DB25-D extended manual

V1.0, February 2022

Overview of Radioddity

'You, our friend and customer, are our focus'

At Radioddity, Customers are important to us. As a Customer, your time and money are important to you. When you buy radios online, you face a dilemma: buy from a reputable website at a high price, or try to save money by choosing a dealer who may or may not offer quality goods, service and advice. At Radioddity.com, you do not have to choose between low prices and a secure shopping experience. Whether you are buying from us for the first time or a seasoned amateur radio operator, we always hope that with our products, prices, content and sources, you will find exactly what you need. In recent years, Radioddity has better met the needs of wireless device buyers by creating a secure shopping experience. We do this by offering the highest quality products at an affordable price and providing you with first-class service. You deserve no less.

Our promise: to give you the best shopping experience

Strong partnerships enable us to offer you the latest technology and outstanding value for money under the Radioddity brand name. Our thoughtful and responsive customer service teams help us deliver on our promise to you and meet your everyday needs even better.

Whether providing you with the latest and greatest DMR and analog radios, accessories and related products, providing outstanding technical support, or by working with the leaders of the amateur radio industry to develop helpful content to assist you with your purchase: Your concerns are our concerns.

We want to connect you with high quality radios at low prices. If, in your opinion, we do not honor this promise in any way, please let us know by e-mail:

support@radioddity.com

1 Disclaimer

This document is intended as an enhanced version of the manual that comes with the radio. It does describe all those details, that are required to know in order to get the most out of your Radioddity DB25-D. If you find anything that needs correction, please let us know via support@radioddity.com.

We advise you to take a look at the document our engineers prepared for those new to DMR. Check the corresponding blog-entry for more details. To be found here: https://www.radioddity.com/blogs/all/radioddity-getting-on-air-with-your-dmr-radio

Not all functionality is available in both operating modes of the radio. For easier identification of those functionality, we used the following icons:

Described functionality is only available for digital DMR channels

Described functionality is only available for analog channels

Parameter names, when displayed on the screen of the Radioddity DB25-D are written ***bold&italic.***

2 Product safety and RF exposure for portable radios

	Before using the radio, please read this manual carefully. It contains important instructions for the safe and proper use of the radio and operating instructions for compliance with the limits of RF energy exposure in accordance with applicable national and international standards.

2.1 Notes on the use of the radio

Please read the following quick start guide, as failure to comply with these rules can be dangerous or in violation of the law.

1. Observe local regulations before using this radio, as improper use may violate the law.
2. Turn off the radio before approaching flammable or potentially explosive atmospheres.
3. Do not charge or replace the battery in flammable or potentially explosive atmospheres.
4. Turn the radio off before you come near any areas with explosives.
5. Do not use a radio whose antenna is damaged, as touching the damaged antenna may result in injury.
6. Do not try to disassemble the radio; any maintenance work should be carried out by qualified technicians.
7. To prevent electromagnetic interference issues, turn the radio off in locations that have signs displaying similar instructions to 'Do not use wireless devices' or 'Turn cell / mobile phones off' such as inside hospitals and healthcare facilities.
8. Do not place the radio in the area of airbag deployment in vehicles so equipped.
9. Do not store the radio in direct sunlight or hot areas.
10. When transmitting with the radio, keep the antenna at least 5cm away from your body or face.
11. If the radio emits any smoke or burning smells, switch the radio off immediately and disconnect it from the car's battery and contact your dealer.
12. Do not transmit for long periods as this may damage the radio or cause it to become hot enough to cause injury.

2.2 Maintenance and Cleaning

To ensure the best performance and prolong working life, please acquaint yourself with the following for maintenance and cleaning.

Maintenance

1. Please do not scratch or puncture the device with hard or sharp object.
2. Please do not place the device in an environment which can corrode electronic circuits or under direct solar radiation.
3. Please do not carry the device by its antenna or headset.
4. Please make sure the Speaker-Microphone plug is covered when not in use.

Cleaning

1. Please clean your device regularly by using a dry clean cloth or soft brush to wipe the dust off the surface.
2. The keypads, control knob and housing of the device may become dirty from use. Please use nonwoven wipes to clean them. Do not use chemicals to clean it such as detergent, alcohol, spray or petroleum products, on the device surface or printed labels. Chemicals can damage the housing, display and remove the printing on the labels. Before powering on the radio, please make sure the device is dry completely.

3 What is in the box?

Thank you for choosing a Radioddity DB25-D radio. We recommend that you first check the delivery contents listed in the following table and keep the packaging for later storage. If something is missing or damaged, please contact your dealer immediately.

item	picture
Radioddity DB25-D Mobile Radio	
Adapter-cable with car-cigarette-lighter-plug	
Speaker Mic	
Mini GPS Antenna	
Mounting Bracket	
Rack mounting Screws (2)	
Programming Cable	

Notes: *Further accessories for your radio are available at:* *https://www.radioddity.com/*

4 Preparation for operating the radio

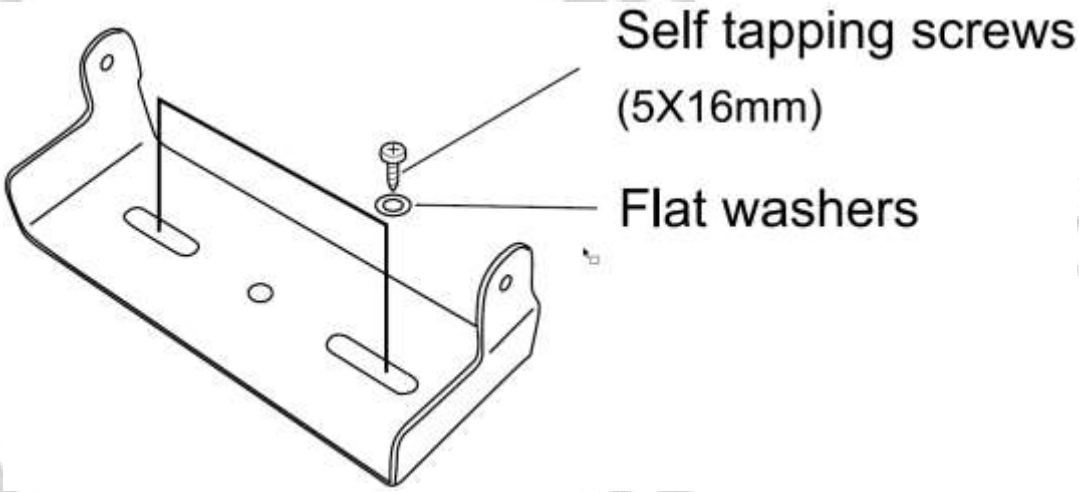
4.1 Radio installation

For sake of your own and passengers safeties, please find a safe and convenient position in order to prevent the damage caused by moving car. Check about suitable and allowed positions with the manufacturer of your car. Choose a mounting location within the driver's reach that allows a view of the radio and the road ahead. The small size makes this more of a possibility than larger under dash radios. Typical under dash installations rely on devices with direct functions and controls. 2 step controls are harder to perform while keeping your eyes on the road. You can consider installing the radio in front of the front passenger seat below the panel section or the car trunk. This will prevent your knees and legs crashing the radio in case of an emergency brake. You should install it with good ventilation and avoiding the direct sunlight.

1. Install the mounting bracket to the car with using the self-taping screws and flat washers (2 pcs screws each kind).

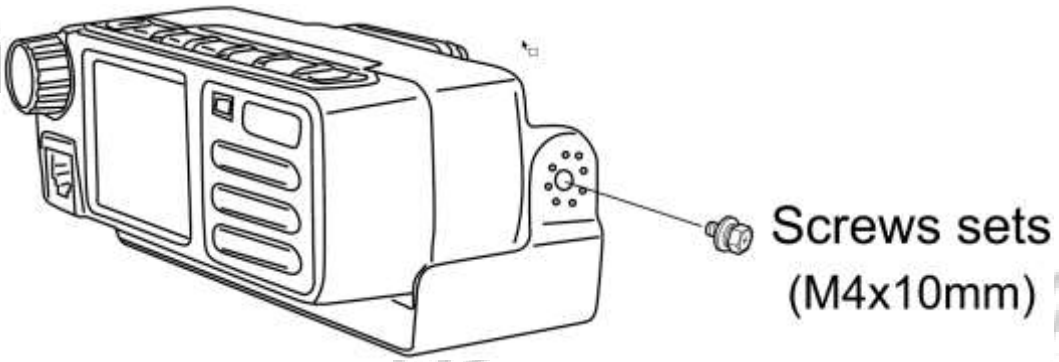
   - Screws can be put upside down (under the dashboard mounting) or upwards the mounting bracket.

   - When installing the mounting bracket, please make sure the screw side edge with slots on the bracket are backwards.

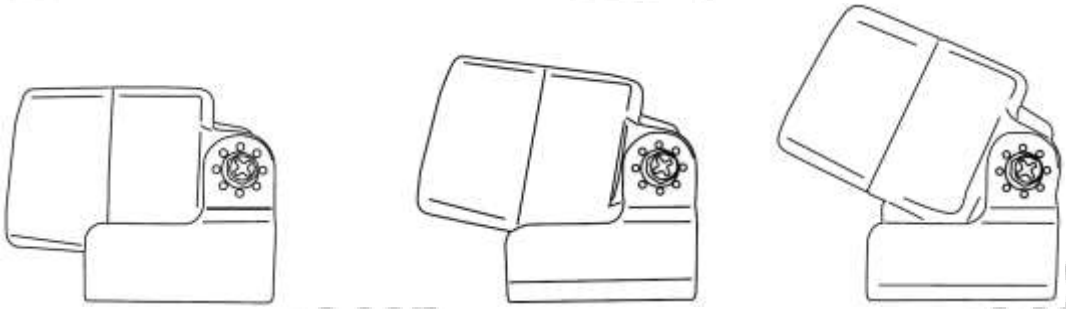


2. Next take the radio body and it between the two side wings of the mounting bracket. Secure the radio body to the mounting bracket using the two supplied M4 x 10mm Rack mounting screws including their fixed washers.

   - Please make sure all the screws are tight to prevent the radio's firm hold from being lost due to the vibrations in the car.



1. With the rotatable fixed point on the left and right sides of the Mounting Bracket, it can tilt the main body at an appropriate angle.



4.2 Power supply options

Mobile Operation

The radio comes with a cigarette-style plug. After connecting a proper antenna this allows immediate use within a car but due to often bad electrical connections between the cigarette lighter socket and the cigarette plug, we recommend to use a fused, but direct wiring to the car´s battery.

The vehicle battery must have a nominal rating of 12 V. Never connect the Radioddity DB25-D to a 24V battery. Be sure to use a 12 V vehicle battery that has sufficient current capacity. If the current to the DB 25-D is insufficient the display may darken during transmission or transmitting output power may drop excessively.

Notes: *If the car battery is not fully charged or when the engine is switched off but the battery is still not fully charged, the battery may discharge and there will not be enough power to start the car. Please avoid using the radio in such situations.*

1. Route the DC power cable supplied with the Radioddity DB25-D directly to the vehicle's battery terminals using the shortest path from the transceiver We suggest you do not use the cigarette lighter socket as some cigarette lighter sockets introduce an unacceptable voltage drop that may cause the radio to turn off or reboot when starting a transmission. The entire length of the cable

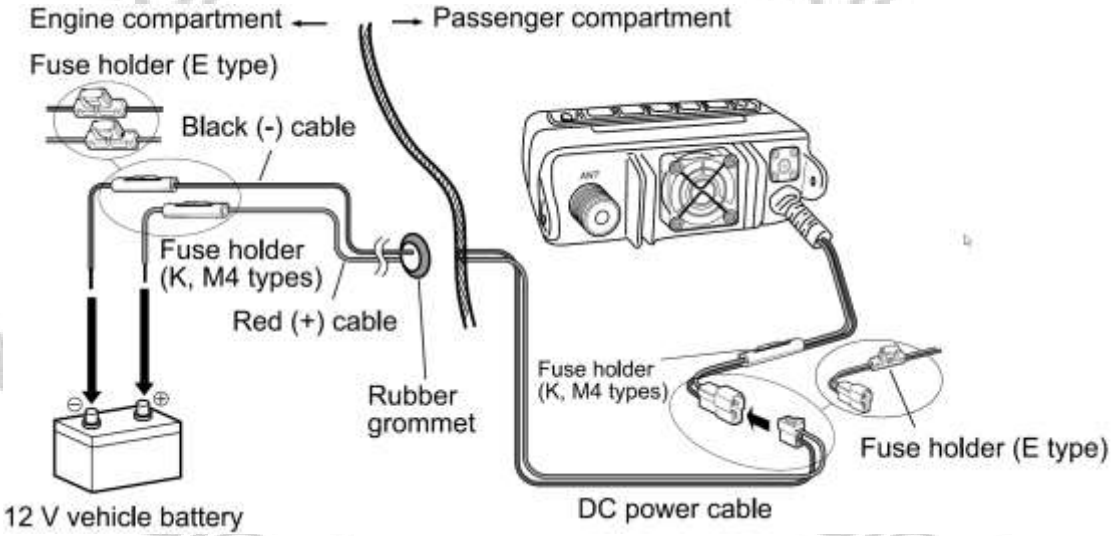
must be dressed so it is isolated from heat, moisture and the engine secondary (high voltage) ignition system/cables. If you use a noise filter, the metal parts of the car shall be fitted with an insulator to prevent it from touching the car.

2. After installing the cable, in order to avoid the risk of damp, please use heat-resistant tape to tie together with the fuse box. Do not forget to reinforce the whole cable.

3. Confirm the correct polarity of the connections, then attach the power cable to the battery terminals: Red connects to the positive (+) terminal and black connects to the negative (-) terminal.

4. Reconnect any wiring removed from the negative terminal.

5. Connect the DC power cable to the transceiver's power supply connector. Press the connectors firmly together until the locking tab clicks. Additional clip-on ferrites applied to the power cable and close to the radio will prevent any HF radiation to enter the power supply lines.



Notes:	*If you use the Radioddity DB25-D for a long period and the vehicle battery is not fully charged or when the car engine is OFF, the car battery may become discharged and will not have sufficient power left to start the vehicle. Avoid using the Radioddity DB25-D in these conditions.*

Base Station Operation

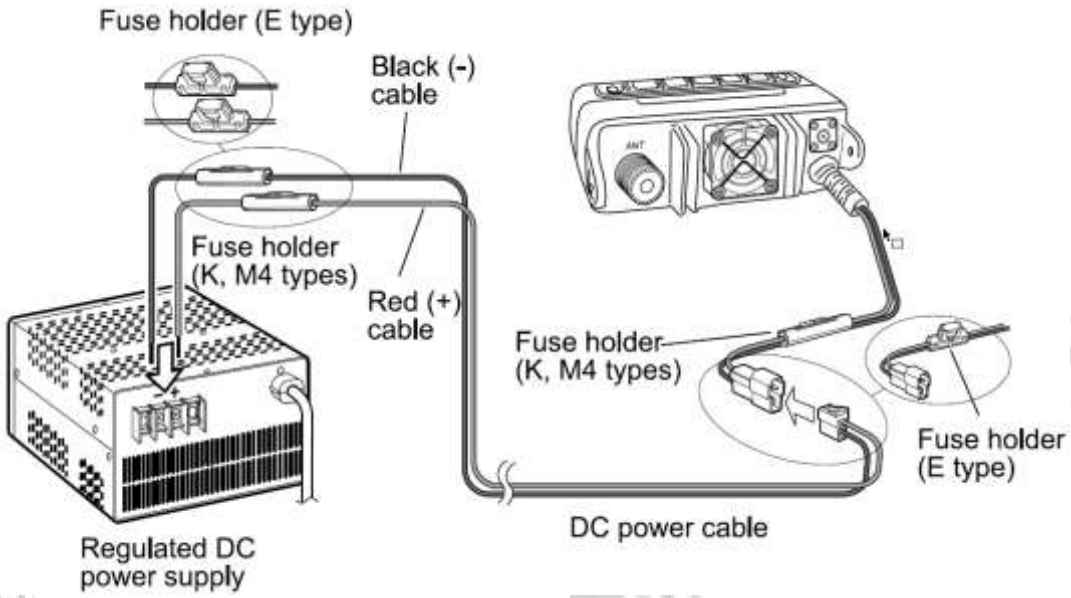
In order to use the Radioddity DB25-D for fixed station operation you will need a separate 13.8 V DC power supply (not included). Please contact your local dealer about it. The recommended current capacity of your power supply should be at least 5 A.

Notes:	*Before connecting the DC power to the Radioddity DB25-D, be sure to switch the DC power supply OFF. Do not plug the DC power supply into an AC outlet until you make all connections.*

1. Make sure that both, the Radioddity DB25-D and DC power supply are off.

2. Connect the DC power cable to the regulated DC power supply and ensure that the polarity is correct. (Red: positive; Black: Negative}. Use the supplied DC power cable to connect the Radioddity DB25-D to a regulated power supply. Do not substitute a cable with smaller gauge wires.

3. Connect the radio's DC power connector to the connector on the DC power cable. Press the connectors firmly together until the locking tab clicks. Additional clip-on ferrites applied to the power cable and close to the radio will prevent any HF radiation to enter the power supply lines.



4. Connect a properly matched dual-band antenna to the radios antenna port.

Replace fuse

If the fuse is blown, please find out the cause and then solve the problem. After the problem is fixed then replace the fuse. But if after re-installation the fuse is still blown, please disconnect the power cord and contact the local authorized dealer or authorized service center for assistance.

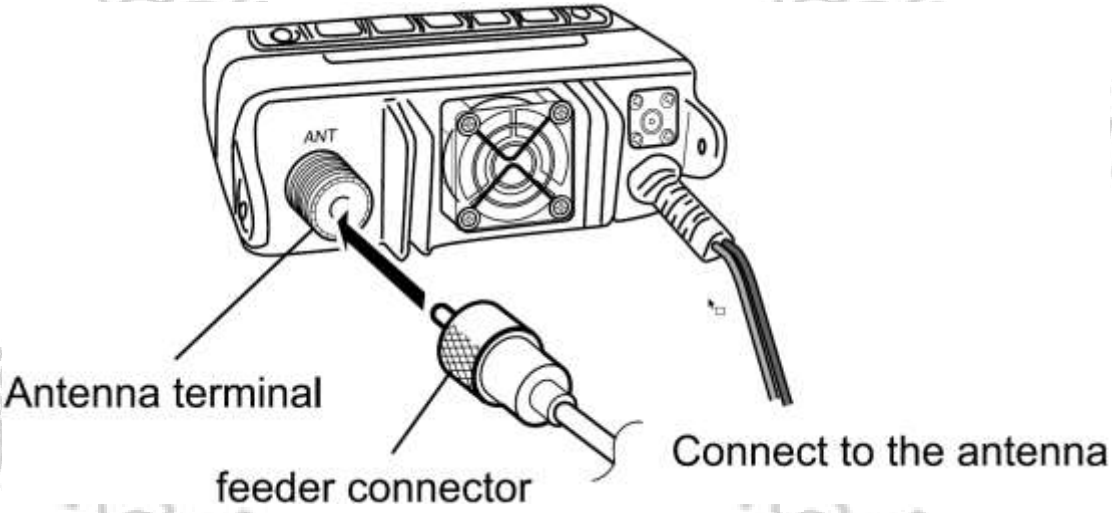
Fuse position	Fuse rated current
Radio (in DC cable)	5 A
DC power cord	10 A

Notes: *Please use only the specified type and the rated value of the fuse; otherwise it might damage the radio.*

4.3 Antenna connection

Before operation, you must first install a properly matched antenna for the optimal transmit coverage. The radio will have best performance if the appropriate antenna is properly installed. A low loss coaxial feeder line with 50 Ω impedance is used to match the input impedance of the radio. If the transmission impedance of the feeder line is less than 50 Ω the antenna connection will reduce the effectiveness of the antenna system, and will cause interference to the nearby radio and television receivers, radio receivers and other electronic devices, and even damage the radio.

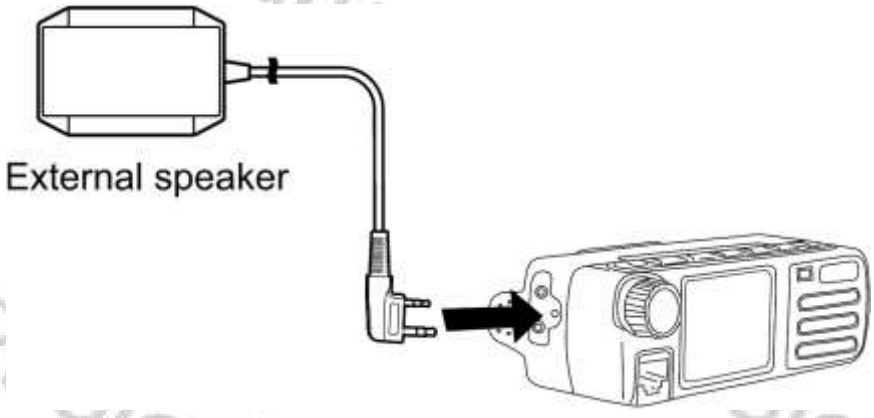
Notes: *If transmitting without an antenna or other matched load line, it could damage the Radioddity DB25-D. The antenna must be connected to the radio before transmitting. All base stations should be equipped with lightning arrester to reduce the risk of fire, electric shock or radio damage.*



4.4 Accessories connection

External speaker/headset and microphone

Please connect a speaker with 8 Ω impedance or a suitable headset. The external speaker socket can be connected with just a 2.5 mm mono plug or as a K1-style plug with a 2.5 mm and 3.5 mm TRS plugs.

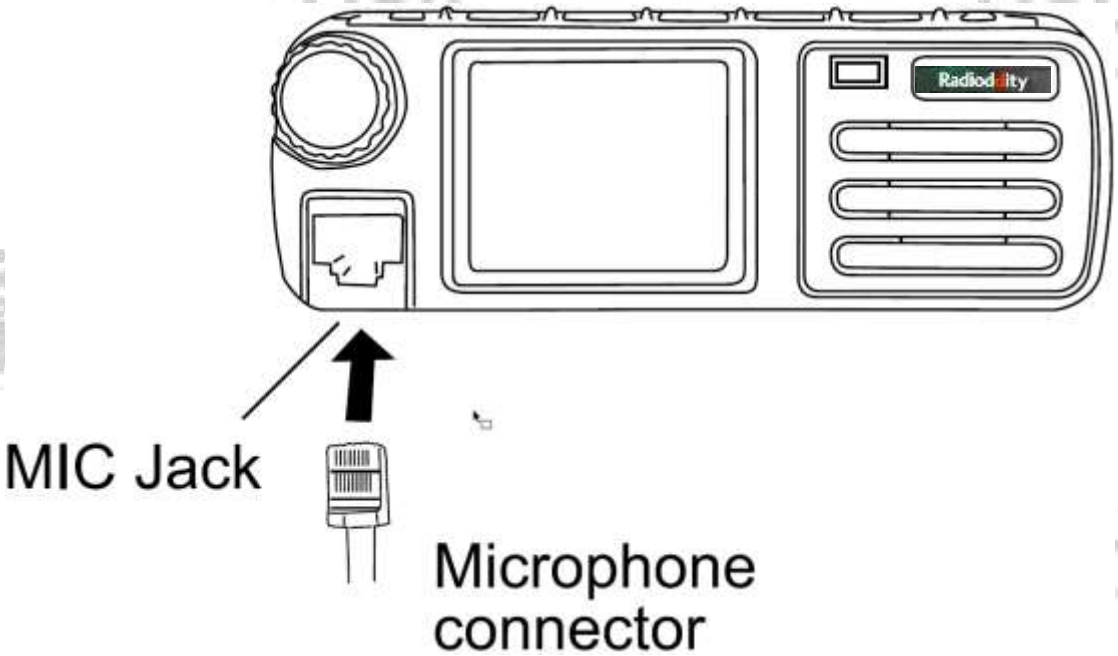


The left side of the Radioddity DB25-D has two jacks (K1 style) for speaker and microphone. Please refer to the instructions to determine how to use an external speaker or headset and microphone accessory.

> ***Notes:*** *More details on this K1 style connector are to be found in Chapter 19.5 K1 connector on page 169.*

Speaker-Microphone

Please insert the provided Speaker-Microphone (with built-in speaker) to the RJ45 jack on left side of the radio to make voice communication. Press the connector until you hear a click sound from the locating plate in place.

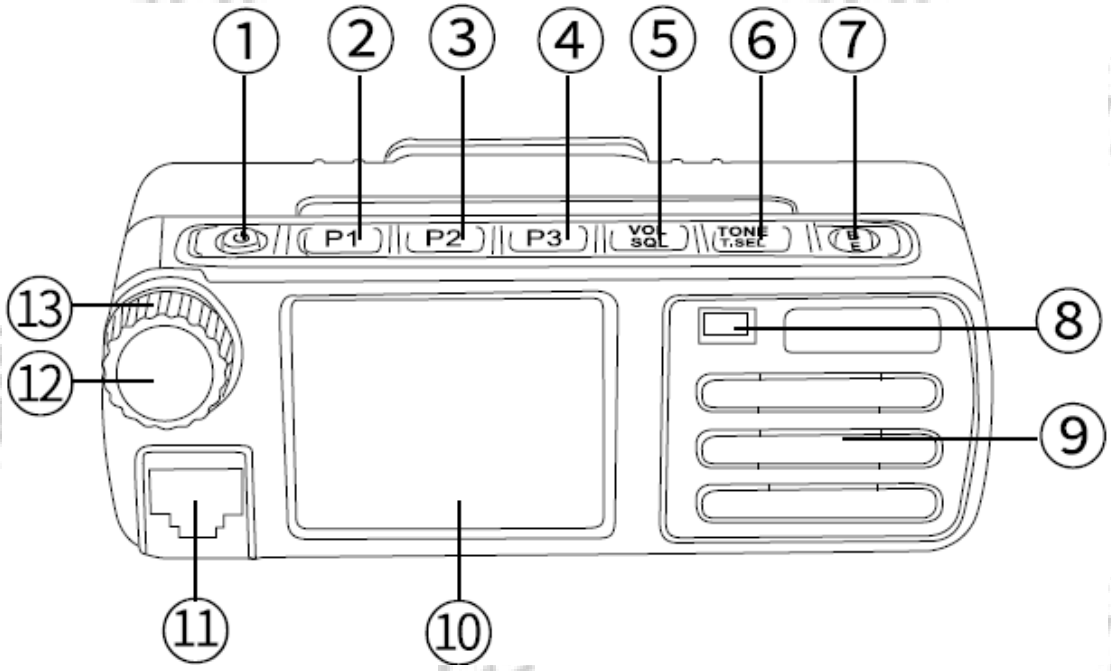


4.5 Keypad operations

Please follow the key operation described below to simplify the instructions and avoid unnecessary duplication.

Instruction	Operation
Press the [XXX] button	Short press the button and release it quickly
Press and hold [XXX] button	Long press and hold down the button for 3 seconds or more
Press the [MENU] tuning knob (button 1)+ [XXX] (button 2)	Short press the [Menu] tuning knob button (button 1), and release it; then press button 2 and release it to enter a function menu
Rotate the [MENU] tuning knob	Select set options
Press and hold power switch	Press and hold the power switch for more than 3s to turn the DB25-D on or off

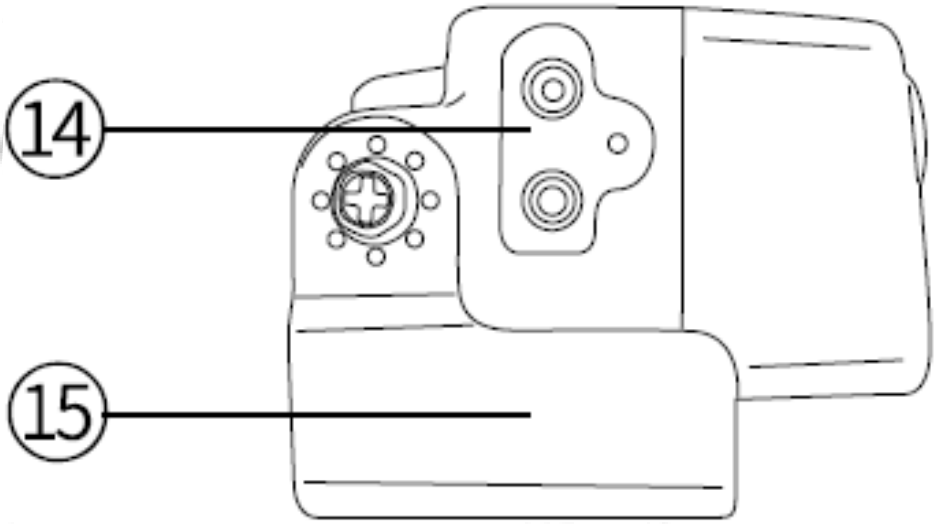
4.6 Radio controls



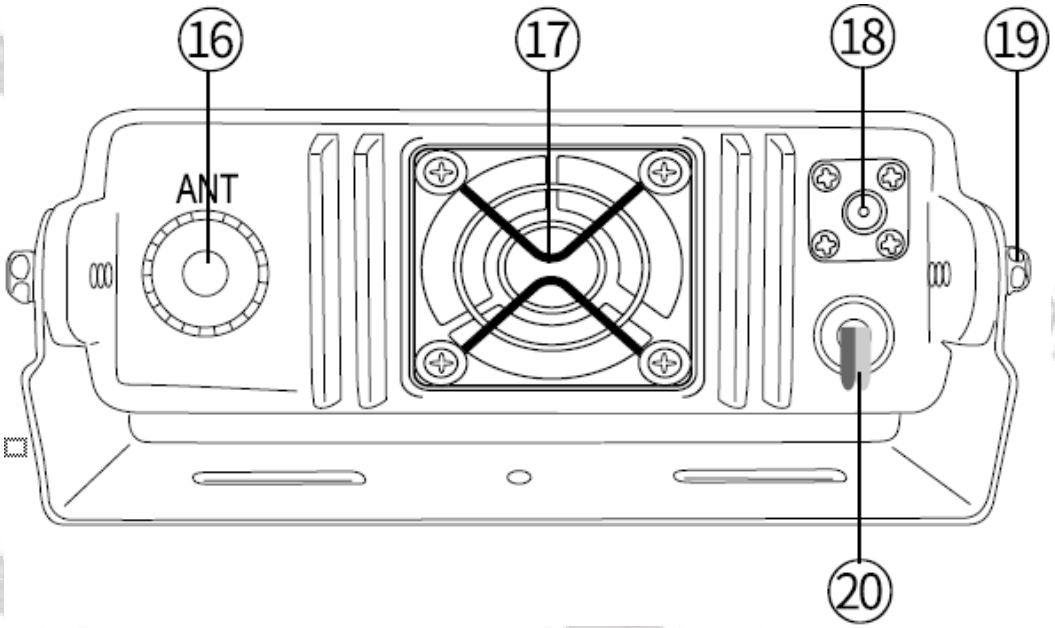
Parts description & function applications

No.	Part Name	Function description and applications
1	[⏻] Power Switch	Press and hold it for more than 3 sec to turn the radio on or off.
2	P1	Programmable function key 1
3	P2	Programmable function key 2
4	P3	Programmable function key 3
5	[VOL/SQL] key Notes: SQL is for analog mode only	1) Short press to set the volume of the band with the '➡' icon. 2) In analog mode, long press to set the squelch level of the band with the '➡' icon.
6	[TONEI/T.SEL] key	1) In analog mode, short press and rotate it to select the signaling type of the band with the '➡' icon. 2) 2) After selecting the signaling type, long press it to change the signaling code / frequency. TX/RX signaling code/frequency can be set.
7	[B/E] key	1) In Standby, short press to switch between band A and band B. The band with the '➡' icon is the main band for transmitting or menu set. 2) For operating the band with the '➡' icon, in menu mode, short press to return to the previous level, and long press to exit menu mode. 3) In Standby, long press to enter the Channel-Edit mode of the main band with the '➡' icon.
8	LED indicator	Used to indicate the RX/TX status, etc.
9	Speaker	Used to receive audio from others
10	TFT display	Display various working states, and combine with visual icons for easy use and operation
11	RJ45 (MIC) connection port	Connect the original Speaker-Microphone to this port
12	[Menu] key [OK] key [Select] Key	1) In standby, short press to access the menu of the main band with the '➡' icon 2) In the current menu mode, short press to be [Menu] key or [OK] key for parameter selection and confirmation.
13	ENC selection knob	In standby, rotate the knob to operate and set frequency, channel, menu selection and parameters etc. of main band with '➡' icon.

