

KENWOOD

TH-D75A/E

Operating Tips

More Ways to Connect
More With the World



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There is a possibility that the user's important data may be lost due to a malfunction of the equipment, unforeseen circumstances, or erroneous operation. Therefore, it is crucial for the user to regularly create backups of important information such as operational data, recorded voices, messages, settings, and logs. These backups should be stored on an external data storage device, such as a USB flash drive.

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This manual is dedicated to the APRS pioneer Mr. Bob Bruninga (WB4APR: SK).

Mr. Don Arnold, W6GPS made significant contributions to this manual by authoring Chapter 3 and helping in overseeing other sections.

We also thank Mr. David Grootendorst, PA7LIM, for developing applications that have simplified making seamless reflector connections, benefiting users globally.

Additionally, we extend deep gratitude to the global community of radio amateurs for their dedication to developing, maintaining, and preserving the APRS, D-STAR, and other systems, ensuring these resources effectively serve the community.

COPYRIGHTS FOR THIS MANUAL	II
SOFTWARE COPYRIGHTS	II
COPYRIGHTS FOR RECORDED AUDIO	II
TRADEMARKS	II
INDEMNITY	III
HANDLING OF IMPORTANT DATA	III
URL AND CONTACTS OF JVCKENWOOD CORPORATION	III
1 PROLOGUE	1
1.1 INTRODUCING THE TH-D75A/E: EVOLUTION OF THE LEGACY	1
2 APRS	2
2.1 APRS NETWORK	2
2.2 APRS AND KENWOOD	2
2.3 APRS FEATURES ON THE TH-D75A/E	3
2.4 DIGIPEATER RELAY METHODS	5
2.5 DIGIPEATER CONFIGURATION EXAMPLES (USA)	7
2.6 PACKET PATH	8
2.7 KISS TNC	9
2.8 KISS MODE APPLICATION EXAMPLE	10
3 ENJOYING D-STAR (BY DON ARNOLD, W6GPGS)	12
3.1 ENCOUNTER WITH D-STAR	12
3.2 ENJOY WITH D-STAR	12
3.3 D-STAR REFLECTOR OPERATION	14
3.4 REFLECTOR TERMINAL MODE	15
4 D-STAR	16
4.1 BASIC OPERATION	16
4.2 D-STAR COMMUNICATION	17
4.3 COMMUNICATION USING A REPEATER	18
4.4 CONFIGURATION FOR REFLECTOR COMMUNICATION	21
4.5 REFLECTOR TERMINAL MODE	23
4.6 HOTSPOT LIST	34
4.7 HOW TO UPDATE THE REPEATER LIST	38
5 SETTINGS & CONTROLS	41
5.1 USB CHARGING	41
5.2 EXTENDING THE BATTERY LIFE	42
5.3 SILENT APRS AND PACKET COMMUNICATIONS (VOICE ALERT)	43
5.4 SCREEN CAPTURE OF TRANSCEIVER DISPLAY	43
5.5 VIEWING MICROSD CARD CONTENTS ON APC	44
5.6 BEEP AND VOICE GUIDANCE	44
5.7 ADJUSTMENT OF RX AUDIO QUALITY	45
5.8 ADJUSTMENT OF TX AUDIO QUALITY	45
5.9 WIDE-BAND AND MULTI-MODE RECEPTION	46
5.10 MODE	48
5.11 MEMORY CHANNELS	51
5.12 BLUETOOTH CONNECTION	53
5.13 USB CONNECTION	54
5.14 MICROSD CARD USAGE	55
6 APPENDIX	60
6.1 EXTERIOR VIEWS	60
6.2 TH-D75A / TH-D75E SPECIFICATIONS	61

1 PROLOGUE

1.1 Introducing the TH-D75A/E: Evolution of the Legacy

We are delighted to introduce the TH-D75A/E. This model inherits the outstanding features of the predecessor, the TH-D74A/E, and offers further enhancements for improved user experiences. The TH-D74A/E, a high-end handheld transceiver launched in 2016, was highly acclaimed for its multifunctionality and user-friendliness. Unfortunately, due to a halt in the supply of key semiconductors, we had to discontinue the production after just four years. In response, we have developed the successor, the TH-D75A/E, incorporating valuable feedback and requests from many customers.

The new TH-D75A/E is compliant with MMDVM (Multi-Mode Digital Voice Modem) serial commands and introduces Reflector Terminal Mode in Band A. This feature allows easy access to D-STAR reflectors via a Windows PC or Android device using third-party applications, through USB or Bluetooth connections, eliminating the need for mini-RF devices such as hotspots.

Moreover, the TH-D75A/E supports simultaneous reception of D-STAR on both Bands A and B. Users can continue to operate D-STAR repeaters or hotspots on Band B even while using the Reflector Terminal Mode on Band A. In addition to the predecessor's 1500 Repeater List, the TH-D75A/E features a 30 Hotspot List, enhancing convenience for hotspot operation.

Like its predecessor, the TH-D75A/E includes a built-in KISS mode TNC, enabling packet communication with PCs via USB or Bluetooth. Importantly, this model leverages the KISS mode TNC to revive the stand-alone digipeater function, a feature that was popular in the TH-D72A/E but absent in its immediate predecessor. This enhancement plays an active role in your field operations again.

Continuing the design philosophy of the predecessor, Band A (upper section) is specifically designed for amateur band operation at 144MHz, 430MHz, and 220MHz (TH-D75A only), while Band B (lower section) not only supports these amateur bands but also offers wide-band reception across frequencies from 0.1MHz to 524MHz. It supports various modes such as SSB, AM, CW, FM, and DV, with DSP handling the demodulation for SSB, AM, and CW modes. Notably, SSB, AM, and CW modes include an IF receive filter, which ensures clear reception by reducing interference. Moreover, this model can output an IF signal with a center frequency of 12kHz and a bandwidth of 15kHz via the USB port, allowing for diverse operations like monitoring the band scope (a third-party application is required) on a connected PC while listening to the received audio from the speaker output.

Our current lineup of amateur transceivers is equipped with voice guidance functionality, ensuring ease of use even when displays are difficult to read. The TH-D75A/E goes a step further, providing over 770 phrases of voice data to inform users of the operating status, including menus, parameters, frequency, or memory channel contents shown on the screen. This model also supports reading of callsigns using phonetic codes.

These features of the TH-D75A/E enhance the user experiences and will be explained more in the following pages. We encourage you to consult this document and the USER MANUAL (download version) to fully enjoy your TH-D75A/E transceiver.

The USER MANUAL is available for download from the following URL.

https://manual.kenwood.com/en_contents/search/keyword

May, 2024
KENWOOD TH-D75A/E Development Team

2 APRS

2.1 APRS Network

APRS (The Automatic Packet Reporting System) is a worldwide data communication system introduced by Mr. Bob Bruninga (WB4APR, Silent Key).

It facilitates the real-time, bidirectional exchange of position information, messages, and other local information between APRS clients such as the TH-D75A/E, either directly or via Digipeater or IGate stations within the APRS network.

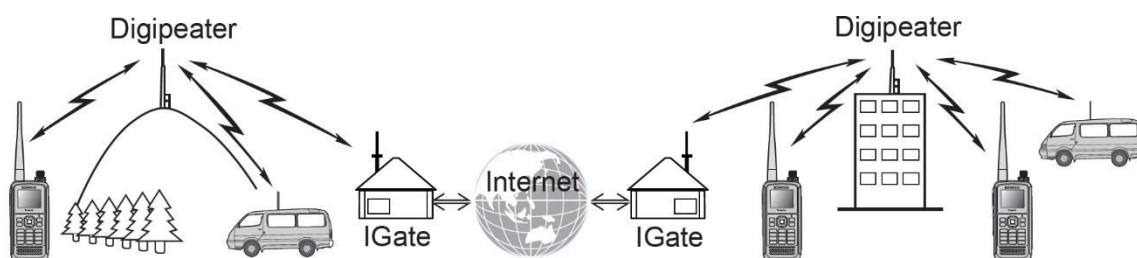
For more information and detailed guides, please visit the official APRS website at <http://www.aprs.org>.

2.1.1 Digipeater

The Digipeater (Digital Repeater) relays digital packet data such as APRS beacons or messages. Upon receiving a packet, it is stored in memory and then re-transmitted on the same frequency once reception concludes. This process facilitates the extension of the communication range beyond the direct reach of individual stations.

2.1.2 IGate

The IGate (Internet Gateway) is a very useful and important feature for APRS as well as the Digipeater. IGates facilitate the bridging of APRS packets between Radio Frequency (RF) and the Internet, allowing for communication with much more distant stations beyond the reach of Digipeaters alone.



2.2 APRS and KENWOOD

KENWOOD has long been a forerunner in APRS, merging transceiver and GPS technology to spearhead innovation in the field.

Our engagement with APRS began in 1996 upon meeting its pioneer, Mr. Bob Bruninga. This era marked the nascent stages of the Internet, personal computers, GPS, and electronic mapping. As these foundational elements matured, KENWOOD's transceivers evolved in tandem, continuously adapting to and influencing the technological landscape.

Our dedication to enhancing APRS continues unabated. We aim to make APRS more accessible and enjoyable, introducing features that enhance its practicality and user experiences.

The sections that follow will provide an overview of these features, designed to make the most of APRS for enthusiasts and advanced users alike.

2.3 APRS Features on the TH-D75A/E

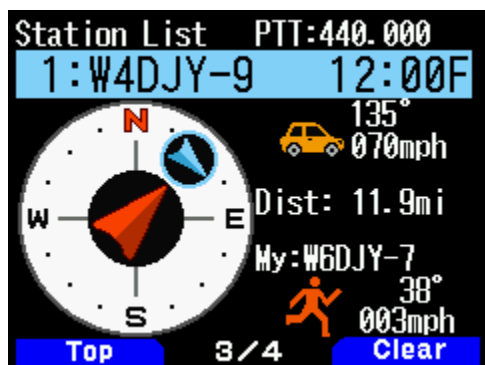
This section focuses primarily on the enhanced APRS features first introduced with the TH-D74A/E, and now seamlessly integrated into the successor, the TH-D75A/E.

2.3.1 Relative Direction Display

The direction of your advancement is centered on a large compass display, with the location and movement direction of the target station indicated along the compass edge for straightforward identification.

You can toggle the display between North Up and Heading Up by pressing **[F]**, aiding in determining if the target station is moving in the same direction as your station.

Example: When W4DJY-9 (target station) is at 45 degrees from your station and moving southeast at 70 mph.



2.3.2 Transmission of Object/Item Information

The TH-D75A/E support the transmission of "Object information" and "Item information."

"Object information" involves transmitting data about entities that may not have a radio, such as hurricanes or marathon runners, characterized by a timestamp. In contrast, "Item information" pertains to static entities like event locations, which do not carry timestamps.

These details are transmitted using predefined names, making the received data easily identifiable on the callsign display.

Live Object/Item: For temporally relevant information (e.g., during a hurricane or marathon), set "Type" to Live Object or Live Item.

Killed Object/Item: When the information expires, choose Killed Object or Killed Item as "Type" to update the status accordingly.

2.3.3 Disclosing Voice Frequency Information (QSY Function)

The frequency used for APRS data communication cannot be used for voice communication.

The TH-D75A/E facilitates the sharing of voice communication frequencies through the APRS beacon. Embedding the voice frequency in APRS data (the QSY function) allows for seamless bidirectional communication. When transmitting QSY data, such as for FM repeaters, additional settings of tone/shift/offset may be included.

"F" (means Frequency) appears on receiving QSY data, enabling the "Tune" function to select the frequency automatically for voice communication in non-APRS band.

2.3.4 Disclosing D-STAR Frequency Information with the QSY Function

The TH-D75A/E enhances the QSY function by integrating D-STAR frequency details and repeater information. Activating the "Tune" function upon receiving QSY information of D-STAR automatically aligns the transceiver's settings with the D-STAR configuration. This streamlined process facilitates a smooth transition to D-STAR voice communication while managing APRS data communication on a distinct, non-APRS band.

In DR Mode (Semi-duplex): The frequency details and the callsign of the currently configured D-STAR repeater are included in the QSY information. Activating the "Tune" function allows the receiving station to switch the non-APRS band to DR mode and sets the specified D-STAR repeater callsign as the Gateway CQ destination for voice communication.

In DV Mode (Simplex): Only the frequency details are included in the QSY information. Activating the "Tune" function allows the receiving station to switch the non-APRS band to DV mode and sets the simplex D-STAR frequency for voice communication.

2.3.5 Restricting QSY Information

This is one of the QSY functions for the receiving end. The feature allows you to restrict the "Tune" operation to only include data within a specified distance range from my station. For instance, if a station operating in **FM mode** or **DV mode** is too remote to receive radio signals directly, the "Tune" operation would be ineffective.

In such scenarios, you can set a distance range to limit the tuning capabilities of these receiving stations. (→ **Menu No. 523**)

2.3.6 Beacon Transmission from a Fixed Position During GPS Track Logging

In previous models up to the TH-D72A/E, GPS information was automatically used for APRS beacon transmissions whenever GPS was enabled, which could be problematic for stations that wanted to log their track without transmitting their location. The TH-D75A/E and TH-D74A/E allow you to select position information for beacon transmissions, including "GPS" or predefined "My Position1 - 5" settings. This allows you to record your GPS track log while transmitting a fixed position of your choice. (→ **Menu No. 401**)

2.3.7 Registering the Beacon of My Station that is Digipeated in the Station List

In the previous models up to the TH-D72A/E, the beacon transmitted from my station and then digipeated was not recorded in the APRS station list. The TH-D75A/E registers these digipeated beacons in the station list. This enhancement allows you to view the APRS information you transmit from an external perspective, improving situational awareness and network understanding.

2.3.8 Reading Out Received Beacons with Voice Guidance Function

The TM-D710GA/GE (with VGS-1) and TH-D74A/E had the capability to audibly announce the other station's callsign and message text (APRS voice) upon receiving an APRS message.

The TH-D75A/E features an enhanced voice guidance function that extends to reading out the content of received beacons as well.

When Menu No. 916 (Voice Guidance) is set to "Auto 1" or "Auto 2", the selected station's callsign, position information, weather station data, and other relevant details from the station list are automatically announced.

2.4 Digipeater Relay Methods

The greatest feature of APRS is the network that is spreading around the world, at the heart of which are many digital repeaters, commonly referred to as digipeaters. These have long been well-known among packet radio users. Digipeaters receive data over-the-air via radio signals and relay it onward. Unlike a voice repeater, which uses two different frequencies to function, a digipeater first receives and stores data, then transmits it once the channel clears.

In the early days of packet radio and digipeaters, users needed to specify the callsign of each digipeater station, a challenging task especially when moving in a vehicle and needing to constantly switch digipeaters.

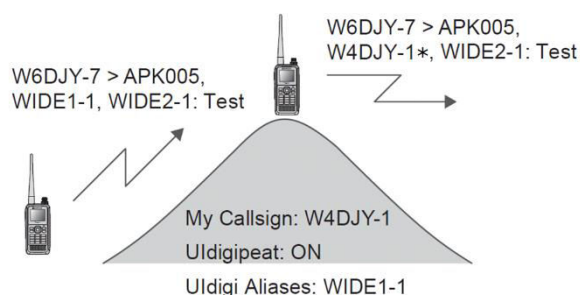
Currently, APRS employs a universal generic callsign for all digipeaters, referred to as WIDEn-N, where "n" represents the maximum hops, and "N" represents the desired hops through the network. The total hop count is typically 2 or fewer. ("Hops" refers to the relay stages.) This WIDE terminology indicates that the digipeater is in a good location for repeating signals. Mobile stations can simply specify WIDEn-N, like WIDE1-1, without needing to know the specific callsigns of digipeaters to relay their beacon transmissions.

Data exchange in APRS is facilitated through the UI frame (Unnumbered Information frame), which allows for the exchange of data without establishing a connection. The methods described below, Uldigipeat, UIflood, and Ultrace, which are also built into the digipeater function of the TH-D75A/E, specialize in forwarding UI frames.

2.4.1 Uldigipeat

Activating Uldigipeat allows for the forwarding of received UI frames containing its alias for Uldigipeat, such as WIDE1-1 for one-hop fill-in digipeaters, by replacing the alias with the digipeater's callsign, along with marking the packet with a completion flag (*).

For example, WIDE1-1, WIDE2-1 → W4DJY-1 *, WIDE2-1.

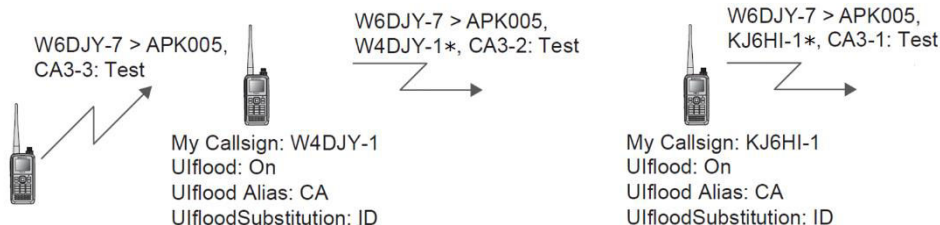


Typically, using Uldigipeat on an APRS transceiver as a client is discouraged to prevent excess interference, as mobile stations repeating all channel packets can lead to congestion. However, in certain scenarios like emergencies or when a mobile station is strategically positioned, such as atop a hill or in a weak signal area, activating Uldigipeat with the WIDE1-1 alias enables the mobile station to effectively act as the initial digipeater. This facilitates communication from challenging locations without significantly impacting network traffic, since WIDE1-1 digipeating is limited to the first hop.

2.4.2 Ulflood

Activating Ulflood enables the forwarding of received UI frames containing its alias for Ulflood, such as "CA" for California, by decrementing the number of hops.

For example, CA3-3 → CA3-2.



