Infrared Multi Analyzer
IM series

10-wavelength, 4-constituent, High-speed/High-repeatability, Multi-interface, Easy to operate

The IM series is an on-line multi IR wavelength analyzer utilizing the infrared absorption technology for measuring product constituent and/or thickness. Signal processing capabilities are built into the Compact All-In-One detector unit for easy installation and operation. A maximum of 99 calibration curves can be stored into the detector memory for numerous measurement applications. The detector can be used by itself or connected to a PC/plant control system, as both analog and digital outputs are provided. A remote setting display unit, connectable up to 9 detector units, can be used to setup various detector functions and also displays measured values.

■ FEATURES
- Up to 10 wavelengths, capable of measuring 4 constituents such as; moisture, film-thickness, organism, and coating-thickness in real time simultaneously.
- Connectivity to multiple interfaces, RS485 (MODBUS), Ethernet (LAN)
- High-speed & High-repeatability (28ms)
- Multi-calculation function
- Self-diagnostic function, easy maintenance.
- Conforms to CE standards and IP-65

■ CONFIGURATION

■ APPLICATION
- Measuring moisture of wood chip.
- Measuring the thickness of sheet or film.
- Measuring the organism, moisture and lipid of fodder.
- Measuring the organism, moisture and oil of potato chips.
- Measuring moisture of garbage (RDF moisture).
- Measuring the coating thickness on the painting sheet.
- Measuring moisture of powder.
- Measuring moisture in cleaning solution.
- Measuring moisture of clay.
- Measuring moisture of fiber.
- Measure & Control the coating thickness of Laminate-sheet production line.
- Measure & Control the painting thickness.
MODELS
Analyser unit

IRMA MODELS

**Analyzer unit**

**Type**

- **1000 Series**... Moisture (Mirror type)
  - 11: General moisture
  - 12: High moisture
  - 13: Micro moisture

- **2000 Series**... Moisture (Fiber type)
  - 21: General moisture
  - 22: High moisture

- **5000 Series**... Multi-component (Mirror type)
  - 51: Multi-component (NIR)
  - 52: Multi-component (thin-film, Infrared)

- **6000 Series**... Multi-component (Fiber type)
  - 61: Multi-component

- **7000 Series**... Thickness, coating (Mirror type)
  - 71: Multi-component
  - 72: Multi-component (thin-film, Infrared)

- **8000 Series**... Thickness, coating (Fiber type)
  - 81: Multi-component

**Number of measuring wavelength or component**

- **00**: Other than 5,000 & 6,000 Series
- **0**: For 5,000 & 6,000 Series
- **1**: Number of measuring wavelength: 2 to 0 (10)
- **2**: Number of measuring component: 1 to 4

**Communications interface**

- **S**: RS485 (standard)
- **L**: Ethernet (LAN)

**Special specification**

- Blank: standard
- 1: Small diameter type
- 2: Rust prevention type
- 3: Gain specifications
- 4: P polarized light

- *1: RS-485 is not applicable when L is selected.
- *2: Other special applications in the models are possible.

MODELS
Setting display unit

**Type**

- **RGMEG2**

**Communications interface**

- **R**: RS232C (standard)
- **A**: RS422A
- **S**: RS485

**Special specification**

- Blank: standard
- **V**: with CE standards

MEASURING EXAMPLES

<table>
<thead>
<tr>
<th>Object</th>
<th>Range</th>
<th>Accu.</th>
<th>High moisture (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General moisture (%)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glass / pottery / cement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Potter's clay</td>
<td>0 to 12</td>
<td>±0.3</td>
<td></td>
</tr>
<tr>
<td>Raw bread crumbs</td>
<td>30 to 40</td>
<td>±0.7</td>
<td></td>
</tr>
<tr>
<td><strong>Iron / metal</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coal</td>
<td>0 to 15</td>
<td>±0.2</td>
<td></td>
</tr>
<tr>
<td>Silica sand</td>
<td>0 to 10</td>
<td>±0.3</td>
<td></td>
</tr>
<tr>
<td><strong>Mix raw material</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 to 10</td>
<td>±0.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Iron oxide</strong></td>
<td>0 to 10</td>
<td>±0.2</td>
<td></td>
</tr>
<tr>
<td><strong>Foods</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Starch</td>
<td>0 to 25</td>
<td>±0.2</td>
<td></td>
</tr>
<tr>
<td>Granular femta</td>
<td>0 to 0.5</td>
<td>±0.08</td>
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<tr>
<td>Bread-crumbs</td>
<td>0 to 20</td>
<td>±0.2</td>
<td></td>
</tr>
<tr>
<td><strong>Cherries</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soybean</td>
<td>0 to 15</td>
<td>±0.2</td>
<td></td>
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<tr>
<td>Polyethylene PE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Milk powder</td>
<td>0 to 5</td>
<td>±0.2</td>
<td></td>
</tr>
<tr>
<td>Polypropylene PE</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sugar / salt</td>
<td>0 to 2</td>
<td>±0.06</td>
<td></td>
</tr>
<tr>
<td>Polyester PET</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flavouring</td>
<td>0 to 10</td>
<td>±0.2</td>
<td></td>
</tr>
<tr>
<td>Vinyl chloride</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PVC</td>
<td>0 to 15</td>
<td>±0.2</td>
<td></td>
</tr>
<tr>
<td>PVA</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Tea</td>
<td>0 to 15</td>
<td>±0.2</td>
<td></td>
</tr>
<tr>
<td><strong>Chemicals</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Catalyst</td>
<td>0 to 10</td>
<td>±0.2</td>
<td></td>
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<tr>
<td>Polyethylene PS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td>0 to 20</td>
<td>±0.2</td>
<td></td>
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<tr>
<td>Polycarbonate</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Detergent</td>
<td>0 to 15</td>
<td>±0.2</td>
<td></td>
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<tr>
<td>Nylon PA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ink</td>
<td>0 to 5</td>
<td>±0.2</td>
<td></td>
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<tr>
<td>Polymide PI</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fertilizer</td>
<td>0 to 5</td>
<td>±0.2</td>
<td></td>
</tr>
<tr>
<td><strong>Rubber / fiber / etc.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vinylon fiber</td>
<td>0 to 10</td>
<td>±0.2</td>
<td></td>
</tr>
<tr>
<td>Coating</td>
<td>0 to 10</td>
<td>±0.2</td>
<td></td>
</tr>
<tr>
<td>Acrylic fiber</td>
<td>0 to 10</td>
<td>±0.2</td>
<td></td>
</tr>
<tr>
<td>Tack paper / label</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wood chip</td>
<td>0 to 10</td>
<td>±0.2</td>
<td></td>
</tr>
<tr>
<td>Adhesive WET/DRY</td>
<td>10 to 1000</td>
<td>±0.2</td>
<td></td>
</tr>
<tr>
<td>Paper</td>
<td>0 to 10</td>
<td>±0.1</td>
<td></td>
</tr>
<tr>
<td>Resin on steel-board</td>
<td>10 to 1000</td>
<td>±0.2</td>
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</tbody>
</table>

