

## PRODUCT APPLICATION AND INSTALLATION INSTRUCTIONS DSDF-D4120 (System Sensor) FLOW DUCT SMOKE DETECTORS

### DEFINITION

The DSDF-D4120 is designed for use with Ruskin UL Classified Smoke and Combination Fire Smoke Dampers. The device detects the presence of smoke in the airstream of ductwork in HVAC systems operating at no less than 100 fpm up to 4000 fpm.

DSDF-D4120 (flow rated duct smoke detectors) are factory mounted for "single point field power connection" to a standard Ruskin electronic fuse link (EFL) or optional firestat (TS150).

**The DSDF-D4120 factory mounted with a smoke rated damper is intended to close the damper in accordance with International Building Codes. However, Ruskin's smoke dampers may be setup for "Fail Open" operation, consult Ruskin for details. The DSDF-D4120 can be field wired back to a UL listed fire alarm panel by others.**

### APPROVAL

Underwriter's Laboratories, Inc. does not have a separate Product Category for factory mounted smoke detectors. The smoke detector and the damper have been individually evaluated by their applicable UL standards.

Since the smoke detector is not rated for use at velocities below 100 fpm, local code may require an alternative means of damper closure such as zone detection or automated damper closure when the system fan is shut down. The local authority having jurisdiction should be consulted prior to installation of the damper and smoke detector.

### APPLICATION

National and local safety standards and codes recognize the ability of air duct systems to transfer smoke, toxic gases and flame from area to area. Smoke can be a serious hazard to life safety unless blowers are shut down and dampers are actuated. **The primary purpose of duct smoke detection is to prevent injury, panic and property damage by reducing the spread of smoke.** Duct smoke detection can also serve to protect the air conditioning system itself from fire and smoke damage, and can be used to assist in equipment protection applications. Duct smoke detectors can be supplied by Ruskin in one of two ways:

1. Factory mounted for single point field wiring connection.
2. Shipped loose for field installation. see DSD5-D4120

**If the detector is shipped loose for field installation refer to the duct smoke detector manufacturer's installation instructions (shipped with each detector) for proper application.**

When presence of smoke in the duct is sensed, or when loss of power occurs the damper will fail close. **Consult NFPA90A, NFPA72 documents and local codes to determine where smoke detectors are required.**

### DSDF DESCRIPTION/SPECIFICATION

**Model:** System Sensor D4120 with sensor component D4S

**Type:** Photoelectric.

**Velocity:** 100 fpm to 4,000 fpm.

**Dimensions (L x W x D):** 14<sup>3</sup>/<sub>8</sub>" x 5" x 2<sup>1</sup>/<sub>2</sub>" (365 x 127 x 64) or 7<sup>3</sup>/<sub>4</sub>" x 9" x 2<sup>1</sup>/<sub>2</sub>" (197 x 229 x 64).

