

Eddy Current Inspection for Bearing Production

A Configurable NDT Subsystem for Special Purpose Machine Manufacturers

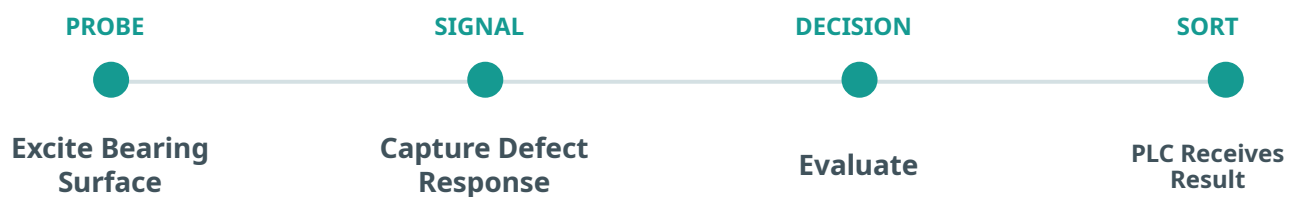


How the Inspection Works

The probe creates an alternating magnetic field in the conductive bearing surface. Cracks, pits and material discontinuities disturb the induced currents, producing a measurable change in the signal.

Designed for Machine Integration

- Non-contact surface and near-surface defect detection
- Up to six probes inspect different surfaces in parallel
- Machine trigger with digital GO / NO GO output
- Scalable 1, 2, 4 or 6-channel architecture
- Isolated 24 V I/O for direct PLC integration



Designed, Developed and Manufactured in India.

Controller and Channel Variants

One 4U platform for a single inspection station or a complete six-head production machine.



System Specifications

CHANNELS	1, 2, 4 or 6
EXCITATION	1 kHz to 1000 kHz
GAIN	1 to 100 percent
ACQUISITION	1 to 30 seconds
DIGITAL I/O	3 inputs and 2 outputs per channel
SUPPLY	230 VAC, 50 Hz, single phase
ENVIRONMENT	0 °C to +50 °C, 85% RH max

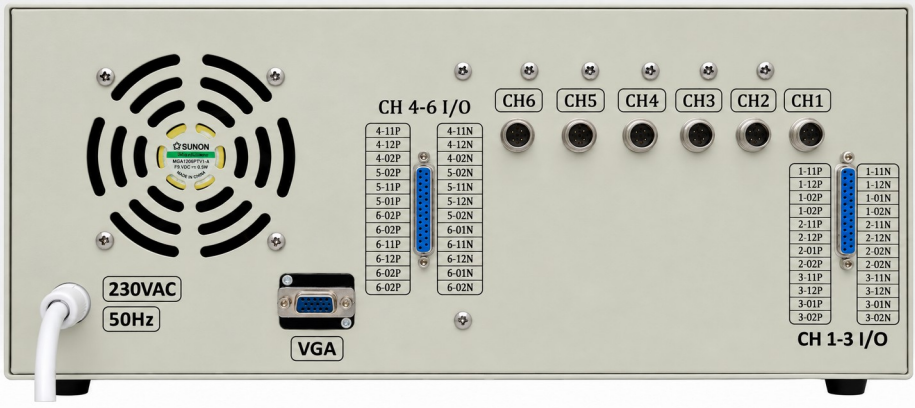
Channel Configurations

2506-1	1 channel	Single station or R&D
2506-2	2 channels	Dual-head inspection
2506-4	4 channels	Rotary or linear machine
2506-6	6 channels	Full production line

The same six-channel chassis supports later expansion by adding acquisition boards and the corresponding probe and I/O connections.

Machine Interface

Rear-panel connections group probe inputs and isolated 24 V digital I/O for direct integration with the host PLC, reject mechanism and machine sequence.

