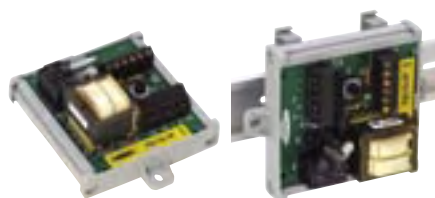


Module



Optional mounts; plastic housing and brackets included (DIN rail not included)

### Features

- Low-cost interface between ac power supply and dc-operated sensors
- Power supply can source up to 100 milliamps
- Integral TEACH push button and remote TEACH function available on all models
- Integral SPDT relay isolates dc sensor output for ac applications
- LED indicators for Power ON and Output Active
- Easy-to-adjust 45° screw terminals for all electrical wiring
- Multiple mounting configurations using supplied hardware
- BENC-L enclosure available for NEMA 4X / IP55 applications (see page 4)
- Use a sinking (NPN) interface module model with an NPN-output sensor, and a sourcing (PNP) interface module model with a PNP-output sensor.

### Models

Models	Input	Output	Relay Input*
PS24-1N	21 to 27V ac, 50/60 Hz	100 mA	Sinking (NPN)
PS24-1P			Sourcing (PNP)
PS115-1N	105 to 130V ac, 50/60 Hz		Sinking (NPN)
PS115-1P			Sourcing (PNP)

\* NOTE: A sinking (NPN) interface module model must be used with an NPN-output sensor, and a sourcing (PNP) interface module model must be used with a PNP-output sensor.

### Overview

This interface module combines the functions of a power supply, a TEACH button, and an SPDT relay to economically interface dc-operated sensors for ac applications. The interface accepts either a 24V ac or 115V ac power supply, depending on model. It uses a transformer to isolate the input power supply from the dc sensor. The transformer output voltage is rectified and filtered to supply up to 100 milliamps to run dc sensors.

An integral TEACH push button can be used to activate the TEACH functions of a Banner *Expert*<sup>™</sup> sensor. Remote TEACH capability also is available on all models (refer to hookups and sensor literature).

The SPDT relay is controlled via the relay coil input. A dc sensor output (either sinking or sourcing, depending on interface module model) can be tied to the relay coil input.

The module Yellow LED is ON when the sensor output is active. The module Green LED is used as a Power indicator (see Figure 2).

NOTE: For sensor supply voltage and current requirements, refer to Figure 1.

