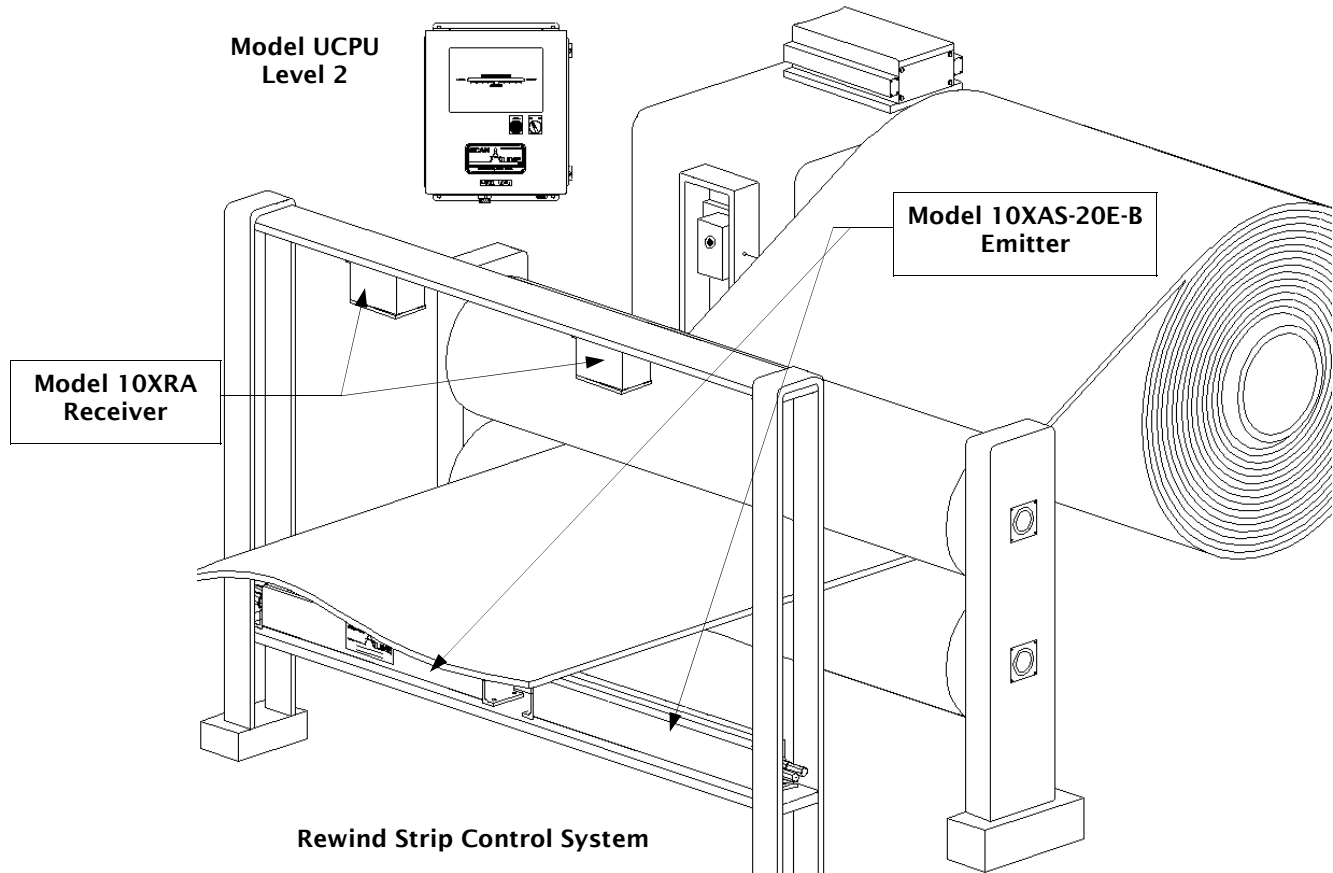


## Rewind Strip Control System



The precision and quality required of modern automated processing lines have put a tremendous strain on the classic rewind control system. Process speeds are continuously increasing, while the costs of downtime and maintenance time are often measured in terms of many thousands of dollars per minute.

Control of the rewind operation poses several problems for modern strip processing lines which classic light source and photo detector control systems cannot address adequately. When a typical rewind control system is used, especially in edge guiding, variations in strip width can produce an uneven coil during rewinding. Although the guided edge will produce an evenly wound coil on the sensor side of the strip, any variation in strip width results in a unevenly wound edge on the opposite side of the coil.

The SCAN-A-LINE™ Rewind Strip Control System (RSC System) completely alleviates these problems with several unique solutions.

- Accurate to  $\pm 0.005"$  [0.127mm] with linearity of 0.024" [0.6096mm] @ 2 sigma
- PID or Time Proportional Control
- Patented Scanned LED Technology
- Solid-state Reliability
- Dust, Mist, and Vibration Tolerant
- Easy to Install, Simple to Maintain
- Smart Sensor FAULT Detection Circuitry
- Clear or Translucent Material Position Control Available
- Several Analog Output Options Available
- First Edge Detection Available

## Rewind Strip Control System Components:

- Digital Control Processing Unit
- Single or Dual 10XAS-Series Auto-Sync Sensors
- Up to 20 feet [6.1m] of cabling between the sensors and the processing unit

The RSC System supplies complete signal processing for up to two SCAN-A-LINE™ 10XAS-Series sensors. A smart sensor FAULT detector circuit monitors sensor signals for valid edge detection information. Defective scans due to strobe light or falling debris interference are rejected.

