

# RGW 7700

RADIO GATEWAY



# ▶ RGW - Radio Gateway



The RGW-7700 is a flexible unit that can be used in multiple configurations where it is necessary to connect an analogue radio to an IP based Voice Communication System (VCS), or an IP based radio to an analogue VCS. Two units can also be used back to back in a configuration where both systems are analogue, and the transport medium between is an IP network.

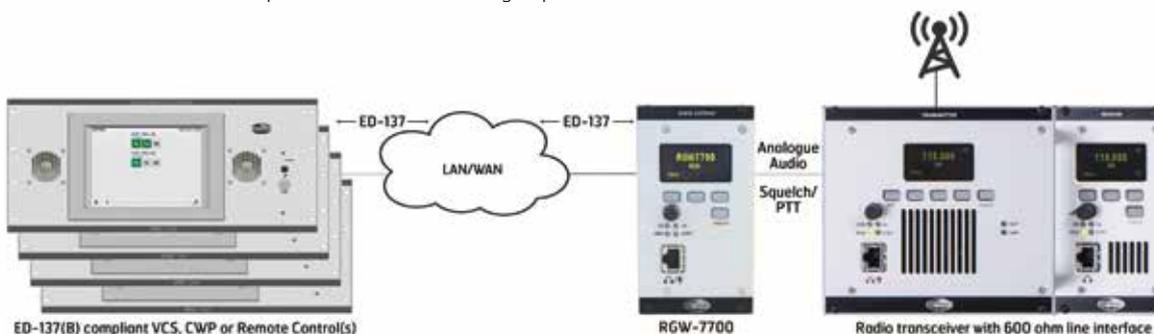
When used as a gateway from an ED-137 compliant VCS or a Remote Radio Control device, the RGW-7700 supports SIP connections using the ED-137 protocol, either as one TRX connection or using separate connections for TX and RX. The RGW-7700 supports separate connections from up to 4(7) independent Voice Control or Remote Radio Control Systems. The RGW-7700 supports both simplex and duplex operation, transferring audio and signalling in both directions simultaneously. When used as a gateway from an analogue VCS or Remote Control, the RGW-7700 is set up to use static Real Time Protocol (RTP) connections that streams voice and signalling to and from the radio or the other RGW-7700 that it controls.

The RGW-7700 introduces extremely low latency in the VoIP system, even when using the optional high compression audio codec. The latency can be as low as 8 ms, depending on the LAN topology and the configuration of the endpoints. The RGW-7700 can be used in any network, fixed LAN, LAN/WAN over a radio link, and over a satellite link with network latencies up to 1s. The RGW-7700 supports ED-137 compliant recording in both directions, and will seamlessly integrate into any recording system that supports this format, such as the Jotron Ricochet Record and Replay System. The RGW-7700 supports the optional RMM/MAM/CLD parameters defined in ED-137. In a system using offset delay compensation, these parameters are used to accurately determine the one-way network delay between the voice control system and the transmitter or receiver.

## Typical applications include:

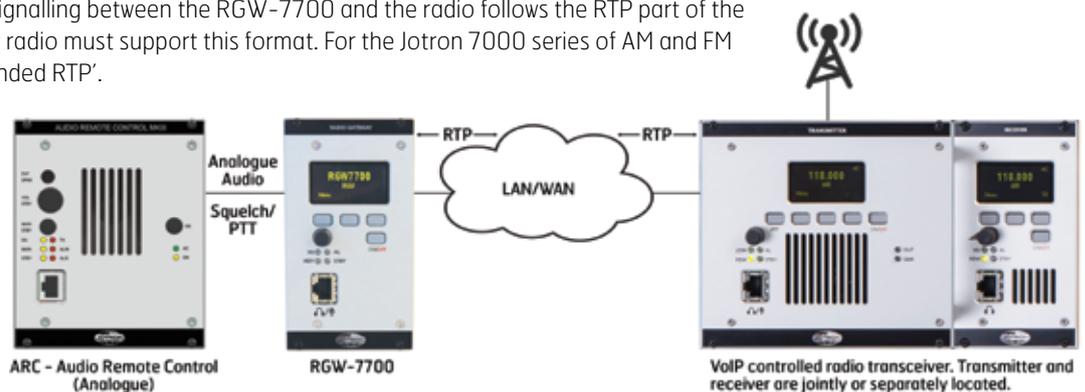
### Analogue radio connected with IP based VCS/Remote Control(s)

