

### E68 Series Integral Sensor Valve

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The Cutler-Hammer® E68 Series Integral Sensor Valve (ISV) from Eaton's electrical business is a complete Zero Pressure Accumulation (ZPA) sensing and control solution. This system solves the problem of product damage and mishandling caused by mechanical sensor rollers on outdated ZPA conveyors.

#### A Complete, Pre-engineered Solution

The ISV comes complete with all needed components including sensors, air valves, pre-measured connectors, power supplies and accessories. These components simply snap together to provide reliable conveyor control without the need to invest costly engineering time. The compact power supply, designed specifically for our ZPA products, includes an integral junction box to eliminate additional mounting enclosures.

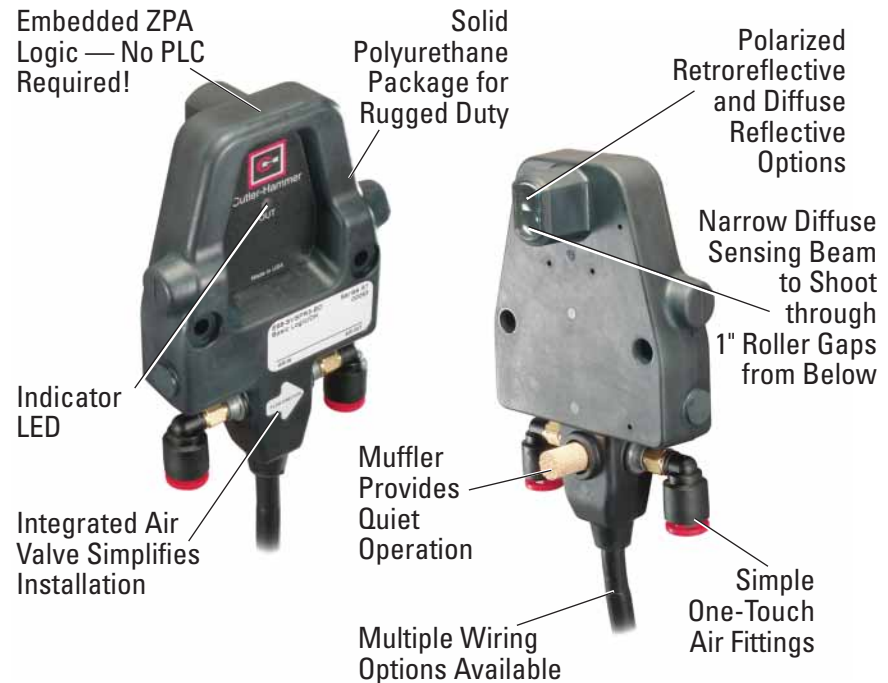
#### Fast, Low Cost Installation and Retrofit

The unique ISV reduces installation costs by integrating the sensor, valve and control logic into one device. Only one device needs to be installed to provide a full zone's worth of control. Connections between zones are also included, eliminating the need to run any additional wiring. Wiring is optimized for an exact fit, eliminating unsightly cable loops that could be snagged and damaged.



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

### A Fully Engineered Non-contact Photoelectric Sensor System with Built-In Accumulation Control



#### Product Features

- Self-contained package includes sensor, logic, air valve, and wiring
- Non-contact, true Zero Pressure Accumulation
- Multiple algorithms available to provide the exact functionality you require
- Multiple wiring options available — including NEMA 4 and NEMA 1 varieties
- Low installation costs
- Integrated "beam status" contact available to allow direct integration into AC or DC control systems
- One-touch air fittings for quick installation
- Low-profile package allows easy integration into conveyor side-channel
- System designed with sub-4A 24V DC wiring for safety and reduced installation costs
- Easily interfaced to external control systems for singulated discharge and/or slug release
- Highly optimized, low-cost power supply
- Custom brackets and sensor/bracket assemblies available

#### High Reliability and Flexibility

ISV sensors are available in both polarized reflex and diffuse reflective sensing modes. Polarized sensors eliminate detection errors caused by shiny targets and provide the highest level of high sensing reliability when used at common conveyor widths.

Diffuse reflective models can be installed in low lift-height locations

and other areas on the conveyor where it may not be possible to mount a polarized reflex sensor and reflector. These models have an extremely narrow field of view to allow for mounting below the level of the conveyor rollers in certain cases where necessary.

For Customer Service in the U.S. call 1-877-ETN CARE (386-2273),  
in Canada call 1-800-268-3578.  
For Application Assistance in the U.S. and Canada  
call 1-800-426-9184.

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**Choose a Sensor to Meet Your Specific Needs**

To provide an ideal solution for a wide variety of Zero Pressure Accumulation needs, ISV sensors are available in two different embedded logic modes:

- The Basic Logic Series offers high-throughput smart Zero Pressure Accumulation control. This logic results in singulation and Zero Pressure Accumulation. Each sensor checks the status of the downstream zone and each zone always runs except when both the current and downstream zones are full.
- The Progressive Logic Series offers even higher throughput than the Basic Logic. This logic does not singulate product, but does result in Zero Pressure Accumulation. Each zone always runs until all of the zones downstream are full, allowing maximum efficiency.

