

Product Data

Hyde Park[®]

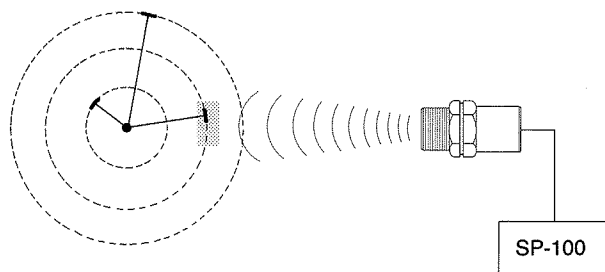
sensing and control solutions

SUPERPROX[®]

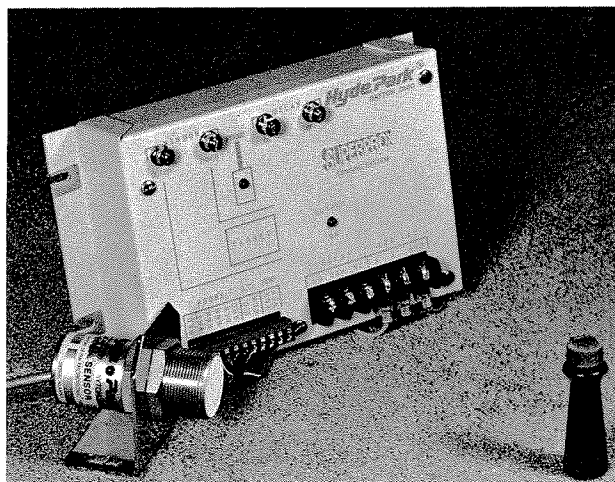
TARGET SENSING SYSTEM

Introduction

Hyde Park's Model SP-100 Sensing System employs state-of-the-art ultrasonic technology to detect objects positioned within or passing through a user-settable sensing window in front of the probe. Objects passing between the probe and the window or positioned beyond the window are ignored. Objects positioned or passing within the window cause the relay and open collector outputs to be activated.



Unique windowing capability allows focusing on specific location in space



By using the unique windowing abilities of this system, you can ignore foreground and background objects and can thus focus on only your window of interest. See drawing on left.

Features

- Non-contact sensing
- Senses almost any surface
- No lenses to clean
- Interfaces to most programmable controllers and computers
- Totally sealed encapsulated probe that withstands harsh environments
- Simple 120VAC hook-up
- Adjustable inner and outer limits
- Independent control via relay output

Benefits

- Quick installation (lower start-up cost)
- Totally contained sensing and control solution (no hidden costs)
- Non-contact sensing and no lenses to clean (lower maintenance costs)
- Used for assorted applications (standard modules result in fewer spares)
- Provides accurate adjustable control resulting in better quality and less wasted product
- Avoids costly unscheduled shutdowns and lost manhours

HYDE PARK ELECTRONICS, INC. 4547 Gateway Circle, Dayton, Ohio 45440-1793
(513) 435-2121 TWX-9103806049 FAX: 513-435-6375

Operation

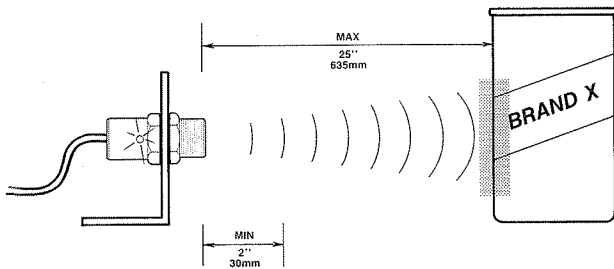
A PR-100 probe mounted adjacent to the target is connected to the SP-100 control unit. The control unit determines the sensitivity of the probe response with respect to the window and operates the indicators, the relay, and the open collector output.

Because the speed of sound changes with air temperature, the relative position of the window with respect to the target will change with changes in temperature. The variation as a result of temperature change is .0015 in/in / °F. Optional temperature compensation is also available.

Installation

Rigidly mount the PR-100 probe no closer than 2 inches (50mm) from the target and no farther than 25 inches (635mm) from it. The Single Probe Bracket shown in Figure 5 is recommended. See pg. 6.

Mount the SP-100 control in a NEMA 1, 4, or 12 enclosure according to the anticipated environmental exposure. See Figure 6, page 6 for physical dimensions.



