

## Introduction

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These instructions apply to all detectors listed on this Technical Bulletin for maintaining, cleaning and testing. Failure to follow these instructions may result in the failure of the detectors to initiate an alarm condition. Hochiki America Corporation is not responsible for detectors that have been improperly maintained, cleaned or tested.

### Detectors

- ALN-V photoelectric detector suitable for monitoring smoke in open areas or HVAC ducts
- ALO-V multi-criteria (photoelectric sensors) detector suitable for monitoring smoke in open areas or HVAC ducts
- ACC-V multi-sensor (photoelectric/ thermistor sensors) detector suitable for monitoring smoke in open areas or HVAC ducts and fixed temperature in open areas
- ACD-V multi-criteria (photoelectric/thermistor/CO sensors) suitable for monitoring smoke in open areas or HVAC ducts and fixed/rate of rise temperatures, and poisonous carbon monoxide (CO) gas in open areas
- ATJ-EA combination fixed/rate of rise heat detector suitable for monitoring fixed/rate of rise temperature in open areas

### Features

- High signal-to-noise ratio and sensitivity stability effective in a wide range of environmental conditions
- User programmable alarm thresholds
- A reliable and fully digital transmission method, which is highly immune to noise even without twisted pair wire
- Automatic drift compensation and determination of sensor health
- Fast alarm reporting with priority assignments and the Hochiki Digital Communication Protocol processing

Multi-criteria Detectors use supplementary photoelectric, thermistor, and/or CO sensors to scale and/or shift the photoelectric smoke sensor output to reduce sensitivity to false alarms and increase sensitivity to fire conditions.

## Placement of Detectors

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Following the guidelines in NFPA 72, base the number and location of detectors on an engineering survey of the area to be protected. Factors to consider include:

- Contents to be protected
- Type of construction and use of structure
- Human occupancy
- Burning characteristics of contents
- Space involved
- Height of ceiling
- Surface condition of ceiling
- Total area
- Air movement (stratification)
- Vent location (velocities and dilution)
- Deflections and obstructions

### Detector Location:

- One smoke detector covers 450 to 900 square feet
- One heat detector covers up to 2500 square feet
- Consider local conditions and codes along with engineering evaluations to determine the proper spacing and specification

**WARNING:** Heat detectors are not life safety devices. Smoke detectors are recommended where life safety is a factor.

### Examples:

- You may use 30' spacing on smooth ceilings for smoke detectors
- You may use 70' spacing on smooth ceilings for ATJ-EA heat detectors
- You may use 50' spacing on smooth ceilings for ACC-V, ACD-V heat detector modes
- Beams or other obstructions extending more than 18" below the ceiling reduce the effective range of the detectors. Such obstruction should designate a new separation point and be considered a border for a new section.

- Beams or other obstructions extending more than 8" but less than 18" require reduced spacing at the perpendicular of the obstructions.

**NOTE:** For information on differing styles of construction consult the NFPA 72.

**WARNING:** Do not install Hochiki smoke detectors in the following areas:

- Where temperatures are likely to exceed the operating temperature ranges specified by detector
- Closer than 4" to any side wall
- Where forced ventilation can dilute the smoke from a fire
- In known areas of combustion such as kitchens or furnace rooms
- In known areas of sustained corrosive atmospheres such as industrial chemical processing areas

## Maintenance

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### Cleaning

Use clean, dry compressed air to remove dust from a detector, or return to Hochiki America for service. For detectors with smoke chambers, direct clean, dry compressed air into the smoke chamber opening to remove contaminants. Do not disassemble the detector as this may result in the failure of the detector to initiate an alarm condition or initiation of a false alarm condition.

### CO Sensor Lifetime

Replace the ACD-V sensor in either the following conditions:

- Control panel indicates the end of life trouble (10 years from the initial power up)
- Indicated date on the product label

### Testing

For a smoke detector to operate efficiently, the combustion products must enter the outer chamber. Air flow, stratification, velocity, stagnation, and migration all affect the efficiency and accuracy of the detector. Use an air flow meter to determine the movement of the air within a structure. Field testing equipment is available from Hochiki America for testing the function of the detectors. Consult local codes and ordinances for maintenance requirements. Hochiki America Corporation recommends a bi-annual functional testing and visual inspection.

