NIRECO

NEW

Print-to-cut Register Control System

CUTMATIC®6000

The Standard in Automatic Cutting Control!

Unrivaled Reliability and Operability!

Introducing the New Print-to-cut Register Control System

Product Outline

From small food wrapping machines to large offset rotary presses, print-to-cut register control system Cutmatic CT6000 features cut positioning control of any sheeter and folder, face-back matching, pre-print sheeting, and overprint. Significant improvements in performance have been achieved through high-speed processing and the ability to select the optimum control mode (Control A, B and C) for each web operation. Implementing a LCD touch panel that functions as both a display and a means of inputting data has simplified the panel, improving operability.

System Specifications

Line speed	10 to 1000 m/min
Cylinder speed	10 to 2000 rpm
Cylinder size	100 to 2500 mm
Detection accuracy	±0.01mm
Control speed	2 mm/s (along web path)
Control operation	Control A, Control B, Control C
Correction count setting	1 to 32 times
Display range	0.01 to 0.99 mm variable
Alarm	0.01 to 0.99 mm variable

Control A: This control mode predicts the number of revolutions required for the current deviation level to converge according to the setting for the distance between the sensor and the drive roll.
It is mainly suited to offset printing (standard).

Control B: This control mode uses proportional gain and differential gain.
It is mainly suitable for processing machines and low-speed printing presses.

Control C: This mode is for controlling die cut rollers.
It is suitable when directly driving die cut rollers or gravure plates.

Features

Mark search function

The mark search function recognizes part of a pattern as a mark using a time-tested conventional controller.

LCD touch panel both enables operation and shows information

The LCD touch panel enables the data necessary for an operation to be entered, and displays various parameters, gate mark waveforms, deviations, repeat lengths and other information.
The color screen makes it easy to understand the operating status of the controller.

A panel designed with operability in mind

The frequently-used motor operation switch has a user-friendly design that maintains a conventional sheet switch, which enables finger operation by the operator. This has also reduced the frequency with which the touch panel is used, extending its life.

High processing speed

A single-chip microprocessor guarantees high-speed processing. (50% UP)

Fail-safe circuit

The system automatically stops, reducing paper waste, when normal operation is impossible such as when signals from the sensor cannot be detected or when the web speed slows down.

Built-in check function

The controller is equipped with a self-diagnostic function to verify operation in the event of a breakdown. As the line speed and the encoder pulse count can be displayed, the user can check whether the encoder is functioning normally and identifying malfunctioning areas has become easier than ever before.

Deviation display and output

By displaying the measured deviation rate (cutting discrepancy) on the touch panel as a graph, movements in the print-to-cut register can be instantaneously confirmed. It is also possible to record the deviation rate by analog voltage. (±5V DC)

