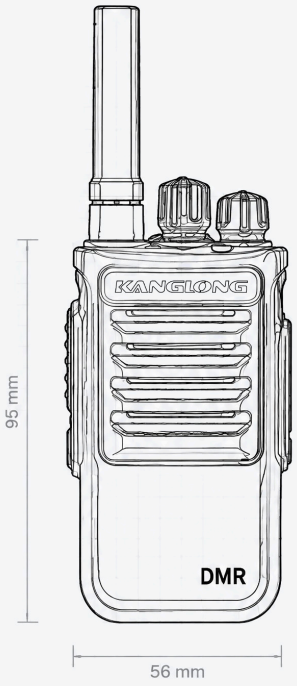
PROFESSIONAL
TWO-WAY RADIO

RELIABLE COMMUNICATION
FOR A SAFER WORLD

USER MANUAL
INSTRUCTION MANUAL



DMR

DM-300
DMR DIGITAL TRANSCEIVER

Dual time slots
TDMA

Remote kill
ENHANCED SECURITY

AES 256 encryption
SECURE COMMUNICATION

USB Type-C
CONVENIENT CHARGING

KANGLONG ELECTRON. TECH. CO., LTD.
PROFESSIONAL COMMUNICATION EQUIPMENT

PREFACE & KEY FEATURES

Thank you for choosing the **DM-300** professional digital two-way radio! This unit features advanced DMR digital technology, full analog FM compatibility, TDMA Direct Dual Capacity (Dual Time Slots), AES 256 hardware voice encryption, Remote Stun/Kill/Revive/Monitor, multi-zone management, and convenient Type-C direct charging. Please read this manual thoroughly before initial operation for safe and optimal performance.

AES 256 Hardware Encryption | Direct Dual Time Slots (TDMA)

Remote Kill / Revive / Monitor | USB Type-C Fast Charging

Dual-Mode DMR Tier II / FM | 1000mW High Audio Output

【Core Technological Highlights】

• **AMBE+2™ Vocoder**: Delivers crystal-clear voice clarity even in harsh industrial and noisy environments.
• **Direct Mode Dual Capacity**: Enables 2 simultaneous voice talk-paths on a single 12.5 kHz channel without a repeater.
• **High Security**: Prevents eavesdropping with AES 256 digital encryption & analog voice scrambling.

1. STANDARD PACKAGE CONTENTS

Please carefully unpack and check that all items listed below are included in your package. If any item is missing or damaged, please contact your dealer immediately:

Item Name	Qty	Description & Purpose
DM-300 Transceiver	1	DMR Tier II & Analog dual-mode radio
Li-ion Battery Pack	1	High-capacity rechargeable battery pack
UHF High-Gain Antenna	1	400-480 MHz tuned antenna (50Ω)
Belt Clip & Screws	1 set	Heavy-duty belt clip for secure carry
Desktop Charger Base	1 set	Fast charging cradle with Type-C cable
User Manual / Warranty	1	Operating guide and warranty card



Fig 1-1 Standard Package Contents Overview

2. RADIO OVERVIEW & DIAGRAM

The physical components, knobs, and controls of the DM-300 are shown below:

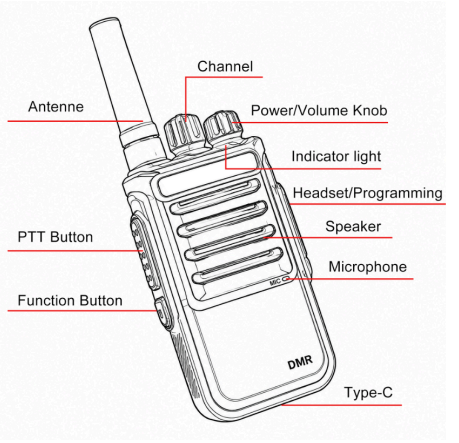


Fig 2-1 DM-300 Controls and Parts Diagram

【Quick Inspection Notice】

Check antenna and battery connection before powering on. Ensure the rubber SP/MIC cover is firmly closed when not using accessories to maintain ingress resistance.

2.1 CONTROLS & COMPONENTS REFERENCE

Component	Location	Function & Operation Guide
Antenna	Top Left	Transmits & receives RF signals. Rotate clockwise to tighten. Never carry radio by antenna.
Channel Knob	Top Center	Rotate to switch operating channels (1-16 / Multi-zone) with voice announcement.
Power / Volume	Top Right	Rotate clockwise past "click" to power ON and adjust volume; counter-clockwise to power OFF.
LED Indicator	Front Bar	Displays operating status (Red = TX; Green = RX/Monitor; Flashing = Scan/Alert).
SP/MIC Jack	Right Cover	Audio jack for earpiece, speaker mic, or PC USB programming cable.
Speaker	Front Grille	Built-in 1000mW speaker delivers clear voice output.
Microphone	Front Lower	High-sensitivity mic. Keep 3-4 cm talking distance.
PTT Key	Upper Left	Push-to-Talk. Press and hold to transmit; release to receive.
Programmable Key	Lower Left	Customizable in CPS (Scan, Monitor, Power, Zone, etc.).
Type-C Port	Battery Base	USB Type-C port for fast direct battery charging.