Prior to testing any detector, care should be exercised to ensure proper disabling of live signals and notification circuits of the Fire Alarm Control Panel. Consult FACP literature for use of walk test functions for this purpose. Failure to exercise this procedure may result in false alarm signals which could place life and property in jeopardy.

**Caution: Excessive aerosol smoke can contaminate a detector.**

**Use Walk Test Mode. Do not spray in bursts longer than 1 second.**

**Wait 20 seconds between sprays.**

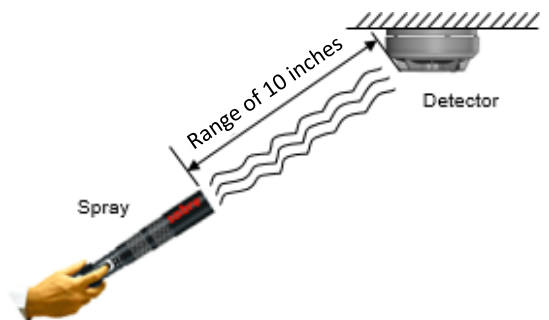
**Spray 10 inches from detector.**

Test with Smoke Sabre aerosol cans or the Testifier 1000/1001 or 2000/2001 with TS3 smoke capsules.

Heat detectors may also be tested with a hand-held hair dryer aimed at the detector. Do not use a heat gun. Hold the hair dryer nozzle at least 4 inches away from the detector. Stop testing when alarm operation is observed.

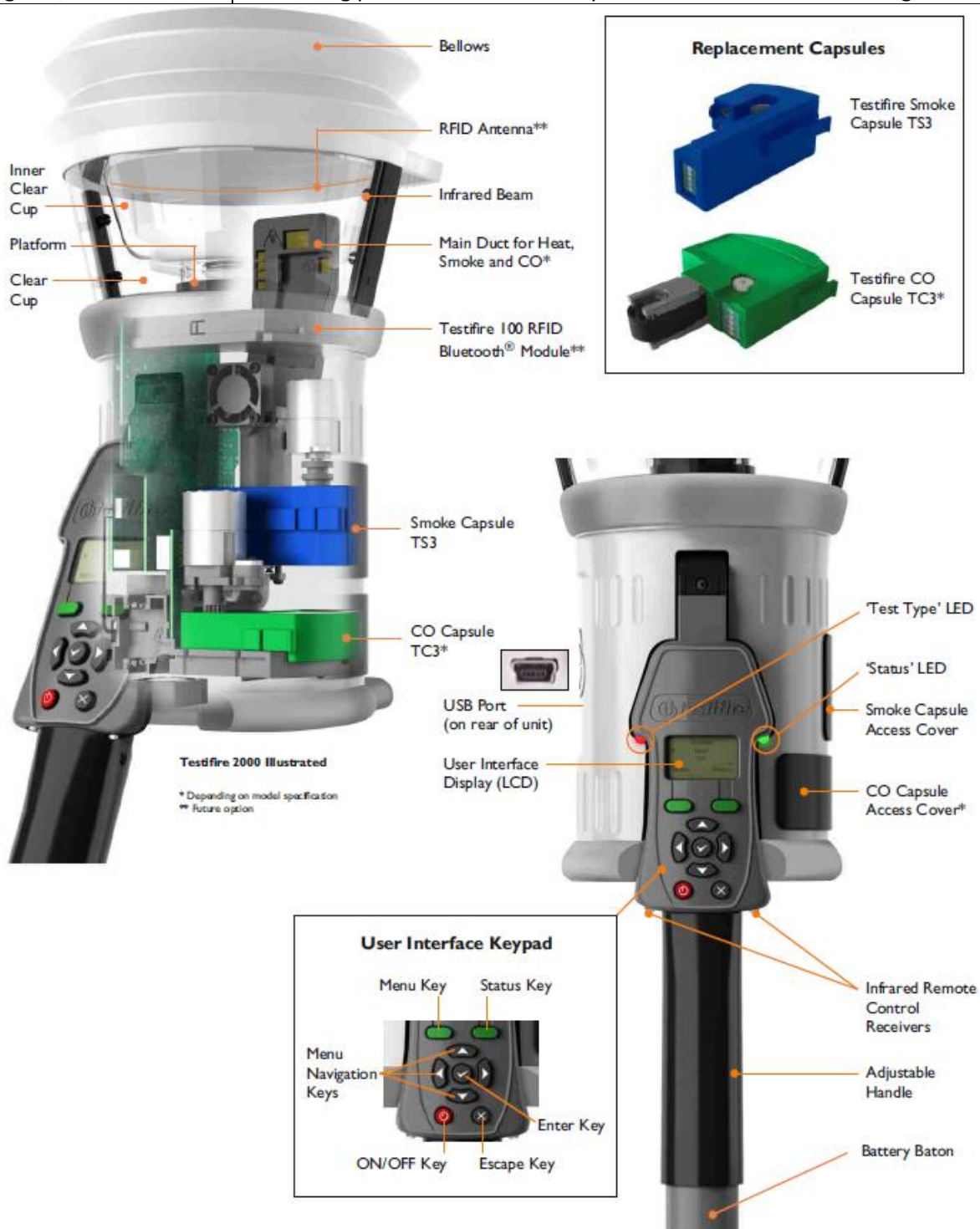
Testifier usage: To insert the battery baton, hold the Testifire head unit by the handle and depress the upper spring button on the battery baton. Align the button with the location hole in the handle and push the battery baton into the handle until the button snaps into place.

