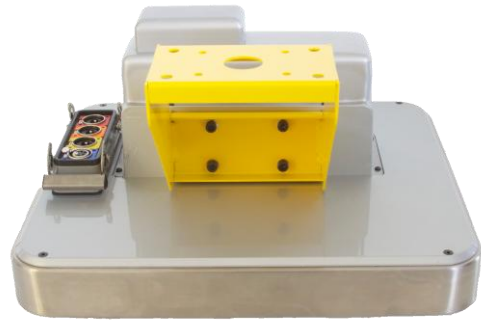
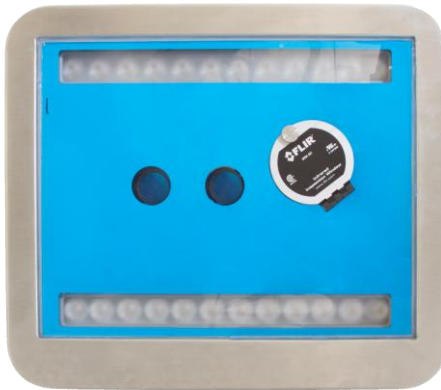


# MHIRA3D



**Imago** developed **Mhira3D** in order to give a more robust and flexible solution to the integrity check of part just outside the press. As an added value, it performs a thermal analysis simultaneously: the two analysis take around 100/120 ms together.

With this system you can check multiple views of your part and on every view you can setup different and unlimited control areas. To every control area you can associate different alarm levels in order to decide what to do depending on the error encountered.

The **integrity check** exploits 3D technology using the stereovision principles: for every view the system computes a 3D model of the part and compare it with the master you recorded. The stereovision technology ensures more reliability because it is not affected by changes in color or in light conditions. No matter what, the analysis won't give any false positive results.

Thanks to the **thermal analysis** you can prevent damages to the die or identify the lubrication/cooling problems by early detecting temperature drifts. Moreover, by monitoring the parts temperature you can analyze the thermal inertia after production interruptions reducing the number of scraps.

## Technical specifications

- Casing material: stainless steel, temperate glass, ABS.
- IP Rating: IP 65 frontal.
- Weight: < 6kg.
- Dimensions: 386 x 335 x 204 mm.
- Power supply: 110V – 220V.
- Power consumption: < 100W.
- Led color: Red 635 nm.
- Illumination area: up to 800 x 600 mm.

## Configuration A

### A1) Only integrity check

#### Optical information

<i>General specification</i>	<b>2 x Cameras for integrity check</b>
Interface	IEEE 802.3
Resolution	1292 (H) x 964 (V)
Sensor size	3.75 $\mu\text{m}$ x 3.75 $\mu\text{m}$
FOV	23° x 17°
Focal length	12mm

#### Integrity check cameras added specifications

- Defect resolution: this value varies depending on the working distance. In order to calculate it use the following formula: Horizontal FOV / Horizontal camera resolution \* 10.  
For example: 1420 mm / 1292 \* 10 = around 10 mm \* 10 mm

### A2) With thermal analysis

#### Optical information

<i>General specification</i>	<b>2 x Cameras for integrity check</b>	<b>1 x camera for thermal analysis</b>
Interface	IEEE 802.3	IEEE 802.3
Resolution	1292 (H) x 964 (V)	320 (H) x 256 (V)
Sensor size	3.75 $\mu\text{m}$ x 3.75 $\mu\text{m}$	17 $\mu\text{m}$ x 17 $\mu\text{m}$
FOV	23° x 17°	25° x 19°
Focal length	12 mm	13 mm

#### Thermal camera added specifications

- Emissivity coefficient value: from 0.5 to 1.
- Measurable temperature range: from -40°C to 550°C.
- Accuracy: 5% of the measured value.

