

## FB530-UM03 Clamp-on Ultrasonic Flow Meter



### | Features |

- Suitable for all kinds of liquids
- Suitable for all kinds of pipes, measuring range ( DN08 ~ DN40 )
- No need to cut the pipe for installation and used without downtime
- Quick installation, set the pipe diameter to complete the installation and measurement
- No contact with liquid, not afraid of dirt and corrosion, zero pressure loss

### | Applications |

Process Precision Control and Leak Detection / Water Resources and Wastewater Treatment / HVAC Cooling Tower Systems and Energy Management / Industrial Process Monitoring and Control / Beverage Canning Machines / Machine Tool Coolant Management / Drainage Management and Detection Systems

# Specification

Applicable Pipe Size		Data Retention Time	Approx. 1 year
Metric Units	DN8 (1/4") ... DN40 (1 1/2")	Power I/O Connector	M12 8pin connector
Pipe Material	Stainless steel, Carbon steel, Copper pipe, Aluminum pipe, PVDF, CPVC, PVC, PPR, PPH, PFA, HDPE	Output	
Fluid Temperature	0°C ... 85°C (Pipe surface must not be frozen)	Switch Output	Instant / Window / Pulse / Accumulated / Error / No Signal NPN / PNP switchable open collector output : $\leq 26.4$ VDC, $\leq 80$ mA/ch, residual voltage $\leq 2.5$ V
Maximum Flow Rate	19.6 ... 376.8 L/min	Analog Output	1 ... 5 V / 0 ... 10 V (switchable) Load resistance : $50k\Omega$ 4 ... 20 mA / 0 ... 20 mA (switchable) Load resistance : $\leq 300 \Omega$ Note 5
Zero Cut-Off Flow Rate	0.3 ... 1.0 L/min	Communication Interface	RS-485
Detection Principle	Transmission Time Difference	Relay Output	Relay output : $\leq 30$ VDC, max 1A, freq. $<2$ Hz
Display	TFT2.0"	Power Supply	
Display Refresh Cycle	4times/sec	Supply Voltage	DC24V $\pm 10\%$ Note 6
Resolution		Current Consumption	$\leq 200$ mA Note 7
Instantaneous Flow	0.01, 0.1, 1 L/min	Protective Circuit	Power reverse protection, surge protection, output short-circuit protection Note 8
Totalized Flow	0.01, 0.1, 1 L (up to 8 digits)	Environmental Resistance	
Response Time	0.5s, 1.0s, 2.5s, 5.0s, 10.0s	Enclosure Protection Rating	IP65/IP67
Measurement Accuracy		Operating Temperature	- 20°C ... +60°C (no freezing)
At 10% to 100% of F.S.	$\pm 2\%$ of F.S. Note 1, 2, 3	Operating Humidity	35% ... 85%RH (non-condensing)
At 0% to 10% of F.S.	$\pm 1\%$ of F.S. Note 1, 2, 3	Vibration Resistance	10Hz to 500 Hz power spectral density : $0.816 G^2/Hz$ (X, Y, Z directions)
Repeatability F.S.	$\pm 0.8\%$ Note 2, 4	Menu Language	Traditional Chinese, English
Flow Unit	L/min, m <sup>3</sup> /h	Calendar Battery	CR1220
Pulse Output Unit	0.1 ... 999.99 L	Applicable Medium	Water, solution, chemical reagents (impurities $\leq 4\%$ )
		Applicable Viscosity	$<300$ CST (mm <sup>2</sup> /s)
		Weight	DN8 / DN10 : 316 g, DN15 / DN20 : 309 g DN25 / DN32 : 392 g, DN40 : 503 g

## Note :

1. The ultrasonic-measured liquid must not contain large amounts of bubbles. Measurement may become unstable depending on pipe material and conditions.
2. Errors may occur due to the type of piping, condition, fluid type, and fluid temperature used by the customer.
3. Zero-point adjustment was performed in a controlled environment at 25° C, considering linearity error.
4. The definition assumes a stable velocity distribution. It does not account for pulsations or variations caused by equipment. The stated F.S. (Full Scale) should be interpreted using the rated flow range.
5. The output impedance of the analog voltage type is approximately 1 k $\Omega$ . If the load impedance is low, the output value may differ significantly. Please verify and account for load impedance error before use.
6. DC24V connection current varies depending on whether a load is connected. Consumption current may also vary. Please take special care.
7. Load current must be below 200 mA. (Excluding expansion module)
8. The built-in protection circuit only covers specific error conditions and load short circuits. It does not guarantee protection against all wiring errors.

