

# MCT700 Series In-Line Food-Grade NIR Sensors

## CONTINUOUS FOOD QUALITY ASSURANCE SENSORS

### Real-Time Analysis of Moisture, Oil/Fat, Color, and Other Parameters for Process and Quality Control

#### OVERVIEW

The MCT700 Series Food-Grade NIR Sensors (MCT700 Series), comprised of the MCT700, MCT750, and MCT790, offers rapid, continuous analysis for manufacturing operators to monitor incoming raw materials or process control on the production line. The in-line, non-contact sensors accurately measure moisture, oil, color, temperature and other parameters. With this analysis, operators can maintain consistent product quality, increase throughput, and minimize waste.

The applications of the MCT700 Series range from snack foods, baked goods, cereals, ingredients, powders, and other food products. The sensors are capable of a closed loop control of ovens, belt speed, seasoning applicators, and other monitoring. The MCT700 Series can also be easily integrated into existing control systems, adding data to maximize efficiency.

Tens of thousands of MCT Series sensors have been installed at many of the largest food processing plants in the world. They help operators control moisture to within one-tenth of a percent to meet product specs every time.

#### MOISTURE, FAT, TEMPERATURE, AND NOW COLOR ANALYSIS

Color is a critical quality parameter for all processed foods. With consistent, real-time color analysis combined with moisture, fat, and temperature control, MCT790 users can achieve more comprehensive in-line quality control than with any previous MCT generation.

#### APPLICATIONS FOR THE MCT700 SERIES

- Potato Chips
- Corn Chips
- Tortillas
- Cookies
- Crackers
- Pretzels
- Extruded Snacks
- Bread Crumbs
- Oil Based Flavorings
- Doughs/Dough Sheets
- Breakfast Cereals
- Popcorn
- Pork Rinds
- Sausage Skins
- Ground Meat
- Rendering Products
- Animal Feed Ingredients
- Flours and Starch
- Milk Powders
- Potato Flakes
- Sugar and Sugar Beets
- Salts
- Coffee, Tea, and Cocoa Powders
- And Many More



#### MCT700 SERIES FEATURES

- High-speed measurement allows capturing up to 100 readings per second
- Integrated color measurement capabilities for food applications (MCT790 only)
- Simple to operate, integrate and standardize across multiple lines and locations
- Rugged IP67 and IP69K food-grade enclosure options available; IP67- and NEMA 4X-rated 7-inch local display included with all models
- Proprietary temperature-controlled detector ensures measurement stability
- Fully modular with all components easily replaceable in the field
- Customizable measurement area to analyze unique food products
- Simple troubleshooting with advanced on-board diagnostics

# MCT700 Series In-Line Food-Grade NIR Sensors



Proven to perform in harsh conditions for industrial applications, the MCT700 Series products are built to last, are simple to install, and are virtually maintenance free for years of reliable, consistent results.



**Note:** All three food-grade MCT sensors have the same housing and operator interface.

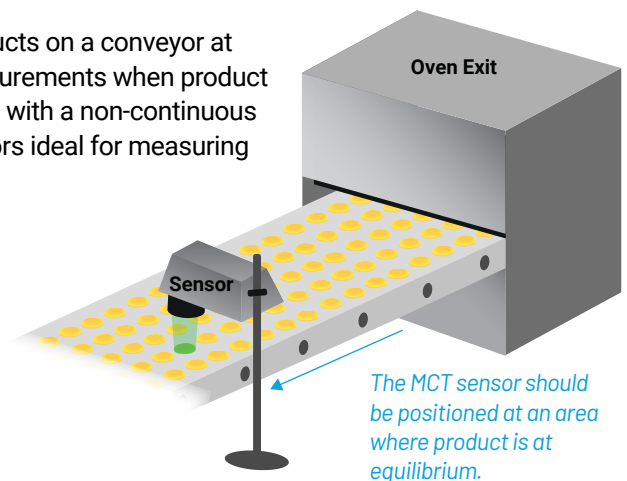
- High-speed measurement capturing up to 100 readings per second.
- Stainless steel housing; IP67 and IP69K options available. IP67-rated user interface enclosure.
- Designed for demanding conditions in food and snack food manufacturing.

