Hytera
Respond & Achieve

# RD965

## Outdoor DMR repeater

The RD965 is Hytera's first digital/analogue repeater for outdoor use that is compatible with the DMR standard. Thanks to its compact design, the device can be used in a number of application scenarios, whether carried on your back, mounted on a wall or installed in an equipment rack.


DMR
DIGITAL MOBILE RADIO ASSOCIATION

www.hytera.co.uk

# Repeater

# RD965

**Outdoor DMR repeater**

## Highlights

**GPS**
The GPS module enables emergency control rooms to monitor the location of a small radio network in real-time if the repeater is being used as a mobile unit.

**Small backup battery (optional)**
The 10 Ah lithium-ion battery can support at least eight hours of operation at a duty cycle of 50% and boasts a high transmitting power as an emergency power supply, for outdoor operation and mobile use. RD965 is compatible with the SMBus 1.1 standard and can monitor battery statuses, such as the estimated remaining capacity. Intelligent charging management enables the battery to be charged automatically for later use. The three-stage battery protection enhances the safety and reliability of the charging process.

**Repeater diagnostics and control system**
Using a PC-based application, it is possible to monitor, diagnose, and control remote repeaters (via the IP interface with a network connected) and local repeaters (via USB port). Hytera's RDAC software supports network access at multiple points and enables the administrator to monitor two-way radios registered in the DMR radio network.

**Voice input/output via dual timeslots**
The device supports voice input and output via dual timeslots in digital mode and enables users to continuously record conversations.

**Flexible networking**
By connecting geographically distributed repeaters that run at the same or different frequencies to form an IP-based and location-independent wireless communication network, mobile radios can use voice and data services even when in roaming mode. The RD965 can be used with the RD985 in a repeater network.

# Innovative design

**Outdoor operation and IP67 degree of protection**
RD965 fully complies with the standards MIL-STD-810 C/D/E/F/G and conforms to the IP67 degree of protection, ensuring exceptional performance, even in harsh conditions.

**Slimline and portable**
With its compact design, the device measures a mere 52 mm in height and weighs less than 5kg, including the 10Ah battery.

**16 channels**
The repeater supports up to 16 voice channels. The user can switch between channels using the PC-based RDAC software, the channel selector switch on the front panel of the device, or the external interface on the repeater.

**Upgradeable software**
New functions can be integrated easily and smoothly using software upgrades, meaning the user does not need to buy a new device.


**Digital/analogue connection**
Using a back-to-back-connection between two repeaters, analogue radio networks can be connected to the DMR radio system, facilitating the smooth transition from analogue to digital radio technology.

**User-friendly control panel**
The control panel has various indicators for the channel status, a button for the channel settings and a connection for a hand microphone or a remote speaker microphone.

**Flexible applications**
The repeater can be mounted on tables and walls to provide mobile radio coverage within a building, installed in a mobile case or rack for emergency communication, or carried on your back for outdoor use. The RD965 repeater is also suitable for providing tunnels and underground facilities, e.g. underground car parks, with radio coverage.

## In the box


External Power Supply (84W) PS7702

## Optional accessories


GPS antenna AN0141H03


Nylon backpack NCN010


Lithium-ion battery PV3001


Remote speaker microphone IP67 SM18A1


Various programming cables

The illustrations above are for reference purposes only. The products might differ from these illustrations.

## Technical Data

### General

| | |
|---|---|
| Frequency range | VHF: 136 - 174 MHz<br>UHF: 400 - 470 MHz<br>UHF2: 350 - 400 MHz |
| Supported operating modes | • DMR Tier II<br>in acc. with ETSI TS 102 361-1/2/3<br>• Analogue |
| Channel capacity | 16 |
| Zone capacity | 1 |
| Channel spacing | 12.5 / 20 / 25 kHz (analogue)<br>12.5 kHz (digital) |
| Operating voltage | 13.6 ± 15% $V_{DC}$<br>Storage battery: 14.8 V |
| Max. power consumption (in stand by) | ≤ 0.8 A |
| Max. power consumption (during transmission) | ≤ 2.5 A |
| Battery life (50-50 duty cycle, high TX power) | approx. 8 hours |
| Frequency stability | ± 0.5 ppm |
| Antenna impedance | 50 Ω |
| Dimensions (H × W × D) | 52 × 183 × 302mm<br>(with 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),<br>± 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 minutes |
| Horizontal accuracy | < 10 metre |

### Transmitter

| | |
|---|---|
| Transmitting power | 1 - 25 W (adjustable) |
| Modulation | 11 K0F3E at 12.5 kHz<br>14 K0F3E at 20 kHz<br>16 K0F3E at 25 kHz |
| 4FSK digital modulation | 12.5 kHz (data only): 7K60FXD<br>12.5 kHz (data and voice): 7K60FXW |
| Interfering signals and harmonics | -36dBm (< 1GHz)<br>-30dBm (> 1GHz) |
| Modulation limiting | ± 2.5 kHz at 12.5 kHz<br>± 4.0 kHz at 20 kHz<br>± 5.0 kHz at 25 kHz |
| Hum and noise | 40 dB at 12.5 kHz<br>43 dB at 20 kHz<br>45 dB at 25 kHz |
| Adjacent channel selectivity | 60 dB at 12.5 kHz<br>70dB at 20/25kHz |
| Audio sensitivity | + 1 to - 3dB |
| Nominal audio distortion | ≤3% |
| Digital vocoder type | AMBE+2™ |

### Receiver

| | |
|---|---|
| Sensitivity (analogue) | 0.3 µV (12 dB SINAD)<br>0.22 µV (typical) (12 dB SINAD)<br>0.4 µV (20 dB SINAD) |
| Sensitivity (digital) | 0.3 µV / BER 5 % |
| **Adjacent channel selectivity**<br>TIA-603<br>ETSI | <br>65 dB at 12.5 kHz / 75 dB at 20 / 25 kHz<br>60 dB at 12.5 kHz / 70 dB at 20 / 25 kHz |
| **Intermodulation**<br>TIA-603<br>ETSI | <br>75 dB at 12.5 kHz / 20 / 25 kHz<br>70 dB at 12.5 kHz / 20 / 25 kHz |
| **Spurious response rejection**<br>TIA-603<br>ETSI | <br>75 dB at 12.5 kHz / 20 / 25 kHz<br>70 dB at 12.5 kHz / 20 / 25 kHz |
| Signal-noise ratio (S/N) | 40 dB at 12.5 kHz<br>43 dB at 20 kHz<br>45 dB at 25 kHz |
| Audio distortion | ≤ 3 % |
| Audio sensitivity | + 1 to - 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.

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




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