2.2 LED STATUS & BATTERY GUIDE

LED Indicator	Operating State	Description & Action
● Solid Red LED	Transmitting (TX)	Transmitting voice or digital signaling.
● Solid Green LED	Receiving (RX) / Monitor	Carrier received or forced monitor active.
◐ Flashing Green	Scanning Active	Scanning pre-set list for active channels.
⚡ Fast Flash Green	Programming / CPS	Data transfer in progress with PC software.
● Flashing Orange	Call Alert Received	Digital call alert page received with tone.
⚡ Flashing Red	Low Battery Alert	Voltage < 3.3V. Recharge unit promptly.

【Battery Maintenance & Protection Tips】

• **Low Battery Warning**: Voice prompt alerts "Please Charge" when battery is below 3.3V. Unit auto-powers off below 3.0V.

• **Charging Status**: LED on charger base turns RED during charging, and turns GREEN when fully charged.

• **Storage**: If storing for over 30 days, charge battery to 50% capacity and store in a cool, dry place.

3. QUICK START GUIDE (5 STEPS)

Follow these 5 steps to quickly start up and begin communication:

1 Step 1: Install Antenna & Battery

Rotate antenna clockwise into top connector until secure. Slide battery pack into rear chassis guide rails until locked firmly in place.

2 Step 2: Power ON & Adjust Volume

Rotate top [Power/Volume Knob] clockwise until it clicks. A power-on tone confirms startup. Continue clockwise to increase volume.

3 Step 3: Select Working Channel

Rotate top center [Channel Knob] to select the same channel number (e.g., "Channel 1") as other group members.

4 Step 4: Transmit & Receive Calls

Hold radio 3-4 cm from mouth. Press and hold [PTT Key] (Solid Red LED) and speak clearly. Release PTT to receive incoming calls (Green LED).

5 Step 5: Daily Battery Charging

Connect USB Type-C cable to radio port or charging cradle with 5V adapter. Voice prompt alerts when battery is low.

【Operating Rule】

Wait **0.3s** after pressing PTT before speaking. **NEVER transmit without antenna!**

4. DMR DIGITAL CALLS & ANALOG OPERATION

4.1 Three DMR Digital Call Types

Call Type	Application	Operation & Logic
Private Call	Point-to-point (1-to-1)	Hold PTT to talk to preset private ID. Target replies during hang time.
Group Call	Team dispatch (1-to-Group)	Press PTT to call all members in the group simultaneously.
All Call	Emergency broadcast (1-to-All)	Broadcasts to all radios on channel; recipients cannot reply.

4.2 Color Code & Dual Time Slots (TDMA)

• **Color Code (0-15)**: Distinguishes co-channel digital systems (16 codes). Unmutes speaker only when Color Codes match exactly.
• **Dual Time Slots (Slot 1 / 2)**: DMR TDMA technology divides a 12.5 kHz channel into 2 independent time slots, allowing two simultaneous voice conversations on one frequency.

4.3 Analog Operation & Sub-Audio Tones (QT/DQT)

Supports 50 CTCSS (QT) and 105 DCS (DQT) tones. The squelch opens only when matching sub-audio tones are detected, filtering out co-channel interference.

5. PROGRAMMABLE SIDE KEY FUNCTIONS

The programmable side key can be customized via CPS software for [Short Press] and [Long Press] actions:

Function Name	Mode	Description & Action
Channel Scan	Digital / Analog	Start or stop channel scanning (flashing green LED).
Monitor	Analog	Forces squelch open to monitor weak signals & noise.
High / Low Power	Digital / Analog	Toggle between 2W (High) and 0.5W (Low).
Talk Around	Digital	Direct radio-to-radio talk bypassing repeater.
Zone Switch	Digital / Analog	Switch channel zone up/down (8 zones, 16 CH each).
VOX On / Off	Digital / Analog	Toggle voice-activated transmission hands-free.
Emergency Alarm	Digital / Analog	Send emergency alarm tone or SOS signal to group.
One Touch Call	Digital	Instantly call preset contact or send kill/revive.
Voice Scrambler	Analog	Toggle analog voice inversion encryption.
Lone Worker	Digital / Analog	Safety monitor mode; alerts if inactive past timer.
Repeater Tone	Analog	Send burst tone (1750Hz, etc.) to activate repeater.

