

... *IH153ES Infra Red Ember Detector*  
*For Coal Conveyor Fire Protection*

# EMBER DETECTORS FOR COAL CONVEYOR PROTECTION

**fladet**<sup>®</sup> SERIES...

**IH 153ES Infra Red Ember Detector**

**For Coal Conveyor Fire Protection**

## 1. **fladet**<sup>®</sup> SERIES... **IH 153ES Infra Red Ember Detector for Coal Conveyor Fire Protection**

### 1.1 Introduction

If a smoldering coal or embers are introduced due to spontaneous combustion on to a conveyor during a loading and unloading operation, it is every possibility to be conveyed to a transfer point, crusher or silo or bunker. At such places hot coal may ignite combustible dust accumulations and may lead to large scale Fire incident. Critical Equipment losses, production loss, property loss, loss of human life are need not to be elaborated. Coal Conveyor Fire Protection is very much essential and important.

### Technical Review on the System

#### Basic Concept:

Infra Red Ember Detector are used to detect hot moving spots on the conveyor before they reach processing machinery or storage hoppers and initiate alarm and Fire Extinguishing arrangement.

#### Principle of Detection:

Hot Carbon Dioxide and Carbon Monoxide produced by the Coal Ember is emitting Infra Red radiation. IR Sensor in the Detector responds when the Ember enters the sensor field of view.

#### Product Introduction:

Agni Controls is pioneer in IR Technology. **AGNI CONTROLS** Make IR Spark & Ember are widely used in Machinery Protection especially in Textile Industries for last 2 decades. More than 5000 Nos. of IR Spark Ember Detectors are in operation.

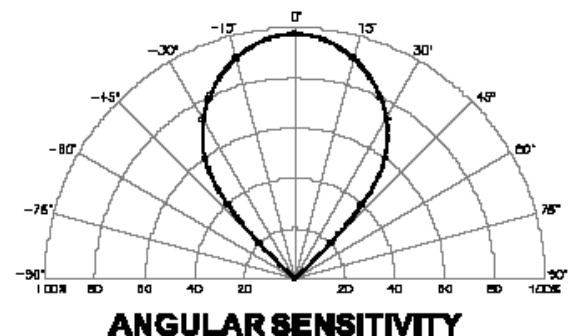
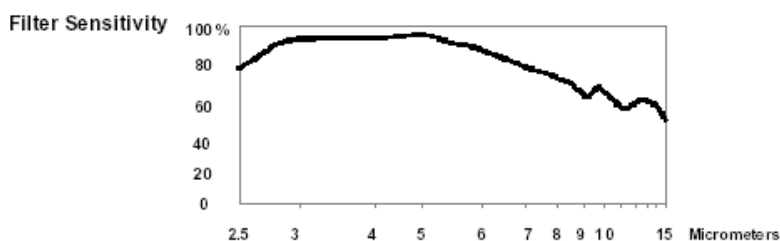
**fladet IH153ES Infra Red Ember Detectors** are specially designed to detect moving ember or flame with 90 Deg. Cone view. Detector is designed with four independent Infra Red Sensors and special electronic logic analysis is used to give the best result. **fladet** IH 153ES IR Ember Detector with IP67 protection is well suitable for dusty environments.

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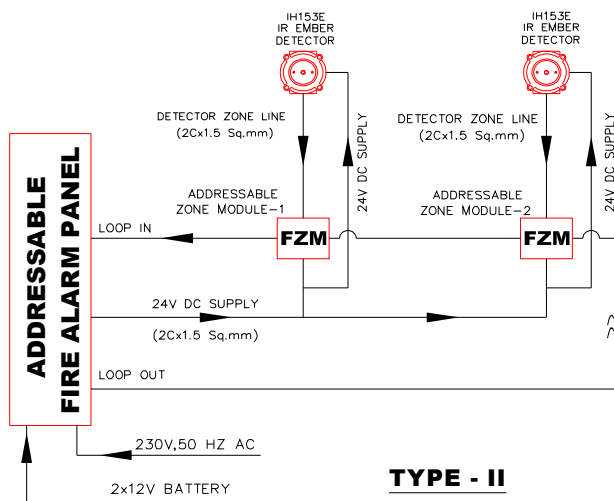
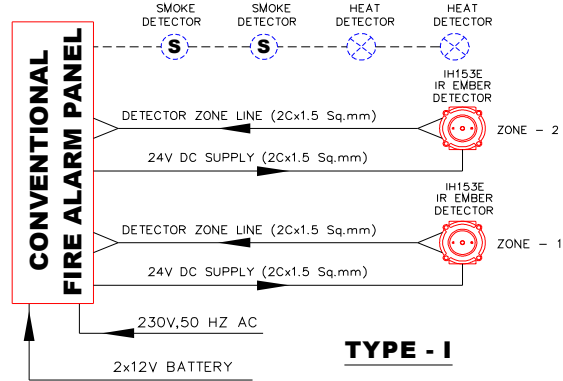
**fladet** IH 153ES IR Ember Detector with unique features makes the detector user friendly and least maintenance requirement.