**Weight:** 2.5 lbs.

**Operating Temperature Range:** -4°F to 158°F (0° to 38°C).

**Operating Humidity Range:** 0% to 95%.

**Operating Voltages:** 24 VAC/VDC or 120/220 VAC operation.

**Contact Ratings:** Refer to information provided with detector.

**Alarm Reset:** Push button on DSDF-D4120 unit (remote reset optional with RTS2-AOS or RTS151KEY).

### LISTINGS OF DSDF

- UL Listed, file S911.
- CSFM Listing #3242-1653:0207.
- FM # 3033744

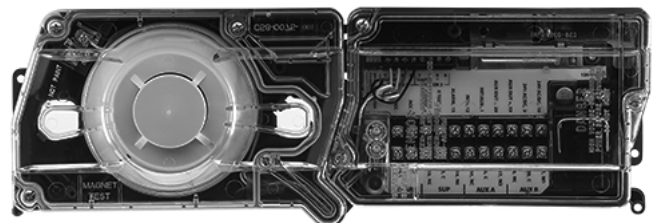
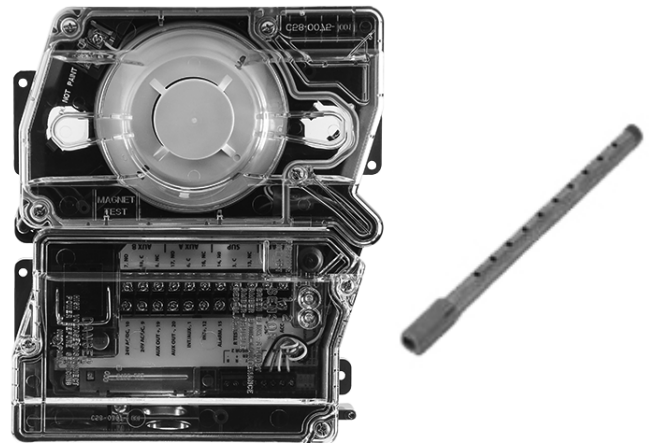
### ACCESSORIES

Annunciators, remote test and reset stations, sounders, strobes, etc. are available from the duct smoke detector manufacturer.

### MAINTENANCE AND SERVICE OF DUCT DETECTORS

Dust, dirt and other foreign matter can accumulate inside a detector and change its sensitivity. Detectors should be tested and maintained periodically. Routine maintenance should be performed at least once a year and more frequently in dirtier environments. Refer to NFPA90A, NFPA72 and detector manufacturer's instructions packaged with each detector for specific maintenance and testing information.

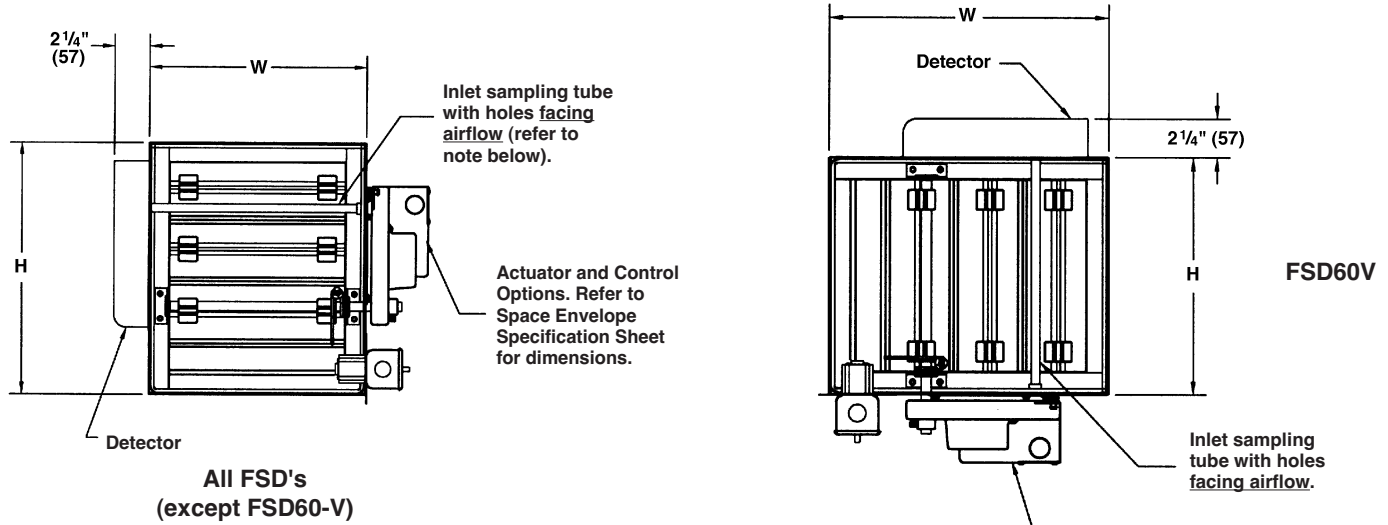
**NOTE:** Dimensions shown in parentheses ( ) indicate millimeters.



