



VHF DIGITAL RF MODULE

# ID-RP2000V

UHF DIGITAL RF MODULE

# ID-RP4000V



**DV + DD**  
**DIGITAL VOICE + DIGITAL DATA**

Imagine a world where you can get a VHF and UHF repeater pair! Or when VHF and UHF DX does not require a band opening! Or even a plug and play repeater system that gives you functionality and capabilities that no other radio service in the world can offer! This dream has become a reality with Icom's ID-RP2000V and ID-RP4000V D-STAR modules.

Whether you are a repeater owner wanting to experiment in the digital world or a club who wants more from their repeater network, D-STAR is definitely the future of amateur radio.

**Icom America Inc.**

# D-STAR RP2000

D-PRS® | AUTO I.D. | INTERNET ACCESS | CROSSBANDING

The power of D-STAR offers flexibility and system growth!

**ID-RP2C:** With the capability of handling up to four RF modules, the ID-RP2C repeater controller is the cornerstone of the D-STAR repeater system. This includes basic in-band as well as crossband operation between any of the four digital voice RF modules. In addition to basic control of the RF modules, the RP2C also provides linking capabilities through the internet and future 10GHz backbone products.

### RF Modules:

#### ID-RP2D: (23cm Data)

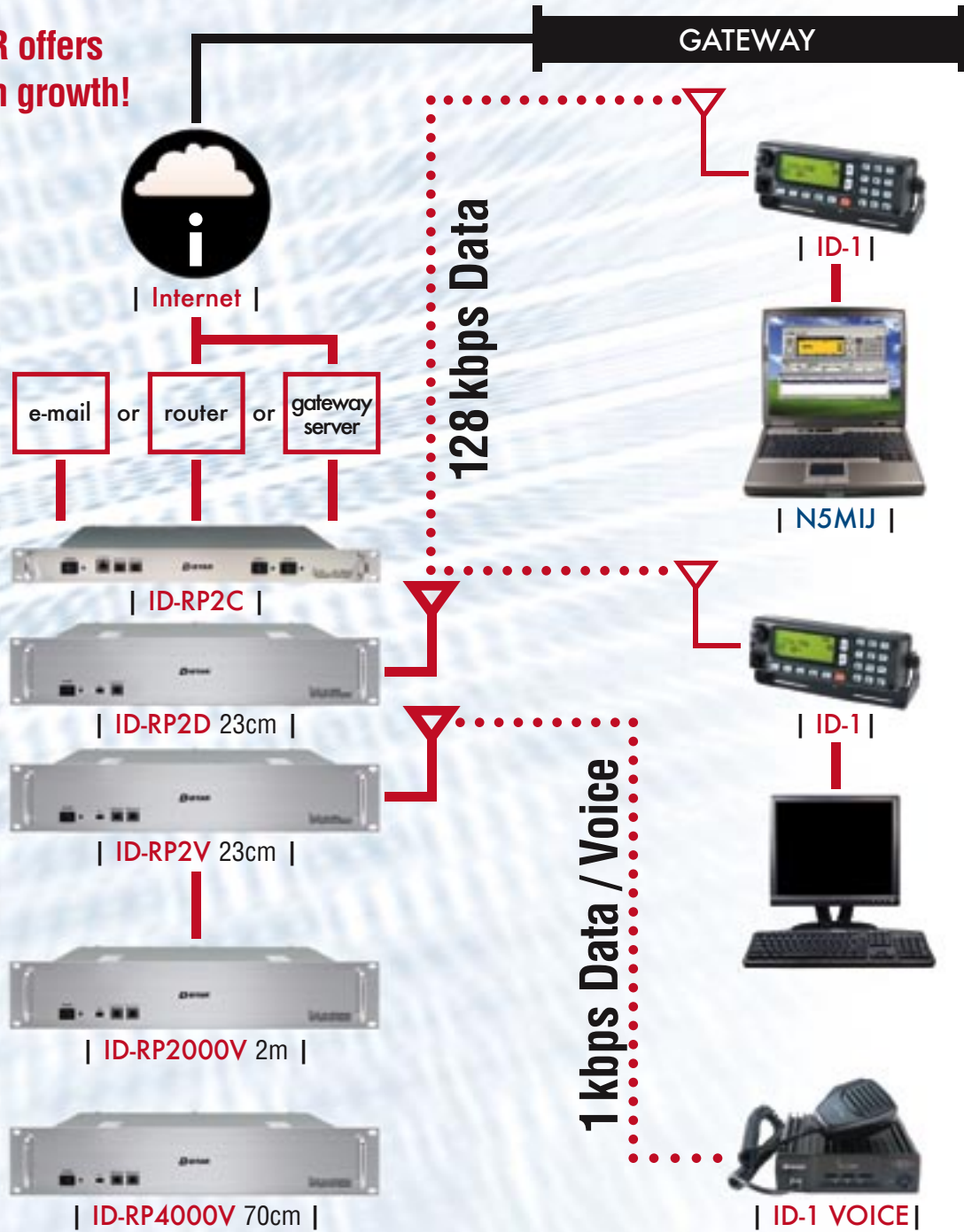
One of the most powerful functions of D-STAR is the ability to move data. The ID-RP2D provides an access point with a data rate of 128kbps. Depending on the system setup, the 128kbps is perfect for setting up an e-mail and/or file server for EmComm support. It's also perfect for connecting to the internet for web applications or support.

