Hi-Tech CNC Systems

THE RIGHT PARTNER

OPEN*control* Product Overview

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OPEN*control* Family

Hi-tech Numerical Control family

OPEN*control*

Osai Prima Electro Numerical *control*

Index

- OPEN*control* system architecture
- OPEN*control* CNC models
- OPEN*control* software
- Operator Panels and Handheld Terminals
- Servodrives & Motors
- I/O modules

Hi-Tech Numerical Controls & Peripherlas

OPEN*control*

- **high scalability**
  hardware configurations
  computational power
  software performances
- **suitable for several applications**

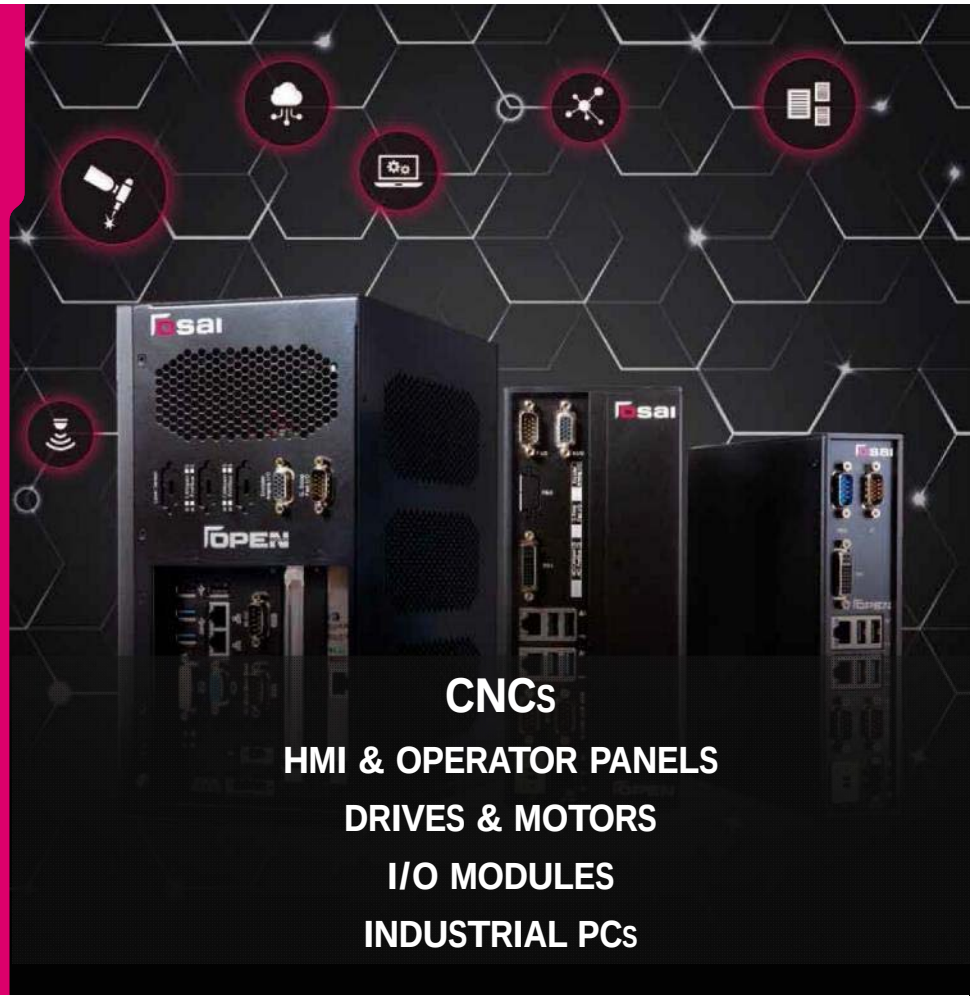
MARKETS:

WOOD & COMPOSITES

GLASS & STONE

ALUMINUM & SHEET METAL

ADDITIVE



OPENcontrol SYSTEM ARCHITECTURE

Single hardware module

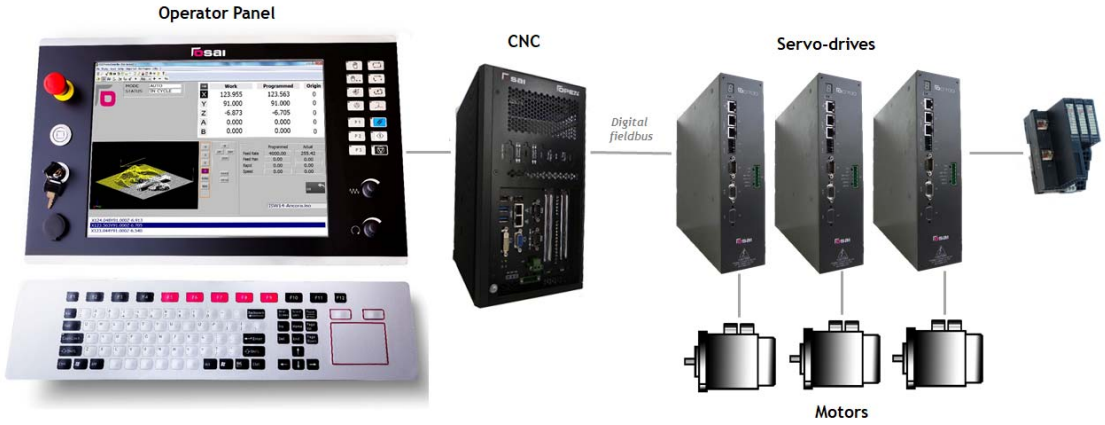
Real Time and HMI running on the same HW

One fieldbus for drives and I/Os

Optional secondary fieldbuses for I/Os and devices

Single Operating System
Real Time SW and HMI on WEC7
or
Dual Operating System
Real Time SW on WEC7
HMI on Windows 10 IOT.
Real Time and HMI connected through virtual network

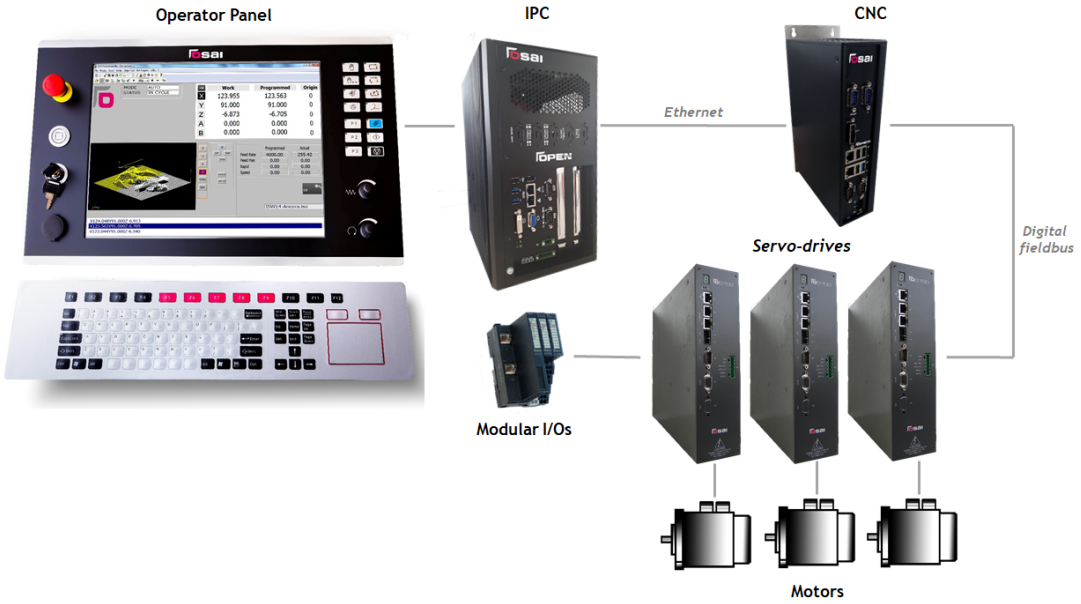
Single module configuration



OPENcontrol SYSTEM ARCHITECTURE

- Two networked hardware modules
- Real Time on CNC module, HMI on PC
- One fieldbus for drives and I/Os
- Optional secondary fieldbuses for I/Os and devices