PROBE SENSING DISTANCE
Figure 1

Figure 2 is the reference for the following sections on WIRING, INDICATORS, CONTROLS, SETTING WINDOWS, and SETTING CONTROLS.

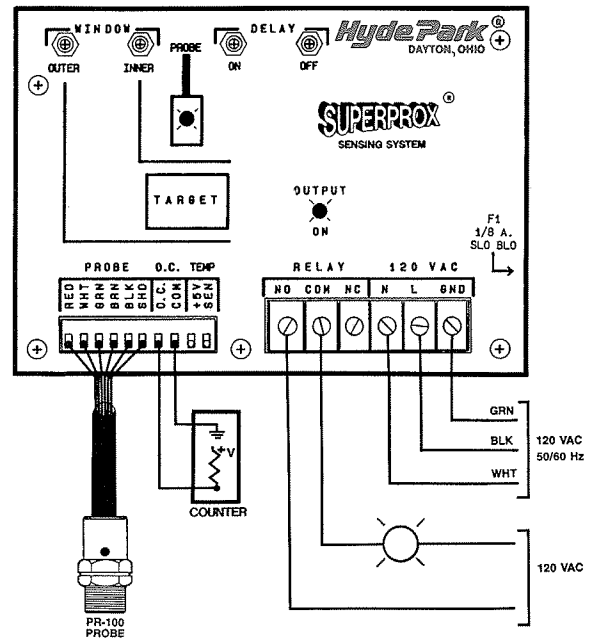


Figure 2

Wiring

Connect the "N" (neutral) terminal to the low (unfused) side of the A.C. supply; connect the "L" (line) terminal to the high (fused) side of the A.C. supply. Connect "GND" to earth ground (green conductor).

Connect the relay contact to the load as shown in Figure 2; both N.O. and N.C. contacts (Form C) are available.

Attach the PR-100 probe wires according to the color code indicated above the removable connector. The cable between the probe and the control should not exceed 50 feet.

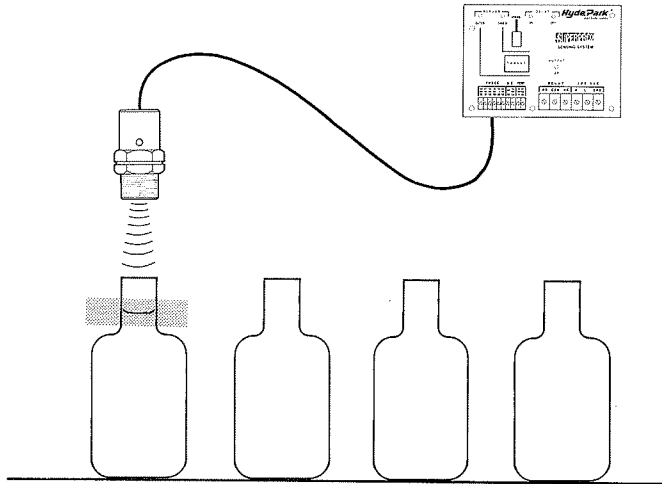
Attach the open collector load to the "O.C." terminal; attach the external supply common to the "COM" terminal.

Figure 2 shows a typical connection of the control to the A.C. power supply and the probe. The connection of a counter to the O.C. and a remote lamp to the N.O. relay contact are also shown.

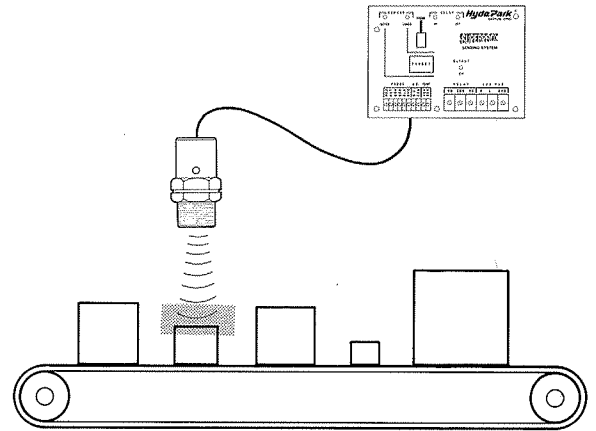
The "TEMP" (temperature sensor) provides the input for a temperature compensation.

