



DIGITAL RECEIVER
AR-DV10
Operating manual



AOR, Ltd.
Authority On Radio Communications

Stay up to date! Operating manual addendum and firmware updates available at
<http://www.aorja.com/receivers/ar-dv10.html>

INTRODUCTION

Thank you for purchasing the AR-DV10.

AR-DV10 is the world's most advanced multi-mode, SDR hand-held receiver that supports a variety of digital, as well as analog modes.

Enjoy multi-digital signal monitoring on the go!

Some of its outstanding features are:

- 1) Wideband reception 100kHz ~ 1300Mhz
- 2) Multi-mode digital demodulation (automatic detection except for Tetra)
- 3) All-mode analog reception
- 4) Fast Memory Scan
- 5) Fast Program Search
- 6) Receiving support functions (such as step-adjustment, offset and priority reception)
- 7) MicroSD card support (recording, memory data input/output, firmware updates)
- 8) Dedicated radio IC for 520kHz-1710kHz AM and 64MHz-108MHz FM broadcasts.
- 9) Supplied accessories: Large capacity Lithium-ion battery pack, AC power adapter, alkaline battery tray, cigarette lighter DC/DC converter, fast charger cradle.
- 10) IPX5 water resistant (providing the antenna, battery pack, belt clip, and all rubber covers are firmly attached)
- 11) 65 (W) x 137 (H) x 41 (D) mm compact design

Please read this operating manual carefully. Its information will allow you to enjoy maximum performance from your receiver.

We sincerely hope that the AR-DV10 will be your monitoring companion for many years to come.

AOR, Ltd.

TABLE OF CONTENTS

INTRODUCTION	1
TABLE OF CONTENTS.....	2
SAFETY PRECAUTIONS.....	5
1. SUPPLIED ITEMS.....	6
2. CONTROLS & CONNECTORS	7
2.1. TOP PANEL.....	7
2.2. FRONT PANEL.....	7
2.3. LEFT SIDE	8
2.4. RIGHT SIDE.....	8
2.5. REAR PANEL.....	9
2.6. BOTTOM PANEL.....	9
2.7. LCD DISPLAY	10
3. POWER SUPPLY	14
3.1. BATTERY PACK INSTALLATION & REMOVAL	14
3.2. BATTERY PACK CHARGING.....	15
3.3. POWERING WITH ALCALINE BATTERIES.....	16
3.4. POWERING WITH CIGARETTE LIGHTER DC/DC CONVERTER.....	17
4. ANTENNA.....	18
4.1 EARPHONES ANTENNA.....	18
5. BASIC OPERATION	19
5.1. POWER ON/OFF	19
5.2. VOLUME	19
5.3. VFO MODE RECEPTION	19
5.4. FREQUENCY INPUT	20
5.5. RECEIVE MODE SELECTION.....	21
5.6. IF BANDWIDTH SELECTION	21
5.7. SQUELCH.....	22
5.8. TUNING STEP	23
5.9. STEP-ADJUST.....	24
6. AUDIO RECORDING	26
6.1. FILE FORMAT	26
6.2. RECORDING DURATION	26
6.3. RECORDING START/STOP	26
6.4. PLAYBACK.....	27

6.5. SD CARD FORMATTING	27
7. MEMORY CHANNEL & SCAN OPERATIONS	28
7.1. SAVE A FREQUENCY INTO A MEMORY CHANNEL	28
7.2. SCAN A MEMORY BANK.....	29
7.3. SCAN PASS	31
7.4. BROWSE MEMORY BANKS/CHANNELS	31
7.5. EDIT A MEMORY CHANNEL	32
7.6. ASSIGN TITLES TO MEMORY BANKS	33
7.7. CREATE A GROUP OF LINKED MEMORY BANKS	33
7.8. SCAN A GROUP OF LINKED MEMORY BANKS	35
7.9. COPY/ERASE/MOVE CHANNELS, BANKS AND GROUPS	35
8. PRIORITY RECEPTION.....	36
9. PROGRAM SEARCH.....	37
9.1. CREATE A SEARCH BANK.....	37
9.2. RUN A SEARCH.....	38
9.3. SEARCH PASS	39
9.4. CREATE A GROUP OF LINKED SEARCH BANKS	40
9.5. SEARCH A GROUP OF LINKED SEARCH BANKS.....	41
9.6. COPY/ERASE/MOVE SEARCH BANKS, GROUPS AND PASS FREQ.....	41
10. ADVANCED OPERATION.....	43
10.1. SIGNAL ATTENUATOR	43
10.2. AGC.....	43
10.3. INPUT CHARACTERS & SYMBOLS	44
10.4. DATA EDITOR (COPY, MOVE, DELETE).....	45
10.5. ADVANCED SQUELCH TYPES	46
10.5.1. CTCSS & REVERSE TONE	46
10.5.2. DCS.....	46
10.6. ANALOG VOICE DESCRAMBLER	47
10.7. ADVANCED DIGITAL MODE SETTINGS	48
10.8. OFFSET RECEPTION	49
10.9. REMOTE MODE	50
11. RECEIVER SETTINGS	51
11.1. CALENDAR & CLOCK	51
11.2. SYSTEM SETTINGS.....	51
12. RECEIVER DATA BACKUP & RESTORE.....	54
13. FIRMWARE UPDATE	56

14. TROUBLESHOOTING58

15. SPECIFICATIONS.....60

SAFETY PRECAUTIONS

- Do not use any other power adapter than the one supplied with the receiver. Only the supplied power adapter is tested and approved for use this receiver. Using third-party power adapters may cause smoke, fire, or cause the battery to burst.
- Do not operate with earphones at high volume levels. If you experience a ringing in your ears, reduce the volume level or discontinue use.
- Do not operate the receiver in a wet environment unless the flexible rubber antenna, battery pack, belt-clip and all rubber covers are securely attached to the receiver, and that the battery pack is dry before attachment. Exposing the inside of the receiver to water can result in serious damage to the receiver. In case the battery pack has been exposed to water, immediately dry the contacts completely before attaching it again to the receiver.
- Do not operate the receiver while driving a vehicle, as an accident may occur.
- Do not use harsh solvents such as alcohol or benzene to clean the receiver, as it is likely to damage the receiver's surfaces. If the receiver became dirty, wipe it clean with a soft, dry cloth.
- Do not leave the receiver in direct sunlight for an extended time, or in areas with temperatures below -10°C or over $+60^{\circ}\text{C}$
- This receiver meets IPX5 requirements for waterproof protection. However, once the receiver has been dropped or opened by a non authorized person, waterproof protection cannot be guaranteed because of possible damage to the receiver's case or waterproof seal.

Special precautions regarding the supplied lithium-ion battery pack:

- Do not short the terminals of the battery pack. Shorting may occur if the terminals touch metal objects, therefore proceed with caution when placing the battery pack in pockets or bags. Shorting may damage the battery pack, and constitute a potential fire hazard.
- Do not expose the battery pack's terminals to any liquid. Do not charge or use a wet battery pack.
- Do not try to open, impact the battery pack or solder the terminals as it may cause liquid leakage, fire hazard, damage and personal injury.
- Never expose the battery pack to temperatures higher than $+60^{\circ}\text{C}$ such as in vehicles during hot seasons, as it could catch fire and also degrade the pack's performance.
- Do only charge the supplied AOR battery pack with the supplied AOR power adapter. Only the supplied power adapter is tested and approved for use with the supplied AOR battery pack. Using third-party battery packs or power adapters may cause smoke, fire, or cause the battery pack to burst.



Recycling of the lithium-ion battery pack

Lithium-ion batteries have an estimated life time of 300 to 500 charges, after which they become weak, even fully charged. Contact your local dealer to purchase a new battery pack and to obtain information on how lithium-ion batteries should be recycled in your country.

Li-ion 00

1. SUPPLIED ITEMS

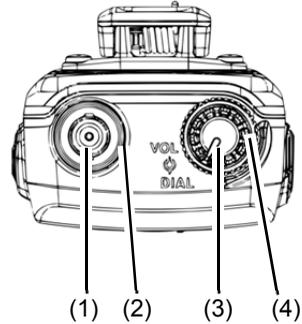
- AR-DV10 Digital Receiver (including antenna ring) 1
- AA-10 AC power adapter* 1
- BP-10 Lithium-ion battery pack 1
- CC-10 Fast charger cradle 1
- BC-10 Belt clip 1
- RA-10 Antenna 1
- DC-10 Cigarette lighter DC/DC converter 1
- BT-10 Alkaline battery tray 1
- microSD card 1
- Printed user manual 1

(* The European version is AA-10E)

2. CONTROLS & CONNECTORS

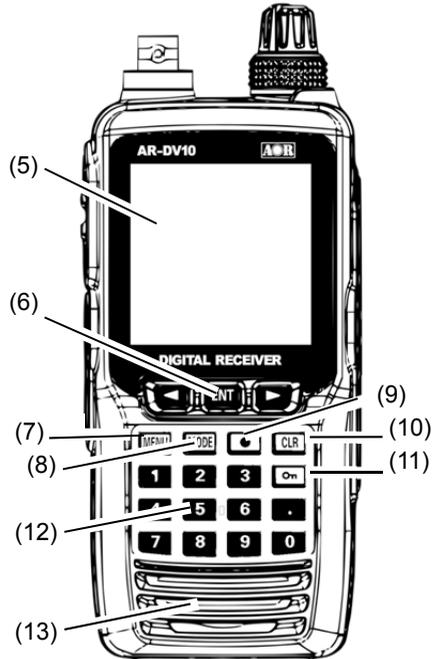
2.1. TOP PANEL

- (1) **Antenna jack (BNC 50Ω)**
Connect the supplied flexible antenna or an external antenna.
- (2) **Antenna ring**
Covers the gap between the antenna and the jack. Remains on the jack when the antenna is removed.
- (3) **VOLUME (inner) knob**
Turn this (inner) control clockwise to increase the volume and counterclockwise to decrease the volume.
- (4) **DIAL selector (outer) knob**
Tunes the frequency up or down and selects menu items.



2.2. FRONT PANEL

- (5) **LCD (liquid crystal display)**
Shows selected operation conditions, as described in chapter 2.7 "LCD DISPLAY"
- (6) **Cursor keys and [ENT] key**
[◀] and [▶] are used to change the frequency or select an item displayed on the LCD. Press the [ENT] key to determine the selection or entered values. [ENT] can also switch VFOs. Press and hold to display the memory channel registration menu.
- (7) **[MENU] key**
Displays the MENU-TOP screen.
- (8) **[MODE] key**
Displays the receive modes menu.
- (9) **[•] REC key**
Starts/stops audio recording on SD card.
- (10) **[CLR] key**
Cancels the current operation or goes to parent menu.
- (11) **[On] key lock**
Press and hold to enable/disable the lock feature. When enabled, all controls except VOL and PWR will be disabled.
- (12) **Numeric keypad**
The keypad is used when setting frequencies, bank & channel numbers, or for an entry selection in a menu.
- (13) **Loudspeaker**



2.3. LEFT SIDE

(14) POWER switch

Press briefly to switch on. Press and hold for 3 seconds to turn the receiver off.

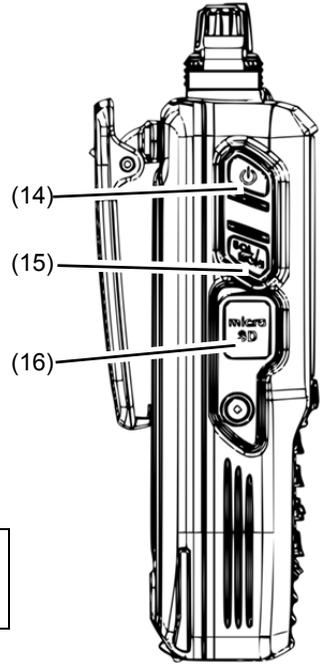
(15) SQL/MONI (squelch/monitor) switch

Press to select the squelch value to be adjusted with the DIAL. Press again to validate.

Press and hold to open the squelch manually, allowing to listen for weak signals. That is the MONITOR function.

(16) microSD card slot

Lift the rubber cover to install the supplied SD card. Used for audio recording & playback, backup and restoration of memory/bank/system/CSV data, as well as firmware updates.



All rubber covers must be closed and the battery pack installed for the receiver to be waterproof (IPX5).

2.4. RIGHT SIDE

(17) EARPHONES jack

(3 pin 3.5mm, mono output)

Lift the rubber cover to connect earphones. A setting allows the earphones cable to act as an antenna for FM (64-107.99999MHz, IF bandwidth 100kHz only).

(18) DATA jack

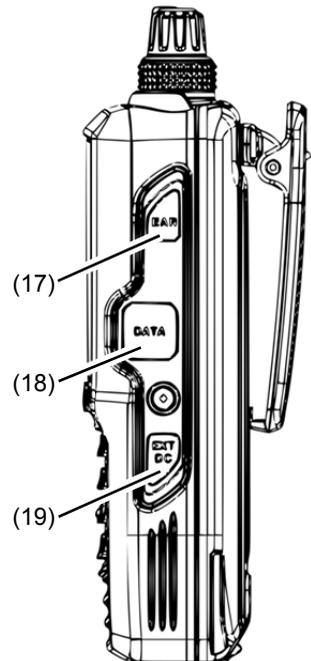
(USB mini- B socket)

Lift the rubber cover to connect a USB cable for command control. (No AOR software supplied.)

(19) EXT DC jack

To power from an external source, connect either the supplied AC power adapter or the cigarette lighter DC/DC converter.

For safety reasons, only use the supplied power sources.



2.5. REAR PANEL

(20) Belt clip screw holes

Mount here the belt clip with the 2 supplied screws.