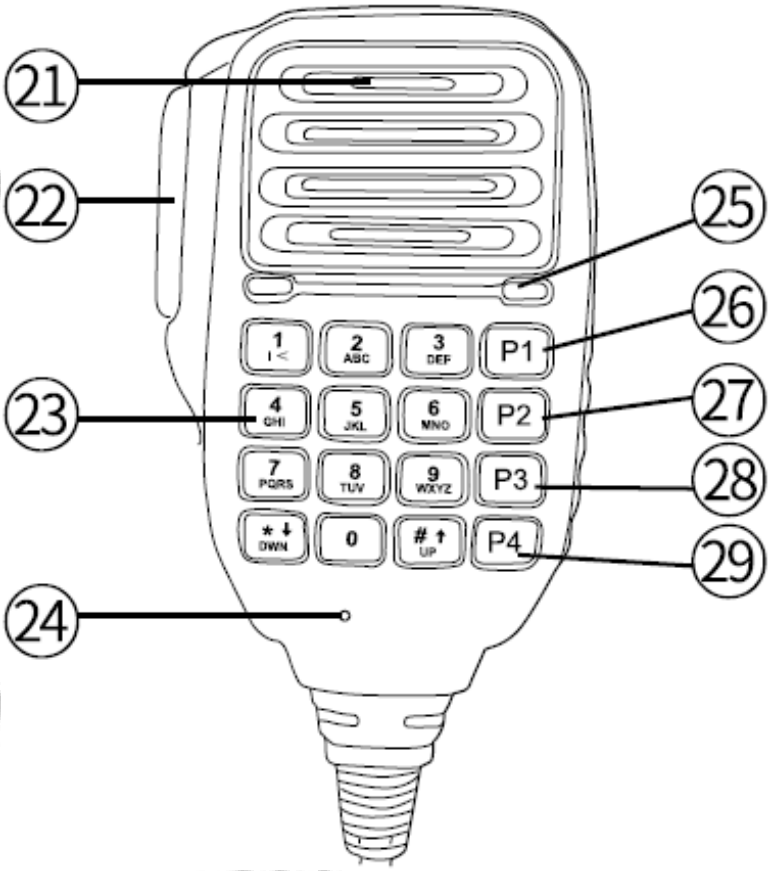
Notes: *For convenient use, there are programmable [P] keys for definition of various functions.*



No.	Part Name	Function description and applications
14	SP/MIC jacket	1) For external accessories connection, such as earpiece, speaker. 2) Connect the programming cable here to get connection with the PC for data programming.
15	Mounting Bracket	For fixing the radio at some place.



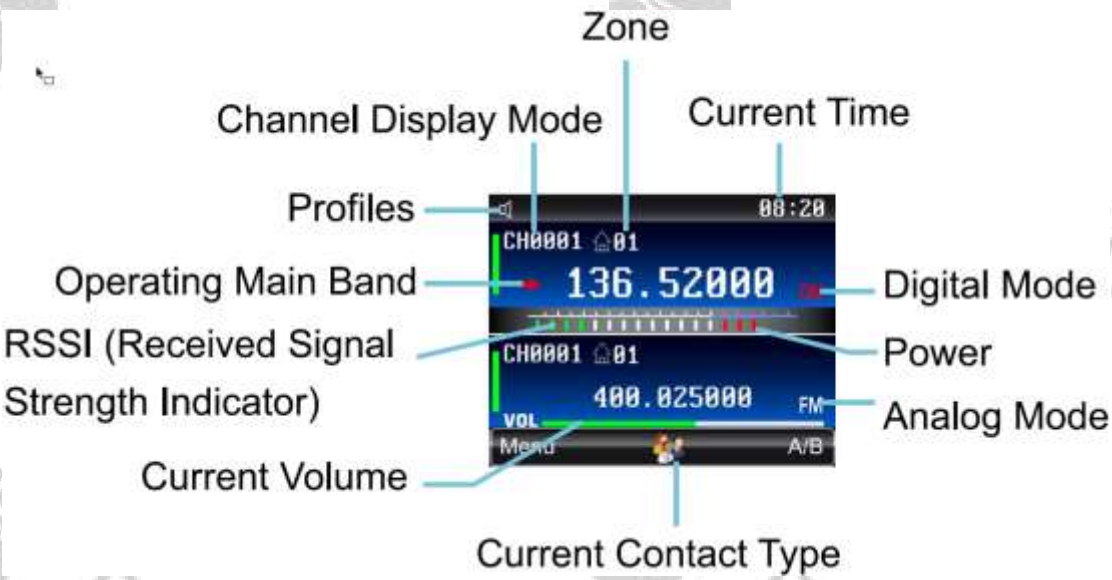
No.	Part Name	Function description and applications
16	Antenna port	Install the external antenna to this port. In TX testing, please install a dummy load to replace the antenna. The antenna or dummy load should be with 50 Ω impedance.
17	Heat Sink	Cool the internal power tube to avoid too high temperature to damage the related components
18	GPS antenna port	Install the GPS antenna to this port for GPS receiving.
19	Rack mounting screws	Loosen the left and right screws to set the correct viewing angle, then re-fasten them.
20	External power cable	Carefully check the polarity (Red:+, Black:-) and power ratings (13.8 V DC +/- 15%) of the power supply before connecting to the radio.



No.	Part Name	Function description and applications
21	The Speaker-Microphone	Used to receive audio from others (Audio output options can be set from the menu option)
22	[PTT] key	Press and then speak in to the microphone to transmit; Release it to receive.
23	Numeric Keypad	Used to input frequency / channel number, alias, ID and SMS
24	MIC	Speak to the microphone when pressing the PTT key to transmit; (3-5 cm away from the mouth)
25	LED indicator of the Speaker-Microphone	In transmitting, LED lights red; if operating on Speaker-Microphone keypad, LED light will be always on.
26	MIC P4	Programmable function key 4
27	MIC P5	Programmable function key 5
28	MIC P6	Programmable function key 6
29	MIC P7	Programmable function key 7

Notes: *For convenient use, there are programmable [P] keys for definition of various functions.*

Status Icons



Icon	Icon description	Applications and function description
	High Power	6 red bars indicate high power
	Low Power	3 red bars indicate low power
	Standby	White bars indicates the radio being in Standby Mode
	RSSI	In RX mode, the more green bars, the stronger the signal
	Keylock	Appears when the keypad is locked
	Monitor	Appears when analog monitor is on
	Promiscuous	Appears when Promiscuous mode is on
	VOX	Appears when VOX is on
	GPS	Appears when GPS is on (red as long as not sufficient GPS satellites received; green as soon as GPS position found)
	Scan	Appears when SCAN is on
	Emergency Mode	Appears when the radio is in emergency mode.
	Encryption	Appears when Encryption is on
QT	CTCSS	Appears when CTCSS is on
DQT	DCS	Appears when Normal DCS is on
DQI	DCS-I	Appears when Reverse DCS is on

Icon	Icon description	Applications and function description
	Prompt Tone on	Appears when profile is in standard mode
	Prompt Tone Off	Appears when profile is in silent mode
	Talk Around	Appears when the radio is in Talk Around Mode
	Roaming	Appears when Roaming is on
	Roaming Lock	For locking current channel in Roaming
	Offset Frequency Negative direction	Appears when RX frequency is higher than TX frequency
	Offset Frequency Positive direction	Appears when TX frequency is higher than RX frequency
DN	Digital Mode	Indicates the current band is working in digital mode
FM	Analog Mode	Indicates the current band is working in analog mode
DN	Digital/Analog Mode	The current band is in digital/analog auto RX mode. Digital Mode is for main TX
DN	Analog/Digital Mode	The current band is in analog/digital auto RX mode. Analog Mode is for main TX
	Operating Main Band	The band with this icon indicates that the current band can make a call or is operable and settable
	Time Slot 1	Indicates the working slot of current frequency or channel
	Time Slot2	Indicates the working slot of current frequency or channel
	Zone	Indicates the working zone of current frequency or channel
VFO	Variable Frequency Mode	Indicates working in frequency mode, can input frequency directly via numeric keypad
	SMS	Appears when received a new message.

Attention: The icon for promiscuous mode will be introduced with the next firmware release.

Transmit / Receiving Icons

The following icon appears on the radio screen to indicate the radio status.

Mode	Type	Icon	Radio status
	Private call		Sending a Private Call
			Receiving a Private Call
	Group Call		Sending a Group Call
			Receiving a Group Call
	All Call*		Sending an All Call
			Receiving an All Call
			Sending an analog transmission
			Receiving an analog transmission

*) Not used by ham operators

LED Indicators

LED indicator	Radio status
	Receiving
	Transmitting
Fast Flashing Green	Scanning

Programmable Function keys

There are more than 30 different functions that may be assigned to the 7 Preset Buttons. For more details on how to program the Preset Buttons, please check chapter 11.6 Preset Buttons on page 109.

Keys and ENC (channel Selector) operation

The following keys can be used to quickly achieve the desired function.

Keypad	Status	Operation	Description
[ENC]	Standby	Short Press	Access to the Menu
		Long Press	[Keylock] or [Unlock]
	In Menu Mode	Long Press	[Confirm] or [Menu]
	Standby	Rotate	Select channel, frequency and other parameters
	In Menu Mode		Select Menu and other setting parameters
	Channel Edit Mode		Select programming items or other parameters
	Edit (SMS)		Move the editing position of the blinking cursor to the left or right
⏻	Standby	Long Press (3 sec)	Power On /Off
[P1]	Standby	Short Press	Preset function based on configuration
		Long Press	Preset function based on configuration
[P2]	Standby	Short Press	Preset function based on configuration
		Long Press	Preset function based on configuration
[P3]	Standby	Short Press	Preset function based on configuration
		Long Press	Preset function based on configuration
[VOL / SQL]	Standby	Short Press	For adjusting the output volume
		Long Press	In analog mode, adjust the squelch level
[TONE / T.SEL]	Standby	Short Press	In analog mode, choose signaling type
		Long Press	To select signaling code / frequency after selecting the signaling type, and thereafter short press of [TONE/T.SEL] to choose signaling code / frequency for RX / TX
[B/E]	Standby	Short Press	Select the operated Band A/B to make a call or menu operation
		Long Press	Operations for Channel/VFO-Attributes, storage and other parameters
	Menu Mode	Short Press	Back to the previous level

Keypad	Status	Operation	Description
[MIC P4]	Standby	Short Press	Preset function based on configuration
		Long Press	Preset function based on configuration
[MIC P5]	Standby	Short Press	Preset function based on configuration
		Long Press	Preset function based on configuration
[MIC P6]	Standby	Short Press	Preset function based on configuration
		Long Press	Preset function based on configuration
[MIC P7]	Standby	Short Press	Preset function based on configuration
		Long Press	Preset function based on configuration

4.7 Main functions description

Common functions

Function	Description
Zone	A zone Is a group of channels. Support end users to build and expand zones by themselves.
VFO Mode	In VFO mode, the user can directly input the required frequency using the numeric keyboard of the Speaker-Microphone
Channel	Support end users to build and expand channels by themselves. Memory is handled dynamically
Power	The power level is for the transmission output power level of the current channel, which can be set to high or low power.
Emergency Alarm	Emergency alarm has the highest priority.
Scan	When the terminal scans a signal on a channel, It will stay on the channel to listen, so as to understand the current activity status of the relevant team members.
VOX	If VOX is On, when the voice is detected to reach the transmission condition by the microphone, it will be transmitted automatically. The user can initiate a call without pressing the [PTT] key.
Busy Channel Lockout	Busy channel lockout (BCL) prohibits transmission and prevents interference with other users when the radio is receiving traffic.
TOT	When a transmission times out, the radio will automatically terminate the transmission and issue a warning sound. The user can Initiate a call without pressing the [PTT] key.
Keyboard Lock	Keyboard lock is used to lock keys to prevent Inadvertent key operation. The radio may be &al to automatic or manual lock mode.

Digital Functions

Function	Description
Private call	Private call is a one-to-one call.
Group call	Group call is a one-to-many call.
All call	All call is a call to all contacts on the current digital channel. Not used by ham operators.
Talk Around	When the repeater fails to work or the radio exceeds the coverage of the repeater, it can communicate off-line (RX & TX at the same frequency) to communicate
Roaming Setting	Roam Mode, RSSI Set, Connect Check Timer, Connect Recheck Timer, Connect Timer
Roaming	When the radio moves from one site to another, it will automatically find the next available site through roaming.
Recording	Record any received and/or transmitted audio
DTMF RX/TX reminder	Used as the TX PTT prompt tone and RX prompt tone before receiving the voice.
TDMA direct mode	TDMA direct mode Is used to divide a direct channel (simplex) into two time slots lo allow efficient channel usage. Multiple parties may share the channel without interference depending on slot setting.

Analog Functions

Function	Description
Analog channel call	An analog call is a call on an analog channel.
Narrow / Wide Band	Working band for the radio (Narrow band: 12.5 kHz, Wide band: 25 kHz)
Squelch Level	It is the signal strength required to adjust the received signal. Normally the higher squelch level, the higher received signal strength is required. Settable squelch level is from O - 9. Level 0 is normally open, and there is background sound from the speaker once the radio is on. Level 9 is the highest and the required received signal strength is the strongest.
Busy Channel Lockout	If it is ON, when received the carrier signal, it is prohibited to transmitting when pressing the PTT button.
Monitor	Monitor allows the user to open the receiver squelch manually to listen to on-channel signals.
CTCSS	CTCSS code for RX radio must be same as TX radio, so that the audio can be received successfully
DCS	DCS code for RX radio must be same as TX radio, so that the audio can be r11ceived successfully

4.8 Operations for Speaker-Microphone keypad

The numeric keypad of the Speaker-Microphone can be used to access the radio functions. It can be used to input frequency/channel number, user alias or ID or SMS. Most characters require pressing a key for several times.

Keystrokes

Keypad	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	Note
1	,	。	?	!	:	;	、	“	”	‘	’	(	)	《	》																"PY" input mode
	.	,	’	?	!	-	(	)	@	/	:	_	;	+	&	%	*	=	〈	〉	$	[	]	{	}	~	^	‘	#	|	"AB" / "ab" input mode
2	A	B	C																												
3	D	E	F																												
4	G	H	I																												
5	J	K	L																												
6	M	N	O																												
7	P	Q	R	S																											
8	T	U	V																												
9	W	X	Y	Z																											
0	Note: in the digital editing mode, a short press of this key enters the value of "0", while long press enters the symbol "+" in the digital, English and Chinese editing mode.																														
*	Note: in the digital, English and Chinese editing mode, a short press of this key enters the "*" symbol, and a long press enters a "space".																														
#	Note: in the editing mode of Numbers, English and Chinese, a short press of this key inputs the symbol "#", while a long press switches between the editing input mode of English, Numbers, Chinese (pinyin) (" AB "in upper case," ab" in lower case," 12 "in figure," PY "in Chinese pinyin)																														

5 Basic Operation

5.1 Turning the radio On/Off

ON: Make sure the power supply is connected correctly, long press the [⏻] key to power on the radio till a 'Beep sound' is heard (if turned on). After power on, the Radioddity logo and 'Powering On' text is shown on the display. The radio is now in standby-mode.

OFF: Long press the [⏻] key to power off the radio.

5.2 Adjust Volume

For adjusting the volume, short press the [VOL/SQL] key, after the volume level is displayed in the upper right of the active band, rotate the [ENC] key clockwise (increase) or counterclockwise (decrease) to adjust the volume. The green volume scroll bar below will change according to the volume level. The volume setting applies to both bands A and B.

5.3 Adjust Squelch

The '➡' icon displayed left to the channel name of the upper band A or the lower band B indicates the selected band. The squelch level for both bands, A and B may be set separately by accessing the menu or long press the [VOL/SQL] key. In general, higher squelch levels do require the received signal strength to be stronger. Settable squelch level range is from '0, 1 - 9'. Level 0 is normally open, and there is background sound from the speaker once the radio is on. Level 9 is the highest level and the required received signal strength is the strongest.

5.4 Switch Bands

In Standby Mode, press the [B/E] key to switch between bands A and B for operation and settings. The current operable and settable band shows the '➡' icon left to the channel name.

Notes: *If single band display is selected, you will see either band A or band B.*

5.5 Busy Channel Lockout

When the '➡' icon is shown left to the channel name you may set the Busy Channel Lock On/Off of the currently selected band A or B separately by accessing the menu. If it is ON, when receiving a carrier signal, it is prohibited to transmitting when pressing the PTT button.

5.6 Wide/ Narrow Band

When the '➡' icon is shown left to the channel name you may set the bandwidth of the currently selected band A or B separately by accessing the menu.

5.7 CTCSS / DCS

When the '➡' icon is shown left to the channel name you may set the CTCSS and DCS signaling of the currently selected band A or B separately by accessing the menu.

1. In standby, press the [Menu] key to access the menu and choose '*Parameters*' → '*Signaling*'.

2. In standby, long press the [B/E] key to access the Channel-Attributes, and choose '*RX/TX signaling*'.

3. In standby, press the [TONE/T.SEL] key, and then choose the required signaling.

   (1) **Choose the signaling type**: single click the [TONE/T.SEL] key to choose from QT , DQT, DQI or none. The signaling icon will display at the upper right of current bands channel.

   (2) **Choose the signaling code / frequency**: long press the [TONE/T.SEL] key to display the current signaling code/frequency at the upper right of current bands channel, rotate the [ENC] key to choose the desired signaling code/frequency and press the [Menu] key to confirm your selection. Or press the [TONE/T.SET] key to set RX (R:XXXX) or TX (T:XXXX) signaling code/ frequency.

5.8 Channel Selection

The desired working channel can be selected as follows:

1. When the '➡' icon is shown left to the channel name of band A or B, rotate the [ENC] knob to select the desired channel.

2. When the '➡' icon is shown left to the channel name of band A or B, input the desired channel number by using the speaker-microphone keypad.

5.9 Switch between VFO and Channel Mode

In Standby Mode, when the '➡' icon is shown left to the band A or B, access the 'MENU → Local Set → DisplayMode' and choose ***VFO Mode*** as Display Mode.

5.10 VFO Frequency Set

In Standby Mode, when the '➡' icon is shown left to the band A or B and the current band is in VFO mode, the desired frequency can be entered through the speaker-microphone keypad. For example for 446.050000MHZ, directly input:

[4] [5] [5] [5] [5] [0] [0] [0] [0]

using the numeric keyboard of the Speaker-Microphone.

> ***Notes:*** *The current frequency can be increased / decreased by pressing the [ENC] knob. For more details on editing a channel please refer to chapter 5.10 VFO Frequency Set on page 36.*

5.11 Zone / Channel Selection

When the '➡' icon is shown left to the current band A or B, the following two methods can be used to select the desired zone, channels switching and zone name modification or editing.

1. Programming one of the keys for the [Zone] switching feature.
2. Select the [Zone] item by accessing 'Menu → Zone&Channel'

5.12 Monitor

In Standby Mode or before pressing the [PTT] key to transmit, press the preset [Monitor] key to monitor channel activity, or receive weak signals, or confirm whether the current channel is free. An active Monitor- or Permanent Monitor-function is indicated by the symbol "" on the top most display line, left besides the GPS symbol.

5.13 Permanent Monitor

In Standby Mode, press the preset [Permanent Monitor] key to continuous monitor the current channel activity. Permanent Monitor is same as Monitor feature, which is allowing you to monitor the channel to make sure it is not occupied before transmitting; their difference is once Permanent Monitor is on,

the radio will always be in this monitor mode, till you exit it. An active Monitor- or Permanent Monitor- function is indicated by the symbol on the top most display line, left besides the GPS symbol.

5.14 Repeater / Talk Around

When the repeater fails to work, or the radio exceeds the coverage of the repeater but within the call range of other radio users, press the preset [Repeater / Talk Around] key or actively set 'Menu → Parameters → Slot/Repeat → Repeat/off' to 'Talkaround' and press the [PTT] key to continue the communication. This is the so-called Talk Around function.

5.15 Emergency Alarm

The emergency alarm function is mainly used in an emergency situation. Pressing the preset [Emergency Alarm On/Off] key will make an emergency alarm call or stop sending an emergency alarm call.

There are 3 Emergency Alarm modes supported:

1. Emergency Alarm
2. Emergency Alarm & Call
3. Emergency Alarm & Voice

An alarm is a type of non-voice signaling that can trigger a prompt to another radio. This function refers to the alarm behavior of the radio after it is activated. The following types of alarms are possible:

Disable	The radio will not send an alarm signal.
Standard	The radio can send the alarm signal with voice & visual prompts.
Mute	The radio sends alarm signaling without audio or visual prompts, and will not alert to any received audio.
Mute with voice	The radio sends alarm signaling without audio or visual prompts, but can send signal to the eligible channels.

Notes: *Not used within amateur radio networks*

5.16 Scan On/Off

When the '➡' icon is shown left to the current band A or B, turn scan On/Off by the following two ways.

1. Turn scan On/Off by programming a [Scan On/Off] key.

2. Actively select 'Menu → Scan → Scan -> Scan On/Off' to turn it On or Off.

5.17 Roaming On / Off

If necessary, turn roaming On or Off by the following two ways.

1. Turn roaming On/Off by programming a [Roaming On/Off] key.

2. Actively select 'Menu → Scan → Scan -> RoamScan On/Off' to enable/disable roaming.

Notes: *Make sure the 'Scan List' is pre-selected before turning on the 'Scan' or 'Roaming' feature , otherwise, none of the scan types will be enabled.*
The radio will work in band A as default when 'Roaming' is enabled.
When 'Roaming' is enabled, the radio will start to scan all repeater channels in the 'scan list' (TX/RX with different RX- and TX-frequency), and the non-repeater channels in the 'scan list' (RX/TX with same frequency) will not be scanned. If there is no repeater channel in the scan list, the radio will exit the roaming after scanning the current 'scan list';
When 'Scan' is enabled, the radio will open all the receivable channels in the 'scan list'.

5.18 1750Hz Pilot tone

Analog repeaters often do require to be activated by sending a 1750 Hz pilot tone to the repeater.

To do so, define one of the programmable keys for [1750Hz]. Whenever you press that preset key the 1750 Hz pilot tone will be send.

5.19 Promiscuous Mode

If you haven´t assigned a proper RX-group to the selected channel, you may still monitor all activity that is taking place on the specified channel by means of activating the so called Promiscuous mode.

To do so, define one of the programmable keys for [Promiscuous]. Whenever you press that preset key promiscuous mode will be turned On/Off.

6 Using the radio menu

Set various functions and parameters by accessing the main menu and submenu of the radio. The menu function options supported by the Radioddity DB25-D are shown in the table below.

The user-defined [Px] key programming keys are function shortcut keys, for specific function application, please pre-program those using the Radioddity DB25-D CPS.

Icon	Main Menu Item	Available setting Items
	Contacts Ⓙ	Contact List Ⓙ, New contact Ⓙ, Manual Dial Ⓙ, Ham contacts Ⓙ, Ham Group Cont Ⓙ
	Message Ⓙ	Create Msg Ⓙ, Comm Msg Ⓙ, Inbox Ⓙ, Outbox Ⓙ, Draftbox Ⓙ
	Call Log Ⓙ	Dialed Numbs Ⓙ, Received Calls Ⓙ, Missed Calls Ⓙ
	Scan	Scan (On/Off), Scan List, Scan Mode, Roam Setting
	Zone&Channel	Zone List, Chn List
	Local Set	Language, Keypad Lock, Back Light, LEDs, Display Mode, VOX, Channel Sw, Factory Reset
	Parameters	TOT, Power, Slot/Repeat Ⓙ, EncLevel Ⓙ, Sq Level ~, Band ~, BCLO ~, Signaling ~, Ctcss Tail ~
	Tone Set	Profiles, Key Tone, Msg Tone Ⓙ, P Call Tone Ⓙ, G Call Tone Ⓙ, Alert Tone Ⓙ, FM Call Tone
	Appendix	GPS, Fm Radio, Time, DTMF Ⓙ, Headset+Speaker, APRS
	Record Ⓙ	Record Set Ⓙ, Record List Ⓙ, Clear Record Ⓙ, Space Info Ⓙ
	Device Info	Radio ID Ⓙ, RX Group List Ⓙ, CH contact Ⓙ, Version.
	Channel Edit	Edit the parameters of the current bands channel or activated VFO-mode.

6.1 Accessing the menus and operations

Access the main menu and submenu options to set or browse various parameters (like message checking, editing and sending, etc.) through the following operations and steps. Some of the menus may be enabled or disabled using the Radioddity DB25-D CPS.

Icon	description
	Indicates an On (green) /Off (red) switch
	Indicates a selected and executed items
	Indicates to enter the next submenu option

1. In Standby Mode, press the [Menu] key to access the menu.
2. Rotate the [ENC] knob to select the desired 'Main Menu' item, and press the [Menu] key to enter the submenu.
3. Rotate the [ENC] knob to select the desired submenu item, and press the [Menu] key to enter.

or

1. Rotate the [ENC] knob to select and set the current parameter value and press the [Menu] key to confirm the setting and return to the previous level.

or

1. Press the [Menu] key to select 'On' or 'Off'.
2. Press the [B/E] key to return to the previous level.
3. If needed, continue to browse other menus by repeating the above steps or return to the 'Main Menu' for other operations.

Notes: *No matter where the ➡ ' icon is shown left to the current band A or B, the setting for some of the parameters applies to both bands.*
For more details, please check chapter 4.7 Common functions on page 31.

7 Placing a PTT Call

To ensure an optimal transmission, hold the Speaker-Microphone in a vertical position at one to two inches (2.5 to 5.0 cm) away from the mouth. Noisy environments may require a closer distance or lifting up your voice.

In order to compensate network latency times, leave a short pause after pressing the [PTT] key but before beginning your actual voice communication. After your communication and before releasing the [PTT] key, do the very same again. In order to allow other stations to join a conversation, also do not start your transmission immediately after the other station did release its PTT.

7.1 High / Low power

In Standby Mode, if needed, when the '➡' icon is shown left to the current band to be set, change radio output power by one of the following two ways:

1. Press the preset [High/Low Power option] key to switch between high and low power. The 'red' indicator at the bottom of the screen of the current band will change according to the set power level.

2. Access 'MENU → Parameters → Power' through the menu to set the output power level of the radio. After setting, the 'red' indicator at the bottom of the screen of the current band will change according to the set power level.

Notes: *High power allows further communicate distance. Low power allows closer communication distance. If you use your radio with a hotspot, set it to low power. For more details, please check also chapter 0* **High / Low power** *on page 41.*

7.2 Select the transmitting band

In Standby Mode, press the [B/E] key to switch between band A and B for desired transmission, and the current transmitting band will have the '➡' icon is shown left to the current band.

7.3 Receive and Answer to a digital radio call

Private calls, Group calls, and All calls can be made to the preset contacts on the current digital channel (All call rights needs to be allowed by the Radioddity DB25-D CPS), and the methods for initiating and receiving all types of calls are the same. Each digital channel can be preset using the Radioddity DB25-D CPS with a 'transmission contact' for Private Call, Group Call or All Call contact. Analog Calls do not require a Contact or RX-Group.

Call Type	Operation method	
	Make a call	Receive a Call
Private Call	In Standby Mode, press the [PTT] key to initiate the call. When a Private Call is initiated, the screen displays: 	When a Private Call is received, the screen displays: 
Group Call	When a Group Call is initiated, the screen displays: 	When a Group Call is received, the screen displays: 
All Call*	When an All Call is initiated, the screen displays: 	When an All Call is received, the screen displays: 

*) Not used within amateur radio networks

If the 'Tx Begin Tone' and 'TX End Tone' for Private and Group Calls are activated (currently only possible at the radio), when pressing the [PTT] key of the Speaker-Microphone to make a call, a short prompt tone will be heard indicating that the call is in progress. You can speak into the MIC. Upon release of the [PTT] key, a short beep sound will be heard indicating that your radio is now is ready for receiving.

If 'Rx Begin Tone' and 'Rx End Tone' for Private and Group Calls are activated (currently only possible at the radio), when the other station transmits, you will hear a short prompt tone indicating that the current channel is in receiving mode. As soon as the other station ends its transmission, you will hear a short beep, indicating that the channel is now idle again and waiting for your answer.

> ***Notes:*** *For more details, please check chapter 0 Initiate a digital radio call on page 74.*

If necessary, a call can be initiated by any of the following ways.

1. Rotate the [ENC] knob to select any of the preset channels, and then press the [PTT] key of the Speaker-Microphone to initiate the call.

2. Access the 'Contact' list through the menu, or press the preset [Contact] key to access the Contact list. Then select the desired contact by rotating the [ENC] knob, and finally press the [PTT] key of the Speaker-Microphone to initiate the call.

3. Access 'Contacts' through the menu and select 'Manual Dial' to input the user DMR ID using the numeric keypad of Speaker-Microphone within the dialog box popping up on the radio screen. This is used for Private Calls only.

> ***Notes:*** *For more details, please check chapter 9.1 Contacts on page 46.*

7.4 Receive and Answer to an analog radio call

Rotate the [ENC] knob to select any of the preset analog channels, and then press the [PTT] key of the Speaker-Microphone to initiate the call to all users. The TFT display screen shows . When receiving a call from other operators on the current analog channel or when the Monitor function is activated, the TFT display screen shows .

> ***Notes:*** *If the transmitter is configured for CTCSS or DCS encoding, the other station can successfully decode the audio only if using the same CTCSS/DCS code.*
> *For more details, please check chapter 0 Signaling on page 72.*

8 Special DMR functions

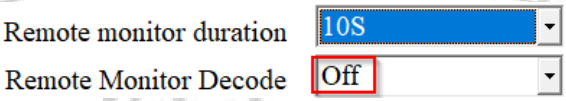
Use our Radioddity DB25-D CPS software to enable/disable and preset any of the Preset Buttons with one of the following functions.

Notes: For more details on how to program the Preset Buttons, *please check chapter 11.6 Preset Buttons on page 109.*

Remote monitor

Preset to prohibit the radio from being remotely monitored by others or allow other users to remote monitor for the set time for continuing to keep the MIC and transmitter on (Time range is from 10s - 120s).

Notes: *To avoid misuse, we advise to disable that parameter using the CPS.*



Remote Kill

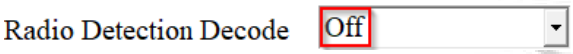
Preset to prohibit the radio from receiving 'Remote Kill' command sent by other users; or allow the other users to receive and process the 'Remote Kill' command to disable the radio. This function can be used to disable the radio when it is stolen or lost.

Notes: *To avoid misuse, we advise to disable that parameter using the CPS.*

Radio Detection

Preset to prohibit or allow the radio from being remotely detected whether the radio is in communication range or active state without any prompt.

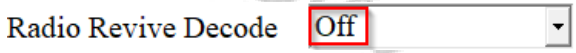
Notes: *To avoid misuse, we advise to disable that parameter using the CPS.*



Radio Revive

Preset to restrict the radio from receiving 'Radio Revive' command sent by other users; or allow the radio to receive and process the 'Radio Revive' command to activate it remotely. This function can be used to enable the radio when it is lost and found.

Notes: *To avoid misuse, we advise to disable that parameter using the CPS.*



Call Alert

Preset to prohibit or allow the radio from receiving alert tone to ask for calling back when you are free.

GPS

Turn on/off GPS and position report feature to report the position information to the preset designated channel and talkgroup at the preset intervals.

Record

Preset to prohibit or allow the recording for any of receive, transmit, receive + transmit voice.

DTMF

Preset to prohibit sending DTMF tones or allow to send a DTMF prompt tone when pressing the [PTT] key to transmit in order to achieve the effect of phone ring.

Encryption

Preset to encrypt the voice transmission of the digital channels. But the encryption is a software-based AES 128 scrambling solution for preventing eavesdropping. The receiver radio must have same encryption method, level, alias and value as the transmitter radio to decrypt the encrypted voices from each other.

Notes: *Within amateur radio networks, Encryption is not used as it is not allowed. For more details, please check chapter 9.7* Encryption (ENC Level) *on page 71.*

9 The radio Menu functions in detail

The various functions, applications and parameter configurations of the radio can be checked and set by menus, if those has been enabled using the Radioddity DB25-D CPS.

9.1 Contacts

The contacts provide the 'address book' for the radio. Each entry corresponds to an alias or ID used to initiate a call, as well as operations and advanced DMR functions.

Contact list

1. Press the preset [Contacts] key to access the menu.

or

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to select *Contacts* and press the [OK] key to enter.

2. Rotate the [ENC] knob to select the *Contact list* → press the [OK] key to confirm → select the desired contact

   (1) Press the [PTT] key to initiate a call

   (2) Press the [Select] key to choose from the following options

Group Call ID:

(1) *SendMsg* → press the [Select] key → Edit SMS → rotate the [ENC] knob to choose the option of *SendMsg* (Send Message), *InsertComMsg* (Insert Common Message), *Save* or *Exit Editor* → press the [Select] key to confirm → return back to the previous level.

(2) **Edit** (contact) → Press the [Select] key → rotate the [ENC] knob to choose the option of *Number*, *Name, Type* or *Save* → press the [Select] key to input the number and name or Save → press the [OK] key to confirm → return to the previous level.

Private Call ID:

(1) **Application** → press the [Select] key → Rotate the [ENC] knob to choose either ***Radio Check***, ***Call Alert***, ***Remote Mon.***(Monitor), ***Radio Disable*** or ***Radio Enable*** → press the [Select] key to send→ 'OK' or 'Fail' text pops up on the screen → press the [Back] key to return to the previous level.

(2) **Edit** (contact) → Press the [Select] key → rotate the [ENC] knob to choose either ***Number***, ***Name***, ***Type*** or ***Save*** → press the [Select] key to input the number, name or type (Call Type) and press the [OK] key to confirm and return to the previous level → finally select ***Save*** → press the [OK] key to confirm → 'Contact Saved' pops up on the screen → return to the previous level.

(3) **Delete** → press the [Select] key → 'Are you sure?' pops up on the screen → press the [OK] key to confirm the deletion or press the [Back] key to cancel the deletion → return back to the previous level;

(4) **SendMsg** → press the [Select] key to Edit a SMS → rotate the [ENC] knob to choose either ***SendMsg*** (Send Message), ***InsertComMsg*** (Insert Common Message), ***Save*** or ***ExitEditor*** → press the [Select] key to confirm the selected option → return to the previous level.

