



Vratvark

PMR 446/LPD/FRS



RTS

RTS Help line

Dear client should you experience any difficulties or problems on your RTS product please feel free to contact our office at **086 100 2525** between 7:30 and 17:00.

We will gladly assist you with your purchased RTS product.

RTS Hulp lyn

Geagte klient, indien u enige probleme ondervind met die aankoop van u RTS produk, moet nie huiwer nie, skakel ons gerus op

086 100 2525 tussen 7H30 and 17H00 -
Maandae tot Vrydae. Ons sal u met graagte behuplsaam wees.

Byvoorbaat dank
RTS bestuur.

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1 Introduction

Thank you for choosing one of our products. Besides being characterised by a compact design, a housing in aluminium die-cast and a high resistance to all types of aggressions, RTS Vratvark DV-4400 rugged is an industrial and portable dual band device (PMR and PMR446) device particularly suited for very noisy environments and able to guarantee maximum robustness. The unit is pre-set at factory in the PMR446 and LPD band. To enable the PMR band, simply ask your dealer to programme (with a power up to 4W) your device. We remind you that the PMR band is subject to individual licence required to the ICASA. RTS Vratvark DV-4400 can be used in the hardest working conditions because it is compliant with the severe requirements of standards **MIL 810 C, d, E, F, and has an IP54 class**. The device offers also truly innovative features like **e-VOX** that be used also without external microphones, **unlike traditional hands free systems**.

- **101 channels** - These channels can be used to store several combinations of radio/tone frequencies. RTS Vratvark DV-4400 can operate in open or restricted traffic. It is supplied with 101 channels; 77 are pre-set at factory:
 - 8 PMR 446 channels referred to open traffic
 - 69 LPD channels referred to open traffic

2 Safety information

Warnings

Carefully read all the instructions contained in the manual and on the labels applied to the device. The manufacturer has taken all possible measures to ensure that all the information contained in this manual is complete, accurate and current. However, RTS Truat shall not be responsible for damages for which it is not directly responsible. Modifications performed by unauthorized personnel may affect the validity of the information contained in this manual.

- This transceiver is compliant with Directive 99/05/EC. Before using the device, always refer to the restrictions on the use enclosed to this manual.
- Always use the professional transceiver selected in compliance with the regulations in force in the country of residence and refrain from using it when its use is forbidden or if it is likely to cause interference or serious hazards.

Attention

The portable Vratvark DV-4400 extra transceiver has been specifically designed to guarantee a long-term safe and reliable operation. For optimum and safe performance, always observe the basic precautions applicable to all electric equipment: **do not handle the transceiver by its aerial**. The use of a faulty aerial could seriously damage the transmission power stages.

Do not keep the aerial of the radio too close to your body during transmission.

Users with cardiac stimulators, acoustic implants or medical devices should always consult their doctor or the manufacturer of these devices to make sure that they are adequately protected against RF energy.

Do not use the radio close to unshielded primers in explosive atmospheres. The radio is designed to be used in extreme conditions. However, it is always advisable to avoid exposing it to very high or low temperatures (temperatures below -20°C or above $+55^{\circ}\text{C}$). Do not expose the transceiver to excessive vibrations, dust or rain.

do not attempt to disassemble or repair the radio or battery (except for performing the routine maintenance operations described in this manual). $-20^{\circ}\text{C}/+55^{\circ}\text{C}$

4

Use original accessories only in order not to damage the radio. do not use the radio next to water sources and not spill liquids on the radio. If the transceiver gets wet, dry it immediately with a soft and clean cloth.

Always remove the battery and switch the radio off before cleaning it. Verify that the supply source is compatible with the battery-charger supplied (AC adapter). Do not place any objects on the power cable of the battery-charger in order not to damage it.

2.3 Technical support

Write the serial number of your transceiver in this space. This number is printed on the nameplate inside the battery compartment of the transceiver and must be provided for technical support and/or in the event of loss and/or theft of the unit.

Vratvark DV-4400 transceiver - Serial Number _____

Unpack and check equipment

Please take the transceiver from the carton carefully. Please check if the package including the spare parts as below:

Spare parts	Unit	Quantity
Antenna	PC	1
Belt clip	PC	1
Li-ion battery pack	Pack	1
Charger	PC	1
Power transformer	PC	1
Usual manual	PC	1
Car charger	PC	1

Please check the indicator light on the display, which would be useful for you to find what it means.

- 1、High power indicate.
- 2、VOX on indicate
- 3、display the frequency or channel number.
- 4、DCS inverse.
- 5、DCS normal.
- 6、CTCSS.
- 7、DCS.
- 8、Key-pad locked.
- 9、Setting mode
- 10、BEEP ON
- 11、Battery alert
- 12、Busy signal
- 13、Transmit signal
- 14、Battery saving.
- 15、Low power transmit signal.
- 16、Channel scan indicator

IV. Basic operation

1. Power ON/OFF

Turn on the power: Turn the [PWR/VOL] switch by clockwise to turn on the power. After hearing a "beep" sound indicator means the power was turned on, now you can start to communicate.