**E68 Series System Components****Sensor**

The ISV sensor has been specially designed with upstream communication abilities and internal logic to implement Zero Pressure Accumulation (ZPA) control. When combined with the components below, a complete ZPA conveyor control system can be literally snapped into place on your conveyor. Two versions are available depending upon the control you require: Basic Logic and Progressive Logic (described above).

**Sensor with Integrated Beam Status Output**

These ISV Sensors are the same as standard units in all respects, with the exception of a special output connector that is added to the sensor body. This allows you to conveniently access the beam status output of any zone by simply substituting a special sensor of this type in place of a standard unit. This is useful, for example, at the infeed end of a section of conveyor where a lane full signal is required, as a separate photo-eye need not be mounted.

**Power Supply**

A 4A Power Supply designed for use with the Conveyor Sensor systems. A single power supply can normally operate up to 50 zones. For more information, see **PG.05.06.T.E.**

**Power Supply Cable**

This cable allows the power supply to be connected to any zone, while allowing use of that zone.

**Release Cable**

This cable is normally connected to the last zone and is tied to your external control to allow release of product from the conveyor system. The system can be wired to the power supply to enable either singulated product release or slug/train release from the conveyor's discharge end.

**Buss Harness (Not required with daisy-chained models)**

The Buss Harness distributes power, slug release signals and provides communications links for multi-drop versions of the ISV. Made from flat ribbon cable, it is available in 10, 50 and 100 foot lengths and is connectorized at intervals to match your zone length (18 to 60 inches in 6-inch increments). A buss link accessory can be used to join multiple sections together, while a zone jumper accessory may be used to skip unused zones. This harness is only required for multi-drop connection versions of the ISV (described at right).



It's So Easy to Get Started,  
All That's Needed Is:

- Your conveyor zone length(s)
- Preferred ZPA algorithm
- Preferred connection style (see below)



Daisy-chained connection  
with NEMA 4 sealed micro-  
connectors



Daisy-chained connection with  
NEMA 1 unsealed connectors



Multi-drop connection  
(requires Buss Harness)

### Model Selection — Basic Logic Sensors

	Type	Sensing Range	Optimum Range	Field of View	Connection Type	Operate Mode	Option	Catalog Number
								Standard
	Polarized Reflex <sup>①</sup>	10 feet (3m)	0.1 to 8 feet (0.03 – 3.6m)	3 inch (76 mm) Diameter at 12 feet (3.6m)	Multi-Drop	Air to Drive	—	<b>E68-SVSPR3-BL</b>
							Isolated Beam Output	<b>E68-SVSPR3-BL-B</b>
						Air to Brake	—	<b>E68-SVSPR3-BD</b>
							Isolated Beam Output	<b>E68-SVSPR3-BD-B</b>
	Polarized Reflex <sup>①</sup>	10 feet (3m)	0.1 to 8 feet (0.03 – 3.6m)	3 inch (76 mm) Diameter at 12 feet (3.6m)	Daisy-Chain — NEMA 1	Air to Drive	—	<b>E68-SVSPR3-BLC</b>
							Isolated Beam Output	<b>E68-SVSPR3-BLC-B</b>
						Air to Brake	—	<b>E68-SVSPR3-BDC</b>
							Isolated Beam Output	<b>E68-SVSPR3-BDC-B</b>
	Polarized Reflex <sup>①</sup>	10 feet (3m)	0.1 to 8 feet (0.03 – 3.6m)	3 inch (76 mm) Diameter at 12 feet (3.6m)	Daisy-Chain — NEMA 4	Air to Drive	—	<b>E68-SVSPR3-BLP</b>
							Isolated Beam Output	<b>E68-SVSPR3-BLP-B</b>
						Air to Brake	—	<b>E68-SVSPR3-BDP</b>
							Isolated Beam Output	<b>E68-SVSPR3-BDP-B</b>
	Diffuse Reflective <sup>②</sup>	3 feet (1m)	0.2 to 2 feet (0.06 – 0.6m)	0.2 inch (5 mm) Diameter at 2 inches (51 mm) 6 inch (152 mm) Diameter at 5 feet (1.5m)	Multi-Drop	Air to Drive	—	<b>E68-SVSSD1-BL</b>
							Isolated Beam Output	<b>E68-SVSSD1-BL-B</b>
						Air to Brake	—	<b>E68-SVSSD1-BD</b>
							Isolated Beam Output	<b>E68-SVSSD1-BD-B</b>
	Diffuse Reflective <sup>②</sup>	3 feet (1m)	0.2 to 2 feet (0.06 – 0.6m)	0.2 inch (5 mm) Diameter at 2 inches (51 mm) 6 inch (152 mm) Diameter at 5 feet (3.6m)	Daisy-Chain — NEMA 1	Air to Drive	—	<b>E68-SVSSD1-BLC</b>
							Isolated Beam Output	<b>E68-SVSSD1-BLC-B</b>
						Air to Brake	—	<b>E68-SVSSD1-BDC</b>
							Isolated Beam Output	<b>E68-SVSSD1-BDC-B</b>
	Diffuse Reflective <sup>②</sup>	3 feet (1m)	0.2 to 2 feet (0.06 – 0.6m)	0.2 inch (5 mm) Diameter at 2 inches (51 mm) 6 inch (152 mm) Diameter at 5 feet (1.5m)	Daisy-Chain — NEMA 4	Air to Drive	—	<b>E68-SVSSD1-BLP</b>
							Isolated Beam Output	<b>E68-SVSSD1-BLP-B</b>
						Air to Brake	—	<b>E68-SVSSD1-BDP</b>
							Isolated Beam Output	<b>E68-SVSSD1-BDP-B</b>

