Align

LPC ®
G-Series

Guide

1. About LPC Web Guide System

(1) About LPC

LPC is an acronym for "Line Position Control" and is the trade name (registered trademark) of our Web Guide System. Since its development in 1953 as an all-electric web guide system, the LPC has been used in a wide range of fields to automatically correct meandering in web (paper, film, foil, fiber, and rubber) production and processing lines to increase productivity and produce high-quality products.

(2) Typical applications

● Unwinding Guide System

Unwinding guide is used in the unwinding section of slitters, coaters, laminators, etc., when irregularly wound webs need to be aligned and unwound. A sensor fixed to the frame detects the web position, and a linear actuator connected to the reel stand operates to unwind the web in a constant position.
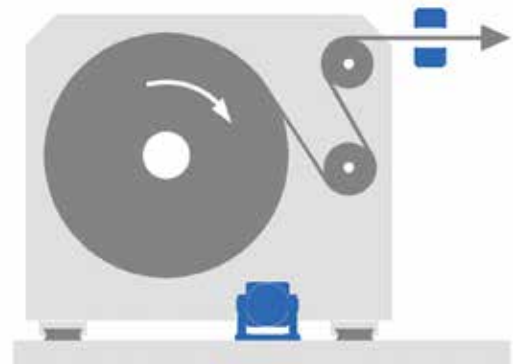

● Center Guide System

A center guide system is installed in the conveyor line of coaters, printers, laminators, etc., when there is a need for centering of a web in conveyor lines. There are two types of roll guider systems: offset pivot roll guider and end pivot roll guider.
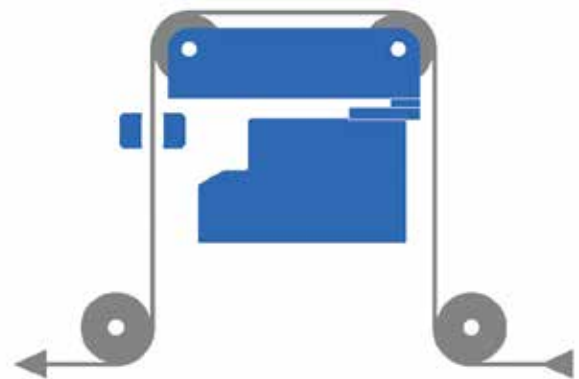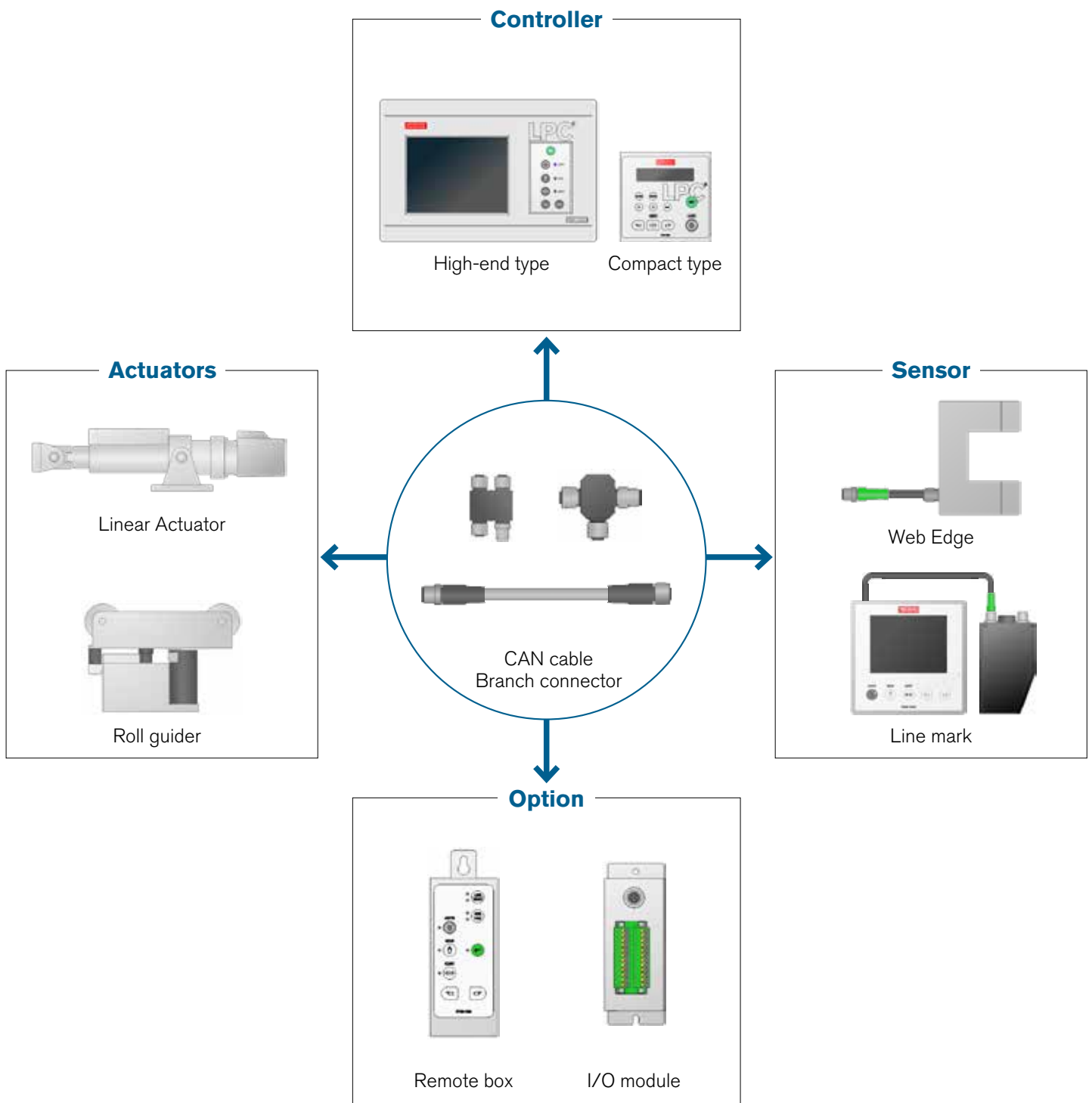

● Winding Guide System

Winding guide system is used in coaters, printers, laminators, etc.., to align and wind irregularly meandered webs. The sensor and winding stand connected to the linear actuator move with the web to ensure that the web is wound in a constant position.
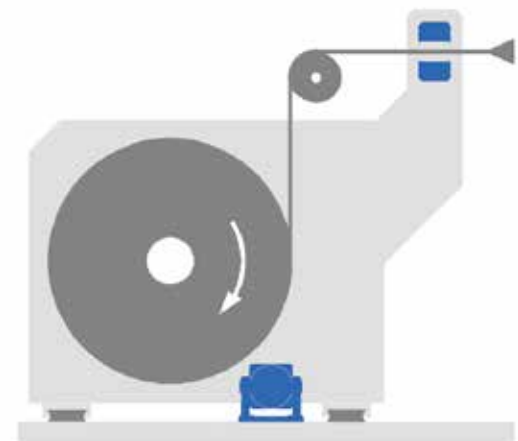
2. Basic configuration

The LPC consists of three main devices: a controller, a sensor, and an actuator. I/O modules and other options are then added as needed. These devices are connected using CAN cables and branch connectors. The sensors measure the positions of web edges or printed line marks, and the controller commands the actuator to move the web to a certain position based on the measurement results. When the actuator is activated, the rollers and carts connected to the actuator move correct the position of the web while maintaining the set position.

Controller

High-end type   Compact type

Actuators

Linear Actuator

Roll guider

CAN cable
Branch connector

Sensor

Web Edge

Line mark

Option

Remote box   I/O module

High responsiveness

The low-inertia brushless motor and high-speed control provide excellent positioning performance.

※ Characteristic comparison data when 0.5 ton cart is connected to the actuator and started 2 mm away from the target position
Q-series: PW-1000-PD-610
G-series: PEM-3000-PDM-610
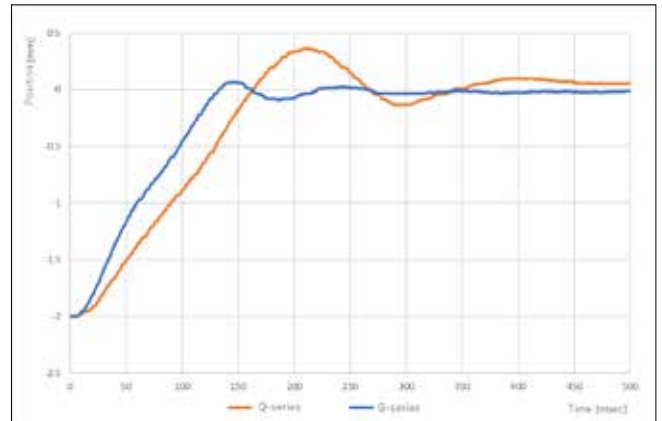
Brushless Motor, Maintenance Free and Position Detectable

Brushless motors are used for the actuator. Eliminating dust generation and the need for brush replacement due to brush wear. In addition, since rotational position detection is possible, the stroke center or stroke end position of the actuator can be adjusted by changing parameters.

(Note)　The stroke end stop by rotation position detection becomes effective after the power is turned on and the center return operation is performed.

Easy Connection and Easy Start-Up

Everything between the controllers, sensors, and actuator is wired with connectors. Wiring is easy and hassle-free. The controller automatically recognizes the connected devices and guides the user through the start-up procedure.

All wired by connectors

Automatic recognition of connected devices

Automatic recognition of the type of connected sensors and driving unit.
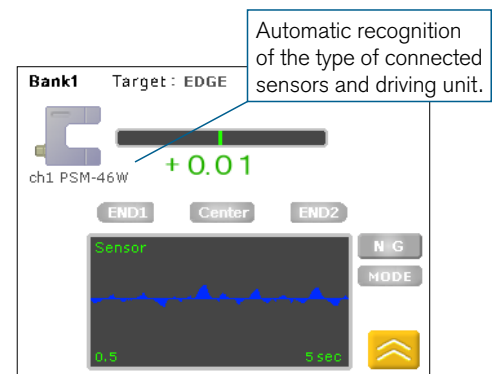
PEM-3000 home screen

Highly Reliable Communication

Controller Area Network (CAN) cables are used for communication between the controller, sensor and actuator. Even in the unlikely event that the connection between devices is broken due to disconnection or poor contact, it is immediately detected and an alarm is output. In addition, because of digital communication, the web position signal detected by the sensor is not affected by noise.

Controller

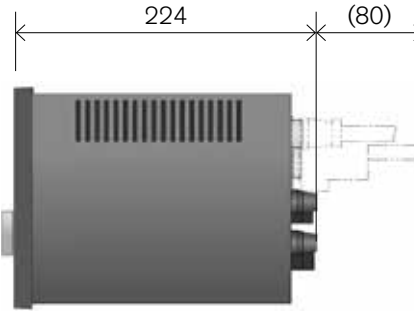**Controller Area Network**

Actuator

Sensor
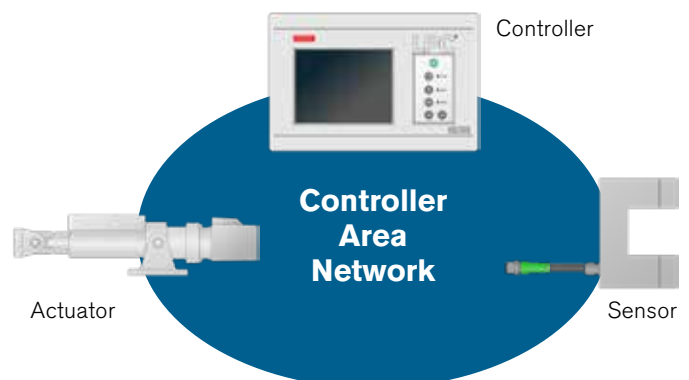
Compact Housing

The size of the controller has been significantly reduced compared to the conventional product. It can be installed in a small space.

Size comparison of the high-performance type

PW-1000 (conventional)

224   (80)
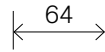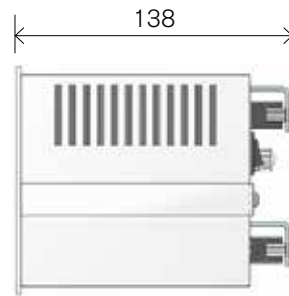
-180mm

PEM-3000

64

Cables are pulled out from the underside to save space.

Size comparison of the compact type

182

PW-800 (conventional)

138

-116mm
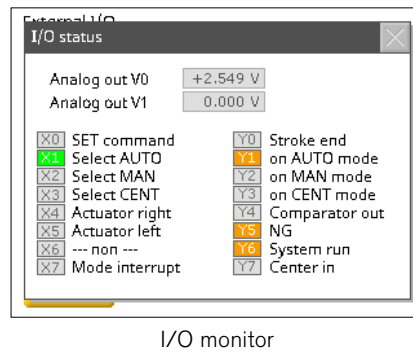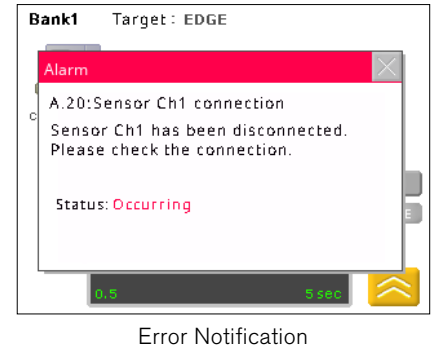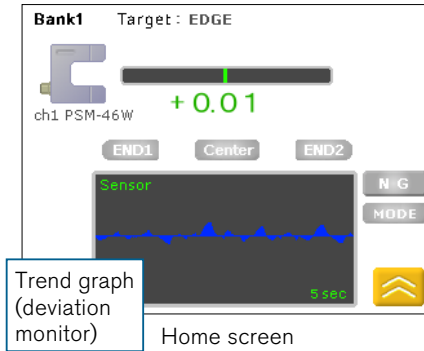
96

PEM-200

22
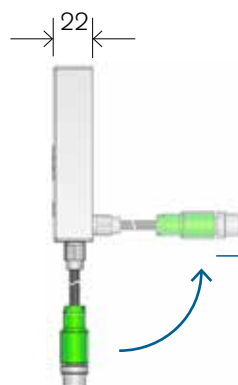
Cables can be pulled out from the rear.

Various Functions (In case of Controller PEM-3000)

Intuitive operation using touch panels

The intuitive touch panel operation is easy to use, and the trend graph and digital value display make it easy to grasp the operation status. The display can also identify system abnormalities, such as poor communication between devices due to wire breakage, and assist in recovery.

Trend graph (deviation monitor)

Home screen

Error Notification

I/O monitor

List of connected devices

Analog output for monitoring deviation and drive speed

The PEM-3000 is equipped with 2 channels of analog output. The number of misalignments measured by the sensor and the operation status of the drive machine can be recorded by a data logger or other means.

