AOR® AR7030 *high dynamic range, low noise short wave receiver*

The standard AR7030 receiver has been awarded a **five star rating** by **Radio Netherlands** and **Table-top Receiver of the Year award 1996/97** by the **World Radio TV Handbook**, it has also been awarded **five stars** by **Passport to World Band Radio**... truly a remarkable receiver.

The AR7030 stunned the world when first released due to exceptionally high performance, indeed the AR7030 still wins the analogue / DSP battle in respect of high dynamic range and low noise, a testimony to the successful project between internationally acclaimed UK designer John Thorpe and AOR.

Table-top receiver of the year - WRTH 1996/97 ★★★★★

AR7030 & AR7030 *PLUS*, awarded five stars by both the authoritative Passport To World Band Radio and World Radio & TV Handbook

High performance coupled to enhanced microprocessor features and facilities forms the cornerstone of its success. Frequency coverage is from 0 - 32 MHz all mode: AM, Synchronous AM, USB, LSB, CW, DATA & NFM. Four 455 kHz IF filters are provided as standard with provision for a further two (including Collins mechanical filters), all of which are 'self aligned' by the receiver for optimum performance and passband symmetry; this plus the standard fitted TCXO makes the AR7030 ideal for ECSS applications.

The self tuning variable bandwidth synchronous detector is a pleasure to use and 'hangs on' to the weakest of signals, audio quality is superb.

Where good strong signal handling, high performance and transportability are of great importance, the AR7030 is the solution offering an IP3 greater than +30dBm (typical +35dBm reduced by 10dB with the preamp on). Intermodulation free dynamic range with the 2.2kHz filter is typically 105dB @ 100/200kHz spacing, 104dB @ 20/40kHz and still better than 90dB @ 5kHz. This fantastic strong signal handling is aided by the innovative configuration of a lateral DMOS FET QUAD first mixer running at 15V, relay switching in the front end (not diodes) and the use of shielded inductors throughout the signal path. All this and GREAT SENSITIVITY better than 0.5uV for 10dB S/N in AM mode and better than 0.3uV for 10dB S/N in SSB.

Selectivity too is razor sharp typically offering greater than 90dB @ 5kHz SSB, almost 100dB @ 10kHz and greater than 100dB @ 20kHz, these excellent figures are achieved by the implementation of a remarkably low phase noise local oscillator <-158dBc/Hz @ 100kHz.

The receiver is built around a TCXO frequency standard which provides the reference for all circuitry ensuring the ultimate in stability and optimum alignment. Single loop DDS provides the clean local oscillator reference essential for low reciprocal mixing levels and seamless tuning in 2.655Hz steps (10.62Hz in AM & NFM modes) with no tuning "plops" at regular intervals. The receiver is a double conversion superheterodyne with intermediate frequencies of 45MHz and 455kHz.

Enhanced features include pass band tuning ±4.2kHz, variable audio pitch tune on CW & data modes and a "variable bandwidth synchronous detector" for AM listening to eliminate the effects of transmitter / receiver drift as well as reducing distortion from selective fading. The pass band tuning may be used in synchronous AM mode to select synchronous USB, LSB, DSB or anything in between. A specially developed AGC release characteristic has been developed to provide very smooth SSB. Noise spike compression has also been included to reduce the effects of noise pulses. A built-in six level attenuator provides levels of sensitivity from +10dB to -40dB.

Assignable controls enable you to place the functions YOU want at your fingertips. It is also possible to save a few of your 'favourite' receiver setups for later retrieval. **Twin VFOs** are provided in addition to the **100 memory channels** (400 with the 'features CPU' fitted) with versatile **scanning** facilities including independent squelch settings for each memory and VFO. Virtually every aspect of the AR7030 is controllable via the standard REMOTE port for straight forward **computer connection**, optional PC Windows based software is available.

Despite the deceivingly simple front panel layout, the AR7030 really packs a punch with enhanced facilities including an extensive computer command set ideally placing the receiver for semi-commercial applications...

The tape recorder configurable outputs and slave relay may be programmed to operate from the **built-in clock** timer or from the squelch control. Mute input is available for use with transmitters. The AR7030 features a stylish custom CNC machined solid aluminium front panel with extruded aluminium shaped sides, metal top, bottom & rear panels. The front panel finish is brushed & anodised with the sides and other surfaces toned in a matching textured paint. Smooth lines, detailed front panel, domed top mounted speaker grille and ergonomically placed controls spell out the attention to detail of the robust cabinet. **An internal battery option adds the possibility of transportable operation.** An infrared remote controller is supplied as standard along with a low noise power supply and comprehensively illustrated operating manual.

