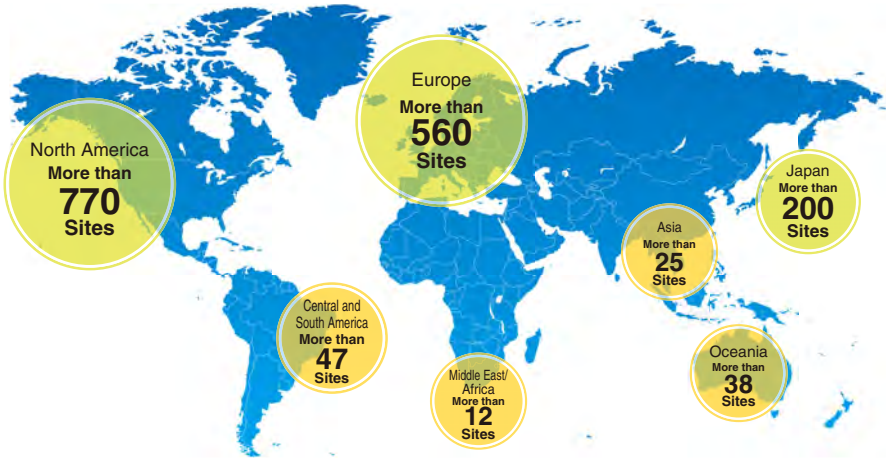
DIGITAL System Introduction

2017–2018

DIGITAL

Worldwide Digital Repeater Network



* Some repeaters may not be connected to an IP network.

Internet Resources and Digital Amateur Radio Community

There are already many D-STAR user communities on the Internet, and below are some major Internet resources.

http://www.dstarinfo.com/

This site is dedicated to helping D-STAR users world wide. From basic information on what D-STAR is, to detailed technical information.

• Repeater List • Reflector List • Application List

http://www.dstarusers.org/

Your source for D-STAR information.

• Last Heard List • Repeater List

D-STAR QSO PARTY

The biggest D-STAR QSO party in the world is held every September.

D-STAR Repeater

ID-RP2C
Repeater controller

One unit is required for each repeater site and connects up to four RF modules. Transfers the received signal to the specified RF module, or to the Internet gateway server.

Photo shows ID-RP2V.

ID-RP2V
1200 MHz DV mode RF module

ID-RP2000V
144 MHz DV mode RF module

ID-RP4000V
430 MHz DV mode RF module

These are DV mode RF modules for the respective bands.
With a combination of these RF modules, cross band operation between the 144,430 and 1200 (you can go between all various bands) MHz bands is possible.

ID-RP2D
1200 MHz DD mode RF module

The ID-RP2D is the DD mode RF module for 1200 MHz. It provides 128 kbps data speed communication.

RS-RP3C
Internet gateway software

The Internet gateway connects the D-STAR repeater site to the Internet, and links multiple D-STAR repeaters through the Internet.

Repeater Compatibility Chart with Icom Digital Transceiver

	ID-51E PLUS2	ID-31E PLUS	ID-5100E	ID-4100E	IC-7100	IC-9100+UT-121	ID-1*1
ID-RP2000V (144 MHz DV mode)	✔	—	✔	✔	✔	✔	—
ID-RP4000V (430 MHz DV mode)	✔	✔	✔	✔	✔	✔	—
ID-RP2V (1200 MHz DV mode)	—	—	—	—	—	—	✔
ID-RP2D (1200 MHz DD mode)	—	—	—	—	—	—	✔

*1 Discontinued product.

* Repeater access using radio frequency. Cross band operation between ID-RP2000V,ID-RP4000V and ID-RP2V is possible.

Icom Inc. 1-1-32, Kamiminami, Hirano-Ku, Osaka 547-0003, Japan Phone: +81 (06) 6793 5302 Fax: +81 (06) 6793 0013 **www.icom.co.jp/world**

Count on us!

