



REBLE310 Rev. 2K11

## GENERAL DESCRIPTION

The REBLE310 is the latest microwave link based on the experience and the competence of Elber's R&D department. It inherits the features of the previous *Slim Line Microwave Radio Link* series and of the DDM310 digital modem, integrating all in a new, compact (1U rack 19") and high-end solution. The improved ICs technology allows the implementation of direct frequency conversion from baseband I/Q components to the final frequency, without IF stages. This assures no spurious emissions due to L.O. and very compact sizes of both transmitter and receiver modules.

Monodirectional and bidirectional configurations are available, as well as a relay version with the possibility of asymmetrical configurations regarding frequency range and modulation schemes. The high clock frequency allows the link achieve up to 40MHz bandwidth, transporting a 200 Mbit/s payload in 128 QAM modulation. The I/O section is to be chosen depending on the application; 3 versions are available: the first one with 4 ASI/BTS channels and one E1, the second with 2 ASI/BTS channels, one STM-1 and one E1 and the third with 2 ASI/BTS, 1 E1 and a GbE port. Many accessories are integrated in order to optimize spaces in remote sites, such as the hitless switch for redundant configurations, the double hot-swappable power supply and an optional booster to achieve 1W output power even in high-level modulation schemes. A new embedded software offers complete control of all parameters of the link, driving an easy user interface with a TFT touch screen and a keyboard accessible from the front panel, for very simple and immediate maintenance and troubleshooting. An intuitive web interface allows a local or remote user to manage the equipment, as well as through SNMP protocol.

## FEATURES

- Half-duplex, Full-duplex or Repeater
- Frequency:
 

5	5250-5450
6L	5925-6425
6U	6425-7125
7	7125-7825
10	10000-10700
11	10700-11700
13	12700-13200
14	14500-15500
Others in progress	
- Direct frequency conversion
- Up to 1 GHz frequency agile
- Power output @ 1 dB c.p.: 32dBm ± 1 dB
- Optional booster for 1W output power in STM-1 configuration
- Very high spurious suppression
- Excellent noise figure
- High speed integrated digital modem
- Data interfaces:
 

4x ASI/BTS & E1
2x ASI/BTS & GbE & E1
2x ASI/BTS & STM-1 & E1
Others on request
- Bandwidth: 1.75÷40 MHz
- Bit-rate adjustable up to 200 Mbps in 128QAM
- Integrated Hitless Switch for 1+1 configuration
- Redundant hot-swappable power supply (AC+AC, AC+DC, DC+DC)
- Web interface and SNMP remote control GPIO

# SPECIFICATIONS

## General

<b>Configuration:</b>	Direct Frequency Conversion
<b>Centre frequency:</b>	5.0 - 5.5 GHz 5.8 - 7.2 GHz 7.2 - 7.8 GHz 9.5 - 10.8 GHz 10.7-11.8 GHz 12.7 - 13.2 GHz 14.0-15.3 GHz
<b>Frequency Resolution:</b>	250 kHz
<b>Frequency Stability:</b>	± 2.5 ppm
<b>RF connectors:</b>	5 N(f) 6L N(f) /IEC UER 70 6U N(f) /IEC UER 70 7 N(f) 10 IEC UBR 120 11 IEC UBR 120 13 IEC UBR 120 14 IEC UBR 140
<b>RF Return Loss:</b>	> 26 dB
<b>Data connectors:</b>	ASI/BTS BNC female ASI/BTS aux SMB STM-1 BNC female E1 BNC female 1+1 RJ-45 GbE RJ-45

## Transmitter Module

<b>RF Output Power @ 1dB c.p.:</b>	5: +34dBm
	6L: +34dBm
	7: +34dBm
	10: +32dBm
	11: +32dBm
	13: +32dBm
	14: +32dBm

**RF Output Connector:** SMA female  
**Spurious Output Content:** < -65 dBc

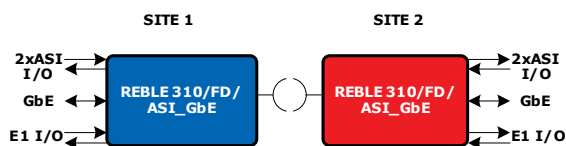
## Booster Module

<b>RF Output Power @ 1dB c.p.:</b>	5: +39 dBm
	6L: +39 dBm
	6U: +39 dBm
	7: +39 dBm
	10: +38 dBm
	11: +38 dBm
	13: +38 dBm

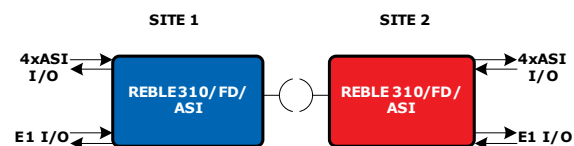
**RF output power for STM-1:** 30 dBm ± 1 dB  
**Spurious Output Content:** < -65 dBc

## APPLICATIONS

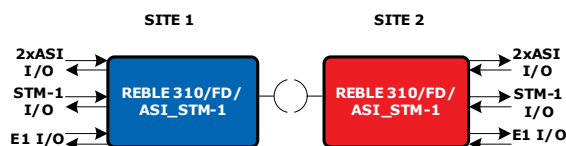
### IP & ASI



### ASI



### STM-1 & ASI



## Receiver Module

<b>RF Input Connector:</b>	SMA female
<b>RF Input Return loss:</b>	> 26 dB
<b>Noise Figure:</b>	< 4 dB

## Modem Module

<b>Baud Rate:</b>	Up to 30 Mbaud
<b>Net Data Rate:</b>	Up to 200 Mbit/s
<b>Modulation:</b>	QPSK; 16-32-64-128-256QAM
<b>Bandwidth:</b>	Up to 40 MHz
<b>Protection:</b>	Reed-Solomon coding with K = 6 to 255, t = 0 to 16 Concatenated convolutional, trellis or block convolutional inner code with variable rates: 1/2 to 13/14 Programmable Internal Interleaver
<b>Equalizers:</b>	24-tap T/2 spaced Feed Forward Filter (FFF) 3-tap Decision Feedback Filter (DFF)
<b>Carrier Acquisition:</b>	± 10% of channel baud rate

## Data interface Modules

- Different modules are available:**
- 2xASI/BTS + 1xE1 + 1xSTM-1
  - 2xASI/BTS + 1xE1 + 1xGbE
  - 4xASI/BTS + 1xE1

1+1 capability for FD and hot-standby configurations.

## Controls

**Front Panel (TFT Display with touchscreen; Keypad)**  
**SNMP**  
**Web browser**

## Electrical

<b>Power Supply Voltage:</b>	AC 90-260V 50/60Hz DC 22V - 65V
<b>Maximum Power Consumption:</b>	100W

## Mechanical

<b>Cabinet :</b>	19" 1U Rack
<b>Dimensions:</b>	Width 482 mm Height 44 mm Depth 480 mm
<b>Weight:</b>	6.5 Kg

## Environmental

**Operating Temperature Range:** -10 to 65°C  
**Relative Humidity:** 0 to 95% non condensing

*\*Elber reserves the right to make changes to specifications of products described in this datasheet at any time without notice and without obligation to notify any person of such changes.*



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