APPLICATIONS

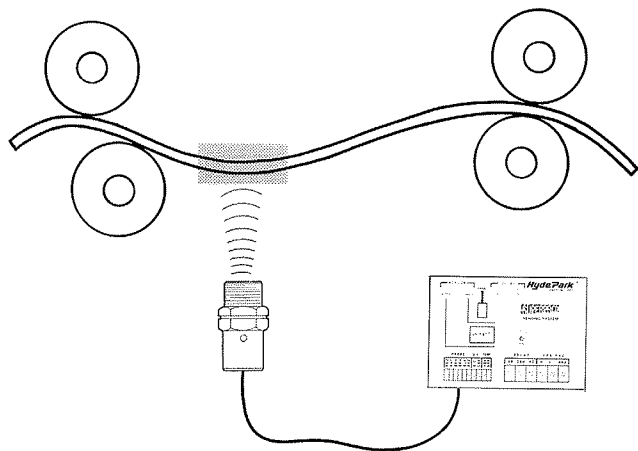
(Materials being sensed may be of any material)



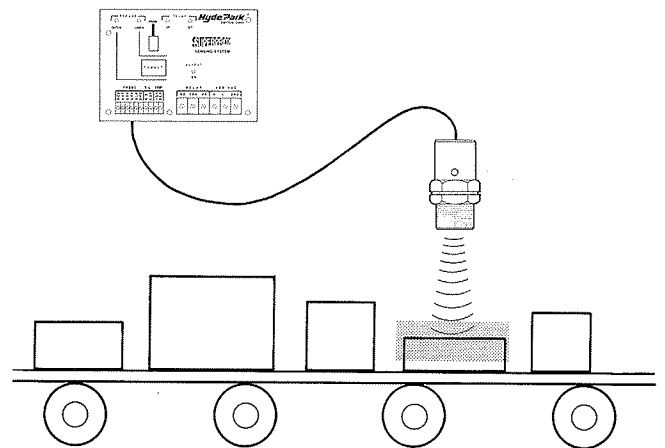
FLASH DETECTION (PARTIALLY CLOSED NECK)
ON PLASTIC CONTAINER



