



Changes for the Better

MITSUBISHI CNC

MITSUBISHI
CNC



The Best Partner for Your Success

for a greener tomorrow



The Best Partner for Your Success

This is the MITSUBISHI CNC business philosophy.

All the staffs who are committed to MITSUBISHI CNC business wish to be “the best partner for customers aiming at global and future-oriented development”.

We will continue our efforts with the aim that our CNCs be great help to the customers.

Technologies for the Next Generation

Advanced Technologies for the Next Generation

With the sophisticated technologies we have developed as a total factory automation manufacturer, we attain advanced machining control and contribute to the highest accuracy and productivity of manufacturing worldwide. MITSUBISHI CNCs change machine tools, machining and manufacturing.

Solutions for the Future

Optimum Solutions for the Future

As a global CNC provider as well as the best partner, we provide optimum technologies and supports for the users making a step toward the future. MITSUBISHI CNCs create new values in cooperation with the users.

Support for the Day-to-day Comfort

Solid Support for Day-to-day Comfort

Providing prompt responses, solid technologies and user-friendly supports, we continuously improve our after-sales service quality for users in the world so that they choose MITSUBISHI CNCs again.



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(Note) The contents of this catalog includes optional specifications. Refer to specification manuals for details.

Technologies for the Next Generation

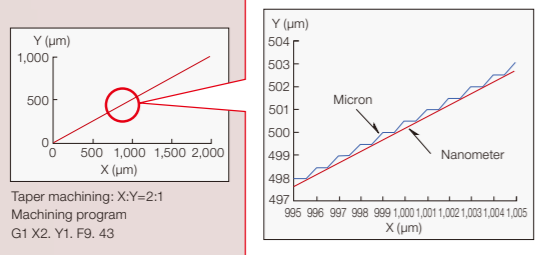
With the sophisticated technologies we have developed as a total factory automation manufacturer, we attain advanced machining control and contribute to the highest accuracy and productivity of manufacturing worldwide.

MITSUBISHI CNCs change machine tools, machining and manufacturing.

High-accuracy Machining with Complete Nano Control



The complete nano control enables all processing in nanometers, from NC operation to servo processing. This advanced machining control technology supports next-generation ultra-precision machining.

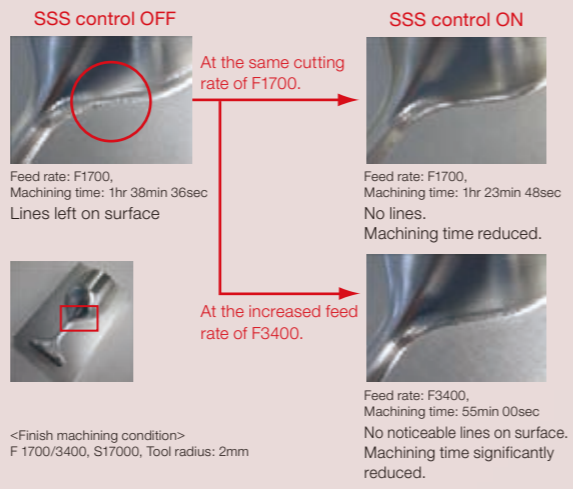


Interpolation path under nanometer control

High-quality Machining with Balanced Accuracy and Speed



SSS control ensures high machining stability and quality with virtually no effects resulting from cutting shape or speed. Smooth surfaces can be achieved even when small steps exist in a path, and machining time can be reduced by 5 to 30% relative to conventional systems.



<Finish machining condition>
F 1700/3400, S17000, Tool radius: 2mm

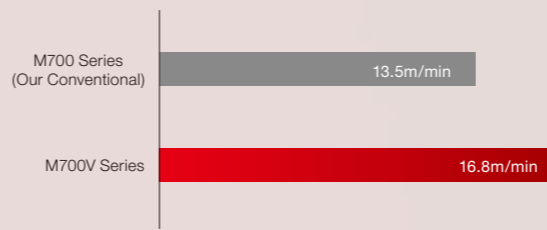
Die/Mold Machining Time Reduced



Complete nano control enables high-speed and high-accuracy machining at a maximum fine-segment feed rate of 168kBPM. (BPM: Block per Minute)

High-speed and High-accuracy Control

Machining speed attained with 0.1mm-pitch NC program

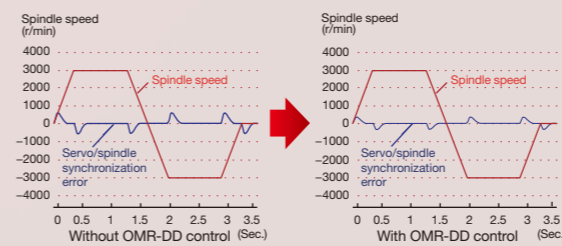
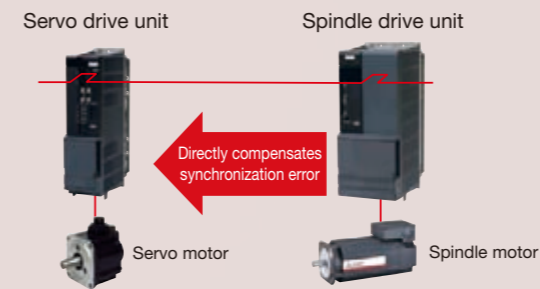


High-speed and High-accuracy Tapping



A high-speed error-compensation function is used for controlling the spindle and servo, enabling accurate tapping. (Note) This function is available with MDS-D2/DH2, MDS-DM2 (one axis only) and MDS-DJ.

OMR-DD Control (Optimum Machine Response Direct Drive)

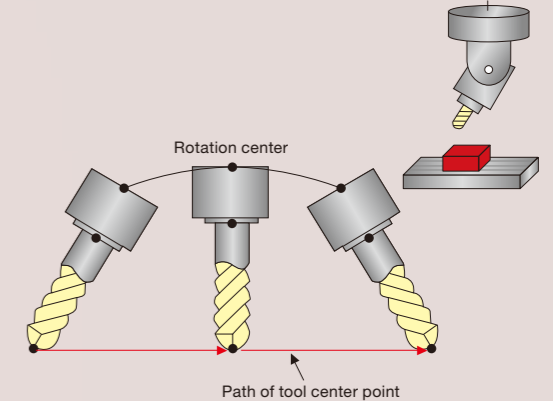


High-grade 5-Axis Machining Control Technology



High-accuracy machining is realized by controlling each axis so that the tool center point moves linearly at a commanded feed rate even if the rotary axis moves in linear interpolation.

Tool Center Point Control

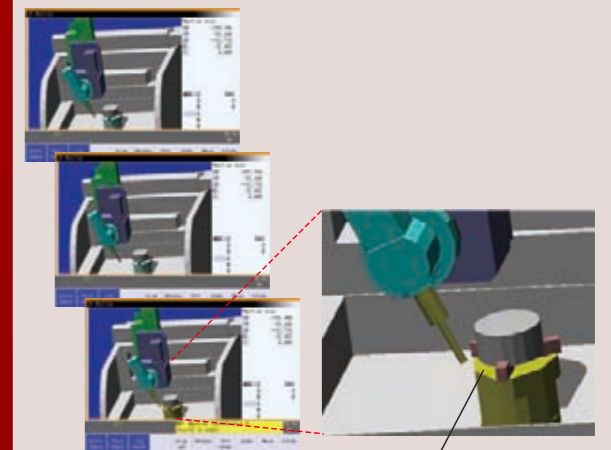


Prevention of Interferences in Machine



When a possibility of interference is detected on a machine model, the motor decelerates to a stop before interfering. The part to interfere is displayed in a different color.

3D Machine Interference Check



Motor decelerates to a stop before interfering. The part to interfere changes in color.



Solutions for the Future

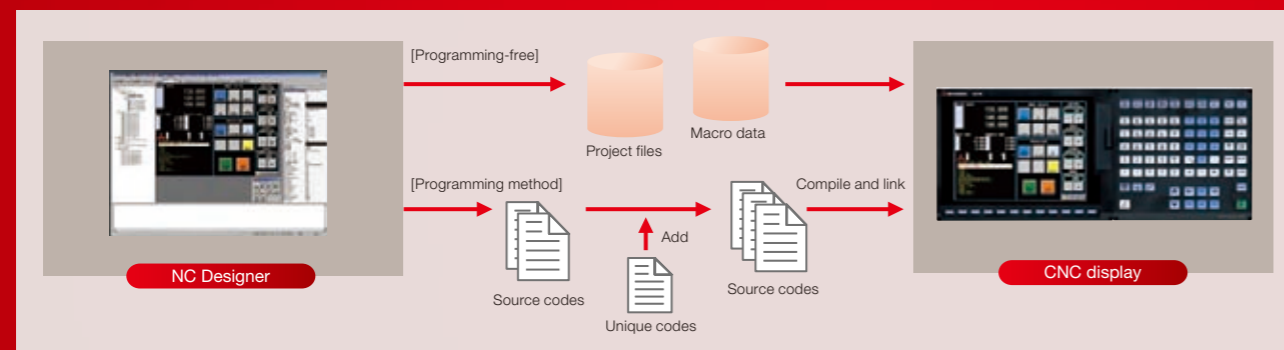
As a global CNC provider as well as the best partner, we provide optimum technologies and supports for the users making a step toward the future.

MITSUBISHI CNCs create new values in cooperation with the users.