(5) **Detail ->** press the [Select] key to show any details for that contact as found in the Ham contacts

New Contact

1. Press the preset [Contacts] key to access the contact

or

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to select ***Contacts*** and press the [Select] key to enter.

2. Rotate the [ENC] knob to choose ***New Contact***, press the [Select] key to choose from one of the following options:

(1) **Number** → press the [Select] key → input the numbers using the numeric keypad of the Speaker-Microphone → press the [OK] key to confirm → return back to the previous level.

(2) **Name** →press the [Select] key →edit interface → input the characters using the numeric keypad of the Speaker-Microphone → press the [OK] key to confirm → return back to the previous level.

(3) **Type** → rotate the [ENC] knob to choose a Call Type either ***Group Call*** or ***Private Call*** → press the [OK] key to confirm → return back to the previous level

(4) **Save** → press the [OK] key to confirm → Return back to the previous level.

Manual Dial

1. Press the preset [Contacts] key to access the contact

or

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to select *Contacts* and press the [Select] key to enter.

2. Rotate the [ENC] knob to select the Manual Dial, press the [Select] key to enter the interface for keying in the ID.

3. Input the ID using the numeric keypad of the Speaker-Microphone.

   (1) Press the [PTT] key to initiate a call;

   (2) Press the [OK] key and Rotate the [ENC] knob to make following options:

   - **Application** → press the [Select] key → Rotate the [ENC] knob to choose either *Radio Check*, *Call Alert*, *Remote Mon.*(Monitor), *Radio Disable* or *Radio Enable* → press the [Select] key to send→ 'OK' or 'Fail' text pops up on the screen → press the [Back] key to return to the previous level.

   - **SendMsg** → press the [Select] key to Edit a SMS → rotate the [ENC] knob to choose either *SendMsg* (Send Message), *InsertComMsg* (Insert Common Message), *Save* or *ExitEditor* → press the [Select] key to confirm the selected option → return to the previous level.

Ham Contacts

The Radioddity DB25-D can permanently store up to 300.000 HAM contacts within its internal memory.

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to select *Contacts* and press the [Select] key to enter.

2. Rotate the [ENC] knob to select the *Ham Private Contacts*, press the [Select] key to enter the Ham Private Call Contacts List.

3. Choose the desired private contact by rotating the [ENC] knob, the selected contact ID number will display at the top left of the screen and the serial No of the contact displays at the upper right.

   or

Long press and hold the [MENU] key for 3 seconds, a dialogue window pops up.

- Input the first few digits of the private contact ID to search using the numeric keypad of the Speaker-Microphone → press the [OK] key to confirm → the display shows the search results → rotate the [ENC] knob to choose the desired ID.

4. Press the [PTT] key to initiate a private call or press the [Select] key, rotate the [ENC] knob to choose from the following options:

   (1) ***Application*** → press the [Select] key → Rotate the [ENC] knob to choose either ***Radio Check***, ***Call Alert***, ***Remote Mon.***(Monitor), ***Radio Disable*** or ***Radio Enable*** → press the [Select] key to send→ 'OK' or 'Fail' text pops up on the screen → press the [Back] key to return to the previous level.

   (2) ***SendMsg*** → press the [Select] key to Edit a SMS → rotate the [ENC] knob to choose either ***SendMsg*** (Send Message), ***InsertComMsg*** (Insert Common Message), ***Save*** or ***ExitEditor*** → press the [Select] key to confirm the selected option → return to the previous level.

   (3) ***Details*** → press the [Select] key → the display shows ID, nick name, name, city, province, country etc. information → press the [Back] to return to the previous level.

Notes:	*The '128 Bytes' records mode must be selected firstly before writing Ham Private Contacts list to the radio, so that all details like name, city, province, country, etc. information will be imported. However, the import of that data requires a long writing time (about an hour). Make sure the radio keeps normal power supply during the writing process. If '16 Bytes' records mode is selected before writing Ham Private Contacts list, only the contact ID and Nick name will be imported. This mode has a shorter writing time of just about 15 minutes. Make sure the radio keeps normal power supply during the writing process.*

Ham Group Contacts

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to select *Contacts* and press the [Select] key to enter.

2. Rotate the [ENC] knob to select the *Ham Group Contacts*, press the [Select] key to enter the Ham Group Call Contacts. Up to 20,000 HAM group contacts can be added.

3. Rotate the [ENC] knob to choose from the following options:

   (1) Ham Rx Group → press the [Select] key to turn the option ON / Off.

   (2) Choose the desired HAM group contact by rotating the [ENC] knob, then the selected contact ID number will be displayed at the top left of the screen.

   (3) Long press and hold the [MENU] key for 3 seconds, a dialogue window pops up on the interface.

   - Input the first few digits of the private contact ID to search using the numeric keypad of the Speaker-Microphone → press the [OK] key to confirm → the display shows the search results → rotate the [ENC] knob to choose the desired ID.

4. Press the [PTT] key to initiate a group call.

5. Press the [Back] key to return to the previous level.

9.2 Message

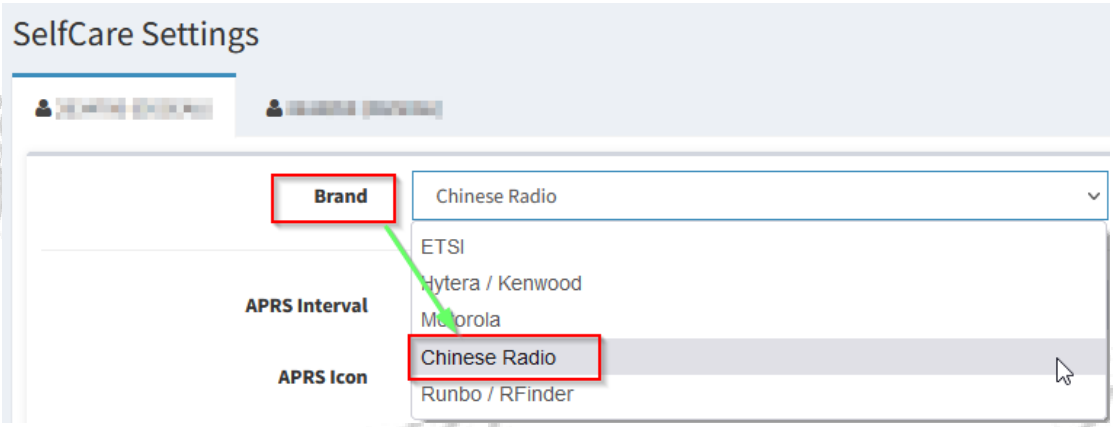
The Radioddity DB25-D can receive and send text messages (SMS) from and to other radios. Those are textmessages within the DMR network. Sending/receiving of text messages to/from normal mobile phone networks is not supported.

The following options can be used to send SMS messages.

Notes:	*Hold and long press the '#' key for 3 seconds to change the Input modes in writing and editing messages and other processes. The input modes are AB (uppercase), ab (lowercase), 12 (numerical digits) and PY (Chinese). In the process of searching contacts or inputting ID numbers to send SMS, a call is initiated whenever the [PTT] key is pressed.*

Network support for short messages

Not all DMR-based networks do support sending such short text messages. Some networks may require additional settings for your account. As an example the currently largest DMR network, Brandmeister network, requires the brand of radio associated with the DMR ID to be assigned. For your Radioddity DB25-D set it to 'Chinese Radio'. However the DMR network does not guarantee a SMS will be successfully delivered.



CreateMsg

1. Press the preset [SMS] key to access the menu.

or

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to select ***Message*** and press the [Select] key to enter.

2. Rotate the [ENC] knob to ***CreateMsg*** and press the [Select] key to enter the message editing interface.

3. After editing, press the [OK] key to choose from one of following options:

   (1) **SearchLinkman** → rotate the [ENC] knob to choose the contact → press the [PTT] key of the Speaker-Microphone to initiate a call or press the [Select] key to send the message → 'MSG SENDING' pops up on the screen → press the [Back]key to return to the previous level.

   (2) **WriteNumber** → input the contact number using the numeric keypad of the Speaker-Microphone → press the [OK] key to send the → 'MSG SENDING' pops up on the screen → press the [Back]key to return to the previous level.

   (3) **InsertComMsg** (Insert Common Message) → press the [Select] key → rotate the [ENC] knob to choose the desired message → press the [OK] key → the inserted text is added to the text → edit or press the [OK] key to return to the previous level.

   (4) **Save** → press the [Select] key to save the message to the Draftbox → return to the previous level.

   (5) **ExitEditor** → press the [Select] key to return to the previous level.

Common Messages CommMsg

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to select ***Message*** and press the [Select] key to enter.

2. Rotate the [ENC] knob to select ***CommMsg*** and press the [Select] key to enter the common message list or 'Empty! Do you want Add?' text pops up on the screen.

3. In common message list → rotate the [ENC] knob to select the desired message → press the [Select] key and choose from one of the following options:

   - **Display** → Press the [Select] key to display the full message → Press the [Back] key to return to the previous level.

   - **AddCommMsg** → press the [Select] key → input the message using the numeric keypad of the Speaker-Microphone → press the [OK] key → choose either **Save** or **ExitEditor** → press the [Select] key → return to the previous level.

   - **Edit** → press the [Select] key → edit the message using the numeric keypad of the Speaker-Microphone → press the [OK] key → choose either **Save** or **ExitEditor** → press the [Select] key → return to the previous level.

   - **Delete** → press the [Select] key → 'Are you sure?' pops up on the screen → press the [OK] key to confirm deletion or press the [Back] key to cancel the deletion → return back to previous level.

   - **Send** → Press the [Select] key → edit SMS and press the [Select] key to either ***Search*** a contact or WriteNumber to manually key in the receiver ID using the numerical keypad of the Speaker-Microphone → press the [OK] key to send the message → return to the previous level.

Notes:	*If there are no Common Messages, you should pre-program those using the Radioddity DB25-D CPS software first or add them into 'CommMsg'.*

Inbox

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to select ***Message*** and press the [Select] key to enter.

2. Rotate the [ENC] knob to ***Inbox***, and press the [Select] key to choose from one of the following options:

   (1) ***Inbox*** list → press the [Select] key → rotate the [ENC] knob to choose the received message → press the [Select] key to display the full message → press the [Select] key to perform one of the following options:

   - **Reply** → press the [Select] key → edit SMS → rotate the [ENC] knob to choose an option of either ***SendMsg***, ***InsertComMsg*** or ***ExitEditor*** → press the [Select] key to confirm the selected option.

   - **Forward** → Press the [Select] key → rotate the [ENC] knob to choose an option of either ***Search*** or ***WriteNumber*** → Press the [Select] key → rotate the [ENC] knob to choose the contact or input the ID number using the numeric keypad of the Speaker-Microphone → Press the [OK] key to send the SMS.

   - **Edit** → press the [Select] key to make changes to the message → Press the [OK] key → rotate the [ENC] knob to choose from one of the options of either ***SearchLinkman***, ***WriteNumber***, ***InsertComMsg*** or ***Save***.

   - ***Delete*** → 'Are you sure?' pops up on the screen → press the [OK] key to confirm deletion or press the [Back] key to cancel deletion → return back to previous level.

   (2) ***Delete All*** → 'Are you sure?' pops up on the screen → press the [OK] key to confirm deletion or press the [Back] key to cancel deletion → return back to previous level.

Outbox

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to select *Message* and press the [Select] key to enter.

2. Rotate the [ENC] knob to *Outbox* and press the [Select] key to choose from one of the following options:

   (1) *Outbox* list → press the [Select] key → rotate the [ENC] knob to choose one of sent messages → press the [Select] key to display the full message → press the [OK] key to choose from one of the following options:

   - **Search** → rotate the [ENC] knob to search the contact → press the [PTT] key to initiate a call or press the [Select] key to send the message → the message sending status pops up on the screen.
   - **WriteNumber** → input the contact number using the numeric keypad of the Speaker-Microphone → press the [OK] key to send the message → the message sending status pops up on the screen.
   - **InsertComMsg** (Insert Common Message) → press the [Select] key → rotate the [ENC] knob to choose the desired message → press the [OK] key → the inserted text is added to the text → edit or press the [OK] key to return to the previous level.
   - **Save** → press the [Select] key to save the message → return to the previous level.
   - **Delete** → 'Are you sure?' pops up on the screen → press the [OK] key to confirm deletion or press the [Back] key to cancel the deletion → return back to previous level.
   - **ExitEditor** → press the [Select] key to return to the previous level

   (2) Delete All → 'Are you sure?' pops up on the screen → press the [OK] key to confirm deletion or press the [Back] key to cancel deletion → return back to previous level.

Draftbox

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to select *Message* and press the [Select] key to enter.

2. Rotate the [ENC] knob to *Draftbox*, and press the [Select] key to choose from one of the following options:

   (1) *Draftbox* list → press the [Select] key → rotate the [ENC] knob to choose the message → press the [Select] key to display full message → press the [OK] key to perform the following options:

   - *Search* → rotate the [ENC] knob to search the contact → press the [PTT] key to initiate a call or press the [Select] key to send the message → the message sending status pops up on the screen.
   - *WriteNumber* → input the contact number using the numeric keypad of the Speaker-Microphone → press the [OK] key to send the message → the message sending status pops up on the screen.
   - *InsertComMsg* (Insert Common Message) → press the [Select] key → rotate the [ENC] knob to choose the desired message → press the [OK] key → the inserted text is added to the text → edit or press the [OK] key to return to the previous level.
   - *Save* → press the [Select] key to save the message → return to the previous level.
   - *Delete* → 'Are you sure?' pops up on the screen → press the [OK] key to confirm deletion or press the [Back] key to cancel the deletion → return back to previous level.
   - *ExitEditor* → press the [Select] key to return to the previous level

   (2) Delete All → 'Are you sure?' pops up on the screen → press the [OK] key to confirm deletion or press the [Back] key to cancel deletion → return back to previous level.

9.3 Call Log

Information for recent dialed calls, received calls and missed calls can be checked by users thru Call Log menu. Call logs help to manage the recent call activities.

Dialed Calls (DialedNumbs)

3. Access the menu, press the [Menu] key and rotate the [ENC] knob to select *CallLog* and press the [Select] key to enter.

4. Rotate the [ENC] knob to *DailedNumbs* and press the [Select] key to choose from the following options:

(1) *DialedNumbs* list → press the [Select] key → Rotate the [ENC] knob to choose the number/contact → press the [Select] key to choose between the following options:

- *View* → Press the [Select] key to check the dialed number → Press the [Back] key to return to the previous level.
- *TimeOfCall* → press the [Select] key to display the call time and duration information → press the [Back] key to return to previous level.
- *SendMsg* → Press the [Select] key to edit the message → Press the [OK] key → rotate the [ENC] knob to choose option of either *SendMsg*, *InsertComMsg*, or *ExitEditor* → Press the [Select] key to confirm the selected option → Return to the previous level.
- *Delete* → 'Are you sure?' text pops up on the screen → press the [OK] key to confirm deletion or press the [Back] key to cancel deletion → return back to previous level.

(2) *Delete All* → 'Are you sure?' text pops up on the screen → press the [OK] key to confirm deletion or press the [Back] key to cancel deletion → return back to previous level.

Received Calls

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to select *CallLog* and press the [Select] key to enter.

2. Rotate the [ENC] knob to *ReceivedCalls* and press the [Select] key to choose from the following options:

   (1) *ReceivedCalls* list → press the [Select] key to enter → rotate the [ENC] knob to choose the number/contact → press the [Select] key to choose from the following options:

   - *View* → Press the [Select] key to check the dialed number → Press the [Back] key to return to the previous level.
   - *TimeOfCall* → press the [Select] key to display the call time and duration information → press the [Back] key to return to previous level.
   - *SendMsg* → Press the [Select] key to edit the message → Press the [OK] key → rotate the [ENC] knob to choose option of either *SendMsg*, *InsertComMsg*, or *ExitEditor* → Press the [Select] key to confirm the selected option → Return to the previous level.
   - *Delete* → 'Are you sure?' text pops up on the screen → press the [OK] key to confirm deletion or press the [Back] key to cancel deletion → return back to previous level.

   (2) *Delete All* → 'Are you sure?' text pops up on the screen → press the [OK] key to confirm deletion or press the [Back] key to cancel deletion → return back to previous level.

Missed Calls

- Access the menu, press the [Menu] key and rotate the [ENC] knob to select *CallLog* and press the [Select] key to enter.
- Rotate the [ENC] knob to *MissedCalls* and press the [Select] key to choose from one of the following options:

  (1) *MissedCalls* list → press the [Select] key to enter → rotate the [ENC] knob to choose the number/contact → press the [Select] key to choose from the following options:

  - *View* → Press the [Select] key to check the dialed number → Press the [Back] key to return to the previous level.
  - *TimeOfCall* → press the [Select] key to display the call time and duration information → press the [Back] key to return to previous level.
  - *SendMsg* → Press the [Select] key to edit the message → Press the [OK] key → rotate the [ENC] knob to choose option of either *SendMsg*, *InsertComMsg*, or *ExitEditor* → Press the [Select] key to confirm the selected option → Return to the previous level.
  - *Delete* → 'Are you sure?' text pops up on the screen → press the [OK] key to confirm deletion or press the [Back] key to cancel deletion → return back to previous level.

  (2) *Delete All* → 'Are you sure?' text pops up on the screen → press the [OK] key to confirm deletion or press the [Back] key to cancel deletion → return back to previous level.

9.4 Scan

Scan, Scan list, Scan Mode and Roaming of the radio can be enabled or disabled by following options.

Scan

1. Press the preset [Scan On/Off] key to turn the scan On or Off

or

1. Access the menu, press the [Menu] key and rotate the [ENC] knob in order to select ***Scan*** and press the [Select] key to enter.
2. Rotate the [ENC] knob to ***Scan*** and press the [Select] key to enter.
3. Rotate the [ENC] knob to choose from the following options:

   (1) ***Select List*** → press the [Select] key to enter → rotate the [ENC] knob to choose the desired scan list → press the [Select] key to confirm the selection → 'Set OK!' pops up on the screen → return to the previous level.

   (2) ***Scan On/Off*** → press the [Select] key to turn it On or Off.

   (3) **RoamScan On/Off** → press the [Select] key to turn it On or Off.

Scan List

1. Access the menu, press the [Menu] key and rotate the [ENC] knob in order to select ***Scan*** and press the [Select] key to enter.
2. Rotate the [ENC] knob to ***Scan list*** and press the [Select] key to enter.
3. Rotate the [ENC] knob to the desired scan list and press the [Select] key to enter the list.
4. Rotate the [ENC] knob for below options:

   (1) Choose one of the channels, press the [Select] key to choose from the following options:

   - ***Set Prior*** → press the [Select] key to set the channel to be priority → 'Prior is Set' pops up on the screen → return to the channel list, where the current channel is additionally marked with a P.
   - ***Cancel Prior*** → press the [Select] key to cancel the priority channel → 'Cancelled' pops up on the screen → Return to the channel list, where the 'P' letter disappears on current channel.

- *Channel Del* → press the [Select] key to delete the channel from the scan list → Return to the channel list.

(2) *Channel Add* → press the [Select] key → select zone → select channel to be added → press (OK) to confirm your selection → return to previous level. *Zone list* → rotate the [ENC] knob to choose the Zone → press the [Select] key → rotate the [ENC] knob to choose the desired channel → press the [Select] key to add the selected channel and return to the scan list.

Scan Mode

1. Press the preset [Scan Mode] key to choose the scan mode.

or

1. Access the menu, press the [Menu] key and rotate the [ENC] knob in order to select *Scan* and press the [Select] key to enter.
2. Rotate the [ENC] knob to ***Scan Mode*** and press the [Select] key to enter.

(1) ***Carrier*** - when the radio receives a HF carrier signal while scanning, it will stay at the current channel for a short time until the carrier signal disappears and continue to scanning.

(2) ***Time*** - when the radio receives a HF carrier signal while scanning, it will stay at the current channel for a preset short period (time range is 5...20 sec) and continue with scanning once the preset period is up.

(3) ***Search*** - when the radio receives a HF carrier signal while scanning, it will stay at the current channel and exit the scanning, unless you restart it.

Notes:	*Before any scan mode is selected, please make sure the 'Scan List' is preset in advance, otherwise the scan feature is unable to be activated. When the scan is On, the radio will start to scan all the receivable channels in the list.*

Roam Setting

Roaming and Roam Mode can be enabled or disabled by the following two ways:

1. Press the preset [Roam On/Off] key to turn the roaming On/Off.

or

1. Access the menu, press the [Menu] key and rotate the [ENC] knob in order to select *Scan* and press the [Select] key to enter.
2. Rotate the [ENC] knob to ***Roam Setting*** and press the [Select] key to choose from one of the following options:

(1) **Roam Mode** → press the [Select] key → rotate the [ENC] knob to choose from one of the modes ***Auto***, ***Manual*** or ***RSSI*** → press the [Select] key to confirm the selection and return to the previous level.

Roaming Mode	Description
Auto	Once searching an available repeater from the scan list, the radio will lock to the current available repeater and pause auto roaming. Then, it will connect with the available repeater according to the preset Connect Check Timer. If the connection fails after the preset Connect Time is used up, it will restart the strong signal Auto roaming search.
Manual	Users can manually roam to the next available repeater. Once it is on, all repeater channels in the scan list will be waken up to search the nearest available repeaters until finds an available one. Every time the nearest available repeater is found, a Connect Re-<:heck Timer (Repeater Check Timer) will be enabled. Users can also lock the repeater by short pressing the [OK/Select] key. The next available repeater is not necessarily the one with the largest RSSI value in the channels of the scan list.
RSSI (Strong Signal Roaming)	Once a repeater in the channels of the scan list with RSSI more than preset RSSI threshold value is searched by RSSI mode, the radio will lock to the current channel and pause the strong signal auto roaming. Then it will connect with the current repeater according to the preset Connect Check Timer. If the connection fails after the preset Connect lime is used up, it will restart the strong signal Auto roaming search.

(2) **RSSI Set** → press the [Select] key to display the current RSSI threshold value → rotate the [ENC] knob to adjust the desired value → press the [OK] key to confirm the modification → 'Set Ok!' pops up on the screen and return to the previous level.

Threshold values: Maximum: - 90 dBm
Minimum: - 125 dBm
Increment: -1 dBm

Notes: *The received signal strength (RSSI threshold value) is settable. If the RSSI mode is enabled and the searched repeater RSSI value is more than the preset threshold, the repeater's transmitting signal coverage will be automatically recognized as good, and then the radio will suspend RSSI roaming. The stopped repeater is not necessarily the one with the largest RSSI value in the channels of the scan list.*

(3) ***ConnectChk Timer*** → press the [Select] key to display the current time value (second) → rotate the [ENC] knob to adjust the desired connect check time → press the [OK] key to confirm the modification → 'Set Ok!' pops up on the screen and return to the previous level.

Timer values:	Maximum:	255s
	Minimum:	0s
	Increment	1s

Notes: *When the nearest available repeater is searched by Manual Roaming, the radio will immediately start timing according to the preset dwell time value. If the available repeater is not confirmed by pressing the [OK] key within the preset time, once the timer reaches the preset time, the radio will stop roaming; or restart roaming to find the next available repeater.*

(4) **ReChkTimer** → press the [Select] key to display the current time value(second) → rotate the [ENC] knob to adjust the desired recheck time → press the [OK] key to confirm the modification → 'Set Ok!' pops up on the screen and return to the previous level.

Timer values:	Maximum:	255s
	Minimum:	0s
	Increment	1s

Notes: *When the available repeaters are searched by Auto roaming or RSSI roaming, the radio is confirmed to lock at the currently available repeater and the roaming is paused. Then, the radio will transmit signals at regular intervals based on the preset Connect ReCheck timer to connect with the current repeater. If it fails to connect with the currently available repeater in preset Connect timer of transmission (set on the Connect timer table), the radio will restart Auto Roaming or RSSI Roaming to search any nearest available repeater.*

(5) **ConnectTime** → press the [Select] key to display the current connect time → rotate the [ENC] knob to adjust the desired connect times → press the [OK] key to confirm the modification → 'Set Ok!' pops up on the screen and return to the previous level.

Timer values:	Maximum:	10s
	Minimum:	1s
	Increment	1s

Notes: *No matter which roaming mode is selected, in searching, each repeater channel in the scan list will try to connect with nearby available repeaters based on the preset Connect times. If the pause channel fails to find the available repeaters within the preset Connect times, it will continue to scan the next repeater channel from the list till it finds an available one.*

Precautions for roaming

1. Before any scan mode is selected, please make sure the 'Scan List' is preset in advance, otherwise the scan feature is unable to be activated.

2. When the roaming is activated, the radio will scan all repeater channels (TX/RX channels with different TX- and RX-frequencies) only. It will not scan channels with same TX/RX frequency.

3. When the roaming is activated, if there is no TX/RX channels with different TX- and RX-frequencies (repeater channels) in the scan list, after scanning the current selected scan list, it will exit the roaming function.

4. In roaming searching, if band A is indicated with '➡' icon when PTT button is pressed, the radio will stop roaming and return back to preset Scan reply/transmit Mode to initiate a call. It will continue to roam after the [PTT] key is released.

5. When roaming is on, the radio defaults to scan in the main band (band A). When the main band (band A) is in roaming, channel selection is prohibited. However, menu accessing and setting of main band (band A) can still be made by selecting band A.

6. When the main band (band A) is in roaming, channel and VFO operation and menu accessing and setting of band B still can be made by selecting band B.

9.5 Zones & Channel

The following two ways can be used to select and switch in Zones and channels:

1. Press the preset [Zone switch] key to switch in zones and channels.

or

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to select ***Zone & Channel*** and then press the [Select] key to enter.

2. Rotate the [ENC] knob for the desired zone and press the [Select] key to enter.

3. Rotate the [ENC] knob for the desired channel and press the [Select] key to choose from the following options:

   (1) **Select** → press the [Select] key → change to the selected zone and channel → return to the standby interface.

   (2) **Modify Name** → press the [Select] key → modify the channel name → press the [OK] key to confirm and return to the previous level.

9.6 Local Set

If the basic operation and functions of the menu are allowed by software to set and check, below functions are optional thru accessing the ***Local Set*** menu.

Language

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to choose ***Local Set*** and then press the [Select] key to enter.
2. Rotate the [ENC] knob to choose the ***Language*** and press the [Select] key to enter.
3. Rotate the [ENC] knob to choose the desired Language and press the [Select] key to change.
4. 'Lang is Set' pops up on the screen and return back to the previous level.

Keypadlock

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to choose ***Local Set*** and then press the [Select] key to enter.
2. Rotate the [ENC] knob to choose ***KeypadLock*** and press the [Select] key to enter.
3. Rotate the [ENC] knob to choose the option of ***AutoLock SW*** or ***ManualLock SW*** and press the [Select] key to switch it On / Off.
4. Press the [Back] key to return to the previous level.

Backlight

1. Press the preset [BackLight Auto/On/Off] key.

or

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to choose ***Local Set*** and then press the [Select] key to enter.
2. Rotate the [ENC] knob to choose ***BackLight*** and press the [Select] key to choose from the following options:

   (1) ***BL switch*** → press the [Select] key → rotate the [ENC] knob to choose option of ***BL ON***, ***BL OFF*** or ***Auto*** → press the [Select] key to confirm → return to the previous level.

   (2) ***Brightness*** → press the [Select] key → rotate the [ENC] knob to select desired brightness between 0 and 6 → press the [OK] key to confirm → 'Lightness is Set' pops up on the screen → return to the previous level.

   (3) ***DelayTime*** → press the [Select] key → rotate the [ENC] knob to select a value between 10 and 60 → press the [OK] key to confirm → 'Set OK!' pops up on the screen → return to the previous level.

LED indicator (LEDs)

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to choose ***Local Set*** and then press the [Select] key to enter.
2. Rotate the [ENC] knob to choose ***LEDs*** and press the [Select] key to enter.
3. Press the [Select] key to switch it On or Off.
4. Press the [Back] key to return to the previous level.

Notes:	*If the LED indicator is OFF, it will not light in receiving and transmitting.* *If the LED indicator is On, it will light in receiving and transmitting.*

Display Mode

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to choose *Local Set* and then press the [Select] key to enter.

2. Rotate the [ENC] knob to choose *DisplayMode* and press the [Select] key to enter.

3. Rotate the [ENC] knob to choose from the following options:

   (1) *CHN+Name* → press the [Select] key for the display to show the channel number and the name associated to it → 'DispMode is Set' pops up on the screen → return to previous level.

   (2) *CHN+FREQ* → press the [Select] key for the display to show the channel number and the frequency assigned to it →'DispMode is Set' pops up on the screen → return to previous level.

   (3) *CHN* → press the [Select] key for the display to show just the channel number →'DispMode is Set' pops up on the screen → return to previous level.

   (4) *VFO Mode* → press the [Select] key → VFO Mode is activated -> return to standby screen.

> ***Notes:*** *This may also be accomplished by assigning a function key to [VFO] and pressing that function key. For more details, please check chapter 11.6* Preset Buttons *on page 109.*

   (5) *S/D Mode* → Press the [Select] key to switch it On or Off → press the [Back] key to return to the previous level

> ***Notes:*** *For single band display, the switch should be to its On-position (green). For dual band display, the switch should be to its Off-position (red).*

VOX

1. Press the preset [VOX On/Off] key to turn it On / Off.

or

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to choose ***Local Set*** and then press the [Select] key to enter.
2. Rotate the [ENC] knob to choose ***VOX*** and press the [Select] key to choose from the following options:

   (1)**Vox Switch** → press the [Select] key to turn it On or Off.

   (2)**Vox Level** → press the [Select] key → Rotate the [ENC] knob to choose the desired level between 1 and 12 → press the [Select] key to confirm → 'Level is Set' pops up on the screen → return to the previous level.

   (3)**Vox delay** → press the [Select] key → rotate the [ENC] knob to choose the desired level between 1 and 4 seconds → press the [Select] key to confirm → 'Vox is Set' pops up on the screen -> return to the previous level.

Notes:	*If VOX is on, when the audio amplitude is detected to reach the preset level, the radio will automatically initiate a call without pressing the [PTT] key. The higher the sensitivity level, the smaller the required audio amplitude to trigger VOX. The lower the sensitivity level, the higher the required audio amplitude to trigger VOX.*

Factory Reset

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to choose ***Local Set*** and then press the [Select] key to enter.
2. Rotate the [ENC] knob to choose ***Factory Reset*** and the display shows 'Are you sure restore factory settings?' by pressing the [Select] key.
3. Press the [OK] key to confirm the factory reset, or press the [Back] key to cancel.

Notes:	*If you confirm to restore the factory settings, the radio will be restored with those settings that have previously been saved using the CPS as the radios factory settings. All data like frequencies, channels and etc. set by CPS will overwritten by those as saved for the factory reset procedure. For more details, please check chapter 10.3 FactoryReset on page 93.*

9.7 Parameters

If it is allowed by software, TOT, Power Setting, Repeater Setting, High / Low Power, Time Slot, Repeater settings, Power Saving mode and etc. can be set and/or checked through the Parameters menu.

TOT

The Call Time is for limiting the time of each call, which can be used to avoid affecting the normal communication of other users due to a long-lasting transmission of the radio.

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to choose *Parameters* and then press the [Select] key to enter.
2. Rotate the [ENC] knob to choose *TOT* and press the [Select] key to enter.
3. Rotate the [ENC] knob to choose the *Call Time(s)* between Off, 20...500 sec. and press the [OK] key to confirm.
4. 'Calltime is set' pops up on the screen and the radio returns to the previous level.

TOT time:	Maximum:	500s
	Minimum:	20s
	Increment:	10s

Power

1. Press the preset [High/Low Power option] key to switch the power between high and low.

or

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to choose *Parameters* and then press the [Select] key to enter.
2. Rotate the [ENC] knob to choose *Power* and press the [Select] key to choose between *High Power* and *Low Power* and press the [Select] key to confirm.
3. 'Power is set' pops up on the screen → return to the previous level.

Slot/Repeat

The Slot/Repeat setting is set according to the channel type that currently accesses the menu (Repeater with different TX/RX frequencies or RX/TX with same frequency).

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to choose ***Parameters*** and then press the [Select] key to enter.

2. Rotate the [ENC] knob to choose from the following options:

   If the currently selected channel is setup with different RX/TX frequencies (typically repeater):

   (1) ***Slot/Repeat*** → press the [Select] key to enter

   - rotate the [ENC] knob to choose between either ***Slot 1*** or ***Slot 2*** → press the [Select] key to confirm → 'Set OK!' pops up on the screen → return to the previous level.

   - *Repeat/Off* → press the [Select] key → rotate the [ENC] knob to choose either ***Repeater mode*** or ***Talkaround*** → press the [Select] key to confirm → 'Set OK!' pops up on the screen → return to the previous level.

   > **Notes**: *For more details, please check chapter 5.14* **Repeater / Talk Around** *on page 37.*
   > The functionality may also be accomplished by pressing the preset [Scan On/Off] key to turn the scan On or Off.

   If the currently selected channel is setup with *same RX/ TX frequencies (typically hotspot):*

   (1) ***Slot/Repeat*** → press the [Select] key to enter

   - ***Rx Timeslot*** → press the [Select] key → rotate the [ENC] knob to choose option of either ***ON***, ***Slot 1*** or ***Slot 2*** → press the [Select] key to confirm → 'Set OK!' pops up on the screen → return to the previous level.