1. To insert the battery baton, hold the Testifire head unit by the handle and depress the upper spring button on the battery baton. Align the button with the location hole in the handle and push the battery baton into the handle until the button snaps into place.
2. Insert the other end of the battery baton into the Solo access pole and depress the lower spring button. Align it with the location hole and push the battery baton further into the pole until the button snaps into place.
3. Remove the capsule from its outer carton and Anti-Static bag.
4. Remove the spring clip protector cap from the new capsule.



5. Holding the capsule by spring clips with the label on the underside, carefully insert the new capsule into the capsule port. Push it into position, ensuring that the clips spring out positively on both sides of the capsule.
6. Close the access cover securely.
7. Program the tester to the following options available: Smoke, Heat or CO. Refer to the panel manual for additional information regarding detector test modes which may be necessary to prevent long test intervals.
8. Raise Testifire over the detector. The detector should touch the base of the inner clear cup.
9. Lower Testifire from the sensor after testing is complete.

Testifire's LED Indications	
Blue Solid	Smoke test in progress
Red Solid	Heat test in progress
Green Solid	CO test in progress
Green Slow Flashing	Standby mode
Green Fast Flashing	Operational mode
Red Flashing	Battery needs charging, but still operational
Alternating Red/Green Flashing	Timeout indication (after 2 minutes of continuous testing)
Red Solid	Error
Green Solid	CO cooling
Alternating Red/Green	CO cooling phase wait until standby mode status before continuing to test CO

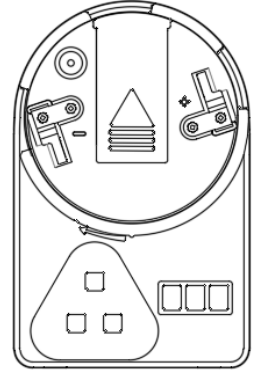


## Address Programming Procedure with AP7 Handheld Programmer

This section explains how to program the detector's address using the AP7 hand held programmer. The hand held programmer is designed for use with Hochiki's DCP protocol supported SLC devices.

Features:

- Easy to use and Portable
- Provides address setting and reading
- Diagnostic ability by displaying the analog value in real-time
- Uses 9VDC battery
- Automatically increments to the next address for addressing multiple sensors
- Automatically switches the power to off after use



Programming Buttons:

Left Button	Power on. Subsequent presses will advance the device address by ten.
Right Button	Power off. Presses advance the device address by one.
Top Center Button	Stores the displayed address to the device and is used to read the sensor's analog values.

Address Setting:

1. Install detector onto programmer, ensuring that the detector mounting tabs align with the programmer grooves.
2. Press the left button to switch programmer to on. A battery check message will appear followed by the device address.
3. Set the required address by incrementing the left and right buttons (the display will show three red flashing dots if the address being programmed is different from the device's current address)
4. When the desired address is displayed, press the top center button to store the address. The three red dots on the display will no longer be present

Reading the Analog Value:

The analog value can be read to assess the detector's contamination level, or performance in the installation environment. The device is not intended for performing testing.

