ITS6000

Highway Advisory Radio for 21st Century ITS Applications

ITS6000 Series Highway Advisory Radio Stations from ISS provide new and efficient ways to integrate real-time radio into an ITS project. Radio is as relevant as its content is current. ITS6000 Series HAR Stations are designed to make broadcast content match current conditions to maximize utility to motorists. There are two new ITS6000 Series HAR Stations from which to choose:

Verson 6010

Telephone Control by DTMF/Voice

Conventional Highway Advisory Radio design, kicked up a notch, Version 6010 offers operators the ability to record 3 hours of recordings, 1,000 high quality messages in 50 playlists and, if desired, automatic "all-hazards" alerts from the National Weather Service, targeted to the area served (e.g., hurricane and Amber alerts). Two-way redundant control, standard with each station, uses push-to-talk style transceivers (transceivers not included) and the same, familiar broadcasting protocols and voice prompts as regular phones.

Verson 6020

IP-Based Control

Manage Highway Advisory Radio Stations on a wired, fiber optic or modem-based network. SignalcastIP™ software provides text-to-speech and message-scheduling capability from a single or networked workstation or via XML from a traffic management system. Control flashing advisory sign beacons in the field from the same platform.

ITS6000 Features

Standard Features

→ Non-volatile dynamic message storage.

→ Remote control.

→ Independent recording, monitoring and erasing of recordings.

→ Four-day battery backup operation if AC power is lost.

→ National Weather Service EAS/All-Hazard messages automatically broadcast, targeted to area served via Specific Area Message Encoding (standard on ITS6010; optional on ITS6020).

→ Rack-style signal cabinet for high security and multiple option flexibility.

Options

→ The Vertical Profile Antenna System requires no buried groundplanes or groundrods. Only one square foot of ground is needed for installation. The system comes with an aluminum antenna support pole that has internal wiring to discourage vandalism.

→ GPS Frequency Stabilization minimizes interference among satellite radio stations.

→ Power Loss Notification Module informs technicians that AC power has been lost at the HAR location.

→ National Weather Service EAS/All-Hazard Messages automatically broadcast, targeted to area served via Specific Area Message Encoding (standard on ITS6010; optional on ITS6020).

→ Services include FCC licensing and studies, turnkey installation, staff training, professional broadcast recording and system certification.

ITS6000 Details

Transmitter System Specifications

Standard on Versions 6010 & 6020

Transmitter

- 0-10-watt operation, Class D, high efficiency output; internal components rated to 3 times operating wattage, utilizing 2 output devices.
- Federal Communications Commission certified for Travelers Information Service in the United States under Part 90.242., Certification Number B7MTR-6000TIS-WB.
- IPC-610 certified.
- Manufactured in compliance with Class 3 wavesolder standards.
- Approved for military use.
- Single-board design with all RF, power and audio circuitry.
- Integral LED wattage and VU reference meters.
- Remote broadcast monitoring control.
- Synthesized frequency selection, compander-style audio processing.
- Defeat-able LED operation to save power.
- 24V DC, fully regulated power supply.
- 530 to 1700 kHz AM frequency range.
- Frequency stability +/-20 Hz.
- Continuously adjustable power and audio modulation controls, externally accessible on front panel.
- Tunable series filter on RF output.
- Audio distortion: less than 1.2%, 100 Hz to 3 kHz.
- Noise level: 70 dB below 95% modulation level, 100 Hz to 3 kHz.
- Modulation: 99%, -40 dB to +20 dB.
- Temperature: -40 to +85 degrees Celsius.
- Humidity: 95% (non-condensing).
- External audio, power and synchronization inputs.
- External PL-259 UHF style RF output and 1/4" audio headphone output driven by detector circuit to provide positive modulation indication.
- Rack, panel or shelf-mountable cabinet.
- Slim-line design (7.5" height, 17" width, 1.5" depth) and 4 pounds.
- Mean time between failure - in excess of 60 years.
- Estimated product life = in excess of 30 years.

Transmitter System Specifications (continued)

Security Enclosure

- NEMA3R grade, gasketed, with dual doors, aluminum frame and sheeting. Removable rack cage.
- Cabinet footprint: 66.75 inches high by 24.25 inches wide by 32.75 inches deep; 23-inch doors open 90 degrees, front and back.
- 332/334 signal cabinet style. Dual internal locks and locking handles.
- Fan/vent/filter, thermostatically controlled.
- AC power service panel and ground bus.
- Cabinet lights activate/deactivate with door opening/closure.
- Gasketed base, ready for pad mounting. All shelves, brackets and hardware for rack mounting, bolts for cabinet installation.

