

## System configuration

Basic configuration	<ul style="list-style-type: none"> <li>●Maximum number of colors controlled: 13 colors (12 channels); up to 9 channels for standard vertical and horizontal control</li> <li>●Types of printing supported: Straight printing, split printing, double-sided printing</li> <li>●User interface: 15.1-inch touch-screen panel LCD</li> </ul>
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Options	<ul style="list-style-type: none"> <li>●Remote panel</li> <li>●AC servo motor</li> <li>■Initial register function</li> <li>■Change gear</li> <li>■Two-unit split</li> </ul>
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Note: The ■ mark indicates that software modification is required.

Specifications	
Web speed	10 to 500 m/min.
Cylinder size	200 to 2,000 mm
Measurement accuracy	±0.01 mm (mark to mark)
Control speed	1 mm/sec. (in a circumferential direction on the paper path)
	0.5 mm/sec. (differential gear) 0.5 mm/sec. (lateral direction)
Fine adjustment range	±5 mm (in a circumferential direction on the paper path)
No. of channels	2 to 12 channels (8-channel system is standard)

Electrical specifications	
Controller power supply input	<ul style="list-style-type: none"> <li>• Power supply input voltage: 100,110,200,220,240,380V AC switchable using an internal tap</li> <li>• Power supply frequency: 50/60Hz</li> <li>• Power consumption: 1.1kW</li> </ul>
Motor power supply input	<ul style="list-style-type: none"> <li>• Power supply for the compensation and sidelay motors</li> <li>• Max. operating voltage: 240V AC</li> <li>• Internal breaker: 15A</li> </ul>

### Register Marks

Register ahead and across is measured and controlled using positional information read from specially printed register marks. The register marks, which present the positional information, are determined by their shape and arrangement.

#### Register mark dimensions

#### Register mark direction

The register mark direction can be selected freely.

#### ■ Marks ahead

Blank 30  
20  
20  
20  
20  
Blank 30

Web direction ↑

#### ■ Marks across

15(20) 15(20) 15(20) Blank 20

Web direction ↑

Normal mark arrangement	Fourth color	Third color	Second color	First color	Blank 20
Reverse mark arrangement	First color	Second color	Third color	Fourth color	Blank 20

We reserve the right to change the specifications in this catalog without prior notice for improving and updating our products.

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QH1000.2-E

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**NIRECO**

# Automatic Register Control System

# MR5500

## For Web-fed Gravure Rotary Presses



# Built-in communications functions allow the MR5500 to be linked to a quality inspection system to reduce total costs (time, labor, and materials)!

## Features

- Can be linked to a Nireco quality inspection system to achieve "integrated management" in the gravure printing process
- The automatic MR5500 register control system has built-in communications functions. It can be connected to print quality inspection systems or print still-image devices to achieve integrated information management and smarter operation.
- The operation panel can be removed and operated separately from the console
- The operation panel, which is a flat screen LCD, can be removed from the console and operated in a convenient place for the operator, e.g., on the operation desk of the printing press.
- FSP (First Search and Preset) substantially cuts down on the amount of waste created
- It has until now been impossible to check for position of initial plate setting before all of the colors start printing. The FSP function makes it possible to check the plate positions after printing only one or two colors, cutting down on the time spend and material wasted during initial set up.
- Automatic recognition of registration marks
- The registration marks are automatically recognized on the moving web.
- Rapid, optimum corrective action
- The optimum predictive control will be provided for each web type.
- Extraordinarily easy for the operator to use
- Every system function can be performed by the operator on the touch screen LCD panel.
- A waveform display gives the operator an immediate representation of the registration, even at very low speeds. The display is switchable between showing the waveform for one complete plate cylinder revolution or the waveform near the gate. Setting the gate is a one-touch operation.
- The name of each setting point is displayed when data settings are made.
- The icon-based operation is international understandable.
- Different types of marks (vertical and horizontal) and web types are handled by one type of sensor
- Registration marks can easily be handled by changing an attachment at the fiber optics scanner.
- Failsafe function guarantees stable operation
- ◆ When a major error occurs or when there is a large deviation in registration, such as a missing mark, the fail safe functions activated to maintain an extra margin of registration control.
- Job memory
- ◆ Parameter settings can be stored and later recalled when running the same product (up to 1000 data sets).
- Analog deviation signal output
- ◆ Deviations signals are output as analog voltage (+/-5V) to allow recording.
- Applicable with a double-sided and split-printing simultaneously

## Options

- Remote control panel: Installing remote panels at the operator sites for each plate cylinder unit, so that operators can work without going back to the control box. Panels are also equipped with individual search functions.
- Twin operation panels with split printing function for split printing: With the split printing function, the display from the sub-controller can be displayed on another control box. In addition, two operation panels can be controlled completely independently from each other.
- Numerical keypad: This keypad can be attached at times when the touch screen is not usable.