Whether you use the 128kbps for e-mail or file servers, connecting to an internet source via a router will give you the capability of checking out the radar from the National Weather Service or National Hurricane Center.

**Digital Voice:** No room for another repeater pair? **No problem** for the Icom D-STAR repeaters! In addition to the 128kbps data, D-STAR incorporates the power of digital voice and 1kbps data mode on 2m, 70cm, and 23cm. The spectral efficiency, crystal clarity, and the ability of repeating data and voice communications on a single 6.25 kHz channel is something yet to be seen in any other radio service! With this capability, expand the number of repeaters available in your area.

**Icom's D-STAR compatible repeaters modules:**  
RP2V: (23cm) RP4000V: (70cm) RP2000V: (2m)

**Crossband Operation:** Finally, a commercially available legal crossband repeater! With proper callsign programming in any D-STAR compatible mobile or portable, the Icom D-STAR repeaters will automatically route your signal to any other RF module connected to a common RP2. With simple repeater commands, you can direct your communications through any of the RF modules.



### Repeater Configuration:

There are three distinct repeater configurations currently available.

**Local:** This configuration is very similar to most analog repeater systems without any linking or internet requirements or capabilities, and is primarily used for Digital Voice and 1kbps operations.

**Local with Internet:** Expand to the local repeater with the addition of the ID-RP2D and a simple DSL connection through a router. While this allows internet connectivity with an ID-1, there is no control over who is able to use the internet connection. (Interconnection with other remote users is not possible.)

**Gateway:** This is the ultimate D-STAR configuration providing a controlled internet connection as well as linking to other repeaters installed into a common D-STAR network. All users of the DV (digital voice) gateway of 128kbps internet connection must be registered in one of the D-STAR networked repeaters. (**NOTE:** A static IP address is required to set up a gateway D-STAR repeater. A few examples of a gateway network can be seen on [www.dstarusers.org](http://www.dstarusers.org) website.)



# V/4000

## TEXT MESSAGING | DIGITAL VOICE & LOCATION | RESCUE TRACKING | CROSSBANDING

### Applications and Uses

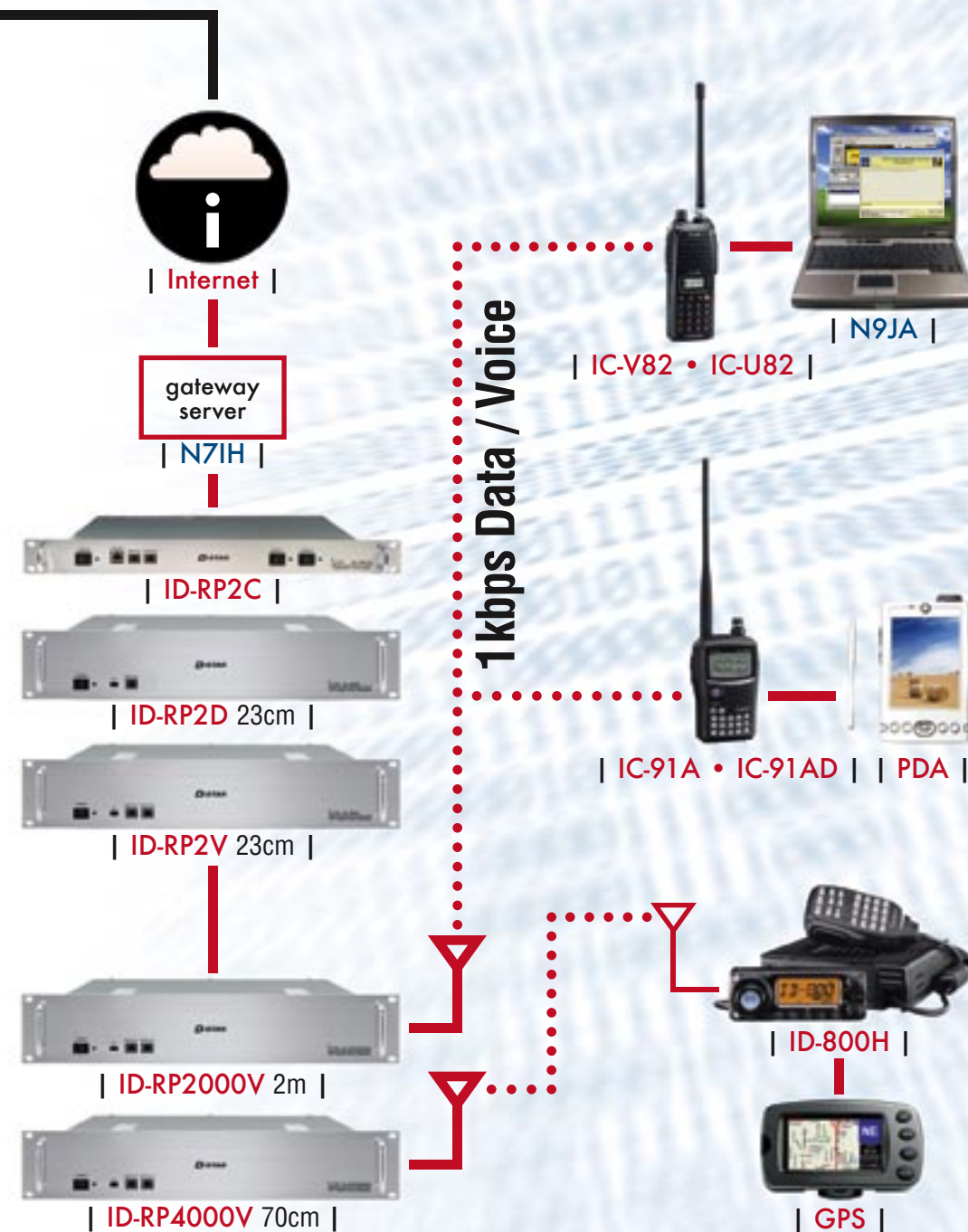
**1kpbs:** The 1kpbs is the transport layer for your data communications using the serial port of your computer. While considered a slow data rate, the 1kpbs can move a considerable amount of data and co-exist on the same frequency with DV communications.

