MITSUBISHI CNC
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**
- Setting 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.

**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.
- A wide array of development support tools such as NC Designer2 is available.
- Ultra-compact drive units with built-in power supplies contribute to reducing control panel size.
- 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.

**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.
- 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.

*Least command increment is 0.1µm

*1 LED backlight life: Approx. 70000 hours (specified value)
*2 Compared with our existing products (energy savings using LED backlight)
Simple & Easy
System Configuration Example

Simple, small lathe (with analog spindle)
Cost effective configuration to control the spindle with an inverter using analog output.

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.

Simple & Easy
Functions & Usability

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 uses:
- When the X axis serves as the basic axis and the Y axis serves as the inclined axis.

\[ Y_p = \frac{X \times \tan \theta}{\cos \theta} \]

\[ X_{a} = X - Y_{p} \]

\[ Y_{a} = Y_{p} \times \tan \theta \]

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.

NAVII LATHE(for lathe) / NAVII MILL(for machining center)
Simple programming function
- 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.

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.

Main Specifications
- Model name
- Specifications
  - Maximum number of control axes (NC axes + PLC axes + spindle)
  - Maximum number of NC axes (in total for all the part systems)
  - Maximum number of spindles
  - Maximum number of PLC axes
  - Maximum number of simultaneous contour control axes
  - Least command increment
  - Least control increment
  - Maximum program capacity
  - Maximum PLC program capacity
  - Display
  - Keyboard
  - HMI customization function
  - MITSUBISHI CNC machine operation panel

Refer to the specifications manuals.
Simple & Easy
NC Units & Drive Units

Control Unit, Display & Keyboards

- FCU-KB028 8.4-type sheet keys
- FCU-KB024 sheet keys

MITSUBISHI CNC Machine Operation Panel

- Front switch 50 points, LED 50 points
- MTBUSHI standard key layout
- Rotary switches, up, down, left, right
- Select switch, memory protection
- Emergency stop push-button

Drive Units

- All-in-one compact drive units MD6-DJ Series
- High performance multi-hybrid drive units are available. The multi-hybrid drive unit drives a maximum of three servo axes and one spindle, supporting the downsizing of units and offering technical advantages.
- A power regeneration system that efficiently uses energy during deceleration as power contributes to savings.
- STO (safe torque off) is now available.

- Medium-inertia Motor HF Series
- Suitable for machines requiring quick acceleration.
- Range: 0.5 to 9 [kW]
- Maximum speed: 6,000 [r/min]
- Supports three types of detection with a resolution of 260,000, 1 million or 16 million p/rev.

- Low-inertia Motor HF-KP Series
- Suitable for an auxiliary axis with high-speed positioning.
- Range: 0.1 to 0.75 [kW]
- Supports a detector with a resolution of 260,000 p/rev.

- Tool Spindle Motor HF-KP Series
- Taking advantage of the characteristics of a servo motor such as stiffness and high output, this motor serves as a compact and high-output spindle motor which is capable of high-speed rotation (6,000rpm). This motor contributes to downsizing of spindles, such as the rotary tool spindle.
- Product range: HF-KP Series 0.4 to 3 [kW]

NC Explorer

- Support Tools
- NC Trainer2, NC Trainer2 plus
- NC Trainer2 is an application for operating the screens of MTX00/MTX10/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 Trainer2 plus can also be used for checking PLC programs and custom screens.

Simple & Easy
Support Tools

NC Designer2

- 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 Designer2, customized functions can be added by programming in C language.

- Parts displayed on NC (example)
- On a personal computer

- NC Monitor2

- 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.

- STO (safe torque off) is now available.

- 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 Analyzer2

- Servo Adjustment Support Tool
- Servo parameters can be automatically adjusted by activating the motor using machining programs for adjustment or vibration signals, and measuring and analyzing the machine characteristics.
- STO (safe torque off) is now available.
- Brake diagram measurement display, speed loop gain adjustment, position loop gain adjustment, coach filter setting, acceleration/deceleration time constant adjustment, circuitry adjustment and servo waveform measurement.

- Parts displayed on NC (example)
- On a personal computer

- NC Explorer

- Data Transfer Tool
- By connecting the NC and personal computer via Ethernet, data such as machining programs can easily be shared.

- This tool is free of charge. Please contact us.

- NC Trainer2

- Standard CNC Training Tool
- NC Trainer2 is an application for operating the screens of MTX00/MTX10/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 Trainer2 plus can also be used for checking PLC programs and custom screens.