Dual module configuration



OPEN*control* CNC models

Four CNC models available:
OPEN*smart*, **OPEN***key*, **OPEN***prime* and **OPEN***prime-i*

Model choice is determined by the required perfomances in terms of block cycle time, minimum system tick, number of Processes and Axes, number of fieldbuses and devices used by specific configurations

OPEN*prime*
OPEN*prime-i*

OPEN*key*

OPEN*smart*

OPEN*control* hardware

OPEN*smart*
entry level
- Up to 8 Interp. axes
- Up to 16 total axes
- Up to 2 processes
- Min tick 2 mSec.

OPEN*key*
advanced applications
- Up to 16 interp. axes
- Up to 24 total axes
- Up to 4 processes
- Min tick 1 mSec.

OPEN*prime*
heavy applications
- Up to 64 interp. axes
- Up to 64 total axes
- Up to 24 processes
- Min tick 500 microSec.

OPEN*prime-i*
time critical applications
- Up to 64 interp. axes
- Up to 64 total axes
- Up to 24 processes
- Min tick 500 microSec.

Performances*

* Computational power, Flexibility, Fieldbus range, Features

CNC Technical data overview

	OPENsmart		OPENkey			OPENprime/prime-i		
CNC								
Interpolator Tick	2 ms		1ms			500µs		
Max interpolated axes	8		16			64		
Max axes number	16 (*)		24 (**)			64 (***)		
Processes	2		4			24		
Retentive memory	Hardware							
OPERATING SYSTEM								
Dual O.S.	Available							
PERIPHERALS								
LAN	1		up to 2			2		
RS232	1							
RS232/422/485	1							
USB	1 x 3.0* 3 x 2.0					2 x 3.0 2 x 2.0		
Video	DVI-I					DVI-D + VGA		
FIELDBUS								
Fieldbus 1	EtherCAT	ML III	EtherCAT	ML III	ML II	EtherCAT	ML III	ML II
Fieldbus 2	CAN	EtherCAT	CAN	EtherCAT	EtherCAT	CAN	EtherCAT	EtherCAT
Fieldbus 3	-	-	-	CAN	CAN/Profibus	-	CAN	CAN/Profibus
INTEGRATED I/Os								
Power ON enabling Out	YES							
Fast I/O	1 In		3 Out, 4 In					
Analog In 1	-		12 bit res./± 10V o 4÷20 mA					
Analog In 2	-		12 bit res./± 10V					
Analog Out	-		1 x 16 bit res.					
Encoder In	-		1 x ABZ Inc.					

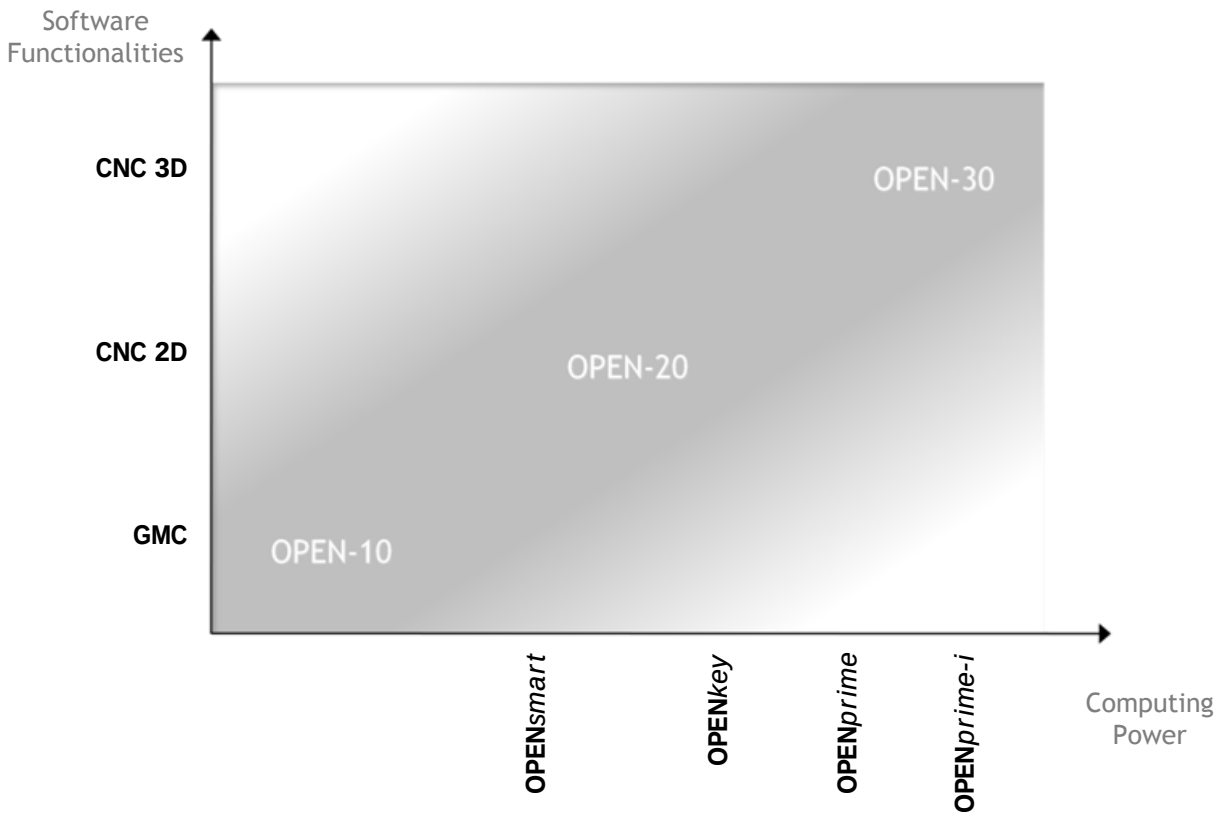
(*) of which max
8 Mechatrolink

(**) of which max
12 Mechatrolink

(***) of which max
62 Mechatrolink

OSAI

OPEN*control* software

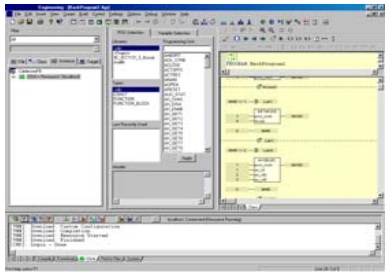


The graphic just shows typical hw and sw configurations pairing
One unique software release is used for all CNCs
All sw configurations can be used on all hw models

