

# Infrared Multi Analyzer IM series



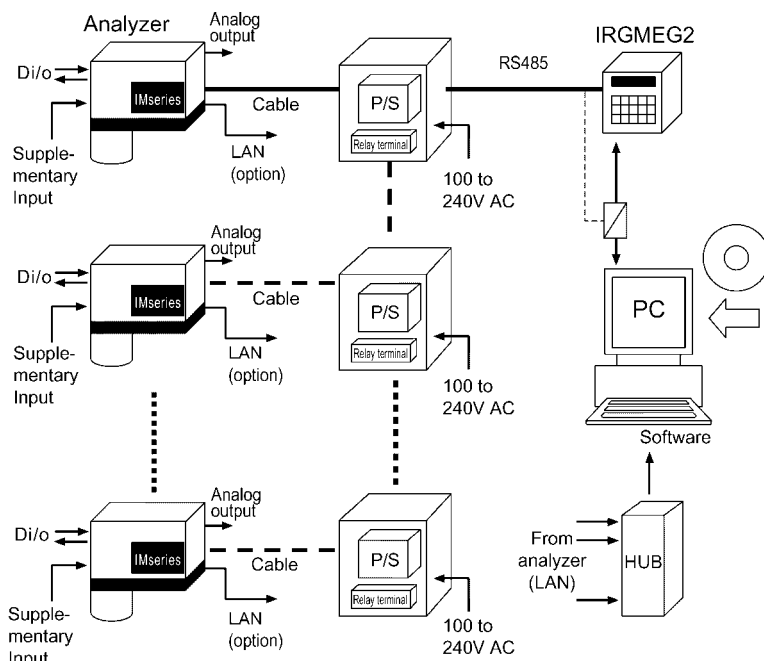
## 10-wavelength, 4-constituent, High-speed/High-repeatability, Multi-interface, Easy to operate

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

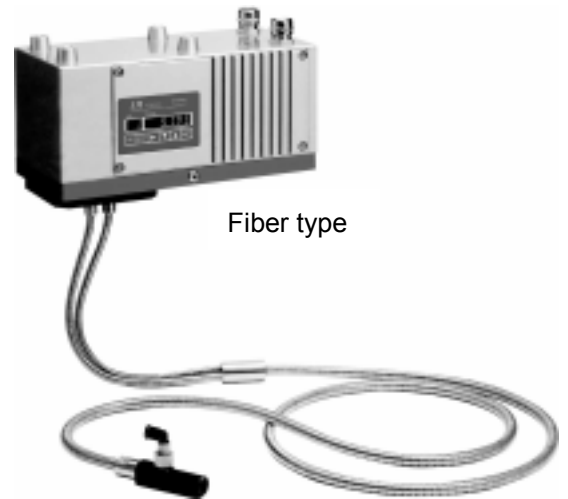
### ■ CONFIGURATION



Mirror type



Fiber type



### ■ 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

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 : Thickness, coating
- Number of measuring wavelength or component  
 00 : Other than 5,000 & 6,000 Series  
 : For 5,000 & 6,000 Series  
 : Number of measuring wavelength: 2 to 0 (10)  
 : Number of measuring component: 1 to 4
- Communications interface  
 S: RS485 (standard) \*<sup>1</sup>  
 L: Ethernet (LAN)
- Special specification \*<sup>2</sup>  
 Blank: standard  
 1: Small diameter type  
 2: Rust prevention type  
 3: Gain specifications  
 4: P polarized light

\*<sup>1</sup>: RS-485 is not applicable when L is selected.

\*<sup>2</sup>: Other special applications in the models are possible.

