

Prepare OPC UA data for AI

Turn a tag value into a usable observation with units, quality, timestamps and asset context.

In short

- A value like 72 is not an observation until asset identity, signal identity, engineering units and source time are attached to it.
- Bad quality should never become a zero reading, and a carried-forward last value needs an explicit flag and its age.
- A working connection alone does not make data analytically fit, so acceptance should rest on unit, timing and quality checks.

01 / A value is not an observation

The number 72 could mean temperature, speed or load. Keep asset identity, signal identity, engineering units, source time, receipt time and quality status with each reading. Version mappings so that a renamed integration tag does not silently change asset identity.

02 / Preserve quality information

Do not turn bad quality into a zero reading. If carrying a last-known value forward, include an explicit flag and its age. A model must not confuse a three-hour-old reading with a fresh measurement. The process engineer should define acceptable staleness in the data contract.

03 / Test time alignment

Create fixtures for clocks moving backward, duplicate readings and mixed time zones. Monitor the difference between source and receipt time. When choosing a resampling interval, consider whether averaging could hide a brief event. Keep raw measurements separate from derived features.

04 / A proposed minimum contract

Start with `asset_id`, `signal_id`, `source_timestamp`, `received_timestamp`, `value`, `unit`, `quality` and `schema_version`. Complete the contract for five critical signals before expanding the pilot. A working connection alone does not establish analytical fitness; use unit, timing and quality checks for acceptance.

Try it

Inspect a sensor table in Forge and document missing readings, incorrect units and duplicate timestamps separately.

References and online guide

[Open the online guide](#)

OPC Foundation: OPC UA

Proposed pilot steps do not claim field accuracy. Synthetic examples are not measurements from a production site.