FANUC's CNC for LASER cutting machine with high-speed LASER control

FANUC

Series 30*i*/31*i*-LB Plus
Series 0*i*-LF Plus

LASER cutting machine CNC capable of high-speed, high- precision, high-performance LASER control

FANUC Series 30*i*/31*i*-LB Plus
FANUC Series 0*i*-LF Plus

More powerful and easier to use

- Equipped with FANUC's latest CNC and servo technologies
- High-speed LASER command synchronized with axis control
- Equipped with functions required for LASER cutting as standard
  - Cutting condition setting function
  - LASER high-speed control
  - Power control function
  - Gap control, etc.
- Operation screen to support LASER processing
  - LASER dashboard
  - Programming simulation
  - LASER processing conditions database
- Improved basic performance (required functions are equipped as standard)
  - Customized functions
  - Multifunctional Ethernet *30*i*/31*i*-LB Plus only
  - Extended memory capacity

Optimal CNC based on the application

CNC for multi-axis, 3D LASER cutting machine

FANUC Series 30*i*-LB Plus
Max. number of paths : 4 paths
Max. total number of controlled axes : 32 axes
Max. number of simultaneous controlled axes : 24 axes
Max. number of connectable oscillators : 3

CNC for core LASER cutting machine

FANUC Series 31*i*-LB Plus
Max. number of paths : 4 paths
Max. total number of controlled axes : 26 axes
Max. number of simultaneous controlled axes : 4 axes
Max. number of connectable oscillators : 3

CNC for entry LASER cutting machine

FANUC Series 0*i*-LF Plus
Max. number of paths : 2 paths
Max. total number of controlled axes : 9 axes
Max. number of simultaneous controlled axes : 4 axes
Max. number of connectable oscillators : 1

Machining Performance

High synchronization of axis and LASER achieves high-quality cutting.
▶ Power control function / LASER high-speed control

Improve productividy through reduced cycle times.
▶ Fast Cycle-time Technology

Maximizing Uptime

Prevent sudden machine downtime with preventive maintenance
▶ Extensive failure prediction functions

Reduce recovery time by easily pinpointing faulty parts
▶ Diagnosis/maintenance functions

Ease of Use

Integrated support of the shop floor
▶ FANUC *i*HMI

Original screen for ease of use
▶ Comes standard with customizability functions

IoT integration
▶ Extensive compatibility with field networks

System Configuration

CNC Control Unit (LCD mounted type*/stand-alone type)

The display lineup supports a wide range of machines, from compact to large, including the FANUC *i*PC and PANEL *i*H/*i*H Pro with *i*HMI support, a 10.4″ LCD unit, and more.

