



C-Gage™ SLC1 Series Self-Adaptive Label Sensor



C-Gage™ SLC1 Series Self-Adaptive Label Sensor

- **Continuous automatic adjustment of sensing threshold and drift compensation**
- **No user adjustments – Adaptive Digital Logic (ADL)**
- **Registration accuracy of $\pm 0,3$ mm typical at speeds up to 1,5 m/s**
- **Reliably detects the presence of most types of labels on web backing**
 - * **Clear labels on an opaque backing**
 - * **Clear labels on a clear backing**
 - * **Opaque labels on an opaque backing**
 - * **Opaque labels on a clear backing**
- **Heavy-duty metal housing, 1 mm slot**

The SLC1 Series is completely self-teaching and needs no programming; there are no adjustments to set. Simply align the label web in the slot, between the guides, and allow the labels to run through the sensor. After the passing of four successive labels or 250 milliseconds (whichever is greater), the SLC1 will learn the characteristics of the labels, and adjust for the proper sensing threshold and drift compensation.

For best self-programming results, turn power to the sensor ON or perform a reset after the web has been positioned in the slot. Align the labels within the web alignment guides on the side of the sensor slot, as completely as possible.

For best repeatability, position the label to cover the entire sensing area (between the sensor's web alignment guides, as shown in figure 1). Some label configurations are sensed with greater repeatability than others; the sensor performs best when there is an abrupt change between the labels (see figure 2). For example, labels with sharply defined edges that are perpendicular to the web direction and that have larger gaps between the labels are sensed most easily. Tiny gaps between labels and labels whose shape tapers at the leading and trailing edges are more difficult to sense.

If sensing a label with a shape as shown in figure 3, best repeatability will result if the most perpendicular edge of the label is aligned fully within the sensing area.



Fig. 1 Allowing the web to glide over the bottom fork with slight tension lessens the effects of web flutter

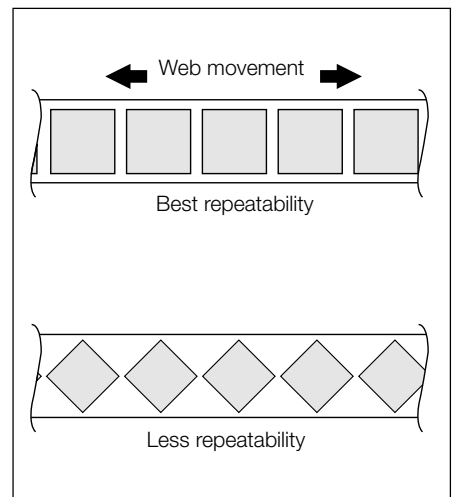


Fig. 2 SLC1 Label Sensor preferred sensing configurations

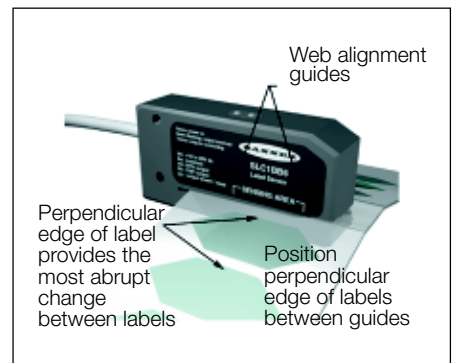


Fig. 3 For best repeatability, align the labels' flat sides between the sensor's web alignment guides

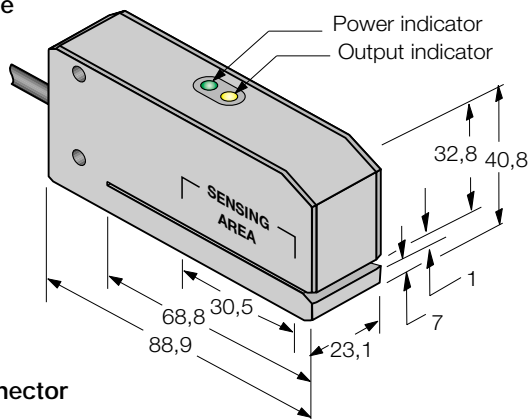


C-Gage™ SLC1 Series Self-Adaptive Label Sensor

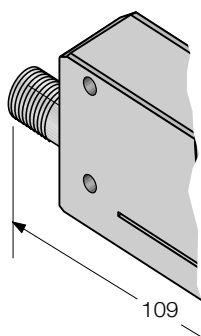


Dimensions [mm]

