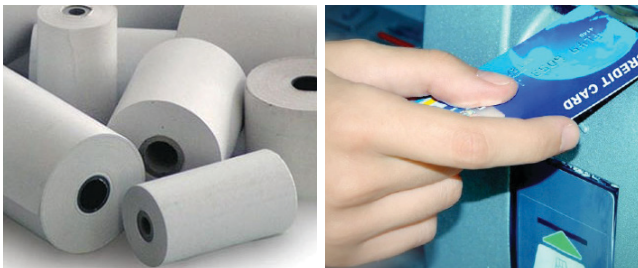


# ConvertIR

For Fixed Point Paper  
and Film Converting  
Applications



On-Line coat weight and  
moisture measurements  
with the pedigree of  
stability for process  
control and monitoring



- ▶ Enhance Product Quality & Consistency
- ▶ Reduce Waste
- ▶ Faster Start-up and Grade Changes
- ▶ Increase Process Productivity

## On-Line Measurements That Can Be Trusted

NDC Technologies brings its world renowned NIR technology experience of over 40 years to narrow web paper and film converters where budgets are tight and the requirements are, simply a fixed point coating weight or moisture measurement or perhaps left and right fixed point measurements to allow simple profile control.

For years generic instrumentation suppliers have offered moisture and coating weight gauges which promise measurements at a low price. However, in practice experience has not met expectation: these gauges need regular re-calibration, have poor measurement accuracy and instrument stability which limit their application where process control or even simple monitoring is important.

These same suppliers have said that for process monitoring only gauge accuracy is not important. In reality where measurement only is the chosen strategy, process adjustment decisions will be taken based upon the output of the gauge to manually adjust the process otherwise why measure on-line at all, hence reliable instrument performance is vital!

Now NDC offers, through ConvertIR, a dependable, stable and accurate on-line measurement which allows converting processes to be tightly and consistently controlled manually or automatically with confidence. ConvertIR is designed to bring this level of control to a converting process deploying either a single point measurement perhaps mounted centrally on a narrow web or with two heads mounted left and right on the web.

Our pedigree of solid long term instrument stability, no effects from ambient condition changes and tolerance to process physical changes are all offered in ConvertIR so that end users can see the benefits of on line gauging of a process and achieve an enduring return on investment and an ongoing contribution to their bottom line.

Users around the world have come to trust the NDC brand and with more than 30,000 instruments installed our presence is truly global in a huge range of applications and customers.



### Key benefits of on-line measurement:

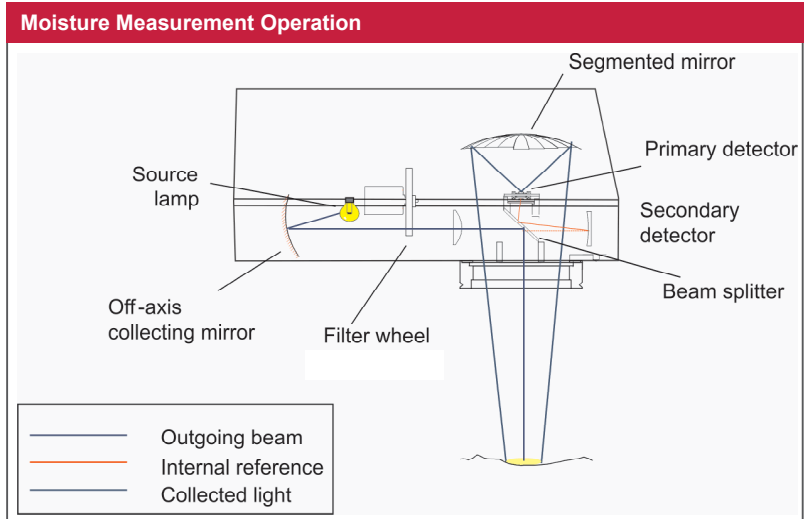
- ▶ Reducing waste or scrap
- ▶ Improving product quality and consistency and gaining competitive advantage
- ▶ Faster start up and product change times
- ▶ Increasing product yield through closer operation to the product specification
- ▶ Reducing raw materials usage through not over-coating
- ▶ Avoiding over drying
- ▶ Achieving moisture balance in converting lamination processes

