

PHOTOSWITCH® Photoelectric Sensors
44N Zone Control Sensor



Description

The 44N provides an economical, noncontact, solution to zero pressure accumulation conveyor systems by combining built-in zone control with a photoelectric sensor. This simple approach replaces the conventional mechanical switch sensing device, central PLC, and large quantities of interconnecting wiring.

The use of a photoelectric sensor eliminates the need for minimum weight restrictions required by mechanically actuated switches. The polarized retroreflective sensing mode ensures reliable detection of even shiny packages over a 4.8m (16ft) range.

The 44N comes complete with micro QD connections to both an upstream and downstream 44N along with a variety of connection options for common pneumatic valves. Power for the 44N and the valve is distributed through these connections.

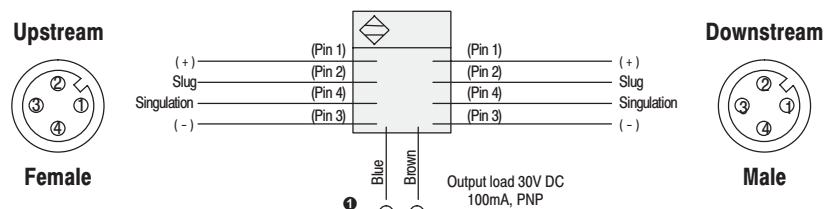
The zone logic of the 44N ensures that product being loaded on the conveyor will be separated into zone length gaps thus providing zero pressure accumulation throughout the conveyor system. Once product has accumulated, it may be released individually (singulate) or simultaneously as a train (slug). This release is activated through an external contact closure.

The 44N also contains a variable 200ms to 10 second ON (RUN) delay. This function can be used for unloading operations where delayed product movement is desired.

General Specifications

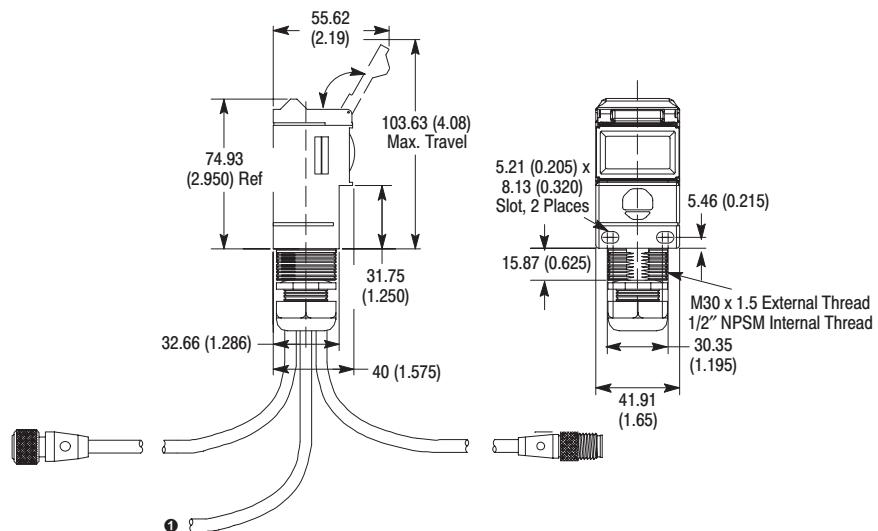
Catalog Number	44NSP-2JPBD5-Z01
Sensing Mode	Polarized retroreflective
Sensing Range	50.8mm (2in) to 4.8m (16ft) with 92-39 reflector
Sensitivity Adjustment	None
Light Source	Visible Red LED (660nm)
Zone Logic	Zero pressure accumulation with singulation and slug release
Operating Mode	Switch selectable air-to-drive or air-to-brake
Unit Protection	Output short-circuit protection (SCP), overvoltage, reverse polarity, false pulse
Supply Voltage	10-30V DC @ 20mA maximum excluding load current
Output Type, Rating, Response Time	PNP/30V DC, 100mA maximum/2ms
Time Delay	Adjustable 200ms to 10 second ON (RUN) delay
Housing/Lens Material	Valox®/Acrylic
LED Indicators	Green (output)
Connection Types	33 inch pigtail with 4-pin DC male micro QD (downstream) 33 inch pigtail with 4-pin DC female micro QD (upstream) 12in 22AWG pigtail (valve) ①
Supplied Accessories	#129-130 mounting kit
Optional Accessories	Mounting brackets, reflectors, 889D-F4AC cordset
Operating Environment	NEMA 4, 4X, 6, 12 (IP67)
Vibration	10-55Hz, 1mm amplitude, Meets or exceeds IEC 947-5-2
Shock	30G with 1ms pulse duration, Meets or exceeds IEC 947-5-2
Operating Temperature	-20°C to +70°C (-4°F to +158°F)
Relative Humidity	5...95%
Approvals	UL, cUL listed, CE marked for all applicable directives