|        | MEASURED PARAMETERS |          |           |              | ENCLOSURE RATING               |
|--------|---------------------|----------|-----------|--------------|--------------------------------|
|        | Color               | Moisture | Fat (Oil) | Temperature  |                                |
| MCT790 | ✓                   | ✓        | ✓         | ✓ (optional) | IP69K (Sapphire sensor window) |
| MCT750 |                     | ✓        | ✓         | ✓ (optional) | IP69K (Sapphire sensor window) |
| MCT700 |                     | ✓        | ✓         | ✓ (optional) | IP67 (Kel-F sensor window)     |

## HIGH-SPEED GATING ANALYSIS

The MCT700 Series sensors allows for the analysis of segmented products on a conveyor at full-line speeds. Through this process, the sensor will only provide measurements when product is under the sensor, thereby making the system suitable for applications with a non-continuous product flow. High-speed gating capabilities make the food-grade sensors ideal for measuring moisture and fat content in high-throughput food operations, including:

- Cookies/Biscuits
- Snack Cakes
- Candy Bars/Granola Bars
- Individually Packed Noodles
- Freeze-Dried Portioned Products



## OTHER COMMON INSTALLATIONS

**Belt Conveyor Installations:** MCT700 Series sensors are mounted 200-450 mm (8-18 in) above the conveyor, ideally with continuous product.

**Augers & Screw Conveyors:** Installing the MCT700 Series on top of Augers and Screw conveyors allows for a measurement of the flow of material being conveyed by the flights of a screw. The KPM NIR Sensors are installed offset to the side of the central shaft while the influence of the flights passing the unit are eliminated by the instrument's software.

**Bins and Chutes:** Sapphire Sight Glass Windows can be used for continuous flow of products against the window.

**Traversing Analysis:** The optional food-grade Guardian-HD traversing frame allows for analyzing products across a full belt width, including move & park scanning.