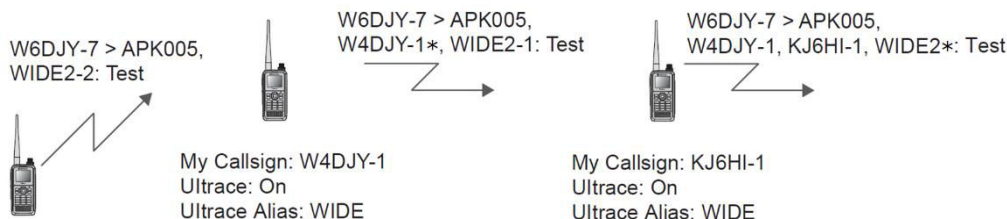
To keep frame lengths manageable, Ulflood does not fully track packet paths as shown above. Therefore, Ulflood is suitable only for broader digipeating paths within specific boundaries designated by SSn-N, such as "CA" for California, or SSSn-N, such as "WPA" for the Western Pennsylvania Section. For broader digipeating, SS3-3 or SSS3-3 should be used instead of WIDE3-3.

Ulflood is a feature specific to full-sized, properly configured, permanent digipeaters. Activating Ulflood on mobile stations risks causing network interference. It should only be activated in exceptional circumstances, such as when a mobile station is used on a hill to provide temporary emergency digipeating services, replacing a missing or malfunctioning permanent digipeater.

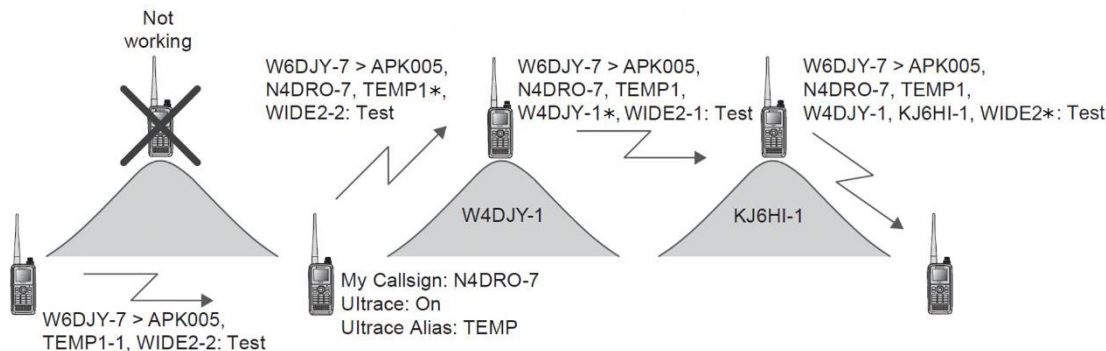
2.4.3 Ultrace

Activating Ultrace enables the forwarding of received UI frames containing its alias for Ultrace, such as WIDE for wide area digipeaters, decrementing the number of hops and adding the digipeater's callsign along with marking the packet with a completion flag (*).

For example, WIDE2-2 → W4DJY-1*, WIDE2-1.



Ultrace operates similarly to Ulflood but distinguishes itself by documenting the complete packet digipeaters involved in the forwarding. This feature allows users to verify the precise path of any transmitted packet. Although activating Ultrace by mobile stations is typically not recommended due to potential network complications, the significant benefits of Ultrace suggest that all APRS mobile stations should enable it using the TEMP alias instead of WIDE, allowing mobile stations to act as TEMPn-N digipeaters while minimizing interference with the standard use of WIDEn-N.



2.5 Digipeater Configuration Examples (USA)

Configuring digipeaters correctly is crucial for efficient APRS communication. Below are examples for setting up two common types of digipeaters.

2.5.1 Fill-in type Digipeater Configuration

This example shows configuration for a typical fill-in type digipeater for general use in routine operation.

Menu No.580 [APRS - Digipeat - Digipeat(MyCall)] : On

Menu No.582 [APRS - Digipeat - Uldigipeat] : On

Menu No.583 [APRS - Digipeat - Uldigi Aliases] : WIDE1-1

Menu No.584 [APRS - Digipeat - Ulflood] : On

Menu No.585 [APRS - Digipeat - Ulflood Alias] : SS or SSS (Abbreviation of state or ARRL section.)

Menu No.586 [APRS - Digipeat - UlfloodSubstitution] : ID

Menu No.587 [APRS - Digipeat - Ultrace] : On

Menu No.588 [APRS - Digipeat - Ultrace Alias] : TEMP

2.5.2 Wide type Digipeater Configuration

This is a general recommendation for permanent digipeaters installed at a high location.

Menu No.580 [APRS - Digipeat - Digipeat(MyCall)] : On

Menu No.582 [APRS - Digipeat - Uldigipeat] : On

Menu No.583 [APRS - Digipeat - Uldigi Aliases] : WIDE1-1

Menu No.584 [APRS - Digipeat - Ulflood] : On

Menu No.585 [APRS - Digipeat - Ulflood Alias] : SAR (Stands for Search and Rescue.)
Other local paths can be defined here.

Menu No.586 [APRS - Digipeat - UlfloodSubstitution] : ID

Menu No.587 [APRS - Digipeat - Ultrace] : On

Menu No.588 [APRS - Digipeat - Ultrace Alias] : WIDE

Proper configuration of digipeaters ensures optimal performance and integration into the APRS network, enhancing communication for all users.

2.6 Packet Path

To efficiently transfer packet data and address frequency congestion from the proliferation of APRS systems, the TH-D75A/E supports various packet path configurations, offering an efficient packet transfer mechanism.

2.6.1 New-N Paradigm

Proper configuration under the New-N Paradigm is essential for establishing an effective packet path using WIDEn-N, a system that assigns both an alias and a specific number of hops to digipeaters. This globally adopted system simplifies the process of specifying the desired number of hops for packet transmission.

Historically, the RELAY setting was used for the first hop within a region. However, this approach has been superseded by the use of WIDE1-1, reflecting a shift towards a more standardized and efficient approach within the APRS network.

In the TH-D75A/E, "WIDE1-1" is set to "On" and "Total Hops" is set to "2" by default. This ensures that the packet path is adjusted to "WIDE1-1, WIDE2-1", optimizing transmission for 2 hops within the network.

Under the New-N paradigm, it is advised to limit hops to 2 or fewer. To safeguard the APRS network from potential negative impacts caused by configuration errors, the TH-D75A/E thoughtfully displays a warning message when a user attempts to adjust the "Hops" setting to exceed "2" in the "New-N" configurations.

2.6.2 Relay Paradigm

Although the Relay Paradigm remains in the TH-D75A/E, it is now largely obsolete and has been replaced by the New-N Paradigm. The Relay Paradigm, which includes the backward-compatible RELAY as the first hop, and uses TRACEn-N for subsequent hops, was a foundational approach before the integration of the more efficient New-N Paradigm.

2.6.3 Region

In contrast to the omnidirectional propagation of WIDEn-N, the Region setting allows packet relay within specific boundaries, reducing interference outside these areas. Abbreviations designate these boundaries, such as "AZ" for Arizona or "NCA" for the North California Section. This enables the establishment of special nets for long-distance communication without adversely affecting other areas.

For example, using WIDE5-5 from the middle of Maryland would generate hundreds of packets of interference in 13 surrounding states. This is why configurations beyond "WIDE2-2" are not recommended. However, "MD5-5" would facilitate statewide communication in Maryland without causing unnecessary interference. The packet path of the Region setting is used effectively during events such as statewide drills.

2.7 KISS TNC

2.7.1 What is KISS?

KISS stands for "Keep It Simple, Stupid" a principle proposed by K3MC and KA9Q at the ARRL 6th Computer Networking Conference in 1987. It refers to a design approach for a TNC (Terminal Node Controller) that operates without the complex protocol control typically found in TNCs, specifically omitting the AX.25 protocol. KISS protocol is designed to minimize interference and collisions during communication. The KISS protocol supports features such as adding a Frame Check Sequence (FCS) to transmitted data for error checking and flag to denote packet frame boundaries. Additionally, the KISS protocol offers eight types of serial communication commands for interfacing with PCs, simplifying the process.

2.7.2 TH-D75A/E KISS TNC Specifications

The TH-D75A/E's KISS TNC is designed to support packet speeds of 1200 bps using AFSK modulation and 9600 bps using GMSK modulation. It features a transmit buffer size of 3 kB and a receive buffer size of 4 kB, accommodating efficient data handling for different communication needs.

2.7.3 List of KISS Commands

Command	Command Name	Functional Description	Configurable Range	Default Value (Value when KISS mode is On)
00	Data Frame	Transmits data that is configured immediately after the command.	-	-
01	TXDELAY	For configuring the time interval from the point when PTT is turned on until when data transmission starts. Units of 10 ms	0 to 120 (78 h)	Varies with the TH-D75A/E Menu No. 508 (TX Delay) configuration.
02	P	For configuring the probability of P-persistent CSMA.	0 to 255 (FFh)	128(80h)
03	SlotTime	For configuring the random number generation time interval of P-persistent CSMA. Units of 10 ms	0 to 250 (FAh)	10(0Ah)
04	TXtall	For configuring the duration for maintaining the transmission state after FCS (CRC) is transmitted. Units of 10 ms	0 to 255 (FFh)	3
05	FullDuplex	For selecting full-duplex or half-duplex communication.	0: Half-duplex communication Value other than 0: Full-duplex communication	0
06	SetHardware	Switches the packet speed.	0 or 35 (23 h) : 1200 bps 5 (05 h) or 38 (26 h) : 9600 bps	Varies with the TH-D75A/E Menu No. 505 (Data Speed) configuration.
FF	Return	Exits KISS mode.	-	-

2.8 KISS Mode Application Example

The TH-D75A/E can run an IGate or digipeater station in KISS mode by using a PC with an APRS application installed. The following is an example of using UI-View32, which is one of the popular APRS applications.

Note:

- UI-View32 is originally designed for older operating systems. On current operating systems, run the application in compatibility mode to ensure stable operation. Right-click the UI-View32 shortcut, select "Properties", and open the "Compatibility" tab. Check "Run this program in compatibility mode for:" and select "Windows XP (Service Pack 3)".

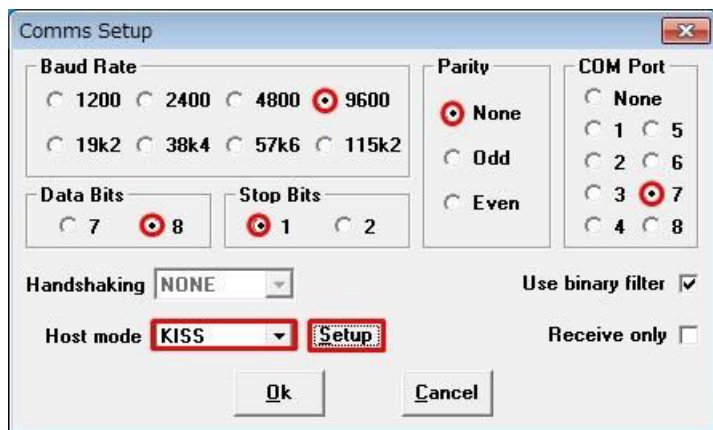
2.8.1 Operation of IGate or Digipeater by Combining the TH-D75A/E and UI-View32

To configure the TH-D75A/E with UI-View32 for IGate or digipeater operation, follow these steps.

1. Press **[F], [LIST]** (APRS) on the TH-D75A/E to turn off **KISS** mode. Ensure that neither **"KISS12"** nor **"KISS96"** is displayed, as these icons indicate that the device is in KISS mode.
2. In UI-View32, access the "Comms Setup" window through the "Setup" pull-down menu.
3. Configure the TH-D75A/E PC terminal settings in UI-View32's "Comms Setup" window as follows:

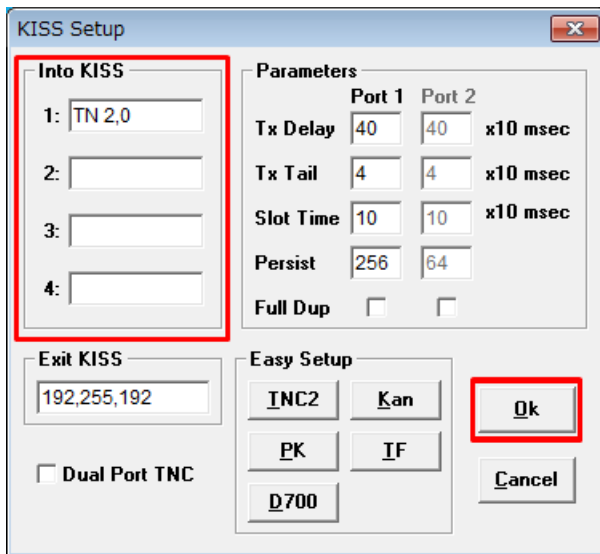
Baud Rate: 9600 bps; Data Bits: 8; Stop Bits: 1; Parity: None;

COM Port: Select the PC's virtual COM port assigned to the TH-D75A/E.



4. Choose **"KISS"** from the "Host mode" dropdown list, then click **"Setup"**.

5. In the "KISS Setup" window, enter "**TN 2,0**" in the first field and leave the others blank. (Be sure to include a space between "N" and "2".)



The screenshot shows the "KISS Setup" dialog box. It has a title bar with a close button. The dialog is divided into several sections:

- Into KISS:** A section with four input fields labeled 1, 2, 3, and 4. Field 1 contains "TN 2,0". This section is highlighted with a red border.
- Parameters:** A section with two columns for "Port 1" and "Port 2".

	Port 1	Port 2	
Tx Delay	40	40	x10 msec
Tx Tail	4	4	x10 msec
Slot Time	10	10	x10 msec
Persist	256	64	
Full Dup	<input type="checkbox"/>	<input type="checkbox"/>	
- Exit KISS:** A section with a single input field containing "192,255,192" and a checkbox labeled "Dual Port TNC".
- Easy Setup:** A section with several buttons: "INC2", "Kan", "PK", "IF", "D700", "Ok", and "Cancel". The "Ok" button is highlighted with a red border.

Click "**OK**" to close this window.

6. Click "**OK**" in the "Comms Setup" window to finalize the setup. This action sends a command to the TH-D75A/E, switching its built-in TNC to KISS mode. The "**KISS12**" or "**KISS96**" icon will light up, indicating KISS mode activation.

It's important to note that while in KISS mode, all APRS configurations on the TH-D75A/E will be inactive, with the exceptions of Menu No.505 (Data Speed) and Menu No.506 (Data Band).

For more detailed settings in UI-View32 or other applications, please consult online resources for further guidance and explanations.

3 ENJOYING D-STAR (BY DON ARNOLD, W6GPS)



3.1 Encounter with D-STAR

I have been a Ham since the early 1970s, so I love talking about HF and Local repeater operations. Several places I lived in had antenna restrictions, but somehow I would be able to hide an antenna or just work worldwide HF in the car. I did do a little D-STAR around 2010. It was ok, but limited to where a repeater was and had limited access to the D-STAR network, so I set it aside. When the KENWOOD TH-D74A/E was released August 2016, I tried my D-STAR experience again. Now, instead of having to depend on D-STAR repeaters, mobile Access Points along with mobile Hotspots opened up a broader more accessible D-STAR experience. In the first 4 hours on the air with my new KENWOOD TH-D74A/E, I worked 15 new countries that I thought I would never get. I find the majority of D-STAR activity is with a hotspot or a D-STAR access point. Examples of the access point are DV Mega, openSPOT, and the popular DVAP. In the first QSO's I had with the TH-D74A/E, people remarked about the audio quality. The TH-D74A/E has DSP processing before and after the vocoder. You can customize both mic audio and receiver audio with the built in graphic equalizers.

Now we have the new KENWOOD TH-D75A/E with many new features improving upon its predecessor, the TH-D74A/E.

My advice to the first-time user of the TH-D75A/E is to learn a few features at a time. You can get overwhelmed with this feature rich handheld transceiver (HT). Please check out some of my TH-D75A/E instruction videos at <https://www.youtube.com/user/w6gps>. I have simple setup video instructions there.

3.2 Enjoy with D-STAR

You will have to get yourself registered first on the D-STAR network server. Go to <https://regist.dstargateway.org> and register. The TH-D75A/E's DR mode for D-STAR means Digital Repeater. It is a series of commands to tell the D-STAR network what to do from your radio.

Therefore, for me in Chattanooga, State of Tennessee (TN) in USA, to get to my repeater, I would hold down the bottom key on the multi-scroll key [▲] for 2 seconds to use the "Repeater Select" menu, so I can locate Chattanooga [W4PL B] module.

When I select this, the frequency (443.15 MHz) is selected along with the repeater name "Chattanooga". So, I am getting ready to tell the [W4PL B] module what to do. I hold in the multi-scroll key [▼] for 2 seconds and I get a list on the "Destination Select" Menu. If I want a local CQ (only Chattanooga Area), I select the "Local CQ", and talk to local Chattanooga. This would be output to the [W4PL B] module and I would be transmitting to the local area.

The "Gateway CQ" in the "Destination Select" Menu would mean I wanted my signal sent to another repeater like [K6VO C] module. This way I can talk to my California friends.

Another option is I can input a call sign for the "Individual" (callsign routing) in the "Destination Select" Menu. Both of these transmissions are possible, but not 100 percent dependable.



Gateway CQ



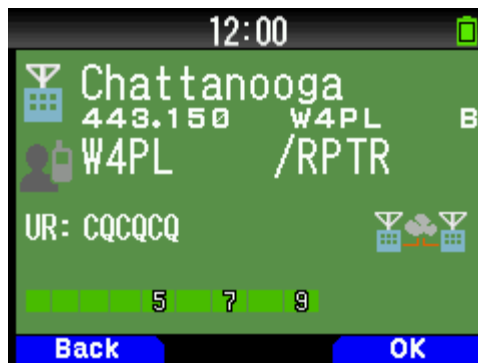
Individual Call

The best way to get on the D-STAR is to use the "Reflector" menus. If your local repeater allows it, you can transmit to the repeater a command to link to a reflector.

For example: to link to reflector REF030C, you would select link to a reflector, press [ENT], and use the [ENC] (Encoder) knob and dial in "REF030CL" and press [PTT] for about 1 second. This command is sent to the D-STAR network and your repeater is linked to the reflector 30C. You should get a response from the repeater "linked to 030C".



Setting the reflector's number/module



Response from the repeater

Once you confirm this, you have to go back into the "Reflector" Menu and select "Use Reflector". A command of "CQCQCQ" will be sent and you can talk on 30C. When your QSO is finished, it is good practice to unlink from the reflector, so go back and select "Unlink Reflector" to use the unlink command "____U".

3.3 D-STAR Reflector Operation

Therefore, here is the simple sequence: Select your repeater and listen. If you want to link the repeater to a reflector then input the reflector name, press **[PTT]** for about 1 second. Listen for acknowledgement, and then select "Use Reflector".

