Web Width Measurement — Industrial Ethernet — SCU5

Quick Start Guide

Controller: SCU5 | **Output:** Industrial Ethernet | **Configuration:** Dual Sensor

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interactive guide

What You'll Achieve

After completing this guide, wired to your SCU5 C(x)D controller with width data available over Industrial Ethernet for your PLC.

Estimated time: ~2–3 hours

What You Need

SCU5 Ethernet

- [ ] ODC Family sensor — sized for your web width (full sizing guidance under Install)
- [ ] SCU5 C(x)D controller (x = E for EtherNet/IP, P for PROFINET, EC for EtherCAT)
- [ ] Quick Disconnect Sensor Cable - 3m (10 ft) (U2-01975)
- [ ] 24 V DC Input Power Cable, Length 5 m (21218-5m)
- [ ] M12 to RJ45S, Shielded Cable - 9.8ft/3m (21222-3m)
- [ ] 24 VDC power supply
- [ ] For dual sensor: second ODC Family sensor + second sensor cable (U2-01975)

> **Which controller variant?** Choose protocol matching your PLC: C(E)D = EtherNet/IP, C(P)D = PROFINET, C(EC)D = EtherCAT. The C(x)D+ variant adds an analog output of the width value alongside the Ethernet data (overall width plus left-edge, right-edge, and centerline positions for logging).

Prerequisites

- [ ] Machine accessible and safe to work on
- [ ] 24 VDC power available at the installation location
- [ ] For Ethernet paths: Ethernet network ready (switch port available, IP address planned)

- [ ] For digital monitoring paths: stacklight, alarm, or PLC digital input wired and ready
- [ ] Web material available for initial setup and teach operations
- [ ] A sample of known width on hand for the teach correction/offset step

1. Install the Sensor

Edge-based web width measurement always 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).

Dual Sensor Setup

- Position the left sensor to see the left edge, right sensor to see the right edge
- Critical: mount both with the same camera (physical) orientation, but set their electronic orientation oppositely — the left sensor tracks the left edge, the right sensor the right edge
- Each sensor needs margin for the full range of web widths (min to max) plus wander
- Sensors do not need to be the same size — select each based on wander range at its edge

Light source: Infrared (IR) — default for most materials.

Sensor size selection: Single sensor: sensing range must exceed max web width + wander. Dual sensor: each sensor covers its respective edge + wander. If no single sensor is wide enough, use dual sensor.

Dual Sensor Installation: For dual-sensor width measurement, mount both sensors with the same camera orientation (facing the same direction). Then set their electronic orientation so that, relative to the web, one sensor tracks the left edge and the other tracks the right edge — see Sensor Installation Recommendations for orientation details.