Surge Arrestors

- Power surge arrestor: 30 KAmps max - fewer than 1 nS.
- Telephone line arrestor: 10 KAmps max - fewer than 2.5 nS.

Power

- 115VAC/220VAC.

Utilities Required

- 110VAC, phase/50/60 Hz, less than 1 amp AC operating current, 4 amp maximum AC charging current (20A breaker, non-GFI circuit). Standard business telephone line (“central office” type, shielded).

ITS6000 Details

NX8R Digital Message Player Specifications

Standard on Versions 6010; Optional on Version 6020

- Voicemail-style natural voice operation with 800-word/phrase capability; voice prompts and status report on available recording time, sequences, security codes, programming parameters and complete status of current audio program, relay states, power.
- Identical remote and local control codes.
- High quality (16-bit sampling rate) recording process, yielding 5500-Hz dynamic range.
- One thousand independent broadcast messages that may be of any length. Each message may be independently monitored and later erased, as desired.
- Automatic message scheduling by time, day, date. Internal time clock never requires setting, keeping time even with total loss of power.
- Fifty message playlists that may contain hundreds of broadcast messages, up to three live sources (each with independent timing control), command for up to four external relays, other (nested) playlists and differing output levels for each audio output. Playlists may be created, recreated or appended locally or remotely.
- Selection of active playlist locally or remotely.
- Three hours of recordable time in dynamic flash memory.
- Three audio inputs for separate and independent live program feeds, each with independent audio level controls.
- Three audio outputs with audio levels settable locally, remotely or programmed to change automatically.
- One- to nine-digit security access code, defeat-able phone prompting, programmable locally or remotely. User-settable number of retries and timeout period for maximum security.
- Five-second and full-message survey monitoring of all stored messages and playlists.
- Eight prioritized control closures to trigger message sequences remotely.
- Control closure prioritization allows automatic interrupts for emergency messages and automatic National Weather Service all-hazard radio notifications (weather and EAS).
- Includes prerecorded messages by professional announcer for advisory radio application -- ready for broadcast immediately.
- Station identification message broadcasts every half-hour.
- Rack mountable, slim design, 1 RU in height.
- Two-way redundant control, which allows full control of the NX8R Digital Message Player via push-to-talk style transceivers (not included) in parallel with and having priority over telephone control. The two-way, redundant control option uses the same commands and protocols as telephone control, including the same voice prompts and control options.

ITS6000 Details

NX6000 Digital Message Player Specifications

Standard on Version 6020

- TCP/IP in switched 10/100 Ethernet environments, 10baseT (IEEE 802.3).
- PPP connections for remote dial-up operations.
- FTP audio message transfers.
- Automatically logs system events and playback for manger review.
- Connectivity over a network for audio programming.
- Can be locally controlled or programmed via RS-232 serial port.
- MP3 audio file format, 32 to 128 kbps audio rates supported.
- Audio storage (standard) 1,000 minutes (16 bit, 44kpps, mono).
- Output level + 0dbu in two RCA type connectors (+6 dB/ XLR optional).
- Output level programmable from -110 to + 18dB.
- Harmonic distortion: 0.05 percent.
- Dynamic range: 86dB.
- Voltage: 120 VAC or 24VDC.
- 19" rack, 1U.
- Weight: 8 pounds.

ITS6000 Details

Signalcast^{IP} Broadcast Management Software Package Specifications

Optional on Version 6020

This option is required to control audio on the ITS6020 stations. The Signalcast^{IP} package is comprised of software utilities, options and services that allow convenient advisory radio station programming management from a stand-alone computer workstation or from a network-based computer. It may be bundled with hardware, peripherals, installation and training options.

Applications

Municipalities: management of emergency advisory radio station programming from various city government departments on an intranet.

Departments of Transportation: control of virtually an unlimited number of Highway Advisory Radio Stations via network or dialed-up modem from single or multiple control locations; automatic control from an Automatic Traffic Management System computer.

Airports: control of advisory radio station programming from multiple networked locations, such as the operations department and the parking office.

Capabilities

Signalcast^{IP} allows . . .

