ORC100
Single Port RoIP Gateway

OVERVIEW

The ORC100 is a compact industrial communications device used for connecting conventional VHF/UHF radio networks to an IP network. Using sophisticated signal-processing techniques, the ORC100 digitises and compresses voice band audio from a connected radio and exchanges it with a network dispatch centre or other RoIP gateway. Its small form factor makes it ideal for retrofitting within existing installations and provides a cost effective mechanism for extending your radio network across a large geographic area.

FEATURES

Radio Interface
A single, balanced 600ohm, transformer coupled radio interface is provided, enabling either fully differential or single ended operation. Signalling I/O for mute detection (COS) and transmitter key (PTT) operation are provided, along with two serial ports for separate monitoring and control of transmitter and receiver components.

Audio compression is achieved using either G.711 or G.729 codecs, providing high or low bandwidth solutions respectively. Additional features include sub-audible (CTCSS) and 5-tone (Selcall) signalling, along with test-tone generation and diagnostic loopback capability. An added bonus is the talk-through function, which enables local retransmission of received audio signals.

Network Interface
The ORC100 has a single, auto-sensing, 10/100 Ethernet port for connection to an IP network. Audio streams are delivered to and from the ORC using Real Time Protocol (RTP). Received signal strength (RSSI) and real-time signal quality (RTA) information are embedded within the header of each RTP packet to facilitate voting between multiple audio streams at the receiving endpoint.

Local Diagnostics
Numerous diagnostic LEDs are provided on the fascia, including transmit and receive level bar graphs, mute and key state indications, IP network activity and system status, thus enabling device operation to be confirmed at a glance.

Data Logging
Supply voltage and internal temperature monitoring are provided as standard within the ORC100. These parameters are logged to internal memory and are available for display via the web management interface. Many other parameters can be logged (e.g. RTP statistics), depending upon user requirements.

Event Logging
The ORC100 maintains a detailed event log, which can be accessed via the web management interface. This can prove useful for remotely confirming device configuration and operation.

CONFIGURATION

The ORC100 utilises a set of configuration files to tailor operation to specific user requirements. A dedicated Microsoft Windows GUI application is provided for building and modifying the configuration files before deploying them to the unit.

There are many configuration options available, however those of most interest are likely to be the IP network and radio interface properties. You can set the destination IP address and port number for compressed audio streams and tune transmit and receive audio levels to suit your radio. Specifying the type of radio connected to the ORC100 enables it to automatically select the correct radio channel and obtain diagnostic information (e.g. transmitter temperature) via the serial interface . All configuration settings are stored in non-volatile flash memory.

Kupe Integration
The ORC100 is fully compatible with Xworks Kupe management system, which can be used to automatically deploy configuration and software updates to a large network of Xworks devices via the IP network. Updates can be applied selectively to individual units, groups of units or globally. This mechanism enables different sites to run different configurations to suit their individual needs from the same central management system.
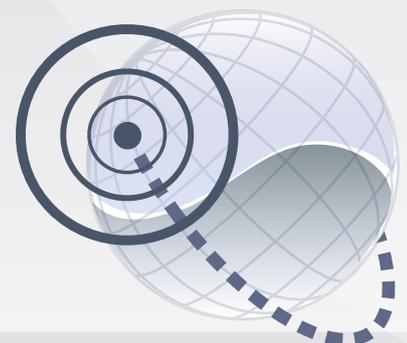
MANAGEMENT

Web Management
The ORC100 can be remotely managed from the desktop using a standard web browser. This provides access to a vast array of configuration and runtime information and can be used to remotely enable diagnostic functions such as audio loopback or test tone generation. Alternately the user may browse the system event log, view plots of historical data and download logged information.

SNMP Management
Remote management and diagnostic functions are also available via SNMP. Many variables are provided for reading/writing by the management station. The ORC100 can also be configured to send SNMP traps to the management station upon detection of alarm conditions.

SPECIFICATIONS

Power Supply	
Input Voltage	13.8VDC (10V to 15V DC)
Power Consumption	4W (nominal)
Connector	3.5mm barrel socket
Voice Radio Interface	
Number of interfaces	1
Connector	DB25 Female
Audio Connection	Four wire, transformer coupled, DC blocked
Input Impedance	600 ohms
Output Impedance	600 ohms
Frequency Response	67Hz – 3kHz, essentially flat over this range
Nominal Input Level	-20 to +5dBm, adjustable in 1dB increments via programmable gain amplifier
Nominal Output Level	-20 to +5dBm, adjustable in 1dB increments via programmable gain amplifier
Relative Level Control	Individually adjustable in 1dB increments from nominal (CTCSS/Selcall/Test)
Pre-emphasis / De-emphasis	Individually on/off selectable at 6dB/octave over voice band
CTCSS Encode/Decode	User selectable standard tones from 67.0Hz to 254.1Hz
Selcall Encode/Decode	User selectable tone set with programmable tone period, lead-in and lead-out delays
Test Tone	User adjustable in 1Hz increments
Mute Input Lead (COS)	0-15V active-low pull-down
Key Output Lead (PTT)	Open-drain pull-down
Digital Inputs	2 x 0-15V active-low pull-down
Digital Outputs	2 x open-drain pull-down
RSSI	0-5V
RS232	2 x 2-wire (RXD/TXD), 1200 - 57600 baud
Auxiliary Power Output	1 x 12VDC (fused @ 500mA)
VoIP	
Vocoders	G.711 u-law, G.729
Protocol	RTP
Network Connectivity	
Connector	1 x RJ45
Interface	10/100 auto detect
SCADA I/O	
Analogue Inputs	Internal Temperature and Supply Voltage
Digital Inputs	n/a
Digital Outputs	n/a
Local Monitoring & Control	
Microphone	n/a
Speaker	n/a
LCD	n/a
Keypad	n/a
Diagnostic LEDs	Comprehensive (status, tx/rx level, mute/key, rtp tx/rx, loopback, talkthrough, Ethernet)
Auxiliary Serial Ports	n/a
RoIP Dispatch Software Compatibility	
Xworks - XWIRE	Yes
Twisted Pair Solutions – WAVE	Yes
Physical & Environmental	
Style	Desktop Mount
Construction	Milled aluminium enclosure with acetal base
Weight	0.5 kg
Dimensions	149 mm x 95 mm x 42 mm (width x depth x height)