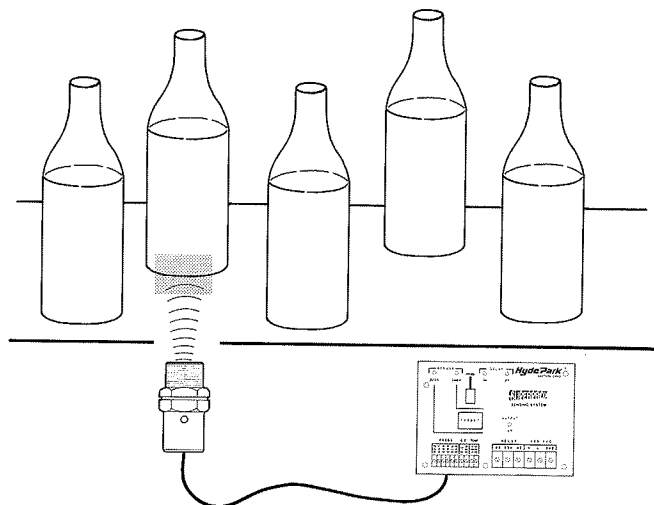
OBJECT SENSING
COUNTING
RECEPTACLE SORTING
HEIGHT DIFFERENTIATION
SPACING



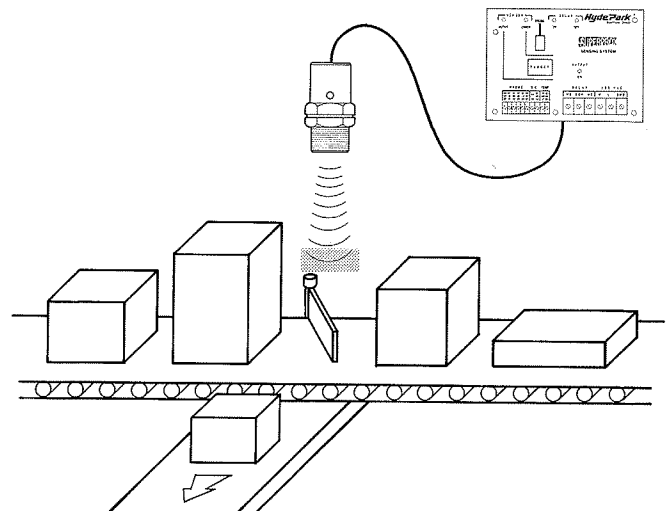
LOOP CONTROL



DETECTION OF FILLED OR EMPTY PALLETS

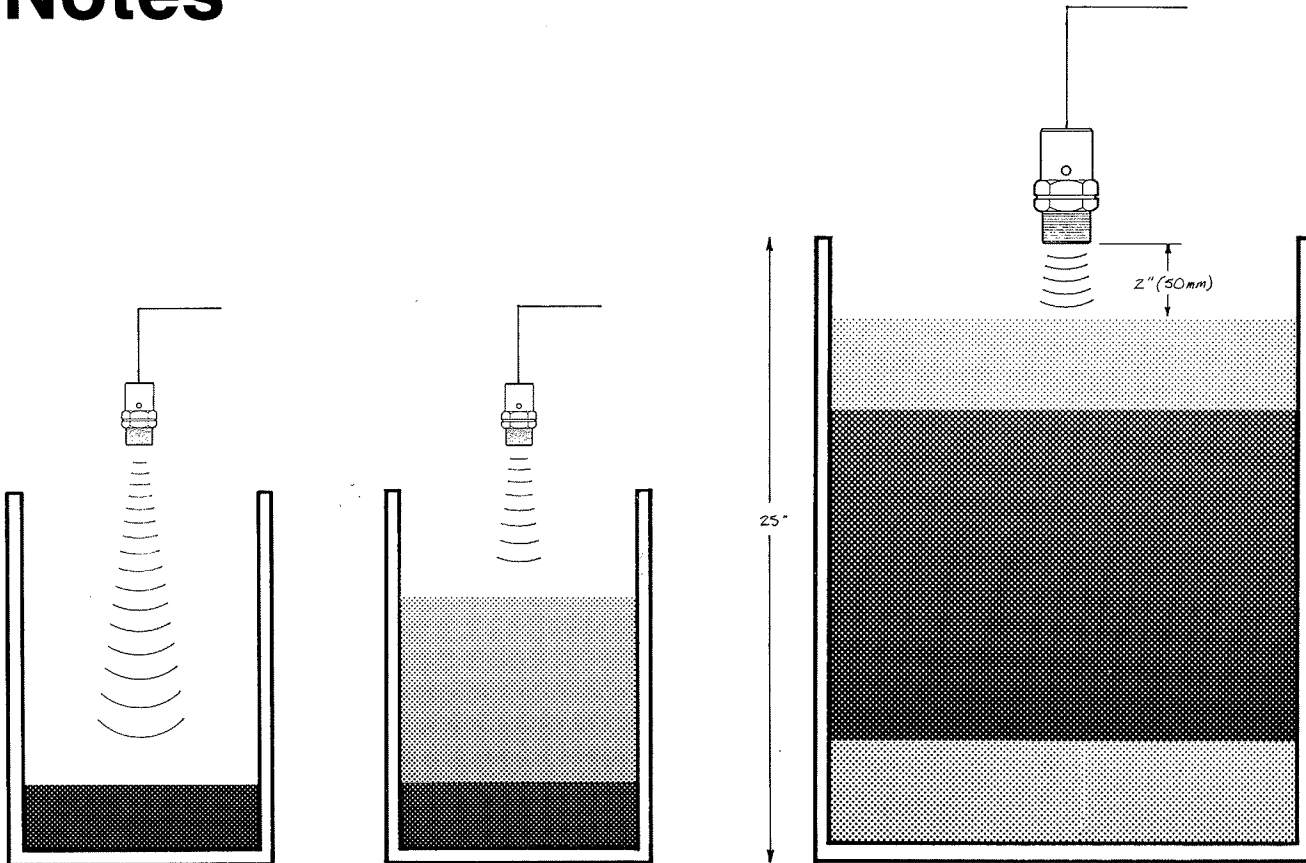


BOTTLE COUNTING



SEPARATE BY HEIGHT

Application Notes



Single Level Alarm

Hyde Park's Model SP-100 is ideal for single point level control such as high or low level alarm. It's accuracy and sturdy design make it very cost effective for alarm indication.