① Ranges based on a 3-inch diameter retroreflector.

② Sensors will detect a 90% reflectance white card at this range.

 Fast turn product with typical one business day lead-time to shipment.

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## Model Selection — Progressive Logic Sensors

	Type	Sensing Range	Optimum Range	Field of View	Connection Type	Operate Mode	Option	Catalog Number	
								Standard	
	Polarized Reflex <sup>①</sup>	10 feet (3m)	0.1 to 8 feet (0.03 – 3.6m)	3 inch (76 mm) Diameter at 12 feet (3.6m)	Multi-Drop	Air to Drive	—	<b>E68-SVSPR3-PL</b>	
							Isolated Beam Output	<b>E68-SVSPR3-PL-B</b>	
							Air to Brake	—	<b>E68-SVSPR3-PD</b>
								Isolated Beam Output	<b>E68-SVSPR3-PD-B</b>
	Polarized Reflex <sup>①</sup>	10 feet (3m)	0.1 to 8 feet (0.03 – 3.6m)	3 inch (76 mm) Diameter at 12 feet (3.6m)	Daisy-Chain — NEMA 1	Air to Drive	—	<b>E68-SVSPR3-PLC</b>	
							Isolated Beam Output	<b>E68-SVSPR3-PLC-B</b>	
							Air to Brake	—	<b>E68-SVSPR3-PDC</b>
								Isolated Beam Output	<b>E68-SVSPR3-PDC-B</b>
	Polarized Reflex <sup>①</sup>	10 feet (3m)	0.1 to 8 feet (0.03 – 3.6m)	3 inch (76 mm) Diameter at 12 feet (3.6m)	Daisy-Chain — NEMA 4	Air to Drive	—	<b>E68-SVSPR3-PLP</b>	
							Isolated Beam Output	<b>E68-SVSPR3-PLP-B</b>	
							Air to Brake	—	<b>E68-SVSPR3-PDP</b>
								Isolated Beam Output	<b>E68-SVSPR3-PDP-B</b>
	Diffuse Reflective <sup>②</sup>	3 feet (1m)	0.2 to 2 feet (0.06 – 0.6m)	0.2 inch (5 mm) Diameter at 2 inches (51mm) 6 inch (152 mm) Diameter at 5 feet (1.5m)	Multi-Drop	Air to Drive	—	<b>E68-SVSSD1-PL</b>	
							Isolated Beam Output	<b>E68-SVSSD1-PL-B</b>	
							Air to Brake	—	<b>E68-SVSSD1-PD</b>
								Isolated Beam Output	<b>E68-SVSSD1-PD-B</b>
	Diffuse Reflective <sup>②</sup>	3 feet (1m)	0.2 to 2 feet (0.06 – 0.6m)	0.2 inch (5 mm) Diameter at 2 inches (51mm) 6 inch (152 mm) Diameter at 5 feet (1.5m)	Daisy-Chain — NEMA 1	Air to Drive	—	<b>E68-SVSSD1-PLC</b>	
							Isolated Beam Output	<b>E68-SVSSD1-PLC-B</b>	
							Air to Brake	—	<b>E68-SVSSD1-PDC</b>
								Isolated Beam Output	<b>E68-SVSSD1-PDC-B</b>
	Diffuse Reflective <sup>②</sup>	3 feet (1m)	0.2 to 2 feet (0.06 – 0.6m)	0.2 inch (5 mm) Diameter at 2 inches (51mm) 6 inch (152 mm) Diameter at 5 feet (1.5m)	Daisy-Chain — NEMA 4	Air to Drive	—	<b>E68-SVSSD1-PLP</b>	
							Isolated Beam Output	<b>E68-SVSSD1-PLP-B</b>	
							Air to Brake	—	<b>E68-SVSSD1-PDP</b>
								Isolated Beam Output	<b>E68-SVSSD1-PD</b>

① Ranges based on a 3-inch diameter retroreflector.

