

DMR / Analogue repeaters

Entel

DR400 Series

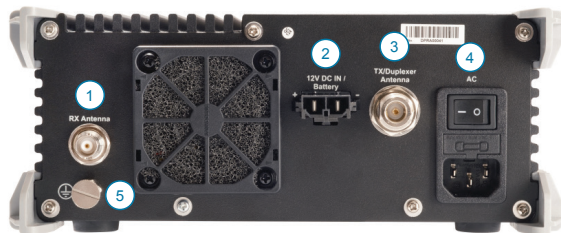
DMR / Analogue repeaters

PACKING LIST

- DR400 Series Repeater
- AC Mains Lead (UK, EU or US)
- USB Programming Lead
- Quick start user guide

CONNECTORS AND INDICATORS

Rear panel connectors (with optional dust filter fitted)



- Receiver input (dual antenna port configuration only / not present when the optional internal duplexer has been fitted).
- DC Power / Backup Battery Connector.
- Transmitter output (dual antenna port configuration / TX & RX connector when the optional internal duplexer has been fitted).
- AC Mains input / Mains On/Off switch / Fuse holder. Replacement fuse part number: [Littelfuse 023901.6HXP](#)
- Grounding stud



Mains switch
ON



Mains switch
OFF

Front Panel Connector and Indicators



- Power LED
- TX DMR Slot 1 / Analogue LED
- RX DMR Slot 1 / Analogue LED
- TX DMR Slot 2 LED
- RX DMR Slot 2 LED
- USB engineering socket

LED Indicator patterns

All extinguished	No power applied / switched off
All Amber	Switched on & booting up
Power LED	
Solid Green	Operational using primary power (AC or DC)
Flashing Green	Operational using DC revert (AC mains failed, Tx Power="Low")
Flashing Amber / Red	Bootloader mode
Alternating Green / Red	Programming mode
Flashing Red	Repeater disabled
Solid Red	Major alarm
Solid Amber	Minor Alarm
TX1 or TX2	
Extinguished	Idle
Steady Red	Transmitting normally
Flashing Red	Transmitting in 'limp' mode (Tx Power=1W)
RX1 or RX2	
Extinguished	Idle
Steady Green	Receiving normally
Steady Amber	Receiving invalid signal (interference)

SAFETY

WARNING: Risk of Serious Injury, Death, or Equipment Damage

- Read and strictly follow all safety precautions in this Quick Start Guide and related documents before installing, operating, or maintaining this Entel DR400 Series repeater.
- Installation, maintenance, and service must only be performed by trained and qualified engineers in accordance with all applicable local safety codes, standards, and regulations.

Electrical Safety

WARNING: Hazardous Voltage

- Disconnect all power sources before installation or maintenance.
- Ensure the repeater is properly grounded according to local electrical codes and manufacturer instructions.
- Use only a mains supply with RCD (Residual Current Device) protection.
- Ground all antenna cable shields per the cable manufacturer's recommendations.
- If using an outdoor antenna, fit and properly ground an appropriate surge protection (correct RF bandwidth/power rating).
- Use only power cords and connectors supplied or specified by Entel. Do not open the repeater casing or insert objects into openings.

Thermal Safety

WARNING: Hot Surfaces & Airflow Requirements

- Ensure adequate clearance around the unit for airflow.
- Do not block or cover ventilation openings. Proper airflow is essential for cooling.
- Components can become very hot during operation:
 - Exercise caution when near an operating repeater.
 - Allow the unit to cool down sufficiently before performing maintenance.
 - Never store combustible materials near the repeater.
- Only operate the repeater within its specified environmental limits (temperature: 30°C to +60°C; humidity: <95% non-condensing).

