HEIDENHAIN



HEIDENHAIN OPC UA NC Server

The industry standard for machine tools

Application-based monitoring and control

HEIDENHAIN OPC UA NC Server

- **Future-ready communication**
- **Efficient production data collection**
- **Current machine messages**
- **Centralized automation**
- **Versatile extensibility**
- **Virtual testing**
- **Your path to OPC UA applications**



connected + machining

Superior industrial applications

Companies wishing to digitally network their manufacturing environment need effective technology with an assured future. Discover the HEIDENHAIN OPC UA NC Server, which provides HEIDENHAIN controls with an interface based on the OPC UA standard. This internationally standardized and widespread communication protocol makes it fast and easy to connect machines to your production IT network.

Effortlessly connect standard software applications, and save considerable time when implementing your own unique solutions.



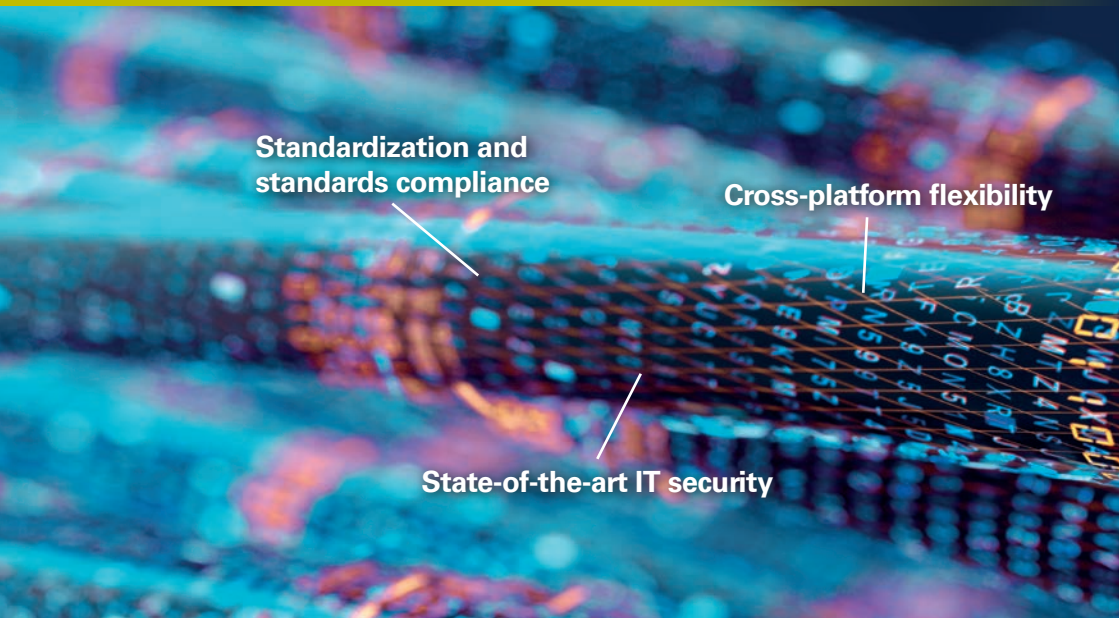
Future-ready communication

Efficient and secure digital communication in a machine-tool context requires standardized components, application-based information models and adherence to current IT security guidelines.

The HEIDENHAIN Connection Assistant simplifies the process of setting up a certificate-supported connection. Through the authentication, authorization and encryption of all communication, the product's security standard meets the recommendations of the German Federal Office for Information Security (BSI).