② Sensors will detect a 90% reflectance white card at this range.

### Model Selection — Accessories

	Type	Length	Description	Used with Sensors	Catalog Number
<b>Sensor Output Cables</b>					
	Beam Status Output Cable	1m	Wires from the beam status output connector on the sensor to a remote PLC or other controller	E68....-xyz-B	E68-SVABEAM-1
<b>Power Supply Cables</b>					
	Power Supply "T" connection	2m	This cable allows the power supply to be connected between any two zones, while allowing use of those zones. For best results, the Power Supply Cable should be connected at the center of the zones being powered. Tinned leads on power supply end. 12 mm DC-key connector on power supply end.	E68....-xyC	E68-SVAPWR-C2
				E68....-xyP	E68-SVAPWR-P02
				E68....-xyP	E68-SVAPWR-P2
	Power Supply Cable	2m	This cable allows the power supply to be connected to any zone, while allowing use of that zone. For best results, the Power Supply Cable should be connected at the center of the zones being powered.	E68....-xy	BUS266PWR-01B1
		50m		E68....-xy	BUS266PWR-5001B1
	Power Supply	—	27V DC, 100W; short-circuit, overload and overvoltage protection (cycle power to reset). Power supply can normally power up to 50 ISV zones. See PG.05.06.T.E for more details.	E68....	PS256A-01B1
<b>Zone Extensions and Jumpers</b>					
	Zone Extension Cable	1m	Used for zone lengths > 36".	E68....-xyC	E68-SVAEXT-C1
				E68....-xyP	E68-SVAEXT-P1
	Power Jumper	5m	Used to slave an asynchronous ZPA chain — does not pass accumulation signals.	E68....-xyC	E68-SVAJMP1-C5
				E68....-xyP	E68-SVAJMP1-P5
	Power Isolation Cable	2 ft (0.6m)	Used to isolate parallel power supplies on an extended ZPA chain.	E68....-xyC	E68-SVAISO-C
				E68....-xyP	E68-SVAISO-P




 Stocked product, typical order quantities guaranteed in stock.

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**Model Selection — Accessories (Continued)**

	Type	Length	Description	Used with Sensors	Catalog Number
<b>Zone Extensions and Jumpers (Continued)</b>					
	Zone Jumper	5 in.	A Zone Jumper is required when a zone is skipped to allow communications to continue through the unused zone.	E68....-xy	QDJU266A-01B1
	Slug Isolation Cable	2 ft (0.6m)	Used to break a slug release signal to affect closer control of product release. Insert between any two zones, and a slug release signal is isolated from all upstream zones.	E68....-xyC	E68-SVASLUG-C
				E68....-xyP	E68-SVASLUG-P
	Buss Link Cable	10 cm	This cable allows two sections of buss harness to be connected together. <b>NOTE:</b> 10 foot versions of buss harness have this connector built-in.  Passes power and ZPA signals.	E68....-xy	BUS266LINK-01B1
		10 cm	Power isolation version.  Passes ZPA signals but isolates power.	E68....-xy	BUS266ISO-01B1
		3m	This cable allows two sections of buss harness to be connected together. DC power is passed through the connection.  Passes power only.	E68....-xy	BUS266JUMP15-01B1
		3m	This cable allows two sections of buss harness to be connected together. Both DC power and the ZPA signal is passed through the connection.  Passes power and ZPA signals.	E68....-xy	BUS266JUMP15-02B1
	Power Curve Delay Module	—	Allows ZPA through a powered curve that is not divided into ZPA controlled zones. Installed adjacent to the sensor at the powered curve infeed. All required wiring is included.	E68...-xy	1451BSR1216
E68...-xyC				1451BSC1216	
E68...-xyP				1451BSP1216	

**Model Selection — Accessories (Continued)**


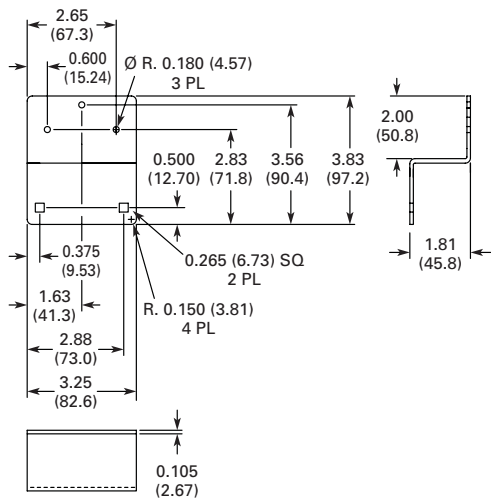
	Type	Length	Description	Used with Sensors	Catalog Number
<b>Release Cables</b>					
	Release Cable	2m	This cable is connected to the last zone and allows singulate or slug discharge control from an external system.  Both release and power connections are provided. If the power connections are used, a separate power supply "T" cable is not needed.	E68....-xyC	E68-SVAREL2-C2
				E68....-xyP	E68-SVAREL2-P2
			This cable is connected to the last zone and allows singulate or slug discharge control from an external system.  Release connections only are provided.	E68....-xy	BUS266REL-01B1
			This cable is connected to the last zone and allows singulate or slug discharge control from an external system.  Both release and power connections are provided. If the power connections are used, a separate power supply cable is not needed.	E68....-xy	BUS266REL-02B1