Original Screen Design Environment

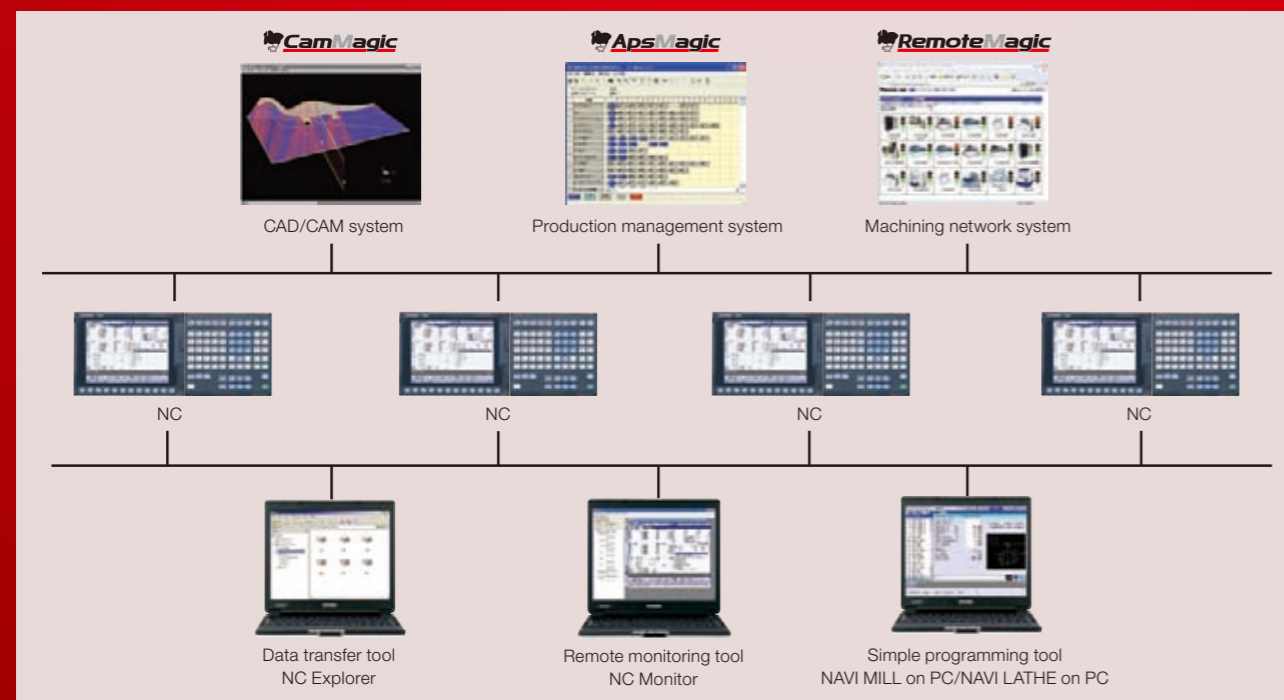
Custom
CNC
Solution

- Well-developed screen design tools help bring out the uniqueness of CNCs.
- NC Designer, which helps create original screens easily, enables users to add unique customized screens that meet machine tool characteristics.
- Two types of designing methods are available: a programming-free method in which automatic programming is carried out upon laying out switches, buttons and data display frames, etc. and a programming method that enables higher-level processing.



Manufacturing Support Software

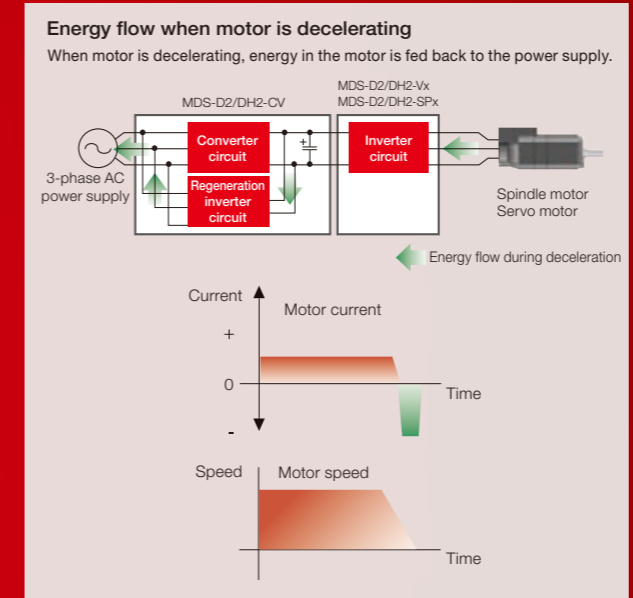
We provide optimal solutions for manufacturing sites by combining various software.



Energy Savings

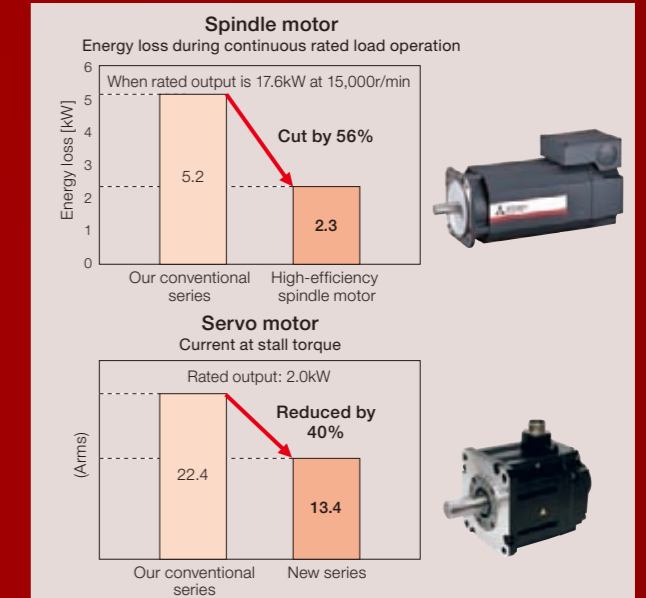
Drive units

Application of the power regeneration system which allows energy generated during deceleration to be efficiently used as a power supply. Use of low-loss power devices enables reductions in loss of power.



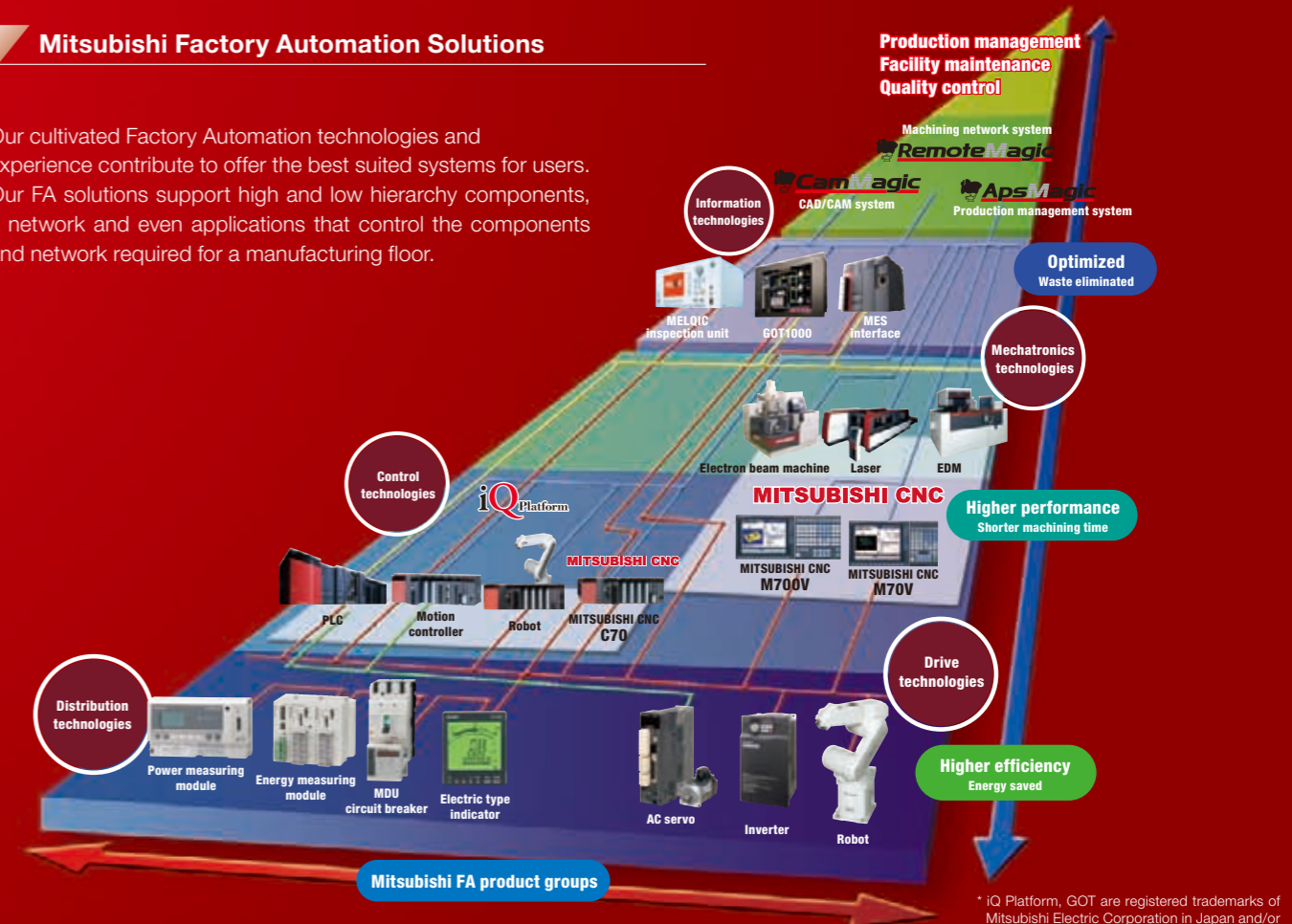
Spindle motors/Servo motors

Energy loss of spindle motors during high-speed operation has been substantially reduced. Drive current of servo motors has also been reduced by downsizing the motors while increasing the torque.



Mitsubishi Factory Automation Solutions

- Our cultivated Factory Automation technologies and experience contribute to offer the best suited systems for users.
- Our FA solutions support high and low hierarchy components, a network and even applications that control the components and network required for a manufacturing floor.



* iQ Platform, GOT are registered trademarks of Mitsubishi Electric Corporation in Japan and/or other countries.

Technologies

Solutions

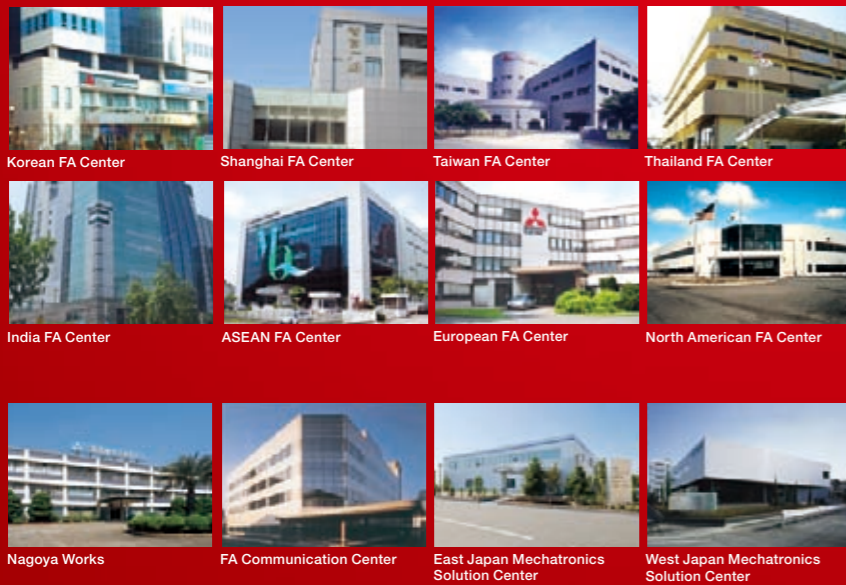
Support

Support for the Day-to-day Comfort

Providing prompt responses, solid technologies and user-friendly supports, we continuously improve our after-sales service quality for users in the world so that they choose MITSUBISHI CNCs again.