1. Install the sensor and power up programmer as previously described
2. Press the top center button. An "A" will appear on the display followed by the analog value. This value will be continuously updated for three minutes or until the unit is turned off
3. Typical analog values for a clean detector are between 56 to 66

Display Message:	
bAt:	On power up (check battery). Approximately 3000 addresses can be programmed in low battery condition
E0:	Attempting to set an address beyond 127 or 255
E1:	Attempting to program an address with no device connected
E2:	Can not find device after power up. Check Connection and retry.
E3:	Invalid sensor response. Check Connection and retry.
E4:	Can not find the device program
E5:	Device read error
E6:	Fail to read analog value

**ALN-V Intelligent Photoelectric Smoke Detector**

Supply Voltage	Operating Voltage Range (High Signal)	24 - 41 VDC
	Signal Voltage (Peak to Peak) <sup>1</sup>	7 - 9 VDC
Current Consumption	Normal Standby Current	450µA
	Alarm Current (LED Off) <sup>2</sup>	540µA
	Alarm Current (LED On) <sup>2</sup>	9.5mA
	Remote Indicator Current <sup>3</sup>	9.6mA
	Polling Current <sup>4</sup>	6.75mA
Smoke Density Range	0.70 – 4.00%/ft @300 FPM Open Area 0.70 – 4.00%/ft @1000 FPM In Duct 0.70 – 3.86%/ft @2000 FPM In Duct 0.70 – 3.49%/ft @3000 FPM In Duct 0.70 – 2.65%/ft @4000 FPM In Duct	
Compatible Bases	YBN-NSA-4, HSB-NSA-6, SCI-B4, SCI-B6, ASB, ASBL YBN-NSA-47, HSB-NSA-67, SCI-B47, SCI-B67, ASB7, ASBL7	
Operating Temperature Range	14F ~ 122F	
UL Listed Ambient Temperature	32F ~ 120F	
Storage Temperature Range	-4F ~ +140F	
Operating Humidity Limit	<95%RH at 104F, <80%RH at 120F	
Dimensions	3.94" diameter x 1.77" tall	
Color	(ALN-V) Ivory, (ALN-VW) White	
Weight	3.4 oz.	

Notes

1. Measured during FACP transmission. 17V Minimum Voltage (Operating Voltage less Signal Voltage).
2. When the total number active of alarm LEDs is limited by the FACP, additional detectors in Alarm will consume the Alarm Current (LED Off) current.
3. RI is current limited by the detector not to exceed 9.6mA. Actual RI current is equal to the load current for loads less than 9.6mA.
4. Polling Current should be added to sum-total Normal Standby Current for each SLC loop. Voltage drop calculations do not need to include Polling Current.

Recommended maintenance actions for detector troubles are listed in the following table. Refer to compatible FACP literature for method of trouble annunciation.

Cause of Trouble	Recommended action
Detector's IR LED failure	Replace the detector
Detector's Internal memory data failure	Replace the detector
Detector's contamination	Clean the detector's smoke chamber

**ALO-V Intelligent Multi-criteria Photoelectric Smoke Detector**

Supply Voltage	Operating Voltage Range (High Signal)	24 - 41 VDC
	Signal Voltage (Peak to Peak) <sup>1</sup>	7 - 9 VDC
Current Consumption	Normal Standby Current	340 μA
	Alarm Current (LED Off) <sup>2</sup>	340 μA
	Alarm Current (LED On) <sup>2</sup>	8.5mA
	Remote Indicator Current <sup>3</sup>	9.2mA
	Polling Current <sup>4</sup>	6.75mA
Smoke Density Range	1.40 – 3.30%/ft @0 - 300 FPM Open Area 1.40 – 2.75%/ft @300 FPM In Duct 1.40 – 4.00%/ft @1000 FPM In Duct 1.40 – 4.00%/ft @2000 FPM In Duct 1.40 – 2.37%/ft @3000 FPM In Duct 1.40 – 4.00%/ft @4000 FPM In Duct	
Compatible Bases	YBN-NSA-47, HSB-NSA-67, SCI-B47, SCI-B67, ASB7, ASBL7	
Operating Temperature Range	32F ~ 120F	
UL Listed Ambient Temperature	32F ~ 120F	
Storage Temperature Range	-22F ~ +140F ( 104F or less at 95%RH, 140F or less at 80%RH)	
Operating Humidity Limit	<95%RH at 104F, <80%RH at 120F	
Dimensions	3.94" diameter x 1.68" tall	
Color	(ALO-V) Ivory, (ALO-V(WHT)) White	
Weight	3.4 oz.	

