SENSORS PRODUCT GUIDE

Panasonic Electric Works of America

http://pewa.panasonic.com/automation-controls/

PHOTOELECTRIC : FIBER OPTIC : PRESSURE

Panasonic ideas for life

Panasonic Electric Works of America

Panasonic is a Leader in High-Technology and Cost-Effective Automation Control Solutions. Our Products are Proven Throughout the World in Various Industrial Settings, Including Automotive, Semiconductor, Packaging & OEM Environments.

TOTAL AUTOMATION SOLUTIONS
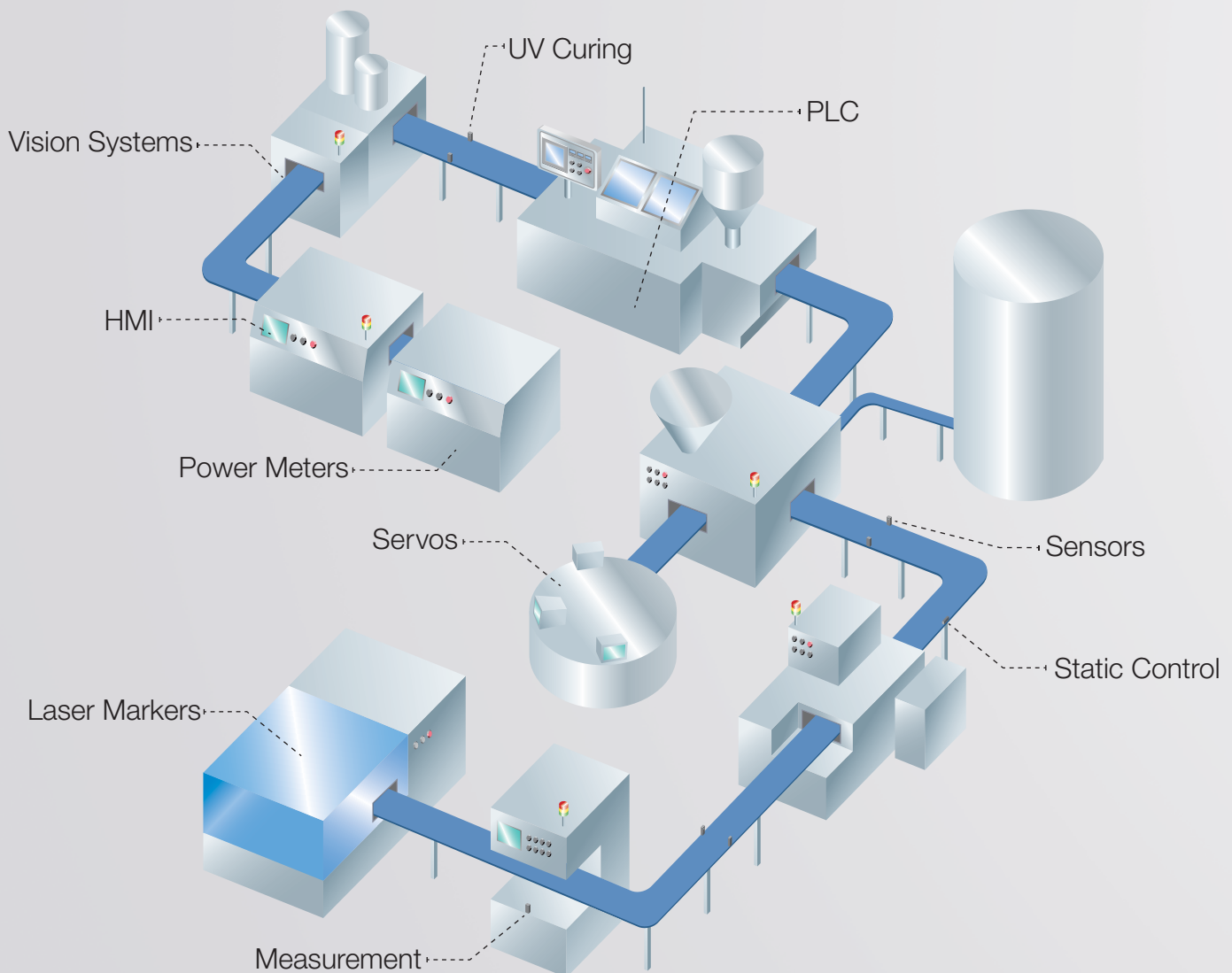
PHOTOELECTRIC SENSORS

With a complete line of self-contained photoelectric sensor solutions we offer some of the smallest sensors in the world. Panasonic sensors have unmatched simplicity, versatility and provide advanced features that include background/foreground suppression for protection against unwanted detection.

