PMR-171

Product Datasheet v1.0 | 1st August 2023

GENERAL RELEASE

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PMR-171 Technical Datasheet

General Overview

The **PMR-171** is an ultra-portable, all-band (100kHz to 2GHz) / all-mode (FT8, USB, LSB, CW, AM, FM, RTTY, DMR (optional), WFM (receive only), etc.), SDR radio, designed, manufactured, and sold by GUOHE Electronics. With its dual VFO modes, split-frequency operation support, intermediate frequency offset adjustments, fine-tuning, noise suppressions, AGC speed selections, RF gain and squelch controls, integral pre-attenuator processing, integrated AM/FM broadcast receivers, automatic sleep and transmit-time-out timers, CAT, and configuration cloning capabilities; the **PMR-171** is truly a next generation field and QRP solution.

The **PMR-171** leverages an externally attached modular 5AH battery-carrier designed to be an ideal complement for fully self-contained field radio deployments. This is especially true when the modular battery carrier is augmented with dual battery backup and the radio's native ultra-low power consumption architecture to significantly extend battery-powered operation times. To service the varied interest of modern amateur radio operators, the **PMR-171** also offers a standardized external 9VDC-18VDC power input (with anti-reverse-polarity protection), allowing it to be equally at home in fixed-station and vehicle/mobile deployment scenarios.

Meant to provide an optimized operational experience in a multitude of environments, the visual interface of the **PMR-171** is designed around a high-resolution, LCD display, with adjustable backlight brightness. This, combined with the user-selectable brightness level of the keypad, allows for clear and easy readability, even under the glare of mid-day outdoor conditions.

Designed as a modern multi-function SDR platform, the **PMR-171** supports the QRadioBLE mobile app (amongst others), allowing for wireless control of the radio via Bluetooth, transforming operation and control into a convenient and fast app-based experience that very effectively eliminates problems related to wired common-mode interference. When direct wired connections are desired, the integrated internal soundcard and serial control interface can still be accessed via a single USB cable connection, allowing for the support of a wide range of standard amateur radio software on a wide array of host computing platforms.

The **PMR-171** has many advanced features typically available only in large base-station radios; dual VFO mode, split frequency operations, intermediate frequency offset adjustments, receive frequency fine-tuning, intermediate frequency noise suppression, AGC speed selection, RF gain adjustment, squelch control, pre-attenuator, AM/FM broadcast reception, built-in CW automatic keying, automatic key point ratio adjustment, built-in CTCSS analog subtone, automatic sleep function and transmission timeout function (TOT) timers; computer-aided control functions, and data cloning options, amongst many other features, reinforce this concept.

The **PMR-171**, along with its assortment of optional add-on modules (Compass, DMR, & GPS) are meant to bring joy to your QRP and Field-Radio operations.

The **PMR-171** incorporates the following:

1. Real-time spectrum display.
2. Waterfall display.
3. Doppler frequency tracking.
4. Software-Defined Radio (SDR) *all-band/all-mode:* FT8, USB, LSB, CW, RTTY, AM, FM, DMR (optional), WFM (receive only).
5. Dual frequency conversion circuit structure.
6. Intermediate Frequency (IF) width and IF displacement hardware and software can be modified to provide powerful IF interference suppression.
7. Digital Signal Processing (DSP), Digital Noise Reduction (DNR).
8. Built-in 4m to 160m high-speed automatic antenna tuner (ATU).
9. Built-in programable and electronic automatic CW keyer.
10. Built-in soundcard, CAT control, and IQ logic.
11. External battery compartment.
12. USB TYPE-C (3.1) interface.
13. High-precision TXCO ± 0.5ppm (-10°C to 60°C).
14. Ultra-wide working input voltage range: 9VDC to 18VDC (some TX levels limited by input voltage).
15. Power supply anti-reverse polarity protection.
16. Built-in GPS/BeiDou, electronic compass, and accelerometer (acceleration, angle sensor) (optional GPS module required).
17. GPS timing (optional GPS module required).
18. RTC clock set capability.
19. Voltage monitoring/display.
20. Ultra-lightweight: ≤2kg.
21. Bluetooth wireless control (viable for Bluetooth FT8.)