## Rewind Strip Control Processing Unit Features:

### Proportional/Integral/Derivative (PID)

#### Control Amplifier – PID Module

Interfaces with most pneumatic or hydraulic proportional control valves or servo-valves in closed loop process control lines. The PID Control Amplifier (PID Module) in the Model DCPU provides a fully tunable deviation (bipolar) control signal.

### AD/DA Module for CO-LINEAR™ & CO-CENTRIC™ Functions

Each Model DCPU comes complete with an AD/DA Module to allow in input from a Linear Position Transducer. This input is the current position of the mandrel. The AD/DA Module then takes the mandrel position information and the strip position and creates an error signal that is sent to the PID Module for final processing and tuning.

### Rewind Control with Stagger Wrap

Rewind (or Take-up) Mandrel PID Position Control with edge stagger feature to eliminate tightly wound coils that have thick edges (requires optional Linear Transducer and Current Sensor).

### Bargraph Display

All Control Processing Units come standard with a Bargraph Display to visually represent the difference between a predetermined material position and the detected material position. Also included are annunciators and limit relays.



Model DCPU

## Rewind Strip Control System Configurations:



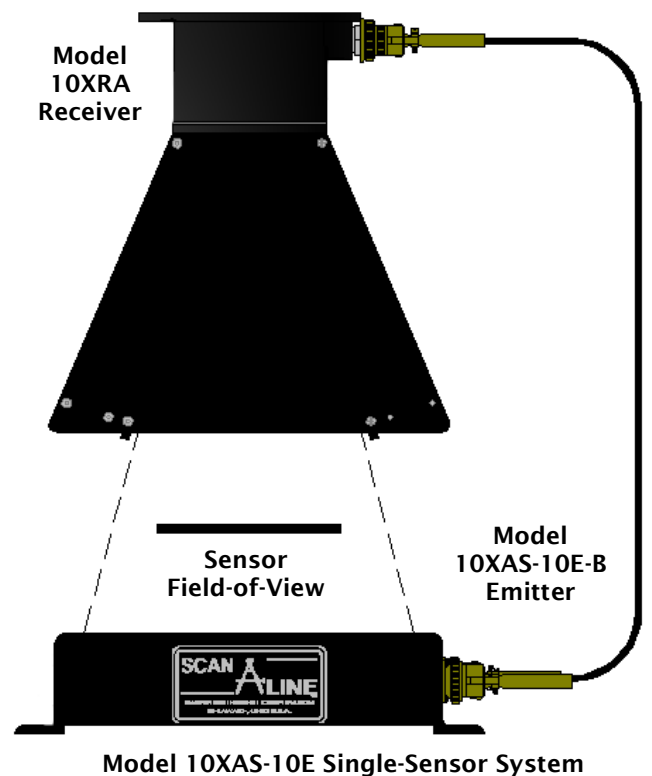
- Edge Guide RSC System

Utilizing a single 10XAS-Series sensor and a Model DCPU, the CO-LINEAR™ RSC System monitors the edge position of the strip, no matter what the variation in strip width. The digital position signals generated in the system sensors are fed to the processing unit where they are converted to an analog edge position signal. A linear transducer located on the mandrel provides a continuous mandrel position signal. Both of these signals are fed to the CO-LINEAR™ amplifier (AD/DA Module) where they are scaled and continuously processed to provide a deviation position signal for the control valve. This analog signal is used to control the direction and distance of travel of the rewind mandrel. The mandrel will be driven in the proper direction until the error signal reads zero volts and the mandrel is again aligned with the edge of the strip. As a result, strip width variation is apportioned to only one edge of the coil, producing a wound coil with one straight edge.



### ✓ Centerline RSC System

The CO-CENTRIC™ RSC System (single or dual 10XAS-Series sensors and the Model DCPU) continuously monitors the centerline of the strip, no matter what the variation in strip width. The digital position signals generated in the system sensors are fed to the processing unit where they are converted to an analog centering signal. A linear transducer located on the mandrel provides a continuous centerline position signal. Both of these signals are fed to the CO-CENTRIC™ amplifier (AD/DA Module) where they are scaled and continuously processed to provide a deviation position signal for the control valve (PID). This analog signal is used to control the direction and distance of travel of the rewind mandrel. The mandrel will be driven in the proper direction until the error signal reads zero volts and the mandrel is again aligned with the centerline of the strip. As a result, strip width variation is apportioned evenly between both edges of the coil, producing an evenly wound coil.