- Recording of CD-Quality Broadcast Messages (Hundreds of Hours, Thousands of Messages).
- Editing, Processing & Library Storage of Recorded Messages.
- Creation of Messages via Text-to-Speech with Male & Female Voices.
- Importation of Messages in .mp3 & .wav Formats.
- Drag-and-Drop Message Playlist & Flashing Sign On/Off Control.
- Calendar Scheduling of Messages by Date & Time.
- Ethernet-Based (Standard) or Modem Connectivity (Optional).
- 10-User License.

Warranty

Warranty term on ISS products, including computers and software, is one year from the date of delivery or ISS installation, whichever comes later, unless otherwise stated in writing. Full warranty is available upon request. Warranty is void should the configuration of components, hardware or software, including the total system, be modified (or modified with respect to the operating environment) subsequent to delivery.

SignalcastIP Specifications (continued)

Software

Application Architecture

- Platform – Windows 2000, 2003, XP (server side).
- Database – SQL server for storing the current state of the system.
- Web Server – Microsoft Internet Information Server for Windows NT.
- Text 2 Speech Generation – server side using AT&T Natural Voices Software.

Security Features

- Access control to the application is through Windows User Groups & Users.
- Users access the application through Internet Explorer.
- Application can be configured to be accessed locally (INTRANET) or remote (EXTRANET).
- Multiple users can access the application at the same time.

User Interface (UI)

- Intuitive UI.
- Uses state of the art web technology (such as Ajax) minimizing "refreshes" that cause the webpage to go back to the server.
- Online "Help."

Hardware

SignalcastIP software runs on customers' own single workstation or network-based computers.

The NX6000 Digital Message Player (earlier page) and RAS6000 Remote Access Server (below) function in concert with SignalcastIP software to repeat messages for Emergency and Highway Advisory Radio stations

Remote Access Server 3-Port Modem to Ethernet

- 3 integrated V90/56K modems.
- PAP & CHAP authentication.
- 10 MB Ethernet connectivity to I/IPX LANs; local & remote management using a telnet, TFTP or bundled management software.
- RADIUS authentication & accounting support.
- Flash memory on modems & server for easy updates.
- LAN port interface: 10 Base T; WAN ports interface: 3 built-in V90/56K modems.
- Data rates: 33.6K BPS upload & 33.6K BPS download speeds from dial-in clients & non-V90/56K flex servers; 56K BPS download speeds from digital V90/56K flex servers (dial-out only).
- Standards: data = V90/56K flex, enhanced V34 & below; error correction - V42; data compression = MNP Class 5, V42 BIS.
- Operation: line type, dial up.
- Memory: 8 MB RAM, 2 MB Flash ROM.
- Physical description: 6.2" W x 1.4" H x 9.0" D; 2 pounds; 15.8 CM x 3.6 CM x 22.9 CM; 0.9 KG.
- Approvals: FCC Parts 15 & 68; EN55022; EN55024; EN60950; UL 1950; CE mark.• Operates in-line.
- Functions to allow precision tuning of antenna on setup, and troubleshooting once station is operational.
- Size and weight: 6 inches by 4.6 inches by 2.5 inches; 1.2 pounds.

ITS6000 Details

All-Hazards Warning System Specifications

Standard on Version 6010; Optional on Version 6020

The Federal Communications Commission (FCC) designed the Emergency Alert System (EAS) so officials could quickly send important emergency notifications to affected counties across the country. This FCC EAS is digital-based and automated, using coding protocols similar to National Oceanic and Atmospheric Administration (NOAA) weather radio Specific-Area Message Encoding (SAME) technology. Under national EAS guidelines, each state and localities within have formed Emergency Communications Committees to serve as liaisons to the FCC, ensuring continuous improvement in the system and ensuring national implementation of the system, so it's useful.

The Automatic All-Hazards Warning System, which comes standard with every ITS6000 System, automatically rebroadcasts FCC EAS/weather targeted national alerts. It includes an FCC-approved EAS/weather radio receiver with antenna, mount and SAME programming. Within the ITS6000 Automatic All-Hazards Warning System, targeted national alerts automatically interrupt regular programming.

