KENWOOD

News Release

JVCKENWOOD
株式会社 JVCケンウッド

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Industry's first*1 portable amateur radio, supporting on both APRS and D-STAR®

New release of 144/430 MHz dual bander TH-D74

JVCKENWOOD will release a new high-end 144/430 MHz dual band portable amateur radio TH-D74 from the KENWOOD brand at the end of August in Japan.

Product name	Model number	MSRP (tax excluded)	Release date
144/430 MHz dual bander	TH-D74	72,800 yen	End of August

● Background of the product planning and overview

In the amateur radio set market, there is a high demand for portable radio sets that can be easily carried and used in any location. At KENWOOD, we have been introducing portable products compatible with the APRS, the Automatic Packet Reporting System, which realizes real-time two-way data transmission by using packet communications, and they were favorably received due to their superioroperability. In order to enhance it's versatility, JVCKENWOOD has developed a Industry's first*1 144/430 MHz dual bander TH-D74 that supports the widely used D-STAR®, Digital Smart Technologies for Amateur Radio, a digital voice and data protocol, too promoted by the Japan Amateur Radio League (JARL).

This high-end model not only supports both APRS and D-STAR® but is also equipped with the radio technologies JVCKENWOOD has developed over the years, making it possible to operate in wide range of radio applications with a wideband reception function (HF bands SSB and CW) and various interfaces.

*1: As to the portable radio set for amateur radio will be sold towards the end of August, an accounting our research as of 8 August 2016.

● Major features of TH-D74

1. APRS for real-time data transmission/reception

1) Built-in GPS provides location, directional information on the color LCD

In addition to real-time information of the local station obtained with the integrated GPS receiver, a directional compass that shows real-time information of the local station as well as distance, bearing, direction, and moving speed of another preset station can be displayed on the color screen. This function allows the user to easily recognize the position and moving direction of another station in relation to the local station. Furthermore, data (rainfall amount, temperature, wind direction, wind velocity, atmospheric pressure, and humidity data) acquired from meteorological observation systems.

<Relative display compass> <Meteorological information>

2) Station list can be stored up to 100 stations

Up to 100 stations such as mobile stations, base stations, meteorological stations, and objects can be saved. The type limitation and order of receiving station are adjustable. In addition, local information can be transmitted as an object.

3) Real-time transmission and reception of APRS message

Messages can be transmitted and received in real time between stations using APRS. Letters can be typed in using panel keys and pre-stored phrases can quickly be selected for immediate transmission.

4) QSY function

Voice channels of FM or D-STAR® can be set and quick QSY is possible using frequencies embedded in beacons from APRS stations and information from received D-STAR® repeater. D-STAR® gateway is also able to set automatically.

2. D-STAR®, a digital voice and data protocol for Amateur Radio.

1) Flexible operation of voice mode and data mode

QSO with stations around the world is possible through flexible operation including conventional simplex operation, via a single-repeater, and IP-based gateway repeater. Various types of QSO are supported in digital format with clear sound quality.

DV mode (Single band)

APRS + DR mode (Dual band)

2) DV fast data mode

DV fast mode make it possible to accelerate the throughput by placing data on a vacant voice frame to provide fast data transmission.

3) Easy to use DR (D-STAR® repeater) mode

The target station can be called up easily by selecting the access repeater and from the list. Furthermore, a direct reply function for replying to a IP gateway call by pressing a PTT switch and a function to check the accessibility condition during kerchunk or passing the gateway. The status can be easily recognized the intuitive icons on the display. In addition, up to 120 records of TX and RX history can be stored and be used easily to reconfigure the station informations.

3. Wideband multi-mode reception

Wideband reception can be used with B band. SSB and CW can be received in addition to DV, DV fast data, FM, NFM, WFM, and AM of between 0.1 and 524 MHz band. The radio is equipped with a fine mode to zero-in with the minimum step frequency of 20 Hz[*2], a bar antenna[*3]to receive 0.1 to 10 MHz band, and a simultaneous dual watch function for VxV, UxU, and VxU.

*2: SSB, CW, AM mode only.

*3: Possible to switch to SMA antenna connector.

4. IF Filter to handle adjacent unwanted signals

An IF Filter that reduces adjacent frequency interference when receiving SSB or CW, it provides excellent contour characteristics.. (Selection range: 2.2 to 3.0 kHz for SSB, 0.3 to 2.0 kHz for CW, and 3.0 to 7.5 kHz for AM)

5. IF Output Mode

An IF signal with a central frequency of 12 kHz and 15 kHz bandwidth can be output through a USB port, that enables various types of data reception via PC.