The system is very user-friendly and understandable. You simply adjust two pots (potentiometers) to obtain your detection area (window). The remainder of the installation requires only wiring up the probe and the relay. The relay has an on/off delay adjustment should you need it.

Pump In-Pump Out

Hyde Park has developed the Model SP-102 to control a pump that fills or empties a container. This unit has two separate points (levels) adjusted through "UPPER" and "LOWER" limit controls. When the lower point is sensed, the relay coil and open collector are turned "ON" and remain latched in this state until the upper limit is sensed. This sequence can be reversed for pump-out applications. The SP-102 design eliminates the continuous "ON-OFF" cycling of a single set point pump control.

As an added safety feature, if loss of echo occurs, the latched relay is de-energized after 6 seconds.

Please contact our Application Engineering Dept. to further discuss how these controls can work to improve your efficiency and solve tough pump control problems.

Indicators

PROBE - Indicates a detected echo when "ON".

OUTPUT - Indicates that the relay coil is energized and open collector outputs are energized.

Controls

Two locking potentiometers on the panel control the INNER and OUTER edges of the window. Clockwise rotation moves them farther from the probe while counterclockwise rotation moves them closer. These controls are internally connected so that the INNER edge cannot exceed the OUTER edge. Therefore the OUTER edge control affects the INNER edge control. If the OUTER control is rotated clockwise to move the edge farther from the probe, the INNER edge is also moved farther from the probe. Similarly, if the OUTER control is rotated counterclockwise to move the edge closer to the probe, the INNER edge is moved closer to the probe. However, the INNER control does not affect the OUTER control.

Setting The Window

To set the edges of the window, follow these steps:

Position the target to the farthest operating point. Adjust the "OUTER" control until the "PROBE" LED is on continuously.

Position the target to the closest operating point. Adjust the "INNER" control until the "PROBE" LED is on continuously.

Setting Delays

Two other locking potentiometers on the front panel control the relay "ON" and "OFF" delay times. The range of adjustment is 40 milliseconds to 6 seconds. Clockwise rotation increases the delay. These locking potentiometers have no effect on the open collector response.

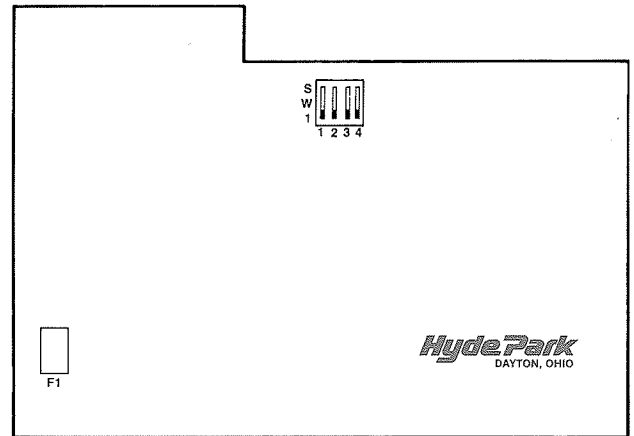


Figure 3

Adjustment for Materials

Refer to Figure 3 for the location of DIP switch SW1.

The receiver gain is controlled by positions 2 and 3 of SW1 as shown below.

SW1-2	SW1-3	GAIN
OFF	OFF	LOWEST
ON	OFF	
OFF	ON	
ON	ON	HIGHEST

SW1-1 and SW1-4 are reserved for future use.

Troubleshooting

If the unit does not operate, proceed as follows.

Verify that the input A.C. power is as specified.

Check the fuse (F1) located in the lower left corner of the printed circuit board. Refer to Figure 3 for the location of F1. (1/8amp, 125VAC)

Check for +12 VDC from the "RED" to the "BLK" terminals on the 10-pin strip.

Check the voltage from the "+5" terminal to the "BLK" terminal.

Inspect the sensor for physical damage.

Remove any heavy deposits of grease or oil that may have accumulated on the sensor.

For additional service assistance contact Hyde Park.

General Specifications

Supply Voltage: 97 to 132 VAC, 50/60 Hz, 0.1 Amp

Relay Contact Rating: 5 Amp. @ 120 VAC for resistive load

Open Collector Current Rating: 165 millamp.