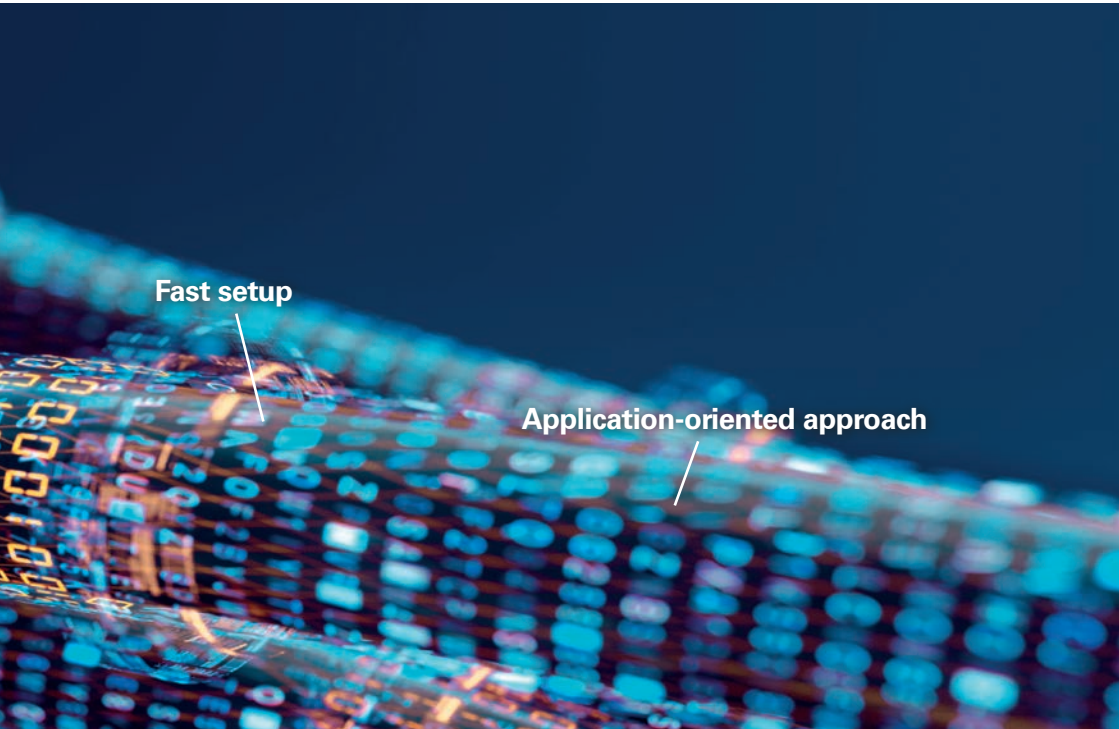
The OPC UA NC Server lets you connect applications to the control that have been programmed in various operating systems, including Windows, Linus and MacOS.

HEIDENHAIN OPC UA NC Server



You also save time when integrating new functions because the application-based presentation of information considerably reduces programming and configuration effort.

As an open communication standard, OPC UA is also ideal for translation into other protocols, including MQTT or REST, which can be realized via appropriate protocol gateways.





Efficient production data collection

Software applications for production data collection (PDC) provide a real-time view of the production status and productivity of your machines.

