



# AR7030 *high dynamic range general coverage receiver*

The AR7030 is a combined project between AOR and internationally acclaimed designer "John Thorpe". This new design provides exceptional strong signal performance coupled with enhanced microprocessor features and facilities. 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 IP<sup>3</sup> 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  $\pm 4.2$ kHz, variable audio pitch tune on CW & data modes and a new "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.

***Despite the deceptively 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... volume commercial purchasers are invited to discuss specific requirements such as rack mounting etc.***

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 plus **100 memory channels** with **dual VFO** and 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**. 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 is planned so that transportable operation will be possible.** An infrared remote controller is supplied as standard along with a low noise power supply and comprehensively illustrated operating manual.

## 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..."

### Don Phillips - DSWCI

"The AR7030 gives the illusion that it is able to trap any signal that hits the antenna and demodulate it almost at FM quality"

### John Wilson - Short Wave Magazine

"... the appearance is stunning, the finish on every part is of the highest standard..."  
 "... there is a very good synchronous a.m. system which has the unique feature of being auto tuned..."  
 "...I was simply amazed when I came to explore the i.f. filtering arrangements..."

### Chris Lorek - Ham Radio Today

"Regarding the RF performance of the set, my measured results say it all. If you're not technically minded just read these as superb..."

### Gordon Bennett - AWR broadcaster and contributor to medium wave DX and many other titles

"Is it an excellent DX machine? Yes!"  
 "Is it an excellent receiver for SWL's? Yes!"  
 "Can it be used with an indoor loop? Yes!"  
 "... the audio is superb"

### 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..."

### Nils Schiffhauer - German independent reviewer (Funk etc)

"Clear advantage to AOR thanks to its perfect syncro detector"  
 "AOR wins thanks to its fine AGC"

- Wide frequency coverage 0 - 32 MHz
- All mode reception: USB, LSB, CW, AM, Synchronous AM, NFM, DATA
- Advanced IP<sup>3</sup> greater than +30dBm
- Very high dynamic range
- 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

Specification	
Frequency input range	0 - 32 MHz
Modes	AM, Synchronous AM, USB, LSB, CW, DATA & NFM
Intercept point (IP <sup>3</sup> )	>+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**

- 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
- Planned options include:  
additional IF filters including Collins,  
internal rechargeable battery,  
notch filter plus noise blanker,  
enhanced features microprocessor,  
band-2 stereo VHF converter

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