

Infrared Multi Analyzer IM series



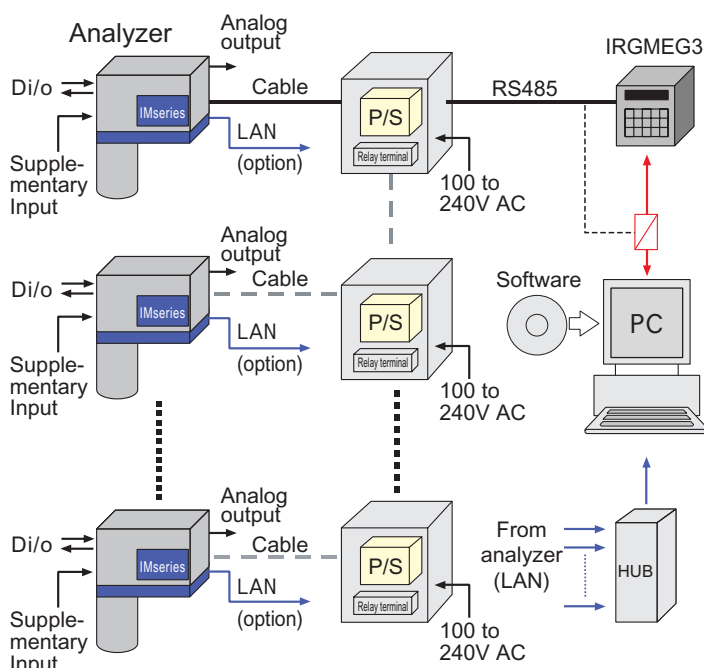
10-wavelength, 4-constituent, High-speed/High-repeatability, Multi-interface, Easy to operate

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



Setting display unit

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 : Thickness, coating (NIR)
 - 72 : Thin-film, coating (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) *1
- L : Ethernet (LAN)
- W : SS radio

Special specification *2

- 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.

MODELS

Setting display unit

IRGMEG3 ☐

Communications interface

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



Setting display unit

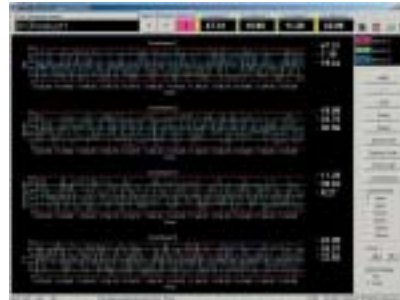
MEASURING EXAMPLES

Object	Range	Accu.
General moisture (%)		
Glass / pottery / cement		
Potter's clay	0 to 12	>±0.3
Iron / metal		
Coal	0 to 15	>±0.2
Mix raw material	0 to 10	>±0.2
Iron oxide	0 to 10	>±0.2
Foods		
Starch	0 to 25	>±0.2
Bread-crumbs	0 to 20	>±0.2
Soybean	0 to 15	>±0.2
Milk powder	0 to 5	>±0.2
Sugar / salt	0 to 2	>±0.05
Flavouring	0 to 10	>±0.2
Tea	0 to 15	>±0.2
Chemicals		
Catalyst	0 to 10	>±0.2
Medium	0 to 20	>±0.2
Detergent	0 to 15	>±0.2
Ink	0 to 5	>±0.2
Fertilizer	0 to 5	>±0.2
Rubber / fiber / etc.		
Vinylon fiber	0 to 10	>±0.2
Acrylic fiber	0 to 10	>±0.2
Wood chip	0 to 10	>±0.2
Paper	0 to 10	>±0.1

High moisture (%)		
Plaster	5 to 15	>±0.7
Wet paper	40 to 70	>±0.5
Raw bread crumbs	30 to 40	>±0.7
Clay	0 to 30	>±0.3
Silica sand	0 to 10	>±0.8
Bicarbonate	0 to 18	>±0.6
Micro moisture (%)		
ABS, PVC powder	0 to 1	>±0.08
Granular ferrite	0 to 0.5	>±0.08
Thickness (μm)		
Polyethylene PE	10 to 3000	>±0.2
Polypropylene PP		>±0.2
Polyester PET		>±0.2
Vinyl chloride PVC		>±0.2
PVA		>±0.2
EVA		>±0.2
Polystyrene PS		>±0.2
Polycarbonate		>±0.2
Nylon PA		>±0.2
Polyimide PI		>±0.3
TAC film		>±0.2
Coating (g/m ²)		
Coat-paper	10 to 1000	>±0.2
Tuck-paper, label		>±0.2
Adhesive WET/DRY		>±0.2
Resin on steel-board		>±0.2

SOFTWARE PACKAGE

Main Screen



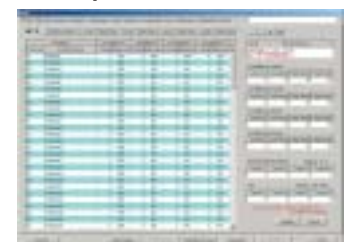
Displays measured data, trend and alarm value. Displays 4 constituents on one screen. Save data into specified folder, enable to search or read out the data.

Create the Calibration Curve



Creates the calibration curve for new sample, and transmits the regression type data to detector.

