



## IR Series Digital Radios 6 to 38 GHz

### PRODUCT DATA SHEET

(Typical values at 25°C unless otherwise stated)

SYSTEM								
Operating frequency ranges								
Band	7	8	10/11	13	15	18	23	38
	7.1	7.8	10.7	12.7	14.4	17.7	21.2	37.0
GHz	to	to	to	to	to	to	to	to
	7.9	8.5	11.7	13.3	15.54	19.7	23.6	40.0
Tx/Rx separation (nominal)								
Band	7	8	10/11	13	15	18	23	38
MHz	154	119	490/530	266	315	1008	1008	700
	160	126			420	1010	1200	1260
	161	208			475		1232	
	196	266			490			
	245	311.32			640			
					728			

RF channel spacings	3.5/7.0 MHz
TDM channel capacity (standard PCM)	2.048Mbit/s (1xE1) to 16.384Mbit/s (8x E1)
Type of modulation	QPSK, 16 QAM
Ethernet channel capacity	Up to 18Mbit/s
Spurious emissions at antenna port	As per ETSI
Co-channel performance	As per ETSI
Adjacent channel performance	As per ETSI
Supply voltage	-24 V or -48 Vdc positive earth (Voltage ranges -20 to -32 V and -40 to -60 V respectively)
Overvoltage protection	-36 V or -68 V respectively
Reverse polarity protection	Fuse blows at +3.2 V
Power consumption 1xIDU, 1xODU and SIU 2x IDU, 2xODU, SUI and PSX	Unduplicated: 40 W Duplicated (warm standby): 90 W
Alarm indicators	Front panel LEDs – IDU, ODU, Rx Sync, FEC Sync, E1/T1, Unsaved Configuration, Far End Status, Power and High BER
<b>TRAFFIC CHANNEL</b>	
Traffic channel modulation	QPSK, 16 QAM
Symbol Rate	5.5 or 11 Mbaud
Data input connector	RJ 45
Data input – TDM E1	HDB3, 120 Ω balanced (conforms with ITU Rec. G.703) 75 Ω unbalanced with optional Balun panel
Data input – TDM T1	AMI, B8ZS, 110 Ω balanced (conforms with ITU Rec. G.

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## IR Series 6 to 38 GHz Digital Radio Products

### SERVICE CHANNEL

Requires optional Services Interface Unit

Analog

VoIP-based EOW

Digital

1x RS 232, 1x RS485

4x general purpose I/O

### ODU MODULE

#### Transmitter

Output power over band at Antenna Port (dBm)	7/8	10/11	13/15/18	23	38
QPSK	>25	>25	>24	>22	>20
16 QAM	22	22	21	19	16

Adjustable output power range

>10 dB

Synthesiser frequency step

250 KHz

Frequency stability

± 7 ppm

#### Receiver

Threshold at antenna port (dBm)

Channel Bandwidth 3.5 MHz at (1 x 10 <sup>-6</sup> BER)	7/8	10/11	13/15/18	23	38
QPSK	-96	-93	-93	-91	-89
16 QAM	-89	-86	-86	-84	-82

Channel Bandwidth 7 MHz at (1 x 10 <sup>-6</sup> BER)	7/8	10/11	13/15/18	23	38
QPSK	-93	-88	-88	-86	-84
16 QAM	-86	-83	-83	-81	-79

For (1 x 10<sup>-3</sup> BER) reduce RSL by 2 dB

Noise figure at converter input

Band	7/8	10	13	15	18	23	38
	7.0dB	6.5 dB	6.5 dB	6.5 dB	6.5 dB	7.0 dB	9.5 dB

Maximum input power

-20 dBm

Synthesiser frequency step

250 KHz

Frequency stability

± 7 ppm

Intermediate frequency

140 MHz

AGC dynamic range

60 dB (input power from -90 to -30 dBm)

AGC Voltage range

0.1 to 4.5Vdc ( 4.5 V @ -20dBm)

Demodulation

Coherent incorporating FORNEY convolutional deinterleaver and a Reed-Solomon Forward Error Correction

Spurious response

As per ETSI

Image rejection (diplexer + converter)