## MODELS

### Setting display unit

IRGMEG2

- Communications interface  
 R: RS232C (standard)  
 A: RS422A  
 S: RS485
- Special specification \*<sup>2</sup>  
 Blank: standard  
 V: with CE standards



Setting display unit

## MEASURING EXAMPLES

Object	Range	Accu.	High moisture (%)		
<b>General moisture (%)</b>			Plaster	5 to 15	>±0.7
<b>Glass / pottery / cement</b>			Wet paper	40 to 70	>±0.5
Potter's clay	0 to 12	>±0.3	Raw bread crumbs	30 to 40	>±0.7
<b>Iron / metal</b>			Clay	0 to 30	>±0.3
Coal	0 to 15	>±0.2	Silica sand	0 to 10	>±0.8
Mix raw material	0 to 10	>±0.2	Bicarbonate	0 to 18	>±0.6
Iron oxide	0 to 10	>±0.2	<b>Micro moisture (%)</b>		
<b>Foods</b>			ABS, PVC powder	0 to 1	>±0.08
Starch	0 to 25	>±0.2	Granular ferrite	0 to 0.5	>±0.08
Bread-crumbs	0 to 20	>±0.2	<b>Thickness (μm)</b>		
Soybean	0 to 15	>±0.2	Polyethylene PE	10 to 3000	>±0.2
Milk powder	0 to 5	>±0.2	Polypropylene PP		>±0.2
Sugar / salt	0 to 2	>±0.05	Polyester PET		>±0.2
Flavouring	0 to 10	>±0.2	Vinyl chloride PVC		>±0.2
Tea	0 to 15	>±0.2	PVA		>±0.2
<b>Chemicals</b>			EVA		>±0.2
Catalyst	0 to 10	>±0.2	Polystyrene PS		>±0.2
Medium	0 to 20	>±0.2	Polycarbonate		>±0.2
Detergent	0 to 15	>±0.2	Nylon PA		>±0.2
Ink	0 to 5	>±0.2	Polyimide PI		>±0.3
Fertilizer	0 to 5	>±0.2	TAC film	>±0.2	
<b>Rubber / fiber / etc.</b>			<b>Coating (g/m<sup>2</sup>)</b>		
Vinylon fiber	0 to 10	>±0.2	Coat-paper	10 to 1000	>±0.2
Acrylic fiber	0 to 10	>±0.2	Tuck-paper, label		>±0.2
Wood chip	0 to 10	>±0.2	Adhesive WET/DRY		>±0.2
Paper	0 to 10	>±0.1	Resin on steel-board		>±0.2

## SOFTWARE PACKAGE

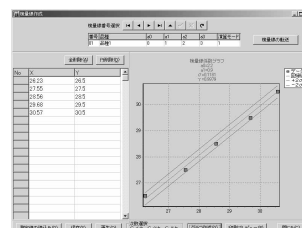
### • Main Screen



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

項目	設定	標準	検出	警報	単位	説明
01 水分	0.1	0.0	0.0	0.1	%	水分
02 灰分	0.1	0.0	0.0	0.1	%	灰分
03 糖類	0.1	0.0	0.0	0.1	%	糖類
04 糖類	0.1	0.0	0.0	0.1	%	糖類
05 糖類	0.1	0.0	0.0	0.1	%	糖類
06 糖類	0.1	0.0	0.0	0.1	%	糖類
07 糖類	0.1	0.0	0.0	0.1	%	糖類
08 糖類	0.1	0.0	0.0	0.1	%	糖類
09 糖類	0.1	0.0	0.0	0.1	%	糖類
10 糖類	0.1	0.0	0.0	0.1	%	糖類
11 糖類	0.1	0.0	0.0	0.1	%	糖類
12 糖類	0.1	0.0	0.0	0.1	%	糖類
13 糖類	0.1	0.0	0.0	0.1	%	糖類
14 糖類	0.1	0.0	0.0	0.1	%	糖類
15 糖類	0.1	0.0	0.0	0.1	%	糖類
16 糖類	0.1	0.0	0.0	0.1	%	糖類
17 糖類	0.1	0.0	0.0	0.1	%	糖類
18 糖類	0.1	0.0	0.0	0.1	%	糖類
19 糖類	0.1	0.0	0.0	0.1	%	糖類

