

**aselsan**

Professional Communications  
Repeater Family

# PROFESSIONAL COMMUNICATIONS REPEATER FAMILY

4700 FIXED TYPE



4700 MODULAR MOBILE



4700 COMPACT MOBILE



**aselsan**

4900 FIXED TYPE



4900 MOBILE



# 4700 Fixed Type Repeater

## General Features

- Modular Design
- 19" Rack Structure
- Duplex Communication
- Adjustable RF Output Power
- Ethernet/IP Interface
- Continuous Duty
- Capability of being supplied by an accumulator (in case of electricity outage)
- Built-in Self Test and Alarm Indication
- Support of Analog, DMR and P25 Systems (with required software changes)
- Full Compatibility with ETSI 300-086 (Analog), ETSI 300-113 (Digital:DMR) and TIA-102.CAAB-D (Digital:P25) standards

## Digital Features

- Repetition of Base Band Signal without Decryption
- Regeneration of Digital Voice & Data with Error Detection and Error Correction Algorithms
- Digital Modulation: 4FSK (DMR), C4FM (P25)



## General Technical Specifications

Frequency Range	VHF: 136-174 MHz (D/R 4741) UHF: 380-470 MHz (D/R 4745)
Channel Separation	12.5 kHz (DMR or P25) 25 kHz (Analog)
Number Of Channels	99 (Programmable)
RF Output Power	VHF: 10-90 W UHF: 10-70 W
Modulation	FM (Analog), 4FSK (DMR), C4FM (P25)
Operating Voltage	13.6Vdc $\pm$ 20%
Standby Current	$\leq$ 700 mA @ 13.6 Vdc
Operating Current	$\leq$ 20 A @ 13.6 Vdc
Dimensions (HxWxL)	$\approx$ 133x482x361 mm (without accessories)
Weight	$\approx$ 10.5 kg (without accessories)
Operating Temperature	-30 °C / +60 °C
Storage Temperature	-40 °C / +85 °C
Humidity	90 % @ 50 °C

## Receiver Technical Specifications\*

Analog Sensitivity	VHF : $\leq$ -119 dBm (@ 12 dB SINAD) UHF : $\leq$ -118 dBm (@ 12 dB SINAD)
Digital Sensitivity	DMR: VHF: $\leq$ -117 dBm (@ 1% BER) UHF: $\leq$ -116 dBm (@ 1% BER) P25: VHF: $\leq$ -120 dBm (@ 1% BER) UHF: $\leq$ -119 dBm (@ 1% BER)
Adjacent Channel Selectivity	$\geq$ 60 dB (@ 12.5 kHz)
Co-Channel Rejection	$\geq$ -12 dB (DMR) $\leq$ 9 dB (P25)
Bit Error Rate Floor	$\leq$ 0.01%
Receiver Audio Distortion	< 5% (@ 100 mW, 8 $\Omega$ )

## Transmitter Technical Specifications\*

RF Output Power	VHF: 10-90W / UHF: 10-70W
Adjacent Channel Power Ratio	>60 dB (@ 12.5 kHz)
Spurious Emissions	<-36 dBm (DMR) / <-20 dBm (P25)
Modulation Limiting	$\pm$ 2.5 kHz (@ 12.5 kHz)
Frequency Stability	$\leq$ 0.5 ppm

\*According to ETSI Standards

# 4700 Modular Mobile Repeater

## General Features

- Easily Transportable
- Rapid Deployment in Required Area
- Modular Design
- Duplex Communication
- Adjustable RF Output Power
- Continuous Duty
- Capability of Being Supplied by an Accumulator (In Case of Electricity Outage)
- Built-in Self Test and Alarm Indication
- Support of Analog, DMR and P25 Systems (with required software changes)
- Full Compatibility with ETSI 300-086 (Analog), ETSI 300-113 (Digital:DMR) and TIA-102.CAAB-D (Digital:P25) standards



## Digital Features

- Repetition of Base Band Signal without Decryption
- Regeneration of Digital Voice & Data with Error Detection and Error Correction Algorithms
- Digital Modulation: 4FSK (DMR), C4FM (P25)