- E70 Series

* 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.
Global Partner. Local Friend

WARRANTY

Please confirm the following product warranty details before using MITSUBISHI CNC.

1. Warranty Period and Coverage

   Should any fault or defect (hereafter called "failure") for which we are liable occur in this product during the warranty period, we shall provide repair services at no cost through the distributor from which the product was purchased or through a Mitsubishi Electric service provider. Note, however, that this shall not apply if the customer was informed prior to purchase of the product that the product is not covered under warranty. Also note that we are not responsible for any on-site readjustment and/or trial run that may be required after a defective unit is replaced.

(Warranty Term)

   The term of warranty for this product shall be twenty-four (24) months from the date of delivery of product to the end user, provided the product purchased from us in Japan is installed in Japan (but in no event longer than thirty (30) months, including the distribution time after shipment from Mitsubishi Electric or its distributor).

   Note that, for the case where the product purchased from us in or outside Japan is exported and installed in any country other than where it was purchased, please refer to "2. Service in overseas countries" as will be explained.

(Limitations)

(1) The customer is requested to conduct an initial failure diagnosis by him/herself, as a general rule. It can also be carried out by us or our service provider upon the customer’s request and the actual cost will be charged.

(2) This warranty applies only when the conditions, method, environment, etc., of use are in compliance with the terms and conditions and instructions that are set forth in the instruction manual, user’s manual, and the caution label affixed to the product, etc.

(3) Even during the term of warranty, repair costs shall be charged to the customer in the following cases:

(a) a failure caused by improper storage or handling, carelessness or negligence, etc., or a failure caused by the customer’s hardware or software problem

(b) a failure caused by any alteration, etc., to the product made by the customer without Mitsubishi Electric’s approval

(c) a failure which may be regarded as avoidable, if the customer’s equipment in which this product is incorporated is equipped with a safety device required by applicable laws or has any function or structure considered to be indispensable in the light of common sense in the industry

(d) a failure which may be regarded as avoidable if consumable parts designated in the instruction manual, etc. are duly maintained and replaced

(e) any replacement of consumable parts (including a battery, relay and fuse) (f) a failure caused by external factors such as inevitable accidents, including without limitation fire and abnormal fluctuation of voltage, and acts of God, including without limitation earthquake, lightning, and natural disasters

(2) Should any failure for which we are liable occur in this product during the warranty period, we shall provide repair services at no cost through the distributor from which the product was purchased or through a Mitsubishi Electric service provider. Note, however, that this shall not apply if the customer was informed prior to purchase of the product that the product is not covered under warranty. Also note that we are not responsible for any on-site readjustment and/or trial run that may be required after a defective unit is replaced.

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(g) a failure which is unforeseeable under technologies available at the time of shipment of this product from our company

(h) any other failures which we are not responsible for or which the customer acknowledges we are not responsible for

2. Service in Overseas Countries

If the customer installs the product purchased from us in his/her machine or equipment, and export it to any country other than where he/she bought it, the customer may sign a paid warranty contract with our local FA center.

This falls under the case where the product purchased from us in or outside Japan is exported and installed in any country other than where it was purchased. For details please contact the distributor from which the customer purchased the product.

3. Exclusion of Responsibility for Compensation against Loss of Opportunity, Secondary Loss, etc.

Whether during or after the term of warranty, we assume no responsibility for any damages arising from causes for which we are not responsible; any losses of opportunity and/or profit incurred by the customer due to a failure of this product, any damages, secondary damages or compensation for accidents arising under specific circumstances that either foreseen or unforeseen by Mitsubishi Electric, any damages to products other than this product, or compensation for any replacement work, readjustment and startup test run of on-site machines or any other operations conducted by the customer.

4. Changes in Product Specifications

Specifications shown in our catalogs, manuals or technical documents are subject to change without notice.

5. Product Application

(1) For the use of this product, its applications should be those that may not result in a serious damage even if any failure or malfunction occurs in the product, and a backup or fail-safe function should operate on an external system to the product when any failure or malfunction occurs.

(2) Mitsubishi CNC is designed and manufactured solely for applications to machine tools to be used for industrial purposes.

Do not use this product in any applications other than those specified above, especially those which are substantially influential on the public interest or which are expected to have significant influence on human lives or properties.

Mitsubishi Electric Corporation Nagoya Works is a factory certified for ISO14001 (standards for environmental management systems) and EC9001 (standards for quality assurance management systems).

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