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TECHNICAL DATASHEET

SubstationSynk Edge – Technical Specifications

A turnkey IEC 61850 simulation, testing and integration appliance. Pre-loaded software on a fanless industrial box: plug in, power on, start testing.



20,000

NODES PER INSTANCE

10X

CONCURRENT SESSIONS

Ed 1 / 2 / 2.1

IEC 61850 EDITIONS

Fanless

LINUX-BASED

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01 • SOFTWARE CAPABILITIES

CAPABILITY	MODE	INTERFACE	NOTES
LIVE IEC 61850 MMS	Server + Client	MMS / TCP-IP	Full report and control model; acts as an IED or connects to IEDs.
LIVE IEC 61850 GOOSE	Publisher + Subscriber	L2 multicast	Multicast; interlocking and trip validation.
LIVE IEC 61850 editions	Ed 1 / 2 / 2.1	per session	Native edition select; no version-switching.
LIVE SCL import	Server build	ICD / IID / CID / SCD	Build the simulated IED data model from SCL files.
LIVE Multi-IED & bay simulation	Server	—	Multiple simulated IEDs per instance.
LIVE Network sniffer (MMS / GOOSE)	Capture	PCAP export	Full packet capture with timestamping; PCAP export.

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02 • IEC 61850 SIMULATOR

★ FLAGSHIP CAPABILITY

Hardware-free substation IED & communication simulator

Simulates IEDs and substation communication for FAT/SAT and pre-commissioning validation. Test GOOSE interlocking and SCADA integration before live equipment is available.

● Server mode — acts as IED

● Client mode — connects to IEDs

● GOOSE publish / subscribe

● Pre-commissioning validation

03 · SERVER MODE AND CLIENT MODE

SERVER MODE

ACTS AS IED

A fully functional IEC 61850 IED. Expose Logical Devices, Nodes, Data Objects & Attributes to any MMS client.

- Publish GOOSE messages
- Buffered & Unbuffered Report Control Blocks
- SCL export (ICD / IID / CID / SCD)
- Up to 10 independent server instances

CLIENT MODE

CONNECTS TO IEDS

Connect to live IEDs or simulated servers. Browse data models, subscribe to reports, command, poll.

- BRCB / URCB report subscription
- GOOSE subscription & live monitoring
- Select-Before-Operate & Direct Operate
- Up to 10 simultaneous client connections

04 · SOFTWARE IN ACTION

01 Client mode — report subscription.

Live BRCB report PDUs with sequence numbers, trigger options and per-member values.

02 Client mode — GOOSE subscription.

GCB configuration with live stNum, TTL and subscribed data-attribute monitoring.

03 Network sniffer.

MMS & GOOSE streams grouped by source / AppID with a full packet-detail inspector and PCAP export.

04 Topology viewer.

IED diagram with protection badges, virtual GOOSE wiring and live health diagnostics from loaded SCL.

05 · PERFORMANCE & SCALE

Simulated nodes per instance

20,000

Concurrent sessions

10×

IEC 61850 editions

Ed 1 / 2 / 2.1

Capture

MMS & GOOSE sniffer · PCAP

06 · DIAGNOSTICS & INTEROPERABILITY

Network sniffer

PCAP export

Live GOOSE monitor

Live report detail

Data model browser

Timestamped capture

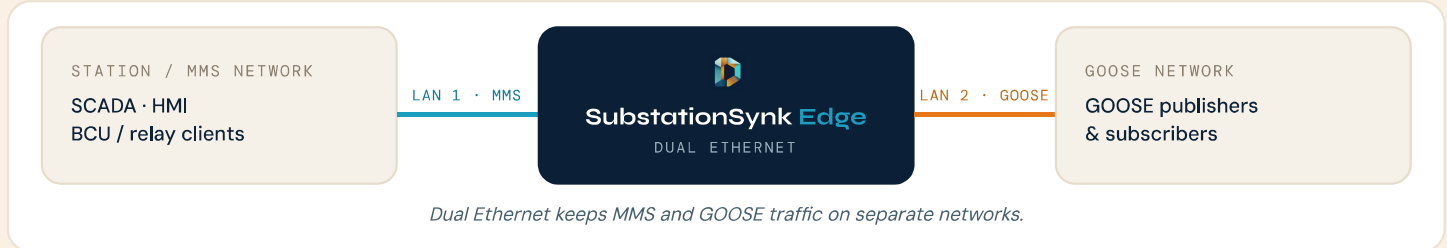
VALIDATED

GE MiCOM · GE Multilin · GE C264 BCU

COMPATIBLE

Siemens · Hitachi Energy (ABB) · Schneider · SEL · any IEC 61850 device

07 · HOW IT CONNECTS



08 · DEPLOYMENT SCENARIOS

01

FAT / SAT and commissioning

Bench rigs and pre-commissioning checks.

02

Protection and trip validation

GOOSE-based interlocking and trip testing.

03

System integration testing

Multi-vendor IED, BCU and SCADA interoperability.

04

Training and R&D labs

Demo and engineering lab use without live equipment.

Positioned for engineering labs, FAT environments and control rooms.

09 · REFERENCE HARDWARE



TOP VIEW

Fanless, passively cooled

Anodised aluminium enclosure with mounting flanges. No moving parts.

HARDWARE SPECIFICATION

PROCESSOR	Intel Core i3-1215U · 6 cores · up to 4.4 GHz · 10 MB cache
MEMORY	8 GB DDR4
STORAGE	128 GB SSD
OS	Ubuntu Linux 24.04 LTS
NETWORK	2 × Ethernet
SERIAL	4 × DB9 male RS-232 (2 front, 2 rear), for console and legacy device access
USB	2 × USB 3.2 (rear) · 4 × USB 2.0 (front)
DISPLAY	1 × HDMI · 1 × VGA
POWER	12 V DC / 7 A adapter · 100–275 V AC · 50–60 Hz
OP. RANGE	0–50 °C · 20–80% RH non-condensing
ENCLOSURE	Anodised aluminium, silver, mounting flanges
DIM. / WT.	200 × 184 × 52 mm · 2.55 kg
CERTS.	RoHS compliant

10 · DELIVERY AND ORDERING

SubstationSynk Edge appliance

Turnkey, software pre-loaded on the fanless industrial box. 12 V DC power adapter included. Ready to use on first boot.

SubstationSynk software-only

The same software for installation on your own Linux system, for teams who already run standardised hardware.

Request a 30-minute demo

See the simulator, sniffer and topology viewer running against live IEDs.

Contact@deliverain.com

+91 95918 15060