

EXICOM

EX7100 provides a long range, multi-configurable 64kbps digital wireless link to remote or isolated locations. Various configurations allow multichannel telephone line replacement, trunked audio, digital data transfer, LAN extension, or a combination of services over a single 25kHz VHF or UHF radio channel.

COMPETITIVE ADVANTAGE

- ▶ Trusted brand
- ▶ Worldwide deployment
- ▶ Comprehensive worldwide support

SUPERIOR RELIABILITY

- ▶ Dependable in extreme environments
- ▶ Proven technology
- ▶ Long service life



EX7100

DIGITAL / MULTICHANNEL
WIRELESS TELECOMMUNICATIONS LINK

HIGH PERFORMANCE

- ▶ Long range VHF/UHF transmission with very high system gain
- ▶ Flexibility of multiple interfaces
- ▶ Full telephony services
- ▶ Secure digital transmission
- ▶ Sophisticated remote management

LOW COST OF OWNERSHIP

- ▶ Fast deployment
- ▶ Inexpensive VHF/UHF infrastructure
- ▶ Low power requirements
- ▶ Low maintenance
- ▶ On-board configuration interface
- ▶ Local and remote management



EX7100 Digital Radio

Features:

- ♦ G.703, synchronous V.35, V.11, X.21, EIA-530, data interface to connect to external devices/ multiplexers.
- ♦ Transparent 64kbps data available to user
- ♦ Optional internal multiplexer with six MP-MLQ (CCITT G723.1) low bit rate voice/ fax/ data channels
- ♦ Optional six channel asynchronous RS-232 interface or mix of voice + RS-232 totalling six channels
- ♦ Automatic fax³ and modem data⁴ detection
- ♦ "On-demand" transmit option for reduced power consumption
- ♦ Inherent security through digital encoding
- ♦ Repeater option
- ♦ Very high system gain with 1-2 or 10 Watt transmitter options
- ♦ Payphone and Call Line Identification standard
- ♦ External pass-through of alarms without compromising user bandwidth
- ♦ Low end-to end time delay for digital interfaces

System Parameters

Modulation type	16-QAM
Frequency bands (MHz)	
VHF	138–148, 148–162, 159–174
UHF	400–430, 430–450 450–470, 470–490, 490– 512
Transmitter Frequency stability	1.5 ppm (UHF and VHF)
Available digital bandwidth	64 kbps
Channel data rate	68 kbps
End-to-end link delay	Typically 2.2mS
RF channel bandwidth	25 kHz
Duplexer (Integral)	
Tx/Rx spacing:	VHF 4.6 – 10 MHz UHF 5.0 – 13 MHz
Output connector:	50Ω N-type female
Frequency selection (Synthesised)	5 or 6.25 kHz steps

Transmitter

Maximum transmit power (PEP) @ duplexer output

- > +31-40 dBm (1.25 – 10 W) variable in 3dB steps
- > +24-33 dBm (0.25 – 2 W) variable in 3dB steps

Duty cycle	100% @ 60°C (140°F) ambient, <3000m AMSL
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Receiver

Sensitivity @ Rx input

Normal temperature	-10°C to +55°C (14 °F to 113°F) 10-3 BER <-105 dBm (1.3 μV) 10-6 BER <-102dBm (<1.8μV)
Extreme temperature	-30°C to 60°C (-22°F to 140°F) 10-3 BER <-102 dBm (1.8 μV) 10-6 BER <-98dBm (<2.8μV)

Data Channel

Data interfaces	CCITT G.703 Synchronous V.35, X.21, V.11, EIA-530 EtherNet (optional)
Data rate	64 kbps
Connections	
G.703:	75Ω (unbalanced) BNC connectors (not available when RS-232 option fitted) 120Ω (balanced) DB15 connector
Synchronous data:	DB15 connector (Contact Exicom for standard synchronous interfaces via adapter cable)



Multi-channel Voice, Fax and Data System

Purpose	For telephony ¹ , low bit rate data, and 4-wire audio.
Integral multiplexer interface	Proprietary
Number of channels	Up to 6 low bit rate voice/modem data/fax/POS ⁶
Voice quality	Toll quality – MOS 3.9 ²
Voice compression	MP-MLQ @ 6.4 kbps (ITU-T G.723.1)
Audio frequency response	300 to 3400 Hz typical
Line interfaces	<u>2 wire subscriber</u> 600Ω, 900Ω, Complex impedance Maximum DC loop resistance 1300Ω 50V line supply <u>2 wire exchange</u> 600Ω, 900Ω, Complex impedance <u>4 wire + E&M</u> (Optional module required) 600Ω, +/- M-wire <u>Six channel RS-232 line card</u> Uses one voice channel/RS232 circuit. 2 wire supports voice, fax, modem data (up to 9600 kbps) Possible configurations: Six RS-232, circuits, mixed 2 wire/4 wire/RS-232 totalling six circuits
Line receive/send levels	-15 to +3 dBm -11 to +7 dBm (4 wire only)
Fax and data detection	Automatic
Fax speed	G3 up to 9.6 kbps ³
Modem Data speed	Up to 9.6 kbps with telephone modems ⁴
Line connections	Via 50 way connector
Line drive current	25 or 45 mA software selectable
Payphone Interface ⁵	12/16 kHz meter pulse and line reversal

System Management

Front panel metering

Six button keypad and 16x2 LCD with bar graph
Status LEDs
Test points for connection of external analogue meter

System Configuration

- ♦ Front panel menu driven control
- ♦ Via RS-232 connection to external PC (requires proprietary Exicom Link Management System, ELMS)

