

■ OUTLINE

FA-1000 series Flow monitor is a flow indicator with an alarm contact for liquid application.

The product line-up ranging from 8mm to 40 mm in line size and 1 L/min to 100 L/min in full scale flow rate serves you for wide variety of applications.

■ FEATURES

- Flow indication with alarm output
- Compact design makes easy installation on packaged units
- Splash water proof
- Suitable for opaque liquids and hot pressurized water
- Adjustable alarm setpoint on the front face with a pointer
- Any flow direction and easy reading from any angle
- Competitive price and quick delivery with standardized specifications



■ RECOMMENDED APPLICATION

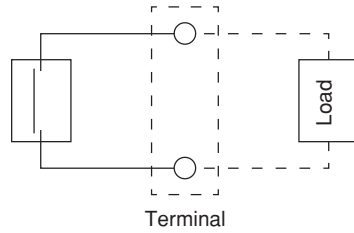
- Cooling water lines and monitoring of its stoppage
- Monitoring of leakage of sealing liquids
- Cooling fluids lines for injection molding machines and metallic molds.

STANDARD SPECIFICATIONS

Measuring fluid	: Water or Low viscosity liquids
Measuring range	: (Min.) 0.1 to 1 L/min (Max.) 10 to 100 L/min
Fluid temperature	: 0 to 100°C O-ring made of FPM is used for the service 80°C or higher. *: It is general data, and the maximum temperature may change by terms of use and environment.
Fluid press.	: Max. 1.0 MPa
Flow direction	: Bottom to Top, Left to Right, Right to Left, Top to Bottom
Connection size	: 8mm or 1/4" to 40mm or 1-1/2"
Process connection	: Rc and JIS 10K FF as standard. NPT, JIS10KRF, ANSI class 150RF, JPI class 150RF are available.
Indication accuracy	: ±5% F.S.
Alarm setting accuracy	: ±2% F.S. (Against flow calibration)
Alarm setting range	: 10 to 100%
Alarm contact	: 1 point (High or Low)
Reset span	: Less than 15% F.S. (Against flow calibration)
Alarm switch	: Reed switch (Self-holding type)
Contact capacity	: 100 V DC/10W, 125 V AC / 10VA
Alarm setting	: Set by screw from housing front
Insulation resistance	: More than 100MΩ at 500VDC megger
Withstand voltage	: 1500VAC during 1 minute
Painting	: Munsell 5GY8/1.5 Painted on housing and carbon steel materials only
Cable entry	: Waterproof gland, or G1/2 female only when the terminal box attached
Wiring connection	: M3.5 screw terminal
Housing construction	: Equivalent to IP54 Intrinsically safe (Intrinsically safe barrier to be installed separately)
Installation	: Piping or Panel installation (With screw hole M4 for panel installation)

Part name	Material		
	Material class 1	Material class 2	Material class 3
① Tapered tube	C3604	SUS304	SUS316
② Float	PPS Resin	PPS Resin	PPS Resin
③ O ring	NBR	FPM	FPM
④ Connecting fitting	C3771 or C3604	SCS13 or SUS304	SUS316
⑤ Housing	ADC12	ADC12	ADC12
⑥ Flange	SS400	SUS304	SUS316

MATERIAL



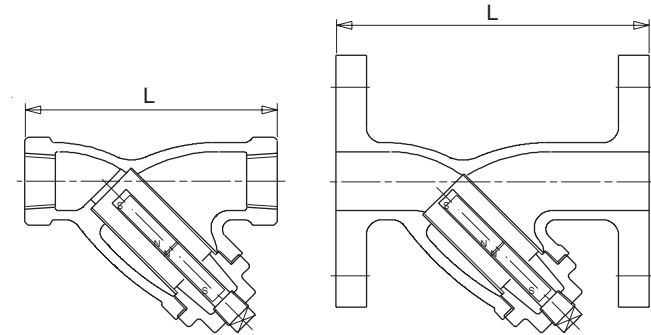
WIRING

CAUTION FOR USE

- Flow rate of FA-1000 monitor is indicated by the magnet coupling method.
The float stuck with iron particles in the stream leads to the erroneous operation.
It is recommended to eliminate the magnetic materials by providing with the magnetic strainer for such processes.
- If the load exceeds the maximum contact capacity of flow monitor, intensify the capacity by providing with the relay driver.
The suitable relay drivers are available as option.

● Magnet strainer (Model code /Mn□)

A filtering stainless steel mesh and magnet piece are provided in the magnet strainer to eliminate the ferrous contents.