When using one or more ED-137 compliant VCS, CWP or Remote Control(s), it is possible to connect a radio that has a standard E&M interface to the IP VCS using the RGW-7700 as an audio and signalling converter. The radio may be a HF, VHF, UHF or SHF radio from any vendor, as long as the radio uses an E&M (600 ohm) line interface for audio and signalling. In this application, the signalling from the VCS to the RGW-7700 follows the ED-137 specification, either using separate connections for TX and RX or connected as a TRX.



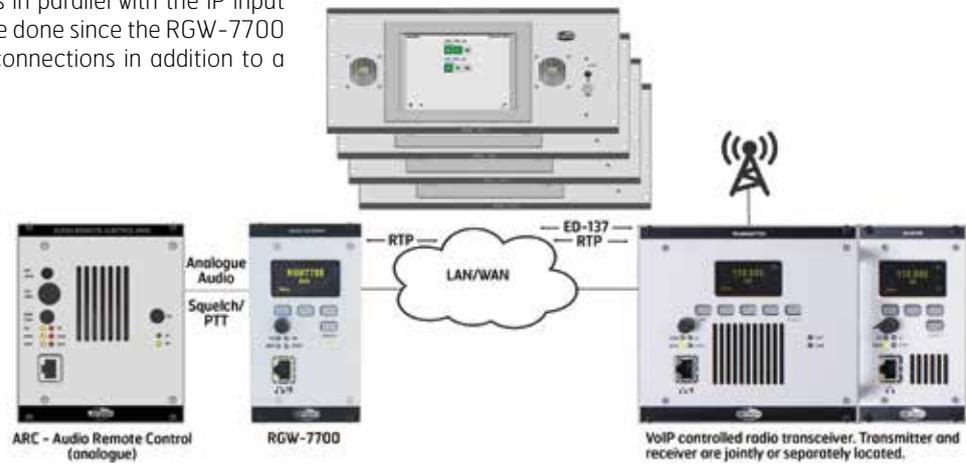
### VoIP compliant radio connected to an analogue source (ARC or VCS)

When using an analogue VCS, CWP or Remote Control, it is possible to connect the remote control to an IP radio. In this application, the signalling between the RGW-7700 and the radio follows the RTP part of the ED-137 standard (no SIP). The IP radio must support this format. For the Jotron 7000 series of AM and FM radios, this format is called 'extended RTP'.



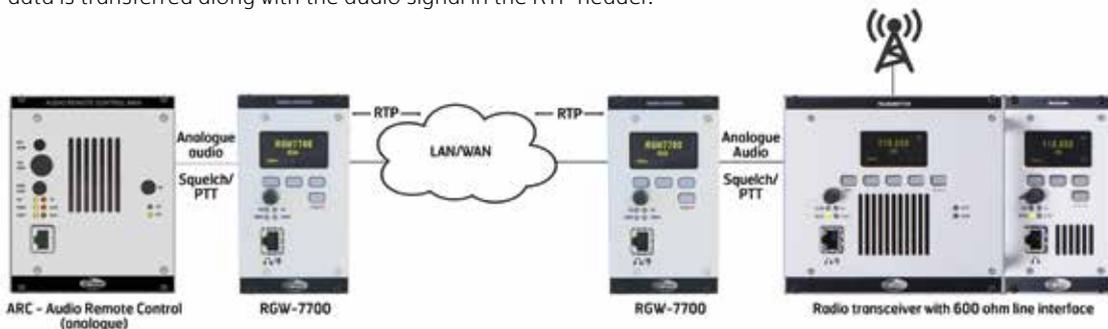
### VoIP compliant radio connected to an analogue source (ARC or VCS), in addition to one or more IP Voice Control Systems