Targeted Applications:

- Emergency Communications,
- Remote Spectrum Monitoring/Detection,
- Radio Direction Finding,
- Amateur Radio,

Transmitter Specifications	
Architecture	Software Defined Radio (SDR)
Available Modes	USB, LSB, FT8, CW, RTTY, AM, FM, DMR(Matching)
Frequency Precision	1HZ
TX Frequency range*[1] *(Frequency range can be customized)*	**ITU Region 1:** 1.810-1.850, 3.500-3.800, 5.3515-5.3665, 7.000-7.200 , 10.100-10.150, 14.000-14.350, 18.068-18.168, 21-21.450, 24.890-24.990, 28-29.7, 50-54, 144-146, 430-440 (MHz)
	ITU Region 2: 1.800-2.000, 3.500-4.000, 5.3515-5.3665, 7.000-7.300, 10.100-10.150, 14.000-14.350, 18.068-18.168, 21-21.450, 24.890-24.990, 28-29.7, 50-54, 144-148, 430-450 MHz
	ITU Region 3: 1.800-2.000, 3.500-3.900, 5.3515-5.3665, 7.000-7.200, 10.100-10.150, 14.000-14.350, 18.068-18.168, 21-21.450, 24.890-24.990, 28-29.7, 50-54, 144-148, 430-440 MHz
Output Power	**HF:** SSB: (1-20W, **CW:** (0.1-10W, FM（0.1-20W）, **AM:** (1-20W） **VHF:** SSB/CW /FM（≤10W） **UHF:** SSB/CW /FM（≤10W）
Power Consumption	**TX:** 13.8V 5A **RX:** 13.8V 0.25A (nominal), 0.35A (Peak Load – full volume and screen brightness)
Carrier Suppression	＜50db
Spurious Suppression	1.8-54MHZ：≥50db 144-146MHZ：≥60db 430-440MHZ：≥60db
Channel Memory	100 Channels
Receiver Specifications	
Architecture	SDR
Available Modes	USB, LSB, FT8, CW, RTTY, AM, FM, WFM(RX-only), DMR(Matching)
RX Frequency Range	100KHZ−2GHZ*
IF Bandwidth	20KHZ
Intermediate Frequency	12KHZ
Sensitivity *[2]	**SSB/CW:** (BW: 2.4kHz @ 10dB S/N） 0.18uV (1.8−54MHZ), 0.25uV (144−148MHZ), 0.25uV (430−450MHZ), **AM:** (BW: 6kHz @ 10dB S/N), 15uV (0.3−1.8MHZ), 2uV (1.8−54MHZ), 2uV (144−148MHZ), 2uV (430−450MHZ), **FM:** (BW: 15kHz @ 12dB S/N), 0.5uV (28.0−29.7MHZ), 0.25uV (50−54MHZ), 0.3uV (144−148MHZ), 0.5uV (430−450MHZ）
IF Rejection	≥70db
IF Suppression	≥80db

Audio Output Power	2 W (10% DISTORTION, 8Ω LOAD, 3KHZ)
Antenna Tuner Specifications	
Frequency Range	1.8−74MHZ
Impedance Range	16.7Ω - 150Ω unbalanced (VSWR better than 1:3)
Precision	VSWR: 1:1.5 or less
Tune Speed	2-5s (full segment @ 10s)
Activation Modes	Fully Automatic / Manual
Spectrum Specifications	
Spectrum Width	48K
RF Spectrum	FFT
Structural Parameters	
Dimensions	270mm x 166mm x 50mm (with battery) 220mm x 166mm x 50mm (without battery)
Weight	<2.4Kg (with battery & accessories) <1.7Kg (without battery or accessories)
Battery Specifications	
Capacity	5AH@14.2V
Operating Voltage Specifications	
Voltage Range	9-18V receiving range, 9-12V transmit power limit, 13.8-15V full power output, 15-18V transmit power limit.
Antenna Interface Specifications	
Connectors	BNC (100KHz−74MHz) TNC (74MHz−520MHz)
Environmental Requirements	
Operating Temp	−10℃ to ~60℃
Relative Humidity	10% - 90%

Notes:

**1: The frequency range regulated according to local laws.*

**2: To be calibrated, the final interpretation right belongs to the manufacturer.*