FIBER OPTIC SENSORS

Our line of fiber optic sensors and sensor heads offer stable detection for any application, including those in hazardous environments. With over 200 fiber optic sensor heads to choose from, you are covered from every angle, whether you need long distance, a high-temperature rating, or if you have limited mounting space.
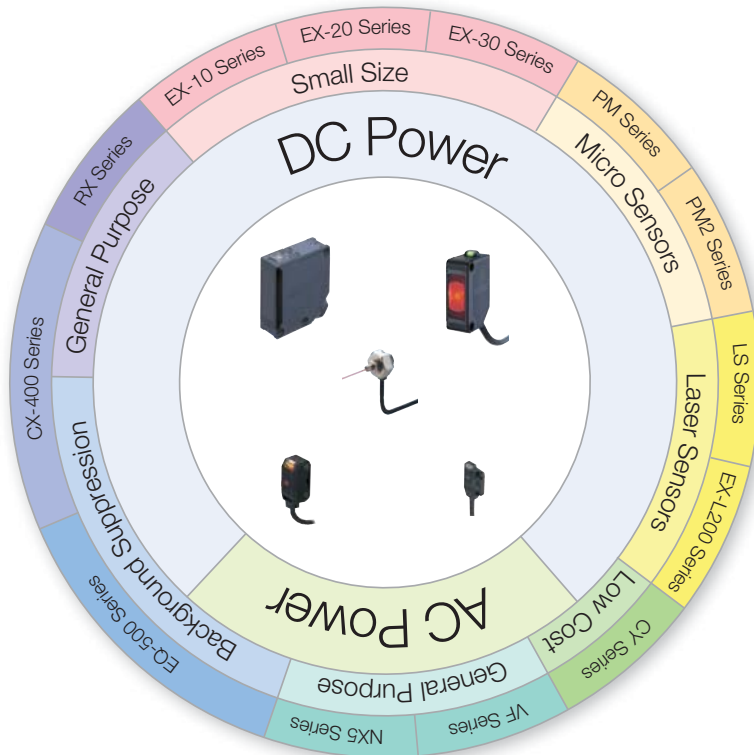
PRESSURE SENSORS

Our line of pressure sensors consist of self-contained and separate head types for maximum application coverage. Our sensor options include positive pressure, vacuum and compound pressure ranges as well as multiple port size and output configurations.

- UV Curing
- PLC
- Vision Systems
- HMI
- Power Meters
- Servos
- Sensors
- Static Control
- Laser Markers
- Measurement

PHOTOELECTRIC SENSORS

Panasonic has some of the industry's smallest photoelectric sensors with unmatched simplicity and versatility. Our sensors have advanced features which include background/foreground suppression to protect against unwanted detection.
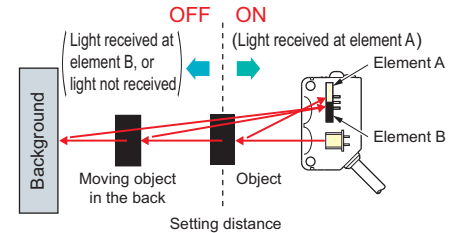
Background Suppression

For instances where the background may affect sensing performance, or cause false detections, utilize a background suppression sensor to achieve an accurate detection.

BGS Functionality

The sensor judges that an object is present when light is received at position A of the light-receiving element (2-segment element).

This is useful if the object and background are far apart. The distance adjustment is the same as the conventional adjustment method for adjustable range reflective sensors.

Part Number	Detecting Distance	Output
CX-441(-P) *	2 to 50 mm	NPN (PNP)
CX-443(-P)		NPN (PNP)
CX-442(-P)	15 to 100 mm	NPN (PNP)
CX-444(-P)	20 to 300 mm	NPN (PNP)
EQ-501 / EQ-511	0.1 to 2.5 m	Bi-Polar NPN/PNP
EQ-502 / EQ-512	0.1 to 1.0 m	Bi-Polar NPN/PNP
EQ-34(-PN)	0.2 to 2.0 m	NPN (PNP)

* Small spot type

CX-400 Series

General Purpose Detection ● Over 120 Different Models ● 1ms Response Time

CX - 4 [11] - [P] - [Z]

