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DRIVE CONNECTOR SINAMICS, DRIVETRAIN ANALYZER EDGE

Drive data analytics on your Industrial Edge platform – fast and secure data analysis

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Integration of the SINAMICS drives solutions to Industrial Edge



Industrial Edge is an open platform for integrating IT mechanisms into manufacturing to make software and data processing scalable, dependable, and easy to use. Drivetrain Analyzer Edge and Drive Connector SINAMICS are part of the Industrial Edge platform. This combination provides numerous options for easily integrating SINAMICS drives with data from other devices on the shop floor.

Optimized cybersecurity and speed

Industrial Edge is an on-premises solution. It ensures that all data is managed within the local network. This provides very tight control over data from a cybersecurity perspective and enables a secure multi-level architecture from edge to cloud. In addition, Industrial Edge offers connectivity with low latency. Speed is the key factor for a fast response, especially in the event of a fault. Drivetrain Analyzer Edge provides real-time data on the Industrial Edge platform, which can be fed directly and instantaneously into control systems or a live twin (digital twin in real time).



Drive Connector SINAMICS

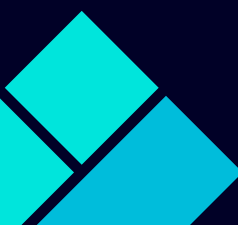
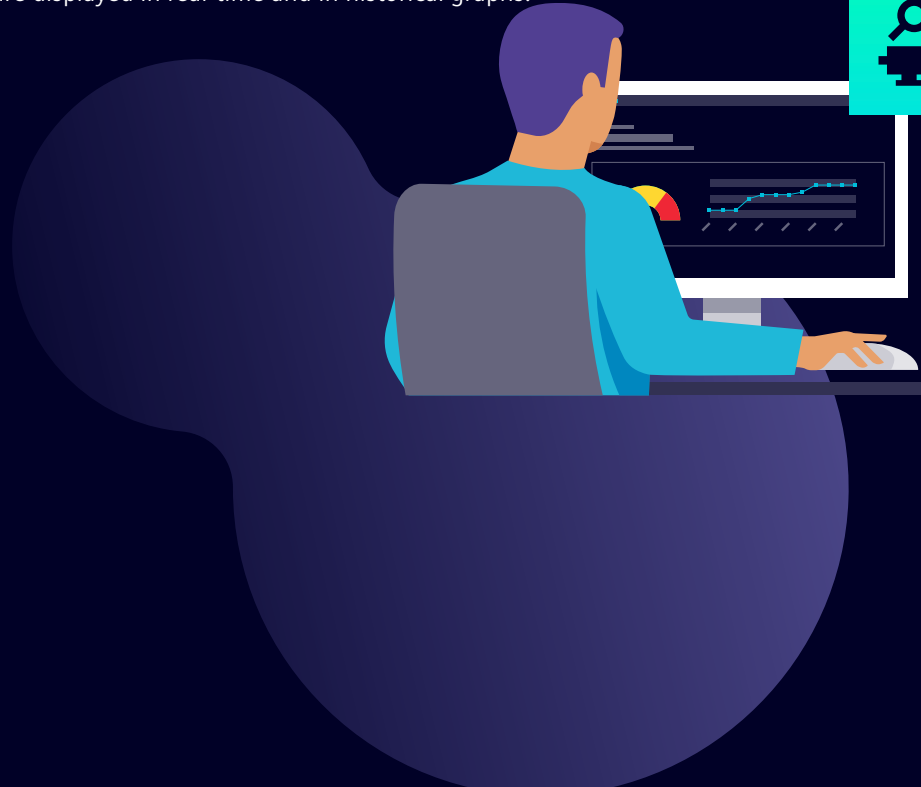
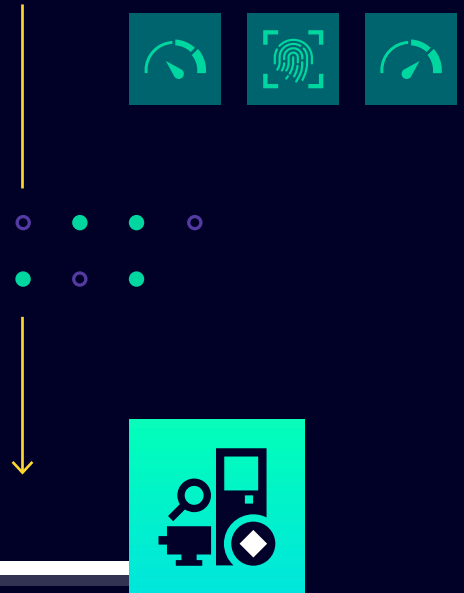
As an Industrial Edge application, Drive Connector SINAMICS enables a simple connection of SINAMICS drives to the Industrial Edge device. Drive Connector SINAMICS delivers data to the Industrial Edge device using three adapters (Low Speed, Fingerprint and High Speed) and a simulator adapter. These adapters are a SW interpretation of the diverse ways of receiving data from the drive. Drive Connector SINAMICS and its drive connectivity open the door to new, innovative analysis approaches.



