MITSUBISHI CNC
M800/M80 Series
Mitsubishi Electric’s first CNC-dedicated CPU, the sum of our industry-leading technologies.

Development of convention-breaking CNCs

Leading the way in today’s industrial globalization, the innovative products of Mitsubishi Electric continue to exceed the expectations of users around the world. The outstanding performance of our CNC lineup consistently wins praise from users for their high levels of productivity, intuitive usability, and superior functionality. However, to develop the new M800/M80 Series, we went back to the drawing board and completely reexamined our cutting-edge control technologies. The result is a breakthrough in the control of high-speed, high-precision machining.

In-depth analysis and simulations achieve one volition

Pursuit of CNC-dedicated CPU began with design validation on an unprecedented scale as well as high-precision simulations to verify processing performance. Achieving a leap in processing performance demanded the integration of innovative technologies beyond optimizing processor manufacturing processes. Overcoming numerous hurdles and maximizing the potential of the processor, we succeeded in producing a CNC-dedicated CPU that achieves unprecedented high-speed processing performance.

User performance requirements demand a commitment to development

The story of the new M800/M80 Series began with conventional development to produce incremental evolutionary improvements. But our goal was a revolutionary leap in CNC performance. Our project team determined that the only way to significantly boost processing performance and totally satisfy user demands would be the creation of a CPU optimized for CNC control. This insight inspired Mitsubishi Electric’s first-ever attempt to develop a CNC-dedicated CPU and opened a new chapter in CNC development.

Experience the revolutionary high-speed processing of the new CNC-dedicated CPU

Incorporating the CNC-dedicated CPU in the new series not only results in phenomenal processing speed, but also reduces the number of required parts, leading to fewer possibilities of failure and increasing product quality. Equipped with Mitsubishi Electric’s first-ever CNC-dedicated CPU, the long-awaited M800/M80 Series is the fruit of an original development process and the sum of our latest technologies. With the utmost confidence, we are proud to introduce the M800/M80 Series and invite customers to experience performance of the future today.

The Mitsubishi Electric CNC Development Project Team
Display and keyboard design have been renewed.
The advanced construction and sophisticated flat profile take machine design to the next level.
The display incorporates a touchscreen as standard specifications, providing intuitive smartphone-like operation (10.4-type and wider displays).

19-type vertical display is included in the M800W/M80W Series. The display provides two-split multiple windows that can be customized by arranging the software keyboard, document viewer or other application.

The slim personal computer unit enables greater flexibility in operation panel design

A 19-type vertical display is included in the M800W/M80W Series. The display provides two-split multiple windows that can be customized by arranging the software keyboard, document viewer or other application.

19-type vertical display unit provides two-split multiple windows for various applications

The M800/M80 Series accommodates an SD card, a relatively easy-to-source device. The SD card can be inserted or removed independently of USB memory. The flip-up door provides greater durability.

Possible to be mounted not only from the front side of machine tools but also from the inner side of cabinets.

Display redesigned for enhanced visibility of keyboard

The display and keyboard have been redesigned. Measuring only 9.5mm thick (excluding protrusions), the possibilities of machine tool design have been expanded. In addition, their gray-scale colors can be easily harmonized with machines in different colors.

The surfaces of display and keyboard are flush, providing beauty and usability as well as increased operability. 10.4-type and larger displays have touchscreen made of beautiful, long-life glass, which allows you easy day-to-day maintenance. Vertical mount and horizontal mount keyboards are included in the product line.
The display features a capacitive touchscreen that is commonly used in smartphones and tablets, allowing for intuitive and easy operation. With a simple flick of the finger, for instance, you can monitor the desired part of program, or view and select a menu key on the next page without the need for tedious key operation.

In 3D graphic check, you can view a 3D model at any desired size, in any desired position.

Smartphone-like intuitive touch operation

Touch operation provides you unprecedented ease of use.

Drag

Pinch-in/Pinch-out

Menu scroll (flick)

Program edit (flick)

Advanced universal design with a focus on ease of use

The easy-to-use interface inherited from M700V/M70V Series has further advanced, leading to greater visibility and usability. Iconized features and operation menus are easy to recognize, and readily available for anyone to use. The Simple Monitor screen displays the information required for lathes and machining centers respectively in an enlarged view. The icons on the screen tell you the status of tools and spindles. All of these interface features are worth a try.