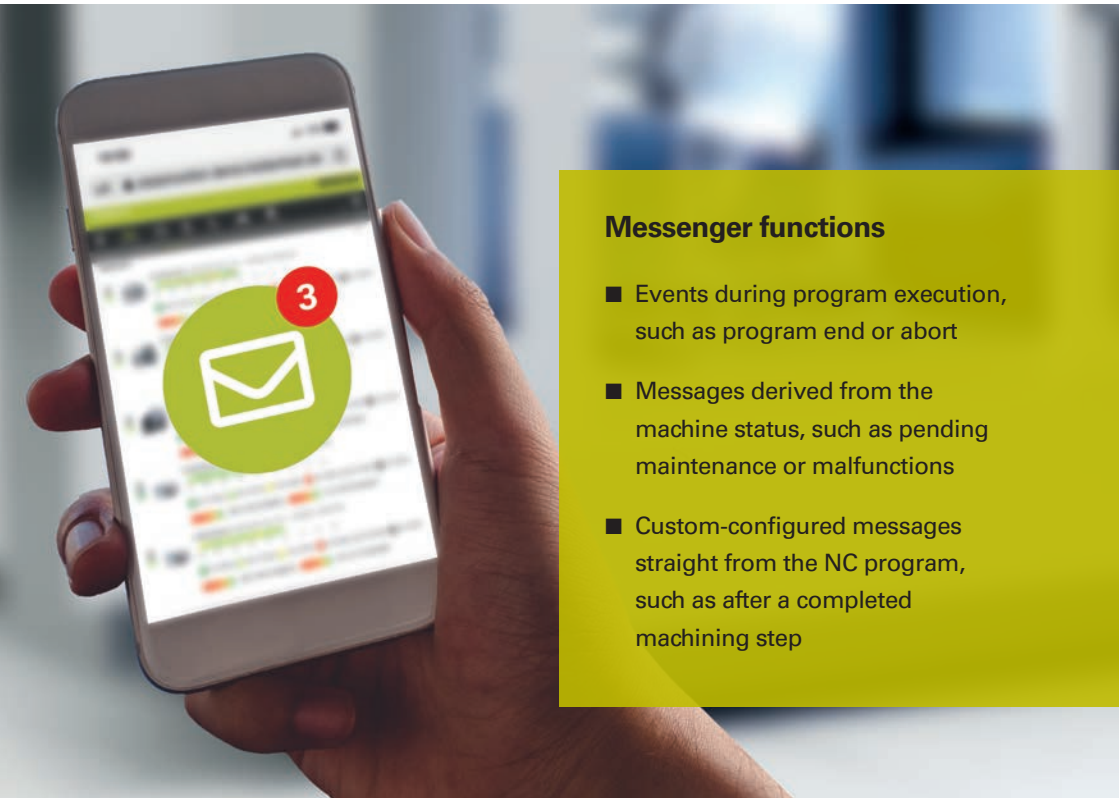
Is the current job still running, or was there an interruption?
How long did it take to run the job?

For questions like these, your PDC application requires information from your machine's CNC control. The HEIDENHAIN OPC UA NC Server reliably delivers the required information, thus providing a foundation for efficient production data collection. The analysis and presentation of your production data are key factors in attaining process transparency and optimization.

Current machine messages

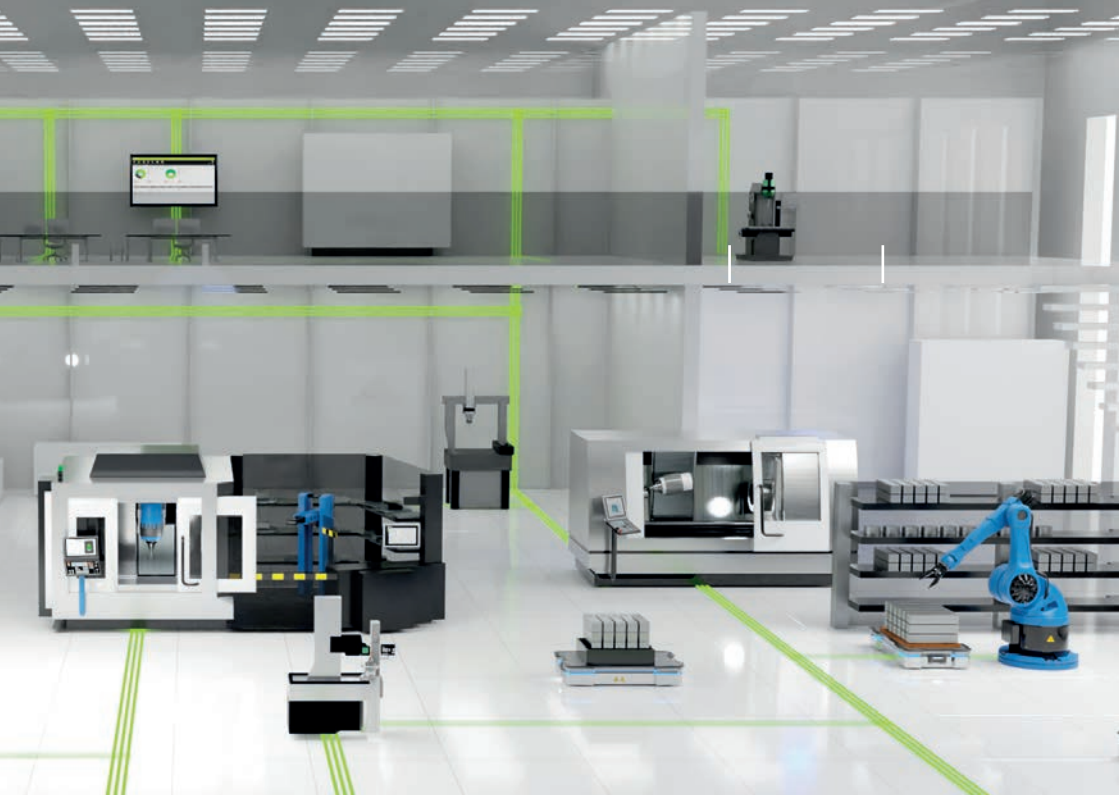
Stay informed by knowing when to change out a tool at the end of its service life or when to refill critical fluid levels to avoid program interruptions. If the application detects an unexpected event, the OPC UA NC Server enables the creation of service files for detailed analysis and rapid problem resolution.