- Flashing Green LED indicates healthiness of the Detector.
- 4-wire system – 2 wire for input supply and 2 wire suitable to connect any Standard Fire Alarm Zone / PLC / Annunciation.
- No separate control panel is required. Any Annunciation or PLC or Fire Alarm Panel can be used (Refer model number and installation guidance).
- Air purging provision makes cleaning very simple. By connecting existing instrument air, the Glass surface can be cleaned either by simple manual method or by automatic arrangement as per site requirement. Dedicated separate air source also can be incorporated.
- IH 323 Air Purging Unit is Stand Alone Provided with Air Blower operates on 230V AC.
- The Detector is cost effective because of the above referred flexibility.
- Simple mounting bracket with tilting arrangement is used to easy field erection and maintenance.
- Spectral range is 3000 – 14000 nm
- Because of the critical spectral range it is ineffective to sunlight, other lights
- Cone of Vision is 90 Deg which makes wider coverage.
- Wider Range of operating Temperature (-20 Deg.C to 60 Deg.C) and Input supply voltage 24 V DC +/- 20% ensure proper detection performance.
- Non-Ferrous Rugged enclosure suitable for dusty and windy environments with IP 67 protection.

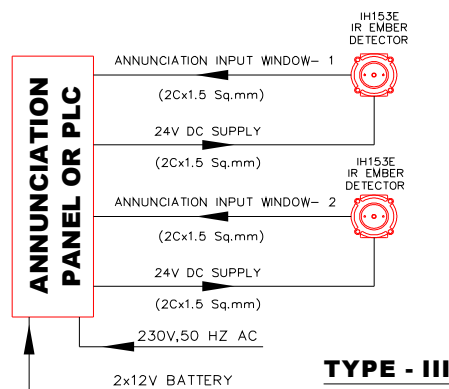
**FOR IH153ES SPECTRAL RESPONSE**



... **IH153ES Infra Red Ember Detector** ...  
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- 4-wire system - 2 wire for input supply and 2 wire suitable to connect any standard Fire Alarm Zone/PLC/Annunciation.
- No separate control panel is required. Any Annunciation or PLC or Fire Alarm Panel can be used.



**Note: For Installation, refer Installation Manual.**

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**Detector Position:**

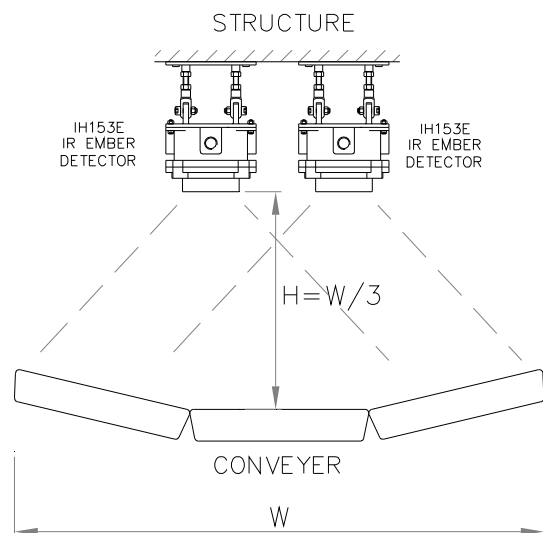
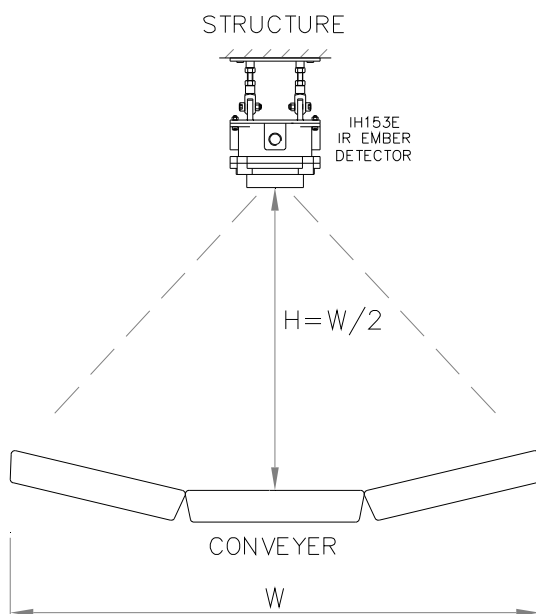
Detector should be mounted on the conveyor hood or gantry structure looking down at the coal being transparent. Detector will detect 100 Sq.cm glowing coal ember at the distance of 1 meter to 3 meter in 90 Deg. Cone angle and straight line.

