AOR®

Authority On Radio Communications

SINCE 1978

AR2300 BLACK-BOX RECEIVER
"I/Q Special Edition"

- 40kHz - 3.15GHz, all analog modes
- Digital I/Q output and a suite of supplied software solutions for WINDOWS & LINUX
- 15 MHz wide IF output for external IF recorders, signal and spectrum analyzers
- 10 MHz reference input
- +/− 0.1ppm frequency stability
- Full control command set for system integrators
- New updated user manual
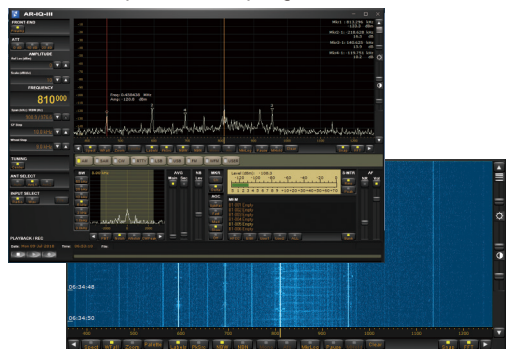- Optional APCO 25 decoder
- Optional Ethernet controller

High-performance communications receiver for commercial and governmental applications, as well as for the demanding prosumer. AR2300 "I/Q Special Edition" is a complete wide-band signal detection, monitoring, recording and playback solution with great versatility!

SUPPLIED AOR WINDOWS SOFTWARE

SUPPLIED AOR LINUX SOFTWARE

AR-IQ-III
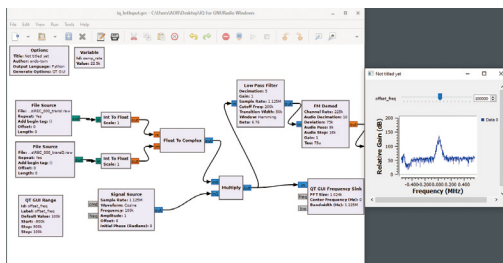**Receiver control, I/Q REC & playback**

Store and playback a full 900kHz bandwidth with no loss of quality! 72Mbit/sec stream with 1.125Msample/sec sampling rate.

IQ for GNURadio
I/Q converter for use with GNURadio on Windows

Manipulate I/Q files recorded with AR-IQ-III, in GNU Radio on Windows! Use our sample configuration or build your own blocks!
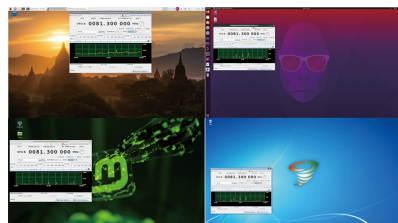

ARL2300 Local
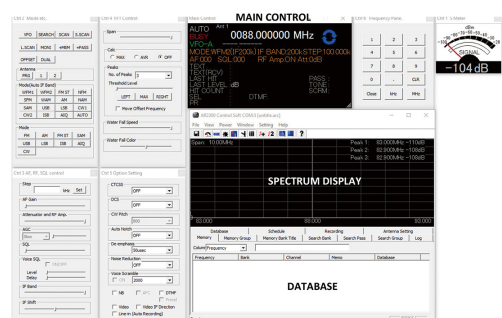**Receiver control & memory management for Linux**

Works on any recent DEBIAN, UBUNTU or RASPBIAN based system, such as Raspberry Pi O.S, UBUNTU, Linux MINT and Twister OS.

AR2300 Controlsoft
Receiver control & memory management

Complete receiver control, audio recording, playback and memory bank management.

AR2300 Editing Software
Memory channel editor

Conveniently edit memory banks/channels, create search banks, link memory and search banks.
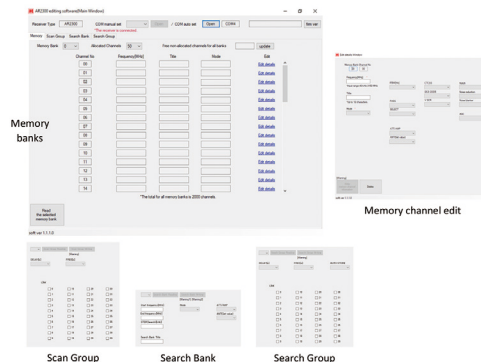
REL
I/Q capture for Linux

Also compatible with Raspberry Pi 4B and 400. Manipulate the captured I/Q in GNURadio. Playback with GQRX.

Specifications are subject to change without notice nor obligation.

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GENERAL

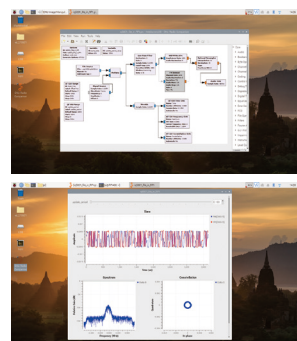|	
Frequency range	40kHz to 3.15GHz
Frequency resolution	1Hz
Tuning steps - program	1Hz to 999.999kHz in 0.001kHz increments
Receiving mode	USB/LSB(J3E), CW(A1A), AM(A3E), FM(F3E), WFM(F3E), FM-Stereo(F8E), APCO P-25(D3E) Optional
Number of VFO	5 (A through E)
Memory channel	2,000 channels (50 channels × 40 Memory banks)
Memory bank	40 banks (each bank can be customized between 5 to 95 channels)
Pass frequencies	1,200 frequencies or 1,200 frequency ranges 30 frequencies(ranges) × 40 banks
Priority channel	1 (one)
Selected memory channel	100 channels through memory banks
Typical scanning speed	Approx. 100 channels/steps per second
Antenna impedance	50 Ω
Operating temperature range	0℃ to +50℃ / 32℉ to 122℉
Frequency stability	Less than ±0.1ppm after warm-up (5 minutes) Less than ±0.01ppm with optional GPS unit.
Power supply requirement	DC 10.7V to 16V, 2.0A@ 12V
Audio output	> 2W into 8Ω load
Power consumption*	Stand-by : 200mA, Max. Audio : 1.5A
Ground system	Negative ground
Dimensions*	285mm(D)×220mm(W)×70mm(H) 11¼"(D)×8½"(W)×2¾"(H)
Weight*	3kg (6.6 lb.)