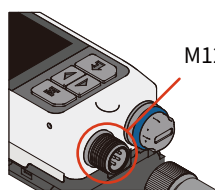
## | Flow range |

Pipe Diameter	DN08	DN10	DN15	DN20	DN25	DN32	DN40
Minimum Flow Rate <small>Note 1</small>	0.6 L/min	0.94 L/min	1.06 L/min	1.88 L/min	2.94 L/min	4.82 L/min	7.54 L/min
Maximum Flow Rate <small>Note 2</small>	19.6 L/min	30.62 L/min	53 L/min	94.2 L/min	147.2 L/min	241.15 L/min	376.8 L/min

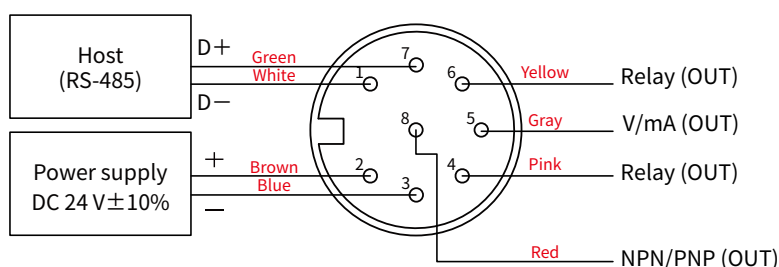
Note 1: For minimum flow rate Ø15 and above, flow is calculated at 0.1 m/s velocity; for Ø15 and below, at 0.2 m/s.

Note 2: For maximum flow rate Ø15 and above, flow is calculated at 5.0 m/s velocity; for Ø15 and below, at 6.5 m/s.

## | Diagram |



M12 - 8P Power connector



## ■ Wiring

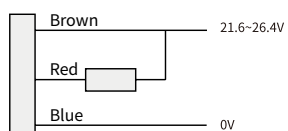
Unused input wires must be individually insulated.

□ Load (Input Device)

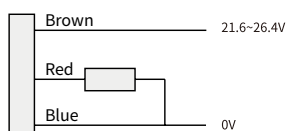
⊗ Analog voltage/current input device

### 1.Wiring for switch output channel

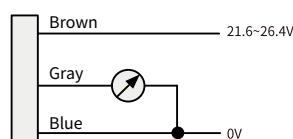
NPN



PNP

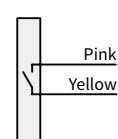


### 2.Wiring for analog output channel

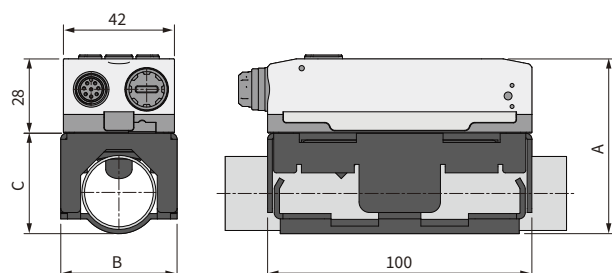


\*Selectable output: 0 ... 20 mA / 4 ... 20 mA / 1 ... 5 V / 0 ... 10 V (via configuration)

### 3.Wiring for relay output channel



## | Dimension | Unit : mm



Pipe Diameter	DN08	DN10	DN15	DN20	DN25	DN32	DN40
Pipe Outer Diameter	ø13 ... ø16	ø16 ... ø18	ø18 ... ø23	ø23 ... ø28	ø28 ... ø37	ø37 ... ø44	ø44 ... ø52
A	54.9	56.9	61.9	66.9	75.9	82.9	90.9
B	44	44	44	44	60	60	84
C	26.4	28.9	32.8	39	46.2	54.6	60.9