Detector cone of angle is 90 Deg. across the belt. It is recommend to mount the Detector at a height equal to half width of the conveyor.

For increased sensitivity, two Detectors are recommended if the width is more than 2 meters.

It is recommended to a minimum of two Infrared Ember Detector for each conveyor. One detector shall be placed at head pulley and one detector at tail pulley not exceeding the distance between two detectors 30 mtrs. One Additional detectors should be located in the middle if distance exceeds 30 Mtrs.

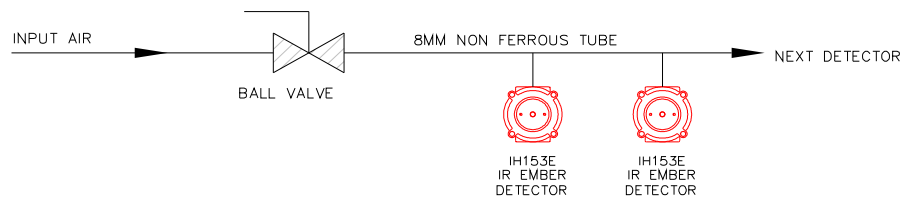
**RECOMMENDED MOUNTING ARRANGEMENT FOR  
IH 153ES IR EMBER DETECTOR ON COAL CONVEYER**



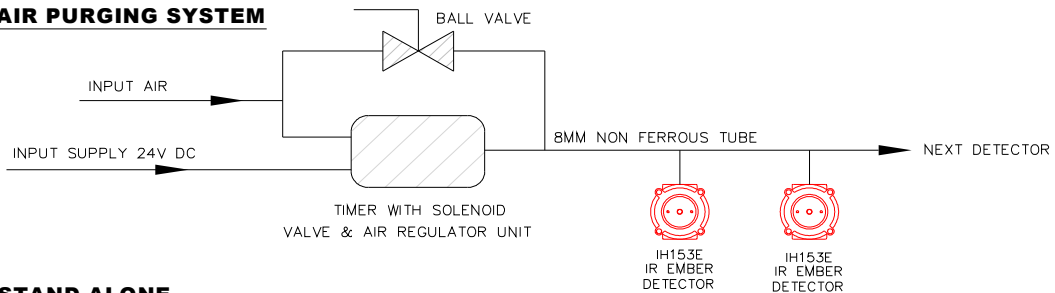
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- Air Purging provision makes cleaning very simple. By connecting existing instrument air, the Glass surface can be cleaned either by simple manual method or by automatic arrangement as per site requirement. Dedicated separate air source also can be incorporated.