Parameter protection with password

Parameters can be password-protected to prevent operators from accidentally changing them during operation. Permission/prohibition settings can be selected for each parameter individually.
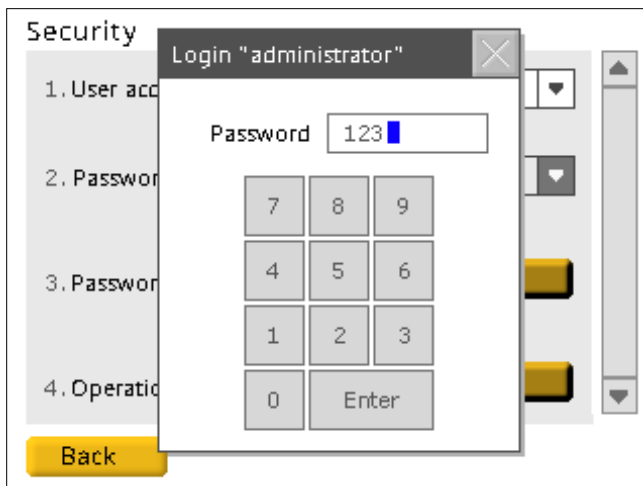
Comparator

When the sensor detects a misalignment, which exceeds the set tolerance value, the display and output terminals notify the operator. The operating status can be easily checked by displaying a trend graph of the deviation.

Lamp lights up when deviation exceeds the set value.

Deviations are displayed in time series. The set tolerance value is displayed with a red line.
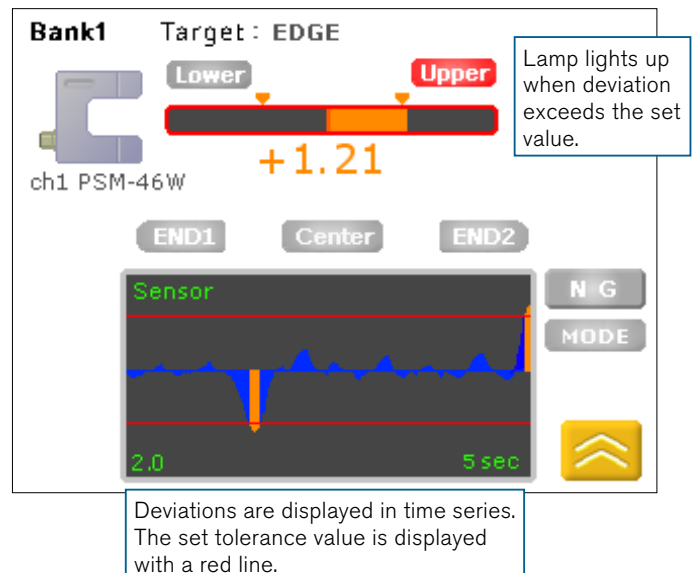
4. Products

Controller

Two types of controllers are available: a high-end and a compact type.

The high-end type, PEM-3000, is equipped with a color LCD touch panel for intuitive operation. It is also equipped with an input/output terminal for switching the operation mode from an external controller such as a PLC and an analog output terminal for monitoring the operating status.

The compact type PEM-200 offers excellent cost performance. It provides high response and high accuracy control with simple operation and functions. By using two sensor, centering control is also possible.
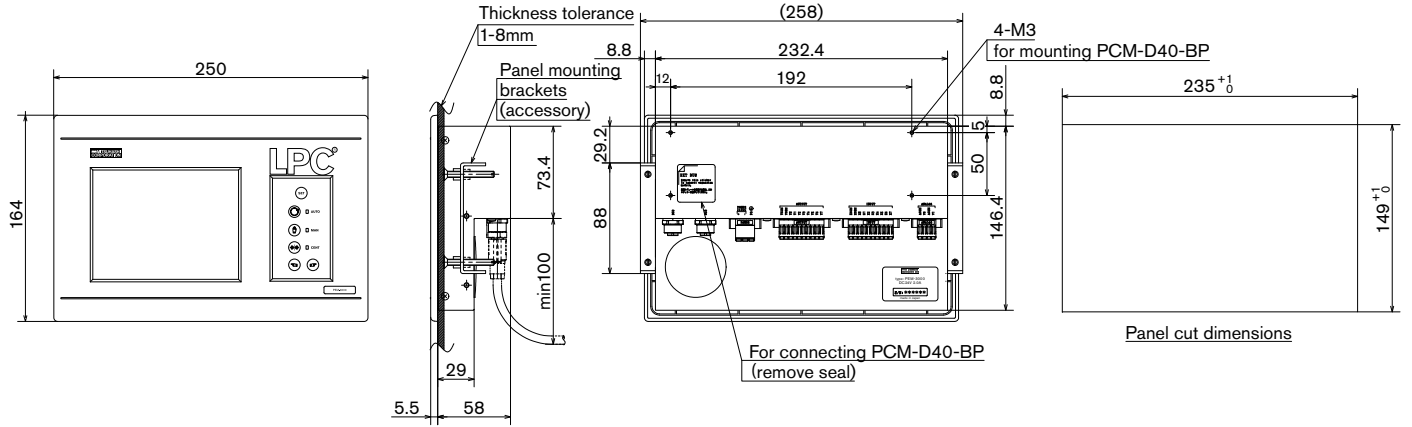
Model	PEM-3000	PEM-200
Appearance		
Power Supply	DC24V ± 10%	
Current Consumption	Max. 500mA (PEM-3000 only)	Max. 30mA (PEM-200 only)
Mass	Approx. 1.5kg	Approx. 0.5kg
Environment	Ambient Temperature：0–40℃ , Ambient Humidity：Below 80% RH (non-condensing) Atmosphere：Indoor (no direct sunlight), well-ventilated, Free from corrosive gases, flammable gases, oil mist, and dust	
Display	5.7 inch TFT color display with resistive touch panel	OLED display, monochrome, 16 characters×2 lines
Language	English, Korean, Chinese, Japanese	English, Japanese (Katakana)
Operation	Membrane switch and Touch panel	Membrane switch
External control terminal	· Inputs：8 ports, Photo couplers, Operation mode switching (AUTO/MAN/CENT), Bank switching, Actuator operation · Outputs：8 ports, NPN Transistor Open Collector, 30V, 100mA Operation mode status (AUTO/MAN/CENT), Actuator stroke limits / Center, System run, Comparator, Alarm · Analog outputs：2 ports, ± 5V Deviation, Actuator speed	None (If external control is required, please use the expansion I/O module)
Connect able Devices — Sensor	PSM series, Max 4 units	PSM series, Max 2 units
Connect able Devices — Actuator	Actuator：PDM series；Roll guider：PGM series Models with DC motor：PD, PG, MR series (Models with a rated current of 2.5A or less) (Note) When connecting an actuator equipped with a DC motor, the DC motor driver PCM-D40 must be used.	
Connect able Devices — Options	Expansion I/O module：PXM-100, Remote box：PTM-100, Analog input module：PAM-10	

Outline Drawing

PEM-3000

< Mounting to the panel mount >

250

164

Thickness tolerance
1-8mm

Panel mounting
brackets
(accessory)

73.4

min100

29

5.5 58

(258)

8.8   232.4

12   192

29.2

88

4-M3
for mounting PCM-D40-BP

8.8

5

50

146.4

For connecting PCM-D40-BP
(remove seal)

235 $^{+1}_{0}$

149 $^{+1}_{0}$

Panel cut dimensions

< Mounting to the base >

186.2

55

20

23

2×2-M4
for base mounting brackets

21.5

26 29.5

6

42

248.4

263.4

7.5
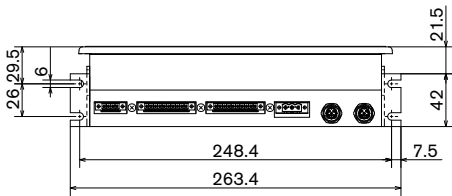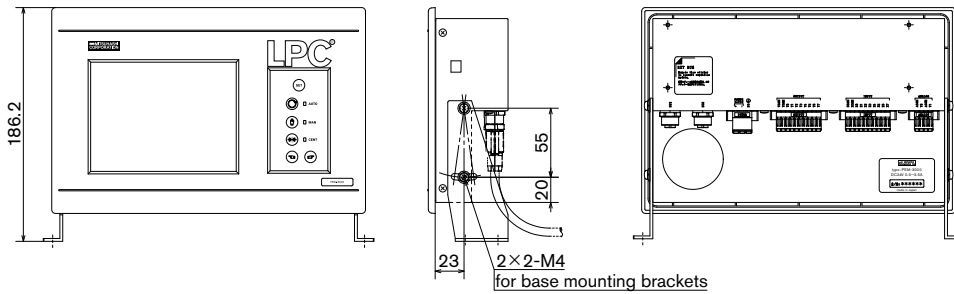
**base mounting brackets
(sold separately)**

(Screws included, M4×4pieces)

PEM-200

96

96

(3000)

21.2

min. 50

5.3

9   78

48

type: PEM-200
DC24V 30mA

S/N: ******

made in japan

2-M4

2-M3
Cable outlet,
for recombination

8.5

When cable out
from behind
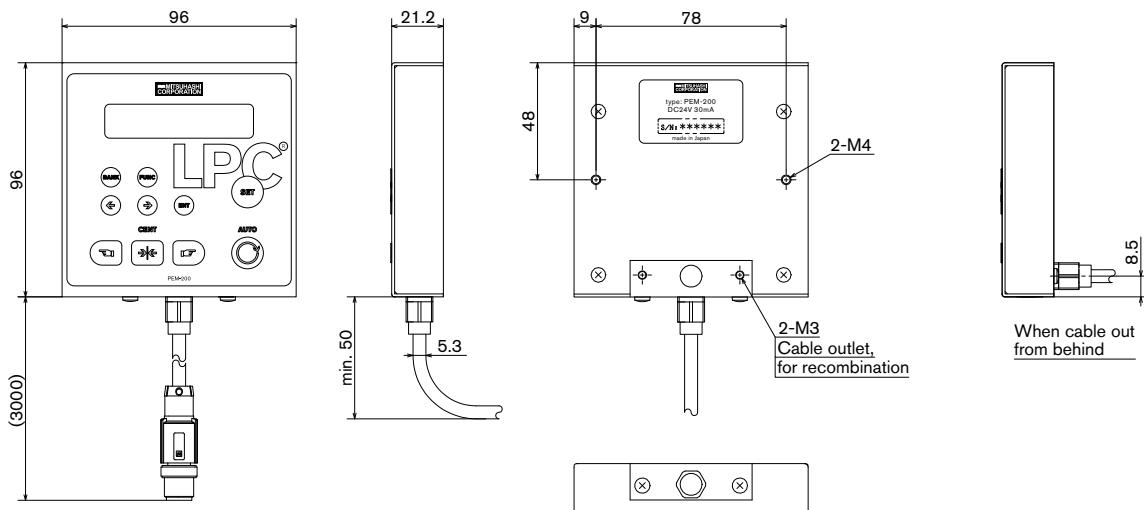
System Configuration (When using PEM-3000)

Controller PEM-3000

Main system (e.g., PLC.)

External control I/O

Analog output for monitor

DC motor driver

PCM-D40-BP (Mounted on the Rear of the PEM-3000)
Connect to the PEM-3000 using the Included Cable
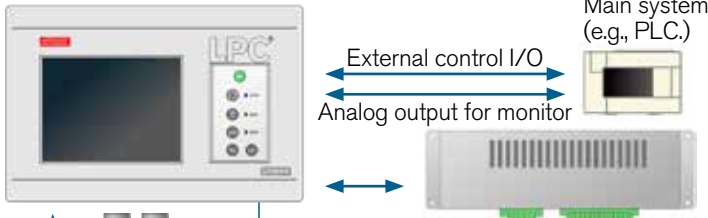
Included cable

DC24V Power supply for CAN bus

AC100-220V Power supply for actuator

Equipped with two connection ports on the rear.

Actuators of Q series

Actuators of Q series

PG series
MR series
PD series(2.5A or less)

Sensor (Max. 4 units)

Web Edge sensor

PSM-400 series
PSM-700 series

Reflective sensor

PSM-270
PSM-1500
PSM-2000

Analog input module

PAM-10

Analog signal

Commercially available sensor.

T-branch connector.
Used to connect 2 sensors

G series Actuators

Compact roll guider

PGM-15-ST
PGM-15-LT
※ No power connection required for PGM-15 series.
(supplied via CAN bus)

Linear Actuators

PDM series

Roll guider

PGM-400
PGM-80
MRM-100

DC24V Power supply for actuator

T-branch connector.
Used to connect options

Options

Remote box

PTM-100

System Configuration (When using PEM-200)

Controller PEM-200

DC24V Power supply for CAN bus

T-branch connector. Used to connect 2 sensors

T-branch connector. Used to connect options

Sensor (Max. 2 units)

Web Edge sensor
PSM-400 series
PSM-700 series

Reflective sensor
PSM-270
PSM-1500
PSM-2000

Analog input module
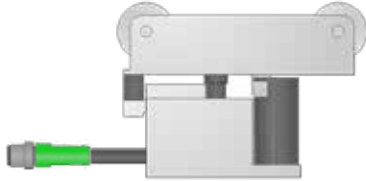PAM-10

Analog signal

Commercially available sensor.

Actuator

Compact Roll guider
PGM-15-ST
PGM-15-LT
※ No power connection required for PGM-15 series.
(Supplied via CAN bus)

Linear actuator
PDM series

Roll guider
PGM-400
PGM-80
MRM-100

DC24V Power supply For Actuator

DC motor driver
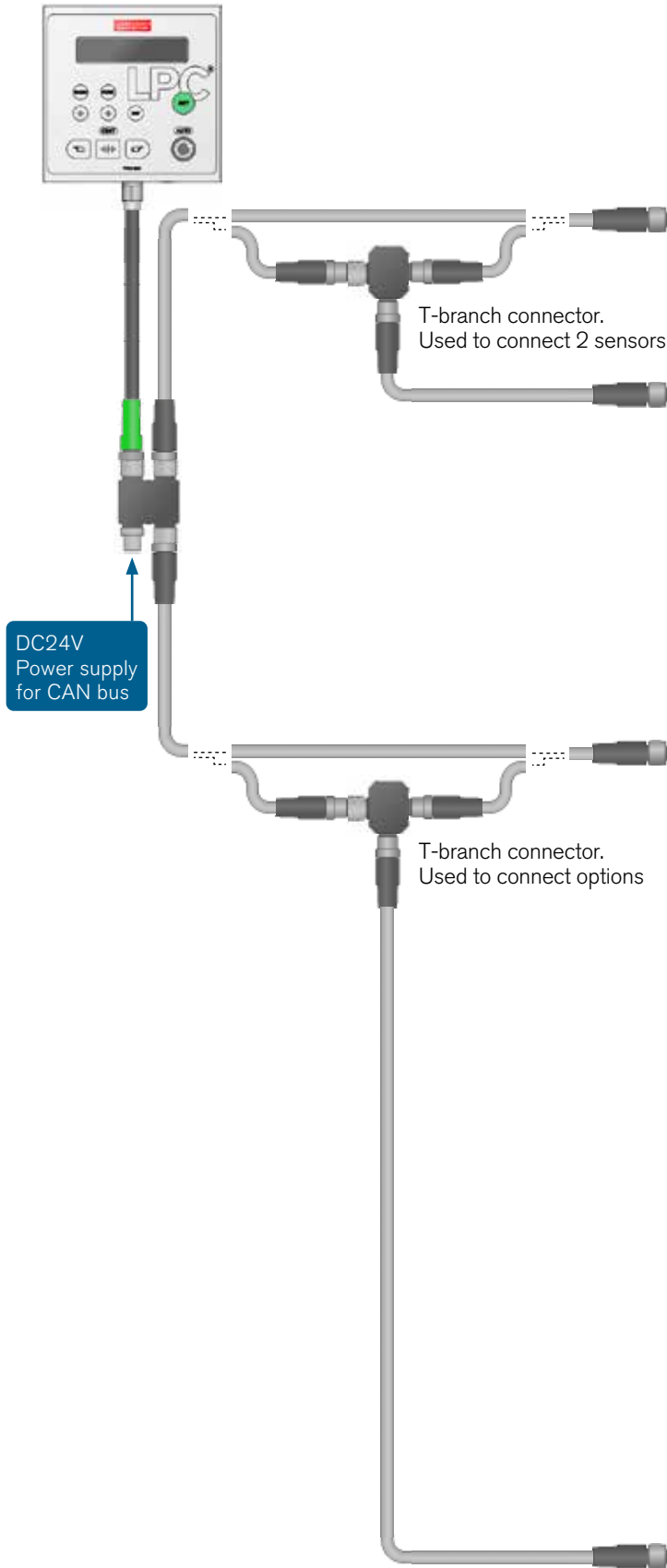PCM-D40-NL

AC100-220V Power supply for actuator

Actuator of Q series
PG series
MR series
PD series
(2.5A or less)

Options

Remote box
PTM-100

Expansion I/O module
PXM-100

Main system (e.g., PLC.)

