

Fire Systems, Wireless Mesh Radio Network (AES)

Fire alarm monitoring is a critical part of a comprehensive fire protection system. When a fire alarm goes off in your building, monitoring ensures that the signal is quickly assessed to verify that it's not a false alarm and then transmitted to first responders within minutes. With fire alarm monitoring, business owners can be confident that even if a fire breaks out when their building is unoccupied, it will still be quickly reported to emergency services, saving potentially tens of thousands of dollars in property damage

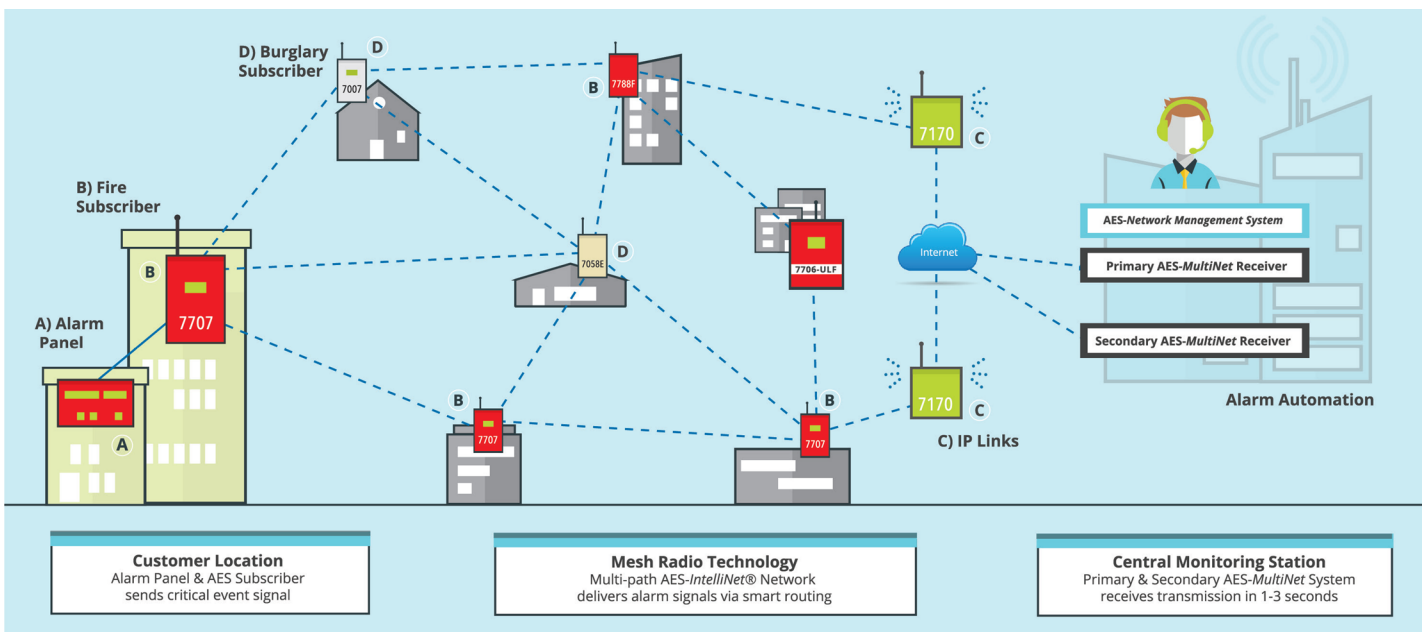
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Select: King County | Fire | (Project Type) | (Activity Type) | Other Systems and Equipment



AES-IntelliNet Multi-Path Private Wireless Mesh Network

AES-IntelliNet is a private wireless mesh radio network made up of Subscriber units each acting as a receiver, transmitter, and repeater. Each protected premise outfitted with an AES Subscriber unit is linked to the AES-IntelliNet network by this Subscriber unit. The network allows distant Subscriber units to use one of many other Subscriber units to relay the alarm message to the network receiver hub. Signals follow the shortest route of all the available path options at that particular moment, ensuring the fastest and most reliable alarm communications possible.



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All AES radio transmitters shall be installed and inspected according to NFPA 70, NFPA 72, WAC, Manufacturer, AES Radio requirements/recommendations, and King County guidelines. Request for inspection is required within 24 hours of energizing the AES radio.

Location/Install Information

The AES Radio shall be mounted near the Fire Alarm Control Panel (FACP) in a temperature-controlled environment. If it is mounted on the interior side of an exterior metal, concrete, or block wall it shall be on an insulating board to prevent direct contact with moisture or temperature extremes.



Alternate locations: If approved by the Fire Marshal, it may require the ASE Radio to be located inside a lockable NEMA 4X (**Gasketed door enclosure** intended for indoor or outdoor use primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water, and hose directed water; undamaged by ice which forms on the enclosure. This is the most common enclosure in “food” environments) enclosure with a smoke detector and thermostatically controlled heater.