Sound easy? I hope so. DR mode is the simplest and most efficient way to change radio commands.

It gets even better if you get your own repeater! You mean I need to put-up a tower and antenna? No, I am referring to the Access Point, also known as Hotspot. People use the term Hotspot referring to a small low power device connected to a wired internet connection or mobile Hotspot Wi-Fi over a mobile cellular network, I have both. These hotspots can be wired or wireless over a Wi-Fi network. It is self-contained, low power, and simple D-STAR enabled device that is very easy to use. It receives a transmission from your TH-D75A/E converts it to a data packet and sends it to a D-STAR server sending it to repeaters, and reflectors.

Therefore, in simple terms I program the openSPOT with VoIP communications and a simplex frequency according to Amateur band recommendations for low power simplex operations. With this, I can talk to my low power Access Point and tell it what reflectors to go to. I love reflectors as they have more people operating and you can have nice QSOs. If you have to move your QSO, you can tell the Access Point or hotspot to go to another reflector by selecting a new reflector via input using the **[ENC]** (Encoder) knob. This way you can have more control of your reflectors instead tying up a local repeater.

Now I have saved the best for last, mobile Access Point or mobile Hotspot. I use the SharkRF openSPOT4 Pro. So what is the coolness of this system? I can work coast to coast on low power in my car. In fact, I can work the world from my HT (Handheld Transceiver) in the car or from a hotel room with this simple setup. As long as I have mobile cellular service, I can have access to the world of the D-STAR network.



SharkRF openSPOT4 Pro



Elite 3.5 LCD ZUMspot

I know it is hard to visualize this, but go to my videos at <https://www.youtube.com/user/w6gps>, there you can see all this in action.

3.4 Reflector Terminal Mode

NOW the most impressive feature of the TH-D75A/E is called Reflector Terminal Mode. You don't need a hotspot or access point to use the Reflector Terminal Mode. To use Reflector Terminal Mode, you will need an Android phone or Android tablet, a free download from [Google Play](#), called **Blue DV Connect**. Install the application on your Android Device pair the device to your TH-D75A/E. Put your radio in Reflector Terminal Mode. Make sure you have Internet access on your Android device and you're ready to go. The RF section of the TH-D75A/E is turned off, all voice and UR CALL fields information is transmitted via Bluetooth back and forth to the radio. You can access reflectors as you do with a repeater or hotspot (access point). If you're using an Android phone with internet access, you just slip your phone in your pocket and control everything on the radio.

Another option is to use a Windows PC and **BlueDV for Windows** to use Reflector Terminal Mode. Download the application from <https://www.pa7lim.nl/bluedv-windows/>, pair the radio with Bluetooth or connect with a USB Type-C cable and setup BlueDV for Windows. Put your TH-D75A/E in Reflector Terminal Mode. Now you can connect to the desired REF/XRF/DCS/XLX either from the application or from the radio. If you used Bluetooth for your connection, you are untethered and free to roam with your radio.

Please refer to the [section 4.5 "Reflector Terminal Mode"](#) for detailed instructions on how to set up BlueDV Connect and BlueDV for Windows.

With further optimization of the internal microphone's audio conductive structure, the modulation circuit, DSP processing, and AMBE vocoder parameters, you will have great audio reports characterized as the "KENWOOD sound", via network as previously described, or via radio wave.

In all my 40 years as a ham, I have not had even more excitement than using the KENWOOD TH-D74A/E and TH-D75A/E on the D-STAR network. I have met many new hams worldwide without enduring SSB noise. For you veteran D-STAR users try not to overly complicate things, it is easy with the TH-D75A/E. For my new D-STAR KENWOOD's TH-D75A/E users, take your time and get on the air. While you are waiting for verification and registration on the D-STAR radio, get familiar with the many different features of the TH-D75A/E. If you are an owner of the TH-D74A/E, TH-D72A/E or TH-F6A/F7E this radio will be very familiar.

73's

Don Arnold

W6GPS

4 D-STAR

4.1 Basic Operation

4.1.1 Callsign Registration for Using Internet Gateway D-STAR Repeaters

To access Internet gateway D-STAR repeaters, you must register your callsign.

Visit <https://regist.dstargateway.org> for using repeaters connected to the US Trust server.

For systems other than US Trust, please refer to online resources for details.

4.1.2 Start with Configuring "My Callsign"

To enable transmission via D-STAR, you first need to configure "My Callsign".

Note:

- Transmission in DV/DR mode is not possible until your configuration is complete.

Access **Menu No. 610**.

Up to 6 Callsigns can be registered.

Select the number you wish to register and press **[A/B] (Edit)**.

Enter your callsign.

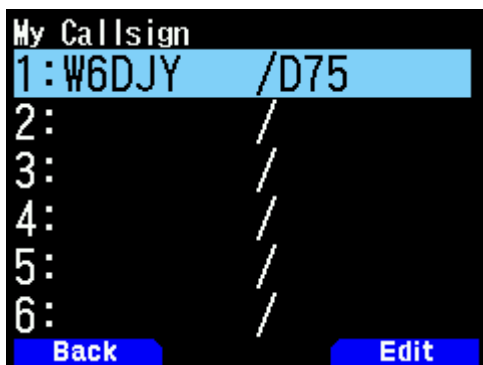
You can register a callsign with up to 8 characters.

After a slash (/), you may add any memo (such as the transceiver model name, operating location, etc.) of up to 4 characters.



Press **[ENT]**.

Your callsign is now registered.



4.2 D-STAR Communication

4.2.1 Difference between DV and DR Modes

DV mode is used for simplex communication, where two transceivers communicate directly with each other without using a repeater. DR mode is for communication via a repeater. For repeater lists that are preset or edited in advance, it is possible for you to select and communicate in DR mode. You can toggle between DV and DR modes from the Digital Function Menu.

4.2.2 Using the Digital Function Menu

1. Press **[MODE]** to switch to **DR mode**.
2. Press **[F]**, **[MODE]** (DIGITAL) in sequence to display the Digital Function Menu.
3. Select "DV/DR Select" and press **[A/B]** (**OK**) to toggle between DV and DR modes.



DR Mode



DV Mode

4.2.3 Carrying out Simplex Communication



<K Type>



<E Type>

1. Configure the frequency using **[▲]**/**[▼]**, or **[ENC]** (Encoder) knob.
2. Press **[MODE]** to switch to DR mode.
If your TH-D75A/E is in DV mode, switch to DR mode in the Digital Function Menu.
3. In the Digital Function Menu, select "Destination Select".
The Destination Select screen will appear.
4. Select "Local CQ" and press **[ENT]**.
"TO" (destination display area) is now configured as "CQCQCQ".
5. Press **[PTT]** to start transmission.

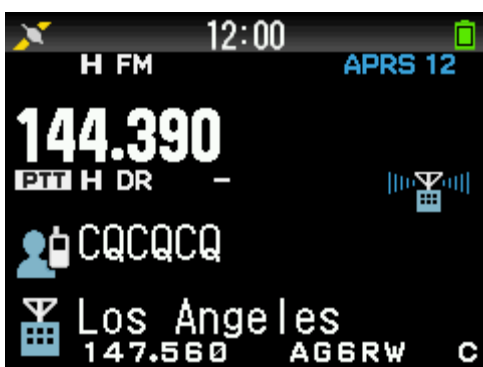
4.3 Communication Using a Repeater

4.3.1 Local CQ

The Local CQ is a method of communication that utilizes a single D-STAR repeater. It is similar to the conventional method of communication using FM repeaters. By configuring "TO" as "Local CQ" while in a state where radio signals are able to reach the access repeater selected in "FROM" (access repeater display area), a local CQ can be configured by pressing [PTT].

4.3.1.1 Configuring the access repeater ("FROM")

1. Press [MODE] to switch to DR mode.
If your TH-D75A/E is in DV mode, switch to DR mode using the Digital Function Menu.
2. Press and hold [▼].
The Repeater Select screen appears.
3. Select "Repeater List" and press [ENT].
The World Region / Country & Region / Group Select screen appears.
4. Select the regional group where you are located, and press [ENT] to display the Repeater List.
5. Select a nearby repeater based on callsign, name, or location information, such as state or prefecture.
Pressing [▶] displays the detailed information of the selected repeater.
Pressing [ENT] configures "FROM" to the selected repeater.




4.3.1.2 Configuring the Local CQ ("TO")

1. Press and hold [▲], and the Destination Select screen appears.
2. Select "Local CQ" and press [ENT]. "TO" is now configured as "CQCQCQ".

4.3.1.3 Checking whether radio signals reach the repeater (kerchunk)

1. Press [PTT] for about 1 second and transmit.
2. Check the response.

When a response is received from the repeater within 3 seconds and the icon  appears on the interrupt (pop-up) screen, it signifies that your signal has been properly transmitted and has reached the repeater. If Menu No. 644 (Callsign Announce) is set to "Kerchunk" or "All", the TH-D75A/E announces "Operational" when the icon appears. However, if another station accesses the repeater within this timeframe, an interrupt screen showing the response will not appear.

3. Press [PTT] to start transmission and make calls, such as a CQ call.

4.3.2 DR Scan

This function scans the stations in the repeater list or hotspot list in DR mode.

1. In DR mode, press and hold **[VFO]** (or select "DR Scan" in the Digital Function Menu) to access the following DR Scan screen.



2. Select an item and press **[VFO]**, **[ENT]**, or **[A/B] (OK)** to begin scanning. The icon representing the access repeater, along with the MHz dot, will flash as the scan progresses through the repeater numbers in ascending order, starting from the last used repeater. To change the scan direction, use **[▲]/[▼]**, or **[ENC]** (Encoder) knob.
3. To stop the scan, press **[ENT]**.

4.3.3 Gateway CQ

By configuring "TO" to the repeater of the area you wish to communicate with and then pressing **[PTT]**, you can establish communication with stations that have access to the repeaters of that area.

The access repeater configured in "FROM" is connected via the Internet to the area repeater configured in "TO", thus enabling calls to be made to an area where radio signals cannot be received directly.

Like the Local CQ, configure "FROM" as the repeater that is directly accessible, and then configure "TO" for the target according to the steps below.

1. Press and hold **[▲]** to access the Destination Select screen.
2. Select "**Gateway CQ**" and press **[ENT]** to access the World Region / Country & Region / Group Select screen.
3. Select the regional group that corresponds to the repeater you wish to connect to and press **[ENT]**. The Repeater List appears.
4. Select the repeater you wish to connect to. Optionally, press **[▶]** to display detailed information about the selected repeater before finalizing your choice. Press **[ENT]** to configure "TO" to the selected repeater.
5. After configuring "TO" to the selected repeater, it's essential to check the connection to the area repeater. Perform a "kerchunk" like the Local CQ to verify that a connection can be established. This ensures that your radio signals are properly reaching the repeater you are attempting to access.

4.3.4 Response to Gateway Communication


When you receive an incoming call in DR mode, whether it's a Gateway CQ or Individual Call, you can respond to the calling station by setting the calling station's callsign in the "TO" field.

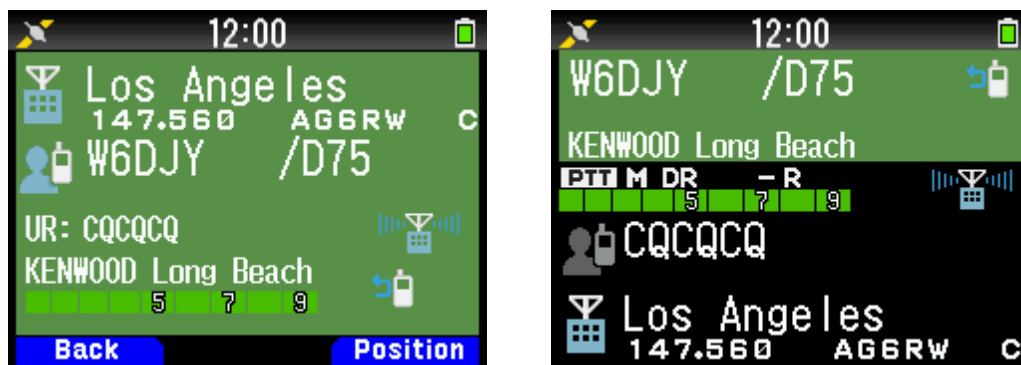
4.3.4.1 Manual configuration


1. After the calling station completes transmission, press and hold [ENT] to access the Call History Select screen.
2. On the Call History Select screen, select the callsign of the calling station and press [ENT].
3. This action sets the calling station's callsign in "TO", and the gateway communication route will be selected automatically. You can then respond by pressing [PTT].

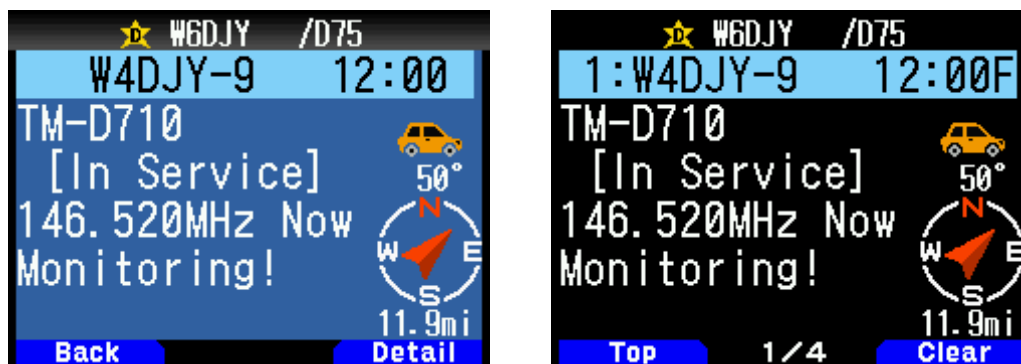
4.3.4.2 Automatic configuration (Direct Reply function)

On the TH-D75A/E, after the calling station completes transmission and the reception interrupt screen is displayed, the device automatically sets the calling station's callsign in "TO", and the gateway communication route will be selected automatically. You can then immediately respond only by pressing [PTT].

The Direct Reply icon  appears on the interrupt screen as shown below when Direct Reply is active, indicating that pressing [PTT] will initiate an automatic callback without any manual configuration settings.



When APRS and D-STAR are operated simultaneously, and D-STAR is on the active band, the Direct Reply function becomes available. When the Direct Reply is active, the callsign of the incoming D-STAR call is displayed above the APRS indication area, marked with the Direct Reply icon  as shown below.



4.4 Configuration for Reflector Communication

4.4.1 What is a Reflector?

A reflector is an Internet-connected server that mirrors and forwards audio packets to connected devices, acting like a reflective surface and serving as a virtual meeting space.

Devices with the necessary connectivity software installed, such as D-STAR repeaters and hotspots, can connect to a reflector, enabling seamless communication with distant stations.

REF, XRF, DCS, and XLX represent different types of D-STAR reflectors.

REF (Dplus protocol): Developed by Mr. Robin Cutshaw, AA4RC.
The first type of D-STAR reflector introduced, still widely used by many D-STAR repeaters.

XRF (DExtra protocol): Developed by Mr. Scott Lawson, KI4KLF.
Provides more features and flexibility than REF reflectors, marking it as the second type of D-STAR reflector.

DCS (DCS protocol): Developed by Mr. Torsten Schultze, DG1HT.
Also provides the extended features found in XRF reflectors. After the original administrators resigned, the DCS system is now managed by several radio amateurs.

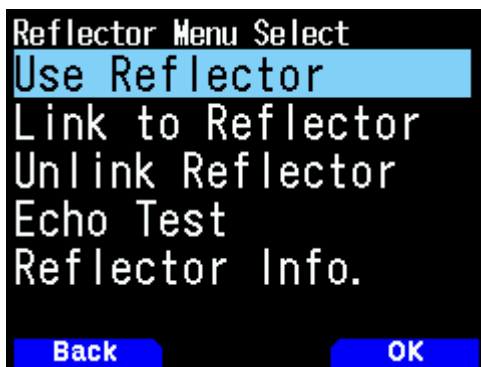
XLX (Multiprotocol): Developed by Mr. Luc Engelmann, LX1IQ, and Mr. Jean-Luc Deltombe, LX3JL.
The newest and most flexible type of D-STAR reflector, XLX is a multiprotocol gateway reflector that supports all protocols of DPlus (REF), DExtra (XRF), and DCS, extending its compatibility beyond D-STAR to other digital modes. XLX's high customizability and multifunctionality have made it popular worldwide.

Please refer to online resources for more details.

4.4.2 Reflector Menu on the TH-D75A/E

To access D-STAR reflectors, please use the reflector commands found in the Reflector Menu as follows.

1. In DR mode, press and hold [▲].
The Destination Selection screen appears.
This screen also appears when selecting "Destination Select" in the Digital Function Menu.
2. Select "Reflector" and press [ENT].
The following Reflector Menu Select screen appears.



3. Select the following items and press [ENT].

[Use Reflector]: If the repeater or hotspot is currently linked to a reflector, select **"Use Reflector"** and press **[ENT]**.

"CQCQCQ" is set to **"TO"**. Then press **[PTT]** to transmit your digital voice signal to the reflector.

[Link to Reflector]: If you wish to link the repeater or hotspot to a reflector, or if you intend to change to another reflector, select **"Link to Reflector"** and press **[ENT]**. Input the reflector's type (REF/XRF/DCS/XLX), number (000 to ZZZ) and module (A to Z), and press **[ENT]**.

A link command (example: "REF030CL") is set to **"TO"**. Then press **[PTT]** to link the repeater to the reflector.

To conduct a QSO, the reflector type, number, and module must all correspond, unless they are interconnected.

Up to 5 reflectors you linked before are shown when you select **"Link to Reflector"** again.



[Unlink Reflector]: If you wish to link the repeater or hotspot to another reflector, be sure to unlink currently linked reflector.

Select **"Unlink Reflector"** and press **[ENT]**.

"_____U" is set to **"TO"**. Then press **[PTT]** to unlink the repeater from the reflector.

[Echo Test]: You can verify how well your digital voice signal is getting into the system.

Select **"Echo Test"** and press **[ENT]**.

"_____E" is set to **"TO"**. Then press **[PTT]** to transmit your digital voice signal to the system. After releasing **[PTT]**, echo back will be sent back from the repeater.