Configuration

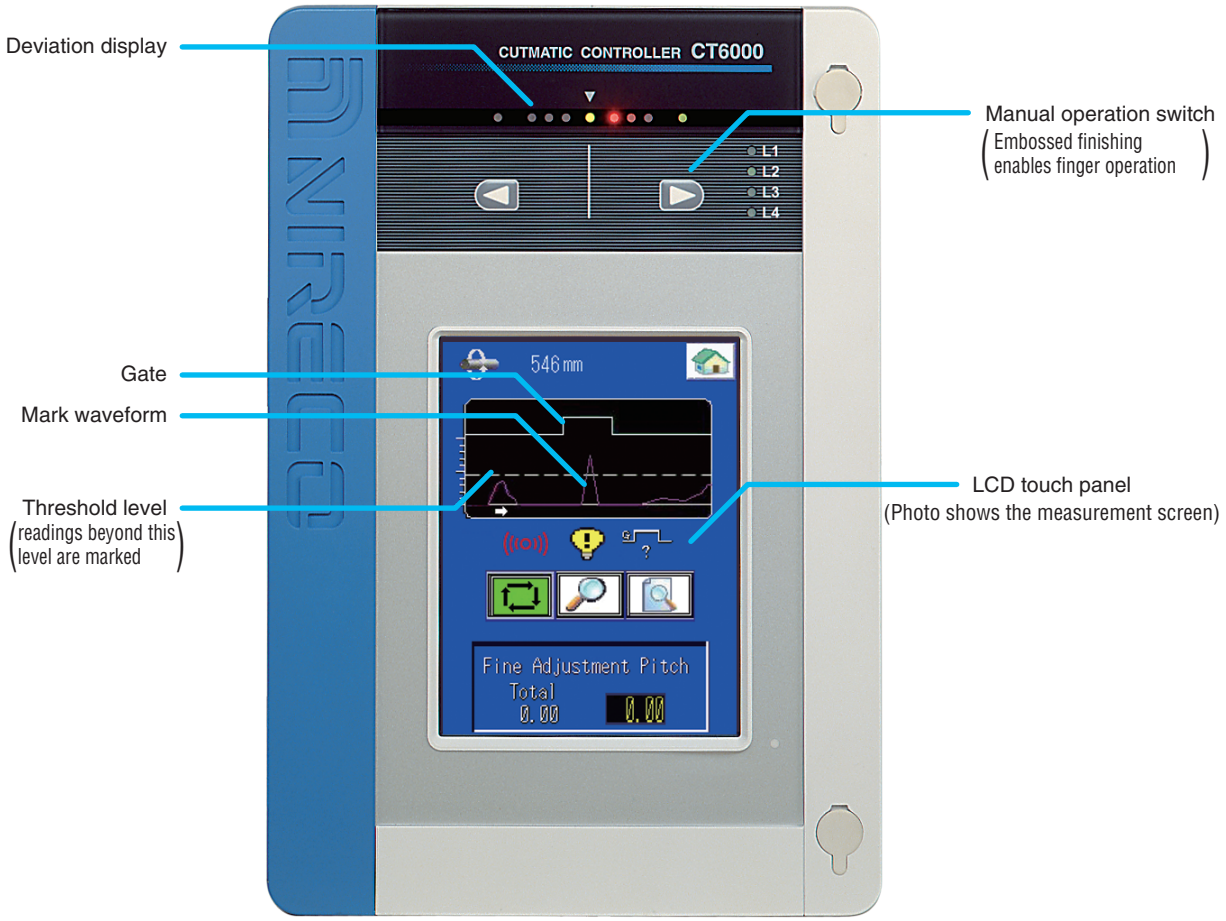
Controller

Operating under microprocessor control, the controller processes electric signals from the scanning head and the encoder. Control mode, gain, etc. can be set to control parameters. The correction motor is driven by controller correction signals.

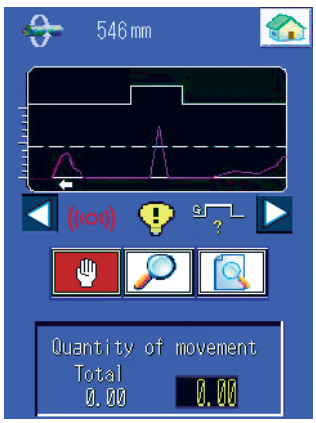
Controller specifications

Power voltage	100 to 240V AC automatically switched, single phase 50/60Hz
Power consumption	100VA (excluding motor)
Ambient temperature	0 to +50˚C
Mass	7kg
Mounting	Panel mounted

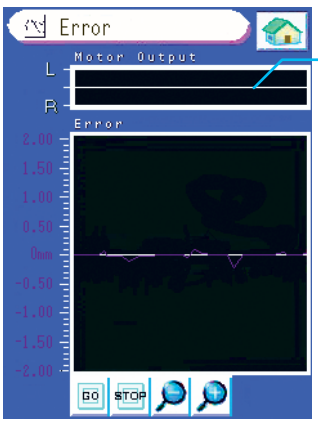
LCD display facilitates setting



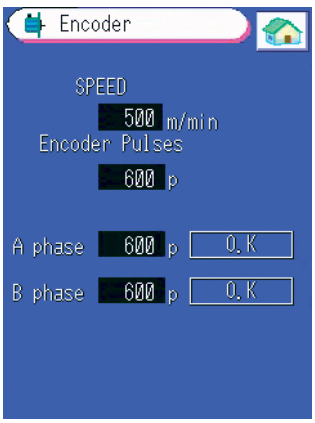
Controller Front Panel



Manual measurement screen



Deviation screen



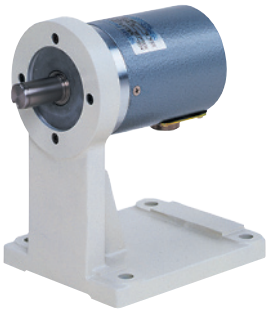
Encoder check screen

Optical fiber sensor

The optical fiber sensor was developed to enable detection at a constantly stable level, further improving the detection capability of a conventional S/H (sample/hold) circuit. The sensor uses a halogen lamp, which produces a high color temperature, and provides an outstanding color rendition. The sensor is superb at detecting marks with pale color combinations and adapts well to special webs.
The circuit has also been designed to extend the life of the lamp, which has increased 1.7 times (5,000 hours). All of these improvements have made the sensor extremely easy to use.

Encoder

The encoder is an absolute no contact photoelectric unit that is directly connected to a cutter or plate cylinder drive shaft. It is controlled by the A, B and Z phases and monitors the synchronization and speed of the plate cylinder.

