

INNOVATIVE NUMERICAL CONTROL SOLUTIONS.

10 CNC



DYNAMIC EVOLUTION

The 10 Series CNC Family

The 10 Series family of numerical controls offers a wide choice of technologically advanced solutions based on standard PC architecture. These solutions excel in a wide range of application sectors: from machine tools for metalworking, woodworking, glass-working and marble-working through to specialized high speed metal cutting machines.

1

10 Series CNC is the first control to offer such a wide range of versions covering applications ranging from 3 axes mono-process up to the simultaneous management of 20 processes and 32 axes.

2

Continuous commitment to the technological evolution of 10 Series family products is not only expressed in its advanced hardware and software, but also in the **innovative and ergonomic design of the new range of operator panels which include TFT monitors.**

3

Configuration flexibility of the **modular and integrated versions of the 10 Series CNC allows the simple creation of distributed control architectures, which can be connected by standard Ethernet communication networks.**

4

The controls in the 10 Series family are based on a **multi-platform software architecture: on one hand the real-time multi-task operating system offers accurate and safe axes control that can be completed with the system's own technological algorithms, and on the other, a standard Windows™ operating system gives the system a "friendly" operator interface** that can be customised with graphics and the specifications of the system's own machine or application.

5

10 Series CNC is easy to program and can be guided via dedicated graphic editors. Continuous digitising using either a Probe, Laser, manual digitalisation of existing profiles or CAD-CAM data is available for the automatic generation of the technological program.

6

To satisfy recent demands, in particular in the model and mould making sector and also in order to achieve better performances and finishes in conventional applications, **the 10 Series family has recently added an additional series of algorithms. These are defined as interpolated line sequence, for high speed cutting (HSC), based on geometric and dynamic optimisation in calculating paths in the form of splines. This high-speed cutting feature can directly interface with standard CAM systems.**



A wide range from 3 axes mono-process...

The extensive range of 10 Series controls offered is made possible by advanced 64 bit modular hardware structure based on standard PC architecture. **Full compatibility of the 10 Series control functions guarantees application portability and scalability over the entire range.**

The compact 10/110 version offers an excellent price/performance ratio in applications with a limited number of axes without having to compromise

any of the functionality offered in the modular versions: a single "box" incorporates the CNC for controlling up to 3 interpolated axes and spindle, the operator panel with TFT 10.4" colour monitor, operator console, machine I/O and Ethernet communications.



The "building block" hardware architecture of the **10/510 speeds up configuration and integration combining the CNC and the PC with the TFT operator panel.**

The concept of basing the design on elementary hardware modules that can be combined in various configurations gives the possibility of selecting the CNC

according to the type of tool machine: **from the 10/510 version without an operator panel where**

the operator interface is managed by an Office PC, to the Blink 10/510 and OpLink 10/510

versions where the CNC is incorporated with the 10.4" TFT operator panel, **to the 10/510 WinLink version where the CNC and the PC are integrated in the WinLink operator panel with the 12" TFT.**

With the introduction of the 10/510, OSAI offers a more powerful and flexible CNC guaranteeing full compatibility with previous products with a configuration that can manage up to 4 parallel processes, up to 6 analogue axes, up to 8 axes with SERCOS™ digital interface or with FastWire, the OSAI proprietary digital interface, and standard field buses such as INTERBUS and PROFIBUS-DP.



... up to 32 axes and 20 processes in a single CNC

The modular "rack" versions are the 10/585 Super Multi-process and the 10/565. The 10/565 can manage up to 16 analogue axes or 16 digital axes with Sercos interface and up to 4 processes. **The 10/585**

can manage up to 20 processes and 32 axes with digital SERCOS™ interface or 24 axes with the analogue interface.

WINLINK brings the CNC into the Windows™ world...

Ease of use, high reliability, reduction in space and flexibility of installation, together with the pleasing characteristics and refined style are **the innovative elements at the root of the development of the new range of operator panels with LCD displays.**

Blink is the basic version with 10.4" TFT monitor. **OpLink** incorporates the operator console along with the 10.4" TFT monitor. In this version 6 function keys are available with LEDs that can be customized by the manufacturer via machine logic.