Usability in lathe improved through tool icons, 3D work simulation for turning and other dedicated features

One of the highlights in M800/M80 Series is improved usability in a lathe. The tool icons indicate the tool shape and bit direction in an easy manner, which can satisfy both inexperienced and experienced operators. The 3D graphic check supports for both turning and milling, so even a complex program can easily be checked through the 3D simulation.

Reducing leakage of defects caused by human errors

M800/M80 Series has a feature called “User level-based data protection”, which allows you to set multiple levels of access permission. Permissible operation range can be set for each operator according to their roles in production. This can even more effectively prevent operation errors and other human errors, resulting in less defect leakage.

Various features and operation menus are indicated using easy-to-recognize icons. Tool icons tell you the tool type, left- or right-hand, lifetime and other information at a glance.

Tools displayed by icons

8.4-type/10.4-type

15-type/19-type

Simple screen with narrowed-down information is easy to see from a distance.

A click of the menu button navigates you to 3D graphic check of the currently edited program. For lathe system, the 3D check supports for both milling and turning.

Lathe system Machining center system

X1 125.000 Y1 -35.000 Z1 -6.000 C1 15.000

X 182.500 Y -36.500 Z -6.000 C -15.000

Up to 8 levels of access permission helps to prevent you from dispatching defective works. Permissible operation can be set individually for each access level.
CNC LINEUP

M800W

Premium CNC provides expandability and flexibility
- Separated type, a control unit separated from display
- Windows-based display is included in the lineup, which provides excellent expandability
- Four expansion slots are provided as standard specifications, allowing for expansion using option card slot

Display unit size
- 19-type Touchscreen
- 15-type Touchscreen
- 10.4-type Touchscreen

Main Specifications
- Max. number of axes (NC axes + Spindles + PLC axes) Standard: 16 Optional: 32
- Max. number of spindles 8 4
- Max. number of part systems (main+sub) Standard: 4 Optional: 8 2
- Fine segment processing capacity [kilo-blocks/min] 168 270

M800S

High-grade CNC well suited to high-speed high-accuracy machining and multi-axis multi-part system control
- Panel-in type, a control unit with integrated display
- Multi-CPU architecture allows for high performance and high functional graphics
- Windows-less based display provides easy operability

Display unit size
- 19-type Touchscreen
- 15-type Touchscreen
- 10.4-type Touchscreen

Main Specifications
- Max. number of axes (NC axes + Spindles + PLC axes) Standard: 16 Optional: 32
- Max. number of spindles 8 4
- Max. number of part systems (main+sub) Standard: 4 Optional: 8 2
- Fine segment processing capacity [kilo-blocks/min] 168 270

M80W

Standard CNC with expandability and flexibility
- Separated type, a control unit separated from display
- Windows-based display is included in the lineup, which provides excellent expandability
- Packaged type for selecting a machine type easily
- Two expansion slots are provided as standard specifications, allowing for expansion using option cards slot

Display unit size
- 19-type Touchscreen
- 15-type Touchscreen
- 10.4-type Touchscreen

Main Specifications
- Max. number of axes (NC axes + Spindles + PLC axes) TypeA: 12 TypeB: 9
- Max. number of spindles TypeA: 4+G/B TypeB: 3
- Max. number of part systems (main+sub) TypeA: 11 TypeB: 9
- Fine segment processing capacity [kilo-blocks/min] TypeA: 67.5 TypeB: 135

M80

Standard CNC provides high productivity and easy operability
- Panel-in type, a control unit with integrated display
- Provided in package (TypeA/TypeB) for easier selection
- Windows-less based display provides easy operability

Display unit size
- 19-type Touchscreen
- 15-type Touchscreen
- 10.4-type Touchscreen

Main Specifications
- Max. number of axes (NC axes + Spindles + PLC axes) TypeA: 12 TypeB: 9
- Max. number of spindles TypeA: 4+G/B TypeB: 3
- Max. number of part systems (main+sub) TypeA: 11 TypeB: 9
- Fine segment processing capacity [kilo-blocks/min] TypeA: 67.5 TypeB: 135
This CNC makes it easier to configure factory automation systems, and design and build machine tools.

