

# MODELS 551 & 552

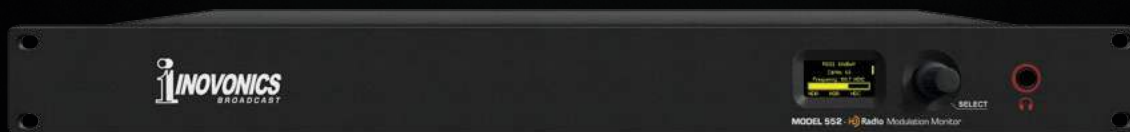
HD Radio® Modulation Monitors

## MODEL 551



- Monitor off-air analog FM and HD Radio signals (HD1-HD4) on the Hi-Res Front Panel Touch Display and via the Web from anywhere in the world.
- The 3U package features a 7-inch graphic touch screen display, wide-range LED level meters with rear-panel tallies.
- Displays HD Radio album artwork, station logos and similar visuals on the front panel display and remote Web interface.
- Measures real-time audio diversity delay and mismatch between the FM and HD1 broadcast.
- Fulltime off-air program audio as L/R-analog, AES3-digital and Dante®-based AES67 AoIP streaming, plus a multi-listener Internet IP stream and front-panel headphone jack.

## MODEL 552



- Model 552 is a 1U package designed for remote Web access and control.
- Monochrome display jog wheel for easy IP setup.
- Web interface and accessible tools are identical to Model 551.

## FEATURE HIGHLIGHTS

- Unexcelled off-air reception of analog-FM and FM/HD Radio programs HD1-HD8; accurate FM total-mod and other measurements with HD Radio carriers at any level. Stays on-channel and on-mode through signal and power loss.
- Intuitive, menu-driven setup from the front panel, or remotely with the built-in Web server addressable over any IP network by computer or mobile device. The 551 and 552 support full SNMP remote control and monitoring.
- Graphic front-panel and remote display of all level metering; FFT spectrum analysis of RF, MPX baseband and program audio; audio XY, oscilloscope and ITU-R BS.1770 ('LU') loudness displays. Collects and logs a history of FM and HD Radio signal parameters.
- Precise analysis of timing and level errors between analog FM and HD1 digital program channels.
- Simultaneous monitoring of analog FM, HD1 and three other user-selected HD Radio programs. Analog, AES3-digital, HTTP/UDP Web-streaming and independent AoIP-streaming program audio outputs, plus an FM composite/MPX baseband output.
- Displays FM/RDS and HD/PAD data in real time; gives on-screen presentation of station logos and 'Artist Experience' album art.
- Alarms for up to 20 individual signal faults, with tallies and SMS text or email message dispatches to specific individuals for various alarm conditions. Logs all alarms chronologically.
- BandScanner™ utility scans the entire FM spectrum, displaying all stations with signal level, PI code, callsign, PTY (format) and HD status.
- StationRotation™ mode enables automatic sequential monitoring of multiple stations.

551



The 3U package features a 7-inch graphic touch screen that displays all the essential modulation data for accurate readings in a graphic format, plus wide-range LED level meters. Assignable fault alarms with rear-panel tallies.

Real-Time Clock has battery backup.



Fulltime off-air program audio is available simultaneously as L/R-analog, AES3-digital and Dante®-based AES67 AoIP streaming, all with adjustable levels, plus a multi-listener Internet IP stream and front-panel headphone jack.

Selectable outputs for monitoring.

GPOs may be user-assigned to specific alarm functions.

# MODELS 551 & 552 WEB INTERFACE FEATURES



See the occupied bandwidth of the Analog and HD carriers in real-time. Power levels are measured and displayed.

Accurately view all FM meter levels, even on small screen sizes.

Monitor the instantaneous FM/HD1 time alignment as well as its 24-hour rolling history.

The MODELS 551 & 552 display HD Radio graphics and related text data for each HD channel. Select the 'simple' mode to see what the listener sees, or the 'advanced' mode with a history of previous images.

## 552



- Easy setup for Web access & control.
- Offers the same Web-enabled features & functions as model 551.



- Selectable outputs: L/R Analog, AES-digital, Dante AoIP, IP multi-user listening.
- User-assignable GPOs and SNMP is fully supported.

# TECHNICAL SPECIFICATIONS

**Tuning Range:** 87.5MHz-107.9MHz in 100kHz steps

**Antenna Input:** 75-ohm (F)

**High Level RF Input:** 50-ohm (BNC)

**Sensitivity/SNR:**

10dBuV required for 50dB mono-FM SNR, unweighted.