Wiring Diagrams



① Product comes with 22AWG cable. Contact Rockwell Automation for DIN valve connection options.

Dimensions—mm (inches)



System Overview, Installation, and Operation

Install one 44N at the downstream side of each zone and make both upstream and downstream connections using the micro QD connectors. Connect the actuator lead of the 44N to the valve within its zone. Using an 889D-F4BC-2 cordset, connect 24V DC to a suitable power supply. A 4A supply will provide power for up to 25 zones when using a 1W pneumatic valve. Connect the black lead to the singulation release pushbutton and the white lead to the slug release pushbutton. Both pushbuttons should be normally open and maintained.

Loading Product Onto the Conveyor

With power applied to the system, all zones will immediately drive feeding product onto the conveyor. As product passes the 44N mounted at the infeed zone, a gap will be formed equal to the zone length. This will ensure zero pressure throughout the system. Once the first product reaches the discharge zone (1), it will stop and await release from the conveyor.

Release of Product from the Conveyor:

Once product has been transported and accumulated at the discharge end of the conveyor (Zone 1), it may be released in one of two manners.

Singulation Release

With the zone release pushbutton closed and maintained, only product in the discharge zone (1) will release. As the product clears the sensor, the adjacent upstream zones will advance into the discharge zone. Product will continue to discharge as long as the zone release pushbutton remains closed.

Slug Release

With the slug release pushbutton closed and maintained, all accumulated product on the conveyor will release simultaneously. When the slug release pushbutton is released, the remaining product will resume normal accumulation. This function overrides the 44N logic and can be used to load and unload product as a slug.