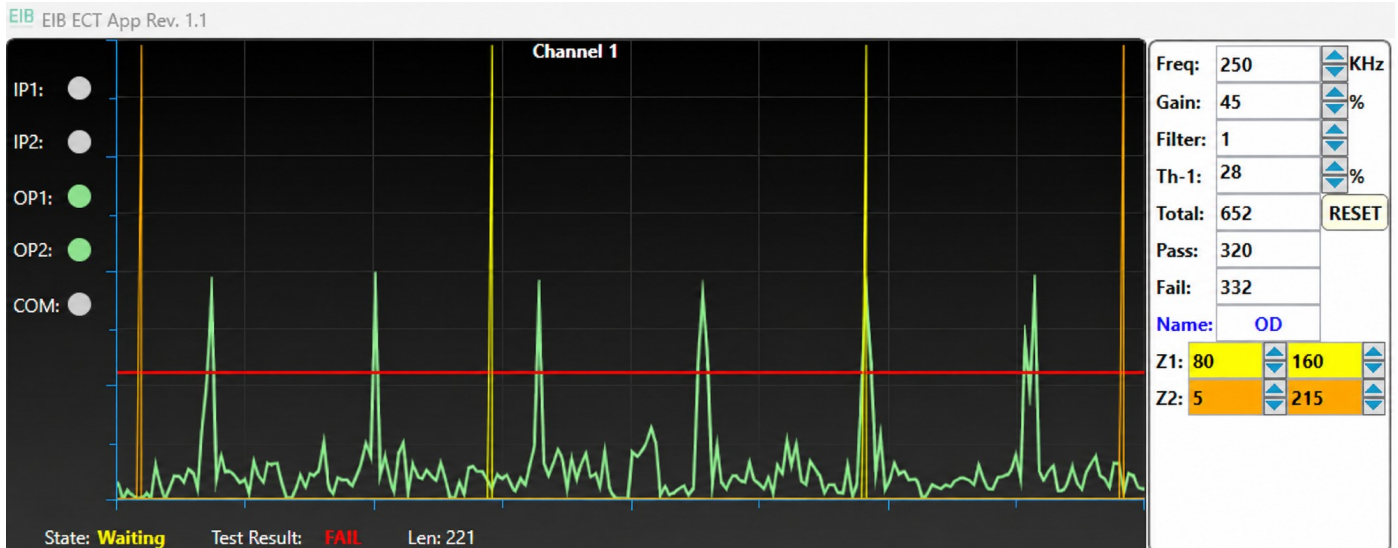


IP1 Starts Acquisition

IP2 Initiates Calibration

OP1 Reports GO / NO GO

Live acquisition, protected recipes, machine-triggered testing and production reporting.



One Screen for Signal and Decision

Each channel pane combines the live waveform, communication and I/O indicators, part result, counters and the active parameter set. Operators can confirm both the inspection signal and the machine handshake without changing screens.

TEST MODE

Continuous acquisition supports setup, probe checks and waveform verification.

Use known-good and known-defect samples to tune the response.

START MODE

IP1 triggers acquisition for each production part. OP1 returns the inspection result.

The interface updates Total, Pass and Fail counters automatically.

SELF-CALIBRATION

IP2 identifies the master-part cycle so the PLC can verify the complete signal path.

A missing reject response flags probe shift, loose wiring or signal drift.

Protected Recipe Parameters

- Frequency, gain and digital filter per channel
- Z1 and Z2 define valid inspection regions
- Th-1 sets the final rejection threshold

Production Data

- Part name plus Total, Pass and Fail counters
- Shift, day or lot report export
- Password control prevents unintended edits

Probes Fixtures and Integration Support

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Application-specific sensing and rigid positioning complete the inspection subsystem.



Straight Probe

For flat faces, axial surfaces and accessible straight profiles on bearing races and rings.

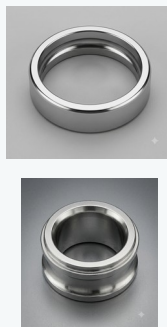
- Stainless-steel M7 body with Delrin tip
- 1 m or 2 m cable with 4-pin connector



Angled Probe

The 90° tip reaches internal diameters, shoulders and curved raceways where straight access is limited.

- Operating frequency from 1 kHz to 1 MHz
- Minimum cable bend radius 50 mm



Fixtures and Engineering Services

- Probe selection and inspection-track planning
- Bearing locating and rotation fixtures
- Custom probe holders and cable integration
- Mechanical design service for special purpose machines integrating the ECT solution

EIB Solutions

Excellence in Design Solutions

Electronic system design, embedded hardware and firmware, Windows applications, industrial automation and custom inspection integration.

CONTACT

D82, Shaktipark Society, Old Sama Road, Sama, Vadodara – 390 008, Gujarat INDIA.

+91 95 5880 7442

contact@eib-solutions.com

www.eib-solutions.com