SEE COMPLETE MARKING  
ON PRODUCT

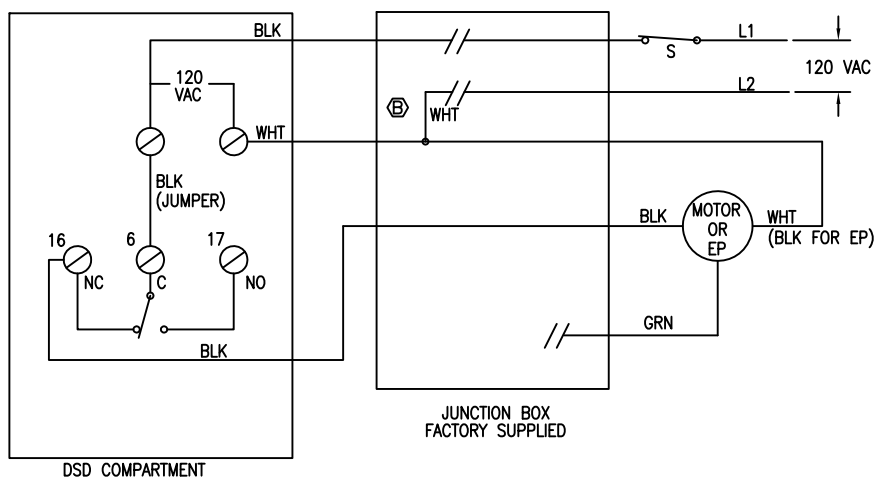
# FACTORY MOUNTING DETAILS

The DSD-D4120 is standardly mounted on the opposite side of the sleeve from the actuator.

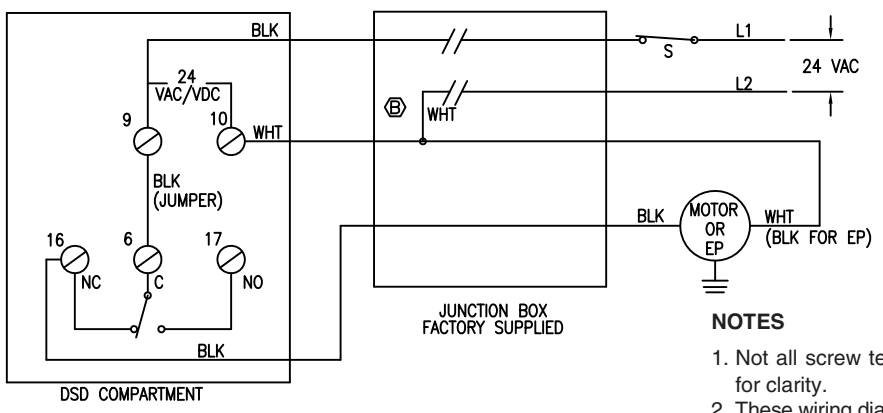


**NOTE:** Ruskin factory installs the duct smoke detector with holes in sampling tube pointed away from the damper. The sampling tube must be rotated in the field so the holes are pointed in the direction of the air flow. Minimum damper size is 8" wide x 6" high (203 x 152) (actual size).