Drivetrain Analyzer Edge

With the Industrial Edge application Drivetrain Analyzer Edge, SINAMICS drive systems can be monitored and analyzed using high-speed and low-speed data. The main benefit of this application is to identify the root causes of efficiency loss, reduce downtime and increase the sustainability of the connected systems.

Drivetrain Analyzer Edge processes and analyzes the data provided by the Drive Connector SINAMICS application using artificial intelligence and data analysis models. The Key Performance Indicators (KPIs) calculated by these models are displayed in real-time and in historical graphs.



Drive Connector SINAMICS

Easy configuration

Drive Connector SINAMICS provides easy configuration of how to acquire data from SINAMICS drives. Low-speed and fingerprint adapters do not require any changes to the drive firmware or parameterization. All configuration is done within the Drive Connector SINAMICS application.

High-speed adapter

With the high-speed adapter, Drive Connector SINAMICS provides a unique solution for the acquisition of high-speed data from SINAMICS drives based on CU320-2. The high-speed adapter enables continuous data acquisition at up to 8 kHz and is based on the SINAMICS Technology Extension TRCDATA (Trace Data). This extension buffers the captured data on the control unit (CU). The solution limits data traffic in the network and at the same time delivers high-frequency data from the drive in near real time.

Fingerprint adapter

You can use the fingerprint adapter function to capture time-defined snapshots of the drive data. These snapshots are triggered either manually, based on the time of day (hours and minutes), or by an external trigger signal. This can be a signal from the drive (related to speed or torque) or from the PLC (defined state of the technology). All this allows you to capture data of very dynamic applications in the same state and use it for further analysis.

Open data format

The Drive Connector SINAMICS low-speed adapter is fully compatible with the common Industrial Edge payload format. This means that the data from the low-speed adapter can be used in all other Industrial Edge applications capable of reading this format (e.g., IIH Essentials app). This makes low-speed adapter drive data highly expandable with other Industrial Edge applications.

The open payload format for fingerprint and high-speed adapters allows software engineers to connect and develop applications that meet their requirements without any special prerequisites. The open payload format for all adapters is accessible on the Industrial Edge device.

API interface

With the API functionality of Drive Connector SINAMICS, other Industrial Edge applications receive information about the drive list and the adapter list and their status. Furthermore, it provides functions for starting and stopping all adapters.





Drivetrain Analyzer Edge

Compatibility with SINAMICS drives

Drivetrain Analyzer Edge is developed together with Drive Connector SINAMICS. This allows easy use of drive data from different SINAMICS drives without additional effort. Drivetrain Analyzer Edge reads the payload from all Drive Connector SINAMICS adapters.

Sensorless solution

The Drivetrain Analyzer Edge solution does not require any additional hardware sensors. By using data from Drive Connector SINAMICS, Drivetrain Analyzer Edge can access drive data (torque, speed, temperature, etc.) with little effort. This benefits submerged equipment or hazardous areas where sensor placement is limited.

Basic anomaly detection

Based on low-speed data, Drivetrain Analyzer Edge is using statistical calculations and trend analysis to detect basic anomalies in the complete system.

High-speed data analytics

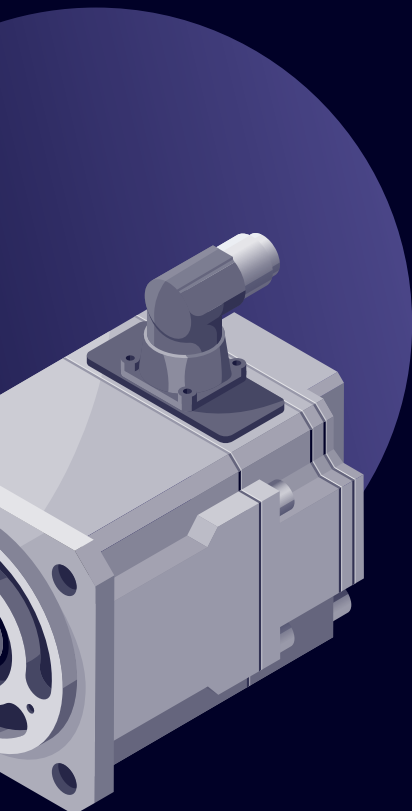
The condition of mechanical drivetrain components can be monitored by analyzing high-speed data (up to 8 kHz) using the Mechanical Anomaly Detector and customizable AI models. This requires no additional sensors or special equipment. This unique functionality protects the equipment from concrete and specific failure patterns that you use to train your AI model.

Energy efficiency

The energy efficiency model creates transparency regarding the energy consumption of the drivetrain for the SINAMICS G-series drives. This includes a detailed calculation of the drive's operating costs, CO₂ footprint and power and energy consumption. In addition, 12 KPIs are calculated for a better understanding of the drive behavior, including the power loss of the drive and motor, the loss ratio between the real and reference drive, the avoided losses compared to the IE2 drive and the energy, cost and CO₂ savings compared to the IE2 reference device.

Customized AI model

Develop your own AI model in Drivetrain Analyzer Edge. The feature of customizable AI models provides a framework for developing your own model, which is created within the specification of the project template and configuration file. You can visualize the KPIs of your own AI model using charts or gauges.



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