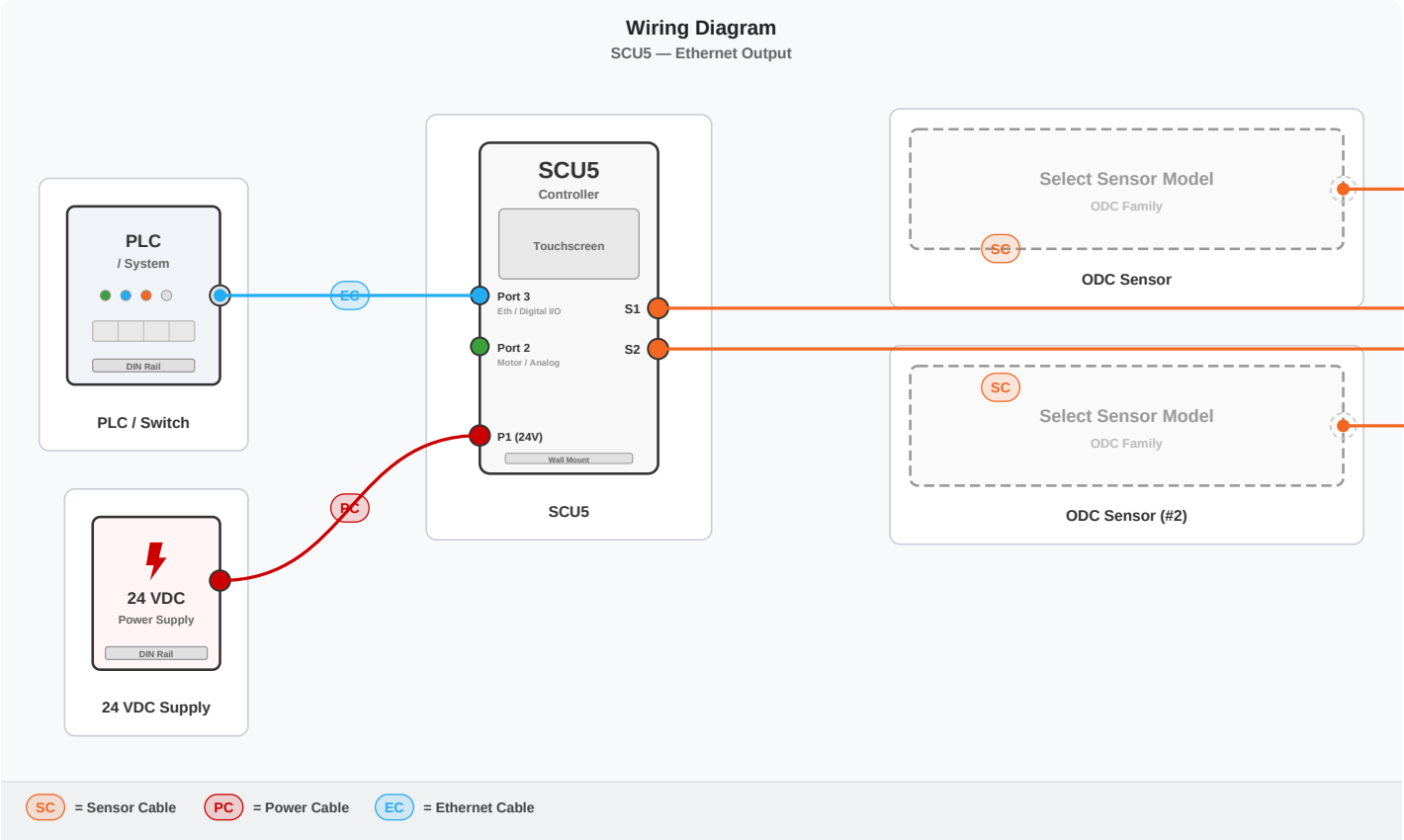
2. Wire the System

Same sensor wiring as analog, plus Ethernet cable.

1. Sensor: Connect Quick Disconnect Sensor Cable (U2-01975) from ODC Family sensor to SCU5 port S1 (and S2 for dual)
2. Power: Connect 24 V DC Input Power Cable (21218-5m) to SCU5 port P1
3. Ethernet: Connect M12 to RJ45S, Shielded Cable (21222-3m) from SCU5 Port 3 to PLC or network switch

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

Wiring Diagram



3. Configure & Verify

Web width measurement computes the distance between the detected left and right edges. The controller computes the width internally and provides the value directly.

Dual Sensor Width

Two sensors — one per edge — with the controller computing total width including the distance between sensors. Use when the web is wider than any single sensor. Not available for 1DC.

1. Set each sensor's electronic orientation first — left sensor ? left edge, right sensor ? right edge — then perform single-sensor configuration for each
2. Teach offset: place a known-width sample so both sensors see their edges
3. Enter the known width value and press the Teach Offset button
4. The controller computes the distance between sensors and stores it
5. Optionally perform teach correction after teach offset for better repeatability

> Teach offset = one-time during installation (re-teach only when sensors are physically moved). Teach correction = optional per product change. Final width = raw measurement + offset + correction.

> **What success looks like:** Both sensors show green indicators, width reflects the full web width, changing products produces the expected width change.

Common Configuration Mistakes

- Not re-teaching correction after product change — measurements drift with a different material
- Forgetting teach offset — width will be wildly incorrect (missing distance between sensors)

4. PLC Integration

The controller provides computed web width (with offset and correction applied) in dedicated registers. No PLC-side computation needed unless you prefer raw measurements.

- Width is provided as a 16-bit register value with offset and correction applied
- Raw edge positions (left and right) also available for PLC-side computation
- For PLC-based tolerance monitoring: read width register, compare against nominal ± tolerance
- Rockwell AOI handles pixel-to-mm conversion and bit unpacking automatically

Note: The register map, EDS file (EtherNet/IP), and Add-on Instruction (AOI) for Studio 5000 are listed under **Your Products** below — grouped on the product card.

Go Further

Related Quick Start Guides

- **Multiple Web Width Measurement** — Measure multiple strips or webs simultaneously (SCU6x only)
- **Position Measurement** — Measure edge, centerline, or contrast/line position
- **Splice Detection** — Add splice detection alongside width measurement

Need Help?
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