

What is the SV interface of a relay protection device



Overview

IEC 61850 9-2, commonly referred to as SV, is the service that is used to exchange the raw power system samples from the station yard to the control house over Ethernet communication cables or network(s). SV operates on the same publish and subscribe model that GOOSE messages. SV-based process bus solutions from SEL feature intelligent merging units with built-in protective functions and use IEC standards to maximize flexibility and interoperability. Process bus systems based on SV and GOOSE protocols and the Precision Time Protocol (PTP) provide many benefits. A digital substation is an evolved form of a conventional electrical substation that leverages intelligent electronic devices (IEDs) in the place of analogue equipment to improve monitoring, control, and protection of power systems. We compare event. The two main interfaces are the Station bus and the Process bus (in Fig. 2, from IEC 61850-9, Figure 9,). Latency accounts for processing delays, network queuing delays, and propagation delays in the channel. A simple Ethernet-based remote data acquisition system using IEC 61850 Sampled Values (SV) technologies is shown in the figure below.



Article Content

Jul 26, 2025

SEL-421 Protection, Automation, and Control System

This simple point-to-point solution with a strong cybersecurity posture is easy to implement. Apply the IEC-compliant SEL-421-7 SV relay to receive SV data from a remote merging unit via a network, or ...

Sep 01, 2025

GOOSE, MMS, and SV Protocols in Digital Substations

The Sampled Values (SV) protocol is a crucial protocol commonly used in digital substations to propagate high-speed, real-time analog and digital sampled values from IEDs to other ...

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IEC 61850 Communication Architectures and Services

This chapter introduces the IEC 61850 architectures and services. The Station bus and Process bus in the Protection, Automation and Control System are explained. Architectures like RPR ...

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Resilience of IEC 61850 Sampled Values-Based Protection Systems ...

A second SIPROTEC 5 protection relay from the same vendor subscribes to the SV stream and implements distance protection for the line between buses 6 and 7. The relay trip output is ...

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SEL Sampled Values (SV) Process Bus Solutions

In an SV-based process bus, relays perform protective functions and other control actions based on the data streams they subscribe to as well as direct communication from other devices. Relays send ...

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Performance of IEC 61850 Sampled Values Relays for a Real ...

IEC 61850 9-2, commonly referred to as SV, is the service that is used to exchange the raw power system samples from the station yard to the control house over Ethernet communication cables or ...

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How to calculate relay settings for IEC 61850-9-2 Sampled ...

The SV network latency can be used as a relay setting that defines the maximum latency acceptable by the protection system.

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SEL-487E Transformer Protection Relay | Schweitzer Engineering ...

This simple point-to-point solution with a strong cybersecurity posture is easy to implement. Apply the IEC-compliant SEL-487E-5 SV relay to receive SV data from a remote merging unit via a network, or ...

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Protection and Testing Considerations for IEC 61850 Sampled ...

While an SV relay can alarm for packet loss, a protection engineer must monitor for this alarm and address the root cause of the packet loss to ensure fast and reliable SV-based protection schemes.

Feb 01, 2026

IEC 61850 Sampled Values protocol

Typically, SV senders are synchronized to a global (master) clock in order to relay the exact time the Current/Voltage values are sampled. In this way the the receiver knows if the values are old or up to ...

Contact Us

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