### Invitation to the Future

12.5 kHz C4FM Digital
25 kHz FM

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**Specifications**

<table>
<thead>
<tr>
<th></th>
<th>FT1DR</th>
<th>FT1DE</th>
<th>FTM-400DR</th>
<th>FTM-400DE</th>
<th>DR-1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frequency Range</strong></td>
<td>0.5 - 300 MHz</td>
<td>0.5 - 300 MHz</td>
<td>100 - 300 MHz</td>
<td>100 - 300 MHz</td>
<td>144 - 146 MHz (European version)</td>
</tr>
<tr>
<td><strong>Output Power (W)</strong></td>
<td>2W (FM)</td>
<td>2W (FM)</td>
<td>2W (FM)</td>
<td>2W (FM)</td>
<td>5W (25W) (European version)</td>
</tr>
<tr>
<td><strong>Audio Output</strong></td>
<td>3 W RMS (4 ohms)</td>
<td>3 W RMS (4 ohms)</td>
<td>3 W RMS (4 ohms)</td>
<td>3 W RMS (4 ohms)</td>
<td>6 W RMS (25W) (European version)</td>
</tr>
<tr>
<td><strong>Dimensions (W x H x D)</strong></td>
<td>8.8 x 5.7 x 1.7&quot;</td>
<td>8.8 x 5.7 x 1.7&quot;</td>
<td>8.8 x 5.7 x 1.7&quot;</td>
<td>8.8 x 5.7 x 1.7&quot;</td>
<td>10&quot; x 5.7 x 1.7&quot; (European version)</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>2.24 lbs (1.2 kg)</td>
<td>2.24 lbs (1.2 kg)</td>
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</tbody>
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*“Bluetooth” is a registered trademark of Bluetooth SIG, Inc., and its members.*

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**System Fusion**

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**DR-1**

C4FM/DMR Digital Repeater

FT1DR/FT1DE
C4FM/DMR Handheld Transceiver

FTM-400DR/FTM-400DE
C4FM/DMR Mobile Transceiver

HRI-200
WIRES-X Internet Network System
The Best Solution for the Future

The new YAESU System Fusion leads the way for future Ham Radio digital systems; it provides total integration and compatibility of both digital and conventional FM communications.

Conventional FM has a number of excellent features that continue to provide substantial advantages over digital modulations, such as low battery consumption and greater distance capability. Conventional FM communications on the VHF and UHF bands will continue to be the mainstream communication method for Ham Radio in the future.

Digital modulation provides a wide range of advantages by enabling the exchange of more complex information, resistance to radio interference and better audio quality. You can discover a completely new side to amateur radio that was never before possible with conventional FM systems.

Comparing to other digital modulations within FDMA, C4FM has excellent communication quality (BER, Bit Error Rate characteristics). Presently, C4FM is the standard method for professional communication devices in FDMA, and it is therefore expected to continue to be the main stream digital communication in the future.

In System Fusion, you can choose between three C4FM digital modes and a conventional FM mode to suit your needs.*

* System Fusion is not compatible with D-Star DMR format.

The Choice of C4FM Digital

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FM Friendly Digital

Until now, FM repeaters were only used for conventional FM communication, and digital repeaters were only used for digital communication. There has been no option for cross-communication in a single repeater. However, System Fusion can be used in multiple ways, for digital communication, for conventional FM communication and even internet communication. Most importantly, System Fusion enables intercommunication between all users. This is enabled by the AMS (Automatic Mode Select) function used in System Fusion. With AMS, the modulation of your station is automatically selected according to the received signal. If a member transmits in conventional FM, the other radios in the System Fusion automatically select their modulation to conventional FM to communicate between all members.

Easy Migration

By simply replacing the current conventional FM repeater station with the DH-3 System Fusion AMS digital repeater, you can continue to use the conventional FM communication, as well as using the repeater for digital communications. Because the DH-1 is capable of converting and transmitting digital communication to conventional FM communication, you can communicate with members using either conventional FM communication, or those using C4FM digital communication. Previously, when a repeater group planned to use a digital system, all other members of the club using conventional FM communication needed to purchase equipment capable of digital communication. With the groundbreaking YAESU C4FM repeater digital communication and conventional FM communication can join together in a single multiple function system.

New Functions Enabled by C4FM Digital Communication

Digital-SM Function: digital group mode function

The Digital-SM function enables a device to be linked with a group in a communication range, and display information such as the distance and orientation for each call on the screen. This function also enables you to see which members are within communication range. It also enables you to see at a glance where all group members are located. Additionally, this function can be used to send small messages between group members.

Snaphoot Function: Snaphoot data transmission function

Simply connect an FM-1500J/1500J to the microphone and press the microphone's shutter button to take snapshots easily, and send them to other C4FM digital transceivers.

Smart Navigation Function: smart scanning function

This function allows scanning while keeping your location in mind. When scanning a certain area, the scanning function will automatically scan the area to the north, south, east, and west of your current location. The scanning function will then display your current location on the screen.

The Best Solution for the Future
144/430 MHz Dual Band C4FM/FM Digital Repeater DR-1

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 analog 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 C4FM capability.

**DR-1 Features:**
- **Modulation Mode:** 25 kHz FM, 12.5 kHz C4FM Digital (VFO Mode, VFR Mode, DFR Mode)
- **System Fusion** is not compatible with the 12.5 kHz C4FM digital format.
- **Output Power:** 50 W/25 W/10 W
- Equipped with large-size heat-sink and cooling fan to ensure a stable transmission output.
- **Emergency Operation:** Supports operation on an emergency battery.
- **AMS (Automatic Mode Select)** function automatically recognizes whether the signal is a C4FM digital or conventional FM signal, and transmits using the set communication method.
- **Built-in large-size monitor speaker with volume control** for checking the reception state during setup. The speaker can also be used to constantly monitor the reception state.
- **A microphone terminal is provided on the front panel** for use in repeater transmitter tests and to enable use as a base station.

**Wires-X**

In addition to the convenient and easy-to-use digital function, advanced VoIP wireless Wires-X is also available.

**AMATEUR RADIO INTERNET LINKING KIT**

**HRI-200**

USB Cable and Data Cable (HQ-100) are included.

**User Friendly Set-up**

The large color touch-panel screen installed in the front panel is used to configure various settings such as transmit and receive frequencies, transmit power output, and AMS function. The display can be switched off after configuring the settings 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 frequency and other functions are configured by the touch-panel screen. CTCSS can be set for Rx/tx (same frequency) or Rx only.

**Easy Migration**

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

**Installation Example 1:** Replacing Existing Analog FM Repeater

- AMS is set to AUTO mode on the receiver side and the repeater side.
- When an existing conventional FM repeater, AMS on the receiver side is set to FM/AN mode. If the DR-1 player receives C4FM digital signals, it converts them, and transmits them in conventional FM automatically.
- When receiving conventional FM signals, it transmits them unchanged as the FM repeater.

**Installation Example 2:** New Repeater setup for C4FM Digital and conventional FM

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

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