



# AR5000, AR5000c, AR5000+3

*high performance wide band all mode receiver 10 kHz - 2600 MHz*

Since the release of the AR5000, professional monitors, top-end hobbyists, government departments and armed forces throughout the world have been astonished how the seemingly impossible has been achieved: unparalleled high performance, an amazingly flexible operating system, high build quality featuring a metal cabinet - yet still remaining very compact and relatively light weight. There is little competition for comparison, 'the rest of the pack' are significantly larger, heavier or many times more expensive!



AR5000+3 awarded four stars by both the authoritative Passport To World Band Radio and World Radio & TV Handbook

True base receivers are few and far between, some have simply evolved from the hand held equivalents with little tangible improvement in performance or facilities over their smaller counterparts (or use switched wide band converters) - *the AR5000 is not like this!* AOR have been synonymous with pioneering receiver design from many years and this tradition continues with the AR5000. A great advancement in wide band front end design has been made, partly due to the introduction of **automatic electronic preselection** between 500kHz - 999.999999MHz with low pass, band pass and high pass filters for other bands. The preselection may be "manually tracked" when monitoring spot frequencies to help reduce any potential effects of interference caused by nearby monster transmitters, this results in excellent strong signal handling yet maintains high sensitivity.

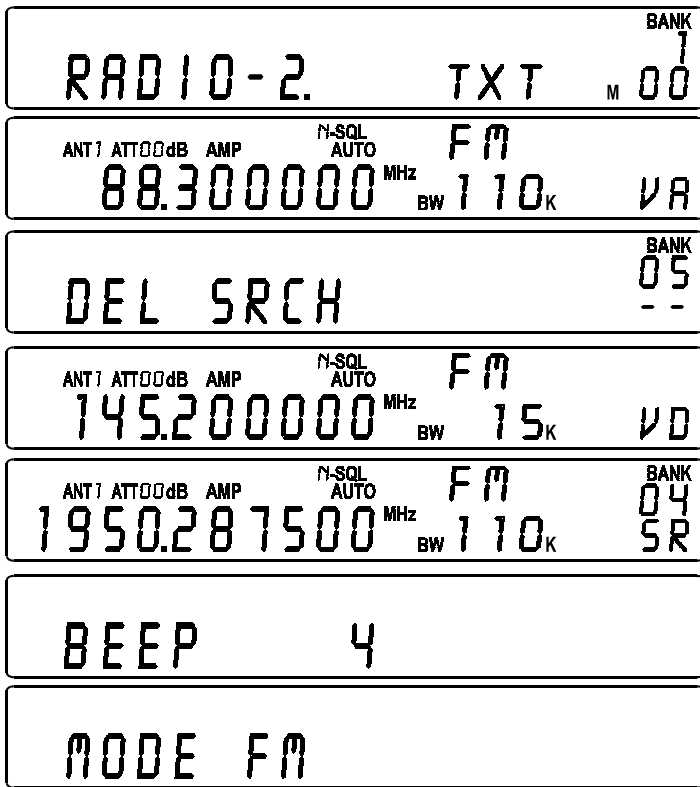
A **TCXO** forms the building block which is fitted as standard to ensure a very high degree of stability, provision is made to feed the AR5000 from an external 10 MHz reference signal should one be available (commercial organisations etc). A **Numeric Controlled Oscillator (NCO)** provides smooth tuning with **steps right down to 1Hz**. The receive circuitry is a triple conversion superheterodyne with I.F.s of 622MHz, 10.7MHz & 455kHz. Multiple switchable I.F. bandwidths are available in both the 10.7MHz and 455kHz I.F. stages: 3kHz, 6kHz, 15kHz, 30kHz, 110kHz & 220kHz with provision for an optional 500Hz Collins mechanical filter, also a substitute 2.5kHz Collins mechanical SSB filter and Collins mechanical 5.5kHz narrow AM filter option is available.

The AR5000 is housed in a stylish custom **solid metal cabinet** and is powered from the supplied external 12V d.c. power unit but may be operated from any regulated supply or battery capable of providing 12-16V @ 1.5Amps. Aerial input is via a high quality N-TYPE connector with a second SO239 connector which is switchable manually or automatically from the front panel. A switchable preamplifier is employed (below 230 MHz) plus a switchable 10dB attenuator, this may be configured as "auto" so that the receiver selects the optimum setting automatically.

Not only is the RF performance outstanding, the microprocessor facilities also point to the forward and innovative thinking which forms the core of the success. There are 1,000 memory channels, 10 scan banks, 20 search banks with **auto-memory store** and a total of **2100 PASS frequencies**, 5 independent VFOs, alpha-tag memory & search banks, frequency offset, step adjust and auto-mode tuning to name just a few.

