

# ULTRASONIC LIQUID LEVEL METER

DATA SHEET

FQH-2,FQG-2,FLY

An ultrasonic liquid level meter measures the liquid level by the propagation time of the ultrasonic pulses emitted out of the ultrasonic detector are reflected on the surface of the measurement object and are received as echoes by the detector again.

It provides high reliability and it permits easy installation, running and maintenance, as it does not make contact with the measurement object and it is free of mechanical moving parts.

It deals with uses of a broad range including water level measurement of water, wastewater, tide level, rivers and reservoirs and level measurement of highly viscous liquid in chemical tanks, slurry agitation tanks, roll mills and food tanks.

## FEATURES

1. No liquid contact  
Permits easy installation and maintenance.
2. Detector of waterproof structure and of excellent corrosion resistance  
It is of no problem against adhesion of water drops and splashes, and it is optimum for wastewater, alkali, acid and high viscosity liquid.
3. Not affected by fixed reflection noise  
Not affected by obstacles such as projections of detector mounting area, walls and ladders because of the DGL (dynamic gain limit) function that automatically learns the noise level at all times and masks noise so that no noise is detected.
4. Minimum influence of electrical noise  
Not affected by electrical noise or noise from agitating blades, as such noise is largely reduced by statistical processing.
5. Use of high gain amplifier  
Permits use at a pump well involving scum that could be hardly measured with conventional meters and also at a place of large attenuation such as sludge storage tank.

## SPECIFICATIONS

### Converter (Type: FQH)

Structure: IP65  
 Material grade: Aluminum alloy  
 Coating color: Blue (cover), silver (case)  
 Accuracy:  $\pm 1\%$ /FS or better  
 Output: 4 to 20mA DC (insulated, load resistance 0 to 1k $\Omega$ )



Detector (FQG)



Converter (FQH)

**Display:** LCD display (16 characters, 2 lines, with back light)  
 Level measured value (m, %), detector peripheral temperature, ultrasonic wave received signal intensity, etc. are displayed.

**Dumping:** 2 to 600 seconds (once every second)

**Power failure recovery processing:** Memory backup with lithium cell (valid for about 10 years)

**Power supply:** 100 to 240V AC, 50/60Hz or 20 to 30A DC

**Power consumption:**  
 35VA or less (AC power supply)  
 12W or less (DC power supply)

**Contact output:** Upper limit and lower limit alarms, error alarms, up to 8 points (optional), relay contact output, contact capacity AC 250V, 5A, normally open contact

**Working ambient temperature:** -10 to 50°C  
**Working ambient humidity:** 90% RH or less  
**External dimensions:** H320 X W240 X D137mm  
**Mounting method:** Wall surface mounting  
**Mass:** About 7 kg  
**Lightning measure:** Power supply, output signals and alarm outputs are provided with arresters