External control I/O

Sensors

Web Edge Sensors

Web Edge Sensor PSM-400/PSM-700

These are used for web edge guiding. We offer two types: ultrasonic and infrared. The ultrasonic type is suitable for detecting transparent films, while the infrared type is suitable for detecting metal foils and non-woven fabrics. Models with a switch panel allow for convenient mode switching and teaching operations directly at the sensor. Additionally, it can be used in a simple configuration (master mode) without a PEM-type controller.

Model	PSM-400	PSM-700
Appearance		
Applications and Features	Edge detection for transparent films. Not affected by the transparency or pattern of the film.	Edge detection for metal foils and non-woven fabrics. Wide detection range, ideal for centering control.
Power Supply	DC24V ± 10% (Supplied via CAN bus)	
Current Consumption	35mA	40mA
Mass	Approx. 220g	Approx. 220g
Environment	Ambient Temperature：0–40℃ , Ambient Humidity：Below 80% RH (non-condensing) Atmosphere：Indoor (no direct sunlight), well-ventilated, Free from corrosive gases, flammable gases, oil mist, and dust.	
Detection range	5mm	15mm
Detection method	Ultrasonic (frequency 300kHz)	Infrared
Detection target	Web edge	
Suitable Sensor holder	PZM-200	

Models

PSM-400

· Blank: Without switch panel
· "S": With switch panel

PSM-700

· Blank: Without switch panel
· "S": With switch panel

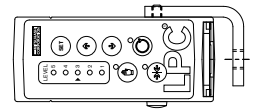· Blank: Without dust blower
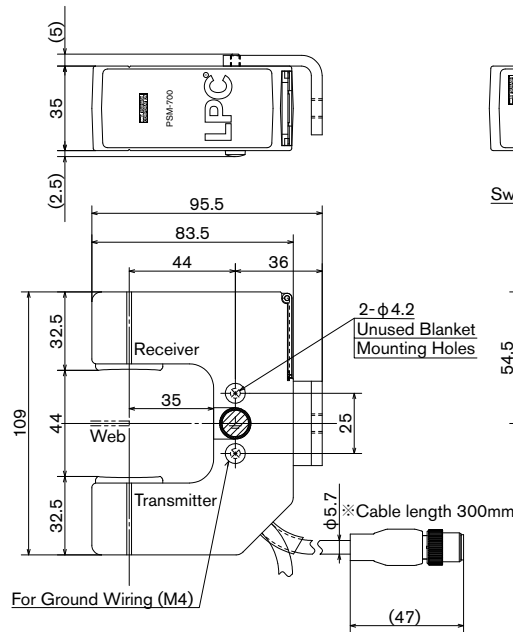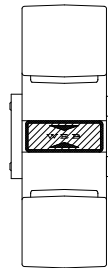· "-DB": With dust blower

Switch panel

Dust blow
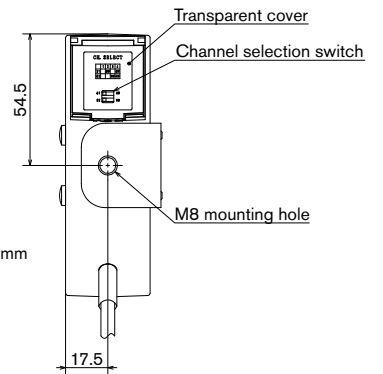(PSM-700only)

Air Capacity for Dust blower：
Air Pressure：0.2–0.5 MPa, Flow Rate：20Nl/min, Connection Diameter：φ 2.1 (for Φ 3 tube)

Outline Drawing
## (Common for PSM-400 and PSM-700)

Switch Panel Installation Diagram

- (5)
- 35
- (2.5)
- 95.5
- 83.5
- 44
- 36
- 32.5
- Receiver
- 35
- Web
- 44
- 109
- 32.5
- Transmitter
- 2-φ4.2 Unused Blanket Mounting Holes
- 25
- φ5.7
- ※Cable length 300mm
- (47)
- For Ground Wiring (M4)
- Transparent cover
- Channel selection switch
- 54.5
- M8 mounting hole
- 17.5

System Configuration   (When using models with switch panel)

The models, PSM-400 and PSM-700, with switch panels, can be used in a simple configuration (master mode) without a PEM-type controller. The minimum system configuration consists only of a sensor and actuator.
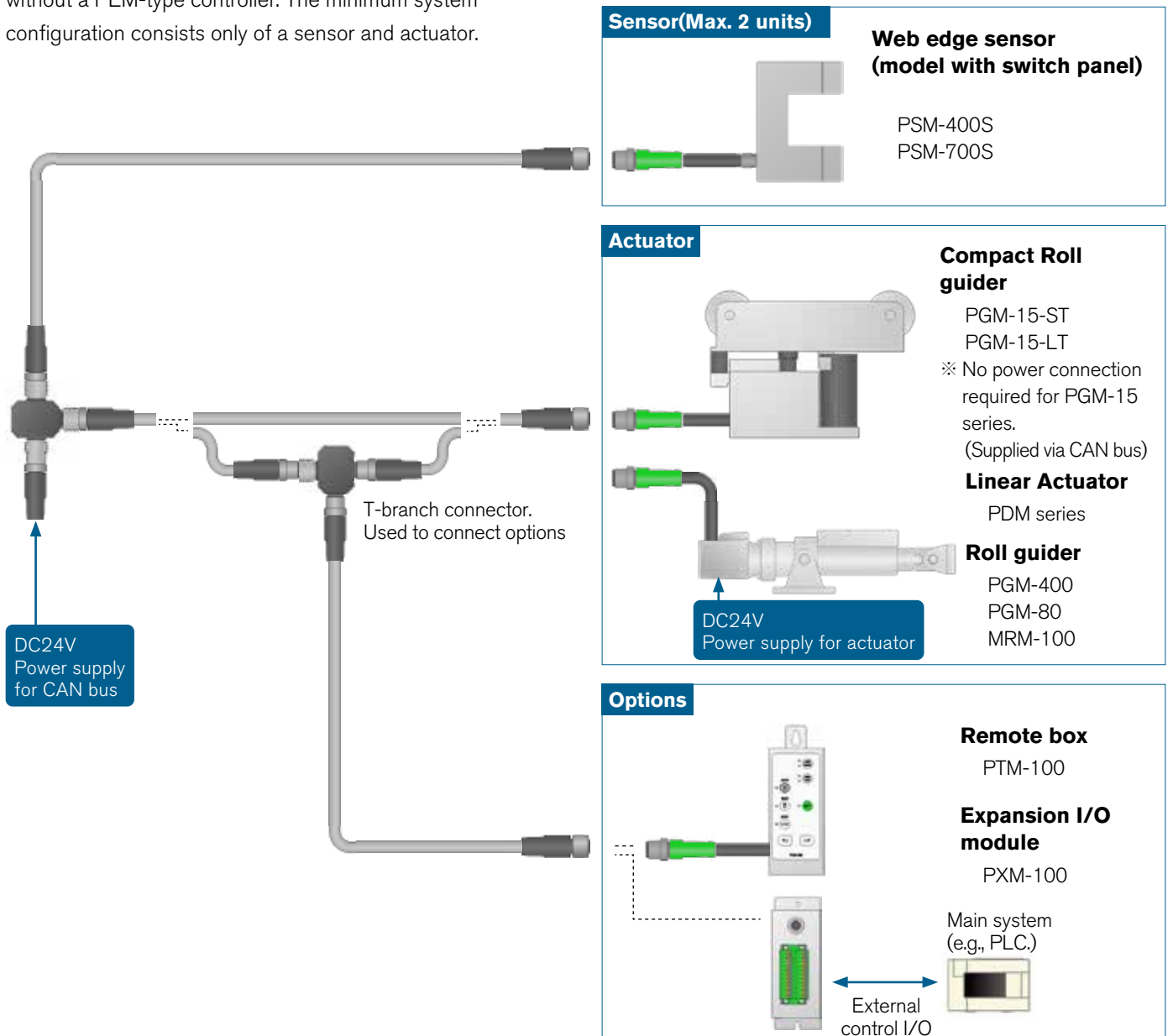
Sensor(Max. 2 units)

Web edge sensor (model with switch panel)

PSM-400S
PSM-700S

Actuator

Compact Roll guider

PGM-15-ST
PGM-15-LT

※ No power connection required for PGM-15 series.
(Supplied via CAN bus)

Linear Actuator

PDM series

Roll guider

PGM-400
PGM-80
MRM-100

DC24V
Power supply for actuator

T-branch connector.
Used to connect options

DC24V
Power supply
for CAN bus

Options

Remote box
PTM-100

Expansion I/O module
PXM-100

Main system (e.g., PLC.)

External control I/O

Reflective Sensor

Reflective sensors are used for web guiding by detecting line marks or patterns printed on the web. We offer the compact model PSM-270, the PSM-1500, which can detect without being affected by patterns near line marks using one-dimensional image processing with a color linear image sensor, and the PSM-2000, which can track intermittent patterns through two-dimensional image processing.
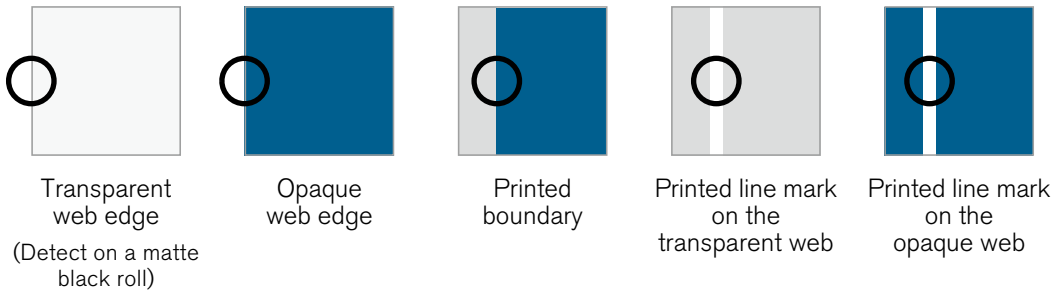
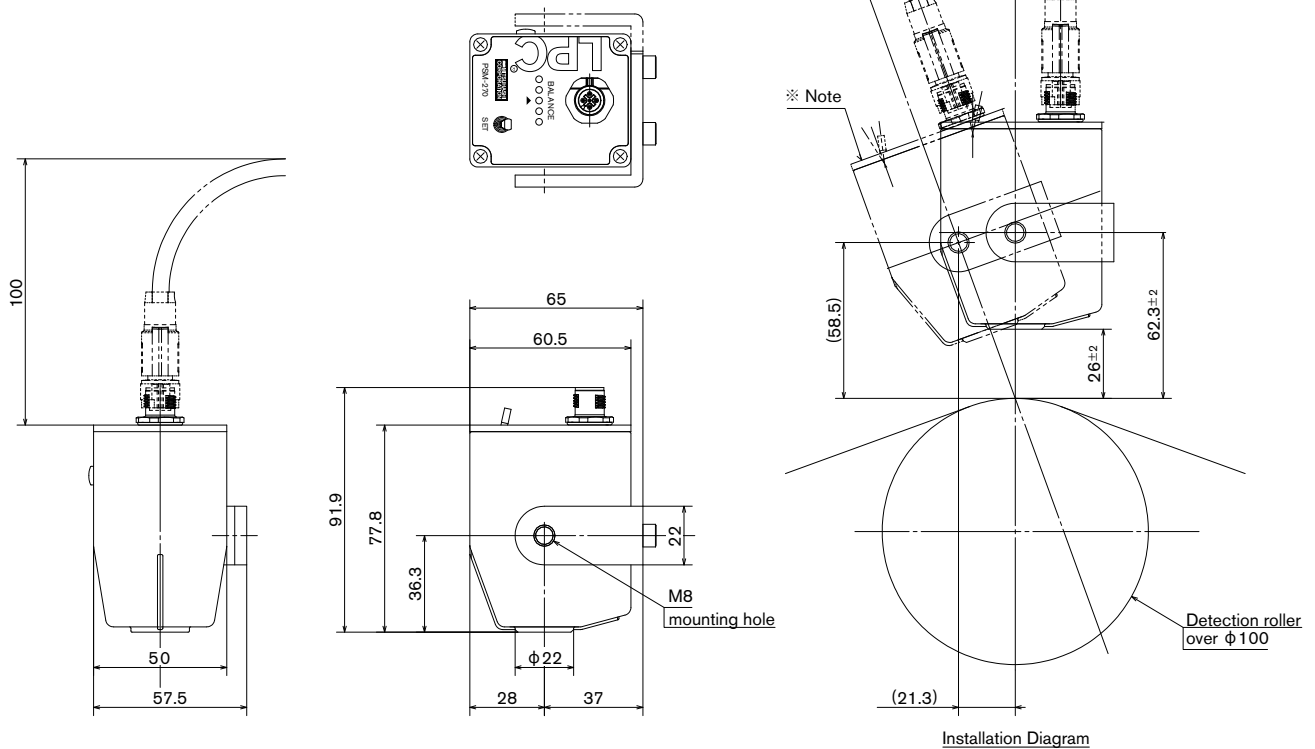| Model	PSM-270	PSM-1500	PSM-2000
Appearance			
Applications and Features	· Compact · High sensitivity and capable of detection even at low contrast.	· Unaffected by characters or patterns near the line marks. · The detection status can be monitored on the display.	· Unaffected by characters or patterns near the line marks. · Capable of following intermittent characters and logos.
Power Supply	DC24V ± 10% (Supplied via CAN bus)		
Current Consumption	50mA	400mA	600mA
Mass	Approx. 350g	Sensor head: Approx. 700g Console: Approx. 300g	Sensor head: Approx. 700g Console: Approx. 500g
Environment	Ambient Temperature: 0–40℃ , Ambient Humidity: Below 80% RH (non-condensing) Atmosphere: Indoor (no direct sunlight), well-ventilated, 　　　　　Free from corrosive gases, flammable gases, oil mist, and dust.		
Detection range	6mm	20mm	24mm
Light source	White LED	White LED	White LED
Photodetector	Photodiode	Color linear image sensor	Color area image sensor
Resolution	Dependent on the contrast between the object and the background	0.01mm	0.01mm
Detection target	Web edge Printed line mark Printed boundary	Web edge Printed line mark Printed boundary	Web edge Printed line mark Printed boundary Intermittent characters, logos
Object distance	26mm ± 2mm	17.5mm ± 2mm	Approx. 20mm (Refer to installation diagram)
Suitable Sensor holder	PZM-100		

Reflective Sensor PSM-270

○ The PSM-270 is a reflective sensor used for detecting printed line marks, boundaries, or the edges of the web.