   - ***Tx Timeslot*** → press the [Select] key → rotate the [ENC] knob to choose option of either ***ON***, ***Slot 1*** or ***Slot 2*** → press the [Select] key to confirm → 'Set OK!' pops up on the screen → return to the previous level.

   > ***Notes:*** *Most simplex (same RX and TX-frequency) hotspots do not support the TDMA timeslot technique and thus require the* ***Rx Timeslot*** *and* ***Tx Timeslot*** *both to be set to On.*
   > *Fullduplex repeaters in general do use the very same timeslot for TX as well as for RX. That´s why there is no differentiation of* ***Rx Timeslot*** *and* ***Tx Timeslot*** *for those.*

Encryption (ENC Level)

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to choose ***Parameters*** and then press the [Select] key to enter.
2. Rotate the [ENC] knob to choose the desired encryption level of either ***None***, ***Low***, ***Mid*** or ***High*** and press the [Select] key to confirm.
3. 'Set Ok!' pops up on the screen and returns to the previous level.

> ***Notes:*** *If it is allowed by CPS software, enabling this function will help to prevent other users from eavesdropping without authorization. However, encryption is not a necessary requirement for receiving and transmitting. The receiver radio must have the same AES 128 encryption method, level, alias and values as the transmitter radio to decrypt the encrypted voices from each other.*
> ***Amateur radio networks do not allow to use encryption.***

Squelch Level (SQ level)

1. Access the menu, press the [Menu] key and Rotate the [ENC] knob to choose ***Parameters*** and then press the [Select] key to enter.
2. Rotate the [ENC] knob to choose the ***SQ Level*** and press the [Select] key to enter.
3. Rotate the [ENC] knob to select the desired ***Level 1...12*** or normally open (***Level 0***), and press the [Select] key to confirm.
4. 'Sq level is set' pops up on the screen and the radio returns to the previous level.

Wide / Narrow Band (Band)

Processes:

1. Access the menu, press the [Menu] key and Rotate the [ENC] knob to choose ***Parameters*** and then press the [Select] key to enter.
2. Rotate the [ENC] knob to choose ***Band*** and press the [Select] key to enter.
3. Rotate the [ENC] knob to select the desired ***Narrow*** band or ***Wide*** band and press the [Select] key to confirm.
4. 'Set Ok' pops up on the screen and the radio returns to the previous level.

Busy Channel Lockout (BCLO)

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to choose *Parameters* and then press the [Select] key to enter.
2. Rotate the [ENC] knob to choose *BCLO* and press the [Select] key to turn Busy channel Lockout On or Off.
3. Press the [Back] key to return to the previous level.

Signaling

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to choose *Parameters* and then press the [Select] key to enter.
2. Rotate the [ENC] knob to choose *Signaling* and press the [Select] key to enter.
3. Rotate the [ENC] knob to select the choose from the following options and procedures:

   (1) *RX Subaudio* → press the [Select] key to choose from the following options:

   - *Signaling off* → press the [Select] key to turn off the CTCSS/DCS code → 'Set Ok' pops up on the screen and returns to the previous level.
   - *CTCSS* → press the [Select] key → rotate the [ENC] knob to choose the CTCSS code → press the [Select] key to confirm → 'Set Ok' pops up on the screen and returns to the previous level.
   - *DCS* → press the [Select] key → rotate the [ENC] knob to choose the DCS code → press the [Select] key to confirm → 'Set Ok' pops up on the screen and returns to the previous level.
   - *DCS Reverse* → press the [Select] key → rotate the [ENC] knob to choose the DCS Reverse code → press the [Select] key to confirm → 'Set Ok' pops up on the screen and returns to the previous level.

(2) *TX Subaudio* → press the [Select] key to choose from the following options:

- *Signaling off* → press the [Select] key to turn off the CTCSS/DCS code → 'Set Ok' pops up on the screen and returns to the previous level.
- *CTCSS* → press the [Select] key → rotate the [ENC] knob to choose the CTCSS code → press the [Select] key to confirm → 'Set Ok' pops up on the screen and returns to the previous level.
- *DCS* → press the [Select] key → rotate the [ENC] knob to choose the DCS code → press the [Select] key to confirm → 'Set Ok' pops up on the screen and returns to the previous level.
- *DCS Reverse* → press the [Select] key → rotate the [ENC] knob to choose the DCS Reverse code → press the [Select] key to confirm → 'Set Ok' pops up on the screen and returns to the previous level.

CTCSS Phase Reverse (Ctcss Tail)

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to choose *Parameters* and then press the [Select] key to enter.
2. Rotate the [ENC] knob to choose *CtcssTail* and press the[Select] key to enter.
3. Choose one of the options *55Hz*, *120°*, *180°* or *240°* and press the [Select] key to confirm.
4. 'Set OK!' pops up on the screen and returns to the previous level.

9.8 Tone Set

If It is allowed by CPS software, set and check the prompt tones by accessing the Tone Set menu.

Profiles

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to choose *Tone Set* and then press the [Select] key to enter.
2. Rotate the [ENC] knob to choose *Profiles* and press the [Select] key to enter.
3. Rotate the [ENC] knob to choose *General* or *Silent*, and press the [Select] key to confirm the selection.
4. 'Profile is set' pops up on the screen and returns to the previous level.

Key Tone (KeyTone)

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to choose *Tone Set* and then press the [Select] key to enter.
2. Rotate the [ENC] knob to choose **KeyTone** and press the [Select] key to choose from the following options and procedures:

   (1) **KeyRingSW** → press the [Select] key to turn it on or off.

   (2) **KeyRingStat** → press the [Select] key → rotate the [ENC] knob to choose the Key Tone level between 01 and 13→ press the [OK] key to confirm → 'Keytone is set' pops up on the screen and returns to the previous level.

Message Tone (MsgTone)

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to choose *Tone Set* and then press the [Select] key to enter.
2. Rotate the [ENC] knob to choose *MsgTone* and press the [Select] key.
3. Rotate the [ENC] knob to choose the Message Tone ring type between *Off*, *Ring 1*, *Ring 2*, *Ring 3*, *Ring 4* and *Ring 5* → press the [Select] key to confirm → 'RingType is set' pops up on the screen and returns to the previous level.

Private Call Ring Tone (PCallTone)

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to choose *Tone Set* and then press the [Select] key to enter.

2. Rotate the [ENC] knob to choose *PCallTone* and press the [Select] key to choose from the following options and procedures:

   (1) *PCallSW* → press the [Select] key → rotate the [ENC] knob to choose from one of the options of *Rx Begin Tone*, *Rx End Tone*, *Tx Begin Tone* or *Tx End Tone* → press the [Select] key to tick or untick the option → press the [Back] key to return to the previous level.

   (2) *PCallTone* → press the [Select] key → rotate the [ENC] knob to choose the Private Call Tone ring type between *Off*, *Ring 1*, *Ring 2*, *Ring 3*, *Ring 4* and *Ring 5* → press the [Select] key to confirm → 'Tone is set' pops up on the screen and returns to the previous level.

Group Call Ring Tone (G Call Tone)

3. Access the menu, press the [Menu] key and rotate the [ENC] knob to choose *Tone Set*, and then press the [Select] key to enter.

4. Rotate the [ENC] knob to choose *GCallTone* and press the [Select] key to choose from the following options and procedures:

   (1) *GCallSW* → press the [Select] key → rotate the [ENC] knob to choose from one of the options of *Rx Begin Tone*, *Rx End Tone*, *Tx Begin Tone*, *Tx End Tone* → press the [Select] key to tick or untick the option → press the [Select] key to confirm or the [Back] key to return to the previous level.

   (2) *GCallTone* → press the [Select] key → rotate the [ENC] knob to choose the Group Call Tone ring type between *Off*, *Ring 1*, *Ring 2*, *Ring 3*, *Ring 4* and *Ring 5* → press the [Select] key to confirm → 'Tone is set' pops up on the screen and returns to the previous level.

Alert Ring Tone (AlertTone)

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to choose *Tone Set* and then press the [Select] key to enter.

2. Rotate the [ENC] knob to choose *AlertTone* and press the [Select] key to enter.

3. Rotate the [ENC] knob to choose the Alert Ring Tone between *Off*, *Ring 1*, *Ring 2*, *Ring 3*, *Ring 4* and *Ring 5* → press the [Select] key to confirm.

4. 'Tone is set' pops up on the screen and returns to the previous level.

Power On Tone (FM Call Tone)

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to choose *Tone Set* and then press the [Select] key to enter.

2. Rotate the [ENC] knob to choose *FM Call Tone* and press the [Select] key to enter.

3. Press the [Select] key to turn the *PwrOnTone* On or Off.

9.9 Appendix

If it is allowed by CPS software you may set and check GPS, FM Radio, Time, DTMF, HeadSet+Speaker and APRS by accessing the Appendix menu.

GPS

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to choose *Appendix* and then press the [Select] key to enter.

2. Rotate the [ENC] knob to choose *GPS* and press the [Select] key to choose from the following options and procedures:

   (1) *GPS Switch* → press the [Select] key to turn GPS On or Off;

   (2) *GPS Serial Data* → press the [Select] key → rotate the [ENC] knob to choose from one of the options of *GPGGA*, *GPGSA*, *GPGSV*, *GPRMC* → press the [Select] key to tick or untick the option → press the [Back] key to return to the previous level.

Notes:	*All of these options should be checked in order for APRS to work as expected.* *GPGGA: Global Positioning System Fix Data* *GPGSA: GPS DOP and active satellites* *GPGSV: GPS Satellites in view* *GPRMC: Recommended minimum specific GPS/Transit data*

   (3) *GroupInfo* → press the [Select] key to enter the following options and procedures:

   - *GPS Map* → press the [Select] key to display the rough distance between the Radioddity DB25-D and other stations → rotate the [ENC] knob to choose between *GroupMap* and *Location* → press the [Back] key to return to the previous level.

   - *GPS RXMsgs* → press the [Select] key to display the list of received APRS messages → rotate the [ENC] knob to choose the received message → press the [Select] key to display the full APRS data (date, time, longitude,

latitude, altitude, speed) that had been received → press the [Back] key to return to the previous level.

- *GPS Location* → press the [Select] key to display the location information (date, time, longitude, latitude, altitude, speed) of the DB25-D → rotate the [ENC] knob to check GPS / GL received satellites information and signal strength (white: empty signal, red: weak signal, light blue: available signal) → press the [Select] key to return to the previous level.

- *Clear RXMsg* → press the [Select] key to delete the received messages and return to the previous level.

(4) *GPS Upload Chn* → press the [Select] key to check *Zone*, *Chn* and *SendGap* information → press the [Back] key to return to the previous level.

(5) *Calibrator* → press the [Select] key to choose from the following options:

- *Auto* → press the [Select] key to turn the Auto-function On / Off.

- *Manual* → press the [Select] key → Display Time zone and offset compared to UTC (Coordinated Universal Time) → rotate the [ENC] knob to choose the desired time zone → press the [Select] key to confirm → return to the previous level.

Notes:	GPS needs to be allowed by software. Some GPS functions must be preset by software before use. For some GPS functions the radios location must be identified successfully before use. Some GPS functions require other users to have GPS function and their location been successfully identified as well before use. The GPS Distance calculation or the use of some functions is for reference only, which may cause errors due to some unexpected or environmental reasons.

FM Radio

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to choose *Appendix* and then press the [Select] key to enter.

2. Rotate the [ENC] knob to choose *FM Radio* and press the [Select] key to display the FM radio frequency information.

3. Rotate the [ENC] knob to manually select the FM radio frequency or seek the FM radio frequency automatically.

4. Press the [Back] key to exit the FM radio mode and return to the previous level or press the [OK] key to choose from the following options and procedures:

   (1) *Save* → press the [Select] key to save the current FM radio channel.

(2) *FMList* → press the [Select] key to display the list of saved FM radio frequencies → rotate the [ENC] knob to choose the desired frequency → press the [Select] key to select one of the following options:

- *Delete* → press the [Select] key to delete the current FM radio frequency or press the [Back] key to cancel.
- *Play* → press the [Select] key to play the current FM radio frequency or press the [Back] key to cancel.

(3) *TuneMode* → press the [OK] key to choose from the following options and procedures:

- *Manual* → press the [Select] key to select the manual tuning mode → 'Mode is set' pops up on the screen and returns to the previous level.
- *Auto* → press the [Select] key to select the automatic tuning mode → 'Mode is set' pops up on the screen and returns to the previous level.

Time

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to choose *Appendix* and then press the [Select] key to enter.

2. Rotate the [ENC] knob to choose *Time* and press the [Select] key to choose from the following options and procedures:

(1) *Date* → press the [Select] key to display the date and year → rotate the [ENC] knob to change the cursor position (between year, month and day) or input the desired date and year using the numeric keypad of the Speaker-Microphone → press the [OK] key to confirm → 'Date is set' pops up on the screen and returns to the previous level.

(2) *Time* → press the [Select] key to display the time → rotate the [ENC] knob to change the cursor position (minutes and hous) or input the desired time using the numeric keypad of the Speaker-Microphone → press the [OK] key to confirm → 'Time is set' pops up on the screen and returns to the previous level.

(3) *DateForm* → press the [Select] key → rotate the [ENC] knob to choose the desired date form (*Y/M/D*, *M/D/Y* or *D/M/Y*)→ press the [Select] key to confirm → 'Date is set' pops up on the screen and returns to the previous level.

(4) *Use GPS datetime* → press the [Select] key to turn dta&time synchronization with received GPS data On or Off.

Notes: Use GPS datetime is effective only when GPS function is on and successfully positioned.

DTMF

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to choose ***Appendix*** and then press the [Select] key to enter.

2. Rotate the [ENC] knob to choose ***DTMF*** and press the [Select] key to choose from the following options and procedures:

   (1) ***DTMF Switch*** → press the [Select] key to turn it on or off.

   (2) ***DTMF Volume*** → press the [Select] key to display the current local volume → Rotate the [ENC] knob to adjust the volume between Off, 01...12 → press the [OK] key to confirm → 'Set OK!' pops up on the screen and returns to the previous level.

Notes:	*The specified DTMF code tone is only used as an alert tone to the local radio and reminds the user to receive the call. The DTMF code must be preset by CPS software. Notes: For more details, please check chapter 11.9 DTMF Volume on page 116 and 11.9* DTMF code *on page 117*

Headset+Speaker

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to choose ***Appendix*** and then press the [Select] key to enter.

2. Rotate the [ENC] knob to choose ***Headset+Speaker*** and press the [Select] key to enter.

3. Rotate the [ENC] knob to choose from one of the options of ***OFF***, ***LoudSpeaker***, ***MicroSpeaker*** or ***Loud+Mic Spkr*** and press the [Select] key to confirm.

4. 'Set Ok!' pops up on the screen and returns to the previous level.

Notes:	*If **Off** is selected, there is audio output from the external speaker, but no audio output from the Speaker-Microphone.* *If **LoudSpeaker** mode is selected, there is audio output from the external speaker, but no audio output from the Speaker-Microphone.* *If **MicroSpeaker** mode is selected, there is audio output from the Speaker-Microphone, but no audio output from the external speaker.* *If **Loud+Mic Spkr** mode is selected, both the external speaker and the Speaker-Microphone have audio output. This mode is the recommended audio output mode to be used with the Radioddity DB25-D.*

APRS

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to choose *Appendix* and then press the [Select] key to enter.

2. Rotate the [ENC] knob to choose ***APRS*** and press the [Select] key to choose from the following options and procedures:

   (1) ***APRS Type*** → press the [Select] key to change the modes for APRS signaling → rotate the [ENC] knob to choose the desired APRS Type from either ***None***, ***Analog APRS***, ***DMR APRS*** or ***DMR+Analog APRS*** -> press the [OK] key to confirm your selection -> 'Set OK!' pops up on the screen and returns to the previous level.

   (2) ***Analog APRS*** → press the [Select] key to change the parameters for analog APRS → rotate the [ENC] knob to choose the desired parameter → press the [Select] key to select one of the following options :

   - ***PTT Upload*** → press the [Select] key to change the behavior on PTT-press → rotate the [ENC] knob to choose the desired Upload mechanism from either ***Close***, ***TX Start*** or ***TX End*** → press the [Select] key to confirm → 'Set OK!' pops up on the screen and returns to the previous level.

   - ***Upload Power*** → press the [Select] key to change the output power for APRS upload → rotate the [ENC] knob to choose between ***Low Power*** and ***High Power*** → press the [Select] key to confirm → 'Set OK!' pops up on the screen and returns to the previous level.

   - ***Upload Frequency*** → press the [Select] key to display the current transmit frequency → rotate the [ENC] knob to position the cursor within the inputfield → input the frequency using the numeric keypad of the Speaker-Microphone → press the [OK] key to confirm → 'Set OK!' pops up on the screen and returns to the previous level.

   - ***Upload Path*** → press the [Select] key to display the current Upload Path → rotate the [ENC] knob to position the cursor within the inputfield → input the desired Upload Path using the numeric keypad of the Speaker-Microphone → press the [OK] key to confirm → 'Set OK!' pops up on the screen and returns to the previous level.

   - ***Upload Text*** → press the [Select] key to display the current Upload Text → rotate the [ENC] knob to position the cursor within the inputfield → input the desired Upload Text using the numeric keypad of the Speaker-Microphone → press the [OK] key to confirm → 'Set OK!' pops up on the screen and returns to the previous level.

(3) ***DMR APRS*** → press the [Select] key to change the parameters for digital APRS → rotate the [ENC] knob to choose the desired parameter → press the [Select] key to select one of the following options :

- ***APRS Message*** → press the [Select] key to display the list of received APRS messages → rotate the [ENC] knob to choose the received message → press the [Select] key to display the full APRS data (date, time, longitude, latitude, altitude, speed) that had been received → press the [Back] key to return to the previous level.

> ***Notes:*** *If yet no APRS message had been received, 'Commsg empty' pops up on the screen and returns to the previous level.*

- ***Delete APRS Msg*** → 'Are you sure?' pops up on the screen → press the [OK] key to confirm deletion or press the [Back] key to cancel deletion → return back to previous level.

(4) ***Timer*** → press the [Select] key to select the interval for regular APRS beacon transmissions → Rotate the [ENC] knob to choose in 30s intervals between ***OFF***, ***30s*** and up to ***7650s*** and press the [OK] key to confirm → 'Set OK!' pops up on the screen and the radio returns to the previous level.

(5) ***Beacon*** → press the [Select] key to change the location source to be used for the beacon transmission → rotate the [ENC] knob to choose the desired source between ***Preset Beacon*** and ***GPS Beacon*** → press the [OK] key to confirm your selection -> 'Set OK!' pops up on the screen and returns to the previous level.

9.10 Record

If it is allowed by CPS software to set and check recording list, clear record, space info about recording by accessing the Record menu.

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to choose ***Record*** and then press the [Select] key to enter.

2. Rotate the [ENC] knob to make following options:

(1) ***Record Set*** → press the [Select] key -+ Rotate the [ENC] knob to choose between the options ***RX record SW*** and ***TX record SW*** → press the [Select] key to turn the selected option On or Off → press the [Back] key to return to the previous level.

(2) *Record List* → press the [Select] key to display the recording list → rotate the [ENC] knob to choose the desired recording (they are named as follows: <ascending number>_<R/T><DMR_ID>) and press the [Select] key to choose from the following options:

- *Play* → press the [Select] to play the selected recording → return to the previous level after finishing playing.
- *Delete* → press the [Select] key → 'Clearing...' pops up on the screen while all recordings are being deleted → return to the previous level.
- *Information* → press the [Select] key to display the detailed information of the recording.

(3) *Clear record* → press the [Select] key → 'Are you sure?' pops up on the screen → press the [OK] key to confirm deletion or press the [Back] key to cancel deletion and return to the previous level.

(4) *Space Info* → press the [Select] key to display the total recorded time and total recordable time information → press the [Back] key to return to the previous level.

Notes:	*Up to 198h of recording time is possible, depending on the remaining memory allocation of the radio.*

9.11 Device Info

If it is allowed by CPS software, set and check Radio ID, Rx Group List, CH Contact (channel contact) and Version by accessing Device Info menu.

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to choose **Device Info** and then press the [Select] key to enter.

2. Rotate the [ENC] knob to choose from the following options:

(1) *Radio ID* → press the [Select] key to display the Radio ID (DMR ID) → input the desired ID with the numeric keypad of the Speaker-Microphone → press the [OK] key to save → 'Set OK!' pops up on the screen and returns to the previous level.

(2) *RXGrouplist* → press the [Select] key to display the RX-group list (name in top line) and its members of the currently selected channel → Rotate the [ENC] knob to check details → press the [back] key to return to the previous level.

(3) *CH contact* → press the [Select] key to display the contact information (ID, Name, Call Type) of the contact associated with the currently selected channel → press the [Back] key to return to the previous level.

(4) ***Version*** → press the [Select] key to display the Model Number (DB25-D), Firmware Version, Frequency Range (F136-174,F400-480) and Version Date and time → press the [Back] key to return to the previous level.

9.12 Channel Edit

It is supported to check and modify the parameters of Channel or VFO mode by accessing the ***Channel Edit*** mode.

1. In Standby Mode, press and hold the [B/E] key for 3 seconds to enter the ***Channel Edit*** mode.

or

1. Access the menu, press the [Menu] key and rotate the [ENC] knob to choose ***Channel Edit***, and then press the [Select] key to enter.
2. Rotate the [ENC] knob to select the one of the listed parameters.
3. Press the [Select] key to light up the cursor and enter the editing mode.
4. Rotate the [ENC] knob to choose the desired value and press the [Select] key to confirm and save.
5. Press the [Back] key to return to the previous level.

Notes:	*When accessing any sub menu, press the [Back] key to return to the previous level.*

Parameter	Possible Values
Channel Attribution	Digital/Analog/RX:D/A-TX:A/TX:D/A-RX:D
RX Frequency	In the available range of the radio
TX Frequency	In the available range of the radio
FreqStep	5kHz/6.25kHz/10kHz/12.50kHz/25kHz/50kHz/100kHz
Power	High/Low
RXOnly	On/Off
RX_CC	0...15
TX_CC	0...15
Rx Timeslot	Slot 1/Slot 2
Alarm*	Alarm:ON/Alarm:OFF
CallAlert*	ON/OFF
PCallType*	PATCS/OACSU
MsgType	PATCS/OACSU
Permission	Impolite/Polite to CC/Polite To all
RXGroup	OFF/<*self-defined RX-Groups*>
Encpty	Enc:OFF/<*self-defined Encryption alias* >
Contact	Contact:OFF/<*self-defined Contacts* >
Emergency*	Emergency:OFF//<*self-defined Digital Alarm lists*>
Bandwidth	Wide/Narrow
TxSubType	Signaling Off/CTCSS/DCS/DCS Reverse
TxSubItem	The signal codes of CTCSS, DCS and DCS Reverse
RxSubType	Signaling Off/CTCSS/DCS/DCS Reverse
RxSubItem	The signal codes of CTCSS, DCS and DCS Reverse
ScanList*	OFF/<*self-defined scanlists*>
Save2CurChn	Save setting to currently selected channel
Save2SelChn	Save settings after selecting target channel from list

*) Not available for digital VFO mode

Notes: *FreqStep is only available for digital VFO mode*

10 Programming with the CPS

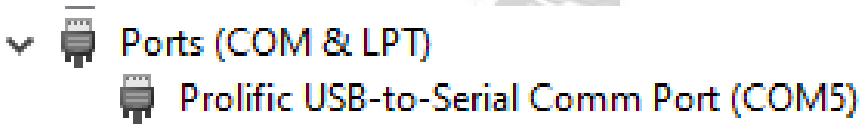
The most convenient way to setup your radio is my using the CPS supplied by Radioddity.

10.1 Install device driver

Quite likely, your Radioddity DB25-D came with a programming cable. This programming cable adds an additional virtual COM-port to your system. It does include a small chip of type Prolific PL2303 that converts signals to and from the USB-side into serial signals in the K1 style connector.

As soon as you plug in the USB side of the cable to your PC, you should hear the 'USB device connected'-sound on your PC. In case your Windows system is not able to automatically install the required driver, you will see an entry, similar to

within Windows device manager. However normally after a few seconds, Windows has automatically loaded and installed the required driver and you should see an entry, similar to



In case the driver did not install automatically, we have prepared a download link on our Radioddity DB25-D support page.

Internally the signals of the cable are connected as follows:

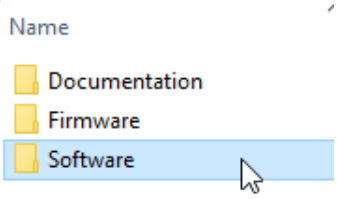
Signal name	K1
Radio RXD	3.5 mm sleeve
Radio TXD	2.5 mm ring
GND	2.5 mm sleeve

You may also use this cable for most of our analog radios that come with a combined 2.5 mm and 3.5 mm TRS K1-style jack.

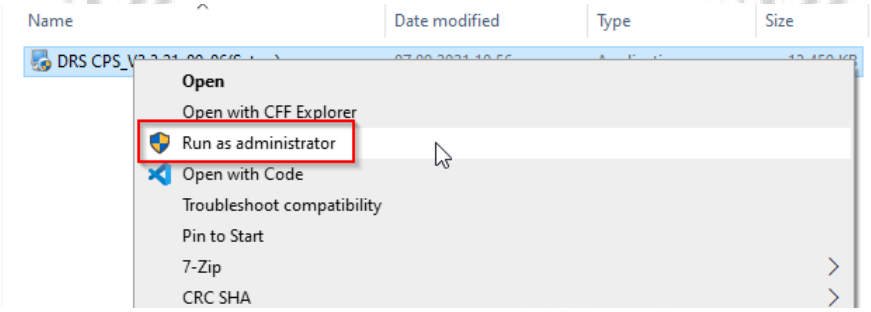
Notes: *Only COM-port 1...8 are currently supported.*

10.2 Install CPS

Download the current Radioddity DB25-D CPS version from our Support area. After downloading, unpack the archive into a temporary directory of your choice. Navigate to the subfolder named 'Software'.

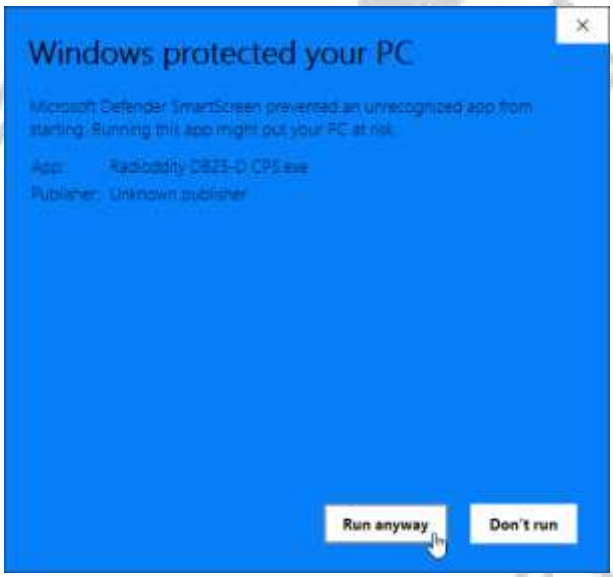


In there, you find the CPS-installer. Execute the installer with admin rights by invoking 'Run as administrator' to start the CPS installation process.



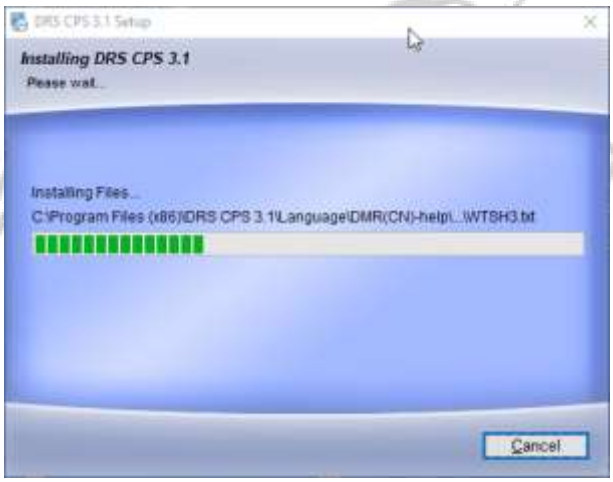
Due to the fact, that the executable isn´t signed, Windows may give you a popup-warning.

Click on the underlined 'More info' and continue by clicking on 'Run anyway'.



An additional confirmation dialog will follow, asking 'Do you want to allow this app from an unknown publisher to make changes to your device?'. Confirm this dialog by clicking 'Yes'.

Follow the standard installation procedure by mostly clicking on 'Next'.

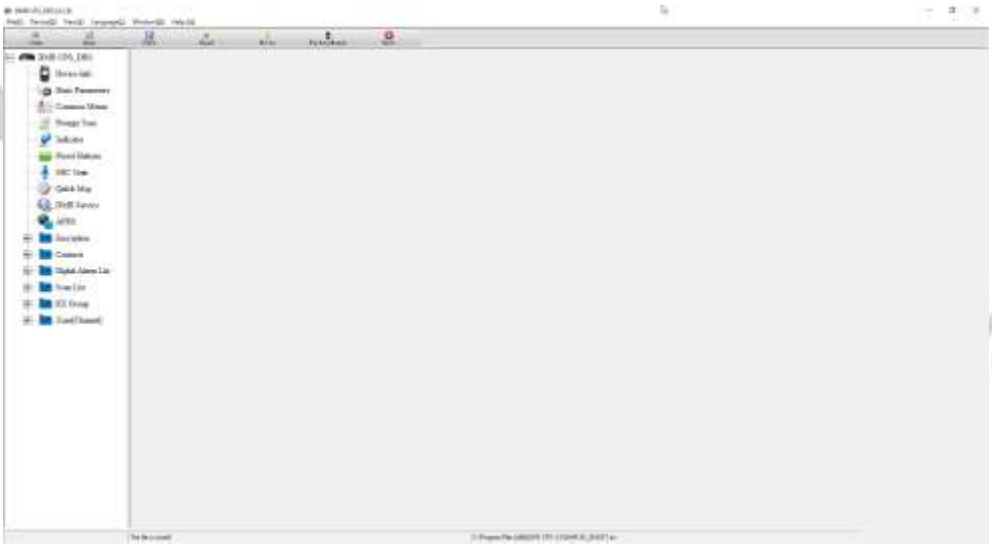


After a while, the installation process finishes with

Click ‘Finish’ to confirm the completion of the installation process.

10.3 Start CPS

During installation of the CPS, a shortcut had been placed on your desktop. Double click on that shortcut to start the CPS. As the e CPS has never been used before, it will be preloaded with certain default data. Whenever you start the CPS again, the last settings will automatically be preloaded. However, we do advise to regularly make backup copies of the current settings. Those settings are often also called 'codeplug'.



Within the bottom line of the CPS you are presented a bunch of statistical data, such as: Number of Contacts, Number of Zones and Number of channels

Whenever changes to parameters have been made, the complete setting ('codeplug') must be written back to the radio. But we will come to that later.

Special functions

Some of the computers keyboard function keys have been assigned special functionality within the CPS.

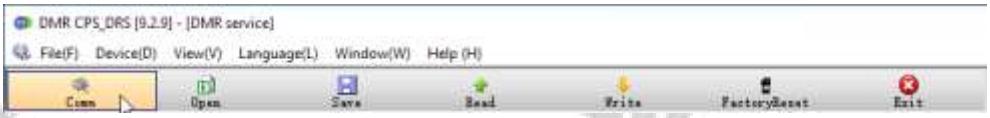
Key	Function
F1	Turn Toolbar On/Off
F2	Turn Navigation bar On/Off
F3	Turn Status bar On/Off
F4	Font
F5	Background Color
F6	Font Color
F7	English
F8	Chinese
F9	Stack-up
F11	Tile horizontal
F12	Tile Vertical
Ctrl+O	Read codeplug from file (File → Open)
Ctrl+S	Write codeplug to file (File → Save)
Ctrl+X	Exit CPS (File → Exit)
Ctrl+K	Radio COM-port (Device → Comm)
Ctrl+R	Transfer data from radio to CPS (Device → Read)
Ctrl+W	Transfer data from CPS to radio (Device → Write)

Safe factory settings to a file

Before you start making your first changes, transfer the data from your radio to your PC and safe them as 'factory settings' for later use. It is always advisable to have the original factory settings at hand.

Connect to the radio

Make sure, that your radio is connected with the supplied programming cable to your Windows machine. Start by clicking on 'Comm' within the toolbar.



You will then be presented a list of COM-ports identified on your Windows machine. This is required before any 'Read'- or 'Write'-Operation from/to the radio.

Select the COM-port that does represent your connected programming cable.

Notes: *Only COM-port 1...8 are currently supported.*

Read codeplug from DB25-D

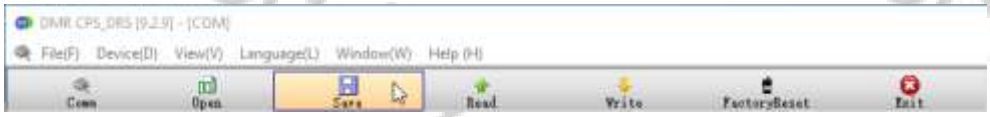
To read the current codeplug as stored on the radio, click on 'Read' within the toolbar to start the transfer of data from the Radioddity DB25-D to the PC.

The radio will display 'Flash Read' whilst data is been transferred from the radio to the CPS.

As soon as all data has been transferred from the radio to the PC, the text 'Flash Read' will disappear.

