MACHINE CONTROLLER

MC 600 SERIES

Rev. B, August 2023

OFFERING HIGHER PRECISION, MAXIMUM FLEXIBILITY AND FASTER CYCLE TIMES

WHAT MOVES YOUR WORLD

MOOG

Whenever the highest levels of motion control performance and design flexibility are required, you'll find Moog expertise at work. Through collaboration, creativity and world-class technological solutions, we help you overcome your toughest engineering obstacles. Enhance your machine's performance. And help take your thinking further than you ever thought possible.

INTRODUCTION 2
- System Overview 3
- Features and Benefits 5

CONCEPTS 6
- Components 6
- Configuration 7
- CPU Modules 8
- IO Modules 10
- Others 11
- Human Machine Interface 12
- License Key 14
- Moog Application Software Suite 15
- Other Functionalities 19
- Suitable Technology 20
- Configuration Examples 21
- Easy Mounting 22

TECHNICAL DATA 23
- Dimensional Drawings 23

ORDERING INFORMATION 25
- Code List 25
- Notes 27

This catalog is for users with technical knowledge. To ensure all necessary characteristics for function and safety of the system, the user has to check the suitability of the products described herein. The products described in this document are subject to change without notice. In case of doubt, please contact Moog.

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SYSTEM OVERVIEW

The latest generation of Moog Machine Controllers (MC 600 Series) was developed based on 30 years of experience working with customers to solve tough machine challenges. They provide a flexible and modular solution for high-performance, industrial machinery and incorporate a new level of hardware and software design.

Hardware

Available modules include CPUs, bus transceivers, a range of digital and 16-bit resolution analog I/O modules, temperature and other sensor modules. Several fieldbus communication modules are in development.

For greater flexibility Moog offers a range of Human Machine Interfaces (HMIs) based on html5 technology. The controller runs on a multitasking, Linux-based, realtime operating system that offers short reaction times and high frequency execution of tasks. Fast sampling, 16-bit analog I/O resolution and 2 Mbit/s sensor acquisition provide the basis for highly accurate control and positioning.

Software

All modules are programmed to incorporate the powerful yet easy-to-use Moog Application Software Suite (MASS). It is based on the latest version of the proven 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 to applications such as the control of injection molding and blow molding machines.

Special software libraries are available for customer-specific solutions and a complete software library of easy-to-use application templates is available for simplified realization of user-specific control and sequence applications.

Applications

The modular design of the MC 600 Series ensures that it can be configured exactly to the specific application. The new quad core processor of the MC 600 Plus CPU allow to reach the highest performances in machine and motion control application.

An important feature of the controller is its ability to operate in the extended temperature range -25 to +70 °C (-13 to +158 °F, non-condensing). This, together with the low power consumption technology and robust construction of the modules, makes the MC Series 600 ideal for use in demanding industrial environments such as plastic machinery.

The incorporation of integral functions such as temperature and parison profile control makes the MC 600 Series suitable for a wide variety of industrial applications including blow and injection molding, packaging, metal forming and presses.

Characteristics	Advantages
Linux operating system for easy implementation of new features	Open to new technology implementation
Auto-tuning feature for axis and temperature control	Automatically calculation of PID parameter
Working temperature from -25 °C to +70 °C without forced cooling request	Electrical cabinet simplification, space and cost reduction, reliability
Software connectivity packages already included	• EtherCAT Master with DC clock • Serial port and Modbus RTU • EtherNET for remote connection (diagnostic), information transfer, debug, data collection • CAN Open port • USB or data acquisition and file transfer
Integrated software packages for motion control	Included and tested algorithm for Axis control, trajectory generation, axis synchronization and PID regulation
Tool for debugging and diagnostic	Debug available during cycle execution
HMI solutions	Page editing and management included, high number of solution available for HMI and remote connections (Web browser or VNC connection on PC, Tablet, smartphone)
Technical programming skills	• Standard programming language for automation industry based on IEC 61131-3 • Codesys V3 integration allows to easily find expert personnel

SYSTEM OVERVIEW

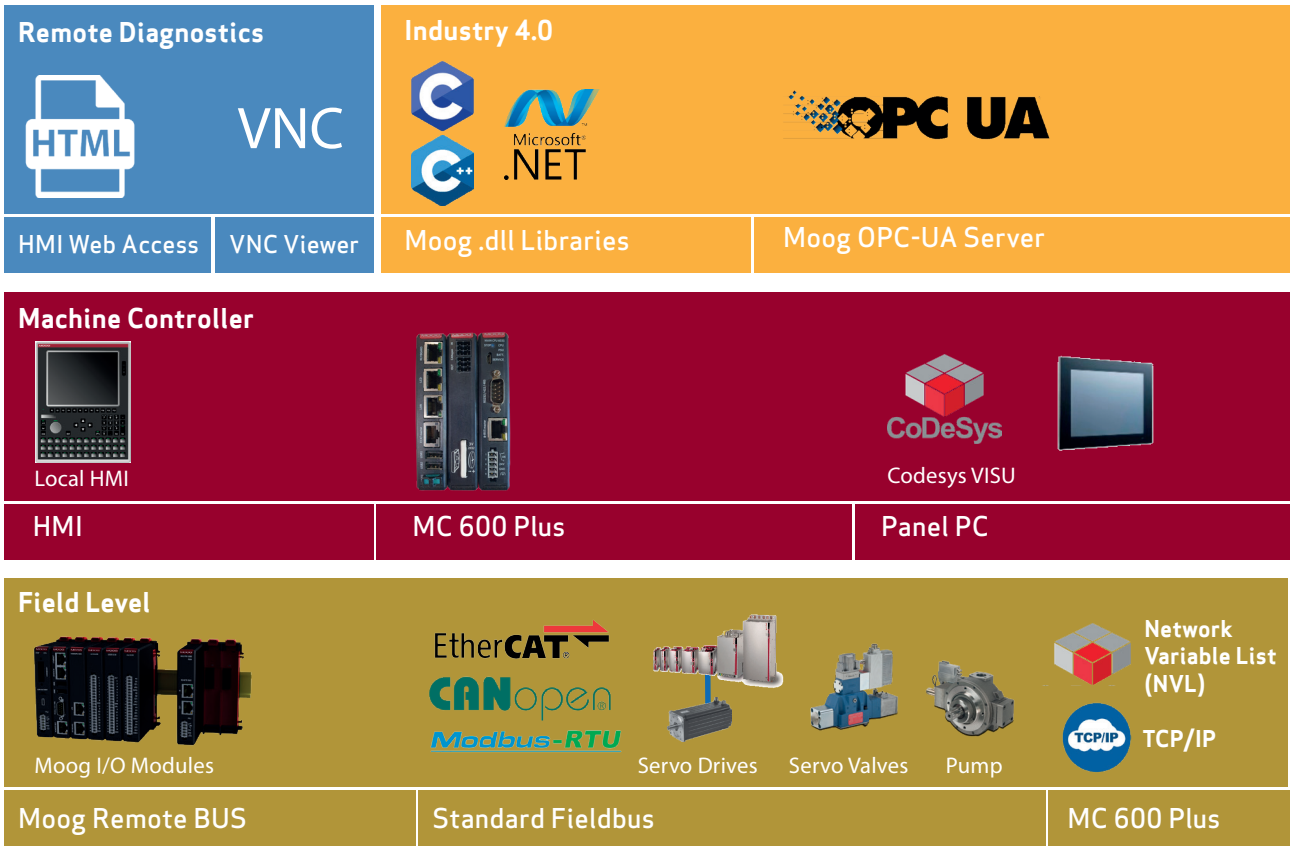
The MC 600 Series can increase the performance and the precision of other products in your system. Moog offers a wide range of products that are optimized to work together for the creation of complex and demanding applications in machine control.