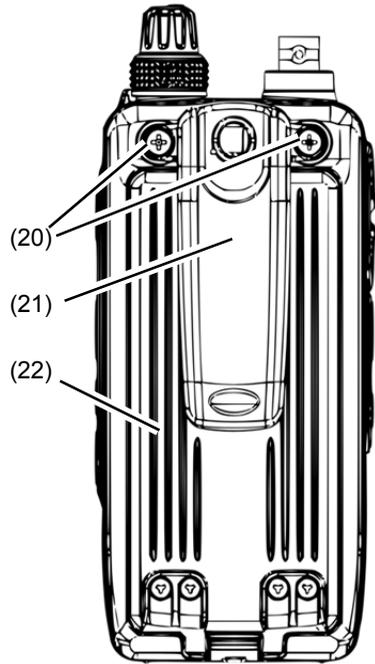
When the belt clip is not used, it is important to fix the screws to the body to prevent water filling these holes.

(21) Belt clip

(22) Battery pack

Only use the supplied lithium-ion battery pack.

Be sure that the rubber gasket on the battery pack is not loose when inserting.



All rubber covers must be closed and the battery pack installed for the receiver to be waterproof (IPX5).

2.6. BOTTOM PANEL

(23) Battery pack latch

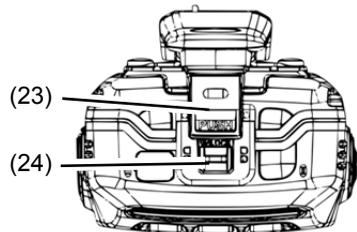
(24) Locking plate (grey color)

To install the battery pack:

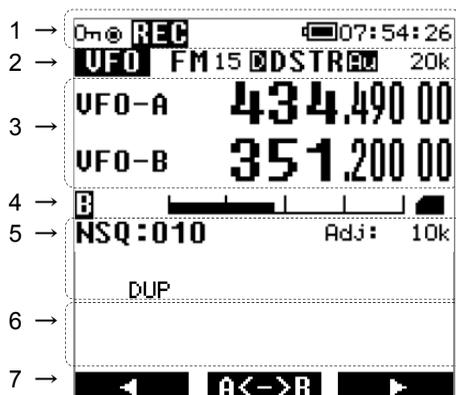
Insert the battery in the battery compartment, press the end of the battery latch on the bottom of the receiver, then lock the pack by sliding the locking plate beside the latch until the entire "LOCK" appears.

To remove the battery pack:

Turn the receiver off, slide the locking plate until the "UNLOCK" appears entirely, lift up the end of the battery by pressing the battery latch, then pull out the battery from the receiver.

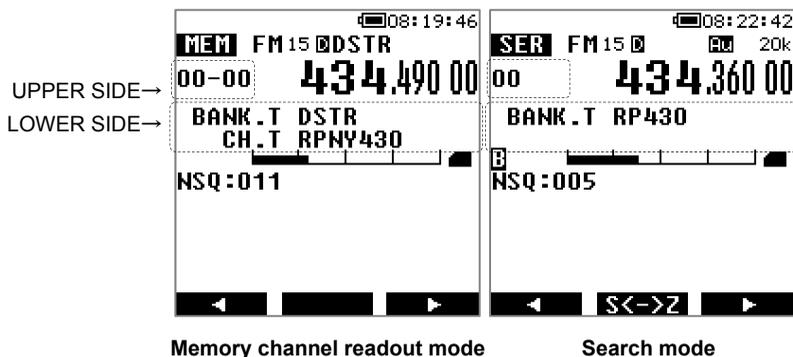


2.7. LCD DISPLAY



Section	Icons	
1		Key lock status All controls except VOL and PWR are disabled. Press and hold to enable/disable the lock feature.
		Remote control status All controls except VOL and PWR are disabled. Press the ENT key to stop remote control.
		Currently recording on SD card. Press the [•] key to toggle recording on or off.
		Battery status  : Fully charged  ~  : Partially full  : Battery almost empty (urgently recharge the battery)  : charging*  : Running on external power* (*: Not displayed when charging through the charger cradle)
	07:54:26	Time (HH:MM:SS in 24 hour format)

	VFO	Operation mode VFO : VFO MEM : Memory channel readout SCN : Scan SER : Search
	FM15	Demodulation mode and IF bandwidth in kHz or Hz. FM100, FM30, FM15, FM6 (kHz) AM15, AM8, AM5.5, AM3.8 (kHz) USB2.6, USB1.8, LSB2.6, LSB1.8 (kHz) CW500, CW200 (Hz) IF bandwidths for digital modes: FM30, FM15, FM6 (kHz)
2	D	Digital demodulation is activated.
	DSTR	Digital mode which has been set or which has been automatically detected by the receiver. DSTR: D-STAR YAES: YAESU (C4FM) DMR: DMR (Tier 1 / Tier 2 / MOTOTRBO) D-CR: Japanese D-CR & NXDN (6.25k) dPMR: dPMR (446 Tier 1) ALIN: ALINCO (EJ47U) P-25: APCO25 (Phase 1) T-DM: TETRA (Direct mode, mobile to mobile)
	Au	Auto-detection of digital modes is activated. (Except Tetra)
	20k	Frequency step in kHz. Step-adjust value (when activated) is shown in section 5.
3	VFO-A XXXX.XXX XX VFO-B XXXX.XXX XX ----- 00-00 XXXX.XXX XX BANK.T (bank title) CH.T (channel title) 00 XXXX.XXX XX BANK.T (bank title)	Receive frequency (In MHz over 3MHz and in kHz below 3MHz. The VFO of the upper line is the one currently received. ----- For <u>memory channel readout</u> and <u>scan</u> modes, the bank and channel numbers are displayed on the upper side. The bank and channel titles are on the lower side. For <u>search mode</u> , the bank number is displayed on the upper side. The bank title is on the lower side.



4		BUSY (The squelch is open)
		S-Meter signal strength meter (relative signal strength) Relative signal strength of incoming signal is indicated in standards S points, from S1 to S9. Calibration above S9 is in dB up to +60dB.
5		microSD card Solid : Card ready Blinking : Checking, please wait .
	NSQ:nnn (or LSQ) Adj: 10k DUP <u>Others:</u> VolATT CTC DCS RTN VI AGCF AGCM AGCS RF-G ATT EAR PAS	Noise squelch set at level nnn Level squelch set at level nnn Frequency step adjustment value Offset frequency is active Volume attenuator is active CTCSS squelch is active DCS squelch is active Reverse tone squelch is active Analog voice descrambler is active (not available for US consumer version.) Automatic gain control “fast” is set Automatic gain control “mid” is set Automatic gain control “slow” is set Manual gain control is set Signal attenuator is ON The earphones cable acts as an antenna for FM (64-107.99999MHz, IF bandwidth 100kHz only) Frequency pass is on.
6	from CCCCCC /3 to CQCQCQ rep1 CCCCC C rep2 CCCCC C	Details on incoming signal. Type of information is mode dependent.
7	 Each of the three black rectangles can appear as following:	Select with physical [◀], [ENT] and [▶] buttons below the display.
		Move to left or lower the frequency (by 10-fold of set step).
		Move to right or higher frequency (by 10-fold of set step).
	A<->B	Switch between VFO-A and VFO-B.
	ENT	Validate an input
		Go one line up
		Go one line down
		Return to previous screen
	BS	Erase a character at the right edge
	C◀	Move to left digit
		Move to right digit
	SEL	Selection
SET	Settings	
SET&◀	Set and return to previous screen	
NEXT	Go to next	

	S<->Z	Toggle between search, scan and VFO.
	COPY	Copy date and time information

3. POWER SUPPLY

CAUTION REGARDING THE LITHIUM-ION BATTERY PACK.

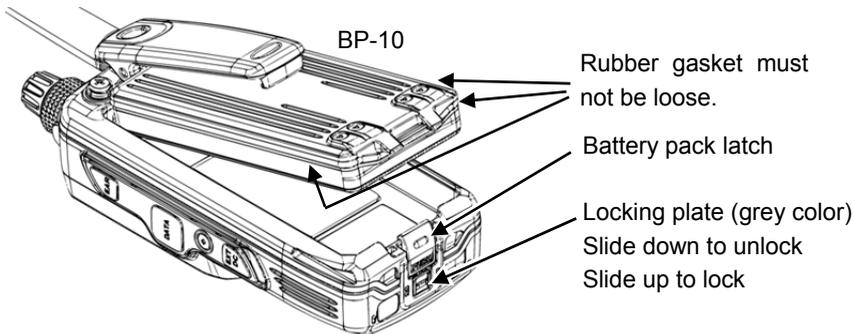
- Do not leave the charger connected to the receiver for continuous periods in excess of 24 hours. Long term overcharging can degrade the lithium-ion battery pack and significantly shorten its useful life.
- A complete discharge of the battery is likely shorten its lifespan.
- The receiver standby mode consumes some battery power even when the receiver is switched off. If you do not use the receiver for over a month, to prevent over- discharge of the battery, either remove the battery pack from the receiver or charge the battery every month.
- If you have to store the battery outside of the receiver for an extended period of time, to prevent over-discharge you should charge it for about 2 hours once every 6 months.
- The battery pack can be charged approximately 300 times, however over-charge or over-discharge might reduce this number.

Do not attempt to open the battery pack as personal injury or damage to the lithium-ion cells could occur if they become accidentally short-circuited.

3.1. BATTERY PACK INSTALLATION & REMOVAL

INSTALLATION

1. Insert the battery in the battery compartment and press the end of the battery latch on the bottom of the receiver.
2. Lock the pack by sliding the locking plate beside the latch until the entire "LOCK" appears.
3. The receiver will power on automatically. To switch it off, simply press the red power button for 3 seconds.



REMOVAL

1. Turn the receiver off.
2. Slide the locking plate until the "UNLOCK" appears entirely.
3. Lift up the end of the battery by pressing the battery latch, then pull out the battery from the receiver.

3.2. BATTERY PACK CHARGING

It is necessary to charge the lithium-ion battery fully before its first use.

1. Install the battery pack onto the receiver. Ensure that the receiver is switched off.
2. Insert the AC power adapter's DC plug into the jack located on the back of the fast charger cradle, then plug the AC power adapter into the AC line outlet.
3. Insert the receiver into the fast charger cradle as pictured.

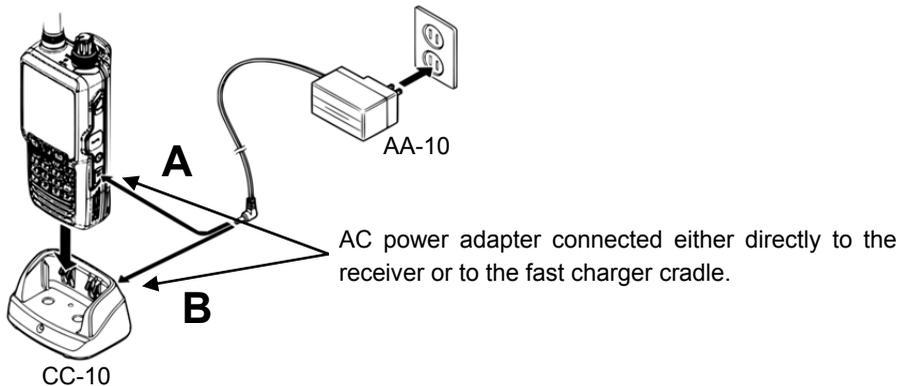
You may connect the AC power adapter directly to the receiver, however charging is much slower.

Approximate charging times of a fully discharged battery pack:

- AC power adapter connected to receiver: 90%charge : 8~9 hours
Full charge : 11~12 hours
- AC power adapter connected to fast charger cradle: 6~7 hours

Note:

While it is possible to switch the receiver on and operate it while charging the battery pack, the charging time will be significantly longer.



A: When the AC power adapter is connected directly to the receiver, after approx. 10 seconds the LCD will indicate “CHARGING”. Once the battery is fully charged, this indication will disappear. If the receiver is switched on while the charger is still connected, a  icon will appear on the top of the LCD. A minute later it will turn to  to indicate a charging status.

Important:

Do not leave the AC power adapter connected directly to the receiver after the charge is complete, as long term overcharging can degrade the lithium-ion battery pack and significantly shorten its useful life.

B: When the AC power adapter is connected to the fast charger cradle and the receiver inserted into the cradle, the cradle's LED will first turn red, indicating a charging status. Once the battery pack is full, it will turn green.

A flashing red LED indicates a charging error. If this occurs, please check following:

- Inspect the battery pack and charger cradle electrodes for any stain or obstructive object.
- The battery pack might be over-discharged. A totally empty battery pack cannot be charged using the cradle. In that case connect the AC power adapter directly to the receiver to charge the battery pack for about 10 minutes. Then continue the charge as usual through the charger cradle.

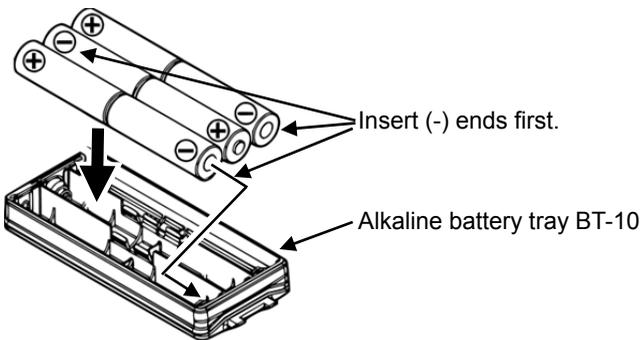
3.3. POWERING WITH ALCALINE BATTERIES

The supplied alkaline battery tray allows operation of the receiver using six "AA" size alkaline battery cells.

