

EN

MI.RA/3D

3D robot guidance based
on 2D imaging

COMAU





A customized solution starts with a watchful eye

Discover MI.RA, Machine Inspection and Recognition Archetypes: Comau's flexible vision systems portfolio empowered by artificial intelligence.

Reconfigurable performance to face the future

Delivering the flexibility and innovation to meet the demands of the most challenging production scenarios, Comau's MI.RA portfolio guarantees modular, scalable, stable and customizable solutions that reduce operating expenses while increasing throughput and performance.

Thanks to decades of experience in systems integration, Comau's advanced MI.RA archetypes also ensure a seamless interface with the best hardware available on the market.



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Comau's all-in-one solution solves the need for 3D robot guidance without expensive 3D camera technology. The powerful vision system captures, analyzes and iteratively compares images with a reference in order to successfully assist high-precision operations. In addition, its patented approach fully adapts the guidance precision to meet the specific requirements of the task at hand. This allows the robot to perform challenging tasks smarter, and with increased accuracy.

MI.RA/3D assesses the position of a rigid body by comparing its photo with a pre-prepared reference image and analyzing its deformation caused by roto-translation. After a single photo teaching phase, the system updates the reference frame and allows the robot to re-define its grasp pose as needed. This ensures optimal positioning with maximum flexibility.

Guaranteed precision, lower costs.

- **3D performance with a 2D solution:** 70% cost savings compared to a similar 3D system
- **No GEO stillage:** reduce stillage and manufacturing costs by 20%
- **Cabin-free footprint:** all-in-one solution has zero impact on the existing layout
- **Reduced MTTR:** stored calibration and job specifications grant 30% less maintenance time
- **Camera options:** save 30% by integrating a lower resolution camera, without sacrificing precision
- **Tailored integration:** acquire alone, with an integrated camera or as a complete robotic solution, all backed by Comau expertise

*Estimates based on Comau application cases





Standard to customizable solution

The all-in-one Smart Camera solution is commercially available for Comau's Racer-5 COBOT. The technology agnostic design also allows full flexibility for personalized integration options, including other cameras and other robots as desired.

- **Hardware and robot agnostic:** use Smart or pc-based cameras and all major robot brands
- **CPU agnostic:** deploy the solution on different processing units
- **User-friendly interface:** optimized UX and easy-to-use system configuration
- **IR light support:** choose the best-suited lighting source for the application
- **Powerful inline system:** seamless integration with the production line robots and PLC

Applications



Pick and place



Joining technologies guidance



Loading-unloading guidance



Logistic



Casting ladle outlet
Piston stuffing



Appliance manufacturing

Software features

CALIBRATION

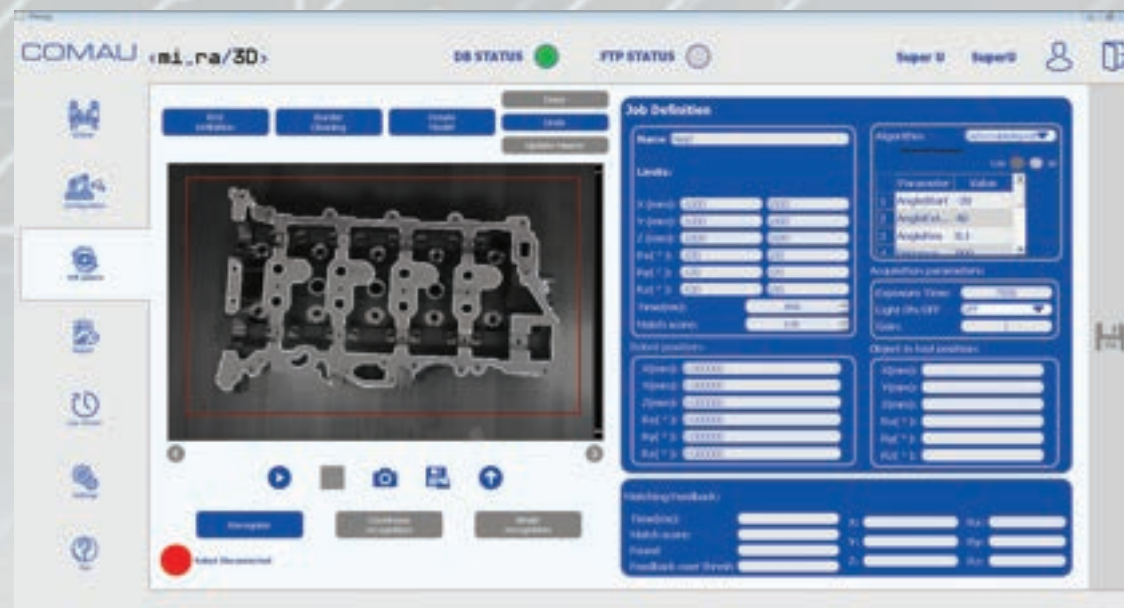
- FOV calculation tool
- Calibration plate generation
- Automatic or manual calibration
- Fully parameterizable pose generation
- Stationary on-arm mounting

JOB CONFIGURATION

- Easy to configure
- Remote-assistance ready
- Performance assessment tool

ONLINE

- Adapts to changes in lighting condition
- Integrated light management
- Exhaustive results collection for reporting



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Software specifications

GUIDANCE	
Volume of View (VOV) - $\delta x \delta y \delta z$ (hardware dependent)	8'x4'x2' down to 2"x2"x1"
Best resolution* :	x,y,z 0,3mm Rx,Ry,Rx 0.5°
Calibration	Automatic or manual
Max number of models	255
Offline testing	Yes
Camera mounting	On-robot or pedestral
Part localization time	<1s

ACQUISITION	
Lighting Management	Yes
IR Lighting Support	Yes
Lens	Variable

LOGGING	
Image Storage	Yes
Result Storage	Yes
Performance Graph	Yes

COMMUNICATION	
TCP/IP	Yes

Hardware specifications*

MECHANICAL	
Dimension	75 mm x 87.55 mm x 98 mm
IP rating	IP67
Lens	C-Mount
Lighting	Ring or bars

ELECTRICAL	
Input Voltage	24V
Power consumption	10.8W
Ethernet Connector	8 pin M12 X Code
Power /DIO Connector	Power Connector 4 pin via adaptor or 19 pin

ENVIRONMENTAL	
Vibration	Operating, 5 Grms, 5-500 Hz, 3 axes
Certification	IP67 SENSOR With Lens Cover and CAPS

*Refers to smart-camera configuration

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