### 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>Receiver</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency Range</td>
<td>0.5 - 995 MHz</td>
<td>0.5 - 995 MHz</td>
<td>100 - 995 MHz</td>
<td>100 - 995 MHz</td>
<td>100 - 146 MHz (American &amp; European versions)</td>
</tr>
<tr>
<td></td>
<td>144 - 146 MHz</td>
<td>144 - 146 MHz</td>
<td>144 - 146 MHz</td>
<td>144 - 146 MHz</td>
<td>144 - 146 MHz (American &amp; European versions)</td>
</tr>
<tr>
<td></td>
<td>430 - 450 MHz</td>
<td>430 - 450 MHz</td>
<td>430 - 450 MHz</td>
<td>430 - 450 MHz</td>
<td>430 - 450 MHz (European version)</td>
</tr>
<tr>
<td><strong>Modes</strong></td>
<td>C4FM, FM, AM (RX)</td>
<td>C4FM, FM, AM (RX)</td>
<td>C4FM, FM, AM (RX)</td>
<td>C4FM, FM, AM (RX)</td>
<td>C4FM, FM (RX)</td>
</tr>
<tr>
<td><strong>To Power Output</strong></td>
<td>5 W/2.5 W/1 W</td>
<td>5 W/2.5 W/1 W</td>
<td>50 W/20 W/5 W</td>
<td>50 W/20 W/5 W</td>
<td>3 W/1.8 W/0.9 W</td>
</tr>
<tr>
<td><strong>Sensitivity</strong></td>
<td>0.45 μV (Digital 2 m/70 cm) BER 1%</td>
<td>0.30 μV (FM 2 m/70 cm) 12dB SINAD</td>
<td>3 W/1.8 W/0.9 W</td>
<td>3 W/1.8 W/0.9 W</td>
<td>0.45 μV (Digital 2 m/70 cm) BER 1%</td>
</tr>
<tr>
<td><strong>Audio Output</strong></td>
<td>200 mW @8 Ω 10% THD (@7.4 V)</td>
<td>400 mW @8 Ω 10% THD (@13.8 V)</td>
<td>200 mW @8 Ω 10% THD (@7.4 V)</td>
<td>400 mW @8 Ω 10% THD (@13.8 V)</td>
<td>3 W/1.8 W/0.9 W</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>2.4” x 3.7” x 1.1” (60 x 95 x 28 mm)</td>
<td>2.4” x 3.7” x 1.1” (60 x 95 x 28 mm)</td>
<td>2.4” x 3.7” x 1.1” (60 x 95 x 28 mm)</td>
<td>2.4” x 3.7” x 1.1” (60 x 95 x 28 mm)</td>
<td>19” x 5.5” x 5.5” (482 x 88 x 380 mm)</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>9.35 oz (265 g) with FNB-101LI &amp; Antenna</td>
<td>9.35 oz (265 g) with FNB-101LI &amp; Antenna</td>
<td>9.35 oz (265 g) with FNB-101LI &amp; Antenna</td>
<td>9.35 oz (265 g) with FNB-101LI &amp; Antenna</td>
<td>22.05 lbs (10 kg)</td>
</tr>
</tbody>
</table>

**DR-1**: C4FM/FM Digital Repeater

**FT1DR/FT1DE**: C4FM/FM Handheld Transceiver

**FTM-400DR/FTM-400DE**: C4FM/FM Mobile Transceiver

**HRI-200**: WIRES-X Internet Network System

---

*Bluetooth® is a registered trademark of Bluetooth Special Group (SIG), Inc. YAESU MUSEN Co., Ltd. is an Adopter Member of Bluetooth® SIG.*

*APRS® is a registered trademark of Bob Bruninga WB4APR.*

*Smart Beaconing TM from Ham HUD Nichetronix*

---

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.
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.

System Fusion joins digital and conventional FM communication into a single multiple function system.

By using the revolutionary System Fusion, the user no longer needs to choose between digital or conventional FM; instead, we can use whichever system is best suited for the situation. Users can also communicate freely between digital and conventional FM stations.

New Functions Enabled by C4FM Digital Communication

Digital GM Function (Digital Group Monitor Function)

The Digital GM Function automatically checks whether members registered to a group are within communication range, and displays information such as the distance and orientation for each call sign on the screen. This useful function not only enables you to see which friends 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 data such as messages and images between group members.

