



**mitsubishi
electric**

Changes for the Better

MITSUBISHI CNC
E70 Series

Simple
& Easy

E70 series



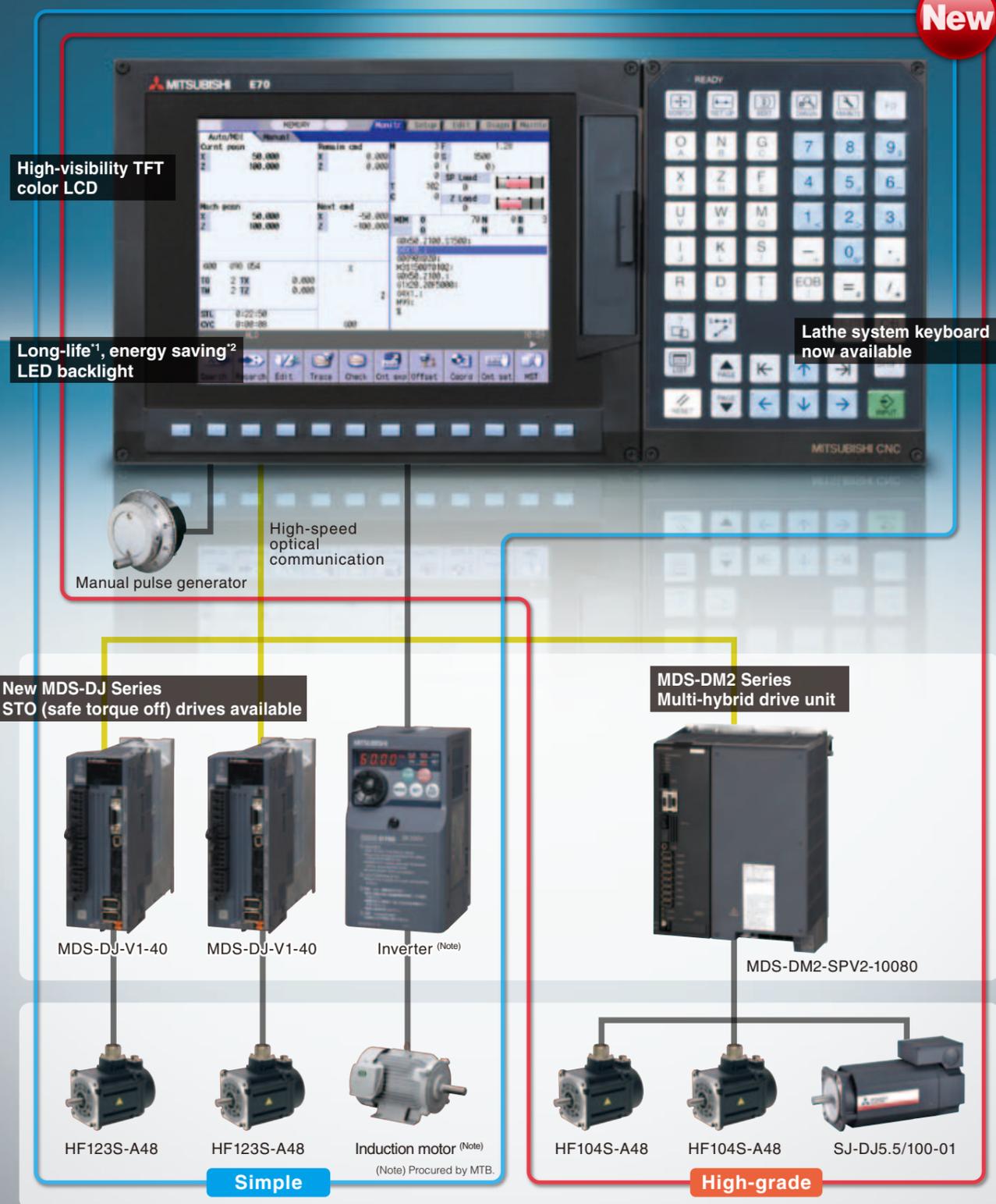
The Best Partner for Your Success

for a greener tomorrow



New CNC best suited to simple lathes/milling machines

New



High-visibility TFT color LCD

Long-life¹, energy saving² LED backlight

Lathe system keyboard now available

High-speed optical communication

Manual pulse generator

New MDS-DJ Series STO (safe torque off) drives available

MDS-DM2 Series Multi-hybrid drive unit

MDS-DJ-V1-40

MDS-DJ-V1-40

Inverter (Note)

MDS-DM2-SPV2-10080

HF123S-A48

HF123S-A48

Induction motor (Note)
(Note) Procured by MTB.