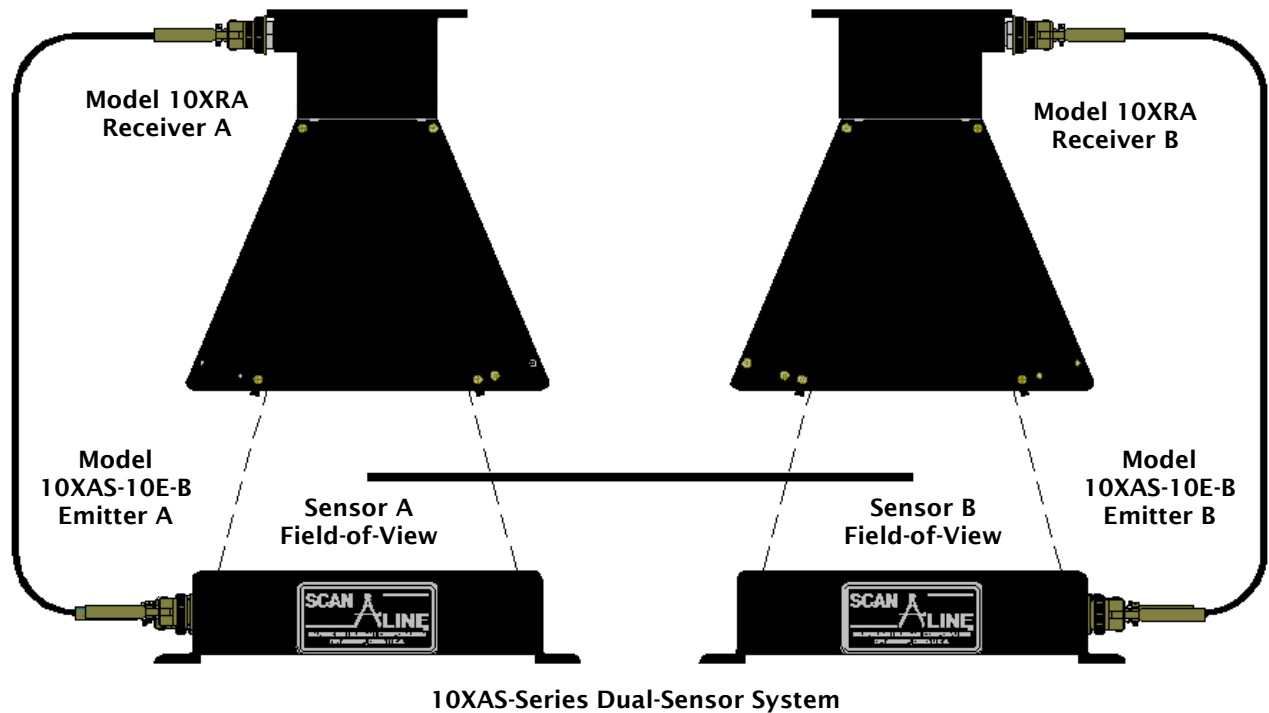


### SCAN-A-LINE™ 10XAS-Series Sensors:

- High-speed edge position tracking for proportional position control
- Precise 2000 inch [508cm] per second scan velocity
- Position information is a function of time rather than light intensity
- Quartz Crystal controlled — won't drift out of adjustment
- Smoke, steam, dust and dirt have no effect on edge detection
- Nothing to burn out and **NO MOVING PARTS** mean virtually no maintenance worries
- LED's rated at 275-year mean-time-between-failure (MTBF) and carry a lifetime guarantee

**SCAN-A-LINE™ 10XAS-Series** Auto-Sync sensors allow for the greatest position size variation in material guiding. They may be configured as a single-sensor or dual-sensor system, depending upon the size of the material to be guided, without any special hardware. 10XAS-Series sensors come in ten inch [25.4cm] increment lengths ranging from ten inches [25.4cm] up to forty inches [101.6cm].

*10XAS-Series Single-Sensor System* includes one emitter, one receiver, and up to twenty feet [6.1m] of interconnection cabling. A single-sensor system can accommodate materials measuring between one-half inch [12.7mm] and thirty-eight inches [96.5cm]. Single-sensor systems require the use of the Model DCPU for conversion of the digital sensor signal into analog control signal for interfacing with process line controls.



*10XAS-Series Dual-Sensor System* includes two emitters, two receivers and up to twenty feet [6.1m] of interconnection cabling. A dual-sensor system can accommodate materials measuring between six inches and up to an almost infinite maximum size (Note: if guiding materials both narrow and wide, overall maximum material width may be limited.). Dual-sensor systems require the use of the DCPU for conversion of the digital sensor signals into analog control signal for interfacing with process line controls.



**Model 10XAS-10E-UT Emitter**

### Options for SEC System Sensors:

- **Infrared LED (IR Option):** Designed for operation in extremely hazy conditions that attenuate material detection. Also used for visible light intolerant materials.
- **ULTRA-TOUGH™ enclosures (UT Option):** For applications where physical abuse and damage cannot be avoided.
- **On-Line Balance (OLB Option):** Allows sensor to be balanced on-line for peak performance.
- **Clear Material (CLR Option):** Provides for detection of clear, translucent or loosely woven products (requires On-Line Balance Option).
- **End Alignment (EA Configuration):** Designed for measurement applications where product thickness varies.



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