

# Automotive Connector Zero-Defect Quality Assurance

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A Comprehensive Solution to Prevent Welding, Contact, and Dimensional Issues

# CONTENTS

## 01 Design Stage

*Root Cause Prevention*

## 02 Incoming Control

*Supplier Quality Lockdown*

## 03 Manufacturing

*Full-Process Error Proofing*

## 04 Final Inspection

*Zero-Defect Release*

## 05 Packaging & Shipping

*End-to-End Protection*

## 06 Lifecycle Support

*Complete Assurance*



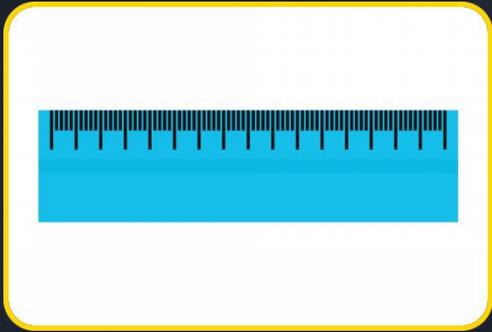
# 01 Design Stage

## Root Cause Prevention

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Solving 80% of potential issues before production

# Dimensional Deviation Prevention



Advanced precision control and simulation techniques ensure zero defects in production.



## 3DCS Tolerance Stack-up Analysis

Perform full-dimension tolerance chain calculation to avoid any assembly issues at your end.



## Environmental Compensation

Pre-compensate for material shrinkage and spring back using simulation, ensuring stability across temperatures.



## DFMEA Implementation

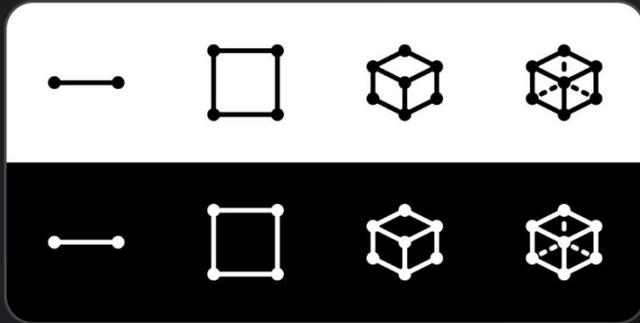
Proactively identify and mitigate potential dimensional failure modes before they occur.



## Stringent Internal Standards

Core dimension tolerance  $\pm 0.02\text{mm}$ , SMT coplanarity  $\leq 0.03\text{mm}$ , exceeding industry standards.

# Contact Failure Prevention



Advanced engineering ensures robust connectivity in extreme automotive environments, minimizing the risk of failure.



## Spring Force Redundancy Design

Maintains stable contact force throughout the vehicle's 10-year/240,000km lifespan, ensuring long-term reliability.



## Automotive-Grade Plating

"Ni+Hard Gold" plating ( $\geq 1.27\mu\text{m}$ ) for power applications, providing superior corrosion resistance and durability.



## Anti-Vibration & Sealing

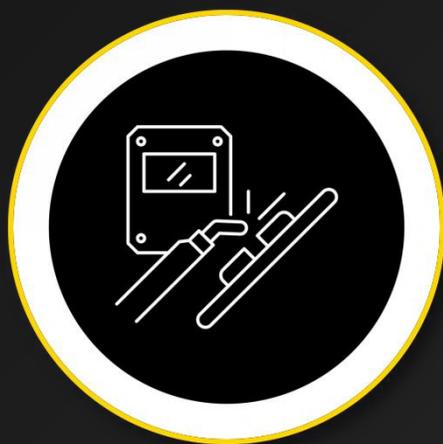
IP67/IP6K9K waterproofing and secondary locking structure withstand harsh automotive operating environments.



## Ultra-Low Contact Resistance

Internal standard  $\leq 1\text{m}\Omega$ , significantly lower than industry average, ensuring lossless and reliable signal transmission.

# Welding Failure Prevention



Advanced Welding  
Process & Design



## Solderability & Process Compatibility

Flat SMT pins prevent tombstoning, while optimized THT pin design ensures perfect solder joint formation.



## Zone Plating Process

Separating plating for contact (Gold) and solder (Tin) areas completely avoids the "gold embrittlement" issue.



## High-Temperature Resistance

Materials withstand three reflow cycles at 260°C, ensuring no deformation or damage during soldering.



## Pre-production Line Validation

Free DFM reviews and SMT trial support ensure seamless integration with your production line.