The diagram shows the range of Moog products that are typically used as parts of advanced control and actuation systems used in some of today's most sophisticated machines. While this document features the primary products in the MC 600 Series system, technical information for all the other products are available in their respective catalogs.

The MC 600 Series analog I/O and temperature modules convert process signals with 16 bit resolution. A 16 bit value can represent 65,536 (216) different numbers. The precision of a command signal, e.g. for a valve, can be improved with this high resolution sampling of analog

MC 600 Series offers maximum flexibility to meet your control architecture requirements. A variety of structures can be configured – from small single rack applications to multi rack applications in one or more cabinets. Centralized and decentralized systems using multiple CPUs are supported to create complex control solutions. A process structure, e.g. for valves, pumps and servo motors, can be controlled from specific CPUs and I/Os. The machine can be operated with a HMI and a separate CPU as host for subsequent process clients.

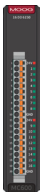
The high CPU performance and the fast sensor acquisition offer short cycle times. The delay in closed-loop control can be minimized.



FEATURES AND BENEFITS

Features	Benefits
Single-/multi-processor and centralized/decentralized configurations with up to 2,000 I/Os for complex applications	Flexible design
Fewer modules required to make up the system	Easier to use and configure for your application needs
Simple insertion of modules and automatic identification from software	Easy installation
Modules can be mounted into empty/spare sockets after first installation without rack dismounting	Easily expandable
High shock and vibration resistance, along with an extended operating temperature range	Robust construction even for use in harsh, non-condensing environments
2 Mbit/s sensor acquisition and 16 bit analog I/O	Precise positioning and better accuracy in temperature control processes
Digital I/Os with short circuit, open circuit and high temperature protection	Robust electric design
High processing power of the CPU together with a performance optimized system design	Short reaction and execution times of the application program
Based on the latest version of Codesys to support machine builders standardized development environment for closed-loop control	Easy to use programming language
Moog experts collaborate with customers to develop human machine interfaces, modules and application software	Adaptable to customer‘s needs
Dedicated software modules are available for specific markets such as injection and blow molding	Save development time

COMPONENTS

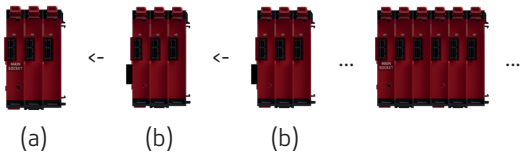
CPU Modules		Human Machine Interface (HMI)	
	The main CPU modules are the heart of each application. The main CPU 6031 introduce a quadcore platform. Will be possible to have CPU with ProfiNET device.		Several PLC operated and PC based HMIs can be used within the MC 600 Series
I/O Modules		**License Keys**	
	Various analog and digital I/O modules are available (digital I/O, encoder, temperature, etc.).		The type of license key affects the software functionality of the application. Different license keys are available for single-/multi- processor and customer-specific applications. Additional features can be activated when system is already on site.
Other Modules		**Moog Application Software Suite (MASS)**	
	Bus transceiver module and PSU module allow complex and decentralized configurations		MASS is based on latest version of Codesys and has been extended by a number of libraries and plug-ins to enhance functionality. Specific libraries for Blow molding and Injection molding Machine can help customers for develop their application.
Sockets		**Other Functionalities**	
	The sockets are used to hold the modules and to electronically connect them by the local bus. Socket 6990 is the basic socket of each rack. Socket 6991 is an extension element.		Dedicated software for remote debugging, data monitoring and data collection.

CONFIGURATION

Combining Sockets to Racks

The MC 600 Series is organized in racks which are mounted on DIN rails. A rack consists of a number of nested sockets.

The first socket of a rack is always a Socket 6990 (a), all other sockets of a rack are Socket 6991 (b)

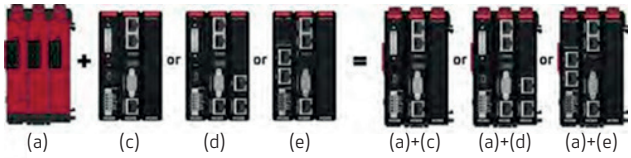


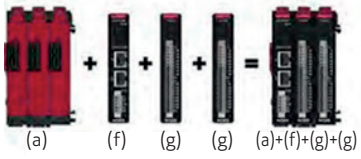
Combining Sockets and Modules

The modules are plugged into the slots of a socket. Each socket has three slots. The CPU modules are triple modules and thus occupy a complete socket. All other modules are single modules and need only one slot of a socket. Within a rack the modules are electronically connected through the local bus which is provided by means of the sockets.