Global Service & Support Network

We provide satisfying after-sales services worldwide, aiming to be your best partner.



We have established FA Centers that manage service centers and service satellites in each area to enhance our service quality by providing trainings for engineers and enhancing service parts and repair facilities.

After-sales Service

Maintenance service

Our service centers boasting high-quality customer service system are located in various regions around the world to provide secured and reliable services for the users. We offer wide range of services such as giving prompt and precise advices and suggestions, and on-site repairs, etc.



Part supply

As each service center keeps maintenance parts in stock, the down time after a failure can be minimized. We are making our efforts to provide utmost services that allow users to use their CNC machine tools more securely.



One-year maintenance contract

We provide maintenance services after expiration of warranty period in one-year units. Should there be any failure, our engineer in the closest service center will be at your support immediately.

Training

We provide trainings on both basic and advanced operations using actual machines. Individually tailored training programs and on-site lessons are also available. Please contact us for details.



Displays in 17 Languages

Supports 17 languages.

Supported languages

- Japanese
- Portuguese
- English
- Hungarian
- German
- Dutch
- Italian
- Swedish
- French
- Turkish
- Spanish
- Polish
- Chinese (traditional)
- Russian
- Chinese (simplified)
- Czech
- Korean

High-quality

Our top priority is to provide users with high-performance and high-quality products. We are making the best efforts to improve quality and reliability in every process from planning, development, designing and manufacturing through operation after delivery.



Nagoya Works



FA Development Center

Product Line

Advanced product lines take your machine to the next level

High-grade Mitsubishi CNC M700V Series, Equipped with Advanced Complete Nano Control

- The latest RISC-CPU is installed to achieve advanced complete nano control
- High-accuracy machining with complete nano control
- Easy operability that significantly reduces machining setup time



Global Standard Mitsubishi CNC M70V Series, Pursuing High Speed and Accuracy

- Enhanced machining accuracy and reduced tact time
- Easy and advanced operation contributing to setup time reduction
- Compact size



Simple CNC E70 Series, Offering Easy Operability and High Cost Performance

- Simple operations free operators from burden
- With the latest hardware installed, this CNC realizes high cost performance



iQ Platform Compatible CNC C70 Series Incorporated with Mitsubishi's State-of-the-Art Technologies

- Compatible with the Mitsubishi FA integrated solution, "iQ Platform"
- High-performance CNC integrated with high-speed PLC offers high-speed control to reduce cycle time
- A wide variety of FA products helps construct flexible lines



*Customized screen image

* Windows® is either a trademark or registered trademark of Microsoft Corporation in the United States and/or other countries.

Drive Units

High-performance Servo/Spindle Drive Units MDS-D2/DH2 Series

- With the fastest current control cycle, basic performance is drastically enhanced (high-gain control). A combination of high-speed servo motor and high-accuracy detector helps enhance overall drive performance.
- A line of drive units driving a maximum of two spindles is available, contributing to a reduction in control panel size.
- STO (safe torque off) is now available. ^(Note)



Multi-hybrid Drive Units MDS-DM2 Series

- The multi-hybrid drive unit drives a maximum of three servo axes and one spindle.
- A power regeneration system that efficiently uses energy during deceleration as power contributes to highly-frequent acceleration/deceleration and energy savings.
- STO (safe torque off) is now available. ^(Note)



All-in-one compact drive units MDS-DJ Series

- Ultra-compact drive units with built-in power supplies contribute to reducing control panel size.
- A high-efficiency fan and low-loss power module have enabled unit downsizing, which also leads to a reduction in control panel size.
- STO (safe torque off) is now available. ^(Note)



(Note) Please contact us for availability of STO as a whole system.

Servo Motors

Medium-inertia Motor HF Series

- High-inertia machine accuracy is ensured. Suitable for machines requiring quick acceleration.
- Range: 0.5 to 9 [kW]
- Maximum speed: 4,000 or 5,000 [r/min]
- Supports three types of detectors with a resolution of 260,000, 1 million or 16 million p/rev.



Low-inertia Motor HF-KP Series

- Suitable for an auxiliary axis that requires high-speed positioning
- Range: 0.2 to 0.75 [kW]
- Maximum speed: 6,000 [r/min]
- Supports a detector with a resolution of 260,000p/rev.



Linear Servo Motor LM-F Series

- Use in clean environments is possible since no ball screws are used and therefore contamination from grease is not an issue.
- Elimination of transmission mechanisms which include backlash, enables smooth and quiet operation even at high speeds.
- Dimensions:
Length: 290 to 1,010 [mm]
Width: 120 to 240 [mm]



Direct Drive Servo Motor TM-RB Series

- High-torque direct-drive combined motor with a high-gain control system provides quick acceleration and positioning, which makes rotation smoother.
- Suitable for a rotary axis that drives a table or spindle head.
- Range:
Maximum torque: 36 to 1,280 [N·m]



Spindle Motors

High-performance New Type Spindle Motor SJ-D Series

- Motor energy loss has been significantly reduced by optimizing the magnetic circuit.
- Product line:
Normal SJ-D Series 3.7 to 11 [kW]
Compact & light SJ-DJ Series 5.5 to 15 [kW]
Low-inertia SJ-DL Series 5.5 [kW]



High-performance Spindle Motor SJ-V Series

- A vast range of spindle motors is available, all ready to support diversified machine tool needs.
- Product line:
Normal SJ-V Series 0.75 to 55 [kW]
Wide-range constant output SJ-V Series 5.5 to 18.5 [kW]
High-speed SJ-V-Z Series 2.2 to 22 [kW]
Hollow-shaft SJ-VS Series 5.5 to 18.5 [kW]



Low-inertia, High-speed Spindle Motor SJ-VL Series

- The spindle dedicated to tapping machines requiring faster drilling and tapping.
- The low-inertia reduces acceleration/deceleration time, resulting in higher productivity.
- Product line:
Low-inertia normal SJ-VL Series 3.0 to 11 [kW]
Low-inertia hollow shaft SJ-VLS Series 3.7 to 11 [kW]



Tool Spindle Motor HF-KP/HF-SP Series

- Taking advantage of the characteristics of a servo motor such as smallness and high-output, this motor serves as a compact and high-output spindle motor which is capable of high-speed rotation (6,000r/min). This motor contributes to downsizing of spindles, such as the rotary tool spindle.
- Product line:
Small capacity HF-KP Series 0.4 to 0.9 [kW]
Medium capacity HF-SP Series 2.2 to 4 [kW]



Built-in Spindle Motor

- As feedback communication is serial, the resolution is significantly enhanced (Max. 4 million p/rev)
- The adjustment PCB has been eliminated to achieve adjustment-free conditions. The standard gap has been reduced to 0.3mm.



IPM Spindle Motor

- In answer to demands for downsizing and higher efficiency, an IPM motor has been introduced for further energy savings.
- A reduction in acceleration/deceleration time contributes to shorter cycle times.



M700V Series

High-grade Mitsubishi CNC M700V Series, equipped with advanced complete nano control

Latest RISC-CPU achieves Advanced Complete Nano Control

- The latest RISC-CPU and high-speed optical servo network are installed, achieving high-speed and high-accuracy control, nano control and 5-axis machining
- Functions can be easily expanded by adding an expansion unit
- Ultrahigh-speed PLC engine reduces cycle time

High-accuracy Machining with Complete Nano Control

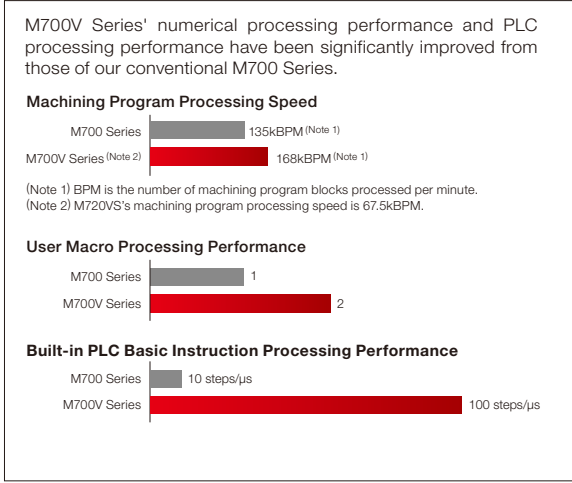
- Combination of "complete nano control" that processes everything from NC operation to servo control processing in nanometers, a state-of-the-art technology "SSS control" and "OMR control" makes it possible to achieve ultrahigh-quality machining
- High-speed and high-accuracy machining at 168k blocks per minute is possible

Easy Operability that Significantly Reduces Machining Setup Time

- NC screen design has been renewed to strongly support operations from machining setup to monitoring
- The NC screen displays machining program check and machining states visually by using 3D display

Windows®XPe-based Model Added to the Product Line

- Since Windows®XPe is installed in M720VW, M730VW and M750VW, they facilitate developing such as MTB's original CAM function and data managing function that can enhance the operability



Main Specifications

Specifications	Model name	Machining center system			Lathe system			Machining center system			Lathe system		
		M720VS	M730VS	M750VS	M720VS	M730VS	M750VS	M720VW	M730VW	M750VW	M720VW	M730VW	M750VW
Maximum number of control axes (NC axes + spindles + PLC axes)		12	16		12	16		12	16		12	16	
Maximum number of NC axes (in total for all the part systems)		8	16		12	16		8	16		12	16	
Maximum number of spindles		4			4			4			4		
Maximum number of PLC axes		6			6			6			6		
Maximum number of PLC indexing axes		4	6		4	6		4	6		4	6	
Maximum number of simultaneous contour control axes		4	8		4	8		4	8		4	8	
Maximum number of NC axes per part system		6	8		6	8		6	8		6	8	
Maximum number of part systems		2			2	4		2			2	4	
CF card in control unit mode		—			—			Available			Available		
Front IC card mode		Available			Available			Available			Available		
Hard disk mode		—			—			Available			Available		
Least command increment		0.1μm	1nm		0.1μm	1nm		0.1μm	1nm		0.1μm	1nm	
Least control increment			1nm			1nm			1nm			1nm	
Maximum program capacity		2,000kB (5,120m)			2,000kB (5,120m)			2,000kB (5,120m)			2,000kB (5,120m)		
Maximum PLC program capacity		128,000 steps			128,000 steps			128,000 steps			128,000 steps		
Display		8.4-type/10.4-type/10.4-type touch panel (selectable)						10.4-type/10.4-type touch panel/15-type/15-type touch panel (selectable)					
Keyboard		Sheet keys/clear keys (selectable)						Clear keys					
Windows® XPe		—						Available					
MITSUBISHI CNC machine operation panel		Compatible						Compatible					

* Maximum specifications including optional specifications are listed.