Important :

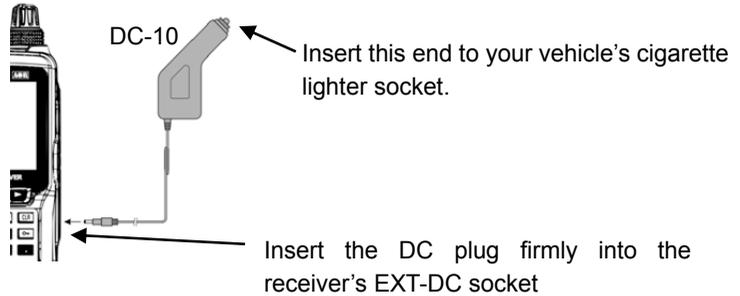
- The battery tray must NOT be used with rechargeable cells, as it does not contain the thermal and over-current protection circuits required when utilizing Ni-Cd and Ni-MH cells!

When installing the alkaline batteries, insert the (-) end first, then press in the (+) end so the battery snaps into place. Pay attention to the polarity indicated inside the tray.



3.4. POWERING WITH CIGARETTE LIGHTER DC/DC CONVERTER

Using the supplied cigarette lighter DC/DC converter (DC-10), you can use a vehicle's cigarette lighter socket (12V or 24V) as the power source.



Important :

- Do not connect any accessory unapproved by AOR to supply DC power; otherwise the receiver may be damaged.
- The AOR cigarette lighter DC/DC converters from other receivers are not compatible with the AR-DV10.

4. ANTENNA

The AR-DV10 is supplied with a flexible rubber antenna to be attached to the 50 Ohm BNC jack located at the top of the receiver.

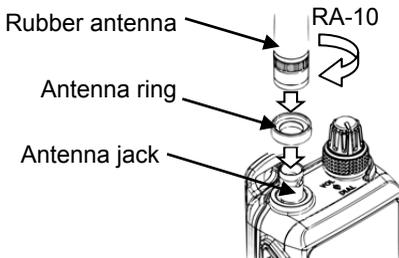
Note :

- AR-DV10 does not feature any internal AM ferrite antenna.
- Due to physical limitations, the supplied flexible rubber antenna is not ideal for reception of LW, MW or SW. Although it does work to some extent, you should connect a dedicated external antenna for optimal reception of those bands. However as the receiver's RF stage is extremely sensitive, if the signal is too strong, it could potentially overload the RF stage. It is therefore highly advised to use an external antenna signal attenuator if you connect an external antenna.

ANTENNA INSTALLATION

1. Make sure that the antenna ring is in place.
 2. Align the slots of the supplied rubber antenna to the pins of the antenna jack.
 3. Rotate the antenna clockwise $\frac{1}{4}$ turn to lock the mechanism.
- To remove the rubber antenna, rotate the antenna anti-clockwise $\frac{1}{4}$ turn to unlock the mechanism.

The antenna ring covers the gap between the antenna and the jack. Remains on the jack when the antenna is removed. The ring does not fulfill any waterproofness function.



4.1. EARPHONES ANTENNA

When this function is activated, the earphones cable acts as an antenna for FM (64-107.99999MHz, IF bandwidth 100kHz only).

1. Press [MENU]→use the cursor key [▶] to select [OPT] and press [ENT].
2. Use the cursor key [▶] to select [EAR ANT] and press [ENT].
3. Select ON or OFF by rotating the DIAL selector knob.
4. Press [ENT] twice.

When set to ON, [EAR] will be displayed on the main screen.



5. BASIC OPERATION

5.1. POWER ON/OFF

To power ON, briefly press the red power button. Don't keep your finger pressed, otherwise the boot sequence cannot start.

It takes about 3 seconds to the receiver to be ready for operation.

To power OFF, press and hold the red power switch for 3 seconds. Don't keep your finger pressed passed the 3 seconds, otherwise the shut down sequence can't complete.

It takes about 3 seconds to the receiver to completely shut down.

During these 3 seconds, all receiver settings and frequency data are saved in the receiver's memory.

Note: Be sure not to suddenly interrupt power supply, otherwise the receiver will not remember your previously saved receiver settings and frequency data.

5.2. VOLUME

Turn the volume (inner) knob clockwise to increase the volume and counterclockwise to decrease the volume. The volume knob controls the speaker & earphones volumes, as well as the key press, startup and error beep levels.

However the beep levels can be set individually as follows:

1. Press [MENU], use [▶] to select [CONF] and press [ENT] twice.
2. Using the DIAL, adjust the desired beep level between 00 (off) and 15 (max).
3. Validate with [ENT].

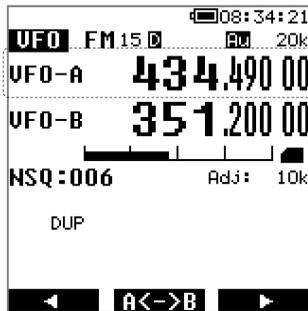
The maximum volume level can also be set as follows:

1. Press [MENU], use [▶] to select [CONF] and press [ENT].
2. Use [▶] to select [VOL ATT] and press [ENT].
3. Using the DIAL, adjust the desired maximum volume level between 00 (maximum volume) and 15 (most attenuated). Default is level 5.
4. Validate with [ENT].

5.3. VFO MODE RECEPTION

AR-DV10 has three VFOs, VFO-A, VFO-B and VFO-Z, each of which has independent receive frequency, demodulation mode, frequency step, etc.... However only one VFO can be selected and received at a time.

VFO currently being received →



VFO-A selection:

Press [MENU] and [ENT] twice.

VFO-B selection:

Press [MENU] and [ENT]. Then use [▶] to select [B] and press [ENT].

VFO-Z selection:

Press [MENU] and [ENT]. Then use [▶] to select [Z] and press [ENT].

- Press [ENT] to switch between VFO-A and VFO-B.

5.4. FREQUENCY INPUT

In VFO mode there are 3 ways to adjust a frequency:

A) KEYPAD

Directly enter the frequency in MHz with the keypad and validate with [ENT].

For example to set 439.49MHz:

[4]→[3]→[9]→[.]→[4]→[9]→[ENT]

For frequencies under 1MHz, start with [0] [.] or just [.]

To delete just one digit, use the [◀] key.

To cancel frequency input, press [CLR].

B) DIAL SELECTOR KNOB

Turn the dial selector knob on the top panel to choose the desired operating frequency.

The incremented step per knob click is as per the frequency step displayed at the top right corner of the screen. (See chapter 5.8 "TUNING STEP" on how to change this step value.)

C) USING THE [◀] and [▶] KEYS (fast tuning method)

Press [▶] to increase or [◀] to decrease the frequency.

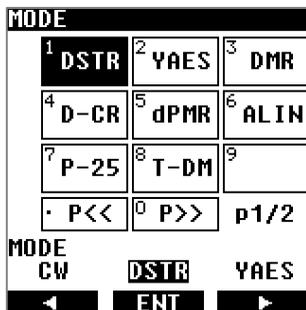
The incremented step per click is 10 times the frequency step displayed at the top right corner of the screen. (See chapter 5.8 “TUNING STEP” on how to change this step value.)

5.5. RECEIVE MODE SELECTION

Press [MODE] and use the arrows [◀] or [▶] to select the desired receive mode and validate with [ENT].

The first page lists the digital modes:

- DSTR: D-STAR
- YAES: YAESU (C4FM)
- DMR: DMR (Tier 1 / Tier 2 / MOTOTRBO)
- D-CR: Japanese D-CR & NXDN (6.25k)
- dPMR: dPMR (446 Tier 1)
- ALIN: ALINCO (EJ47U)
- P-25: APCO25 (Phase 1)
- T-DM: TETRA (Direct mode, mobile to mobile)

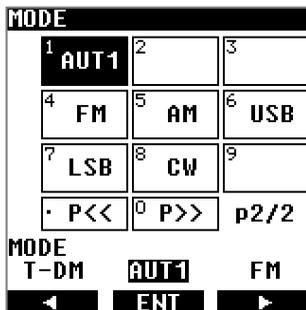


- When a digital mode is selected, sound will be muted until the receiver can detect a signal of this mode.
- Please note that some restrictions apply for each mode.

The second page lists the analog modes with the exception of AUT1.

AUT1 corresponds to automatic detection of digital modes listed above, except Tetra.

AUT1 is particularly useful when you are DXing for digital signals, but don't know in advance which kind of digital signals you might meet.



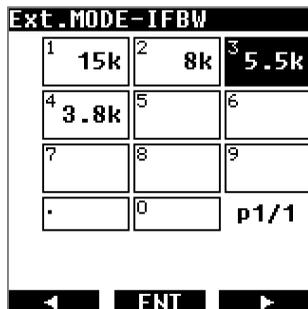
- Squelch remains open for AUT1, therefore you will hear radio noise even when no actual digital mode is received.

5.6. IF BANDWIDTH SELECTION

The appropriate IF bandwidth needs to be set manually for each analog demodulation mode. However for digital modes, the IF bandwidth is automatically selected and cannot be changed.

After the desired analog mode has been set, access the IF bandwidth menu as follows:

1. Long press [MODE] and use [▶] to select [IFBW], followed by [ENT].
2. Use the arrows [◀] or [▶] to select the desired bandwidth and validate with [ENT].
(Greyed out values cannot be selected.)



Above example shows selectable bandwidths for AM mode.

User selectable bandwidths for each of the analog modes:

FM	6, 15, 30, 100 kHz
AM	3.8, 5.5, 8, 15 kHz
USB	1.8, 2.6 kHz
LSB	1.8, 2.6 kHz
CW	200, 500 Hz

5.7. SQUELCH

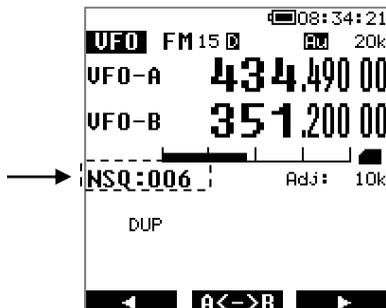
Squelch is a function which quiets the background “white” radio noise, when no signal is present. It operates in analog modes (FM, AM, USB, LSB, CW) and the digital auto-mode (AUT1). It has no effect for the individual digital modes (DSTR, YAES, DMR, D-CR(NXDN), dPMR, ALIN, P-25, T-DM) as the receiver only lets audio pass through when a digital signal is detected.

The squelch can be manually “opened” to allow signals to be heard, or “closed” to mute the audio of the signal.

When the squelch is “open”, the indicator **B** (for busy) appears on the left side of the LCD.

When doing a memory SCAN or SEARCH, the squelch setting is very important as it serves as a threshold to the receiver to determine if there is indeed a signal or not, and when to resume scanning.

Squelch type and threshold value example



Squelch is adjusted as follows:

1. Press the [SQL/MONI] switch on the left side of the receiver, that will select the [NSQ:006] area pictures above.
Rotate the DIAL selector to set the squelch threshold so that the receiver is just silenced. The squelch is now “closed” as no audio is let through.
2. Press the [SQL/MONI] again to return to normal operation.

Note: Do not set the squelch value too high, as a higher number indicates that a higher signal level is required in order to open the squelch.

Monitor function:

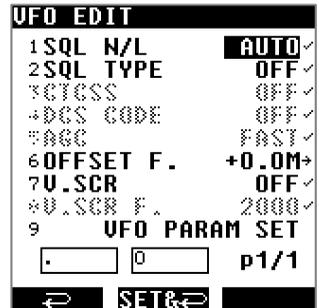
Squelch can be temporarily fully opened by keeping the [SQL/MONI] switch pressed. That is useful to listen to weak signals, where the signal level is close to the noise level.

There are 2 types of analog squelch:

NSQ (noise squelch) used for FM mode (including all digital modes).
LSQ (level squelch) used for AM, LSB, USB, CW modes.

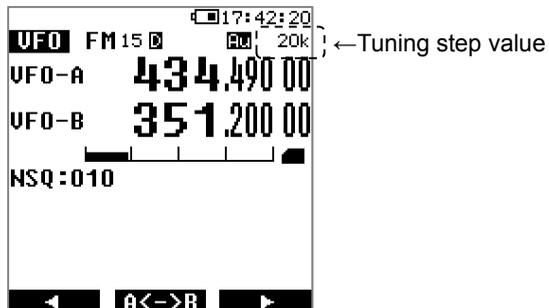
The receiver automatically selects the appropriate squelch type for optimal performance. However if needed you can force the squelch type as follows:

1. Press [MENU], then [ENT].
2. Use [▶] to select [VFO EDIT], followed by [ENT] twice.
3. Rotate the dial selector knob to select NOISE or LEVEL.
4. Validate with [ENT].
5. Activate your settings by going to line VFO PARAM SET using [▶] and press [ENT].



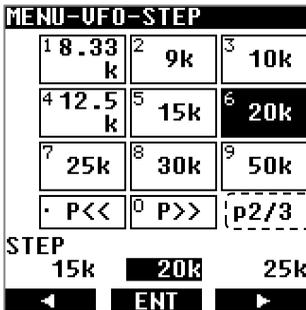
5.8. TUNING STEP

A tuning step is the value by which the frequency will be incremented per click when rotating the dial selector knob.



The tuning step value can be changed as follows:

1. Press [MENU], then [ENT].
2. Use [▶] to select [STEP], then press [ENT]

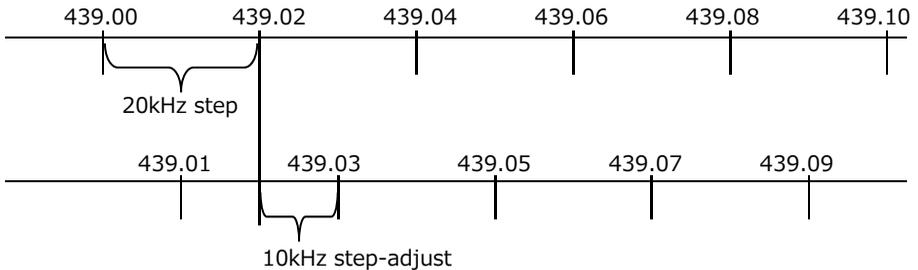


Note that there are 3 pages for values from 10Hz up to 500kHz.