**PC:** An exciting new area to experiment, each of the Icom D-STAR compatible radios utilizes a serial port interface for 1kpbs. So, any files, messages or data you send through the serial port or USB port on your laptop will move through the D-STAR network.

**d\*Chat:** One of the first third-party Windows® software applications for D-STAR, d\*Chat, created by NJ6N, works on low-speed D-STAR (DV data). It offers keyboard-to-keyboard instant text messaging between multiple stations on a simplex frequency or through a repeater. d\*Chat can be set up to send automated status reports at regular intervals. A printable event log is kept. Download for free: [http://nj6n.com/dstar/dstar\\_chat.html](http://nj6n.com/dstar/dstar_chat.html)

**PDA:** (Applications pending) Communicate with others via text through the serial port on your PDA. Complete forms and send them from in the field, or just a quick text message to say "hello". This is a perfect combination for the amateur on the go!

**GPS:** Connect any NMEA compatible GPS to the serial port of the Icom D-STAR compatible radios and send GPS coordinates, either with each press of the PTT button or at preset TX intervals. The IC-2820H has optional GPS capabilities with coordinates relayed on its LCD.



**Gateway Communications:** Expand your VHF, UHF, and SHF horizons by adding the D-STAR gateway. The Gateway operates like a router, directing your communications either locally or over the internet based on the callsigns used. There are four callsigns used in routing calls over a D-STAR repeater. The most critical is the "My" or "Mycall" as it identifies the originating communication. There are two repeater callsign locations as well as a destination callsign, "Your" or "Urcall". The tables below show proper programming of these callsign locations.

### Repeater Configuration (N7IH)

Module	Band	Mode
A	23cm	DV
A	23cm	DD
B	70cm	DV
C	2m	DV

### Local communications (User radio)

Simple 2m repeater operation		Simple 2m - 70cm crossband operation		Gateway operation to N5MIJ	
Setting	Callsign	Setting	Callsign	Setting	Callsign
Mycall	N9JA	Mycall	N9JA	Mycall	N9JA
Urcall	CQCQCQ	Urcall	CQCQCQ	Urcall	N5MIJ
RPT1	N7IH ___ C	RPT1	N7IH ___ C	RPT1	N7IH ___ C
RPT2	off	RPT2	N7IH ___ B	RPT2	N7IH ___ G

Note: Each callsign location can hold up to eight characters. The 8th character is the "switch" and is necessary for controlling the repeater. Spaces are required to position the switch character into the 8th character location.