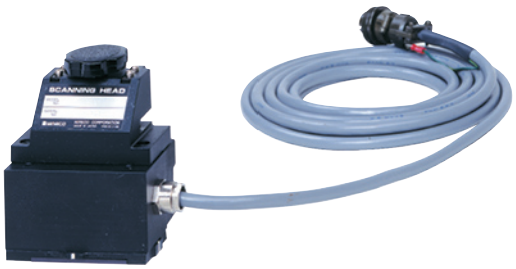


Correction Motor

The correction motor normally drivers the register roller (or the compensator roller) to adjust web length between the final control unit and the cutter in an inline configuration. The cutter mechanism is controlled using a correction motor to operate a differential gear.

Scanning Head

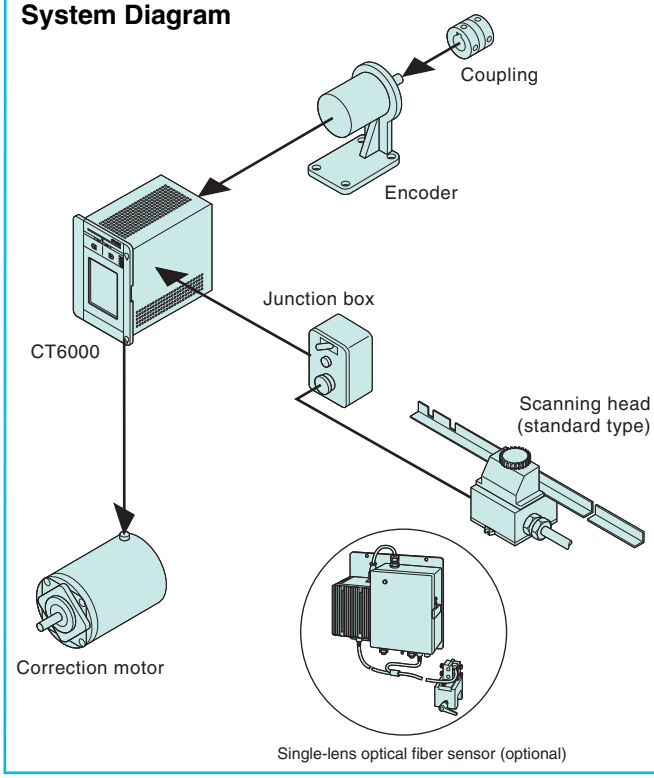
The Scanning head incorporates a silicon photo diode, lamp, lens assembly and amplifier. Scanning head signals undergo high-speed automatic processing in the controller microprocessor to ensure automatic compensation of fogging of the scanning head window due to ink smudges, paper dust or slight changes in register mark density.



Junction Box

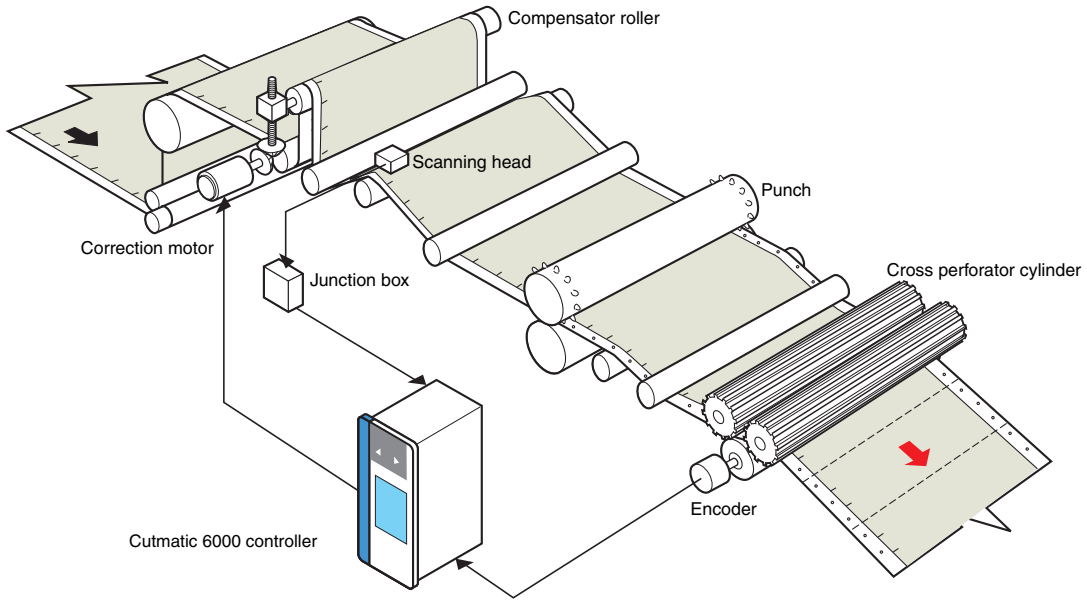
This terminal box relays signals between the scanning head and the controller. It houses the scanning head lamp drive circuit and the mark catch verification lamp. * Not required for optical fiber