● Cable

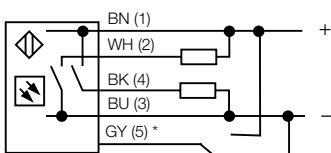


● Connector

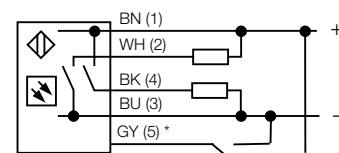


Wiring

Outputs ON during gap



Outputs ON during label



* Toggle to opposite polarity for > 100 milliseconds to reset microprocessor

Technology

capacitive sensor using patented Adaptive Digital Logic (ADL)

Adjustment

no user adjustments; automatic continuous adjustment of sensing threshold and drift compensation

Adjustment interval

every 250 ms or 4 labels

Registration accuracy**

0,3 mm typical, at web speed up to 1,5 m/s

Maximum Counting Speed**

web speed of 61 m/s

Minimum Sensing Speed**

web speed of 90 mm/min.

Minimum gap between labels

3 mm

Supply

Supply voltage U_B

10...30 VDC

Ripple V_{pp}

≤ 10 %

No load current

< 60 mA

Protection

reverse polarity
transient voltages
continuous overload
short-circuit

Output

Continuous load current

≤ 150 mA

Overload trip point

> 200 mA typical at 20 °C

Material

Housing

machined aluminium
with black anodized finish
IP67

Protection class

(IEC 60529/EN 60529)

Temperature range

+5...+50 °C

Cable

2 m, PVC 5 x 0,34 mm²

Connector

eurofast®

Indicator LEDs

Green

power-on

Green flashing

output overload

Yellow

nnp and pnp outputs are ON

Green/Yellow flashing alternating

internal error; reset sensor

Accessories

Connectors

RK4.5T-2

66 338 03

straight type

WK4.5T-2

66 600 02

right-angled type

** Based on 3,2 mm gap between labels.

C-Gage™ SLC1 Series Self-Adaptive Label Sensor

<i>Model</i>	<i>Ident number</i>	<i>Type</i>	<i>Output</i>	<i>Connection</i>
SLC1-BB6	30 561 77	application specific: clear label sensor	pnP, npN	cable connector
SLC1-BB6-Q	30 561 78	application specific: clear label sensor	pnP, npN	

Reset procedure

Resets are performed at startup, when changing label types, or in response to an internal error indication. To reset, simply turn the power to the SLC1 ON or cycle the power OFF for 1 second or longer and ON again. The SLC1 may also be reset using the sensor's gray wire. To do so, toggle the gray wire to the opposite polarity for > 100 ms.

Troubleshooting

The SLC1 Series sensor has two LEDs, green and yellow:

Green ON steadily:	Power to sensor is ON
Green flashing at 4 Hz:	Output is overloaded
Yellow ON steadily:	npN and pnP outputs are ON
Green and yellow flashing alternately at 1 Hz:	internal error; reset sensor

Internal errors are caused by several factors:

- Moisture in the sensing slot
- Extreme and prolonged web flutter
- Label jams (labels touching both the top and the bottom sensor forks)

If an internal error occurs, correct its cause and perform a reset (cycle the power OFF for at least 1 second and ON again or toggle the gray wire to the opposite polarity for > 100 milliseconds).

Maintenance

The SLC1 Series sensor may be disassembled for periodic cleaning, as needed. Use a 7/64" hex key to remove the four screws at the bottom and remove the bottom fork for cleaning. Clean the fork surfaces with a mild solvent, such as isopropyl alcohol, taking care to avoid the sensing window.

Application notes

For stepped-advance (indexed) label system, the instantaneous webspeed may be up to 3 times higher than the average speed, based on the number of labels per minute. The maximum counting speed of the SLC1, 61 m/s, relates to the instantaneous speed, not to the average speed.

Allow the web to glide over the bottom fork with slight tension to lessen the effects of web flutter.

Labels with metallic inks, foil embossing or metal substrates are not recommended for use with SLC1 Series sensors.