OPENcontrol 100% customizable

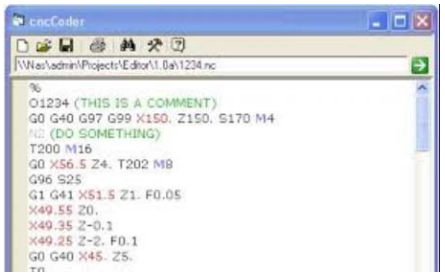
- Machine Logic
- HMI
- ISO programming
- Communication library

Integrated SoftPLC

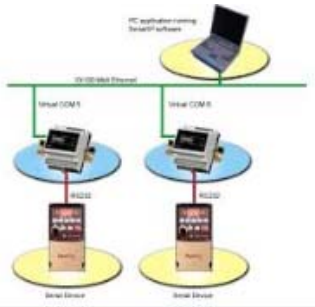


WinNBI

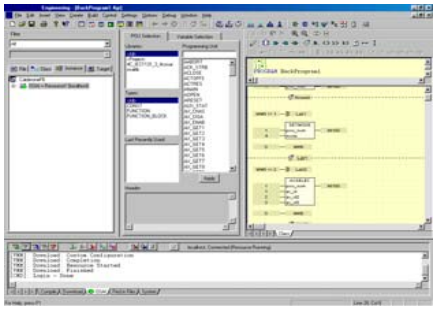
Programming



Communication library



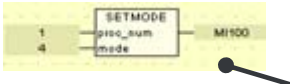
WinPLUS Integrated SoftPLC



- Development environment based on IEC 61131-3
- IL, LD, ST, FB, SFC programming languages
- Integrated machine logic environment
- Multi-tasking real-time execution
- Max 250 tasks, 10 priority levels
- Cyclic task with min. scheduling of 250 µSec.
- User event-driven tasks
- Event tasks associated to M, S, T functions
- On-line debugging (tracing, breakpoint etc.)

- Programming environment for full system customization
- Powerful development environment
- More than 350 functions available
  - **HMI data exchange**
  - ISO program data exchange and synchronization
  - **Axes motion and interpolation**
  - File access
  - Media and fieldbus access
  - Data Table access
  - Part Program management
  - Drive parameters access
  - Several base functions

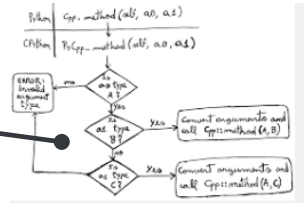
Standard Functions



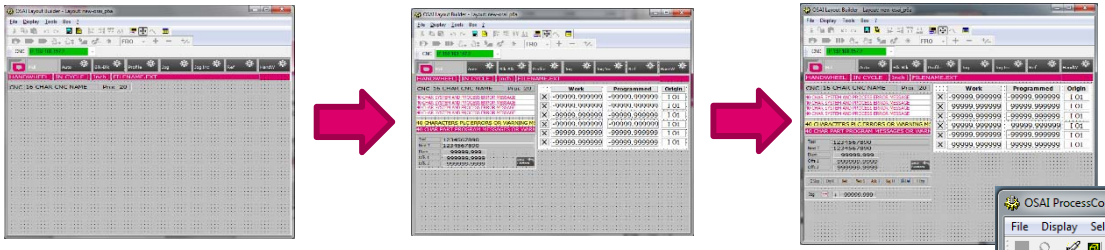
Custom Functions

C++ functions integration

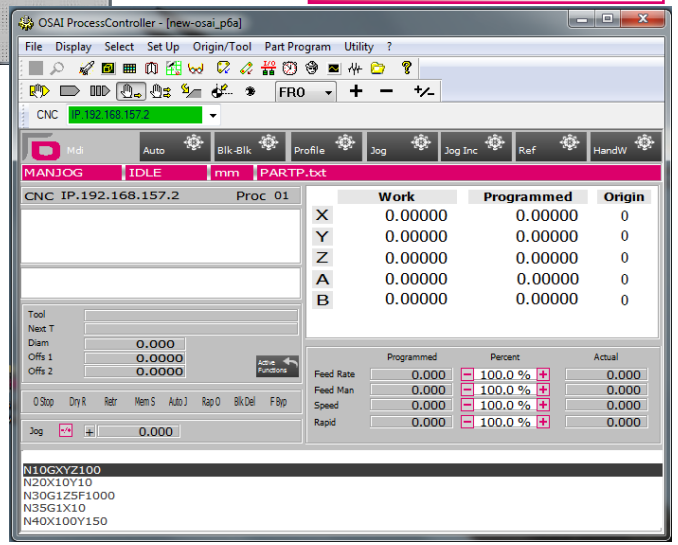
- Synchronization with the system
- System library access



HMI customization



ProcessController/LayoutBuilder



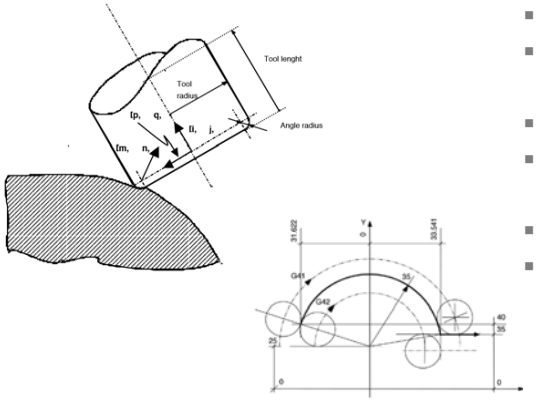
- Several standard user screen panels supplied with CNC software
- Easy screen panels customization based on automatic graphical objects
- No software required for automatic objects
- Data exchange with PLC for custom object management

OPENcontrol software

Key features

Axes Management

- Coordinated, Auxiliary, Pseudo and Spindle axes
- Linear and Rotary Axes
- Rollover Axes
- Diameter Axes
- Gantry Axes (Split)
- Dual Axes (UDA, SDA)
- Master/Slave axes (XDA)
- Dynamic follower axes (AXF)
- Gantry Axes (Split)



Axes Motion

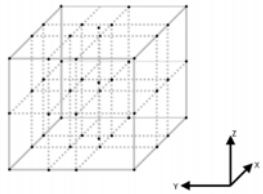
- Linear, Circular, Circular 3D, Helical, Helical 3D and Spline Interpolation
- Rounding Corners
- Axes Reference System
- Tool radius Compensation
- Motion Modality (accel and decal RAMP parameters)
- Linear Ramp
- S Ramp
- Trapezoidal Ramp
- S Ramp with Jerk limitation
- Point to Point and Continuous Modewith Lock Ahead
- Axis motion filters (FLT)
- Velocity and Acceleration Feed Forward (VFF and AFF)
- Tangential Axis Control (AXT)
- Constant or Variable Pitch, Multi-start Threading (G33)

