

# BETA TRANSMISSION SENSOR

## Models 301, 302

### On-Line Thickness or Basis Weight Measurement

#### Applications:

- ▶ **Converted products**
- ▶ **Extruded film & sheet**
- ▶ **Calendered products**
- ▶ **Aluminum foil**
- ▶ **Textiles and nonwovens**

#### Features:

- ▶ **High precision measurement**
- ▶ **Streak resolution to 1.0mm (1/32in)**
- ▶ **Fast 5 millisecond response time**
- ▶ **Wide passline and flutter tolerance**
- ▶ **High-efficiency detector**
- ▶ **Minimized-activity sources**
- ▶ **Proprietary noise-immune signal processing**
- ▶ **Explosion-proof ATEX model available**
- ▶ **Easily maintainable**

NDC's Model 300 family of beta transmission sensors are designed for on-line thickness or weight measurement of continuous web products. Each beta sensor is matched to a specific web product application to provide optimum measurement performance and results.

#### Source Design

NDC's beta sensors have minimized activity sources with smaller, lighter source capsules and less shielding. This translates into a compact head design with reduced radioactivity that is preferred by nuclear regulatory authorities.



#### Detector Design

A key feature of NDC's beta gauges is an efficient detection system that delivers high measurement sensitivity and superior nuclear statistics. For example, the ion chamber is constructed with a specially welded thin window that is filled with a denser inert gas at a higher pressure and a lower ionization potential resulting in a highly efficient detector. Its fast 5 millisecond signal response produces optimized streak resolution measurement performance (1.00mm; <1/32in.), high speed data processing and maximum scanning speeds.

For superior profile measurement accuracy, a collimator over the detector window provides broad sensor alignment plateaus that eliminate the effect of any 'z' direction source/receiver displacement.

#### Digital Signal Processing

An advanced Digital Signal Processor (DSP) resides in the detector head and has a stable pre-amplifier and digital converter (VFC) for maximum noise immunity. The design insures accurate, drift-free digital measurement performance.

The DSP transmits accurate, calibrated product data to an iFrame™ that is typically located in the scanner end bell. NDC's TDi™(Total Distributed intelligence) architecture broadcasts the measurement data across a secure Ethernet CAT 5 network to the system's other nodes in the network for both HMI (Human Machine Interface), quality reporting and control functions.

# Technical Specifications

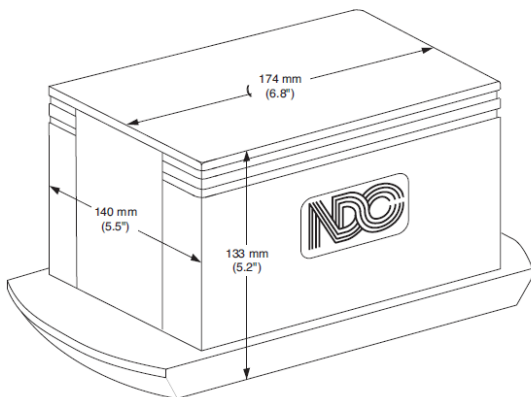
## Specifications

- Measurement Footprint:** Model 302: 8 x 50mm (0.3 x 2.0in)  
Model 301: 30mm dia (1.2in)
- Streak Resolution:** 1mm (1/32in) at 130mm/sec (5in/s) scan speed (Model 302)
- Passline Tolerance:** ±3.0mm (± 0.125in)
- Time Constant:** 5ms
- Operating Temperature:** 0-60°C (32-140°F)
- Shutter:** Pneumatic failsafe
- Construction:** 0.200 in (5mm) Cast aluminum housing with Stainless Steel Allen Head fasteners; Exposed surfaces are polyester powder coated. Sealed Quick Connect Electrical Connector; IP64 (DIN 40050) Rating
- Options:** Explosion-proof ATEX model available  
Water cooling for high temperature environments

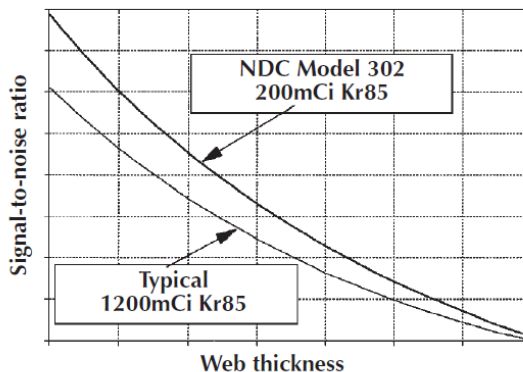
Model	302	301
Isotope	Krypton_85	Strontium_90
Activity	200mCi (7.4GBq)	10mCi (0.37GBq)
Energy (E <sub>max</sub> )	0.687MeV	2.283 MeV
Half-life	10.7 Years	29 Years
Range	15-1200g/m <sup>2</sup> (0.0006-0.047in)	100-5500g/m <sup>2</sup> (0.004-0.215in)
Static Repeatability*	±0.2% or 0.2g/m <sup>2</sup> (the greater)	±0.3% or 1.5g/m <sup>2</sup> (the greater)
Dynamic Precision*	±0.2% or 0.2g/m <sup>2</sup> (the greater)	±0.3% or 1.5g/m <sup>2</sup> (the greater)

\* The repeatability specifications reflect the weighted mean of all possible sources of dynamic error, including the maximum allowable sensor X, Y and Z-Axis misalignment, passline/flutter variation, temperature change, etc. Measurement tests to confirm the above are encouraged.

## Source/Detector Housing



## Comparison of Krypton\_85 Beta Gauges



\* Static repeatability is measured with a static gauge using stationary samples. Dynamic accuracy and repeatability is a function of product presentation, scanner condition, backing roll metallurgy and other factors. Please contact NDC for a repeatability estimate for your product.

NDC is represented in over 60 countries worldwide. ISO9001:2008 [www.ndc.com](http://www.ndc.com)

spectris

**NDC Technologies Inc.**  
Tel: +1 626 960 3300  
Email: [info@ndc.com](mailto:info@ndc.com)

**NDC Technologies sa**  
Tel: +32 4 239 90 10  
Email: [sales@ndcinfraed.be](mailto:sales@ndcinfraed.be)

**NDC China**  
Tel: +86 21 6113 3609  
Email: [info@ndcinfraed.com.cn](mailto:info@ndcinfraed.com.cn)

**NDC Germany**  
Tel: +49 1801 977112  
Email: [ndcgermany@ndc.com](mailto:ndcgermany@ndc.com)

**NDC Singapore**  
Tel: +65 91994120  
Email: [apacsales@ndc.com](mailto:apacsales@ndc.com)

**NDC Technologies Ltd**  
Tel: +44 1621 852244  
Email: [enquiries@ndc.com](mailto:enquiries@ndc.com)

**NDC Beta LaserMike**  
Tel: +1 937 233 9935  
Email: [sales@betalaserMike.com](mailto:sales@betalaserMike.com)

**NDC Japan**  
Tel: +81 3 3255 8157  
Email: [ndcjapan@ndc.com](mailto:ndcjapan@ndc.com)

**NDC Italy**  
Tel: +39 0331 454 207  
Email: [ndcitaly@ndc.com](mailto:ndcitaly@ndc.com)

**NDC India**  
Tel: +91 9890800697  
Email: [ndcindia@ndc.com](mailto:ndcindia@ndc.com)

In line with its policy of continuous improvement, NDC reserves the right to revise or replace its products or services without prior notice. The information contained in this document may not represent the latest specification and is for indicative purposes only.

Document Number: IS-111-15535-02-2015-06  
Date of Issue: June 2015  
© NDC 2015



Measured by Commitment