Socket 6990 for CPU and Bus Transceiver Modules

Socket 6990 (a) is used with a CPU module (c, d and e) or a bus transceiver module (f). The bus transceiver module is put into the first slot, so up to two I/O modules can be inserted in the other two slots (g).



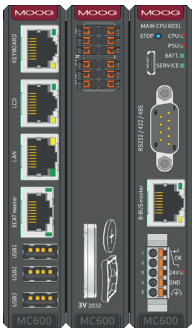


Socket 6991 for I/O Modules

Socket 6991 (b) can be combined with up to three I/O modules or temperature modules (g).

CPU MODULES

Overview



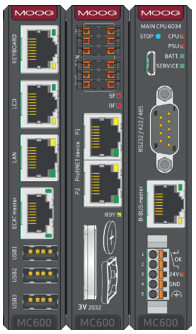
Main CPU 6031

MC 600 Plus is the new MC 600 CPU Series based on a quadcore SOC technology.

Each MC 600 Series application needs exactly one main CPU module. It is not possible to use more than one main CPU module in an application.

The main CPU module controls all other modules of the application. The two main CPU modules have the same functionality, including battery backup, wake-up function and a license key connector for advanced algorithms.

The main CPU 6034 module comes with an additional ProfiNET device connectivity.



MAIN CPU 6034 (ProfiNET device)

Power Supply

Each of these modules has its own internal power supply unit (PSU) that requires a nominal +24 V_{DC} input to produce the logic voltages necessary for the other modules.

The external +24 V_{DC} power supply for the modules must be combined with either a CPU module or a bus transceiver module.

All modules monitor voltage, current, and temperature or any other data from the power supply. The main CPU modules have a wake-up function to start-up the power supply. The power available from the modules limits the number of modules to be used in an application.

Additional Information

For decentralized applications, additionally bus transceiver modules are available, see section ""Bus Transceiver Modules".

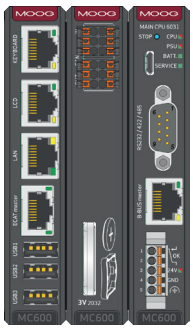
I/O and temperature modules are connected to each of the CPU modules via local bus, see sections ""I/O Modules" and "Temperature Modules".

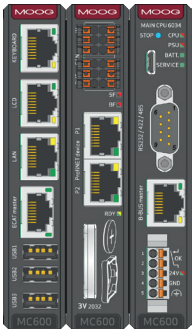
For possible combinations of modules and application samples, see section "Concepts".

Ordering number	Description
IMI220-6031A001	Main CPU + PSU + HMI controller + CAN
IMI220-6034A001	Main CPU + PSU + HMI controller + CAN + ProfiNET device

CPU MODULES

Overview





	IMI220-6031A001	IMI220-6034A001
Microprocessor	Quad-core ARM cortex A9 iMX6Q 800 MHz	
Cooling	Fan cooling	
RAM	2 GB	
Nonvolatile RAM	2 MB	
Flash-EpRoM	4 GB	
Fastest task	100 µs	
EtherCAT master	1	
Ethernet	1	
USB 2.0 host	3 [1)]	
Serial port RS232/RS422/RS485 (Modbus RTU)	1 [2)]	
Remote bus master	1	
LCD/ keyboard	1/1	
CAN bus	1	
Backup battery	1	
ProfiNET device	-	1

1) One USB port is mandatory for license key

2) Expandible with USB to serial port adapter

IO MODULES

Digital I/O

Order number	Description	Image
IMI220-6100B001	16 digital input, 24 V_{DC} + 2 counter	
IMI220-6150A001	16 digital output, PNP 24 V_{DC} 0.5A	
IMI220-6161A001	8 relay digital output	
IMI220-6180A001	12 digital output, PNP 24 V_{DC} 2A	

Analog I/O

Order number	Description	Image
IMI220-6200A001	4 analog input ±10 V 16 bit	
IMI220-6201A001	8 analog input ±10 V 16 bit	
IMI220-6201A002	8 Analog Input 0÷20 mA (240 ohm) 16 bit	
IMI220-6203A001	8 analog In 4÷20 mA fully isolated 16 bit	
IMI220-6210A001	4 analog In ±5 A AC/DC for current measurement	
IMI220-6250A001	4 analog output ±10 V 16 bit	
IMI220-6251A001	8 analog output ±10 V 16 bit	
IMI220-6260A001	4 AO +/-10 V 10 mA (voltage feedback) or +/-100 mA (current feedback) - 16 bit	
IMI220-6262A001	4 AO +/-10 V 100 mA (voltage feedback) or +/-50 mA (current feedback) - 16 bit	

Process and Motion I/O

Order number	Description	Image
IMI220-6220A001	4 temperature thermocouple or PT100 2, 3, 4 wires 16 bit	
IMI220-6221A001	8 temperature thermocouple or PT100 2 wires 16 bit	
IMI220-6204A001	3 channels AI LVDT/resolver	
IMI220-6501B001	4 encoder inputs incremental / SSI / start-stop / PWM / PTO	

OTHERS

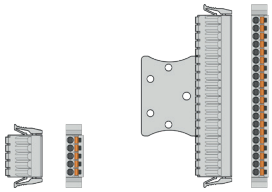
Modules

Order number	Description	Image
IMI220-6980A001	Bus transceiver TRX + PSU	
IMI220-6981A001	EtherCAT bus transceiver (TRX + PSU)	
IMI220-6970A001	PSU parallel power booster	

Sockets

Order number	Description	Image
IMI220-6990A001	3 slot for main modules (main CPU and bus transceiver)	
IMI220-6991A001	3 slot for IO modules	

Accessories

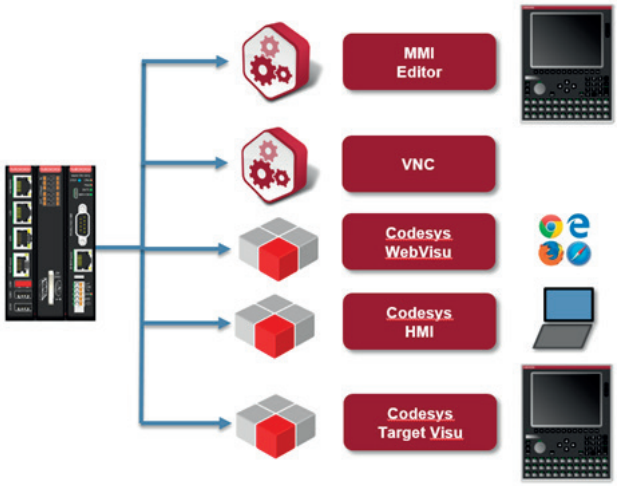
Order number	Description	Image
C46675	MC 600 Plus CANopen connector	
C46665	5 poles female connector	
C46666	20 poles female connector	

HUMAN MACHINE INTERFACE

The implementation of the new MC 600 Plus CPU, increase the variety of solutions offers for visualization technology.