HF104S-A48

HF104S-A48

SJ-DJ5.5/100-01

Simple

High-grade

¹ LED backlight life: Approx. 70000 hours (specified value)
² Compared with our existing products (energy savings using LED backlight)

[Examples of connections using E70 Series]

E70 series

Seeking easier usability and higher cost efficiency, we have brought out the E70 Series, a new standard CNC series that succeeds the high performance and high operability of the M70V Series. While employing the screen configuration of the M700V and M70V Series, the E70 Series offers even more compact dimensions and less wiring. With the latest hardware installed, the E70 Series is best suited to simple lathes and milling machines.

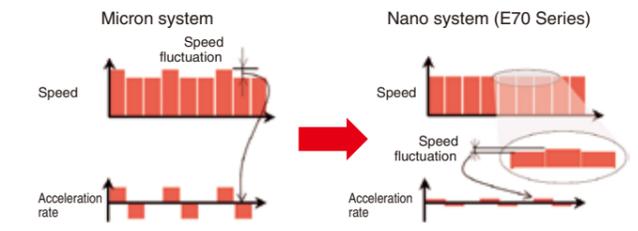
Simple Operability

- Screen design equivalent to M700V/M70V Series, offering simple operability.
- Switching between lathe and milling systems is accomplished simply by changing a parameter.
- Multiple display languages available for global use, which can be selected by parameter setting.
- A pop-up window shows your desired information without closing the original window.



High Cost Effectiveness

- Very smooth cutting surface achieved with one-nanometer position interpolation.*
 - Up to 20 sequence programs can be registered with the built-in PLC function.
 - A wide array of development support tools such as NC Designer is available.
 - Ultra-compact drive units with built-in power supplies contribute to reducing control panel size.
- *Least command increment is 0.1µm



Compact Size and Less Wiring

- The control unit is integrated into the back side of the display to realize compact size.
- Ethernet* is available as standard specification, enabling input/output of machining programs and parameters by connecting the NC to a personal computer.
- Front CF card/USB memory interface in the display as standard specification.
- Analog output offered as standard specification to enable the use of a spindle drive with an inverter.



MITSUBISHI CNC Machine Operation Panel

- The display and keyboard are the same color, providing consistency in design.
 - The key layout can be customized according to machine specifications.
 - The sequence program samples have been prepared for the basic key layout.
 - Wiring has been reduced by connecting the panel with the NC via a remote I/O link.
- *Refer to the product brochure for details.



Example when combined

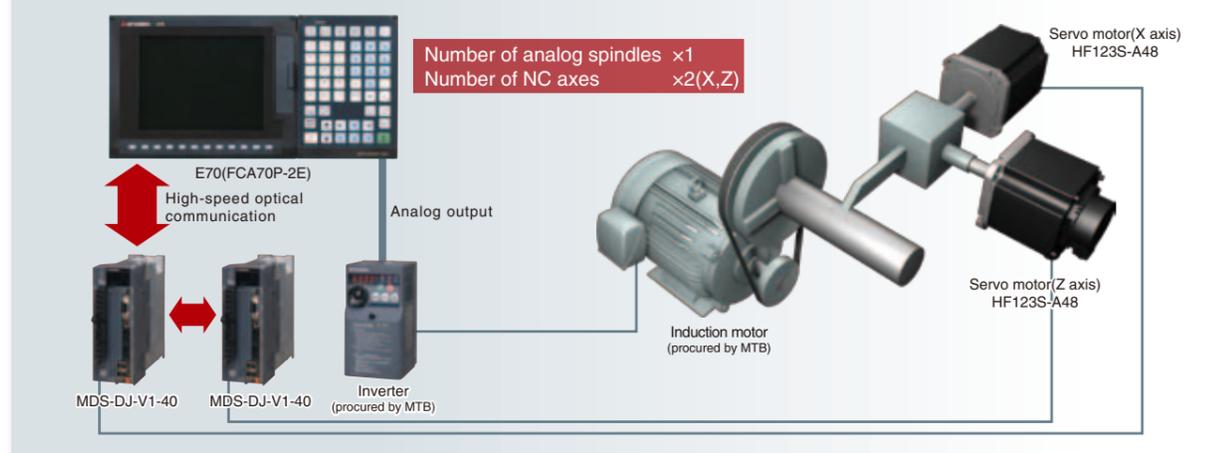
* Ethernet is a registered trademark of Xerox Corporation in the United States and/or other countries.
* CompactFlash and CF are either trademarks or registered trademarks of SanDisk Corporation in the United States and/or other countries.