- Specific-Area Message Encoder for customer-selected counties, 2,000-county capability.
- Receives all 7-channel, VHF, NOAA weather frequencies and all EAS codes.
- Field programmable and upgradeable.
- Front-panel diagnostics and audio test port that accepts recorded .wav files.
- Detects up to 16 programmed SAME county codes; user-adjustable; triggers program changes based on NOAA EAS/weather-encoded messages.
- Stores most recent alert for local speaker replay.
- 600-ohm continuous output, manual and autoscan tuning; integral speaker/volume control.
- Steel chassis; rack mountable.
- External antenna, cut for the EAS/weather radio frequencies and mount with threaded UHF connector, balun and weatherproof gasket.

ITS6000 Details

GPS Frequency Stabilization System Specifications

Optional on Versions 6010 & 6020

This option may be added to any ITS6000 Transmitter System to minimize interference among satellite HAR stations. Oscillation phase-lock (PLL) to a common reference carrier allows all radio stations in the system to operate with minimal heterodyne. No external wirelines are required to achieve stability.

- GPS receiver: 8-channel.
- 1 PPS outputs: DB-9 connector, TTL outputs, positive edge true:
  - #1 - 20% duty output <500mS accuracy, directly from receiver.
  - #2 - 50% duty output <1mS accuracy, regenerated.
- Accuracy: 10 MHz @ 10 nS.
- Power: 117 VAC, 50/60 Hz or 24 VDC.
- Mechanical: 19" rack mount 1.6"H x 16.8"W x 9.4"D.

ITS6000 Details

Power Loss Notification Modeul Specifications

Optional on Versions 6010 & 6020

- Five programmable notification delay periods.
- Instantaneous to 24 hours.
- Internal battery backup.
- Automatically dials up to 4 telephone numbers.

ITS6000 Details

Antenna System Specifications

Standard on Versions 6010 & 6020

The ITS6000 Highway Advisory Radio Antenna System features the standard antenna, which produces a signal intensity of 2.0 mV/m at 1.5 km, the FCC maximum field level. The signal is typically signable at 3 to 5 miles. The antenna may be mounted atop a square or round pole of wood, metal or fiberglass.

The HAR antenna system is packaged with a prewired groundplane, pole mounts and insulators, a cabinet-protected lightning arrestor system and ground bus for lightning dissipation and groundplane connection. Components include . . .

Antenna Mount and Insulators

A galvanized-steel mount allows the antenna to be attached to any type of pole, minimum 6" diameter or 6" square. Includes split-plastic insulator mounts and stainless-steel hardware.

Lightning Arrestor, Enclosure and Ground Bus

Provided in a NEMA-4 cabinet, the lightning arrestor is bonded to an aluminum panel, which serves as support for lightning grounding and groundplane connection clamps.

Groundplane

A groundplane is the copper wire part of the antenna system buried beneath the antenna support. The PowerPlane® Groundplane is placed in a 6"-to-12" excavation that extends outward 10 to 20 feet (depending on frequency) in all directions from the pad or pole base; it is covered with backfill. The groundplane consists of a central ring of #4 bare copper stranded wire with 62 radials that extend outward in a circular pattern.

Antenna System Specifications (continued)

Antenna

- Type: whip (vertically polarized, center loaded, base fed).
- Power rating: 25 watts.
- Length: 15 to 25 feet (specifications vary with frequency of antenna).
- Weight: 8 to 12 pounds (specifications vary with frequency of antenna).
- Wind rating: antennas 1230 kHz and above 100 mph, 80 miles per hour with ¼ radial ice; antennas 1220 kHz and below 80 miles per hour, 50 miles per hour with ¼ radial ice.
- Assembly: 4 sections - base, coil, midtip and tip.
- Position of loading coil: center section.
- Joints: sleeves with locking. screws, sliding tip with locking nut.
- Temperature: -40 degrees C to 85 degrees C.
- Base pipes: aluminum construction, black finish color to discourage ice buildup; UV-resistant finish; architectural-anodization process #801; 1.5-inch diameter.
- Coil: wound with copper enameled wire in white vinyl shrink tubing, 2-inch diameter.
- Adjustable tip: stainless steel with locking nut, adjustable for SWR optimization, 0.5-inch diameter.

Groundplane

- Quantity: single PowerPlane Groundplane System, patented.
- Radials in system: 60 to 120 (specifications vary with frequency of antenna).
- Radial length: 10 to 20 feet each (specifications vary with frequency of antenna).
- Radial size: #12 bare solid copper wire.
- Bonding method: silver solder brazing with double weather resistant coating.
- Bonding ring size: #4 bare stranded copper wire.
- Lead: #4 bare stranded copper wire, 10 feet.