Type:
11: Thrubeam, 10m
12: Thrubeam, 15m
13: Thrubeam, 30m
91: Retroreflective, 5m
93: Retroreflective, 3m
83: Retroreflective*, 50-1000m
82: Retroreflective*, 0.1-2m
24: Diffuse Reflective, 100mm
21: Diffuse Reflective, 300mm
22: Diffuse Reflective, 800mm
23: Diffuse Reflective, 70-300mm

* For Transparent Targets

Output:
Nil: NPN Transistor
P: PNP Transistor

Connection:
Nil: 2m Cable
C5: 5m Cable
C05: 0.5m Cable
Z: M8 Quick Disconnect
J: M12 Quick Disconnect

EX-10 Series

Ultra Small Size ● Just 3.5mm Thick ● 0.5ms Response Time

EX - [11] [E] [A] - [PN] - [R]

Type:
11: Thrubeam, 150mm
13: Thrubeam, 500mm
14: Convergent Refl., 2 to 25mm
19: Thrubeam, 1m

Sensing Mode:
Nil: Front Sensing
E: Side Sensing*

* N/A for EX-19

Operation:
A: Light-ON
B: Dark-ON

Output:
Nil: NPN Transistor
PN: PNP Transistor

Connection:
Nil: 2M Cable
C5: 5M Cable
R: High Flex, 2M

EX-20 Series

Compact Size ● Built-In Sensitivity Adjuster ● 0.5ms Response Time

EX - [21] [A] - [PN] - [R]

Type:
21: Thrubeam, Front Sensing, 1M
23: Thrubeam, Side Sensing, 2M
29: Retroreflective, 30 to 200mm
22: Diffuse Reflective, 5 to 160mm
24: Convergent Refl., Front Sensing, 2 to 25mm
26: Convergent Refl., Side Sensing, 6 to 14mm
28: Narrow View Reflective, 45 to 115mm

Operation:
A: Light-ON
B: Dark-ON

Output:
Nil: NPN Transistor
PN: PNP Transistor

Connection:
Nil: 2M Cable
C5: 5M Cable

EX-30 Series

Simple Mounting ● Hex-Shaped Head Design ● 0.5ms Response Time

EX - [31] [A] - [PN] - [C5]

Type:
31: Thrubeam, 500mm
33: Thrubeam, 800mm
32: Diffuse Reflective, 50mm

Operation:
Nil: LO/DO Switchable *
A: Light-ON
B: Dark-ON

* EX-33 Only

Output:
Nil: NPN Transistor
PN: PNP Transistor

Connection:
Nil: 2M Cable
C5: 5M Cable

Part options created with *italicized text* may have longer lead times.

FIBER OPTIC SENSORS

Panasonic fiber optic sensors are unmatched in quality and performance. High speed detections coupled with unparalleled stability give you the best performance possible. With over 200 different fiber optic cables, you're sure to find one for your application, no matter how specialized.

An **integrated optical communication** port on the FX-500 and FX-300 series allow for remote configuration/control as well as interference prevention.

Additionally, Panasonic fiber optic sensors utilize a **universal power connection** system to decrease wiring and share power over an array of sensors. Simply select a main cable for the first unit in the array and a sub cable for each subsequent sensor.

FX-500 Series

Type	# Outputs		Model	
	Discrete	Analog	NPN Output	PNP Output
Standard	1		FX-501	FX-501P
High Function	2		FX-502	FX-502P
Analog	2	1	FX-505-C2	FX-505P-C2

High Visibility Dual Digital Display
The incident light value and threshold setting can be viewed simultaneously without the need to enter the menu system.

High Stability
Each amplifier is calibrated at the factory to ensure consistency from part to part. Furthermore, our newly developed active coupling device (ACD) provides optimal light transmission.

25µs Response Time
With a 25 µs response time, the FX-500 series can handle detections on even the fastest manufacturing lines.