**Miscellaneous Accessories**

	Upstream Connector Cover	—	Used to seal the upstream micro-connector on the most infeed sensor.	E68....-xyP	E68-SVAUSC-P
	Downstream Connector Cover	—	Used to seal the downstream micro-connector on the discharge sensor (if a release cable is not connected).	E68....-xyP	E68-SVADSC-P

■ Stocked product, typical order quantities guaranteed in stock.



**Model Selection — Mounting Brackets**

	Dimensions	Description	Used with Sensors	Catalog Number
		Mounting bracket for E68 sensor family. Can be used to mount E68 sensor to conveyor side channel. Can also be used to mount 3-inch retroreflector (6200A-6506).	E68....	6161AS0285

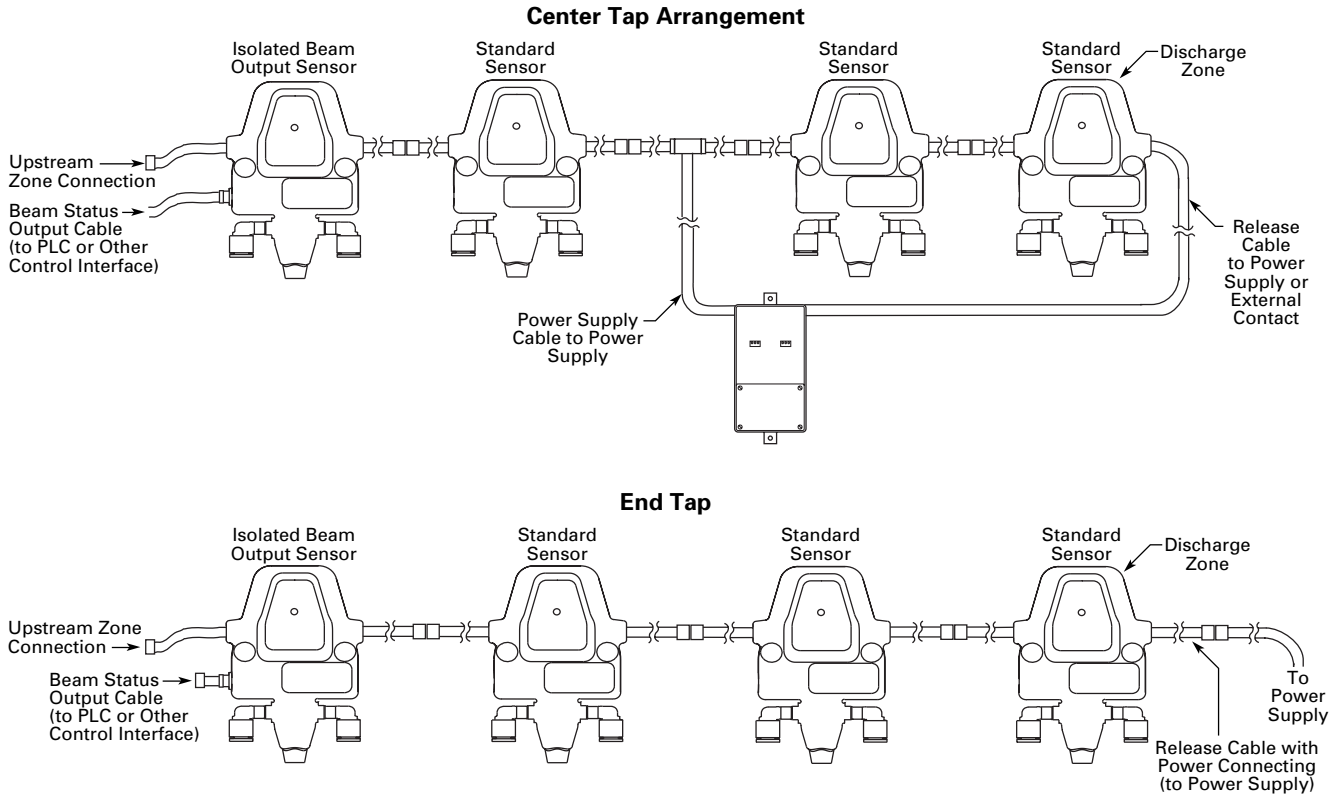
■ Stocked product, typical order quantities guaranteed in stock.