In this application, it is possible to control the radio, using one or more ED-137 compliant VCSs in parallel with the IP input from the RGW-7700. This can be done since the RGW-7700 supports dynamic ED-137 SIP connections in addition to a static connection.



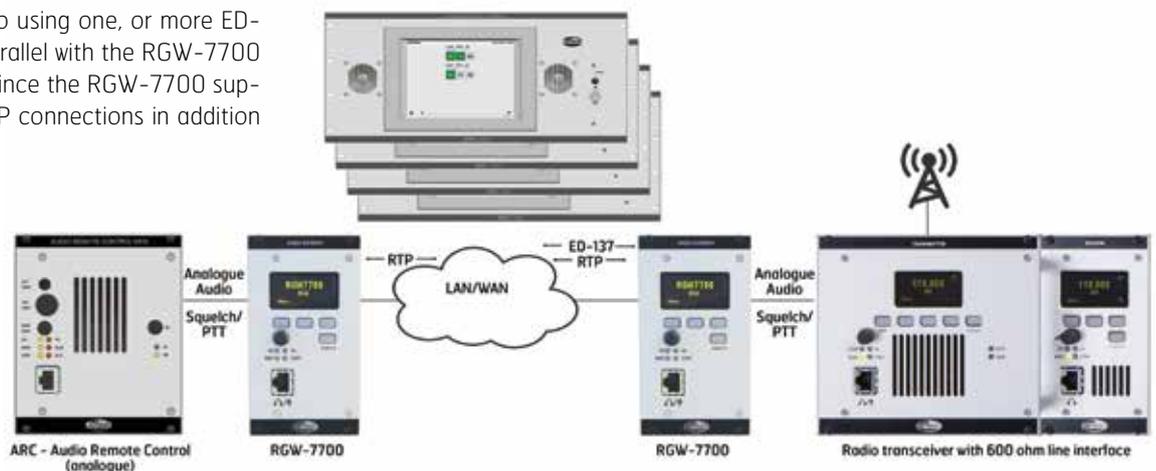
### Analogue radio connected with an analogue source (ARC or VCS)

When using an analogue VCS, CWP or Remote Control towards an analogue radio that uses an E $\Sigma$ M (600-ohm) line interface. In this application, the two RGW-7700 communicates using the extended VoIP setup. The extended VoIP uses a static connection between the two RGW-7700 and contains the RTP information that is used by the ED-137 protocol. Thus both squelch, ptt, as well as RSSI and other important data is transferred along with the audio signal in the RTP header.



### Analogue radio connected with an analogue source (ARC or VCS), in addition to one or more IP voice control systems

In this application, it is possible to control the RGW-7700 closest to the radio using one, or more ED-137 compliant VCSs in parallel with the RGW-7700 input. This can be done since the RGW-7700 supports dynamic ED-137 SIP connections in addition to the static connection.