The actual HMI interfaces solution available on MC 600 Plus hardware are:

- TargetVisu technology: realize a modern HMI application interface and show it on Moog Local HMI
- WebBisu technology: give to the customer the possibility to interact using a standard web client with the same HMI application shown on local HMI
- Codesys HMI: realize and show the HMI pages on a windows based PC



Local HMI

Interfaces

Moog terminals permit users to connect the MC 600 Series via:

- LVdS (Low Voltage differential signaling) communication
- Ethernet communication
- Serial communication (e. g. protocol VT100, V52)
- Touch screen

Our terminals can be equipped with a touch screen panel. This touch screen are based on resistive technology.

The implementation of Codesys Visu technology, allow the customer to use the technology that best fit his requirement choosing between:

- Local HMI
- Web Server
- Windows PC based

HUMAN MACHINE INTERFACE

User Buttons

Moog terminals allow different buttons:

- Touch screen resistive buttons
- Mechanical buttons
- Electromechanical buttons

The local HMI family uses the LVdS communication to connect to the MC 600 Series. We have a HMI LVdS with touch screen, 12“ LCD (800 x 600 pixels), rotary knob, alphanumeric keypad, USB ports and 36 buttons + 36 LEDs.

Modular Parison Controller, 4 channels, 400 points

Customized Terminals

Moog utilizes its own know-how to design custom terminals. The customer may request to customize their terminal following the family feeling of the company into their own. Moog gives full availability in the creation of custom terminals following step-by-step throughout the procedure.

HMI with separated keyboard

Ordering number	Description
IMI220-123B002	Local graphic panel color LCD - touch screen - keyboard - LVDS communication - USB - rotary knob – LVDS interface
IMI220-7001A001	HMI touch panel 10”
IMI220-7002A001	HMI touch panel 12”
IMI220-7003A001	HMI touch panel 15” horizontal
IMI220-7003A002 [1)]	HMI touch panel 15” vertical
IMI220-7102A001	HMI automation keyboard 10x4
IMI220-7103A001	HMI automation keyboard 12x4

1) Available only with TargetVisu technology

PC-based HMI

Implementing the Codesys HMI technology, the HMI pages of MC 600 can be shown also on a Windows based PC, communicating with MC 600 through a data source DB. Taking advantage from supporting of Codesys V3 protocol, for customer that require a PC based HMI solution, MC 600 can be connected to PC based HMI with the possibility to interact with our standard keyboard.

Ordering number	Description
C46676	Visu HMI license key 10.000 data point
C46677	Visu HMI license key unlimited variables
C46668	Kit to allow remote use of local HMI automation keyboard (IMI220-71xxAxxxx)

LICENSE KEY

The license key contains the runtime license for enable the execution of different functionalities on MC 600.

The different functionality are enabled according to the license key being used.

The license key additionally contains:

- IP address
- Fieldbusses node addresses

Order number	Functions	Color
D138-030-001	MASS runtime license with basic functionality: • Moog basic Building Block library • Control libraries • TargetVisu • OPC/UA integrated	White
D138-030-002	All functions of license key 'White' and additionally: • EtherCAT • CANopen • Hydraulic libraries • Web visualization • Advanced Building Block libraries • Modbus RTU	Green
D138-030-003	All functions of license key 'Green' and additionally: • Generation of motion profiles, camming, gearing: Soft motion • Multicore QuadCore	Black

Additionally, the USB dongle Wibu license key, give to the customer the possibility to activate new feature from Codesys store, not available on standard license key package, like:

- Modbus TCP master/slave
- Ethernet IP scanner/adapter (not on realtime port)
- CNC and robotics
- Codesys IIoT library

MOOG APPLICATION SOFTWARE SUITE

MASS Software Basic Functions

The Moog Application Software Suite (MASS) is the MC 600 programming environment based on Codesys V3.

It is a complete automation platform to create customer specific software systems for programming and configuring field devices.

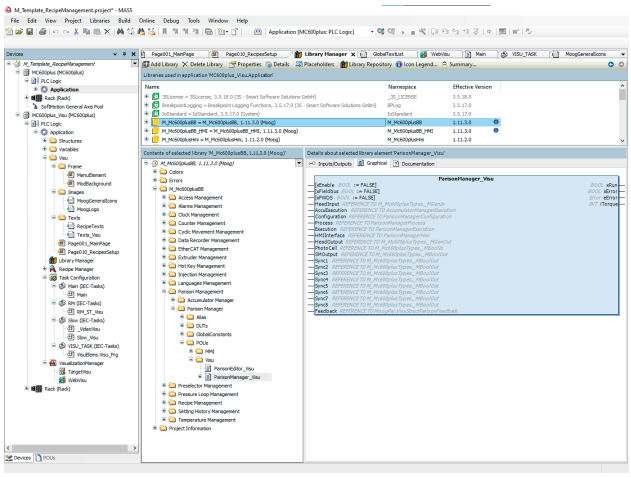
Object Orientation

Real object-oriented features:

- Classes
- Interfaces
- Methods
- Inheritance
- Polymorphism and dynamic binding
- Seamless extension of the IEC function block
- Unchanged classic programming possible

PLC Networks

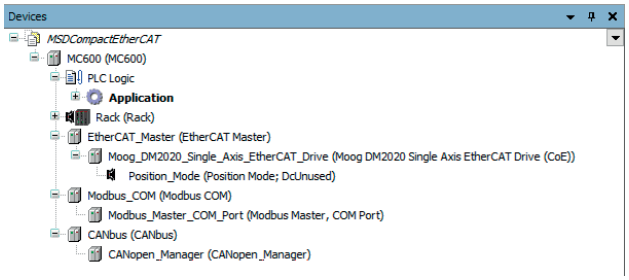
- Several devices per project
- Accommodates programmable and parameterable devices
- Several functions per device (e.g. PLC, Web-Server)
- Network and fieldbus hierarchy displayed in device tree
- Devices of different manufacturers with specific configurators can be mixed
- Logical extension of the Codesys Automation Alliance concept