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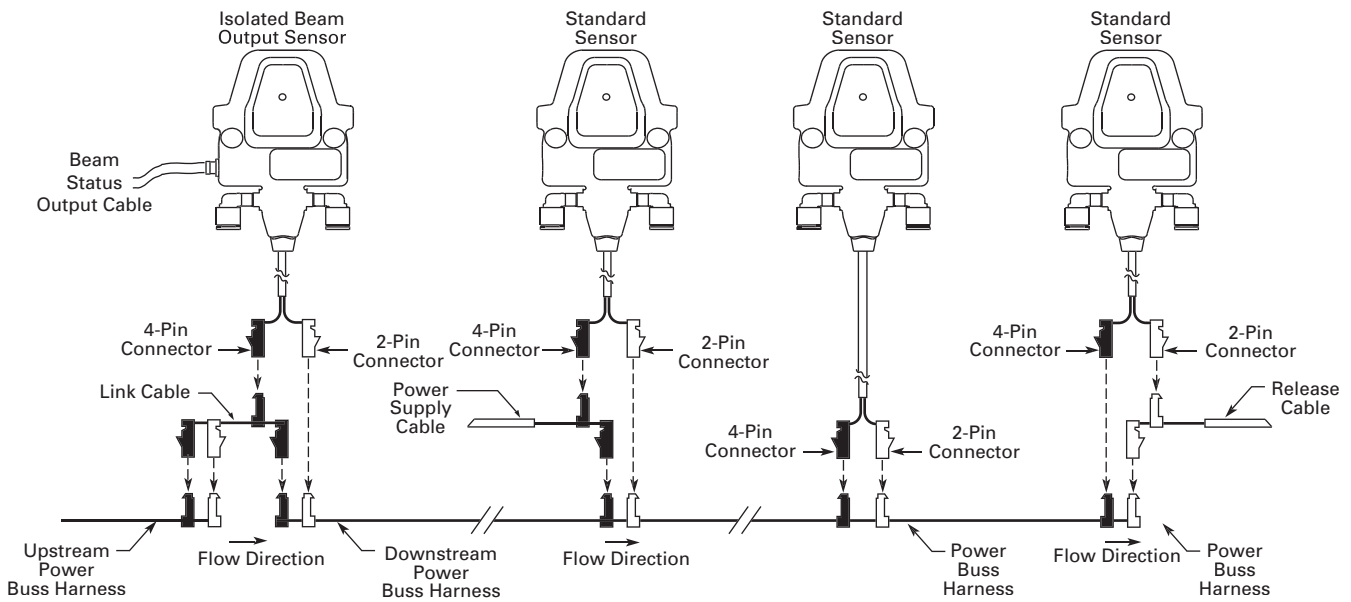
**Model Selection — Buss Harnesses**

Photo	Zone Length	Nominal Length	Number of Zones	Use with Sensor Models	Catalog Number
 50' and 100' versions	18 inches	10 feet (1.8m)	6 Zones	E68...	BUS266A18-6
		50 feet (3.6m)	33 Zones		BUS266A18-33
		100 feet (6.1m)	66 Zones		BUS266A18-66
	24 inches	10 feet (1.8m)	5 Zones		BUS266A24-5
		50 feet (3.6m)	25 Zones		BUS266A24-25
		100 feet (6.1m)	50 Zones		BUS266A24-50
	30 inches	10 feet (1.8m)	4 Zones		BUS266A30-4
		50 feet (3.6m)	20 Zones		BUS266A30-20
		100 feet (6.1m)	40 Zones		BUS266A30-40
36 inches	10 feet (1.8m)	3 Zones	BUS266A36-3		
	50 feet (3.6m)	16 Zones	BUS266A36-16		
	100 feet (6.1m)	33 Zones	BUS266A36-33		
40 inches	10 feet (1.8m)	3 Zones	BUS266A40-3		
	50 feet (3.6m)	15 Zones	BUS266A40-15		
	100 feet (6.1m)	30 Zones	BUS266A40-30		
42 inches	10 feet (1.8m)	2 Zones	BUS266A42-2		
	50 feet (3.6m)	14 Zones	BUS266A42-14		
	100 feet (6.1m)	28 Zones	BUS266A42-28		
48 inches	10 feet (1.8m)	2 Zones	BUS266A48-2		
	50 feet (3.6m)	12 Zones	BUS266A48-12		
	100 feet (6.1m)	25 Zones	BUS266A48-25		
54 inches	10 feet (1.8m)	2 Zones	BUS266A54-2		
	50 feet (3.6m)	11 Zones	BUS266A54-11		
	100 feet (6.1m)	22 Zones	BUS266A54-22		
60 inches	10 feet (1.8m)	2 Zones	BUS266A60-2		
	50 feet (3.6m)	10 Zones	BUS266A60-10		
	100 feet (6.1m)	20 Zones	BUS266A60-20		
 10' versions	18 inches	10 feet (1.8m)	6 Zones	E68...	BUS266A18-6
		50 feet (3.6m)	33 Zones		BUS266A18-33
		100 feet (6.1m)	66 Zones		BUS266A18-66
	24 inches	10 feet (1.8m)	5 Zones		BUS266A24-5
		50 feet (3.6m)	25 Zones		BUS266A24-25
		100 feet (6.1m)	50 Zones		BUS266A24-50
	30 inches	10 feet (1.8m)	4 Zones		BUS266A30-4
		50 feet (3.6m)	20 Zones		BUS266A30-20
		100 feet (6.1m)	40 Zones		BUS266A30-40
36 inches	10 feet (1.8m)	3 Zones	BUS266A36-3		
	50 feet (3.6m)	16 Zones	BUS266A36-16		
	100 feet (6.1m)	33 Zones	BUS266A36-33		
40 inches	10 feet (1.8m)	3 Zones	BUS266A40-3		
	50 feet (3.6m)	15 Zones	BUS266A40-15		
	100 feet (6.1m)	30 Zones	BUS266A40-30		
42 inches	10 feet (1.8m)	2 Zones	BUS266A42-2		
	50 feet (3.6m)	14 Zones	BUS266A42-14		
	100 feet (6.1m)	28 Zones	BUS266A42-28		
48 inches	10 feet (1.8m)	2 Zones	BUS266A48-2		
	50 feet (3.6m)	12 Zones	BUS266A48-12		
	100 feet (6.1m)	25 Zones	BUS266A48-25		
54 inches	10 feet (1.8m)	2 Zones	BUS266A54-2		
	50 feet (3.6m)	11 Zones	BUS266A54-11		
	100 feet (6.1m)	22 Zones	BUS266A54-22		
60 inches	10 feet (1.8m)	2 Zones	BUS266A60-2		
	50 feet (3.6m)	10 Zones	BUS266A60-10		
	100 feet (6.1m)	20 Zones	BUS266A60-20		