PLUS PERFORMANCE

AR7030 *PLUS*: For those who want the 'edge' then this model has been designed for you. All aspects of performance have been carefully studied and specific performance enhancements have been applied making **excellent** into the **ultimate** :-

- ✓ Increased balance of the mixer for greatest IP2 & IP3
- ✓ High tolerance 0.1% components in DDS ladder for low noise
- ✓ Enhanced RF attenuator operation for minimal intermod
- ✓ Higher spec wire aerial input transformer for minimal mixing products
- ✓ Ceramic metal cased 4 kHz (displayed) AM filter fitted as standard (typical bandwidths: 2.2kHz, 4.0 kHz, 5.3kHz 9.5kHz)
- ✓ Bourns optical encoder for the smoothest DX tuning
- ✓ Features CPU fitted, 400 memories, multi timers & alpha tag

The **NB7030** multi-option is **not fitted as standard** to the *AR7030 PLUS*, just the 'features' CPU is fitted. Should you wish to add the hardware noise blanker and audio notch filter, **order the UPNB7030**. The **AR7030 'PLUS'** is the best of the best!

Enhancement continues in production, the latest production features **alternative click encoders** which provide a smoother and more consistent quality feel and a **new-style liquid crystal display** with higher contrast and a wider viewing angle. The AR7030 has established itself as the popular performance trendsetting short wave receiver representing the new 'bench mark' in excellence and **sheer performance.**

AR7030 options

MF500	Collins 500 Hz mechanical CW filter	**BP123**	Internal rechargeable battery and charge circuit for the AR7030
CFJ455K8	Murata 1.0 kHz data filter		
XTAL2.4	Quality 2.4 kHz crystal filter for AR7030 (FL124 daughter board recommended for fitting)	**NB7030**	Enhanced multi-option - audio notch filter, noise blanker and features CPU for alpha-tag memories, additional memories, enhanced timer
MF2.5	Collins 2.5 kHz mechanical SSB filter		
CFK455J	Murata 3.0 kHz metal cased filter (displays around 3.8 kHz in AR7030) as fitted in the AR7030 *PLUS*	***UPNB7030***	Enhanced upgrade NB7030 for those who already have the features CPU fitted or are adding the NB7030 to the *AR7030 PLUS*
CFK455I	Murata 4.0 kHz metal cased filter (displays around 4.7 kHz in AR7030)	**FPU7030**	"Features CPU" for the AR7030 as supplied with the NB7030 option
MF4	Collins 4.0 kHz AM mechanical filter	**SM7030**	Service information comprising circuits, layout, block diagram, service alignment disk & lead
MF6	Collins 6.0 kHz AM mechanical filter		
FL124	Daughter board for fitting up to three crystal filters to the AR7030	**Data-Master** PC Windows control software	

- Wide frequency coverage 0 - 32 MHz
- All mode reception: USB, LSB, CW, AM, Synchronous AM, NFM, DATA
- Advanced IP^3 greater than +30dBm
- Very high dynamic range
- Low noise local oscillator, phase noise <-158dBc/Hz
- Variable bandwidth auto tune synchronous detector with selection of USB, LSB, DSB or anything in between using PBS
- Passband tuning ±4.2kHz
- Audio pitch tune in CW & DATA modes
- Frequency display resolution to 10Hz
- Seamless tuning using single loop DDS
- TCXO frequency standard fitted
- Automatically calibrated and aligned filters

- Specially developed AGC release characteristic
- 100 memory channels plus dual VFOs
- Clock & timer facility
- DOT MATRIX rear illuminated LCD
- Assignable controls
- Re-configurable receiver
- Infrared hand control as standard
- Compact stylish strong cabinet
- Built-in whip amplifier
- 50 ohm & 600 ohm aerial inputs
- Four standard IF bandwidths provided as standard with provision for a further two
- *PLUS* version available with enhanced performance
- Wide range of options available

