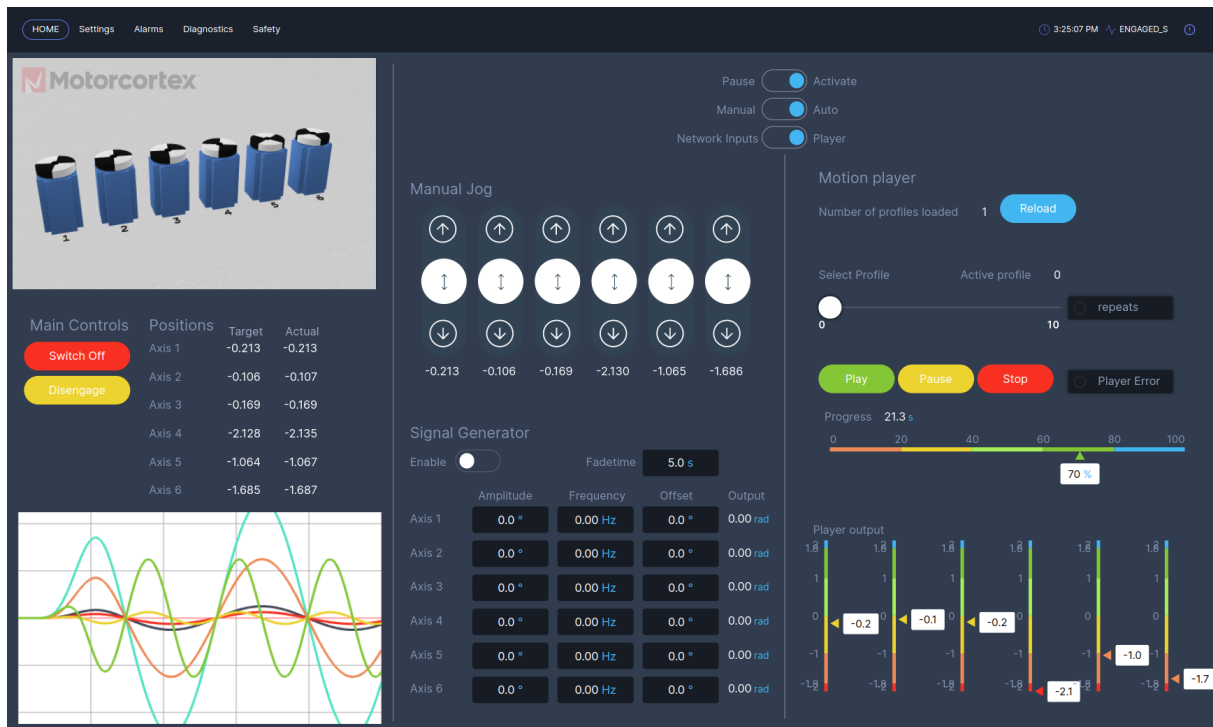# Motorcortex

MOTORCORTEX-MACHINE-APP
VERSATILE MACHINE MOTION CONTROL SOFTWARE APP

Motorcortex-Machine-App is a turn-key motion control software for a general class of Machines. The Machine-App provides the machine logic, motion control, errorhandling and interfacing to hardware. Shorten your time-to-market and reduce software development time.

The responsive and fresh browser-based Graphical User Interface is suitable for single- or multi-touch HMI. With the intuitive visual programming interface you can program your Machine in no time. Or use the free and open API to send machine programs from e.g. your Vision application or ERP software.

Fast EtherCAT communication gives you the freedom to connect many hardware devices and allows virtually unlimited expansion with i/o and additional axes.

All machine and process data is freely and securely accessible via a webbrowser and via open APIs for all major programming languages. The data can be streamed to and from other applications and databases at kHz high speeds enabling new opportunities for data use such as AI, 3D visualization and data storage.

From your browser use the *motorcortex.io* portal to securely deploy the Machine-App to your fleet of Machines with a single click. Manage your machine configurations, configure your EtherCAT devices, collect, visualize and distribute data and simulate your Robots including a Digital Twin for offline programming and debugging.

RECOMMENDED CONTROLLER HARDWARE

cpu architecture	4 Core Intel or ARM
cpu frequency	1 GHz+
memory / disk space	2 Gb+ / 4 Gb+
ethernet	2 x Gigabit Ethernet (1 x for EtherCAT)

CONTROL SYSTEM

operating system	motorcortex MCX-RTOS, realtime Linux
update rate	1 kHz (typical, adjustable to cpu performance)
supported machines	any machine
motion control	control upto 20 axes and 100 sensor.
dynamics model	yes, rigid body dynamics model
feedforward	mass, friction and stiffness compensation
auto-referencing	supported
force control	yes, fidelity depending on machine hardware
digital-twin	realtime physics built-in, EtherCAT simulation

HARDWARE CONNECTIVITY

industrial bus	EtherCAT
i/o	expandable via EtherCAT
tool-changing	yes, through EtherCAT Hot Connect
drive protocols	SERCOS (SoE), CiA402 (CoE)
safety integration	FSoE or conventional (with digital i/o)
usb devices	IMUs (Bosch, XSens), Joysticks/Gamepads

SOFTWARE CONNECTIVITY

middleware	motorcortex
messaging	publish/subscibe, request/reply
API	C++, C#, JavaScript, Python
security	TLS, end-to-end encryption
framework support	ROS, Node-RED
streaming interface	Websockets, UDP, MQTT, OPC-UA

USER INTERFACE

teach pendant	tablet with webbrowser
multitouch support	yes
number of clients	unlimited
user permissions	users authentication via logon screen
3D visualization	GLTF models (open standard)
customization	user interface fully customizable

MACHINE PROGRAMMING FEATURES

programming	from teach pendant, tablet or laptop
teaching	on-screen joysticks or compliance mode
move commands	joint, cartesian (linear), circular
blended moves	yes, adjustable segment velocities
logical commands	loop (break), if-then-else, wait, set, math
user variables	unlimited, scalars or arrays
subprograms	yes, with arguments, object oriented
debug features	slow-motion, pause, command highlighting
data tracing	motorcortex-desk, python datalogger

For more information and a free trial visit **https://motorcortex.io/**