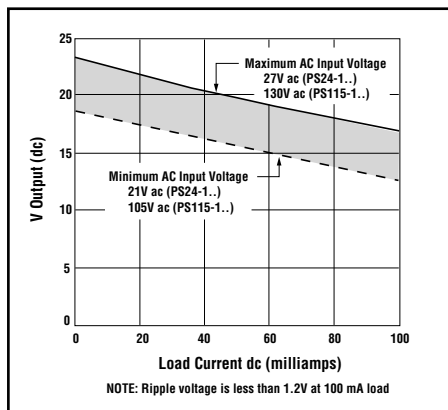


Figure 1. Voltage regulation vs. load

# Models PS24-1.. and PS115-1.. Sensor Interface Modules

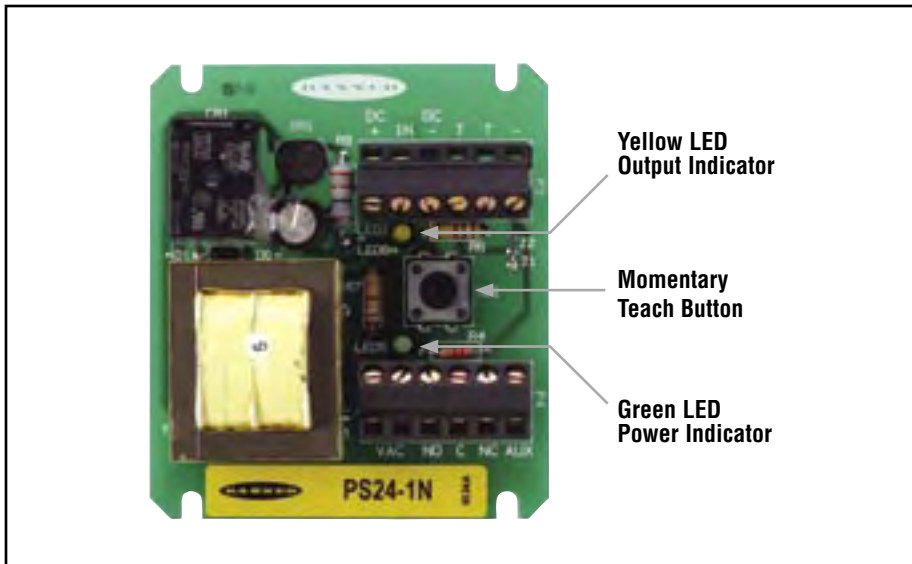


Figure 2. Features

## Installation

The module must be isolated from conductive surfaces. It may be installed in a user-supplied housing using the four slots in the board's corners, or it may be inserted into the supplied plastic housing.

If the supplied housing is used, either insert the two DIN clips into the grooves on the housing's underside and add the two end caps (as shown in Figure 3), or install only the end caps and use the screw-holes in the end caps for mounting to a flat surface. Screws are provided for attaching the end caps to the housing.

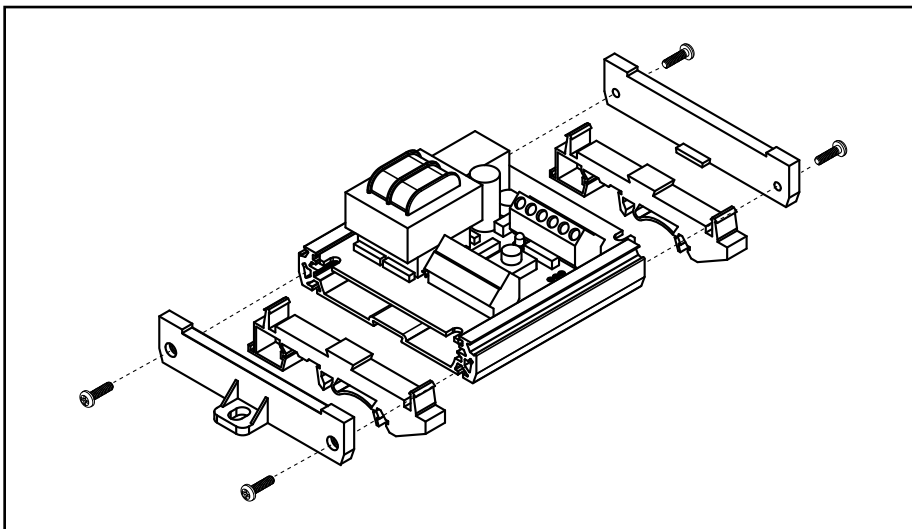


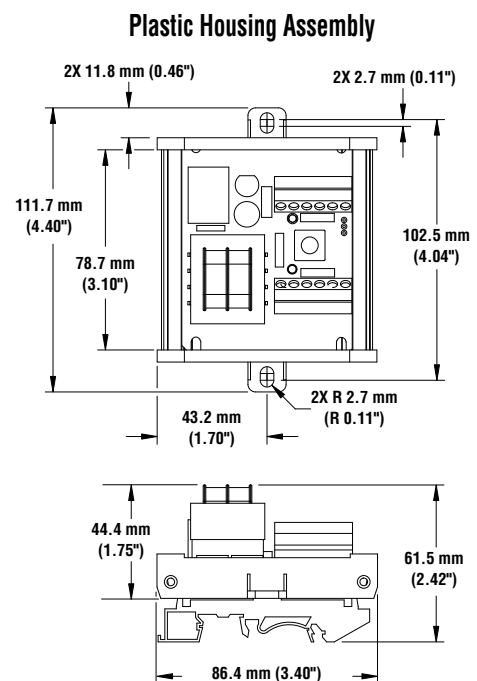
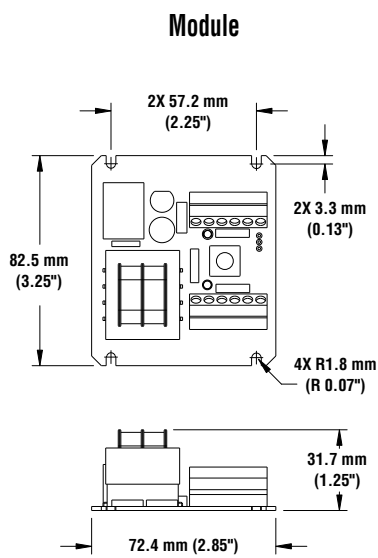
Figure 3. PCB and housing assembly