Safe codeplug to file

If this is the first time you used the READ-function, we advise to safe the data to a file of your choice, such as 'Factory setting of my DB25-D'. To do so, click on the 'Save' button within the toolbar.



A normal file dialog will follow that allows to specify the filename to be used.

Write codeplug to DB25-D

Whenever you have made any changes to your current codeplug, using the CPS and want those changes to become active on the radio, you need to write the changed codeplug back to the radio. To do so, just click on the button, named 'Write' in the toolbar.

The Radioddity DB25-D will display 'Flash Write' whilst data is been transferred from the CPS to the radio.

As soon as all data has been transferred from the CPS to the Radioddity DB25-D, the text 'Flash Write' will disappear.

Open existing codeplug

Codeplugs that have previously been saved to a file can be loaded into the CPS at any time. To do so, click on the 'Open' button within the toolbar.

A normal file dialog will follow.

FactoryReset

The FactoryReset-functionality is slightly different to what you may be used to with other radios. Whilst it is actually activated on the Radioddity DB25-D itself, using 'MENU → Local Set → FactoryReset', the settings that will then be restored to the radio may be predefined using the FactoryReset-functionality within the CPS.

To do so, just open your favorite codeplug (the one you want to become the 'Factory-defaults' one) within the CPS. Then, instead of writing it to the DB25-D using the normal 'Write'-function, click on the 'FactoryReset' button within the toolbar in order to have the codeplug being written to the radio similar to the normal 'Write'-function. But this time it will be saved to a special area within the radios memory for later use with the FactoryReset-function of the radio itself.

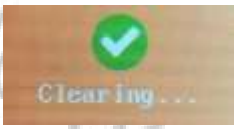
The radio will display 'Write Factory' whilst data is been transferred from the CPS to the Radioddity DB25-D.

As soon as all data has been transferred from the CPS to the Radioddity DB25-D, the text 'Write Factory' will disappear.

If you now, later on, do activate the FactoryReset on the radio by using 'MENU → Local Set → FactoryReset', you will first be asked if you are sure to restore the factory-settings.

Confirm by pushing the MENU-knob.

Now the settings previously stored as factory-defaults will be restored. You will see a couple of screens on your Radioddity DB25-D.



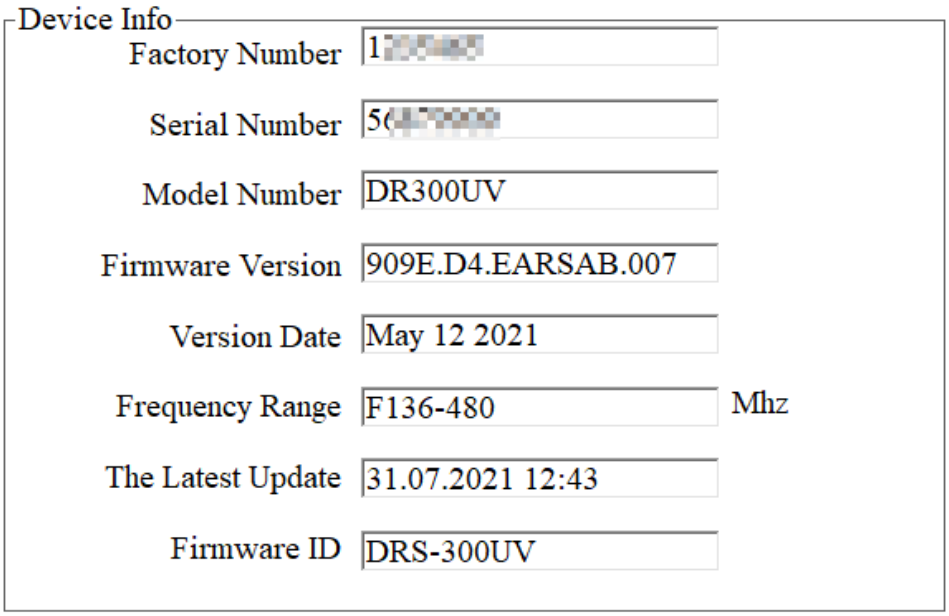
The complete process takes about 15 seconds, depending on the size of the factory-defaults codeplug you previously saved to the radio.

11 Make changes to your settings

In total there are currently 16 menus, but you will find out that some of them are needed just once whilst others are needed more often.

11.1 Device Info

This menu mainly refers to the general information of the device as provided by the manufacturer.



Factory Number

With this number, Radioddity can track the selling country or area of the product.

Notes:	*Data will only be shown in the CPS after the codeplug has been read from the Radioddity DB25-D to the CPS.*

Serial Number

A sequence of numbers and letters to identify the individual device. Every device has a unique serial number, that cannot be amended or edited.

Notes:	*Data will only be shown in the CPS after the codeplug has been read from the radio to the CPS.*

Model Number

A number to indicate the radio type that cannot be amended or edited.

> ***Notes:*** *You may find other radios looking similar to the Radioddity DB25-D and even sharing the very same 'Model Number'. Be careful as to not use any firmware or CPS not downloaded from our website with your Radioddity DB25-D as this may void any warranty.*
> *Data will only be shown in the CPS after the codeplug has been read from the radio to the CPS.*

Firmware Version

It refers to the program-controlled software version. It indicates the non-editable version of firmware.

> ***Notes:*** *Data will only be shown in the CPS after the codeplug has been read from the radio to the CPS.*

Version Data

It is to indicate the date of firmware version from the manufacturer.

Frequency Range

Refers to the device working frequency range.

The Latest Update

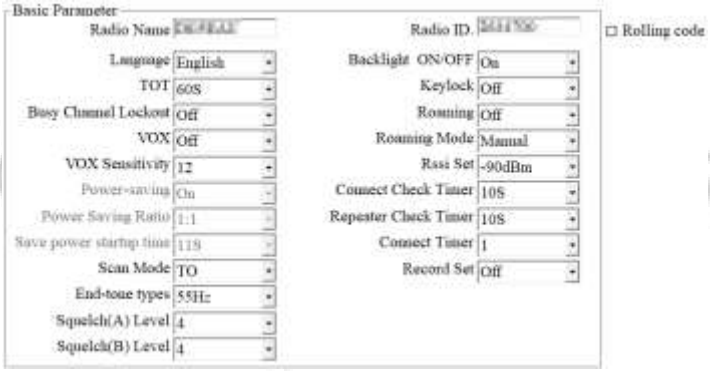
To display the last programmed time and date.

Firmware ID

A unique number to indicate the radio's firmware.

11.2 Basic Parameters

Before starting your first QSO with your new Radioddity DB25-D, do not forget to setup your Radio ID (DMR ID) and your Radio Name (Call Sign). You find those parameters at the very top of the 'Basic Parameters'.



Radio Name

This field represents the name of your radio. And the name can be found on the menu settings of your radio. It can be composed by numbers, symbols, letters, Chinese characters, space, and special characters etc., with a maximum of 16 characters. HAM operators would use their call sign.

Rolling Code

This feature is for companies using larger quantities of the Radioddity DB25-D. If the checkbox is ticked the specified 'Radio ID.' will get increased by one on each 'write' of the codeplug to the next radio.

Language

Users can select a preset language from the device setting as menu display language for the Radioddity DB25-D.

Options: English
Chinese
Default: ***English***

TOT

TOT as abbreviation for Time-Out-Timer defines the longest time allowed for each transmission.

Options: Maximum: 500s
Minimum: 20s
Increment: 10s
Default: ***300s***

Busy Channel Lockout

In literature, this parameter is often abbreviated as BCL. Users are allowed to turn the Busy Channel Lockout on or off.

Options: On Turn on the busy channel lockout. The radio will be forbidden to transmit when receiving signals to protect the call quality of other users on this frequency.
Off Turn off the busy channel lockout. The radio is allowed to transmit while receiving signals.

Default: ***Off***

VOX

Users are allowed to turn VOX on or off. With VOX turned on, once the microphone detects audio, the radio will automatically transmit.

Options: On Users don't have to press PTT to transmit.
Off Users need to press PTT to transmit.

Default: ***Off***

VOX Sensitivity

This is used to adjust the VOX sensitivity level. There are 12 levels, where level 1 is the lowest and level 12 is the highest. It is recommended to choose a suitable level to avoid triggering of VOX accidentally or having difficulty to trigger VOX at all. Some elements, such as component type, using surroundings, speaking volume of the user and so on, should be considered so as to choose the most suitable level to achieve the best performance.

Options: Maximum: 12
Minimum: 1
Stepping: 1

Default: ***4***

Power-saving

This option and its value is not user changeable.

Default: ***On***

Power Saving Ratio

This option and its value is not user changeable.

Default: ***1:1***

Save power startup time

This option and its value is not user changeable.

Default: 10 s

Scanmode

Users can enable this function according to the working environment and actual needs to set scan mode, so as to improve scan efficiency.

Scan mode options: CO: Carrier Off scan: Once radio receives a scanned signal over the air, it will stay on that channel until signal disappears, and then continue to scanning.
TO: Time-Out scan: Once the radio receives a scanned signal over the air, it will stay on that channel for a preset time (5/10/15/20s). Once time is over, it will continue to scan.
SE: Seek scan: Once the radio receives a scanned signal over the air, it will stay on that channel and stop scanning until you re-activate to scanning.

default: CO

Notes:	*Whilst band A is selected, band B will no longer be monitored during scanning. Whilst band B is selected, band A will no longer be monitored during scanning. The non-selected band is used for the scanning process.*

End-tone types

Users can enable this function according to the working environment and actual needs to set the end-tone type after PTT has been released, so as to facilitate the receiver to turn off its speaker in advance.

End-tone options: 55HZ
120°
180°
240°

Default: 55HZ

Squelch (A) Level

When receiving a carrier signal and its strength reaches the preset squelch level, the audio circuit will be turned on. This setting is for the upper (A) channel).

Selection range:	Maximum value:	9	
	Minimum value:	1	
	Increment:	1	
	Squelch circuit off	0	(audio circuit normally open)
Default:		***4***	

Notes: *The higher the squelch level value is set, the stronger the carrier signal needs to be.*

Squelch (B) Level

When receiving a carrier signal and its strength reaches the preset squelch level, the audio circuit will be turned on. This setting is for the lower (B) channel).

Selection range:	Maximum value:	9	
	Minimum value:	1	
	Increment:	1	
	Squelch circuit off	0	(audio circuit normally open)
Default:		***4***	

Notes: *The higher the squelch level value is set, the stronger the carrier signal needs to be.*

Radio ID

You can program a unique ID to identify your radio. The other radios can use that ID to call you. For example, to initiate a private call or send a text message.

ID editable range:	Max:	16776415
	Minimum:	1
	Increment:	1
Default:		***<empty>***

Notes: *If the radio is used for DMR amateur radio, this is the place to setup your DMR ID. Never ever use a DMR ID that is not assigned to you.*

Backlight ON/OFF

Users can enable this feature based on working environment and their actual needs. It will help to save battery power, and prolong battery life.

Options: Off Screen Background Light is on the darkest condition.
On Screen lights on.
Auto Screen Background will turn off automatically if there is no operation within 1 minute.

Default: ***On***

Keylock

User can lock or unlock the keypads according to their actual needs.

Options: Off Turn off keylock feature.

Auto Keypad will be locked automatically if there is no operation within 1 minute. Long press the Menu-key (normally the channel knob) to unlock the keyboard.

Manual Long press the Menu-key (normally the channel knob) to lock or unlock the keyboard.

Auto&Manual Keypad will be locked automatically if there is no operation within 1 minute. Long press the Menu-key (normally the channel knob) to lock or unlock the keyboard.

Default: ***Off***

Roaming

Users can enable this function according to the working environment and their actual needs to specify if the radio should directly start roaming after booting up.

Options: Off Do not start roaming after booting up.
On Start roaming after booting up.

Default: ***Off***

> ***Notes:*** *The function may be assigned to one of the functrion keys. For more details, please check chapter 11.6* **Preset Buttons** *on page 109.*

Roaming Mode

Users can enable this function according to the working environment and their actual needs.

options:	Auto	When scanning a roaming list, the radio will automatically switch to the repeater channel with the strongest signal.
	Manual	When scanning a roaming list, the radio will automatically switch to the repeater channel with the strongest signal and exit the scan roaming.
	Strong RSSI Priority	When a repeater signal is higher than the specified RSSI threshold, the radio will switch to that repeater channel automatically.

Default: ***Auto***

RSSI threshold

When the radio is set for 'Auto' roaming scan and scanned the largest RSSI value of the members of the [Scan/Roam list], it will lock to the current member channel with the largest RSSI value and stop the strong signal automatic roaming. Then the radio will trigger the 'Repeater Check Timer' for handshake confirmation with the current channel repeater based on the preset connect times. If a handshake is not confirmed with the repeater within the preset connect times, the radio will restart the strong signal automatic roaming search for a repeater with the largest RSSI in the member list.

Threshold values:	Maximum:	- 90 dBm
	Minimum:	- 125 dBm
Recommendation :		***- 100 dBm***

Connect Check Timer

When radio on Manual roaming scan and scanned an available repeater, it will pause at the repeater channel based on your preset connect check timer. Now, press 'OK' to select the repeater. The radio will restart roaming scan for the nearest repeater or available base station if you do not press 'OK' within preset time.

Timer values:	Maximum:	255s
	Minimum:	0s
Recommendation:		***60S***

Repeater Check Timer

When auto roaming or strong RSSI priority scanned an available repeater, radio will lock into the current repeater channel and stop roaming scan. Then radio will pause at the current channel and issue a Repeater check timer at a preset connect times for handshake confirmation with the current repeater. If fail to handshake with the current repeater, radio will restart auto roaming search for each of the nearest repeater or available base station.

Timer values:	Maximum:	255s
	Minimum:	0s
Recommendation:		***60S***

Connect Time

When auto roaming or strong RSSI priority scanned an available repeater, radio will lock into the current repeater channel and stop roaming scan. Then radio will pause at the current channel and issue a Repeater check timer at a preset interval for handshake confirmation with the current repeater. If a handshake is not confirmed with the repeater within the defined connect time, the radio will continue with the strong signal automatic roaming search for the nearest repeater or available base station.

Possible values:	Maximum:	10
	Minimum:	1
Recommendation:		***3***

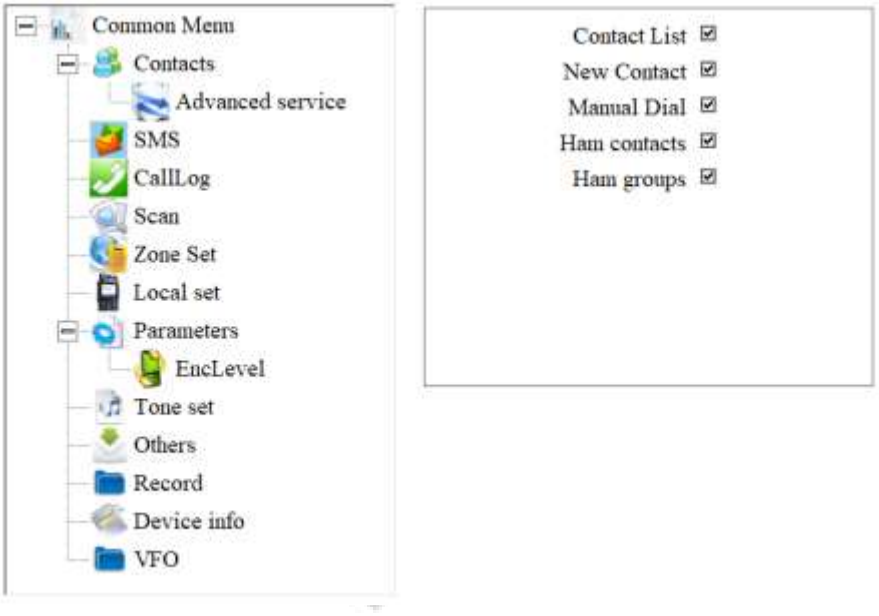
Record Set

Users can enable this function according to the working environment and their actual needs to set recording functions.

Options:	Off	Close the recording.
	RX	Record the received voice whenever radio is receiving
	TX	Record the voice call whenever radio is transmitting
	TX/RX	Record the transmitting and receiving voice call
Default:	***OFF***	

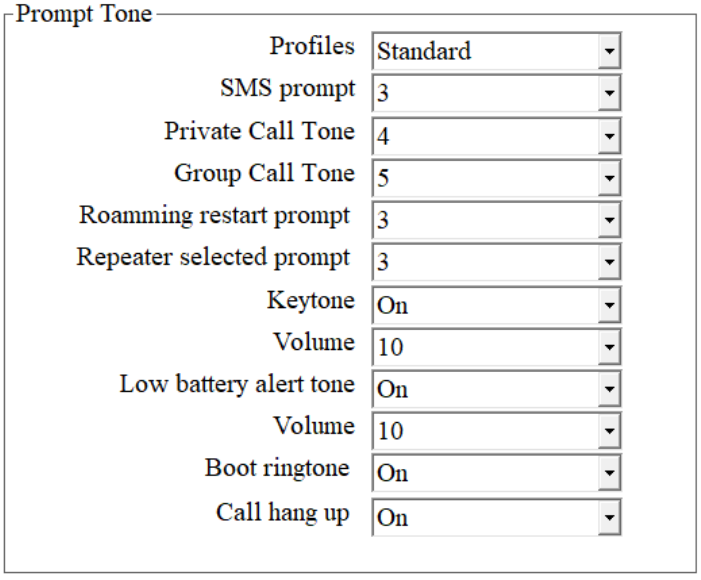
11.3 Common Menus

Users can disable or enable some menu options to show on the radio screen, to prohibit or allow users to check and operate the menu items from the radio screen menu. Users can tick '☑' the various boxes next to the option, to allow users to check or program the corresponding menu item.



11.4 Prompt Tone

You can turn on or off all sounds and prompt tones thru this parameter, or just set partial prompt tones of specific radio parameters.



Profiles

Select a predefined audio profile.

Mode Options: Standard All prompt tones of radio parameters are on
Silent All prompt tones of radio parameters are off
Default: ***Standard***

SMS prompt

Once receiving a message, the message Tone will be heard if this option is selected.

Mode Options: off, 1~5
Default: ***3***

Private Call Tone

Once receiving a private call, the Private Call Tone will be heard if this option is selected.

Mode Options: off, 1~5
Default: ***4***

Group Call Tone

Once receiving a group call, the Group Call Tone will be heard if this option is selected.

Mode Options: off, 1~5
Default: ***5***

Roaming restart prompt

Users can select the 'Roaming restart prompt' option to play a prompt whenever the radio restarts roaming.

Mode Options: off, 1~5
Default: ***3***

Repeater lock prompt

Users can use the 'Repeater lock prompt' option to play this prompt when the radio scanned for a repeater and locked to it.

Default: ***3***

Keytone

You can turn on or off 'Keytone' thru this parameter.

Options: On Turn on Keytone
Off Turn off Keytone
Default: *On*

Keytone volume

You can increase or decrease the 'Keytone volume' thru this parameter.

Volume Range: Maximum: 13
Minimum: 1
Increment: 1
Default: *10*

Low Battery Alert tone

After selecting it on, low battery alert will be heard when battery voltage is less than preset battery power level, which reminds you to charge or change the battery pack.

Options: On Turn on Low Battery Alert
Off Turn off Low Battery Alert
Default: *On*

Low Battery Alert volume

You can choose the volume of Low Battery Alert thru this parameter.

Volume Range: Maximum: 13
Minimum: 1
Increment: 1
Default: *10*

Boot ringtone

User could turn on or off the tone for radio power ON through this parameter.

Options: On Turn on the power on prompt tone
Off Turn off the power on prompt tone
Default: *On*

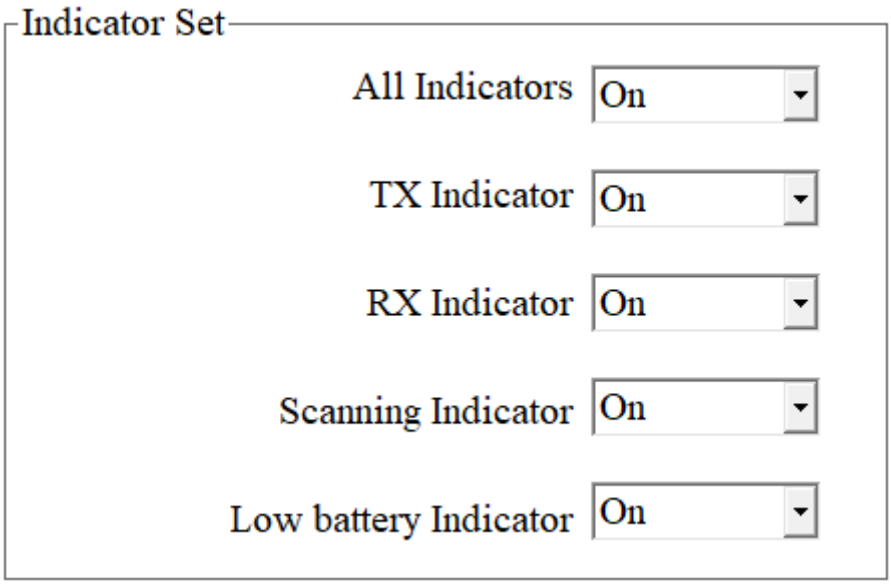
Call hang up

This parameter is only been evaluated in digital mode. Depending on the settings of 'DMR Service' -> 'Group call hang time' and 'Private call hang time', a sound will be played (if this parameter is set to on), whenever the corresponding time period has exceeded.

Options: On Turn on Call hang up
Off Turn off Call hang up
Default: ***On***

11.5 Indicator

You can enable or disable some status indicators thru this menu.



All Indicators

You can activate or disable all working status indicators of the radio thru this parameter.

Options: On Turn on all working status indicators of the radio
Off Turn off all working status indicators of the radio
Default: ***On***

TX Indicator

You can activate or disable the working status of the LED indicator for transmitting thru this parameter.

Options: On LED indictor is on when the radio is transmitting
Off LED indictor is off when the radio is transmitting
Default: ***On***

RX Indicator

You can activate or disable the working status of the LED indictor for receiving a signal thru this parameter.

Options: On LED indictor is on when the radio is receiving
Off LED indictor is off when the radio is receiving
Default: ***On***

Scanning Indicator

You can activate or disable the working status of the LED indictor for scanning thru this parameter.

Options: On LED indictor is on and flashing when the radio is scanning
Off LED indictor is off when the radio is scanning
Default: ***On***

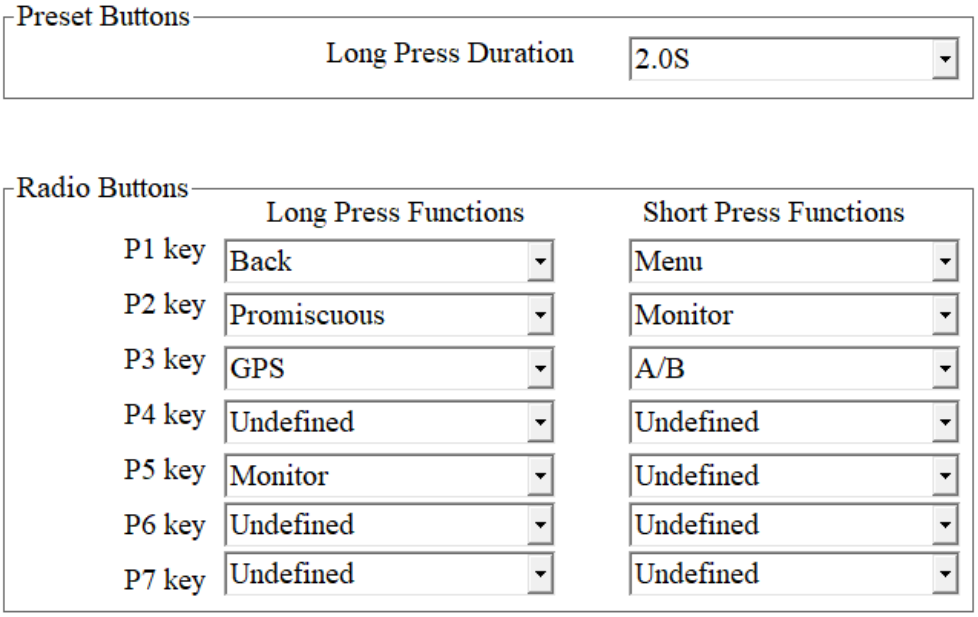
Low battery Indicator

You can activate or disable working status of the LED indicator for battery voltage being less than preset battery power level thru this parameter.

Options: On LED indictor is on and flashing when the battery voltage is less than preset battery power level
Off LED indictor is off when the battery voltage is less than preset battery power level
Default: ***On***

11.6 Preset Buttons

Users can define the buttons through this menu.



Long Press Duration

You can distinguish using functions between Long Press and Short Press thru this parameter.

Options: Longest: 5.0s
Shortest: 0.5s
Increment: 0.5s
Default: ***2.0s***

Possible settings are as listed in the following paragraph.

Notes:	*Short Press: press and release quickly* *Long Press: press and hold for programmed time length (0.5 s – 5.0 s)*

Available Function for the Preset Buttons

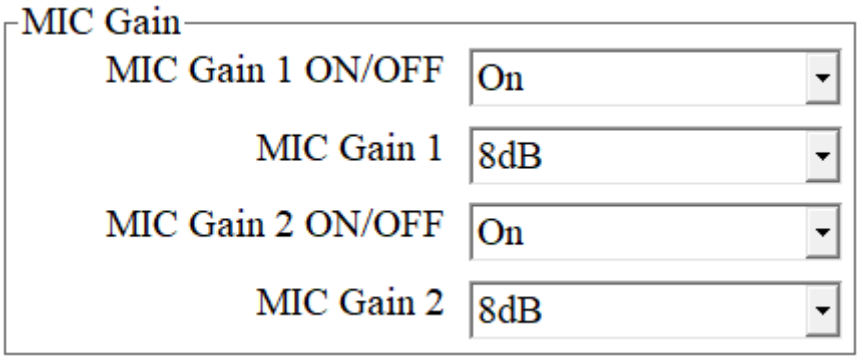
Type	Features	Description
	Undefined	Preset Button is not assigned to any special function
	High /Low Power	Allows users to switch between high power and low power
	Backlight Auto/ON/OFF	Turn on and off the radio screen backlight
	Keylock	To lock or unlock the radio keypads
	VOX ON/OFF	To turn VOX feature of the radio On and Off
	Zone Switch	To change from selected Zone to new Zone
	Scan On/Off	Enable or disable radio scanning feature
	Scan Mode	Select the desired scan mode (switch between SE, TO and CO mode)
	Repeater / Talk Around	Switch between Repeater and Talk Around Mode
	Emergency Alarm ON/OFF	Make an emergency alarm call or stop sending an emergency call. ***Notes**: Not used within HAM networks*
	Encryption On/Off	Turn radio encryption On or Off. ***Notes:** Not allowed within HAM radio networks*
	Contacts	Access to contact list to make a call or activate any other additional call feature
	SMS	Access to Message items
	Radio Revive	Remotely revive a disabled (killed) radio. (Being available only if enabled on target radio)
	Radio Detection	Detect and confirm if the radio is within reach without sending any indication or making visual inspection. (Being available only if enabled on target radio)
	Radio Kill	Disable a target radio remotely, which can protect stolen or missed radios being used by others. (Being available only if enabled on target radio)
	Remote Monitor	Remotely activate Mic and Transmitter of a target radio, and create a call silently without sending any indication or visual inspection message to the target radio, etc. (Being available only if enabled on target radio)
	Monitor	Turn On/Off the radio RX squelch circuit. Receive weak analog signals
	Permanent Monitor	Permanent Monitor is same as Monitor feature, which is allowing you to monitor the channel to make sure it is not occupied before transmitting; their difference is once Permanent Monitor is on, the radio will always be in this Monitor mode, till you exit it.
	1750Hz	To transmit a 1750 Hz signal. (analog pilot tone)
	DTMF On/Off	To turn DTMF on or off

Type	Features	Description
	Roam On/Off	To turn Roaming scan On or Off
	GPS	To turn GPS On or Off
	Menu	Press assigned Preset Button to access the menu without pushing the channel knob
	Up	Emulating the microphones Up-Key
	Down	Emulating the microphones Down-Key
	Back	Emulating the back button of the radio base on one of the microphones programmable keys (P4...P7)
~	DQT/QT	Switch between QT, DQT and DQI and no signaling QT is the equivalent to CTCSS DQT is the equivalent to DCS DQI is the equivalent to DCS-inverted
	A/B	Emulating the B/E button of the radio base on one of the microphones programmable keys (P4...P7))
	Volume	Emulating thze Volume button of the radio base on one of the microphones programmable keys (P4...P7))
~	VFO	Turn VFO mode On or Off
⎍	Promiscuous	Turn Promiscuous mode On or Off

11.7 Mic Gain

You can turn the gain for the Microphone-signal on or off and also set the MIC gain level of the Radioddity DB25-D.

MIC Gain 1 refers to a microphone attached to the K1-socket at the left side of the radio and requires also MIC Gain 2 to be in its ‘ On’ position. MIC Gain 2 refers to the Speaker-Microphone that comes with the radio and is connected via the front RJ45-Socket.



MIC Gain 1 ON/OFF

MIC Gain 1 is only active, if MIC Gain 1 and MIC Gain 2 are both turned on.

Options: On Turn on MIC Gain 1 feature.
Off Turn off MIC Gain 1 feature.
Default: ***On***

MIC Gain 1

The transmitted radio microphone audio level will be amplified in accordance with the setup gain ratio of ' MIC Gain 2' plus those of ' Mic Gain 1'.

Option: Maximum: 20 dB
Minimum: 0 dB
Stepping: 4 dB
Default: ***8 dB***

Notes: *This option is effective ONLY when the status of the MIC Gain 1 and MIC Gain 2 are both 'ON'.*

MIC Gain 2 ON/OFF

You can turn on or off the MIC Gain 2 feature of the microphone attached to the RJ45-socket at the front of the DB25-D and with the parameter turned 'On', the transmitted radio microphone audio level will be amplified in accordance with the setup gain ratio of ' MIC Gain 2'. It is advisable to align the gain for the same total volume level heard by the receiving station as other stations. Within the DMR Brandmeister network, the parrot functionality is excellent for checking the own volume level.

Options: On Turn on MIC Gain 2 feature.
Off Turn off MIC Gain 2 feature.
Default: ***On***

MIC Gain 2

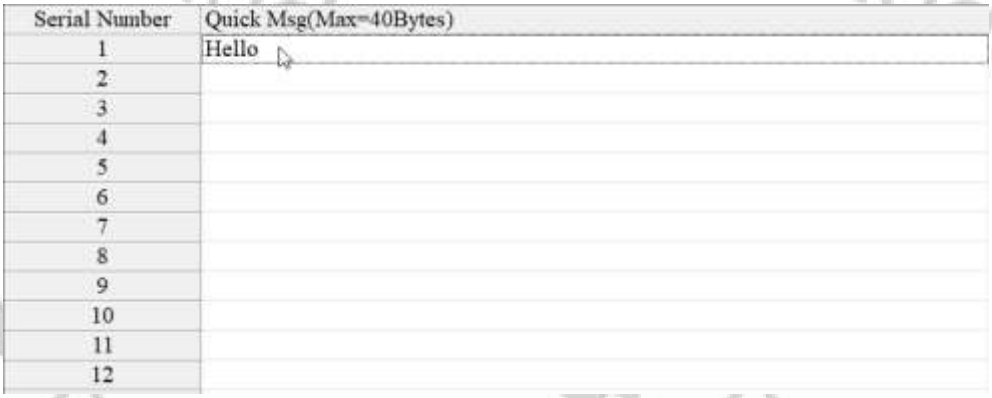
The transmitted audio of the Speaker-Microphone that´s connected to the front RJ45-socket will be amplified according to value defined by 'MIC Gain 2'.

Option: Maximum: +43 dB
Minimum: 0 dB
Stepping: 1 dB
Default: ***8 dB***

Notes: *This option is effective ONLY when 'MIC Gain 2 ON/OFF' is set to 'ON'.*

11.8 Quick Msg

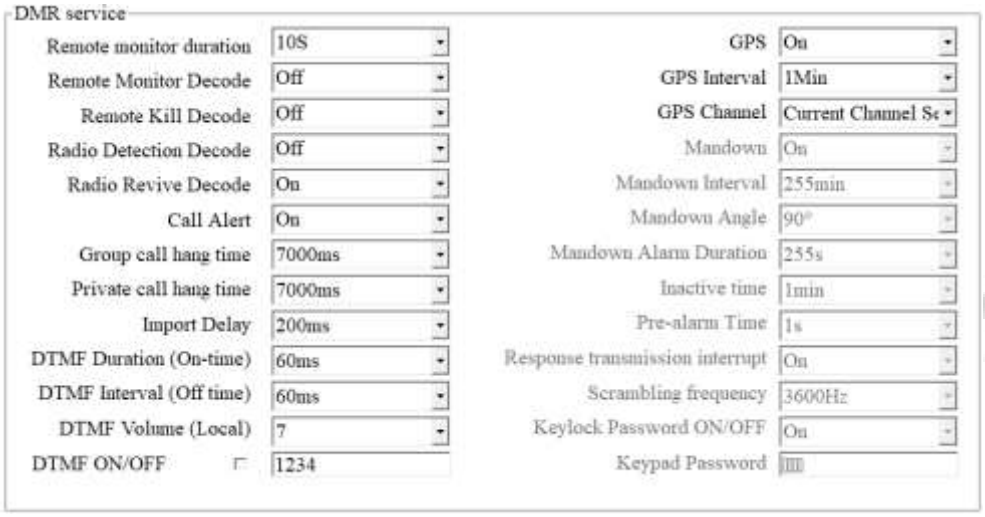
The users can pre-program up to 100 messages, each message content up to 40 characters. Valid characters include alphanumeric characters, spaces, and special characters. Users can access the function through the Message menu function.