Snapshot Function (Image Data Transmission)

Simply connect an MH-85A11U (option) microphone with camera and press the microphone shutter button to take snapshots easily and send them to other C4FM FDMA digital transceivers.

Smart Navigation Function

This function automatically checks whether members registered to a group are within communication range, and displays information such as the distance and orientation for each call sign on the screen. This useful function not only enables you to see which friends 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 data such as messages and images between group members.

AMS Function (Automatic Mode Select)

This function automatically checks whether members registered to a group are within communication range, and displays information such as the distance and orientation for each call sign on the screen. This useful function not only enables you to see which friends 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 data such as messages and images between group members.

Easy Migration

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.

FM Friendly Digital

By simply replacing the conventional FM repeater station with the DR-1 System Fusion AMS digital repeater, you can continue to use the conventional FM communica -
tion, as well as using the repeater for digital communications. Because the DR-1 is capable of converting and transmitting digital communication to conventional FM communication, you can intercommunicate 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 DR-1 repeater, digital communication and conventional FM communication can join together in a single multiple function system.

The Choice of C4FM Digital

Compared 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 is therefore expected to continue to be the mainstream 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 compatible with 3.5S V/D (SDM) format
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 AMS capability.

**Features:**
- **Modulation Mode:** 25 kHz FM, 12.5 kHz C4FM Digital (V/D Mode, VFR Mode, DFR Mode) *
  * System Fusion is not compatible with the D-STAR GMSK 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.

**Installation Example 1:** 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.
When receiving conventional FM signals it retransmits them unchanged as the FM repeater.

*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.

**Installation Example 2:** 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.*

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

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 (MDIN10 pin to MDIN10 pin) included
Exciting New Amateur Digital Transceiver

**C4FM FDMA 144/430 MHz DUAL BAND DIGITAL/FM TRANSCEIVER**

**FT1DR**
**FT1DE**

- **Digital Group Monitor (GM) Function**
- **Smart Navigation Screen**
- **Snapshot Function (Image Data Transmission)**
- **Digital Group Monitor Screen**
- **Backtrack function for returning to your departure point**
- **Built-in GPS with antenna in the top section of the unit**
- **Battery Operating Time (Approximately)**

### Options

- **Microphone**
- **Microphone with micro SD card slot**
- **Data Communication Terminal**
- **External Speaker**
- **Mount Bracket**
- **Antenna**
- **Accessories**

---

144/430 MHz Dual Band Digital/FM Mobile Transceiver

**Equipped with advanced touch panel operation and full-color TFT large-scale display**

**C4FM FDMA 144/430 MHz DUAL BAND DIGITAL/FM TRANSCEIVER**

**FTM-400DR**
**FTM-400DE**

- **3.5-inch full color touch panel operation**
- **Built-in GPS with antenna**

---

**1** The same as the supplied accessory  
**2** “B” : for USA version / “C”: for 220 – 240 VAC / “U” for 230VAC w/ UK Plug  
**3** “B” : for USA version / “C”: for 220 – 240 VAC / “U” for 230VAC w/ UK Plug  

---

**Specifications**

- **Frequency Range** 144/430 MHz
- **Power Output** 5W
- **Modulation** 50W C4FM FDMA 144/430 MHz Dual Band
- **Antenna** Built-in GPS with Antenna
- **Water Resistant** Equivalent to IPX5
- **Operating Time**
  - 144MHz: 3.5 hours
  - 430MHz: 3.6 hours

---

**Digital Group Tracker**

- **Distance to saved location**
- **Distance to other station**
- **Software Navigation**

---

**Digital Group Monitor Screen**

- **Smart Navigation Screen**
- **Digital Group Monitor Screen**
- **Data Communication Terminal**
- **External Speaker**
- **Mount Bracket**
- **Antenna**
- **Accessories**

---

**Options**

- **Microphone**
- **Microphone with micro SD card slot**
- **Data Communication Terminal**
- **External Speaker**
- **Mount Bracket**
- **Antenna**
- **Accessories**

---

**Specifications**

- **Frequency Range** 144/430 MHz
- **Power Output** 5W
- **Modulation** 50W C4FM FDMA 144/430 MHz Dual Band
- **Antenna** Built-in GPS with Antenna
- **Water Resistant** Equivalent to IPX5
- **Operating Time**
  - 144MHz: 3.5 hours
  - 430MHz: 3.6 hours