

## Dancer Control System

Nexen's closed loop dancer control system features the RSD digital dancer position controllers, EN50 electro-pneumatic transducer, DPS 30 or 60 dancer position sensor, and Nexen power supply. The RSD dancer controller interfaces with a brake, clutch or motor drive to provide stable web tension through adjustments in dancer arm movement. Designed for use in winding or unwinding of materials such as paper, film, foil, cloth, and wire, the RSD system works in both single roll or flying splice applications. An electro-pneumatic transducer allows the RSD to interface directly with air engaged brakes/clutches; a power supply makes this possible for electrically engaged brakes/clutches.

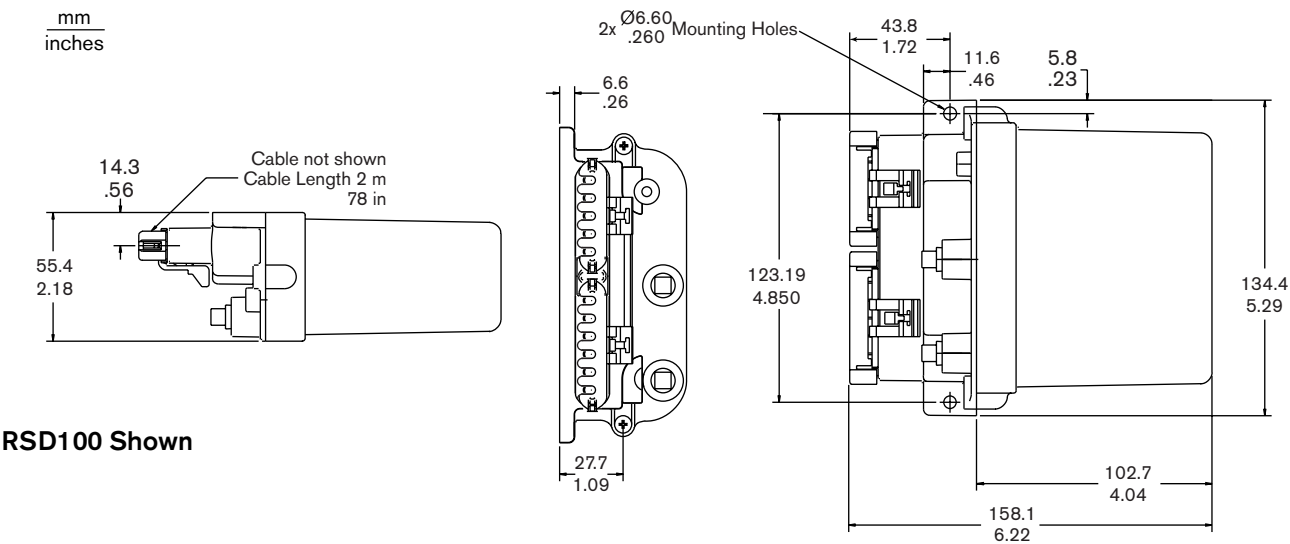


Web tension is created by the force applied to the dancer arm. The RSD system works to maintain constant and consistent tension and keeps the dancer in the center of its range of travel. The dancer arm stores web material in a loop, and maintains constant tension by increasing or decreasing the amount of material in the loop. The dancer arm functions best when kept in its mid-range position, so it is always able to increase or decrease storage quickly. If the dancer arm position changes, Nexen's position sensor senses the movement and sends a signal to the RSD100, which provides a corrective signal to the tension brake/clutch/drive to increase or decrease web storage accordingly. Nexen's RSD system offers the following features/benefits to your web tension operation:

- Keeps tension uniform by compensating for roll-diameter changes, egg-shaped rolls, and other tension disturbances
- Completely automatic operation
- Fast response time
- Accommodates flying splice applications
- Drip proof and dust tight enclosure
- Components can function as replacement items in existing systems
- No risk of hazardous voltages
- CE and ETL compliant when used as a complete system

# Dancer Position Controllers

## RSD100 & RSD100P, Approximate Dimensions



RSD100 Shown

### RSD100 Dancer Position Controller

Nexen designed the RSD100 to minimize dancer arm movement during tension disturbances, and quickly return the arm to its running position. This microprocessor-based controller is designed for high precision and ease of operation, featuring PC-based setup and calibration to eliminate potentiometer adjustments. The RSD100 is ideal for use on wind or unwind stands with pneumatic or electric brakes and clutches or AC/DC drives. Nexen's dancer controller provides a low cost solution for new OEM applications or a replacement for existing dancer controllers.