The 1,000 memory channels (10 banks x 100 channels), 20 search banks etc are stored by EEPROM so that no external supply, battery or capacitor is required for data retention. In addition **EEPROM BANK SWITCHING** means that all the memory channels, search banks, pass frequencies and VFOs are PROVIDED TWICE (making a **total of 2,000 memory channels, 40 search banks, 10 VFOs** etc). This is an ideal situation when more than one operator is to use the equipment, each have their own 'virtual' set. Scanning and search speed is a very respectable maximum of **45 channels or increments per second** using "Cyber Scan" technology. A meaningful & detailed **auto-mode bandplan** has been preprogrammed (specific to each market area) so that operation is straight forward and quick. Should you wish, auto-mode may be easily cancelled by selecting a different set size or mode. A special **Frequency Offset facility** plus **step adjust** has been provided to simplify DUPLEX frequency monitoring and for tracking unusual band plans. A wide variety of search and scan types are available including memory scan, **select scan** (your temporary favourite frequency notepad!), mode scan, bank scan, pause scan, search bank link etc with channel edit facilities for changing memory contents. The squelch too may be configured for noise, signal level, audio level etc.

**Audio low pass and high pass filters** may be configured and are switchable around the following frequencies: LPF 3kHz, 4kHz, 6kHz & 12kHz, HPF 0.05kHz, 0.2kHz, 0.3kHz & 0.4kHz. De-emphasis is also selectable: THRU, 25uS, 50uS, 75uS & 750uS. A **DTMF decoder** is provided to display DTMF characters in use with an optional CTCSS board to display the CTCSS frequency.



### Specification

Model	AR5000
Frequency range	10kHz - 2600MHz (minimum accepted frequency input 5 kHz) NCO 1Hz - 999.999999kHz
Tuning Modes	AM, FM, USB, LSB & CW +3 includes Sync AM
I.F. frequencies	1st I.F. 622.0 MHz 2nd I.F. 10.7 MHz 3rd I.F. 455 kHz
Standard fitted filters	3kHz, 6kHz, 15kHz, 30kHz, 110kHz & 220kHz (provision for 500Hz option)
Memory channels	1000 (100 ch x 10 banks)
Search banks	20 banks
Memory scan speed	25 channels per second in standard mode, 45 channels per second (max) in <i>Cyber Scan</i>
Search speed	25 increments per second in standard mode, 45 increments per second (with step size of 100kHz or less) in <i>Cyber Search</i>
PASS frequencies	2100 total (21 banks x 100 ch inc VFO)
Priority	1 channel
I.F. output	10.7 MHz with maximum $\pm 5$ MHz bandwidth
External reference	10.0 MHz input
Mute	Phono/RCA socket CMOS input pull-up to 5V @ 100k OHMS
Operating temp.	0° to +50° C
Aerial input	50 OHM unbalanced, N-TYPE & SO239
Audio output (13.5V)	1.7 WATT into 8 OHMS @ 10% THD
Power requirements	nominal 13.5V d.c. (12 - 16V) @ 1.5A or less
Size	217(W) x 100(H) x 260mm(D) mm approx excluding projections
Weight	3.5kg
CPU	8bit
EEPROM	RAM 1,024 Byte
Selectivity	131,072 Byte (1M Bit)

### Sensitivity :

Receive frequency	10dB S/N AM 6kHz	12dB SINAD SSB/CW 3kHz	12dB SINAD FM 15kHz	12dB SINAD FM 220kHz
10kHz - 40kHz	63.00uV	17.70uV	-	-
40kHz - 100kHz	4.46	1.25	-	-
100kHz - 2MHz	2.23	0.40	-	-
2MHz - 40MHz	1.25	0.40	0.56	1.58
40MHz - 1,000 MHz	0.63	0.3	0.4	1.25
1,000MHz - 2.6 GHz	0.63	0.3	0.36	0.89

### Standard supplied accessories

a.c. power supply  
Comprehensive operating manual  
RS232 protocol listing  
Pair of front extension feet

### Options available

MF500 500Hz Collins mechanical CW filter  
MF2.5 2.5kHz Collins mechanical SSB filter  
MF6 5.5kHz Collins mechanical AM filter  
DC3000 d.c. lead  
CT5000 CTCSS unit  
DS8000 analogue voice inverter  
CR5000 tape record lead  
AS5000 aerial switch  
SM5000 service manual  
SA7000 wide band LF-UHF aerial  
DA3000 wide band discone  
LA320 short wave loop aerial  
MA500 mobile aerial on mag-mount  
SDU5500 spectrum display unit  
Data-Master PC Windows software