Version Profile

- Several versions can be installed in parallel
- Creation version of each project is defined
- Every project can be edited in all versions
- Different versions of runtime system and programming system can operate together
- Individual functionalities (e.g. editor, menu commands) can be upgraded independently
- IEC 61131-3 multiple language visualization:
- LD: Ladder Diagram
- FBD: Function Block Diagram
- IL: Instruction list
- ST: Structured Text
- SFC: Sequential function chart
- CFC: Continuous function chart

Ordering number	Description
D138-010-001	MASS Moog Application Software Suite



MOOG APPLICATION SOFTWARE SUITE

MASS Software Libraries

M_BB

M_BB is Moog Standard library that help customers to easily configure their applications with graphical and code features.

Standard M_BB Features

- Access
- Alarms
- Clock management
- Counter
- Data recorder
- Hot key
- Languages
- Pre-selector
- Recipes
- History event log
- Temperature control
- Moog ServoDrive control

Advanced M_BB Features

- Cyclic movement
- Extrusion control
- Injection control
- Parison control
- Pressure loop
- TCP/IP communication

Other Library

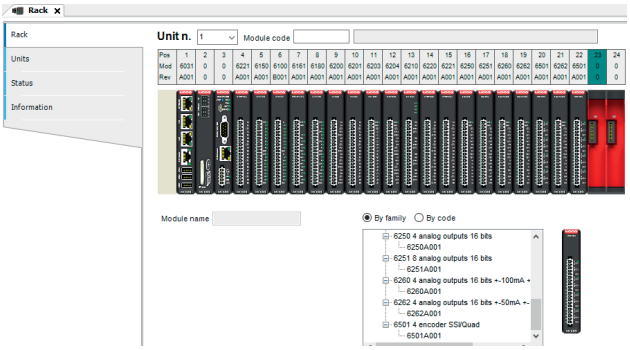
M_MC600Specific	Functions and function blocks created specifically for the MC Series 600 for specific functionalities i.e. Setting IP address or detect if USB stick is present or not
M_Control	Advanced algorithm for motion control like sinwave generator, notch filter and different other controls algorithm
M_Hydraulics	Advanced algorithm for hydraulics control like position or force control, or delta pressure compensator
M_MC600HMI	Data structures and functional blocks for the management of Moog HMIs connected to the MC Series 600
M_Plastic	• Functions and function blocks for motion control, parison control and general purpose like integrator, Low band or low level filter • Function blocks for managing temperature control

MOOG APPLICATION SOFTWARE SUITE

MASS Software Plug-ins

Device Editor

The device Editor allows users to graphically build the configuration of our PLC in a simple and intuitive way. Through a list it is possible to quickly and easily choose the module and to insert our rack. The composition of the rack is freely configurable and follows the concept described in the section “Concepts”.

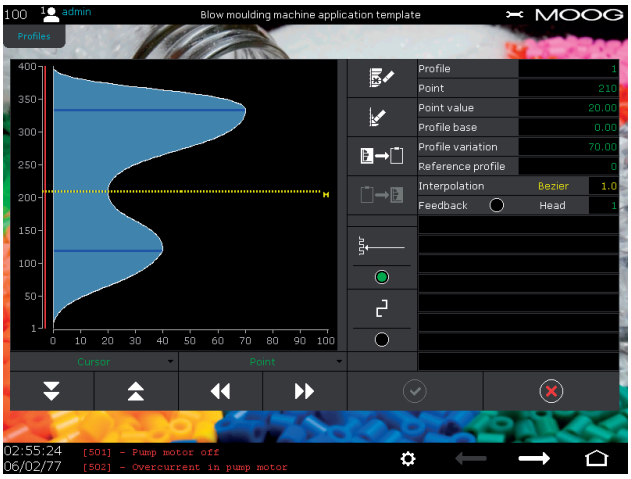


MMI Manager

The MMI Manager allows users to manage the HMI connections, displayed pages and languages. Inside are two sub-editors:

The Multi-Language Text Editor allows users to insert different programming languages in tabular form.

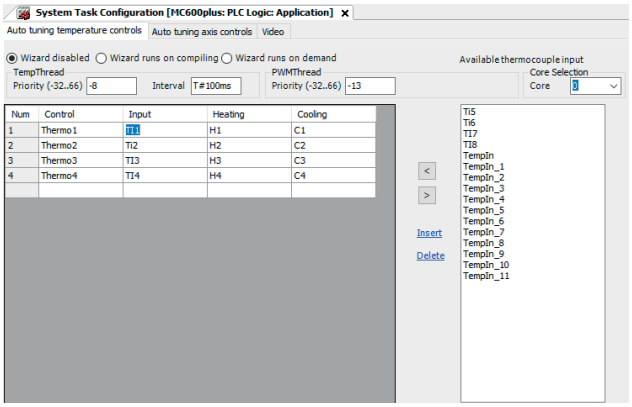
The Page Editor enables the user to create application pages through a tool box.



System Task Wizard

The System Task Wizard allows users to manage the multitasking section via the control video task, the control axis task and the temperatures task.

Through this tool it is possible to automatically implement the task desired inside the application with a simple command (Run Wizard).



MOOG APPLICATION SOFTWARE SUITE

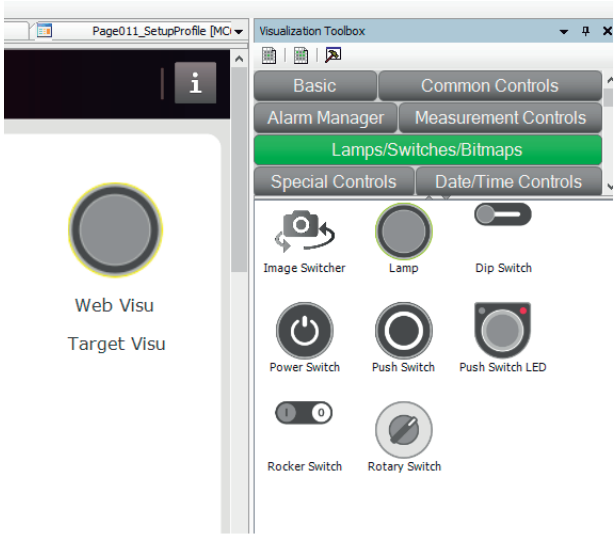
Codesys Features

Codesys features are available inside MASS.

