



Process Bus Insight
IEC 61850 Process Bus Analyzer

User Manual

Practical guide for IEC 61850 SV, GOOSE, PTP timing context, SCL validation, and safe evidence collection.

[User Manual](#)[Windows 10/11](#)[Receive-only](#)[Apache-2.0](#)

Product boundary

- Receive-only and raw-passive.
- Does not send IEC 61850 control commands.
- Does not publish GOOSE or Sampled Values.
- Does not replace certified relay test sets or timing instruments.

Before you start

Use a safe capture path such as a TAP, mirror port, or isolated engineering test switch. Avoid connecting an unverified PC directly into a protection-critical path. Install Npcap when raw Ethernet frame capture is required.

Running the portable package

- Download the latest Windows x64 portable ZIP from GitHub Releases.
- Extract it to a local folder, for example C:\Tools\ProcessBusInsight.
- Run ProcessBusInsight.exe.
- Select the physical Ethernet adapter connected to the Process Bus traffic.
- Start capture.

Main workflow

- Confirm the selected adapter so you do not diagnose the wrong interface.
- Observe SV streams and check APPID, svID, VLAN, MAC, continuity, waveform, phasor, and metering context.
- Inspect GOOSE publishers, state changes, stNum, sqNum, typed dataset values, and event history.
- Check PTP traffic presence, transport, domain, and timing source context when available.

- Load SCL if available and compare expected engineering configuration with observed traffic.
- Copy evidence carefully with expectation, observation, affected object, and confidence wording.

SCL validation

Load SCD, ICD, or CID files when engineering files are available. The app can compare expected APPID, VLAN, MAC, DataSet, confRev, and stream identity against observed traffic. This helps identify missing, unexpected, weak, mismatched, or conflicted objects.

Troubleshooting no traffic

- Wrong adapter selected.
- Npcap is not installed or capture permission is restricted.
- Switch mirror port is not configured correctly.
- VLAN traffic is not forwarded to the capture port.
- PC is connected to the wrong network segment.
- Traffic is not actually present from the publisher.

Evidence guidance

Good FAT/SAT evidence should include adapter name, capture path, APPID, VLAN, source MAC, svID or GOOSE identity, timing context, SCL expected field, observed field, and confidence wording. Avoid overclaiming timing performance from software timestamps.

Safety note

Process Bus Insight is a visibility tool. Always follow site safety rules, commissioning procedures, protection engineering sign-off, and customer test requirements.