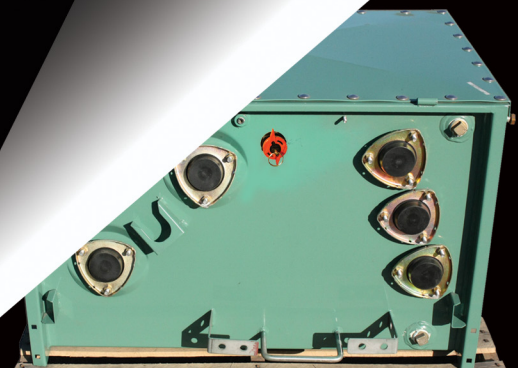




FASTER  
SAFER  
BETTER



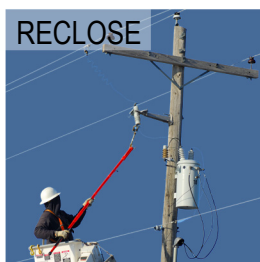
The IFD™ is a sensor that detects internal arcing faults in distribution transformers. The sensor releases a highly visible orange signal that shows the line worker the transformer status before re-energizing.

### Confidence at a Glance

Faster, safer and better, the IFD tells the line crew from a safe distance if an internal fault has occurred.

### How It Works

When an internal fault occurs and the tank pressure rises rapidly at a rate of 0.5psi over 5-7 milliseconds the IFD signaling device is activated, releasing a highly visible orange signal that crews can see from 60 feet (20 meters) away from the pole, even at night. The signal alerts crews that the transformer should not be reenergized.



### Enhanced Safety for Crew and Public

Re-energizing can be hazardous if a transformer contains an undetected internal fault. With the IFD, your crew can make more informed decisions quickly and confidently, making operations safer and better.

Risks and/or costs related to public, utility, and cable or telephone workers for personal injuries can be reduced, as well as reducing or eliminating costs for damages to other surrounding equipment and property.



### Enhanced Utility Performance

The IFD makes it easier for utility personnel to quickly identify from the ground which transformers need replacing; your customers benefit from faster restoration of power resulting in improved SAIDI scores.

### Sound Investment

The IFD is an investment in personnel safety and productivity that is quickly recovered through reduced overall system life-cycle costs. The IFD also incorporates a built-in pressure relief device, replacing the need for transformers to have a separate PRD.

### Installing the Device

The IFD's non-intrusive design fits most distribution transformer tank designs. Our engineers work closely with transformer manufacturers to ensure quality installation procedures in each manufacturing process.

### Reliability and Stability

The IFD sensor is not damaged by mechanical vibrations during truck or rail transport, utility pole top installation, high winds, or pole impacts, and incorporates a removable shipping lock for transportation, storage and field installation. In addition, the IFD is not resettable, to prevent tampering once activated.



## IFD Performance Specifications

### 1. Certified Transformers

Suitable for installation in single and 3-Phase distribution transformers. See IFD Engineering for guidance on transformer fault level requirements in larger transformers.

Ref.: CEATI Report\*

### 2. Transformer Operation

The IFD is situated in the airspace above the maximum operating oil level and has no impact on the normal operation of the transformer.

Ref.: CEATI Report\*

### 3. Activation Level

The IFD will activate with a minimum pressure rise of 0.5psi in 5-7ms. This can represent a fault current of 500A (varies depending on fault location in transformer).

Cert.: Simulated symmetrical and asymmetrical internal faults from 500A to 8000A.

Ref.: CEATI Report\*

### 4. Pressure Relief

The IFD is fitted with either a 30-50 kPa or 10±2 psi PRD (pressure relief device; customer specified). The PRD can also be manually operated.

Ref.: IEEE C57.12.20; CSA C2.2.

### 5. Reliable Activation

The IFD will only activate during an internal fault in the transformer. The IFD will not activate due to faults external to the transformer or due to normal pressure changes within the transformer.

Ref.: CEATI Report\*

### 6. Operating Temperature Range

The IFD will operate between -40°C (-40°F) to 185°C (365°F).

Ref.: IFD Engineering

### 7. Service Life

The IFD is manufactured from glass reinforced PBT for greater than 30 years service. The IFD requires no maintenance during its service life.

Ref.: CEATI Report\*

### 8. Visibility

The activated IFD is clearly visible from at least 60' (20m) during day or night.

Cert.: Day and night visibility test. Ref.: BC Research Inc.

### 9. Permanent Fault Indication

Once activated the IFD cannot be reset; this is a safety feature. The transformer must be removed from service.

### 10. Standards

The IFD conforms to:

IEEE C57.12.20

CSA C2.2

IEC 61936-1

### 11. Quality & Testing

Every IFD is individually tested in a calibrated chamber to ensure correct operation at the lowest specified activation level.

### Some examples of additional tests:

#### a. Lightning Impulse

An IFD equipped transformer passed the lightning impulse test at a level 16% above the rating.

Ref.: CEATI Report\*

#### b. Mechanical Vibration

Tests on IFD equipped transformers confirm that providing the shipping lock is properly installed, the signal will not activate during normal transformer transport, handling.

Ref.: CEATI Report\*

#### c. Shipping & Handling

The IFD incorporates a removable shipping lock for transportation and storage. This prevents accidental activation of the mechanical sensor.

IMPORTANT NOTE: Always transport IFD equipped transformers with the shipping lock installed.

Ref.: IFD Engineering

\*CEA Technologies Inc. Report #T994700-5003

**SIMPLY  
SMARTER**



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