Motion Features

- Axis Migration and Sharing
- Zero Shift
- Multi Block Retrace
- Memory Block Search (Program restart)
- Active Reset
- Protected Areas
- Working Cycles for Turning Systems
- Part Program Execution Time Estimation

Special Features

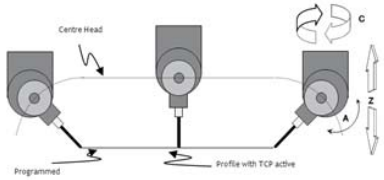
- Multi-Axis Electronic Cam
- Bidirectional axis calibration
- Volumetric and Cross Compensation, Axis Calibration

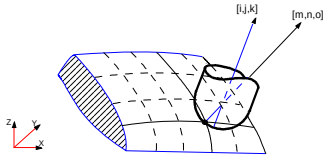


Key features

3D Axes Motion

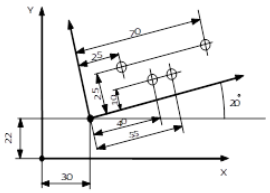
- Circular 3D interpolation
- Tangential axis control
- Tool Centre Point (TCP)
  - TCP for Machine with Double Twist and Prismatic Heads
  - TCP for non-standard kinematics
  - TCP with tool direction axis and relevant rotated plane
  - TCP with Spline (High Speed Machine)
  - Tool Direction axis movement
  - TCP on rotated planes
  - Selection by program of active kinematics

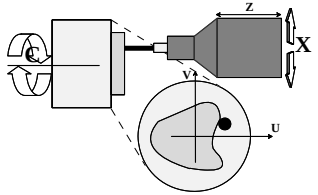




Virtualization

- Programming on Rotated Plane
- Polar Coordinates
- Cylindrical Coordinates
- Non-orthogonal axes management





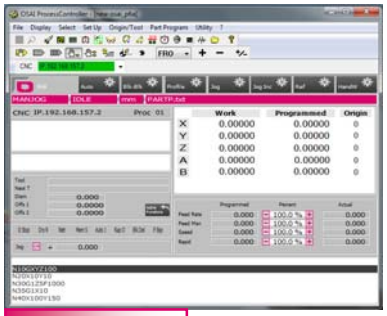
Various

- Unit of measure change
- Shared Axes
- Axis Migration
- Parametric (macro) language
- Machining canned cycles
- Probing cycles
- Part-program subroutines
- XML macro interpreter

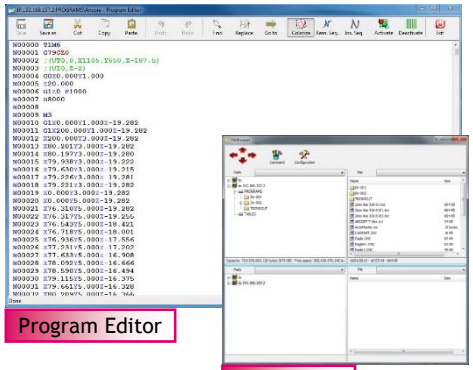
OPENcontrol software

WinNBI Windows Network Based Interface

End-user tools. Programming and machine operations



ProcessController

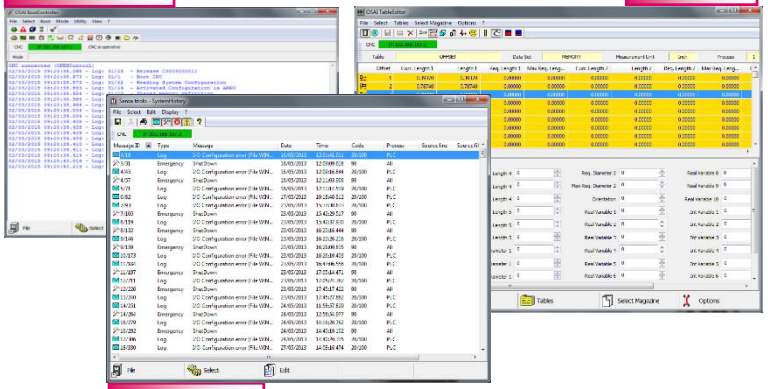


Program Editor

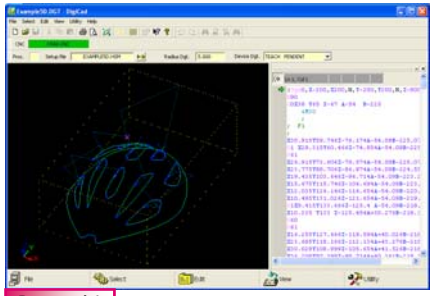
File Browser

Boot Controller

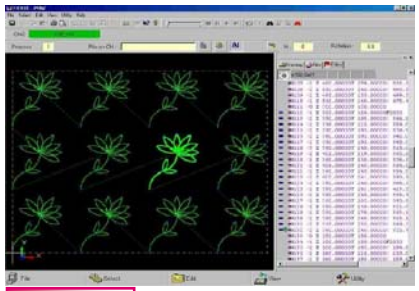
Table Editor



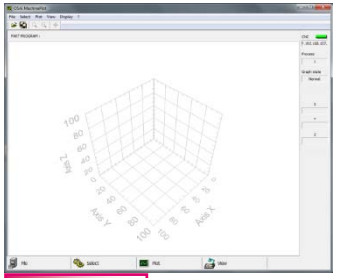
System History



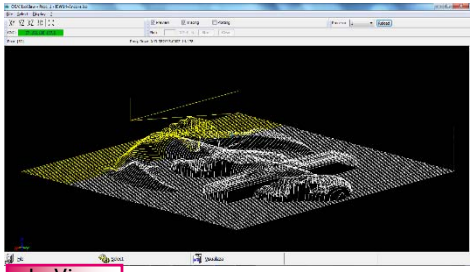
Digicad *



PathView *



MachinePlot *



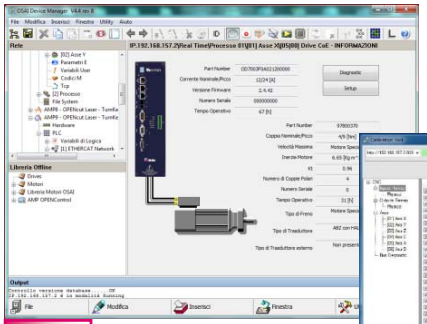
IsoView

* Not available for single platform single O.S. configuration

OPENcontrol software

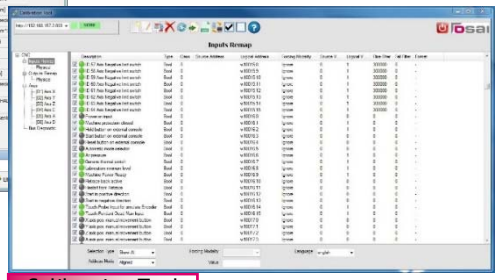
WinNBI Windows Network Based Interface

OEM tools. Machine Setup and Diagnostic



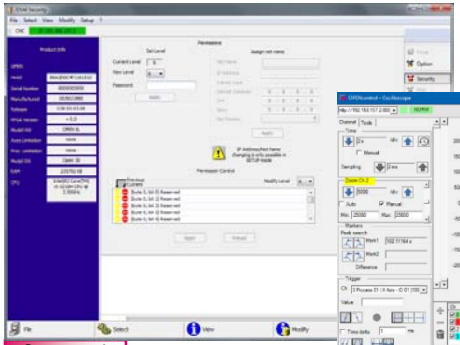
ODM*

- System configuration
- Real Time servo-driver and devices parameter management
- System tuning
- Motors Library