# Models PS24-1.. and PS115-1.. Sensor Interface Modules

## Specifications

	PS24-1..	PS115-1..
<b>Input Supply Voltage</b>	21 to 27V ac, 47/63 Hz	105 to 130V ac, 47/63 Hz
<b>Voltage and Current Output Rating</b>	100 mA, exclusive of relay coil input; see Figure 1 for load curves	
<b>Relay Input Voltage Range</b>	12 to 30V dc	
<b>Relay Input Resistance</b>	470 ohms $\pm$ 10%	
<b>Relay Output Rating</b>	SPDT Relay <b>Maximum Switched Power:</b> 150W, 1200VA <b>Maximum Switched Current:</b> 5A (resistive load) <b>Maximum Switched Voltage:</b> 30V dc, 250V ac <b>Minimum Current and Voltage:</b> 10 mA at 5V dc <b>Mechanical Life:</b> 10,000,000 operations <b>Electrical Life:</b> 100,000 operations at full load	
<b>Relay Response Time</b>	10 milliseconds	
<b>Adjustments</b>	TEACH push button	
<b>Indicators</b>	<b>Green LED:</b> Power applied <b>Yellow LED:</b> Relay coil energized (output active)	
<b>Construction</b>	Circuit board is shipped separate from housing. Plastic housing, end caps and DIN rail mounting hardware are supplied for user assembly.	
<b>Environmental Rating</b>	IP00; use BENC-L enclosure for NEMA 4X / IP55 rating (see page 4).	
<b>Connections</b>	Screw-clamp terminal block accepts 12 to 24 gauge wire	
<b>Operating Conditions</b>	<b>Temperature:</b> -40° to +70° C (-40° to +158° F) <b>Max. Relative Humidity:</b> 90% at 50° C (+122° F) (non-condensing)	
<b>Certifications</b>	CSA and UL approvals pending	

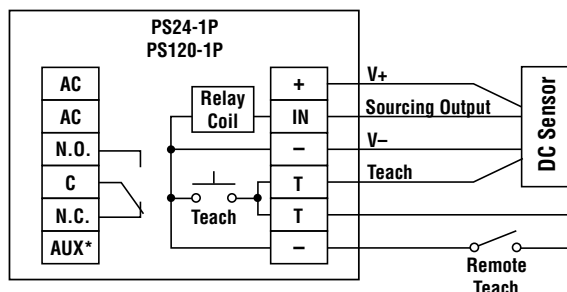
## Dimensions



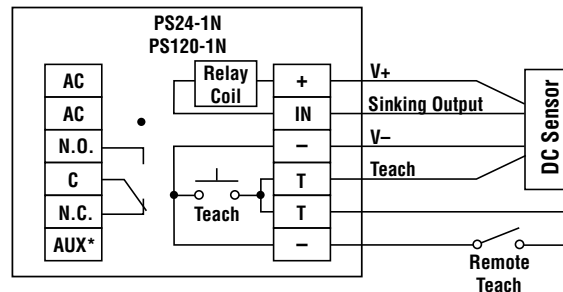
# Models PS24-1.. and PS115-1.. Sensor Interface Modules

## Hookups

### PNP (Sourcing) Input



### NPN (Sinking) Input



\* AUX is an electrically isolated terminal.

## Accessories

Model	Description	
BENC-L	<ul style="list-style-type: none"> <li>Corrosion-resistant plastic enclosure with clear polycarbonate cover to protect module</li> <li>Rated NEMA 4X, IP55</li> <li>Includes o-ring and 4 each: 1/4" - 20x30 and #8 self-tapping screws</li> <li>Temperature rating -40° C to +70° C (-40° F to +158° F)</li> </ul>	



more sensors, more solutions

**WARRANTY:** Banner Engineering Corp. warrants its products to be free from defects for one year. Banner Engineering Corp. will repair or replace, free of charge, any product of its manufacture found to be defective at the time it is returned to the factory during the warranty period. This warranty does not cover damage or liability for the improper application of Banner products. This warranty is in lieu of any other warranty either expressed or implied.