**Others:** Provided with self-diagnostic function

### Detector (Type: FQG)

Structure: IP67  
 Composition: With built-in preamplifier, transmitter and

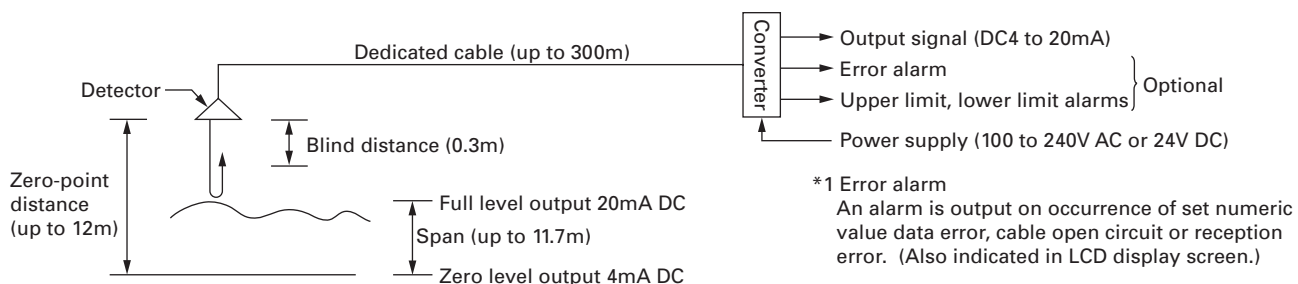
resistance thermometer bulb

- Measuring distance: Up to 12 m (blind distance: 0.3 m)
- Material grade: Heat resistant PVC (color: gray)
- Matching flange: JIS 5K 150A or larger
- External dimensions:  $\phi 140 \times 180\text{mm}$
- Mass: About 1.2 kg
- Lightening measure: With arrester
- Working ambient temperature:  $-20$  to  $80^\circ\text{C}$
- Working ambient humidity: 95% RH or less

### Dedicated cable (between converter and detector) (Type: FLY5)

- Twisted paired shield cable
- 2 pairs  $\times 0.5 \text{ mm}^2$  shield (length up to 300 m)
- Outside diameter:  $\phi 10.5\text{mm}$  (Max  $\phi 11\text{mm}$ )
- Cable end treatment: With M3.5 crimp-style terminal (at both ends)

## CONFIGURATION



## USES

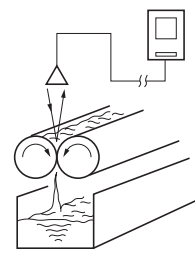
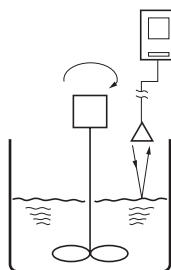
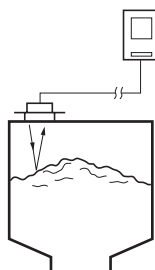
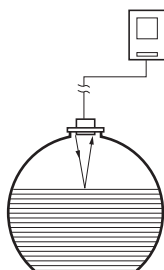
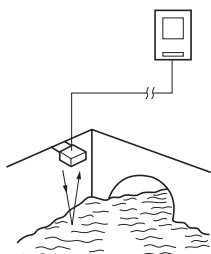
Level measurement of waterworks, wastewater, rivers, dams and reservoirs and tide level

Level measurement of food, high viscosity fluid and chemical storage tanks

Level measurement of dehydrated slurry and sludge tanks

Level measurement of agitation tanks such as slurry agitation tanks

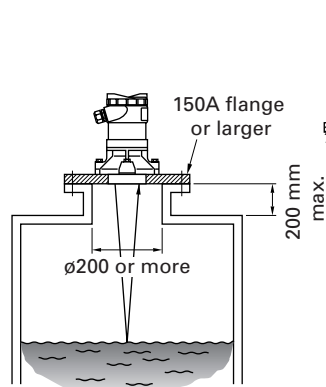
Level measurement of high viscosity fluid in tanks such as roll mills



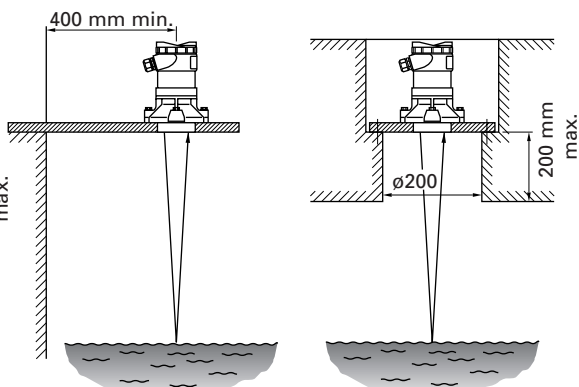
## Typical detector installation

- \* Detectors are of watertight structure.
- Avoid exposure to direct sunlight and rain by means of a roof or the like, when they are used outdoors.

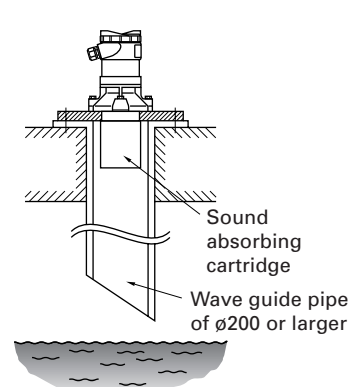
[Mounting with flange]



[Mounting with square flange]



[Mounting on wave guide]



\* Side wall must be free from stand-out and sticking material

\* Inquire us separately regarding wave-guide pipe and sound absorbing cartridge.