System Diagram

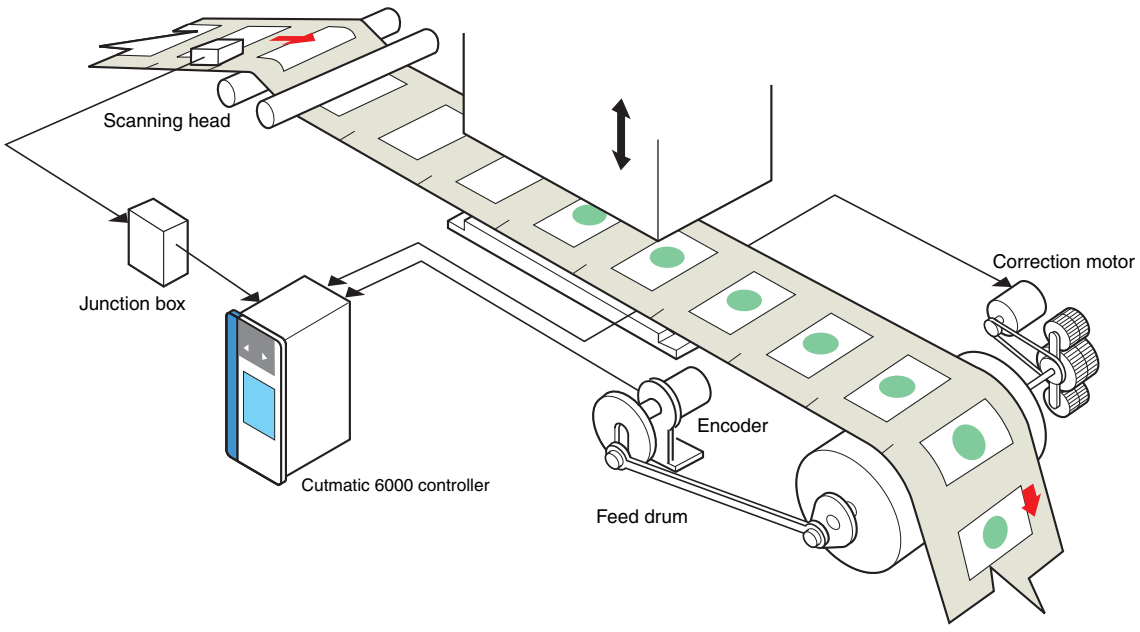


Field of Application

- Folders, Sheeters, face-back matching in offset printing presses, gravure printing presses and newspaper presses
- Perforation of business form printing machines
- Cutters of seal printing machines
- Cutting and folding machines
- Sheeters of packaging machines
- Label blanking machines



Application of Cutmatic 6000 to a Business Form Printing Press



Application of Cutmatic 6000 to a Seal Press

Simple Operation

Setting can easily be made even when the web is in motion.

[Setting during autosearch]

1 : Set the AUTO/MAN switch to MAN.

2 : Operate the machine.

3 : Align the cutter position using the ◁ ▷ buttons.

4 : Press the Mark Search switch to start search.
The device automatically locates the marks and patterns on the web.

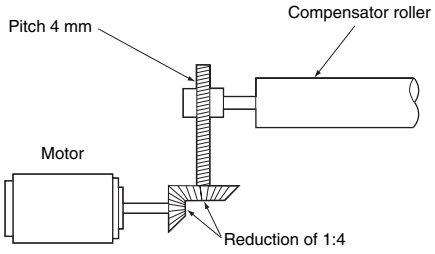
5 : The device will automatically switch to AUTO.
(This completes all required settings.)

Important Design Considerations

1 : Adjust so that one turn of the correction motor corresponds to a 2 mm movement of the web. (Note that this is a case of an inline configuration only. Discussion is required for preprinting.)

2 : Install the reduction gear considering that the torque of the correction motor is 200 N/cm.

3 : Set up the equipment so that the wiring distance between the scanning head and the junction box is less than 4 m.