6. High-performance DSP contributes excellent audio quality

It is equipped with an audio equalizer to adjust both RX EQ5 band (0.4 to 6.4 kHz) and TX EQ4 band (0.4 to 3.2 kHz), allowing flexible adjustment ofto the preferablesound quality.

● Other characteristics

1. TFT transflective color LCD for excellent visibility

TFT transflective color LCD is adopted. A backlight is installed for excellent visibility in dark lighting conditions and it also provides superior visibility even under the sunlight. APRS has a blue background and D-STAR® has a green background in the popup screen so that it is easier to distinguish between them.

2. Flat key top for high operability

In addition to a 4-way directional-pad (D-pad), a flat key top is adopted for tactile keypads to ensure the operability.

3. Weatherproof (IP54/55) for outdoor operation

Equipped with a dustproof and water-jet-proof structure that meets IP54/55 standards assuring to use in outdoors and in bad weather. Heavy-duty specifications are adopted for operation in sudden rain and other outdoor environments.

Water jet (example)

4. High-performance GPS antenna

A high-performance GPS patch antenna is installed on the upper part of the main body. Functions such as nearest D-STAR® repeater search, GPS logger to save the position tracking, and automatic time correction are installed as well.

High-performance GPS antenna

5. Bluetooth® and other various interfaces as standard

Bluetooth® (HSP and SPP) as well as microSD/SDHC memory card and is equi terminal for flexible use with a personal computer.

6. Free software for PC

Free computer software such as MCP-D74[*4] to manage the settings of memory. and ARFC-D74[*3] for adjusting the radio frequency via PC

*4: MCP-D74 and ARFC-D74 will be available for download (free of charge) at KENWOOD's website after the product is released.

● **Main specification of TH-D74**

General specification					
Frequency range					
Band-A	Transr	144 - 146, 430 - 440 MHz			
	Recep	136 - 174, 410 - 470 MHz			
Band-B	Recep	0.1 - 76, 76 - 108 MHz (WFM)			
(VFO operating range)		108 - 524 MHz			
		Frequncies below cannot be received.			
		253 - 255, 262 - 266, 271 - 275,			
		380 - 382, 412 - 415 MHz			
Radio wave format Transmission		F3E, F2D, F1D, F7W			
Reception		F3E, F2D, F1D, F7W, J3E, A3E, A1A			
Operating temperature range		-20 °C to +60 °C			
upplied KNB-75L is used		-10 °C to +50 °C			
Frequency stability		+/- 2.0 ppm			
Antenna impedance		50 Ω			
Power-supply voltage range					
External power source		DC 11.0 - 15.9 V (STD: DC 13.8 V)			
Battery terminal		DC 6.0 - 9.6 V (STD: DC 7.4 V)			
Current during transmissi		External power source 13.8 V / Battery: 7.4 V			
(TYP.)		H	M	L	EL
DC-IN		1.4 A	0.9 A	0.6 A	0.4 A
BATT		2.0 A	1.3 A	0.8 A	0.5 A
Current during reception					
(TYP.)	Single	260 mA	(at rated power output)		
		135 mA	(SQ close)		
		48 mA	(average at save)		
	Dual	310 mA	(at rated power output)		
		185 mA	(SQ close)		
		50 mA	(average at save)		
GPS receiver mode		115 mA			
Operation time*5 (reference)		Single, Save on, Rate 6:6:48 sec, GPS off			
		H	M	L	EL
KNB-75L (1,800 mAh)		6 hrs	8 hrs	12 hrs	15 hrs
KNB-74L (1,100 mAh)		4 hrs	5 hrs	7 hrs	9 hrs
KBP-9 (alkali AAAx6)		------	------	3.5 hrs	------
		About 10% shorter when GPS is on.			
Dimension (width x height x depth		Protruding object not included			
With KNB-75L		56.0 x 119.8 x 33.9 mm			
With KNB-74L		56.0 x 119.8 x 29.3 mm			
With KBP-9		56.0 x 119.8 x 36.0 mm			
Mass	Body only	202 g			
With KNB-75L		345 g (including antenna and clip)			
With KNB-74L		315 g (including antenna and clip)			
With KBP-9		360 g (including antenna, clip and 6 AAA bateries)			