**BANNER**<sup>®</sup>

the photoelectric specialist

# SPS101 DC Sensor Power Supply

For Powering Banner dc Sensors

For sensors with Euro-style pigtail or integral QD connector



For sensors with Euro-style QD pigtail only

## SPS101 Features

- Converts 120V ac line voltage to low voltage dc for powering any Banner dc sensor† which has either 4- or 5-pin Euro-style quick-disconnect (QD)
- **SPS101 models:** 5 amp-rated SPST relay for switching ac loads or large dc loads
- **SPS101S models:** optically-isolated SPST solid-state output for switching ac or dc loads
- Models with “Q” suffix require a sensor with a pigtail QD connector; models with “QP” suffix connect to a sensor with either an integral or pigtail quick-disconnect
- Isolated dc output

† Note: SPS power supplies are not for use with NAMUR sensors or personal safety products.

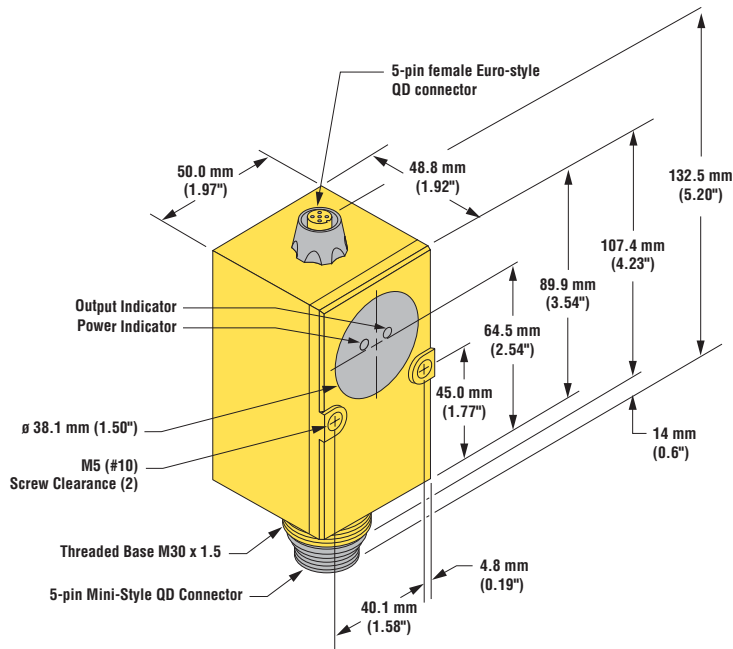
## SPS101 Sensor Power Supply Models

Model	Supply Voltage	Sensor Connection	Supply/Output Cable	Output Type
SPS101Q	105-130V ac 60 Hz	5-pin Euro-style QD*	5-pin Mini QD	“Form A” (SPST) electromechanical relay (see specifications for rating information)
SPS101QP		5-pin Pigtail Euro-style QD		SPST Optically-isolated solid-state switch (see specifications for rating information)
SPS101SQ		5-pin Euro-style QD*		
SPS101SQP		5-pin Pigtail Euro-style QD		

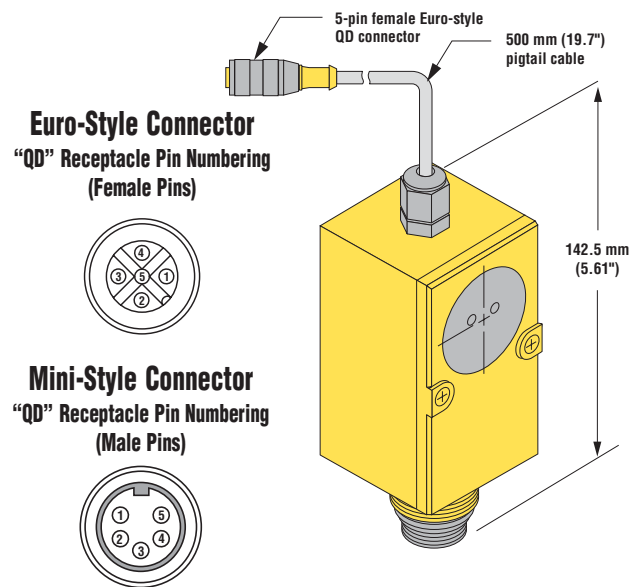
\*Requires 4- or 5-pin Pigtail Euro QD on sensor.

## SPS101 Sensor Power Supply Dimensions

### Model Suffix “Q”



### Model Suffix “QP”



### WARNING . . . Not To Be Used for Personnel Protection

Never use these products as sensing devices for personnel protection. Doing so could lead to serious injury or death.

