Multiple Web Width Measurement — Digital Monitoring — SCU6x

Quick Start Guide

Controller: SCU6x | **Configuration:** Dual Sensor

Scan for interactive guide

What You'll Achieve

After completing this guide, wired to your SCU6x controller with combined pass/fail monitoring output — all lanes within tolerance or any lane out of tolerance — on NPN digital outputs for your stacklight, alarm, or PLC.

Estimated time: ~3–4 hours (includes overlap teaching)

What You Need

SCU6x Digital Monitoring

- [ ] ODC Family sensor — select size so sensing range covers all lanes plus wander margin
- [ ] SCU6x controller (any variant)
- [ ] Quick Disconnect Sensor Cable - 3m (10 ft) (U2-01975)
- [ ] 24 V DC Input Power Cable for SCU6x or 1DC - 5m (21218x-5m)
- [ ] M12 12-pin Digital I/O Cable (3m) (21228-3m)
- [ ] 24 VDC power supply
- [ ] For two sensors: second ODC Family sensor + second sensor cable (U2-01975)

> **Which controller variant?** Digital monitoring provides a combined pass/fail across all lanes (not per-lane), because the controller has only 3 NPN outputs. For per-lane monitoring, use the Industrial Ethernet path.

Prerequisites

- [ ] Machine accessible and safe to work on
- [ ] 24 VDC power available at the installation location

[ ] Sensor mounting location identified — plan where to install one or two sensors within the machine frame for optimal coverage of all lanes

[ ] For Ethernet paths: Ethernet network ready (switch port available, IP address planned)

[ ] For Digital Monitoring path: stacklight, alarm, or PLC digital input wired and ready

[ ] Strips or lanes running (or available to run) for initial setup and teaching

[ ] For two-sensor overlap setup: a single strip of known width, wide enough to span the overlap zone between the two sensors

1. Install the Sensor

Multiple web width measurement uses free span mounting (web unsupported between rollers). Install the sensor so that the length of the sensor is parallel to the cross-machine direction (the width direction of the web). All strips and gaps must be visible within the sensor field of view.

Two Sensor Setup (SCU6x Only)

- Mount both sensors side by side so their combined fields of view cover all lanes
- Overlap the fields of view — the two sensors must have an overlapping region so no edge falls in a dead zone between them
- Mount both with the same camera (physical) orientation, but set their electronic orientation oppositely — one sensor referencing the left edge of the span, the other the right
- The sensors do not physically overlap — they are mounted side by side, but their sensing ranges overlap
- Not available for 1DC — use SCU6x with two ODC Family sensors for wide lane spans

Light source: Infrared (IR) — default for edge-based detection of multiple strips.

Sensor size selection: Single sensor: sensing range must cover all lanes (including gaps) plus lateral wander margin. Two sensors: each sensor covers a portion of the total lane span, and the combined coverage must span all lanes with margin.

Dual Sensor Installation: For dual-sensor multi-width measurement, mount both sensors with the same camera orientation, then set their electronic orientation oppositely — one referencing the left edge of the lane span, the other the right. Teach the overlap region so the controller stitches the two fields of view.

2. Wire the System

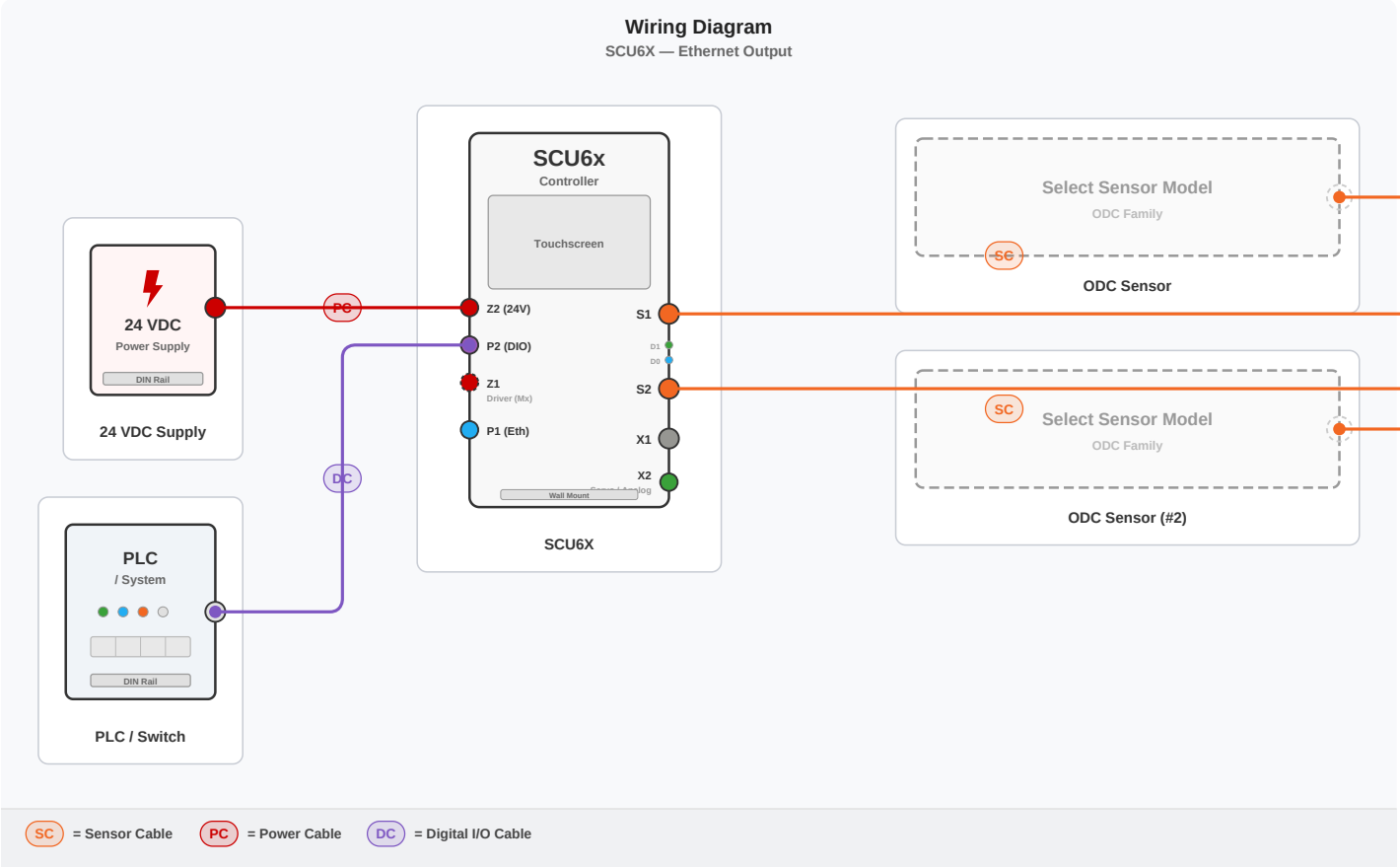
Sensor connects via Quick Disconnect cable. Digital monitoring output via M12 connector.