○ Due to its high sensitivity, it can detect even low-contrast marks.

○ The sensor is equipped with a reference positioning setting switch and an indicator that displays deviations on the top surface, making it easy to operate and monitor the operating status.

Detection target

Transparent web edge	Opaque web edge	Printed boundary	Printed line mark on the transparent web	Printed line mark on the opaque web

(Detect on a matte black roll)

Outline Drawing

100

50

57.5

65

60.5

91.9

77.8

36.3

Φ22

28

37

22

M8 mounting hole

20°±2°

※ Note

(58.5)

62.3±2

26±2

(21.3)

Detection roller over φ100

Installation Diagram

Note: To detect line mark printed on the film, or the film edge, without being affected by the film's gloss; please install the sensor in an angle of approximately 20 to detect the boundary between the glossy and non-glossy surfaces of the web, please install the device perpendicular to the roll.

Color Line Sensor PSM-1500

○ The PSM-1500 is equipped with a color linear image sensor and uses image processing to measure the position of line marks or boundaries printed on the web.

○ It can detect line marks without being affected by nearby characters or patterns.

○ It is easy to confirm that the system is operating normally because the detection status can be checked on the console display.

○ The console can also be used as a remote-control device for switching operation modes and manually operating actuators.

○ It does not require adjustments to parameters such as the controller gain, even if the color or contrast of the detection target changes.

Detection target
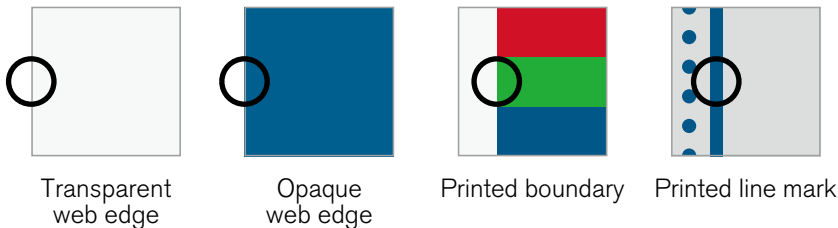
Transparent web edge

Opaque web edge

Printed boundary

Printed line mark

Note : When detecting web edges or prints on transparent film, select a roll surface material that maximizes the contrast between the roll and the detection target. (Example : For detecting the edge of a glossy transparent film, use a non-glossy black roll.)

System Configuration

included cable

CAN cable (sold separately)

Console PPM-1500

Sensor head PSM-1500
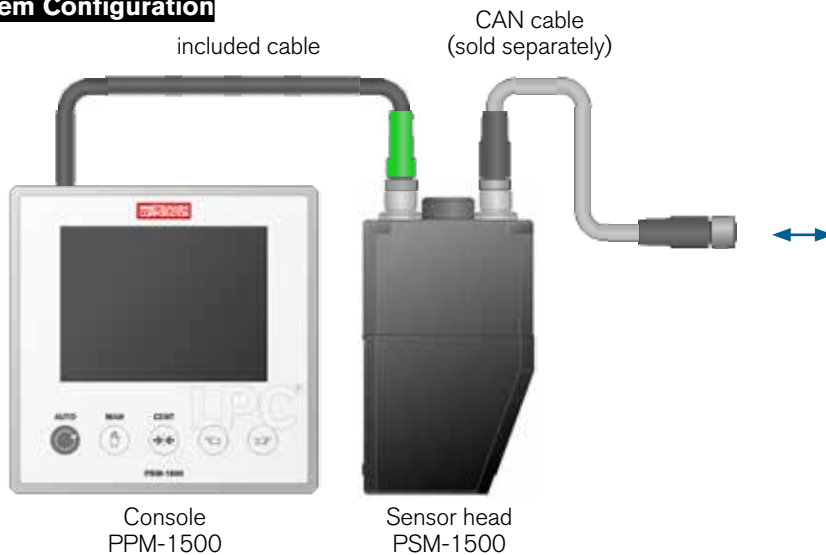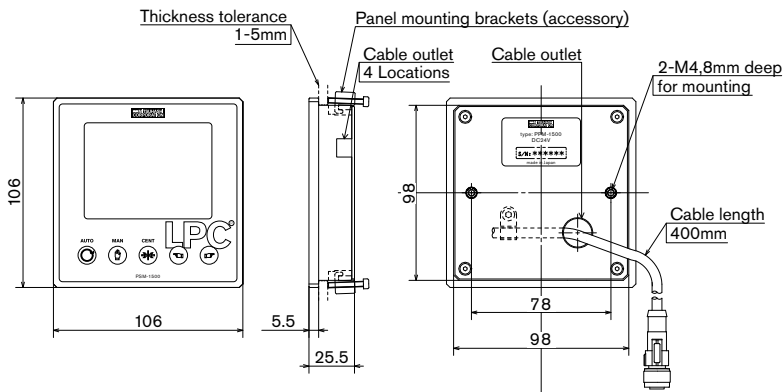
Controller (sold separately)

PEM-3000

or

PEM-200

Sensor holder PZM-100 (sold separately)

Console mounting bracket (sold separately) ※1

※ 1. By using the sensor holder PZM-100 and the console mounting bracket, the sensor head PSM-1500 and the console PPM-1500 can be mounted together as a single unit. For details, please refer to the outline drawing provided later.
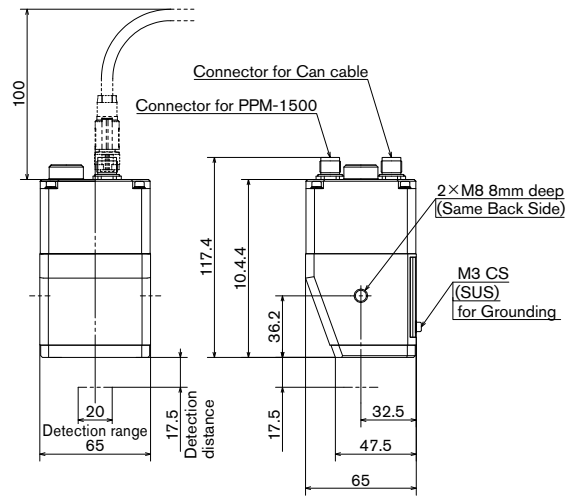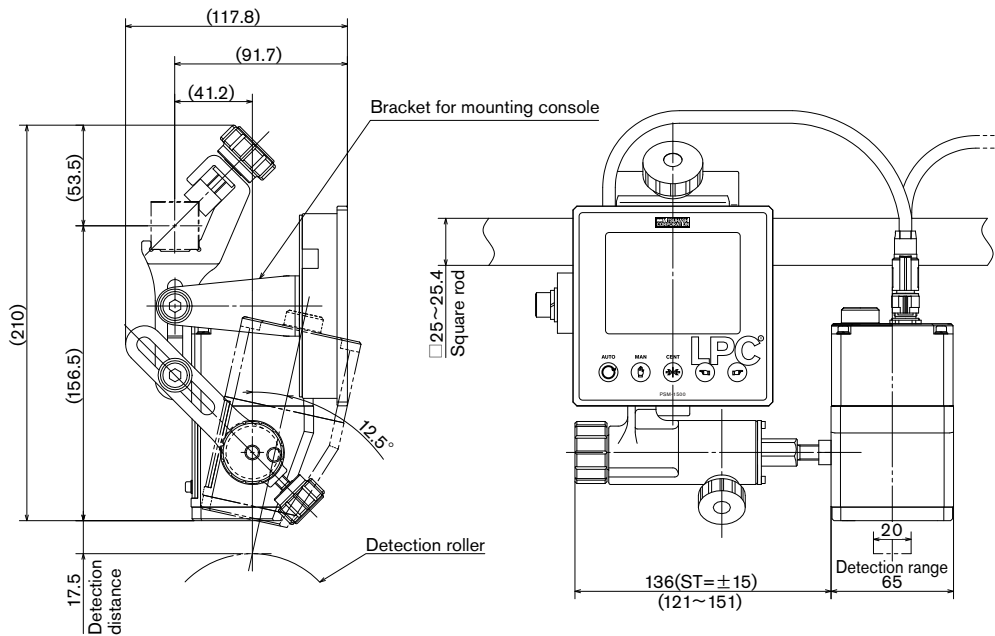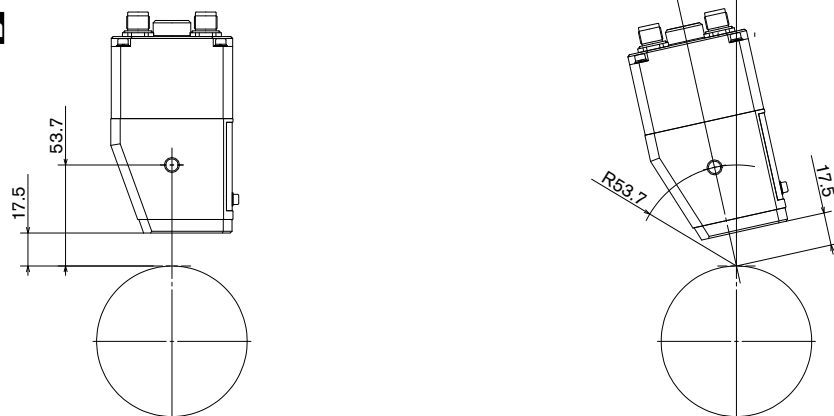
Console PPM-1500

Thickness tolerance 1-5mm
Panel mounting brackets (accessory)
Cable outlet 4 Locations
Cable outlet
2-M4,8mm deep for mounting
106
106
98
98
5.5
25.5
78
Cable length 400mm

Sensor head PSM-1500

Connector for Can cable
Connector for PPM-1500
100
117.4
10.4.4
36.2
2×M8 8mm deep (Same Back Side)
M3 CS (SUS) for Grounding
20
Detection range 65
17.5
Detection distance
17.5
32.5
47.5
65

Diagram for mounting sensor holder PZM-100 and the console

(117.8)
(91.7)
(41.2)
(53.5)
(210)
(156.5)
12.5°
17.5
Detection distance
Bracket for mounting console
Detection roller

□25~25.4 Square rod
136(ST=±15)
(121~151)
20
Detection range 65

Installation diagram

53.7
17.5

12.5°
R53.7
17.5

Vertical mounting

When detecting targets without being affected by the gloss of the web, please install it vertically to the roll as shown in the above diagram.

Inclined Mounting

When detecting the boundary between the glossy and non-glossy sides of the web, please install it at an angle to the roll.

Color Line Sensor PSM-2000

○ The PSM-2000 is equipped with a color area image sensor and can track not only line marks and boundaries printed on the web, but also intermittent patterns such as text and logos through image processing.
○ By switching optical filters, it can detect various types of webs. For example, it can detect the edge of transparent film on a mirror-surfaced roller.
○ Teaching operation is simple; just press a button while the target is displayed on the screen.
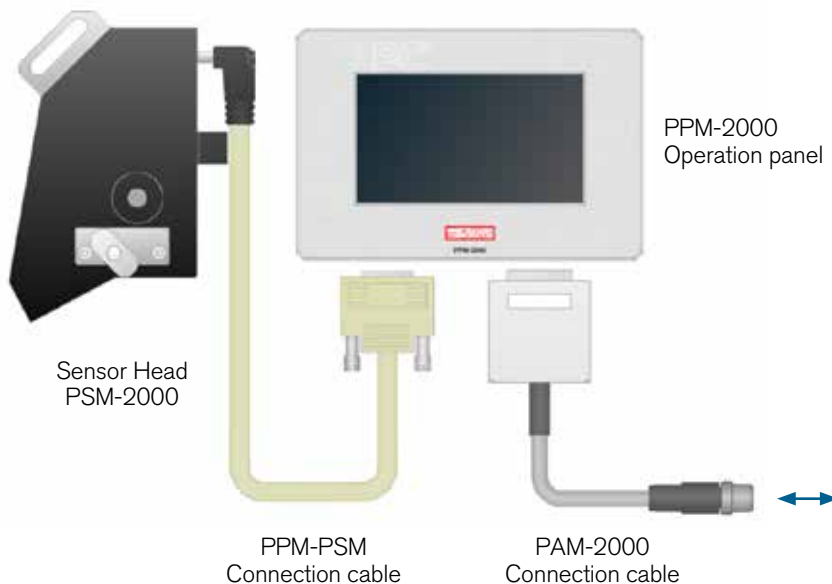
Detection target
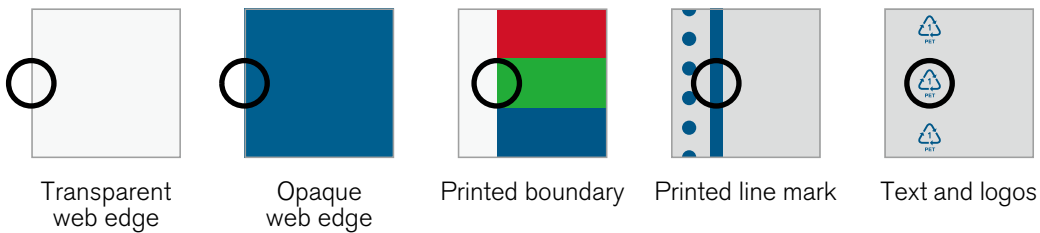
| Transparent web edge | Opaque web edge | Printed boundary | Printed line mark | Text and logos |