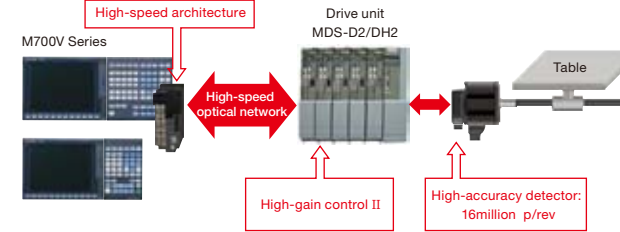
* Windows® is either a trademark or registered trademark of Microsoft Corporation in the United States and/or other countries.

* CompactFlash and CF are either trademarks or registered trademarks of SanDisk Corporation in the United States and/or other countries.

Complete Nano Control



All operations from program values to servo commands are done in nanometer units. Interpolation is at the nano-unit level even when program commands are in micrometer units.

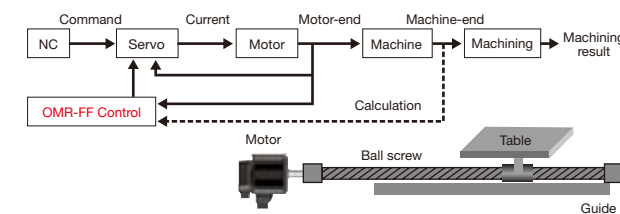


OMR-FF Control



Optimum Feed Forward

Unlike conventional control, which simply matches the motor path to the commands, OMR control calculates the machine's status based on a model and applies correction to motor control in order to match not the motor position, but the machine tool position to the commands.



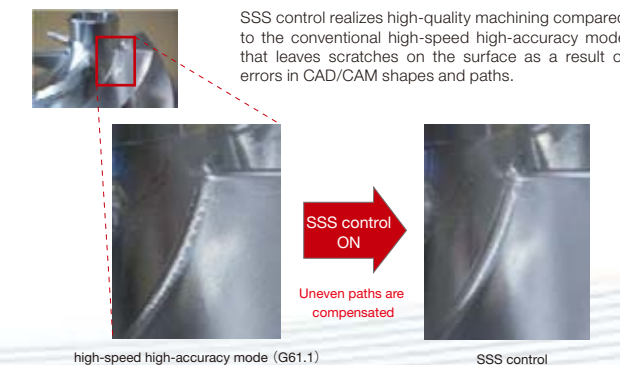
SSS Control (Machining Center System)



Super Smooth Surface

*1st part system only

SSS control is now available for the most basic function of five-axis simultaneous interpolation control, tool center point control. It compensates uneven paths output from CAM to smoothly joint the tool center points' path. In addition, rotary axis pre-filter is available to move the rotary axis smoothly, which achieves high-grade cutting in five-axis simultaneous machining.



high-speed high-accuracy mode (G61.1)

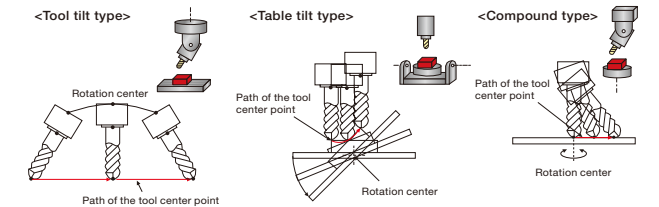
SSS control

Tool Center Point Control (Machining Center System)



*M750VS, M750VW only

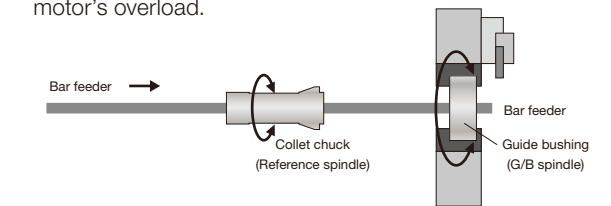
High-accuracy machining is realized by controlling each axis so that the tool center point moves linearly at a commanded feed rate even if the rotary axis moves in linear interpolation.



Guide Bushing Spindle Synchronization Control (Lathe System)

This function is for a machine with a spindle motor to rotate a guide bushing: This function allows the guide bushing spindle motor (G/B spindle) to synchronize with a reference spindle motor (Reference spindle).

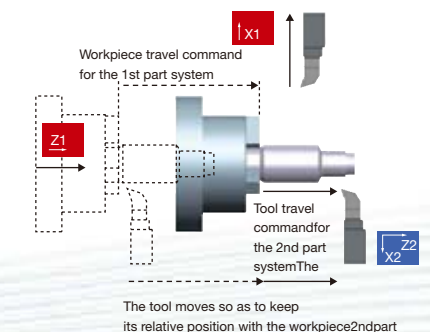
The position error compensation function reduces the spindle's vibration due to the workpiece's torsion, and the motor's overload.



Control Axis Superimposition (Lathe System)

- This function enables machining using a certain part system simultaneously with that of another part system by superimposing their movements.

- This is effective when machining in multiple part systems is executed simultaneously. It allows for an axis to shift its coordinate system relative to the system using the axis.



The tool moves so as to keep its relative position with the workpiece 2nd part

M70V Series

Global standard Mitsubishi CNC pursuing high speed and accuracy

Enhanced Machining Accuracy and Reduced Tact Time

- The minimum command unit of 0.1 μ m and minimum internal interpolation unit of 1nm allow highly accurate and smooth machining
- High-speed error compensation function is incorporated in spindle and servo controls, which enables high-speed and high-accuracy tapping, etc
- The high-speed PLC engine enhances the operation speed, contributing to cycle time reduction

Easy and Advanced Operation Contributing to Setup Time Reduction

- This CNC is equipped with pop-up screens that prevent operators from being bothered with screen hierarchy, and guiding function that displays guidance on operations, programs and alarms
- Ethernet interface is installed as standard; thus, program management can be easily realized
- A compact flash installed in front of the display allows storing of large-capacity NC programs and easy management of maintenance data
- Simple programming functions NAVI MILL and NAVI LATHE are installed

Compact Size Achieved

- Unit dimensions have been downsized by integrating a display with CNC control part, contributing to downsizing of control panel
- High visibility TFT color LCD is used. 8.4-type and 10.4-type displays are available



Main Specifications

Specifications	Model name	Machining center system		Lathe system	
		M70V TypeB	M70V TypeA	M70V TypeB	M70V TypeA
Number of control axes	Maximum number of control axes (NC axes + PLC axes + spindle)	9	11	9	11
	Maximum number of NC axes (in total for all the part systems)	5	8	5	9
	Maximum number of spindles	2	2	3	4
	Maximum number of PLC axes	6	6	6	6
	Maximum number of simultaneous contour control axes	4	4	4	4
Maximum number of part systems		1	2	1	2
Least command increment		0.1 μ m			
Least control increment		1nm			
Maximum program capacity		500kB [1,280m]	2,000kB [5,120m]	500kB [1,280m]	2,000kB [5,120m]
Maximum PLC program capacity		20,000 steps	32,000 steps	20,000 steps	32,000 steps
Display		8.4-type/10.4-type/10.4-type touch panel (selectable)			
Keyboard		Sheet keys/clear keys (selectable)			
HMI customization function		NC Designer			
MITSUBISHI CNC machine operation panel		Compatible			

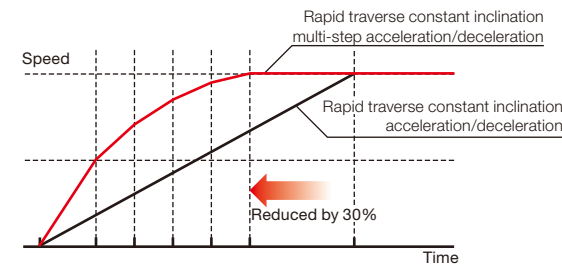
* Maximum specifications including optional specifications are listed.

* Ethernet is a registered trademark of Xerox Corporation in the United States and/or other countries.

* CompactFlash and CF are either trademarks or registered trademarks of SanDisk Corporation in the United States and/or other countries.

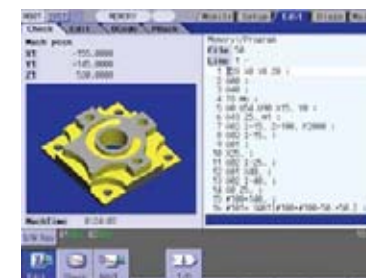
Rapid Traverse Constant Inclination Multi-step Acceleration/Deceleration Function (Machining Center System) High Speed Performance

- Rapid traverse acceleration/deceleration is performed according to the motor's torque characteristics.
- As the motor's characteristics can be utilized optimally, positioning time is reduced, and cycle time is improved.



3D solid program check (Machining Center System) TypeA only

The added 3D solid model check function allows more realistic cutting check.