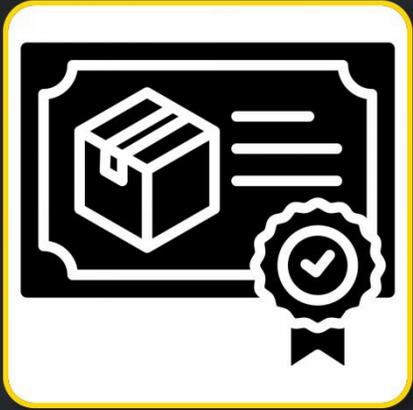
# 02

## Incoming Material Control Supplier Quality Lockdown

Ensuring the integrity of upstream supply chain

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# Supplier Qualification & Inspection



## IATF16949 Certified Suppliers

*We only partner with suppliers who meet the rigorous IATF16949 automotive quality standard.*

## PPAP & ISIR Submission

*Every raw material must complete the full PPAP process and provide an ISIR report before approval.*

## IQC Special Inspection

*Each batch undergoes 100% inspection for key properties, including dimensions, material composition, and plating quality.*

## Traceability Management

*We maintain full batch traceability from the supplier to our production line, ensuring complete accountability.*

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## CHAPTER 03

# Manufacturing Process: Full-Process Error Proofing

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*Achieving zero-defect manufacturing with automation and SPC*



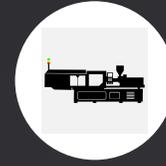
AUTOMATION & QUALITY CONTROL SYSTEM

# Stamping & Injection Molding



## Stamping Technology

- ❖ High-precision progressive dies with accuracy up to  $\pm 0.001\text{mm}$
- ❖ In-line vision inspection for 100% dimensional check of every part
- ❖ SPC monitoring ensures process stability with  $aCPK \geq 1.67$



## Injection Molding

- ❖ Electric injection molding machines for precise parameter control
- ❖ 3D CMM for comprehensive first article inspection
- ❖ Stress relief and environmental testing to ensure long-term stability

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*Committed to delivering the highest standards of precision and reliability in manufacturing*

# Plating & Assembly

## Plating Process

- ❖ Automated plating lines ensure precise control over zone plating (Gold for contact, Tin for solder).
- ❖ XRF thickness measurement and adhesion testing verify plating quality.
- ❖ Salt spray and thermal shock testing confirm long-term reliability.

## Assembly Process

- ❖ Fully automated assembly with vision-guided alignment ( $\pm 0.005\text{mm}$  accuracy).
- ❖ 100% testing for insertion force, electrical continuity, and pin coplanarity.
- ❖ Double error-proofing mechanisms address high-risk failure modes identified in PFMEA.

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*Committed to delivering zero-defect components through advanced manufacturing technologies*



# 04 Final Inspection: Zero-Defect Release

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100% inspection and type testing before shipment

# 100% Full Inspection Items

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INSPECTION ITEM

AUTOMOTIVE-GRADE STANDARD

SOLVED ISSUES



**Dimensional  
Check**

*Cpk  $\geq$  1.67, Coplanarity  $\leq$  0.03mm*

*Misalignment, installation failure*



**Electrical Test**

*Contact Resistance  $\leq$  1m $\Omega$ , 100%  
continuity*

*Open circuit, signal instability*



**Visual  
Inspection**

*No plating defects, no deformation*

*Welding failure, contact failure*



**Air Tightness**

*IP67/IP6K9K (for waterproof parts)*

*Corrosion, environmental failure*

# Batch Type Testing (Per USCAR-2 / AEC-Q200)



## Welding Validation

*Solderability, thermal shock, and reflow resistance tests simulate your production process.*



## Contact Reliability

*Durability, salt spray, vibration, and mechanical shock tests ensure performance under extreme conditions.*



## Dimensional Stability

*Temperature cycling, drop tests, and aging tests confirm long-term stability.*



## ISO 17025 Certified Lab

*All test data is fully traceable and can be provided in formal reports.*



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# *Packaging & Shipping: End-to-End Protection*

*Preventing secondary damage during logistics*



# Packaging & Logistics Protection

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## Automotive-Grade Packaging

*Custom tape & reel for SMT parts and anti-static trays for connectors ensure safe handling throughout the supply chain.*



## Controlled Logistics

*We partner with top logistics providers for temperature/humidity monitored shipping with full GPS tracking for complete visibility.*



## ISTA Certified Packaging

*Our packaging is certified to withstand a 1.5m drop test and simulated transport vibration, ensuring products arrive in perfect condition.*

# 06 Lifecycle Support: Complete Assurance

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Full traceability and rapid response for peace of mind



# Full Traceability & Safety Net

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## End-to-End Traceability

Every product has a unique batch ID for full lifecycle tracking, ensuring complete transparency.