- Compatible with a range of field networks, facilitating connection with peripherals to configure factory automation systems.
- Compatible with MES interface function, through which the CNC automatically sends data to the production control system database upon completion of cutting or occurrence of alarm. This enables more efficient configuration of production or quality control systems.
- I/O units have been redesigned. The units can be mounted on DIN rails, and the lineup has been expanded with improved built-in PLC functionality for I/O control.
- Software tools have been upgraded, and now support everything from designing to setting up machine tools. These tools simplify design processes and building machine tools.
Implement ever more complex machining in an easy and efficient manner

Milling features have been improved through high-speed high-accuracy control and SSS control. Multi-axis, multi-part system control features have also been upgraded. A wide array of these features help ensure high productivity. Significant progress has also been made in frequently used operation as well as programming, such as tool offset and workpiece coordinate system shift, which allows operators to easily implement even more complex machining.

Significantly easier programming

Programming has been made much easier. The screen allows you to create a program while viewing the finish work shape. You can also insert machining cycles in an interactive manner. The created program can be checked through 3D work simulation before actual cutting.

Improved milling features using a tool spindle

High-speed high-accuracy control features accumulated originally for machining centers are now available in lathe system. Fine milling can be implemented at high speeds on a lathe. This CNC enables a servo motor, instead of a spindle, to act as a tool spindle. Any of the servo control axes driven by multi-hybrid drive can be used as a tool spindle. This contributes to the downsizing of machine tools.

Multi-axis multi-part system control features help to reduce cycle time and maintain synchronization between part systems

M800/M80 Series provides "Spindle superimposition control", a feature that enables simultaneous execution of turning and center tapping, although they needed to be executed individually. These features are effective in eliminating idle time, resulting in a significant reduction in tact time. This CNC also offers features that maintain synchronization between part systems, which is required for automatic lathes, in particular. These enable operators to implement even more complex machining safely and securely.

Real-time tuning helps maintain machine stability by adjusting the control gain automatically

This function estimates the work inertia and changes the speed control gain or time constant automatically according to the estimation results to suppress mechanical vibration.
SSS control has further evolved, realizing high-speed, high-accuracy, high-quality machining. In addition, this CNC offers features that bring out the full potential of each axis and minimize non-cutting time, leading to higher productivity.

**High-speed, high-accuracy, high-quality cutting through SSS-4G control**

M800/M80 Series offers SSS 4th-generation (SSS-4G) control, enabling high-speed, high-accuracy, high-quality machining. SSS-4G control provides features that are effective in reducing tact time, including optimal acceleration/deceleration suited to each axis’ characteristics. In addition, SSS-4G is capable of reducing machine vibration during high-speed cutting. SSS-4G control allows for greater cutting accuracy in the same length of time, or shorter cutting time with the same degree of accuracy when compared to our previous models.

**Tolerance control function**

Tolerance control function provides a smooth motion within specified error tolerances. Desired machining results can be achieved using simple parameter adjustment.

**High productivity and high accuracy are our primary focus**

CNC-dedicated CPU is incorporated in the M800/M80 Series, providing significantly improved short segment processing capability. The benefits are not limited to improvements in basic performance alone. The Tolerance Control function enables operators to achieve high-quality surfaces simply by specifying the desired dimensional accuracy. This feature takes machining to a whole new level.

**M800/M80 Series brings out the full potential of machine tools**

M800/M80 Series provides new features that can maximize the full potential of machine tools, including:

- Variable-acceleration pre-interpolation acceleration/deceleration provides optimized acceleration, with each axis’ characteristics fully exercised. For example, allowing a linear axis to accelerate irrespective of rotary axis responsiveness.
- “OMR-FF control” allows for optimal position loop gain adjustment suited to each axis, leading to smoother and more accurate cutting.

Other than the above, this CNC has new functionality effective for higher productivity, including “Rapid traverse block override function” that helps reduce non-cutting time by overlapping feed blocks.