FANUC *i*PC
24″ LCD

FANUC *i*PC
21.5″ LCD

FANUC *i*PC
15″/10.4″ LCD

PANEL *i*H/*i*H Pro
19″ /15″ /10.4″ LCD

Standard display
10.4″ LCD*

Handheld unit

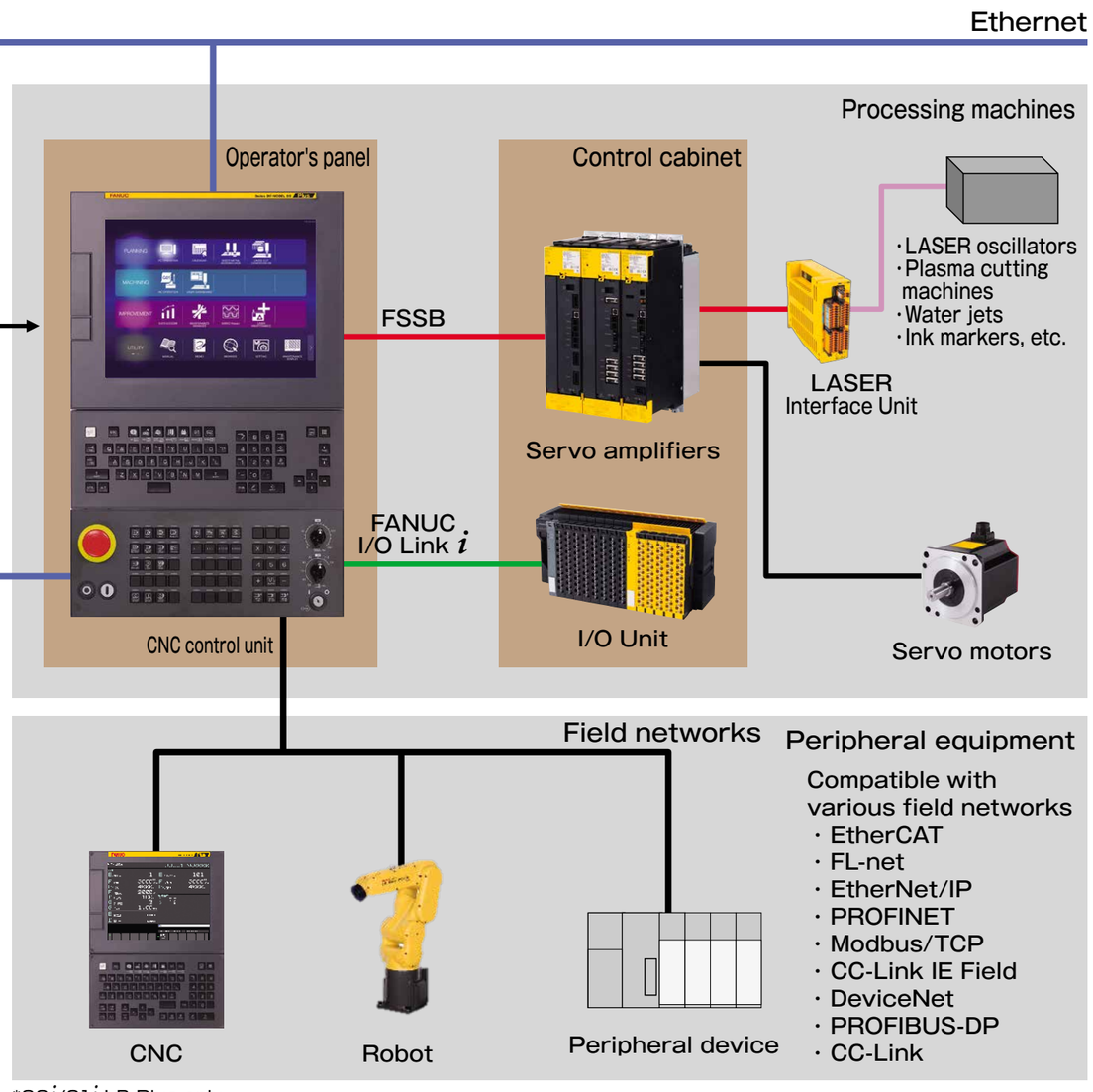
Handheld Unit

Equipped with an emergency stop button and a manual pulse generator, this handy unit line-up achieves safe manual operation of machine tools.

***i*Pendant**

Handy Machine
Operator's Panel

Portable manual
pulse generator



*30*i*/31*i*-LB Plus only

LASER Interface Unit

LASER Interface Unit that not only contributes to high-speed, high-quality laser processing by connecting to laser oscillators, but also realizes a variety of processing by connecting to various processing machines.

LASER Interface Unit Type-2 (LIU2)

Processing machines that can be connected to LIU2 are as follows.
LASER oscillators, plasma cutting machines, water jets, and ink markers, etc.

Servo Motor

Line-up to meet the various needs of LASER cutting machines and contribute to the performance improvement of feed axes

SERVO MOTOR
α*i*-D series

DD MOTOR
D*i*S-B series

LINEAR MOTOR
L*i*S-B series

Servo Amplifier

Line-up to be flexibly available for a variety of LASER cutting machines and contribute to the downsizing of cabinets

SERVO AMPLIFIER α*i*-D series

I/O Unit

Wide range of I/O units compatible with various installation locations and I/O devices.

Optimized for operator's panels with its thin and space-saving design

Standard operator's panel with key input duplication

Safety Machine
operator's panel

Handles the output/input of safety signals

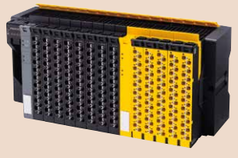
I/O module for operator's panel
supporting safety function

Compatible with original operator's panels

I/O module for
operator's panel

Optimized for power magnetics cabinets with high scalability an d extensive modules such as the multi-point output/input type and the analog/digital output/input module

Small size I/O unit with improved expandability, workability and maintainability



FANUC Slice I/O

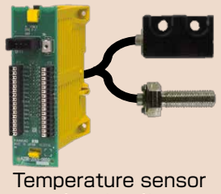
Excellent cost performance with multi-point output/input