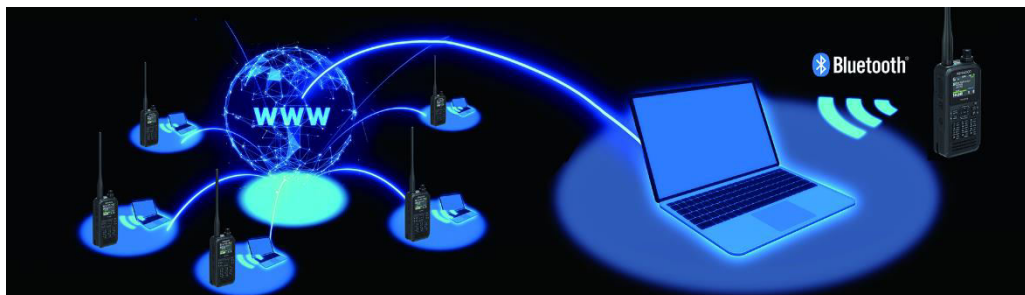
[Reflector Info.]: You can send the reflector information command to check the current connection status.

Select **"Reflector Info"** and press **[ENT]**.

"_____" is set to **"TO"**. Then press **[PTT]** to transmit the reflector information command.

4.5 Reflector Terminal Mode

The TH-D75A/E is compliant with MMDVM (Multi-Mode Digital Voice Modem) serial commands, serving as an MMDVM modem device. It offers Reflector Terminal Mode, which facilitates easy access to D-STAR reflectors via a Windows PC or Android device. This easy access is made possible through USB or Bluetooth connections using third-party applications, eliminating the need for additional devices such as hotspots.



In the sections below, you'll find examples of basic settings for the TH-D75A/E in Reflector Terminal Mode. These settings utilize the globally popular third-party applications "BlueDV Connect" and "BlueDV for Windows," developed by Mr. David Grootendorst, PA7LIM.

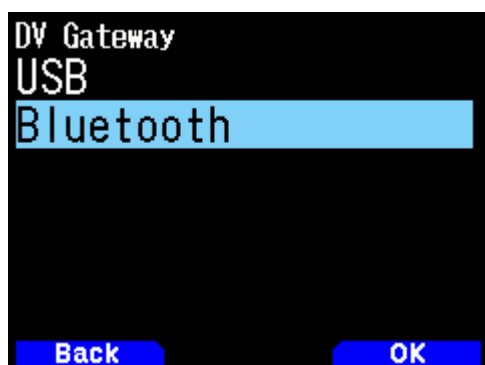
Please note that the instructions in the sections below are based on the information available at the time of editing this manual. Settings may be changed or added due to application updates. To stay updated, please look up the latest information online.

4.5.1 Reflector Communication using BlueDV Connect

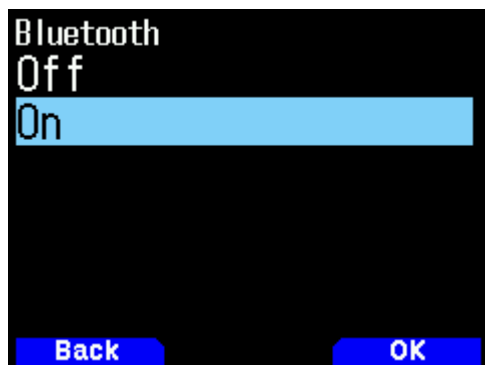
[Setting Up TH-D75A/E]

After full reset, set up your TH-D75A/E following these steps.

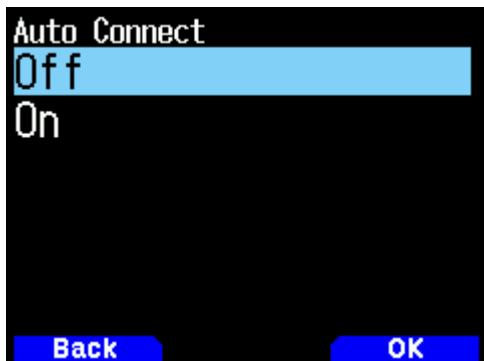
Set **Menu No.985** (DV Gateway) to **"Bluetooth"**. This configuration allows the use of the BlueDV Connect application over a Bluetooth connection.



Set **Menu No.930** (Bluetooth) to **"On"**.



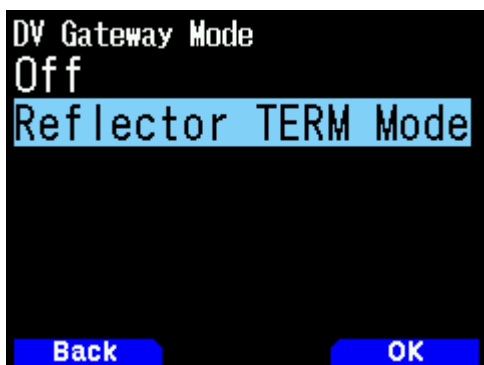
Set **Menu No.936** (Auto Connect) to "**Off**".



Press **[MODE] (Back)** to return to the frequency display, the Bluetooth icon should appear in standby mode (grey) as follows.



Set **Menu No.650** (DV Gateway Mode) to "**Reflector TERM Mode**".



In **Menu No.651** (My Callsign for DV Gateway Mode), press **[A/B] (Edit)** to input your callsign for Reflector Terminal Mode.



Press **[MENU]** again to return to the frequency display, where the Band A will be in Reflector Terminal Mode, indicated by "TERM" in green at the top right.



Note:

- The setting in Menu No.610 (My Callsign for DV/DR Mode) applies to DV/DR mode operations and is not relevant for Reflector Terminal Mode.
- Reflector Terminal Mode is only available on the Band A side. You cannot activate Reflector Terminal Mode when operating in Single Band mode on the Band B side.

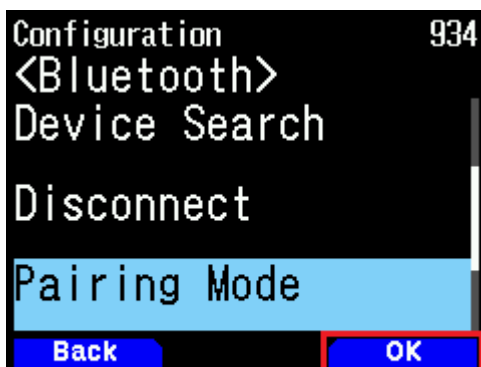
[Pairing TH-D75A/E with an Android Device via Bluetooth]

Follow these steps to pair your devices correctly:

On your Android device, tap the [Settings] icon and ensure Bluetooth is turned on. If off, tap to activate it and select "Pair new device" if prompted.



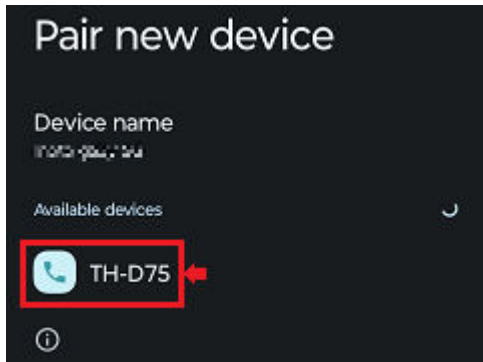
On the TH-D75A/E, select **Menu No.934** (Pairing Mode) and press **[A/B] (OK)**. The device will enter pairing mode and start a 60-second countdown.



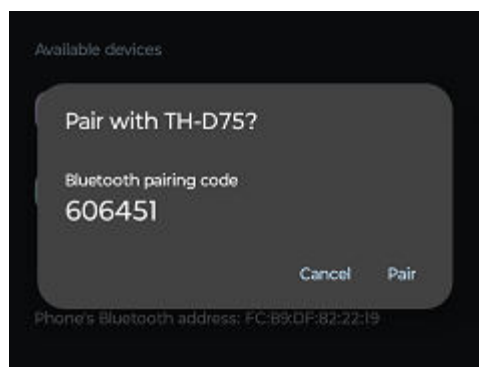
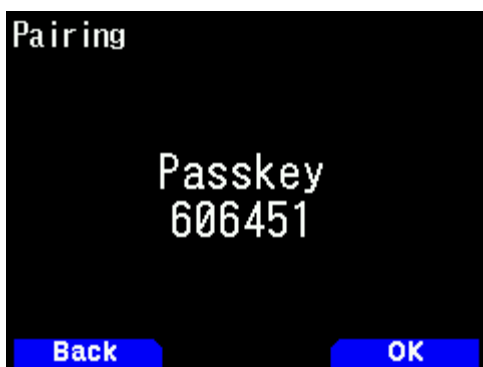
Press **[A/B](OK)**



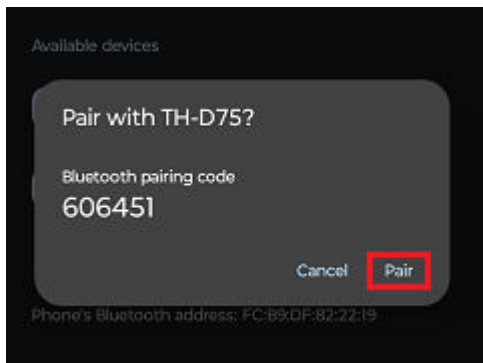
Once "TH-D75" appears under "Available devices" on your Android device, tap to select it.



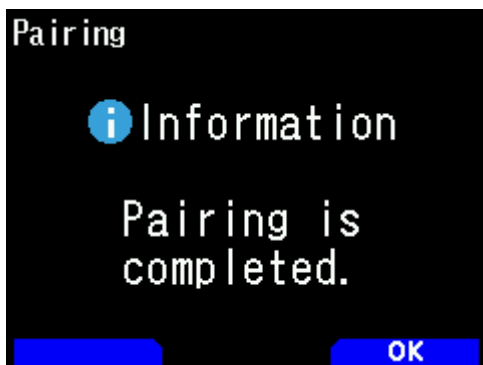
A passkey will be displayed on both the TH-D75A/E and the Android device's screens.



Press [A/B] (OK) on the TH-D75A/E first, followed by selecting "Pair" on the Android device.




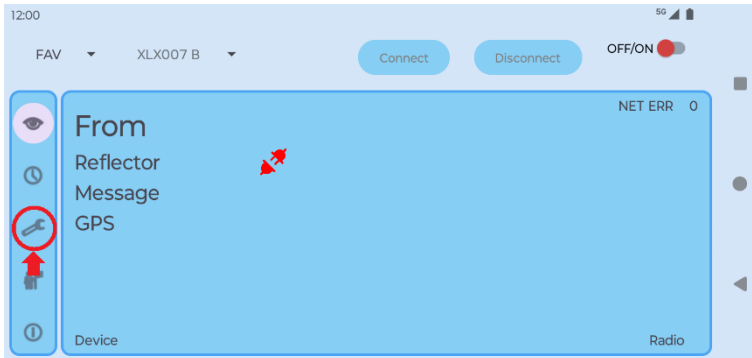
Once "Pairing is completed" appears on the TH-D75A/E as follows, press [A/B] (OK) again to finish the process.



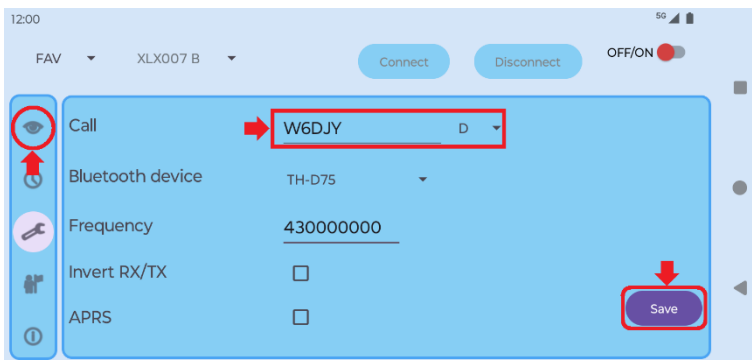
[Setting Up BlueDV Connect]

Download and install BlueDV Connect from [Google Play](#) on your Android device.

Launch the application by tapping the BlueDV Connect icon  on the home screen. The following application main screen will appear.



- Tap the wrench icon in the middle left of the screen, and configure as shown (leave other settings at default):

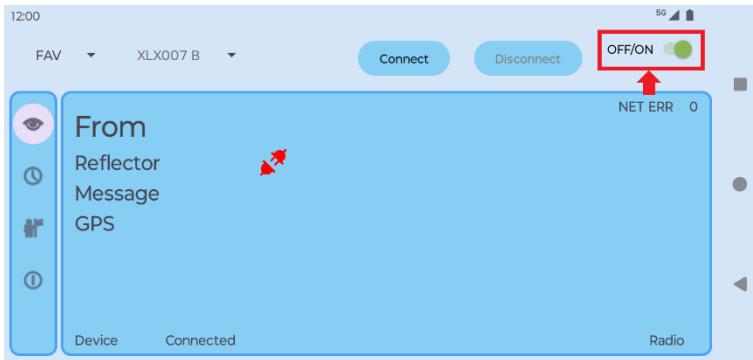


- Set your callsign. (The default identification code "D" can remain unchanged unless a change is needed.)
- Ensure the device name is set to "TH-D75". (If other Bluetooth devices are listed, select "TH-D75" from the dropdown list.)
- Tap [Save] and then the eye icon in the top left to return to the home screen.
- Enable "Invert RX/TX" and "APRS" if necessary.

Note:

- If the TH-D75A/E and Android device are not paired, "TH-D75" will not appear in the dropdown list.
- "Frequency" is for controlling Bluetooth-enabled hotspot devices and does not affect Reflector Terminal Mode operations on the TH-D75A/E.
- "Invert RX/TX" reverses the background colors for RX and TX.
- "APRS" feeds the APRS sentence positional information to the Internet via the application. You also need to ensure Menu No.630 (GPS Info. in Frame) is set to "On" and in Menu No.631 (Sentence), select "APRS Sentence". Please refer to the USER MANUAL for details.

In the app main screen, tap the [OFF/ON] button at the top right. When turned on, the button will change from red to green.

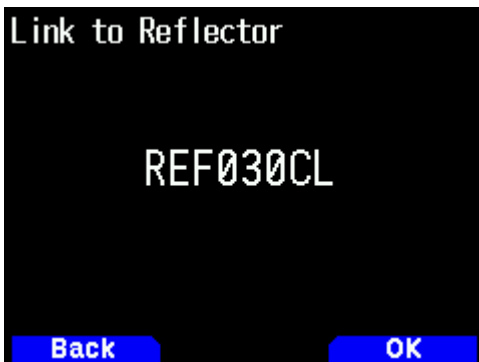


The TH-D75A/E will display "Connected Bluetooth Device," and the Bluetooth icon will change from grey (standby) to blue (connected).

[QSO via a D-STAR Reflector]

You can link to and unlink from reflectors using the TH-D75A/E's reflector commands, as detailed in Section "4.4.2 Reflector Menu on the TH-D75A/E" of this manual.

Press and hold [▲] on the TH-D75A/E to select [Destination Select] - [Reflector] - [Link to Reflector] and set the desired reflector, such as "REF030C".



Press [A/B] (OK) or [ENT] to return to the frequency screen with the link command set as the destination.

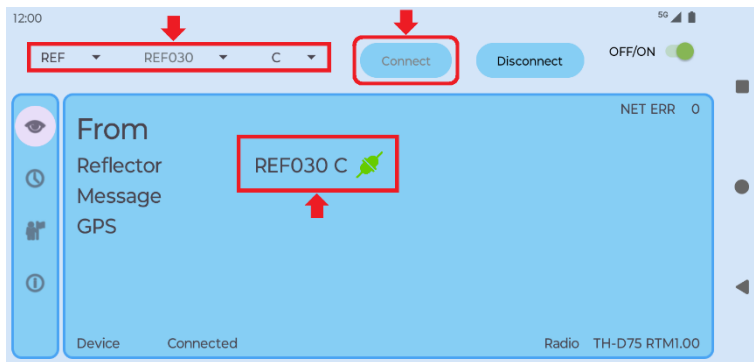


Press [PTT] to send the link command to the reflector.

Note:

- Hold [PTT] for about 1 second to ensure the command is transmitted properly.

Alternatively, you can select a reflector type, reflector number and module, and tap **[Connect]** on the application's main screen to establish the connection.



Once connected, the reflector status will change from red (Not linked) to green (Linked) on the application, as shown above.

When a link notification is received, an interrupt screen will appear on the TH-D75A/E.

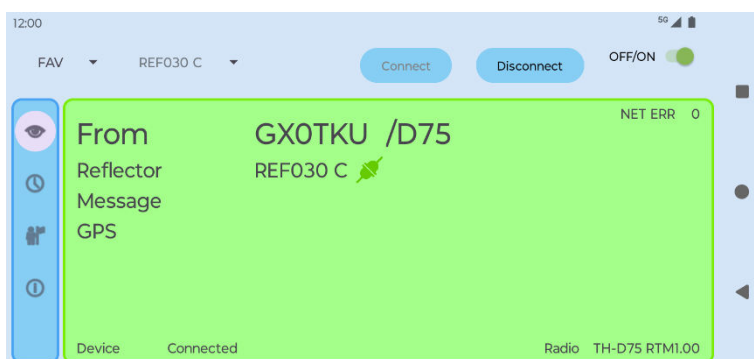


To conduct a QSO, again press and hold **[▲]**, select "Use Reflector" for the destination (CQCQCQ), and return to the frequency screen.

When pressing **[PTT]**, the application will display the status as shown below.



When receiving another station's signal, the application will display the status as shown below.

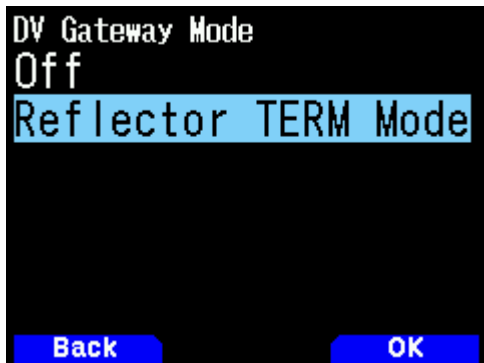


4.5.2 Reflector Communication using BlueDV for Windows

[Setting Up TH-D75A/E]

After full reset, set up your TH-D75A/E following these steps.