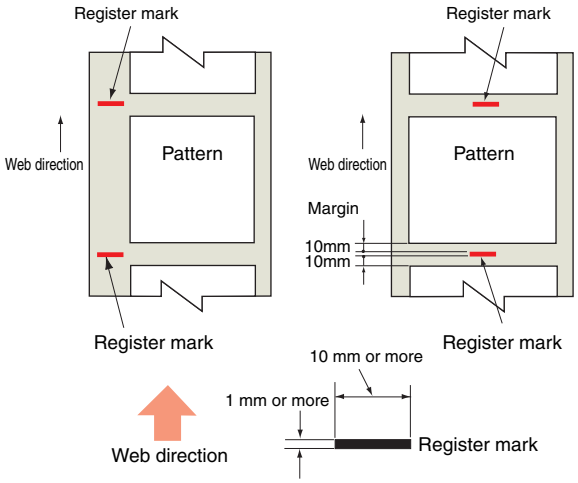


Reduction Gears (Reference Diagram)

4 : Install the scanning head as shown in the Scanning Head (Standard Type) external dimensions drawing on pg. 7.

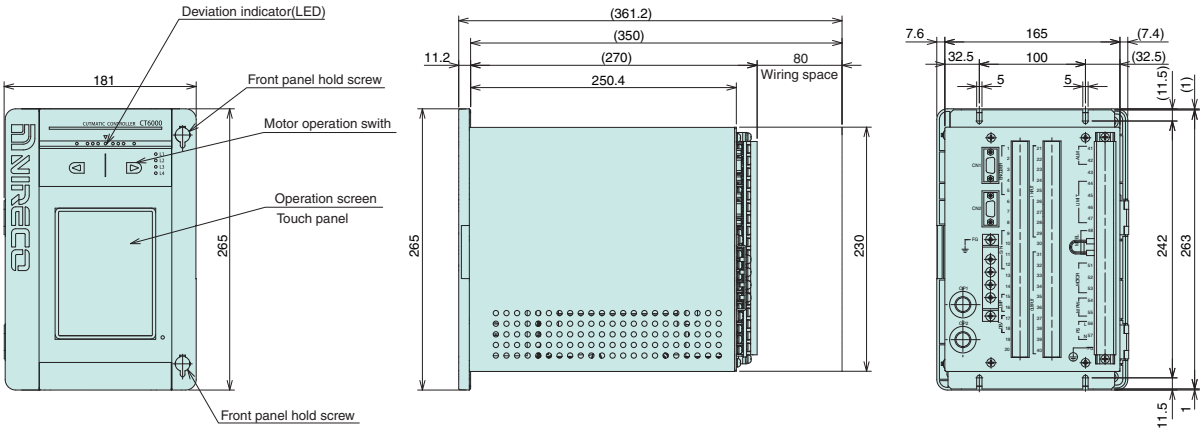
5 : Register marks are of critical importance as criteria for positional control. Please follow the cautionary notes below when wiring them.

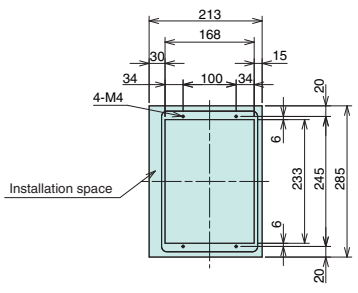
- ○ Use dark colors and avoid light colors for the marks.
- ○ The length of the space (margin) before and after a register mark differs according to the gate width, but it must exceed 10 mm.
- ○ It uses lines perpendicular to web direction.
- ○ When there are no lines in the pattern, the pattern edge is used as reference.



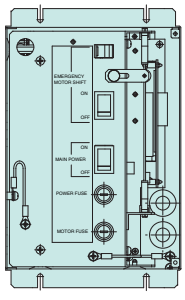
Register mark

External Dimensions

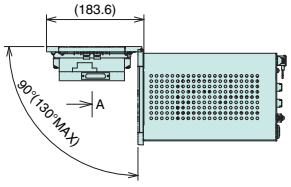




CT6000 panel mount, Panel cut size (S=1:6)



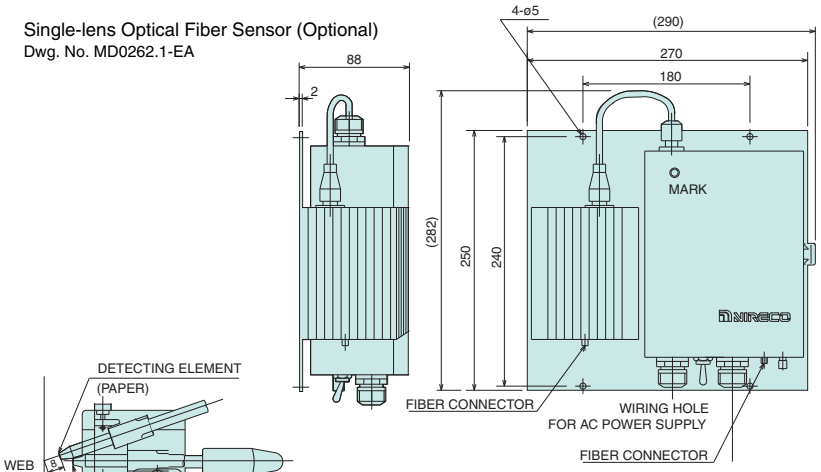
View from A Panel inside (S=1:3)