Additional Features
- Active Threshold Tracking
- Built-In Logic Functions
- Interference Prevention
- Automatic Attenuation
- Multifunction Input
- 8 Channel Memory

FX-100 Series

Low Cost ● Small Size ● 250µs Response Time

Type	Connection	Model	
		NPN Output	PNP Output
Standard	2M Cable	FX-101-CC2	FX-101P-CC2
	M8 Connector	FX-101-Z	FX-101P-Z
Long Range	2M Cable	FX-102-CC2	FX-102P-CC2
	M8 Connector	FX-102-Z	FX-102P-Z

FX-300 Series

Mid-Range Performance ● Red, Green and IR LED ● 65µs Response Time

Type	LED	# Outputs	Model	
			NPN Output	PNP Output
Standard	Red	1	FX-301	FX-301P
	Green	1	FX-301G	FX-301GP
	Blue	1	FX-301B	FX-301BP
	Infrared	1	FX-301H	FX-301HP
High Function	Red	2	FX-305	FX-305P
High Speed, 33µs	Red	1	FX-301-HS	FX-301P-HS

FX-400 Series

Manual Adjustment Amplifier ● Easy to Use ● 150µs Response Time

Type	LED	Model	
		NPN Output	PNP Output
Standard	Red	FX-411	FX-411P
	Green	FX-411G	FX-411GP
	Blue	FX-411B	FX-411BP
Raised Adjuster	Red	FX-412	-
	Green	FX-412G	-
	Blue	FX-412B	-

POWER CABLES

Type	# Cores	Model		
		1M Length	2M Length	5M Length
Main Cable	3	CN-73-C1	CN-73-C2	CN-73-C5
	4	CN-74-C1	CN-74-C2	CN-74-C5
Sub Cable	1	CN-71-C1	CN-71-C2	CN-71-C5
	2	CN-72-C1	CN-72-C2	CN-72-C5

STANDARD FIBERS

Single Core ● Break Free ● Sharp Bending ● -67 to +176 ºF Temp. Rating

	Type		Sensing Range	Bend Radius	Model
Thrubeam	M4	M4 15 0.591	HYPR: 3600mm STD: 1130mm H-SP: 190mm	R2 mm R0.079 in	FT-42
	M3	M3 12 0.472	HYPR: 1350mm STD: 315mm H-SP: 70	R4 mm R0.157 in	FT-31
	1.5mm Dia.	ø1.5 ø0.059 10 0.394			FT-S21
	Ultra Small Dia.	Beam diameter ø0.25 mm ø0.010 in ø0.4 ø3 ø0.016 ø0.118 Sleeve part cannot be bent 5 15 0.197 0.591	HYPR: 270mm STD: 75mm H-SP: 13mm		FT-E23
Diffuse Reflective	M6	M6 17 0.669	HYPR: 1400mm STD: 450mm H-SP: 70mm	R2 mm R0.079 in	FD-61
	M4	M4 14 0.551			FD-41
	M3	M3 12 0.472	HYPR: 515mm STD: 125mm H-SP: 25mm	R4 mm R0.157 in	FD-31
	3mm Dia.	ø3 ø0.118 10 0.394			FD-S31

Universal Power Connection

Optical Communication

PRESSURE SENSORS

Panasonic pressure sensors are easy to use and deliver the highest level of performance. Our product line can detect air, water, oil, and other liquids with pressures up to 50MPa. Whether you need high resolution or high speed detection, our pressure sensors have you covered.

Air

DP-100 Series
- Self Contained Design
- M8 Quick Connection Available
- Pressure Range: -0.1 to 1.0 MPa

DPC-100 / DPH-100 Series
- Separate Head and Amplifier
- High Flex Cable Models Available
- Pressure Heads Can Be Used Independently
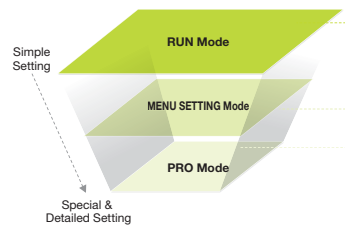- Pressure Range: -0.1 to 1.0 MPa

Water / Oil

DPC-L100 / DPH-L100 Series
- Separate Head and Amplifier
- For Air, Water, Oil, and Other Liquids
- Pressure Heads Can Be Used Independently
- Pressure Range: -0.1 to 50.0 MPa

Three Level Configuration

The setting levels are clearly separated into "RUN mode" for operation settings that are carried out daily, "MENU SETTING mode" for basic settings, and "PRO mode" for special and detailed setting. These make setting operations easy to understand and easy to carry out.

Simple Setting

RUN Mode

MENU SETTING Mode

PRO Mode

Special & Detailed Setting

RUN Mode
Settings such as threshold value adjustment and key lock operation can be carried out while the sensor is operating.