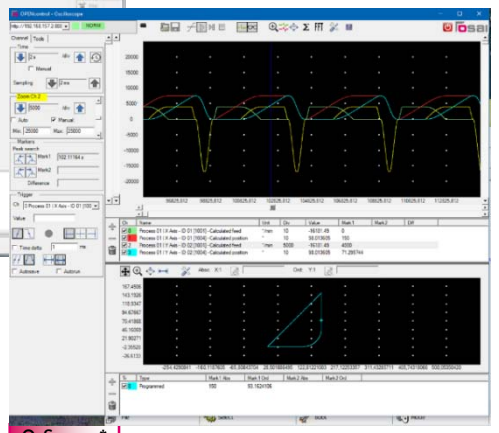
Calibration Tool

- I/O easy remapping
- I/O forcing (set, negate etc.)
- I/O delay management
- Real Time devices parameter management
- Powerful EtherCAT diagnostic



Security*

- Software release management
- Backup and restore
- Options management

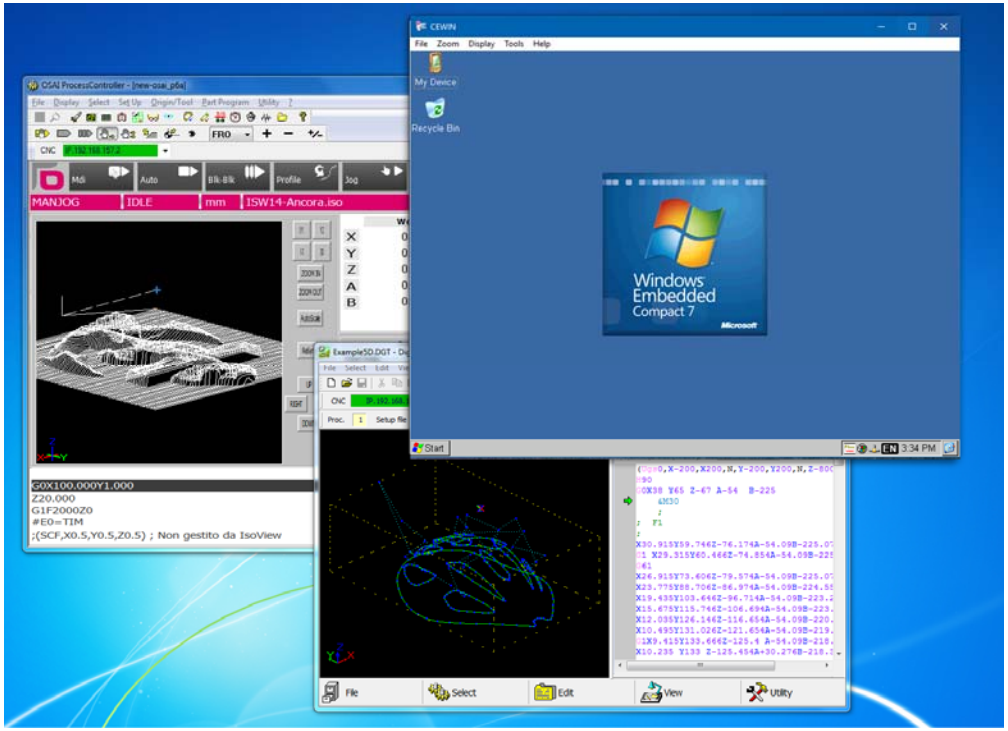


O-Scope*

- Simultaneous display of axes trace
- Simultaneous display of CNC and PLC variables
- Simultaneous display with Part Program blocks
- PLC and System task monitoring
- Multiple selection of different traces
- Horizontal and vertical axis slider

* Not available for single platform single O.S. configuration

OFFLINE CNC SIMULATOR (DIGITAL TWIN MACHINE)



Windows 10, Dual O.S. layer, Windows CE (WEC7), CNC software running on a standard PC

- Development, running and debug of PLC programs
- Writing and testing of part programs
- Development and debug of software communicating with the CNC
- Same behavior as for CNC, same software used on both environments
- Same HMI used for the “real” CNC.
- Updates with the same software and same procedures used for the “real” CNC
- Absence of connection with devices (servo-drives and I/Os), if needed, can be simulated via the PLC.

Communication Library

- CNC boot phase management
- Variables exchange
- Executive commands
- Data Table access
- Technological parameters set and monitor (feed, feed % etc.)
- Part Program management
- File exchange
- CNC messages management
- System functions

Supervisor applications

Factory automation

Factory network

TCP/IP

Commands, Data, Files exchange

Custom HMI applications

HMI

Industrial PC

Commands, Data, Files exchange

TCP/IP

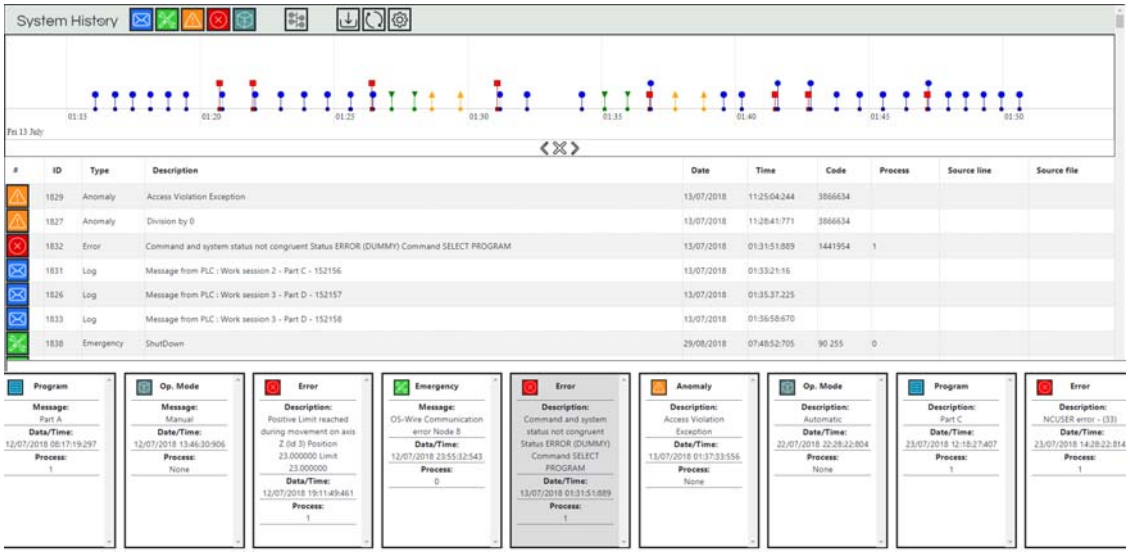
OPENcontrol

i4.0 on-board Servers

In order to guarantee the connection to external systems OPEN*control* on-board Servers implement standard and vendor-independent Industry 4.0 protocols such as:

OPC UA (Open Platform Communications – Unifed Architecture)

MQTT (Message Queue Telemetry Transport) protocols



In addition, OPEN*control* includes a **data-base** containing a wide quantity of information and data (same that can be transmitted run-time via OPC UA and MQTT) permanently stored and historicized.