Icom America Inc.
12421 Willows Road NE,
Kirkland, WA 98034, U.S.A.
Phone: +1 (425) 454-8155
Fax: +1 (425) 454-1509
E-mail: sales@icomamerica.com
URL: http://www.icomamerica.com

Icom Canada
Glenwood Centre #150-6165
Highway 17A, Delta, B.C.,
V4K 5B8, Canada
Phone: +1 (604) 952-4266
Fax: +1 (604) 952-0090
E-mail: info@icomcanada.com
URL: http://www.icomcanada.com

Icom Brazil
Rua Itororó, 444 Padre Eustáquio
Belo Horizonte MG,
CEP: 30720-450, Brazil
Phone: +55 (31) 3582 8847
Fax: +55 (31) 3582 8987
E-mail: sales@icombrazil.com

Icom (Europe) GmbH
Communication Equipment
Auf der Krautweide 24
65812 Bad Soden am Taunus, Germany
Phone: +49 (6196) 76685-0
Fax: +49 (6196) 76685-50
E-mail: info@icomeurope.com
URL: http://www.icomeurope.com

Icom Spain S.L.
Ctra. Rubi, No. 88 "Edificio Can Castanyer"
Bajos A 08174, Sant Cugat del Valles,
Barcelona, Spain
Phone: +34 (93) 590 26 70
Fax: +34 (93) 589 04 46
E-mail: icom@icomspain.com
URL: http://www.icomspain.com

Icom (UK) Ltd.
Blacksole House, Altira Park,
Herne Bay, Kent, CT6 6GZ, U.K.
Phone: +44 (0) 1227 741741
Fax: +44 (0) 1227 741742
E-mail: info@icomuk.co.uk
URL: http://www.icomuk.co.uk

Icom France s.a.s.
Zac de la Plaine,
1 Rue Brindejonc des Moulinais, BP 45804,
31505 Toulouse Cedex 5, France
Phone: +33 (5) 61 36 03 03
Fax: +33 (5) 61 36 03 00
E-mail: icom@icom-france.com
URL: http://www.icom-france.com

Icom (Australia) Pty. Ltd.
Unit 1 / 103 Garden Road,
Clayton, VIC 3168 Australia
Phone: +61 (03) 9549 7500
Fax: +61 (03) 9549 7505
E-mail: sales@icom.net.au
URL: http://www.icom.net.au

Shanghai Icom Ltd.
No.101, Building 9, Caifuxingyuan Park,
No.188 Maoting Road, Chedun Town,
Songjiang District, Shanghai, 201611, China
Phone: +86 (021) 6153 2768
Fax: +86 (021) 5765 9987
E-mail: bjicom@bjicom.com
URL: http://www.bjicom.com

Your local distributor/dealer:

A4 17AHH528A © 2015–2017 Icom Inc. Printed in Japan

Upgraded Entry Model with New Functions

- **430 MHz single band**
- **3 colour variations (Silver/Red/Gold)**
- **DV enhanced functions with an Android™ device*1**

5W · Terminal Mode · DV Gateway · Access Point Mode

UHF DIGITAL TRANSCEIVER (GPS Integrated)

ID-31E PLUS

Enhanced Functions and Great Digital Features

- **144/430 MHz, dualwatch (VHF/VHF, UHF/UHF, VHF/UHF)**
- **Independent AM/FM receiver**
- **DV enhanced functions with an Android™ device*1**

5W · Terminal Mode · DV Gateway · Access Point Mode

VHF/UHF DIGITAL TRANSCEIVER (GPS Integrated)

ID-51E PLUS2

Enjoy D-STAR More Actively and Comfortably

- **144/430 MHz dual band**
- **Compact, detachable controller for flexible installation**
- **DV enhanced functions with iOS™ and Android™ devices*2**

Terminal Mode · DV Gateway · Access Point Mode

50W · Bluetooth® (With optional UT-137)

VHF/UHF DIGITAL TRANSCEIVER (GPS Integrated)

ID-4100E

Innovation and Mobility Taken to the Next Level

- **144/430 MHz, dualwatch (VHF/VHF, UHF/UHF, VHF/UHF)**
- **Intuitive touch screen operation**
- **DV enhanced functions with an Android™ device*3**

50W · Bluetooth® (With optional UT-133A)

VHF/UHF DIGITAL TRANSCEIVER (GPS Integrated)

ID-5100E

Intuitive Touch Screen, Quick Response, Multi-band Radio

- **HF/50/70/144/430 MHz multi-band**
- **Compact with separated front panel**
- **Controls at your fingertips with an angled display**

100W (HF/50MHz) · 50W (70/144MHz) · 35W (430MHz)