### Key features

- Very wide frequency coverage 10kHz - 2600MHz
- All mode reception: AM, FM, USB, LSB & CW
- Automatic electronic preselection of the front end
- Excellent strong signal handling
- NCO (Numeric Controlled Oscillator) with tuning steps down to 1Hz
- TCXO fitted as standard
- Multiple I.F. bandwidths 3kHz, 6kHz, 15kHz, 30kHz, 110kHz & 220kHz
- Auto mode bandplan selection
- Multi-function LCD with 8 character alpha-text comments
- Extensive search & scan facilities
- "Cyber Scan" fast search & scan speeds up to 45 channels / increments per second
- Analogue S-meter
- 1000 memory channels and 20 search banks with EEPROM storage - *TWICE!*
- Auto memory store
- Extensive RS232 command list
- Sleep timer / alarm
- SDU ready

Filter: kHz	Total noise (b'width kHz / dB)	Total skirt (dB)
0.5 (500Hz)opt	0.5 -3	2.0 -60
2.5 opt	2.5 -3	5.2 -60
3	2.4 -6	4.5 -60
5.5 opt	5.5 -3	11.0 -60
6	9.0 -6	20 -50
15	15 -6	30 -50
30	30 -6	70 -50
110	140 -3	350 -20
220	260 -3	520 -20

Specification is typical but not guaranteed, subject to change due to continuous development of the receiver. E&OE. © AOR Ltd 1995 - 1999

A front panel accessory socket provides audio break-out / return for use with external signal processing units, detector output and switching control for tape recorders. The AR5000 has a switchable 10.7MHz I.F. output ready to plug straight into the optional SDU5500 spectrum display unit for "real time" band occupancy evaluation and measurements in both frequency and dBm signal level, finding those elusive transmissions has never been so easy. Extensive facilities are available via the **RS232 port** which is standard on the AR5000. Even the volume and squelch controls may be remotely controlled. Output terminals are provided for an external speaker, headphones & transmit mute. Provision has been included for an optional built-in signalling unit, external aerial switching unit plus CTCSS and other decoder options.

A large rear illuminated segmented liquid crystal display provides a wealth of operating detail including frequency, mode, AGC, etc but also displays up to **8 alpha-numeric text characters** so that comments may be entered to accompany memory channels & search banks to aid easy identification and retrieval of data. **Two tuning controls are provided:** the main knob provides tuning steps from 1Hz to 999.999kHz and has mechanical variable torque adjustment ideal for fine tuning such as SSB applications, the second is click-indented for channel tuning and provides switchable step sizes of 100Hz, 1kHz, 10kHz, 100kHz, 1MHz and x10 for rapid tuning. An **analogue S-meter** provides easy to see relative signal strengths. Other useful facilities include a built-in dual time clock 12hr/24hr with On/Off timer, sleep and alarm, variable beep tone... **plus much, much more!** The English language operating manual comprises 77 A4 size pages with graphical key presses and lavishly illustrated LCD representations, a booklet containing the RS232 protocol listing is also supplied.

### AR5000c - frequency coherent

When making critical measurements, the frequency coherence is very important whether a single or multiple unit is employed. Just like optical telescopes, the output from several receivers may be ADDED together to provide greater performance, however their frequencies must be absolutely coherent. This involves the use of a single reference for all oscillators employed throughout the receiver. Several receivers may then be connected to a single external frequency standard safe in the knowledge that their outputs will be coherent.

The AR5000c now provides this commercially required capability. The "C" version may be provided to order in either the standard AR5000 format or with two of the +3 additions of AFC and NB. If you are a commercial operator with this application in mind, please request the separate specification information for the AR5000c.

### AR5000+3 - Sync AM, AFC, NB

The "+3" version offers even more with synchronous AM (upper side band, lower side band and double side band with excellent lock range), AFC (Automatic Frequency Control for accurately tracking moving transmissions or unusual band plans) and Noise Blanker.

★★★★☆ AR5000+3 awarded four stars by both the authoritative **Passport To World Band Radio and World Radio & TV Handbook**

### Passport to World Band Radio '99.

"Front-end selectivity, image rejection, IF rejection, weak-signal sensitivity, AGC threshold and frequency stability all superior".  
"Unlike virtually every other receiver we have tested over the past 21 years, the frequency readout is unfailingly accurate to the nearest Hertz. This should make the AR5000+3 of exceptional interest to broadcast engineers".

### World Radio TV Handbook '99.

Speaking of the AR5000+3 in conclusion... "Compared with the ICOM ICR-8500 it offers considerably more features, better strong-signal handling, wider coverage and decidedly superior filters".



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