# CODE SYMBOLS

## <Converter>

1	2	3	4	5	6	7	8	9	10	11	12	Specification	
F	Q	H				0	2						Application
												1	Level meter for liquid/slurry
												F	Structure
													Immersion-proof
												3	Power source
												7	100 to 240 V AC, 50/60 Hz
													20 to 30 V DC
												1	Current output (4 to 20 mA DC)
													1 point
												0	Contact closure command
												5	None
												8	5 points
													8 points
												Y	Wiring port
												A	With waterproof gland
													With union (for PRICA) gland
												Y	Tag indication
												T	No
													Yes

## <Detector>

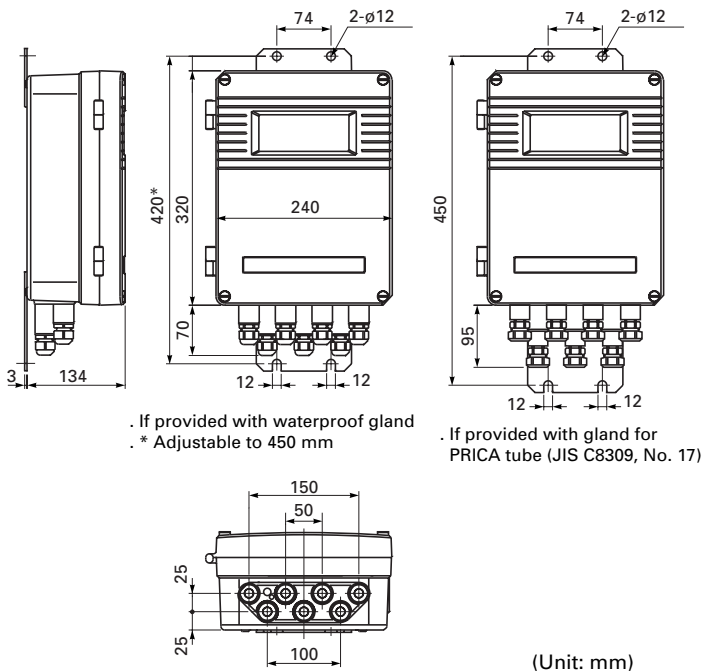
1	2	3	4	5	6	7	8	9	10	Specification		
F	Q	G					0	2			Structure	
											Heat-resisting PVC immersionproof	
											Measurable distance (frequency)	
											12 m (30 kHz) max.	
											Resistance bulb	
											Incorporated	
											Tag indication	
											No	
											Yes	
											Detector fixture	
											None	
											1	L-shaped fixture, mounted on 1 inch pipe
											2	L-shaped fixture, suspended from flat plate

## <Cable>

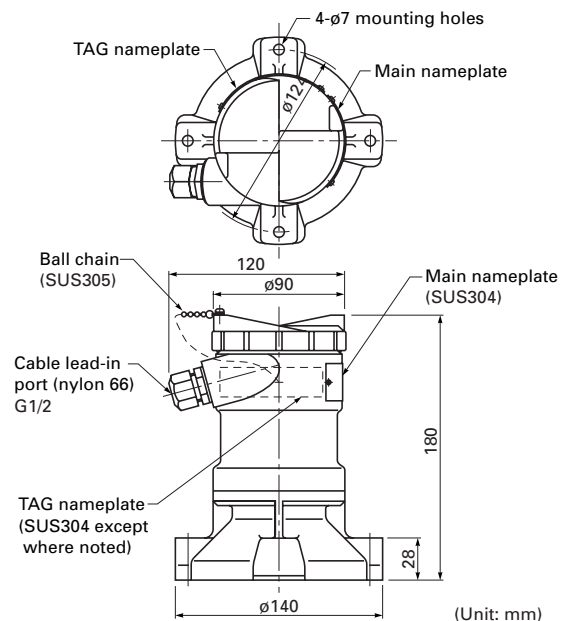
1	2	3	4	5	6	7	8	Specification	
F	L	Y	5						Applicable detector
									Ultrasonic level meter detector
									Detector-converter cable length
									5 m
									5 m steps up to 100 m.
									10 m steps for 100 to 300 m.
									(Ex.: 150 for 150 m.)
									300 m