# DSD FACTORY WIRED TO FSD WITH EFL



**EFL AND 120 VAC SUPPLY**

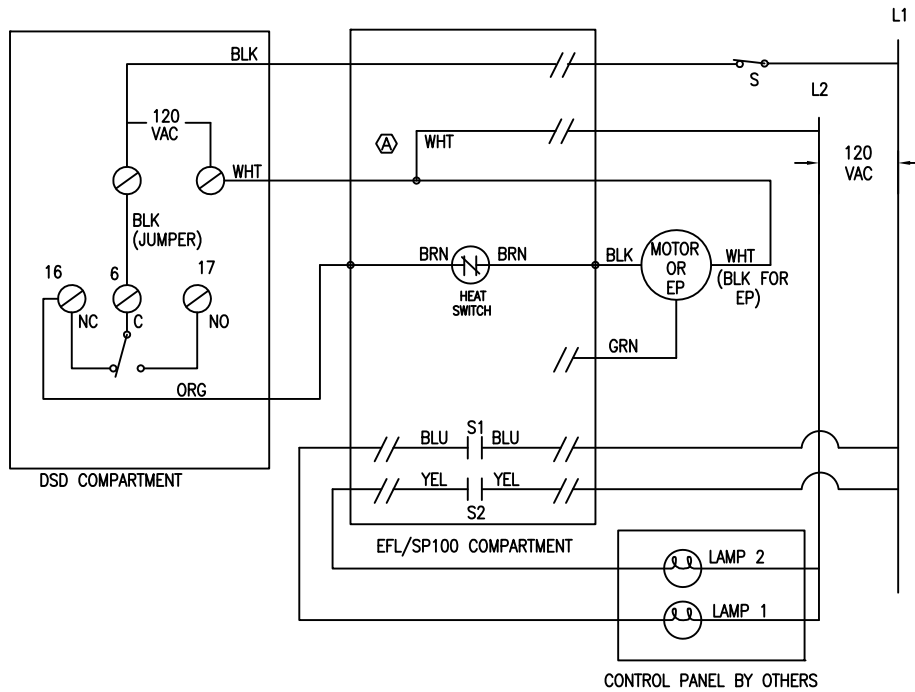


**EFL AND 24 VAC SUPPLY**

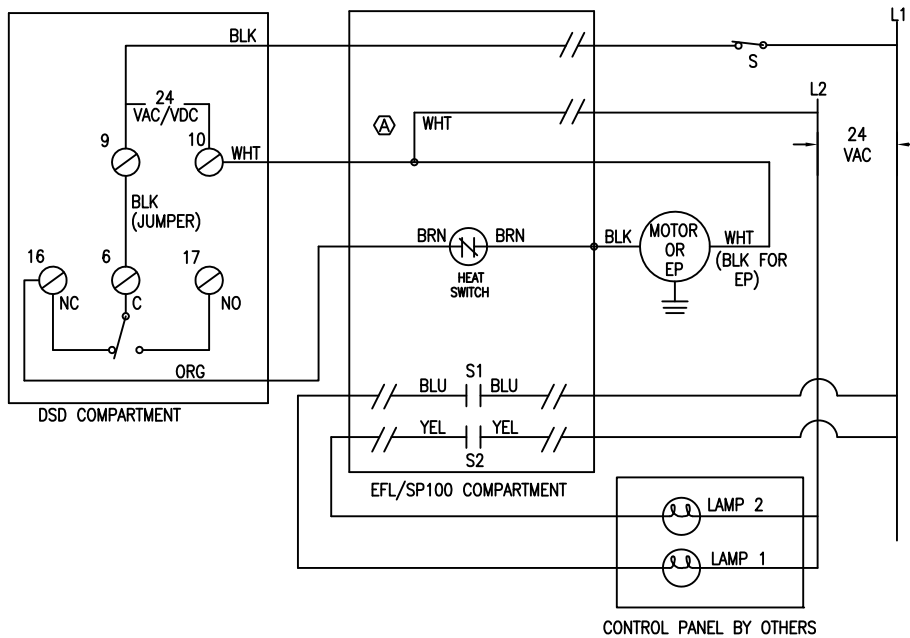
**NOTES**

1. Not all screw terminals Ø in the DSD compartment are shown, for clarity.
2. These wiring diagrams apply to model D4120 duct smoke detector (made by System Sensor) with either photoelectric detector head.
3. // Indicated connections needed to be made in the field by qualified electrician.