# How ConvertIR Measures Moisture

Proven technology for proven results

ConvertIR is based upon NDC Technologies' proven optical filter technology. Light at a specific wavelength is absorbed by moisture. The rotating filter wheel projects pulses of light at this wavelength, and other reference wavelengths, not absorbed by moisture, onto the product. Some of this light is absorbed and the rest is scattered/reflected. The gauge light collecting optics focus the reflected intensities onto a detection system which compares the amount of moisture absorption with the reference wavelengths providing a measurement independent of pass height variations, changes in source lamp intensity and atmospheric dust.

Algorithms convert the infrared signals into an output that is proportional to moisture content and calibration is carried out using the normal slope and intercept (Span and Trim) controls to achieve agreement with the customer's primary reference method. The measurement speed is very fast (over 60 Hz) and therefore delivers a continuous measurement of moisture which can be output by 4-20 mA analogue devices or using serial bus or Ethernet protocols to the process computer.



## Key Applications

- Moisture in paper and board
- Re-moisturising paper webs for labelstock or corrugating
- Water based pigmented or clay coatings
- Liner board moisture control for corrugators
- Adhesive coatings on paper or film for adhesive tape
- Melamine or urea based coatings on paper
- Hotmelt adhesive coatings on paper
- Wax coatings on paper
- Vinyl and PVC coatings on paper
- Polymer coatings on paper
- Moisture measurements in paper and board pre-polymer extrusion
- Moisture in paper pre-metallisation
- Cellulose pulp sheet moisture



If you do not see your application listed, please contact us.

# ConvertIR In The Process

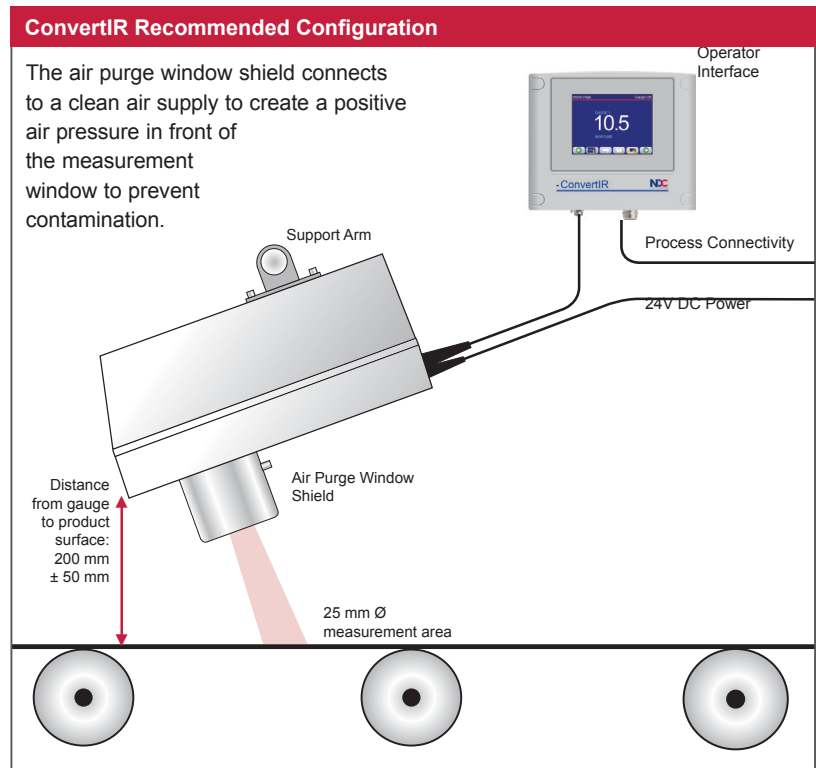
## Gauging configurations and installation