Setup Screen



■ 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□/200m)
Analog output:	4 to 20mADC, $\pm 0.2\%$ 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
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:	EN61326-1:2006 Emission : Class A Immunity : Table 2

■ 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

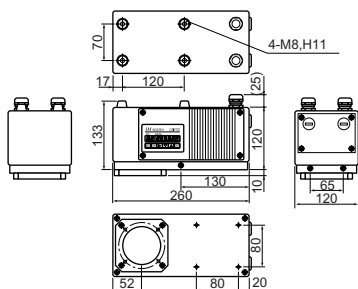
Input signal:	RS485, up to 9 detectors connectable
Analog output:	4 to 20 mA DC, 3 output (Load resistance : output 1, 2 : Less than 600Ω, 3 : Less than 400Ω) (Component 1 of detector no.1 to 3 is outputed for multi head)
Communications:	RS232C(standard), RS422A or RS485(option)
Output renewal cycle:	28ms x detector number
Display:	1. Measured data, LED 5 digit 2. Detector No., component No., calibration curve No., parameter setup (Component 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 (Depending on the detector)
Calibration curve No. setup:	Calibration curve No. is key configurable for each of 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

● FIBER UNIT

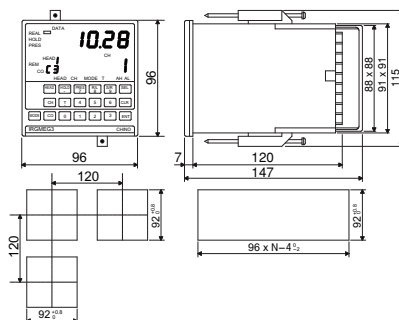
Measuring distance and diameter:	With lens --- $\phi 25/25\text{mm}$ to $\phi 40/100\text{mm}$ Without lens --- $\phi 20/15\text{mm}$ to $\phi 50/50\text{mm}$
Fiber length:	Standard 1.5m, Max.5m (Reflection type fiber) Standard 2m, Max.10m (Transmission type fiber)
Fiber protection:	Stainless steel flexible 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

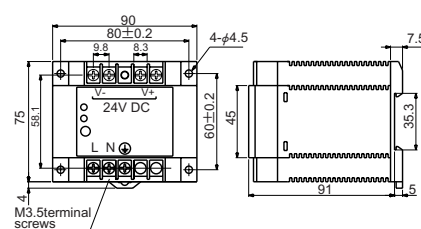
Analyzer IRMA



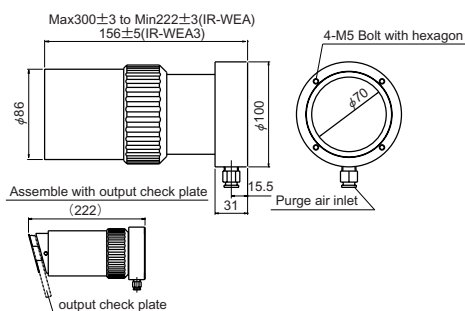
Setting display unit IRGMEG3



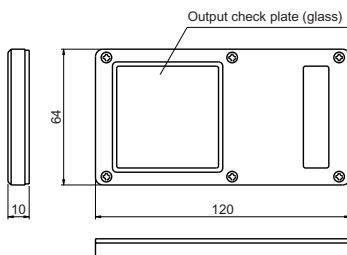
Power supply unit IR-WEP



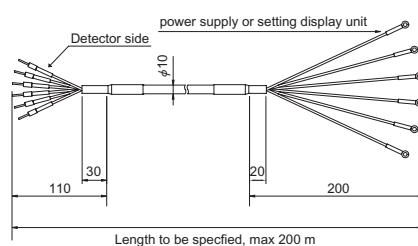
Air purge hood IR-WEA



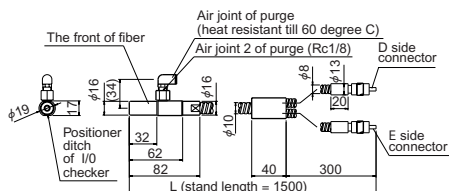
Output checking plate IR-WEB



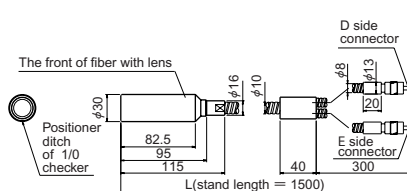
Connecting cable IR-WERP



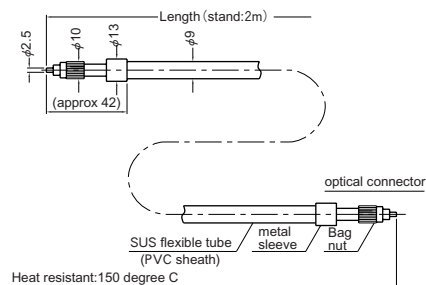
Reflection type fiber (without lens) IR-WCRN



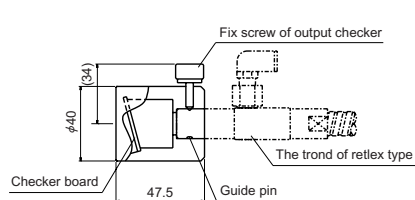
Reflection type fiber (with lens) IR-WCRE



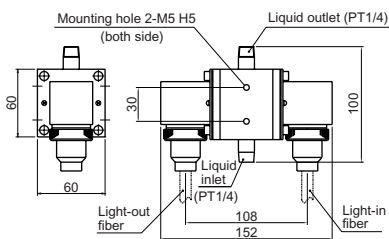
Transmission type fiber IR-WCT



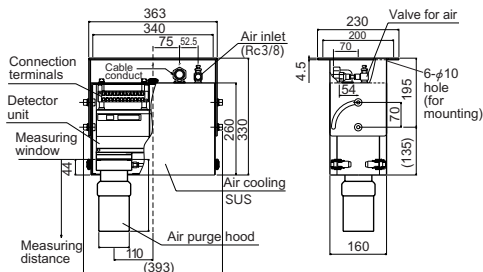
Output checking plate for reflection type fiber IR-WCR



Liquid cell IR-WCC



Air-cooling box IR-WEX



Unit: mm

Specifications subject to change without notice. Printed in Japan (I) 2009. 11

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