Notes

1. Measured during FACP transmission. 17V Minimum Voltage (Operating Voltage less Signal Voltage).
2. When the total number active of alarm LEDs is limited by the FACP, additional detectors in Alarm will consume the Alarm Current (LED Off) current.
3. RI is current limited by the detector not to exceed 9.2mA. Actual RI current is equal to the load current for loads less than 9.2mA.
4. Polling Current should be added to sum-total Normal Standby Current for each SLC loop. Voltage drop calculations do not need to include Polling Current.

Recommended maintenance actions for detector troubles are listed in the following table. Refer to compatible FACP literature for method of trouble annunciation.

Cause of Trouble	Recommended action
Detector's IR LED failure	Replace the detector
Detector's Blue LED failure	Replace the detector
Detector's Internal memory data failure	Replace the detector
Detector's contamination	Clean the detector's smoke chamber



**ACC-V Intelligent Multi-sensor Smoke and Heat Detector**

Supply Voltage	Operating Voltage Range (High Signal)	24 - 41 VDC
	Signal Voltage (Peak to Peak) <sup>1</sup>	7 - 9 VDC
Current Consumption	Normal Standby Current	450µA
	Alarm Current (LED Off) <sup>2</sup>	540µA
	Alarm Current (LED On) <sup>2</sup>	9.5mA
	Remote Indicator Current <sup>3</sup>	9.6mA
	Polling Current <sup>4</sup>	6.75mA
Smoke Density Range	0.70 – 4.00%/ft @300 FPM Open Area 0.70 – 4.00%/ft @1000 FPM In Duct 0.70 – 3.86%/ft @2000 FPM In Duct 0.70 – 3.49%/ft @3000 FPM In Duct 0.70 – 2.65%/ft @4000 FPM In Duct	
Heat Fixed Temperature Range	135 ~ 150F	
Compatible Bases	YBN-NSA-4, HSB-NSA-6, SCI-B4, SCI-B6, ASB, ASBL YBN-NSA-47, HSB-NSA-67, SCI-B47, SCI-B67, ASB7, ASBL7	
Operating Temperature Range	14F ~ 122F	
UL Listed Ambient Temperature	32F ~ 120F	
Storage Temperature Range	-4F ~ +140F	
Operating Humidity Limit	<95%RH at 104F, <80%RH at 120F	
Dimensions	3.94" diameter x 1.77" tall	
Color	(ACC-V) Ivory, (ACC-VW) White	
Weight	3.4 oz.	

Notes

1. Measured during FACP transmission. 17V Minimum Voltage (Operating Voltage less Signal Voltage).
2. When the total number active of alarm LEDs is limited by the FACP, additional detectors in Alarm will consume the Alarm Current (LED Off) current.
3. RI is current limited by the detector not to exceed 9.6mA. Actual RI current is equal to the load current for loads less than 9.6mA.
4. Polling Current should be added to sum-total Normal Standby Current for each SLC loop. Voltage drop calculations do not need to include Polling Current.

Recommended maintenance actions for detector troubles are listed in the following table. Refer to compatible FACP literature for method of trouble annunciation.

Cause of Trouble	Recommended action
Detector's IR LED failure	Replace the detector
Detector's Thermistor failure	Replace the detector
Detector's Internal memory data failure	Replace the detector
Detector's contamination	Clean the detector's smoke chamber