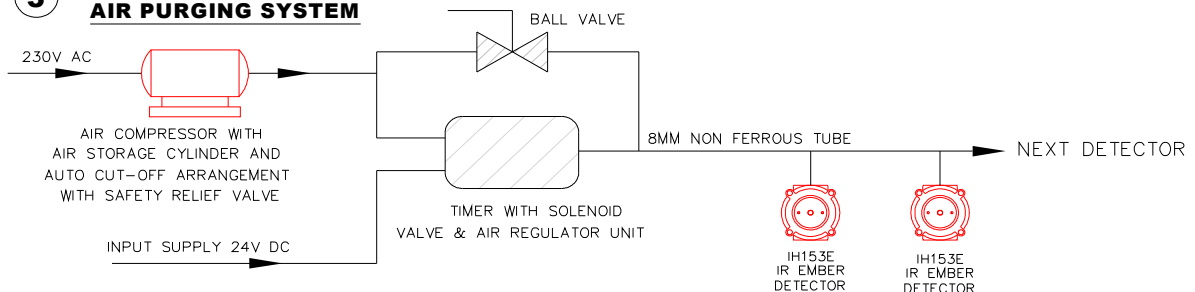
**1 MANUAL AIR PURGING SYSTEM**



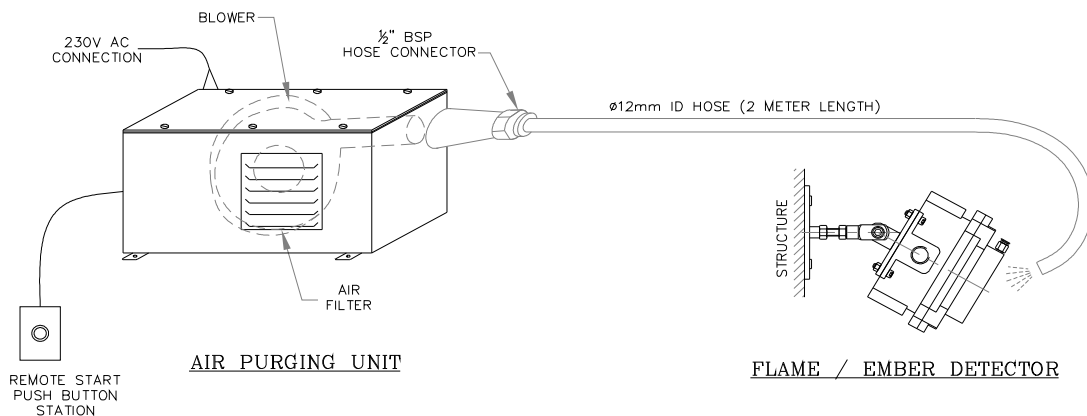
**2 MANUAL & AUTOMATIC AIR PURGING SYSTEM**



**3 STAND ALONE AIR PURGING SYSTEM**

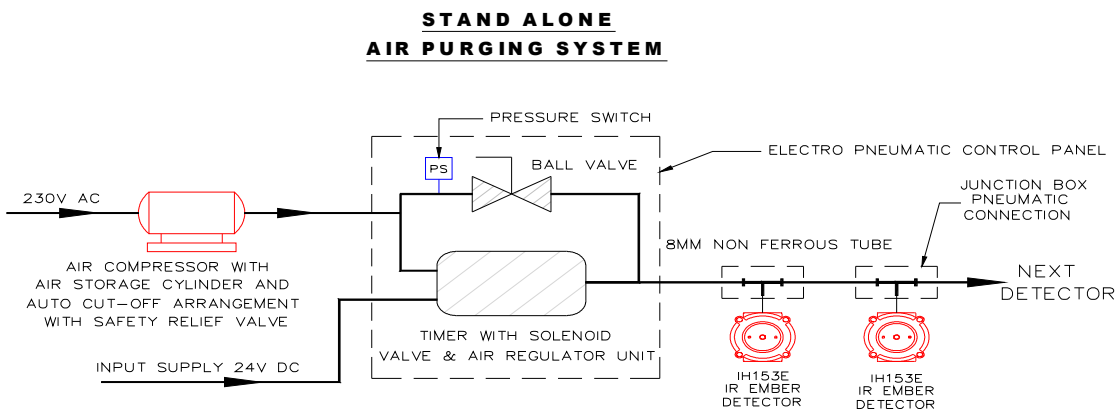


**4 STAND ALONE IH323 AIR PURGING UNIT**



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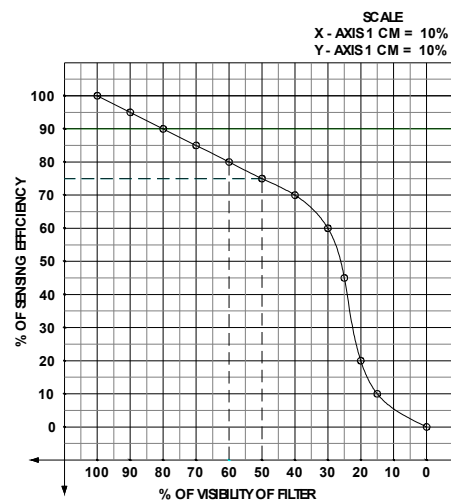
- Air Purging provision makes cleaning very simple. By connecting existing instrument air, the Glass surface can be cleaned either by simple manual method or by automatic arrangement as per site requirement. Dedicated separate air source also can be incorporated.
- The below scheme explains stand - alone Air Purging System. This system can be supervised commonly through pressure switch in control panel.