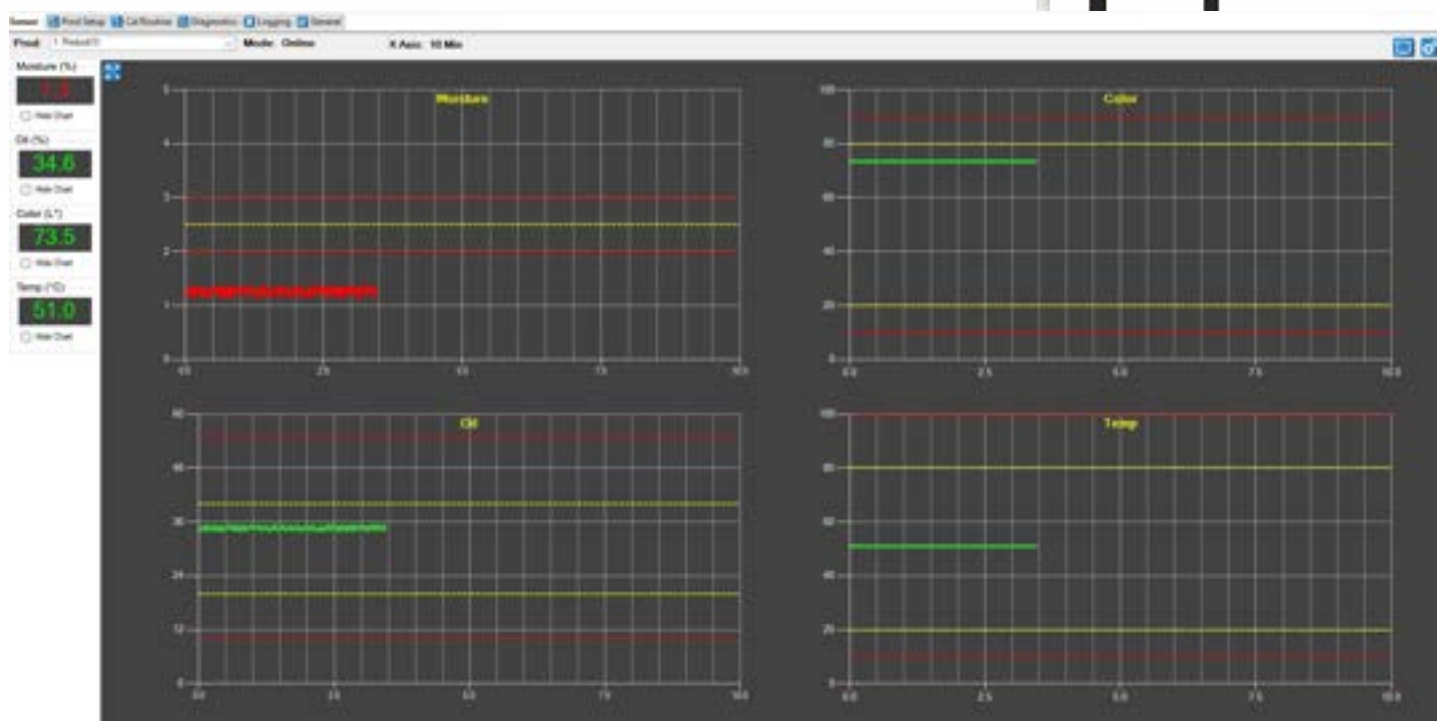
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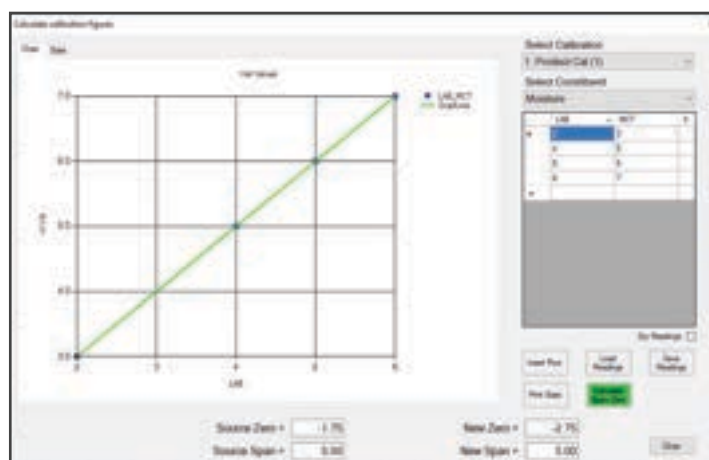
## SensorVu™

### PROPRIETARY SOFTWARE PLATFORM

The MCT700 Series uses SensorVu™ Windows® - based PC software, allowing operators to insert set-up parameters, perform or adjust calibrations, select product codes, examine internal diagnostic values and remotely view moisture and temperature trends. SensorVu™ can also connect to multiple KPM In-line NIR Sensors in a single location for multi-system monitoring.



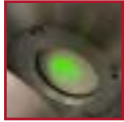
*Trend screen with logging capability displays process reading changes in real time.*



*Simple, graphical calibration routine for quick setup of new products.*



## ACCESSORIES



**Sapphire Sight Window**  
(51 mm dia.)  
Part# 240-150A

Enables look-in analysis of products in chutes.



**Snorkel Sampler**  
Part# 250-000A

Designed to measure free falling powders/granules in chutes.



**Air Cooling**  
Part# 240-010A-700

Vortex cooler attached to the sensor for high-temp applications.



**Cal Check Standard**  
Part# 230-000A-S

Used to verify sensor stability over time and transfer calibrations between sensors.

