C-Gage™ SLC1 Series
Self-Adaptive Label Sensor
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Self-Adaptive Label Sensor

- Continuous automatic adjustment of sensing threshold and drift compensation
- No user adjustments - Adaptive Digital Logic (ADL)
- Registration accuracy of ± 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
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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 $U_s$: 10..30 VDC
- Ripple $V_{pp}$: $\leq 10 \%$
- No load current: $< 60 \ mA$

Protection
- reverse polarity
- transient voltages
- continuous overload
- short-circuit

Output
- Continuous load current: $\leq 150 \ mA$
- Overload trip point: $> 200 \ mA$ typical at 20 °C

Material
- Housing: machined aluminium with black anodized finish
- Protection class: IP 67
- 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: npn 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

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

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

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<tr>
<th>Model</th>
<th>Ident number</th>
<th>Type</th>
<th>Output</th>
<th>Connection</th>
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