### Benefits

- Control outputs of 4-20 mA and 0-10 V
- 12 VDC reference output for Position Sensor
- Diameter based gain compensation
- Accommodates flying splice applications
- Operating temperature of 0°- 60°C [32°- 140°F]
- PID control algorithm
- Setup parameters adjusted via computer interface
  - No potentiometers to adjust
- Dancer arm position and output level available via RS232 communications
- Designed for mounting anywhere on a machine

### Dancer Controller Specifications

Power Supply		+24 VDC at 500 mA
Isolated Power Supply		15-24 VDC at 150 mA
Operating Ambient Temperature		0°C [32°F] to 60°C [140°F]
Inputs	Digital	12-24 VDC at 24mA maximum
	Analog	0-12 VDC maximum at 1mA
Outputs	Control (Analog)	0-10 VDC or 4-20 mA
	Position Sensor Reference Voltage	+12 VDC at 100mA
Enclosure		Nylon with o-ring seal
Cable		20 AWG conductors, 2m [78in] long

## RSD100P Dancer Position Controller

In addition to the standard RSD100 digital dancer controller, Nexen offers the RSD100P to automatically monitor and adjust for changes in dancer arm pressure.

The RSD100P offers all the same great features as Nexen's standard dancer controller with increased precision and ease in monitoring. Simply tune the controller while at the lowest tension set point and the RSD100P will automatically adapt to changes in the dancer arm's loading pressure. Fast response time keeps web tension constant during any tension disturbances and roll changes. Completely automatic tension compensation eliminates additional potentiometer adjustments during a job, ensuring the best tension in the industry.



### › Benefits

- Provides gain compensation for tension set point changes
- Works with pneumatically loaded dancer arms
- Increases stability at jog speeds
- Maintains control at high acceleration/deceleration rates
- Accommodates flying splice applications
- Easy integration: setup parameters adjusted via computer interface
- High performance, great for extensible webs
- Internal pressure transducer with simple tension configuration
- PID control algorithm
- Control output of 4-20 mA and 0-10 V



## Communications Software

Nexen offers a communications software package required for setup and diagnostics of tuning parameters on the RSD100 and RSD100P. This Microsoft<sup>®</sup> Windows 95<sup>®</sup>/NT (and later) based software is accompanied by an RS232 interface cable. One communications package can be used to program multiple RSD systems.

## Product Numbers

Dancer Controller	(RSD100)	964520
Dancer Controller	(RSD100P)	964522
Communications Kit		964521
Dancer Position	(DPS30)	964510
Sensors	(DPS60)	964511
Roll Diameter Sensor		912127

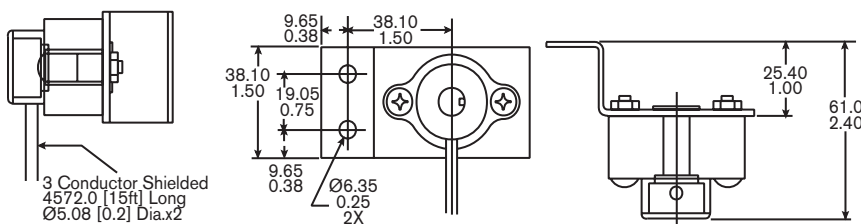
Power Supply		964509
Prefilter		912005
Final Filter		912006
Electro-Pneumatic	(EN50-85)	964231
Transducer	(EN50-85V)	964232

## DPS30 and DPS60 Dancer Position Sensor

Nexen's dancer position sensors are designed to accurately measure the rotational movement of a dancer arm. This family of sensors uses Hall Effect technology for infinite resolution, low drag, and no mechanical wear. Eliminating potentiometer and gearing use, the DPS sensors can offer non-contact operation and high accuracy with no maintenance needed.