## Operation Panel (Touch Screen Interface)

The operation panel, which is a flat screen LCD, can be removed from the console and operated in a convenient place for the operator, e.g., on the operation desk of the press. For optional split printing configuration, two operation panels can be used simultaneously for easier control of the system.



## Console

The console contains the controller, the transformer, the power supply and other equipment. Specifications can be selected in which the control box and touch screen interface are either separate or joined into a single unit. If the separate touch screen interface is selected, the maximum separation between the two is 50m.



## Fiber Optic Scanner

The fiber optic scanner consists of fiber optic scanning heads and a projector-detector unit. The compact designed optical unit is easy to handle.

- The projector-detector unit contains a lamp, light receiving element, and other optical components.
- The projector spot is clearly visible, making scanner setup easy.
- The scanner is resistant to the effects of external lighting such as fluorescent lighting, ensuring stable detection.
- By concentrating the projected and received light, detection sensitivity is improved.
- By using a special reflector, varnished register marks can be detected. (Patent)
- A wide range of web materials can be handled.
  - Paper base (defused reflection)
  - Film (mirror reflection using mirror reflector)
  - Metal foil (mirror reflection)



## Phase Shift Box (Option)

The phase shift box contains a phase shifter to move the correction motor. It consists of capacitors and resistors.



## Correction Motor (Option)

The correction motor is a high-response step-syn motor to provide highly accurate and stable control. It normally drives the compensator roller.



## Encoder Unit

This is a completely contact-free photoelectric unit which is driven by a direct coupling with the plate cylinder or plate cylinder drive shaft. The web speed and angular position of the plate cylinder are detected and transmitted to the console. It detects register marks by means of Nireco's unique inspection method without using gates as in ordinary systems. It is mounted so that it rotates with the plate cylinder at a ratio of one to one.