## Rapid Response

Guaranteed 1-hour response, 2-hour root cause analysis, and 24-hour on-site support if required.



## Zero-Defect Commitment

DPPM controlled to  $\leq 5$ PPM, with full compensation provided for any confirmed quality issues.



## Pre-project Support

Free DFM reviews, sample validation, and line trials to ensure seamless project integration.

# Our Commitment: Zero-Defect Quality

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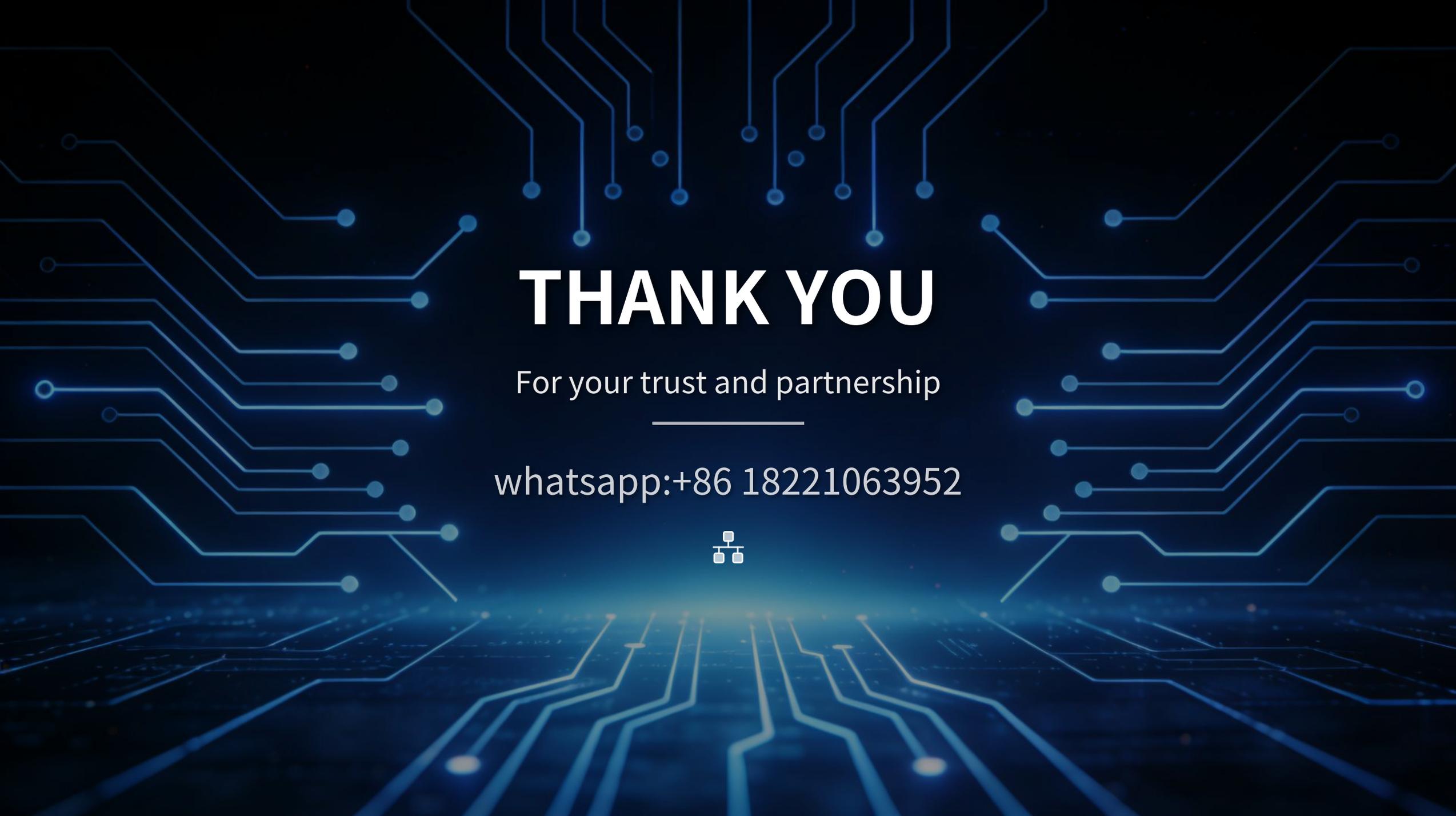
We don't just inspect quality; we build it into every stage.



From design to after-sales, our IATF16949 system ensures 100% reliability.



Your trusted partner for automotive connector solutions.



# THANK YOU

For your trust and partnership

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