I/O unit for power
magnetics cabinet

Compact and with reduced wiring

I/O module for
connector panel

Effective for thermal displacement compensation with multi-point temperature sensor input



Temperature sensor
input unit

Optimized for reduced wiring by enabling distributed setup

Can be positioned near sensors scattered inside and outside the machine cabinet

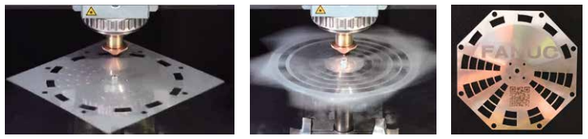
IP67 type

I/O Unit-MODEL B

Superior control functions and high operability

High synchronization between servos and LASERs

CNC sends an axis command to the servo motor and simultaneously generates and sends a laser output command to the LASER oscillator over the same FSSB connection to achieve high synchronization between the axis movement and LASER output.



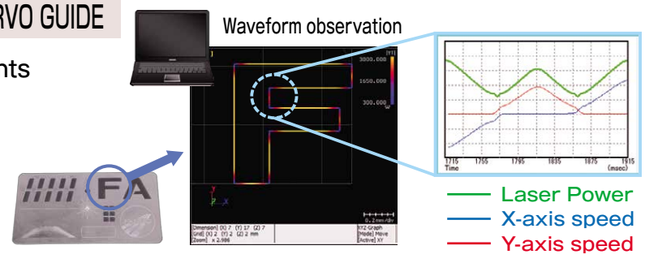
High-speed, high-precision cutting and marking of rotating workpiece
("FANUC" character marking: 120m / min)

FSSB connection
(FANUC Serial Servo Bus)

LASER output can be visualized by the FANUC SERVO GUIDE

Strong support for LASER cutting adjustments

The servo guide measures the servo waveforms, laser power waveforms, and PMC signals, to comprehensively handle adjustment tasks.
The LASER output status can be viewed with color-coding by the servo guide 3D display function.



Equipped with functions required for LASER cutting as standard

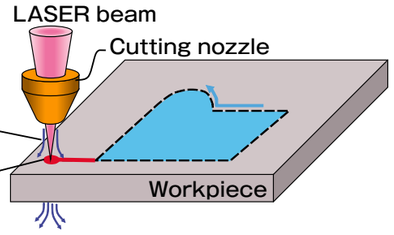
LASER cutting program

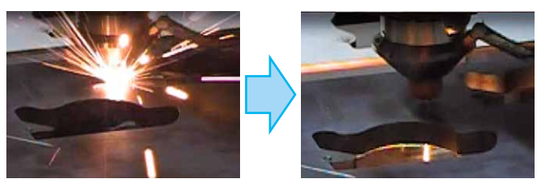
E1
E101 } Set the cutting conditions for cutting and piercing. Can be managed with the cutting condition database.
G13 : The nozzle approaches the workpiece to maintain a constant distance regardless of the shape of the workpiece.
G32 L2 : Controls the assist gas to improve processing quality and processing performance.(Piercing data)
G24 : Shaping the through hole before starting cutting allows for a stable cutting start.
G32 L1 : Controls the assist gas to improve processing quality and processing performance.(Cutting data)
G01 X_Y_ : The workpiece is cut along the cutting path.

Piercing (To make a through hole before cuting)

Changes LASER output step by step when piercing to optimize the power level, achieving stable piercing in the shortest time.

G24 (S_P_Q_)
S : Power command
P : Frequency command
Q : Duty command



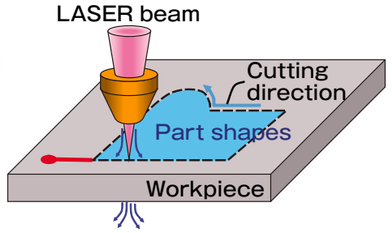


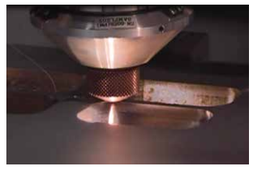
During piercing　　Through-hole shaping

Cutting

The optimal cutting conditions will vary as the cutting speed changes at slender corners or when starting cutting.
Power control functions are available to control LASER output coordinated with the speed of the controlled axis.