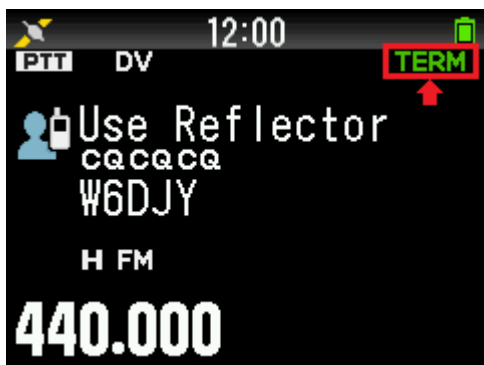
Set Menu No.650 (DV Gateway Mode) to "Reflector TERM Mode".



In Menu No.651 (My Callsign for DV Gateway Mode), press [A/B] (Edit) to input your callsign for Reflector Terminal Mode.



Press [MENU] to return to the frequency display, where the Band A will be in Reflector Terminal Mode, indicated by "TERM" in green at the top right.



Note:

- The setting in Menu No.610 (My Callsign for DV/DR Mode) applies to DV/DR mode operations and is not relevant for Reflector Terminal Mode.
- Reflector Terminal Mode is only available on the Band A side. You cannot activate Reflector Terminal Mode when operating in Single Band mode on the Band B side.

[Connecting TH-D75A/E with a PC]

To connect the TH-D75A/E to your PC via USB, install the virtual COM port driver. After installation, verify the COM port number assigned to your TH-D75A/E, following the website's instructions. Download and install the driver from the following website. This driver is compatible with both TH-D74A/E and TH-D75A/E.

https://www.kenwood.com//products/info/amateur/thd74_vcp_e.html

[Setting Up BlueDV for Windows]

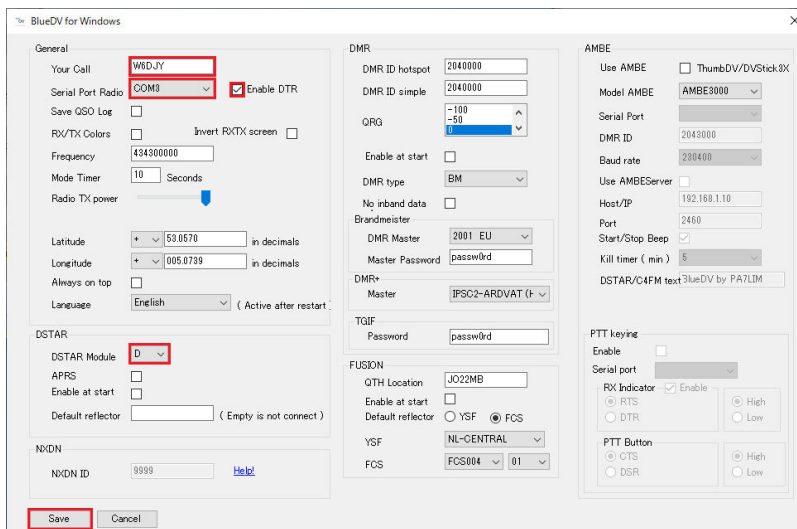
Download the latest version of BlueDV for Windows from:

<https://software.pa7lim.nl/BlueDV/BETA/Windows/>

Choose the ZIP file with the most recent date. Download and extract the ZIP file, then install the application by double-clicking the file within the extracted folder.

Launch the application by double-clicking the desktop icon.  The application main window will appear.

Then navigate to **[Menu]** → **[Setup]** to enter setup window, and configure as shown (leave other settings at default):



- Set your callsign in the "Your Call" field.
- Specify the COM port number assigned for the TH-D75A/E.
- Check the "Enable DTR" checkbox.
- Leave "D" for the "DSTAR Module" pull-down list unless a change is needed.
- Click **[Save]** to close the setup window.

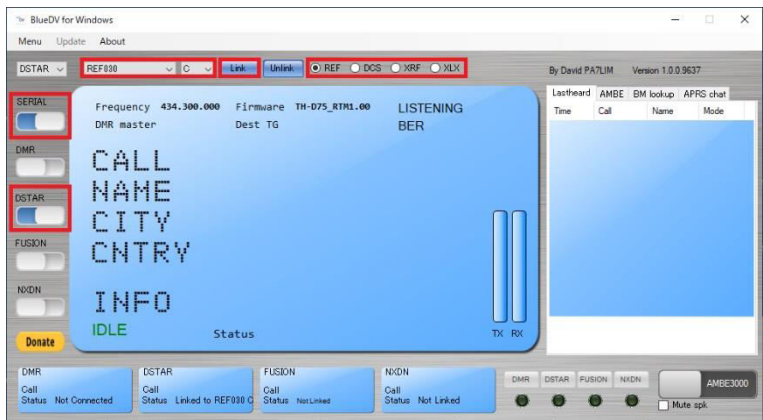
Note:

- If your Windows PC is paired with the TH-D75A/E via Bluetooth, set Menu No.985 (DV Gateway) to "Bluetooth". For specifying the Bluetooth COM port number in Windows, go to "Settings" > "Bluetooth & other devices", click "More Bluetooth options", and in the "Bluetooth Settings" pop-up, under the "COM Ports" tab, select the COM port listed as "COMx Outgoing TH-D75 'Serial Port'".
- The vocoder programmed in the TH-D75A/E is compatible only with D-STAR and cannot operate with other modes due to incompatibility.

[QSO via a D-STAR Reflector]

In the main window, click [SERIAL] for a USB connection, and click [DSTAR] to access the D-STAR screen.

Then, select a reflector type, reflector number, and module, and click [Link] to establish the connection



Alternatively, you can link to and unlink from reflectors using the TH-D75A/E's reflector commands, as detailed in Section "4.4.2 Reflector Menu on the TH-D75A/E" of this manual.

Press and hold [▲] on the TH-D75A/E to select [Destination Select] - [Reflector] - [Link to Reflector] and set the desired reflector, such as "REF030C".



Press [A/B] (OK) or [ENT] to return to the frequency screen with the link command set as the destination.



Press [PTT] to send the link command to the reflector.

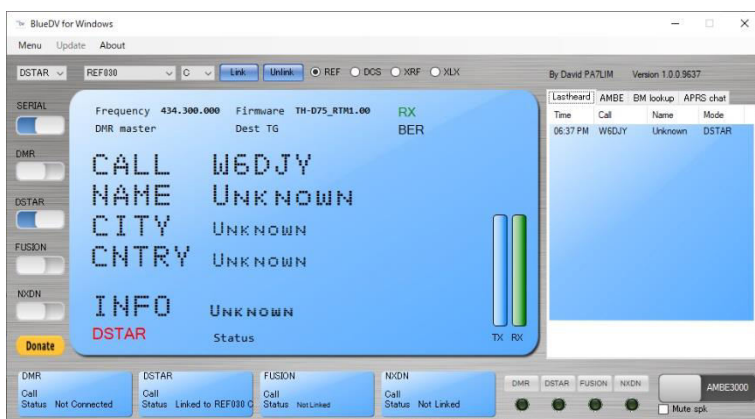
Once connected, the "DSTAR" - "Status" indication in the application's main window will change from "Not linked" to "Linked to REF030C" or a similar status.

When a link notification is received, an interrupt screen will appear on the TH-D75A/E.

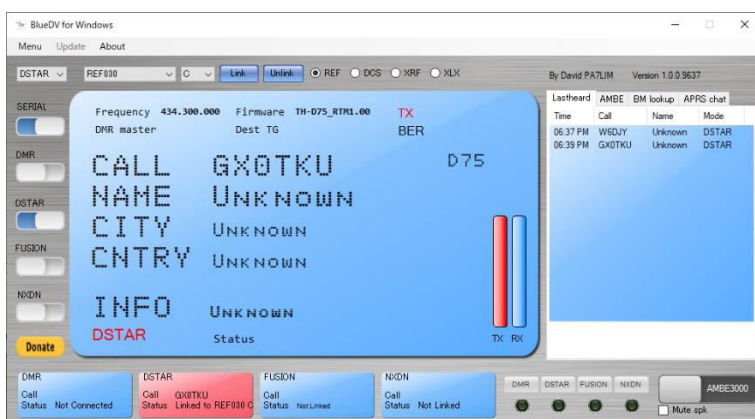


To conduct a QSO, again press and hold [▲], select "Use Reflector" for the destination (CQCQCQ), and return to the frequency screen.

When pressing [PTT], the application receives data from the TH-D75A/E and displays the status as shown below.



When receiving another station's signal, the application transmits data to the TH-D75A/E and displays the status as shown below.



Note:

- These are the basic settings required to connect to reflectors using BlueDV Connect and BlueDV for Windows. For additional settings, such as Menu No.611 (TX Message) or Menu No.630/631 (Sending Positional Information), please refer to the USER MANUAL and adjust as necessary.

4.6 Hotspot List

4.6.1 About the Hotspot List

The TH-D75A/E supports simultaneous reception of D-STAR signals on both Band A and Band B. This feature allows for the operation of D-STAR hotspots on Band B while using the Reflector Terminal Mode on Band A. As a result, your existing hotspot devices can continue to be used with the TH-D75A/E.

To enhance your experience with hotspot devices, the TH-D75A/E introduces the Hotspot List. This dedicated memory channel list for hotspots is separate from the Repeater List, and up to 30 hotspots can be registered.

Furthermore, the Hotspot List, like the Repeater List, is not cleared even after a full reset.

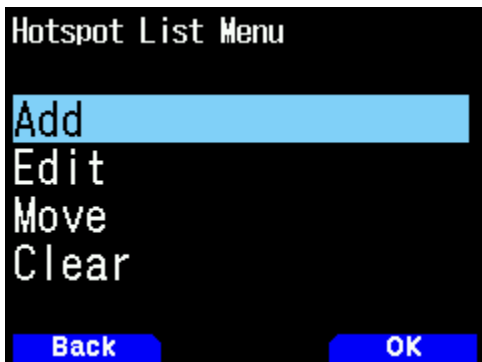
4.6.2 Adding the Hotspot List

Initially, the Hotspot List is empty. You can add information for your hotspot.

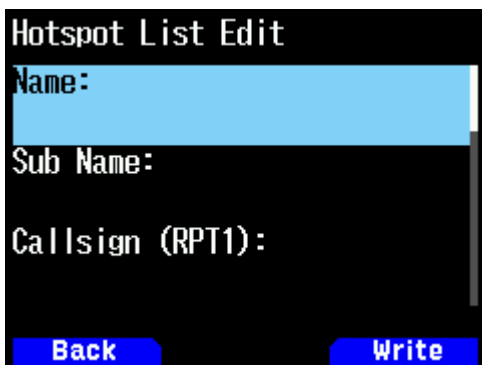
1. Access Menu No. 230. The Hotspot Select screen will appear.



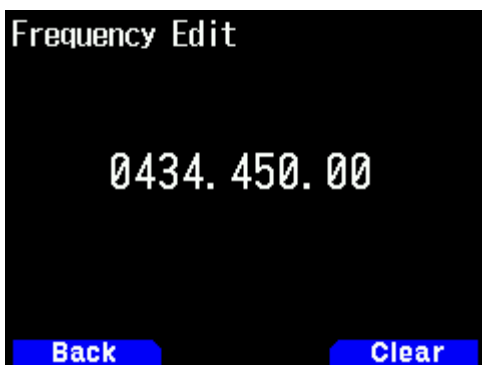
2. Press [MENU] to bring up the Hotspot List Menu screen.



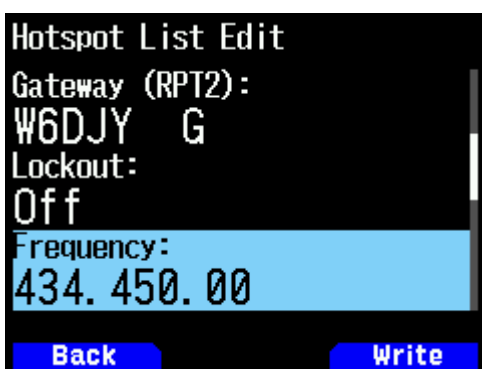
3. Select "Add" and press [A/B] (OK).



4. Select the item to edit and press **[ENT]**. Then edit the items.



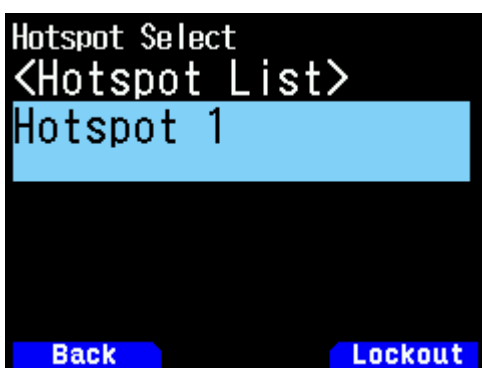
5. After editing the item, press **[ENT]** to return to the Hotspot List Edit screen.



6. Make your edits and press **[A/B] (Write)** to finalize.



7. Press **[MODE] (Back)** to confirm that the hotspot information is registered.



Note:

- Configure the "Callsign (RPT1)" and "Gateway (RPT2)" in the Hotspot List as "W6DJY B" and "W6DJY G" (for example, according to the hotspot's callsign), or as both "DIRECT". Follow the recommended settings for the hotspot device.

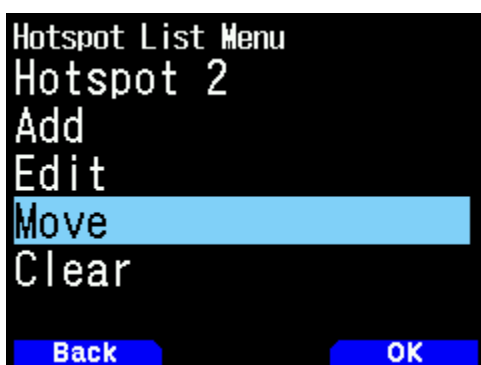


4.6.3 Sorting the Hotspot List

1. On the Hotspot Select screen, select the hotspot you wish to move.



2. Press **[MENU]** to display the Hotspot List Menu screen.



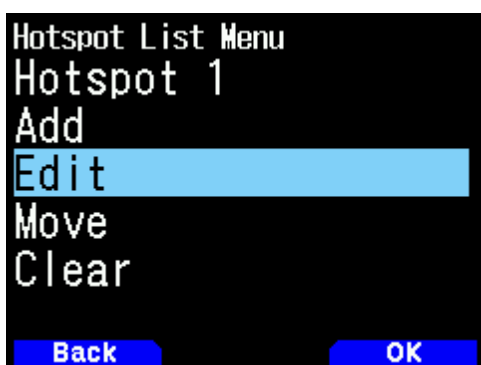
3. Select "Move" and press **[A/B] (OK)**.
4. Choose the destination and press **[A/B] (OK)**. To move to the end of the list, select "<Move to End>" and press **[A/B] (OK)**.

4.6.4 Editing the Hotspot List

1. Select the hotspot to edit on the Hotspot Select screen.



2. Press **[MENU]**. The Hotspot List Menu screen will appear.



3. Select "Edit" and press **[A/B] (OK)**. The Hotspot List Edit screen will appear.



4. Select an item and press **[ENT]**. You'll see the editing screen for the selected.
5. Make your edits and press **[A/B] (Write)** to finalize.
6. Press **[MODE] (Back)** to return to the Hotspot Select screen.

4.6.5 Clearing the Hotspot List

1. Choose the hotspot to clear on the Hotspot Select screen.
2. Press **[MENU]**. The Hotspot List Menu screen will appear.
3. Select "Clear" and press **[ENT]**.
4. Press **[A/B] (OK)**. The selected hotspot is deleted, and you will return to the Hotspot Select screen.

4.7 How to Update the Repeater List

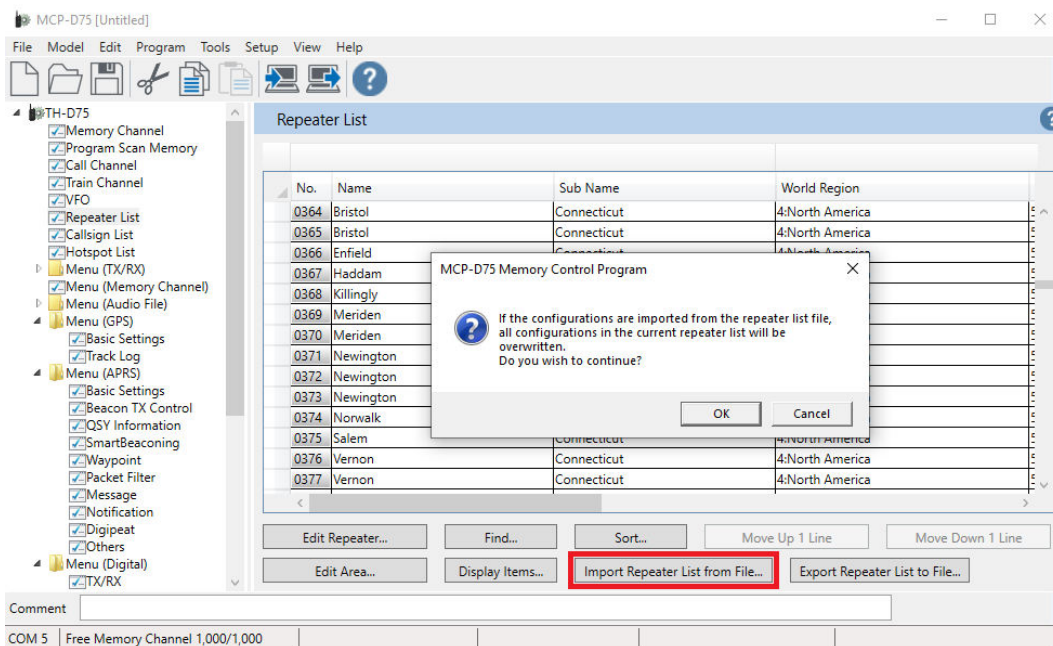
The repeater list can be imported into your TH-D75A/E by using MCP-D75 or a microSD card.