**ACD-V Intelligent Multi-criteria Smoke, Heat, and CO Detector**

Supply Voltage	Operating Voltage Range (High Signal)	24 - 41 VDC
	Signal Voltage (Peak to Peak) <sup>1</sup>	7 - 9 VDC
Current Consumption	Normal Standby Current	600µA
	Alarm Current (LED Off) <sup>2</sup>	600µA
	Alarm Current (LED On) <sup>2</sup>	30mA
	Remote Indicator Current <sup>3</sup>	9.6mA
	Polling Current <sup>4</sup>	6.75mA
Smoke Density Range	0.77 – 3.47%/ft @300 FPM Open Area 0.77 – 3.89%/ft @1000 FPM In Duct 0.77 – 3.56%/ft @2000 FPM In Duct 0.77 – 3.63%/ft @3000 FPM In Duct 0.77 – 4.00%/ft @4000 FPM In Duct	
Heat Fixed Temperature Range	135 ~ 150F	
Heat Rate of Rise Range	15F/min	
CO Range	30~150ppm	
COHb Range	6.2% (Response time 70ppm 60-240 minutes)	
Compatible Bases	YBN-NSA-4, HSB-NSA-6, SCI-B4, SCI-B6, ASB, ASBL YBN-NSA-47, HSB-NSA-67, SCI-B47, SCI-B67, ASB7, ASBL7	
Operating Temperature Range	14F ~ 122F	
UL Listed Ambient Temperature	32F ~ 120F	
Storage Temperature Range	-4F ~ +95F at 15 ~ 90%RH	
Operating Humidity Limit	<95%RH at 104F, <80%RH at 120F	
Dimensions	3.94" diameter x 1.77" tall	
Color	(ACD-V) Ivory, (ACD-VW) White	
Weight	3.7 oz.	

Notes

1. Measured during FACP transmission. 17V Minimum Voltage (Operating Voltage less Signal Voltage).
2. When the total number active of alarm LEDs is limited by the FACP, additional detectors in Alarm will consume the Alarm Current (LED Off) current.
3. RI is current limited by the detector not to exceed 9.6mA. Actual RI current is equal to the load current for loads less than 9.6mA.
4. Polling Current should be added to sum-total Normal Standby Current for each SLC loop. Voltage drop calculations do not need to include Polling Current.

Recommended maintenance actions for detector troubles are listed in the following table. Refer to compatible FACP literature for method of trouble annunciation.

Cause of Trouble	Recommended action
Detector's IR LED failure	Replace the detector
Detector's Thermistor failure	Replace the detector
Detector's CO sensor failure	Replace the detector
Detector's CO sensor end-of-life	Replace the detector
Detector's Internal memory data failure	Replace the detector
Detector's contamination	Clean the detector's smoke chamber



**ATJ-EA Intelligent Combination Heat Detector**

Supply Voltage	Operating Voltage Range (High Signal)	24 - 41 VDC
	Signal Voltage (Peak to Peak) <sup>1</sup>	7 - 9 VDC
Current Consumption	Normal Standby Current	350µA
	Alarm Current (LED Off) <sup>2</sup>	500µA
	Alarm Current (LED On) <sup>2</sup>	9.5mA
	Remote Indicator Current <sup>3</sup>	9.6mA
	Polling Current <sup>4</sup>	6.75mA
Heat Fixed Temperature Range	135 ~ 194F	
Heat Rate of Rise	15F per minute	
Compatible Bases	YBN-NSA-4, HSB-NSA-6, SCI-B4, SCI-B6, ASB, ASBL YBN-NSA-47, HSB-NSA-67, SCI-B47, SCI-B67, ASB7, ASBL7	
Operating Temperature Range	14F ~ 100F for ORDINARY [135~174F] rating and 14F ~ 122F for INTERMEDIATE [135~194F] rating	
UL Listed Ambient Temperature	32F ~ 120F	
Storage Temperature Range	-4F ~ +140F	
Operating Humidity Limit	<95%RH at 104F, <80%RH at 120F	
Dimensions	3.94" diameter x 1.77" tall	
Color	(ATJ-EA) Ivory	
Weight	3.4 oz.	

Notes

1. Measured during FACP transmission. 17V Minimum Voltage (Operating Voltage less Signal Voltage).
2. When the total number active of alarm LEDs is limited by the FACP, additional detectors in Alarm will consume the Alarm Current (LED Off) current.
3. RI is current limited by the detector not to exceed 9.6mA. Actual RI current is equal to the load current for loads less than 9.6mA.
4. Polling Current should be added to sum-total Normal Standby Current for each SLC loop. Voltage drop calculations do not need to include Polling Current.

Recommended maintenance actions for detector troubles are listed in the following table. Refer to compatible FACP literature for method of trouble annunciation.

Cause of Trouble	Recommended action
Detector's Thermistor failure	Replace the detector
Detector's Internal memory data failure	Replace the detector