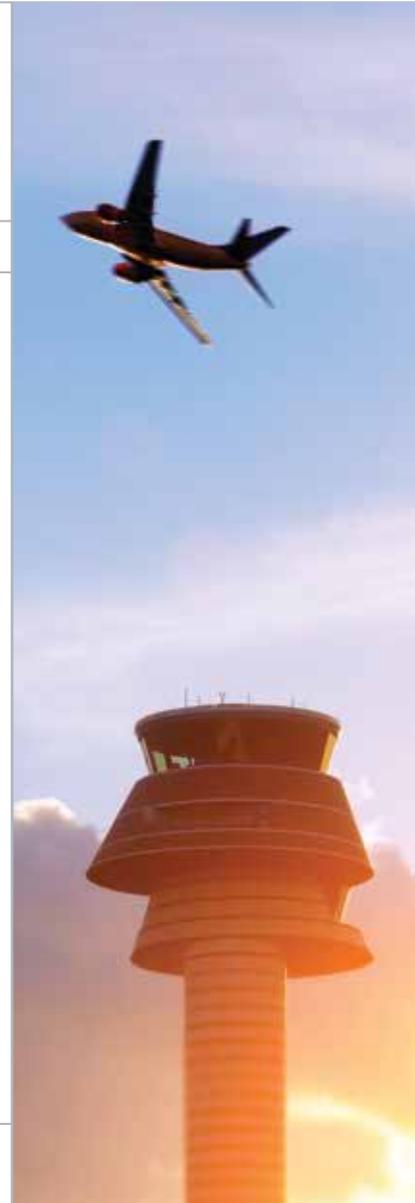
# ► Specifications

## Applicable standards

Voice over IP:	EUROCAE ED-137 (RTP/SIP).
EMC:	ETSI EN-301489 part 1/22, FCC rule 15B.
Safety	EN-60950.
Random vibration:	ETSI EN 300019-2-2(V2.1.2), Method IEC 60068-2-6.
Shock:	ETSI EN 300019-2-2(V2.1.2), Method IEC 60068-2-27.
Drop:	ETSI EN 300019-2-2(V2.1.2).

## General

Audio frequency response:	300-3400 Hz.
Data ports:	RS232, RS485, 100BaseT(Ethernet/LAN)
Remote protocols:	UDP/IP: SNMP v.1., SNMP v.3., RTP, SIP, NTP TFTP, DHCP, RTSP.
Codecs:	G.711 A-law and u-law (standard), G.729A optional.
Supported frame sizes:	Minimum 5 ms, Maximum 150 ms.
Bandwidth @20ms frames:	G.711: 100 kbit/s, G.729 (option): 45 kbit/s.
Bandwidth @100ms frames:	G.711: 71 kbit/s, G.729 (option): 15 kbit/s.
Jitter buffer:	Adaptive (self-adjusting) or manual up to 500 ms (maximum allowed jitter).
Latency, analogue to VoIP:	Typical 3 ms (G.711) +Packet size. E.g. a packet size of 5 ms gives a total delay of 8 ms.
Latency, VoIP to analogue:	Typical 3 ms (G.711) +Jitterbuffer. E.g. a jitterbuffer of 5 ms gives a total delay of 8 ms.
IP network delay:	Support up to 1000 ms network delay without loss of data.
Security (remote control):	SNMP v3. DES, AES, AES192 and AES256 encryption. MD5 and SHA authentication.
BITE monitoring:	Monitoring of voltages, currents, line levels, IP network performance.
Pre-set channels:	99.
Audio response:	300-3400 Hz.
Temperature range:	-20°C to +55°C (operating) -40°C to +70°C (storage).
Humidity:	95% @+40°C (non-condensing).
AC operating voltage:	85 to 264VAC, 47-63Hz.
DC operating voltage:	21.6 - 31.2VDC negative ground, automatic switchover to DC on AC failure.
Line input:	600Ω, -36 - +10dBm, VOGAD, adjustable.
Line output:	600Ω, -36 - +10dBm adjustable.
Heat dissipation:	< 5 W.
MTBF:	Calculated: 10.1 years/unit (MIL-HDBK-217F), Actual: > 20 years.
MTTR:	<30 minutes at lowest replaceable unit.
Dimension:	71mm (I4TE)(W) * 230mm(D) * 128mm (H).
Weight:	1.7 kg.



## Agent/Distributor:

Jotron AS reserves the right to change the design and/or specifications at any time without prior notice. Reservations are also taken towards any general errors that may occur.

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