AR7030/19 *rack mount - high dynamic range general coverage receiver*

The AR7030 was first released in the spring of 1996 and quickly gained many awards and accolades including the industry standards *World Radio & TV Handbook table-top receiver of the year* and *Passport to World Band Radio five star award for Editor's choice*. Responding to commercial requests for an "off the shelf" solution to cost effective high performance monitoring applications, the AR7030 is now available in a 19inch U3 rack mount in addition to the standard table-top formats of AR7030 and AR7030 'PLUS'. The AR7030 is now a mature product enjoying a good reputation in the hobbyist and semi-commercial market places, building on this success, the AR7030/19 is set to prove equally popular as a cost effective alternative to established high end and custom units.

At the core of the AR7030 is exceptional strong signal performance coupled with up-to-the-minute 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 and crystal), all of which are 'self aligned' by the receiver for optimum performance and passband symmetry; this in addition to the standard fitted TCXO makes the AR7030 ideal for ECSS applications and long term monitoring of data modes. For broadcast monitoring, the self tuning variable bandwidth synchronous detector is a pleasure to use and 'hangs on' to the weakest of signals, audio quality is superb, two adjustable line outputs are provided.

Where good strong signal handling is of great importance, the AR7030 must be the most cost effective solution offering an IP^3 greater than +30dBm (typical up to +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. Simply compare this specification to others then compare the price!

The AR7030 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. In particular, the AR7030/19 has been based on the AR7030 'PLUS' enhanced receiver, this ensures the very highest levels of performance and capability with all aspects of performance carefully considered, a front panel keypad (in addition to the hand-held infrared control) and front facing speaker are also incorporated:

- 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
- Four filters fitted as standard (typical bandwidths: 2.2, 4.0, 5.5, 9.5kHz)
- Bourns optical encoder for the smoothest DX tuning
- Features CPU fitted, 400 memories, multi timers & alpha tag

Enhanced features include pass band tuning ±4.2kHz, 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 four level attenuator provides levels of sensitivity from +10dB to -20dB. The AR7030/19 may also be controlled by direct connection to RS232.

Options: many additional filter bandwidths (up to a total of six may be fitted at any time), mutli-option switchable noise blanker and audio filter, internal rechargeable battery for areas where power drop out is common, service kit, Windows PC software, desk-top cabinet. The standard AR7030/19 offers a bolt-in U3 19 inch rack using a custom CNC machined solid brushed & anodised aluminium front panel with the receiver section housed in a metal top, bottom & rear panel.

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"

AR7030/19 specification

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, 4.0 kHz, 5.5kHz, & 10kHz *nominal*
Tuning	2.655Hz in SSB modes 10.62Hz in AM & NFM modes Fully continuous tuning multi-rate speed up. Keypad frequency entry from front panel and infrared hand control
Audio output	2 WATTS into 8 ohms
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	U3 19 inch front panel
Weight:	3.1kg (without optional desk cabinet or mains power supply)

AOR has been producing innovative radio receivers in Japan for twenty years, the AR7030 is our first to be designed and built in the UK.

- 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
- 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
- 400 memory channels plus dual VFOs
- Clock & timer facility
- Alpha tag DOT MATRIX rear illuminated LCD
- Assignable controls
- Re-configurable receiver
- Infrared hand control as standard
- Stylish front panel
- Built-in whip amplifier
- 50 ohm & 600 ohm aerial inputs
- Four standard IF bandwidths provided with provision for a further two
- Smooth tuning optical encoder
- Options:
  additional IF filters including Collins, and high quality crystal
  internal rechargeable battery,
  notch filter plus noise blanker,
  desk-top cabinet

AOR®

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Despite the deceivingly simple front panel layout, the AR7030/19 really packs a punch with enhanced facilities including an extensive computer command set ideally placing the receiver for commercial applications... The AR7030/19 is available in the stated format, however we are happy to consider specific requirements for bespoke orders such as a different filter combinations, channelised programming, specific changes to the control system etc.