

# ULTRASONIC LIQUID LEVEL METER

**DATA SHEET**
**FQG,H**

Fuji's ultrasonic liquid level meter is an instrument to measure levels of service water, sewage and various other kinds of liquids. The instrument incorporates an ultrasonic detector which emits ultrasonic pulses and receives echoes after the pulses are reflected by the liquid to be measured, so that liquid level can be measured by detecting the propagation time required for the ultrasonic pulses to return as echoes.

The instrument has no moving parts and is used apart from the liquid to be measured, thus providing high reliability and insuring easy installation, operation and maintenance.

It is also used in conjunction with a weir or the like for flow rate measurements.

## FEATURES

### 1. Non-contact measurement

The instrument has no parts which contact liquid, so it measures levels of any liquid irrespective of viscosity, density, sediment, etc.

### 2. Freedom from effects of ambient temperature

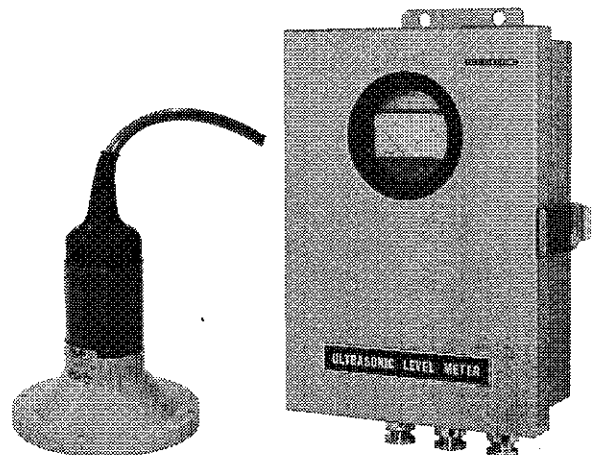
Ultrasonic propagation speed is subject to variation with changes in ambient temperature. The instrument has its own built-in temperature compensator to prevent the effects of temperature changes.

### 3. Error-free measurement against misechoes

The built-in sample hold circuit compensates for misechoes to insure error-free measurements.

### 4. No-moving parts design and continuous measurement

High reliability and easy maintenance with the use of no-moving-parts design. Current signal output can be connected to a FUJI IS system receiving instrument for continuous measurements.


**Detector (FQG)**
**Transmitter (FQH)**

Zero/span shift: Adjustable with individual controls

| Measuring range (m) | Zero adjustable range (m) | Span adjustable range (m) |
|---------------------|---------------------------|---------------------------|
| 0 to 0.2 .....0.5   | 0.3 to 0.9                | 0.2 to 0.5                |
| 0 to 0.4 .....2     | 0.7 to 4                  | 0.4 to 2                  |
| 0 to 1.0 .....4     | 1.0 to 6                  | 1.0 to 4                  |
| 0 to 2.5 .....10    | 2.5 to 12                 | 2.5 to 10                 |

## SPECIFICATIONS

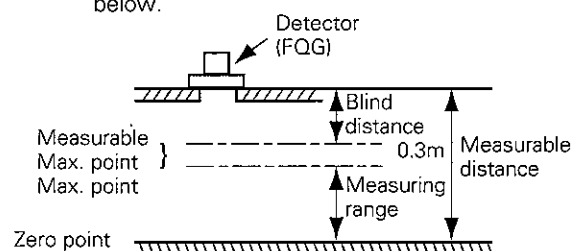
Measuring range and measurable distance\*:

| Type of Transmitter | Measuring range (m) | Measurable distance(m) |
|---------------------|---------------------|------------------------|
| FQHF 1              | 0 to 0.2 .....0.5   | 0.5 to 0.9             |
| 2                   | 0 to 0.4 .....2     | 0.7 to 4               |
| 3                   | 0 to 1.0 .....4     | 1.3 to 6               |
| 4                   | 0 to 2.5 .....10    | 2.8 to 12              |

Blind distance (from detector mounting surface)\*:

0.3m

Note)\* The above items are detailed in the illustration below.



Accuracy: Liquid level;  $\pm 1\%$  of full scale (with transmitter)

Transmitter output signal:

DC4 to 20mA (load resistance;  
Less than 1k $\Omega$ )

\*DC10 to 50mA (load resistance;  
Less than 400 $\Omega$ )

Response speed: 5, 20, 100 sec. 3 steps, selectable

Ultrasonic frequency:

30 kHz

Ambient temperature:

Detector; -10 to +60°C

Transmitter } -10 to +50°C

Junction box }

Ambient humidity:

Detector } 95% RH or less

Junction box }

Transmitter; 90% RH or less

Power source: AC 100/110V, 50/60 Hz

Power consumption:

Approx. 12VA

Cable connection:

Use special coaxial cable (100m max.) for connection between detector and transmitter, and between detector, junction box (with preamplifier) and transmitter.

Type of enclosure:

Detector and junction box;

JIS C 0920, waterproof type

Converter; dustproof type

Finish color:

Silver, epoxy coating

Output indicator: Built-in transmitter, 2.5% (accuracy),

0 to 100% (linear scale calibrated at 10% intervals)

Mass (weight):

Detector (FQGA); 1kg(approx.)

Detector (FQGF); 4.6kg(approx.)

Transmitter; 8.6kg(approx.)

Junction box; 3kg (approx.)