Please download the Repeater List file "**KWD_yyyymmdd_E.tsv**" ("yyymmdd" represents the numerical release date) from the following KENWOOD website in advance.

https://www.kenwood.com//products/info/amateur/software_download.html

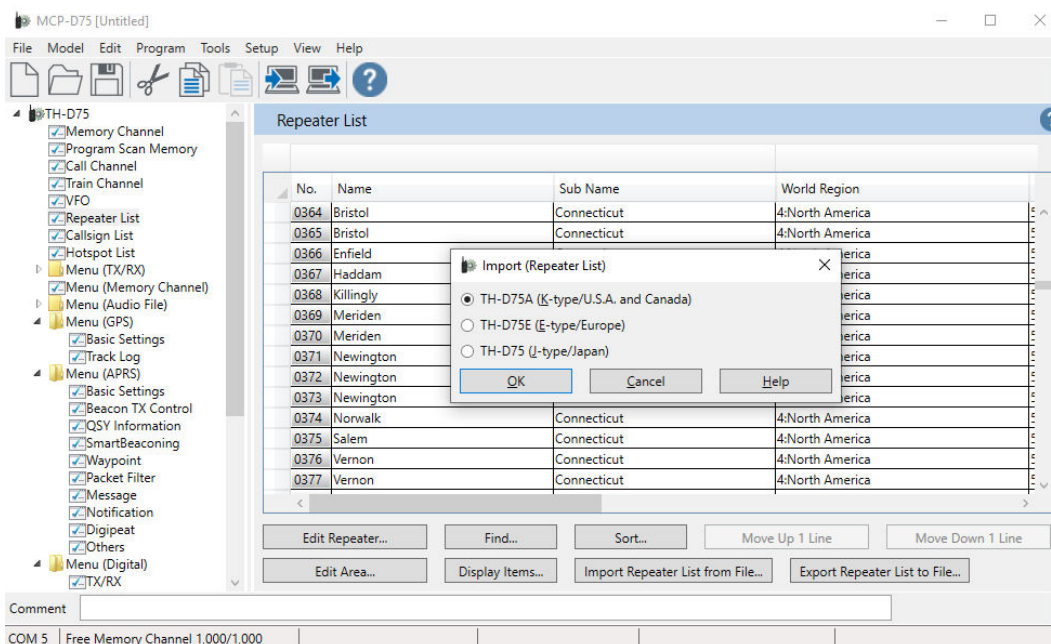
4.7.1 By using MCP-D75

1. Connect the TH-D75A/E and the PC via a USB Type-C cable.
2. Launch the MCP-D75.
3. Read data from the TH-D75A/E.
4. Click **[Repeater List]**, **[Import Repeater List from File...]**, and click **[OK]**



5. Select the downloaded Repeater List file "**KWD_yyyymmdd_E.tsv**".

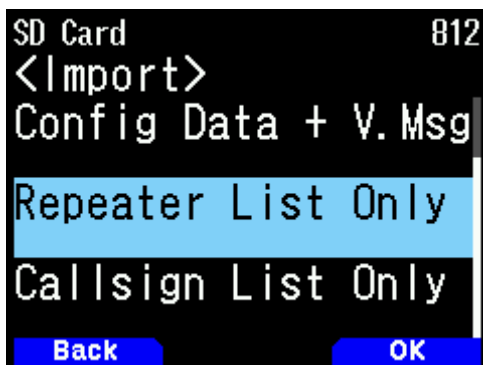
6. Click the radio button of "**TH-D75A (K-type/U.S.A. and Canada)**", or "**TH-D75E (E-type/Europe)**" and click **[OK]**.



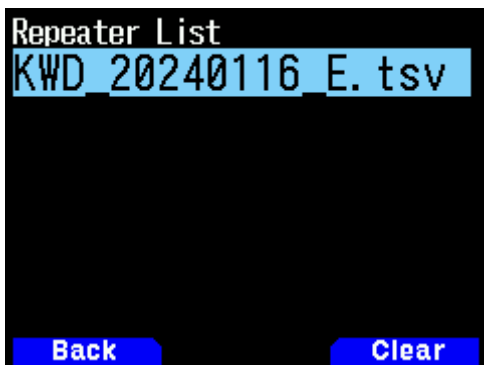
7. The D-STAR Repeater List which is mainly focused on North America or Europe will be imported to the MCP-D75.
8. Write data back to the TH-D75A/E from the MCP-D75. Then the TH-D75A/E's Repeater List will be updated.

4.7.2 By using a microSD card

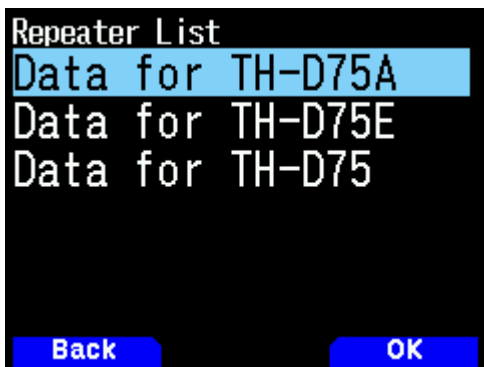
1. Install a microSD card to the TH-D75A/E.
2. Access the TH-D75A/E's **Menu No.980** (USB function) and set the transceiver to Mass Storage mode.
3. Connect the TH-D75A/E and the PC via a USB Type-C cable.
4. Copy the downloaded Repeater List file "**KWD_yyyymmdd_E.tsv**" to the microSD card folder **[KENWOOD]-[TH-D75]-[SETTINGS]-[RPT_LIST]**.
5. Remove the TH-D75A/E from the PC.
6. Access **Menu No. 812** (Import - Repeater List Only) and press **[ENT]**.



7. Select the copied Repeater List File and press [ENT].



8. Select "Data for TH-D75A" or "Data for TH-D75E" and press [ENT] or [A/B] (OK).



9. The Repeater List which is mainly focused on North America (when selected "Data for TH-D75A") or Europe (when selected "Data for TH-D75E") will be imported from the microSD card to the TH-D75A/E.

10. Press [A/B] (OK) to restart the TH-D75A/E. Then the TH-D75A/E's Repeater List will be updated.

4.7.3 Voice Guidance Functionality with the Repeater List

The "Aux 1" and "Aux 2" columns in the repeater list file are utilized by the Voice Guidance function of the TH-D75A/E to announce specific information.

On the Country & Region Select screen, the Voice Guidance will announce the strings in the "Aux 1" column, which are three-letter alphabetical codes in compliance with ISO 3166-1 alpha-3.

(For example, it will announce "USA", or "GBR" for the United Kingdom.)

On the "Group Select" screen, the Voice Guidance will announce the strings in the "Aux 2" column, which may be abbreviations for call areas or administrative districts.

(For example, it will announce "W1", or "NOR" for Northern England.)

Note:

- If no information is entered in the "Aux 1" and "Aux 2" columns, no announcement will be made.
- The TH-D74A/E models do not support the announcement of strings from the "Aux 1" and "Aux 2" columns.

5 SETTINGS & CONTROLS

5.1 USB Charging

The TH-D75A/E is capable of battery charging through its USB Type-C connector, enabling charging from USB chargers or PCs.

The TH-D75A/E does not support USB PD (Power Delivery). Even if a USB PD compatible AC adapter is used, the voltage supplied to the TH-D75A/E will always be 5V. Rapid charging through the USB connector is not possible.

The rated voltage at the battery terminals of the TH-D75A/E is 7.4V, in contrast to the 5V provided from the USB connector. Consequently, the TH-D75A/E incorporates a DC-DC converter to boost the 5V to the necessary voltage for charging.

The current supply through the USB connector is controlled by the internal circuit of the TH-D75A/E, which determines whether the maximum current supply is limited to 1.5A or 0.5A, based on the capacity of the USB charger and the cable's compliance with the USB Type-C standard. When the maximum current supply is limited to 1.5A, the charging time is approximately 5.5 hours, and when it is limited to 0.5A, the charging time is approximately 13 hours.

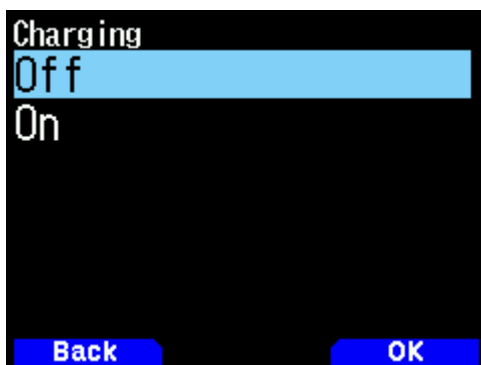
Note:

- When charging through the USB connector, be sure to turn the power off. If the power is on, the battery pack will not receive enough charging current.
- To avoid malfunction or abnormal heat generation, be sure to use an AC adapter with an output voltage of 5V and a current of 2A or higher.
- Do not use a USB cable longer than 3m (9.8 feet).
- Charging through the USB connector is not guaranteed to work with all AC adapters or USB cables.
- The TH-D75A/E will not operate properly if DC power is supplied only through the USB connector. Be sure to use the TH-D75A/E with the battery pack installed.
- Charging time using the supplied charger is approximately 3.5 hours. USB charging, which requires more time, is recommended for auxiliary purposes.

5.1.1 Disabling Charging at Power On

The TH-D75A/E can be configured to disable battery charging when the power is turned on, while power is being supplied via the DC IN cable or USB cable.

For instance, when a notebook PC is connected to the TH-D75A/E with a USB cable and the ARFC-D75 is used, the battery consumption of the notebook PC can be reduced by setting the TH-D75A/E not to charge its battery. (→ **Menu No. 923**)



5.2 Extending the Battery Life

The TH-D75A/E is equipped with a wide variety of hardware features. You can minimize battery power consumption by turning off unused features or adjusting settings.

5.2.1 Disable GPS

The built-in GPS receiver is enabled by default. The user may turn off the GPS if not needed. (→ **Menu No. 400**)

Note:

- By default, the transceiver is shipped with the GPS enabled, which allows the transceiver to update the clock via GPS signal.

5.2.2 Disable Bluetooth

To conserve power, turn off Bluetooth if it is not needed. (→ **Menu No. 930**)

5.2.3 Backlight Adjustment

The LCD and keypad backlight consume a great deal of power if left on all the time. Battery life may be enhanced by using the following backlight adjustments.

- Set the Backlight Control to "**Auto (DC-IN)**" (default) or "**Auto**" to ensure the backlight turns on and off automatically when the TH-D75A/E is running on battery power. Once a panel key is pressed, the backlight turns on, and after the duration set in the "Backlight Timer" elapses, the backlight turns off. (→ **Menu No.900**)
- Shorten the time interval configured in the Backlight Timer. (→ **Menu No. 901**)
- Reduce the brightness of the backlight (LCD Brightness). (→ **Menu No. 902**)
- Set the interrupt screen's auto backlight from "**LCD+Key**" (default) to "**LCD**" or "**Off**" for APRS and D-STAR signal reception or when scanning is stopped. (→ **Menu No. 907**)

5.2.4 Utilize the Battery Saver feature

The Battery Saver feature turns the receiver circuit on and off intermittently when no signal is received and no key is pressed for an interval of 5 seconds. The interval for the receiver circuit to remain off while in Battery Saver mode may be adjusted in Menu. Setting the off time to a longer duration helps to conserve battery power. However, note that the beginning of the received audio may be truncated if the off time is too long. (→ **Menu No. 920**)

Note:

- When **DV/DR mode** is activated, the off duration of the receiver circuit will be automatically fixed at 200 ms.
- When **APRS** or **KISS mode** is activated, the Battery Saver feature is disabled.

5.2.5 Disable Busy LED Indicator

When a radio signal is received, the Busy indicator (green LED) lights up. Turning the "RX" setting in the "LED Control" menu from on (default) to off will help to reduce battery consumption. (→ **Menu No.181**)

Note:

- Since FM broadcasts are continuously received, it is recommended that the "FM Radio" setting in Menu No.181 be left disabled (default).

5.2.6 Enable Single Band Mode

Enable Single Band mode when there is no need to operate two bands simultaneously.
(→ [F], [A/B] (DUAL))

5.2.7 Adjust Volume Balance

When the transceiver is running in **APRS** or **KISS mode**, adjust the volume of the band used in the mode.
(→ **Menu No. 910**)

5.2.8 Utilize Auto Power Off

The Auto Power Off feature prevents the battery power from draining when the power of the transceiver is left on accidentally. In the factory setting, the power of the transceiver is turned off automatically when there is no key operation for an interval of 30 minutes. (→ **Menu No. 921**)

5.3 Silent APRS and Packet Communications (Voice Alert)

The TH-D75A/E is capable of receiving radio signals of two different frequencies at the same time. For example, if Band A is used for APRS communication and Band B for voice communication, data bursts sound may be emitted when receiving packets for Band A.

5.3.1 Volume Balance

The TH-D75A/E has only one volume control, but it is equipped with a function for adjusting the balance between the volume of Band A and Band B. (→ **Menu No. 910**)

5.3.2 Voice Alert

The Voice Alert feature utilizes CTCSS. The CTCSS frequency used for Voice Alert is referred to as the voice alert frequency. Audio comes from the speaker only when received signals with the matching CTCSS coincide with the voice alert frequency.

For example, if Band A is used for APRS communication and Band B for voice communication, data burst sounds may be emitted when receiving packets on Band A.

First of all, the speaker sound is muted when both users turn on the Voice Alert feature. Next, when APRS beacon is turned on and both users move away from each other, the sound received from the beacon is from the speaker when both users move to a distance where signals can be received directly. In other words, when the sound received from the beacon is heard, this means a voice call can be established.

5.4 Screen Capture of Transceiver Display

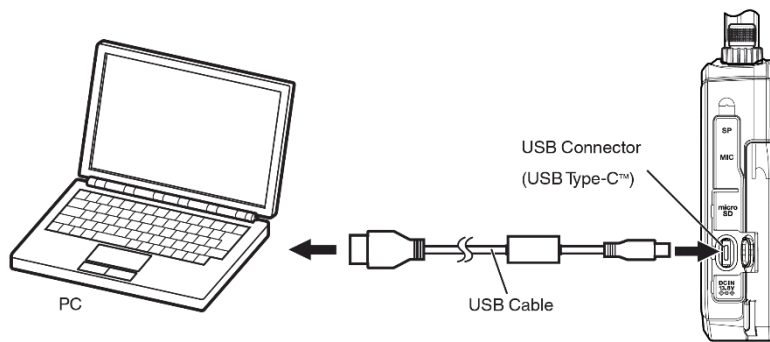
5.4.1 Screen Capture

The TH-D75A/E features a Screen Capture option similar to what is commonly available on smartphones. By assigning the Screen Capture function to any key on the optional SMC-34 Speaker Microphone, which includes Programmable Function Keys and Volume Control, users can take screenshots by pressing a programmed key (PF1/PF2/PF3). This action saves the image directly to the microSD card.
(→ **Menu No. 942/ 943/ 944**)

Screenshots are saved as 24-bit color bitmap images with a resolution of 240x180 pixels and a file size of 128 KB to the following folder on the microSD card.

[KENWOOD]-[TH-D75]-[CAPTURE]

5.5 Viewing microSD Card Contents on a PC



5.5.1 USB Mass Storage feature

Activating the mass storage feature involves configuring the USB function of the TH-D75A/E to "Mass Storage". (→ **Menu No. 980**).

Configuring the USB Function to "Mass Storage" and connecting the transceiver to the PC via a USB Type-C cable completes the setup.

Note:

- The USB Mass Storage feature of the TH-D75A/E is supported only on Microsoft Windows systems. On other operating systems, the device may not be recognized or the file size may not display correctly.

5.6 Beep and Voice Guidance

The TH-D75A/E significantly enhances the voice guidance feature. Whereas the TH-D74A/E offered approximately 180 phrases, the TH-D75A/E provides more than 770 phrases.

Additionally, the TH-D75A/E supports 4 levels of speed variability.

Regarding playback volume, the VOL link can be selected in addition to the 1-7 levels, similar to the TH-D74A/E.

5.6.1 Beep Volume

By default, the beep volume changes in conjunction with the [VOL] knob. It can also be set independently. (→ **Menu No.915**)

5.6.2 Voice Guidance Volume

By default, the voice guidance changes in conjunction with the [VOL] knob. It can also be set independently. (→ **Menu No.917**)

5.6.3 Voice Guidance Speed

Allows the reading speed of voice guidance to be varied across 4 levels, up to a maximum of 1.45 times faster. (→ **Menu No.918**)

5.6.4 Callsign Readout Method

This is another new feature of the TH-D75A/E. The TH-D75A/E specifies how to pronounce the alphabetic characters (A-Z) in the callsign.

[Standard]: All are read out as the alphabet is.

[Phonetics (Full)]: All are read out in phonetic code.

[Phonetics (Suffix)]: Only the suffix is read out in phonetic code. (→ **Menu No.919**)

5.7 Adjustment of RX Audio Quality

Different users have different sound quality preferences. The TH-D75A/E features an Audio Equalizer that allows for sound quality adjustments according to individual preference.

5.7.1 DSP audio sound processing

The DSP (digital signal processor) on the TH-D75A/E ensures proper processing of all transceiver audio signals. In analog FM mode, audio signals are temporarily converted to digital signals by an A/D converter. After sound processing within the DSP, the signals are restored to analog form by a D/A converter and output from the speaker.

5.7.2 RX Equalizer

The RX Equalizer feature is enabled through the DSP's processing of all received audio signals as described above. The audio frequency band of the RX Equalizer is divided into 5 different bands, each of which can be adjusted within the range of -9 dB to +9 dB. User can therefore adjust the frequency properties of the audio signal to their preference. (→ **Menu No. 913**)

The equalizer can be set to ON or OFF. (→ **Menu No. 911**)

Frequency Band [kHz]	Variable Range [dB]
0.4	-9 ~ ±0 ~ +9
0.8	-9 ~ ±0 ~ +9
1.6	-9 ~ ±0 ~ +9
3.2	-9 ~ ±0 ~ +9
6.4	-9 ~ ±0 ~ +9

5.8 Adjustment of TX Audio Quality

Similar to the RX audio, the TX audio input from the microphone is processed by the DSP as well, enabling adjustment using the TX Equalizer.

5.8.1 TX Equalizer

The audio frequency band of the TX Equalizer is divided into 4 different bands, each adjustable within a range of -9 dB to +3 dB. (→ **Menu No. 912**)

Users can choose whether to apply the preset equalizer properties to analog FM, digital (D-STAR) or both. (→ **Menu No. 911**)

Frequency Band [kHz]	Variable Range [dB]
0.4	-9 ~ ±0 ~ +3
0.8	-9 ~ ±0 ~ +3
1.6	-9 ~ ±0 ~ +3
3.2	-9 ~ ±0 ~ +3

5.9 Wide-band and Multi-mode Reception

The TH-D75A/E is capable of wide-band reception from 0.1 MHz to 523.995 MHz on Band B. Band A is specifically designed for amateur band operation at 144 MHz, 430 MHz, and 220 MHz (TH-D75A only).