Lightning Arrestor System

- Capacity: 50,000 amps surge.
- Clamping speed: less than 2.5 nS.
- Connectors: UHF (2).
- Ground connection: aluminum flange.

ITS6000 Details

Vertical Profile Antenna System Specifications

Optional on Versions 6010 & 6020

When space is at a premium and station operation is unattended, the patented Vertical Profile Antenna System (VP9000) offers the solution. Place the VP9000 System in the area adjacent to the outdoor cabinet where the HAR equipment is located. The Vertical Profile Antenna System is designed to withstand hurricane wind speeds encountered on the Gulf and Atlantic coasts. The Vertical Profile Antenna System is comprised of an attractive painted aluminum antenna support pole and antenna grounding system, all in one. The antenna lightning arrestor and all cable are inside the pole, accessible through a service hatch. There is nothing on the surface of the support pole to encourage vandalism.

Added Advantages

VP9000 is compliant with the ANSI/TIA-222-G-2005 Class III, Category 4, Exposure D standard, rated to perform in worst-case environments, e.g., unobstructed shorelines in hurricane-prone areas, atop ridges in terrain where wind speeds achieve great force. It is also rated for essential communications in critical areas where structure failure could damage buildings or present a hazard to life. VP9000 can sustain 130 mph/3-second gust winds without failure. It is also compliant with the ANSI/TIA -222-G-2005 standard for frequencies 1400-1700 kHz when installed in soil types per Annex F of the standard. In a separate study, when used with AM frequencies 1400-1700 kHz, VP9000 met increased coastal hurricane wind-speed requirements (150 mph in a 3-second gust) for South Florida and other coastal areas. ISS holds US Patent 7,027,008 for the Vertical Profile Antenna.

Installation Requirements

Minimal ground disturbance (less than one square foot, horizontal, and 6' deep). No additional antenna groundplane or rod are required, therefore, it is an easy antenna to move.

Vehicles may be parked next to the system; however, the support pole should be guarded from vehicle damage. No objects taller than 25 feet should be within 50 feet. Coaxial cable to the support pole may be buried or installed overhead. The pole is set in a 6-foot post hole with good earth contact in the lowest 4 feet of the hole. (When used on AM frequencies below 1000 kHz, a 20-foot solid ground rod is driven beside the pole.) Concrete, asphalt or tamped dirt may surround the pole within 2 feet of the surface.

- Space requirement: less than 1 square foot.
- RF grounding element: 4-foot length; integral to support pole.
- Lightning ground: 8-foot groundrod, copper clad.
- Support pole composition: aluminum, 6-inch OD, .3125-inch wall thickness.
- Support pole length: 24 feet.
- Support pole finish: powder coat, silver/gray.
- Support standing height: 18 feet above grade; 6 feet below grade.
- Wind: hurricane rated. 1400-1700 kHz, support pole exceeds Florida Dade/Broward County windload requirements with attached antenna, greater than 146 MPH/3-second gusts. 530-1390 kHz, support pole meets and exceeds Florida windload requirements with attached antenna, 130 MPH/3-second gusts. (Florida Building Code – 2001).
- Internal components: RF lightning arrestor, grounding bus, coaxial feedline.
- External components: threaded attachment for antenna mount, weatherproof service hatch with tamperproof hardware. Crane hook.
- Frequencies: 530-1700 kHz.
- Compliant with ANSI/TIA-222-G-2005 standard (Class III, Category 4, Exposure D) 130 mph/3-second gust for frequencies 1400-1700 kHz when installed in soil types per Annex F of the standard.

ITS6000 Details

FAS6000 Flashing Advisory Sign Controller Specifications

Pager Version

Optional on Versions 6010 & 6020

The FAS6000 Flashing Advisory Sign Controller allows an operator to turn on or off a pair of flashing amber beacons on highway signs through wireless means – without compromising the AM broadcast signal. The FAS6000 Controller includes a solar-power collection-and-storage system (AC power source is an option), paging receiver, two amber 8" LED flashing signals for minimum maintenance, weatherproof fiberglass enclosure, mounts, wiring and instructions.

Each FAS6000 Flashing Advisory Sign Controller can recognize multiple on/off codes, allowing each sign to obey commands shared with other signs in the area. In this way, common groupings of Flashing Advisory Signs can be keyed on or off quickly in emergency situations.