Turn off the power: Turn the [PWR/VOL] switch anti-clockwise to turn off the power. After hear "click" means the power was off.

2. Volume control:

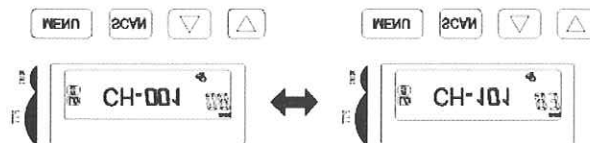
Rotating the [PWR/VOL] knob clockwise to increase the volume and counter clockwise to decrease the volume.

3. Transmitting:

Press PTT key to communicate and use normal voice to talk, keep 5 cm between your mouth and microphone.

4. Select the working channel

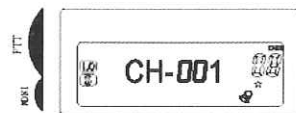
- ① From standby state, press [UP] or [Down] to get into the channel selection mode (Stored 101 channels)



- ② It will exit the channel selection mode automatically without pressing the keypad within 5 seconds.

5. See the working frequency

- ① From standby state, press [Menu] key to get into the setting mode and "★" shows.



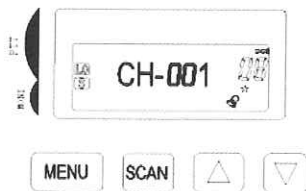
- ② Press [MENU] key within 5 second, the LCD will show receive and transmit frequency and "★" disappears.



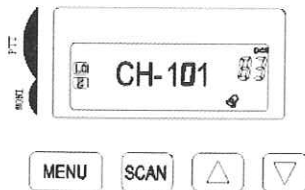
Repeat above operation ① and ② to exit the displays frequency mode.

6. Scan

- ① From standby state, press [MENU], get into the setting mode and “★” will show.



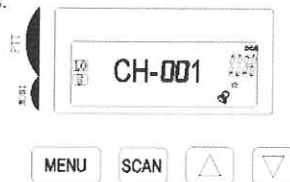
- ② Press [SCAN] key Within 5 seconds, the transceiver will get into the scan mode, scan every frequency with in the scan list (all channels are in the scan list- Factory default)



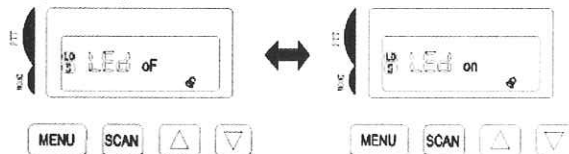
- ③ Repeat above operation ①、② to exit the mode.

7. LED backlight ON/OFF

From standby state, press [MENU], get into the setting mode and “★” will show.



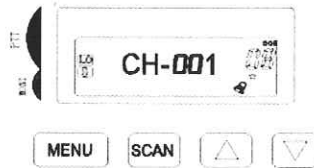
Press [UP] key within 5 seconds to get into setting of backlight and “★” will disappear, the LCD will display “LED ON/OFF”, use [UP] or [DOWN] to on/off the background light. The on/off state will be ON→OFF→ON.



Press [MENU] key to confirm and exit.

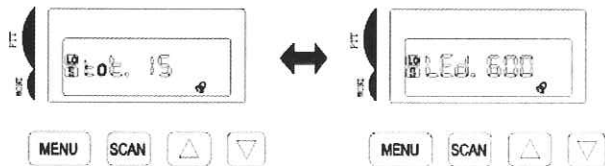
8. Time out timer setting (only works in transmitting mode)

From standby state press [MENU], get into the setting mode and “★” will be showing.



Press [DOWN] key within 5 seconds, the transceiver will get into the time out timer setting mode and “★” will disappear.

The LCD will display “tot 15/30/45/60 ... 585/600”, use [UP] or [DOWN] key to change the setting value.



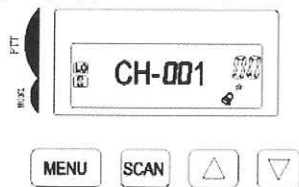
Press [MENU] key to exit

9. VOX Function

- VOX function – standard factory mode.
- Plug the Speaker /mike to the MIC/speaker socket, the screen will display the "VOX" logo.
- Speak to the microphone, VOX and transmitting function will be active when the volume is high enough.
- Stop talking after 2 seconds; the transceiver will stop transmitting automatically and start to receive.
- If you want to cancel the VOX function, please take off the speaker/mic or use the PC to set the VOX function off.