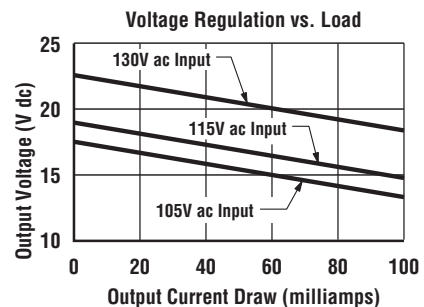
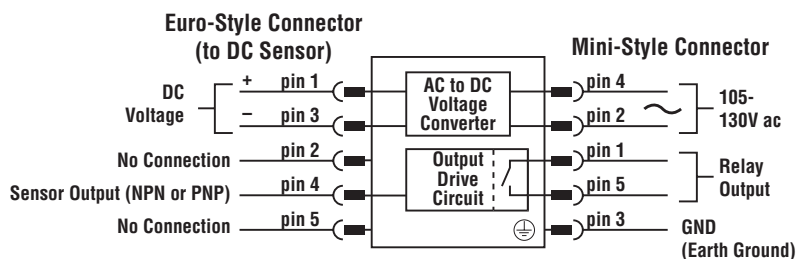
These sensors do NOT include the self-checking redundant circuitry necessary to allow their use in personnel safety applications. A sensor failure or malfunction can cause either an energized or de-energized sensor output condition. Consult your current Banner Safety Products catalog for safety products which meet OSHA, ANSI and IEC standards for personnel protection.

# SPS101 DC Sensor Power Supply

## SPS101 Sensor Power Supply Specifications

<b>Supply Voltage</b>	105V ac to 130V ac, 60Hz
<b>Output Power</b>	120mA maximum: 12V dc minimum, 30V dc maximum (dependent on load)
<b>Output Configuration</b>	<b>SPS101Q(P) models:</b> "Form A" (SPST) electromechanical relay <b>SPS101SQ(P) models:</b> Optically isolated SPST solid-state switch
<b>Output Rating</b>	<p><b>SPS101Q(P) models</b></p> <p><b>Max. switching power (resistive load):</b> 150 W, 600 VA  <b>Max. switching voltage (resistive load):</b> 250V ac or 30V dc (120V ac max. per UL &amp; CSA)  <b>Max. switching current (resistive load):</b> 5A  <b>Min. voltage and current:</b> 1 amp at 5V dc, 0.1 amp at 24V dc  <b>Peak switching voltage:</b> 750V ac (transient suppression recommended)  <b>Mechanical life of relay:</b> 10,000,000 operations</p> <p><b>SPS101SQ(P) models</b></p> <p><b>Max. switching voltage:</b> 250V ac or 250V dc  <b>Max. switching current:</b> 300 mA  <b>On-state saturation voltage:</b> less than 3V at 300 mA; less than 2V at 15 mA  <b>Off-state leakage current:</b> &lt; 50 microamps  <b>Inrush current:</b> 1 amp for 20 milliseconds, non-repetitive</p> <p>NOTE: Output of the solid-state models is not short-circuit protected. Exercise care when making wiring connections.</p>
<b>Status Indicators</b>	Power On (green) and Output On (red)
<b>Connections</b>	<p><b>Power connector:</b> 5-pin Mini-style quick disconnect</p> <p><b>Sensor connector:</b></p> <p>"Q" version: 5-pin Euro-style quick-disconnect mounted on housing  "QP" version: Shielded, PVC jacketed 5-pin pigtail Euro-style quick-disconnect, 0.5 meter long</p>
<b>Environmental Rating</b>	IEC IP54
<b>Operating Conditions</b>	<p><b>Temperature:</b> -20° to +50°C (-4° to 122°F)  <b>Maximum Relative Humidity:</b> 90% @ +50°C (non-condensing)</p>
<b>Additional Notes</b>	Compatible with Banner dc sensors with NPN or PNP output, equipped with 4- or 5-pin Euro-style quick-disconnect (except NAMUR sensors). Minimum of 630V isolation from earth ground to dc output of circuit.

## SPS101 Sensor Power Supply Hookups



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## Quick-Disconnect Cables

Style	Model	Length	Pin-Out (Female View)
5-Pin Mini-Style Straight	<b>MBCC-506</b> <b>MBCC-512</b> <b>MBCC-530</b>	2 m (6.5') 4 m (12') 9 m (30')	