


Fire Systems, Wireless Mesh Radio Network (AES)

Fire alarm monitoring is a critical part of a comprehensive fire protection system. When a fire alarm activates in your building, monitoring ensures that the signal is quickly transmitted to first responders within minutes. With fire alarm monitoring, business owners can be confident that even if a fire occurs when their building is unoccupied, it will still be quickly reported to emergency services, saving potentially tens of thousands of dollars in property damage.

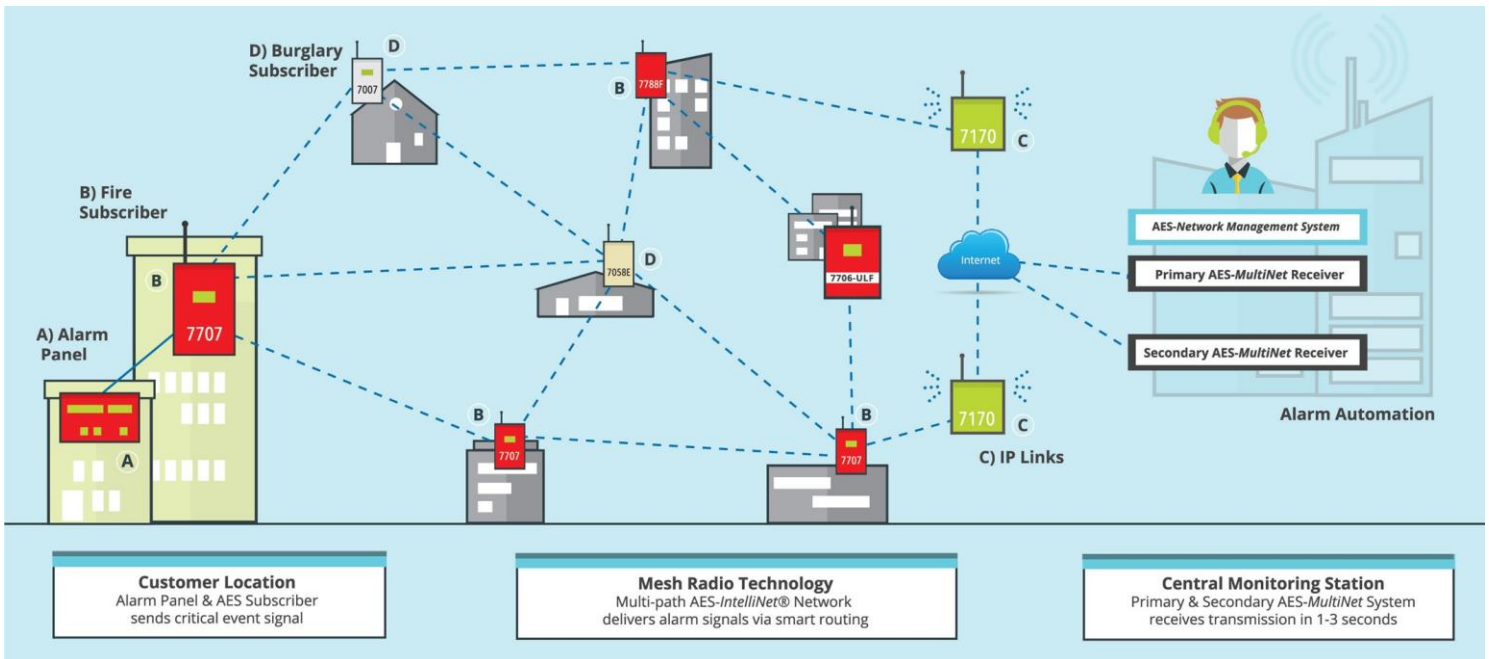
Apply On-Line at [MyBuildingPermit.com](https://www.kingcounty.gov/permits/mybuildingpermit)

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 the 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 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: May be approved by the Fire Marshal. Such as inside a lockable NEMA 4X (**Gasketed door enclosure**) along with a smoke detector and thermostatically controlled heater installed within the enclosure.

Submitted plans shall identify:

- 1) The AES is protected by a smoke detector.
- 2) The A/C transformer is either a FM approved or UL listed device.
- 3) The wire from A/C transformer enclosure to AES enclosure is protected 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' Above Finish Floor 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 antenna is protected by a lightning arrester (preferably as close to the antenna as possible).
- 9) RG-58 cabling is no longer than 25'.
- 10) RG-8 cabling is no longer than 75'.
- 11) LMR-400 (LMR-600 preferred) cabling is no longer than 125'.
- 12) 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) outputs from the FACP are connected to supervised input zones on the AES.
- 3) General Trouble (Zone2) outputs from the FACP are connected to supervised input zones on the AES. outputs from the FACP are connected to supervised input zones on the AES.
- 4) Supervisory (Zone 3) outputs from the FACP are connected to supervised input zones on the AES.

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- 5) Waterflow (if Sprinkler Suppression System is 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. 36” minimum of clear space required in front of unit as well as each side of unit.

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 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.
 - d. Battery requirements/calculations

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

Applying for an Other 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

Apply On-Line at MyBuildingPermit.com

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 permitquestions@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](#)

[King County Green Building Handbook](#)