Typical "Daisy-Chain" Wiring Example



Typical "Multi-Drop" Buss Wiring Example



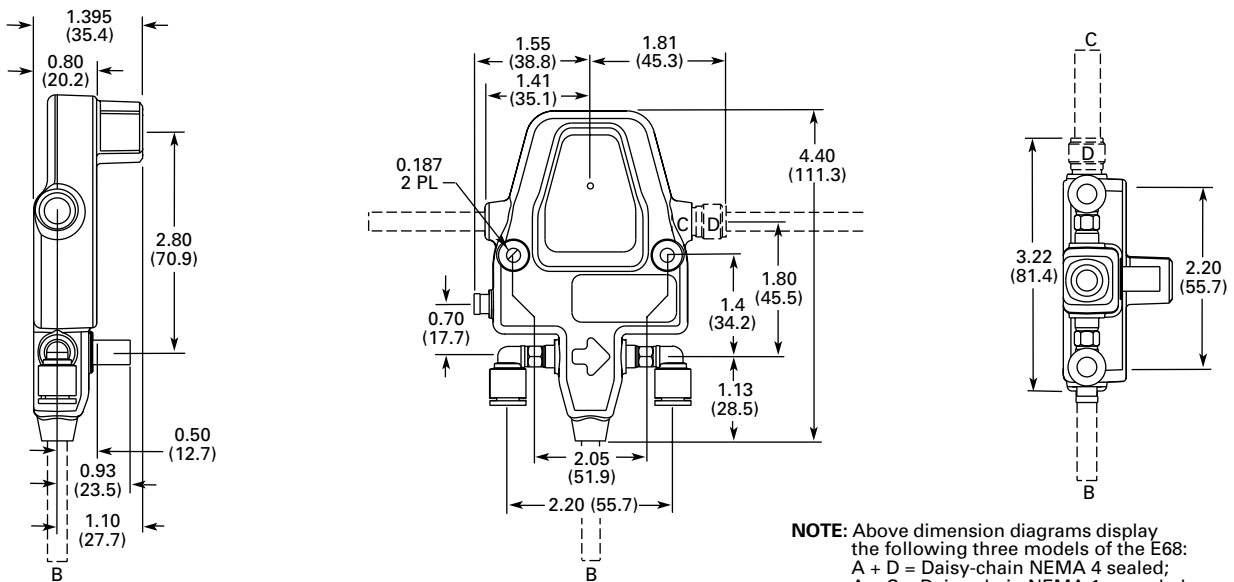
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**Specifications**