Specification - *based on a typical production unit*

Frequency input range	0 - 32 MHz
Modes	AM, Synchronous AM, USB, LSB, CW, DATA & NFM
Intercept point (IP^3)	>+30dBm (+35dBm typical)
Dynamic range	typical 104dB 20/40 kHz spacing with 2.2kHz SSB filter
Sensitivity (150kHz - 32 MHz)	<0.3uV for 10dB S/N in SSB modes
	<0.5uV for 10dB S/N in AM mode
Selectivity	>90dB @ 5kHz SSB with 2.2kHz filter
	>100dB @ 20kHz SSB
Standard fitted filters	2.2kHz, 5.5kHz, 7.0kHz & 10kHz
Tuning	2.655Hz in SSB modes
	10.62Hz in AM & NFM modes
	Fully continuous tuning multi-rate speed up.
	Keypad frequency entry from infrared hand control
Audio output	2 WATTS into 8 ohms using standard provided power supply
Harmonic distortion	SSB modes, input signal at S9, THD <0.2%
	AM modes, input signal at S9, THD < 1.3%
Frequency stability	TCXO specification ±2.5ppm from -30° to +70°C and will typically give a receiver stability better than ±1ppm from 10°C to +40°C
Aerial connection	50 ohm unbalanced SO239
	600 ohm unbalanced via wire grip
	Hi-Z whip input (on SO239) with reduced RF performance
Power requirements	15V d.c. from external a.c. mains adapter. Current typical 300 to 500mA, 1A max. 30mA on standby but can be operated on 12 to 15V d.c. with degraded performance
Dimensions	Case: 238 x 77 x 191mm (W.H.D.)
	Overall: 238 x 93 x 227mm (W.H.D.)
	Weight: 2.2kg

Designed & built in the UK for AOR Ltd Japan by AOR Manufacturing Ltd

What do the reviewers have to say?

Larry Magne - Monitoring Times & Radio Japan
"...arguably the best receiver on the market, regardless of price..."
"... Dynamic range is excellent at both 5 & 20 kHz separation..."
"... overall audio distortion is good-to-excellent..."

Passport to World Band Radio 1997 (nearly 5 pages of review!)
"Dynamic range is breathtaking at spacings of 5kHz and 20kHz, with respective third-order intercept points being +1dB and +30dB. Indeed, it is so outstanding that our laboratory manager had to visit with Hewlett-Packard's signal generator maven and upgrade certain of our testing gear in order for us to be able to accurately measure performance of this calibre. ...What these measurements showed is that the '7030's dynamic range and third-order intercept points are at levels normally associated only with the finest in professional hardware. Yet, the '7030 does this at a fraction of the price." Awarded five stars and Editor's choice.

World Radio & TV Handbook 1999
"The AR7030 PLUS is a totally state of the art HF receiver, whose specification puts that of almost everything else on the market to shame. If our sample is typical - and there is no reason to suppose it was not - some aspects of its performance almost certainly exceed the ability of the average test laboratory to measure and establish them. So much about this receiver is utterly right. ...sheer performance allied to extreme versatility and excellent build quality, the AOR 7030 PLUS remains one of the world's most desirable receivers. A word of praise is also in order for the truly excellent manual..." Awarded five stars and table-top receiver of the year 1996/97.

RadCom (RSGB) - The Peter Hart Review
"The strong signal performance is extremely good. The intermodulation measurements are at the limit of my measurement capability and the close-in result by far the best I have measured on any general coverage receiver. ...The excellent RF performance of the AR7030 is certainly most apparent in on-air tests."

Jonathan Marks - Radio Netherlands
"Of the synthesizer... this is an extremely low sideband noise design..." "We think that the phase noise of the AR7030 DDS is excellent, and much better than comparable priced and even much higher priced receivers..."

AOR®

AOR Ltd
2-6-4 Misuji, Taito-ku, Tokyo 111-0055, Japan.
Tel: +81 3 3865 1695 Fax: +81 3 3865 1697
post@aorja.com www.aorja.com
AOR (UK) Ltd
4E East Mill, Bridgefoot, Belper, Derbys DE56 2UA, England
Tel: +44 1773 880788 Fax: +44 1773 880780
info@aoruk.com www.aoruk.com
AOR USA, INC.
20655 S. Western Avenue, Suite # 112
Torrance, CA. 90501, USA
Tel: (310) 787 8615 Fax: (310) 787 8619
info@aorusa.com www.aorusa.com