**Necessary features are available on your machine. M80 Series includes SSS control and inclined surface machining features.**

The SSS control function provides smoother surfaces at higher speeds and the inclined surface machining control function makes it possible to issue normal program commands to an arbitrary plane (inclined surface) in space. The tool center point control supports for a system with four simultaneous contour control axes. These and various other features are incorporated in the M80 Series.
UNIQUE CUSTOMIZATION

A high level of screen customization is attainable more easily in a shorter period of time. Highly scalable hardware and advanced drawing application make it possible to increase the added value of machine tools.

19-type vertical display boosts the added value of machine tools

The display shows the standard CNC screen on the upper half, while offering the lower half (home application) to be freely customized. It is also possible to add some originality to machines to increase their added value. However, it is difficult to design the whole screen at the same time. This screen layout can satisfy such needs. Combined with customers’ ideas, the possibilities are infinite.

Support for large-capacity custom data using the SD memory on the back of display

The panel-in type CNC with integrated display has the SD card interface on the back of the display. SD card can accommodate large-capacity machining programs, and large-capacity graphic data for custom screens, which leads to increased possibilities of customization.

Customize the standard screens as per the preference of operators

Each operator has their own set of frequently used menus. This CNC allows operators to arrange their menus and hide any unused ones so they can easily navigate to their desired screen. This CNC has a function called Selective Display, which enables partial customization of the Monitor screen. Operators can constantly view and monitor Tool offset, Work offset, Common variable or other commonly used functions.

Enhanced tool management screen

The CNC provides new tool management screen, where you can gather and manage tool-related information with greater convenience. A wide range of setting items such as tool name and tool ID are readily available. You can read or write tool data or add custom data via ladder or machining program.

REINFORCED FUNCTIONAL SAFETY

M800/M80 Series provides a range of safety features collectively called the Smart Safety Observation Function. This function has achieved full conformity with the safety standards that cover the entire system including CNC, drive, I/O, sensors and communication.

Smart safety observation function

Safety-related I/O observation

Safe Operating Stop (SOS)

Safe Brake Control/Safe Brake Test (SBC/SBT)

Safe Stop (SS1/SS2)

Emergency stop observation

Safe-Limited Speed (SLS)

Safe Operating Stop (SOS)

Safe Cam (SCA)

Safe Torque Off (STO)

Functional safety system can be configured easily.

Compliant with a range of safety standards, equipped with the drive safety features required for machine tools

The Smart Safety Observation Function conforms to EC Machinery Directive (2006/42/EC) and meets the following safety standard requirements. The function has also obtained the Type Approval Certificate from TÜV SÜD (German certification authority) with regard to the conformity with the safety standards.

Compatible functional/product safety standards

IEC 61800-5-1 : 2007 ~ EN 60204-1: 2006

ISO 12100 : 2010

ISO 13849-1: 2006

IEC 61326-3-1:2008

IEC 61800-5-1 ~ 2:2007

IEC 62061: 2005

ISO 15019: 2010

TÜV SÜD (German certification authority)
e-F@ctory SUPPORTS FACTORY-WIDE OPTIMIZATION

Our FA integrated solution “e-F@ctory” supports to reduce the total cost across the entire supply chain and engineering chain by utilizing our FA and IT technologies and collaborating with e-F@ctory Alliance partners. Mitsubishi CNC enables visualization and analysis that lead to improvements and increase availability at production sites by utilizing the information at production sites where the machine tools are used.

Remote desktop function enables a machine operator to monitor and operate a computer in the office.

If a need arises to check drawings or CAD/CAM, you do not need to return to the office anymore. This function allows you to remotely access a PC in the office through the machine touchscreen. This helps improve operation efficiency. The function is enabled on a Windows-less based NC display. No external computer is needed.

Operator mail notification lets you know the machine status at anytime and anywhere.

This sends you an e-mail about machine condition automatically at the specified timing to a computer, tablet or smartphone. No dedicated line is needed, so you can set up easily. Machine condition can be monitored at anytime, anywhere. This helps you to deal with emergent situations timely, leading to shorter downtime and higher productivity.

Compatible with a range of field networks that facilitate connection to peripherals.