3. Use the arrows [◀] or [▶] to select the desired step and validate with [ENT].

5.9. STEP-ADJUST

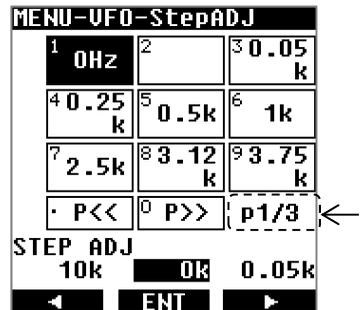
This function is useful in the case of a special frequency array where the received frequency is not divisible by the step frequency. Step-adjust allows to adjust the step accordingly. The following example describes a situation of a 20kHz frequency step which needs to be adjusted by 10kHz.



The step-adjust value can be set as follows:

- Press [MENU], then [ENT].
Use [▶] to select [STEP ADJ], then press [ENT]

Note that there are 3 pages for values from 0.05kHz up to 250kHz. Select 0Hz to disable the function.



Use the arrows [◀] or [▶] to select the desired value and validate with [ENT].

Note: The maximum value which you can select corresponds to half the frequency step set in chapter 5.8 “TUNING STEP”.

6. AUDIO RECORDING

The received audio can be recorded in MONO on a microSD card and played back.

Note :

- When a microSD card is inserted, the receiver might take more or less time to read the card's content, depending on the size of the card. When the icon  is still blinking, it means that the receiver is currently reading the card. Once the icon  is solid, the card is ready for operation.
- If the icon  does not appear on the LCD after the card has been inserted, either the card's file format has not been recognized by the receiver, or the card's terminals are dirty.

Do never remove the card while recording (when the **REC** icon is lit) or when data is written to the card. Interrupting data writing is likely to corrupt the card's file system and loss of data can occur.

6.1. FILE FORMAT

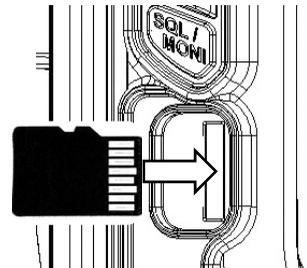
- Audio is recorded in WAV format, 16bits, 38400kHz, mono.
- The resulting files names have 8 numerical digits, (ex. 00000001.wav).
- Each new recording has a file number incremented by 1. (ex. 00000001.wav will be followed by 00000002.wav).
- If the file 99999999.wav is present in the SD card, a new recording cannot be made.
- The .wav recordings can also be played back using audio playback software of most operating systems. However the computer must feature an SD card reader to read your card.

6.2. RECORDING DURATION

- Approx. three and half hours recording per GB.
- Long recordings will automatically be split in chunks of 100MB (approx. 21min.)
- If the microSD card is out of free space, recording will not start.

6.3. RECORDING START & STOP

1. Lift the rubber cover labeled MicroSD.
2. Insert the SD card.
Refer to the illustration for the SD card's orientation.



Make sure that the SD card icon  appears on the right side of the screen.

START

Press the [●] button to start audio recording.

Once started, the **REC** icon will be displayed on the top left of the LCD.

STOP

Press the [●] button to stop audio recording.

The **REC** icon will blink while data is written to the card. Once the icon is off, data write is complete.

Note : If the data being written is large, it might take a while until data write is complete. Do not interrupt this process.

HOW TO SKIP BLANKS

The function SQL.SKIP allows to skip blanks in your recording. If SQL.SKIP is set to ON, the recording is paused when the squelch is closed (the recording file does not increase in size) and the recording is performed only when the squelch is open.

1. Press [MENU]→use the cursor key [▶] to select [CONF] and press [ENT].
2. Use the cursor key [▶] to select [SQL.SKIP] and press [ENT].
3. Select ON or OFF by rotating the DIAL selector knob.
4. Press [ENT].

6.4. PLAYBACK

Audio which has been recorded using the AR-DV10 can be played back directly on the AR-DV10.

1. Long press on [●] followed by [ENT].

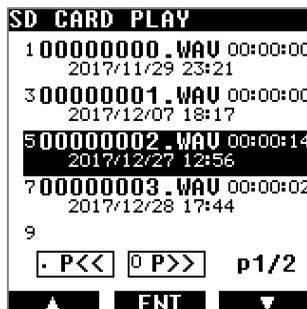
- The recordings file list is displayed.
- You can browse through the file list using the [▶] key.

2. Select the desired recording and press[ENT] to start the playback. [PLAY] will blink on top of the screen during playback.

3. To stop playback, press the [CLR] button.

6.5. SD CARD FORMATTING

The receiver cannot format SD cards. Should you need to format your card, use the official SD formatting utility available at http://www.sdcard.org/downloads/formatter_4/



7. MEMORY CHANNEL & SCAN OPERATIONS

- AR-DV10 can store 2000 memory channels, divided into 40 banks of 50 memory channels each.
- Frequencies can be conveniently stored into “memory channels”, along with the demodulation, IF bandwidth, etc...
- Commonly used frequencies can be stored into “memory banks”, which can be scanned either individually or in a group of linked banks.
- SCAN is a function which allows to find a live signal among the memory channels registered into a memory bank.
- Memory channels are numbered from 00 to 49.
- Memory banks are numbered from 00 to 39.
- Scan groups are numbered from 0 to 9.
- It is crucial to correctly set the SQUELCH level for the scan function to operate. In order to do that, tune to a none-active frequency and increase the squelch level to the point where the sound will mute. We want the squelch to only open when the signal becomes active.

7.1. SAVE A FREQUENCY INTO A MEMORY CHANNEL

Frequencies can be conveniently stored into “memory channels”, along with the demodulation mode, IF bandwidth, pass and protection status, and a name.

To save a frequency into memory (fast way):

1. Tune to the desired frequency with the correct demodulation mode and IF bandwidth.
2. Long press [ENT] to access the memory channel registration page.

The first line [BANK-CH] will be highlighted. The receiver will automatically assign the next available memory band and memory channel.

(If it's the first time you save a frequency into a memory channel, it will be BANK 00, CHANNEL 00.)



If you previously set the correct MODE and IFBW, and do not wish to set assign a channel name now, then you just need to save settings as follows:

3. Use the [▶] button to go to the last line [MEM CH PARAM SET] and press [ENT].

To save a frequency into a memory channel (while editing details):

Long press [ENT] to access the memory channel registration page.

To edit any of the parameters, just use the [▶] button to highlight the parameter to change, and press [ENT] to edit as follows:

BANK-CH: Use the keypad to enter the bank number and channel number, followed by [ENT]. For ex. [0110] + [ENT] for bank 01 and channel 10.

- FREQ:** Use the keypad to enter the frequency in MHz, followed by [ENT].
- MODE:** Rotate the dial selector knob to select the desired demodulation mode, and press [ENT].
- IFBW:** Rotate the dial selector knob to select the desired IF bandwidth, and press [ENT].
- PASS:** Rotate the dial selector knob to toggle the frequency pass ON or OFF, and press [ENT]. If set to ON, this memory channel will be ignored when its memory bank is scanned.
- T:** Input a name as described in chapter 10.3 "INPUT CHARACTERS & SYMBOLS".
- PROTECT:** Rotate the dial selector knob to toggle the protect ON or OFF, and press [ENT]. If set to ON, this memory channel cannot be erased.

(on page 2/2)

- SQL N/L:** Rotate the dial selector knob to chose between LEVEL, NOISE or AUTO squelch.
- SQL TYPE:** Rotate the dial selector knob to chose between CTCSS, DCS, reverse tone and OFF.
- CTCSS:** Rotate the dial selector knob to set the CTCSS tone frequency manually, or in automatic discovery mode (SRCH), or OFF.
- DCS CODE:** Rotate the dial selector knob to set the DCS tone code manually, or in automatic discovery mode (SRCH), or OFF.
- AGC:** Rotate the dial selector knob to set automatic gain control to FAST, MID, SLOW or RF-G.
- OFFSET F.:** Set the offset frequency function as described in chapter 10.8 "OFFSET RECEPTION".
- V.SCR:** Set the voice descrambler function as described in chapter 10.6 "ANALOG VOICE DESCRAMBLER"

Finally save all your settings: Use the [▶] button to go to the last line [MEM CH PARAM SET] and press [ENT].

7.2. SCAN A MEMORY BANK

The scan mode scans the memory channels that you have previously registered in one or more memory banks, for active signals. It is crucial to correctly set the SQUELCH level for the scan function to operate. In order to do that, tune to a none-active frequency and increase the squelch level to the point where the sound will mute. We want the squelch to only open when the signal becomes active.

Annotations for the scan mode display:

- Memory bank number and memory channel number → 02-00
- Memory bank title → BANK.T
- Memory channel title → CH.T

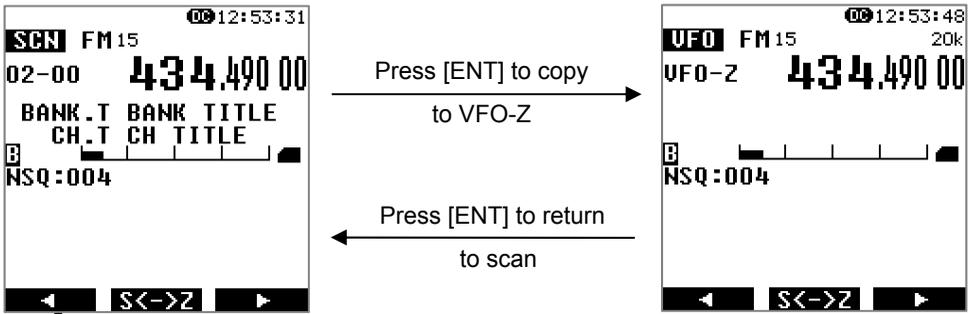
Display content: SCN FM 15.0 11:33:12
02-00 434.490 00
BANK.T BANK TITLE
CH.T CH TITLE
NSQ:004

To scan a memory bank:

1. Go to [MENU], use the [▶] button to select [SCAN] and press [ENT].
2. Use the [▶] button to select [BANK] and press [ENT].
3. Enter the bank number you wish to scan with the keypad. Scan will start immediately.
 - If scan stops on a non-active frequency, it means that the squelch level needs to be increased, as follows:
Press the SQL/MONI switch and turn the dial selector knob clockwise until sound mutes and scan resumes. Press SQL/MONI again to keep that squelch value.
 - You can change the scan direction with the [◀] and [▶] keys.
 - To force scan to resume (even though it stopped on an active frequency), turn the dial selector knob by one increment, clockwise or counter-clockwise, depending on the scan direction.
 - If you change the demodulation mode while scan stopped on an active frequency, the new mode will be saved into that memory channel.

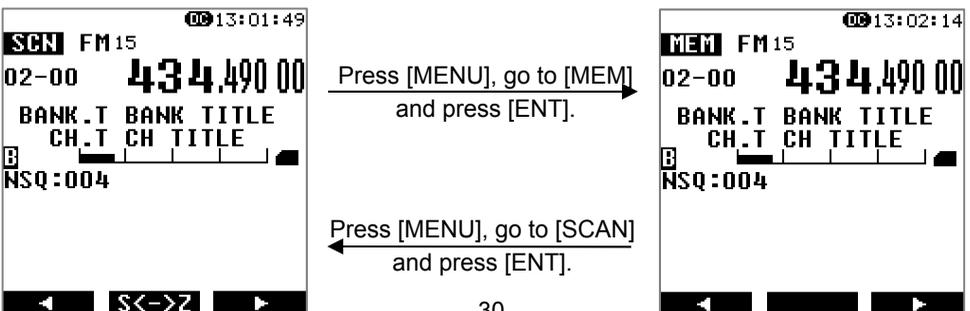
To copy a scanned channel to VFO:

- When scan has stopped on an active frequency of interest, this frequency channel, along with all its VFO settings, can be copied to and received on VFO-Z.



To switch to memory channel browser during scan:

- When scan has stopped on an active frequency of interest, you can temporarily switch to memory channel browser mode.



7.3. SCAN PASS

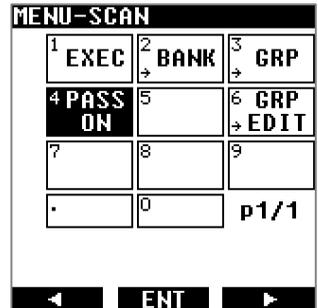
The scan pass function does mark a memory channel to be ignored during scan. This is useful to temporarily disable memory channels, without having to erase them.

Let's say you are scanning a memory bank and scan has stopped on an active signal, but you want to bypass this frequency for future scans. While scan is stopped on that frequency (memory channel), proceed as follows:

Press [MENU] followed by [ENT].

Use the [▶] button to select [PASS ON] and press [ENT].

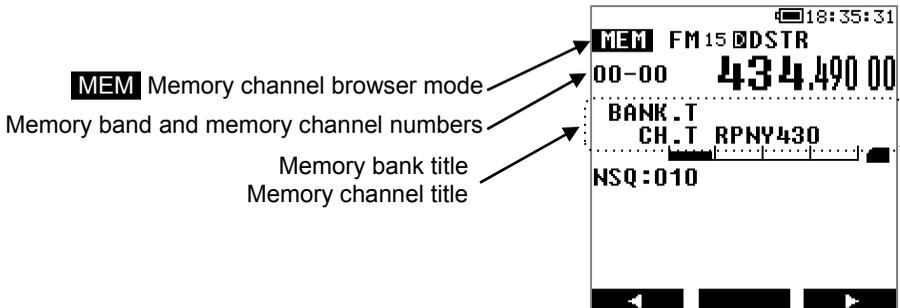
If you want to reintegrate a frequency into your scans, you can do that in its properties menu (See chapter 7.5 "EDIT A MEMORY CHANNEL").