RF Exposure Safety

WARNING: Hazardous Radio Frequency Energy

- This equipment generates significant Radio Frequency (RF) energy.
- Installers and users are responsible for ensuring compliance with all local and international regulations regarding human exposure to Electro-Magnetic Fields (EMF). Consult your frequency regulator for details.
- Install antennas in locations that ensure minimum safe separation distances are maintained according to RF exposure regulations.
- Never operate the repeater without a correctly connected antenna or dummy load. The primary RF burn risk comes from the antenna:
 - Touching or being within 2-3 cm of the antenna during transmission can cause RF burns.
 - Maintain a minimum distance of 5 metres (preferably 10 metres) from a transmitting antenna to minimise RF exposure.
- Disconnect repeater power before connecting or disconnecting antennas to prevent equipment damage and reduce injury risk.
- UK Specific Guidance:
 - HSE: <https://www.hse.gov.uk/pubns/books/hsg281.htm>
 - Ofcom: <https://www.ofcom.org.uk/spectrum/electromagnetic-fields/compliance-and-enforcement-guidance>

DISCLAIMER

Entel has prepared this manual with care but provides no warranty regarding its accuracy or reliability. While the information herein is believed to be reliable, Entel cannot assume responsibility for inaccuracies, often arising because Entel reserves the right to make changes without notice to any product herein to improve reliability, function, or design.

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POWER SUPPLY REQUIREMENTS

AC: UK/Euro model: Americas model:
230VAC±10%, 50Hz @ 1A max 110VAC±10%, 60Hz @ 2A max

WARNING: Before connecting AC power, check the label on the rear of the repeater to confirm its AC voltage configuration (110 or 230VAC).

DC: 12.0-15.0VDC @ 10A max
(for external DC power supply or backup battery connection)

WARNING: When operating from AC, NEVER connect an external DC power supply or charger to the DC connector as it may cause permanent damage. When using AC, the DC connector is for a backup battery only.

PROGRAMMING AND INSTALLATION

WARNING: Improper installation risks death, injury and/or damage to the repeater. Only use suitably trained and qualified personnel to program, install, commission, service and/or repair the repeater.

- Consult Entel's **DR400 Series Repeater Installation Guide** for installation and commissioning details.
- Consult Entel's **DR400 Series Repeater Programming Guide** for programming details.

OPTIONAL ACCESSORIES

Model	Description
DR/DUP70/5-7	Repeater Internal UHF Duplexer kit (5-7MHz Tx/Rx separation)
DR/DUP70/7-9	Repeater Internal UHF Duplexer kit (7-9MHz Tx/Rx separation)
DR/DUP70/9-13	Repeater Internal UHF Duplexer kit (9-13MHz Tx/Rx separation)
DR/DUP70/13-16	Repeater Internal UHF Duplexer kit (13-16MHz Tx/Rx separation)
DR/DCL	Repeater DC Lead
DR/WMK	Repeater Wall Mount Kit
DR/DF	Repeater Dust Filter*

* Reduces max temperature to +55°C

UK & EU DECLARATIONS OF CONFORMITY

Hereby, Entel UK Limited declares that the DR400 Series DMR / Analogue repeater is in compliance with:

- UK Radio Equipment Regulations 2017 (SI 2017/1206).
- EU Radio Equipment Directive 2014/53/EU
- UK Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012 (SI 2012/3032)
- EU Restriction of Hazardous Substances (RoHS) Directive 2011/65/EU

The full text of the relevant declarations of conformity are available at the following internet addresses:

EU: www.entel.co.uk/RED
UK: www.entel.co.uk/UKCA

Frequency Range	VHF	136-174MHz
	UHF	400-470MHz
Power Output	VHF	Up to 25W
	UHF	Up to 25W

The product shall only be put into service after it has been professionally configured by a specialist radio communications dealer for the EU member state or geographical area it is intended to be operated within.

Intended countries of use:

	AT	BE	BG	CH	CY	CZ	DE	DK	EE
	ES	FI	FR	EL	HR	HU	IE	IS	IT
	LI	LT	LU	LV	MT	NL	NO	PL	PT
	RO	SE	SI	SK	TR	UK(NI)			