With the aim of configuring factory automation systems, compatibility with a range of field networks has been implemented, enabling connection to peripherals. Insert the option card into the standard expansion slot of the M800W/M80W Series CNC or on the back of the display for the M800S/M80 Series.
During an alarm, operation of individual machine groups can be stopped. During an alarm, operation of individual machine groups can be stopped. M800/M80 Series has a feature called Machine Group-based Alarm Stop, which stops operation of individual machine groups if an alarm occurs when control is combined with the MDS-E/EM/EJ Series. This feature allows continuation of machining even when an alarm occurs on a loader, magazine or other peripheral equipment.
## SPECIFICATIONS

### Lathe system

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<th>MSIGS Series</th>
<th>MSOW Series</th>
<th>MSIGS Series</th>
</tr>
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<tbody>
<tr>
<td>Max. number of axes (NC axes + Spindle + PLC axes)</td>
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### Machining center system

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<th>MSIGS Series</th>
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### Optional Features

- **Real-time control 1 (speed gain)**
- **Variable-acceleration pre-interpolation acceleration/deceleration**
- **OMR-FF**
- **Rapid traverse block overlap**
- **Spindle-mode servo motor control**
- **3-dimensional tool cutter radius compensation**
- **3-dimensional manual feed**
- **Finish shape view programming**
- **CC-Link (Master/Local)**
- **PROFIBUS-DP (Master)**
- **MES interface library**
- **EcoMonitorLight connection**
- **Machine group-based alarm stop**
- **Smart safety observation**

### Notes

- Refer to the specifications manuals for details.
- (1) G/B Guide Bush
- (3) The 4.4-type display unit is incompatible.
- (4) Limited to the simultaneous 4-axis contouring control.
**DRIVE SYSTEM**

### Servo Motors

**High-performance Servo Motor**
- Spindle Drive Units
  - MDS-E/EH Series
    - The servo control-dedicated core processor realizes an increase in control speed, leading to improved basic performance. When combined with a higher resolution motor sensor and enhanced high-speed optical communication, the drive contributes to high-speed, high-accuracy control.
    - Motor power connector comprises an anti-misinsertion mechanism. This helps to eliminate connection errors.
    - Safe Torque Off (STO) and Safe Brake Control (SBC) are supported in effort to enhance safety features.

**Medium-inertia, High-accuracy and High-speed Motors**
- HG Series
  - Use in clean environments is possible since no ball screws are used, eliminating possible contamination from grease.
  - Elimination of transmission mechanisms, including backlash, enables smooth and quiet operation even at high speeds.
  - Dimensions:
    - Range: 0.2 to 9 [kW]
    - Maximum speed: 4,000 to 5,000 [rpm]
    - Safety support sensors are included as standard specification. Sensor connectors are screw-locked and have enhanced vibration resistance. Three sensor resolutions (i.e., 1, 4 and 67 million pulses/rev) are available.
    - Small-sized connector allows horizontal cable connection, which helps to save space in machines.

### Linear Servo Motor

**LM-F Series**
- Use in clean environments is possible since no ball screws are used, eliminating possible contamination from grease.
- Elimination of transmission mechanisms, including backlash, enables smooth and quiet operation even at high speeds.
- Dimensions:
  - Range: 0.2 to 9 [kW]
  - Maximum speed: 4,000 to 5,000 [rpm]
  - Safety support sensors are included as standard specification. Sensor connectors are screw-locked and have enhanced vibration resistance. Three sensor resolutions (i.e., 1, 4 and 67 million pulses/rev) are available.
  - Small-sized connector allows horizontal cable connection, which helps to save space in machines.

### Direct Drive Servo Motor

**TM-RB Series**
- High-torque, direct-drive motor combined with high-gain control provides quick acceleration and positioning, which increases driving efficiency.
- Suitable for rotary axes that drive tables or spindles.
- Dimensions:
  - Range: Max torque: 36 to 1,280 [N·m]

### Built-in Spindle Motor

**SJ-BG Series**
- The electrical design has been optimized to increase the continuous rated torque per unit volume, contributing to the downsizing of spindle units.
- A mold with cooling jacket is available as an optional feature.

### Tool Spindle Motor

**HG/HG-JR Series**
- The compact tool spindle motors, designed with small and high-output characteristics of servo motors, are capable of high-speed rotation (6,000 [rpm]).
- This motor contributes to downsizing of spindles, such as the rotary tool spindle.