Serial Number	Quick Msg(Max=40Bytes)
1	Hello
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	

11.9 DMR Service

Users are allowed to turn on or off the advanced services through DMR Services, if required.



Remote monitor duration

By programming, users can program how long the radio will keep the microphone and transmitter on after it receives the remote monitor command from another radio. No visual or audio indication will be shown to your radio.

Options: Maximum: 120s
Minimum: 10s

Stepping: 10s

Default: *10s*

> The functionality may also be accomplished by pressing the preset [Scan On/Off] key to turn the scan On or Off.

Remote Monitor Decode

It allows the radio to receive and deal with the 'Remote Monitor' command. The radio will activate the microphone and transmitter and send the audio activities of the surroundings for the specific time programmed after receiving the 'Remote Monitor' command. No indication will be shown.

Options: On Allow other users to activate and start remote monitor function
Off Do not allow users to access to the remote monitor function

Default: *Off*

> *Notes: The function may be assigned to one of the functrion keys. For more details, please check chapter 11.6* **Preset Buttons** *on page 109.*

Remote Kill Decode

It allows the radio to receive and deal with the 'Remote Kill' command. The radio will be forbidden to be used, which would be useful to protect a stolen or missing radio from being used by others.

Options: On Allow and accept to be killed by other radios
Off Forbid to be killed by others

Default: *Off*

> *Notes: The function may be assigned to one of the functrion keys. For more details, please check chapter 11.6* **Preset Buttons** *on page 109.*

Radio Detection

Users or base station operators can send a 'Radio Detection' command to a target radio to see whether it is active in the system, and without showing any indications.

Options: On Allow and accept to be detected by other radios
Off Forbid other radios to detect this radio

Default: *Off*

> *Notes: The function may be assigned to one of the functrion keys. For more details, please check chapter 11.6* **Preset Buttons** *on page 109.*

Radio Revive

It allows the radio to receive and deal with the 'Radio Revive' command, and activate itself to be used again.

Options: On Allow and accept to be revived by other radios
Off Forbid other radios to revive this radio
Default: ***Off***

> ***Notes:*** *The function may be assigned to one of the functrion keys. For more details, please check chapter 11.6* **Preset Buttons** *on page 109.*

Call Alert

It allows the radio to receive and deal with the 'Call Alert' command, and will reply to it at its convenience.

Options: On Allow the radio to receive the call alert command
Off Forbid the radio to receive call alert command
Default: ***Off***

Group Call Hang Time

The duration that the radio will reply back to a received call or continues the transmitted Talk within a Group Call of the received or transmitted digital Group ID. This allows to answer on a call, although the active talkgroup is not selected within the current channel, but is a member of the RX group that is associated with the current channel. After the specified time has expired, the channel will transmit to the designated contacts (digital group) as programmed for the current channel.

Options: Maximum: 7000 ms
Minimum: 0 ms
Increment: 500 ms
Default: ***3000 ms***

Private Call Hang Time

The free time for Talk Around Private Call after releasing PTT button, which can prevent more calling when you press PTT to transmit every time. In this period, as the channel is free, other radios can still transmit. After the specified time has expired, the channel will transmit to the designated contact as programmed for the current channel.

Options: Maximum: 7000 ms
Minimum: 0 ms
Increment: 500 ms
Default: ***3000 ms***

Import Delay

By setting this parameter, user can set the duration time from the PTT pressed to the first DTMF code sent, when radio call is issued.

Options:	Maximum:	500 ms
	Minimum:	50 ms
	Increment:	10 ms
Default:		***200 ms***

DTMF Duration (On-time)

To change the duration of each DTMF code send by setting this parameter.

Options:	Maximum:	500 ms
	Minimum:	50 ms
	Increment:	10 ms
	Recommendation:	100 ms
Default:		***60 ms***

DTMF Interval (Off-time)

To change the time interval between the end of each DTMF code and the next DTMF code by setting this parameter.

Options:	Maximum:	500 ms
	Minimum:	50 ms
	Increment:	10 ms
	Recommendation:	100 ms
Default:		***60 ms***

DTMF Volume

To adjust the volume of local playback sound of the DTMF code issued by the radio, by setting this parameter.

Options:	Maximum:	12
	Minimum:	off
	Increment:	1
	Recommendation:	8
Default:		***7***

DTMF code

By setting this parameter, users can make the radio send out a set of DTMF codes in advance when PTT is pressed, so as to achieve the effect of a phone ring.

DTMF code supports 11-character (0-9, ABCD*#) composition.

Default: *1234*

> ***Notes:*** *Enabling and disabling of that function may be assigned to one of the functrion keys. For more details, please check chapter 11.6* **Preset Buttons** *on page 109.*

GPS

By setting this parameter, users can turn on the GPS module.

Options: Off Close the GPS
On Open the GPS

Default: *Off*

> ***Notes:*** *The function may be assigned to one of the functrion keys. For more details, please check chapter 11.6* **Preset Buttons** *on page 109.*

GPS interval

Once the GPS feature is activated, The DB25-D will send the GPS data whenever the 'GPS interval' has elapsed.

Options: Max: 250 min
Min: Off (No interval)

Default: *1 min*

GPS channel

Once GPS activated, the radio will send the GPS data to others from the appointed channel. It can be any digital channel including the channel selected by channel selector.

Default: *off*

Mandown

This option and its value is not applicable for the DB25-D. Please ignore it.

Default: *On*

Mandown Interval

This option and its value is not applicable for the DB25-D. Please ignore it.

Default: 255 min

Mandown Angle

This option and its value is not applicable for the DB25-D. Please ignore it.

Default: 90°

Mandown Alarm Duration

This option and its value is not applicable for the DB25-D. Please ignore it.

Default: 255 s

Inactive Time

This option and its value is not applicable for the DB25-D. Please ignore it.

Default: 1 min

Pre-alarm Time

This option and its value is not applicable for the DB25-D. Please ignore it.

Default: 1 s

Response transmission interrupt

This option and its value is not applicable for the DB25-D. Please ignore it.

Default: On

Scrambling frequency

This option and its value is not applicable for the DB25-D. Please ignore it.

Default: 3600 Hz

Keylock Password On/Off

This option and its value is not applicable for the DB25-D. Please ignore it.

Default: On

Keypad Password

This option and its value is not applicable for the DB25-D. Please ignore it.

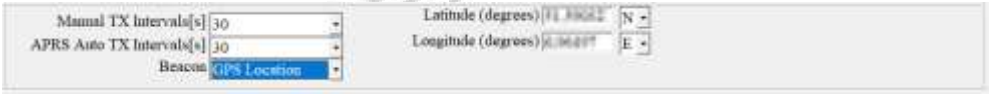
Default: *----*

11.10 APRS

The APRS (Automatic Packet Reporting System) protocol has first been used back in the early 80s and got lot of extensions since then. Within amateur radio and in combination with a GPS receiver it is mainly used to publish the current geographic position to a repeater or an iGate whereas those do forward the information to other sites, such as https://aprs.fi. More details on APRS to be found at http://www.aprs.org/.

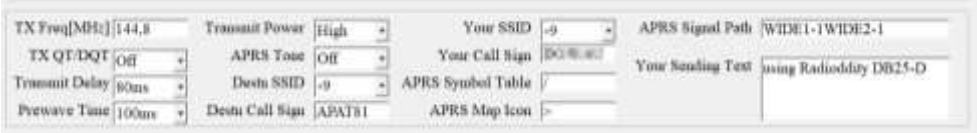
The DB25-D is capable of analog and digital transmission of GPS position data (called 'APRS beacon') using APRS protocol.

Those parameters in common with both are specified within the topmost block of the APRS parameters.



Analog APRS

For Analog APRS data, check which frequency and further parameters are to be used for your region. Within the CPS, those settings required for analog APRS are specified within the following block:



Notes:	*Analog APRS may be assigned to a channel as 'APRS(A)'. However, analog APRS only works on analog channels.*

Digital APRS

For Digital APRS a DMR network is required and the APRS-message is sent to a certain talk group either as Private or as Group call, depending on the DMR network and country/region. A total of 8 possible Digital APRS settings may be defined. Within the channel definition one of those 8 digital APRS settings or the analog APRS setting may be selected for APRS.

No	Report Channel	APRS TG	Report Slot	Call Type	PTT
1	Current channel	0	Current Slot	Private call	Off
2	Current channel	0	Current Slot	Private call	Off
3	Current channel	0	Current Slot	Private call	Off
4	Current channel	0	Current Slot	Private call	Off
5	Current channel	0	Current Slot	Private call	Off
6	Current channel	0	Current Slot	Private call	Off
7	Current channel	0	Current Slot	Private call	Off
8	Current channel	0	Current Slot	Private call	Off

Manual TX Interval[s]

When using analog APRS, an APRS packet (beacon) will be send out on the very first use of the PTT key. This also triggers the 'Manual TX Interval timer'. As long as the timer has not reached its specified value, new APRS packets will not be send when PTT gets depressed. This APRS packet transmission is independent of the specified 'APRS Auto TX Intervals'.

Interval period:	Maximum:	255
	Minimum:	0
	Increment:	1
Recommended:		***30***

APRS Auto TX Intervals[s]

It makes little sense to transmit the current position too often. This parameter defines the interval at which the current position is to be transmitted via APRS protocol.

Interval period:	Maximum:	7650
	Minimum:	0
	Increment:	30
Recommended:		***120***

Beacon

If the DB25-D is mainly used as a radio station at home, we advise to not use GPS but set the GPS-data within the APRS protocol to the fixed location as specified with the parameters 'Latitude' and 'Longitude'

Options: Fixed Location
GPS Location
Recommended: ***GPS Location***

Notes:	*If set to 'Fixed location', the color of the pictogram indicating the GPS-status will remain 'red'. If set to 'GPS Location', the pictogram indicating the GPS-status will initially be colored 'red'. As soon as the GPS receiver has been able to receive at least 3 satellites, the color of the pictogram will change to 'green'.*

Latitude (degrees)

Latitude and Longitude define an exact position on earth. The parameters 'Latitude' and 'Longitude' are used when 'Fixed Location' had been selected for the APRS functionality.

Default: *0*

Notes:	*This parameter is mandatory if using APRS with a 'Fixed Location'.*

Longitude (degrees)

Longitude and Latitude define an exact position on earth. The parameters 'Latitude' and 'Longitude' are used when 'Fixed Location' had been selected for the APRS functionality.

Default: *0*

Notes:	*This parameter is mandatory if using APRS with a 'Fixed Location'.*

TX Freq [MHz]

The frequency specified with this parameter for analog APRS is totally independent of the selected channels frequency. The APRS beacon is transmitted using 1200 Baud AFSK. The frequency data within the following table is subject to change without prior notice.

Region	Frequency
Argentina, Uruguay	144.9300 MHz
Australia	145.1750 MHz
Austria (test)	433.8000 MHz
Brazil	145.5700 MHz
Chile	144.3900 MHz
China	144.6400 MHz
Colombia	144.3900 MHz
Europe	144.8000 MHz
Germany	432.5000 MHz
Indonesia	144.3900 MHz
Japan	144.6400 MHz
Malaysia	144.3900 MHz
Netherlands (test)	430.5125 MHz
New Zealand	144.5750 MHz
North America	144.3900 MHz
Russia	144.8000 MHz
South Africa	144.8000 MHz
Taiwan	144.6400 MHz
Thailand	145.5250 MHz

Default: ***0***

TX QT/DQT

It may be required to setup CTCSS or DCS whenever transmitting your position on analog APRS to a repeater or iGate. This parameter is normally 'off' (no CTCSS/DCS used), but may be assigned any of the supported CTCSS frequencies or DCS/DCS-I values. See Appendix A for supported CTCSS frequencies and DCS/DCS-I values.

Default: ***Off***

Transmit Delay

The two parameters 'Transmit Delay' and 'Prewave Time' are responsible for the delay between automatic PTT activation (for analog APRS) and the actual transmission of the APRS beacon.

Delay period:	Maximum:	5100 ms
	Minimum:	0 ms
	Increment:	20 ms
Recommended:		***80 ms***

Prewave Time

The two parameters 'Transmit Delay' and 'Prewave Time' are responsible for the delay between automatic PTT activation (for analog APRS) and the actual transmission of the APRS beacon.

Time period:	Maximum:	2550ms
	Minimum:	0ms
	Increment:	10ms
Recommended:		***100 ms***

Transmit Power

The output power for analog APRS can be set to either High or Low.

Options:	High	Use 20W output power whenever a stronger signal is required to enhance the transmit range.
	Low	Use the 5W option for short range communication
Default:	***High***	

APRS Tone

If you want to hear the transmitted APRS packet (AFSK modulated) you may set this parameter to 'On'.

Options:	Off
	On
Default:	***Off***

Destn SSID

The specified digit will be appended to the destination call sign

Value: Maximum: -15
Minimum: 0
Increment: -1
Default: ***0***

Destn Call Sign

This parameter is required to specify the destination call sign and may not be left empty for analog APRS.

Recommended: *APAT81*

Your SSID

To further specify the type of station that sends out an APRS beacon, 15 SSIDs have been assigned as follows:

SSID	Definition
0	Your primary station usually fixed and message capable
-1, -2, -3, -4	generic additional station, digi, mobile, wx, etc.
-5	Smartphone user
-6	Satellite or special operations (Camping)
-7	walkie talkies, HT's or other human portable
-8	boats, sailboats, RV's or second main mobile
-9	Primary Mobile (usually message capable)
-10	internet, iGate, echolink, winlink, AVRS, APRN, etc.
-11	balloons, aircraft, spacecraft, etc.
-12	APRStt, DTMF, RFID, devices, one-way trackers, etc.
-13	Weather station
-14	Truckers or generally full-time drivers
-15	generic additional station, digi, mobile, wx, etc.

The specified digit will be appended to your own call sign as specified within the parameter 'Your Call Sign'.

Value: Minimum: 0
Maximum: -15
Recommended: ***-9*** For using your DB25-D in a car

Your Call Sign

This parameter is also mandatory for analog APRS as it does specify your own call sign

Default: *<empty>*

APRS Symbol Table

Initially APRS supported just 192 different symbols. This has recently been enhanced to several thousands. The selected 'APRS Symbol Table' in combination with the selected 'APRS MAP Icon' define the symbols that will be used within sites such as https://aprs.fi to visually show the type of station at its current location. More details on that topic to be found at http://www.aprs.org/symbols.html. Recommended setting for 'APRS Symbol Table': '/'.

Recommended: */*

Notes: *This parameter is only relevant for analog APRS*

APRS Map Icon

Initially APRS supported just 192 different symbols. This has recently been enhanced to several thousands. The selected 'APRS Symbol Table' in combination with the selected 'APRS Map Icon' defines the symbol that will be used within sites such as https://aprs.fi to visually show the type of station at its current location. More details on that topic to be found at http://www.aprs.org/symbols.html . The recommended setting for 'APRS Map Icon' will lead to a car being displayed on sites such as https://aprs.fi.

Examples:	k	Truck
	[	Human person (used for HT)
Recommended:	*>*	*Car*

Notes: *This parameter is only relevant for analog APRS*

The following table lists the resulting icons according to the selected 'APRS Symbol Table' in combination with the selected 'APRS Map Icon'.

Table	!	‘	#	$	%	&	'	(	)	*	+	,	-	.	/	0
/																
\																

Table	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?	@
/																
\																

Table	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
/																
\																

Table	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_	`
/																
\																

Table	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p
/																
\																

Table	q	r	s	t	u	v	w	x	y	z	{	|	}	~		
/																
\																

By selecting the 'APRS Symbol Table' and 'APRS Map Icon', you define the resulting icon that will be displayed on APRS service pages such as https://aprs.fi. The following table list the most used icons and their corresponding 'APRS Symbol Table', 'APRS Map Icon' and 'SSID' that are applicable for your DB25-D.

Notes: *We advise not to take any other combinations besides those listed.*

Description	APRS Symbol Table	APRS Map Icon	Icon	SSID
Human Person (with HT)	/	[		-7
Car	/	>		-9
Truck	/	k		-14

APRS Signal Path

This parameter defines the path your APRS beacon packets should take.

Recommended: WIDE1-1WIDE2-1

Notes:	*There is no space or ',' between 'WIDE1-1' and 'WIDE2-1'. This parameter is only relevant for analog APRS*

Your Sending Text

Within this field a maximum of 60 alphanumeric characters may be defined. Those text will become part of the APRS beacon and will be displayed alongside the Call sign on maps such as https://aprs.fi.

Recommended: ***using Radioddity DB25-D***

No

A total of 8 APRS reporting channel definitions is possible for digital APRS. For each of those definitions, you may specify a different 'Report Channel', 'APRS TG', 'Report Slot', 'Call Type' and 'PTT' setting.

Notes:	*This parameter is only relevant for digital APRS*

Report Channel

You may either specify a specific channel out of all channels that are within your various zone definitions or just use the current channel whenever APRS beacon data is to be transmitted.

Default: ***Current channel***

APRS TG

In digital APRS the APRS data will be transmitted to the talk group, specified by this parameter. The talk group is depending on the network that is used by the defined APRS channel. The following table lists some of those talkgroups as found on the DMR Brandmeister network.

	Talk group (TG)	Report Slot	Call Type
France	208999		Private Call
Germany	262999	2	Private Call
Greece	202999		Private Call
Hungary	216950-216959		Private Call
North America	310999		Private Call
Norway	242999		Private Call
Poland	260099		Private Call
Portugal	268999		Private Call
United Kingdom	234999	2	Private Call

Report Slot

As digital APRS makes use of DMR repeaters we need DMR Tier 2 with its support for time slots. This parameter defines the time slot to be used for transmitting your APRS beacon data. You may either specify a specific time slot or just use the timeslot of the currently selected digital channel.

Default: ***Current Slot***

Call Type

Depending on the digital network used by the specified APRS channel, the transmission of the APRS beacon is either established as a 'Private Call' or as a 'Group Call'. Check with your digital network provider on the required setting. As for digital DMR Brandmeister network, APRS calls are transferred as 'Privat Call'.

Default: ***Private call***

PTT

Define if PTT should trigger the transmission of an APRS beacon

Options: Off Do not send an APRS beacon when radio is keyed up
On Send an APRS beacon when radio is keyed up

Default: ***Off***

11.11 Encryption

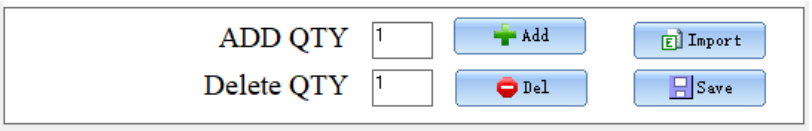
Users are allowed to program a maximum of 10 encryption key names and their 2 Byte encryption key values. The encryption level (low, middle and high) should be programmed to be the same. Otherwise, the encryption value can't be used. If the encryption level is programmed to be 'off', this function can't be used.

> ***Notes:*** *This feature only works with radios of same brand and model.* ***This feature may not be used by HAM operators!***

11.12 Contacts

Contact list

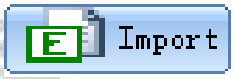
It is convenient for users to create, modify, edit, add and delete digital Contacts in the current channel, or to copy ham contacts or Ham groups to the contact list, which is convenient for you to call an associated contact or talk group on a specified channel for communication. If necessary, you can create, modify, edit, add, delete the contacts and groups that are in your 'Contact list'. The capacity of this contact list can reach up to 2000 private contacts or groups, including 'Contact name' (call sign or Talk group), 'Contact ID' (DMR ID) and 'Call Type' (mainly 'Private Call' or 'Group Call').



Serial No	Contact name	Contact ID	Call Type
1	Parrot	262997	Private call
2	local	9	Group Call
3	regional	8	Group Call
4	Ruhrgebiet	26243	Group Call
5	NRW	2624	Group Call
6	DE	262	Group Call
7	EU	92	Group Call
8	WW	91	Group Call

You may access lists of currently available talk groups as follows:

- Brandmeister network (BM): https://www.pistar.uk/dmr_bm_talkgroups.php
- ThankGodItsFriday (TGFM) network: https://www.pistar.uk/dmr_tgif_talkgroups.php
- DMR+ network: https://www.pistar.uk/dmr_dmr+_talkgroups.php



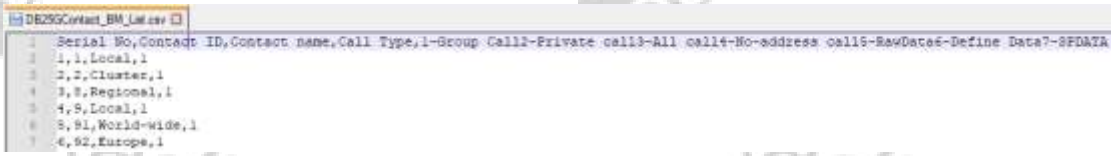
If you press the button 'Import', you will be directed to the default file path of the system, and you can directly import a CSV file of digital contacts. For your convenience we have included a sample file 'contacts 2000.csv '. This sample file has a couple of sample contacts their 'Serial No', 'Contact ID', 'Contact name' and 'Call Type', whilst the following assignment is valid for the different call types:

Call Type #	Call Type
1	Group call
2	Private call
3	All call
4	No-address call
5	RawData
6	Define Data
7	SPDATA

Normally only Call Type 1 (Group call) and Call Type 2 (Private call) are used. If you need to update the imported contacts CSV file, you need to re-import the updated digital contacts CSV file to replace the previously imported contacts.

The format of the CSV file is as follows:

```
Serial No,Contact ID,Contact name,Call Type
```



Notes: *We advise to not use Excel but some plain text editor such as https://notepad-plus-plus.org/ to edit CSV files.*

What 'Import' is for getting CSV file data into the CPS is 'Save' for storing it into a CSV file. If you press the 'Save' button, you will be directed to the default file path of the system in order to directly save the current content of your 'Contact list' to a CSV file of your choice.

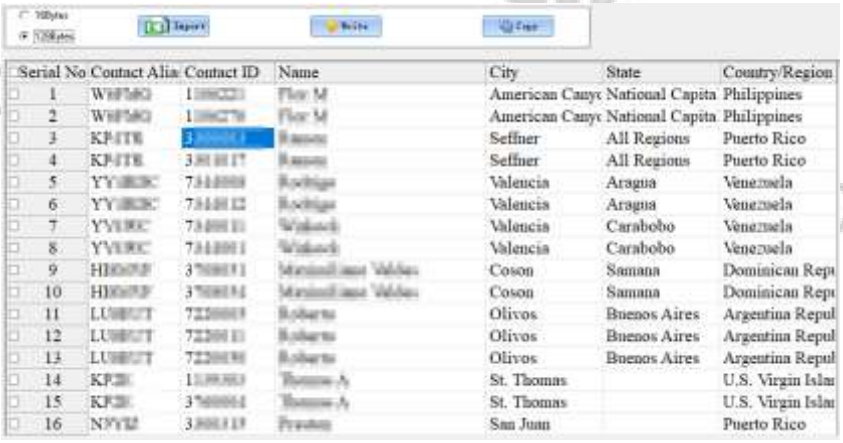
To manually add one or more records ('Serial No's) to the 'Contact list', first specify the total number of records you want to add within the field labeled 'ADD QTY' before you push the button '+ Add'. Be careful as to not exceed the maximum number of allowed records.

To manually delete one or more records ('Serial No's) from your current 'Contact list', first specify the total number of records you want to delete within the field labeled 'Delete QTY', then position the cursor at the Serial No you want to start the delete-process at before you push the button '- Del'. Be careful as to not try deleting more records than actually do exist.

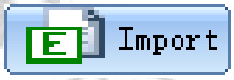
To save the 'Contact list' to the radio, click on 'Write' within the top menu selection of the CPS. Do not forget to do that.

Ham contacts

The 'Ham contacts' is mainly used for high-end users or amateur groups. At the same time, it allows users to create, modify, edit, add and delete the ham contacts list through a CSV file, or download the CSV file of the ham contacts from a designated website or other ways directly import or copy it to the CSV file and then import. This 'Ham Contacts' can hold up to 300,000 Contacts with details such as 'Contact Alias' (call sign), 'Contact ID' (DMR ID), 'Name' (Name of operator), 'City', 'State/Province' and 'Country'.



Serial No	Contact Alia	Contact ID	Name	City	State	Country/Region
1				American Canyc	National Capita	Philippines
2				American Canyc	National Capita	Philippines
3				Seffner	All Regions	Puerto Rico
4				Seffner	All Regions	Puerto Rico
5				Valencia	Aragua	Venezuela
6				Valencia	Aragua	Venezuela
7				Valencia	Carabobo	Venezuela
8				Valencia	Carabobo	Venezuela
9				Coson	Samana	Dominican Repu
10				Coson	Samana	Dominican Repu
11				Olivos	Buenos Aires	Argentina Repul
12				Olivos	Buenos Aires	Argentina Repul
13				Olivos	Buenos Aires	Argentina Repul
14				St. Thomas		U.S. Virgin Islan
15				St. Thomas		U.S. Virgin Islan
16				San Juan		Puerto Rico

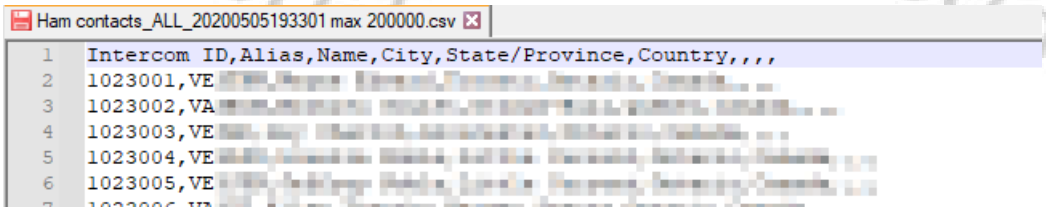


If you press the 'Import' button, you will be directed to the default file path of the system in order to directly import a CSV file of digital contacts. For your convenience we have included a sample file 'Ham contacts_ALL_20200505193301 max 200000.csv ' within the installation directory of the DB25-D CPS. This sample file has more than 160000 records with their 'DMR ID', 'Call sign', 'Full name', 'City', 'State/Province' and 'Country'.

If you need to update the imported contacts CSV file, you need to re-import the updated digital contacts CSV file to replace the previously imported contacts.

The format of the CSV file is as follows:

```
Intercom ID (DMR ID),Alias (Call sign),Name,City,State/Province,Country,,,,
```



Notes: *The 'HAM contacts' CSV-Format does not require a serial number like the normal 'Contact List'.*
We advise to not use Excel but some plain text editor such as https://notepad-plus-plus.org/ to edit CSV files.
Due to a bug within the CPS/firmware, the file needs to be sorted with ascending DMR IDs.

When you have imported the digital contacts CSV file, you can press the 'Write' button to write the list to the radio. Only The 'Ham contacts' will be written to the radio. This is the only way to write the 'Ham contacts' to the radio.

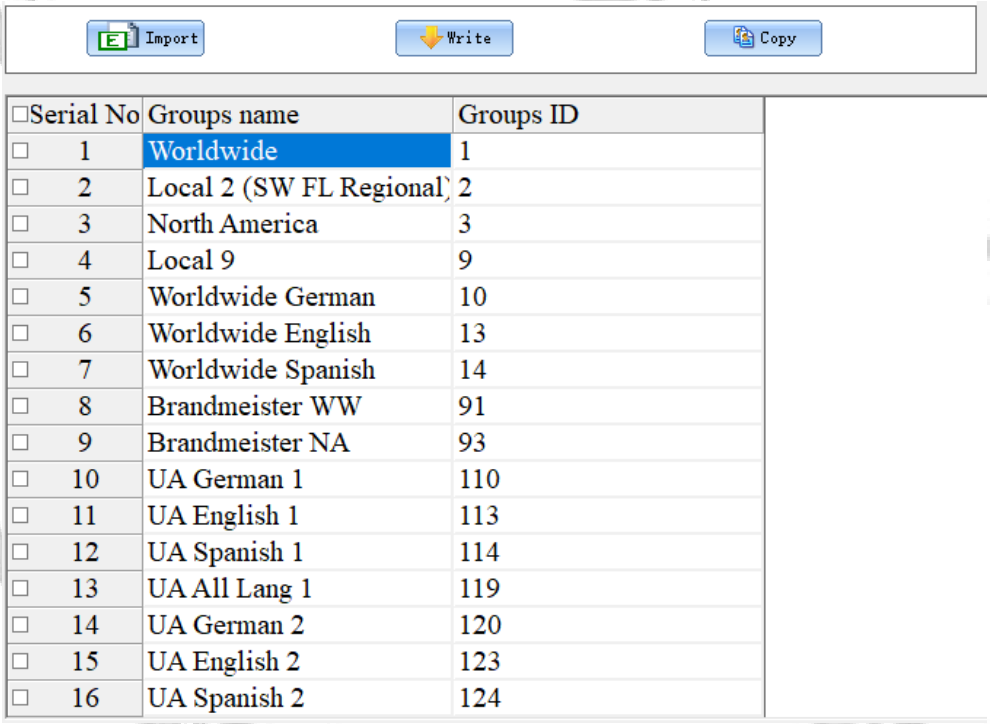
Tip: You can choose what information and details to write using these two options:

◉ 16Bytes ○ 128Bytes	Choose this option, to just write the 'Contact ID' (DMR ID) and the 'Contact alias' (call sign) of the ham contact to the radio. This option significantly minimizes the time to write the contacts to the radio.
○ 16Bytes ◉ 128Bytes	Choose this option, to write all details of the ham contacts including 'Contact ID' (DMR ID), 'Contact alias' (call sign), Name, City, State, Country/Region and address etc. to the radio. This is very convenient for the user to browse and view detailed contact information. However, this option significantly increases the required time to transfer the contact details to the radio. For 200.000 Ham contacts this currently takes about an hour.

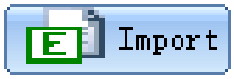
When you have imported the digital contacts CSV file, you can select your desired friend contacts from it, and then tick '☑' in the '☐' box next to serial number. After all the required contacts have been selected, press the 'copy' button to copy the name and number of the selected contacts to the 'Contacts list' which make it more convenient for you to call an associated contact on a specified channel for communication. Once copy successes, 'Has copied to Contacts list successfully' will pop up. If necessary, you can modify, create, edit, add, delete contacts in the contacts list. The 'Contacts list' capacity can be up to 2000 private contacts (or talk groups) including name, number and call attributes.

Ham groups

The ham groups is mainly used for high-end users or amateur groups. At the same time, it allows users to create, modify, edit, add and delete the ham groups through the CSV file, or download a CSV file of the ham groups through a designated website or other ways directly import or copy it to a CSV file and then import. This 'Ham groups' can hold up to 20,000 groups, including details such as digital group name (Talk Group Name) and Group ID (Talk Group ID).



Serial No	Groups name	Groups ID
1	Worldwide	1
2	Local 2 (SW FL Regional)	2
3	North America	3
4	Local 9	9
5	Worldwide German	10
6	Worldwide English	13
7	Worldwide Spanish	14
8	Brandmeister WW	91
9	Brandmeister NA	93
10	UA German 1	110
11	UA English 1	113
12	UA Spanish 1	114
13	UA All Lang 1	119
14	UA German 2	120
15	UA English 2	123
16	UA Spanish 2	124



If you press the 'import' button, you will be directed to the default file path of the system in order to directly import a CSV file of Ham groups. If you need to update the imported 'Ham group' CSV file, you need to re-import the updated 'Ham group' CSV file to replace the previously imported 'Ham groups'.

The format of the CSV file is as follows:

```
TG #,Talkgroup,TS
```

Ham groups max 20000.csv

```
1  TG #,Talkgroup,TS
2  1,Worldwide,1
3  2,Local 2 (SW FL Regional),2
4  3,North America,1
5  9,Local 9,2
6  10,Worldwide German,1
7  13,Worldwide English,1
8  14,Worldwide Spanish,1
9  91,Brandmeister WW,1
10 93,Brandmeister NA,1
```

Notes: *The 'HAM Groups' CSV-Format does not require a serial number like the normal 'Contact List'.*
We advise to not use Excel but some plain text editor such as https://notepad-plus-plus.org/ to edit CSV files.

When you have imported the ham groups CSV file, you can select your desired groups from it, and then tick '☑' in the '☐' box next to serial number. After all the required groups have been selected, press the 'Copy' button to copy the Groups name and Groups ID of the selected ones to the 'Contact list' which is convenient for you to call an associated group on a specified channel for communication. Once copy has completed, 'Has copied to Contacts list successfully' will pop up. Then, you can check the 'Contact list'. If necessary, you can modify, create, edit, add, delete contacts and groups within the 'Contact list'. The 'Contact list' capacity can be up to 2000 private contacts, including Contact name, Contact ID and Call Type.

After you have imported the 'Ham groups' CSV file, you can press the button 'Write' to transfer the data to the radio. Only the hams groups will be written to the radio. This is the only way to write 'Ham groups' to the radio.