## OUTLINE DIAGRAM (Unit : mm)

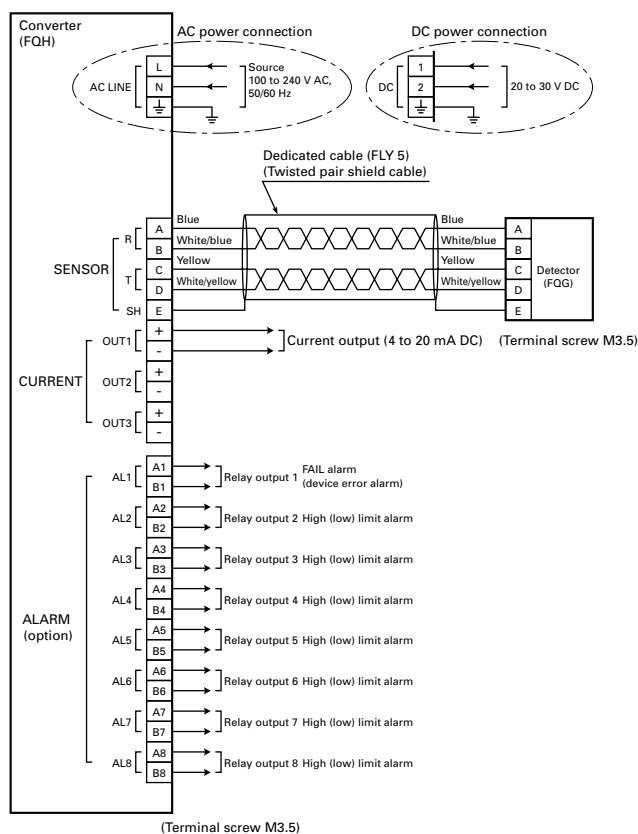
### Converter (Type: FQH)



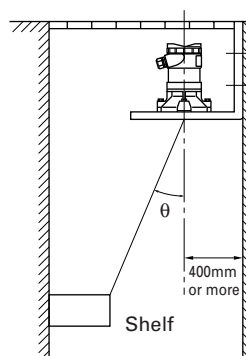
### Detector (Type: FQG)



## CONNECTION DIAGRAM



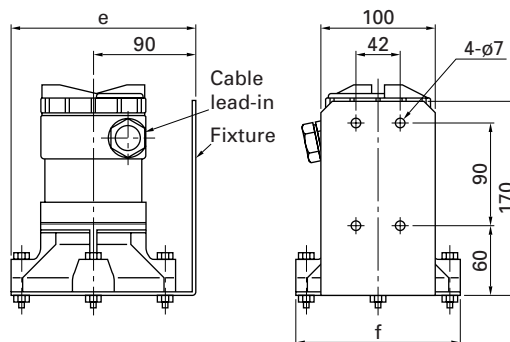
## Precautions against obstacles



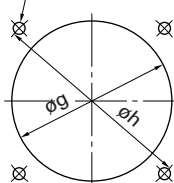
- (1) Mount the detector 400mm or more away from the side wall
- (2) Get at least  $\theta$  of 8° away from shelf, step or standout, if any

## Detector fixture (option)

- L-shaped fixture made of SUS304
- On 1 inch pipe or suspended from flat plate



[Mounting size]  
4-φ7, or M6 Tap



(Boring of flanges, etc.)

## Scope of delivery

Converter main unit, detector main unit, dedicated cable (of specified length)

## What are specified at the time of placement of an order

1. Detector type FQG \_\_\_\_\_
2. Converter type FQH \_\_\_\_\_
3. Dedicated cable FLY \_\_\_\_\_
4. Span distance \_\_\_\_\_m
5. Zero-point distance \_\_\_\_\_m
6. Tag No. designation \_\_\_\_\_

⚠ Caution on Safety

\*Before using this product, be sure to read its instruction manual in advance.

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