

Business  
Critical  
Communications

Entel

# DR400 Series

Commercial Grade UHF Repeaters



DMR/Analogue & Analogue-only models



100% Duty Cycle at Full Power



Desk, Wall & Rack Mountable



Integrated Battery Charger



Internal PSU & Duplexer



Tough | FUTURE  
PROOF  
Versatile  
Dependable

[entel.co.uk/dr-series](http://entel.co.uk/dr-series)

# DR400 Series

## Commercial Grade DMR / Analogue UHF Repeater

The DR400 Series are compact, tough and versatile UHF repeaters that deliver a 100% transmit duty-cycle for both Land and Maritime applications. It's available in a DMR / Analogue / Mixed Mode model (DR482) and an Analogue-only model (DR482/A).

Entel's simple, yet robust and powerful DR400 Series repeaters are ideal for demanding applications both on land or at sea.

## Key Benefits

### Exceptionally Robust

Entel's development team recognises that durability and reliability go hand-in-hand. Housed in an ultra-compact enclosure with a low thermal footprint, the DR400 Series are built to perform in the toughest environments. It has been tested for thermal shock, vibration, impact shock, solar radiation, and ingress. Combined with Entel's rigorous life-cycle testing programme, users can expect many years of trouble-free operation, even under the most demanding conditions.

### Built in Power Supply

The repeater is supplied with a built in AC Mains power supply capable of charging a backup battery.

### Built in Protection

The DR400 Series are protected against antenna faults, over temperature, interfering signal, AC mains and DC supply voltage fluctuations.

### Three Mounting Options

A DR400 Series repeater can be desk, 19" rack (two repeaters fit side-by-side on a 3U rack tray) or wall mounted (using the optional wall mounting kit).

### Simple End-User Programming

Our unique and simple-to-use Windows® app means there is no longer any need to return a repeater to your dealer to reprogram or update it. With the user-friendly app, you can simply transfer the programming data sent to you by your Entel dealer, apply software updates or add new features to your Entel DR400 Series repeater yourself.

### Three Power Supply Modes

A DR400 Series repeater can be powered in three different modes:

- AC Mains only
- 12V DC only
- AC Mains with Battery Backup

### Optional Internal Duplexer

A DR400 Series repeater can be supplied either with separate Tx and Rx connectors for 2-antenna working or an external duplexer, or with an internal duplexer for single antenna working.

### Mixed Mode Operation\*

To support legacy analogue radios, a DR482 repeater can be configured to automatically switch between DMR Digital and Analogue modes.

## Model List

Frequency Band	DMR/Analogue	Analogue-only
400-470MHz	DR482	DR482/A



\* DR4x2 model only

## Key Features

- ✓ Digital\*, Analogue & Mixed modes\*
- ✓ Simple end-user programmer app
- ✓ Built-in mains power supply
- ✓ Built-in mains-fail battery charger
- ✓ Software upgradable for extra features/updates
- ✓ 100% Transmit duty cycle at 25 Watts
- ✓ Optional built-in duplexer
- ✓ Versatile mounting options

# Technical Specifications

Physical	
Size (H x W x D):	95 x 220 x 375 mm (main body only)
Weight:	4.15 kg
Temperature Range:	Operational: -30°C to +60°C (fan unrestricted)
	-30°C to +55°C (fan dust filter fitted)
Storage:	-40°C to +70°C
Relative Humidity:	Up to 95% (non-condensing) at 50°C
Antenna Connectors:	Two Antenna Working: Tx: N-Type female Rx: BNC female
	With Optional Duplexer: Tx/Rx: N-Type female
Power Connectors:	AC: Fused IEC C14 (fits IEC C13 cable)
	DC: Molex Mini-Fit Sr. 2-Circuit Plug

RF General	
Mode of Operation:	Full-Duplex Repeater
Number of Channels:	1
Channel Bandwidth:	12.5 kHz or 25 kHz
Supported Modes of Operation: (Auto-switches between modes)	Analogue FM Conventional
	DMR Tier II (TS 102 361-1 and -2) <sup>†</sup>

Transmitter		
Rated Output Power:	1–25W (adjustable)	
Transmitter Duty Cycle:	Continuous Duty	
Frequency Stability:	<0.5 ppm	
Intermodulation Attenuation:	>40 dB	
Adjacent Channel Power: (ETSI & TIA603E)	12.5kHz	>60 dB
	25kHz	>70 dB
FSK Modulation Fidelity (DMR) <sup>†</sup> :	Frequency:	<3%
	Magnitude:	<1%
Max Freq Deviation / Modulation Limiting: (Analogue FM)	12.5kHz	±2.5 kHz
	25kHz	±5.0 kHz
Spurs & Harmonics (Conducted and Radiated):	<1GHz	<-36 dBm
	>1GHz	<-30 dBm
FM Hum & Noise:	12.5kHz	<-45 dB
	25kHz	<-50 dB

Conformance				
	UK & Europe (Land)	UK & Europe (Marine)	USA (Land)	Canada
Radio:	EN 300 086 EN 300 113	EN 300 720	CFR Title 47 Part 90	RSS-119
Safety:	EN 62368-1			
EMC:	EN 301 489-1 and -5	EN 60945	CFR Title 47 Part 15	ICES-003
Labelling:	UKCA marked CE marked		FCC ID: RV6DRUHFL	ISED IC ID: 34924-DRUHFL