5.9.1 Receiving Frequency Range & Demodulation Mode for each model

Step [kHz] and Demodulation mode in the tables below are default values.

[TH-D75A]

Operating Band	Frequency Band	Frequency Range [MHz]	Step [kHz]	Demodulation Mode	
Band A	144 MHz	136 ~ 174	5	FM	
	220 MHz	216 ~ 260	20	FM	
	430 MHz	410 ~ 470	25	FM	
Band B	LF/ MF	0.1 ~ 0.520	5	AM	
		0.520 ~ 1.710	10		
	HF	HF	1.710 ~ 3.5	0.1 (FINE Mode ON)*	CW
			3.5 ~ 4.0		LSB
			4.0 ~ 7.0		AM
			7.0 ~ 7.3		LSB
			7.3 ~ 10.1		AM
			10.1 ~ 10.15		CW
			10.15 ~ 14.0		AM
			14.0 ~ 14.35		USB
			14.35 ~ 18.068		AM
			18.068 ~ 18.168		USB
			18.168 ~ 21.0		AM
			21.0 ~ 21.45		USB
			21.45 ~ 24.89		AM
			24.89 ~ 24.99		USB
			24.99 ~ 28.0		AM
	28.0 ~ 29.7	USB			
	50 MHz	50 MHz	29.7 ~ 51	25	FM
			51 ~ 54	10	
			54 ~ 76	5	
	FM Radio	76 ~ 108	100	WFM	
	118 MHz	108 ~ 136	12.5	AM	
	144 MHz	144 MHz	136 ~ 144	5	FM
			144 ~ 148		
			148 ~ 174		
	VHF	174 ~ 216	50	FM	
220 & 300 MHz	220 & 300 MHz	216 ~ 220	12.5	AM	
		220 ~ 225	20	AM	
		225 ~ 410	12.5	AM	
430 MHz	430 MHz	410 ~ 420	12.5	FM	
		420 ~ 450	25		
		450 ~ 470	12.5		
UHF	470 ~ 524	50	FM		

The transmission frequency ranges are:

144.000 to 147.995 MHz, 222.000 to 224.995 MHz, and 430.000 to 449.995 MHz.

* In the HF band, FINE Mode is enabled by default and cannot be directly switched to FM mode. To switch to FM mode in the HF band, press **[F]**, **[MHz] (Fine)** to turn off FINE Mode.

[TH-D75E]

Operating Band	Frequency Band	Frequency Range [MHz]	Step [kHz]	Demodulation Mode	
Band A	144 MHz	136 ~ 174	12.5	FM	
	430 MHz	410 ~ 470	25	FM	
Band B	LF/ MF	0.1 ~ 0.520	5	AM	
		0.520 ~ 1.710	9		
	HF	1.710 ~ 3.5	(FINE Mode ON)*	0.1	CW
		3.5 ~ 4.0		LSB	
		4.0 ~ 7.0		AM	
		7.0 ~ 7.3		LSB	
		7.3 ~ 10.1		AM	
		10.1 ~ 10.15		CW	
		10.15 ~ 14.0		AM	
		14.0 ~ 14.35		USB	
		14.35 ~ 18.068		AM	
		18.068 ~ 18.168		USB	
		18.168 ~ 21.0		AM	
		21.0 ~ 21.45		USB	
		21.45 ~ 24.89		AM	
		24.89 ~ 24.99		USB	
		24.99 ~ 28.0		AM	
		28.0 ~ 29.7		USB	
	50 MHz	29.7 ~ 51	5	5	FM
		51 ~ 54		10	
		54 ~ 76		5	
	FM Radio	76 ~ 108	50	50	WFM
	118 MHz	108 ~ 136	12.5	12.5	AM
	144 MHz	136 ~ 144	5	5	FM
		144 ~ 146		12.5	
		146 ~ 174		5	
	VHF	174 ~ 230	50	50	FM
	220 & 300 MHz	230 ~ 410	12.5	12.5	AM
430 MHz	410 ~ 430	12.5	12.5	FM	
	430 ~ 440		25		
	440 ~ 470		12.5		
UHF	470 ~ 524	50	50	FM	

The transmission frequency ranges are:
144.000 to 145.995 MHz, and 430.000 to 439.995 MHz.

* In the HF band, FINE Mode is enabled by default and cannot be directly switched to FM mode. To switch to FM mode in the HF band, press **[F]**, **[MHz] (Fine)** to turn off FINE Mode.

5.10 Mode

In the SSB, CW, and AM modes, the 10.8 kHz IF signal, obtained after the 3rd mixer, is fed into the DSP and the IF filter. This signal is then processed digitally for detection. The design of the IF filter and the detection process are adapted for handheld transceivers, drawing on the design of our HF transceivers.

5.10.1 SSB

In SSB mode (LSB, USB), the high-cut frequency can be adjusted in the receiving filter configuration. A high-cut frequency can be selected from **2.2 kHz/ 2.4 kHz/ 2.6 kHz/ 2.8 kHz/ 3.0 kHz**. The low-cut frequency is fixed at 200 Hz. Changing the high-cut frequency switches in the IF band pass filter (BPF).

For example, if the high-cut frequency is configured to **2.4 kHz**, the passband of the IF filter becomes **2.2 kHz**. (→ **Menu No. 120**)

5.10.2 CW

In CW mode, the passband (Band Width) can be adjusted in the receiving filter configuration. The passband can be selected from **0.3 kHz/ 0.5 kHz/ 1.0 kHz/ 1.5 kHz/ 2.0 kHz**. Changing the passband switches the IF filter (BPF). (→ **Menu No. 121**)

In addition to the receiving filter, configurations include pitch frequency and CW reverse settings. Pitch frequency refers to the frequency for playing back the Morse signals received as demodulated audio signals when the carrier coincides exactly with the receiving frequency.

A pitch frequency can be selected from **400 Hz/ 500 Hz/ 600 Hz/ 700 Hz/ 800 Hz/ 900 Hz/ 1000 Hz**. (→ **Menu No. 170**)

CW reverse is a configuration for determining whether to carry out detection in CW mode as LSB or USB. CW reverse can be selected from **Normal / Reverse**. USB is chosen the Normal mode and LSB in Reverse mode. (→ **Menu No. 171**)

5.10.3 AM

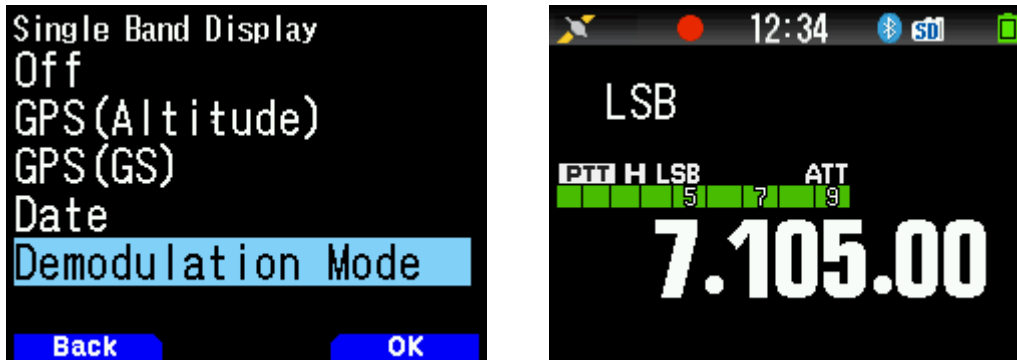
In AM mode, the high-cut frequency can be adjusted in the receiving filter configuration. A high-cut frequency can be selected from **3.0 kHz/ 4.5 kHz/ 6.0 kHz/ 7.5 kHz**.

The low-cut frequency is fixed at **200 Hz**. Changing the high-cut frequency switches the IF filter (BPF). The passband of the IF filter in AM mode is double that of the high-cut frequency.

For example, when the high-cut frequency is configured to **4.5 kHz**, the passband of the IF filter becomes **9 kHz**. (→ **Menu No. 122**)

5.10.4 Single Band Display

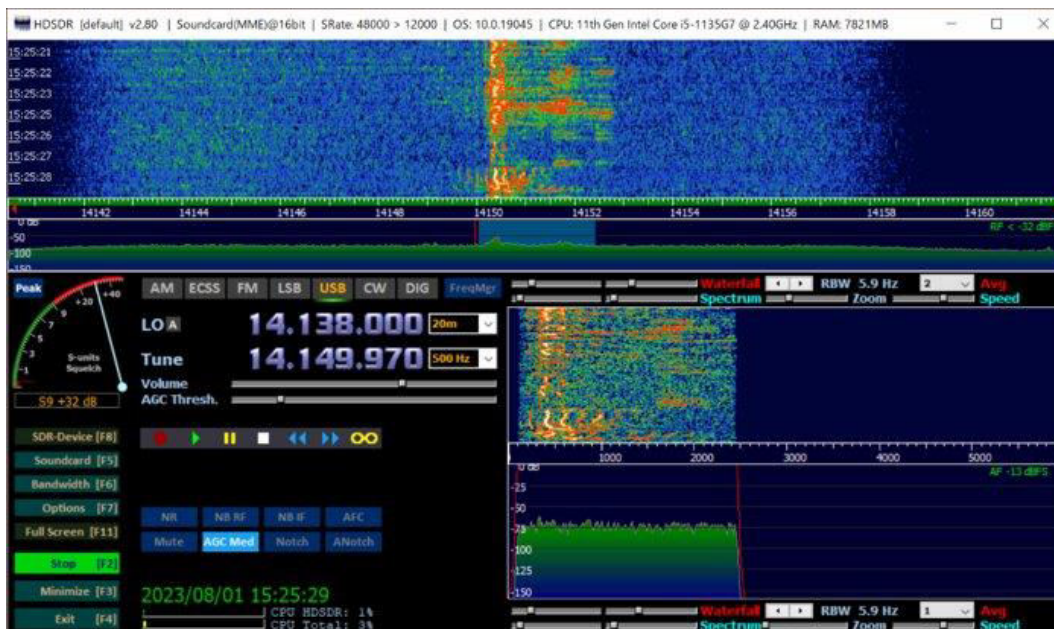
The TH-D75A/E allows for the selection of not only date and GPS information but also demodulation mode to be displayed during Single Band mode (→ **Menu No. 904**)



5.10.5 IF Signal and Detection Signal Output

The TH-D75A/E can output IF signals through the USB connector while monitoring the receiving audio in SSB, CW, and AM modes. By using third-party PC applications, it is possible to watch the state of nearby frequencies on the PC's band scope while listening to the received audio from the built-in speaker of the TH-D75A/E.

When Menu No.102 (USB Out Select) is set to 'IF', it outputs a centered 12 kHz IF signal for SSB, CW, and AM modes. The output IF signal will have a passband of 15 kHz, regardless of the RX filter settings. Setting Menu No.102 (USB Out Select) to 'Detect' will output the signal before the De-Emphasis filter in FM mode, and the signal right after the detection stage in SSB, CW, and AM modes. When set to 'IF' or 'Detect', the USB output does not apply the RX equalizer. (→ **Menu No. 102**)



Example of Band Scope Display on the Windows PC Application "HDSDR".

Menu No.102 (USB Out Select) can be configured only when the transceiver is in Single Band mode on Band B. There are some restrictions on the operation and behavior during the output of IF or detection signals. For more details, please refer to the USER MANUAL.

5.10.6 Fine Mode Step

When the reception mode is SSB, AM or CW, using the **"FINE mode"** enables tuning in finer step frequencies.

The step frequency of **"FINE mode"** can be selected from **20 Hz/ 100 Hz/ 200 Hz/ 1000 Hz**.

Please note that in the HF band, FINE Mode is enabled by default and cannot be directly switched to FM mode. To switch to FM mode in the HF band, press **[F]**, **[MHz]** (Fine), to turn off FINE Mode.

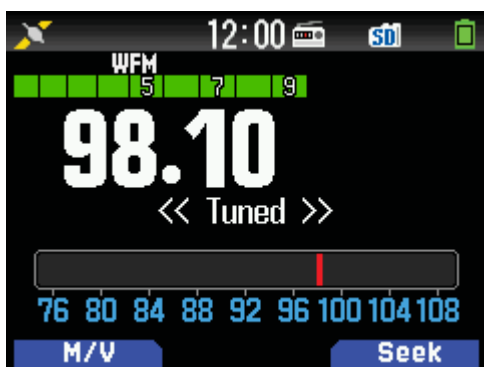
5.10.7 FM Radio

There are two methods of FM radio reception. One method involves selecting the frequency of Band B within the FM radio band, while the other requires setting FM Radio mode to "On" in Menu No. 700.

By turning on the FM Radio mode, it is possible to receive FM radio signals while APRS and D-STAR are running.

When radio signals are received on Band A or Band B, the display switches to the normal frequency screen to receive the signals, while the FM radio is temporarily muted. After communication is finished in this state and no signal is received on Band A or Band B for a time interval specified in the menu, the display returns to the FM radio broadcast reception screen. (→ **Menu No. 701**)

The frequency range of FM radio is from 76.0 MHz to 107.9 MHz, which supports reception of supplementary FM (wide FM) broadcasts.



FM Radio mode

The FM Radio icon lights up when FM Radio mode is turned on, enabling the transceiver to be used exclusively as an FM radio.

- In this mode, the direct frequency input mode is dedicated to the FM radio function, simplifying radio frequency input.
- There are 10 special memory channels for FM radio that also support registration of memory names.
- **[MODE] (M/V)** is used to toggle between **Memory Channel mode** and **VFO mode**.
- To start scanning, press **[A/B] (Seek)**. When an FM station is found, "**<< Tuned >>**" is displayed and scanning stops.
- In locations with unstable FM signal reception, increasing the 'Auto Mute RET. Time' can minimize the frequency of switches between normal frequency mode and FM Radio mode. (→ **Menu No. 701**)

5.11 Memory Channels

5.11.1 Using the Memory Groups

The TH-D75A/E offers 30 memory groups, from "GRP-0" to "GRP-29".

When a new memory channel is registered, it is automatically assigned a default memory group number. Users can reassign group numbers according to their intended use.

To change the group of a selected channel, press **[ENT]** and **[MENU]** while in Memory Channel mode to enter the Memory Channel List Menu, then select **[Edit] - [Group]**.

Each memory group can assign a group name of up to 16 characters. Select a group in Menu No. 201 and rename as needed.

Memory Channel No.	Memory Group	Default Group Name	Example of Renaming
0 to 99	Group 0	GRP-0	Simplex
100 to 199	Group 1	GRP-1	Repeaters
200 to 299	Group 2	GRP-2	HF Amateur Bands
300 to 399	Group 3	GRP-3	Citizen Band
400 to 499	Group 4	GRP-4	FRS / GMRS
500 to 599	Group 5	GRP-5	VHF Air Band
600 to 699	Group 6	GRP-6	MW Broadcasting
700 to 799	Group 7	GRP-7	SW Broadcasting
800 to 899	Group 8	GRP-8	FM Broadcasting
900 to 999	Group 9	GRP-9	APRS / Packet

Pressing **[MR]** switches the device to Memory Channel mode and activates the **"All Groups"** state, where all groups are recalled simultaneously. The default setting is "All Groups".

To select different memory groups for recall, press and hold **[◀]** or **[▶]** while in Memory Channel mode. The new memory group will be displayed for 2 seconds after a change is made, and then only the Memory Channels registered in the selected memory group can be recalled.



ALL Groups
(All memories can be recalled)



Group-0
(Only memories registered in the displayed group can be recalled)

5.11.2 Group Link Scan

Press and hold **[MHz]** to start the Group Link Scan. Group Link Scan is a feature that allows scanning of only the memory groups linked via **Menu No. 203**.

For instance, to scan only the amateur radio bands 144 MHz and 430 MHz, as in the examples provided above, both **"GRP-0"** and **"GRP-1"** must be linked in the group link.

5.11.3 Program Scan Memory

There are 50 sets of program scan memories, totaling 100 channels, designated for specifying scan ranges. Each program scan memory consists of a pair of channels: one for the lower frequency limit and the other for the upper frequency limit.

For example, to set a scan range from 145.500 MHz to 145.900 MHz, register 145.500 MHz to channel number **"L49"** and 145.900 MHz to **"U49"**.

When the frequency falls within a program scan range in VFO mode, the display will show the number of the currently active program scan.



Indicates the range of Program Scan No. 49.

5.12 Bluetooth Connection

The TH-D75A/E is equipped with a Bluetooth feature that enables wireless connections with other external devices. It supports Bluetooth 3.0, Class 2, and the following two profiles:

- HSP (Headset Profile): Enables audio communications, such as with headset devices.
- SPP (Serial Port Profile): Enables serial communications, such as with PCs or Android devices.

5.12.1 Supported Bluetooth Profile Description

HSP (Headset Profile)

By connecting the TH-D75A/E to a Bluetooth-compatible headset device, the microphone and earphone of the headset can be used for making voice calls.

PTT on the transceiver unit or speaker microphone is used to start transmission. (Transmission cannot be made directly from the Bluetooth headset, except for VOX operation, as PTT is not available via the Bluetooth headset.)

To adjust the volume level when a Bluetooth device is connected, do so using the volume control of the headset. The sensitivity of the microphone can be adjusted in **Menu No. 112**.

Note:

- Audio sound cannot be output from the USB or SP port when a Bluetooth headset is connected. HFP (Hands-Free Profile) is not supported.

SPP (Serial Port Profile)

By pairing the TH-D75A/E with a PC and assigning a virtual serial port, it is possible to carry out serial communication with the PC wirelessly. Doing so enables wireless operation of APRS applications such as UI-View32 and MCP-D75. Also, serial communication with a PC is possible while a Bluetooth headset is being connected.

During virtual serial communication via Bluetooth, configuration of the baud rate is not necessary to ensure communication at the optimal speed. If it is necessary to configure the baud rate in the PC application program in use, select any of the available options.



Bluetooth ON (Bluetooth icon appears)



Bluetooth (connected) icon lights up

Bluetooth devices that are currently connected will appear in **Menu No. 933**.