LED Signals are rated for more than 100,000 hours of continuous operation. The sealed-gelled cell battery auto-disconnects at low voltage to preserve integrity. FAS6000's 64-watt unbreakable solar panel and charging system allow many hours of operation per day without tapping into battery reserves. FAS6000 batteries provide approximately 60 hours of continuous dark operation. The solar charging system adds an additional 3-15 hours of operation per day, on the average, varying with location and season.

Cabinet

- NEMA4, fiberglass; gasketed, weatherproof with equipment panel and I-beam or wood post mounts; vented design; key lockable.
- Dimensions: approximately 24 inches by 24 inches by 14 inches.

Receiver

- Time and date stamping of messages.
- Pocsag or Flex available. (Flex is a Motorola trademark.)
- 9-15 volt DC operation.
- Large CAP code capacity.
- Physical (WxDxH) 20x70x30mm.
- Parallel printer output (Centronics).
- Serial data output (2nd port optional).
- 4 relays switching 12V 1A (optional).
- All frequency bands available (VHF, UHF, 900 MHz).
- External aerial on BNC connector.
- Text search and replace.

Beacons

- Two amber LED signals with parallel wiring pattern, 8-inch diameter. (12-inch is optional.)
- Internal faceting that minimizes maintenance (cleaning).
- Flashers (1fps) wig-wag format.
- Includes top-of-conduit mounts with pan adjustment.

Power Source

- AC: 120V AC single phase, 50/60 Hz.
- Solar: 64 watt, unbreakable solar panel; 20A charge controller with low voltage disconnect, LED indicators, adjustable-angle mast mount.

Battery

- 85 AH, 12V gelled cell battery.

ITS6000 Details

FAS6000 Flashing Advisory Sign Controller Specifications

Two-Way Version

Optional on Versions 6010 & 6020

The FAS6000 Flashing Advisory Sign Controller allows an operator to turn on or off a pair of flashing amber beacons on highway signs through wireless means – without compromising the AM broadcast signal. The FAS6000 Controller includes a solar-power collection-and-storage system (AC power source is an option), tone decoder, two amber 8" LED flashing signals for minimum maintenance, weatherproof fiberglass enclosure, mounts, wiring and instructions.

Each FAS6000 Flashing Advisory Sign Controller can recognize multiple on/off codes, allowing each sign to obey commands shared with other signs in the area. In this way, common groupings of Flashing Advisory Signs can be keyed on or off quickly in emergency situations.

LED Signals are rated for more than 100,000 hours of continuous operation. The sealed-gelled cell battery auto-disconnects at low voltage to preserve integrity. FAS6000's 64-watt unbreakable solar panel and charging system allow many hours of operation per day without tapping into battery reserves. FAS6000 batteries provide approximately 60 hours of continuous dark operation. The solar charging system adds an additional 3-15 hours of operation per day, on the average, varying with location and season.

Cabinet

- NEMA4, fiberglass; gasketed, weatherproof with equipment panel and I-beam or wood post mounts; vented design; key lockable.
- Dimensions: approximately 24 inches by 24 inches by 14 inches.

Control Circuitry

- Controlled via single or dual tones (300 to 3,000 Hz).
- Up to six sets of activation codes.
- Four latched or timed relay outputs.programmable alert tones.
- Commercial-grade receiver (sensitivity < 0.35uV at 12 dB SINAD.
- Frequency bands supported 33-50 Mhz / 150-174 Mhz / 450-470 Mhz.
- Flashing-alert-received indicator, adjustable volume, monitor button.

Beacons

- Two amber LED signals with parallel wiring pattern, 8-inch diameter. (12-inch is optional.)
- Internal faceting that minimizes maintenance (cleaning).
- Flashers (1fps) wig-wag format.
- Includes top-of-conduit mounts with pan adjustment.

Power Source

- AC: 120V AC single phase, 50/60 Hz.
- Solar: 64 watt, unbreakable solar panel; 20A charge controller with low voltage disconnect, LED indicators, adjustable-angle mast mount.

Battery

- 85 AH, 12V gelled cell battery.

ITS6000 Planning Steps

Step 1: Conduct a frequency search.

Contact ISS to order a frequency search. Just provide the general area where the radio station(s) might be located. The $790 per-location cost includes the license-application work, as well, once you decide to move forward. ISS will develop a list of AM frequencies that are available and send them to you with our suggestions and instructions on how to monitor them.