7.4. BROWSE MEMORY BANKS/CHANNELS

Memory channels which already contain saved frequencies can be manually browsed and received as follows:

Press [MENU], use the [▶] button to go to [MEM] and press [ENT] twice.



There are 2 ways to browse through memory channels:

- Rotating the dial selector knob. Each increment tunes to the next registered memory channel.
- Direct input of the bank and channel numbers using the keypad. You can also just enter the desired bank number followed by [ENT]. It will start with the lowest registered memory channel in that bank.

7.5. EDIT A MEMORY CHANNEL

A memory channel which already contains a saved frequency, can be edited as follows:

1. Press [MENU] and use the [▶] button to go to [MEM] and press [ENT]
2. Use the [▶] button to go to [CH EDIT] and press [ENT] twice.
3. Use the keypad to enter the bank number and channel number, followed by [ENT]. For ex. [0110] + [ENT] for bank 01 and channel 10.
4. To edit any of the parameters, just use the [▶] button to highlight the parameter to change, and press [ENT] to edit as follows:

BANK-CH: Use the keypad to enter the bank number and channel number, followed by [ENT]. For ex. [0110] + [ENT] for bank 01 and channel 10.

FREQ: Use the keypad to enter the frequency in MHz, followed by [ENT].

MODE: Rotate the dial selector knob to select the desired demodulation mode, and press [ENT].

IFBW: Rotate the dial selector knob to select the desired IF bandwidth, and press [ENT].

PASS: Rotate the dial selector knob to toggle the frequency pass ON or OFF, and press [ENT]. If set to ON, this memory channel will be ignored when its memory bank is scanned.

T: Input a name as described in chapter 10.3 "INPUT CHARACTERS & SYMBOLS".

PROTECT: Rotate the dial selector knob to toggle the protect ON or OFF, and press [ENT]. If set to ON, this memory channel cannot be erased.

(on page 2/2)

SQL N/L: Rotate the dial selector knob to chose between LEVEL, NOISE or AUTO squelch.

SQL TYPE: Rotate the dial selector knob to chose between CTCSS, DCS, reverse tone and OFF.

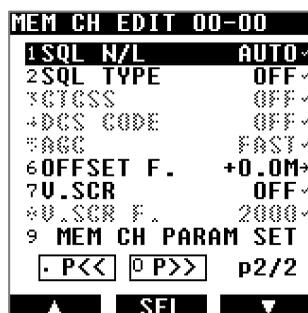
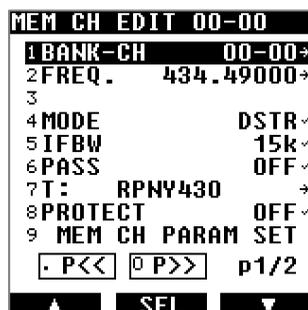
CTCSS: Rotate the dial selector knob to set the CTCSS tone frequency manually, or in automatic discovery mode (SRCH), or OFF.

DCS CODE: Rotate the dial selector knob to set the DCS tone code manually, or in automatic discovery mode (SRCH), or OFF.

AGC: Rotate the dial selector knob to set automatic gain control to FAST, MID, SLOW or RF-G.

OFFSET F.: Set the offset frequency function as described in chapter 10.8 "OFFSET RECEPTION".

V.SCR: Set the voice descrambler function as described in chapter 10.6 "ANALOG VOICE DESCRAMBLER"



5. Finally save all your settings: Use the [▶] button to go to the last line [MEM CH PARAM SET] and press [ENT].

7.6. ASSIGN TITLES TO MEMORY BANKS

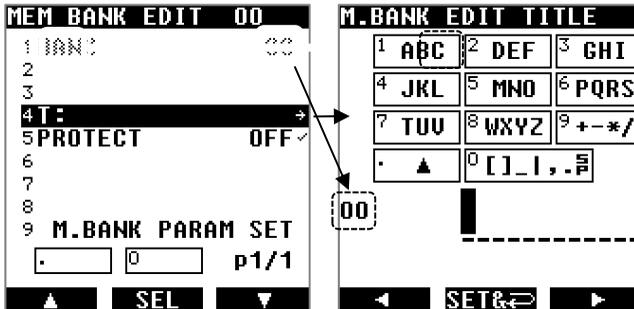
You can assign a title to each memory bank, and set a protection so the bank is not accidentally erased.

1. Press [MENU], use the [▶] button to select [MEM] and press [ENT].
2. Use the [▶] button to select [BANK EDIT] and press [ENT].
3. To edit any of the parameters, just use the [▶] button to highlight the parameter to change, and press [ENT] to edit as follows:

T: Input a bank title as described in chapter 10.3 “INPUT CHARACTERS & SYMBOLS”.

PROTECT: Rotate the dial selector knob to toggle the protect ON or OFF, and press [ENT]. If set to ON, this memory bank cannot be erased.

4. Finally save all your settings: Use the [▶] button to go to the last line [MEM CH PARAM SET] and press [ENT].



7.7. CREATE A GROUP OF LINKED MEMORY BANKS

There are 10 scan groups (numbered 0 to 9) that you can set up individually to scan a group of linked memory banks. Each scan group can be setup with its own squelch behavior as follows:

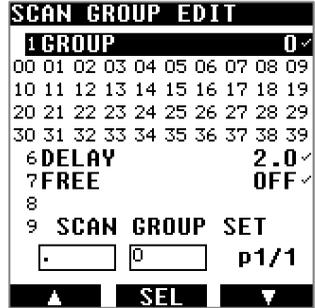
- Delay time, which is the time between signal interruption and squelch closing, for scan to resume.
- Free time, which is the time after which scan will resume, no matter if the signal was interrupted or not.

Create a scan group:

1. Press [MENU], use the [▶] button to select [SCAN] and press [ENT].

2. Use the [▶] button to select [GRP EDIT] and press [ENT] twice.
3. Enter the scan group number you would like to create, with the keypad.

This illustration shows an example of scan group 0 and all bank numbers from 00 to 39 which can be linked, providing of course they already have frequencies registered.



4. Press the [▶] button followed by [ENT], that will select the first bank 00 (the selected bank will blink).

Let's say we want to link banks 00 and 01.

5. Press the [.] key to register bank 00.
6. Use the [▶] button to go to bank 01 and press the [.] key to register bank 01. (You can also rotate the dial selector knob to rapidly scroll through the bank numbers)

If you selected another bank number by mistake, you can deselect it with the [.] key.

The linked banks 00 and 01 will appear as follows:

```

00 01 02 03 04 05 06 07 08 09
10 11 12 13 14 15 16 17 18 19
20 21 22 23 24 25 26 27 28 29
30 31 32 33 34 35 36 37 38 39
  
```

7. Press the [9] key to save the bank link selection and move to the following settings for [DELAY TIME].

Delay time:

It's the time between signal interruption and squelch closing, for scan to resume. It can be set between 0.1 and 10 seconds, in 0.1 second increments. [OFF] is for no delay. Default is 2 seconds.

Press [ENT] and rotate the dial selector knob to select the desired timing. Validate with [ENT]. The following setting [FREE] is now selected.

Free time:

It's the time after which scan will resume, no matter if the signal was interrupted or not. It can be set between 1 and 60 seconds. [OFF] means scan will only resume after signal interruption, as set in "Delay time". Default is [OFF].

8. Press [ENT] and rotate the dial selector knob to select the desired timing.
9. Validate with [ENT].
10. To save all settings of this group link page, press [ENT].

7.8. SCAN A GROUP OF LINKED MEMORY BANKS

Select the scan group of linked memory banks to be scanned:

1. Press [MENU], use the [▶] button to select [SCAN] and press [ENT].
2. Use the [▶] button to select [GRP] and press [ENT].
3. Input the scan group number with the keypad and press [ENT].



Start the scan of this group:

4. Press [MENU] use the [▶] button to select [SCAN] and press [ENT].
5. Press [ENT] again.

7.9. COPY/ERASE/MOVE CHANNELS, BANKS AND GROUPS

You can copy, move, and erase the contents of memory channels, memory banks and scan groups as follows.

1. Press [MENU].
2. Use [▶] to select [EDIT] and press [ENT].
3. Use [▶] to select any of the following categories on which you would like to perform data COPY, MOVE or ERASE:

MEM CH: For just a single memory channel.

MEM BANK: For an entire memory bank.

SCAN GRP: For a scan group.

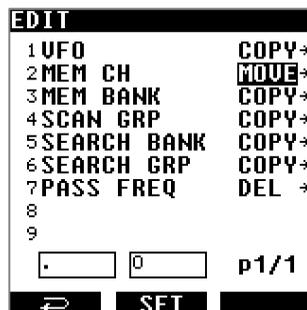
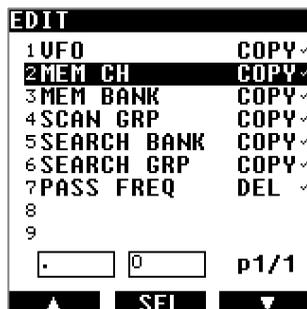
4. Press [ENT] and rotate the dial selector to chose either:

COPY: To copy data

MOVE: To move data (the original will be lost)

DEL: To delete data

5. Press [ENT] to enter the data input screen.
6. Using the dial selector, select either the data to be erased, or the data to be copied or moved to a target location and go to the next selection with the [▶] key.
7. Once you have entered all the data, initiate the copy/move/erase procedure by selecting: [XXX EXEC] and press [ENT].
 - 「WRITING MEMORY...」 will be displayed for a short time until the procedure is over.



8. PRIORITY RECEPTION

- The PRIORITY feature enables you to carry on scanning, searching or monitoring while the AR-DV10 checks a selected frequency for activity (taken from one of the 2000 memory channels). The priority checking is accomplished by momentarily tuning the receive circuit to the priority frequency to see if it is active. If activity is found, the AR-DV10 will remain on the active frequency until the signal disappears. If no activity is detected, the receiver returns to the VFO frequency, scan channel or search bank from where it originated.
- The priority facility has a large number of applications and is particularly useful for keeping an eye on a distress frequency while scanning or searching another frequency band.
- Note: Depending upon the frequency and mode stored as priority, an audible click may be heard when the priority facility is in operation. This is quite normal and is caused by the internal switching of circuitry necessary to accomplish the frequency change (as two frequencies cannot simultaneously be monitored).
- The priority mode is automatically suspended during entry of frequencies via the numeric keypad, this prevents the AR-DV10 from changing frequency while you are busy programming.

How to setup the priority channel:

Press [MENU], use the [▶] key to select [MEM] and press]ENT].

Use the [▶] key to select [PRIO] and press]ENT].

Press [ENT] and turn the dial selector knob to toggle the priority function ON or OFF.

Use the [▶] key to select [BANK-CH] and press]ENT].

Enter the priority channel's bank number and channel number in the xx-yy format.

Press [ENT] and rotate the dial selector knob to set the interval time in seconds, between 1 and 99 seconds.

Press [ENT] to start this function.



9. PROGRAM SEARCH

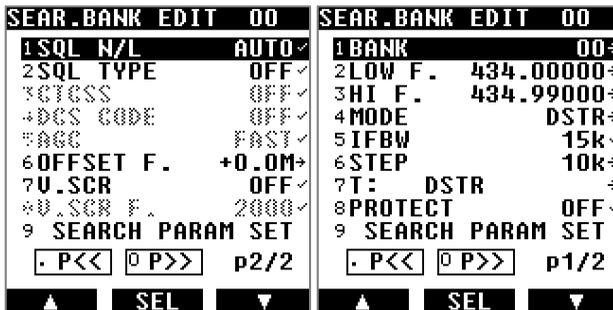
- This function tunes the receiver through all frequencies between two specified frequency limits in predetermined step size, looking for active frequencies.
- The search instructions may be programmed into “search banks”.
- There are 40 search banks, numbered from 00 to 39.
- Search banks can be searched either individually or in a group of linked banks.
- There are 10 search groups, numbered from 00 to 09.
- It is crucial to correctly set the SQUELCH level for the search function to operate. In order to do that, tune to a none-active frequency and increase the squelch level to the point where the sound will mute. We want the squelch to only open when the signal becomes active.

Note: Search mode is extremely effective for AM & NFM use in the VHF and UHF bands. Searching the shortwave bands is usually ineffective due to the relatively high background noise.

9.1. CREATE A SEARCH BANK

In the search bank edit menu you can register the two frequency limits, the demodulation mode, a search bank title, etc...

1. Press [MENU], use the [▶] button to go to [SRCH] and press [ENT].
2. Use the [▶] button to go to [BANK EDIT] and press [ENT] to access the bank edit menu
3. To edit any of the parameters, just use the [▶] button to highlight the parameter to change, and press [ENT] to edit as follows:



- BANK:** Use the keypad to enter the two digit search bank number.
- LOW F.:** Use the keypad to enter the lower frequency limit in MHz, followed by [ENT].
- HI F.:** Use the keypad to enter the higher frequency limit in MHz, followed by [ENT].
- MODE:** Rotate the dial selector knob to select the desired demodulation mode, and press [ENT].
- IFBW:** Rotate the dial selector knob to select the desired IF bandwidth, and press [ENT].
- STEP:** Rotate the dial selector knob to select the desired step size between 10Hz and 500kHz, and press [ENT].
- T:** Input a search bank title as described in chapter 10.3 “INPUT CHARACTERS & SYMBOLS”.

PROTECT: Rotate the dial selector knob to toggle the protect ON or OFF, and press [ENT]. If set to ON, this search bank cannot be erased.

(on page 2/2)

SQL N/L: Rotate the dial selector knob to chose between LEVEL, NOISE or AUTO squelch.

