



# RD985 / RD985S

DMR repeaters

The RD985 and RD985S DMR repeaters from Hytera are at the heart of analogue and digital radio networks and were developed in line with the open ETSI standard for DMR.

Both repeaters are characterized by their reliability and outstanding functionality.



# Repeater

## RD985

## RD985S

DMR repeaters



### Highlights

Both repeaters can be operated in analogue and digital mode and are completely compatible with analogue systems currently in use. In addition, the RD985S is a true all-rounder. As well as DMR trunked radio (Tier III), it also supports use in Hytera XPT and simulcast radio systems.

Both repeaters were developed according to the open ETSI DMR standard and, thanks to their technical features, they are your perfect companion to deliver a professional digital radio network.

#### The heart of professional radio systems

All the repeaters from Hytera can be connected in digital mode via IP connection to a comprehensive radio network. In analogue mode, the repeaters can be connected together back-to-back. Both in conventional analogue and DMR modes (DMR Tier II), the RD985 and RD985S repeaters can be used with the RD625 and RD965 repeaters in a radio system.

#### Upgradeable for greater challenges (RD985S)

The RD985S repeater supports not only conventional analogue and digital modes, but also other modes that can be unlocked with a chargeable licence. It can be upgraded into a base station for DMR simulcast, DMR trunked radio (Tier III) or Hytera XPT radio systems. This means that the RD985S is a secure investment for growing radio projects.

#### Improved utilization of the frequency spectrum

Thanks to the TDMA technology, twice as many users can use the same channel. Due to restricted frequency resources, this represents an important relief and reduces expense for system terminals and licences.

#### Dual mode and automatic change

Both repeaters can switch independently between the digital and analogue modes, depending on the type of the receiver signal.

#### Secure communication

To protect your radio communications, the RD985 and RD985S repeaters offer advanced digital encryption functions, according to the DMRA specification. Depending on the variant, both repeaters support encryption with 40, 128 or 256 bit.



## Powerful and reliable

### High transmitting power

Both repeaters offer an adjustable transmitting power of up to 50 watts and therefore satisfy the high requirements for modern PMR radio systems.

### Extremely reliable

As they are designed to military standards, both repeaters offer consistently high reliability and excellent performance. Test results from independent laboratories have shown that the device can be operated for up to 100,000 hours without interference (MTBF) and it therefore meets the requirements for use in extreme situations.

### Flexible installation options

The RD985 and RD985S repeaters can be installed in a 19-inch equipment rack with an optional installation kit. Alternatively, they can be operated simply on a rack, a bracket or a table. With the additionally available installation kit, an optional duplexer can be housed in the chassis.

### High cooling capacity

The power amplifier can dissipate any generated heat with extraordinary efficiency. In addition, the integrated fan system ensures stable and powerful operation.

### High-resolution 2-inch LCD colour display

Whether during ongoing operations, or during maintenance tasks, users can easily access all desired information via the large LCD colour display.

### Professional design

Integrated LEDs on the volume controller complement the innovative repeater design and simultaneously optimize its use. The repeaters are easy to use, thanks to their clear menus and the large navigation controller.



### Clear LED indicators

The 8 LED indicators on the front allow the current repeater status to be easily identified.

## In the box



DC Power Cable  
(3M) PWC11

### Ergonomic design

The beveled handles facilitate the installation and transport of the repeater.

## Optional accessories



Programming cable  
(USB) PC47



Handheld micro  
phone SM16A1



Table microphone  
SM10A1



Installation kit for  
duplexer BRK09



Installation kit  
for 19-inch racks  
(black) BRK12



External Power  
Supply (300W)  
PS22002

The representations shown above are intended for reference purposes only. The products themselves may deviate from these representations.