## ORDERING INFORMATION

| Part Number     | Description                                                   |
|-----------------|---------------------------------------------------------------|
| 700-100-SSA-FBX | MCT700 Sensor assembly with display. Stainless steel housing. |
| 750-100-SSA-FBX | MCT750 Sensor assembly with display. Stainless steel housing. |
| 790-100-SSA-FBX | MCT790 Sensor assembly with display. Stainless steel housing. |

## FOOD-GRADE SENSOR SPECIFICATIONS (MCT700, MCT750, & MCT790)

|                                      | MCT700                                                                                                              | MCT750                                          | MCT790                                                 |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|--------------------------------------------------------|
| <b>Sensor enclosure &amp; rating</b> | IP67 rated stainless steel                                                                                          | IP69K rated stainless steel                     | IP69K rated stainless steel                            |
| <b>Constituents measured</b>         | Moisture, oil (fat), and temperature (optional)                                                                     | Moisture, oil (fat), and temperature (optional) | Color, moisture, oil (fat), and temperature (optional) |
| <b>Sensor window</b>                 | Kel-F                                                                                                               | Sapphire                                        | Sapphire                                               |
| <b>Sensor weight</b>                 | 17 kg (37 lbs)                                                                                                      |                                                 |                                                        |
| <b>Ambient operating temperature</b> | 0-60 °C (32-140 °F) with water or air cooling up to 80 °C (160 °F)                                                  |                                                 |                                                        |
| <b>Reading speed</b>                 | Up to 100 readings/second                                                                                           |                                                 |                                                        |
| <b>Guardian-HD compatible?</b>       | Yes                                                                                                                 |                                                 |                                                        |
| <b>High-speed gating available?</b>  | Yes                                                                                                                 |                                                 |                                                        |
| <b>Advanced features</b>             | Lamp life monitoring, motor life monitoring, vibration alarm, window contamination monitoring                       |                                                 |                                                        |
| <b>Total product calibrations</b>    | 200                                                                                                                 |                                                 |                                                        |
| <b>Operator interface</b>            | 7 in (178 mm) touch screen (IP67)                                                                                   |                                                 |                                                        |
| <b>Communication options</b>         | USB, Ethernet TCP/IP, Ethernet IP, EtherCAT, ProfiNet, ProfiBus, Modbus TCP, Modbus RTU DeviceNet, OPC-DDE Server   |                                                 |                                                        |
| <b>Moisture accuracy</b>             | +/- 0.1%                                                                                                            |                                                 |                                                        |
| <b>Fats/oils accuracy</b>            | +/- 0.2%                                                                                                            |                                                 |                                                        |
| <b>Wet basis moisture range</b>      | Min. 0.1% Max. 90%                                                                                                  |                                                 |                                                        |
| <b>Fats/oils range</b>               | Min. 0.1% Max 50%                                                                                                   |                                                 |                                                        |
| <b>Transmitter/product distance</b>  | 200-450 mm (8-18 in)                                                                                                |                                                 |                                                        |
| <b>Power inputs</b>                  | 110 to 240 V (50 - 60 Hz) standard. 24 VDC optional.                                                                |                                                 |                                                        |
| <b>Outputs</b>                       | 4-20mA, 0-10V (isolated)                                                                                            |                                                 |                                                        |
| <b>Languages</b>                     | English and 10+ selectable languages                                                                                |                                                 |                                                        |
| <b>Cable</b>                         | 5 m (16.7 ft) standard; other lengths available                                                                     |                                                 |                                                        |
| <b>ATEX22 available?</b>             | Optional                                                                                                            |                                                 |                                                        |
| <b>Compliance</b>                    | CE Certified (FCC CFR 47: Part 15: B: 2015, Industry Canada Interference-Causing Equipment Standard ICES-003: 2021) |                                                 |                                                        |
| <b>Warranty</b>                      | Two years limited warranty                                                                                          |                                                 |                                                        |

### KPM Analytics

8 Technology Drive | Westborough, MA 01581 USA  
Phone: +1 774.399.0500  
www.kpmanalytics.com | sales@kpmanalytics.com