SQL TYPE: Rotate the dial selector knob to chose between CTCSS, DCS, reverse tone and OFF.

CTCSS: Rotate the dial selector knob to set the CTCSS tone frequency manually, or in automatic discovery mode (SRCH), or OFF.

DCS CODE: Rotate the dial selector knob to set the DCS tone code manually, or in automatic discovery mode (SRCH), or OFF.

AGC: Rotate the dial selector knob to set automatic gain control to FAST, MID, SLOW or RF-G.

OFFSET F.: Set the offset frequency function as described in chapter 10.8 "OFFSET RECEPTION".

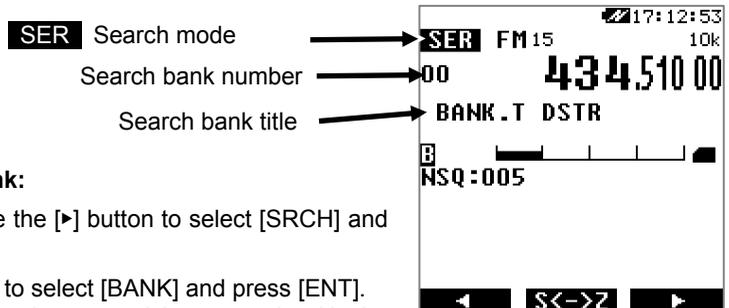
V.SCR: Set the voice descrambler function as described in chapter 10.6 "ANALOG VOICE DESCRAMBLER"

Finally save all your settings: Use the [▶] button to go to the last line [MEM CH PARAM SET] and press [ENT].

9.2. RUN A SEARCH

The search mode tunes the receiver through all frequencies between the two frequency limits you have set previously, looking for active frequencies.

It is crucial to correctly set the SQUELCH level for the search function to operate. In order to do that, tune to a none-active frequency and increase the squelch level to the point where the sound will mute. We want the squelch to only open when the signal becomes active.



To scan a search bank:

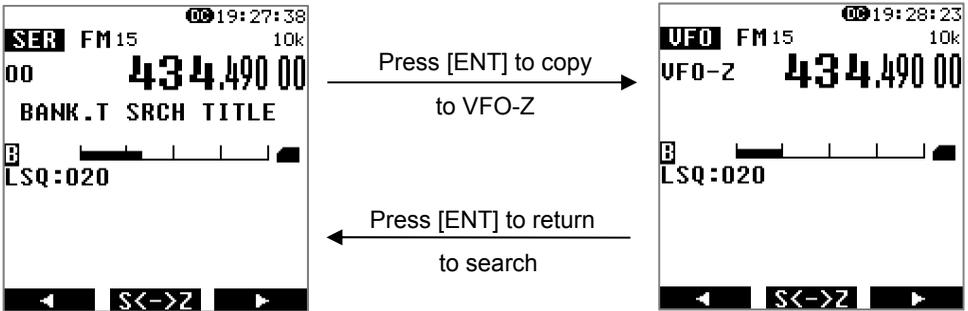
11. Go to [MENU], use the [▶] button to select [SRCH] and press [ENT].
12. Use the [▶] button to select [BANK] and press [ENT].
13. Enter the bank number you wish to search with the keypad. Search will start immediately.

- If search stops on a non-active frequency, it means that the squelch level needs to be increased, as follows:
Press the SQL/MONI switch and turn the dial selector knob clockwise until sound mutes and search resumes. Press SQL/MONI again to keep that squelch value.

- You can change the search direction with the [◀] and [▶] keys.
- To force search to resume (even though it stopped on an active frequency), turn the dial selector knob by one increment, clockwise or counter-clockwise, depending on the search direction.

To copy a search channel to VFO:

- When search has stopped on an active frequency of interest, this frequency channel, along with all its VFO settings, can be copied to and received on VFO-Z.



9.3. SEARCH PASS

This function allows individual frequencies to be skipped when doing a search. This can be useful to remove blank carriers or unwanted signals from continually stopping the search process.

Each of the 40 search banks can store up to 50 pass frequencies, for a total of 2000 pass frequencies.

How to register a pass frequency:

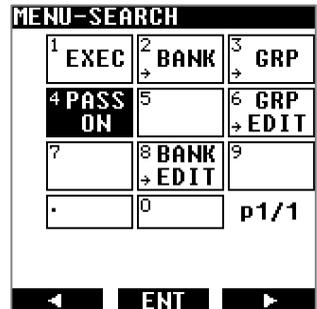
While search is stopped on that unwanted frequency, proceed as follows:

Press [MENU] followed by [ENT].

Use the [▶] button to select [PASS ON] and press [ENT].

How to erase a pass frequency:

See chapter 9.6 “COPY/ERASE/MOVE SEARCH BANKS, GROUPS AND PASS FREQ.”



9.4. CREATE A GROUP OF LINKED SEARCH BANKS

There are 10 search groups (numbered 0 to 9) that you can set up individually to search a group of linked search banks. Each search group can be setup with its own squelch behavior as follows:

- Delay time: Time between signal interruption and squelch closing, for search to resume.
- Free time: Time after which search will resume, no matter if the signal was interrupted or not.
- Auto store: The first 50 busy frequencies located during search are automatically saved in memory bank 39, for later review and scanning.

How to create a search group:

1. Press [MENU], use the [▶] button to select [SRCH] and press [ENT].
2. Use the [▶] button to select [GRP EDIT] and press [ENT] twice.
3. Enter the search group number you would like to create, with the keypad.

This illustration shows an example of search group 0 and all search bank numbers from 00 to 39 which can be linked, providing of course they have already been programmed.



4. Press the [▶] button followed by [ENT], that will select the first bank 00 (the selected bank will blink).

Let's say we want to link banks 00 and 01.

5. Press the [.] key to register bank 00.
6. Use the [▶] button to go to bank 01 and press the [.] key to register bank 01. (You can also rotate the dial selector knob to rapidly scroll through the bank numbers)

If you selected another bank number by mistake, you can deselect it with the [.] key.

The linked banks 00 and 01 will appear as follows:

```
00 01 02 03 04 05 06 07 08 09
10 11 12 13 14 15 16 17 18 19
20 21 22 23 24 25 26 27 28 29
30 31 32 33 34 35 36 37 38 39
```

7. Press the [9] key to save the search bank link selection and move to the following settings for [DELAY TIME].

Delay time:

It's the time between signal interruption and squelch closing, for search to resume. It can be set between 0.1 and 10 seconds, in 0.1 second increments.

[OFF] is for no delay.
Default is 2 seconds.

Press [ENT] and rotate the dial selector knob to select the desired timing.
Validate with [ENT]. The following setting [FREE] is now selected.

Free time:

It's the time after which search will resume, no matter if the signal was interrupted or not.

It can be set between 1 and 60 seconds.

[OFF] means search will only resume after signal interruption, as set in "Delay time".
Default is [OFF].

8. Press [ENT] and rotate the dial selector knob to select the desired timing.
9. Validate with [ENT].

Auto store:

The first 50 busy frequencies located during search are automatically saved in memory bank 39, for later review and scanning.

10. Press [ENT] and rotate the dial selector knob to set auto store ON or OFF (default).
11. Validate with [ENT].
12. To save all settings of this group link page, press [ENT].

9.5. SEARCH A GROUP OF LINKED SEARCH BANKS

Select the search group of search banks linked previously:

1. Press [MENU] use the [▶] button to select [SRCH] and press [ENT].
2. Use the [▶] button to select [GRP] and press [ENT].
3. Input the search group number with the keypad.

Start the search of this group:

4. Press [MENU] use the [▶] button to select [SRCH] and press [ENT].
5. Press [ENT] again.



9.6. COPY/ERASE/MOVE SEARCH BANKS, GROUPS AND PASS FREQ.

Here you can copy, move, and erase the contents of search banks and search groups, as well as delete pass frequencies.

1. Press [MENU].
2. Use [▶] to select [EDIT] and press [ENT].

- Use [▶] to select any of the following categories on which you would like to perform data COPY, MOVE or ERASE:

SEARCH BANK: For an entire search bank.
SEARCH GRP: For a search group.

- Press [ENT] and rotate the dial selector to choose either:

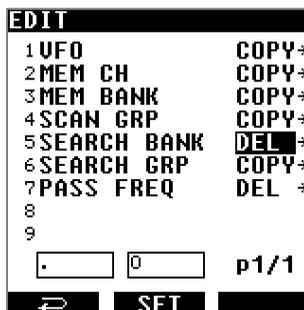
COPY: To copy data
MOVE: To move data (the original will be lost)
DEL: To delete data

- Press [ENT] to enter the data input screen.

- Using the dial selector, select either the data to be erased, or the data to be copied or moved to a target location and go to the next selection with the [▶] key.

- Once you have entered all the data, initiate the copy/move/erase procedure by selecting: [XXX EXEC] and press [ENT].

- 「WRITING MEMORY...」 will be displayed for a short time until the procedure is over.



How to erase pass frequencies:

- Press [MENU].
- Use [▶] to select [EDIT] and press [ENT].
- Use [▶] to select [PASS FREQ] and press [ENT] twice.
- Use the dial selector knob to select the bank number, for which you want to erase pass frequencies.
- Now you have two choices. Either erase just one pass frequency, or all pass frequencies for this bank number.

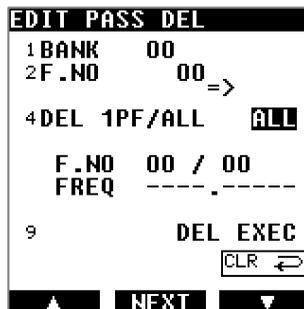
Just one:

Use [▶] to select line [F.NO] and rotate the dial selector knob to select the memory channel number of the unwanted pass frequency.
Use [▶] to select line [DEL EXEC] and press [ENT].

All:

Use [▶] to select line [DEL 1PF/ALL] and rotate the dial selector knob to select [ALL]
Use [▶] to select line [DEL EXEC] and press [ENT].

- 「WRITING MEMORY...」 will be displayed for a short time until the procedure is over.



10. ADVANCED OPERATION

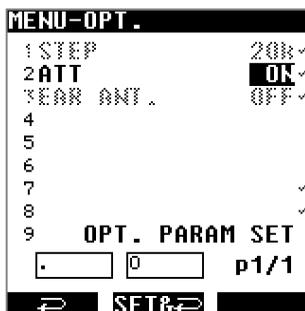
10.1. SIGNAL ATTENUATOR

This function is used to lower the receiver's sensitivity in case the signal is too strong (audio sounds distorted), thus overloading the receiver's RF stage.

The attenuation is approx. 10dB. However the S-meter value remains unchanged.

1. Press [MENU] then use [▶] to select [OPT] and press [ENT].
2. Use [▶] to select [ATT] and press [ENT].
3. Select ON or OFF with the dial selector.
4. Press [ENT] four times.

When set to ON, [ATT] will be displayed on the main screen.



10.2. AGC

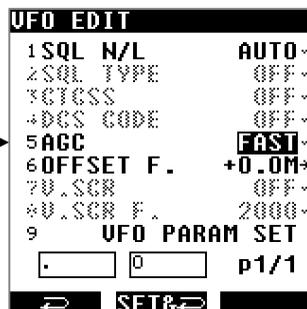
AGC (automatic gain control) equalizes average volume despite variation of the amplitude in the input signal. The recovery time of AGC can be adjusted for AM signals (AM, USB, LSB, CW) to better fit specific kinds of signals.

Typically, FAST is advised for CW (morse signals), SLOW for USB and LSB, and MID for AM broadcasts.

1. Press [MENU] then [ENT].
2. Use [▶] to select [VFO EDIT] and press [ENT].
3. Use [▶] to select [AGC] and press [ENT].
4. Select the desired recovery time with the dial selector. →

Possible selections are:

FAST :AGC with fast recovery timing
MID :AGC with average recovery timing
SLOW: AGC with slow recovery timing
RF-G :Manual gain

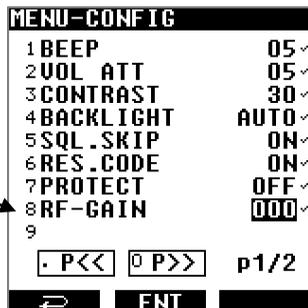


5. Use [▶] to select [VFO PARAM SET] and press [ENT] to save your selection.

□ If you chose RF-G for manual gain, you then need to set a gain level as follows:

1. Press [MENU] then [ENT].
2. Use [▶] to select [CONF] and press [ENT]
3. Use [▶] to select [RF-GAIN] and press [ENT]
4. Select the desired gain level (between 000 and 255) with the dial selector.

Manual gain is particularly effective for CW, LSB and USB signals where fine tuning often allows reduction of background noise.



10.3. INPUT CHARACTERS & SYMBOLS

The following alphanumeric characters and symbols can be used to name memory channels, memory banks and search banks.



Characters and symbols available for each numerical key

<div style="border: 1px solid black; padding: 2px; display: inline-block;">1 ABC</div> A B C a b c 1	<div style="border: 1px solid black; padding: 2px; display: inline-block;">2 DEF</div> D E F d e f 2	<div style="border: 1px solid black; padding: 2px; display: inline-block;">3 GHI</div> G H I g h i 3
<div style="border: 1px solid black; padding: 2px; display: inline-block;">4 JKL</div> J K L j k l 4	<div style="border: 1px solid black; padding: 2px; display: inline-block;">5 MNO</div> M N O m n o 5	<div style="border: 1px solid black; padding: 2px; display: inline-block;">6 PQRS</div> P Q R S p q r s 6
<div style="border: 1px solid black; padding: 2px; display: inline-block;">7 TUV</div> T U V t u v 7	<div style="border: 1px solid black; padding: 2px; display: inline-block;">8 WXYZ</div> W X Y Z w x y z 8	<div style="border: 1px solid black; padding: 2px; display: inline-block;">9 +-* /</div> + - * / 9
<div style="border: 1px solid black; padding: 2px; display: inline-block;">. ▲</div> (reverse character cycle)	<div style="border: 1px solid black; padding: 2px; display: inline-block;">0 [] _ , . S P</div> [] _ , . (blank space insert) 0	

- Use the arrows [◀] or [▶] to position the cursor where you would like to input a character.
- Click the numerical key corresponding to the character or symbol of choice. Press that key until the character you need is displayed.
- To go to the next position, press [▶].
- To erase a character currently selected, press [CLR].
- To insert a new character between two existing characters, place the cursor on the second character and input the new character.
- To save your entries, press [ENT].