Menu Setting Mode
Basic settings such as output mode setting and NO/NC switching can be carried out.
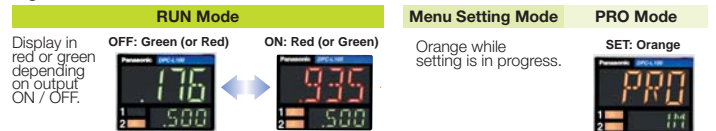
PRO Mode
High-level function settings such as hysteresis adjustment and the copy function can be carried out.

Three Color Digital Display

The main display color switches between green and red in accordance with the ON/OFF status of output during RUN mode. In addition, the display always appears orange while setting is in progress, so that the status of the controller can be viewed at a glance.

RUN Mode		Menu Setting Mode	PRO Mode
Display in red or green depending on output ON / OFF.	OFF: Green (or Red) ⟷ ON: Red (or Green)	Orange while setting is in progress.	SET: Orange

DP-100 Series

Self Contained ● 0.1kPa Resolution ● 2.5ms Response Time

Type		Pressure Range	Output Configuration	Output	Model			
					R1/8 Male	NPT1/8 Male	G1/8 Male	M5 Female
Low Pressure		±100 kPa	2 Discrete Outputs	NPN	DP-101	DP-101-N		DP-101-M
				PNP		DP-101-N-P	DP-101-E-P	DP-101-M-P
			1 Discrete Output + 1 Analog Output	NPN	DP-101A	DP-101A-N		DP-101A-M
				PNP		DP-101A-N-P	DP-101A-E-P	DP-101-M
	M8 Type		2 Discrete Outputs	PNP			DP-111-E-P-J	
			1 Discrete Output + 1 Analog Output				DP-111A-E-P-J	
High Pressure		-0.1 to 1.0MPa	2 Discrete Outputs	NPN	DP-102	DP-102-N		DP-102-M
				PNP		DP-102-N-P	DP-102-E-P	DP-102-M
			1 Discrete Output + 1 Analog Output	NPN	DP-102A	DP-102A-N		DP-102A-M
				PNP		DP-102A-N-P	DP-102A-E-P	DP-102A-M-P
	M8 Type		2 Discrete Outputs	PNP			DP-112-E-P-J	
			1 Discrete Output + 1 Analog Output				DP-112A-E-P-J	

DPC-100/DPH-100 Series

Separate Head and Amplifier ● Miniature Head Design ● 0.5ms Response Time

Controllers		Sensor Heads				
Model Number		Type	Pressure Range	Port Size	Model	
NPN Outputs	PNP Outputs				STD Cable	High Flex Cable
DPC-101	DPC-101-P	**Compound Pressure**	±100 kPa	R1/8 Male + M5 Female	DPH-101	DPH-101-R
				M3 Male	DPH-101-M3	DPH-101-M3-R
				M5 Male	DPH-101-M5	DPH-101-M5-R
		Positive Pressure	0 to 1.0MPa	R1/8 Male + M5 Female	DPH-102	
				M5 Male	DPH-102-M5	
		Vacuum Pressure	0 to -101.0 kPa	R1/8 Male + M5 Female	DPH-103	DPH-103-R
				M3 Male	DPH-103-M3	DPH-103-M3-R
				M5 Male	DPH-103-M5	DPH-103-M5-R

DPC-L100/DPH-L100 Series

Separate Head and Amplifier ● For Liquids and High Pressures ● 5ms Response Time

Controllers		Sensor Heads			
Model Number		Type	Pressure Range	Port Size	Model
NPN Outputs	PNP Outputs				
DPC-L101	DPC-L101-P	**Compound Pressure**	-0.1 to 1.0 MPa	R1/4 Male	DPH-L113V
		Positive Pressure	0 to 1.0MPa		DPH-L113
			0 to 3.5 MPs		DPH-L133
			0 to 10 MPa		DPH-L114
			0 to 50 MPa		DPH-L154

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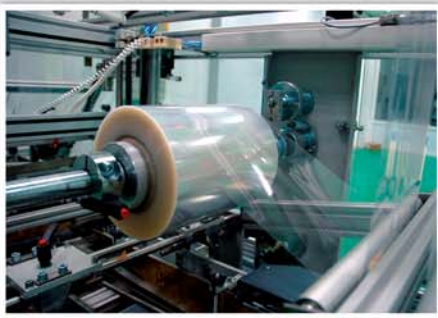1-800-228-2350
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Please review technical specifications before purchase.
For any safety concerns regarding these products, please contact your Panasonic sales representative.

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