Open/Close space (S=1:6)

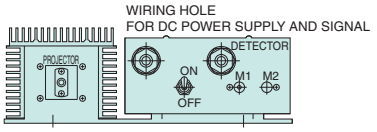
Controller Dwg. No. MK0000100-EA

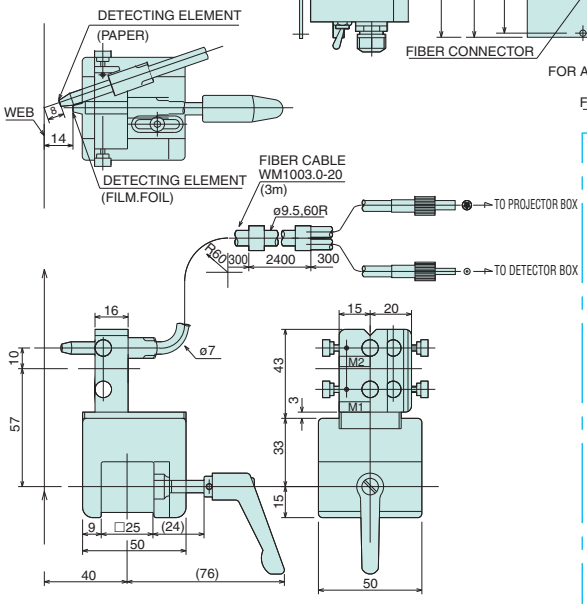
Single-lens Optical Fiber Sensor (Optional)
Dwg. No. MD0262.1-EA



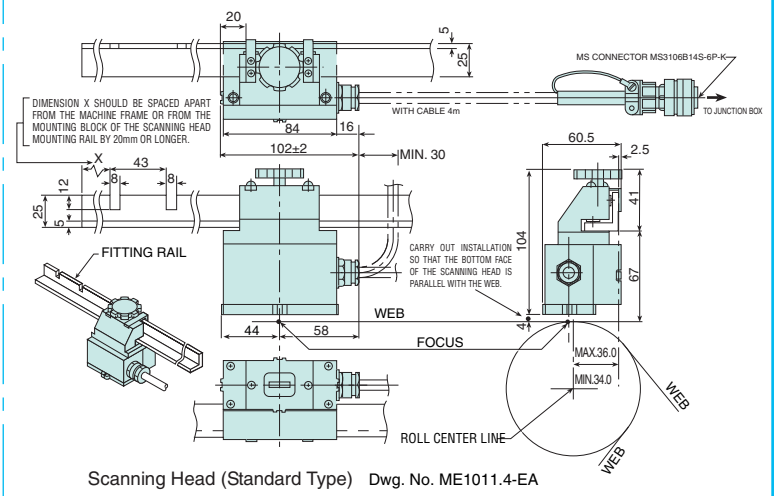
Light Emitting and Receiving Unit Dwg. No. MK7065.1

∗AC100v or AC200v must be selected.
AC200v is selected nomally.
When it be used AC100v, change a jumper
of CN4(on power supply) to AC100v side.