## ■ 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□/300mm (IRMA1300:30mm□/200mm)
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 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 co
Smoothing (delay):	0 to 99 seconds
Calibration:	By checking plate
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:	Di(contact input) --- Perform either one of preset, data-hold or real/smoothing Do(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
Connection:	Terminal connection
Casing:	Aluminum casting, drip-proof structure (conforming to IEC529, IP65)
Weight:	Approx. 4.3kg
Mounting:	Bolt suspension method with 4 pieces of M8 bolts
CE-standards:	EMC directives EN61326+A

### ■ SPECIAL SPECIFICATIONS

Specifications	Content
Small diameter	Mirror reflection type 30mm□
Rust prevention	For inside printed-circuit board
Gain specification	Special sample * Judged by sample test
P polarized light	Thin-film sample * Judged by sample test

### ● SETTING DISPLAY UNIT

Input signal:	RS485, Up to 9 detectors connectable
Analog output:	4 to 20mADC, 2 output* (Load resistance: less than 500Ω) * When multiple detector operation, outputs for detector No. 1 & 2.
Communications:	RS232C, RS422A or RS485 (to be specified)
Output renewal cycle:	28ms × detector number
Display:	1) Measured data, LED 5-digit 2) Detector No., CH. No., Parameter setup
Detector No. setup:	Detector No.1 to No.9 is key configurable.
Calibration curve No. setup:	Calibration curve No. is key configurable.
Smoothing time:	T = 0.0-9.9, 10-99 seconds
Calibration:	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 external contact.
Calibration curve correction:	Online correction of calibration curve Linear or quadratic correction.
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 With lamp display
Power supply:	100 to 240V AC 50/60Hz
Power consumption:	Max. 15VA
Working ambient:	0 to 50°C
Casing:	ABS resin (IP65)
Mounting:	Panel-mount type
Weight:	Approx. 0.6kg

### ● CE STANDARDS SPECIFICATIONS

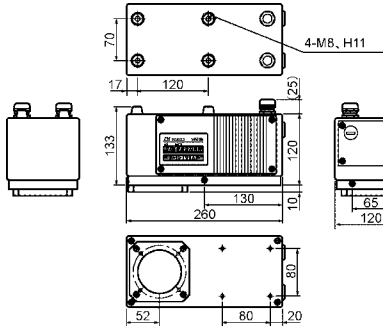
Analog output:	4 to 20mADC, 1 output (Load resistance: less than 500Ω)
Power supply:	24V DC (within ±10%)
Power consumption:	About 10VA

### ● FIBER UNIT

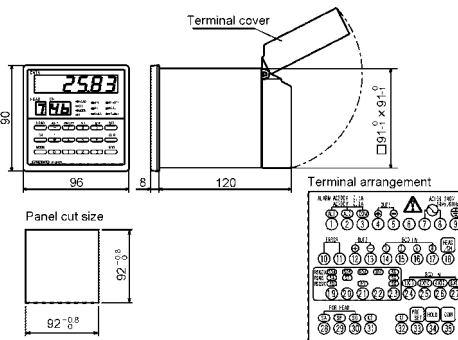
Measuring distance and diameter:	With lens --- φ25/25mm to φ40/100mm Without lens --- φ20/15mm to φ50/50mm
Fiber length:	Standard 1.5m, Max.5m (Reflection type fiber) Standard 2m, Max.10m (Transmission type fiber)
Fiber protection:	Stainless steel flexible armour
Minimum bending radius:	R100mm
Working 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

