All specifications contained in this document may be changed without prior notice.
### MAIN FEATURES:
- ASI or Ethernet (Video Over IP) input/output interfaces with bit rate up to 100Mbit/s
- Optional digital or analog video/audio inputs and outputs
- Versions with up to four video/dual audio high performance HD/SD MPEG encoders and decoders
- Fully agile in the entire frequency band
- Standard or offset parabolic antennas
- Tripod mounted versions

### APPLICATIONS:
- Tripod mounted ODU (OutDoor Unit) for mobile operation
- Standard Rack drawer 19" 1U for indoor units (IDU); Outdoor sealed box for external units (ODU)

### GENERAL SPECIFICATIONS

**Frequency range:**
- DML 7: 5.7 to 6.54GHz; 6.54 to 7.5GHz; 7.5 to 8.6GHz (N°3 Sub-bands)
- DML10: with bit rate up to 100Mbit/s
- DML13: 12.7 to 13.75GHz
- Optional digital or analog video/audio inputs and outputs
- DML14: Versions with up to four video/dual audio high performance HD/SD MPEG encoders and decoders

**Modulation type and information capacity:**
- QPSK (DVB-S EN 300 421) up to 33.4Mbit/s in 28MHz bandwidth
- 8PSK (DVB-S2 EN 302 307) up to 61Mbit/s in 28MHz bandwidth
- 16APSK (DVB-S2 EN 302 307) up to 81Mbit/s in 28MHz bandwidth
- 32APSK (DVB-S2 EN 302 307) up to 101Mbit/s in 28MHz bandwidth

**Operating temperature range:**
- -5° to +45°C (for indoor units)
- -30° to +50°C (for outdoor units)

**Operating relative humidity range:**
- up to 95% - Non condensing

**Power supply:**
- 230Vac ±10% 50-60Hz
- 18 to 24V DC through IF cable
- 12 to 18V DC through IF cable

**Housing:**
- Standard Rack drawer 19" 1U for indoor units (IDU); Outdoor sealed box for external units (ODU)

**Modulation:**
- QPSK: -3dB
- 8PSK: -4dB
- 16APSK: -6dB
- 32APSK: -8dB

**Notes:**
- The optional band-pass filter can be installed at the output of the transmitter and at the input of the receiver to connect the unit to a branching network (i.e. to use the same antenna with more transmitters and/or receivers), in case of strong signals in the reception band, or to comply with specific requirements (e.g.: EMC specifications etc.). The band-pass filter can be narrow-band (for single channel operation) or wide-band (to allow operation on more adjacent channels - group of channels) and will then have to be adjusted (tuned) in case of channel or group of channel change.
- Microwave link chain (more links, one after the other, to form a distribution/contribution network) the connection between the links must be made connecting the Transport Stream interface output of the receiver (i.e.: ASI or IP output) to the Transport Stream interface input of the following modulator/ transmitter (i.e.: ASI or IP input), so that the digital signal will be corrected and regenerated at every hop.
**MAIN FEATURES:**
- ASI or Ethernet (Video Over IP) input/output interfaces with bit rate up to 100Mbit/s
- Optional digital or analog video/audio inputs and outputs
- Versions with up to four video/dual audio high performance HD/SD MPEG encoders and decoders
- Fully agile in the entire frequency band
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**APPLICATIONS:**
- Fixed links (STL – Studio Transmitter Link)
- Mobile links (e.g.: for O.B. Van)
- Distribution/Contribution terrestrial Microwave Link Networks

**GENERAL SPECIFICATIONS**

**Frequency range:**
- **DML 7:** 5.7 to 6.54GHz; 6.54 to 7.5GHz; 7.5 to 8.6GHz (N°3 Sub-bands)
- **DML10:** 10.1 to 10.9GHz
- **DML13:** 12.7 to 13.75GHz
- **DML14:** 14.0 to 14.5GHz

**Optional digital or analog video/audio inputs and outputs**
- **DML14:** Versions with up to four video/dual audio high performance HD/SD MPEG encoders and decoders