Step 2: Survey onsite listening.

Survey the highways where listening is required with an automobile digital AM radio tuned to your candidate frequencies. Monitor all the candidate frequencies throughout the listening areas at least once during daylight hours and at least once after dark. Report your results to ISS, using the frequency-monitoring form provided (above).

Step 3: Choose a general location for coverage.

On a local map, find the approximate geographic center of the listening area you want to cover. The HAR signal will propagate to a radius of 3-5 miles from this point in all directions. If this coverage does not encompass the highways that require coverage, consult with ISS regarding adding satellite stations. If a specific highway or intersection is critically important to cover, consider locations within ½ mile. Mark the map to show the area within which the antenna should be located to meet your coverage goals. Consider where signs will be placed to announce to motorists entering the area that the signal is available.

Step 4: Determine the desired NOAA All-Hazards Alert System notification coverage.

Verify reception of a National Weather Service channel (162.400-162.550 MHz) at the desired location. See coverage areas online at this NOAA web link: http://www.nws.noaa.gov/nwr/.

Step 5: Choose a specific antenna location .

For best coverage, the immediate location should be free of objects that exceed 25 feet (about 2 stories.) This includes tall buildings, trees, terrain features, lighting, power and communication poles and towers, overpasses and highway signs. The radio station and transmitting antenna should not be installed on, or within 50 feet of, the building that contains the radio station's electronics. This does not apply to non-building oriented situations such as isolated-style installations in which a cabinet containing electronic equipment is attached to the antenna support pole. Make certain 120VAC power and telephone service are available at the site and that there is a 40'-by-40' area of open ground for cabinet and antenna installation. A conventional, vertical profile or super antenna system may be used. Consult ISS for assistance.

Step 6: Fill out the FCC License Application Questionnaire

Complete a questionnaire, which you may obtain from ISS, that conveys information needed for ISS to prepare and submit the 10-year FCC license application on your behalf. On the questionnaire, you will be asked to provide information on your antenna operating area, your frequency choice and required names and addresses. The FCC typically takes 3 to 6 months to process it and grant the authorization. While waiting for the 10-year license to be granted, you may procure the equipment and build the station, if you wish. IMPORTANT: You must have a FCC license in hand to operate; the station must be on the air within 12 months of the license grant date, or the authorization will expire. Special Temporary Licenses (STA) might also be available from the FCC, if immediate operation is required.

NOTE 1: Because FCC processing time is unpredictable, we recommend you request licensing and other FCC documentation services as soon as you know for sure you will have a station -- definitely no later than when you place your radio equipment order.

NOTE 2: The FCC considers 10-year, renewable licenses for public-service stations secondary to full-power broadcast stations. This means, that in a rare situation in which a full-power station might move into a given area, an advisory radio station already in that vicinity might need to change frequency. ISS can assist.

Step 7: Consider equipment, options and services.

Many options are available to customize the HAR for your application(s). Consider, for example, extra backup batteries so the station(s) remains operational if AC power goes out. If the station is in an unattended location, also consider getting a Power Loss Notification Module.

If you want to notify motorists that critical messages are being broadcast, ask about the FAS6000 Flash Controller for highway signs that may be triggered via pager or two-way radio.

If you want to control your station's audio "drag and drop" style via a computer on a network or single workstation yet retain the ability to have override control via telephone in an emergency, consider SignalcastIP. This option also provides text-to-speech, an unlimited number of messages and recording time, scheduling and paging control of highway sign flashers to alert motorists to tune in.

Planning assistance is free. Contact Bill Baker: bill@theRADIOsource.com or 616.772.2300 x102. Bill can also provide a formal quotation. Just let him know the following:

√ Your name, agency, phone and fax numbers, email address, if desired.

√ Product Name: ITS6000 Highway Advisory Radio Network.

√ Review options from the "Budget" section of this brochure, and mention them if interested.

Step 8: Prepare your transmitter site

ISS offers detailed, illustrated instructions on how to prepare your transmitter site, based on the antenna system you choose. This allows you to prepare the site yourself; subcontract the work; or, if you prefer, have ISS quote installation services for your configuration.