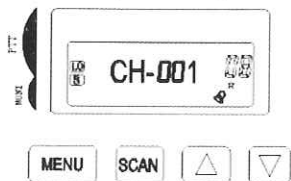
10. Monitor function

From standby state press [MONI] , the transceiver will monitor the signal of frequency by previous setting mode.



11. Keypad Locked ON and OFF

From standby state, press [Menu] key 2 second to lock the keypad, display the key symbol. Only the 【MENU】、【PTT】 and 【MONI】 , button is functional in lock mode. Long press 【MENU】 for 2 second, the keypad will unlocked, and the key icon will disappear.



V. Additional Functions

1. Indicator lights

The red light indicates when transmitting, and it turns yellow while receiving. The orange light indicates when entering copy state. The red light indicates when reading frequency by PC, and it turns yellow while writing frequency.

2. Show the back light

When press any button on the front keypad, the backlight will show and keep 5 seconds then go out.

3. TOT (Time out timer)

This function prevents the transceiver from overheating. If the transceiver keeps transmitting longer than the time which you have programmed (The longest time is 10 minutes), it will stop transmitting and sound an alarm. LCD will display "tot". release the [PTT] key to stop alarm.

4. TX/RX CTCSS/DCS Operation

- Hold [SCAN] key 2 seconds to enter the channel received and transmitted CTCSS and DCS, here the LCD will displays currently received CTCSS/DCS.
- Use [UP] and [DOWN] key to select CTCSS group 38, and DCS 83*2(press SCAN to switch CTCSS and DCS)
- Press [MENU] key to confirm the received CTCSS/DCS which you selected, here LCD will displays currently transmit CTCSS/DCS.
- Use [UP] and [DOWN] key to select CTCSS group 38, and DCS 83*2(press SCAN to switch CTCSS and DCS)
- Press [MENU] key to confirm you selected and back to standby state.

5. Change the power by the keypad

Hold [UP] and [DOWN] key together and turn on the power will enter high power state. When transceiver is turned off and on again it will revert to the dealer programmed setting.

6. Add / Delete scanning channels in Scan list

- ① From standby state, press [MENU], get into the setting mode and "★" shows.
- ② Press 【MONI】 key Within 5 seconds, the transceiver will add or delete a channel in the scan list. If channel is in scan list "▲" will appear. (Only channels 1-8 are in the scan list - Factory default)

IV. Programming Function

1. Channel working frequency

The dealer can use VRATVARK software to program the channel and set the transmitting frequency and receiving frequency.

2. Digital Codes (DCS) and Continues Tone Coded Squelch System (CTCSS)

The dealer or manufacturer can use VRATVARK software to program digital code squelch (DCS) and Continuum tone squelch system (CTCSS)

When any channel has set CTCSS or DCS, it can only receive the same channel with the same CTCSS and DCS, and it can just turn off the squelch circuit. Also the other transceiver must use the same frequency and with the same CTCSS or DCS then it can just receive your signal.

While using the same frequency but different CTCSS or DCS, the squelch system can not be turned off, the yellow light will show.

3. Squelch level setting

The dealer or manufacturer can use VRATVARK software to program the squelch level from 0-9. (Factory default level 5)

4. Battery save

If the transceiver has set battery save function, the LCD will show "S". The transceiver will enter save power state after stopping communication within 10 seconds. (Factory default ON)

5. Beep sound off

When beep sound on, the LCD will display one clock symbol, when the beep off then turn on the transceiver and press the keypad without any indicator sounds. (Factory default ON)

6. Power selection

You can select power transmit for every channel, when you select high power, the LCD will display "HI", when you select low power, the LCD will show "LO" (Factory default LOW)

7. Scan mode and parameter

A. The description scan mode

In scan mode the transceiver will scan every channel, when a signal has been detected on a channel, the scanner will pause and wait until the signal on the channel disappears. The dealer can set the delay time. During the time if the signal was received again, the transceiver will continue to keep the channel within the delay time until the signal disappears, then the transceiver will return to scan state. (Factory default 3 seconds)

B. Start-up scan

Press [MENU] then [SCAN] to start to scan.

- a. From current frequency scan the frequency one by one in increase step.
- b. Yellow light will flash
- c. When such channel receive the signal and the command is matched, the yellow light will keep showing and squelch will be off. Exit the scan state, press [MENU] key then [SCAN] key again.

C. Priority scan

The dealer or manufacturer can use VRATVARK software to set 2 kinds of priority scan.

- a. Set the fixed channel as prior scan channel. (**notice: the channel can not be empty**)
- b. Set the selected channel as prior scan channel. (**current working channel is prior scan channel**)

If you have already set the priority scan channel, when fail to receive the

matched signal during scanning, it will return to scan the prior channel while scanning every channel.