WebVisu - TargetVisu

Web based HMI page can be freely configurable inside MASS for a remote access and control.

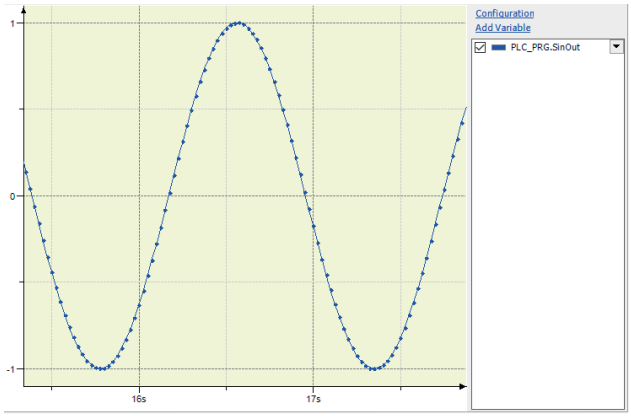
- HTTP Access
- Parison HMI model
- Codesys variety of HMI objects
- Web pages can be easily configured



Codesys Trace

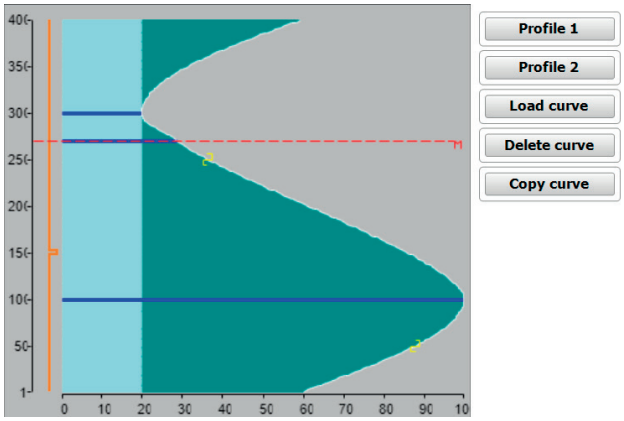
Allow user to collect the data while user is connected:

- Configurable trace functionalities
- Exportable data
- Task cycle time execution
- Multiple variables monitoring
- Settable record condition



Codesys Graph and Parison Graph

- Specific graphic functionalities available on Codesys Visu
- Customized graphic configuration for Parison plastic application



Codesys Softmotion

MASS give to the customer the possibility to use all the standard PLCopen features supported by Codesys soft motion package.

OTHER FUNCTIONALITIES

Codesys Features

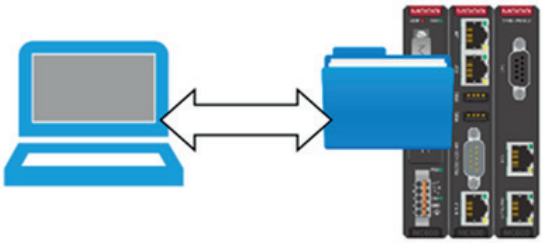
File Access

FTP Server:

- File access to your recipe data
- Easily access from remote

USB Stick:

- Recipe storable on your USB stick
- Moog HMI screenshot storable on your USB stick
- Application update
- Firmware update



Data Access

OPC-UA:

- MC 600 data can be reached through OPC-UA using :
- Embedded OPC-UA Server
- Moog OPC-UA Server: software gateway for OPC-UA server generation
- Application data freely configurable

Ordering number	Description
C46674-001	Moog OPC-UA Server

Remote Connection

- Firmware UPDATE from web browser

VNC Feature:

- Moog HMI page can be access from remote using our Built-in VNC feature

WEB Pages:

- HTML pages can be edited with Codesys WebVisu in order to reach MC 600 Plus using a standard internet browser

SUITABLE TECHNOLOGY

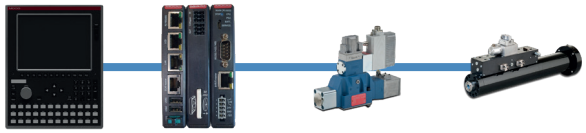
Motion Control

The MC Series 600 is the result of Moog know how of all the actually available technologies of motion control.

Thanks to his wide range of connectivity and his high number of I/O module available, actually MC 600 can fit all the request of speed and accuracy for different kind of markets.

Hydraulic Control

Local HMI MC 600 Servo valve Hydraulic actuator



Electric Control

Local HMI MC 600 Servo drive Servo motor Screw

Hybrid Control

Local HMI MC 600 Servo drive EPU Hydraulic actuator

Actuation

- Analog control modules 6250, 6251
- Servo valve control modules 6260, 6262
- Fieldbus control
- Ethercat Master
- Canbus

Feedback

- Analog feedback modules 6200, 6201
- LVDT feedback module 6204
- Encoder feedback module 6501
- Fieldbus feedback Ethercat Master Canbus

Temperature Control

After years of experience in blow molding and injection molding machine, Moog has developed specific auto-tuning algorithm for temperature control that automatically define the temperature zone parameter.

Local HMI MC 600 Thermal sensor / heating / cooling

Actuation

Digital control modules 6150, 6180

Feedback

Temperature feedback modules 6220, 6221

CONFIGURATION EXAMPLES

Introduction

An MC 600 Series application can vary in complexity based on the number of racks:

- Centralized applications with only one rack
- Decentralized applications with more than one rack

Centralized versus decentralized applications

The simplest variant is a system with only one rack. A rack consists of one or more sockets mechanically fit together. All modules on a rack are electronically connected by the local bus.

An application with only one rack is a centralized application.

A decentralized application consists of several racks which are electronically connected by the remote bus.

Power Supply

Each rack needs an external 24 V_{DC} power supply to be connected to a CPU module or a bus transceiver. Thus, each rack starts with one of these types of modules.