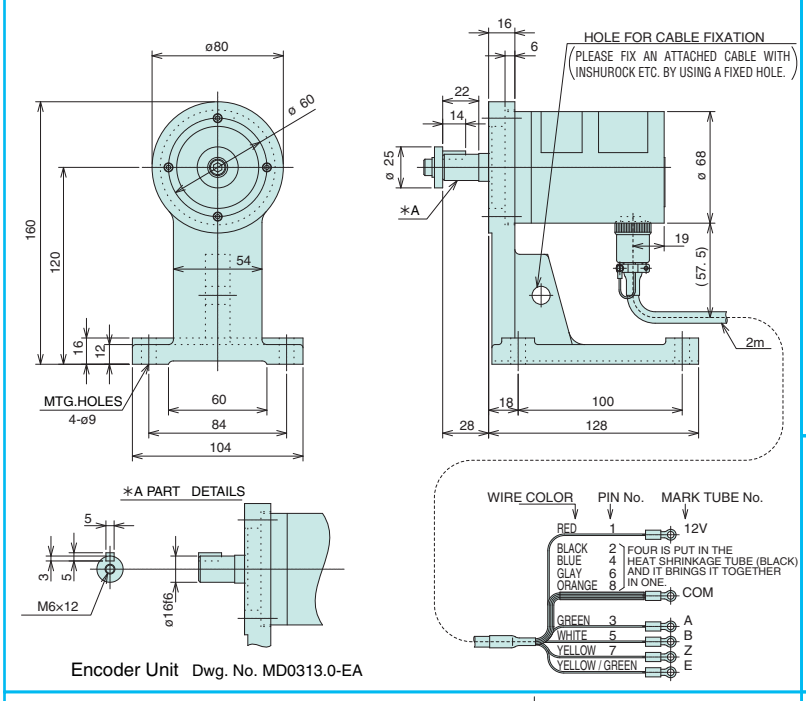




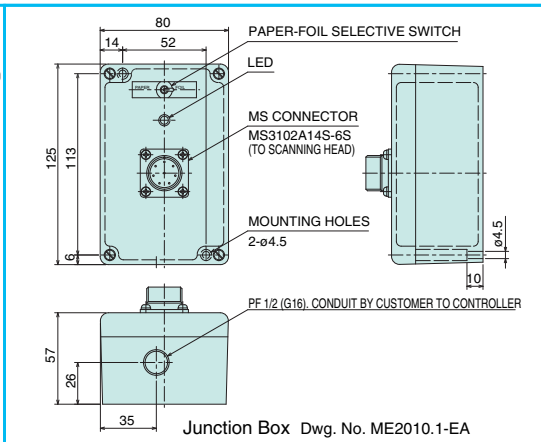
Optical Fiber Head Dwg. No. MD0065.2



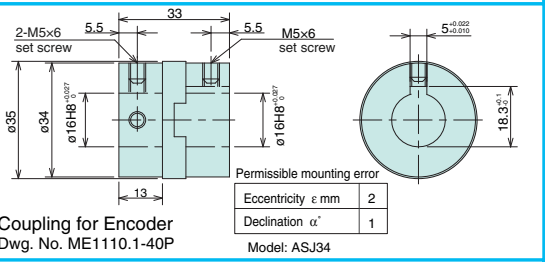
Scanning Head (Standard Type) Dwg. No. ME1011.4-EA



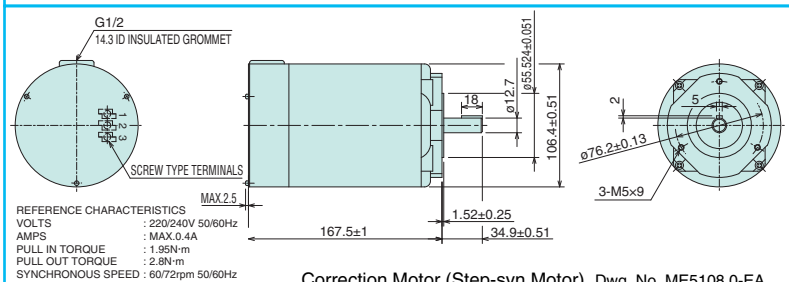
Encoder Unit Dwg. No. MD0313.0-EA



Junction Box Dwg. No. ME2010.1-EA

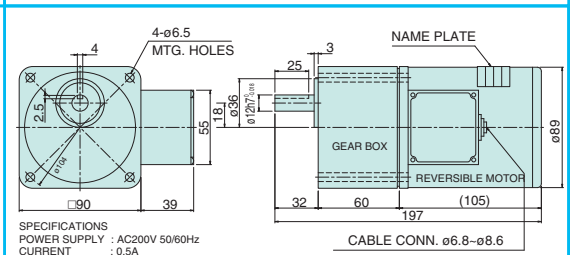


Coupling for Encoder
Dwg. No. ME1110.1-40P
Model: ASJ34



REFERENCE CHARACTERISTICS
VOLTS : 220/240V 50/60Hz
AMPS : MAX.0.4A
PULL IN TORQUE : 1.95N·m
PULL OUT TORQUE : 2.8N·m
SYNCHRONOUS SPEED : 60/72rpm 50/60Hz
MAX. LOAD INERTIA :13kg-cm²
*PHASE SHIFT : ME7007.1 or ME7008.1

