

MC600 SERIES MACHINE CONTROLLER

A modular design that offer precision, flexibility and faster cycle times



The MC600 Series Machine Controller incorporates over fifty years of Moog experience in providing leading edge technology and offers a flexible, modular solution for use on high performance industrial machinery. The Controller's hardware is supported by the Moog Application Software Suite (MASS), a powerful and easy to use tool for the development of application programs based on Codesys, a proven programming system that is IEC 61131-3 compliant.

The MC600 series offers input and output (I/O) communication modules as well as local and PC-based human machine interface (HMI), making it easy to configure with all sizes of machinery. Its Linux based, multi-tasking and real time operating system provides quick reaction and reduced cycle times that can improve machine efficiency and increase productivity. The Controller's 16-bit analog I/O resolution provides greater levels of control precision, and higher accuracy for various types of industrial application.

Moog has specifically designed the MC600 in a standardized environment incorporating debugging, simulation, parametrization and tracing capabilities that make programming and testing faster and simpler. Flexible and easy to use, the Controller is suitable for a wide range of industrial machinery.

The latest MC600plus main CPU is equipped with greater computing power and connectivity, includes a quad-core central processing unit, and is ready for Industry 4.0 connectivity. It features OPC-Unified Architecture (OPC-UA) and Euromap77/83 protocols, as well as a file transfer protocol (FTP) for sharing data or recipes.

ADVANTAGES

- Leading edge system design that provides greater precision, faster reaction times and higher levels of accuracy
- Free choice of centralized or decentralized architectures with no need for application software modifications
- Codesys integrated environment featuring special function blocks that conform with international standards
- Robust design suitable for use in extreme operating environments
- Application templates for blow and injection molding that make machine cycles easy to implement
- Industry 4.0 ready (OPC-UA, Euromap 77/83 and more) permitting simple data transfer between controller and high-level MES systems

APPLICATIONS

- Plastics machinery
- Packaging
- Metal Forming
- Presses
- Testing
- Machine Tools



WHAT MOVES YOUR WORLD

MOOG

SYSTEM OVERVIEW

MC600 SERIES MACHINE CONTROLLER

FEATURES	ADVANTAGES
Quad-core processor	Assigns tasks to a specific central processing unit (CPU) core delivering high performances and low jitter.
Integrated software packages	Integrated software packages for motion control including pre-tested machine axis control algorithms, trajectory generators, axis synchronization, proportional integrative derivative (PID) controllers, Moog EPU specific libraries and Codesys soft motion allows for easy implementation of motion control algorithm.
Wide range of fieldbuses	EtherCAT Master main distributed clock with the capability to read any EtherCAT Slave component defined XML file. EtherCAT Slave and profinet slave for fieldbus data exchange. Ethernet for remote connectivity (diagnostics), information transfers and debugging. USB for data transfer management.
Wide operational temperature range	Suitable for use in temperature environments ranging from -25°C to +70°C. No need for forced ventilation.
Auto tuning function	Automatic definition of PID parameters for temperature and axis control loop resulting in faster commission times.
Linux operating system	Additional technologies can be regularly and quickly implemented to meet specific customer requirements.
Tools for program set up and trace	Program debugging and tracing can be performed while machinery is operational, resulting in less application downtime.
Technical programming skills	Programming language meets IEC61131-3 level standard requirements allowing algorithms to be shared easily between devices.
Additional fieldbuses activation *	Fieldbus license activation directly on Core Processor Unit via USB key.


* If supported by hardware

SYSTEM OVERVIEW










MC600plus KEY DATA

FEATURES	ADVANTAGES
Processor	Quad-core Cortex A9 800MHz
Runtime	Codesys
Master fieldbus	EtherCAT (FileOverEtherCAT, EthernetOverEtherCAT) CANopen Modbus-RTU
Slave fieldbuses	Profinet* EtherCAT*
Industry 4.0 supported protocols	OPC-UA, Euromap 77/83, FTP
Supported I/O Boards	Digital I/O, Analog I/O Temperature Encoder (SSI, StartStop, Pulse Width Modulation (PWM), Quadrature) LVDT, Resolver Analog out for servo valves (up to +-100mA)
Supported HMI solutions	MMI (Moog Machine Interface) Codesys HMI Virtual Network Computing VNC Codesys WebVisu (WebBrowser)
Other features	TCP/IP and UDP/IP protocols, data trace, temperature and axis auto-tuning, modification record, multi-language, alarm, etc.