License Keys

The type of license key affects the software functionality, see section “License Key” on page 14.

Centralized Applications

A simple variant consists of a single rack with one main CPU module (Main CPU 6031 or CPU 6034) and with one to three I/O modules.

Ordering list for this application (displayed in dark gray):

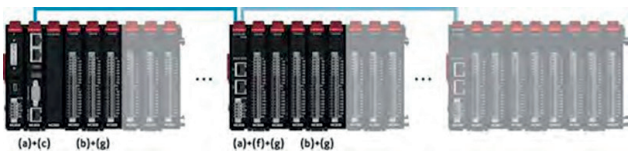
- 1 socket 6990 (a)
- 1 socket 6991 (b)
- 1 main CPU 6031 (c), or main CPU 6034
- 3 I/O modules (g)
- 1 license key

Extension possibilities for this application (displayed in light gray):

- Additional sockets 6991 with up to three I/O modules each

Decentralized Applications

These applications consist of two or more racks, one main CPU module, one or more bus transceiver modules and several I/O modules.



Ordering list for this application (displayed in dark gray):

- 2 sockets 6990 (a)
- 2 sockets 6991 (b)
- 1 main CPU 6031 (c), or main CPU 6034
- 1 BuS TRX 6980 (f)
- 8 I/O modules (g) 1 license key

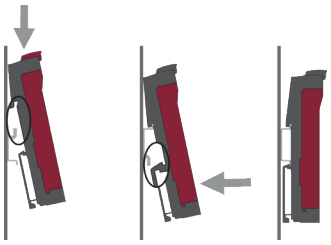
Extension possibilities for this application (displayed in light gray):

- Additional sockets 6991 for an existing rack with up to three I/O modules each
- Additional racks which contain at least a Socket 6990 and a BuS TRX 6980

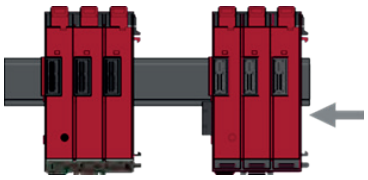
EASY MOUNTING

Assembly

Step 1: Clip socket on DLN rail

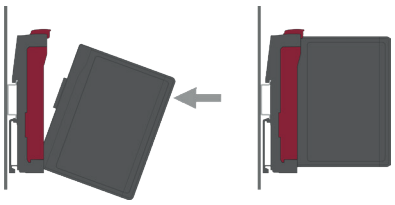


Step 2: Push sockets together until...



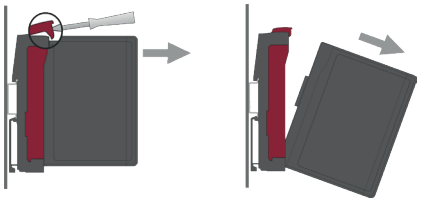
Step 3: The right socket snaps into the left one

Step 4: Plug module into socket

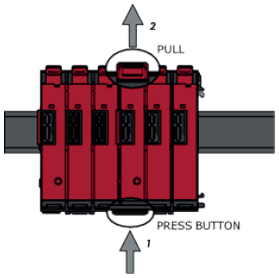


Disassembly

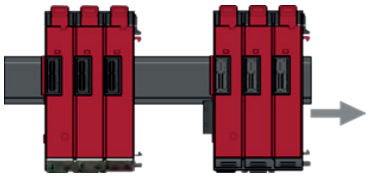
Step 1: Press button at bottom and pull up locking at top



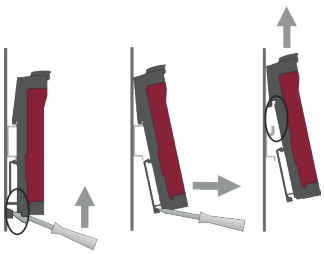
Step 2: Press button at bottom and pull up locking at top