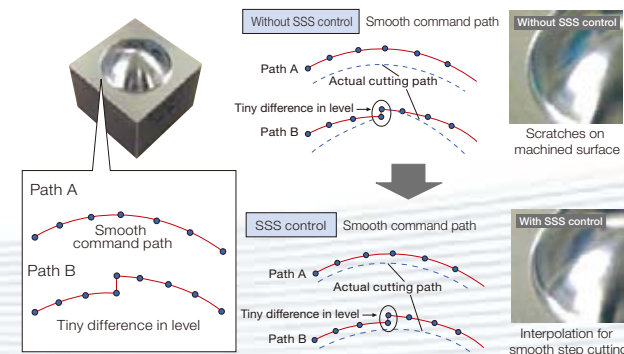


SSS Control (Machining Center System) SSS CONTROL

Super Smooth Surface

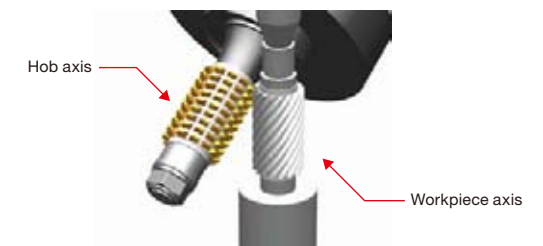
*TypeA only
*1st part system only

By judging shapes in large from commanded paths, unnecessary deceleration is reduced even when fine steps exist; thereby, realizing smooth and deviation free die-mold machining. Machining time can be shorter by 5 to 30% relative to our conventional system, especially more effective at a higher feed rate. (Note) Additional hardware is required.



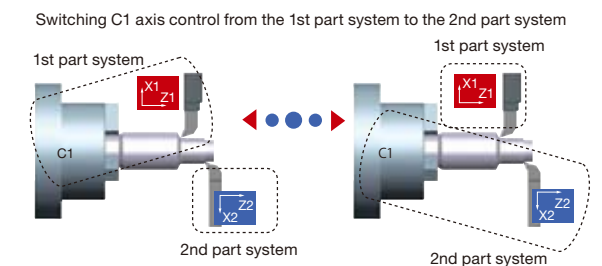
Hobbing (Lathe System) TypeA only

- G code format is available for hobbing.
- A spur gear can be machined by synchronously rotating the hob axis and the workpiece axis in a constant ratio. A heli-cal gear can be machined by compensating the workpiece axis according to the gear torsion angle for the Z axis movement.



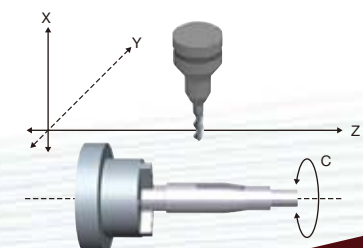
Mixed Control (cross axis control) (Lathe System) TypeA only

The control axes of each part system can be exchanged using a program command. This enables the axis defined as the axis of the 1st part system to be operated as the axis of the 2nd part system.



Polar Coordinate Interpolation (Lathe System)

- This function converts the commands programmed for the orthogonal coordinate axes into linear axis movements (tool movements) and rotary axis movements (workpiece rotation) to control the contours.
- It is useful for tasks such as cutting linear cutouts on the outside diameter of the workpiece and grinding camshafts.



E70 Series

Simple CNC Offering Easy Operability and High Cost Performance

Simple operations free operators from burden

- This CNC has the same screen structure as of M700V and M70V Series, allowing easy operations.
- Switching between milling and lathe systems is accomplished simply by changing the parameter.
- Various support tools help reduce initial setup time including the time for developing ladder programs and customized screens.

With the latest hardware installed, this CNC realizes high cost performance

- CNC control part integrated with a display provides compact size and high cost performance.
- Ethernet interface is installed as standard; thus, program management can be easily realized.
- Compatible with analog output, this CNC allows a spindle motor to be driven by an inverter.



Main Specifications

Specifications	Model name	Milling system	Lathe system
Number of control axes	Maximum number of control axes (NC axes + PLC axes + spindle)	6	6
	Maximum number of NC axes (in total for all the part systems)	3	3
	Maximum number of spindles	1	2
	Maximum number of PLC axes	2	2
	Maximum number of simultaneous contour control axes	3	3
Maximum number of part systems		1	1
Least command increment		0.1 μm	
Least control increment		1nm	
Maximum program capacity		230kB [600m]	
Maximum PLC program capacity		8,000 steps	
Display		8.4-type	
Keyboard		Sheet keys	
HMI customization function		NC Designer	
MITSUBISHI CNC machine operation panel		Compatible	

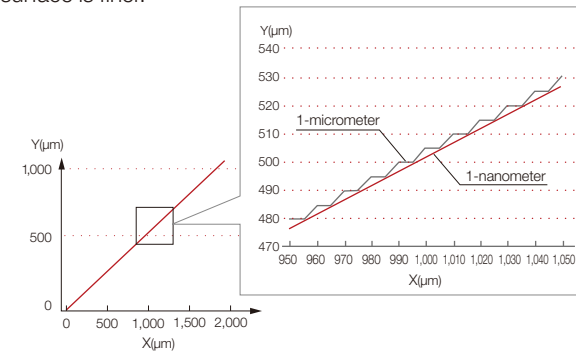
* Maximum specifications including optional specifications are listed.

Nano Control



Interpolation calculation accuracy improved

Even with one-micron-unit commands in the machining program, interpolation is in nanometer units. As the calculation accuracy of a block intersection is improved, lines on the surface is finer.

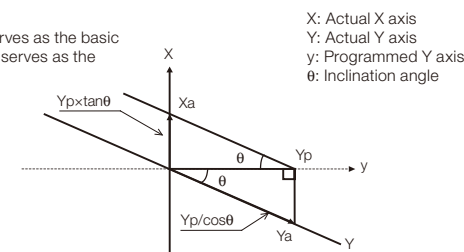


Inclined Axis Control (Lathe System)

- Even when the control axes configuring a machine are mounted at an angle other than 90 degrees, this function enables it to be programmed and controlled in the same way as with an orthogonal axis.
- The inclination angle is set using a parameter, and axes are controlled using the movement amounts of the axes which are obtained through conversion and compensation using this angle.

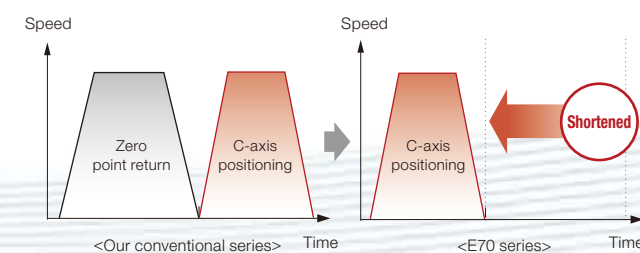
<Example of use>

When the X axis serves as the basic axis and the Y axis serves as the inclined axis



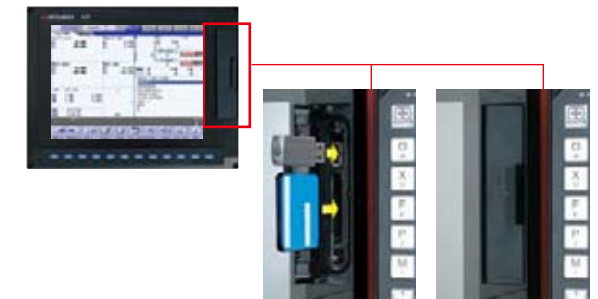
Spindle/C-axis Control

The spindle's constant position loop control has eliminated the zero point return time when switching from the spindle to C-axis.



Memory Card/USB Memory Interface

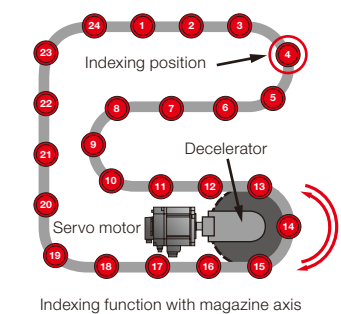
A compact flash memory card (CF card) /USB memory interface is located on the front of the display. In using CF card, the card slot can be completely covered by a lid so as to prevent foreign materials from entering (IP67).



PLC Axis

Indexing function

By setting the number of stations required for the application, the drive automatically sets up equal intervals between each station. Positioning of the axis is only possible by commanding the station number.



MITSUBISHI CNC Machine Operation Panel

PLC program samples have been prepared for the basic key layout, enabling the creation of suitable PLC programs for your machine simply by adding interface components with machine. Refer to the product brochure for details.



Example when combined with an 8.4-type display

* Ethernet is a registered trademark of Xerox Corporation in the United States and/or other countries.

* CompactFlash and CF are either trademarks or registered trademarks of SanDisk Corporation in the United States and/or other countries.

User-friendly

for M700V Series & M70V Series & E70 Series

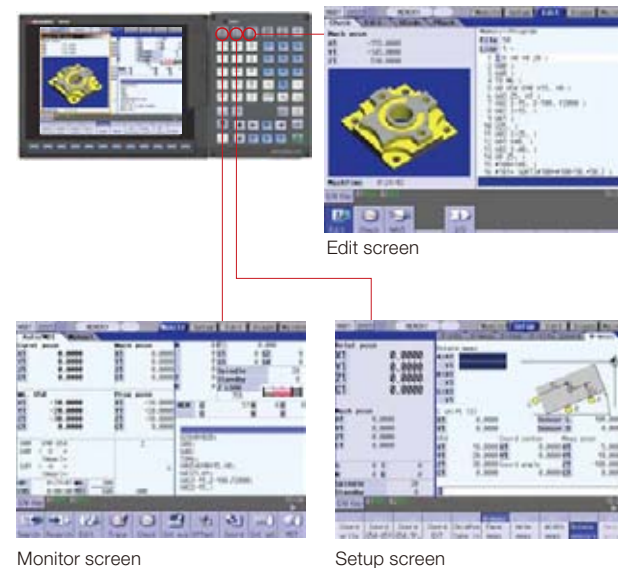
Human Machine Interface allowing easier and more visible use

HMI for Easier and More Visible Use

(HMI:Human Machine Interface)

Screen structure linking to the operation processes

Operation processes are divided into three steps, "Monitor", "Setup" and "Edit", and necessary information is aggregated into three screens. These screens can be displayed by touching a single button on the keyboard.



