September 2008

NanoView™ Series Photoelectric Sensors

Contents

The NanoView Series from Eaton is a family of miniature rectangular photoelectric sensors designed for optimum value and sensing performance in a wide range of applications.

These small sensors are available in a variety of optical modes: polarized reflex; diffuse reflective; fixed-focus diffuse; thru-beam with narrow-beam option; and even a clear object detector.

NanoView sensors are housed in ABS enclosures rated IP66 or better. Two top-mounted indicator LEDs communicate power and output status. Each model includes both light operate and dark operate modes. Termination options include a 4-pin M8 connector cable or a built-in 6-foot (2 m) cable.

NanoView is the ultimate solution to sensing challenges that require reduced dimensions and costs.

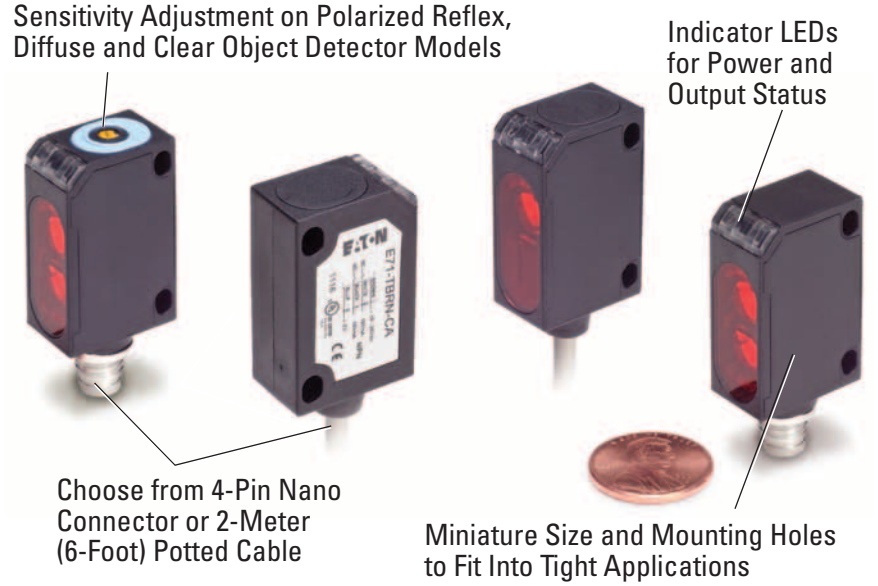
Approvals

- UL Listed
- C-UL Listed

CE

Unless otherwise noted, the products contained in this document are not designed or intended for use in human safety applications.

A Full Line of Miniature Photoelectric Sensors Built for Performance and Value



Product Features

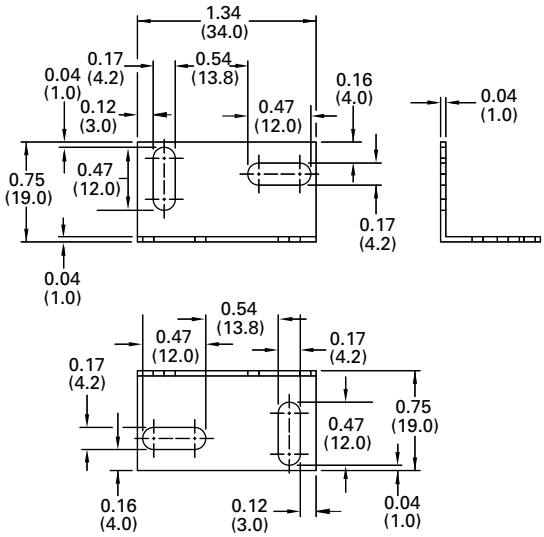
- **A Complete Family of Solutions** — Models include an 8.2 ft. (2.5 m) polarized reflex, a 13 in. (35 cm) diffuse reflective, a 4 in. (10 cm) fixed-focus diffuse, a 20 ft. (6 m) thru-beam; and a 2.6 ft. (80 cm) clear object detector for sensing plastic bottles, molds, cartons and films
- **Small Size** — At less than 1.5 inches long and half an inch deep, NanoView can fit into the smallest of spaces
- **Fixed Focus Diffuse Models** — Perfect for sensing very small targets at a 4-inch focal point. A visible red LED beam makes it easy to set up
- **Clear Object Detection Models** — Ideal for sensing plastic bottles, molds, cartons, films and glass objects
- **UL and C-UL Listed, CE Approved**