**Other models for different frequency range:**
- Please contact ABE’s sales office

**IF frequency:**
- **“L” Band (950 to 2150MHz)**

**Modulation type and information capacity:**
- QPSK (DVB-S EN 300 421) up to 33.4Mbit/s in 28MHz bandwidth
- 8PSK (DVB-S2 EN 302 307) up to 61.3Mbit/s in 20MHz bandwidth
- 16APSK (DVB-S2 EN 302 307) up to 81Mbit/s in 28MHz bandwidth
- 32APSK (DVB-S2 EN 302 307) up to 101Mbit/s in 28MHz bandwidth

**Applications:**
- **8PSK (DVB-S2 EN 302 307) up to 61Mbit/s in 28MHz bandwidth**
- **16APSK (DVB-S2 EN 302 307) up to 81Mbit/s in 28MHz bandwidth**
- **32APSK (DVB-S2 EN 302 307) up to 101Mbit/s in 28MHz bandwidth**

**Operating temperature range:**
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**Operating relative humidity range:**
- up to 95% - Non condensing

**Power supply:**
- 230Vac ±10% 50-60Hz

**Housing:**
- Standard Rack drawer 19" 1U for indoor units (IDU);
- Outdoor sealed box for external units (ODU)

**Notes:**
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**Notes:**
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IF ("L" BAND) DEMODULATORS (Receivers and IRDs - Integrated Receiver Decoder) – INDOOR UNITS

See specific documentation (brochures):

- IRD 1001/AN: DVB-S "L" Band digital IRD with MPEG-2 decoder
- IRD 4001/AN: DVB-S/S2 "L" Band digital IRD with MPEG-2 and MPEG-4 H.264 HD/SD decoder
- RXS 1000: DVB-S/S2 "L" Band digital multistream receiver (Transport Stream output)
- Other receiver solutions: DVB-S/S2 "L" Band digital receiver integrated inside TV Transmitters

**LINK PERFORMANCES**

- Occupied bandwidth (channel): According to symbol rate and roll-off factor settings (up to 40MHz)
- Transport stream bit-rate (Link capacity): According to modulation scheme, code rate, symbol rate, etc. (up to 100Mbit/s)
- Receiver minimum input signal: According to modulation scheme, code rate and symbol rate (up to less than -90dBm)

**Example 1:**

With 14.8MS/s, 35% roll-off, 7/8 code rate, DVB-S QPSK modulation scheme, the net input bit-rate (Transport Stream bit-rate / Link information capacity) is 23.9Mbit/s, enough to accommodate four Video/Dual-Audio programs with excellent broadcast quality, in the same occupied bandwidth (around 20MHz) of an analog TV microwave link and with a receiver threshold of around -90dBm.

**Example 2:**

With 16MS/s, 25% roll-off, 3/4 code rate, DVB-S2 8PSK modulation scheme, the net input bit-rate (Transport Stream bit-rate / Link information capacity) is up to 34.8Mbit/s in the same occupied bandwidth (around 20MHz) of an analog TV microwave link and with a receiver threshold of around -90dBm.

**Example 3:**

With 23.3MS/s, 20% roll-off, 9/10 code rate, DVB-S2 32APSK modulation scheme, the net input bit-rate (Transport Stream bit-rate / Link information capacity) is up to 101.5Mbit/s in an occupied bandwidth of a standard Link (28MHz) with a receiver threshold of around -80dBm.

**AVAILABLE MAIN OPTIONS:**

- Input and output filters for LNBS and BUCs
- Branching networks
- Standard or simplified versions for LNBS and BUCs
- Parabolic antennas for fixed and mobile applications

The innovative “DML” series of Digital Microwave Links for fixed and mobile applications represent the latest development based on ABE digital and microwave technological knowledge and experience, accumulated with thousands of units produced, since 1982, when it started with the first “PM” Link series. These are agile synthesized Digital Links, extremely compact, flexible and competitively priced (also in comparison with the analog ones).

The “DML” series represent a big step towards diffusion and application of the new latest digital technologies.

**DIGITAL TV MICROWAVE LINKS**

**STL (FIXED) & MOBILE**

The high quality, professional and cost-effective solution