Submitted plans shall identify:

- 1) The AES is protected by a smoke detector.
- 2) The A/C transformer is one of the following 3 models; AMSECO XF1640, Elk Products TRG1640, or MG Electronics MGT1640.
- 3) The wire from A/C transformer enclosure to AES enclosure are in conduit.
- 4) The AES is powered via dedicated A/C circuit or shared dedicated circuit to FACP.
- 5) The A/C breaker to AES circuit is labeled and provided with a lock-on device.
- 6) That all exposed wiring below 7' AFF is protected in conduit.
- 7) The external antenna is mounted at least 18" above the roof line, at least 10" away from any parapet, wall or obstruction.
- 8) The exterior antennas are protected by a lightning arrester. (preferably as close to the antenna as possible).
- 9) All bends in the coaxial cable outside of the AES enclosure have a minimum of 6" radius.
- 10) RG-58 cabling is no longer than 25'.
- 11) RG-8 cabling is no longer than 75'.
- 12) LMR-400 (LMR-600 preferred) cabling is no longer than 125'.
- 13) Battery size requirements for all 7177 Hybrid configurations is a 12AH battery which satisfies the requirement for 24 Hr. backup.

Testing:

- 1) AES and IntelliPro or FireTap (if installed) is locally supervised at the protected premises (both audibly and visibly) in an approved manner for antenna cut, low battery, communication troubles, and charger fault as a separate zone or address on the FACP.
- 2) General Alarm (Zone 1)
- 3) General Trouble (zone2)
- 4) Supervisory (zone 3)

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- 5) Waterflow (If Fire Sprinkler System installed, Zone 4) outputs from the FACP are connected to supervised input zones on the AES.
- 6) All zones, signals, or address capable of being transmitted by the FACP are transmitted to the central station. This may require IntelliPro Fire or FireTap.
- 7) Battery Requirements;
- 8) AES routing table shows a minimum of two “good” paths with a net-con of 0-5 prior to connecting to the Fire Alarm Control Panel (FACP). A good path consists of the following:
 - a. The repeating Subscriber unit is at the same Link Layer or lower than that of the reporting Subscriber unit.
 - b. The repeating Subscriber unit has a NetCon value of 5 or 6.
 - c. The signal quality (Q) level is 02 or 03.

The routing table is read from the bottom to the top. Route 1 is the best possible route. The table is decoded as follows:

- 1) 1 - Indicates routing table path # 1.
- 2) 9797 – Account ID of the first Subscriber unit/IP Link in the pathway of the reporting Subscriber unit.
- 3) L:00 – A Link Layer of 0, this indicates that the reporting unit is to an IP Link. There are 0 hops from the reporting unit to the IP Link.
- 4) N:0 - Indicates the NetCon value unit the reporting Subscriber unit is transmitting to. IP Links are always a NetCon 0.
- 5) Q: Good (03) - This path has good signal quality.
- 6) To prevent re-inspection fee, verify the AES Radio installation meets the above requirements and the system has been pre-tested with verification of proper signal transmission to central station.

Accessibility: Accessibility to the AES Radio must be maintained at all times without obstructions and the installation shall

Signal Quality

Signal Quality (Q Value) level is a measure of the RF signal. This measurement is used to evaluate the viability of communications between Subscriber units.

Submittal Requirements

An Other Fire System and Equipment application submittal package must include:

- 1) Plan set cover sheet and two sets of plans (one digital set when submitting on MyBuildingPermit.com.) Plan sheets should include the following information:
 - a. A statement of the scope of work that this permit is intended to cover.
 - b. Appliance(s) description (cut sheets)
 - c. Wiring schematic to include an isometric layout.

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- d. Battery requirements/calculations
- 2) 7707, 7711 (8 zone input card) 10 Ah
 - 3) 7707, 7712 (8 zone input card - 4 ea. EOL and 4 ea. reverse polarity) 10 Ah
 - 4) 7707, 7794A (IntelliPro Fire Module), 7711 (8 zone input card) 12 Ah
 - 5) 7707, 7794A (IntelliPro Fire Module), 7712 (8 zone input card - 4 ea. EOL and 4 ea. reverse polarity) 12 Ah
 - 6) 7707, 7794A (IntelliPro Fire Module) 12Ah
 - 7) 7788F See 7788F Installation and Operation Manual. 7.5 Ah
 - 8) 7788F + 7794 See 7788F & 7794 Installation and Operation Manuals. 7.5 Ah
 - 9) 7788F + 7794 + 7762 + 7740 See 7788F, 7794 & 7762 Installation and Operation Manuals. For 7740 refer to Sec. 3.5 - Fig. 4A and Fig. 4B of the manual.12 Ah
 - 10) 7788F + 7762 + 7740 See 7788F & 7762 Installation and Operation Manuals. For 7740 refer to Sec. 3.5 - Fig. 4A and Fig. 4B in this manual.12 Ah

Washington State AMMENDED CODE REQUIRES that all plans be stamped and signed by a NICT IV designer of record (installing contractor). The designer's name shall be clearly printed in the plans (no pseudonyms, acronyms, or aliases). Installation work shall be done by licensed, fully experienced, and responsible persons.

Obtaining an Alternative Fire Extinguishing Systems and Equipment Permit

Go to MyBuildingPermit.com The permit type selections are:

Jurisdiction: King County

Application Type: Fire

Project Type: (Project Type)

Activity Type: (Activity Type)

Scope of Work: Other Systems and Equipment

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Select: King County | Fire | (Project Type) | (Activity Type) | Other Systems and Equipment



If you have questions or would like to inquire about alternatives, please email DPERWebInquiries@kingcounty.gov.

Additional Resources

King County [Department of Local Services, Permitting Division](#)

[Permit Fees](#)

[Fire, Other Systems and Equipment, Information](#)

[On-line Permit Status, Invoice Payment and Inspection Scheduling](#)

[IVR Inspection Scheduling, phone number and codes](#)