Note: When detecting web edges or prints on transparent film, select a roll surface material that maximizes the contrast between the roll and the detection target.
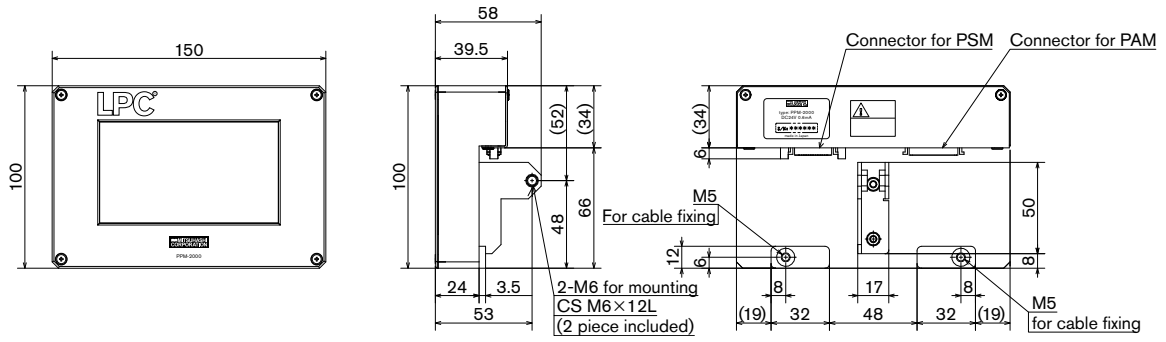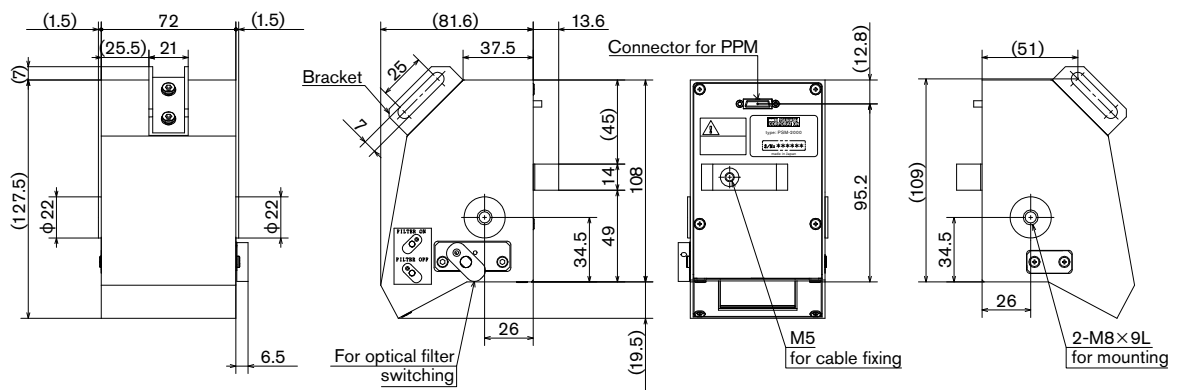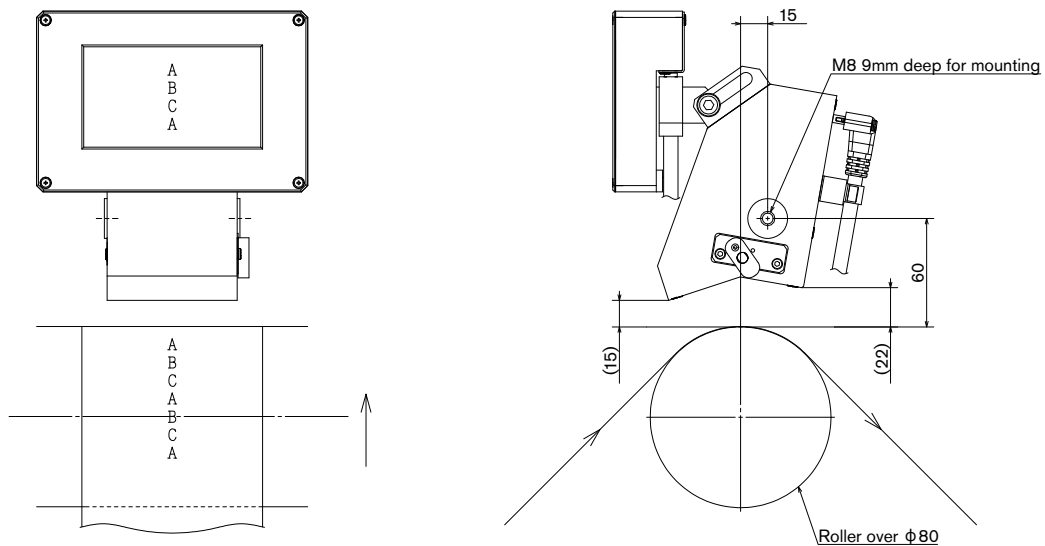
System Configuration

Sensor Head PSM-2000

PPM-2000 Operation panel

PPM-PSM Connection cable

PAM-2000 Connection cable

Controller (sold separately)

PEM-3000

or

PEM-200

Operation panel PPM-2000

150
100
58
39.5
100
(52)
(34)
66
48
24
3.5
53

2-M6 for mounting
CS M6×12L
(2 piece included)

Connector for PSM   Connector for PAM

(34)
6
M5
For cable fixing
12
6
8
50
8
(19) 32   48   32 (19)
17
M5
for cable fixing

Sensor head PSM-2000

(1.5)   72   (1.5)
(25.5) 21
(7)
(127.5)
φ22   φ22
6.5

(81.6)   13.6
37.5
Bracket   25
7
(45)
14
108
34.5   49
26
(19.5)

Connector for PPM

For optical filter
switching

(12.8)
95.2
M5
for cable fixing

(51)
(109)
34.5
26
2-M8×9L
for mounting

Installation diagram

A
B
C
A

A
B
C
A
B
C
A

15
M8 9mm deep for mounting
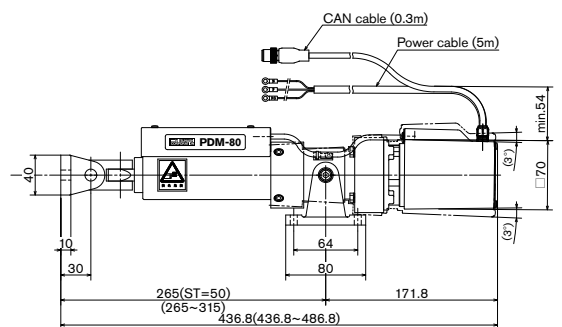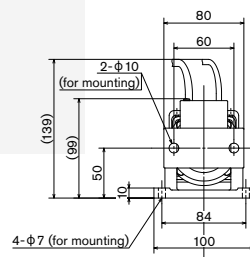60
(15)   (22)
Roller over φ80

Actuators

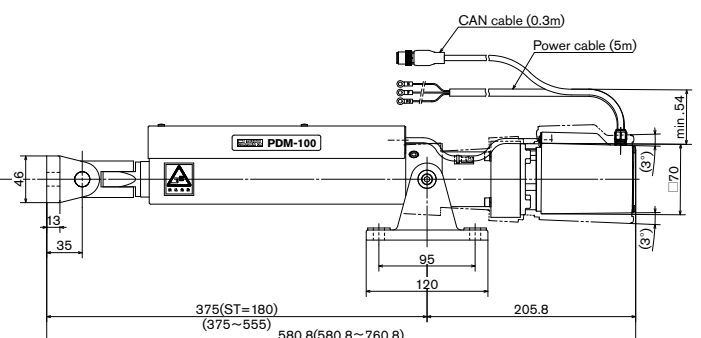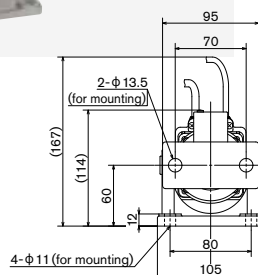## Linear Actuators

Linear Actuator PDM series

The linear actuator PDM series is used for web guiding in the winding and unwinding process.
They are equipped with brushless motors, offering excellent maintainability, high responsiveness, and high-precision control.
Additionally, they are connected to controllers and sensors using connectors, making wiring work easy.

Model	PDM-80	PDM-100	PDM-150	PDM-620	PDM-200	PDM-200-S1
Power Supply	DC24V ± 10%					
Current Consumption	2.5A				4.0A	
Mass	6kg	11kg	10kg	9kg	18kg	
Environment	Ambient Temperature：0–40℃ , Ambient Humidity：Below 80% RH (non-condensing) Atmosphere：Indoor (no direct sunlight), well-ventilated, Free from corrosive gases, flammable gases, oil mist, and dust.					
Force	1700N	1700N	1700N	1700N	2400N	4800N
Maximum Load capacity	1500kg	1500kg	1500kg	1500kg	3000kg	10000kg
Stroke	50mm	180mm	100mm	180mm	180mm	180mm
Speed	20mm/s	20mm/s	20mm/s	20mm/s	16mm/s	8mm/s

PDM-80

PDM-100

PDM-150

CAN cable (0.3m)
Power cable (5m)

min.54

222

□70

2-φ13.5
(for mounting)

46

75

13

35

70

95

108

150

170

10

2-φ10
(for mounting)

50

80

146

350(ST=100)
(350~450)

390
(390~490)

PDM-620

82　34

42

155

78

46

35

2×2-φ13.5
(for mounting)

70

95

146

62

(27)

CAN connector

Power connector

75

φ70

13

35

13

35

517(ST=180)
(517~697)

PDM-200/PDM-200-S1

95

70

2-φ13.5
(for mounting)

(182)

(140)

75

15

110

140

4-φ11 (for mounting)

46

13

35

CAN cable (0.3m)

Power cable (5m)

(3')

□70

(3')

100

130

400(ST=180)
(400~580)

284

684(684~864)

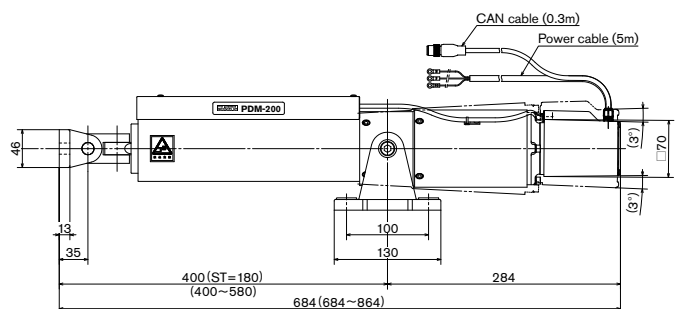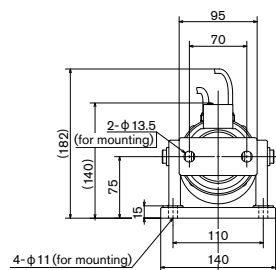## Offset Pivot Roll Guider

Offset Pivot Roll Guider PGM Series

PGM-15 roll guider is used for for web guiding in the centering process of the web meandering process. These are equipped with brushless motors, offering excellent maintainability, high responsiveness, and high-precision control. Additionally, they are connected to controllers and sensors using connectors, making wiring work easy.

Model	PGM-15-ST	PGM-15-LT	PGM-80
Appearance			
Power Supply	DC24V $\pm$ 10% (Supplied via CAN bus)		DC24V $\pm$ 10%
Current Consumption	0.5A		2.5A
Environment	Ambient Temperature: 0–40℃ , Ambient Humidity: Below 80% RH (non-condensing) Atmosphere: Indoor (no direct sunlight), well-ventilated, Free from corrosive gases, flammable gases, oil mist, and dust.		
Roller length	150–650mm	200–650mm	400–3000mm
Roller diameter	ϕ 46, ϕ 78, Other sizes available.		ϕ 100, Other sizes available.
Roller material	Aluminum, steel, rubber (NBR), CFRP, etc.		
Roller span	150–225mm	250–400mm	400–1300mm
Allowable tension [1]	230N (At 250 mm web width)	280N (At 400 mm web width)	1200N
Stroke	$\pm$18–24mm (Depend on roller span)	$\pm$15–26mm (Depend on roller span)	$\pm$15– $\pm$ 25mm (Depend on roller span)
Speed	12–17mm/s (Depend on roller span)	9–15mm/s (Depend on roller span)	26–34mm/s (Depend on roller span)

※ 1. The allowable tension is inversely proportional to the web width.
Note: The stroke limit of the PGM-15-ST/LT is controlled by an electronic counter. Upon power-on, it automatically moves to the center as a homing operation. As an option, a proximity switch for stroke limit detection can be added to prevent automatic homing upon power-on.
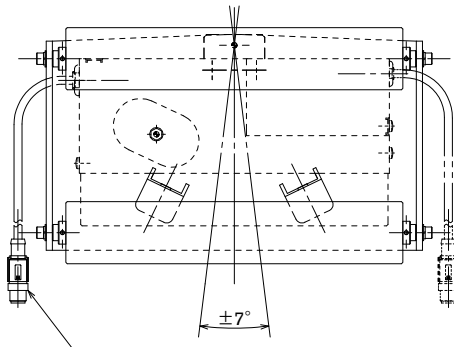
PGM-15-ST/LT Standard dimension table

Rs \ L	150	200	250	300	360	480	550	650
150								
175				PGM-15-ST				
200								
225								
250								
275				PGM-15-LT				
300								
400								

L: Roller Length [mm], Rs: Roller span [mm]

Outline Drawing

PGM-15-ST

Rs	A	B
150	16	10
175	28	23
200	53	23
225	78	23

±7°

CAN cable (※1)
Can also route cable from opposite side

(7.1) L＋29 (7.1)

L
Roller surface length

φ46

64

23

150
Mounting pitch

(50)
230

4-M8 for mounting

Rs
Roller span

140

(82)

0

42 50 31
Mounting pitch

A 124 B
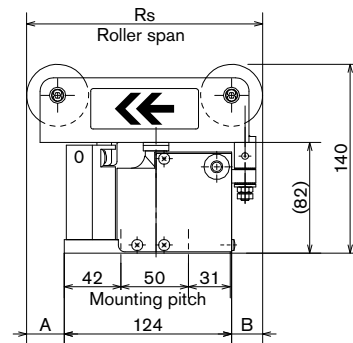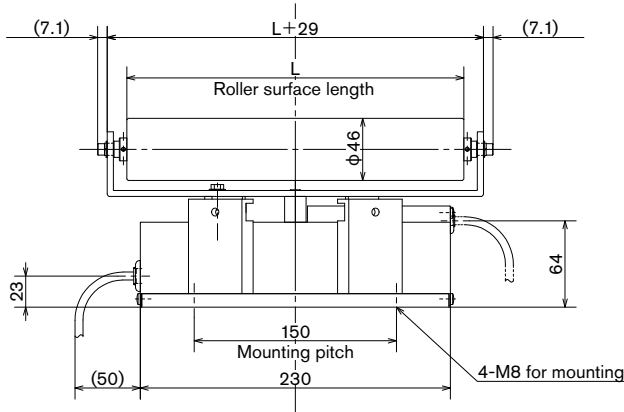
PGM-15-LT
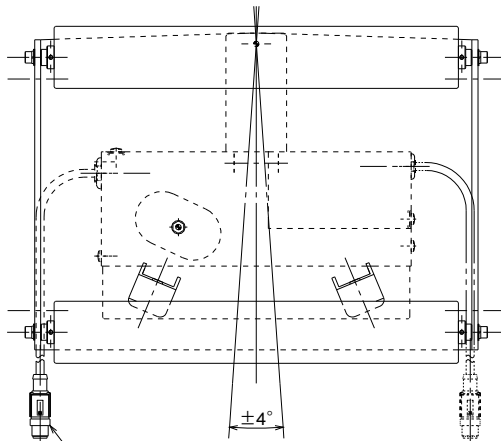
Rs	A
250	33
275	58
300	83
400	183

±4°

CAN cable (※1)
Can also route cable from opposite side

(7.1) L＋29 (7.1)

L
Roller surface length

φ78
φ46

64

23

150
Mounting pitch

(50)
230

4-M8 for mounting

Rs
Roller span

140 at φ46
172 at φ78

(82)

0

5

42 50 31
Mounting pitch

A 124 93
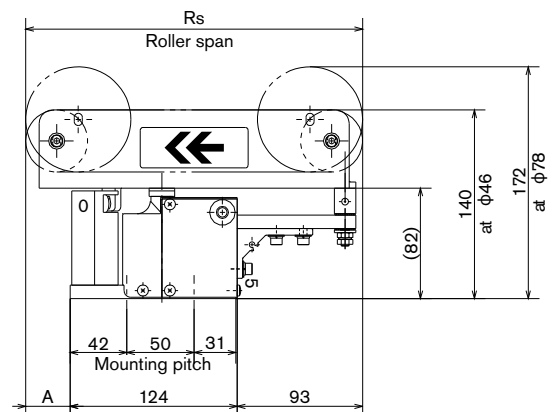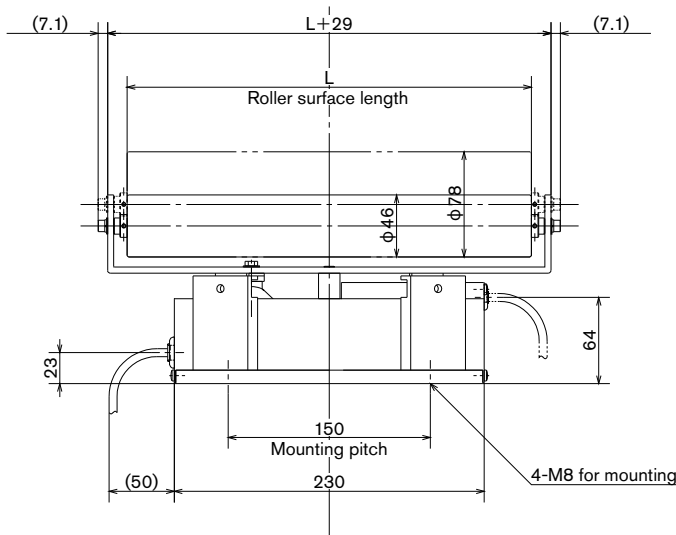
※ 1. Please specify the direction of the CAN cable exit when placing your order.