Monitor screen Setup screen

2-part system display

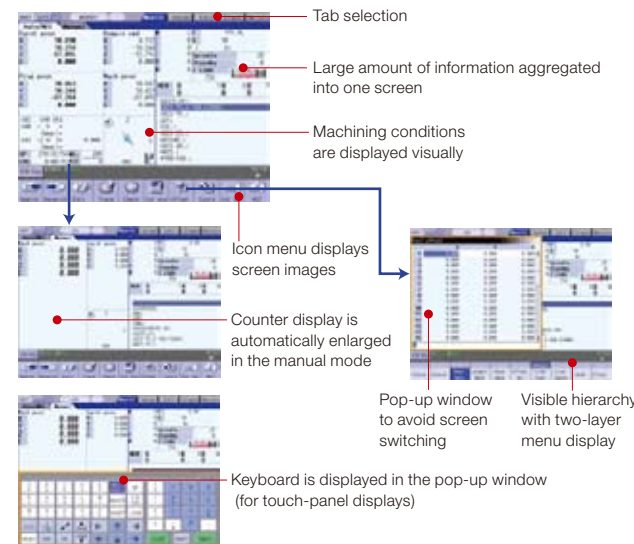
The Monitor screen of the 2nd part system can be displayed together with the 1st part system. Switching screens is not necessary.



2-part system display

Pop-up screens

Tabs allow the user to select necessary operations from the operation menu, and pop-up screens allow the user to access desired information while the original screen remains displayed. For displays with a touch panel, a keyboard can be displayed on the screen.



Menu customization function

Menu keys on the bottom of the screen can be freely arranged. Frequently used menu keys can be put together on the first page.



Operation Support

Manual/Automatic backup function

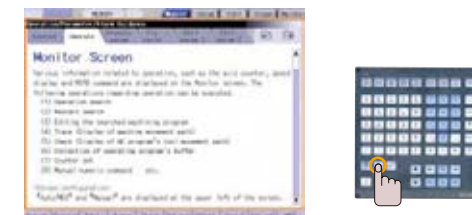
- Batch-backup of the NC data into the memory card/USB memory inserted in the front interface of the display is possible. For the built-in hard disk type M700V Series, backup in the hard disk is also possible.
- Data is automatically backed-up at a certain interval set by the parameter.



Manual/automatic backup function

Guidance function

By pressing the help button, guidance (operation procedure /parameter descriptions/alarm descriptions/G code format) regarding the currently displayed screen will be shown.



Simple Programming Functions with Simple Machining Menu

NAVI MILL (Machining center system) / NAVI LATHE (Lathe system)

* M700V Series, M70V Series only



- Programs are automatically created for each process when an operator selects machining process and inputs data on screen. A tool path can be graphically drawn for the program check.
- This function also supports inclined surface machining.

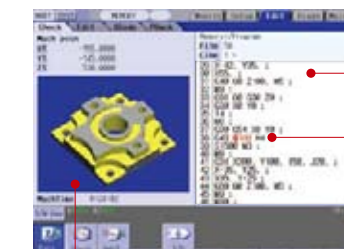


NAVI MILL (Machining center system)

NAVI LATHE (Lathe system)

Program input error warning function

- The added 3D solid model check function allows more realistic cutting check.^{*1}
- This function helps an operator to input and check programs. Errors are indicated when a decimal point is omitted.^{*2}



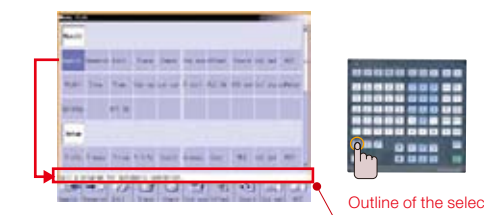
Program check based on a 3D solid model

Integration of program check and editing functions
Decimal point omitted: A decimal point has been left out of the address data

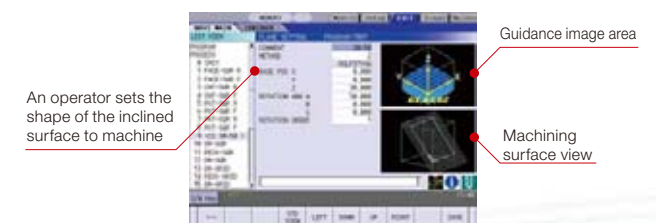
*1 Available with M700V Series, M70V TypeA (M System) only.
*2 Available with M700V Series only.

Menu list

Menu list buttons are newly introduced. With these buttons, the screen desired for display can be called up directly. The selected screen's function outline is also displayed.



Shortcut icons to each screen
Outline of the selected function appears



An operator sets the shape of the inclined surface to machine

Guidance image area

Machining surface view

C70 Series

iQ Platform-compatible CNC, providing the largest effect on TCO reduction



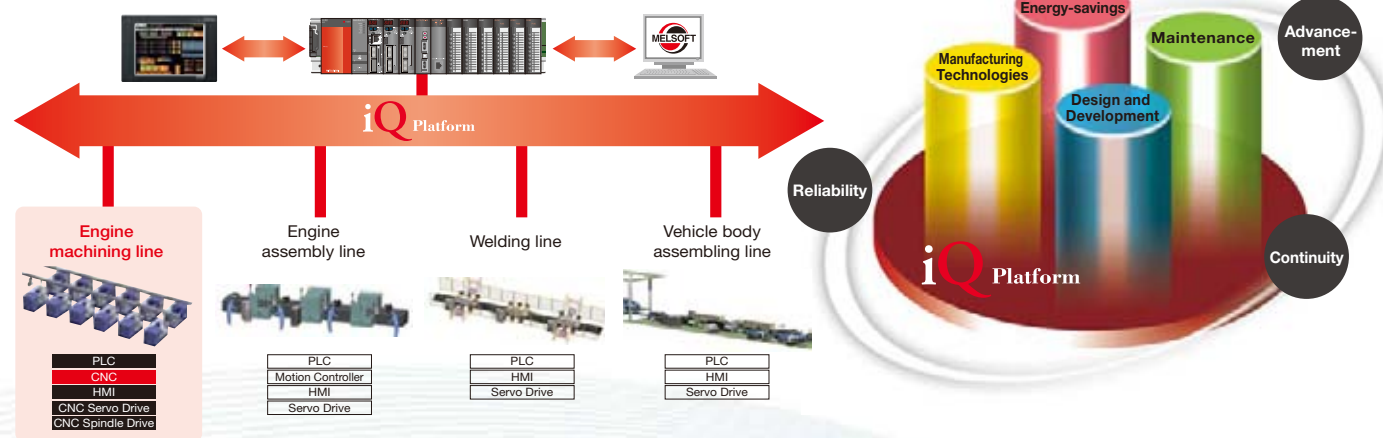
- A CNC structured in building block method on iQ Platform
- Compact and high-speed CNC CPU module "Q173NCCPU" equipped with the multi-axis and multi-part system control
- Ultrahigh-speed connection between ultrahigh-speed PLC CPU module MELSEC QnUD (H) CPU and CNC CPU
- Variety of modules for power supply, input/output interface, network and measurement are available
- "Mitsubishi Graphic Operation Terminal", an easily customizable HMI with high performance and multiple functions
- Compatible with MELSOFT, easy-to-use engineering tools with multiple functions



Main Specifications

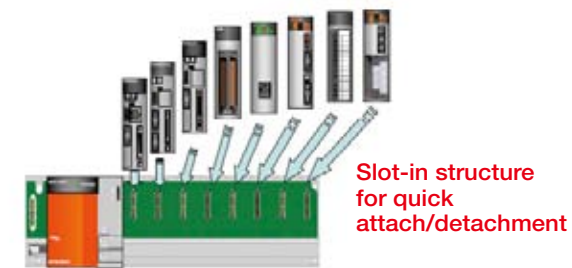
Specifications	Model name C70		
	Machining center system	Lathe system	
Number of control axes	Number of basic control axes (NC axes)	3	2
	Maximum number of control axes (NC axes + spindles + PLC axes)	16	16
	Maximum number of NC axes (total for part systems)	16	16
	Maximum number of spindles	7	4
	Maximum number of PLC axes	8	8
	Number of simultaneous contouring control axes	4	4
Number of control part systems	Maximum number of NC axes in a part system	8	8
	Standard number of part systems	1	1
	Maximum number of part systems	7	3
PLC function	Program capacity [k steps]	Select from among 30/40/60/100/130/260	
	Maximum number of files to store	124/252	
	Number of input/output points	4,096	

iQ Platform makes it possible to structure optimum controllers for various lines.



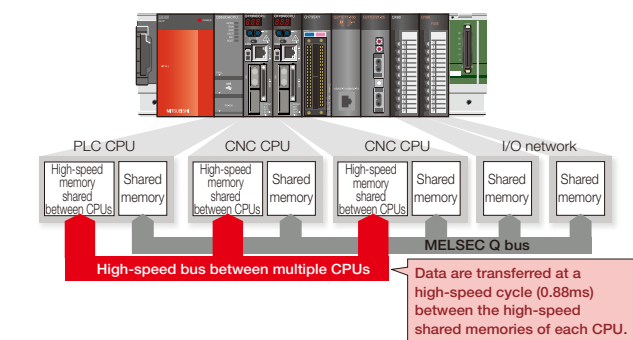
Building Block Type

- Variety of network modules for Mitsubishi PLC MELSEC-Q Series are available.
- Motion controllers and robots are compatible with iQ Platform, enabling system expansion.



Ultrahigh-speed network between CNC CPUs and PLC CPUs

For data transfer between CNC CPUs and PLC CPUs, we have newly developed a dedicated high-speed bus. Data are transferred at a high-speed cycle (0.88ms) between the high-speed shared memories of each CPU, so each CPU speed can be fully utilized.



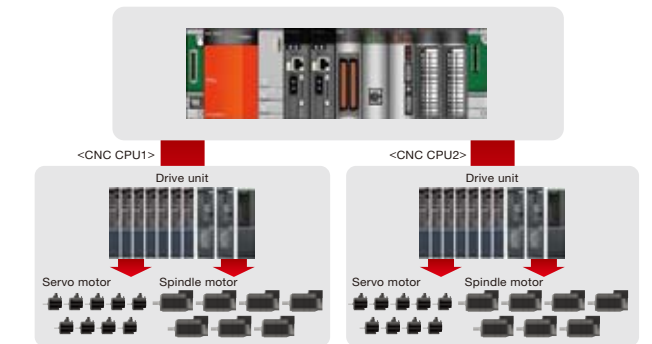
New Model Q PLC

Sequence processing time is widely accelerated, including 3.5 times faster basic instruction performance compared to our conventional one. Reduced scan time also reduces the tact time.