## Technical Data

General data	
Frequency range	VHF: 136 MHz – 174 MHz UHF: 400 MHz – 470 MHz
Supported operating modes	<ul style="list-style-type: none"> <li>DMR Tier II in acc. with ETSI TS 102 361-1/2/3</li> <li>Analogue</li> <li>DMR Tier III (RD985S only, via chargeable licence)</li> <li>Hytera XPT (RD985S only, via chargeable licence)</li> </ul>
Channel capacity	16
Zone capacity	1
Channel spacing	12.5 / 20 / 25 kHz (analogue) 12.5 kHz (digital)
Operating voltage	13.6 ± 15% V <sub>DC</sub> Storage battery: 14.8 V
Max. power consumption (in stand by)	≤ 0.8 A
Max. power consumption (during transmission)	≤ 3.5 A
Standard battery	10 Ah (lithium-ion battery)
Battery life (5-5-90 operating cycle, high transmitting power, standard battery)	approx. 8 hours
Frequency stability	± 0.5 ppm
Antenna impedance	50 Ω
Dimensions (H × W × D)	52 × 183 × 302 mm (repeater with protective housing) 42 × 172 × 280 mm (repeater without protective housing)
Weight	3.5 kg (without standard battery)

Ambient data	
Operating temperature range	-30 °C to +60 °C
Storage temperature range	-40 °C to +85 °C
ESD	IEC 61000-4-2 (Level 4), ± 8 kV (contact), ± 15 kV (air)
Dust and water protection	IP67
Shock and vibration resistance	MIL-STD-810 C/D/E/F/G
Relative humidity	MIL-STD-810 C/D/E/F/G

GPS	
Time to first position recognition (TTFF) cold start	< 1 minute
Time to first position recognition (TTFF) warm start	< 10 seconds
Horizontal accuracy	< 10 meter

Your Hytera partner:



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Transmitter	
Transmitting power	1 – 50 W (adjustable)
Modulation	11 K0F3E at 12.5 kHz 14 K0F3E at 20 kHz 16 K0F3E at 25 kHz
4FSK digital modulation	12.5 kHz (data only): 7K6ΦFXD 12.5 kHz (data and voice): 7K6ΦFXW
Interfering signals and harmonics	-36 dBm (< 1 GHz) -30 dBm (> 1 GHz)
Modulation limiting	± 2.5 kHz at 12.5 kHz ± 4.0 kHz at 20 kHz ± 5.0 kHz at 25 kHz
Hum and noise	40 dB at 12.5 kHz 43 dB at 20 kHz 45 dB at 25 kHz
Adjacent channel selectivity	60 dB at 12.5 kHz 70 dB at 20 / 25 kHz
Audio sensitivity	+1 dB at -3 dB
Nominal audio distortion	≤ 3%
Digital vocoder type	AMBE+2™

Receiver	
Sensitivity (analogue)	0.3 μV (12 dB SINAD) 0.22 μV (typical) (12 dB SINAD) 0.4 μV (20 dB SINAD)
Sensitivity (digital)	0.3 μV / BER 5 %
<b>Adjacent channel selectivity</b> TIA-603 ETSI	65 dB at 12.5 kHz / 75 dB at 20 / 25 kHz 60 dB at 12.5 kHz / 70 dB at 20 / 25 kHz
<b>Intermodulation</b> TIA-603 ETSI	75 dB at 12.5 / 20 / 25 kHz 70 dB at 12.5 / 20 / 25 kHz
<b>Spurious response rejection</b> TIA-603 ETSI	75 dB at 12.5 / 20 / 25 kHz 70 dB at 12.5 / 20 / 25 kHz
Hum and noise	40 dB at 12.5 kHz, 43 dB at 20 kHz 45 dB at 25 kHz
Nominal audio power output	0.5 W
Nominal audio distortion	≤ 3 %
Audio sensitivity	+1 dB at -3 dB
Conducted spurious emission	< -57 dBm

All technical information was determined at the factory and in accordance with the corresponding standards. Subject to change on the basis of continuous development.

Further information can be found at:

[www.hytera.co.uk](http://www.hytera.co.uk)

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Hytera reserves the right to modify the product design and the specifications. In case of a printing error, Hytera does not accept any liability. All specifications are subject to change without notice.

Encryption features are optional and have to be configured separately. They are also subject to European export regulations.

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