# DSD FACTORY WIRED TO FSD WITH EFL/SP100



**EFL/SP100 AND 120 VAC SUPPLY**

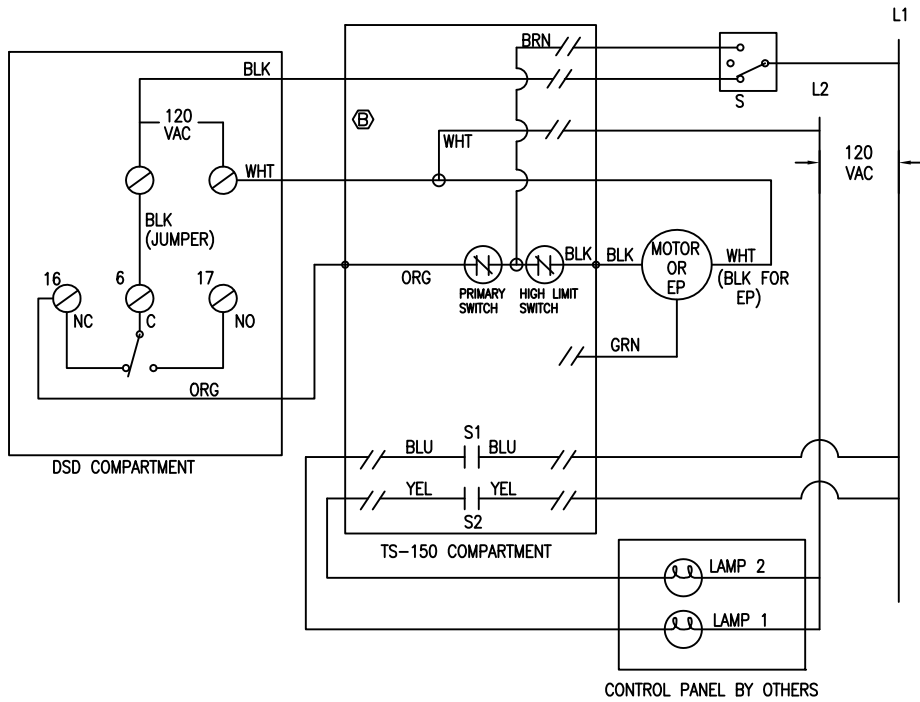


**EFL/SP100 AND 24 VAC SUPPLY**

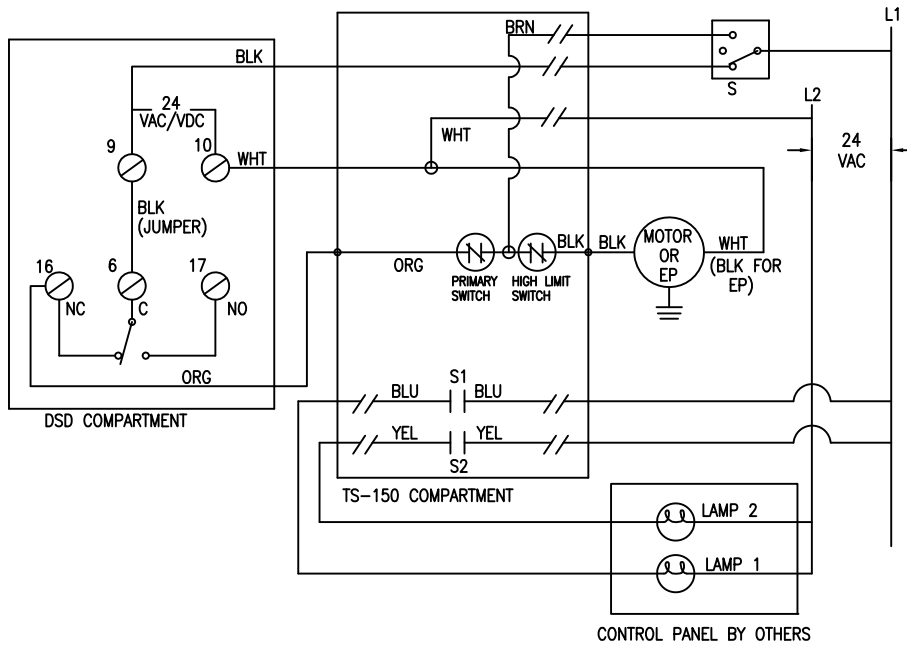
**NOTES**

1. Not all screw terminals ∅ in the DSD compartment are shown, for clarity.
2. These wiring diagrams apply to model D4120 duct smoke detector (made by System Sensor) with either photoelectric detector head.
3. // Indicated connections needed to be made in the field by qualified electrician.

# DSD FACTORY WIRED TO FSD WITH TS-150



**TS-150 AND 120 VAC SUPPLY**



**TS-150 AND 24 VAC/VDC SUPPLY**

## NOTES

1. Not all screw terminals  $\emptyset$  in the DSD compartment are shown, for clarity.
2. These wiring diagrams apply to model D4120 duct smoke detector (made by System Sensor) with either photoelectric detector head.
3. // Indicated connections needed to be made in the field by qualified electrician.