G01 X_Y_ (S_P_Q_)
S : Power command
P : Frequency command
Q : Duty command



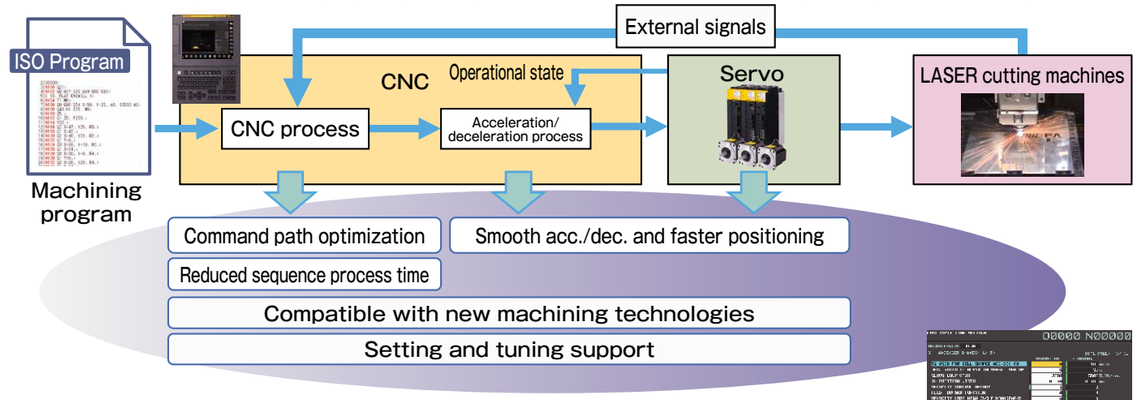


Cutting in progress

Cutting sample

Fast Cycle-time Technology

Fast Cycle Time Technology refers to CNC and servo technologies that achieve reduced cycle times. It reduces cycle times of machining programs through methods such as accelerating and decelerating depending on the operational state and reducing the sequence processing time for external signals.



Fast Cycle-time setting

Easily reduce cycle times

The Fast Cycle-time setting compares the currently set parameter setting to the FANUC default setting, allowing you to easily use the setting that most effectively reduces cycle time.

Information necessary for LASER cutting is centered on the LASER dashboard screen

The *i*HMI LASER dashboard screen is primarily for LASER cutting HMI.
The CNC status display, LASER cutting conditions display, shape previews, and other information required for cutting are concentrated in a single screen.
The LASER dashboard screen allows you to see the shape before cutting, progress during cutting, and cutting conditions without requiring any screen transitions.
You can also easily set up your own screen transitions by allocating launcher soft keys to the required screens.

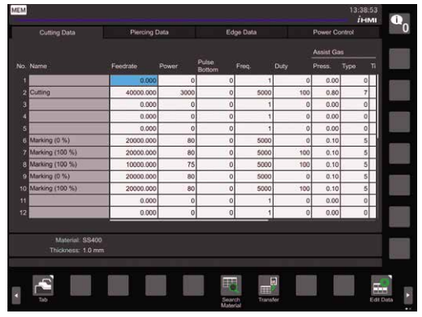
Can allocate desired screens with launcher soft keys

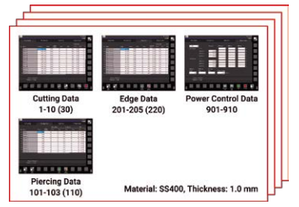
The program management slide previews the cutting shape of the program selected with the cursor, allowing you to select programs while checking the cutting shape.

Program management slide

Cutting conditions database can manage multiple cutting conditions

The LASER cutting conditions database is an application that saves cutting condition settings for each material and board thickness for retrieval with *i*HMI.
Cutting condition settings saved on the PANEL *i*H/*i*H Pro database (can be saved for each material and board thickness, maximum 1000 items.) can be retrieved and forwarded to CNC memory cutting condition settings.





Select the cutting condition setting and forward to CNC memory

Service & Support

Excellent Maintenance Services

FANUC service team delivers customer trust and confidence based on direction of service “Maximizing Uptime”, “Global Service” and “Lifetime maintenance”.

Service First

Conforming to the spirit of “Service First”, FANUC provides lifetime maintenance to its products for as long as they are used by customers, through more than 270 service locations supporting more than 100 countries and regions throughout the world.

Maximizing Uptime

Global Service

Lifetime Maintenance

FANUC ACADEMY

FANUC ACADEMY operates versatile training courses to develop skilled engineers effectively in several days.

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