Notes:	*This function only applies to the digital 'Group call' type.*

11.13 Digital Alarm List

The user can create, modify, edit, or delete the set of alarm system in the digital alarm list. The digital alarm system list is the signaling protocol used to communicate in an emergency in digital mode. Up to 4 digital alarm systems can be created

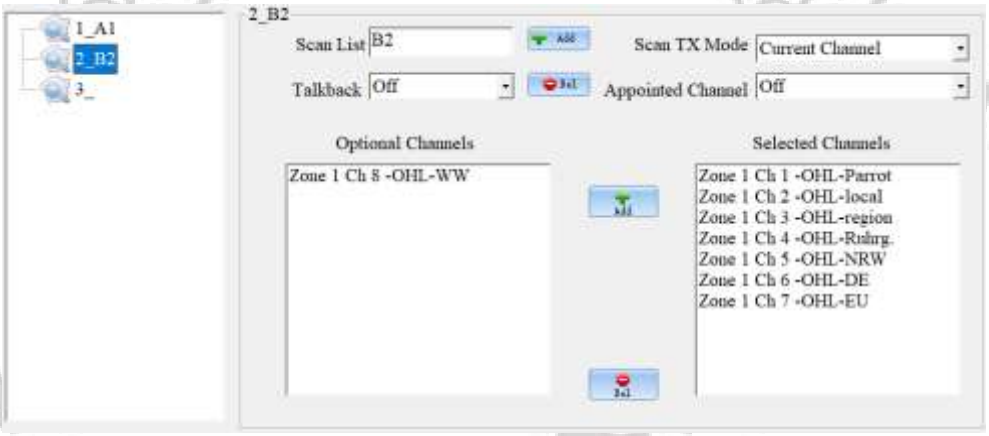
Serial	List name	Alarm type	Alarm mode	Alarm Channel	Inpolite Attempts	Emergent MIC Duration
1	A1	Standard	Emergency Alarm	Off	2	6S
2	A2	Standard	Emergency Alarm	Off	2	6S
3	A3	Standard	Emergency Alarm	Off	2	6S
4	A4	Standard	Emergency Alarm	Off	2	6S

Notes:	*The alarm type cannot be set as disable. This function only applies to digital mode.*

11.14 Scan List

A Scan/Roaming list can be associated with each channel. Once scan is 'On', this Scan/Roaming list will be monitored for activity on the current channel. If Roaming is turned 'On' within the 'Basic Parameters' menu, the radio will scan the repeater channels on the roaming list to search for an available repeater station. To

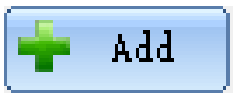
perform a roaming scan, the list must contain repeater channels. Every channel can only enable either scan or roaming scan. A maximum of 250 groups of scan lists can be setup, with a maximum of 50 members per group.



Notes:	*When Scanning is turned on and VFO A is currently selected, the radio will no longer monitor VFO B. When Scanning is turned on and VFO B is currently selected, the radio will no longer monitor VFO A.*

Scan List

The user can edit, rename, or delete the name of the scan/roaming list. The maximum length of the Scan list name may need exceed 10 characters, using letters, numbers, spaces and special marks. Leaving the name empty is not allowed. It is possible, to set up a maximum of 250 San lists, each containing up to 50 Channels.



Press the button '+ Add' to add a new scan list with the name specified by the input field 'Scan List' to the existing scan lists. The total number of scan lists will increase by 1.

Mark one of the existing scan lists. Its name will be displayed in the input field 'Scan List'. Now press the button '- Del' to delete than scan list from the existing scan lists. The total number of scan lists will decrease by 1.

Talkback

The feature allows the user to press PTT key to transmit on the current received channel, during scanning or within 3s after the received signal has disappeared.

Options: On Activate Talkback
Off Deactivate Talkback. Talkback/reply will be based on the setting of 'Scan TX Mode'.

Default: ***Off***

Notes:	*When the talkback is set 'ON', the setting of 'Scan TX Mode' will be ignored. When the talkback is set 'Off', the setting of 'Scan TX Mode' will be evaluated.*

Scan TX Mode

During scanning process, it is allowed to initiate a call or reply back on the current channel by pressing the PTT-key when a scanned signal disappeared or scanning stops.

Options:	Current channel	Transmit only in the initial channel before the scan starts.
	Last Operated Channel	Transmit only in the last operated channel where the radio stays lastly or scan stops.
	Appointed channel	Transmit only on the selected channel.
default:	***Appointed channel***	

Notes:	*The 'Scan TX Mode' is only valid when 'Talkback' function set 'off' or after scanned signal disappears within 3s.*

Appointed Channel

To select a specific channel out of all channels that are within your various zone definitions for transmitting and replying during scanning. When set to 'Off', the channel won't be available for transmitting and replying during scanning.

Default: ***Off***

Notes:	*The setting is only used, when the 'Scan TX Mode' is set to 'Appointed Channel'.*

Optional Channel

Displays all available channel members that can be added to the scan/roaming list.

> ***Notes:*** *When you add a member shown in the 'Optional Channels' window to the scan/roaming list, the selected channel member information will no longer appear in the 'Optional Channels' window, unless you delete the channel member from the 'Selected Channels' window.*

Selected Channels

Lists all channel members selected and added to the scan/roaming list. You can add up to 50 channel members. You can review the available scan/roaming list member information in the 'Selected Channels' window. You can also remove any of the channel members from the 'Selected Channels' window, and the removed channel members will no longer participate in any activity of the scan/roaming list members. Any available channel can optionally be associate to the scan/roaming list.

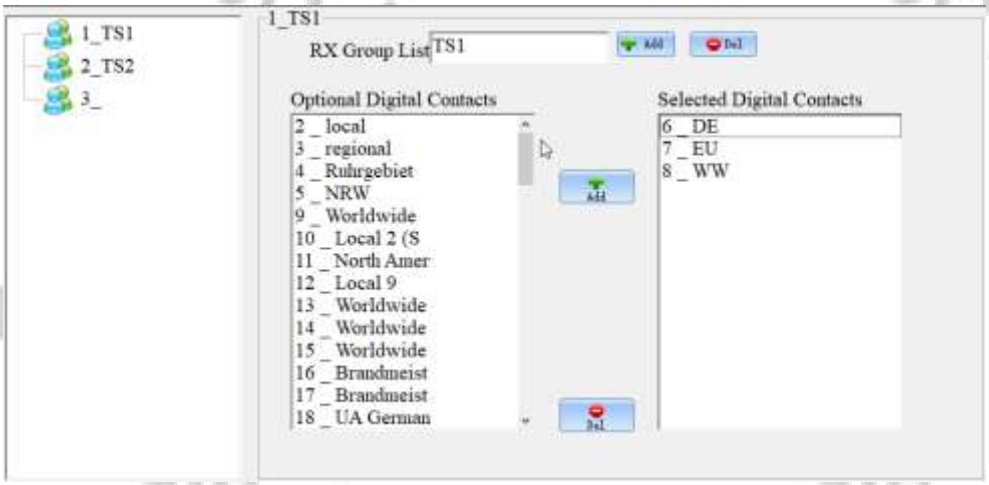
Click on one of the members within the 'Optional Channels' window and press the button '+ Add' to add that member from the 'Optional Channels' window to the 'Selected Channels' window.

Click on one of the members within the 'Selected Channels' window and press the button '- Del' to remove that member from the 'Selected Channels' window. It will then be listed within the 'Optional Channels' window.

> ***Notes:*** *When you remove members of the 'Selected Channels' windows from the scan/roaming list, the information of that channel will no longer be displayed in 'Selected Channels' windows but they will again be listed within the 'Optional Channels' windows.*

11.15 RX Group

An RX Group needs to be setup for the user to listen to group calls to members with the same configuration. You can set or select any group from the available lists (1-250) as a 'RX Group List' (up to 100 RX Group Lists).



Within the Channel settings a RX Group should be assigned to each channel.

Notes:	*This feature is available only in digital mode.*

11.16 Zone [Channel]

Zone is a collection of channels. The user can customize the zone and channel capacity according to the actual needs. A zone supports 1~3999 digital or analog channels.

Notes:	*When editing channel information, the user can select digital or analog channels based on the type of channels.*

Zone name

Users can edit, modify and delete the zone name. A maximum of 10 characters can be entered. Valid characters include numbers, symbols, letters, spaces and special characters.

12 Setup of channels

A channel is defined by several parameters. Some of them apply both, to analog as well as digital channels, others apply to analog or digital channels only. The following 25 chapters do explain all those parameters in more detail.

12.1 Z-1

The number within this column of the channel definition is just an internal number and designates the position of that channel within the selected zone. Currently it is not possible to alter a channels position, except if you use the 'Import' and 'Safe' functions and resort the channels within a CSV file. Whenever a channel is been deleted, all other channels following to the position that got deleted will be shifted upwards and such getting decreased 'Z-1' numbers.

12.2 CH mode

User could choose the current channel working mode from the following options.

Possible modes:	Analog	Channel will become an analogue channel
	Digital	Channel will become an analogue channel
	A&D,TX-A	Channel can receive both digital and analogue signal, but will transmit analogue
	A&D,TX-D	channel can receive both digital and analogue signal, but will transmit digital
Default:	*Analog*	

12.3 CH Name

The display will show channel the channel name. Users can create, edit, rename or delete the channel name. The maximum length for the channel name is 10 characters. Those can be numbers, symbols, letters, space or Chinese characters.

12.4 RX Freq

Users can set the channels receive frequency (in MHz). The possible frequency depends on the available frequency ranges of the DB25-D.

In 'Digital' mode, the DB25-D does not support simplex DMR Tier 1 operation with different TX and RX frequency. Whenever the RX and TX frequencies are different, the channel will be defined as a repeater channel (using DMR Tier 2), using time slots to communicate with the repeater.

12.5 TX Freq

Users can set the channels transmit frequency (in MHz). The possible frequency depends on the available frequency ranges of the DB25-D.

In 'Digital' mode, the DB25-D does not support simplex DMR Tier 1 operation with different TX and RX frequency. Whenever the RX and TX frequencies are different, the channel will be defined as a repeater channel (using DMR Tier 2), using time slots to communicate with the repeater.

12.6 Power

For each channel the transmit output power can be set independently. You can edit it through programmable buttons of short key or long key (H/L Power) or the menu for power function ('Menu' -> 'Parameters -> 'Power').

Options:	High	Use 20W output power whenever a stronger signal is required to enhance the transmit range.
	Low	Use the 5W option for short range communication
Default:	***High***	

12.7 Only RX

Each of the channels defined within a zone may be set for receive only.

Options:	On	Limit the channel to only receive
	Off	Transmitting and receiving is possible for that channel
Default:	***Off***	

12.8 Alarm

Users can decide to show a visual notification when they received an alarm call. If the function is disabled, the radio will not respond when it receives an alarm call. This option is based per channel.

Options:	Off	Disable decoding of alarm call
	On	Enable decoding of alarm call
Recommended:	***Off***	

12.9 Prompt

The radio will not respond when it receives an alarm call. The call prompt is requesting the receiver either to call back the transmitter when they can communicate. It is only available in the channel to receive the call tone. This option is based per channel.

Options: Off Disable alarm call prompt
On Enable alarm call prompt
Recommended: ***Off***

12.10 PCT (Private Call Type)

This function sets the Private Call Type of the current channel either to PATCS (Press And Talk Call Setup) or OACSU (Off Air Call Set Up).

Options: PATCS There is no need to give the radio a respond, they can send the voice to the radio directly.
OACSU It needs to give the radio a respond, then it will send the voice to the radio.
Default: ***PATCS***

Notes: *This parameter is only available in digital mode.*

12.11 RX TS

The DB25-D is based on TDMA technology and can divide a 12.5kHz channel into two alternate time slots.

When operating a digital repeater or duplex-hotspot with the DB25-D, normally the digital repeater does have a TX-frequency different to its RX-frequency and uses DMR Tier 2 for transmission. DMR Tier 2 makes uses of the time slot technique, allowing two separate information channels to be transmitted using the very same physical channel. Normally the time slots (TS) for TX and RX have to be set to the very same time slot, either 1 or 2.

Whereas, when operating a simplex station (such as a simplex hotspot), normally, DMR Tier 1 is in place. DMR Tier 1 does not make use of those timeslots.

Whenever TX and TX-frequency are identical (which is the case in simplex mode), a third option 'On' (for direct simplex mode) becomes available for such channel.

Options: Slot 1 Use DMR Tier 2, time slot 1 for RX
Slot 2 Use DMR Tier 2, time slot 2 for RX
On Use DMR Tier 1 for RX without any time slots
Default: ***On***

Notes: *This parameter is only available in digital mode.*

12.12 TX TS

The use of this parameter is identical to 'RX TS', except that it refers to transmit mode of the DB25-D.

Options: Slot 1 Use DMR Tier 2, time slot 1 for TX
Slot 2 Use DMR Tier 2, time slot 2 for TX
On Use DMR Tier 1 for TX without any time slots

Default: ***On***

Notes:	*This parameter is only available in digital mode.*

DMR use with simplex hotspot

Most Ham operators nowadays do have their own personal hotspot. Some of those hotspots do support 'full duplex', others only support 'simplex' operation. In order to successfully use a simplex hotspot with your DB25-D channel definition needs to be different than for duplex repeaters or duplex hotspots. Whilst duplex-systems use DMR Tier 2, simplex systems do use DMR Tier 1 or Tier 2 but requiring to use just one fixed time slot (often TS 2).

In order to instruct the radio to use DMR Tier 1 (which is only possible when TX and RX frequency are both the same), select the option 'On' for 'RX TS' and 'TX TS' within the channel definition.

All other required parameters are identical to those of a duplex channel.

Notes:	*The option to set ‚RX TS' and ‚TX TS' to ‚On' is only available if RX and TX frequency are both the same and 'CH Mode' is set to 'Digital'*

12.13 RX CC (Color Code)

Users can assign a color code for a RX channel. The channel Color Code can be same or different, but a repeater can have only one Color Code.

A single Color Code is used to identify a single system. Different Color Codes are used to identify multiple systems sharing the same frequency. This feature can be switched between channels using the same operating frequency but with different Color Codes.

Normally the Color Code RX and TX have to be set to the very same value.

Option range: Maximum: 15
Minimum: 0
Increment: 1
Default: ***1***

12.14 TX CC

Users can assign a color code for a TX channel. The channel Color Code can be same or different, but a repeater can have only one Color Code.

A single Color Code is used to identify a single system. Different Color Codes are used to identify multiple systems sharing the same frequency. This feature can be switched between channels using the same operating frequency but with different Color Codes.

Normally the Color Code RX and TX have to be set to the very same value.

Option range: Maximum: 15
Minimum: 0
Increment: 1
Default: ***1***

Notes: *This parameter is only available in digital mode.*

12.15 Msg Type

This parameter allows user to decide which message type to be used when they send a message to another radio.

Options: Unconfirmed data — When the radio received the message from the transmitter, it will not reply.
Confirmed data — When the radio received the message from the transmitter, it will reply automatically.

Default: ***Unconfirmed data***

Notes: *This parameter is only available in digital mode.*

12.16 TX Policy

The Transmit Limit is represented by the TX Policy. It feres to the behavior when pressing the PTT-key at the radio. The activity status of the current channel determines how the radio will react.

Options:	Impolite	Regardless of the current channel activity, pressing the PTT-Key immediately triggers a transmission.
	Polite to CC	Regardless of the channel being available, as long as the Color Code (CC) matches, pressing the PTT-Key will trigger a transmission.
	Polite to ALL	Only of the current channel is available, pressing the PTT-Key will trigger a transmission.

Default: ***Impolite***

12.17 RX Group

In order to be able to receive a group call within the channel, a 'RX Group' should be defined and assigned to the channel. Only those groups, that are listed with their Digital Contact (Talk group ID) within the assigned 'RX Group' may be heard when listening to the channel. If set to 'Off' you will not hear any group calls on this channel, unless the group ID is the same as the TX Contact ID (Talk group ID). This function is used to receive more than just the group selected by the specified entry of the 'Contact List' when listening to the channel.

Default: ***Off***

12.18 Encryption List

Users can use this feature to encrypt the selected digital channels. Encryption is a kind of software based scrambling solution and not very reliable, thus only to prevent eavesdropping. Part of the transmitted signal and user identification is not encrypted. The receiver must have the same encryption key and encryption type as the transmitter, in order to decrypt the encrypted voice calls and receive encrypted data. You can enable or disable the encryption of the channel by using a short press or by long press custom button ('Encryption On/Off'). The radio uses the encryption settings of the selected channel to transmit encrypted signals, but the receiver does not need to do so. The encrypted channel is still capable for receiving a clear transmit signal (After decryption).

Before Using an 'Encryption List' please configure its key ID and digital encryption key initialization, otherwise it will use the default values.

Default: ***Off***

Notes:	In Amateur radio networks using encryption techniques is not allowed.

12.19 Scan List

A predefined 'Scan List' may be assigned to the channel. During the scan, all members on the specified list will be scanned for activity. If the parameter is set to 'Off', the scan function on this channel will be disabled, (Including auto scan).

Notes:	If set to 'Off', auto scan will be disabled.

12.20 Contacts

Each digital channel may be assigned a specific Contact. Whenever the PTT-key is pressed, the radio will start to transmit a call on the selected channel and targeted to the specified contact our group. If a group call is initiated and another Contact ID (group ID) is already active within that channel, the call will be terminated to signal that a call may currently not be initiated.

If this parameter is set to 'Off', a call on the channel will not be possible, making it a RX-only channel. Only those Contacts, defined within the 'Contact list' may be selected.

Notes:	This parameter is only available in digital mode.

12.21 EAS (Emergency Alarm System)

Connect all available digital emergency systems to this channel for emergency usage. To disable the use of the digital Alarm List, select 'Off'.

Before using the Emergency Alarm System, it needs to be defined within the 'Digital Alarm list'.

Notes:	This parameter is only available in digital mode. **Digital Alarm systems are not supported within Ham radio networks.**

12.22 Bandwidth

For each channel it is possible le to specify the working bandwidth for TX and RX frequency. Narrow band as 12.5 kHz and Wide band as 25 kHz. In digital mode, the channel bandwidth is set for 12.5 kHz and cannot be changed or adjusted.

12.23 RX SQ

The user can select decoder type or decoder value of CTCSS, DCS or DCS-I when the radio receives the effective carrier signal. The function can avoid the interference of the same frequency or independent carrier signal.

Options:	QT	Only if the CTCSS decoding frequency of the DB25-D is consistent with the CTCSS frequency of the transmitting radio, squelch will be opened.
	DQT	Only if the DCS decoding value of the DB25-D is consistent with the DCS encoding of the transmitting radio, squelch will be opened on the DB25-D.
	Reverse DQT	Only if the DCS inverted decoding value of the DB25-D is consistent with the DCS inverted encoding of the transmitting radio, squelch will be opened on the DB25-D.
	Off	Squelch will be opened regardless of the CTCSS, DCS or DCS-I values received from the transmitting radio.

Default: ***Off***

12.24 RX QT/DQT (RX CTCSS/DCS)

Depending on the option selected as 'RX SQ', this is the place to specify the CTCSS frequency or DCS/DCS-I code.

Default: ***Off***

> ***Notes:*** *For a list of valid CTCSS, DCS and DCS-I (DCS Reverse) codes please check chapter 18 CTCSS and DCS sub audio signaling on page 166.*

12.25 TX SQ

The user can select ^the encoder type or encoder value of CTCSS, DCS or DCS-I when the radio transmits the effective carrier signal. The function can avoid the interference of the same frequency or independent carrier signal.

Options:

QT	Only if the CTCSS encoding frequency of the DB25-D is consistent with the CTCSS frequency of the receiving radio, squelch on the receiving radio will be opened.
DQT	Only if the DCS encoding value of the DB25-D is consistent with the DCS encoding of the receiving radio, squelch on the receiving radio will be opened.
Reverse DQT	Only if the DCS inverted encoding value of the DB25-D is consistent with the DCS inverted decoding of the receiving radio, squelch on the receiving radio will be opened . DCS inverted values are displayed as 'Dxxxl'.
Off	Squelch will be opened regardless of the CTCSS, DCS or DCS-I values received from the transmitting radio.

Default: ***Off***

12.26 TX QD/DQT (TX CTCSS/DCS)

Depending on the option selected as 'TX SQ', this is the place to specify the CTCSS frequency or DCS/DCS-I code.

Default: ***Off***

12.27 APRS

Specify the APRS channel to be used when transmitting the APRS beacon. Either one of the 8 digital APRS channels or the analog APRS definition may be assigned for APRS of this channel.

Options:

maximum:	8	
Minimum:	1	
Increment:	1	
APRS(A)		Transmit the APRS beacon using analog APRS
Off		Turn off APRS for this channel

Default: ***Off***

> ***Notes:*** *Analog APRS 'APRS(A)' is currently only possible if the channel is analog as well (CH Mode set to 'analog').*

13 Firmware update

In general, an update of PC-software (CPS) or radio-firmware should only be done if it is really required, following the golden rule '**If it isn´t broken, don´t fix it!**'.

Notes:	Prior to performing a firmware update, save the current codeplug to a file. After doing so, the firmware update may be applied. Finally the previously saved codeplug should then again be written to the radio using the corresponding CPS.

Install program for firmware update

To install the updater, just unzip the archive you downloaded from Radioddity support and double click on the file named 'IAP(setup).exe'. This will install the firmware update program on your Windows machine and place a shortcut on your desktop.

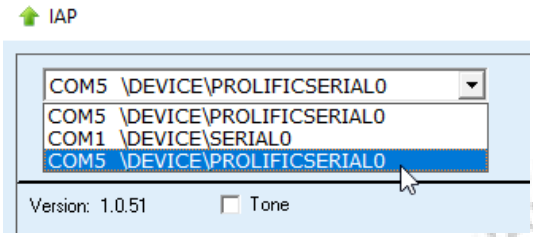
13.1 Perform Firmware update

In order to perform a firmware update, the radio needs to be put into firmware upgrade mode first. To do so:

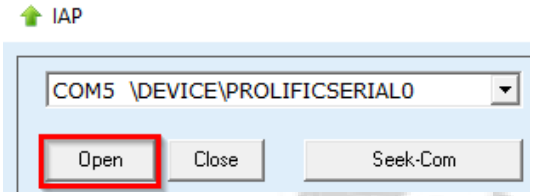
1. Turn off the radio
2. Close the CPS (in case it had been running) in order to make sure the virtual COM-port of your programming cable is not occupied.
3. Connect your Radioddity DB25-D via the supplied programming cable to your Windows PC
4. Press the 'P1' button on top of the Radioddity DB25-D and keep it depressed
5. Additionally press the 'power button' left to the 'P1' button on the Radioddity DB25-D to turn it on
6. The status-LED will constantly light up red
7. The display will stay blank and backlight will be on, regardless of your normal settings
8. Release the 'P1' button.

9. Now start the updater

10. Choose the virtual COM-port that does represent your programming cable

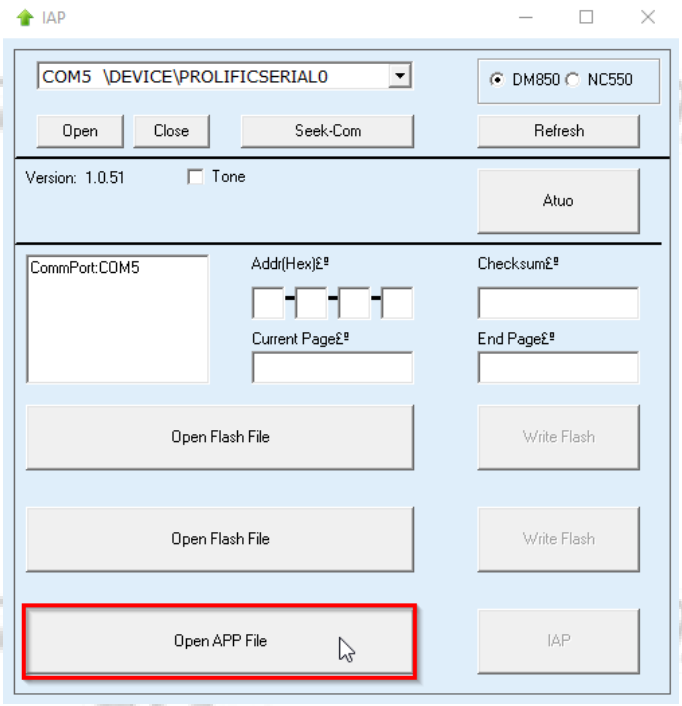


11. Click on 'Open'



12. If the updater is able to connect to your Radioddity DB25-D, it will output 'IAP Successfully'. If it isn´t able to connect to the radio, it will stay on 'CommPort:COMx' (where 'x' represents the selected virtual COM-port number of your DB25-D programming cable). If you forgot to shut down the CPS, you will get a 'The COMM port is occupied or doesn't exit!' error.

13. Next click on the button ‘Open APP file’.



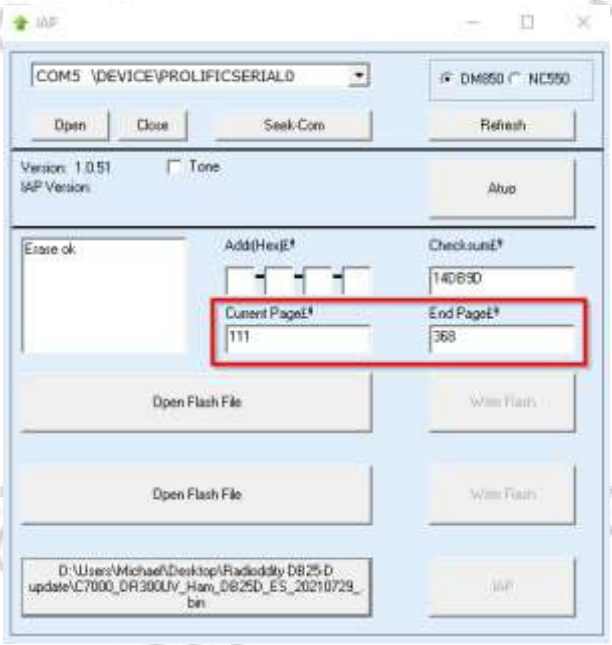
14. Now navigate to the path that does contain the update file that is intended to be transferred to the Radioddity DB25-D, such as:

‘C7000_DR300UV_Ham_DB25D_20210902.bin’.

Notes:	*Do not use update files intended for other radios, even if those may be looking similar to the Radioddity DB25-D. Using files not intended to be put on a Radioddity DB25-D may result in a loss of any guarantee.*

15. To start the actual update process click on the ‘IAP’ button.

16. Do not press any key on the radio, do not remove power, just wait until the radio has finished the update process and turns off! During the update process, the status-LED will flash green and red and the application shows the progress by the increasing number of 'Current Page'.



17. As soon as the update has finished, the radio will automatically shut down.

18. You may now normally power on the radio again.

19. To check which firmware version currently is installed, click: MENU → Device Info → Version

    You will get a screen similar to:

Version
DB25-D 909E.D4.EARSAB.008. F136-174, F400-480 Sep 2 2021 15:40:32
Back

14 Firmware Release notes

The following table lists the details that had been changed with new versions of the firmware.

revision	Changes	released
909E.D4.EARSAB.008	• Improved single VFO display (full screen now utilized) • Factory reset reverts back to the factory settings saved from the CPS • Record number / max record number no longer displayed during transfers	2021-09-02

15 CPS Release notes

The following table lists the details that had been changed with new versions of the CPS.

revision	Changes	released
CPS 3.3	• New function 'FactoryReset' for saving personal factory defaults to the radio • Additional 'Group call hang time' of 30s and 60s • Startup logo exchanged	2021-09-06
CPS 3.2	• No more unwanted changes of parameters • Additional shortcut 'Ctrl+S' for saving the codeplug to the PC • Display of readable text instead of codeplug block numbers within the communications window • Update of built-in help texts • Headlines in channel definitions shortened and no longer truncated • Renaming of 'GCL' to 'RX Group' within channel settings • Correction of popups • Proper display of APRS(A) within channel settings • Using 'Del' within the 'Contact list' now deletes, starting at the current cursor position	2021-08-17

16 Quickstart for common use cases

This chapter is rather intended for those users, new to HAM-radio. If you are familiar with analog ham-radio but new to DMR, we suggest to take a closer look at the document we did prepare some time ago (not specific for the DB25-D but most topics applicable for the Radioddity DB25-D as well. You find the document via our Blog entry at:

https://www.radioddity.com/blogs/all/radioddity-getting-on-air-with-your-dmr-radio

The next subchapters describe the most common use cases for the Radioddity DB25-D. Only those CPS menus that are mandatory for the specific operation mode will be covered in the explanations.

16.1 Simplex analog FM operation with other station

In order to setup the radio for simplex analog FM operation, follow these steps:

1. Add a new zone via 'Zone[Channel]' → '+Add' and give it a 'Zone Name' of 'simplex FM'. The new zone will be created and will already contain a channel of either 'CH mode' being 'analog' or 'digital'.

2. Setup the channel for 'CH mode' being 'Analog'.

3. Give the channel a 'CH Name' of some name, e.g. 'FM simplex'.

4. Set both frequencies 'RX Freq' and 'TX Freq' to the very same value (e.g. 145.500 MHz or 432.100 MHz). You may choose any frequency that is allowed for your type of ham radio license, for analog FM operation and not occupied by some other station. Make sure the other station you want to call is setup for the very same simplex frequency.

> ***Notes:*** *Do not use GMRS-frequencies or other frequencies that are not allowed to be used for analog FM with an output power of more than allowed for the specific frequency band.*

5. Set the output 'Power' to 'Low' if the other station is close to yours. If the other station is some miles away, you may need to set it to 'High'.

6. Set 'Scan List' to 'off' in order to avoid unexpected behavior.

7. Set Bandwidth to either '12.5' or '25' (kHz), depending on your personal requirements. If unsure on that one, set it for '12.5' (kHz).

8. Optional, set 'RX QT/DQT' and 'TX QT/DQT' for any CTCSS or DCS encoding that might be required for connection to the other station. If unsure, set both parameters to 'Off' for not using any CTCSS/DCS decoding and encoding. That will at least allow you to hear the other station, regardless of its CTCSS/DCS settings.

Notes:	*Within a future version of the CPS the names of those two parameters will be changed to 'RX CTCSS/DCS' and 'TX CTCSS/DCS'.*

9. Set APRS to 'Off' for now

Write your settings to the radio. Do not forget to switch to Zone 'simplex FM' and select Channel 'FM simplex' at your Radioddity DB25-D. Now you are ready for your very first simplex analog FM QSO.

16.2 Duplex analog FM operation with a local analog FM-repeater

First of all, collect all information that is available for your local FM repeater that you want to connect to. Best source for such is to check with your local HAM radio club or some other local ham operator.

You will need the following details:

- TX frequency of repeater (becomes your RX frequency)
- RX frequency of repeater (becomes your TX frequency)
- Any CTCSS or DCS encoding or decoding required?
- Pilot tone required? Which frequency (e.g. 1750 Hz)?

In order to setup the radio for operating your local FM repeater, follow these steps:

1. Add a new zone via 'Zone[Channel]' → '+Add' and give it a 'Zone Name' of 'duplex FM'. The new zone will be created and will already contain a channel of either 'CH mode' being 'analog' or 'digital'.
2. Setup the channel for 'CH mode' being 'Analog'.
3. Give the channel a 'CH Name' of some name, e.g. 'DB0OHL rpt' (with DB0OHL being the call sign of your local repeater).
4. Set the 'RX Freq' equal to the TX-frequency of your local repeater.
5. Set the 'TX Freq' equal to the RX-frequency of your coal repeater.
6. Set the output 'Power' to 'Low' if the local repeater is close to your location. If the local repeater is some miles away, set it to 'High'.
7. Set 'Scan List' to 'off' in order to avoid unexpected behavior.
8. Set Bandwidth to '12.5' (kHz).
9. Optional, set 'RX QT/DQT' and 'TX QT/DQT' for any CTCSS or DCS encoding that might be required for connection to the local repeater. If unsure, set both parameters initially for 'Off' for not using any CTCSS/DCS decoding and encoding. That will at least allow you to hear the local repeater.

> ***Notes:*** *Within a future version of the CPS the names of those two parameters will be changed to 'RX CTCSS/DCS' and 'TX CTCSS/DCS'.*

10. Set Encryption to 'Off'

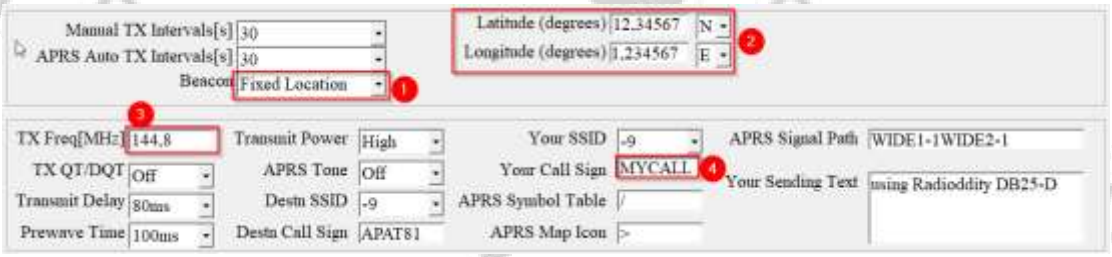
11. Set APRS to 'Off' for now

12. If a pilot tone is required to activate the repeater, preset the Pilot tone [1750Hz] function to one of the function keys.