Open Collector Breakdown Voltage: 60 Volts

O.C. Response Time: 10 milliseconds "ON" and "OFF"

Relay Response Time: 40 milliseconds "ON"; 20 milliseconds "OFF" (Delay controls fully counterclockwise)

Operating Temperature Range: 32°F to 122°F (0°C to 50°C)

Sealing: Probe - NEMA 1, 3, 4, 12, and 13

Sensing Range: 2 to 25 inches (50 mm to 635mm)

Sensor Angle with respect to Target: 90° ± 10°

Limit Adjustment Precision: 0.1 inch (2.54mm)

Repeatability: ± 0.010 inch (0.254mm) from a smooth, flat surface at constant air temperature.

DIMENSIONS PROBE, MODEL PR-100

MATERIAL: STAINLESS STEEL

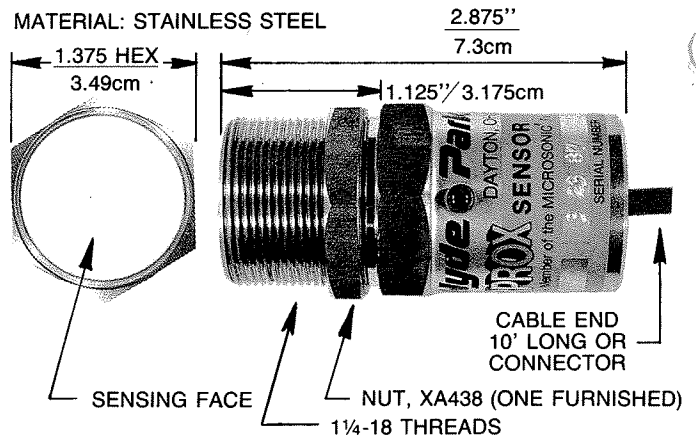


Figure 4

THRU-BEAM BRACKET, MODEL AC-201

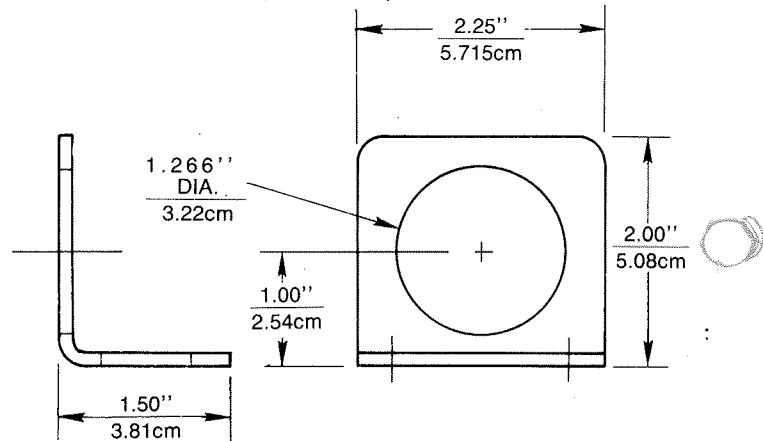


Figure 5

CONTROL MODEL, SP-100

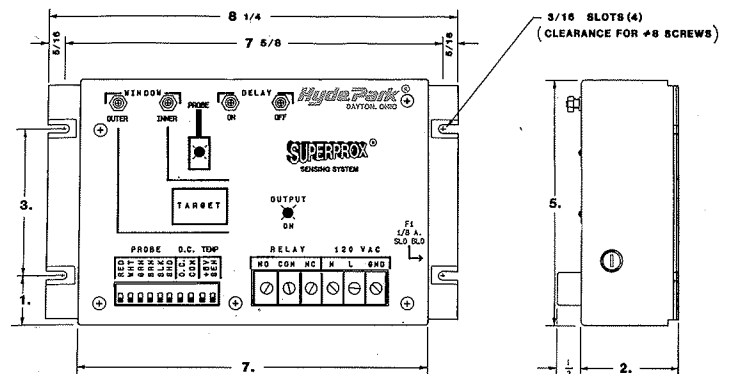


Figure 6

Hyde Park
sensing and control solutions

4547 Gateway Circle
Dayton, Ohio 45440-1793
Phone (513) 435-2121
TWX-9103806049
FAX (513) 435-6375

© 1988 Hyde Park Electronics, Inc.