Process connection: Rc

Process connection rating: JIS 10K FF

Size	A	8 (1/4)	10 (3/8)	15 (1/2)	20 (3/4)	25 (1)	32 (1-1/4)	40 (1-1/2)
Screw	L mm	65	70	85	100	115	135	150
Flange	L mm	—	—	120	130	150	170	190

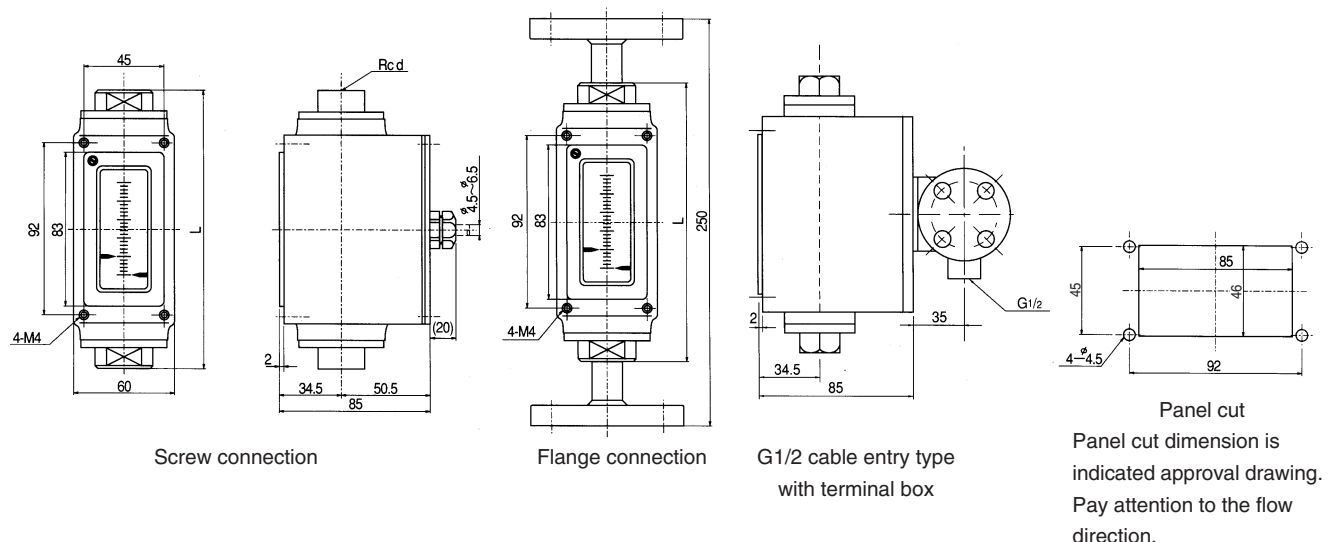
Fluid press.	: Max. 1.5 MPa
Fluid temp.	: Max. 200°C
Filter mesh	80 mesh (Screen)
Material	Body SCS13 or SCS14, or Others Filter SUS304 or SUS316 Gasket PTFE

Notes Face to face dimensions and other dimensions are subject to change due to manufacturer's reasons.
Body material SCS13 is applied to the material class 1 and

2. Body material SCS14 is applied to material class 3.

Model Code		Contents
FA-1	* * * - * * * -A /*** /*	
Measuring range	1	0.1 to 1 L/min
	2	0.2 to 2 L/min
	3	0.5 to 5 L/min
	4	1 to 10 L/min
	5	1.5 to 15 L/min
	6	2 to 20 L/min
	7	3 to 30 L/min
	8	5 to 50 L/min
	9	6 to 60 L/min
	A	7 to 70 L/min
	B	8 to 80 L/min
	C	9 to 90 L/min
	D	10 to 100 L/min
Z	Other ranges (Not available for flow ranges over 100 L/min)	
Connection size	0	8mm or 1/4"
	1	10mm or 3/8"
	2	15mm or 1/2"
	3	20mm or 3/4"
	4	25mm or 1"
	5	32mm or 1 1/4"
	6	40mm or 1 1/2"
Process connection	R	Rc
	N	NPT female
	A	JIS 10K FF
	Z	Other connections
Materials	-1	Material class 1
	-2	Material class 2
	-3	Material class 3
	-Z	Other material configuration
Flow direction	1	Bottom to top
	6	Left to right
	7	Right to left
	8	Top to bottom
Alarm	0	No alarm
	1	Contacts close at high alarm
	2	Contacts open at high alarm
	3	Contacts close at low alarm
	4	Contacts open at low alarm
Version	-A	Version code
Options	/DEG	Oil free
	/TBO	Terminal box attached
	/EXn	Intrinsically safe barrier relay is required "n" in optional code means required numbers of contacts, for example n=1 means 1 contact and n=2 means 2 contacts.
	/RED	Relay driver (RD-100)
	/MnR	Magnet strainer (Rc)
	/MnA	Magnet strainer (JIS 10K FF)
Special features	Vacant	Not required
	/Z	Special features are required

MODEL CODE



DIMENSIONS

● Relay driver (Model code /RED)

To increase contact capacity of flow monitor, model RD-1000 relay driver is used.

The safety measures are taken by charging low voltage and low current to the contacts located in the field.