## General Technical Specifications

Frequency Range	VHF: 136-174 MHz (D/R 4741) UHF: 380-470 MHz (D/R 4745)
Channel Separation	12.5 kHz (DMR or P25) 25 kHz (Analog)
Number Of Channels	99 (Programmable)
RF Output Power	VHF: 10-40 W UHF: 10-30 W
Modulation	FM (Analog), 4FSK (DMR), C4FM (P25)
Operating Voltage	13.6Vdc ± 20 %
Standby Current	≤ 700 mA @ 13.6 Vdc
Operating Current	≤ 10 A @ 13.6 Vdc
Dimensions (HxWxL)	≈ 156x204x329 mm (without accessories)
Weight	≈ 8.5 kg (without accessories)
Operating Temperature	-30 °C / +60 °C
Storage Temperature	-40 °C / +85 °C
Humidity	90% @ 50 °C

## Receiver Technical Specifications\*

Analog Sensitivity	VHF: ≤ -119 dBm (@ 12 dB SINAD) UHF: ≤ -118 dBm (@ 12 dB SINAD)
Digital Sensitivity	DMR: VHF: ≤ -117 dBm (@ 1% BER) UHF: ≤ -116 dBm (@ 1% BER) P25: VHF: ≤ -120 dBm (@ 1% BER) UHF: ≤ -119 dBm (@ 1% BER)
Adjacent Channel Selectivity	≥ 60 dB (@ 12.5 kHz)
Co-Channel Rejection	≥ -12 dB (DMR) ≤ 9 dB (P25)
Bit Error Rate Floor	≤ 0.01%
Receiver Audio Distortion	< 5% (@ 100 mW, 8 Ω)

## Transmitter Technical Specifications\*

RF Output Power	VHF: 10-40W / UHF: 10-30W
Adjacent Channel Power Ratio	>60 dB (@ 12.5 kHz)
Spurious Emissions	<- 36 dBm (DMR) / <- 20 dBm (P25)
Modulation Limiting	± 2.5 kHz (@ 12.5 kHz)
Frequency Stability	≤ 0.5 ppm

\*According to ETSI Standards

# 4700 Compact Mobile Repeater

## General Features

- Easily Transportable
- Rapid Deployment in Required Area
- Compact Design
- Synthesized & Microprocessor Controlled
- Adjustable Output Power
- Continuous Duty
- Status & Alarm Indications
- Uninterruptable Battery Operation
- Full Compatibility with ETSI 300-086 (Analog) and TIA-102.CAAB-D (Digital:P25) Standards



## Digital Features

- Repetition of Base Band Signal Without Decryption
- Regeneration of Digital Voice & Data with Error Detection and Error Correction Algorithms
- Digital Modulation: C4FM (P25)

## Environmental Features

- ESD: IEC 801 - 2KV





## General Technical Specifications

Frequency Range	VHF: 136-174 MHz (Full Band)
Channel Separation	12.5 kHz / 25kHz
Number Of Channels	99 (Preset)
RF Output Power	VHF: 10-40 W
Modulation	FM (Analog), C4FM (P25)
RF Input / Output Impedance	50 $\Omega$
Working style	Continuous
Operating Voltage	13.6 Vdc $\pm$ 20%
Standby Current	$\leq$ 0,5A
Operating Current	$\leq$ 8A
Operating Temperature	-30 $^{\circ}$ C / +60 $^{\circ}$ C
Storage Temperature	-40 $^{\circ}$ C / +85 $^{\circ}$ C
Humidity	90%, @50 $^{\circ}$ C (Relative Humidity)
Dimensions (HxWxL)	73x297x182 mm (without duplexer & accessories)
Weight	$\leq$ 3.5 kg (without duplexer & accessories)

## Receiver Technical Specifications

Sensitivity	$\leq$ 0.35 $\mu$ V (ETSI 20 dB SINAD / 1 % BER) $\leq$ 0.25 $\mu$ V (TIA 12 dB SINAD / 5 % BER)
Adjacent Channel Rejection	$\geq$ 60 dB
Intermodulation Rejection	$\geq$ 70 dB (ETSI) $\geq$ 80 dB (TIA)
Spurious Reception Rejection	$\geq$ 90 dB
Co-Channel Rejection	$\leq$ 9 dB
Audio Output Power	100 mW / 8 $\Omega$ (at option connector)