Historicized data are available for external diagnostic applications connected to the NC via **SOAP protocol** and can be displayed on the control in the system journal (System History) application for machine maintenance.

OPERATOR PANELS & HANDHELD TERMINALS

Each OPEN*control* CNC model can be combined with different operator interfaces, from the simple Touch Screen monitor, to OPEN*console*, the High End modular Operator Panel.

COMPACT*console* TS2

Ergonomic Operator Panel including all commands required to manage machines tools
Thanks to the high configuration flexibility it can easily suit any type of application

- 15” Touch Screen Monitor (1024 x 768)
- Customizable Control Panel (standard functions: operation mode selection, Cycle Start, Hold, Reset plus 3 buttons for general functions)
- 2 customizable rotary selectors (standard functions: spindle and cutting speed override)
- Emergency button set-up
- Set-up for 2 electromechanical elements (buttons, selectors etc.)
- 1 USB port

COMPACT*console* TS2

OPERATOR PANEL	
Control panel	
Emergency Stop	Optional
Set-up for electromechanical buttons	2 with 22 mm Ø hole for standard buttons
Cycle Start	YES (customizable)
Cycle Stop (Hold)	YES (customizable)
Reset	YES (customizable)
Operation mode selection keys	MDI, Automatic, Block by block, Jog, Jog Incremental, Homing, Return on profile, Handwheel (customizable)
Rotary selectors	Feed rate Override (customizable) Spindle speed Override(customizable)
Customizable OEM keys	3
USB connection	1 with protection cap
Connection	EtherCAT
Monitor	
Dimensions / Display	15" - 4:3
Resolution (pixels)	1024 x 768
Connection	VGA / DVI
Touch Screen	Resistive

KEYBOARD	
Layout	USA
N° of keys	87
Pointer	Touch-pad

OPEN*console*

OPEN*console* has been designed to meet many different application requirements.

Its modules can be combined in order to create a customized interface suitable for several machining types and for numerical control machines.

Modular HMI system

- 17” – 19’’ Touch Screen Industrial Monitor (1280 x 1024)
- Main MTB Panel
- MTB Panel extension (customizable)
- Keyboard with touch-pad or track-ball

OPEN*console*

Monitor

- Monitor 17” or 19” Touch Screen
- VGA and DVI connection
- 4:3 format

MTB panel

- EtherCAT fieldbus
- Emergency push-button
- CNC specific push buttons
- Feed override knob (configurable)

MTB panel expansion

- Customizable 7 elements (keys, push-buttons, lamps etc.)

Keyboard

- 101 keys US keyboard
- Touch Pad or Track Ball
- USB port

OPERATOR PANEL	
Monitor	
Size	17” o 19”
Resolution (pixels)	1280 x 1024
Connection	VGA / DVI
Display ratio	4/3
Touch Screen	Resistive
Control panel	
Emergency Stop	YES
Drives ON/OFF	YES
CNC power ON/OFF	YES
Cycle start	YES
Cycle Stop (Hold)	YES
Reset	YES
JOG + / JOG -	YES
Mode selector	Automatic, Manual
Mode Lock key	YES
Override controls	Feed Rate (customizable)
OEM Custom keys	On additional module
Connections	EtherCAT
KEYBOARD	
Layout	US 101 Keys
Pointing device	Touch-pad / Track-ball
Power Supply	USB
Type	Silicon keyboard
Operating Temperature	0°C to +50°C
Humidity	10% to 90% no condensation

Industrial Monitors

Complete line of industrial monitors for panel mounting

Resistive touch screen
Different types of input ports
Solid and light metal frame.

All models are supplied with a 24VDC and include an adapter for 220VAC power supply

A remote controller for front calibration allows modifying settings without opening the electrical cabinet.

With a format ranging from 10.4” (resolution 800x600) up to 17” (resolution 1280x1024), these monitors suit a wide range of applications being the perfect complement of OSAI CNC models for CNC or General Motion Control applications.

Industrial Monitors

	10,4”	15”	17”
Active Display Area (mm)	211 (W) x 158 (H)	304 (W) x 228 (H)	338 (W) x 270 (H)
Display ratio	4:3		
Resolution	800 x 600	1024 x 768	1280 x 1024
Brightness (cd/m²)	250	350	250
Contrast Ratio	500:1	700:1	1000:1
Viewing Angle	140(H) / 110(V)	140(H) / 125(V)	170(H) / 160(V)
Response Time	5ms	4ms	5ms
Backlight	LED		CCFL
Power Consumption	≤ 25W(Max)		≤ 35W(Max)
Touch Screen Type	Resistive (5wires)		
OSD Controls	Auto adjust, Brightness, Contrast, Hori./Vert. Position, Clock, Phase, Colour, Language… Remote controller for calibration purpose included		
Input Ports	HDMI, DVI, VGA		
Power Supply	12V - 24V dc ±5% 220VAC – 12V dc adapter included		

OPEN*wiTP*

Light, easy to manage, with an ergonomic design, OPEN*wiTP* is a reliable **wireless** remote control for CNC-machining centers.

Terminal

- High resolution 4.3” TFT display
- Battery for 8h+ operation with full charge (battery charger integrated)
- 3 levels Enabling device pushbutton
- Emergency stop (E-Stop) pushbutton
- Two-hand operation keys
- 2 rotary selectors
- Keyboard with navigation stick
- 5 MP camera with auxiliary white LED
- NFC reader/writer
- Magnetic hooking on the rear, for ease of use in field

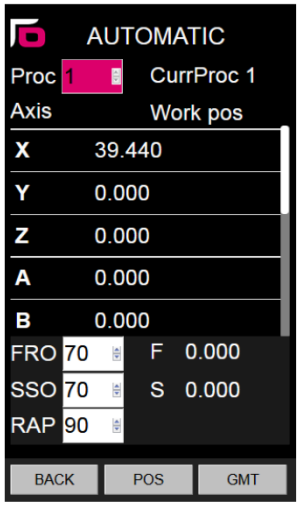
Base station

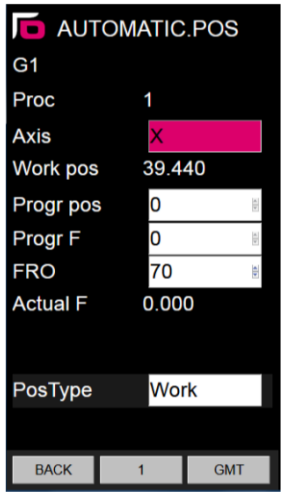
- Compact module for electrical cabinet
- Standard DIN-rail mounted module
- Antenna extension cable supplied