* Coming soon

Remote Diagnostics  		Industry 4.0   	
HMI Web Access	VNC Viewer	Moog .dll Libraries	Moog OPC-UA Server

Machine Controller    			
HMI	MC600plus	Panel PC	

Field Level         			
Moog Remote BUS	Standard Fieldbus	MC600plus	

MC600 SERIES MACHINE CONTROLLER

HARDWARE

The available hardware modules include CPUs, bus transceivers, a range of digital and 16-bit resolution I/O modules as well as temperature and sensor modules. A number of fieldbus communication modules are also available.

For greater flexibility, we offer a range of human machine interfaces (HMI) that are either PLC operated or PC based. The controller runs on a multi-tasking, Linux based real time operating system that provides short reaction times and high frequency task execution. Fast sampling, 16-bit analog I/O resolution and a 1 G bit/s EtherCAT port provide the basis for highly accurate machine control and positioning.

The hardware can be used on both centralized and decentralized control architectures. Using several CPU modules in a single application affords multi-processor solutions.

CPU MODULES

The MC600plus main quadcore CPU module offers a wide range of standard connectivity and interfaces.

The auxiliary CPU module provides the ability to create multi-processor applications.



I/O MODULES

Various analog and digital I/O modules are available:

- Digital I/O
- Analogic I/O
- Temperature
- Encoder (SSI, StartStop, PWM, Quadrature)
- LVDT
- Analog Out for servo valves (up to +-100mA)



DECENTRALIZED CONNECTION MODULES

Bus transceiver module and PSU module allow complex and decentralized configurations in single and multi-processor applications.



SOCKETS

Main socket and IO socket are used to hold the modules and to electronically connect them by the local bus.



SOFTWARE

All software modules are programmed to incorporate the powerful yet easy to use Moog Application Software Suite (MASS). The Suite is based on the Codesys development tool and complies with the IEC 61131-3 standard for programming languages.

It features additional libraries, plug-ins and programming capabilities that are ideally suited for injection and blow molding applications. Special software libraries are available for customer specific solutions and motion control (i.e. Motion control library for DS402 compliant axis control). Moog also provides a complete software library of easy to use application templates for the simplified realization of user specific control and sequencing technology.

HUMAN MACHINE INTERFACES (HMI)

MC Series 600 can be connected with different kind of HMI solutions, Local HMI or PC based.



LICENSE KEYS

Different license keys are available for single-/ multi-processor and customer-specific applications.

Different feature are available on license key depending on customer requests.



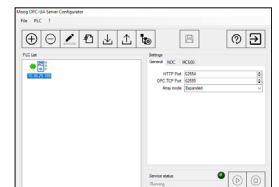
MOOG APPLICATION SOFTWARE SUITE (MASS)

MASS is based on latest version of Codesys and has been extended by several libraries and plug-ins to enhance functionality. Specific libraries dedicated for specific markets can help customers for develop their application.



OTHER COMPONENTS

Moog OPC-UA Server is a dedicated software for export data on OPC-UA server from all the Moog PLC series.



MC600 SERIES MACHINE CONTROLLER

Moog offers a wide range of products that are optimized to work in combination and create effective, high-performance machine control applications. The MC600 Series Controller is designed to function effectively with electric, hydraulic and hybrid motion control technology.

HYDRAULIC CONTROL

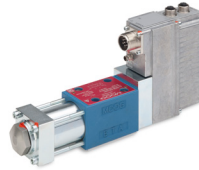
Local HMI



MC600plus



Servo Valve



Hydraulic Actuator



ELECTRIC CONTROL

Local HMI



MC600plus



Servo Drive



Servo Motor



Screw



HYBRID CONTROL

Local HMI



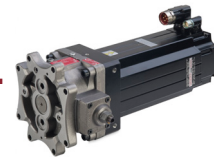
MC600plus



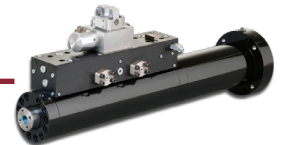
Servo Drive



EPU



Hydraulic Actuator



ACTUATION

- **Analog control:**
Modules 6250, 6251
- **Servovalve control:**
Modules 6260, 6262
- **Fieldbus control:**
EtherCAT Master
CANopen

FEEDBACK

- **Analog feedback:**
Modules 6200, 6201
- **LVDT, Resolver feedback:**
Module 6204
- **Encoder feedback:**
Module 6501
- **Fieldbus feedback:**
EtherCAT Master
CANopen

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This technical data is based on current available information and is subject to change at any time by Moog. Specification for specific systems or applications may vary.

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