As per ETSI

Power consumption

30 Watts Max (6 to 32 GHz)

34 Watts Max (38 GHz)

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### ANTENNA COMBINER MODULE

#### Antenna Direct Mount Insertion Loss

	Nominal
Antenna to Rx	0 dB
Antenna to Tx	0 dB

#### Optional (1+1) Single Antenna Mount Insertion Loss

	Maximum	Typical
Antenna to Radio 1	7 dB	6 dB
Antenna to Radio 2	7 dB	6 dB

### PSX PROTECTION SWITCH

Data in/out	HDB3, 120 $\Omega$ balanced (conforms with CCITT Rec G.703)
Data rates	Up to 8 x E1
System configurations	Hot Standby, Warm Standby, Space Diversity, Frequency Diversity
Tx switching modes	Automatic (Tx alarms) remote and manual switching
Rx switching modes	Automatic (Rx alarms) remote and manual switching
Rx selection	Hitless (while Receivers are operating normally)
Response time to Rx Threshold alarm	12 $\mu$ s
Response time to other Rx alarms	12 $\mu$ s
Failsafe Mode	Rx A and Tx A selected
Power consumption	20 W

### SERVICES INTERFACE UNIT

#### Engineering Order Wire

Network Protocols	VoIP – SIP
Vocoder	ITU G.711 (PCM), one low bit rate (G.723.1 or G.729A/B)
Call Quality	Acoustic Echo cancellation supporting high-quality speakerphone Supporting G.165/G.168, AEC, AGC, LEC
Configuration method	Keypad entry or Remote configuration and upgrade through web browser
Handset operation	10 Feature keys: Flash, Redial, Hold, Speaker, Mute, 10 Speed Dial keys

#### Digital Supervisory Interface 1

Modulation type	Digital (multiplexed with Ethernet traffic)
Data rates	Asynchronous up to 115.2 kbit/s (baud)
Interface	RS-485/V11 (4-wire)

#### Digital Supervisory Interface 2

Modulation type	Digital (multiplexed with Ethernet traffic)
Data rates	Asynchronous up to 115.2 kbit/s (baud)
Interface	RS-232
Format	7/8 Data Bits, 1/2 Stop bits Odd/Even/None Parity XON/XOFF Flow control

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## IR Series 6 to 38 GHz Digital Radio Products

### SERVICES INTERFACE UNIT (continued)

#### Low Speed Signalling

Number of bidirectional channels		4x input, 4x output
Data rate		5 bit/s (maximum) asynchronously sampled, multiplex Ethernet
Interface	Input	Optocoupler (+5 Vmax)
Interface	Output	N.O. and N.C Relay closure ( 60Vdc Max @ 1A)
Power consumption		20 W

### NETWORK MANAGEMENT SYSTEM (NMS)

Remote	SNMP
Local management and configuration	Local Craft Terminal using Telnet or Web-based GUI

### MECHANICAL DATA

#### ODU Module

Dimensions (Diameter x depth)	267mm OD x 89 mm
Weight	4.6kg

#### IDU Module

Dimensions (height x width x depth)	44.5 x 483 x 250 mm
Weight	3.5 kg

#### Diplexer with Splitter and Relay

Dimensions (height x width x depth)	89 x 483 x 305 mm
Weight	3.8 kg

#### Service Interface Unit

Dimensions (height x width x depth)	44.5 x 483 x 260 mm
Weight	3 kg

#### PSX Protection Switch

Dimensions (height x width x depth)	44.5 x 483 x 305 mm
Weight	4.0 kg

#### Unduplicated Terminal

Dimensions (height x width x depth)	89 x 483 x 340 mm
Weight	11.1 kg

#### Duplicated Terminal (Std)

Dimensions (height x width x depth)	223 □x 483 x 340 mm
Weight	21.7 kg

#### Duplicated Terminal (ETSI)

Dimensions (height x width x depth)	223 x 600 x 340 mm
Weight	22.7 kg

#### Environmental data

	IDU	ODU
Specification temperature range	0 to +50°C	-30 to 55°C
Operational temperature range	-10 to +60°C	-30 to 55°C
Humidity tolerance	95% RH at 40°C	

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## *IR Series 6 to 38 GHz Digital Radio Products*

### **Longreach**

Longreach is one of the world's most experienced suppliers of microwave radio equipment for a diverse range of frequencies and applications.

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