Model Selection — NanoView Series

	Voltage Range	Sensing Mode	Sensing Range	Output Type	Connection Type	Catalog Number
4-Wire Sensors						
Thru-Beam 	10 – 30V DC	Thru-Beam Detector	19 feet (6 m)	NPN, Light Operate or Dark Operate (Selectable)	6-foot Cable	**E71-TBRN-CA**
					4-pin Nano Connector ①	**E71-TBRN-M8**
				PNP, Light Operate or Dark Operate (Selectable)	6-foot Cable	**E71-TBRP-CA**
					4-pin Nano Connector ①	**E71-TBRP-M8**
		Thru-Beam Source		N/A	6-foot Cable	**E71-TBS-CA**
					4-pin Nano Connector ①	**E71-TBS-M8**
		Narrow Beam Thru-Beam Source		N/A	6-foot Cable	**E71-NTBS-CA**
					4-pin Nano Connector ①	**E71-NTBS-M8**
Polarized Reflex 		Polarized Reflex	8.2 feet (2.5 m)	NPN, Light Operate or Dark Operate (Selectable)	6-foot Cable	**E71-PRN-CA**
					4-pin Nano Connector ①	**E71-PRN-M8**
				PNP, Light Operate or Dark Operate (Selectable)	6-foot Cable	**E71-PRP-CA**
					4-pin Nano Connector ①	**E71-PRP-M8**
Diffuse Reflective 		Diffuse Reflective	13.8 inches (35 cm)	NPN, Light Operate or Dark Operate (Selectable)	6-foot Cable	**E71-SDN-CA**
					4-pin Nano Connector ①	**E71-SDN-M8**
				PNP, Light Operate or Dark Operate (Selectable)	6-foot Cable	**E71-SDP-CA**
					4-pin Nano Connector ①	**E71-SDP-M8**
Fixed Focus Diffuse Reflective 		Fixed-Focus Diffuse Reflective	3.9 inches (10 cm) focal point	NPN, Light Operate or Dark Operate (Selectable)	6-foot Cable	**E71-FFDN-CA**
					4-pin Nano Connector ①	**E71-FFDN-M8**
				PNP, Light Operate or Dark Operate (Selectable)	6-foot Cable	**E71-FFDP-CA**
					4-pin Nano Connector ①	**E71-FFDP-M8**
Clear Object Detector 		Clear Object Detector	31.5 inches (80 cm)	NPN, Light Operate or Dark Operate (Selectable)	6-foot Cable	**E71-CON-CA**
					4-pin Nano Connector ①	**E71-CON-M8**
				PNP, Light Operate or Dark Operate (Selectable)	6-foot Cable	**E71-COP-CA**
					4-pin Nano Connector ①	**E71-COP-M8**

① For compatible connector cables, see **Page 3**.

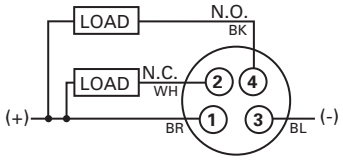
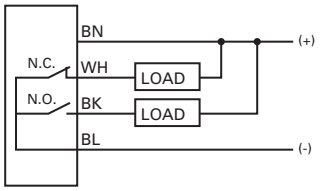
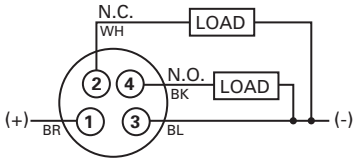
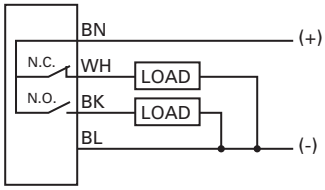
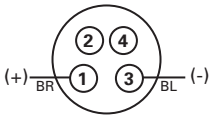
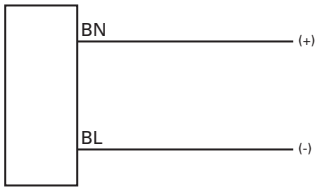
Model Selection — Accessories

	Description	Catalog Number	Approximate Dimensions
Mounting Bracket 	L-shaped mounting bracket for NanoView sensors.	**E71-MTB1**	

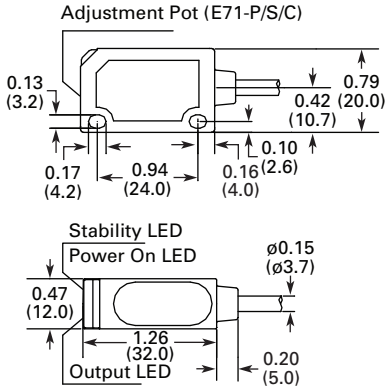
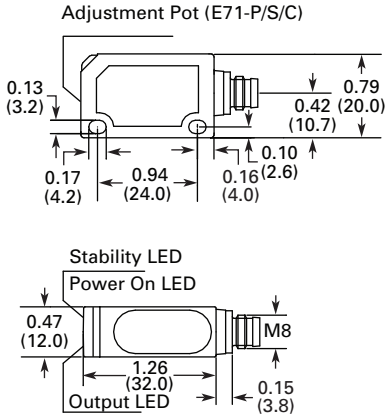
Model Selection — Compatible Connector Cables

	Voltage Style	Number of Pins	Gauge	Length	Catalog Number PVC Yellow Jacket	Pins
M8 Nano Connector Cable, Straight Female 	DC	4-pin, 4-wire	24 AWG	6.5 ft. (2 m)	**CSNS4A4CY2402**	 1-Brown 2-White 3-Blue 4-Black
				16.4 ft. (5 m)	**CSNS4A4CY2405**	
				32.8 ft. (10 m)	**CSNS4A4CY2410**	

