SCAN-A-LINE™ SPECIFICATION SHEET

10XBR-Series

Overview

The SCAN-A-LINE™ Binocular-Receiver 10XBR-Series sensor from Harris Instrument Corporation provides highly reliable and accurate edge position detection and measurement gage for process lines with varying product passlines. An extension of the 10XAS-Series, the 10XBR-Series are non-contact, electro-optical sensors designed primarily for the edge position detection of strip material edges for various dimensional measurement applications.

The 10XBR-Series sensor is compatible with the SCAN-A-LINE™ Multi-Purpose Processing Unit – Model MPPU with up to two sensors per processing unit. Because of its versatility and reliability, the 10XBR-Series sensor is one of the most flexible edge position detection and width measurement systems on the market today.

Configurations

- **Passline Independent Dimensional Measurement**
- **Thickness Independent Width Measurement**

Options

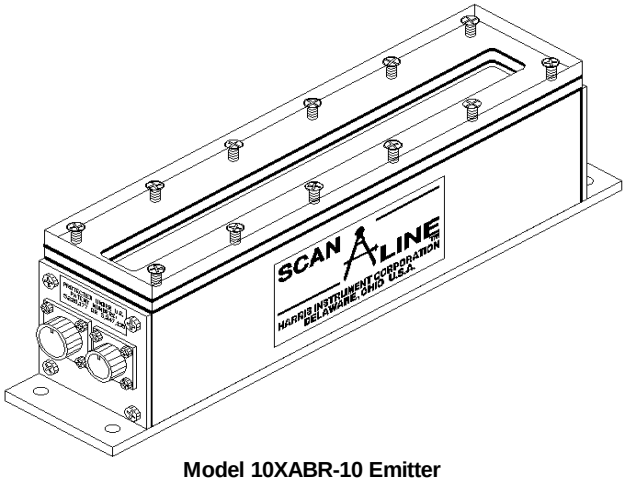
Standard Configuration	Provides highly efficient edge detection dimensional measurement.
Infrared LED's (IR Option)	Permits the10XBR-Series sensor to operate with visible light sensitive materials. Also provides for operation in very hazy or smoky conditions.
Chemical Resistant (CR Option)	Furnishes superior chemical resistance for operation in chemical or solvent rich environments. All gaskets are Teflon®, all hardware is stainless steel, connectors fluid sealed and all surfaces are polene painted.
***ULTRA-TOUGH*™ Option** (UT Option)	Provides excellent crash protection with thick cast aluminum housings and borosilicate viewing windows with sealed connectors and gaskets (Model 10XBR-UT).

Features

- Available in four sizes: 10 inch [254mm], 20 inch [508mm], 30 inch [762mm] and 40 inch [1016mm] in Single- or Dual-Sensor operation.
- Requires the Multi-Purpose Processing Unit – Model MPPU, although a General Processing Unit – Model GPU could be used to route the signals to the Model MPPU.
- Anodized Aluminum Housing with Lexan® bezel viewing window, neoprene gaskets and self-sealing, stainless steel hardware for superior fluid protection (Model 10XABR).
- Passline variations of up to one foot [305mm] standard for Passline Independent Dimensional Measurement.

*Measurement Variation Criteria**

Accuracy:	±0.005" [0.127mm].
Linearity:	±0.024" [±0.6096mm] at 2-sigma.
Repeatability:	±0.005" [±0.127mm].
Reproducibility:	±0.010" [±0.254mm].
Stability:	Better than ±0.005" [±0.127mm].



Model 10XABR-10 Emitter

**Specifications based on a Model 10XABR-10 sensor at twenty-inch [508mm] emitter-to-receiver separation and a two-inch [51mm] to fourteen-inch [356mm] variable product passline with material thickness of 0.0625 inch [1.59mm] and all environment conditions optimal for sensor operation with a Model MPPU processing unit. Actual results may vary depending upon environmental and installation conditions.*

Binocular-Receiver Sensor – 10XBR-Series

Description

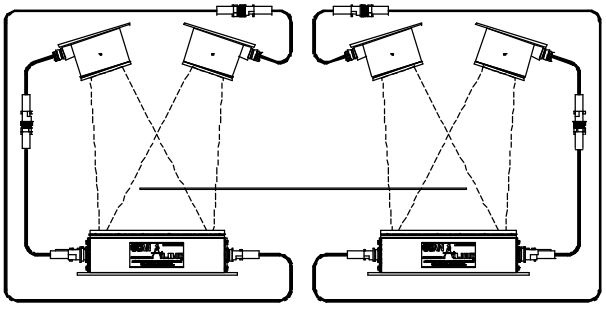
The 10XBR-Series sensor consists of an emitter, two receivers and all applicable cabling to connect the receivers with the emitter and the emitter with the processing unit (emitter-to-receiver cables are two pieces with in-line connectors, a total of fifteen feet [4.39m] each and the emitter-to-processing unit cable is twenty feet [6.1m] with a maximum of fifty feet [15.4m]).