## COMPATIBILITY CHART WITH ICOM DIGITAL TRANSCEIVERS

	IC-91AD or IC-91A + UT-121	ID-800H	IC-2200H + UT-118	IC-V82 + UT-118	IC-U82 + UT-118	IC-2820H + UT-123	IC-92AD	ID-1 (1.2GHz)
ID-RP2000V	✓	✓	✓	✓	--	✓	✓	--
ID-RP4000V	✓	✓	--	--	✓	✓	✓	--
ID-RP2V/2D	--	--	--	--	--	--	--	✓

## SPECIFICATIONS

### GENERAL

Frequency range	ID-RP2000V: 144-148 MHz ID-RP4000V: 440-450 MHz
Type of emission:	F1D (GMSK); F7W with ID-RP2C
Frequency stability	ID-RP2000V: ±0.3 kHz (at 25°C; +77°F) ID-RP4000V: ±0.8 kHz (at 25°C; +77°F)
Frequency resolutions:	5/6.25 kHz
Antenna impedance:	50Ω (type-N)
Transmission speed:	4.8 kbps (Voice 2400 bps, FEC 1200 bps, data 952 bps)
Power supply requirement:	13.8 V DC ±15% (negative ground)
Current drain	
TX High/Low:	Less than 7.0/3.0A
RX Stand-by:	Less than 0.7A
Operation temp. range:	-10° C to +50° C; +14° F to +122° F
Dimensions (proj. not incl.):	483(W)x88(H)x428(D) mm; 19(W)x3 15/32x16 27/32(D) in.
Weight (approx.):	7.5 kg; 16 lb 9 oz

### TRANSMITTER

Output power:	25-30W (high)/2-3W (low)
Modulation system:	Quadrature modulation (244.8 MHz)
Occupied bandwidth:	Less than 6.25 kHz
Spurious emissions:	Less than -60 dB

### RECEIVER

Intermediate freq.	ID-RP2000V: 46.35 MHz/450 kHz (1st/2nd) ID-RP4000V: 70.00 MHz/455 kHz (1st/2nd)
Sensitivity:	Less than 0.45μV @ BER 1x10 <sup>-2</sup>
Adjacent Ch. Selectivity:	More than 65 dB (10 kHz offset)
Intermodulation rejection ratio:	More than 65 dB (±20 kHz/40 kHz)
Receive Spurious:	Less than -57 dBm
Spurious image rejection:	More than 70 dB

### GENERAL

Frequency range	ID-RP2D: RX 1240-1300 MHz; TX 1240-1300 MHz ID-RP2V: RX 1240-1300 MHz; TX 1240-1300 MHz
Type of emission	ID-RP2D: F1D (GMSK) ID-RP2V: F1D (GMSK) F7W for system operation
Frequency stability:	±2.5 ppm (based on 25° C; +77° F)
Frequency resolutions:	5/6.25 kHz
Antenna connector:	Type-N (impedance: 50Ω)
Communication speed	ID-RP2D: 128 kbps ID-RP2V: 4.8 kbps
Power supply requirement:	13.8 V DC ±15% (negative ground)
Current drain	
ID-RP2D:	TX (high) Less than 6.0 A TX (low) Less than 2.7 A RX stand-by Less than 0.7 A
ID-RP2V:	TX (high) Less than 7.0 A TX (low) Less than 3.0 A RX stand-by Less than 1.0 A
Usable temperature range:	-10° C to +50° C; +14° F to +122° F
Dimensions (proj. not incl.):	483(W)x88(H)x428(D) mm; 19(W)x3 15/32x16 27/32(D) in.
Weight (approx.):	ID-RP2D: 6.2 kg; 13 lb 10 oz ID-RP2V: 7.5 kg; 16 lb 9 oz

### TRANSMIT POWER (at 13.8 V DC)

ID-RP2D:	High 9-12 W Low 0.5-1.2 W
ID-RP2V:	High 6-12 W Low 0.5-1.2 W
Modulation system:	Quadrature (243.95 MHz)
Occupied bandwidth	ID-RP2D: Less than 130 kHz ID-RP2V: Less than 5.5 kHz
Spurious emissions:	Less than -50 dB
Receive system	ID-RP2D: Double-conversion superheterodyne ID-RP2V: Triple-conversion superheterodyne

### RECEIVER

Intermediate freq.	ID-RP2D:	1st 243.95 MHz 2nd 10.7 MHz 3rd N/A
ID-RP2V:	1st 243.95 MHz 2nd 31.05 MHz 3rd 450 kHz	
Sensitivity (BER 1x10 <sup>-2</sup> )	ID-RP2D: Less than 2.24 μV ID-RP2V: Less than 0.45 μV	
Selectivity	ID-RP2D: More than 140 kHz/6 dB; Less than 520 kHz/40 dB ID-RP2V: More than 6 kHz/6 dB; Less than 18 kHz/50 dB	
Receive spurious:	Less than -57 dBm	
Spurious and image	Rejection ratio: More than 60 dB (General); More than 50 dB (IF and <sup>f</sup> f <sub>2</sub> )	

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