WinLink is the best solution if you require a Windows environment incorporated in the CNC operator panel.

The standard hardware architecture based on a Pentium™ microprocessor with integrated hard disk, floppy disk and Mouse Pad, dynamic RAM memory expandable up to 128Mbyte, integrated Ethernet communication interface, a 12" coloured TFT operator panel and powerful DLL libraries. These DLL libraries interface all the CNC's functions, **allowing the development of real SCADA graphic tools, customised according to specifications requested by the application, through "object oriented" languages such as Visual Basic™ and Visual C++™.**

Moreover, using the new COM/DCOM technologies, aimed at distributed architectures, on which the OSAI DLL libraries are based, it is possible to use the same graphic tools, located in different places in the factory's network.

13 function keys and the "yellow key" for switching the video and keyboard from the CNC environment to the PC environment, complete the WinLink configuration.



... for solutions in distributed architectures



From a single WinLink Operator Panel it is possible to fully control the system functions connected in the network.

The programs run on the various controls can be synchronized by part programs using the dedicated instructions on the ASSET extension or with a WinLink supervision program.

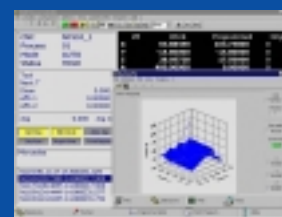
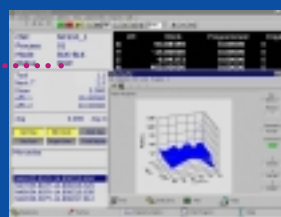


The operations of a numerical control may be duplicated on various WinLink Operator Panels connected in the network. This function is particularly useful in large machines to facilitate man-machine interaction from different positions.

For those who do not have the necessary resources and skills for constructing the graphic tools described above, **WinNBI (Windows Network Based Interface)** provides a "friendly", graphics-oriented operator interface, that can be customized using only the mouse and techniques such as "Point & Click" and "Drag & Drop" without the need for any Windows programming knowledge.

With WinNBI video screens can be created that can be customized and configured by inserting elementary objects such as axes heights, Feed, Speed, G, M, T, functions, with the possibility of changing fonts and colors, so that you can create different video screens, each of which can be combined in one or more processes according to the specifications requested by the application.

Moreover, based on COM/DCOM technology oriented to distributed architecture, **WinNBI can interface with different CNCs and can be distributed to various points in the factory network.**



"Field" management with a higher performance

All the versions of the 10 Series control family offer modules for managing Inputs and Outputs that can be integrated in the rack or distributed versions using a high speed, fiber optic digital link.

Industrial Automation field management requires an increasing number of control systems that cannot only be integrated at network and component levels but are also simple and fast to use.

The Standard INTERBUS® and the new standard PROFIBUS-DP®, interfaces integrated on the 10 Series CNCs and the new line of modular I/O devices, the same for both the INTERBUS, and the PROFIBUS-DP®

extend the possibility of using standard components, making their installation and maintenance simpler and easier.



FastWire, the new OSAI protocol for managing I/O and digital drives.

Based on multi-drop architecture, by using 4 parallel lines, **it transfers data at a speed of 90 Mbauds**

managing up to 64 nodes.

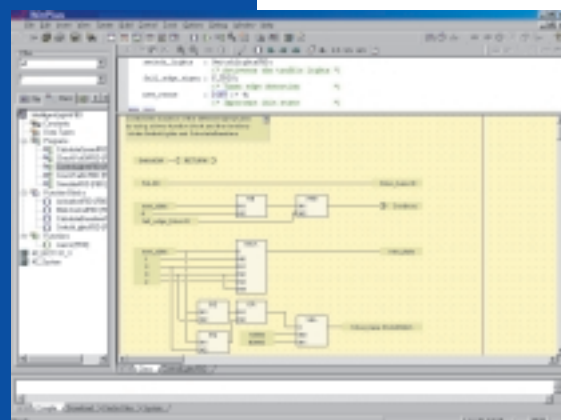
Thanks to the hardware management of telegrams, the number of nodes does not jeopardize transmission speed and guarantees synchronization of the digital drives giving a precise and accurate control of axes especially in high speed machining operations where surface finish, accuracy and working speed are fundamental requirements.