The receivers contains a low-noise preamplifier, a silicon photocell and a cylindrical lens each. AlGaAs Light Emitting Diode (LED) arrays are used in SCAN-A-LINE™ emitters as the light sources. In addition to the LED counters, decoders and drivers, the emitter driver board contains a tuned amplifier for the video signals from the receivers. The ten inch [254mm] long Model 10XABR-10 emitter uses a set of ten array sections. Each section is one inch [25.4mm] in length and is composed of ten LEDs spaced 0.1 inch [2.54mm] apart.

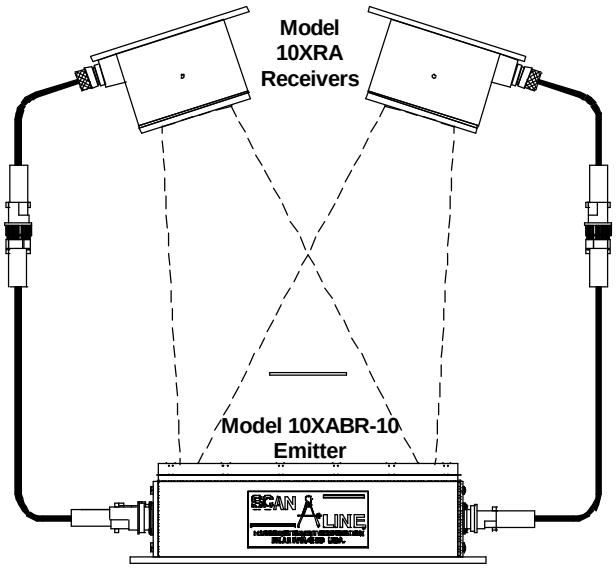
The SCAN-A-LINE™ 10XBR-Series sensor can be used individually (single-sensor systems) as centerline position sensors and dimensional measuring sensors. They can also be used in pairs to measure material dimensional size, as well as provide centerline position. Materials larger than the combined lengths of the modules can be accommodated by adding the separation between the emitters to the portion of each emitter covered. Reliable edge position detection's can still be made with a 90% attenuation of optical signals, providing the attenuation is uniform over the lens area.

Each 10XBR-Series emitter and binocular receivers operate as a complete position sensing sub-system. When supplied with ±12VDC power, the emitter will provide a SYNC pulse, marking the beginning of a scan cycle. Because the scan speed is constant, the position of lighted LED in time, with respect to the SYNC pulse, can be directly translated into position information. Digital processing circuitry in the emitter counts the clock pulses of a predictable frequency and translates the binocular views into a sensor video signal. A simple counter is also be used to determine if the proper number of edges have been sensed. In a single edge application (typically a dual-sensor system, as each sensor only detects one edge), the lack of an edge transition or the presence of more than one edge indicates a FAULT event.

The patented binocular view of the strip material by the 10XBR-Series sensor creates a geometric relationship of the position of the strip material edges, which used by the processing unit (Multi-Purpose Processing Unit – Model MPPU) to calculate the height of the strip material. The height of the strip is then processed with the edge position signals to provide, in English or Metric, the width of the material independent of material product passline or material thickness.



Model 10XABR-10 Dual-Sensor System



Model 10XABR-10 Single-Sensor System

Sensor Size	Minimum Separation	Recommended Separation	Maximum Separation*
10XBR-10	10" [254mm]	20" [508mm]	72" [1829mm]
10XBR-20	20" [508mm]	40" [1016mm]	72" [1829mm]
10XBR-30	30" [762mm]	60" [1524mm]	72" [1829mm]
10XBR-40	40" [1016mm]	72" [1829mm]	72" [1829mm]

10XBR-Series Emitter-to-Receiver Separations

* Extended separations are optionally available.

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