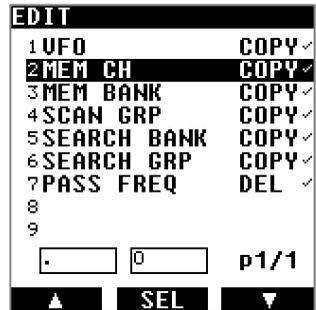
An alternative way to cycle through characters and symbols is by rotating the dial selector knob. This method gives access to a wider choice of symbols than through key entry.

ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`
 abcdefghijklmnopqrstuvwxyz{ }~ (blank space)
 !"#%&'()*+,-./0123456789:;<=>?@

10.4. DATA EDITOR (COPY, MOVE, DELETE)

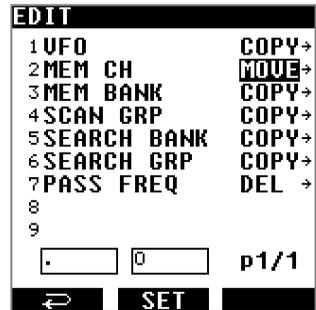
You can copy, move, and erase the contents of memory channels, memory banks, scan groups, search banks, and search groups.

8. Press [MENU].
9. Use [▶] to select [EDIT] and press [ENT].
10. Use [▶] to select any of the following categories on which you would like to perform data COPY, MOVE or ERASE:



MEM CH: For just a single memory channel.
 MEM BANK: For an entire memory bank.
 SCAN GRP: For a scan group.
 SEARCH BANK: For a search bank.
 SEARCH GRP: For a search group

11. Press [ENT] and rotate the dial selector to choose either:
 - COPY To copy data
 - MOVE To move data (the original will be lost)
 - DEL To delete data
12. Press [ENT] to enter the data input screen.
13. Using the dial selector, select either the data to be erased, or the data to be copied or moved to a target location and go to the next selection with the [▶] key.



14. Once you have entered all the data, initiate the copy/move/erase procedure by selecting: [XXX EXEC] and press [ENT].
 - 「WRITING MEMORY...」 will be displayed for a short time until the procedure is over.

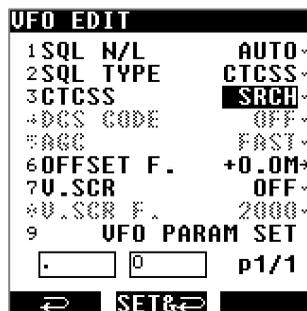
10.5. ADVANCED SQUELCH TYPES

10.5.1. CTCSS & REVERSE TONE

Continuous tone-coded squelch system (CTCSS) is a function which opens squelch only if a preset tone frequency is detected in the signal. At other times, sound will be muted. Only functions in FM mode with IF bandwidth set to 6kHz or 15kHz.

To enable CTCSS:

1. Press [MENU] then [ENT].
2. Use [▶] to select [VFO EDIT] and press [ENT]
3. Use [▶] to select [SQL TYPE] and press [ENT]
4. Rotate the dial selector until CTCSS is displayed and validate with [ENT].
5. Press [ENT] again and rotate the dial selector knob to chose any of the following tone frequencies at which the squelch should open.



OFF	SRCH*	60.0	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	120.0	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	

* SRCH does auto-detect the tone frequency.

6. Press [ENT] then [▶] until you reach the line [VFO PARAMETER SET] and save your selections with [ENT].

○ 「CTC」 will be displayed on the left side of the LCD when that function is active.

For **REVERSE TONE**, the tone frequency table is the same, except that squelch reacts the opposite way compared to CTCSS, as it “closes” when the set tone is detected, and remains open for all other tone frequencies. This system is mostly used in Japan.

○ 「RTN」 will be displayed on the left side of the LCD when that function is active.

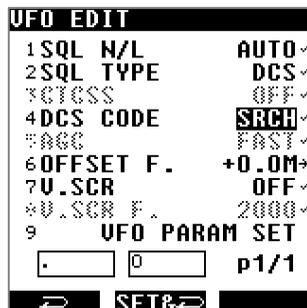
10.5.2. DCS

Digital-codes squelch (DCS) is a function which opens squelch only if a preset tone code is detected in the signal. At other times, sound will be muted. Only functions

in FM mode with IF bandwidth set to 6kHz or 15kHz. Basically DCS functions the same way than CTCSS, however as the tone signal is digital, there are more codes available for DCS.

To enable DCS:

1. Press [MENU] then [ENT].
2. Use [▶] to select [VFO EDIT] and press [ENT]
3. Use [▶] to select [SQL TYPE] and press [ENT]
4. Rotate the dial selector until [DCS] is displayed and validate with [ENT].
5. Use [▶] to select the line [DCS CODE].
6. Press [ENT] again and rotate the dial selector knob to chose any of the following tone codes at which the squelch should open.



OFF	SRCH*	017	023	025	026	031	032	036	043
047	050	051	053	054	065	071	072	073	074
114	115	116	122	125	131	132	134	143	145
152	155	156	162	165	172	174	205	212	223
225	226	243	244	245	246	251	252	255	261
263	265	266	271	274	306	311	315	325	331
332	343	346	351	356	364	365	371	411	412
413	423	431	432	445	446	452	454	455	462
464	465	466	503	506	516	523	526	532	546
565	606	612	624	627	631	632	654	662	664
703	712	723	731	732	734	743	754		

* SRCH does auto-detect the tone code.

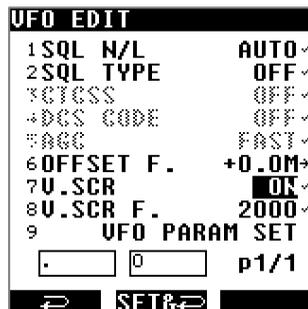
7. Press [ENT] then [▶] until you reach the line [VFO PARAMETER SET] and save your selections with [ENT].
- 「DCS」 will be displayed on the left side of the LCD when that function is active.

10.6. ANALOG VOICE DESCRAMBLER

Analog voice scrambled transmissions can be decoded with the V.SCR function. It is sometimes used in public service radio, automobile racing and cordless telephones. This function is limited to FM mode with IF bandwidth of 6kHz and 15kHz. (V.SCR not available in the U.S consumer version)

To enable V.SCR:

1. Press [MENU] then [ENT].
2. Use [▶] to select [VFO EDIT] and press [ENT]
3. Use [▶] to select [V.SCR] and press [ENT]
4. Turn the dial selector knob until [ON] appears and press [ENT].

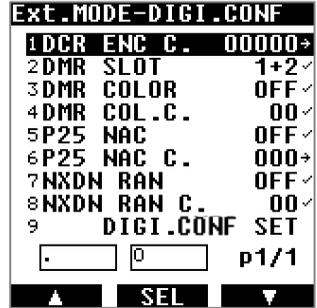


5. Press [ENT] again select the desired carrier frequency (between 2000 and 7000Hz) with the dial selector.
6. Press [ENT] twice to save your settings.

10.7. ADVANCED DIGITAL MODE SETTINGS

These are advanced settings for the digital modes.

1. Access by a long press on [MODE] then use [▶] to select [DIG CONF].
2. Select the desired column with the arrows [◀] or [▶], followed by [ENT].
3. Change values:
 - For the DCR ENC C. line, input the code directly with the keypad and validate with [ENT].
 - For columns with the check mark [✓], change settings with the DIAL selector knob and validate with [ENT].
 - For the P25 NAC C. line, chose numbers with the DIAL selector knob, go to the next digit with [▶] and finally validate with [ENT].
4. Activate all previous settings by going to line DIGI.CONF and press [ENT].



Details for individual modes:

• DCR ENC C. (15 bit digital scramble code setting, also for NXDN)

There are only 32767 possible combinations, between 00001 and 32767.

00000 is for no scramble code used.

Note: AR-DV10 also has an exclusive scramble code auto detect feature. While receiving a scrambled signal, press the key-lock key and “D-CR ENC.CODE” with a blinking “?” will appear on the bottom of the screen. It usually takes 2 or 3 seconds for the code to be found and for the audio to be descrambled.

This feature only works with NXDN/D-CR’s 15 bit digital scramble signals. A “scrambled” signal is not an “encrypted” signal. AR-DV10 cannot decode encrypted signals of any kind.

• DMR slot selection

Only the selected slots will be decoded.

- | | |
|-----|----------------------------------|
| 1+2 | Both slots but priority on SLOT1 |
| 2+1 | Both slots but priority on SLOT2 |
| 1 | SLOT1 only |
| 2 | SLOT2 only |

• DMR COLOR

When set to ON, the receiver will only decode signals corresponding to the color code number set in the **DMR COL C** column. There are 16 possible color codes, from 01 to 16.

Code 00 means that all color codes are decoded.

• P25 NAC

When set to ON, the receiver will only decode signals corresponding to the 3 digit hexadecimal NAC code set in the **P25 NAC C** column.

Each digit can hold the value 0 to 9 or A to F. That makes 4096 possible NAC codes.

Code 000 means that all NAC codes are decoded.

• NXDN RAN

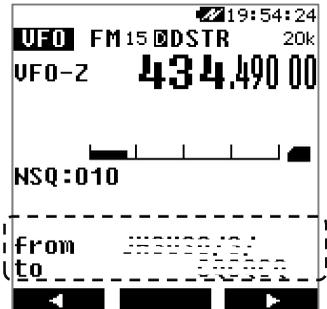
When set to ON, the receiver will only decode signals corresponding to the RAN code number set in the **NXDN RAN C** column. There are 63 possible color codes, from 01 to 63.

Code 00 means that all RAN codes are decoded.

DIGITAL SIGNAL INFO DISPLAY

When using the D-STAR mode, by default the marked dotted area is used to display some user information. You can toggle this info display on or off as follows:

1. Long press on [MENU].
2. Use [▶] to select [DIGI DISP] and press [ENT]
3. Use [▶] to select either [DISP ON] or [DISP OFF] and press [ENT]



10.8. OFFSET RECEPTION

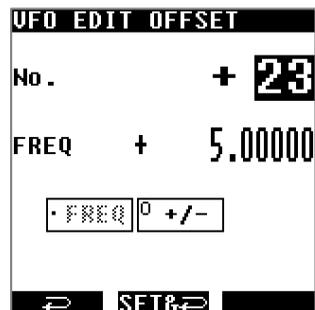
AR-DV10 can be easily programmed to shift the receive frequency by a preprogrammed value.

It is useful for receiving two-frequency radio communications, such as a base station and a mobile station or a relay station, that transmit to each other on two frequencies.

The difference between the two frequencies is the offset frequency.

Access the offset menu as follows:

1. Press [MENU] followed by [ENT].
2. Use [▶] to select [VFO EDIT] and press [ENT]
3. Use [▶] to select either [OFFSET F.] and press [ENT]



4. By rotating the dial selector knob, select a storage number between 00 and 39, depending on the following scenarios:

- 00 : Offset is disabled
- 01~19 : Offset value to be configured manually
- 20~39 : Preset of common offset values

5. If you wish to enter a negative value, press the [0] key to toggle [+] into [-].
6. Press the [.] key to select the frequency input area.
7. Input the frequency in MHz, using the keypad numbers, and validate with [ENT].
8. Use [▶] to select [VFO PARAM SET] and press [ENT] to save your selection.

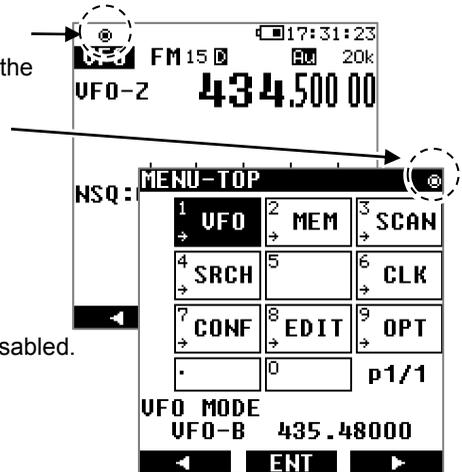


10.9. REMOTE MODE

The receiver can be remote controlled from a PC by using serial commands. The command list can be downloaded on our website.

When the remote mode is active, on the VFO screen, the [Ⓜ] icon is displayed on the top left of the LCD.

However on the MENU-TOP screen it will be located on the top right of the LCD.



During remote control, all buttons and switches except the red power switch and [ENT] will be disabled.

To deactivate remote control, press [ENT].

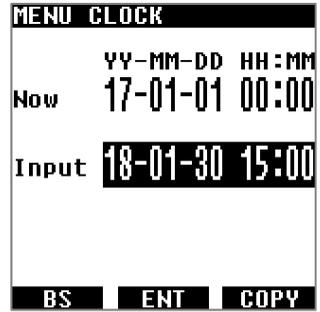
11. RECEIVER SETTINGS

11.1. CALENDAR & CLOCK

1. Press [MENU] and use [▶] to select [CLK] and press [ENT]
2. Using the number keys, input the date and time in the following format:

YY-MM-DD HH:MM

For example for 18-01-30 15:00 (Jan.30, 2018 at 15:00) just enter 1801301500 and validate with [ENT].