PDC applications use machine messages to notify you of important events within your manufacturing environment. These machine messages are recorded by the HEIDENHAIN OPC UA NC Server and forwarded to the OPC UA application, allowing you to quickly respond to machine downtime or avoid it completely.



Messenger functions

- Events during program execution, such as program end or abort
- Messages derived from the machine status, such as pending maintenance or malfunctions
- Custom-configured messages straight from the NC program, such as after a completed machining step



Centralized automation

Efficiently automated machine tools minimize costs and ensure high availability during production. But constant pricing pressure and growing machine variety represent huge challenges for automation solutions.

The HEIDENHAIN OPC UA NC Server offers useful functions for every use case:

- Transferring NC programs
- Controlling program execution
- Outputting workpiece counts

Should the CAM system automatically transfer the program to the machine?
How many workpieces still need to be made for the current job?

From the smallest function to an extensive network: save time, and increase your process stability by avoiding manual input.

Intelligent tool management

Easily and reliably read and write tool data to save time and reduce the need for manual interventions. This intelligent support automatically highlights the relevant parameters based on the tool, thereby reducing the risk of errors and simplifying operation.

This solution can also be used for a digital shadow of a HEIDENHAIN control's tool management functionality on an external PC. As a result, all up-to-date tool data for all machines is available in real time. Locked tools are immediately identified, enabling maximum manufacturing visibility and efficiency.

It is also possible to transfer 3D models of tools directly to the control, where they are then available for cutting simulations and collision monitoring. This can now also be done with complex cutter shapes.





Centralized axis and spindle data

Certain types of axis and spindle data are centrally available and can be integrated into external systems for the automatic configuration of CAM postprocessors, for visualization on dashboards, or for further analysis. Along with configuration data and information about the currently active kinematics, it is also possible to call real-time data such as the spindle speed, axis feed rate, movement status, axis position, or motor temperature.

This data provides valuable information about the machine's condition, thereby supporting a transparent, data-based manufacturing environment without the need for manual adjustments on the control. As a result, you can efficiently use machine information and incorporate it into your digital processes.