Simple & Easy System Configuration Example

Simple & Easy Functions & Usability

Simple, small lathe (with analog spindle)

Cost effective configuration to control the spindle with an inverter using analog output.

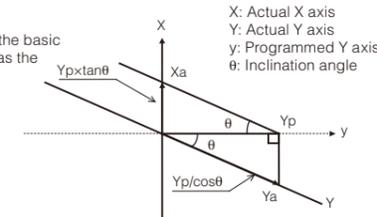


Inclined Axis Control (lathe system)

- 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.

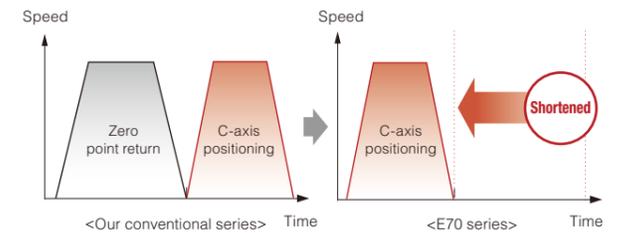
<Example of use>

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



Spindle/C-axis Control

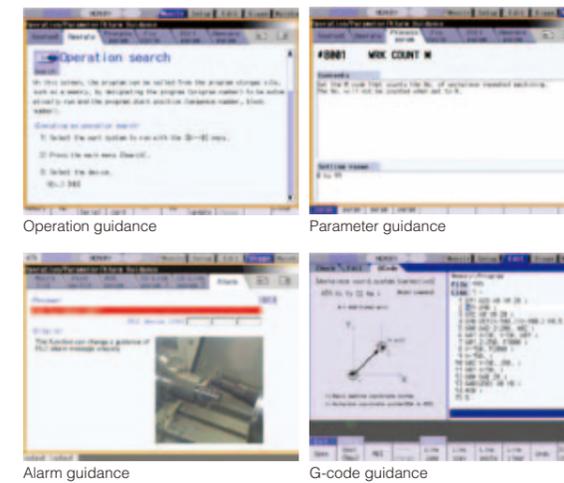
The spindle's constant position loop control has eliminated the zero point return time when switching from the spindle to C-axis.



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.

*Add-on guidance data is required.



System Lock Function

This function allows machine tool builders to set the expiration date for machine use.

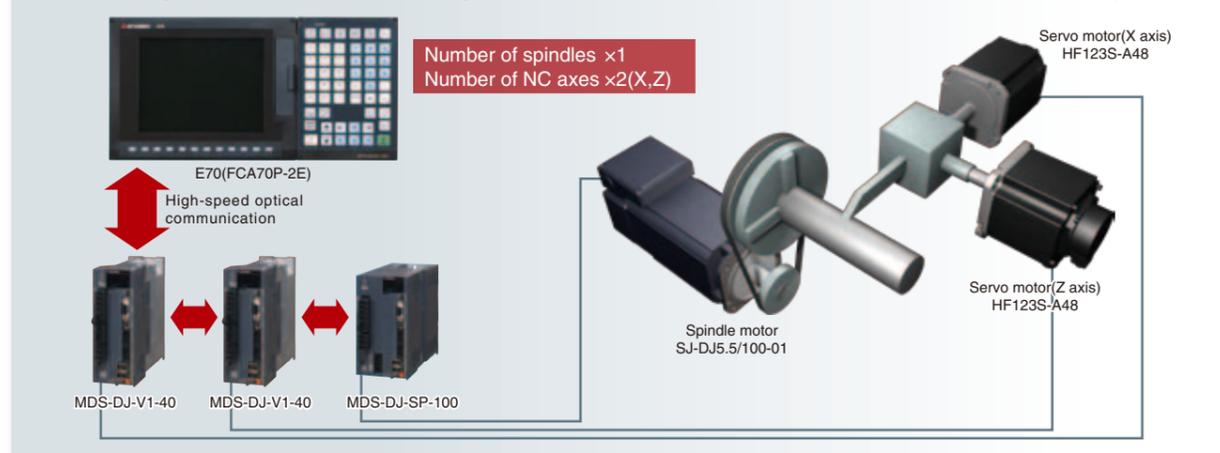
If the cancel code is not entered by the specified deadline, the system forcibly turns OFF the Servo ready completion signal, placing the machine in an inoperable status.