Figure 1. System Overview

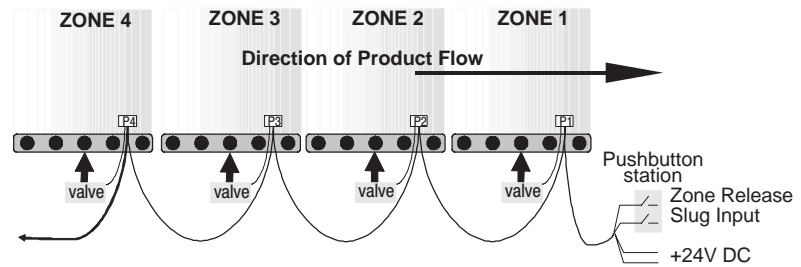


Figure 2. Loading the Conveyor

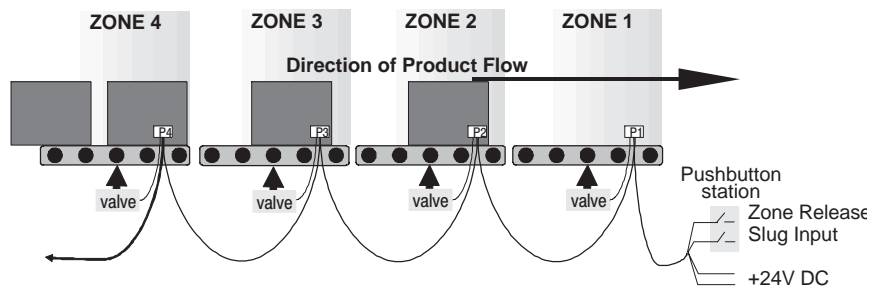


Figure 3. Singulation Release of Accumulated Product

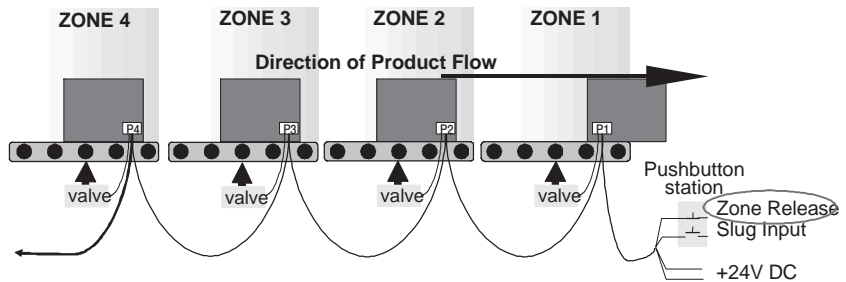
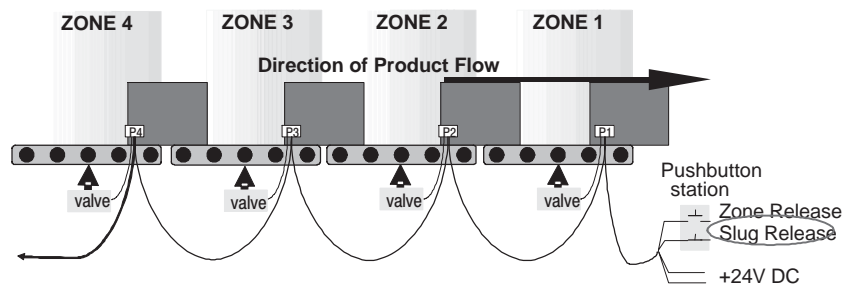
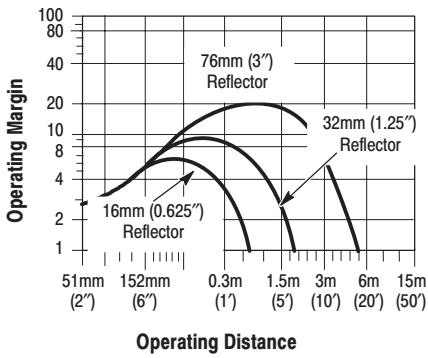


Figure 4. Slug Release of Accumulated Product



44N Zone Control Sensor

Typical Response Curve



Product Selection

Sensing Mode	Operating Voltage Supply Current	Sensing Distance	Output Energized	Output Type Capacity Response Time	Connection Type	Catalog Number
<p>Polarized Retroreflective</p> <p>Field of View: 1.5° Emitter LED: Visible red 660nm</p>	10-30V DC 40mA	50.8 (2) to 4.87m (16ft)	Light Operate	PNP 100mA Variable 200ms to 10 seconds	838mm (33in) pigtail	44NSP-2JPBD5-Z01

Cordsets and Accessories

Description	Catalog Number	Description	Catalog Number	Description	Catalog Number
Zone Control Sensor	44NSP-2JPBD5-Z01	Patchcord, 3.3ft	889F-F4BCDM-1	Pendant Station	800E
Reflector, 3in diameter	92-39	Cordset, for external release	889D-F4BC-2	Pneumatic Valve, 3-way	Contact Rockwell Automation
Mounting Bracket, for 44N	60-2439	Power Supply (24V DC/4A)	XL120E-3	DIN connector	