**Reception Modes:**

**FM:** Stereo / Forced Mono

**HD Radio:** HD1 through HD8

**FM/HD1:** 'Split Mode' delivers L+R FM to the left audio channel and L+R HD1 to the right.

**Off-Air Frequency Response:**

**FM:**  $\pm 0.1$ dB, 20Hz-15kHz

**HD Radio:**  $\pm 0.25$ dB, 20Hz-20kHz

**Stereo Separation:**

**FM:**  $>60$ dB, 20Hz-15kHz

**HD Radio:**  $>90$ dB, 20Hz-20kHz

**Distortion:**

**FM:**  $<0.01\%$  THD, 20Hz-15kHz

**HD Radio:**  $<0.03\%$  THD, 20Hz-20kHz

**FM De-emphasis:** 75 $\mu$ s, 50 $\mu$ s or None, menu-selectable

**Program Audio Outputs:**

'Assignable' outputs utilize XLR connectors; 'Dedicated' outputs (**551 only**) are RJ45 jacks per StudioHub® spec.

**Balanced Analog:** Left and Right outputs adjustable from  $-15$ dBu to  $+15$ dBu in 0.1dB steps; 200 $\Omega$  source.

**AES Digital:** Adjustable from  $-30$ dBFS to 0dBFS in 0.1dB steps; 44.1kHz sample rate; 110  $\Omega$  transformer-coupled.

**Dante/AES67 Compatible:** (RJ45) Output at 44.1kHz (Dante-only) or 44.1kHz/48kHz (Dante /AES67); AoIP utility has independent IP, Audio Format and Transmit Flow settings; level adjustable from  $-30$ dBFS to 0dBFS in 0.1dB steps.

**Listening Stream:** Web browser 'remote listening' stream uses HE-AACv2 encoding, 44.1kHz or 48kHz sample rate, bit-rates from 18kbps to 64kbps; accommodates up to 10 simultaneous listeners. HTTP/Icecast and raw UDP streams are available simultaneously.

**Headphone Jack:** (1/4" TRS) with adjustable listening level.

**Composite/MPX Output:**

(BNC) may be switched between MPX and 19kHz stereo pilot sample; adjustable from 1Vpp to 6Vpp in 0.05V steps.

**LAN Port:**

LAN connection to local network or Internet provides remote monitoring, control, listening and full SNMP implementation; user-programmable network setup and streaming parameters.

**General Purpose Outputs:**

Ten individual open-collector NPN transistor closures to ground are associated with alarm functions. Each is programmable for GPO assignment and logic polarity.

**RDS Fields Displayed:**

PS • PI • Call • RT • RT+1 • RT+2 • PTY • PTYN • CT • M/S • DI • TP • TA • AF • ODA • Block Error Rate • Groups & use statistics

**HD PAD Data Displayed:**

**Overview:** Short Name • Universal Name • Station ID • Slogan • Message • Station Location • Service Mode • TX Blend • Emergency Alert

**HD1-HD8, each:** Slogan • Program Type • Artist • Title • Album • Codec Mode • Bitrate • TX Gain • Logo/Artist Experience graphics and file details

**Bargraph & Numerical Level Metering:**

**Analog FM:** Carrier Modulation • Stereo Pilot & Subcarriers • Demodulated L/R & L+R/L-R • Stereo Separation • Stereo Crosstalk • BS.1770 Loudness • Synchronous & AM Noise

**HD Radio:** (simultaneously for HD1 and three other preselected HD programs) L/R Audio • BS.1770 Loudness (absolute and relative to Analog FM Loudness).

**FM/HD1 Alignment:** Timing offset and level/phase discrepancies between programs; 'Confidence Factor' display.

**Graphic Displays/Plots:**

RF Spectrum • MPX Spectrum • Audio Spectrum • Audio XY • Audio O'scope • FM Modulation History • Audio Level History • Metrics History • FM/HD1 Time & Level Alignment History • BandScanner™ utility

**Alarms:**

Most alarms have multiple parameter settings. All alarms can send text or email notifications. Alarms are also logged daily, weekly, or monthly.

**Analog FM:** Carrier Overmod • Audio Loss • Low Signal • RDS Loss • PI Error • RT Update • PilotLoss

**HD Radio:** HD Loss • Program Loss • Audio Loss • HD Power Level • FM/HD1 Alignment • PSD Update • Logo Receipt • Artist Experience Update • Image Issues • Emergency Alert Updates

**Real-Time Clock:**

Auto-sets to Internet time; auto/manual DST setting; battery backup.

**Power Requirement:**

88-264Vac, 18W

**Operating Environment:**

32°F/0°C-122°F/50°C; 0%-95% non-condensing relative humidity; 10,000ft/3048m.

**Size and Weight:**

**551:** 5.25"H x 19"W x 9"D (3U); 12 lbs. shipping weight.

**552:** 1.75"H x 19"W x 9"D (1U); 7 lbs. shipping weight.

**Conformances:**

EN50081-1

EN50082-1

93/68/EEC

2002/95/EC



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