RECEIVER

Receiver system	40kHz - 25MHz Direct conversion 25MHz - 220MHz Double super-heterodyne 220MHz - 360MHz Triple super-heterodyne 360MHz - 3.15GHz Double super-heterodyne
Intermediate frequencies	1st - 294.5MHz / 1.7045GHz 2nd - 45.05MHz / 294.5MHz 3rd - 45.05MHz
Third-order IMD	> +20 dBm at 14.1MHz > +9 dBm at 50MHz > +5 dBm at 620MHz
Spurious and image rejection	> 70 dB : 40kHz - 25MHz > 50 dB : 25kHz - 2GHz > 40 dB : 2.0GHz - 23.15GHz
Digital IF filter bandwidth	200Hz, 500Hz, 1kHz, 3kHZ, 6kHz, 15kHz, 30kHz, 100kHz, 200kHz- Receiving mode dependant
Selectivity	CW - 500Hz -3dB:>380Hz -80dB:>500Hz AM - 6kHz -3dB:>5.5kHz -80dB:>6.9kHz SSB - 3kHz -3dB:>2.7kHz -80dB:>3.1kHz NFM - 15kHz -3dB:>14.2kHz -80dB:>15.6kHz WFM - 200kHz -3dB:>200kHz -80dB:>250kHz

Sensitivity

Mode	SSB, CW	AM	FM	WFM
Test Method	10dB S/N	10dB S/N	12dB SINAD	12dB SINAD
Filter B/W	3kHz	6kHz	15kHz	200kHz
40kHz to 100kHz	2.0μV	4.0μV		
100kHz to 1.8MHz	1.2μV	2.0μV		
1.8MHZ to 25MHz	1.0μV	2.0μV		
25MHz to 1GHz	0.25μV	1.0μV	0.5μV	1.5μV
1GHz to 2.4GHz	0.3μV	1.0μV	0.5μV	1.5μV
2.4GHz to 3GHz	0.5μV	1.7μV	0.5μV	2.5μV
3GHz to 3.15GHz	1.0μV	2.0μV	0.8μV	3.5μV

AUXILIARY FUNCTIONS

Simultaneous reception	Two types of simultaneous reception (dual-watch) are possible.
2 band reception	One HF (40kHz-25MHz) frequency plus one VHF/UHF(25MHz and above) frequency.
Offset reception	Main frequency plus sub-frequency (within ±5MHz from the center frequency) Offset reception is possible only for VHF/UHF
Triple reception	Triple reception is possible by combining simultaneous reception mode. I.E. One HF frequency plus offset reception.
Squelch system	CTCSS, DCS
Demondulation Aid	Auto Notch Filter(NOTCH), De-Noiser(NR), Noise Blanker, IF Shift, CW Pitch, AGC, AFC, DTMF APCO P-25 Digital voice decoder (option)

AUDIO RECORDING

Type of recordng	Record/Playbank function through SD or SDHC
SD card type	SD or SDHC card per SD Card Association More than 256MB is required. Use card adapter for miniSD and microSD cards. FAT16 and 32 only.
File Format	Windows compatible WAV file format. RIFF (little-endian) data. WAVE audio, Microsoft PCM, 16-bit mono 17.578kHz
Recording time	Approximately 8 hours of continuous recording by 1GB SD Card. Squelch synchronization is possible to eliminate inactive time.

INPUT & OUTPUT

Antenna Input	ANT 1 : 25MHz-3.15GHz, N-J connector
	ANT 2 : 40kHz-3.15GHz, N-J connector
10MHz reference input	SMA-J connector,
	Typical input: -2dBm±2dBm for 50Ω
45.05MHz Analog IF output	BNC-J connector, 45.05MHz±7.5MHz
	Typical output: Antenna input +10dBm for 50Ω
Digital I/Q output	USB2.0 compatible isochronous transfer
	Digital I/Q output through USB Type-A Jack. 0.9MHz bandwidth.
12kHz offset output	12kHz offset analog I/Q through 3.5mmφ stereo-phone jack.
Line output	3.5mmφ stereo-phone jack. (3-wire)
Accessory	8-pin miniature DIN
DC Power Input	EIAJ MP-121C (5.5×2.1mm) plug. Positive center.
External speaker	3.5mmφ miniature phone jack (2-wire)
RS-232C	9-pin D-subminiature type (Male) - Firmware update and remote control by PC.
USB	USB Type-A; USB 1.1/2.0 Jack for PC control.
VIDE output (Front Panel)	RCA Jack 75Ω 1V p-p

Specifications subject to change without prior notice for product improvement or modification. *Power consumptions, size and dimensions are only approximate value. Dimensions does not include projections. E. & O. E.

SUPPLIED ACCESSORIES

AC power adapter, SD card, two USB cables, printed operating manual

WINDOWS software: "AR-IQ-III" with USB license dongle, "AR2300 Controlsoft", "IQ converter for GNURadio on Windows", "AR2300 Editing Software".

LINUX software: "ARL2300 local", "REL"

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