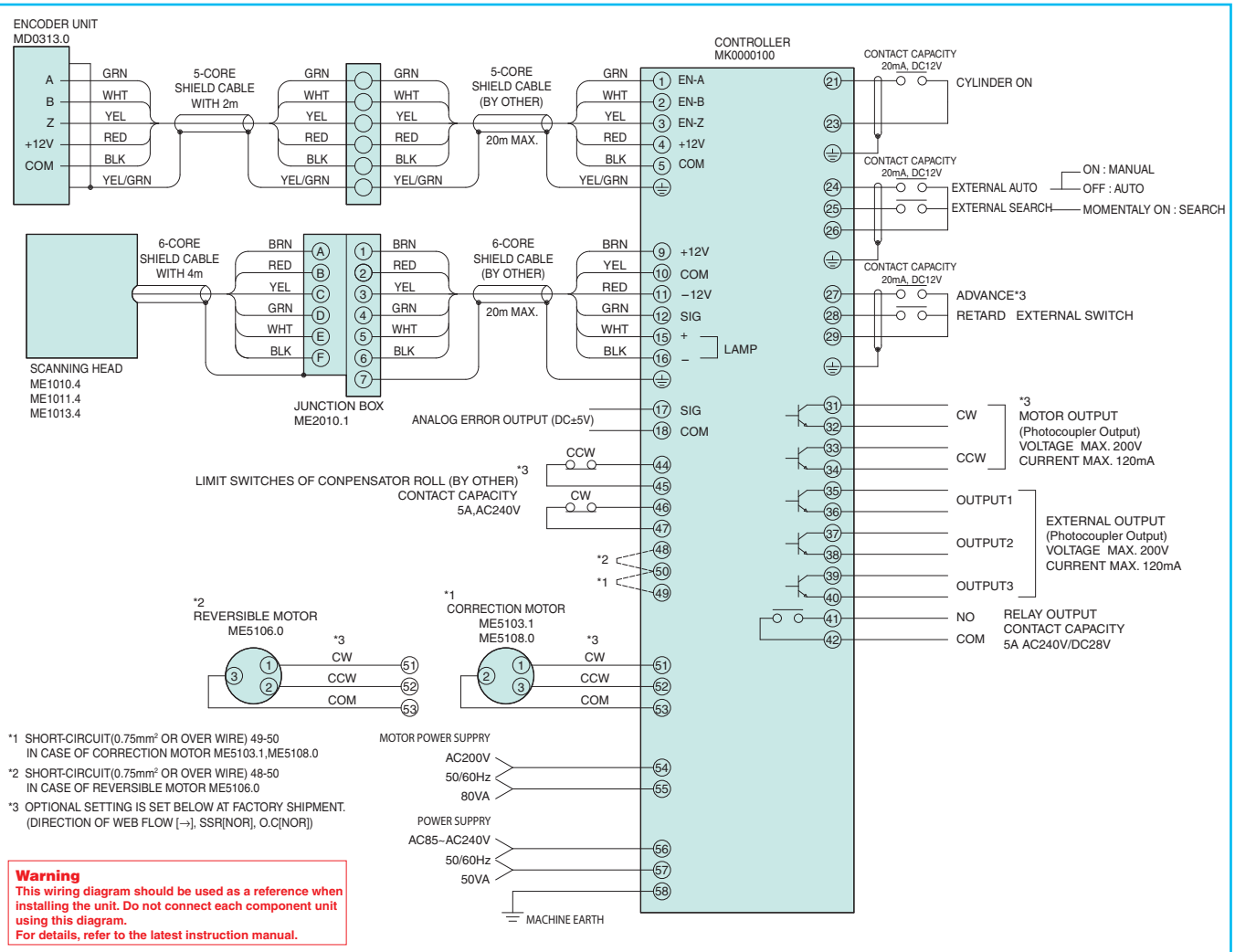
Correction Motor (Step-syn Motor) Dwg. No. ME5108.0-EA



SPECIFICATIONS
POWER SUPPLY : AC200V 50/60Hz
CURRENT : 0.5A
OUTPUT : 40W
REVOLUTION : 50rpm. at 50Hz
: 60rpm. at 60Hz
MAX. TORQUE : 5.4N·m

Correction Motor (Reversible Motor)
Dwg. No. ME5106.0-EA

Wiring Diagram



*1 SHORT-CIRCUIT(0.75mm² OR OVER WIRE) 49-50
IN CASE OF CORRECTION MOTOR ME5103.1,ME5108.0

*2 SHORT-CIRCUIT(0.75mm² OR OVER WIRE) 48-50
IN CASE OF REVERSIBLE MOTOR ME5106.0

*3 OPTIONAL SETTING IS SET BELOW AT FACTORY SHIPMENT.
(DIRECTION OF WEB FLOW [→], SSR[NOR], O.C[NOR])

Warning
This wiring diagram should be used as a reference when installing the unit. Do not connect each component unit using this diagram.
For details, refer to the latest instruction manual.

Standard Wiring Diagram Dwg. No. MK0000100-EC

We reserve the right to change the specifications in this catalog without prior notice to improve and update our products.

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