Transmission					
Transmission output		External power source 13.8 V / Battery: 7.4 V			
		H	M	L	EL
		5 W	2 W	0.5 W	0.05 W
Modulation system	FM	Reactance modulation			
	DV	GMSK reactance modulation			
Maximum frequency	FM	+/-5.0 kHz			
	NFM	+/-2.5 kHz			
Transmission spurious					
	HI / MID	-60 dBc or less			
	L/EL	-13 dBm or less (144MHz)			
	L/EL	-16 dBm or less (430MHz)			
Microphone impedance		2 kΩ			

Bluetooth	
Version and class	Version 3.0, Class 2
Transmission output	-6 < Pav < 4 dBm
Modulation characteristic	140 ≤ ⊿f 1avg ≤ 175 kHz
Initial carrier frequency	-75 ≤ fo ≤ +75 kHz
Carrier frequency fluctuation	±25 kHz (1 slot packet)
	±40 kHz (3 slot packet)
	±40 kHz (5 slot packet)

Reception			**Band-A**	**Band-B**
Reception system				
F3E, F2D, F1D,F7W	Double super heterodyne			
J3E, A3E, A1A	Triple super heterodyne			
Intermediate frequency				
1st IF			57.15 MHz	58.05 MHz
2nd IF			450 kHz	450 kHz
3rd IF	J3E, A3E, A1A			10.8 kHz
Sensitivity (TYP.)				
Amateur band				
FM	12dB SINAD			
	FM/ NFM	144 MHz	0.18/ 0.22 uV	0.19/ 0.24 uV
	FM/ NFM	430 MHz	0.18/ 0.22 uV	0.20/ 0.25 uV
DV	PN9/GMSK 4.8kbps, BER 1%			
		144 MHz	0.20 uV	0.22 uV
		430 MHz	0.22 uV	0.22 uV
SSB	10 dB S/N			0.16 uV
AM	10 dB S/N			0.50 uV
Excluding above amateur band				
AM	10 dB S/N			
	0.3 - 0.52 MHz			4 uV
	0.52 - 1.8 MHz			1.59 uV
	1.8 - 54 MHz			0.63 uV
	54 - 76 MHz			1.12 uV
	118 - 174 MHz			0.50 uV
	200 - 250 MHz			0.63 uV
	382 - 412 MHz			1.12 uV
	415 - 524 MHz			1.12 uV
FM	12dB SINAD			
	28 - 54 MHz			0.32 uV
	54 - 76 MHz			0.56 uV
	118 - 144 MHz		0.36 uV	0.36 uV
	148 - 175 MHz			0.36 uV
	200 - 222 MHz			0.36 uV
	225 - 250 MHz			0.36 uV
	382 - 400 MHz			0.50 uV
	400 - 412 MHz		0.36 uV	0.36 uV
	415 - 430 MHz		0.36 uV	0.36 uV
	450 - 490 MHz		0.36 uV	0.36 uV
	490 - 524 MHz			0.63 uV
SSB	10 dB S/N			
	1.8 - 54 MHz			0.40 uV
	54 - 76 MHz			0.79 uV
	144 - 148 MHz			0.16 uV
	222 - 225 MHz			0.20 uV
	430 - 450 MHz			0.16 uV
FM broadcasting band				
WFM	30 dB S/N			
	76 - 95 MHz			1.59 uV
	95 - 108 MHz			2.00 uV
Squelch sens (TYP.)			0.18 uV	0.25 uV
Spurious interference ratio	144MHz		50 dB or more	45 dB or more
	430MHz		50 dB or more	40 dB or more
IF interference ratio			60 dB or more	55 dB or more
Selectivity	-6 dB	12 kHz or more		
	-50 dB	30 kHz or less		
AF output	7.4 V, 10% distortion rate 400 mW or more/ 8 Ω			

GPS	
TTFF cold start	Approx. 40 sec
TTFF hot start	Approx. 5 sec
Horizontal positioning	10 m or less
Reception sensitivity	Approx. -141 dBm (capture)
25ºC, open sky	

*5: Estimate value when repeatedly operated in proportion of transmission 1: reception 1: and waiting 8 (measurement condition; transmission 6 sec: reception 6 sec: waiting 48 sec). Measurement method specified by JAIA is applied.

Supplied items

Comes with an antenna, lithium-ion battery (7.4 V/1800 mAh), AC adapter for charging, belt clip, instruction manual, and warranty certificate

● Regarding Trademarks

*D-STAR® is a registered trademark of The Japan Amateur Radio League.

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