## Transmitter Technical Specifications

RF Output Power	10-40 W
Operating Frequency Accuracy (-30 $^{\circ}$ C / +60 $^{\circ}$ C; 25 $^{\circ}$ C ref)	$\leq$ 1.5 ppm
Conducted Spurious Emissions	$\leq$ -20 dBm
Symbol Rate Accuracy	$\leq$ 10 ppm
Modulation Fidelity	RMS Error $\leq$ 5% Deviation: 1800 $\pm$ 10 Hz
Frequency Deviation	High: 2828 $\pm$ 10 Hz Low: 943 $\pm$ 10 Hz

## Mobile Duplexer Specification

Attenuation	> 80 dB (One channel)
Insertion Loss	< 2.2 dB
Tx-Rx Separation	> 4 MHz

# 4900 Fixed Type Repeater Radio

## General Features

- Physical Structure Providing Advantages In Terms of Weight and Dimensions
- VHF/UHF Dual Band Operation
- Support for Analog, DMR and P25 Systems without any Firmware Change
- Linux Operating System
- Capability of Changing the Operation Mode to Mobile Repeater or Terminal (with Simple Firmware and Hardware Changes)
- Duplex Communication
- Adjustable RF Output Power
- Continuous Duty
- Capability of Being Supplied by an Accumulator (In Case of Electricity Outage)
- Built-in Self Test
- Full Compatibility with ETSI 300-086 (Analog), ETSI 300-113 (Digital: DMR) and TIA-102.CAAB-D (Digital: P25) Standards

## Digital Features

- Repetition of Base Band Signal without Decryption
- Regeneration of Digital Voice & Data with Error Detection and Error Correction Algorithms

## Environmental Features

- MIL-STD-810C/D/E/F/G (Related method and procedures)



## General Technical Specifications

Weight	2425 g
Dimensions	61x177x246 mm
Operating Temperature	-30 °C/+60 °C
Storage Temperature	-40 °C/+80 °C
Power Supply	13.6 Vdc $\pm$ 20%
Processor	ARM9
Operating System	Linux

## Receiver Technical Specifications

Frequency Range	136-174 MHz (VHF) 380-470 MHz (UHF)
Sensitivity	$\leq$ -119 dBm (VHF) $\leq$ -118 dBm (UHF)
Intermodulation Rejection	$\geq$ 75 dB
Audio Distortion	$\leq$ 5% (rated audio power) $\leq$ 5% (17dB below rated audio power)
BER	$\leq$ 0.01%
Stand-by Current- Reception (Rx) Current	$\leq$ 500 mA, $\leq$ 1.2 A

## Transmitter Technical Specifications

Frequency Range	136-174 MHz (VHF) 380-470 MHz (UHF)
Dual Band Transmission Power Range	10-40 W (VHF) 10-30 W (UHF)
Single Band Transmission Power Range	10-90 W (VHF) 10-70 W (UHF)
Frequency Accuracy	$\leq$ 0.5 ppm
Modulation Fidelity	$\leq$ 3%
Transmission (Tx) Current	$\leq$ 8.0 A

# 4900 Mobile Repeater Radio

## General Features

- Easily Transportable
- Rapid Deployment in Required Area
- VHF/UHF Dual Band Operation
- Support for Analog, DMR and P25 Systems without any Firmware Change
- Linux Operating System
- Capability of Changing the Operation Mode to Fixed Type Repeater or Terminal (with Simple Firmware and Hardware Changes)
- Duplex Communication
- Adjustable RF Output Power
- Continuous Duty
- Capability of Being Supplied by an Accumulator (In Case of Electricity Outage)
- Built-in Self Test
- Full Compatibility with ETSI 300-086 (Analog), ETSI 300-113 (Digital: DMR) and TIA-102.CAAB-D (Digital: P25) Standards

## Digital Features

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Modulation Fidelity	$\leq$ 3%
Transmission (Tx) Current	$\leq$ 8.0 A





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