SOFTWARE PACKAGE

- **Main Screen**
  Displays measured data, trend and alarm value. Displays 4 constituents on one screen. Save data into specified folder, enable to search or read out the data.

- **Create the Calibration Curve**
  Creates the calibration curve for new sample, and transmits the regression type data to detector.

- **Setup Screen**
**GENERAL SPECIFICATIONS**

**INFRARED MULTI ANALYZER**

- **Measuring system:** Infrared absorption type
- **Measuring wavelength:** Up to 10 wavelengths
- **Measuring component:** Up to 4 constituents
- **Light source:** Tungsten lamp
- **Measuring distance:** 200 to 400mm (IRMA1300: 160 to 300mm)
- **Measuring diameter:** 50mm (IRMA1300: 30mm)
- **Analog output:** 4 to 20mADC, ±0.2% of full scale (Load resistance: less than 500Ω)
- **Communications:** RS485 MODBUS
- **Output renewal cycle:** 28ms
- **Display & setup:** Displays data & setup parameter
- **Computing:** 2 or 3-color ratio calculation, Multiple regression calculation
- **No. of calibration curve:** Up to 99 curves
- **Calibration curve:** Linear, quadratic, cubic & multiple regression line
- **Calibration curve correction:** Linear & quadratic co
- **Smoothing (delay):** 0 to 99 seconds
- **Calibration:** Performed by key operation or by external contact in use of checking plate
- **Hold/preset:** Hold or preset the display and output by key operation or external contact.
- **Calibration curve correction:** Online correction of calibration curve
- **External setup:** Detector No., CH. No., Calibration, Hold or Preset.
- **Alarm function:** Outputs contact signal (HCL) beyond setting-range
- **Self-diagnostic:** Outputs contact signal(1b) when abnormal condition

**CE STANDARDS SPECIFICATIONS**

- **Analog output:** 4 to 20mADC, 1 output (Load resistance: less than 500Ω)
- **Power supply:** 24V DC (within ±10%)
- **Power consumption:** About 10VA

**FIBER UNIT**

- **Measuring distance and diameter:** With lens --- 425/25mm to 440/100mm
  - Without lens --- 420/15mm to 450/50mm
- **Fiber length:** Standard 1.5m, Max.5m (Reflection type fiber)
  - Standard 2m, Max.10m (Transmission type fiber)
- **Fiber protection:** Stainless steel flexible armour
- **Minimum bending radius:** R100mm
- **Working temperature:** 0 to 150°C
- **Purge air flow:** With lens --- Air purge disabled
  - Without lens --- 5 to 20L/min

**SPECIAL SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small diameter</td>
<td>Mirror reflection type 30mm</td>
</tr>
<tr>
<td>Rust prevention</td>
<td>For inside printed-circuit board</td>
</tr>
<tr>
<td>Gain specification</td>
<td>Special sample * Judged by sample test</td>
</tr>
<tr>
<td>P polarized light</td>
<td>Thin-film sample * Judged by sample test</td>
</tr>
</tbody>
</table>
### EXTERNAL DIMENSIONS

- **Analyzer IRMA**

- **Setting display unit IRGMEG2**

- **Power supply unit IR-WEP**

- **Air purge hood IR-WEA**

- **Output checking plate IR-WEB**

- **Connecting cable IR-WERPD**

- **Reflection type fiber (without lens) IR-WCRN**

- **Reflection type fiber (with lens) IR-WCRE**

- **Transmission type fiber IR-WCT**

- **Output checking plate for reflection type fiber IR-WCRB**

- **Liquid cell IR-WCC**

- **Air-cooling box IR-WEX**

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Unit: mm

Specifications subject to change without notice. Printed in Japan (I) 2006. 3 Recycled Paper