PGM-80　Standard dimension table

Rs＼L	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	2200	2300	~3000	Max.Angle [deg]	Stroke [mm]	Speed [mm/s]
300			PGM-8012																	± 1.2	± 25	26
400	PGM-8007																			± 1.3	± 25	26
500																				± 1.4	± 25	26
600					PGM-8016								PGM-8024							± 1.6	± 25	27
700																				± 1.8	± 25	27
800																				± 2.0	± 25	27
900																				± 2.4	± 25	28
1000																				± 2.3	± 20	28
1100																				± 2.9	± 20	29
1200									PGM-8030											± 3.0	± 15	30
1300																				± 4.5	± 15	34

Outline Drawing

PGM-80

	H	A	B
8007	290	60	245
8012	290	65	250
8024	334	70	255
8030	372	75	260

Fixing bolts for transportation
(remove after installation)

(±Max. angle)　(±Max. Stroke)

Rs＋15

Rs
Roller span

H

25　Rs−B
Mounting pitch　25

65　(Rs−B＋50)　135

L＋100

L(Roller surface length)

φ20
(Shaft diameter)

φ100

4-φ11 (for mounting)
Install using the included M10
slanting washers

L−30
Mounting pitch
(L)

CAN cable (0.3m)

Power cable (5m)
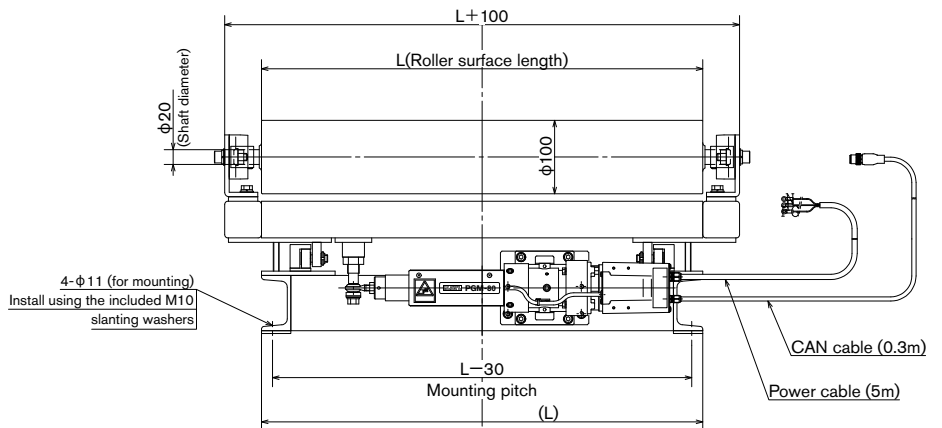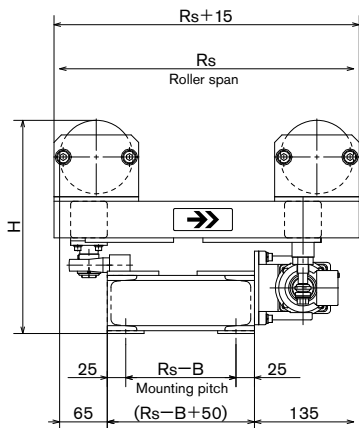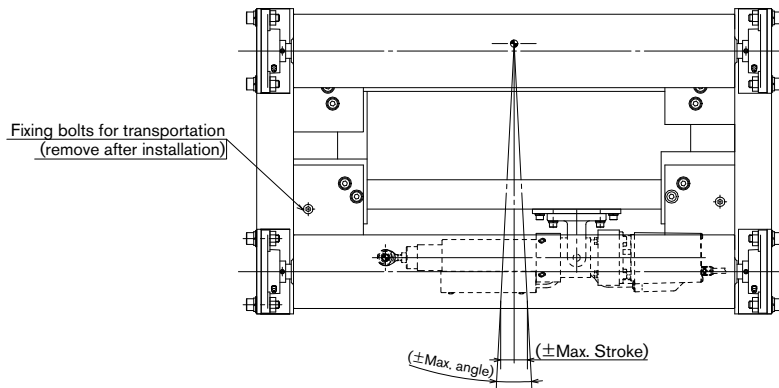
Integrated Offset Pivot Roll Guider PGMW-15 Series

PGMW-15 roll guider is used for for web guiding in the centering process of the web meandering process. The built-in controller and sensor reduce the time required for design, installation, wiring, and adjustment, enhancing ease of use. The built-in brushless motor ensures high maintainability, high response, and high precision. Suitable for narrow webs of 600 mm width or less, it is ideal for alignment control in packaging machines and sanitary goods manufacturing machines.
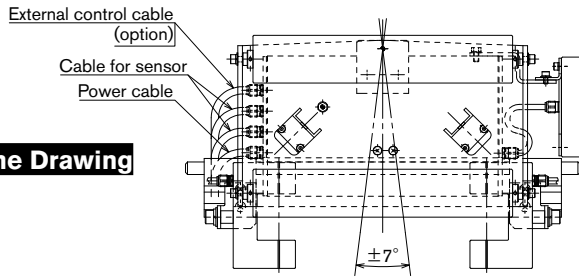
Model	PGMW-15-ST	PGMW-15-LT
Power Supply	DC24V ± 10% (Supplied via CAN bus)	
Current Consumption	0.6A	
Environment	Ambient Temperature：0–40℃ , Ambient Humidity：Below 80% RH (non-condensing) Atmosphere：Indoor (no direct sunlight), well-ventilated, Free from corrosive gases, flammable gases, oil mist, and dust.	
Roller length	150–650mm	200–650mm
Roller diameter	Φ 46, Φ 78, Other sizes available.	
Roller material	Aluminum, steel, rubber (NBR), CFRP, etc.	
Roller span	150–225mm	250–400mm
Allowable tension [1]	200N (At 250 mm web width)	260N (At 400 mm web width)
Stroke	±18– ± 24mm (Depend on roller span)	±15– ± 26mm (Depend on roller span)
Speed	15–20mm/s (Depend on roller span)	10–16mm/s (Depend on roller span)
Embeddable devices	Controller：PEM-200, The mounting direction can be specified. Sensor：PSM-400 or PSM-700 series, Max. two units, Edge or Centering.	
Option	· Sensor position fine adjustment unit · Sensor position fine adjustment unit for centering control · Simple external control cable (one input terminal for mode switching, one output terminal for alarm) · Cable for connecting the expansion I/O module PXM-100	
Other	The stroke limit of the PGMW-15-ST/LT is controlled by an electronic counter. Upon power-on, it automatically moves to the center as a homing operation. As an option, a proximity switch for stroke limit detection can be added to prevent automatic homing upon power-on.	

PGMW-15-ST / LT   Standard dimension table

Rs \ L	150	200	250	300	360	480	550	650
150								
175				PGMW-15-ST				
200								
225								
250								
275				PGMW-15-LT				
300								
400								

L：Roller Length [mm], Rs：Roller span [mm]

Outline Drawing

External control cable (option)
Cable for sensor
Power cable

±7°

PGMW-15-ST

Rs	250	275	300	400
A	20	20	45	70
B	-5	20	20	20

L	150	200	250	300	360	480	550	650
C	66.8	66.8	76.8	101.8	131.8	191.8	226.8	276.8

(7.1) L+29 (7.1)
L
φ46
200 Mounting pitch
(50) (115)
L+130
230.4 C

49.4 Rs
60
181 (123.5)
16
16 103 15
Mounting pitch
A 135 B

Details of the Mounting (S=1/1)
9
2×2-M6 nuts

External control cable (option)
Cable for sensor
Power cable

±4°
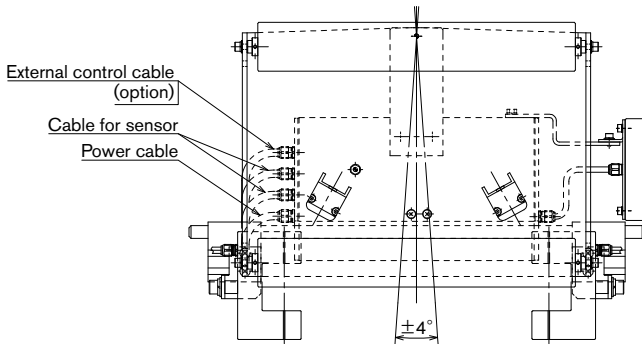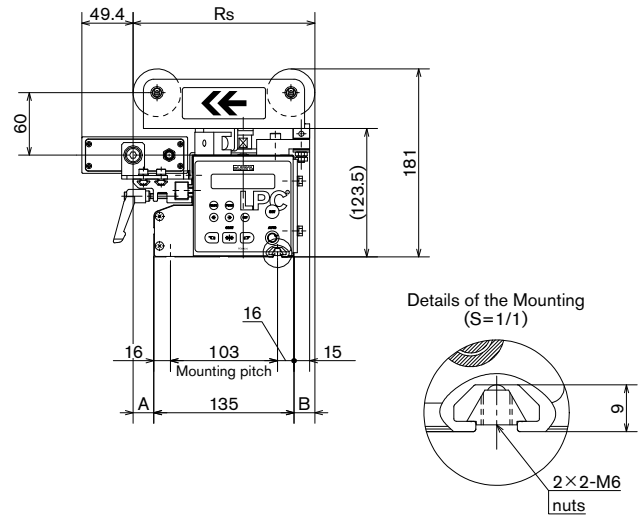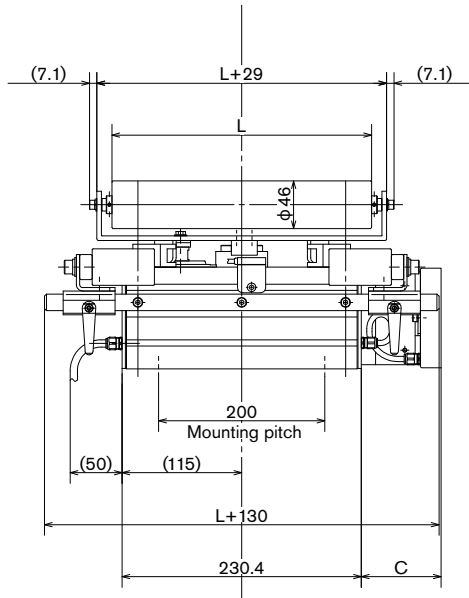
PGMW-15-LT

Rs	250	275	300	400
A	25	50	75	175

L	200	250	300	360	480	550	650
C	66.8	76.8	101.8	131.8	191.8	226.8	276.8

(7.1) L+29 (7.1)
L
Roller surface length
φ46 φ78
200 Mounting pitch
(50) (115)
L+130
230.4 C