### DPS, Approximate Dimensions

mm  
inches



### DPS Sensor Specifications

	DPS30	DPS60
Power Supply*	+12 VDC, +/-0.5V @ 40 mA	+12 VDC, +/- 0.5V @ 40 mA
Output Voltage	10-0 VDC & 0-10 VDC @ max angular rotation	10-0 VDC & 0-10 VDC @ max angular rotation
Temperature	-40°C to +80°C [-40°F to +176°F]	40°C to +80°C [-40°F to +176°F]
Enclosure	NEMA 4	NEMA 4
Resolution	Infinite	Infinite
Angular Rotation (active range)	+/-15°	+/-30°

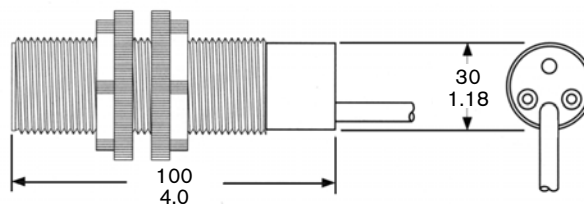
\*Supplied by RSD100

## Ultrasonic Roll Diameter Sensor

The Nexen Roll Diameter Sensor measures the distance to the surface of the product toll. A short distance indicates a full roll and a longer measurement indicates a smaller roll.

### Roll Diameter Sensor, Approximate Dimensions

mm  
inches



### Roll Diameter Sensor Specifications

	Roll Diameter Sensor
Power Input	20-30VDC (Reverse Polarity Protected)
Input Current	50mA
Analog Output	0-10VDC, 4-20mA
Operational Range	Adjustable 100-1000mm [4-40 in]



The Dancer Controller System is CE compliant when used with the following components: RSD100 or RSD100P, EN50, DPS, and Nexen's power supply.