	Standard Models
Input Voltage	18 – 30V DC
Power Dissipation	1.35W at 27V DC
Indicator LED	Red LED: Lights steady when air valve open
Response Time	25 mS maximum to 90% air flow. 18.2 Hz maximum operation
Air to Drive/Air to Brake Operation	Specified by catalog number
Beam Status Output (optional)	Solid-state relay; 400V isolation; 132V AC/DC maximum switching voltage; 100 mA current switching capacity; 10 mA maximum off-state leakage; 25W maximum on-state resistance. Output protected (current limited) for loads less than 32V. <b>IMPORTANT:</b> Output will reset automatically when short is removed (there is no visual indication of a short-circuit condition).
Temperature Range	Operating: 14° to +131°F (-10° to +55°C); Storage: -13° to +158°F (-25° to +70°C)
Material of Construction	Lens: polycarbonate; Cable jacket: polyvinylchloride; Body: structural polyurethane foam; Muffler: brass; Fittings: brass, polybutylene terephthalate, polyacetel, BUNA-N; Label Overlay: polyester. <b>IMPORTANT:</b> Do not expose to concentrated acids, alcohols or ketones.
Mounting	Mount with two #8 fasteners (not included). Torque to between 12 and 14 in-lbs
Connectors	Multi-drop models: Insulation-displacement connectors, factory installed Daisy-chain NEMA 1 models (unsealed): 4-pin AMP DESC Connector Daisy-chain NEMA 4 models (sealed): 4-pin, DC-key micro-connectors Beam Status Output: 3-pin male nano-connector
Vibration and Shock	Vibration: 30g over 10 Hz to 2 kHz; Shock: 100g for 3 mS 1/2 sine wave pulse
Sunlight Immunity	10,000 foot-candles
Enclosure Ratings	Multi-drop and unsealed daisy-chain models: NEMA 1 only Sealed daisy-chain models: NEMA 1, 4 ①
Operations	100 million operations over 5 years. Warranty: 3 years (maximum 60 million operations)
Valve Type	3-way, vent to atmosphere
Valve Specifications	Cv = 0.03; 0 to 75 psi operation <b>IMPORTANT:</b> Dry or lubricated shop air, filtered to less than 5 micrometers required.
Valve Fittings	1/4 inch "one-touch" fittings. <b>IMPORTANT:</b> Fittings must be tightened to 10.6 – 17.7 in-lbs.
Product Packaging	Sensors are bulk packaged. Maximum 10 sensors per bag.

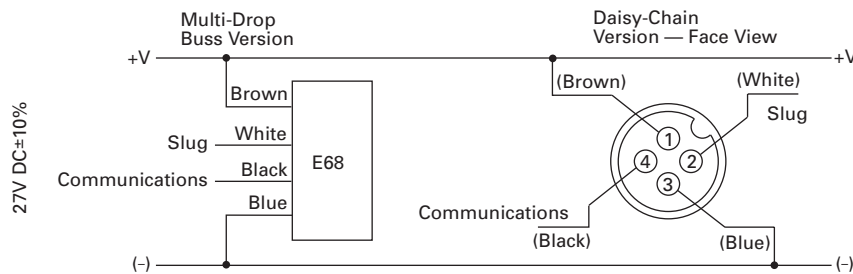
① These products conform to NEMA tests as indicated, however, some severe washdown applications can exceed these NEMA test specifications. If you have questions about a specific application, contact Eaton's Cutler-Hammer Application Department at 1-800-426-9184.

**Approximate Dimensions in Inches (mm)**



**NOTE:** Above dimension diagrams display the following three models of the E68:  
A + D = Daisy-chain NEMA 4 sealed;  
A + C = Daisy-chain NEMA 1 unsealed;  
B = Multi-drop buss harness

**Wiring Diagram**

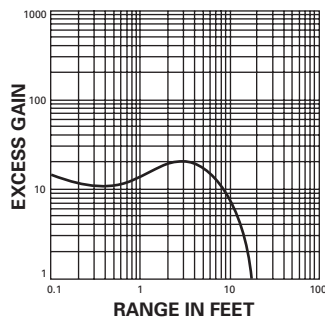


**Optical Performance**

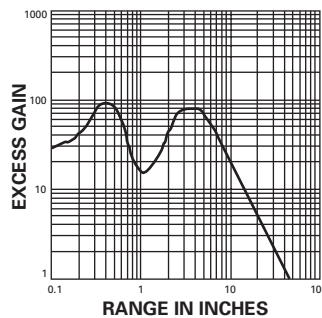
All optical specifications are guaranteed to be the minimum performance under clean conditions of any product delivered from stock. Typical performance may be higher.

Dirt in the environment will affect optical performance by reducing the amount of light the control receives. For best results, sensors should be used at distances where excess gain is higher than 1.5 (1.5 times the amount of sensing power required to detect an object under ideal conditions). Higher excess gain will allow the sensor to overcome higher levels of contamination on the lens.

	Polarized Reflex	Diffuse Reflective
Source	Visible red, 680 nm	Infrared
Maximum Range	10 feet	3 feet
Optimum Range	0.1 to 8 feet	3 inches to 2 feet
Field of View	3 inch diameter at 12 feet	0.2 inch diameter at 2 inches; 6 inch diameter at 5 feet



**Polarized Reflex**  
(3-inch diameter retroreflector)



**Diffuse Reflective**  
(90% reflectance white card)