7351J
Very Intelligent Early Warning (VIEW®)

General
The 7351J VIEW® Laser Detector is a revolutionary advance in early warning smoke detection technology. The unique design of this detector, combined with enhanced intelligent sensing algorithms in the Johnson Controls intelligent fire alarm control panels, allows smoke detection sensitivity that is up to 50 times higher than present photoelectric technology. Because of this high sensitivity, the 7351J can provide very early warning of slow smoldering fires. Its performance is comparable to present aspiration technology, at a substantially lower installed cost.

The 7351J uses an extremely bright laser diode, combined with special lens and mirror optics (U.S. patent pending), to achieve a signal-to-noise ratio that is much higher than traditional photoelectric sensors. In addition, the tightly focused light beam, combined with the intelligent sensing algorithms, allow the system to differentiate between dust and smoke particles. Because of this differentiation, the 7351J can be set to extremely high sensitivity, yet can reject false signals caused by larger airborne particles such as dust, lint, and small insects.

The 7351J is an intelligent (analog/addressable) detector. Using CLIP mode, up to 99 7351J detectors may be installed per loop. On FlashScan® systems (IFC-320/IFC-640/IFC2-640/IFC-3030/IFC2-3030), up to 159 addresses are available. The 7351J may be mixed in any combination with other Johnson Controls intelligent sensors on the same loop and is quickly installed using the panel autoprogram feature. The 7351J provides dual bi-color LEDs, which blink green in normal operation and illuminate steady red in alarm.

FlashScan® (U.S. Patent 5,539,389) is a communication protocol that greatly enhances the speed of communication between analog intelligent devices. Intelligent devices communicate in a grouped fashion. If one of the devices within the group has new information, the panel CPU stops the group poll and concentrates on single points. The net effect is response speed greater than five times that of other designs.

Using the enhanced intelligent sensing algorithms, the intelligent sensing system provides drift compensation (meeting UL requirements as a calibrated sensitivity meter), maintenance alert (3 levels), selection of 9 alarm levels and 9 pre-alarm levels, and report of drift compensation used and recent peak values. The system includes a self-learn sensitivity adjustment to set the pre-alarm level just above the peak levels sensed over long periods of time for each detector’s actual environment. The system includes multi-detector algorithms that permit one sensor to consider readings from adjacent sensors to provide faster detection of fires.

Features
- Very Intelligent Early Warning (VIEW®) smoke detection.
- Advanced laser light source and patented optical design.
- Sleek low-profile housing (1.66”/42.164 mm height).
- Johnson Controls Analog Addressable communications protocol provides extremely reliable operation proven in millions of worldwide detector installations.
- Sensitivity:
  - 0.03% to 1.00% for IFC-400
  - 0.02% to 2.00% for all other panels.
- Rotary DECADE address switches. Set 01 – 99 on legacy systems and 01 – 159 on FlashScan® systems (IFC-320, IFC-640, IFC2-640, IFC-3030 or IFC2-3030). These switches allow quick selection of address without resorting to binary switches, special programmers, or bar coding devices.
- Dual bi-color (red/green) LEDs flash green when Normal and are steady red in Alarm.
- Compatible with the Johnson Controls IFC-320, IFC-400, IFC-640, IFC2-640, IFC-3030, or IFC2-3030 (all software releases).
- Dual LED design provides 360° viewing angle.
- Built-in magnetic test switch, or automatic test commanded from panel.
- Optional relay, isolator, or sounder bases.

Specifications
Operating voltage range: 15 to 32 VDC peak.
Maximum average standby current: 230 μA @ 24 VDC (no communication). 330 μA @ 24 VDC (one communication every 5 seconds with LED blink enabled).
Maximum alarm current: 6.5 mA @ 24 VDC (LED “ON”).
Operating humidity range: 10% to 93% relative humidity, non-condensing.
Operating temperature range: 0°C to 38°C (32°F to 100°F).
Loop resistance: 40 ohms maximum.
Dimensions: Height: 1.66 inches (42.16 mm) installed in B210LPJ base. Diameter: 4.0 inches (154.94 mm) installed.

7351J with B210LPJ base (sold separately)
in B210LPJ base; 4 inches (101.6 mm). Weight: 5.6 oz. (102 g).