49.4 Rs
60
181 at φ46
213 at φ78
(123.5)
16
16 103 85
Mounting pitch
A 135 90

Details of the Mounting (S=1/1)
9
2×2-M6 nuts
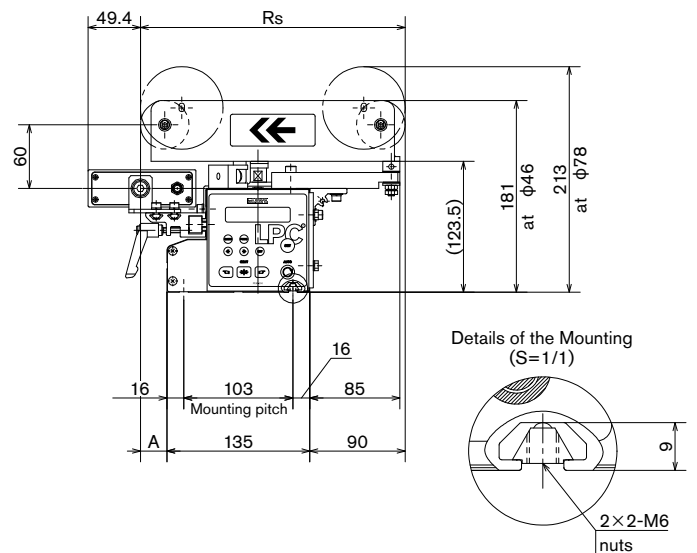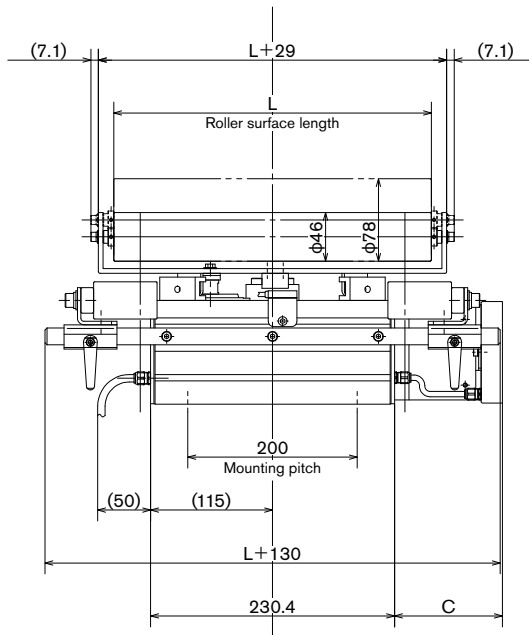
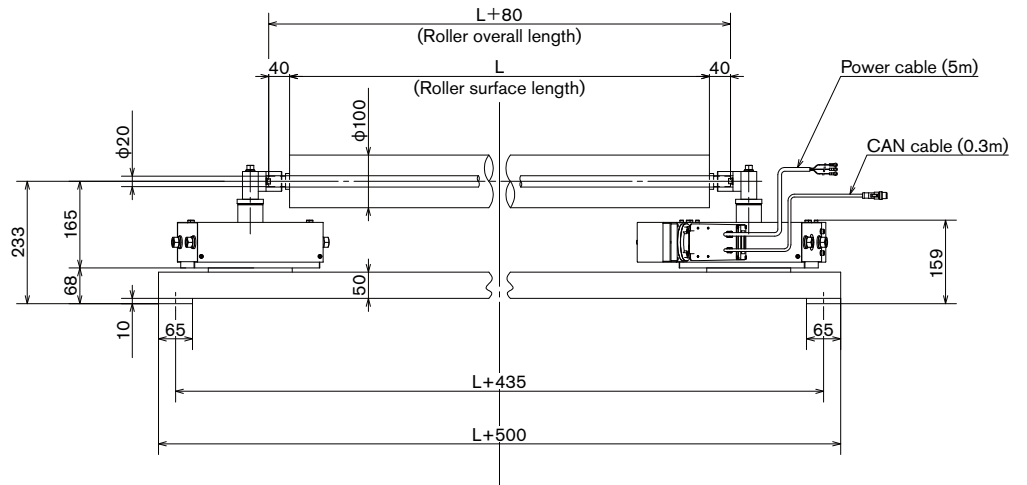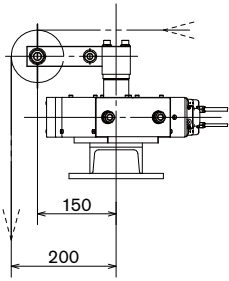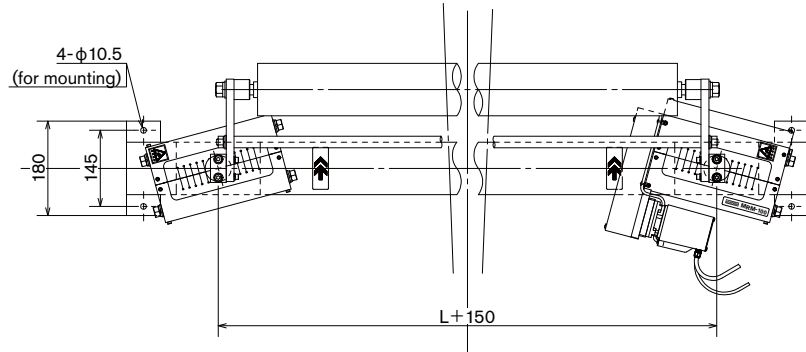## End Pivot Roll Guider

End Pivot Roll Guider MRM-100

he MRM-100 roll guider is used for web guiding centering process of the web meandering process. It is suitable for processes where sufficient distance can be secured between the rollers installed before and after the roll guider, and for processes involving stretchable materials such as polyethylene, non-woven fabric, and tire cord. Equipped with brushless motors, it offers excellent maintainability, high responsiveness, and high-precision control. Additionally, it is connected to controllers and sensors using connectors, making wiring work easy.
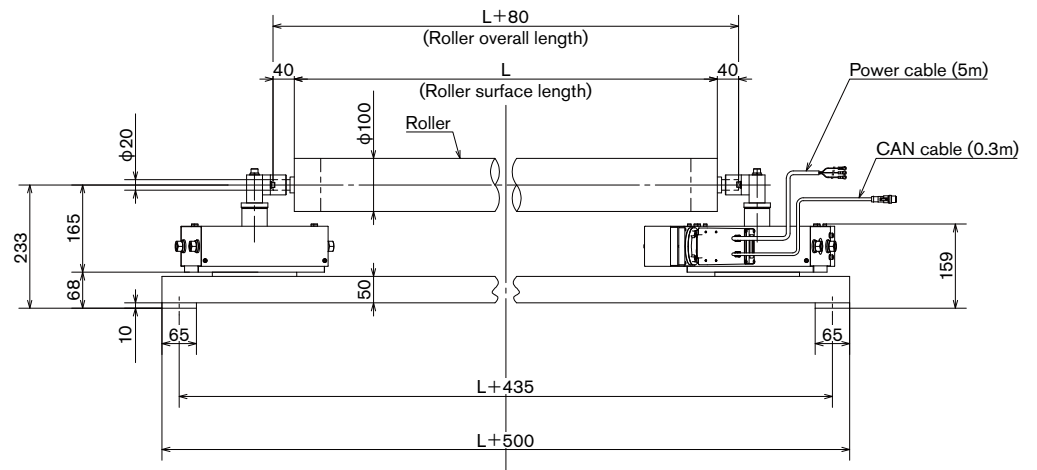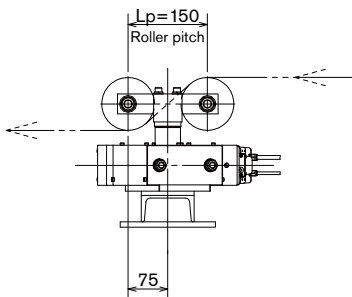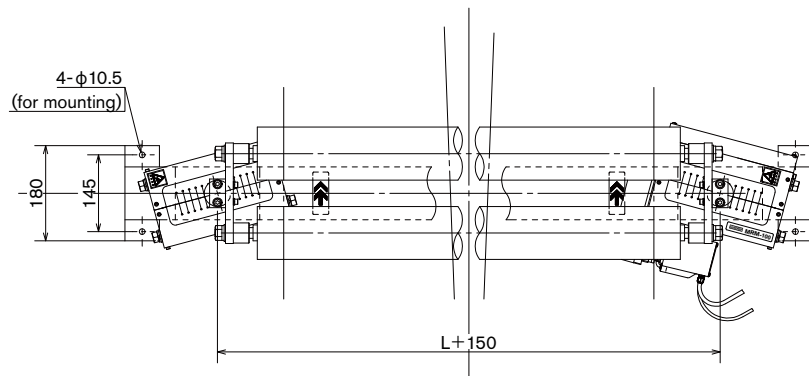
Model	MRM-100
Power Supply	DC24V ± 10%
Current Consumption	2.5A
Environment	Ambient Temperature：0–40℃, Ambient Humidity：Below 80% RH (non-condensing) Atmosphere：Indoor (no direct sunlight), well-ventilated, Free from corrosive gases, flammable gases, oil mist, and dust.
Roller length	300–2000mm
Roller diameter	Φ 100, Other sizes available.
Roller material	Aluminum, steel, rubber (NBR), CFRP, etc.
Allowable tension	600N
Stroke (Liner part)	± 50mm
Speed (Liner part)	20mm/s

Outline Drawing

< Pass line : perpendicular >

4-φ10.5
(for mounting)

180
145

L+150

L+80
(Roller overall length)

40
L
(Roller surface length)
40

Power cable (5m)

CAN cable (0.3m)

φ20
φ100

233
165
68
50

159

10
65
65

L+435

L+500

150
200

< Pass line : horizontal >

4-φ10.5
(for mounting)

180
145

L+150

L+80
(Roller overall length)

40
L
(Roller surface length)
40

Power cable (5m)

Roller

CAN cable (0.3m)

φ20
φ100

233
165
68
50

159

10
65
65

L+435

L+500

Lp=150
Roller pitch

75

Expansion I/O module PXM-100

Used for external control such as switching the operation mode when using the PEM-200 controller.

|	
Power Supply	DC24V ± 10% (Supplied via CAN bus), Current consumption: 100mA
Mass	Approx. 360g
Environment	Ambient Temperature: 0–40℃, Ambient Humidity: Below 80% RH (non-condensing) Atmosphere: Indoor (no direct sunlight), well-ventilated, Free from corrosive gases, flammable gases, oil mist, and dust.
Output terminal	10 ports, NPN transistor open collector output, maximum rating: 30V, 100mA. ＜ Terminal functions when connected to the PEM-200 ＞ Sensor ready, Operation mode status (AUTO/MAN/CENT), Actuator stroke limits, Selected bank number, System run, Actuator center position
Input terminal	10 ports, Photo coupler input (input terminal power supply DC24V, current when ON: approximately 7mA) ＜ Terminal functions when connected to the PEM-200 ＞ Teaching, Operation mode switching (AUTO/MAN/CENT), Actuator operation, Bank switching
Terminal block	model: FMC1,5/10-STF-3,5 (Phoenix Contact) applicable wires: AWG18–22, Connected using stripped wires or ferrules Ferrules: For AWG18 AI0.75-10GY, For AWG20 AI0.5-10WH, For AWG22 AI0.34-10TQ

Outline Drawing

PXM-100 Internal Circuit
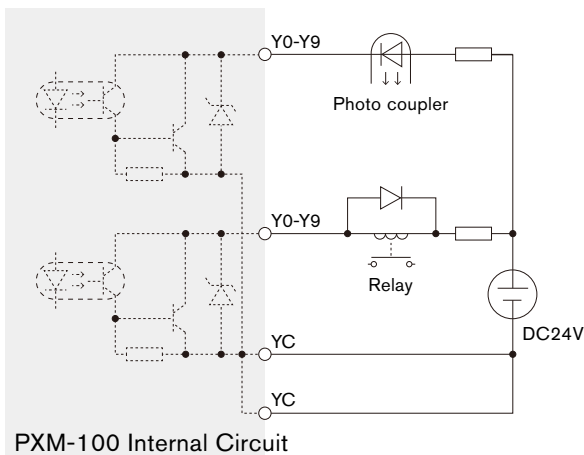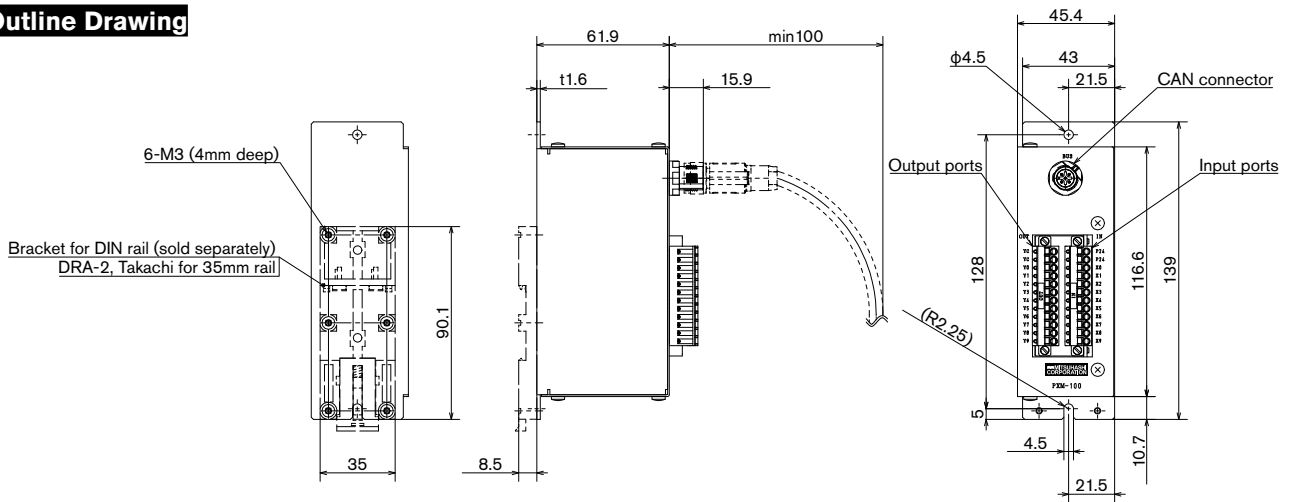
PXM-100 Internal Circuit
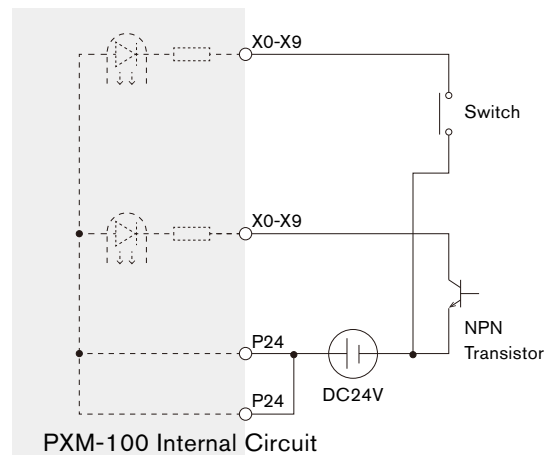
Diagram: Wiring Example

Remote Box PTM-100

Used when remote operation is required from a location away from the controller, such as near sensors or actuators.

Power Supply	DC24V ± 10% (Supplied via CAN bus), Current consumption : 40mA
Mass	Approx. 400g (Including cable)
Environment	Ambient Temperature : 0–40℃ , Ambient Humidity : Below 80% RH (non-condensing) Atmosphere : Indoor (no direct sunlight), well-ventilated, Free from corrosive gases, flammable gases, oil mist, and dust.
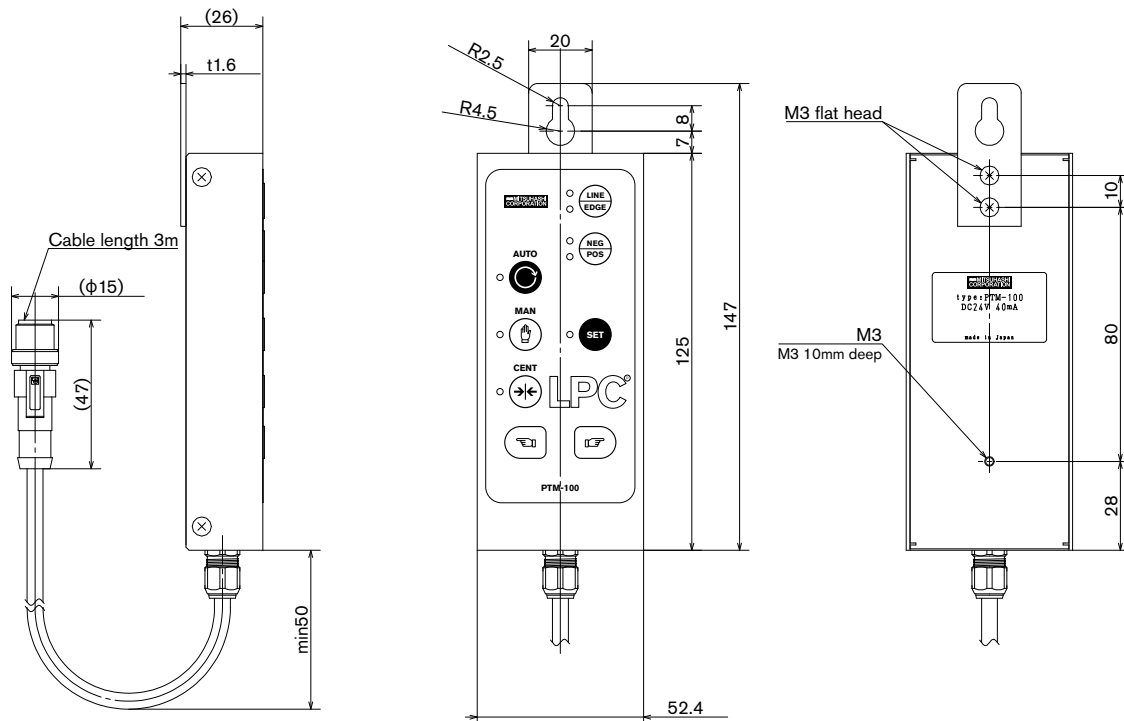
Analog Input Module PAM-10