**SYSTEM CONSISTING**

01. STAND - ALONE AIR COMPRESSOR WITH AIR STORAGE CYLINDER.
02. ELECTRO PNEUMATIC CONTROL PANEL.
03. JUNCTION BOX FOR PNEUMATIC CONNECTION.
04. CONNECTION TUBE.

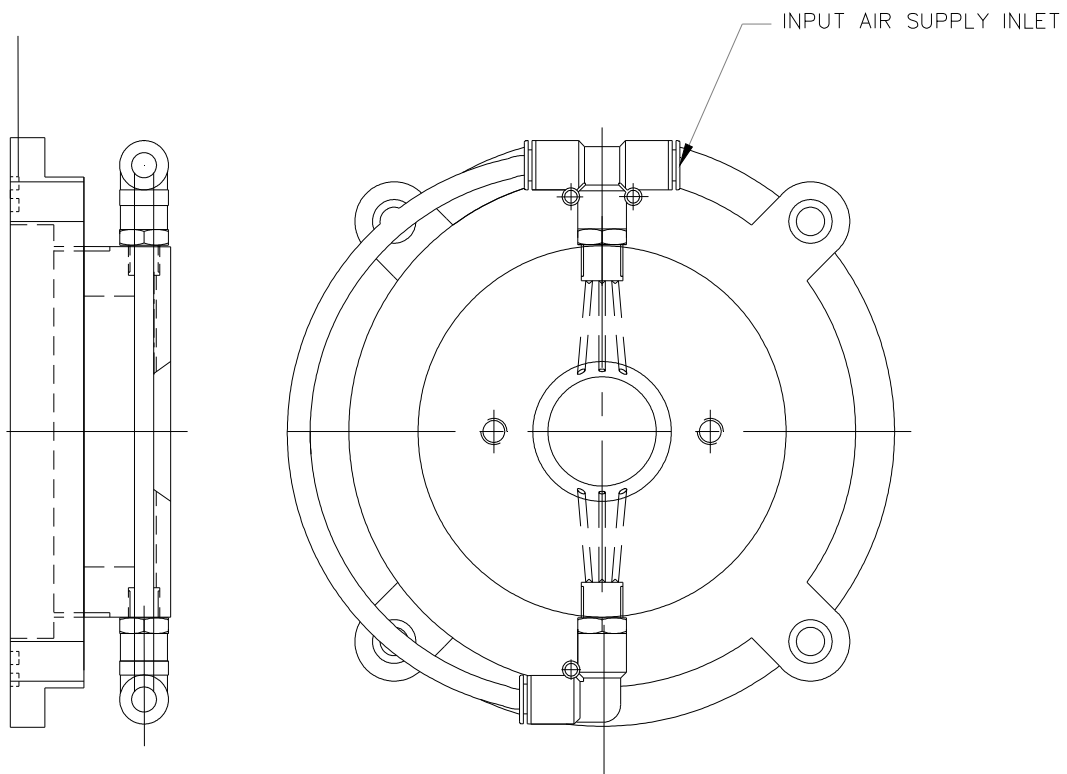
Sensing efficiency with respect to  
Visibility of filter is explained in graphic  
form.



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**AIR PURGING SYSTEM**

- (a) IH 153E IS PROVIDED WITH SINGLE/ DUAL AIR PURGING PROVISION. FOR DUAL AIR PURGING PROVISION USING 6mm AIR TUBE PROVIDED WITH THE UNIT, INTER CONNECT BOTH THE AIR PURGING TERMINAL AS SHOWN IN THE FIG.. REFER FIG.11  
SUITABLE INPUT INSTRUMENT AIR NOT EXCEEDING 5 BAR SHOULD BE USED OR USE STAND ALONE BLOWER IH323.
- (b) BY USING OTHER METHOD OF AIR PURGING OR FILTER CLEANING OR NOT USING INBUILT PROVISION WILL NOT AFFECT THE DETECTOR PERFORMANCE.



**AIRPURGING PROVISION IN THE DETECTOR**