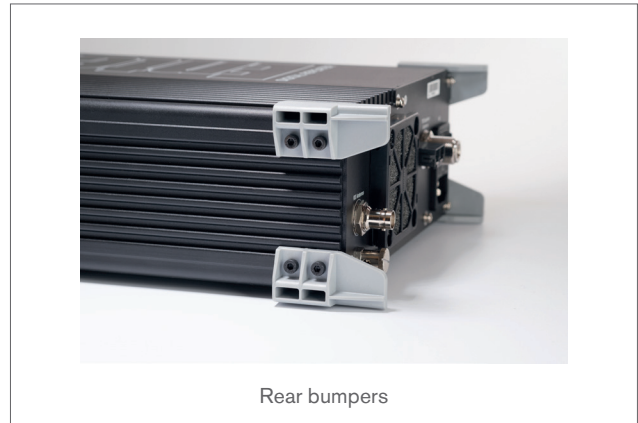
Emission Designators				
Bandwidth	Modulation	Channelisation	Information Carried	Applicable Designator
12.5 kHz	Analogue FM	1x Analogue Channel	Voice	11K0F3E
25 kHz	Analogue FM	1x Analogue Channel	Voice	16K0F3E
12.5 kHz	Digital 4FSK	DMR 2-Timeslot TDMA	Data	7K60FXD <sup>†</sup>
12.5 kHz	Digital 4FSK	DMR 2-Timeslot TDMA	Voice	7K60FXE <sup>†</sup>
12.5 kHz	Digital 4FSK	DMR 2-Timeslot TDMA	Voice & Data	7K60FXW <sup>†</sup>

Power Supply			
Power Supply Type:	Switching		
Input Power Modes:	AC only		
	AC with DC-revert upon AC-failure		
Input Voltage:	AC:	UK/Euro:	230 VAC ±10%, 47-53 Hz
		Americas:	110 VAC ±10%, 57-63 Hz
	DC:	12.0-15.0 VDC	
Typical Input Power: (25°C, VSWR<1.5 and backup battery fully charged or absent)	AC:	Standby:	18 VA
		25W Tx:	130 VA
	DC:	1W Tx:	40 VA
		Standby:	3 W
	25W Tx:	70 W	
	1W Tx:	20 W	
Backup Battery Compatibility:	Charge Scheduling:	Batt Charging during Standby Charging suspended during Tx	
	Charge Current:	1A @ V <sub>batt</sub> < 11.5VDC 3A @ 11.5VDC < V <sub>batt</sub> < 13.8VDC Up to 3A @ V <sub>batt</sub> = 13.8VDC	

Receiver			
Frequency Stability:	<0.5 ppm		
Sensitivity:	Analogue	12dB SINAD	<0.2 µV
	DMR <sup>†</sup>	5% BER	<0.2 µV
Adjacent Channel Selectivity:	ETSI	12.5kHz	>60 dB
		25kHz	>70 dB
	TIA603E	12.5kHz	>65 dB
		25kHz	>75 dB
Blocking / Desensitisation:	ETSI	>84 dB	
	TIA603E	>84 dB	
Intermodulation Response Rejection:	ETSI	>70 dB	
	TIA603E	>75 dB	
Spurious Response Rejection:	ETSI	>70 dB	
	TIA603E	>75 dB	
Spurious Emissions (Conducted and Radiated):	<1GHz	<-57 dBm	
	>1GHz	<-47 dBm	

<sup>†</sup> Not applicable to DR482/A Analogue-only model

## Image gallery



## Accessories

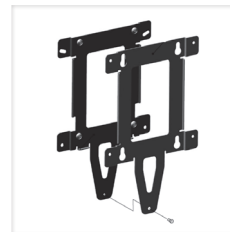
Supplied package include: AC Mains lead (Available plug options: UK, EURO or US), USB lead and User Guide.



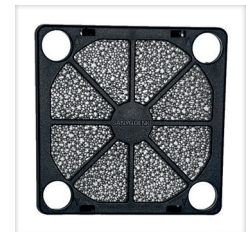
**DR/DCL**  
DC lead



**DR/DUP/380-450MHz/5-7MHz**  
(380-450MHz, 5-7MHz Tx/Rx Separation)  
**DR/DUP/380-450MHz/7-12MHz**  
(380-450MHz, 7-12MHz Tx/Rx Separation)  
**DR/DUP/380-450MHz/12-20MHz**  
(380-450MHz, 12-20MHz Tx/Rx Separation)  
**DR/DUP/450-520MHz/5-7MHz**  
(450-520MHz, 5-7MHz Tx/Rx Separation)  
**DR/DUP/450-520MHz/7-12MHz**  
(450-520MHz, 7-12MHz Tx/Rx Separation)  
**DR/DUP/450-520MHz/12-20MHz**  
(450-520MHz, 12-20MHz Tx/Rx Separation)  
Internal duplexer kit



**DR/WMK**  
Wall mount kit



**DR/DF**  
Dust Filter



**DR/ACFILTER**  
AC Mains Filter  
(Required to meet marine EMC standards  
for AC powered ship installations)

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