## EXTERNAL DIMENSIONS

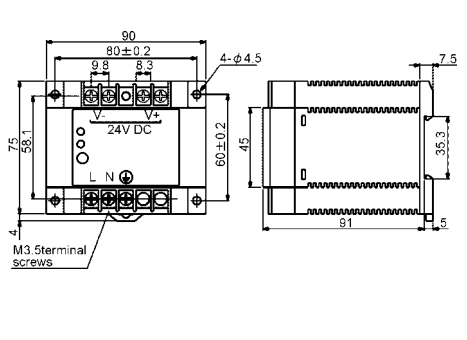
### Analyzer IRMA



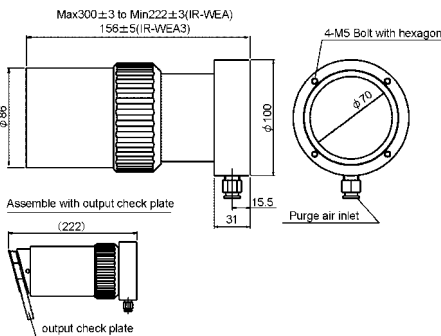
### Setting display unit IRGMEG2



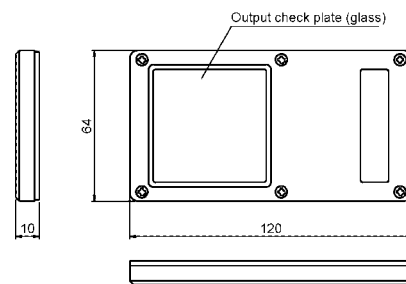
### Power supply unit IR-WEP



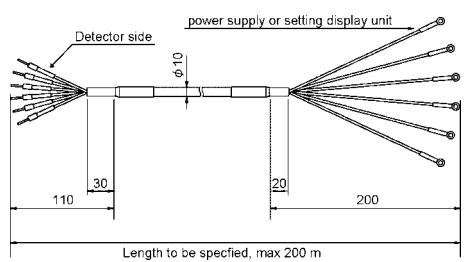
### Air purge hood IR-WEA



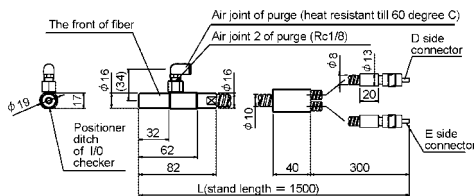
### Output checking plate IR-WEB



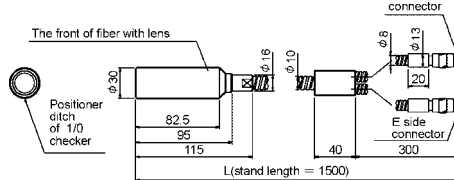
### Connecting cable IR-WERP□□□



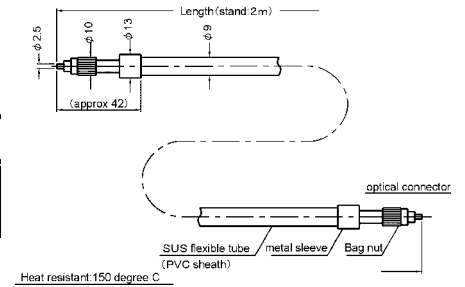
### Reflection type fiber (without lens) IR-WCRN□□□



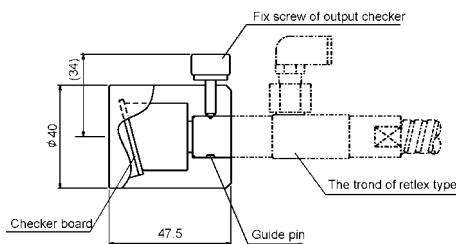
### Reflection type fiber (with lens) IR-WCRE□□□



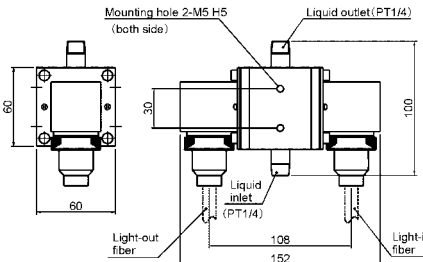
### Transmission type fiber IR-WCT□□



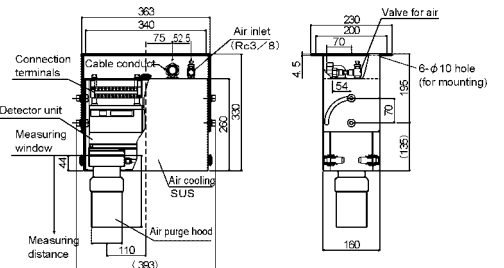
### Output checking plate for reflection type fiber IR-WCR□□



### Liquid cell IR-WCC



### Air-cooling box IR-WEX



Unit: mm

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

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