Versatile extensibility

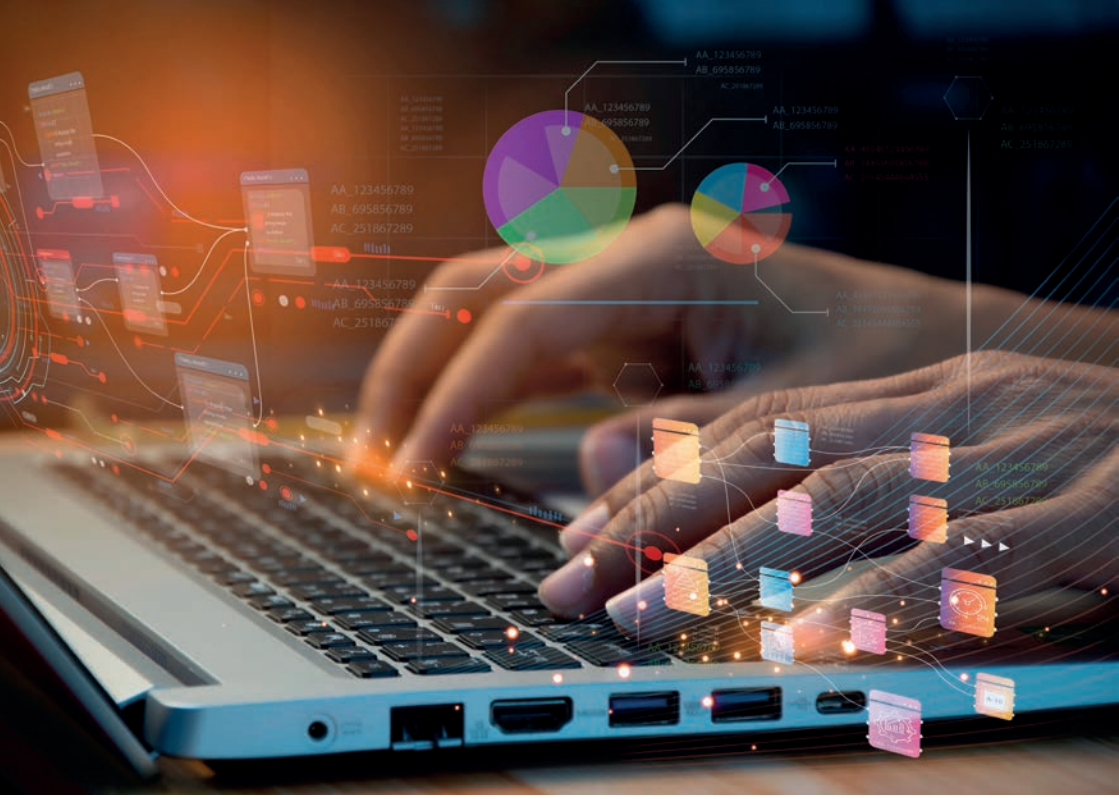
Whether you wish to record your production data, provide maintenance personnel with current machine messages, or automate your machine, the HEIDENHAIN OPC UA NC Server provides proven information models to make your job easier.

It's also a fast and flexible solution for obtaining more information. The machine manufacturer can extend the HEIDENHAIN OPC UA NC Server, giving you access to additional sensors, machine subsystems, or values from PLC programs. As a result, you can also provide your applications with relevant units of measure, limit values, and other information from your machine through OPC UA.



Extensibility for individual machines:

- Temperatures and fill levels (e.g., cooling lubricant)
- Counters and program durations (e.g., for maintenance tasks)
- Statuses and characteristics (e.g., of pallet storage magazines)



Functions with a practical focus

The functions of the OPC UA NC Server offer real value thanks to their practical focus and continuous further development. New functions are aimed at meeting real-world needs. Find out more at www.heidenhain.de/opcua-nc-server.

Application	TNC7*	TNC 640*	TNC 620*
Production data collection	16	10	08
Machine messages	16	10	08
Automation	16	11	08
Expansion of the OPC address space	16	16	16
Tool data management	17	17	17
Axis and spindle data	20	–	–

* Available for these software versions or later (TNC7 basic: 18 or later; TNC7 go: 20 or later)

Common industry security standard

Communication via OPC UA takes places in accordance with state-of-the-art security standards such as X.509 v3 certificates. In addition, machine manufacturers can provide user names and passwords for the corporate or machine network.

Permissions are managed in connection with the control's user administration functionality. User administration can be performed in the application itself, via a centralized server, or via a HEIDENHAIN control in the network. A built-in connection wizard supports you in establishing secure connections and in assigning user profiles, thereby enabling easy and secure integration into already existing IT and OT structures.