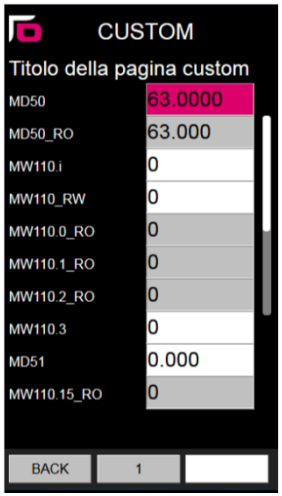
OPEN*wi*TP

CNC pages

Several predefined pages allow the management of the machine tool in AUTOMATIC mode, MANUAL mode (including handwheel mode) and DIGITIZING while a custom page, simply defined through a configuration file, allows to display and edit specific machines data







OPEN*wiTP*

Standards, regulations and certifications

Applied standards

- **EN ISO 13850:2015**
  (Safety of machinery-Emergency stop function)
- **EN 60204-1:2014**
  (Safety of machinery-Electrical equipment of machines)
- **EN ISO 10218-1:2011**
  (Robots and robotic devices-Safety requirements for industrial robots)

Functional Safety Certification

IEC 61508 – Functional safety of electrical/ electronic/ programmable electronic safety-related systems **Level – SIL3**

- Enabling device button
- Emergency stop button

Display	TFT 4.3” 480x800
Keyboard	4-direction + center push joystick 3 soft keys 2 rotary selectors On/off key Start key 3 status LEDs
Wi-Fi	Dual band 802.11a/b/g
NFC	Contactless communication at 13.56 MHz – read/write ISO/IEC 14443A/B NFC tags type 1-2-3-4 ISO/IEC 15693 – MIFARE
Camera	5 MP Autofocus Barcode reader Live streaming video for remote diagnostics Auxiliary LED flashlight
Dimensions mm (inch)	325 (12.8) x 94 (3.7)
Battery	Li-ion 7.2V 5.8Ah
Ingress protection	IP54
HW specification	Dual parallel channel architecture (1oo2). Either channel can process the safety function.
Pairing	Secure wireless pairing through black channel with unique IDs

OPEN*wiHT*

Compact and lightweight device with an ergonomic design

Wireless connection with certification for safety devices

Integrated devices (Keyboard, potentiometers, handwheel) are fully programmable assuring flexible application to any automation project

Terminal

- 5” TFT color display
- 480x272 pixel resolution, 64K colors
- Resistive touchscreen
- 2 USB Host ports (upper, lower)
- Emergency stop button
- 3-positions enabling switch
- 16-positions state selector
- 2 potentiometers
- 1 optional handwheel
- 19 user-programmable selection keys
- NFC reader, accelerometer, buzzer, vibration motor

Receiving Station

Recharging Station

OPEN*wiHT*

System Resources	
Display - Colors	5” TFT LED - 64K
Resolution	480 x 272
Brightness	300 Cd/m² typ.
Touchscreen	Resistive
Handwheel	YES
Potentiometer	2
Programmable keys	19
State Selector Switch	16 positions, 24 V_{DC} / 0.5A outputs (high side drivers)
Emergency stop	YES, 24 V_{DC} / 0.5A outputs (relays)
Enabling switch	3 positions, 24 V_{DC} / 0.5A outputs (relays)
Interface	
Ethernet	Wi-Fi 802.11a/b/g
USB port	2 Host V2.0
Ratings	
Power supply (charging station)	0.8A max. @24 V_{DC}(10 to 32 V_{DC})
Input Protection	Reverse voltage, overvoltage
Battery	Rechargeable Lithium battery, user-replaceable
Environment Conditions	
Operating Temperature	+5° to +45°C
Storage Temperature	-20° to +70°C
Operating / Storage Humidity	5-85% RH, non-condensing
Protection Class	IP64 (terminal)
Dimensions & Weight	
Faceplate LxH mm (inch)	220 (8.66) x 144 (5.67)
Depth D+T mm (inch)	63 (2.48)
Weight (Kg)	0.8 (approx.)

SERVODRIVES & MOTORS

Different solutions - stand-alone, rack, EtherCAT and Mechatrolink III drives - perfectly matching OPENcontrols for high dynamics and high precision motion

OD700 SERVODRIVES

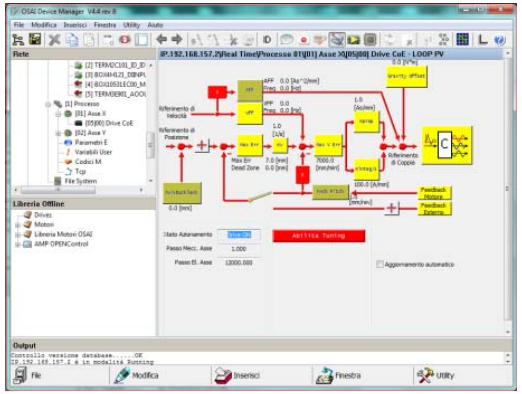
- EtherCAT interface
- Compact mechanical dimensions
- Wide range of operating currents and power supply voltages
- Six available sizes, in four different mechanical formats
- Nominal currents of 3A, 4,5A, 6A, 12A, 18A and 36A
- Integrated security function STO (Safe Torque Off)

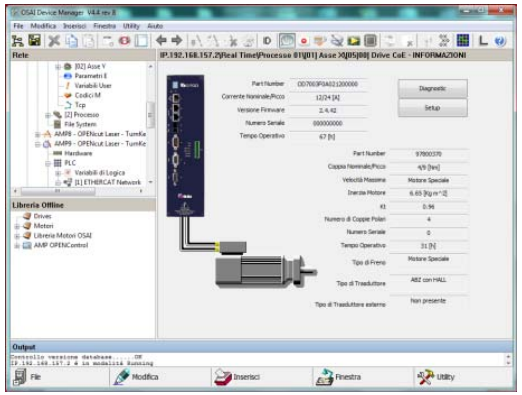
WinNBI "ODM" (OSAI Device Manger), a powerful integrated browser able to simultaneously manage all connected drives and motors, allows both the visualization and the modification of motors and drives parameters, as well as the diagnostic analysis of the drive through several graphical pages easy to use.

WinNBI "OScope" allows full dynamic monitoring of OD700 behavior displaying the servo-drive values on several traces. Synchronous CNC data and part program blocks execution shown by OScope togheter with axis values traces allows fast and easy diagnostic.