HF/VHF/UHF TRANSCEIVER

IC-7100

The All-Round Transceiver, IC-9100

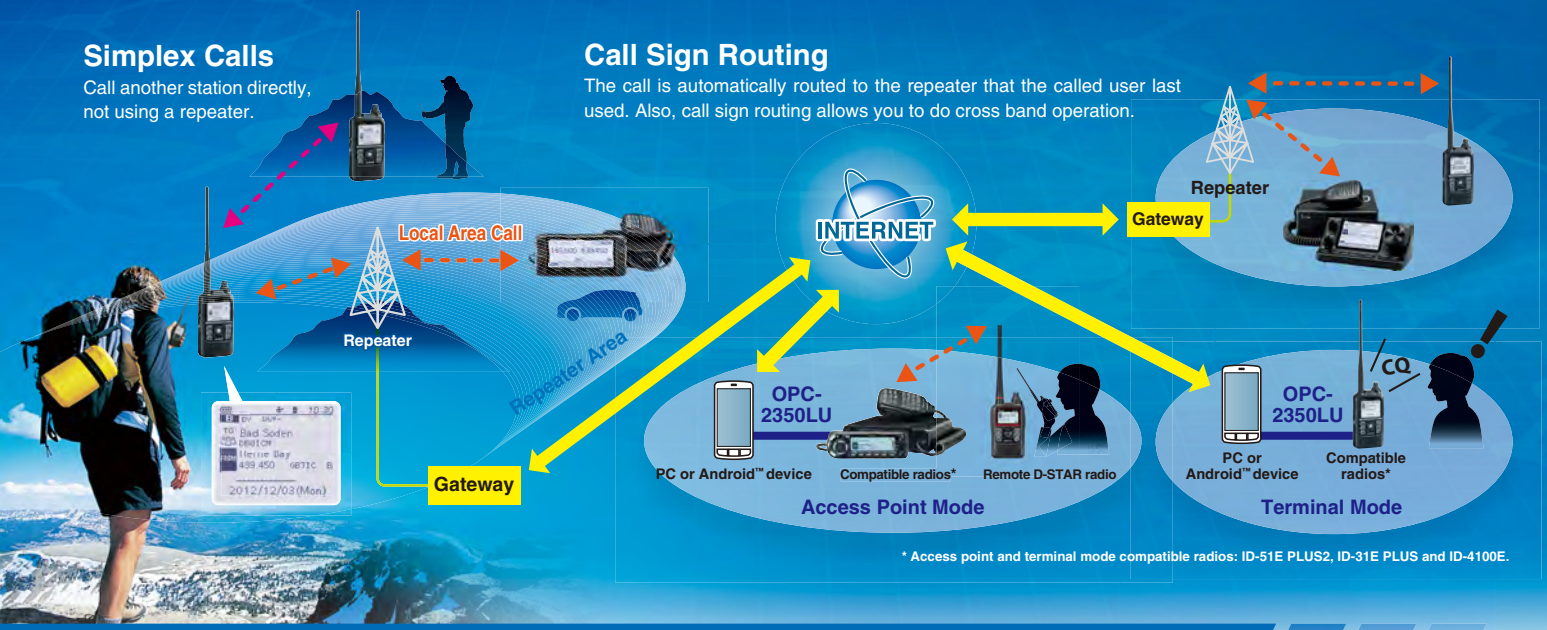
- **HF/50/144/430 MHz band DV mode** (UT-121 required)
- **Satellite Mode Operation**
- **Independent dual receivers, one each for HF/50 MHz, 144 MHz and 430 MHz Bands.**

HF/VHF/UHF TRANSCEIVER

IC-9100

100W (HF/VHF) · 75W (430MHz)

*1 Optional data communication cable OPC-2350LU and RS-MS1A (for Android™) are required.
*2 Optional Bluetooth® unit UT-137 and RS-MS1A (for Android™) or RS-MS1I (for iOS™) are required.
*3 Optional Bluetooth® unit UT-133A and RS-MS1A (for Android™) are required.



Long Distance Communications At Your Finger Tips

The biggest appeal of D-STAR is long distance communication over the Internet gateway through repeaters. Even with a handheld radio, you can communicate with a friend in another city or country with clear audio. You can access to your local repeater and route to a different repeater, even from the opposite side of the earth.

What is D-STAR?

The term D-STAR is Digital Smart Technology for Amateur Radio. It is an open protocol for digital communications established by JARL (Japan Amateur Radio League).