Note:

- The TH-D75A/E does not support Bluetooth Low Energy (BLE). Therefore, it is not compatible with applications or devices that require BLE. It only supports communication via the HSP and SPP profiles.

5.13 USB Connection

5.13.1 Virtual COM Port

The TH-D75A/E supports the USB Communications Device Class (CDC), enabling communication with a PC as a virtual COM port. The use of the USB virtual COM port, a dedicated driver is required. The driver can be downloaded from the following URL.

https://www.kenwood.com/i/products/info/amateur/thd74_vcp_e.html

(The virtual COM port driver is applicable both for the TH-D74A/E and the TH-D75A/E.)

For virtual serial communication via USB, configuring the baud rate is unnecessary. If configuring the baud rate for the PC application in use becomes necessary, selecting randomly from the provided options will suffice. Any one of these options may be chosen.

The USB connection of the TH-D75A/E enables the MCP-D75 to read and write data much faster than the previously mentioned Bluetooth (SPP) connection.

5.13.2 USB Audio

The USB Audio feature on the TH-D75A/E supports audio output only.

- The supported output format is 48 kHz, 16-bit, and monaural audio.
- USB Audio outputs the same audio sound as the speaker output.
- The output level of USB Audio can be adjusted in Menu No. 91A.
- Audio sound is output from the USB even when a speaker microphone or earphone is connected.
- When a Bluetooth headset is connected, USB Audio becomes a port used exclusively for the input and output of the Bluetooth headset.

		Audio Output Destination			
		Built-in SP	Speaker Microphone	USB	Bluetooth
Connected Device	Nil	Yes	---	Yes	---
	Speaker Microphone	---	Yes	Yes	---
	Bluetooth	---	---	---	Yes
	USB Audio	Yes	Yes	Yes	---

5.13.3 USB Mass Storage Class

The TH-D75A/E is compatible with the USB mass storage class and allows access to files on the built-in microSD card from a PC via a USB Type-C cable.

Activating the mass storage feature involves configuring the USB function of the TH-D75A/E to "Mass Storage". (→**Menu No. 980**).

5.14 microSD Card Usage

5.14.1 Recording Data

The TH-D75A/E is compatible with the microSD and microSDHC standards. It supports microSDHC cards with a capacity of up to 32 GB.

The following types of information can be recorded to a microSD card.

Type	Description	Maximum No. of Files	File Format
Transmitted/Received Audio Recording	Records the communication of data transmitted and received.	255	wav 16 kHz/ 16-bit/ monaural
GPS Tracking Log	Records the GPS tracking data.	255	nme
QSO Log	Records the update history.	4000	tsv (tab-delimited text)
Repeater List	D-STAR repeater list	---	tsv (tab-delimited text)
Callsign List	Callsign list for D-STAR	---	tsv (tab-delimited text)
Captured Image	Screenshot image	---	bmp 240 x 180/ 24-bit
Transceiver Configuration	Information such as the configuration of the transceiver features, as well as memory channels and voice messages.	---	d75 (binary format)

5.14.2 GPS Receiver for Prolonged GPS Logging

When using the TH-D75A/E solely as a GPS receiver/logger, activating GPS Receiver mode turns off the transceiver function, thereby prolonging battery life.

Configure the **"Operating Mode"** for GPS to **"GPS Receiver"**. (→ **Menu No. 403**)

The transceiver function is turned off in GPS Receiver mode, but the FM radio feature remains usable. (→ **Menu No. 700**)

5.14.3 Saving Configuration Data to microSD Card

The configuration or programming data of the TH-D75A/E can be saved to a microSD card. Export of configuration data (→ **Menu No. 800**)

- When upgrading the firmware version, it is recommended that the data be saved to the microSD card.
- The data format is the same as that of the MCP-D75 application.
- To change the configuration on the TH-D75A/E, it is possible to save the new configuration data to the microSD card in advance, followed by applying it using the configuration data import feature. (→ **Menu No. 810**)

5.14.4 Position Memory Usage (GPS)

The TH-D75A/E allows users to register the positional information of their favorite locations in the Position Memory.

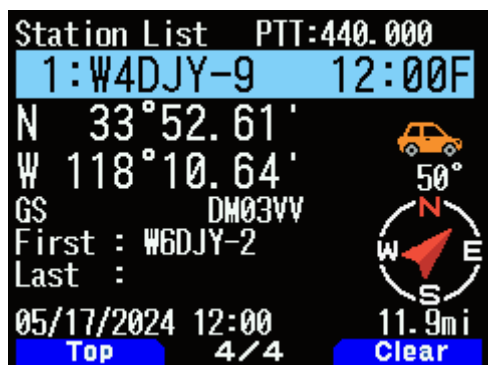
The Position Memory feature stores information including the latitude, longitude, altitude, time of registration, name and icon. Up to 100 sets of information can be stored in the Position Memory. All contents except the time of registration can also be edited.

You can copy information on the current location, APRS station list and My Position to the Position Memory.

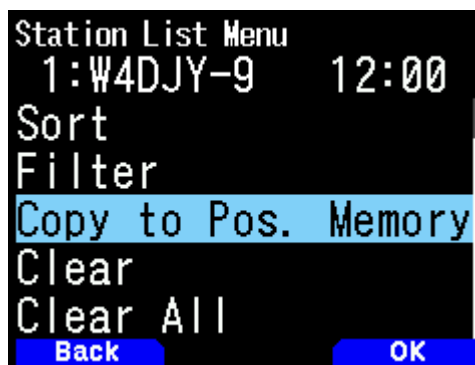
<Ways to Utilize Position Memory>

- Applying the Position Memory information to My Position and sending Position Memory information as object and item
- Target point

To register a Position Memory, press and hold **[MARK]**. Registration is not possible if GPS positioning information is not available. When GPS positioning data is available, pressing and holding **[MARK]** registers the positional information of the current location to the Position Memory. Let us look at the steps to register the APRS station list information to the Position Memory. The procedure is as follows.



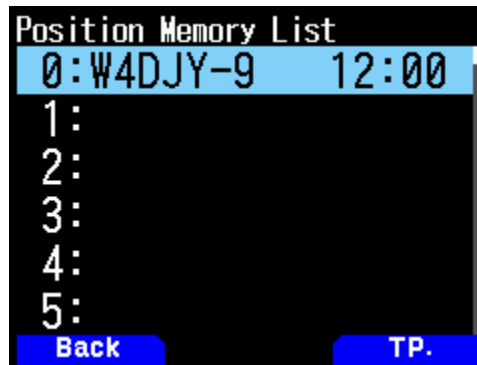
Station List Screen



Press **[MENU]** to display the list menu (and select Copy to Pos. Memory)

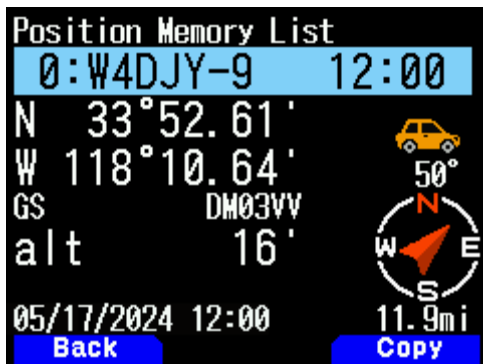


Select the Position Memory number to copy the information to Memory list



After copying, check the Position

Press [MENU] to display the list menu (and select “Copy to Pos. Memory”)



Position Memory List (Details) Screen

Example: Items that are moved when registering information from a station list to the Position Memory list.

Station List		Position Memory List
Callsign	→	Position Name
Radio Station Icon	→	Icon (same as APRS)
Latitude	→	Latitude
Longitude	→	Longitude
Altitude	→	Altitude
Time Received	→	Time of Registration
Status Text	×	
Weather Data	×	
Transmission Power	×	
Antenna Height	×	
Antenna Gain	×	
Position Comment	×	
Packet Relay Route	×	

Example: Items that are copied when registering information from My Position to the Position Memory list.

My Position		Position Memory List
Name	→	Position Name
	×	Icon (same as APRS)
Latitude	→	Latitude
Longitude	→	Longitude
Altitude	→	Altitude
	×	Time of Registration

Example: Items that are copied when registering information from the Position Memory to My Position.

Position Memory List		My Position
Position Name	→	Name
Icon (same as APRS)	×	---
Latitude	→	Latitude
Longitude	→	Longitude
Altitude	→	Altitude
Time of Registration	×	

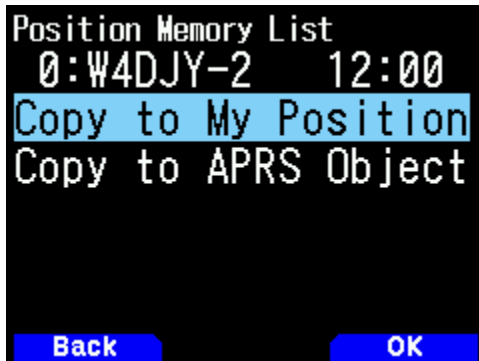
Example: Items that are copied when registering information from the Position Memory to Object.

Position Memory List		Object
Position Name	→	Name
Icon (same as APRS)	→	Icon (same as APRS)
Latitude	→	Latitude
Longitude	→	Longitude
Altitude	×	
Time of Registration	×	

5.14.5 Position Memory Registration

Positional information that has been registered can be copied easily to **"My Position"** or **"Object"**.

Display the screen containing the details of the Position Memory to copy.



Press **[A/B] (OK)** to select the destination to copy to.

Select **"My Position"** or **"APRS Object"** as the destination, and press **[A/B] (OK)**. Select one of the options from **"My Position 1"** to **"My Position 5"** or **"Object 1"** to

"Object 3", and press **[A/B] (OK)** to copy the information.



6 APPENDIX

6.1 Exterior views

The pictures below are the TH-D75A and the TH-D75E.

The TH-D75A is equipped with a Triband Antenna (144/ 220/ 430 MHz band).



TH-D75A

TH-D75E

6.2 TH-D75A / TH-D75E Specifications

GENERAL																
Frequency Range	<p>Band A TX: 144 - 148 (TH-D75A), 144 - 146 (TH-D75E), 222 - 225 (TH-D75A), 430 - 450 (TH-D75A), 430 - 440 (TH-D75E) MHz RX: 136 - 174, 216 - 260 (TH-D75A only), 410 - 470 MHz</p> <p>Band B TX: 144 - 148 (TH-D75A), 144 - 146 (TH-D75E), 222 - 225 (TH-D75A), 430 - 450 (TH-D75A), 430 - 440 (TH-D75E) MHz RX: 0.1 - 76, 76 - 108 MHz (WFM) 108 - 524 MHz</p>															
Mode	<p>TX F1D, F2D, F3E, F7W RX F1D, F2D, F3E, F7W, A1A, A3E, J3E</p>															
Operating Temp. Range	<p>-20 °C ~ +60 °C (-4 °F ~ +140 °F) with Incd. KNB-75LA -10 °C ~ +50 °C (+14 °F ~ +122 °F)</p>															
Frequency Stability	±2.0 ppm															
Antenna Impedance	50 Ω															
Operating Voltage	<p>DC IN DC 11.0 - 15.9 V (STD: DC 13.8 V) BATT DC 6.0 - 9.6 V (STD: DC 7.4 V)</p>															
Current Consumption (TYP.)	<p>TX EXT.PS 13.8 V / Battery:7.4 V</p> <table border="1"> <thead> <tr> <th>DC IN</th> <th>H</th> <th>M</th> <th>L</th> <th>EL</th> </tr> </thead> <tbody> <tr> <td>BATT</td> <td>1.4 A</td> <td>0.9 A</td> <td>0.6 A</td> <td>0.4 A</td> </tr> <tr> <td></td> <td>2.0 A</td> <td>1.3 A</td> <td>0.8 A</td> <td>0.5 A</td> </tr> </tbody> </table>	DC IN	H	M	L	EL	BATT	1.4 A	0.9 A	0.6 A	0.4 A		2.0 A	1.3 A	0.8 A	0.5 A
DC IN	H	M	L	EL												
BATT	1.4 A	0.9 A	0.6 A	0.4 A												
	2.0 A	1.3 A	0.8 A	0.5 A												
Current Consumption (TYP.)	<p>RX SINGLE 260 mA (Rated Power) 155 mA (SQ Close) 50 mA (Avg. Save on) DUAL 310 mA (Rated Power) 225 mA (SQ Close) 50 mA (Avg. Save on) GPS logger mode 125 mA</p>															
Battery Life	<p>Approx. Single, Save on, Rate 6:6:48 sec, GPS off</p> <table border="1"> <thead> <tr> <th></th> <th>H</th> <th>M</th> <th>L</th> <th>EL</th> </tr> </thead> <tbody> <tr> <td>KNB-75LA (1,820 mAh)</td> <td>6 hours</td> <td>8 hours</td> <td>12 hours</td> <td>15 hours</td> </tr> <tr> <td>KBP-9 (Alkaline AAAx6)</td> <td>-----</td> <td>-----</td> <td>3.5 hours</td> <td>-----</td> </tr> </tbody> </table> <p>Approx. 10 % shorter when GPS is ON</p>		H	M	L	EL	KNB-75LA (1,820 mAh)	6 hours	8 hours	12 hours	15 hours	KBP-9 (Alkaline AAAx6)	-----	-----	3.5 hours	-----
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Dimensions (W x H x D)	<p>Projections not included</p> <p>with KNB-75LA with 56.0 x 121.95 x 32.5 mm (2.20 x 4.80 x 1.28 inch) KBP-9 56.0 x 121.95 x 34.6 mm (2.20 x 4.80 x 1.36 inch)</p>															
Weight (net)	<p>Body only TH-D75A: 204 g (7.20 oz)/ TH-D75E: 203 g (7.16 oz) with KNB-75LA TH-D75A: 346 g (12.20 oz)/ TH-D75E: 344 g (12.13 oz) (w/ Antenna, Belt Clip) with KBP-9 TH-D75A: 391 g (12.79 oz)/ TH-D75E: 389 g (13.72 oz) (w/ Antenna, Belt Clip, AAAx6 Battery)</p>															
TRANSMITTER																
RF Power Output	<p>EXT.PS 13.8 V / Battery:7.4 V</p> <table border="1"> <thead> <tr> <th></th> <th>H</th> <th>M</th> <th>L</th> <th>EL</th> </tr> </thead> <tbody> <tr> <td></td> <td>5 W</td> <td>2 W</td> <td>0.5 W</td> <td>0.05 W</td> </tr> </tbody> </table>		H	M	L	EL		5 W	2 W	0.5 W	0.05 W					
	H	M	L	EL												
	5 W	2 W	0.5 W	0.05 W												
Modulation	<p>FM Reactance Modulation DV GMSK Reactance Modulation</p>															
Modulation Deviation	<p>FM ±5.0kHz NFM ±2.5kHz</p>															
Spurious Emissions	<p>HI / MID -60 dBc or less L -50 dBc or less EL -40 dBc or less</p>															
Microphone Impedance	2 kΩ															

6 APPENDIX

RECEIVER		Band A	Band B
Circuitry	F1D, F2D, F3E, F7W A1A, A3E, J3E	Double Super Heterodyne Triple Super Heterodyne	
IF Frequency	1st IF 2nd IF 3rd IF	A1A, A3E, J3E	57.15 MHz 450 kHz 58.05 MHz 450 kHz 10.8 kHz
Sensitivity (TYP.)	Amateur Band	FM 12dB SINAD FM/ NFM 144 MHz FM/ NFM 220 MHz (TH-D75A only) FM/ NFM 430 MHz DV PN9/GMSK 4.8kbps, BER 1% 144 MHz (TH-D75A) 144 MHz (TH-D75E) 220 MHz (TH-D75A only) 430 MHz SSB 10 dB S/N AM 10 dB S/N	0.18/ 0.22 uV 0.18/ 0.22 uV 0.18/ 0.22 uV 0.22 uV 0.20 uV 0.22 uV 0.22 uV 0.16 uV 0.50 uV
Except above Amateur Band	AM	10 dB S/N	4 uV 1.59 uV 0.63 uV 1.12 uV 0.50 uV 0.63 uV 1.12 uV 1.12 uV
	AM	0.3 - 0.52 MHz 0.52 - 1.8 MHz 1.8 - 54 MHz 54 - 76 MHz 118 - 174 MHz 200 - 250 MHz 382 - 412 MHz 415 - 524 MHz	
	FM	12dB SINAD 28 - 54 MHz 54 - 76 MHz 118 - 144 MHz 148 - 175 MHz 200 - 222 MHz 225 - 250 MHz 382 - 400 MHz 400 - 412 MHz 415 - 430 MHz 450 - 490 MHz 490 - 524 MHz	0.36 uV 0.36 uV 0.36 uV 0.36 uV 0.36 uV 0.36 uV 0.36 uV 0.36 uV 0.36 uV 0.36 uV 0.36 uV 0.36 uV
	SSB	10 dB S/N	0.40 uV 0.79 uV 0.16 uV 0.20 uV 0.16 uV
	FM BC Band	WFM 30 dB S/N	1.59 uV 2.00 uV
		76 - 95 MHz 95 - 108 MHz	
Squelch (TYP.)			0.18 uV 0.25 uV
Spurious Rejection		144 MHz 430 MHz	50 dB or more 50 dB or more 45 dB or more 40 dB or more
IF Rejection			60 dB or more 55 dB or more
Channel Selectivity		-6 dB 12 kHz or more -50 dB 30 kHz or less	
Audio Output		7.4 V, 10% Dist.	400 mW or more / 8 Ω
Bluetooth			
Version, Class		Version 3.0, Class 2	
Output Power		-6 < P _{av} < 4 dBm	
Modulation Characteristics		140 ≤ Δf _{1avg} ≤ 175 kHz	
Initial Carrier Frequency		-75 ≤ f _o ≤ +75 kHz	
Carrier Frequency Drift		±25 kHz (One Slot packet) ±40 kHz (Three Slot Packet) ±40 kHz (Five Slot Packet)	
GPS			
TTF (Cold start)		Approx. 40 sec	
TTF (Hot start)		Approx. 5 sec.	
Horizontal Accuracy		10 m or less	
Receive Sensitivity	Ta = 25°C, Open sky	Approx. -141 dBm (Acquisition)	

KENWOOD

TH-D75A/E

Operating Tips

May 17, 2024

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