Used when employing commercially available sensors for web guiding control.
Connects to sensors with analogue output.

| Power Supply	DC24V ± 10% (Supplied via CAN bus), Current consumption: 100mA
Mass	Approx. 150g (Including cable)
Environment	Ambient Temperature: 0–40℃, Ambient Humidity: Below 80% RH (non-condensing) Atmosphere: Indoor (no direct sunlight), well-ventilated, 　　　　　　 Free from corrosive gases, flammable gases, oil mist, and dust.
Analog Input	Active input range: 0.3V–9.7V (Absolute Maximum Input Range: DC-15V – +30V) Accuracy: 0.2% of full scale, Resolution: 1mV or less, Input Impedance: 1M Ω or more, Sampling Period: 1.5ms or less, Temperature Drift: 0.01% / ℃ of full scale
Terminal	Applicable wires: 1.5mm² or less (AWG16 or less), stripped wire length 5mm 1. Common, 2. Analog input (0.3–9.7V), 3. Power supply for potentiometer (DC10.0V) 4. Power supply for sensor (Power supply voltage - 1.0V to Power supply voltage, max 300mA)
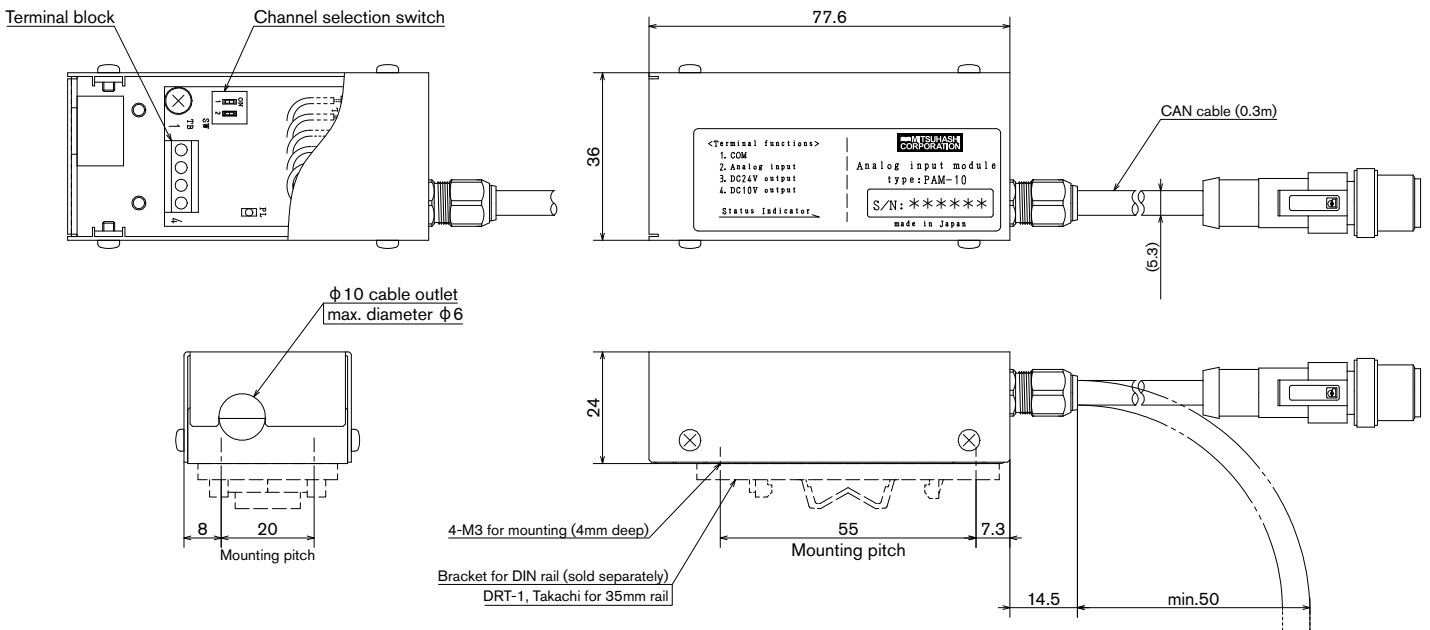
Sensor Holder PZM-100

This is for fine-tuning the position of the sensor. It is suitable for reflective sensors such as the PSM-270 due to its wide adjustment range for the sensor installation position, making it easy to adjust the angle and distance to the detection target. Additionally, when using the PSM-1500, the console can be integrally attached (a separately sold console mounting bracket is required).
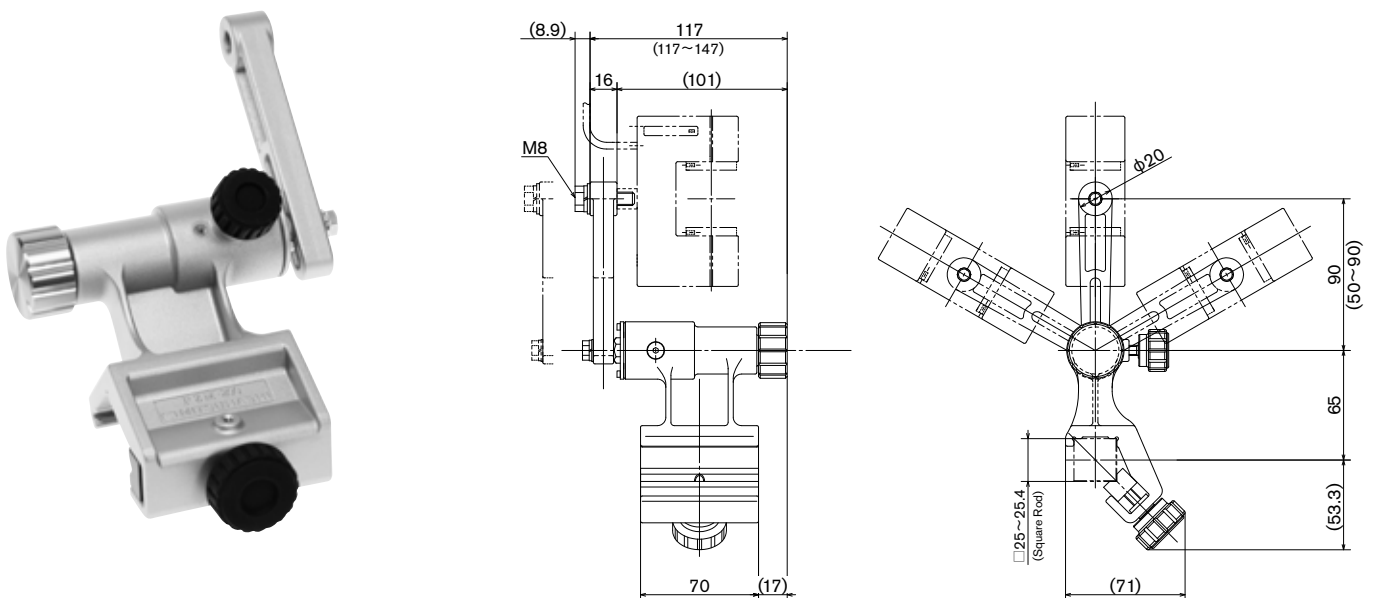
Mass	Approx. 700g
Mounting	25mm square rod
Stroke	30mm
Pitch	1mm per rotation
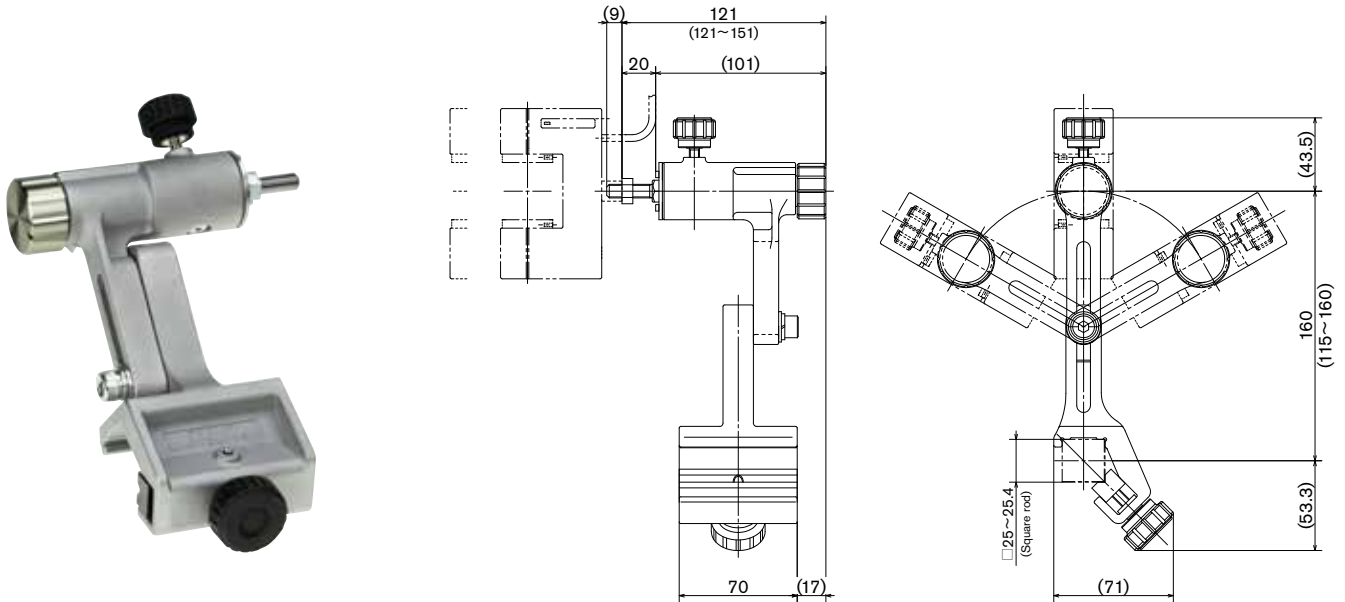
Sensor Holder PZM-200

This is for fine-tuning the position of the sensor. Primarily used for transmissive sensors such as the PSM-400 and PSM-700.
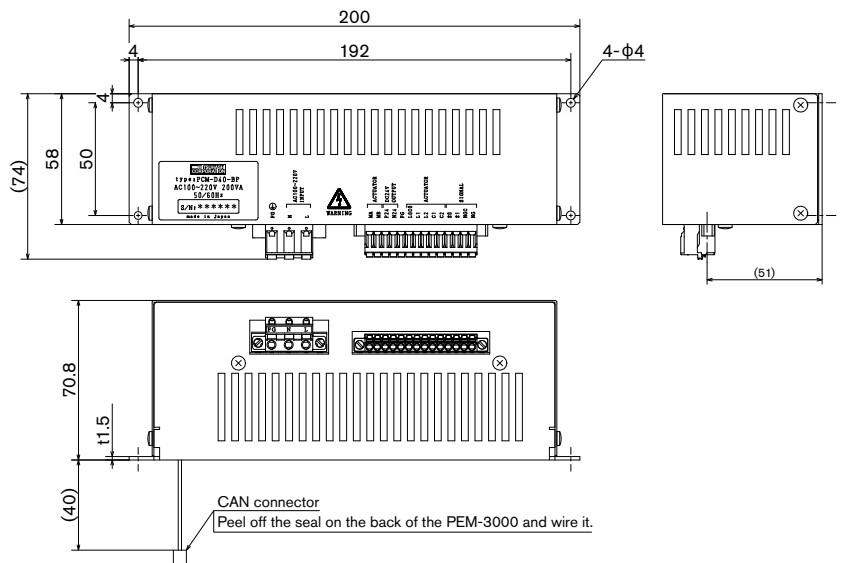
Mass	Approx. 660g
Mounting	25mm square rod
Stroke	30mm
Pitch	1mm per rotation

DC Motor Driver PCM-D40-BP

This is used when connecting the Q series actuator with the PEM-3000. It can connect PG and MR type roll guides, and PD type actuators with a current of 2.5A or less. It is mounted on the rear of the PEM-3000 (not compatible with the PEM-200).

Power Supply	AC100–220V 50/60Hz, Power Consumption : 200VA or less
Mass	Approx. 520g
Environment	Ambient Temperature : 0–40℃ , Ambient Humidity : Below 80% RH (non-condensing) Atmosphere: Indoor (no direct sunlight), well-ventilated, Free from corrosive gases, flammable gases, oil mist, and dust.

CAN connector
Peel off the seal on the back of the PEM-3000 and wire it.

※ Screws for mounting to the PEM-3000 (M3×5, 4 pieces) are included.

DC Motor Driver PCM-D40-NL

This is used when connecting the Q series actuator to the G series controller. It can connect PG and MR type roll guides, and PD type actuators with a current of 2.5A or less.

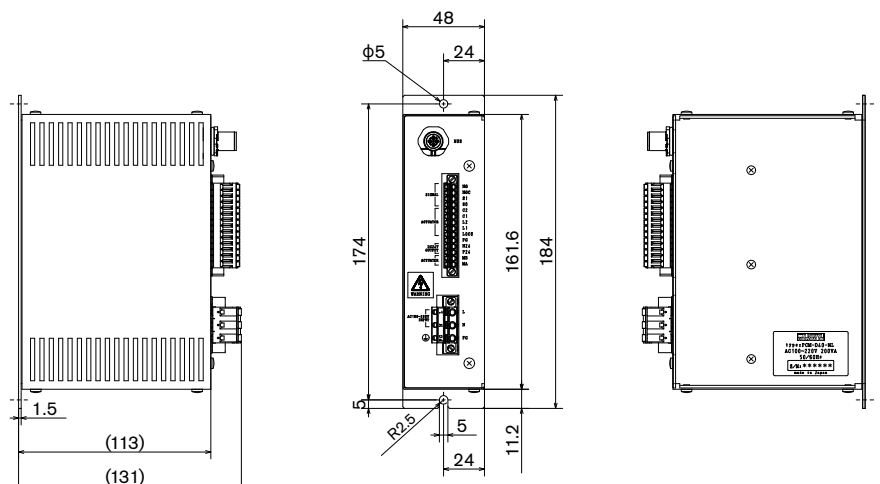| Power Supply	AC100–220V 50/60Hz, Power Consumption : 200VA or less
Mass	Approx. 520g
Environment	Ambient Temperature : 0–40℃ , Ambient Humidity : Below 80% RH (non-condensing) Atmosphere: Indoor (no direct sunlight), well-ventilated, Free from corrosive gases, flammable gases, oil mist, and dust.

Wiring Components

CAN cable

These are used to connect controllers, sensors, actuators, and other options to each other. Available in 1m, 2m, and 5m lengths.

T-branch connector

Used when connecting two sensors or when connecting options, such as a remote box.

H-branch connector

One H branch connector can connect two additional devices. It is mainly used when using the PEM-200.

Power connector

This is used for power supply when using the controller PEM-200.

MITSUHASHI CORPORATION

Lending "hands" to replace human hands.

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In order to improve our products, specifications may change without notice

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