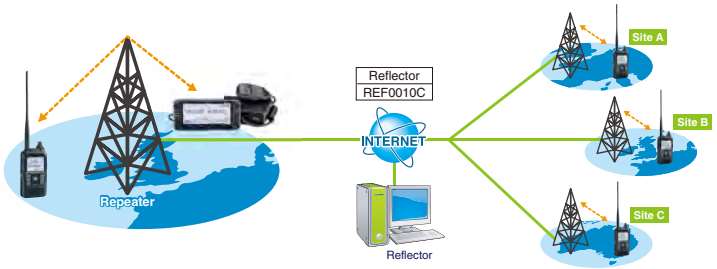
Digital Modulation For Clear Audio

As the digital voice incorporates GMSK modulation with AMBE™'s Forward Error Correction, the result is clear intelligible audio with digital clarity using only 6 kHz occupied bandwidth*. It provides clearer audio than analog FM mode without typically increasing white noise level at the fringes of the communication range.

* Emission designator: 6K00F7W.

Routing and Linking

One of the great features of D-STAR is the user's ability to talk anywhere they want via call sign commands. With the basic call sign routing, you can route your communications to a specific user or repeater. You are not required to know where repeater the person you want to communicate with is located.
For those repeaters running dplus software, you have the capability of linking to another repeater or a group of repeaters through a reflector. Reflectors are a great way to meet new people and have communications with a group of users from all over the world at the same time.



Terminal Mode and Access Point Mode

The Terminal mode and Access point mode enable you to make D-STAR calls through the Internet, even from areas where no D-STAR repeater is accessible by RF signal.

■ Terminal Mode

Connect a D-STAR radio (either ID-31E PLUS, ID-51E PLUS2 or ID-4100E) to the Internet through a PC or Android™ device, and send your voice and/or data through the Internet gateway to a destination repeater.

■ Access Point Mode

Use an ID-31E PLUS, ID-51E PLUS2 or ID-4100E radios connected to the Internet through a PC or Android™ device, as an Access point. You can use another D-STAR radio to send your voice and/or data through the Access point radio, and communicate with D-STAR stations all over the world.

DD Mode Operation

DD mode is a 128 kbps data mode in a 10 W mobile package on the 23 cm band.* It is possible to connect to the Internet via gateway. You can browse the homepage by connecting a personal computer.

* A new DD mode compatible model will be available in the near future.

Note for the Terminal mode and Access Point mode:

- You need an Internet connection with an IPv4 Global IP address. If you use a cellular system, you need an IPv4 Global IP address assigned to your Windows® or Android™ device.
- Before operating in the Terminal mode of the Access Point mode, BE SURE to check your local regulation or laws.
- When operating in the Access Point mode, you need two call signs. One for the Access Point transceiver and one for the Remote D-STAR transceiver.
- For Access point or Terminal mode operation, you must register your MY and Access point call signs with a Gateway repeater/server that has the RS-RP3C installed.
- When using the terminal mode or access point mode through a PC, an optional free download software, RS-MS3W, is required to be installed in the PC.
- When using the terminal mode or access point mode through an Android™ device, an optional free download application, RS-MS3A, is required to be installed in the Android™ device.

PC OS: Windows® 10, Windows® 8.1, Windows® 7 Android™ OS: Android™ 4.0/4.1/4.2/4.3/4.4/5.0/6.0/7.0

Enhance Your D-STAR Experience with Android™/iOS™ Applications

Share Pictures

Pictures on your iOS™ or Android™ device can be shared over D-STAR network. Pictures of your shack, operating place in the field, rigs, or friends can be sent to other D-STAR radio that are also using the application. Add images and make QSOs even more enjoyable. Pictures can be sent in the DV Fast Data mode or conventional DV mode (with voice).

DR Functions and Remote Settings

You can set the radio's "FROM" and "TO" fields and change some of the radio's function settings from your iOS™/Android™ device. When using with the optional VS-3 Bluetooth® headset, you can wirelessly talk through the ID-4100E or ID-5100E from a short distance* away from your rig.

* Communication range of Bluetooth® is approximately 10 meters (33 feet).

Repeater List Viewer

The repeater list viewer shows repeater information including frequencies, call signs and frequency offsets in the repeater list. You can use it to manually set your radio when you are in a different area from your usual operating environment.

Receive History

The receiver history enables to read and edit the receiver station's information. Additional information from an Internet database, such as QRZ.com or APRS.fi, can be downloaded.

Text Messaging

Text messaging enables you to chat with other D-STAR users that are using the application. Use the function when texting is better than exchanging information over voice. By using iOS™/Android™ devices, you can exchange messages in your preferred language.