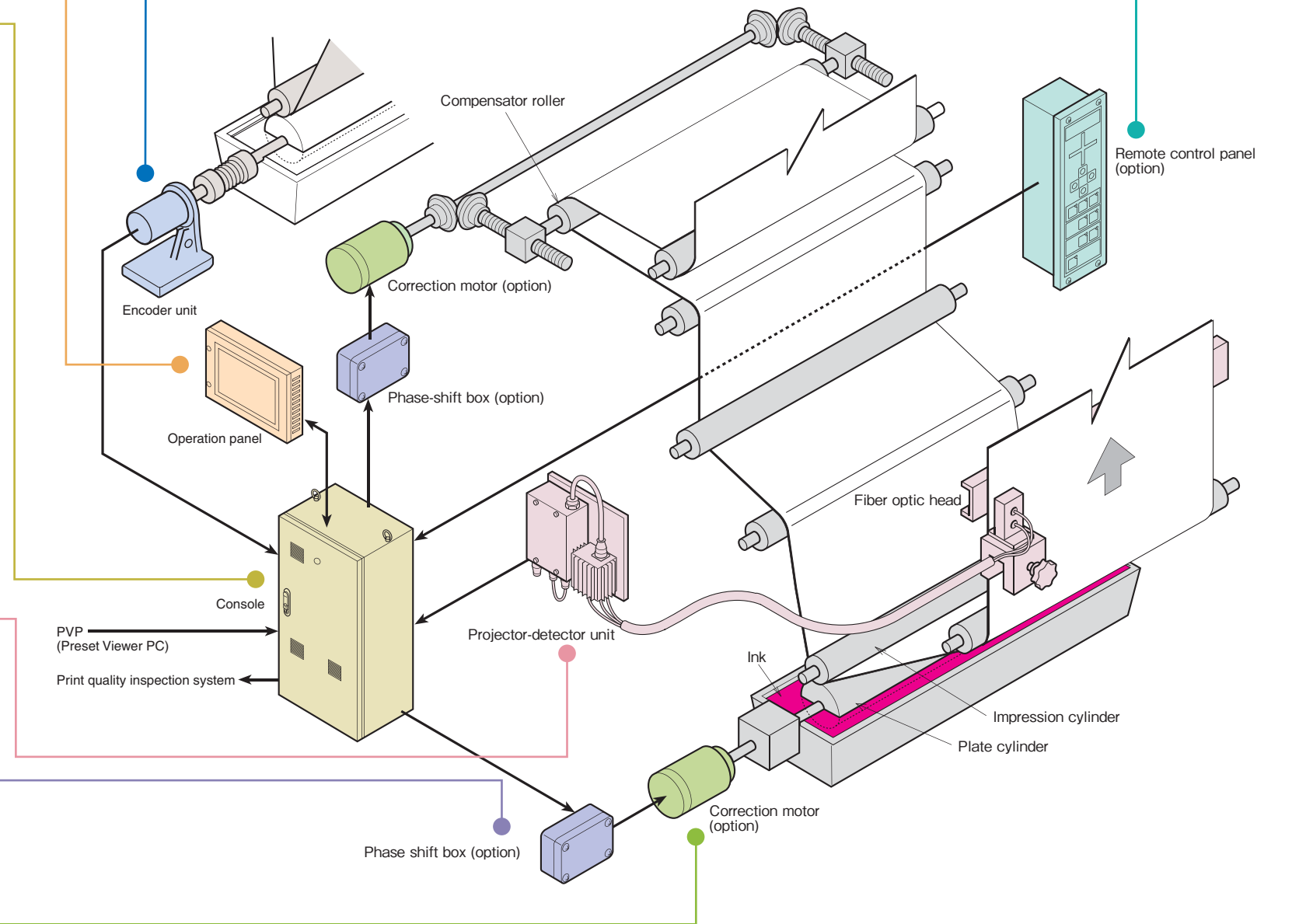


## Remote Control Panel (Option)

The remote control panel is installed at the operator's side of each printing unit. It displays the control conditions (error display/correction movement display) and has the Auto/Man switch and the manual operation switches. The operator can confirm the fine adjustment and automatic bias operations while away from the console.



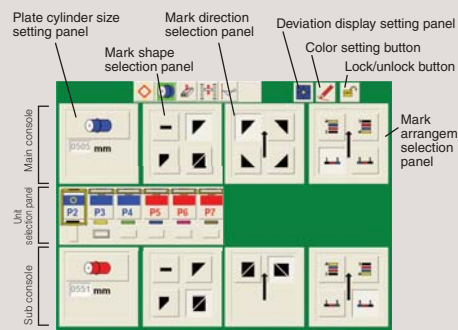
## System configuration



## Setting Screen

The setting panel is used to set control conditions for each channel. The following parameters are available.

- ◆ Parameter Setting
  - (1) Plate cylinder size
  - (2) Selection of mark shape, direction and arrangement
  - (3) Unit switching
- ◆ All control calculation data specifications can be set.



## Job memory screen (option)

The position data for a point that has already been correctly registered can be recorded. Then the register can be set simply by loading the same data. Data for up to 1,000 jobs can be recorded. In addition, the product name, the unit used, plate cylinder size and shape of the register mark can be recorded.

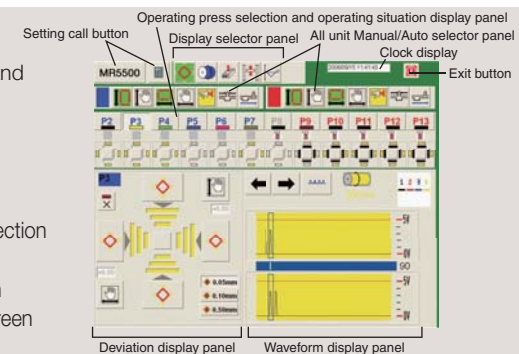
## Pre-alignment function (option)

Before printing begins, this function moves each compensator roller and aligns the register marks. This shortens the time needed for initial adjustments at the start of printing, and saves paper.

## Display screen

The display screen displays errors for each channel, and has the following additional functions.

- (1) Fine adjustment switch
- (2) Automatic/manual selection
- (3) Fully automatic/fully manual selection
- (4) Auto-bias function
- (5) Alarm setting values
- (6) Selection between mark-to-mark and mark-to-cylinder
- (7) Left/right direction selection
- (8) Alarm on/off selection
- (9) Mark search operation
- (10) Digital oscilloscope screen



## Registration error screen