**BASES AVAILABLE:**

B210LPJ: 6.1 inches (154.94 mm) diameter.
B501J: 4.1 inches (104.14 mm) diameter.

**B224RB Relay Base:** Screw terminals: Up to 14 AWG (2.00 mm²). Relay type: Form-C. Rating: 2 A @ 30 VDC resistive; 0.3 A @ 110 VDC inductive; 1.0 A @ 30 VDC inductive. Dimensions: 6.2 in. (157.48 mm) x 1.2 in. (30.48 mm).

**B224BI Isolator Base:** Dimensions: 6.2 in. (157.48 mm) x 1.2 in. (30.48 mm). Maximum: 25 devices between isolator bases.

**Recommended Coverage Per Detector**

In order to support sophisticated smoke/dust discrimination algorithms (cooperating multi-detector), it is recommended that at least two 7351J detectors be installed in each room or enclosed area.

Recommended coverage per detector is 400 square feet (37.16 square meters).

**Installation**

The 7351J plug-in detector uses a separate base to simplify installation, service, and maintenance. A special tool allows maintenance personnel to plug-in and remove detectors without using a ladder.

Mount base on a box which is at least 1.5” (38.1 mm) deep. Suitable mounting base boxes include:

- 4” (101.6 mm) square box.
- 3-1/2” (88.9 mm) or 4” (101.6 mm) octagonal box.
- Single-gang box (except relay or isolator base).

**Agency Listings and Approvals**

These listings and approvals apply to the modules specified in this document. In some cases, certain modules or applications may not be listed by certain approval agencies, or listing may be in process. Consult factory for latest listing status.

- UL Listed: S1948
- UL Listed: S24130
- FM Approved (IFC-3030, IFC2-3030)
- CSFM: 7272-0554:146

**Ordering Information**

7351J: Laser Detector. Intelligent laser sensor with FlashScan® capabilities. Mounts to one of the bases listed below.

**BASES:**

B210LPJA: Same as B210LPJ, but with ULC listing.
B501: Standard European Flangeless base.
B501JBP: Standard European flangeless base, package of ten (10).
B501JA: Same as B501JBP, but with ULC listing.
B501BHT-2A: Same as B501BHT-2, but with ULC listing.
B224RB: Intelligent relay base.
B224RBA: Same as B224RB, but with ULC listing.
B224BI: Intelligent isolator base. Isolates SLC from loop shorts.
B224BIA: Same as B224BI, but with ULC listing.

**ACCESSORIES**

RA400Z: *Remote LED annunciator. 3 – 32 VDC. Fits U.S. single-gang electrical box.
MOD400R: Detector sensitivity test tool. Use with most analog or digital multimeters. Satisfies requirement of NFPA72 for sensitivity testing.
SMK400E: Surface mounting kit provides for entry of surface wiring conduit. For use with B501J base only.
RMK400: Recessed mounting kit. For use with B501J base only.
M02-04-00: Test magnet.
M02-09-00: Test magnet with telescoping handle.
XR2: Detector removal tool. Allows installation and/or removal of 700 Series detector heads from base in high ceiling installations.
XP-4: Extension pole for XR-2. Comes in three 5-ft. (1.524 m) sections.

*Supported by B210LPJ and B501J bases only.
7351J VIEW® Design

The 7351J VIEW® incorporates an extremely bright laser diode and integral lens that focuses the light beam to a very small volume near the receiving photo sensor. The light then passes into a light trap and is absorbed. The photo sensor is activated by a scattering of smoke particles in this small-volume light beam. In a typical photoelectric detector, the light beam is very wide and can reflect off the chamber walls into the photo sensor because dust accumulation changes the wall color from flat black to gray. With the 7351J the concentrated light beam does not touch the walls, therefore it is much less susceptible to dust accumulation. Smoke scatters light in all directions and, in a typical photoelectric detector, only a small portion of that scattered light reaches the photo sensor itself. In the 7351J, a special mirror reflects and concentrates most of the scattered light into the photo sensor. See laser detail drawings on this page. Compared to smoke, airborne dust particles are very large and very sparse. Since a) they are in motion; b) the illuminated volume is very small; and c) the 7351J flashes the laser only every few seconds; then the occasional dust particle cannot remain in the light volume for more than one or two samples. This transient signal from dust is the key to the dust discrimination performed by the 7351J VIEW®.