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

■ 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

**Analyzer unit**

- **IRMA**

**Setting display unit**

- **IRGMEG3**

**Communications interface**

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

**Special specification**

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

*1: RS485 is not applicable when L, W are selected.
*2: Other special applications in the models are available.

### MEASURING EXAMPLES

#### Object

<table>
<thead>
<tr>
<th>Range</th>
<th>Accu.</th>
</tr>
</thead>
<tbody>
<tr>
<td>High moisture (%)</td>
<td></td>
</tr>
<tr>
<td>Plaster</td>
<td>5 to 15</td>
</tr>
<tr>
<td>Wet paper</td>
<td>40 to 70</td>
</tr>
<tr>
<td>Raw bread crumbs</td>
<td>30 to 40</td>
</tr>
<tr>
<td>Clay</td>
<td>0 to 30</td>
</tr>
<tr>
<td>Silica sand</td>
<td>0 to 10</td>
</tr>
<tr>
<td>Bicarbonate</td>
<td>0 to 18</td>
</tr>
</tbody>
</table>

#### Food

<table>
<thead>
<tr>
<th>Range</th>
<th>Accu.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Granular ferrite</td>
<td>0 to 0.5</td>
</tr>
</tbody>
</table>

#### Thickness (μm)

<table>
<thead>
<tr>
<th>Range</th>
<th>Accu.</th>
</tr>
</thead>
</table>
| Coating (g/m²)
| Coat-paper | 10 to 1000 | ≥±0.2 |
| Tuck-paper, label | 10 to 1000 | ≥±0.2 |
| Adhesive WET/DRY | 10 to 1000 | ≥±0.2 |
| Resin on steel-board | ≥±0.2 |

#### Chemicals

<table>
<thead>
<tr>
<th>Range</th>
<th>Accu.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coacryl fiber</td>
<td>10 to 3000</td>
</tr>
<tr>
<td>Acrylic fiber</td>
<td>10 to 3000</td>
</tr>
<tr>
<td>Wood chip</td>
<td>10 to 3000</td>
</tr>
<tr>
<td>Paper</td>
<td>10 to 3000</td>
</tr>
</tbody>
</table>

#### Micro moisture (%)

<table>
<thead>
<tr>
<th>Range</th>
<th>Accu.</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABS, PVC powder</td>
<td>0 to 1</td>
</tr>
<tr>
<td>Granular ferrite</td>
<td>0 to 0.5</td>
</tr>
</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  
(Measurement diameter: 50mm to 300mm)  
Analog output: 4 to 20mA DC, 0.2% of full scale  
(Load resistance: less than 500Ω)  
Communications: RS485 MODBUS  
Output renewal cycle: 28ms  
Display & setup: Displays data & setup parameter  
Parameters are configurable by key  
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 correction  
Smoothing (delay): 0 to 99 seconds  
Detector No. setup: When multiple detector operation, detector No. is key configurable  
Channel No. setup: Calibration curve No. is key configurable.  
Self-diagnostic: Outputs contact signal and communications when abnormal conditions  
Correction input: Compensate measured value by external 4 to 20mA DC  
(sample temperature, etc.)  
External Di/o: D(contact input) — Performs either one of preset, data-hold or real/smoothing  
D(contact output) — Selects self-diagnostic(1b) or Hi/low alarm(1a)  
Working temperature: 0 to 50°C (Use dry air cooling if higher than 45°C)  
Outlet air temperature must be lower than 30°C  
Power supply: 24V DC supplied from IR-WEP  
(IR-WEP power supply: 100-240VAC)  
Power consumption: Approx. 30VA  
CE-standards: EN61326-1:2006  
Emission: Class A  
Immunity: Table 2

## FIBER UNIT

Measuring distance and diameter:  
With lens — Φ25/25mm to Φ40/100mm  
Without lens — Φ20/15mm to Φ50/50mm  
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  
Accessory: Vertical mounting holder  
Flange holder

### 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</td>
</tr>
<tr>
<td></td>
<td>* Judged by sample test</td>
</tr>
<tr>
<td>P polarized light</td>
<td>Thin-film sample</td>
</tr>
<tr>
<td></td>
<td>* Judged by sample test</td>
</tr>
</tbody>
</table>

## SETTING DISPLAY UNIT

Input signal: RS485, up to 9 detectors connectable  
Analog output: 4 to 20 mA DC, 3 output (Load resistance: output 1, 2: Less than 600Ω, 3: Less than 400Ω)  
(Component 1 of detector no. 1 to 3 is outputed for multi head)  
Communications: RS232C standard, RS422A or RS485 (option)  
Output renewal cycle: 28ms x detector number  
Display: 1. Measured data, LED 5 digit  
2. Detector No., component No., calibration curve No., parameter setup  
(Compound No. is displayed for detector multi-component meter)  
Detector No. setup: Detector No. 1 to 9 is key configurable  
Component No. setup: Component No. 1 to 4 is key configurable  
(Detecting on the detector)  
Calibration curve No. setup: Calibration curve No. is key configurable for each detector No. also configurable by external contact  
Smoothing time: Smoothing time setting at smoothing calculation  
T=0.0 to 9.9, 10 to 99 seconds  
Calibration function: Perform calibration 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 by external contact  
Calibration curve correction: Online correction of calibration curve linear and quadratic correction  
External setup: Detector No., component No., calibration curve No., calibration, hold or preset  
Alarm function: High/low limit alarm individual contact output (a contact, common) beyond setting range  
Self-diagnostic: Outputs contact signal(1b) when abnormal condition  
Case material: Flame retardant polycarbonate  
Working ambient: 0 to 50°C  
Mounting: Panel-mount type  
Weight: Approx. 0.6kg  
Power supply: 100 to 240V AC 50/60Hz  
Power consumption: Max. 20VA  
CE-standards: EN61326-1:2006  
Emission: Class A  
Immunity: Table 2
### EXTERNAL DIMENSIONS

- **Analyzer IRMA**
- **Setting display unit IRGMEG3**
- **Power supply unit IR-WEP**
- **Air purge hood IR-WEA**
- **Output checking plate IR-WEB**
- **Connecting cable IR-WERP**
- **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-WCR-B**
- **Liquid cell IR-WCC**
- **Air-cooling box IR-WEX**

Specifications subject to change without notice. Printed in Japan (I) 2019. 3