1. Sensor: Connect Quick Disconnect Sensor Cable (U2-01975) from ODC Family sensor to SCU6x port S1 (and S2 for two sensors)
2. Power: Connect 24 V DC Input Power Cable for SCU6x or 1DC (21218x-5m) to SCU6x port Z2
3. Digital I/O: Connect M12 12-pin Digital I/O Cable (21228-3m) from SCU6x port P2 to stacklight/alarm/PLC digital inputs

> NPN 24V-compatible outputs. Combined pass/fail signal for all lanes. Configuration via SCU6x touchscreen.

> **Dual Sensor Wiring:** Connect second sensor cable to controller port S2.

Wiring Diagram



3. Configure & Verify

The SCU6x and 1DC share the same controller firmware with a dedicated multiple web width measurement mode that auto-detects lanes and computes per-lane widths.

Two Sensor Overlap Setup (SCU6x Only)

Two sensors with overlapping fields of view cover wide lane spans. An additional calibration step establishes the overlap between sensors.

1. Complete single-sensor configuration for each sensor individually
2. Present a single strip of known width that spans the overlap zone between the two sensors
3. Position it so one edge is seen by only sensor 1 and the other edge by only sensor 2, while the strip passes through the overlap zone
4. Enter the known width on the controller and press the Teach Overlap/Offset button
5. The controller measures each sensor's contribution and computes the overlap distance
6. Alternatively, if you know the exact physical overlap, enter it manually via the touchscreen or App

> After overlap calibration, proceed with the same multi-web configuration steps — enable multiple web mode, optionally teach individual lane corrections and patterns.

> **What success looks like:** Both sensors show green indicators, lane count reflects all lanes across both sensors, width values correct for lanes in the overlap zone.

Pattern Teaching (Optional)

Locks in expected lane positions and widths. After teaching, the controller alerts on deviation — useful for slitter rewinders where blade positions are set and should remain constant during a run.

1. Ensure all lanes are running at correct widths and positions
2. Activate pattern teaching mode on the touchscreen or App
3. The controller stores the current lane positions, widths, and count as the reference pattern

> After pattern teaching, the controller alerts when: a lane shifts from its taught position, a lane width deviates from its taught value, a lane disappears, or an unexpected new lane appears.

> **What success looks like:** Pattern teaching indicator active. Controller alerts immediately if a strip is removed, added, or shifted.

Digital Monitoring Setup

For the digital monitoring path (SCU6x only).

1. Enable multiple web mode on the touchscreen
2. Set the nominal width for the lanes
3. Set the upper limit and lower limit tolerance
4. NPN outputs provide combined pass/fail: all lanes within tolerance = OK; any lane out of tolerance = alert

Touchscreen still shows per-lane width data — digital output is just the combined signal

> If the SCU6x has the C(x) Ethernet option, thresholds can also be set remotely via Ethernet.

> **What success looks like:** Per-lane widths visible on touchscreen. NPN outputs inactive when all lanes within tolerance. Remove or shift a strip to verify the alert activates.

Common Configuration Mistakes

- Gaps between strips too small — controller cannot distinguish adjacent lanes (see Install for the minimum gap).
- Forgetting to press Apply after changing parameters
- Confusing teach overlap with teach correction — they are separate operations
- Overlap teaching sample doesn't span correctly — one edge must be in sensor 1 only, other edge in sensor 2 only
- Not re-teaching overlap after moving sensors — width readings drift for lanes in the overlap zone

> **? Watch**
>
> - How to Set the SCU6x Controller for Multiple Web Width Measurement
> - Advanced Multiple Web Width Measurement — SCU6x Controller and App Integration

Go Further

Related Quick Start Guides

- **Web Width Measurement (Edge-Based)** — Single web width measurement with SCU5, SCU6x, or 1DC
- **Position Measurement** — Edge, centerline, or contrast/line position measurement
- **Splice Detection** — Can run simultaneously with multi-web width measurement on the same hardware

Need Help?
Email: experts@r2r.tech | Phone: +1-888-290-3215