The intensified contact capacity allows to drive solenoid valves or other electric devices directly with RD-1000 relay drivers. For details Standard Specifications for RD-1000

Power supply	100 V AC or 200 V AC±10%, 50 / 60Hz
Ambient Temp.	-10 to 50°C
Max. supply voltage	12 V DC (Terminal 7-8 or 9-10)
Max. supply current	3 mA DC (Terminal 7-8 or 9-10)
Max. contact voltage	250 V AC, 125 V DC (Terminal 4-5 or 4-6)
Max. contact current	5A (Terminal 4-5 or 4-6)
Max. value of switch capacity	• 1100 VA AC (Load resistance) • 120 W DC (Load resistance)
Insulation resistance	100MΩ or higher at 500 V DC megger
Withstand voltage	1500 V AC (1 min.)
Power consumption	Less than 2VA

Switch action (Terminal 9-10)	Relay action	
	NO (Terminal 4-5)	NC (Terminal 4-6)
ON	ON	OFF
OFF	OFF	ON

see the Technical Guidance of RD-1000

● Intrinsically safe barrier relay for intrinsically safe circuit

The safe barrier relay is provided as required for intrinsically safe circuit.

Specifications for general purpose type

Rated voltage	100 to 240 V AC	24 V DC
Allowable voltage range	-15 to +10%	±10%
Rated frequency	50 / 60Hz (Allowable range: 47 to 63Hz)	—
Inrush current	10A (at 100 V AC) 20A (at 200 V AC)	10A
Insulation resistance	10MΩ minimum (500 V DC megger, between same poles as the dielectric strength)	

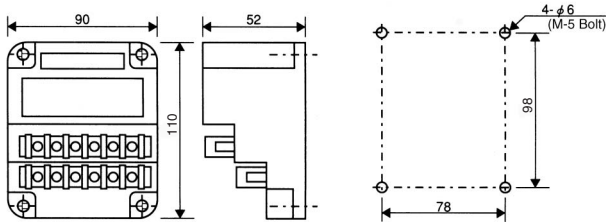
Specifications for explosion-proof type

Intrinsically safe circuits	
Type of explosion-proof	Intrinsically safe circuit (Ex ia IIC)
Rated operating voltage	12 V DC ±10%
Rated operating current	10 mA DC ±20%
Enclosure	IP20 (IEC60529)
Non-intrinsically safe circuits (Relay output)	
Contact configuration	1a contact
Rated insulation voltage	250 V AC / 125 V DC
Thermal current	3A
Contact allowable power	750 VA AC / 72 W DC (Resistive load)
Rated load	250 V AC 3A / 24 V DC 3A (Resistive load)

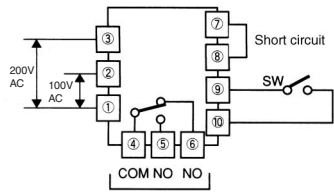
*1 Model code	Contents		
EB3C- R □ □ □	R	□	□
Output	R		Relay output
Number of contacts	01		1 contact
	02		2 contacts
	03		3 contacts
Rated voltage	A	100 to 240 V AC, 50/60Hz	
	D	24 V DC	

*1 Model codes of IDEC Co.

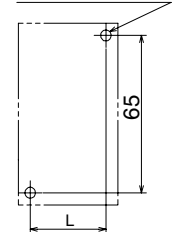
Dimensions for RD-1000



Wiring diagram

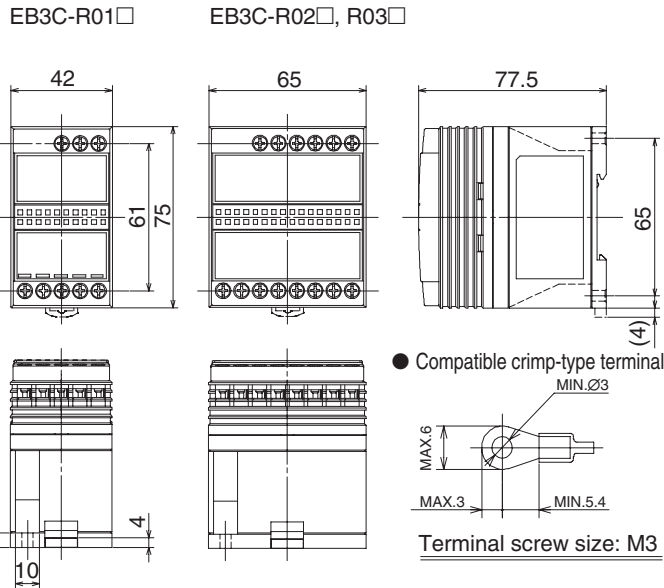


Cutout dimensions for installation
2-M4 Screw taps or 2-φM4.5 mounting holes

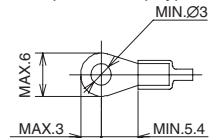


For 1 circuit L=28 mm
For 2 circuits L=51 mm

EB3C Dimensions



● Compatible crimp-type terminals



Terminal screw size: M3

* Specification is subject to change without notice.

TOKYO KEISO CO., LTD.

Head Office : Shiba Toho Building, 1-7-24 Shibakoen, Minato-ku, Tokyo 105-8558
Tel : +81-3-3431-1625 (KEY) ; Fax : +81-3-3433-4922
e-mail : overseas.sales@tokyokeiso.co.jp ; URL : http://www.tokyokeiso.co.jp