Basic command performance	New model Q PLC	Approx. 3.5 times
	Conventional PLC	
Floating-point arithmetic performance	New model Q PLC	Approx. 13 times
	Conventional PLC	
PC MIX value	New model Q PLC	Approx. 6 times
	Conventional PLC	

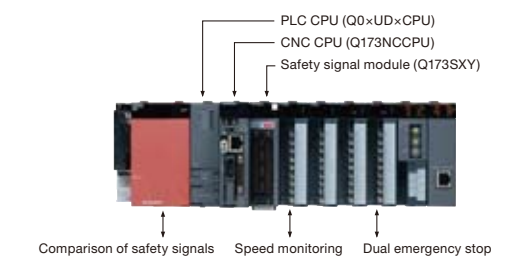
Multi-axis, Multi-part System Control

One CNC CPU module up to 7 part systems and 16 axes. Up to two CNC CPU modules can be installed on iQ Platform.



Safety Observation Function

This function enables safety signal comparison, speed observation and duplexed emergency stop. This function complies with the European safety standard EN ISO 13849-1 PL d.



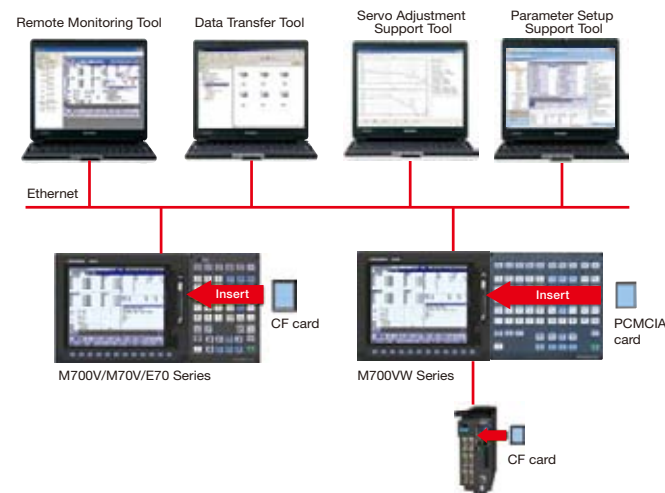
GOT 1000 Series Displays

- Customized screens can be easily developed with the GOT screen creation tool (GT Designer). It is possible to operate a machine via a touch panel instead of a conventional machine operation panel.
- NC Monitor is installed in SVGA and XGA models as standard, which enables setting of each NC data and editing of machining programs, etc.



User Support Tools/Development Tools

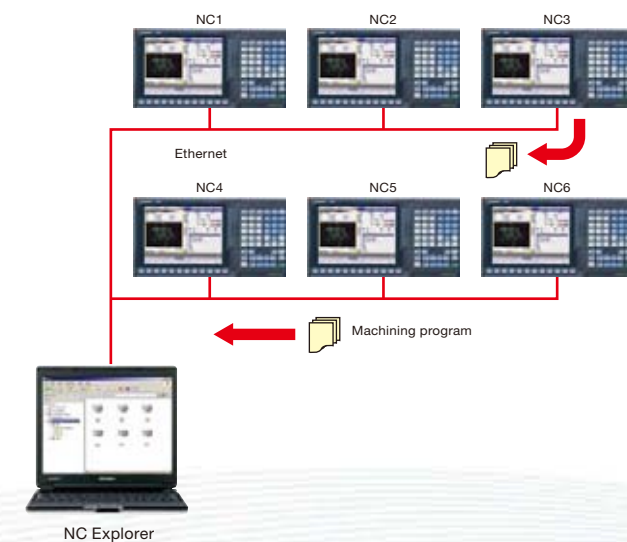
User Support Tools Provide an Improved CNC Environment
Rich Development Tools Help Bring out the Uniqueness of CNCs



NC Explorer M700V M70V E70 (Plan)

Data Transfer Tool

By connecting the NC and host personal computer via Ethernet, data such as machining programs can easily be shared. This tool is free of charge. Please contact us.



NC Trainer/NC Trainer plus M700V M70V E70 (Plan) (Plan)

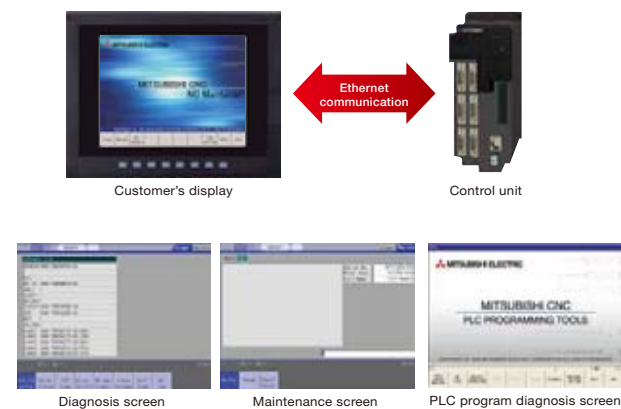
MITSUBISHI CNC Training Tool

- NC Trainer is an application for operating the screens of MITSUBISHI CNC M700V/M70V/E70 Series and machining programs. This application can be used for learning operating CNC and checking the operations of the machining programs.
- NC Trainer plus can also be used for checking the PLC program and custom screens.



NC Maintainer M700VW

A software tool for a personal computer to carry out maintenance (such as parameter setting, NC diagnosis and PLC program diagnosis) of MITSUBISHI CNC on customer's display.

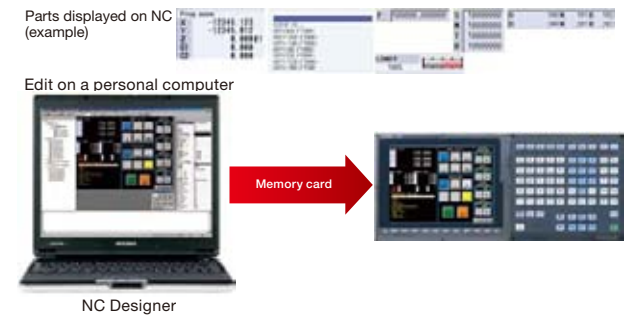


* An operation check is required in combination with software installed on the display.

NC Designer M700V M70V E70

Screen Design Tool

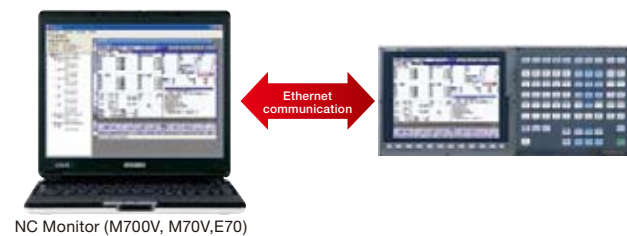
- By laying out ready-made standard parts, you can easily create original screens without programming.
- Using the C language source generation function of NC Designer, customized functions can be added by programming in C language. (Dedicated development environment necessary)



NC Monitor M700V M70V E70 (Plan) / Remote Monitor Tool C70

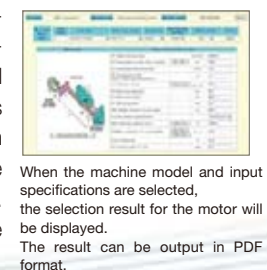
Remote Monitoring Tool

An identical NC display screen can be displayed on a personal computer. By connecting a personal computer to the NC unit when necessary, various data can be checked and set using the same HMI as the standard NC screen. Remote Monitor Tool (C70) is free of charge. please contact us.



Servo Selection Tool M700V M70V E70 C70

By selecting the machine configuration model and inputting the machine specifications, the optimal servo motor meeting specifications can be selected. Other selection functions which fully support drive system selection are also available. This tool is free of charge. Please contact us.



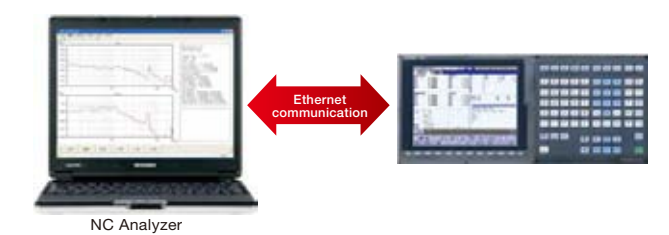
<Main functions>
Servo motor capacity selection, regenerative resistor capacity selection, spindle acceleration/deceleration time calculation, power supply capacity selection, power supply facility capacity calculation, etc.

NC Analyzer M700V M70V E70 C70 (Plan)

Servo Adjustment Support Tool

Servo parameters can be automatically adjusted by activating the motor using machining programs for adjustment or vibration signals, and measuring/analyzing the machine characteristics. This tool is free of charge. Please contact us.

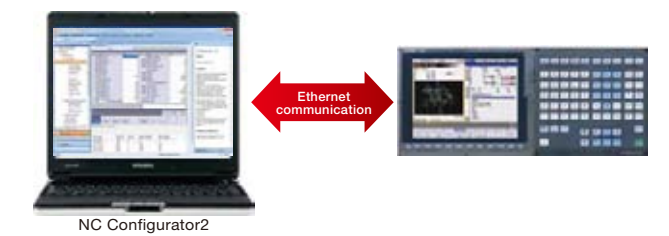
<Main functions>
Bode diagram measurement display, speed loop gain adjustment, position loop gain adjustment, notch filter setting, acceleration/deceleration time constant adjustment, circularity adjustment and servo waveform measurement



NC Configurator2 M700V M70V E70 C70 (Plan)

Parameter Setup Support Tool

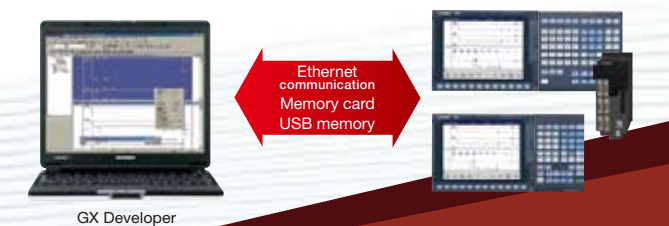
The NC data file necessary for NC control and machine operation (such as parameters, tool data and common variables) can be edited on a personal computer. Please contact us to purchase a full function version. (A limited function version is also available free of charge.)



GX Developer M700V M70V E70 C70

Sequence Programming Tool

The MELSEC programming tool, offering a wide array of functions and easy use, allows for convenient program design and debugging. Linking with a simulator or other utility allows for the efficient creation of desired programs.