*We will pay no compensation for any detriment that may arise from an illegal unlock.



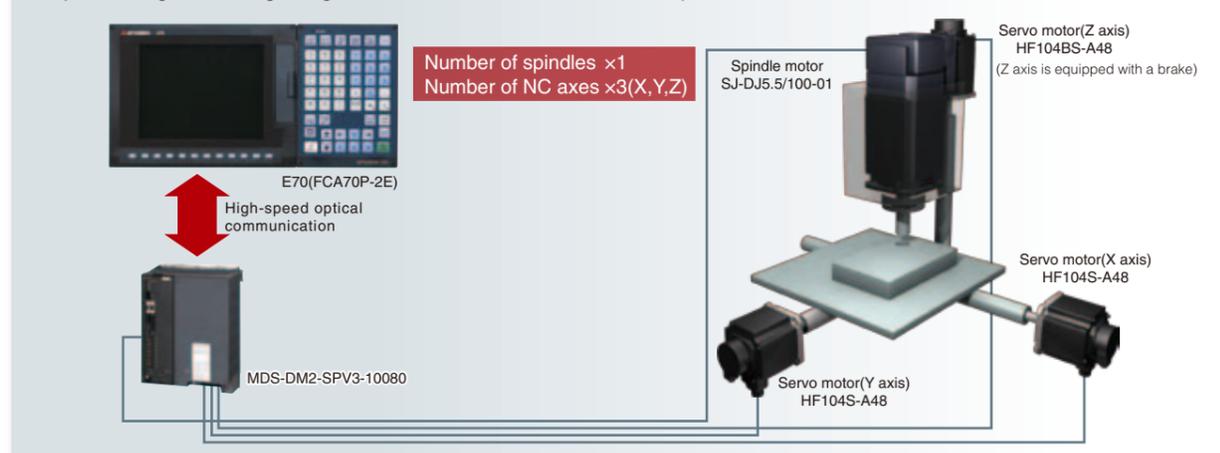
Simple, small lathe (Drive unit: MDS-DJ Series)

Space-saving, cost effective configuration using MDS-DJ Series: Ultra-compact drive unit series with built-in power supply.



Small milling machine (Drive unit: MDS-DM2 Series)

Space-saving, wire-saving configuration to control three servo axes, one spindle and converters with one MDS-DM2 Series drive unit.



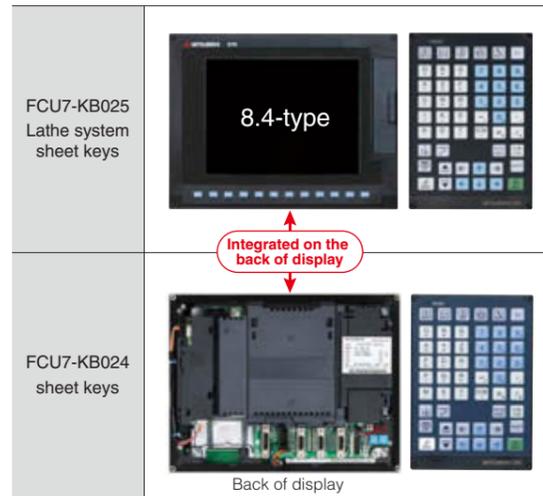
Main Specifications

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		0.1μm	
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.

Refer to the specifications manuals.