**nexen**

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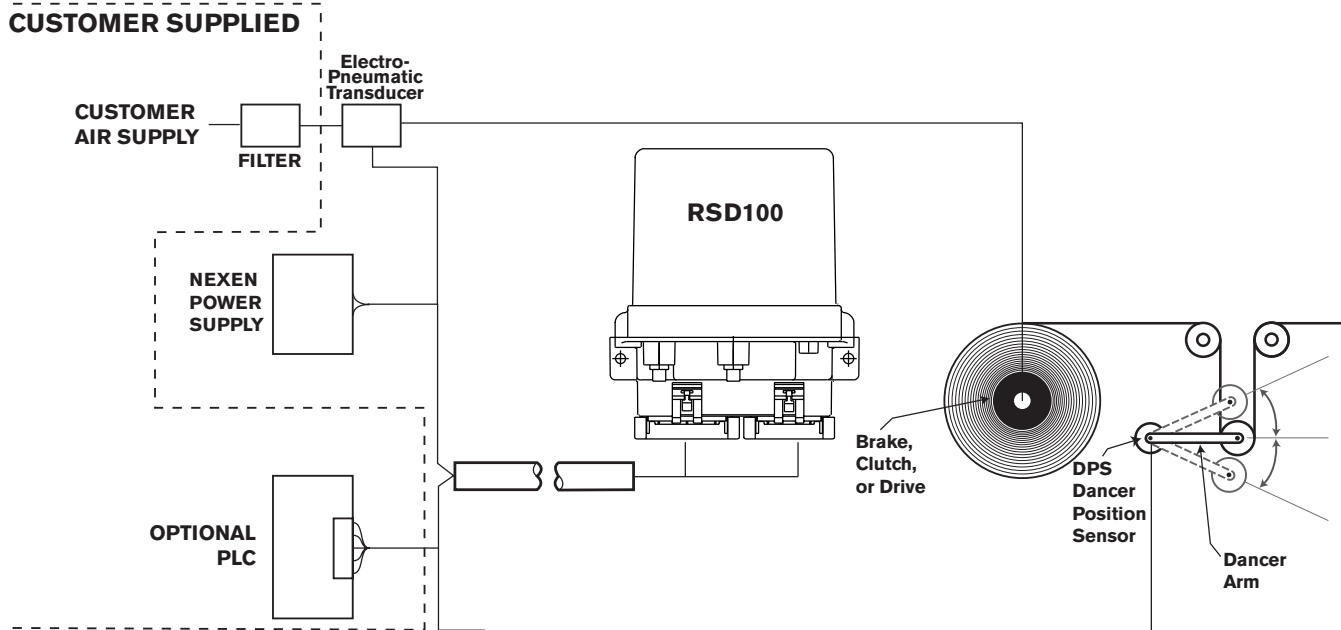
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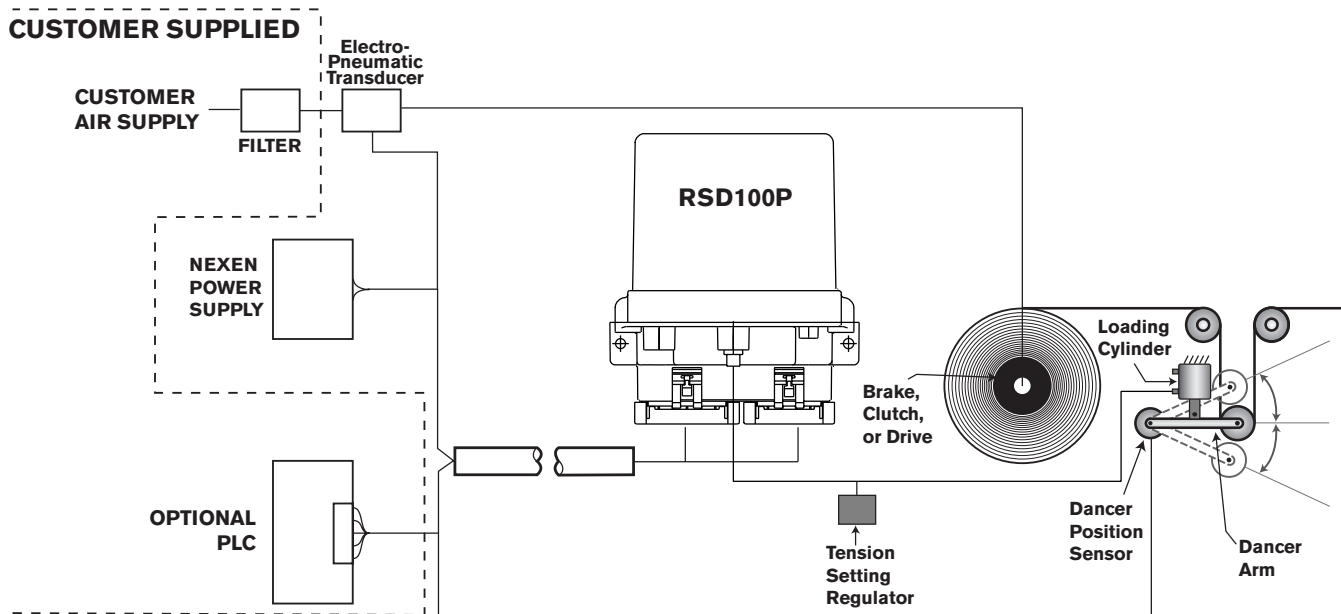
ISO 9001 Certified

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 21103-B-1002

## Standard Dancer Control System RSD100



## Pressure Monitoring Dancer Control System RSD100P



Conforms to  
 ANSI/UL STD. 60950  
 Certified to  
 CAN/CSA-C.22.2 No.  
 60950  
 +24 VDC, 500 mA max