* Ethernet is a registered trademark of Xerox Corporation in the United States and/or other countries.
* CompactFlash and CF are either trademarks or registered trademarks of SanDisk Corporation in the United States and/or other countries.

* MELSEC is a registered trademark of Mitsubishi Electric Corporation in Japan and/or other countries.

Automation Related Products

PLC | MELSEC-Q Series Universal Model



Realizing high-speed, large volume data processing to support complicated processing equipment and manufacturing systems.

- ◎Realize high-speed, high-accuracy machine control with various iQ Platform compatible controllers and multiple CPUs.
- ◎Easily connect to GOTs and Programming tools using built-in Ethernet port.
- ◎20 models from 10 k step small capacity to 1000 k step large capacity, are available.
- ◎Seamless communication and flexible integration at any network level.

Product Specifications

Program capacity	10k steps to 1000k steps
Number of I/O points [X/Y], number of I/O device points [X/Y]	256 points to 4096 points/8192 points
Basic instruction processing speed (LD instruction)	120ns to 9.5ns
External connection interface	USB(all models equipped), Ethernet, RS-232, memory card
Function module	I/O, analog, high-speed counter, positioning, simple motion, temperature input, temperature control, network module
Module extension style	Building block type
Network	Ethernet, CC-Link IE controller network, CC-Link IE field network, CC-Link, CC-Link/LT, MELSECNET/H, SSCNETIII (/H), AnyWire, RS-232, RS-422

HMI | Graphic Operation Terminal GOT1000 Series GT16 Model



Full-flat face body integrating all the functions required of a HMI.

- ◎All models are equipped with Ethernet, RS-422/485 and RS-232 interfaces enabling a diverse range of communications.
- ◎A multimedia unit and a video/RGB unit (optional) are supported for smooth recording and playback of moving images.
- ◎USB host and device ports are provided as a standard on the front panel. Easily connect to a personal computer for data exchange.
- ◎Large 15MB memory capacity allows you to use optional functions and real parts, etc., without worrying about memory space.

Product Specifications

Screen size	15", 12.1", 10.4", 8.4", 5.7"
Resolution	XGA, SVGA, VGA
Intensity adjustment	8-step or 4-step adjustment
Touch panel type	Analog resistive film
Built-in interface	RS-232, RS-422/485, Ethernet, USB, CF card
Applicable software	GT Works3
Input power supply voltage	100 to 240VAC (+10%, -15%), 24VDC (+25%, -20%)

Inverter | FREQROL-A700 Series



High-function, high-performance inverter

- ◎High-accuracy, high-response speed control using real sensor-less vector control is possible with a general-purpose inverter having no PLG (encoder) (200% torque/0.3 Hz (3.7 K or less)).
- ◎Full-scale vector control is possible when used in combination with a motor with PLG (when using option).
- ◎The built-in noise filter (EMC filter) helps reduce noise generated from the inverter.
- ◎This series supports IPM motor operation. Use auto tuning to operate with the optimum motor characteristics.

Product Specifications

Inverter capacity	200V class: 0.4kW to 90kW, 400V class: 0.4kW to 500kW
Control method	IPM control, Soft-PWM control, high-carrier frequency PWM control (Select from V/F, advanced flux vector, or real sensor-less vector), vector control (when using options)
Output frequency range	0.2 to 400Hz (real sensor-less vector, upper frequency during vector control is 120Hz)
PM offline auto tuning	200V class: 0.4K to 1.5K (150%3%ED), 2.2K/3.7K (100%3%ED) When using the MM-CF Series, the motor constants, etc., are automatically measured for operation with the optimum motor characteristics (IPM motors other than the MM-CF Series, and other IPM motor brands are also supported)
Starting torque	200% 0.3Hz (3.7K or less), 150% 0.3Hz (5.5K or more) (when using real sensor-less vector, vector control)

* MELSEC, iQ Platform, GOT, CC-Link, CC-Link/LT, CC-Link IE are registered trademarks of Mitsubishi Electric Corporation in Japan and/or other countries.
* Ethernet is a registered trademark of Xerox Corporation in the United States and/or other countries.
* CompactFlash and CF are either trademarks or registered trademarks of SanDisk Corporation in the United States and/or other countries.

Contactors and Motor Starters | MS-N Series



Compact body with full satisfaction

- ◎Lineup from 10A to 800A frames. Available in wide range of applications.
- ◎Conforming to various international specifications as standard.
- ◎Equipped with safe open function contact, applicable to circuits in "machine safety category 4".
- ◎CAN terminals achieved wiring rationalization and safety improvement.

Product specifications

Frame	10A to 800A frames.
Applicable standards	Complying with various standards such as JIS, IEC, UL, TUS, and GB.
European RoHS Directive	Standard models conform to the Directive.
A variety of options	Additional auxiliary contacts, coil surge absorber modules, mechanical interlock modules, etc.
Introduction of twin contacts for auxiliary contacts as standard	Twin-shaped moving contacts and grooved fixed contacts are employed to enhance contact reliability.
Mounting on DIN rails	10A to 65A frames can be mounted as standard.
Finger protection	Various kinds of finger protection covers are available.

Robot | Mitsubishi's Industrial Robot MELFA F Series RV-4F



High-speed, high-precision, high-function vertically articulated robot with 4 kg payload capacity

- ◎Advanced motion technology yields high-speed motion.
- ◎Internal routing of cables and airlines improves end-of-arm-tool performance.
- ◎Increased range of axis motion yields maximum utilization of robot's work envelope.
- ◎Unique offset arm design allows the robot to be deployed in compact spaces.

Product Specifications

Degrees of freedom	6
Type	Vertically articulated
Installation posture	Floor-mount, ceiling mount, wall mount (Range of motion for J1 limited)
Payload capacity	4kg
Maximum reach radius	515mm
Cycle time (load weight)	0.36 sec. (1kg)
Positioning repeatability	±0.020mm
Protection specifications	IP40 (clean specifications: ISO Class 3, oil mist specifications: IP67)

EDM | Wire EDM MV1200R



Next-generation Innovations of our best selling Performance Machine.

- ◎Total running cost reduced up to 42%, which is accounted for 90% by filter, ion exchange resin and power consumption.
- ◎Improved productivity by an innovative automatic wire threading.
- ◎Faster machining is realized with improved power-supply performance.
(Rz3. 5μm/Ra0. 45μm with 3cuts) (Rz2. 0μm/Ra0. 28μm with 4cuts)

Product Specifications

Model	MV1200R
Machining travel (X×Y×Z)[mm]	(in) 400(15.7)×300(11.8)×220(8.7)(XY axis OPT-drive specifications)
Machining travel (U×V)[mm]	(in) ±60(2.4)×±60(2.4)(OPT-drive specifications)
Max. taper angle [°]	15° (maximum 200mm)(7.9°)
Max. workpiece dimensions [mm]	(in) 810(31.9)×700(27.6)×215(8.5)
Wire diameter [mm]	(in) 0.1(.004) to 0.3(.012)*1
Dielectric fluid	Water
Footprint (W×D)[mm]	(in) 2025(79.7)×2760(108.7)

*1: Φ0.2(0.08) DD guides and Φ1.5(0.06) jet nozzle are standard equipment.

Global Service Network

Overseas Service Network

AMERICA

MITSUBISHI ELECTRIC AUTOMATION INC. (AMERICA FA CENTER)
Central Region Service Center
500 CORPORATE WOODS PARKWAY, VERNON HILLS, ILLINOIS 60061, U.S.A.
TEL: +1-847-478-2500 / FAX: +1-847-478-2650

Michigan Service Satellite
ALLEGAN, MICHIGAN 49010, U.S.A.
TEL: +1-847-478-2500 / FAX: +1-269-673-4092

Ohio Service Satellite
LIMA, OHIO 45801, U.S.A.
TEL: +1-847-478-2500 / FAX: +1-847-478-2650
CLEVELAND, OHIO 44114, U.S.A.
TEL: +1-847-478-2500 / FAX: +1-847-478-2650

Minnesota Service Satellite
ROGERS, MINNESOTA 55374, U.S.A.
TEL: +1-847-478-2500 / FAX: +1-847-478-2650

West Region Service Center
16900 VALLEY VIEW AVE., LAMIRADA, CALIFORNIA 90638, U.S.A.
TEL: +1-714-699-2625 / FAX: +1-847-478-2650

Northern CA Satellite
SARATOGA, CALIFORNIA 95070, U.S.A.
TEL: +1-714-699-2625 / FAX: +1-847-478-2650

East Region Service Center
200 COTTONTAIL LANE SOMERSET, NEW JERSEY 08873, U.S.A.
TEL: +1-732-560-4500 / FAX: +1-732-560-4531

Pennsylvania Service Satellite
ERIE, PENNSYLVANIA 16510, U.S.A.
TEL: +1-814-897-7820 / FAX: +1-814-987-7820

South Region Service Center
1845 SATTELITE BOULEVARD STE. 450, DULUTH, GEORGIA 30097, U.S.A.
TEL: +1-678-985-4529 / FAX: +1-678-258-4519

Texas Service Satellites
GRAPEVINE, TEXAS 76051, U.S.A.
TEL: +1-817-251-7468 / FAX: +1-817-416-5000
HOUSTON, TEXAS 77001, U.S.A.
TEL: +1-678-258-4529 / FAX: +1-678-258-4519

Florida Service Satellite
WEST MELBOURNE, FLORIDA 32904, U.S.A.
TEL: +1-321-610-4436 / FAX: +1-321-610-4437

Canada Region Service Center
4299 14TH AVENUE MARKHAM, ONTARIO L3R 0J2, CANADA
TEL: +1-905-475-7728 / FAX: +1-905-475-7935

Canada Service Satellite
EDMONTON, ALBERTA T5A 0A1, CANADA
TEL: +1-905-475-7728 / FAX: +1-905-475-7935

Mexico City Service Center
MARIANO ESCOBEDO 69 TLALNEPANTLA, 54030 EDO. DE MEXICO
TEL: +52-55-9171-7662 / FAX: +52-55-9171-7649

Monterrey Service Satellite
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ASEAN

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To ensure proper use of the products listed in this catalog, please be sure to read the instruction manual prior to use.

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for a greener tomorrow

Eco Changes is the Mitsubishi Electric Group's environmental statement, and expresses the Group's stance on environmental management. Through a wide range of businesses, we are helping contribute to the realization of a sustainable society.



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