If you just want to change the time, proceed as follows:

1. Press [MENU] and use [▶] to select [CLK] and press [ENT]
2. Press [▶], this will copy the actual date and time.
3. Press [◀] four times and input the new time, followed by [ENT].

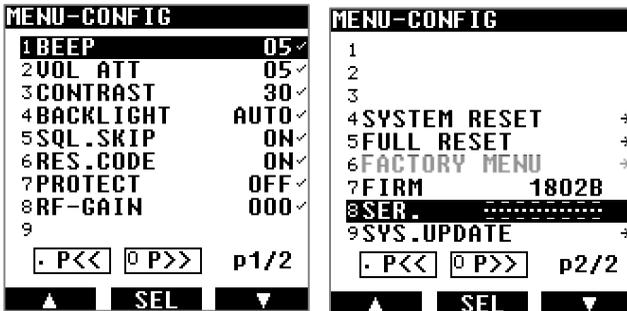
Note:

There is no daylight saving feature.

The system's date and time will be input in the properties of an audio recording file. However there is no date and time stamp in the recording's file name.

11.2. SYSTEM SETTINGS

There are 2 receiver configuration pages as follows:



- Press [MENU] and use [▶] to select [CONFIG] to open the receiver settings menu.
- Select the desired row with [▶] and press [ENT] to select the value on the right side to be changed.
- Change the value by turning the dial selector knob.
- Validate with [ENT].

1 BEEP (00-15)

Beep volume level when a key is pressed or for an error beep. Default is 05.

2 VOL ATT (00-15)

Limits the maximal volume level. 00 is maximum volume, 15 is the most attenuated.

For levels 06 and over, [VolATT] is displayed on screen.

Default is 05.

3 CONTRAST (00-40)

Sets the LCD contrast level. Default is 30.

4 BACKLIGHT

Sets the LCD backlight behavior.

OFF (default) Always off. Saves battery power.

CONT Always on. Consumes more battery.

AUTO Switches on when some keys or controls are operated, switches automatically off after 5 seconds.

5 SQL.SKIP

Related to audio recording behavior.

ON (default) Audio is only recorded when the squelch is open.

OFF Audio is recorded no matter if the squelch is open or closed.

6 RES.CODE

Related to receiver control by PC commands.

ON (default) A result code is added to the beginning of a command response.

OFF Command responses do not feature a result code.

7 PROTECT

Related to configuration auto-store when the receiver is switched off.

ON Configuration auto-store is off.

OFF (default) Configuration auto-store is on.

8 RF-GAIN (000-255)

Manual gain control. Function only active when AGC is set to manual [RF-G]. Can be useful in SSB or CW to improve signal to noise ratio. Default is 000.

(p2/2 of MENU CONFIG)

4 SYSTEM RESET

All settings are reverted to factory default. Memory data remains.

5 FULL RESET

All settings are reverted to factory default and all memory data is deleted.

6 FACTORY MENU

Access restricted to our servicing department.

7 FIRM

Displays the firmware version.

8 SER.

Displays the serial number of the receiver.

9 SYS.UPDATE

To apply a firmware update through the SD card. Download the latest version at <http://www.aorja.com/receivers/ar-dv10.html>

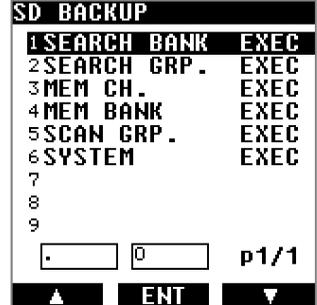
12. RECEIVER DATA BACKUP & RESTORE

MAKE A BACKUP

Receiver system settings and memory data can be backed up on the microSD card. The resulting .CSV files can, if needed, be edited on a PC and then uploaded to the receiver.

1. Long press on [●]
2. Select [BACKUP] using the [▶] button and press [ENT].

The backup selection menu appears as on the right:



3. Select the desired line using the [▶] button. Content explanation as follows:

Item	Explanation	File name
1 SEARCH BANK	All search banks contents	SRCHBK.CSV
2 SEARCH GRP.	All search groups contents	SRCHGRP.CSV
3 MEM CH.	All memory channel contents	MEMCH.CSV
4 MEM BANK	All memory banks contents	MEMBK.CSV
5 SCAN GRP.	All scan group contents	SCANGRP.CSV
6 SYSTEM	All receiver settings	SYSTEM.CSV

Note: File names always stay the same. Beware not to overwrite previous backups if present on the same card!

4. Press [ENT] to backup that selection.
○[WRITING BACK UP...] is displayed while data is being written to the card.

RESTORE A BACKUP

Backups saved on the SD card can be restored to the receiver. To facilitate the handling of multiple backups, you can change file names to your liking, as long as it's up to 8 ASCII characters. The receiver will recognize the kind of backup, no matter what file name you assigned.

To restore a backup to the receiver, proceed as follows:

1. Long press on [●] and press [ENT].
2. Select the desired backup file using the [▶] button.
3. Press [ENT] to restore that selection to receiver.

○[WRITING MEMORY] is displayed while data is being uploaded to the receiver.



13. FIRMWARE UPDATE

■ What do I need?

- The supplied SD card where you saved the firmware file downloaded at:
<http://www.aorja.com/receivers/ar-dv10.html>

If your receiver contains a lot of scan and search data, it is advised to have at least 200MB free space on the card.

■ Words of caution!

- Your memory data and system systems are very likely to be erased after a firmware update, therefore it is always advised to first backup your data as follows:

Press and hold the [●] button

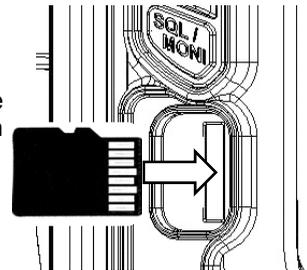
Press [2]

Press [6] (SYSTEM means a complete backup)

- Beware that the backup files will always have the same names, therefore previous back-ups will be overwritten without warning. Please move previous back-up files to your PC.
- Do not cut the power or remove the SD card while the firmware is being uploaded to the receiver! This could potentially corrupt system data and make the receiver unusable. Such a happening would not be covered by the manufacturer warranty.
- The firmware is the property of AOR Ltd. and should not be re-distributed, neither in its original nor any modified form.
- AOR will issue firmware updates to fix major bugs and add new functions, whenever required by our development plan. However there is no guarantee for updates at regular intervals.

■ Update procedure

1. The receiver must be OFF.
2. Lift the rubber cover labeled MicroSD.
3. Insert the SD card containing the update file (for example 1801C.D10) into the receiver slot. Refer to the illustration for the SD card's orientation.



4. Switch the receiver ON.
Make sure that you have enough battery power for the update. A power interruption during the update procedure could potentially corrupt system data and make the receiver unusable. Such a happening would not be covered by the manufacturer warranty.

14. TROUBLESHOOTING

If you think that your receiver is defective, please check the following Q&A before contacting us. If the device does still not work properly after the check, kindly contact your dealer for instructions.

Symptoms	Possible causes	What to do
Receiver does not power on (no display)	<ul style="list-style-type: none"> • The lithium-ion battery pack is discharged. • The alkaline batteries are empty. • The battery pack or the alkaline battery tray is not inserted correctly. • The battery pack or the alkaline battery tray terminals are dirty. • The connection of the AC power adapter or the cigarette lighter DC/DC converter is loose. 	<ul style="list-style-type: none"> • Recharge the battery pack. • Replace with new alkaline batteries. • Press the pack or the tray firmly. • Clean the terminals with a dry cloth. • Make sure that the plugs are inserted correctly.
No sound	<ul style="list-style-type: none"> • The squelch is set too high. • CTCSS and DCS are active. • A digital mode has been selected. • VOL ATT value is set too high. 	<ul style="list-style-type: none"> • Lower the squelch value. • If CTC or DCS is displayed on screen, disable these functions. • That is normal, sound is only heard when a digital signal is detected. • Reduce the VOL ATT value.
Voice barely audible (for analog reception)	• Frequency slightly offset	• Try to fine-tune in 1kHz steps.
	• Signal is weak or affected by multi-path reception.	• Try another location.
Voice is garbled (for digital reception)	• Incompatible digital mode or encrypted signal received.	Sorry that is out of the scope of this receiver.

D-STAR call sign is not displayed.	<ul style="list-style-type: none"> • Header of the transmission has not been received. Especially during SCAN and SEARCH, hitting a signal in the middle of a transmission is likely. 	<ul style="list-style-type: none"> • Wait for the next transmission (header) to be received and decoded. • If cause is unstable signal, try a better location or larger antenna.
From, to, rep1, rep2 appears even though it's not a D-STAR signal.	<ul style="list-style-type: none"> • Noise was mistaken for a digital signal. 	This is not a malfunction. Try a new location with better signal to noise ratio, or a larger antenna.
Boot up is hanging, does not boot normally to VFO screen.	<ul style="list-style-type: none"> • System data not loaded correctly. 	Remove all power sources, wait 1 minute, reinsert the battery pack and power on again.
LCD display seems frozen.	<ul style="list-style-type: none"> • System data problem 	<ul style="list-style-type: none"> • Reboot the receiver and do a system reset.

15. SPECIFICATIONS

Frequency range	100kHz~1300MHz (Cellular frequencies blocked for US consumer version)	
Operation modes	VFO, memory channel, program search, scan	
Analog receive modes	WFM, NFM, AM, USB, LSB, CW	
Digital receive modes	TETRA(Direct mode, mobile to mobile),DMR(Tier1/2/Mototrbo), NXDN(6.25k), dPMR(446 Tier1), APCO25(Phase1), D-STAR, Yaesu(C4FM), Alinco(EJ47U), Japanese D-CR.	
Circuit type	100kHz~1300MHz Single super heterodyne IF 47.25MHz SDR direct sampling WFM (64MHz~108MHz) SDR direct conversion AM (520kHz~1710kHz) SDR direct conversion	
IF filter bandwidths	Analog modes: 100kHz, 30kHz, 15kHz, 8kHz, 6kHz, 5.5kHz, 3.8kHz, 2.6kHz, 1.8kHz, 500Hz, 200Hz (choice is mode dependent) Digital modes: 6kHz, 15kHz, 30kHz (auto-select)	
Assisted functions	AGC, step-adjust, offset and priority receive. Analog voice descrambler (not available for US consumer version).	
Signal attenuator	Approx. 10dB ON/OFF	
Squelch modes	Noise squelch, level squelch, reverse tone, digital voice detection.	
Frequency stability	± 5 ppm (-10°C~+50°C)	
Sensitivity (typical values)	SSB (10dB S/N)	0.3µV
	AM (10dB S/N)	1.6µV
	FM (12dB SINAD)	0.3µV
	WFM (12dB SINAD)	2.6µV
Number of VFO's	3 (A / B / Z)	
Memory channels	2000	
Memory banks	40	
Search banks	40	
Priority channel	1	
Pass frequencies	50 per bank or VFO	
Audio outputs	Internal speaker min.250mW (@16Ω,10.5V,10%THD), earphones jack min. 200mW (@8Ω,10.5V,10%THD)	
Antenna	BNC 50Ω or earphones antenna for FM 64MHz -107.99999MHz.	
Max. antenna input	0dBm	
Power requirements	7.4V 2000mAh Lithium-ion battery pack (BP-10) External input 6.5V~10.5V	
Current consumption	240mA(typ), 500mA(max) (excluding battery pack charge current)	
Case size	65(W) x 137(H) x 41(D)mm (Including battery pack, excluding projections)	
Weight	Approx. 420 g (including battery pack, antenna and belt clip)	
Temperature range	-10°C~+50°C	
Supplied accessories	AC power adapter, lithium-ion battery pack, fast charger cradle, belt clip, antenna, cigarette lighter DC/DC converter, alkaline battery tray, microSD card, operating manual.	

Specifications are subject to change without notice or obligation. Other company and product names mentioned are the property of their respective owners. Product and brand names used are for identification purposes only.

As per FCC rules, the US consumer version has cellular frequencies blocked and analog voice descrambler function deactivated by hardware. These restrictions are final and cannot be reversed by firmware change nor command input.

FCC COMPLIANCE STATEMENT

Changes or modifications to this device not expressly approved by AOR could void the user's authorization to operate this device.

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) this device must accept any interference including interference that may cause undesired operation.

The scanning receiver in this equipment is incapable of tuning, or readily being altered, by the user to operate within the frequency bands allocated to the Domestic Public Cellular Telecommunications Service in the Part 22.

WARNING: MODIFICATION OF THIS DEVICE TO RECEIVE CELLULAR RADIOTELEPHONE SERVICE SIGNALS IS PROHIBITED UNDER FCC RULES AND FEDERAL LAW.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy; and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC ID: NVJARDV10

ISED COMPLIANCE STATEMENT

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:

(1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

CAN ICES-3(B) / NMB-3(B)

IC: 22833-ARDV10

§ 2.1077 COMPLIANCE STATEMENT



Declaration of Conformity

Type of Equipment: DIGITAL RECEIVER

Brand Name: AOR

Model Number: AR-DV10

Manufacturer: AOR, Ltd.

Address of Manufacturer: 2-6-4, MISUJI, TAITO-KU, TOKYO 111-0055, JAPAN

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions; (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The technical documentation as required by the Conformity Assessment procedures is kept at the following address:

Company: AOR U.S.A, INC.

Address: 20655 S. WESTERN AVE., SUITE 112, TORRANCE, CA90501, U.S.A.

Telephone: 310-787-8615



Authority On Radio Communications

AOR, LTD.

**2-6-4, Misuji, Taito-Ku,
Tokyo, 111-0055, Japan
URL: www.aorja.com**

No portion of this manual may be reproduced in English or any other language without the permission of AOR, LTD.

©2018 AOR, LTD. All rights reserved.

(2018-03-19)