, Microwave Links, MPEG Encoders and... much, much more.

MANUALS, TECHNICAL NOTES and TUTORIALS on main TV BROADCASTING topics including DIGITAL TECHNOLOGY.

SOFTWARE utilities for microwave path analysis and terrestrial transmission / distribution network design.

KEEP INFORMED: Join our mailing list and receive the ABE NEWSLETTER regularly.





## EXTRA-TERRESTRIAL DIGIT

Printed in Italy February 2012

Graphic: **Quid Lifestyle** - [www.quidlifestyle.com](http://www.quidlifestyle.com)

Press: **Grafinvest** - [www.graфинvest.it](http://www.graфинvest.it)

Photo: **Federico Buscarino** - [www.federicobuscarino.it](http://www.federicobuscarino.it)

© **ABE Elettronica 2012** - All rights reserved



## ABE ELETTRONICA

Via Leonardo da Vinci, 224 - 24043 Caravaggio (BG) Italy  
Tel. +39 0363 35 10 07 - Fax +39 0363 50 756  
e-mail: [info@abe.it](mailto:info@abe.it) - [www.abe.it](http://www.abe.it)

QuidLifestyle.com