D. Return channel

During scanning, press [PTT] key, the transceiver will transmit by the following 4 modes.

(The dealer or manufacturer can use the VRATVARK to program)

- Select: During scanning, the transceiver will transmit from main channel (the working channel is set as the main channel)
- Select + transmit: During scanning, when receive any matched signal in such channel, then the scan will stop for a short time and transmit from this channel. Otherwise it will transmit from main frequency.
- Priority: During transmitting, it will transmit from the prior channel that was programmed before.
- Priority + transmit: During scanning, when receive any matched signal in such channel, then the scan will stop for a short time and transmit from this channel. Otherwise it will transmit from the prior frequency.

After transmitting, the transceiver will turn back to scan mode within the delay time which has been programmed by dealer or manufacturer.

8. Monitor and off squelch

- Monitor:** if [MONI] is set as monitor function key, then press the key after hearing a "di" sound .It means it has got into the scan mode. Cancel the command (it means the speaker will be active when receive the signal but unnecessary to match the command), Press [MONI] key again after hearing a "di di" sound to exit the monitor mode.
- Monitor instantaneous:** If [MONI] is set as the monitor instantaneous key, then keep pressing the key in monitor state, release the key to exit.
- Cancel squelch:** If [MONI] is set as cancel squelch key, then press the key to enter the cancel squelch mode, turn on the squelch and press the key again to exit cancel squelch mode.
- Instantaneous cancel squelch:** If [MONI] is set as instantaneous cancel squelch key, hold the key to enter instantaneous cancel squelch mode,

release the key to exit.

Notice: If the PF1 is set as other function, then this key will be of no effect.

Attached CTCSS and DCS list

CTCSS 40 :

67.0	88.5	110.9	141.3	179.9	233.6
71.9	91.5	114.8	146.2	186.2	241.8
74.4	94.8	118.8	151.4	192.8	250.3
77.0	97.4	123.0	156.7	203.5	69.3
79.7	100.0	127.3	162.2	210.7	245.1
82.5	103.5	131.8	167.9	218.1	
85.4	107.2	136.5	173.8	225.7	

DCS 83

023	051	114	143	174	251	315	371	445	532	631	723
025	054	115	152	205	261	331	411	464	546	632	731
026	065	116	155	223	263	343	412	465	565	654	732
031	071	125	156	226	265	346	413	466	606	662	734
032	072	131	162	243	271	351	423	503	612	664	743
043	073	132	165	244	306	364	431	506	624	703	754
047	074	134	172	245	311	365	432	516	627	712	

MAINTAIN:

- The transceiver you purchase is exactitude designed electronic product, please use it carefully. As below advice may help you use it for a long time.
- Please don't try to disconnect the transceiver because the non-technician processing may bring attaint. Use the stabilized power supply; please connect the DC line (option) with the DC jack of the transceiver.
- Please don't place the transceiver in the sun for a long time or put it in the hot place, because the high temperature will reduce the using time of electronic parts and make the plastic parts distort.
- Please keep the transceiver dry because rainwater or wet will erode the circuit.
- If you find the transceiver smells terribly or foggy. Please turn off the transceiver and take out the battery pack then contact with the dealer.

9 FREQUENCY CHART

PMR446 channels

Channel Frequency RX/TX (MHz) Channel Frequency RX/TX (MHz)

001 446.00625	002 446.01875	003 446.03125	004 446.04375
005 446.05625	006 446.06875	007 446.08125	008 446.09375

LPD channels

Channel Frequency RX/TX (MHz) Channel Frequency RX/TX (MHz)

009 433.0750	010 433.1000	011 433.1250	012 433.1500
013 433.1750	014 433.2000	015 433.2250	016 433.2500
017 433.2750	018 433.3000	019 433.3250	020 433.3500
021 433.3750	022 433.4000	023 433.4250	024 433.4500
025 433.4750	026 433.5000	027 433.5250	028 433.5500
029 433.5750	030 433.6000	031 433.6250	032 433.6500
25 433.6750	26 433.7000	36 433.9500	37 433.9750
38 434.0000	39 434.0250	40 434.0500	41 434.0750

42 434.1000	43 434.1250	44 434.1500	45 434.1750
46 434.2000	47 434.2250	48 434.2500	49 434.2750
50 434.3000	51 434.3250	52 434.3500	53 434.3750
54 434.4000	55 434.4250	56 434.4500	57 434.4750
58 434.5000	59 434.5250	60 434.5500	61 434.5750
27 433.7250	62 434.6000	28 433.7500	63 434.6250
29 433.7750	64 434.6500	30 433.8000	65 434.6750
31 433.8250	66 434.7000	32 433.8500	67 434.7250
33 433.8750	68 434.7500	34 433.9000	69 434.7750
35 433.9250			