Security mode SignAndEncrypt
Security policies Basic256Sha256, Aes128Sha256RsaOaep, Aes256Sha256RsaPss





Virtual testing

HEIDENHAIN programming stations are based on the same software as the controls. They permit the creation, testing, and optimization of programs away from the machine.

Explore the HEIDENHAIN OPC UA NC Server live for yourself, or test new OPC UA applications on a virtual machine such as a HEIDENHAIN programming station. Current versions of the programming station feature a free, full-version demo of the OPC UA NC Server.

Free download:

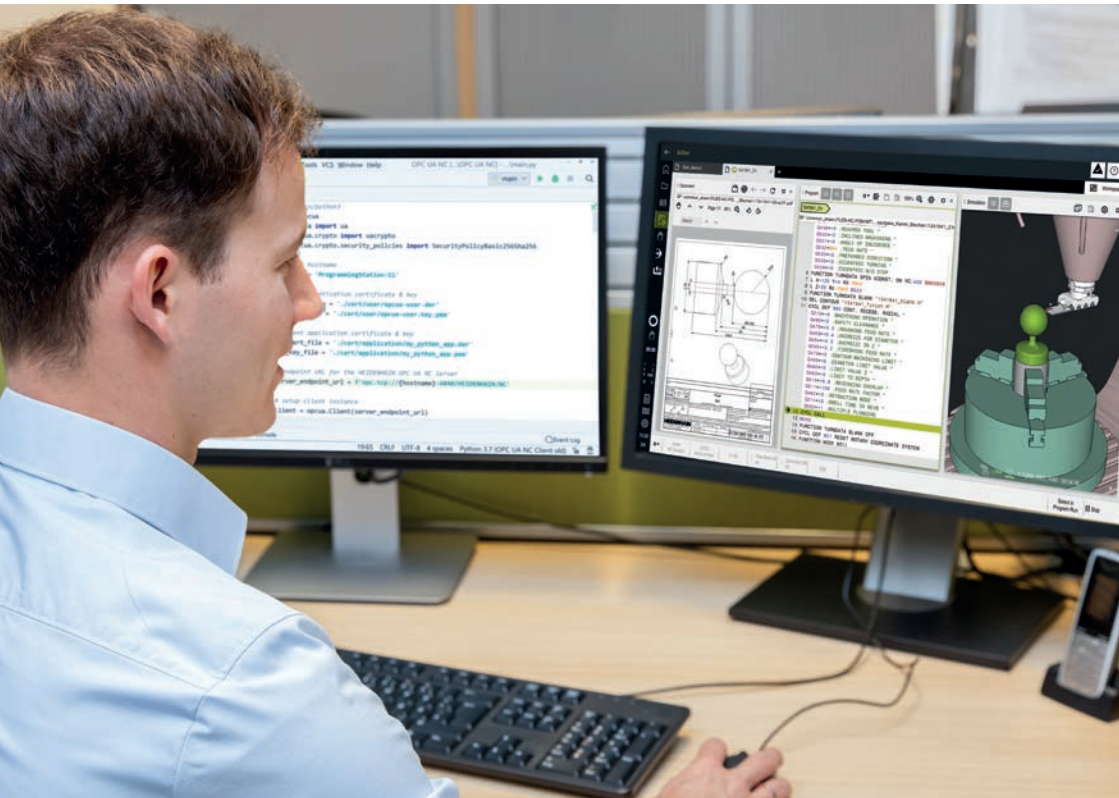
www.heidenhain.com/programming-stations

Your path to OPC UA applications

You can connect up to 10 OPC UA applications to a TNC control (one application per software option). If you have an OPC UA-capable industrial application and a network-connected machine, you can try this software option for a single trial period of 90 days.

SIK (56-61): ID 1291434-01 to ID 1291434-06
SIK2 (3-02-1): ID 1395873-01

More information:
www.heidenhain.de/opcua-nc-server





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