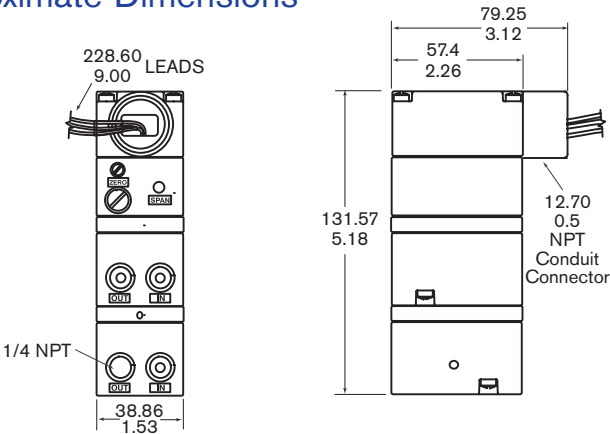


# EN50 Electro-Pneumatic Transducer

The Nexen EN50 electro-pneumatic transducer converts a 4-20 mA DC or 0-10 VDC input signal to a pneumatic output pressure. The output pressure is linearly proportional to the input signal.

## EN50, Approximate Dimensions

mm  
inches



## EN50 Specifications

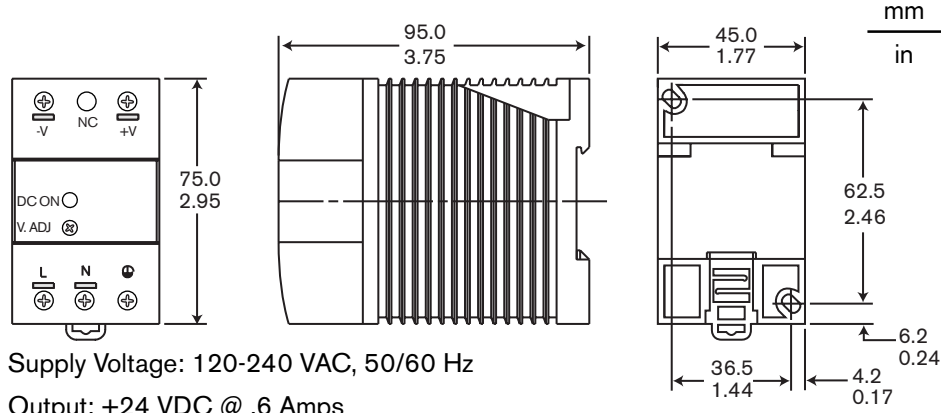
	EN50-85	EN50-85V
Input Range	4-20 mA	0-10 VDC
Output Range	0-595 kPa [0-85 psig]	0-595 kPa [0-85 psig]
Supply Pressure	630-1050 kPa [90-150 psig]	630-1050 kPa [90-150 psig]
Effects on Output	10.5 kPa [1.5 psig] @ 175 kPa [25 psig]	10.5 kPa [1.5 psig] @ 175 kPa [25 psig]
Minimum Span	350 kPa [50 psig]	350 kPa [50 psig]
Air Consumption (SCFH)	6.0(0.48 m <sup>3</sup> /Hr)	6.0(0.48 m <sup>3</sup> /Hr)
Flow Rate (SCFM)	11 SCFM (3.19 m <sup>2</sup> /Hr) @ 1050 kPa [150 psig] and 63 kPa [9 psig] output	
Impedance/Input Signal	270 Ohms	893 ohms
Independent Linearity (%FS)	±1.0	±1.0
Hysteresis & Repeatability	<1.0% FS @ 862 kPa [125 psig] supply	<1.0% FS @ 862 kPa [125 psig] supply
Temperature Range	-30°C to +65°C [-20°F to +150° F]	
Materials of Construction	Body and Housing -----Aluminum Orifice -----Sapphire Trim Trim -----Stainless Steel, Brass, Zinc Plated Steel	

NOTE: An electro-pneumatic transducer is not needed for motor drive applications.

# Dancer Control System Power Supply

Nexen's +24 VDC power supply is compatible with both the RSD100 and RSD100P Dancer Control Systems.

## Power Supply, Approximate Dimensions



Supply Voltage: 120-240 VAC, 50/60 Hz  
 Output: +24 VDC @ .6 Amps