Web Width Measurement — Industrial Ethernet — 1DC Series

Quick Start Guide

Controller: 1DC Series | **Output:** Industrial Ethernet | **Sensor:** 1DC 96

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What You'll Achieve

After completing this guide, with width data from the 1DC Series sensor's built-in controller available over Industrial Ethernet for your PLC.

Estimated time: ~1–2 hours

What You Need

1DC Ethernet

- [ ] 1DC Series sensor (built-in controller — no separate controller needed)
- [ ] 24 V DC Input Power Cable for SCU6x or 1DC - 5m (21218x-5m)
- [ ] M8 to RJ45S, Shielded Cable - 5m (1407354)
- [ ] 24 VDC power supply

> **Which controller variant?** 1DC is single sensor only. Each 1DC operates independently — one 1DC cannot coordinate with another for dual-sensor width. For wide webs, use SCU5 or SCU6x with two ODC Family sensors.

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).

Single Sensor Setup

- Position the sensor so both edges of the web are visible within the sensor field of view
- Allow margin on each side for normal web wander — do not position edges at extremes of the sensing range
- Mount closer to one roller to minimize web flutter
- Ensure the web plane is parallel to the sensor length axis

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

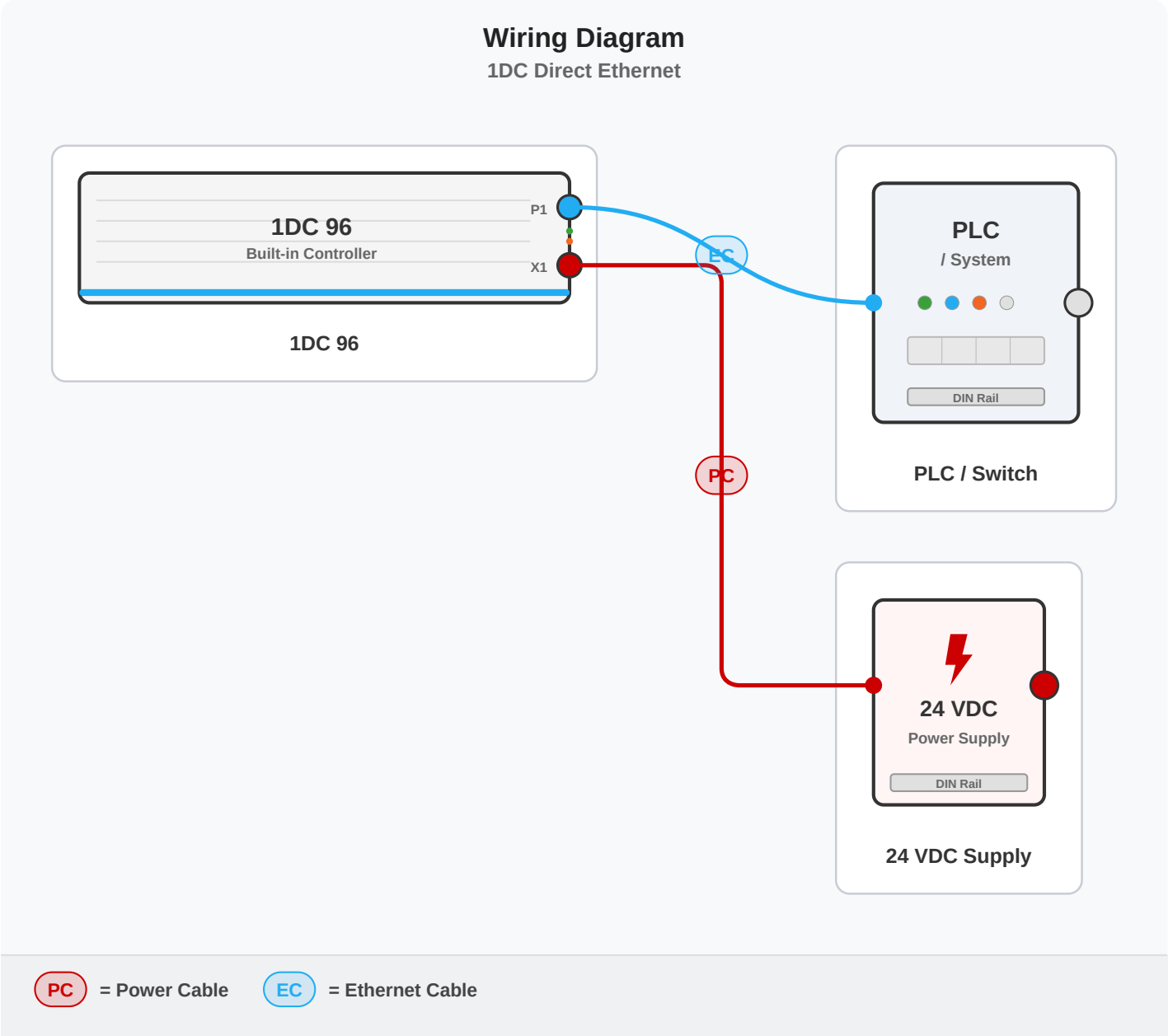
> **Sensor size selection:** Single sensor: sensing range must exceed max web width + wander. Dual sensor: each sensor covers its respective edge + wander. If no single sensor is wide enough, use dual sensor.

2. Wire the System

Just power and Ethernet — no sensor cable needed.

1. Power: Connect 24 V DC Input Power Cable for SCU6x or 1DC (21218x-5m) to 1DC port X1
2. Ethernet: Connect M8 to RJ45S, Shielded Cable (1407354) from 1DC port P1 to PLC or network switch

Wiring Diagram



Bill of Materials

Qty	Item	SKU	Connection
1	24 V DC Input Power Cable for SCU6x or 1DC - 5m	21218x-5m	power.output ? sensor.X1
1	M8 to RJ45S, Shielded Cable - 5m	1407354	sensor.P1 ? plc.input

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.

Single Sensor Width

One sensor sees both edges of the web and computes width directly. Use when the web is narrower than the sensor sensing range.

1. Connect power — the 1DC detects both edges automatically
2. Width is available in Ethernet registers — no touchscreen configuration needed

Teaching Process

1. Place a sample of known width in front of the sensor
2. Enter the known width value on the touchscreen or via Ethernet
3. Press the Teach Correction button
4. The controller compares raw measurement to known value and stores the difference
5. All subsequent width readings include this correction

Teaching time: Teach correction can be repeated per product for the best repeatability, or performed once during commissioning.

> **What success looks like:** Stable width value in PLC Ethernet registers, fault status = 0.

Common Configuration Mistakes

- Not re-teaching correction after product change — measurements drift with a different material

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.

YOUR PRODUCTS

1DC 96

- Product Page
- Datasheet
- 2D Drawing (PDF)
- 3D Model (STEP)
- Register Map
- EDS File (EtherNet/IP)
- Add-on Instruction (AOI) for Studio 5000

Scan for product info

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