D-STAR Stations and Repeater Sites Mapping

Repeater map example
©2014 Google - Map data ©2014 Google

See the location of other stations or repeater sites on a map using received position data. The radio's "FROM" and "TO" can be automatically set by tapping a repeater site or a D-PRS station on the map. When used with a locally cached map, your own and other station's locations can be shown without needing an Internet connection (Offline map function*).

* For only the RS-MS1A.

Call Sign List

The application enables you to add and edit destination call signs and names used in the DR function.

Import and Export*

A user-programmable repeater list or a repeater list on the Internet can be imported from a PC to the application. In addition, receive history can be exported from the application to a PC.

* iTunes is required for the RS-MS1I.

Other Functions

- **Transceiver Setting** Sets certain transceiver's settings.
- **Application Setting** Sets the RS-MS1A/I settings.

Transceivers and Compatible Application

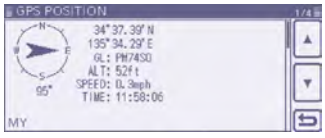
Transceivers	Compatible application	Required options
ID-51E PLUS2	RS-MS1A*1 for Android™	OPC-2350LU data communication cable
ID-31E PLUS	RS-MS1A*1 for Android™	
IC-7100*3	RS-MS1A*1 for Android™	
ID-5100E	RS-MS1A*1 for Android™	UT-133A Bluetooth® unit
ID-4100E	RS-MS1A*1 for Android™ RS-MS1I*2 for iOS™	UT-137 Bluetooth® unit

*1 Download free from Google Play™. (OS: Android™ 4.0 or later)
*2 Download free from App Store. (OS: iOS™ 8.0.1 or later) *3 You can not change transceiver setting.
The RS-MS1I/RS-MS1A may not work, depending on the OS version, installed applications, and so on.

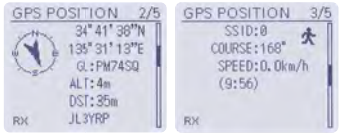
GPS Location Reporting Functions

Displays Your Own and Received Location Data

The ID-51E PLUS2, ID-31E PLUS, ID-5100E or ID-4100E have an integrated GPS receiver and show your own location, course, speed and altitude on the display. The GPS location data can be transmitted with voice. Received location information is also shown with distance and direction from your location.

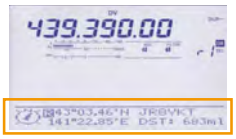


Own (MY) position example (ID-5100E)



Location data example (ID-51E PLUS2)

The IC-7100 and IC-9100 enable you to manually input the current position or connect an external GPS receiver.



Display example of IC-9100

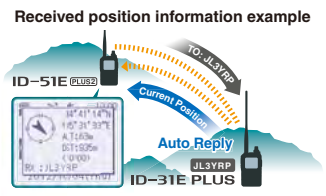
GPS Button (IC-9100)

Automatic Location Reply Function*

When receiving a call addressed to your call sign, this function automatically replies your current location data. Replied location data will pop up on the caller's display.

*ID-31E PLUS, ID-51E PLUS2,ID-4100E and ID-5100E

Received position information example



GPS Log Function*

The GPS log function logs your location data at regular intervals (1 second–60 seconds, depending on setting) and memorizes this in the SD card or microSD card to export to your PC. You can import the data into Google Earth or other map applications.

*SD card microSD card required. *ID-31E PLUS, ID-51E PLUS2, ID-4100E and ID-5100E

Export to the Android™ or iOS™ Application

When connected with an Android™ or iOS™ device*, received location data can be plotted on a Map Application.

* ID-51E PLUS2, ID-31E PLUS, ID-5100E and ID-4100E with RS-MS1A for Android™ device. ID-4100E with RS-MS1I for iOS™ device.

©Google

Repeater Search Function

The repeater search function* assists you in accessing nearby repeaters, even in areas you are visiting for the first time. The function searches for a nearby repeater using the repeater memories with the GPS location data.

* ID-51E PLUS2, ID-31E PLUS, ID-5100E, ID-4100E and IC-7100 functions.
To use the near repeater search function, the position data of the repeater is required. The radios will be shipped with the D-STAR repeater memories preprogrammed, but the position data of some D-STAR repeaters may not be entered or exact.

Display example of IC-7100 (Shows near repeater list with distance)

Display example of ID-51E PLUS2

D-PRS (Digital Packet Reporting System)

D-PRS converts the D-STAR GPS information to APRS™ compatible strings and presents it to the APRS-IS (APRS Internet Server) and other APRS™ clients. The APRS™ maps show real-time APRS™ information and tracks D-STAR stations on the Internet.