ITS6000 Budget

ITS6010 or 6020 Host Station[1]

Highway Advisory Radio Station	$21,970

ITS6010 or 6020 Station Location Options

Satellite Station[2]	$19,100
GPS Frequency Stabilization	$ 3,500
Wireless Audio Link Receiver System for Each Location[3]	$ 5,995
Wireless Audio Link Transmitter System for Each Location[3]	$ 5,995
Receiving Antenna Support Pole	$ 1,225
Unirod Ground Rod (10')	$ 1,395
Unirod Ground Rod (20')	$ 2,365
Unirod Ground Rod (40')	$ 3,325
Vertical Profile Antenna System	$ 2,495
Power Loss Notification Module	$ 525

ITS6020 Only Audio Options

SignalcastIP Broadcast Management Software Package	$16,795
RAS6000 Remote Access Server for Dialed-Up Control of NX6000 Message Player	$ 1,795
Host Server plus Software Installation on Server	$ 5,295
PC Mic/Headphones	$ 89
Installation Services (travel expenses, electronics installation, training, system certification for 8-hr day)	Inquire
Additional Installation Day	$ 1,995
Extended SignalcastIP Warranty after First Year	$ 650
NX8R Digital Message Player Phone-Based Audio Backup with Optional All-Hazards Alerts	$ 3,495

ITS6010 and 6020 Sign Beacon Flash-Controller Options

Solar Powered Beacon & Controller	$ 3,750
120-Volt AC Powered Beacon & Controller	$ 3,750

ITS6010 and 6020 Service Options[4]

Site Choice & Frequency Monitoring Assistance	Inquire
FCC 10-Year License Application Package for Host Station	$ 790
FCC 10-Year License Application Package for each Satellite Station	$ 100
Transmitter Site Preparation	Inquire
Electronics Installation	Inquire
Training & FCC Signal Intensity Survey	Inquire

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1 Each host station includes a transmitter system with a conventional antenna/groundplane system; 2 batteries; a weatherproof, outdoor, dual-door cabinet with removable racks, door-activated lighting and thermostatic control; a digital message player (NX8R on Version 6010; NX6000 on Version 6020).

2 Each satellite station includes everything in the host station (above) except the recorder and EAS/weather radio.

3 Wireless Audio Link systems include all electronics and hardware, cable, connectors, mounts and associated items required, within the constraints of the system design. Includes system design, FCC license, installation of Wireless Audio Link on appropriate buildings, staff training and system tuning with documentation and certification. Not included are towers or independent supports, or the labor to install on towers or other such supports. The Wireless Audio Link system cannot be provided or installed until the license under which it operates is granted by the FCC.

4 ISS will assist with transmitter site selection and will monitor frequencies at each site. Charges vary based on travel and can be formally quoted. The 10-year FCC license includes AM frequency search, engineering study, FCC filing and FCC-required construction notification. A FCC license is required except for federal agencies who obtain licenses through federal channels. The optional, temporary, 6-month license covers operation while the 10-year license is approved or may be used for temporary operation only. ISS will renew it as needed at no additional charge. Transmitter site prep includes connection services, installation of cables, cabinets, groundplanes, conduits and excavation. Electronics installation includes installation and testing of all electronic components, wiring them, cable prep, antenna tuning, FCC-required field-intensity testing and documentation. ISS provides staff training. ISS offers tech support via phone/email at no extra charge for the life of the product. Prices include ground freight.

Terms

ISS prepays ground freight to ship your system inside the 48 contiguous United States. Freight to Alaska and Hawaii bears an additional charge. The product is typically available for shipment 30-60 days after ISS receives an order and the equipment configuration information is provided. Terms are net 30 days to government entities and their agents; check-with-order for initial orders from private-sector entities. ISS reserves the right to invoice for equipment separately from labor items. Prices are valid 180 days from the quotation date. The warranty term on ISS products, including computers and software, is one year from the date of delivery or ISS installation, whichever comes later, unless otherwise stated in writing. Full warranty is available upon request. The warranty is void should the configuration of components, hardware or software, including the total system, be modified (or modified with respect to the operating environment) subsequent to delivery. Purchases are subject to "Standard Terms and Conditions," an agreement to be signed.

Since its founding in 1983, Information Station Specialists has been the USA's primary supplier of AM information radio systems and services, with an installed base of more than a thousand stations across the country. The ISS product array includes emergency and highway advisory radio systems as well as travelers information stations and related components. In the past decade, ISS has averaged 65 percent of all such stations sold in the United States and is the only company whose full-time business is dedicated strictly to this market. For a corporate overview, visit www.theRADIOsource.com.

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