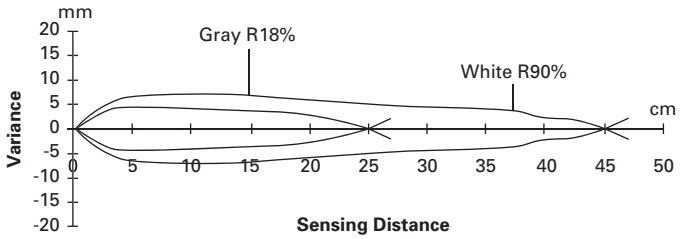
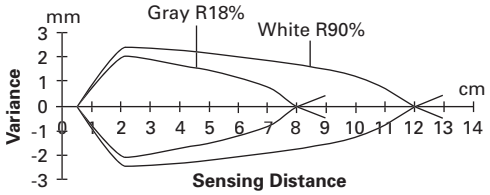
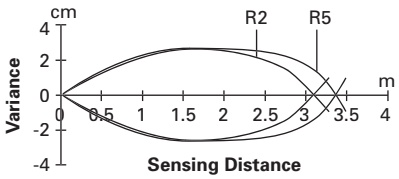
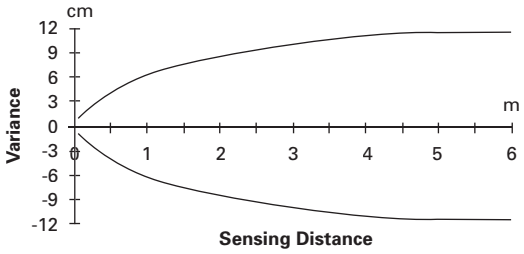
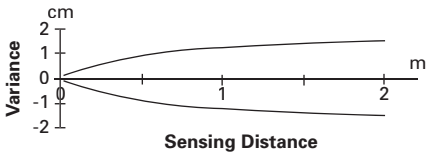
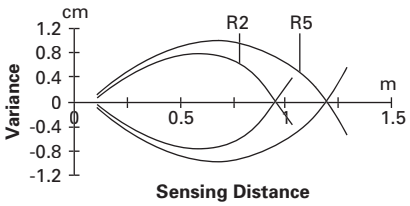
Wiring Diagrams

Models	Nano Connector Diagram (Face View Male Shown)	Cable Diagram
All NPN Models Except Thru-Beam Source		
All PNP Models Except Thru-Beam Source		
All Thru-Beam Source Models		

Approximate Dimensions — NanoView Series

Models	Diagram
Cable Models	
Nano Connector Models	

Detection Diagrams — NanoView Series

Models	Diagram
Thru-Beam Models	E71-S ① 
PolarizedReflex Models	E71-F ① 
Diffuse Reflective Models	E71-P ① 
Fixed Focus Diffuse Models	E71-T ① 
Clear Object Detector Models	E71-N ①  E71-C ① 

① These diagrams depict the width of the sensing beam over distance. These diagrams also show the sensing difference between white and gray targets. Because gray is less reflective than white, gray targets will typically need to come closer to the beam centerpoint to be detected.

Specifications — NanoView Series

	For E71-T/N (Thru-Beam)	For E71-P (Polarized Reflex)	For E71-S (Diffuse Reflective)	For E71-F (Fixed Focus Diffuse)	For E71-C (Clear Object Detector)
Input Voltage	10-30V DC				
Current Consumption (Output Current Excluded)	35 mA max.				
Outputs	Light Operate and Dark Operate; PNP or NPN by model; 30V DC max.				
Output Current	100 mA max.				
Output Saturation Voltage	2V max.				
Electrical Protection	Short Circuit and Reverse Polarity Protection				
Response Time	1 ms max.				
Switching Frequency	500 Hz max.				
Indicator LEDs	Output LED (yellow), Stability LED (green), Power LED (green)				
Sensing Adjustment	None	Adjustment Pot		None	Adjustment Pot
Operating Temperature	-25 to +55°C (-13 to +131°F)				
Storage Temperature	-25 to +70°C (-13 to +158°F)				
Sensing Range	19.7 ft. (6 m)	8.2 ft. (2.5 m)	13.8 in. (35 cm)	3.9 in. (10 cm)	31.5 in. (80 cm)
Beam Type	Infrared LED (880 nm)	Visible Red LED (660 nm)	Infrared LED (880 nm)	Visible Red LED (660 nm)	
Vibration and Shock	Vibration: 0.5 mm Amplitude, 10-55 Hz for every axis (EN60068-2-6); Half sine, 30 g_n, 11 ms, 3 axes				
Housing Material	ABS UL 94V-0				
Lens Material	PMMA				
Mechanical Protection	IP67	IP66		IP67	IP66
Connections	M8 4-Pin Nano Connector; 6-Foot (2 m) Cable				
Weight	Connector Models: 40g max. Cable Models: 10g max.				
Approvals	UL, C-UL, CE				