

DR-1

144/430 MHz DUAL BAND
C4FM/FM DIGITAL REPEATER

System Fusion



YAESU DR-1 is a digital/conventional FM dual mode repeater that covers the VHF and UHF amateur radio bands. It was developed for use with System Fusion. Replacing your conventional FM repeater with the DR-1 will provide continued use of conventional FM communication while integrating the use of digital communication functions through its unique AMS capability.

144/430 MHz DUAL BAND C4FM/FM DIGITAL REPEATER DR-1

DR-1 Features

- Modulation Modes: Conventional FM, 12.5 kHz C4FM Digital (V/D Mode, VFR Mode, DFR Mode)*1
- AMS (Automatic Mode Select) function automatically recognizes the signal as C4FM digital or conventional FM, and then the DR-1 repeater retransmits the signal using the preset communications mode.
- 3.5-inch Full Color Touch Panel Operation
- Extremely reliable, high RF Output Power: 50W/20W/10W
- Emergency Operation: Supports auto-switched backup battery power operation.
- Front panel microphone connector is provided for use in repeater transmitter testing, and enables use as a base station.
- Built-in large-size monitor speaker with front panel volume control

*1 System Fusion is not compatible with the D-STAR GMSK digital format.

User Friendly Set-up

The large front panel, color touch-screen permits convenient configuration of the transmitter and receiver frequencies, transmit power output and AMS functions. When the settings are complete the display can be switched off to prevent accidental operation. Simply turn the display switch ON and use the touch panel screen to confirm or change settings. The transmit and receive frequencies, CTCSS tones, squelch, AMS, and other functions are configured by the touch panel screen.

Easy Migration

The repeater controller, receiver and transmitter are all packaged into a 19" standard cabinet rack mount panel unit for simple replacement of an existing repeater. Other peripheral devices such as the duplexer and amplifier, etc., can continue to be used as-is.

Other Feature

- Internal AC power supply • 19" Rack Mount Available,
- High Stability ± 2.5 ppm TCXO Included • DSQ (Digital Squelch Code) Signaling Feature • CTCSS and DCS Signaling Feature • ID announcement Feature
- Remote controller Interface • Base Station Operation
- TOT (Time Out Timer) • Firmware Updates

DR-1 Specifications

General

Frequency range	144 to 148 MHz, 430 to 450 MHz
Channel steps	5/6.25 kHz
Emission type	F1D, F2D, F3E, F7W
Frequency stability	± 2.5 ppm (-4°F to $+140^{\circ}\text{F}$ (-20°C to $+60^{\circ}\text{C}$))
Antenna impedance	50 Ω
Supply Voltage	AC 100 to 240 V DC 11.7 to 15.8 V, negative ground
Current consumption	1.5 A (Receive) 13 A (50 W TX, 144 MHz band) 14 A (50 W TX, 430 MHz band)
Operating temperature	-4°F to $+140^{\circ}\text{F}$ (-20°C to $+60^{\circ}\text{C}$)
Dimensions	19"(W) \times 3.5"(H) \times 15"(D) (482 \times 88 \times 380 mm)
Weight (approx.)	22.05 lbs (10 kg)

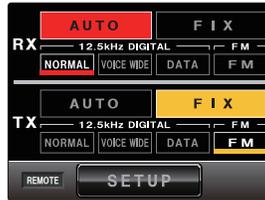
About this brochure: We have made this brochure as comprehensive and factual as possible. We reserve the right, however, to make changes at any time in equipment, optional accessories, specifications, model numbers, and availability. Precise frequency range may be different in some countries. Some accessories shown herein may not be available in some countries. Some information may have been updated since the time of printing; please check with your Authorized Yaesu Dealer for complete details.

Installation Examples of Repeater Set-up

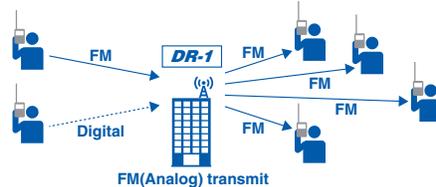
Replacing Existing Analog FM Repeater

When replacing an existing conventional FM repeater, AMS on the receiver side is set to AUTO mode and AMS on the transmitter side is set to FM FIX mode. If the DR-1 repeater receives C4FM Digital signals, it converts them, and retransmits them in conventional FM automatically.*2 When receiving conventional FM signals it retransmits them unchanged as the FM repeater.

*2 C4FM digital signals are converted to FM signals in the repeater. Therefore, digital information such as GPS data included in the C4FM digital signals is not transmitted.



AMS receive \rightarrow FM transmit



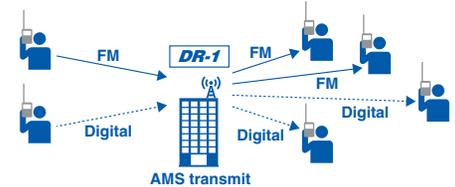
New Repeater set-up for C4FM Digital and conventional FM

AMS is set to AUTO mode on both the receiver and transmitter sides. DR-1 transmits received conventional FM signals unchanged as conventional FM signals, and transmits received C4FM digital signals unchanged as C4FM digital signals.*3

*3 When this setting is used, members using transceivers that are not equipped with the C4FM and AMS function cannot receive digital transmitted signals.



AMS receive \rightarrow AMS transmit



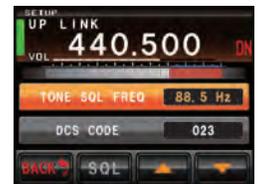
3.5-inch Full Color Touch Panel Operation



Setup screen



Frequency setting screen



CTCSS setting screen

SUPPLIED ACCESSORIES: • AC Cable • DC Cable for backup battery • PC Connection Cable SCU-20 • Rubber Feet (4)

OPTIONS: • DTMF Microphone MH-48A6JA • Hand Microphone MH-42C6J • Voice Guide Unit FVS-2

Transmitter

RF power output	50/20/5 W
Modulation type	F1D, F2D, F3E Variable Reactance Modulation F7W 4FSK (C4FM)
Spurious emission	At least 60 dB below

Receiver

Circuit type	Double conversion super-heterodyne
Intermediate frequencies	1st: 47.25 MHz, 2nd: 450 kHz
Receiver sensitivity	0.3 μV (Digital 2 m/70 cm) BER 1% 0.2 μV (FM 2 m/70 cm) 12dB SINARD
Adjacent Channel Selectivity	Better than 65 dB TYP (20 kHz offset)
Selectivity	FM 12 kHz/35 kHz (-6 dB/ -60 dB)
Intermodulation	Better than 65 dB TYP (20/40 kHz offset)
Audio output	4 W (4 Ω , THD 10%, 13.8 V; internal speaker)

YAESU
The radio

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