ConvertIR, in its most basic configuration is supplied as a single gauge with Operator Interface (OI), with 10m of interconnecting cable. It is also available in a dual gauge configuration both connected into a single OI. These two configurations allow for the most common single point measurements, for example after a dryer, before and/or after a re-moisturiser or after a coating station for a wet coating or after a dry to measure a dry organic coating film. With dual heads measurements before and after a coating or drying or conditioning process can be monitored. More commonly a dual headed configuration can be used to provide a left and right measurement and thus allow an end user to effect basic profile control through simple left/right gap adjustment.

The gauge as standard is supplied with an **Air Purge Window** to keep the glass optics free of splashing, dust and volatile contaminants that may arise from the coating process. In line with best practice window contamination can be monitored as standard and alarms output to a PLC should routine maintenance fall by the wayside!

**ConvertIR can be installed easily** in most processes and as a non-contact measurement it is typically installed above the web and at a 20 degree angle to avoid any specular reflection.

For high temperature environments the gauge head can be cooled using an integral Vortex cooler attached to the side of the casing allowing it to operate in temperatures up to 80°C (176°F).

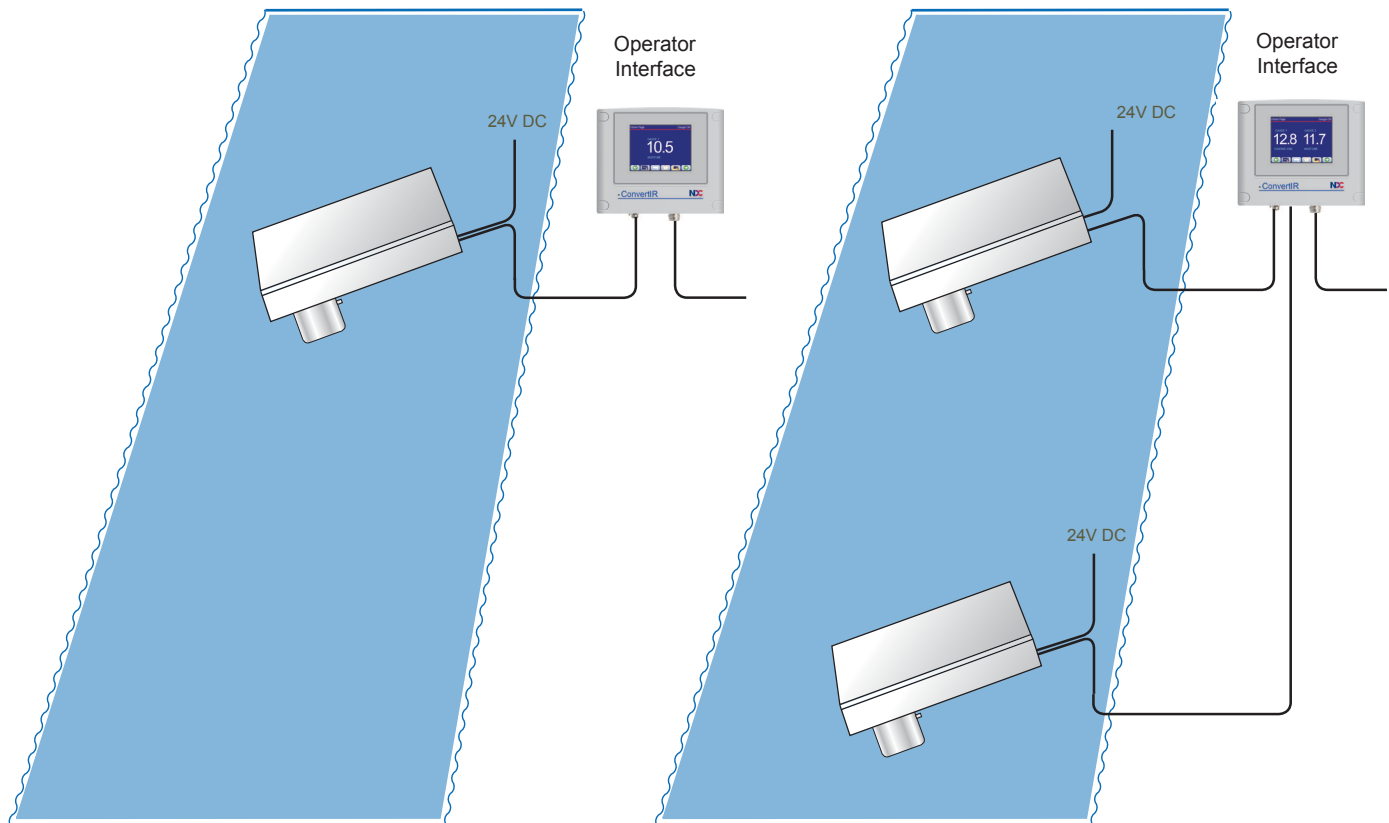


# ConvertIR Specifications

<b>Source Lamp</b>	Quartz halogen 20 W underrun, lifetime >40,000hrs
<b>Filter Wheel Motor</b>	24 V brushless DC
<b>Operating Temperature Range</b>	0-50°C (32-122°F)
<b>Gauge and IO</b>	10 m of interconnecting cable between gauge and OI, Cat 5e LAN cable
<b>Power Consumption</b>	35 W (Gauge and Operator Interface)
<b>Head Construction</b>	Stainless steel with Air Purge Window
<b>Response Time</b>	2-1000 seconds configurable
<b>Measurement Speed</b>	63 Hz
<b>Environment</b>	Gauge & OI IP65/Nema 4
<b>Optical Window</b>	Food-grade sapphire
<b>Moisture Range</b>	0-95% depending on application
<b>Process Connectivity</b>	4-20 mA standard, 8 Digital Inputs (Opto-Isolated), 8 Digital Outputs (FET Driven)
<b>Optional</b>	Ethernet IP, ProfiNet, Modbus TCP, Profibus, DeviceNet all from OI