Network management standard

Proprietary, using ELMS

Inter-site NMS communications

RS485 communications with daisy-chain capability, using ELMS

User I/O ports (does not compromise available user bandwidth)

Six optically coupled inputs, six optically coupled outputs

EX7100 Digital Radio

System Management

System Management Functions

- ◆ Two levels of password security
- ◆ Adjustable Link Active alarm time
- ◆ Antenna alignment mode
- ◆ Adjustable audio line levels
- ◆ Adjustable transmit power level
- ◆ Adjustable BER alarm level – 10^{-3} to 10^{-5}
- ◆ Set individual Rx and Tx RF frequencies
- ◆ 64 kbps digital loopbacks (local and remote)
- ◆ Analogue loopback on each line (6 channel, local and remote)
- ◆ Repeater Mode

Alarms

- ◆ BER (10^{-3} to 10^{-5} threshold adjustable)
- ◆ Low receive signal level
- ◆ Synth error
- ◆ Transmitter low power
- ◆ Low input voltage
- ◆ Modem lock lost
- ◆ Link established for excess time
- ◆ Security alarms

Digital and Analogue Meter Tests and Bar Graph

- ◆ Receive signal level
- ◆ System voltages
- ◆ Transmit power
- ◆ Heatsink temperature

Power, Mechanical and Environmental

Operating temperature

Normal operating temperature -10 °C to +55°C (14 °F to 113°F)
Extreme operating temperature -30 °C to 60 °C (-22 °F to 140 °F)

Humidity

Up to 95% RH, 4°C-45°C (39°F-113°F) non-condensing

Size (h x w x d)

VHF incl. Duplexer	3U/135 x 483 x 432 mm (5.3 x 19.0 x 16.7")
UHF incl. Duplexer	4U/180 x 483 x 432 mm (7.1 x 19.0 x 16.7")

Includes 40 mm (1.6") depth for front panel handles

Weight

Approx 15 kg (33 lbs)

Physical mounting

Rackmount

Line Interface lightning protection

Secondary lightning protection

Power Supply

10.8-30 VDC and 30-60 VDC,
positive or negative earth for
12/24/48 VDC power systems

Power consumption (Typical)

Standby

6 channel	40 Watts
64 Kbps	35 Watts

Transmit

2 Watt

6 channel	75 Watts
64 kbps	60 Watts

10 Watt

6 channel	125 Watts
64 kbps	110 Watts

Six channel transmit power consumption is maximum with six channels operational with 25 mA loop current and no ringing.

Cooling

2 Watt

Convection cooled

10 Watt

Forced air cooled using fully redundant temperature controlled external fans (air flow on external heatsink only)

Fans: Brushless ball bearing type MTBF: >50,000 hrs

Approvals

RF

NZS/AS4295
FCC Part 90
Canadian RSS119

EMC

CISPR22/EN55022 Class A

Safety

ASA/NZS 3260, IEC 950

Line

FCC Part 68
TIA/EIA-IS-968
Industry Canada CS-03

Mechanical/Environmental

IEC 68-2

Options

Repeater Option

Two 64kbps EX7100 terminals can be configured to operate together as a full duplex repeater.

Power supply/battery chargers

110/230 VAC power supplies are available with and without standby battery charging facilities.

Primary lightning protection

Wall and rack mounted five point lightning protection options are available.

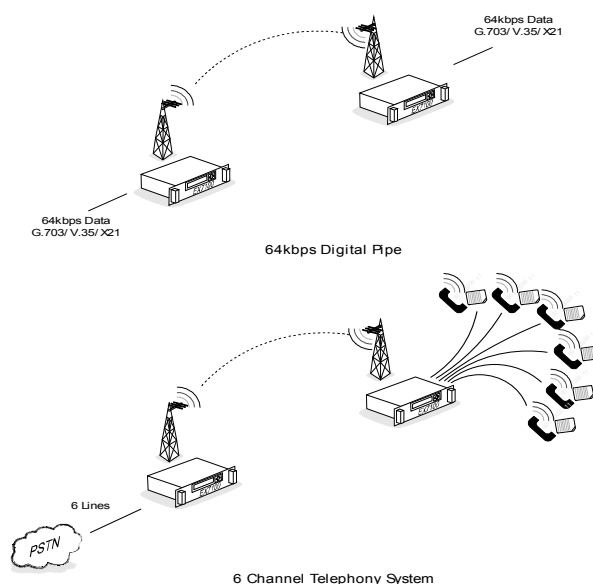
EX7100 Link Management System (ELMS)

ELMS is a low cost proprietary Network Management System software package that allows local and remote access to an EX7100 terminal, within a network. ELMS replicates most functions that are available from the front panel display to allow remote configuration, management, and performance and alarm monitoring via an RS-232 or dial-up modem connection.

- 1 Supports CLID, Tone and pulse dialling.
- 2 MOS = Mean Opinion Score as defined by ITU-T REC P800 and tested by AT&T study group 15 (64kbps PCM MOS is 4.2, 32kbps ADPCM MOS is 3.8)
- 3 Fax Standards supported: V.21, V.27 ter, V.29.
- 4 Modem Standards supported: V.21, V.22, V.22bis, V.23, V.32-full duplex.
- 5 Some proprietary payphone protocols may not be supported.
- 6 Some proprietary POS protocols may not be supported.

NOTE: Exicom Limited is constantly seeking to improve quality and performance. Therefore specifications, configurations and process are subject to change without notice.

Application Diagram



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