Control Unit, Display & Keyboards



The control unit is integrated into the back side of the display.

MITSUBISHI CNC Machine Operation Panel

		[mm]
FCU7-KB921	Key switch 55 points, LED 55 points MITSUBISHI standard key layout	
FCU7-KB926	Rotary switches (spindle override, cutting override) Select switch (memory protection) Emergency stop push-button	

-The internal components of the machine operation panel are protected against water and oil (IP65F).
-Refer to the product brochure for details.

Drive Units

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 fin 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)



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)



(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.



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 | 0.75 to 7.5 [kW] |



Tool Spindle Motor HF-KP 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] |
|----------------|--------------|-----------------|



NC Designer

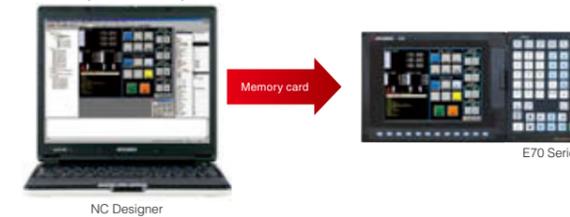
Screen Design Tool

- 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)

Parts displayed on NC (example)



Edit on a personal computer

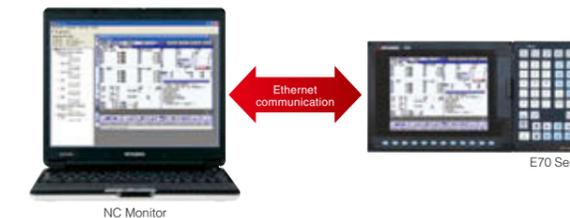


NC Monitor

Remote Monitoring Tool

*Planned to be available in summer of 2013

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.

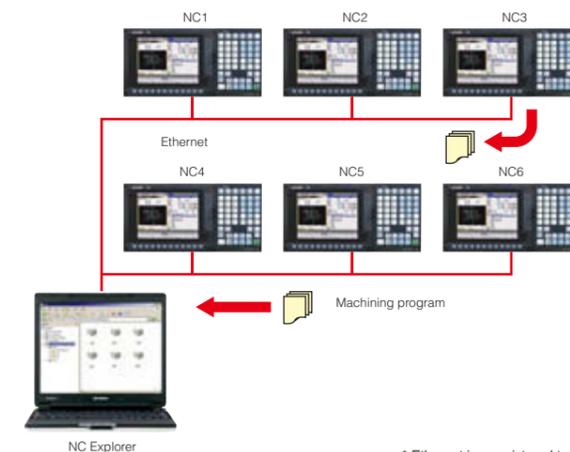


NC Explorer

Data Transfer Tool

*Planned to be available in summer of 2013

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.



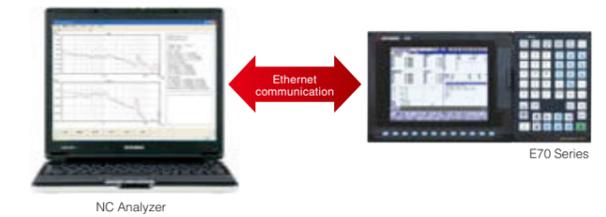
NC Analyzer

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.

<Main functions>

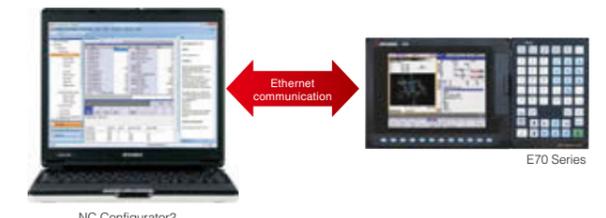
Bode diagram measurement display, speed loop gain adjustment, position loop gain adjustment, notch filter setting, acceleration/deceleration time constant adjustment, circularity adjustment and servo waveform measurement



NC Configurator2

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.)



NC Trainer/NC Trainer plus

MITSUBISHI CNC Training Tool

*Planned to be available in summer of 2013

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



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 **Safety Warning**

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

Mitsubishi Electric Corporation Nagoya Works is a factory certified for ISO14001 (standards for environmental management systems) and ISO9001 (standards for quality assurance management systems)



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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