5.2 REMOTE DISPATCH & SECURITY

1. Call Alert: Sends a page tone requesting a callback (target flashes orange LED).
2. Radio Check: Silently verifies whether target radio is online and in range.
3. Remote Kill / Stun: Anti-theft command disabling TX/RX on lost or stolen units.
4. Radio Revive: Transmits restore signaling to bring stunned units back to life.
5. Remote Monitor: Silently opens target mic to monitor surrounding audio.

5.3 Voice Security & AES 256 Encryption

• **AES 256 Hardware Encryption**: Supports Basic & Enhanced Digital Encryption (10-hex & 64-hex keys, military-grade anti-decryption). Radios with identical Key ID & Key Value in CPS ensure private calls.
• **Analog Voice Scrambler**: Inversion scrambling against analog eavesdropping.

5.4 Auxiliary System Features

• **TOT (Time-Out Timer)**: Prevents accidental continuous channel jamming;
• **SQ Squelch (0-9)**: Level 0 = Open; Level 1 = Max sensitivity; Level 9 = Max filter;
• **VOX / IVOX**: 1-3 sensitivity levels with 0-5s delay for hands-free operations;
• **Smart Battery Save**: 10s auto-sleep (1:1/1:2/1:4) with instant millisecond wake-up;
• **STE (Squelch Tail Elimination)**: Eliminates harsh end-of-call noise.

6. TECHNICAL SPECIFICATIONS

Category	Parameter Item	Specification Value
General	Frequency Range	**UHF: 400 - 480 MHz**
	Channel Capacity	16 / 128 Channels (8 Zones)
	Channel Spacing	12.5 kHz (Analog: 25k/12.5k)
	Operating Voltage	DC 3.7V (Nominal) / 4.0V
	Operating Temp	-40°C ~ +85°C (Industrial)
	Antenna Impedance	50 Ω
	Audio Power	1000 mW @ 8Ω Output
	Dimensions	95 × 56 × 32 mm
Transmitter	RF Power	High: 2.0 W / Low: 0.5 W
	Freq. Stability	±1.0 PPM
	Adjacent Power	≤ -60 dB
	Digital Vocoder	**AMBE+2™**
	Voice Encryption	**AES 256 Hardware Enc.**
	Bit Error Rate	≤ 5%
Receiver	Analog Sens.	≥ 60dB @ 12.5k / 70dB @ 25k
	Digital Sens.	≥ 60 dB
	Intermod. Immunity	TIA-603: -60dB / ETSI: -65dB
	Adjacent Sel.	TIA603C: 65dB / ETSI: 60dB
	Audio Distortion	≤ 3%

7. TROUBLESHOOTING GUIDE

Symptom	Probable Cause	Recommended Solution
Cannot Power ON	1. Battery exhausted; 2. Improperly installed; 3. Protection triggered.	1. Charge via Type-C for 30 mins; 2. Reinstall battery & lock firmly; 3. Clean battery contacts.
Short Range / Heavy Noise	1. Low power mode active; 2. Antenna loose or obstructed; 3. Shielding environment.	1. Switch to High Power (2W); 2. Tighten antenna firmly; 3. Avoid underground dead zones.
Cannot Talk to Group	1. Channel mismatch; 2. Color Code / Slot mismatch; 3. Encryption key mismatch.	1. Check channel number; 2. Match Color Code & Slot; 3. Verify Encryption Key in CPS.
Unwanted Voices / Interference	Co-channel traffic without sub-tone or color code filter.	1. Switch to clear channel; 2. Set CTCSS/DCS or Color Code.
Beeps & Fails to Transmit	1. TX Inhibit active; 2. Low battery (<3.2V); 3. TOT timer expired.	1. Check TX enable in CPS; 2. Recharge battery promptly; 3. Release PTT to cool down.
PC Programming Error	1. Radio in sleep mode; 2. Cable loose / driver missing; 3. Wrong COM port.	1. Power cycle to wake radio; 2. Reconnect USB cable; 3. Verify COM port in CPS.

8. SAFETY & WARRANTY POLICY

【Safety Warnings & Care】

1. NEVER operate or replace battery in explosive atmospheres (e.g., gas stations);
2. NEVER modify circuitry or use non-certified third-party batteries or chargers;
3. Keep charging ports and battery contacts dry to prevent short circuits;
4. Avoid prolonged exposure to direct sunlight, extreme heat, or excessive humidity.

Warranty Policy & Service

- Covered by a **1-Year Free Warranty** from date of purchase (battery/accessories 6 months).
- Please present this warranty stub and purchase proof when requesting service.

Customer Name		**Phone Number**	
Product Model	**DM-300**	**Serial No. (S/N)**	
Purchase Date		**Dealer Name**	
Service Record	(To be filled by authorized service personnel)		

Factory Quality Inspection Certificate

Inspection Result: **PASSED** Inspector: **QC 08**

QC PASSED
CERTIFIED

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