13. Write your settings to the radio. Do not forget to switch to Zone 'duplex FM' and select channel 'DB0OHL rpt' (or equivalent) at your Radioddity DB25-D. Now you are ready for your very first QSO routed via your local repeater.

16.3 Analog FM operation including analog APRS

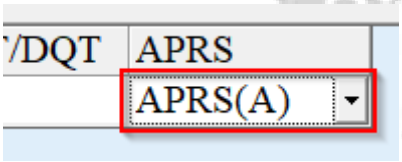
Using analog APRS does require a bunch of settings to be made within the APRS menu of the Radioddity DB25-D CPS. For initial testing, we advise to use a beacon with a fixed location (1) representing the latitude and longitude (2) of your current QTH. This will make the APRS system available immediately after power up. If you set the beacon for 'GPS Location' (1) you need to wait until the GPS receiver of your Radioddity DB25-D has successfully established a connection to at least 3 satellites. This will be indicated by a green sign in the middle of the topmost line of the radios display.



Furthermore set the analog APRS reporting frequency (3) according to your local requirements. For the US that frequency is 144.3900 MHz, for Europe it is 144.8000 MHz. For all other countries see the details on 'TX Freq [MHz]' regarding that parameter.

Of course, also define your call sign (4) to be used for APRS-reporting. The defined SSID will automatically be added to your call sign. For details on the other parameters, please refer to the chapter on APRS within this addendum.

In order for analog APRS to work, an analog channel needs to be selected and 'APRS (A)' needs to be assigned as 'APRS' reporting channel for that analog channel.



Notes:	*Only analog channels are supported by analog APRS.* *Only digital channels are supported by digital APRS.*

16.4 Simplex digital DMR operation with other station

In order to setup the radio for simplex digital DMR operation, follow these steps:

1. Within the 'Contacts' menu define a 'Contact Name' with the corresponding 'Contact ID' (DMR ID) of the other station you plan to call. Set the 'Call Type' to 'Private Call'. e.g.

Serial No	Contact name	Contact ID	Call Type
1	John Doe	1234567	Private call

2. Add a new zone via 'Zone[Channel]' → '+Add' and give it a 'Zone Name' of 'simplexDMR'. The new zone will be created and will already contain a channel of either 'CH mode' being 'analog' or 'digital'.

3. Setup the channel for 'CH mode' being 'Digital'.

4. Give the channel a 'CH Name' of some name, e.g. 'DMRsimplex'.

5. Set both frequencies 'RX Freq' and 'TX Freq' to the very same value (e.g. 433.45000 MHz). You may choose any frequency that is allowed for your type of ham radio license, for digital DMR operation and which is not occupied by some other station. Make sure the other station you want to call is setup for the very same simplex frequency.

6. Set the output 'Power' to 'Low' if the other station is close to yours. If the other station is some miles away, set it to 'High'.

7. Set 'PCT' to 'Patcs'

8. Set 'RX TS' and 'TX TS' both to 'On' in order to not use TDMA for dividing the channel into 2 slots

9. Set 'RX CC' and 'TX CC' both to the very same value as the other station

10. Set 'TX Policy' to 'Impolite'

11. Within the field 'Contacts' of the channel definition select the private contact as defined.

12. Set Encryption to 'Off'

13. Set APRS to 'Off' for now

Write your settings to the radio. Do not forget to switch to Zone 'simplexDMR' and select channel 'DMRsimplex' at your Radioddity DB25-D. Now you are ready for your very first simplex digital DMR QSO with the selected station.

16.5 Simplex digital DMR operation with Single-HAT hotspot

In order to setup the radio for simplex digital DMR operation, follow these steps:

1. Within the 'Contacts' menu define a talk group ('Contact Name') with the corresponding 'Contact ID' (DMR ID) you plan to use. Set the 'Call Type' to 'Group Call'. e.g.

Serial No	Contact name	Contact ID	Call Type
1	TG 99	99	Group Call

2. Next Create an RX Group that does contain the previously created talk group. e.g.

3. Add a new zone via 'Zone[Channel]' → '+Add' and give it a 'Zone Name' of 'simplex HS'. The new zone will be created and will already contain a channel of either 'CH mode' being 'analog' or 'digital'.

4. Setup the channel for 'CH mode' being 'Digital'.

5. Give the channel a 'CH Name' of some name, e.g. 'HS TG 99'.

6. Set both frequencies 'RX Freq' and 'TX Freq' to the very same value (e.g. 433.45000 MHz). You may choose any frequency that is allowed for your type of ham radio license, for digital DMR operation and which is not occupied by some other station. Make sure the simplex hotspot is setup for the very same simplex frequency.

7. Set the output 'Power' to 'Low' as your hotspot is quite likely very close to your Radioddity DB25-D.

8. Set 'PCT' to 'Patcs'

9. Set 'RX TS' and 'TX TS' both to 'On' in order to not use TDMA for dividing the channel into 2 slots.

10. Set 'RX CC' and 'TX CC' both to the very same value as your hotspot (normally '1').

11. Set 'TX Policy' to 'Impolite'
12. Set 'RX Group' to the previously defined RX group 'My RX Grp'.
13. Within the field 'Contacts' of the channel definition select the Talk group as previously defined (e.g. 'TG 99').
14. Set Encryption to 'Off'
15. Set APRS to 'Off' for now

Write your settings to the radio. Do not forget to switch to Zone 'simplex HS' and select channel 'HS TG 99' at your Radioddity DB25-D. Now you are ready for your very first simplex digital DMR QSO using your hotspot.

16.6 Duplex digital DMR operation with Dual-HAT hotspot

In order to setup the radio for duplex digital DMR operation, follow these steps:

1. Within the 'Contacts' menu define a 'Contact Name' with the corresponding 'Contact ID' (DMR ID) of the other station or talk group you plan to call. Set the 'Call Type' to the required Call Type. Normally other stations require a Private Call, whereas talk groups require a Call Type of Group Call. e.g.

Serial No	Contact name	Contact ID	Call Type
1	WW	91	Group Call
2	Germany	262	Group Call
3	TG8->26243	8	Group Call
4	Parrot	262997	Private call

2. Next Create an RX Group that does contain the previously created talk group(s). e.g.

3. Add a new zone via 'Zone[Channel]' → '+Add' and give it a 'Zone Name' (e.g. 'My Hotspot'. The new zone will be created and will already contain a channel of either 'CH mode' being 'analog' or 'digital'.

4. Setup the channel for ‘CH mode’ being ‘Digital’.
5. Give the channel a ‘CH Name’ of some name, e.g. ‘HS WW’.
6. Set the ‘RX Freq’ and ‘TX Freq’ to the values required by your duplex hotspot.
7. Set the output ‘Power’ to ‘Low’ as you are just operating your radio with a hotspot probably just a few meters apart from your DB25-D.
8. Set ‘PCT’ to ‘Patcs’
9. Set ‘RX TS’ and ‘TX TS’ both to the required Time Slot.
10. Set ‘RX CC’ and ‘TX CC’ both to the value required by your local hotspot.
11. Set ‘TX Policy’ to ‘Impolite’
12. Within the field ‘Contacts’ of the channel definition select one of the contacts as defined.
13. Assign the previously assigned RX-Group to that channel. Make sure, that the contact you assigned in the previous step (if of Call Type ‘Group Call’) is also a member of that RX-Group.
14. Set Encryption to ‘Off’
15. Set APRS to ‘Off’ for now

Write your settings to the radio. Do not forget to switch to Zone ‘My Hotspot’ and select channel ‘HS WW’ at your Radioddity DB25-D. Now you are ready for your very first digital DMR QSO via your duplex hotspot.

16.7 Digital DMR operation with digital repeater

In order to setup the radio for duplex digital DMR operation, follow these steps:

1. Within the ‘Contacts’ menu define a ‘Contact Name’ with the corresponding ‘Contact ID’ (DMR ID) of the other station or the talk group you plan to call. Set the ‘Call Type’ to the required Call Type. Normally other stations require a Private Call, whereas talk groups require a Call Type of Group Call. e.g.

Serial No	Contact name	Contact ID	Call Type
1	WW	91	Group Call
2	Germany	262	Group Call
3	TG8->26243	8	Group Call
4	Parrot	262997	Private call

2. Next Create at an RX Group that does contain the previously created talk group(s). We advise to create two RX-groups, one acting as a container for all

talk groups that do require time slot 1 (name that one 'TS 1') and the second RX_group for those talk groups requiring time slot 2 (name that 'TS 2' accordingly). e.g.

RX-Group 'TS 1'	RX-Group 'TS 2'
	

3. Add a new zone via 'Zone[Channel]' → '+Add' and give it a 'Zone Name' (e.g. name it according to the local repeater's call sign you plan to use, e.g. 'DB0OHL'. The new zone will be created and will already contain a channel of either 'CH mode' being 'analog' or 'digital'.

4. Setup the channe(2)l for 'CH mode' being 'Digital'.

5. Give the channel(s) a 'CH Name' of some name, e.g. 'OHL WW', 'OHL-German', 'OHL-TG8', 'OHL-Parrot, ...

Z-1	CH mode	CH Name
1	Digital	OHL-WW
2	Digital	OHL-German
3	Digital	OHL-TG8
4	Digital	OHL-Parrot

6. Set the 'RX Freq' and 'TX Freq' to the values required by your local repeater.

7. Set the output 'Power' to 'Low' as you are just operating your radio with a hotspot probably just a few meters apart from your DB25-D.

8. Set 'PCT' to 'Patcs'

9. Set 'RX TS' and 'TX TS' both to the required Time Slot(s).

10. Set 'RX CC' and 'TX CC' both to the value required by your local repeater.

11. Set 'TX Policy' to 'Impolite'

12. Within the field 'Contacts' of the channel definition select one of the contacts as defined.

13. Assign the previously assigned RX-Group(s) to the channel(s). Make sure, that the contact you assigned in the previous step (if of Call Type 'Group Call') is also a member of the specific RX-Group.

14. Set Encryption to 'Off'

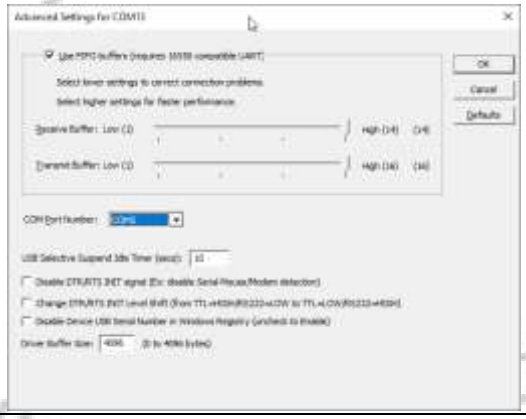
15. Set APRS to 'Off' for now

Write your settings to the radio. Do not forget to switch to Zone ‘My Hotspot’ and select channel ‘HS WW’ at your Radioddity DB25-D. Now you are ready for your very first digital DMR QSO via your duplex hotspot.

The following shows an example of those main parameters (not all possible parfameters are shown).

Z+1	CH mode	CH Name	RX Freq	TX Freq	Power	PCT	RX TS	TX TS	RX CC	TX CC	TX Policy	RX Group	Contacts	APRS
1	Digital	OHL-WW	438.23750	430.63750	High	Pmcs	Slot 1	Slot 1	1	1	Inpolite	TS1	WW	Off
2	Digital	OHL-German	438.23750	430.63750	High	Pmcs	Slot 1	Slot 1	1	1	Inpolite	TS1	Germany	Off
3	Digital	OHL-TG8	438.23750	430.63750	High	Pmcs	Slot 2	Slot 2	1	1	Inpolite	TS2	TG8->26243	Off
4	Digital	OHL-Parrot	438.23750	430.63750	High	Pmcs	Slot 2	Slot 2	1	1	Inpolite	TS2	Parrot	Off

17 Common problems and how to solve them

Problem	Solution
Channel selector knob does no longer allow to switch between the channels	Turn on Channel Switch: MENU (press knob) -> Local Set -> Channel Sw ->MENU (press knob to change setting) When the indicator turns GREEN, you have again assigned the Channel select function to the knob.
Do not want to be interrupted by activity on second channel (which is not selected)	Turn off Dual-Channel mode: MENU (press knob) -> Local Set -> DisplayMode -> S/D Mode Sw -> MENU (press knob to change setting) When the indicator turns GREEN, you have set it for Single Channel Mode Display. When the indicator turns RED, you have set it for Dual Channel Mode Display.
Contact details not shown during conversation	Make sure that the Ham contacts have been imported from a CSV file, sorted by ascending DMR IDs. If you want all details, make sure you did the 128 bytes/record import and turn off Dual-Channel mode: MENU (press knob) -> Local Set -> DisplayMode -> S/D Mode Sw -> MENU (press knob to change setting) When the indicator turns GREEN, you have set it for Single Channel Mode Display. When the indicator turns RED, you have set it for Dual Channel Mode Display.
Activities on even not selected band does activate squelch	Turn off any SCAN-mode as the scanning feature requires the unselected band (VFO).
Message 'The COMM port is occupied or doesn't exit!' or 'DATA MISTAKE' when trying to connect the radio with the CPS or the IAP	Currently the CPS as well as the IAP only support virtual COM-ports 'COM1' up to 'COM8'. You may change the assigned virtual COM-port using the device manager of your Windows-OS. 
Sometimes a 'Run time error 6' is been thrown	Make sure you did install the CPS as administrator in order to avoid such.

Problem	Solution
Analog APRS does not work	Analog APRS currently only works if an analog channel has been selected, the proper analog APRS settings have been applied and an analog iGate is within RF-coverage. Make sure 'Analog APRS' or 'DMR+Analog APRS' is selected at the radio within the menu 'Appendix → APRS → APRS Type'
Digital APRS does not work	Digital APRS only works if a digital channel has been selected and the proper talk group has been assigned for the defined reporting channel. Make sure 'DMR APRS' or 'DMR+Analog APRS' is selected at the radio within the menu 'Appendix → APRS → APRS Type'
Cannot use the Radioddity DB25-D with my local simplex hotspot	If it is pistar-based and single-hat, you need to set both, 'TX TS' and 'RX TS' to 'On' within the corresponding channel definitions of our CPS.
Radio reboots whenever I press PTT	1. Use an external antenna (suitable for the 2m and 70cm band) connected via an antenna cable to the radio. 2. Use clip-on ferrites and place one of those on the power cord, close to the radio body. 3. Route the power cord and antenna cable separate as far away from each other.
Cannot communicate with the radio	Make sure the radio is turned on and the supplied programming cable is plugged in on both, the radio and the PC. Make sure the driver is installed.
Cannot hear the local DMR-repeater	For each talk group that you do want to operate, you will need a separate channel. Each digital channel should have a reference to a specific Contact (talkgroup) and to a so called RX-group that also does have the channels talkgroup as a member. Ham operators often do place all talk groups that are assigned to time slot 1 within one talk group and all talk groups that are assigned to time slot 2 within another RX-group. If there is no RX-group assigned to a channel, you will only be able to receive direct calls to your own DMR ID.
If analog VFO-mode is selected, transmitting is not possible	Check the setting of RXOnly using the Channel-Edit function as described in chapter 9.12 Channel Edit on page 83.

18 CTCSS and DCS sub audio signaling

The DB25-D supports a total of 51 CTCSS (Continuous Tone Coded Sub audio Squelch) frequencies, 103 normal DCS values and additional 103 inverted DCS values.

18.1 Supported CTCSS frequencies

62,5	67,0	69,3	71,9	74,4	77,0	79,7	82,5
85,4	88,5	91,5	94,8	97,4	100,0	103,5	107,2
110,9	114,8	118,8	123,0	127,3	131,8	136,5	141,3
146,2	151,4	156,7	159,8	162,2	165,5	167,9	171,3
173,8	177,3	179,9	183,5	186,2	189,9	192,8	196,6
199,5	203,5	206,5	210,7	218,1	225,7	229,1	233,6
241,8	250,3	254,1	*All figures in Hz*				

18.2 Supported DCS (Digital Coded Squelch)

0nn	1nn	2nn	3nn	4nn	5nn	6nn	7nn
D017N	D114N	D205N	D306N	D411N	D503N	D606N	D703N
D023N	D115N	D212N	D311N	D412N	D506N	D612N	D712N
D025N	D116N	D223N	D315N	D413N	D516N	D624N	D723N
D026N	D122N	D225N	D325N	D423N	D523N	D627N	D731N
D031N	D125N	D226N	D331N	D431N	D526N	D631N	D732N
D032N	D131N	D243N	D332N	D432N	D532N	D632N	D734N
D036N	D132N	D244N	D343N	D445N	D546N	D645N	D743N
D043N	D134N	D245N	D346N	D464N	D565N	D646N	D754N
D047N	D143N	D246N	D351N	D465N		D654N	
D050N	D145N	D251N	D356N	D466N		D662N	
D051N	D152N	D252N	D364N			D664N	
D053N	D155N	D255N	D365N				
D054N	D156N	D261N	D371N				
D065N	D162N	D263N					
D071N	D165N	D265N					
D072N	D172N	D266N					
D073N	D174N	D271N					
D074N		D274N					

18.3 Supported DCS-I (Digital Coded Squelch Inverted) values

0nn	1nn	2nn	3nn	4nn	5nn	6nn	7nn
D017I	D114I	D205I	D306I	D411I	D503I	D606I	D703I
D023I	D115I	D212I	D311I	D412I	D506I	D612I	D712I
D025I	D116I	D223I	D315I	D413I	D516I	D624I	D723I
D026I	D122I	D225I	D325I	D423I	D523I	D627I	D731I
D031I	D125I	D226I	D331I	D431I	D526I	D631I	D732I
D032I	D131I	D243I	D332I	D432I	D532I	D632I	D734I
D036I	D132I	D244I	D343I	D445I	D546I	D645I	D743I
D043I	D134I	D245I	D346I	D464I	D565I	D646I	D754I
D047I	D143I	D246I	D351I	D465I		D654I	
D050I	D145I	D251I	D356I	D466I		D662I	
D051I	D152I	D252I	D364I			D664I	
D053I	D155I	D255I	D365I				
D054I	D156I	D261I	D371I				
D065I	D162I	D263I					
D071I	D165I	D265I					
D072I	D172I	D266I					
D073I	D174I	D271I					
D074I		D274I					

19 Connectivity

The Radioddity DB25-D has various sockets for connecting power, antennas, speaker-microphone, programming cable and other accessories. Their internal connections are as follows:

19.1 Power connector

The connector is of so called T-type and often used within cars for 2pin connections. Your Radioddity DB25-D comes with the proper counterpart, connected to a plug that does fit in a car´s cigarette lighter socket in order to power your radio within seconds, without the hazzle of any specific wiring for your car.

Attention: Do not power the Radioddity DB25-D with more than 13.8V DC

19.2 HF Antenna

Socket of type SO-239, requiring a plug of type PL-259. Do not mount an antenna (without a cable) directly to the Radioddity DB25-D as radiated HF may have a negative impact on the radio´s operation and may also influence your car's electronics. Make sure the antenna is matched for 2m & 70cm frequency band.

Notes: *If using an external switching power supply for operating the Radioddity DB25-D at your home, make sure that the cable for the antenna and for the power supply are routed as far away from each other as possible. If you encounter sudden reboots of the radio, put an additional clip-on ferrite on the power cable, close to the radio.*

19.3 GPS antenna

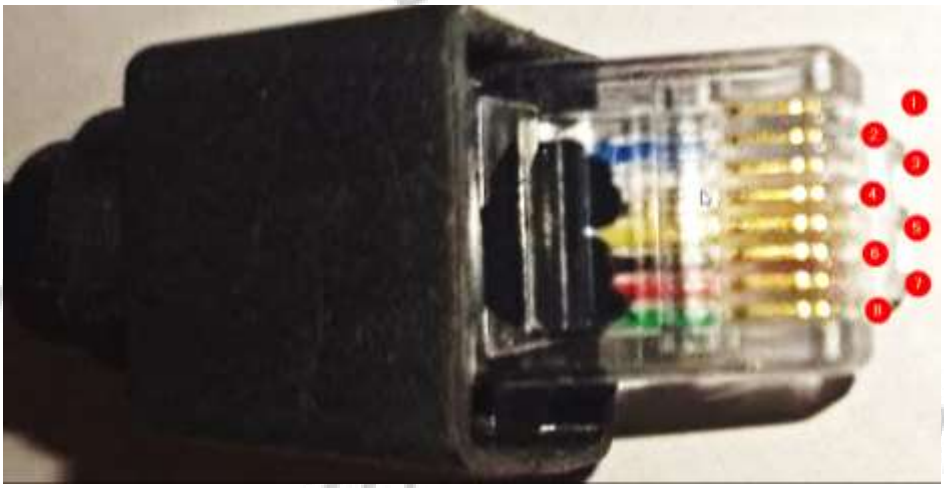
Socket of type SMA-female, requiring antenna with plug of type SMA-male. The GPS antenna that comes with the Radioddity DB25-D is a passive one and absolutely sufficient for use with the Radioddity DB25-D.

If you plan to add an external antenna to the Radioddity DB25-D you need to make sure that sufficient signal input level gets to the Radioddity DB25-D. This will more or less require the use of an active GPS antenna. The option of active antennas often requires a DC voltage coupled from the radio (here Radioddity DB25-D) via the antenna line to the GPS antenna. The Radioddity DB25-D does not provide such DC coupling. If your active GPS antenna comes with an external power supply, it should work. However, we do not recommend to use any other GPS antenna than the passive one that came with the Radioddity DB25-D.

19.4 RJ45 Speaker-Microphone

The Speaker-Microphone is connected via its RJ45-plug to the RJ45-socket of the Radioddity DB25-D.

The RJ45 socket may also be used for programming the radio. It is based on 3.3 V signals. The transmission speed is 115.2 kbaud.



Color	RJ45	Speaker-Microphone*	Signal name
Grey	1	n.c.	Power Off (if connected to GND)
Blue	2	5	PTT/Radio RXD (Data to Radio)
White	3	3	microphone Audio
Silver	4	4	cable shield / analog ground
Yellow	5	n.c.	Radio TXD (Data from Radio)
Black	6	6	signal ground
Red	7	7	+8V
Green	8	8	speaker audio

*) Numbers as stated on Speaker-Microphone internal PCB

19.5 K1 connector

At the left side of the radio there is a K1 socket with the following pin assignment:

Signal name	K1
PTT / Radio RXD	3.5 mm sleeve
Microphone+	3.5 mm ring
+5V via 100 Ω	3.5 mm tip
GND	2.5 mm sleeve
Radio TXD	2.5 mm ring
Speaker+	2.5 mm tip

20 Technical specifications of the DB25-D

All of the following technical specifications are subject to change without further notice.

20.1 General specifications

Parameter	VHF	UHF
Frequency	136...174 MHz	400...480 MHz
Frequency Stability	±2.5 ppm	
Type	Dual band, Dual standby, Dual mode	
Digital mode	TDMA 2-time slot technology (Tier 1 and Tier 2)	
Digital vocoder	AMBE+2™	
Digital agreement	ETSI-TS 102 361-1, -2, -3	
Zones	16	
Channel Capacity	Up to 4000 (250 Channels per Zone)	
PLL Channel Spacing	12.5 kHz / 25 kHz	
Operating Temperature	-20° C ... +60° C	
Antenna Impedance	50 Ω	
Rated Voltage	13.8 V DC ±10%	
Current Consumption	Standby: 0.1 A	
	Receive: 0.3 A	
	Transmit: 3 A	
Dimension (H x W x D)	121.5 mm x 65.5 mm x 42.5 mm	
Weight (without microphone)	1500 g	
Compatible With American Military Standard (MIL-STD-810C/D/E)		

20.2 Receiver

Parameter	VHF	UHF
Frequency Range	136...174 MHz	400...480 MHz
Channel Spacing	12.5 kHz / 25 kHz	
Operating Bandwidth	≤±5 kHz @ 12.5 kHz / ≤±7 kHz @ 25 kHz	
Frequency stability (-20 °C ... +25 °C)	± 1.5 ppm	
IFs	51.550 MHz	
FM modulation Type	12.5 kHz: 11KOF3E / 25 kHz: 16KOF3E	
Sensitivity (12 dB SINAD)	0.25 µV @ 12.5 kHz / 0.2 µV @ 25 kHz	
Squelch Selectivity	0.2 µV @ 12.5 kHz / 0.15 µV @ 25 kHz	
Analogue sensitivity	0.3 µV / 0.25 µV	
Digital sensitivity (5 % BER)	0.25 µV / 0.2 µV	
Intermodulation	≥70 dB	
Adjacent Channel Selectivity	≥65 dB @ 12.5 kHz / ≥70 dB @ 25 kHz	
Spurious rejection	65 dB	
Image Rejection	≥70 dB	
Rated audio	500 mW	
Audio Distortion @ rated audio	≤5 %	
FM hum & noise	-40 dB @ 12.5 kHz / -45 dB @ 25 kHz	
Audio response	+1 dB, -3 dB	
Conducted / radiated emission	-57 dBm	

20.3 Transmitter

Parameter	VHF	UHF
Frequency Range	144...148 MHz	420...450 MHz
Channel Spacing	12.5 kHz / 25 kHz	
Frequency stability (-20°C, +25°C)	± 1.5 ppm	
Low Power	5 W	5 W
High Power	20 W	20 W
FM modulation Type	12.5 kHz: 11KOF3E / 25 kHz: 16KOF3E	
Modulation restriction	±2.5 dB @ 12.5 kHz / ± 5 dB @ 25 kHz	
FM hum & noise	-40 dB @ 12.5 kHz / -45 dB @ 25 kHz	
Conducted / radiated emission	-36 dBm < 1GHz / -30 dBm > 1 GHz	
Adjacent channel selectivity	-60 dB @ 12.5 kHz / -65 dB @ 25 kHz	
Maximum Deviation	≤±2.5 kHz @ 12.5 kHz ≤±5.0 kHz @ 25 kHz	
Spurious Emission	≤65 dB below carrier	
Modulation Distortion	≤5 % (300...3000 Hz)	
Audio Response	+1 dB, -3 dB	
Audio Distortion	3%	
4FSK digital modulation	12.5 kHz data: 7K60F1D and 7K60FXD	
	12.5 kHz audio:7K60F1E and 7K60FXE	

21 Certification

Our Radioddity DB25-D is certified according to FCC part 90. It may also be sold in the European Community as it is also conformant to the European regulations. This is attested by the included certificates.

21.1 FCC part 90 approval

Below you find a copy of the FCC part 90 approval for our Radioddity DB25-D mobile radio.

TCB

GRANT OF EQUIPMENT AUTHORIZATION

Certification

Issued Under the Authority of the

Federal Communications Commission

By:

TCB

Bay Area Compliance Laboratory Corp.
1274 Anvilwood Avenue
Sunnyvale, CA 94089

Date of Grant: 11/18/2021

Application Dated: 11/18/2021

SAIN3 LLC
36 Berkley Drive
Newark, DE 19702

Attention: Damon Cheng , President

NOT TRANSFERABLE

EQUIPMENT AUTHORIZATION is hereby issued to the named GRANTEE, and is VALID ONLY for the equipment identified hereon for use under the Commission's Rules and Regulations listed below.

FCC IDENTIFIER: 2AN62-DB25D
Name of Grantee: SAIN3 LLC
Equipment Class: **Licensed Non-Broadcast Station Transmitter**
Notes: **Digital Mini Mobile Radio**

Grant Notes	FCC Rule Parts	Frequency Range (MHZ)	Output Watts	Frequency Tolerance	Emission Designator
EF	90	136.0 - 174.0	20.0	2.5 PM	11K0F3E
EF ES	90	136.0 - 174.0	20.0	2.5 PM	7K60F1D
EF ES	90	136.0 - 174.0	20.0	2.5 PM	7K60F1E
EF ES	90	400.0 - 406.0	20.0	2.5 PM	11K0F3E
EF	90	406.1 - 480.0	20.0	2.5 PM	11K0F3E
EF ES	90	400.0 - 406.0	20.0	2.5 PM	7K60F1D
EF ES	90	406.1 - 480.0	20.0	2.5 PM	7K60F1D
EF ES	90	400.0 - 406.0	20.0	2.5 PM	7K60F1E
EF ES	90	406.1 - 480.0	20.0	2.5 PM	7K60F1E

Output power listed is maximum rated conducted power at antenna port. The minimum output setting is 5 W. This transmitter must be restricted to work related operations in an Occupational/Controlled RF exposure environment, not exceeding a maximum transmitting duty factor of 50%. A label, as described in this filing, must be displayed on the device to direct users to specific training information for meeting Occupational Exposure Requirements. The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 50 cm from all persons. Users must be provided with the training information, antenna installation and transmitter operating conditions for satisfying RF exposure compliance.

EF: This device may contain functions that are not operational in U.S Territories except as noted in the filing. This grant has extended frequencies as noted in the filing and Section 2.927(b) applies to this authorization.

ES: This equipment is capable of supporting a minimum data rate of 4800 bits per second per 6.25 kHz of channel bandwidth.

21.2 CE certificate

Below you find a copy of the CE certificate for our Radioddity DB25-D mobile radio.

Type Examination Certificate

BACL Bay Area Compliance Labs Corp.

USA: TCB, ISED: FCB
Japan: RCB, OFCA: FCB, IMDA: CAB
Notify Body RED Directive 2014/53/EU
Notify Body EMCD Directive 2014/30/EU

DIRECTIVE 2014/53/EU
EU TYPE EXAMINATION CERTIFICATE
NOTIFIED BODY: 1313

Certificate No.:	B21120313
Date of Issue:	2021-12-22
Manufacturer:	SAIN3 LLC 36 Berkley Drive, Newark, DE 19702, United States
Trade Name:	Radioddity
Product Designation:	DB25-D, DB20-D
Product Description:	Digital Mini Mobile Radio

Essential Requirements		Examined Documentation	Results
RED Article 3.1(a)	Safety	Technical documentation & Test report	Conform
RED Article 3.1(a)	Health	Technical documentation & Test report	Conform
RED Article 3.1(b)	EMC	Technical documentation & Test report	Conform
RED Article 3.2	Radio	Technical documentation & Test report	Conform
RED Article 3.3	Delegated Acts	Technical documentation & Test report	Not Applicable

This EU-Type Examination Certificate is issued in according with Annex III, Module B of Council Directive 2014/53/EU of 16 April, 2014 and is only valid in conjunction with the attached Appendixes.

The scope of EU Type Examination only relates to the submitted documentation.

Marking: The product shall be marked with the CE marking as required in the Council Directive 2014/53/EU

Number of Appendixes to this certificate: 1

CE

Authorized by: Jimmy Xiao

Jimmy Xiao
Certifier

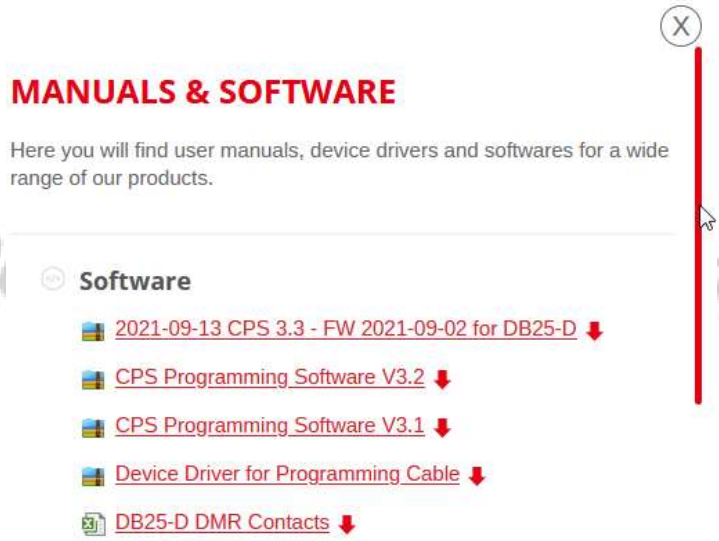
Bay Area Compliance Laboratories Corp. (BACL)
1274 Anvilwood Avenue, Sunnyvale, CA 94089, USA
Tel: 1 (408) 732-9162 Fax: 1 (408) 732-9164 Web: www.baclcorp.com

22 Where to find support material

Please kindly note that all the firmware, software, and user manuals can be found in the Support area on our official website by following these steps:

https://www.radioddity.com/ → Support → Radioddity → click on 'DB25-D'

As for the Radioddity DB25-D the resulting support page will look similar to the following:



As soon as any new material becomes available (such as firmware updates, updated manuals or others), it will be published within our Support area.

23 Revision history of this document

We are constantly trying to update our manuals according to changes resulting of new firmware versions. If you miss any aspect in this document or believe that something has been described incorrectly or in a misleading way, please feel free to give us feedback at support@radioddity.com. We will try our best to make the next version of this document of even more added value for you.

revision	Changes	released
v1.0	Initial version which now has the original manual (that comes with the radio) merged with our Addendum resulting in this extended manual for the Radioddity DB25-D	2022-02-01

We would like to thank all Radioddity DB25-D customers for their constructive feedback.

If you do find any bug in the radios firmware or our CPS, or if you are missing a feature you would have expected, write an email to support@radioddity.com. In general the software- and firmware-updates for your Radioddity DB25-D are free of charge. Using a CPS or a firmware not originating from Radioddity will void your warranty.

Thank You for Shopping at Radioddity!

FIND TUTORIALS, SUPPORT AND MORE AT:

https://www.radioddity.com/

https://www.facebook.com/radioddity

https://www.youtube.com/c/Radioddityradio