

Quality Management in Production

Electrical Temperature Measurement - Temperature Transmitters



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1 Scope

The Quality Management System for the production of temperature transmitters is based on the general Quality Management System of WIKAL, Alexander Wiegand SE & Co. KG. This document provides an overview of the major quality relevant processes used for production and control of temperature transmitters. It should be referred to in combination with the Quality manual document as general information.

2 Documentation

Dokument / Document	Definition / Definition
Data Sheet (DS)	The DS defines technical features of a temperature transmitter and can be downloaded from the WIKAL website.
Operating Instruction (OI)	The OI describes requirements for safe handling, installation, operation and maintenance and can be downloaded from the WIKAL website.
Part Number	The part number of any part, component, or temperature transmitter is unique; it is kept under control through revision management.
Drawing (DRW)	The DRW is used to record technical details of parts, components, or transmitters and always refers to a part number. It is kept under control through revision management.
Standard Operating Procedure (SOP)	The SOP defines how to perform each step of a process. The SOP document is kept under control through revision management and is for internal use at WIKAL only.
Work Instruction (WI)	The WI defines how to handle and test parts/production steps. The WI document is kept under control through revision management and is for internal use at WIKAL only.
Production Work Plan (WP)	The WP is elaborated by the Process Engineering department and defines the different production steps. Every production step is signed by the skilled employee during the production process. The WP document is for internal use at WIKAL only.
Bill Of Materials (BOM)	The BOM is a structured list of individual parts/ materials needed for the assembly of a part or product. The BOM document is for internal use at WIKAL only.

WIKAL's internal documents may be shown through customer visit / audit upon request; copying for customer documentation or use is not allowed.

This is a translation and valid without signature, in case of doubt the original language German applies

3 Quality Management Procedures in production

3.1 Quality Management prior to series production

- New products and variation of existing products are developed and validated for series production capability according to the WP.
- Potential new suppliers are evaluated prior to series shipments.
- New parts have to pass the First Article Inspection (FAI) process according to the WIKAL Global Guideline "Supplier Quality".
- Preventive quality tools (like FMEA, QFD, quality workshops...) are used to define quality specification items in the control plan.

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3.2 Quality Management during series production

- Incoming inspection of purchased parts from certified suppliers according to a control plan is done to verify incoming quality.
- Production tests (functional test, adjustment, configuration...) are documented in the WP to verify the production steps. Completed production steps and product inspections (construction, installation dimensions, identification, documentation, certificates) are documented in the WP to ensure the product quality.
- All relevant data (electrical PCB test, temperature test, adjustment, configuration...) are stored for traceability and quality assurance in a database.
- Interlocking of each test – and work steps through check bits in the transmitter, to ensure that all steps were carried out correctly and the transmitter has processed all steps.

Product / step	Process	Specification
Incoming Inspection	Incoming inspection	WI, WP, SOP
Electrical PCB Test	100% functional test of assembled PCB	WI, WP, SOP
AOI Test	100% optical inspection of assembled PCB	DRW, WI, WP, SOP
Assembly	Mounting of PCB assembly in housing 100% visual inspection	WI, WP, SOP
Potting	Tempering, casting and hardening of transmitter	WI, WP, SOP
Temperature Test ¹⁾	100% functional test at -40 / 23 / 85 °C	WI, WP, SOP
Adjustment	Calibration of devices 100% testing at limit values	WI, WP, SOP
Configuration	Custom configuration of devices 100% version check	WI, WP, SOP, Customer Specification
Functional test ²⁾	100% functional test at 20°C	WI, WP, SOP
Packing and shipping	Transmitter packaging, labeling, packaging and shipping to customer	WI, WP, SOP
Shipping Audit	Random inspection of thermometer attributes	DS, OI, DRW

¹⁾ only T32 ²⁾ only T12, T24

3.3 After sales service

Transmitters which are defective or out of calibration can be returned to WIKA for service; the procedure is described on the website of WIKA under “service” (product return form) and can be handled on an individual basis.

WIKAL Alexander Wiegand SE & Co. KG
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