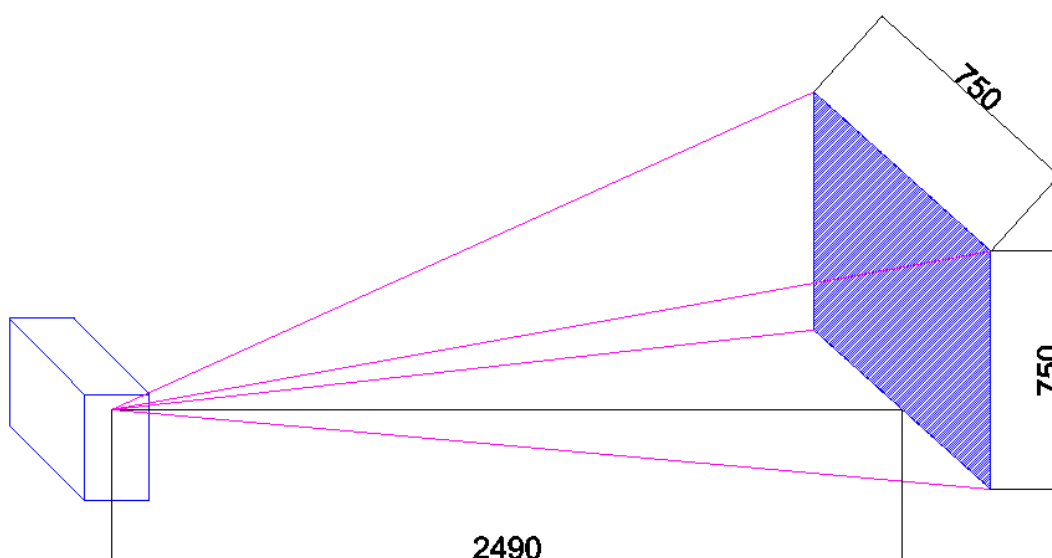
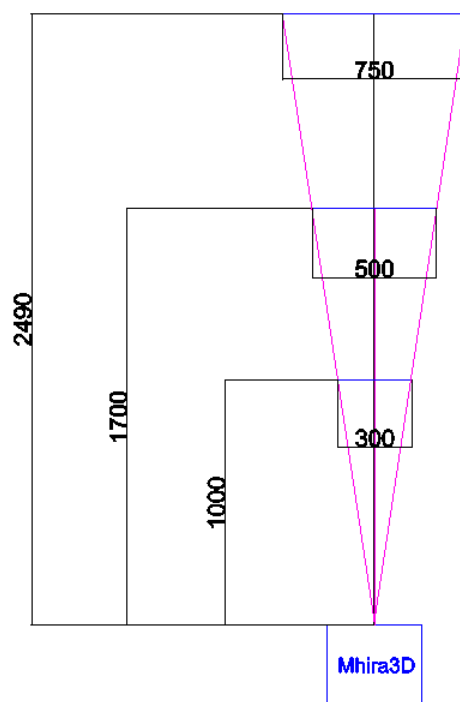
#### Working distance and Field Of View

Nominal working distance: 1 - 3 m.

FOV changes according to the working distance.

At different distance corresponds different field of view as shown in figure (all the measures are in mm).

The integrity check will perform the 3D model of everything visible from both cameras within the set working distance.



## Configuration B

### B1) Only integrity check

#### Optical information

<i>General specification</i>	<b>2 x Cameras for integrity check</b>
Interface	IEEE 802.3
Resolution	1280 (H) x 1024 (V)
Sensor size	5.3 $\mu\text{m}$ x 5.3 $\mu\text{m}$
FOV	46° x 37°
Focal length	8 mm

#### Integrity check cameras added specifications

- Defect resolution: this value varies depending on the working distance. In order to calculate it use the following formula: Horizontal FOV / Horizontal camera resolution \* 10  
For example: 1420 mm / 1280 \* 10 = around 10 mm \* 10 mm

### B2) With thermal analysis

#### Optical information

<i>General specification</i>	<b>2 x Cameras for integrity check</b>	<b>1 x camera for thermal analysis</b>
Interface	IEEE 802.3	IEEE 802.3
Resolution	1280 (H) x 1024 (V)	320 (H) x 256 (V)
Sensor size	5.3 $\mu\text{m}$ x 5.3 $\mu\text{m}$	17 $\mu\text{m}$ x 17 $\mu\text{m}$
FOV	46° x 37°	45° x 35°
Focal length	8 mm	7.5 mm

#### Thermal camera added specifications

- Emissivity coefficient value: from 0.5 to 1.
- Measurable temperature range: from -40°C to 550°C.
- Accuracy: 5% of the measured value.

#### Working distance and Field Of View

Nominal working distance: 1 - 3 m.

FOV changes according to the working distance.

At different distance corresponds different field of view as shown in figure (all the measures are in mm).

The cameras configuration has the same FOV for both integrity check and thermal analysis.

The integrity check will perform the 3D model of everything visible from both cameras within the set working distance.