WINPLUS, the new IEC 61131-3 standard tool, completes OSAI's offer in the "field" management area.

Based on Windows™ operating systems, it is a IEC 61131-3 development tool for creating machine

logic, with 4 different programming languages for a wide range of applications:

from contact language (ladder diagram) to function block language, from a structured language to a "flow chart" style language. A symbolic debugger allows the active program to be followed step by step, "break points" can be inserted and the value of variables monitored. The whole unit is integrated in a "friendly" environment and is graphic oriented.



Open architecture for personalized applications

The open architecture of the 10 Series family of numerical controls allows the development in a real-time multi-DOS programming environment integrated with the Kernel of the system where all the required information are accessible via the powerful libraries in “C” language. With knowledge of his specific requirements, the machine manufacturer can personalize the internal algorithms or develop new functions as required.

Dedicated programming tools

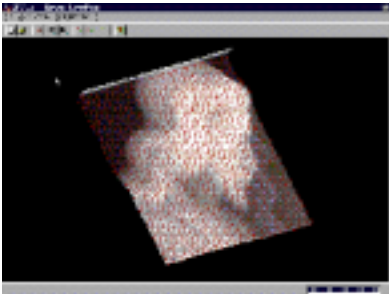
The programming of 10 Series numerical controls is based on the standard ISO language. It has been simplified by the use of various programming tools.

Continuous laser digitizing

With continuous laser scanning it is possible to digitize the profile of a sample model. The profile is thus machined using an integrated CAD-CAM for the automatic tool path generation.

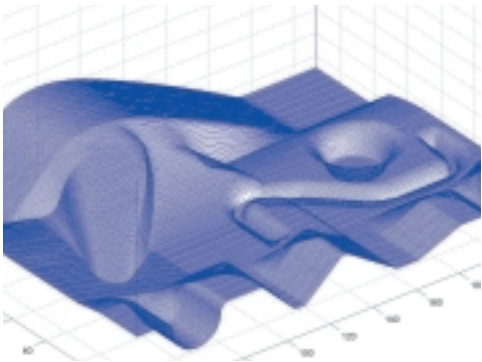
Tool Center Point

The TCP functions allow simple and instant programming of 5 axes machines with up to 3 linear axes and 2 rotary axes. The work profile may be programmed with reference to the tool point in order to keep the tool center point on the desired profile, without the need to program additional axis moves.



Path Optimizer

To satisfy recent demands, in particular in the model and mould making sector and also in order to achieve better performances and finishes in conventional applications, the 10 Series family has recently added a new series of algorithms to its normal profiles defined as interpolated line sequence, for high speed cutting (HSC), based on geometric and dynamic optimization in calculating paths in the form of splines. A software instrument operating under Windows™,



the “Path Optimizer”, is also offered that takes an ISO part program generated by CAM as its input and generates as its output a group of fifth grade polynomials generated via appropriate numeric interpolation algorithms based on B-Splines. These polynomials that optimally describe the profile previously defined via points, are then executed directly by the CNC.

The 10 Series CNC family



OSAI S.p.A., the future as a tradition. Founded in 1957 as the manufacturer of CNC within Officine Meccaniche Olivetti. After being part of the Allen-Bradley/Rockwell Automation group, OSAI today is a dynamic, independent company that develops products

for the widest range of applications: from metal machining to all those sectors

where CNC has become widely used only in recent years, in particular in timber and glass processing, where it is the world leader. More than 50,000 CNCs installed world-wide. Active collaboration with more than 200 European manufacturers. More than 6,000 end users supported on a regular basis.

The following products complete the OSAI offer:

10 GP The new 10 GP version is a general purpose system for motion control designed for industrial automation applications such as the assembly and transportation of materials, bending and cutting processes, cylindrical or SCARA robots.

DAC - DSC The DAC and DSC product lines complete the integrated OSAI package. The DAC line offers a wide range of digital drives and brushless motors featuring torque, speed and inertia control to best meet all application requirements. The DSC line includes digital vector drives and asynchronous motors for multi-spindle control. DAC and DSC drives also offer SERCOS™ digital link. A powerful graphics tool for Windows™ is included to facilitate simple commissioning.



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