**Note 1** For servo motors only
**Note 2** Options supported. (Flange size 90SQ only)
## SOFTWARE TOOLS

### Process flow from machine design and development to operation and maintenance

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</table>

### Machine design

**Servo motor selection**
- Set the machine constants according to the following explanation.
- The spindle acceleration/deceleration times are shown in a graph.

**[NC Servo Selection]**
- Input the machine constants for selection of the optimum servo motor.
- This function automatically calculates spindle acceleration/deceleration times and selects the optimum power supply unit.

**Servo motor selection**
- Input the machine constants for selection of the optimum servo motor.
- This function automatically calculates spindle acceleration/deceleration times and selects the optimum power supply unit.

### Electrical design

**[NC Designer2]**
- We provide a developmental environment where the MTB can customize screens easily. Two types of screen development methods are available: the interpreter system (programming without C++) for simple screen development, and the compiler system with a complex controller (programming with C++) for customization.

**[NC Trainer2 Plus]**
- NC Trainer2 plus supports customization development; it helps to program the ladder programming of the user PLC to be developed by machine tool builders and debug it and check the operations of customized screens.

### Machine assembly and adjustment

**[NC Configurator2]**
- NC parameters required for NC control or machine operation can be edited on a computer. Also possible to create initial parameters simply by inputting the machine configuration.

### Operation and maintenance

**[NC Trainer2]**
- NC Trainer2 plus supports customization development; it helps to program the ladder programming of the user PLC to be developed by machine tool builders and debug it and check the operations of customized screens.

**[NC Explorer]**
- CNC machining data les can be manipulated using Windows® Explorer on a computer when the computer is connected to multiple CNCs via Ethernet.

**[NC Monitor2]**
- Taking advantage of the network in a plant, CNC operation status can be monitored from remote locations. Several CNCs can be connected and monitored simultaneously.

### Application development support

**[Mitsubishi CNC Communication Software (FCSB1224W000)]**
- This software provides a bunch of API functions. They facilitate development of an Windows application which requires connection and communication with Mitsubishi CNC. You can use the common interfaces for any Mitsubishi CNC model, which leads to high efficiency in development.

(*) The compatible model is Mitsubishi CNCs after M700/M70.
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**WARRANTY**

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

1. **Warranty Period and Coverage**

   Should any fault or defect (henceforth 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 the 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 “Service in overseas countries” as will be explained.

   **[Limitations]**
   (1) The machine tool builder is requested to conduct an initial failure diagnosis, as a general rule. It can also be carried out by us or our service provider upon the machine tool builder’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 any alteration, etc., to the hardware or software problem
      (b) a failure caused by any alteration, etc., to the handling, carelessness or negligence, etc.,
      (c) a failure caused by improper storage or use
      (3) Even during the term of warranty, repair costs and instructions that are set forth in the conditions, method, environment, etc., of use shall be the responsibility of Mitsubishi Electric or its distributor.
   (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
   (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 earthquakes, lightning, and natural disasters
   (g) a failure which is unforeseeable under technologies available at the time of shipment of the 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.**

   Regardless of the gratis warranty term, Mitsubishi shall not be liable for compensation to:
   (1) Damages caused by any cause found not to be the responsibility of Mitsubishi.
   (2) Loss in opportunity, lost profits incurred to the user by Failures of Mitsubishi products.
   (3) Special damages and secondary damages whether foreseeable or not, compensation for accidents, and compensation for damages to products other than Mitsubishi products.
   (4) Replacement by the user, maintenance of on-site equipment, start-up test run and other tasks.

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 the 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.

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   * Not all products are available in all countries.

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Mitsubishi Electric offers a wide range of automation equipment from PLCs and HMIs to CNC and EDM machines.

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Since its beginnings in 1870, some 45 companies use the Mitsubishi name, covering a spectrum of finance, commerce and industry.

The Mitsubishi brand name is recognized around the world as a symbol of premium quality.

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As one of the world’s leading companies with a global turnover of over 4 trillion Yen (over $40 billion), employing over 100,000 people, Mitsubishi Electric has the resource and the commitment to deliver the ultimate in service and support as well as the best products.

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- Processing machines: EDM, Lasers, IDS
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Mitsubishi Electric Corporation Nagoya Works is a factory certified for ISO14001 (standards for environmental management systems) and ISO9001 (standards for quality assurance management systems).

Safety Warning

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