Step 3: Move socket away

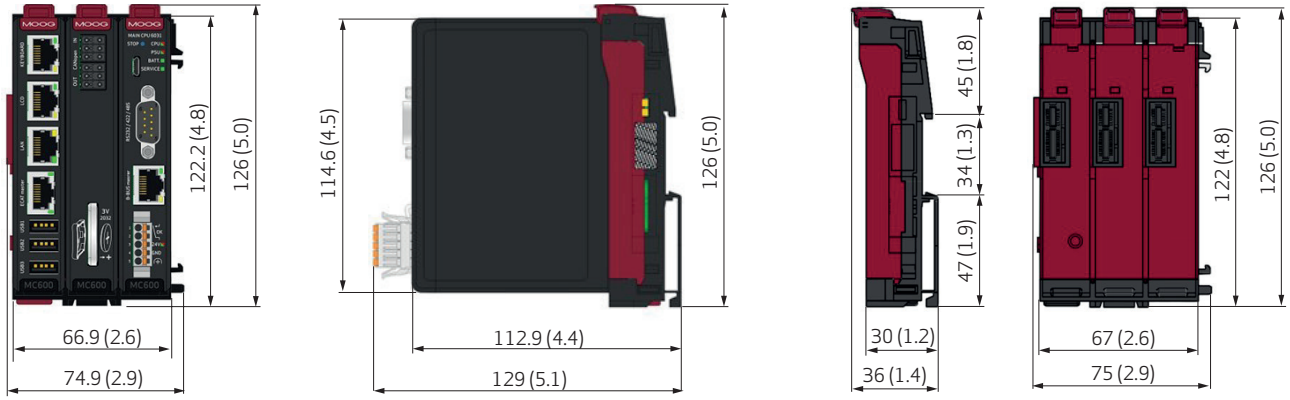


Step 4: Unclip socket from rail

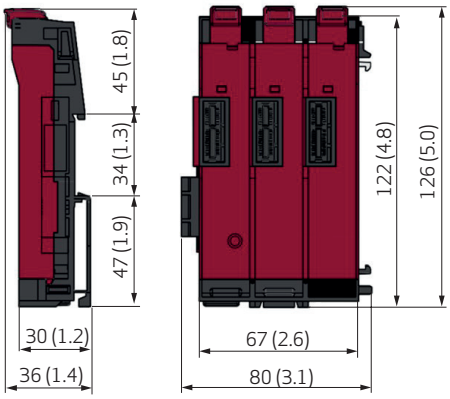


DIMENSIONAL DRAWINGS

Main Module with Socket



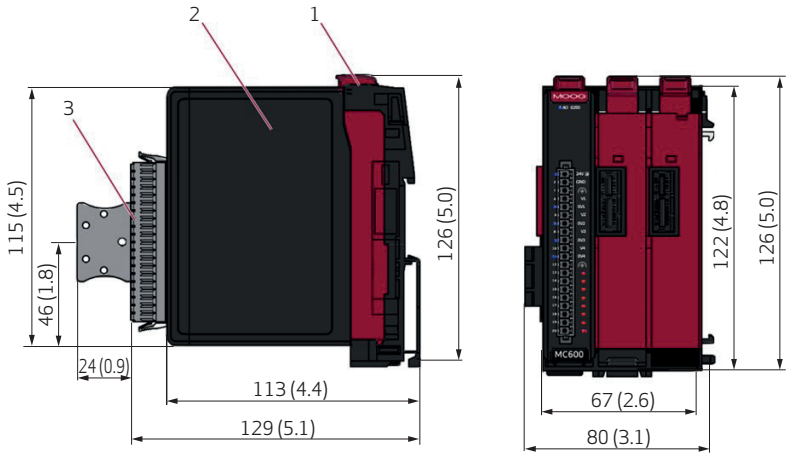
Socket for Main Modules



Note: dimensions in mm (in)

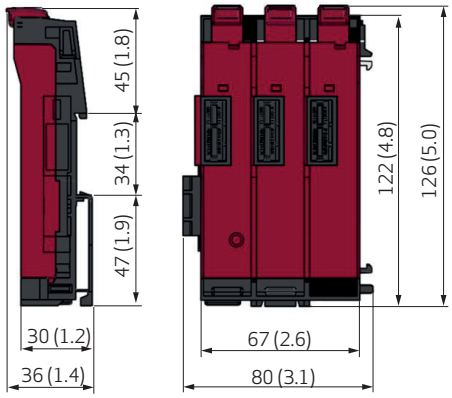
DIMENSIONAL DRAWINGS

I/O Module with Socket



1. Socket
2. I/O module
3. Connector

Socket for I/O Modules



Note: dimensions in mm (in)

CODE LIST

CPU Modules

Order number	Description
IMI220-6031A001	MC 600 Plus - main CPU + EtherCAT master + CAN + HMI driver
IMI220-6034A001	MC 600 Plus- main CPU + EtherCAT master + CAN + HMI driver + ProfiNET device

I/O Modules

Order number	Description
IMI220-6100B001	16 digital inputs, 24 V_{DC} + 2 counter
IMI220-6150A001	16 digital output, PNP 24 V_{DC} 0.5A
IMI220-6180A001	12 digital output, PNP 24 V_{DC} 2A
IMI220-6161A001	8 Relay digital output
IMI220-6200A001	4 analog input ±10 V 16 bit
IMI220-6201A001	8 analog input ±10 V 16 bit
IMI220-6201A002	8 channels input 0…20 mA (240 Ω) 16 bit
IMI220-6203A001	8 analog In 4÷20 mA fully Isolated 16 bit
IMI220-6204A001	3 channels input LVDT/resolver
IMI220-6210A001	4 analog inputs ±5 A AC/DC for current measurement
IMI220-6250A001	4 analog outputs ±10 V, 16 bit
IMI220-6251A001	8 analog outputs ±10 V, 16 bit
IMI220-6260A001	4 AO ±10 V or ±100 mA, 16-bit (each channel selectable)
IMI220-6262A001	4 AO ±10 V up to 100 mA (voltage feedback) or ±50 mA (current feedback) - 16 bit (each channel selectable)
IMI220-6220A001	4 temperature inputs
IMI220-6221A001	8 temperature inputs
IMI220-6501A001	Encoder inputs incremental / SSI / start-stop / PWM

Other Modules

Order number	Description
IMI220-6980A001	Bus transceiver TRX + PSU
IMI220-6970A001	PSU parallel power booster
IMI220-6981A001	EtherCAT bus transceiver (TRX + PSU)

Sockets

Order number	Description
IMI220-6990A001	3 slot for main modules (main CPU and bus transceiver)
IMI220-6991A001	3 slot for IO modules

Connectors

Order number	Description
C46675	MC 600 Plus CANopen connector
C46665	5 poles female connector
C46666	20 poles female connector

CODE LIST

Moog Local HMI

Order number	Description
IMI220-123B002	Local graphic panel color LCD - touch screen - keyboard - LVDS communication - USB - rotary knob - LVDS interface
IMI220-7001A001	HMI touch panel 10.4"
IMI220-7002A001	HMI touch panel 12"
IMI220-7003A001	HMI touch panel 15" horizontal
IMI220-7003A002	HMI touch panel 15" vertical
IMI220-7102A001	HMI automation keyboard 10x4
IMI220-7103A001	HMI automation keyboard 12x4
C46659	LVDS cable set 3 m (CAT 5E)
C46671	LVDS cable set 5 m (CAT 5E)
C46672	LVDS cable set 7 m (CAT 5E)
C46660	LVDS cable set 10 m (CAT 6E)
C46661	LVDS cable set 15 m (CAT 7E)

License Key

Order number	Description
D138-030-001	**License key color: White** MASS runtime license with basic functionality: • Moog basic Building Block library • TargetVisu • OPC/UA integrated control library
D138-030-002	**License Key Color: Green** All functions of license key 'White' and additionally: • EtherCAT • CANopen • Web visualization • Advanced building block libraries • Modbus RTU – hydraulics library
D138-030-003	**License Key Color: Black** All functions of license key 'Green' and additionally: • Generation of motion profiles • Camming, gearing: Soft motion • Multicore QuadCore

PC License Key

Order number	Description
C46676	Visu HMI license key 10,000 data point
C46677	Visu HMI license key unlimited variables

Software

Order number	Description
D138-010-001	MASS Moog Application Software Suite
C46674-001	Moog OPC-UA Server

NOTES

MORE PRODUCTS. MORE SUPPORT.

Moog designs a range of motion control products to complement those featured in this document. Moog also provides service and support for all of our products. For more information, contact the Moog facility closest to you.

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MC 600 Series
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