<b>CE compliant</b>	EMC EN61326

## System Configuration

Configuration includes one or two gauges, stainless steel with Air Purge Window(s), connected to an Operator Interface (OI) with 1/4 VGA colour touch screen and Universal Power Supply delivering 24V DC with 10 m of cable to gauge and OI.



# Company overview

## Combining industry-best performance and reliability with a global support structure

NDC Technologies, headquartered in Irwindale, California, designs, develops and produces a wide range of process measurement and control instrumentation for a broad scope of manufacturing industries.

NDC has manufacturing facilities in California, Dayton, Ohio and Maldon, UK, with centers of excellence at each of these locations including Loncin, Belgium. In addition, there are direct sales and support facilities in China, Japan, France, Germany and Italy. There is also a highly trained network of Sales and Service distribution channels in more than 60 countries around the world.

NDC Technologies is structured to serve its key industry segments with two distinct business units:

### ► Food, Bulk and Packaging

In packaging, NDC provides basis weight, thickness, coat weight and moisture measurement and control systems for a diverse array of applications in the converting and film extrusion industries and also provides solutions for customers in nonwovens and calendering.

For the food and bulk industries, NDC delivers both on-line and at-process analyzers for the measurement of key constituents such as moisture, fat, oil and protein. NDC's broad spectrum of measurement solutions are used in the food, chemicals, minerals building materials, pharmaceutical and tobacco industries.

### ► Cable, Metals and Tubing

In the steel and aluminium industries, NDC offers advanced solutions for the measurement of thickness, width, flatness, edge shape, coatings, and length and speed of sheet and long casted products.

NDC serves the wire, cable, fiber optic, pipe and tube industries with a broad portfolio of on-line and off-line measurement and control solutions for the dimensional monitoring of diameter, ovality, wall thickness, eccentricity, length and speed, and other parameters.



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

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