OD700 SERVODRIVES

ODM interface





	OD700 OPEN*drive*					
Rms current	3A	4,5A	6A	12A	18A	36A
Peak current	9A		12A	24A	36A	108A
Dimensions (h, d, w) [mm]	183 x 200 x 65		275 x 266 x 73		310 x 266 x 104	320 x 310 x 90
Protection	Overcurrent, overvoltage, over-temperature of the drive. Overcurrent and over-temperature of the motor					
Connection	2 x RJ45 for EtherCAT, 1 x RJ45 for Ethernet, D-sub connectors for main and auxiliary motor feedback Removable power connections					
Power supply	230VAC ÷ 480VAC ±10% Three-phase					
Integrated Clamp Resistor	60W		100W		200W	NO
External Clamp Resistor	Optional					Always
Local diagnostic	7 segments display					
Safe Torque Off (STO)	YES					
Transducer interface Port 1	Encoder SinCos 16/1024 Hiperface Single/Multi turn, Incremental SinCos 1Vpp, Incremental ABZ + Hall, Resolver, Incremental Sincos 1Vpp+Hall, ABZ, ABZ+Hall Proprietary 20 bit serial absolute					
Transducer interface Port 2	Incremental SinCos 1Vpp, Incremental ABZ					
Digital input	Rapid Halt, Zero switch, Fast Touch Probe (optoisolated, programmable)					
Other digital inputs	1 optoisolated, programmable (i.e. Gantry axes emergency management)					
Digital output	Drive ready					
Other digital output	3 optoisolated, programmable (i.e. Gantry axes emergency management)					
Motor brake	Driven directly by the drive					
Parametrization & Programming	Integrated on CNC, executable on Windows. Parameters setup, diagnostic and monitoring functions through oscilloscope Drive connection through EtherCAT port (CNC) or local browser connected to drive through Ethernet port					
Cooling	Forced cooling					
Operating temperature	-20÷55°C		-20÷45°C From 45÷55°C with de-rating (-3% for each °C)			
	Storage: -25÷70°C					
Humidity	10% ÷ 90% no condensation					

YASKAWA SIGMA-5 SD

- Combined spindle & servo system
- Modular Multiaxes Drive (up to 10 modules)
- From 5.4 to 51 Amp axis modules, 480 VAC
- MECHATROLINK-III high-speed networking
- Overload 350% for 3 – 5 sec, high peak torque
- STO(Safe Torque Off)
- High resolution absolute encoder
- Advanced and easy to use autotuning
- Power regenerative converter recovers braking energy back to the mains supply

Available on specific driver module with Safety

- STO
- SS1 (Safe Stop 1)
- SS2 (Safe Stop 2)
- SLS (Safe Limited Speed)
- SLS-BP (Safe Limited Speed – Based on Position)

I/O MODULES

Wide range of distributed digital and analog I/O peripherals including Analog and P&D servodrive management modules

BRIDGE MODULES

EtherCAT slave modules for managing several I/Os and Analog or Pulse&Direction axes

Optimized for machines with 3 or 5 axes in Gantry configuration

Can be used with all the OPENcontrol CNC models

Four models available to manage:

- 4 or 6 Analog axes, Spindle, Handwheel, Analog and Digital I/Os
- 4 or 6 P&D, Spindle, Handwheel, Analog and Digital I/Os

BRIDGE MODULES

	A-432 4 Analog axis module	P-432 4 P&D axis module	A-664 6 Analog axis module	P-664 6 P&D axis module
P/N	2SMPM5991/0C	2SMPM6214/0C	2SMPM5992/0C	2SMPM6215/0C
Axes number and type	4 Analog ±10%	4 Pulse&Direction	6 Analog±10%	6 Pulse&Direction
Transducer	Incremental encoder			
Digital Input	32		64	
Digital Input filter	1 pole, t = 4.7ms			
Digital Output	32		64	
Digital Output on 24V	24Vdc 0.25A channel (4A max for each connector grouping 8 output)			
Analog Output	2 x 16 bit	-	-	-
Analog Input	4 x 12 bit			
Spindle Output	1 x analog 16 bit			
Handwheel Input	1 x encoder ABZ			
Power Supply	24 V_{DC}			
Power Supply Digital I/O board	24 V_{DC}			
Operating temperature	0°C... +50°C			
Relative humidity	90% no condensation			
IP Protection	IP20			

OPEN*rio SL*

OPEN*rio SL* is a distribuited, modular I/O system with EtherCAT interface designed and produced for:

- communication and process control
- general control and automation applications
- industrial applications

The system is made by the following components:

- EtherCAT Bus coupler
- Periphery modules like digital and analog I/O
- Relay output module
- PWM output module
- Encoder input module

The bus coupler interface and power module are integrated in one casing

High-performance backplane bus

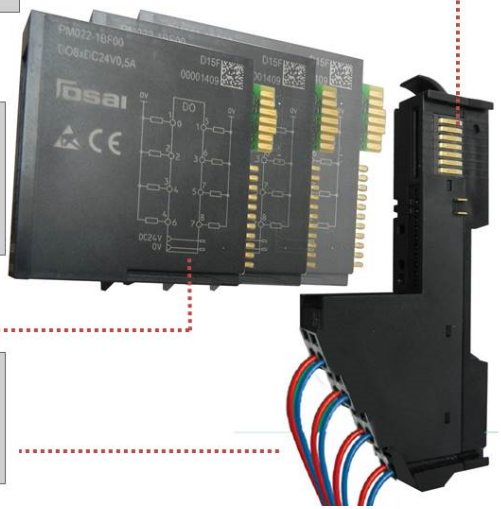
- Transmission rates up to 48 Mbit/s
- Very fast reaction time up to 20µs

Easy installation and maintenance

- Easy mounting through safe slice mechanism
- Two stage concept consisting of terminal modules and electronic modules allowing simple and fast maintenance

Space saving connection technology

- Space saving staircase-shaped wiring with cage clamps
- Easy exchange of modules due to wiring concept



OPEN*rio* SL

	OPEN*rio* SL			
Fieldbus (Bus Coupler)	EtherCAT			
Assembling	DIN rail mounting - modules connected with side contacts			
Dimensions (W x H x D)	15 x 109 x 76,5 mm			
I/O signals isolation	Electrically isolated			
Digital modules	8SMPM021-1BF00		8SMPM022-1BF00	
Number of I/O	8 Input		8 Output	
Current for each output	-		0,5A (max 4 A per module)	
Low level input signal	0÷5 VDC		-	
High level input signal	15÷28,8 VDC		-	
Power modules	8SMPM022-1BD20		8SMPM022-1HB10	
Number of I/O	4 Output		4 Relay Output	
Current for each output	2A (max 4A per module)		3A 30 VDC / 230 VAC	
Analog modules	8SMPM031-1BB40	8SMPM031-1BB70	8SMPM031-1BD70	8SMPM032-1BB70
Number of I/O	2 Input	2 Input	4 Input	2 Output
Input/Output field	0/4....20mA	±10VDC	±10VDC	±10VDC
Resolution	12 bit			
PWM Module	8SMPM022-1BB90			
Number of I/O	2 Output			
Current for each output	0,5A			
Switching frequency	Max. 40 kHz			
Encoder Input Module	8SMPM050-1BA10			
Input voltage for signal "0"	Differential RS422 signal			
Input voltage for signal "1"	Differential RS422 signal			
Maximum input frequency	500 kHz			
Input resistance	120 Ω			

OPEN*rio* V200

Distribuited, modular I/O system with CANopen interface

Modules

- CANopen BUS coupler
- 8 Digital Input
- 16 Digital Input
- 8 Digital Output
- 16 Digital Output
- 8 configurable Digital Input or Output
- 4 Relay out
- 2 + 2 Analog Input Output (configurable +/- 10V or 0 …20mA)
- 4 Analog Input (+/- 10V)

All the modules	
Dimensions (W x H x D)	25.4 x 76 x 88 mm
Operating temperature	0°C +60°C
Relative humidity	5% to 95 % no condensation

www.osaicnc.com