Accessory:

With linearizer, 1.5th to 2.5th power, adjustable (Available on request for flow rate measurements with weir or partial flume)±2% of full scale (transmitter used)

Dimensions (HxWxD):

Detector (FQGA); 140x140x205mm

Detector (FQGF); 183x196x176mm

Transmitter (FQHF); 360x240x120mm

Junction box; 250x200x 76mm

## CODE SYMBOLS

### Detector

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Description                                                                   |
|---|---|---|---|---|---|---|---|---|-------------------------------------------------------------------------------|
| F | Q | G |   |   |   |   |   | 1 |                                                                               |
| A |   |   |   |   |   |   |   |   | Shape                                                                         |
|   |   |   |   |   |   |   |   |   | PVC corrosion-resisting waterproof type                                       |
| F |   |   |   |   |   |   |   |   | Aluminum case waterproof type                                                 |
|   |   |   |   |   |   |   |   |   | Preamplifier                                                                  |
|   |   |   |   |   |   |   |   |   | Measurement distance                                                          |
| 0 |   |   |   |   |   |   |   |   | Without                                                                       |
| 1 |   |   |   |   |   |   |   |   | With (built-in) FQGF                                                          |
| 2 |   |   |   |   |   |   |   |   | With (separate type) (Note 1) FQGA                                            |
|   |   |   |   |   |   |   |   |   | Length of special coaxial cable between detector and transmitter (Note 2)     |
| Y |   |   |   |   |   |   |   |   | With junction box                                                             |
| A |   |   |   |   |   |   |   |   | 5m                                                                            |
| B |   |   |   |   |   |   |   |   | 10m                                                                           |
| C |   |   |   |   |   |   |   |   | 20m                                                                           |
| D |   |   |   |   |   |   |   |   | 30m                                                                           |
| E |   |   |   |   |   |   |   |   | 40m                                                                           |
| F |   |   |   |   |   |   |   |   | 50m                                                                           |
| G |   |   |   |   |   |   |   |   | 60m                                                                           |
| H |   |   |   |   |   |   |   |   | 70m                                                                           |
| J |   |   |   |   |   |   |   |   | 80m                                                                           |
| K |   |   |   |   |   |   |   |   | 90m                                                                           |
| L |   |   |   |   |   |   |   |   | 100m                                                                          |
|   |   |   |   |   |   |   |   |   | Length of special coaxial cable between detector and box (Note 2)             |
| 0 |   |   |   |   |   |   |   |   | Without junction box                                                          |
| 1 |   |   |   |   |   |   |   |   | 5m                                                                            |
| 2 |   |   |   |   |   |   |   |   | 10m                                                                           |
|   |   |   |   |   |   |   |   |   | Length of special coaxial cable between junction box and transmitter (Note 2) |
| Y |   |   |   |   |   |   |   |   | Without junction box                                                          |
| A |   |   |   |   |   |   |   |   | 5m                                                                            |
| B |   |   |   |   |   |   |   |   | 10m                                                                           |
| C |   |   |   |   |   |   |   |   | 20m                                                                           |
| D |   |   |   |   |   |   |   |   | 30m                                                                           |
| E |   |   |   |   |   |   |   |   | 40m                                                                           |
| F |   |   |   |   |   |   |   |   | 50m                                                                           |
| G |   |   |   |   |   |   |   |   | 60m                                                                           |
| H |   |   |   |   |   |   |   |   | 70m                                                                           |
| J |   |   |   |   |   |   |   |   | 80m                                                                           |
| K |   |   |   |   |   |   |   |   | 90m                                                                           |

### Transmitter

| 1   | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | Description                                          |
|-----|---|---|---|---|---|---|---|---|----|------------------------------------------------------|
| F   | Q | H | F |   |   |   |   | 1 |    |                                                      |
|     |   |   |   |   |   |   |   |   |    | Shape                                                |
|     |   |   |   |   |   |   |   |   |    | Dustproof type                                       |
|     |   |   |   |   |   |   |   |   |    | Measuring range (Measurable distance)                |
| 1   |   |   |   |   |   |   |   |   |    | 0 to 0.2...0.5m (0.5 to 0.9m)                        |
| 2   |   |   |   |   |   |   |   |   |    | 0 to 0.4... 2m (0.7 to 4m)                           |
| 3   |   |   |   |   |   |   |   |   |    | 0 to 1 ... 4m (1.3 to 6m)                            |
| 4   |   |   |   |   |   |   |   |   |    | 0 to 2.5...10m (2.8 to 12m)                          |
|     |   |   |   |   |   |   |   |   |    | Output signal                                        |
| 1   |   |   |   |   |   |   |   |   |    | DC 4 to 20mA                                         |
| * 2 |   |   |   |   |   |   |   |   |    | DC 10 to 50mA                                        |
|     |   |   |   |   |   |   |   |   |    | Power source                                         |
| 3   |   |   |   |   |   |   |   |   |    | AC 100V 50/60 Hz                                     |
| 4   |   |   |   |   |   |   |   |   |    | AC 110V 50/60 Hz                                     |
|     |   |   |   |   |   |   |   |   |    | Accessory                                            |
| 0   |   |   |   |   |   |   |   |   |    | Without                                              |
| 1   |   |   |   |   |   |   |   |   |    | With built-in linearizer (for flow rate measurement) |
|     |   |   |   |   |   |   |   |   |    | Built-in power source arrester                       |
| 0   |   |   |   |   |   |   |   |   |    | Without                                              |
| 1   |   |   |   |   |   |   |   |   |    | With                                                 |

(Note 1) When FQGA detector is used and the measurable distance exceeds 6m, junction box (with preamplifier) is supplied with the instrument.

(Note 2) Measurable distance should be checked when selecting the length of special coaxial cable.

(1) Measurable distance less than 6m:

Use cable of 30m or less (Code of 6th digit; A to D)

(2) Measurable distance more than 6m:

Specify "with preamplifier".

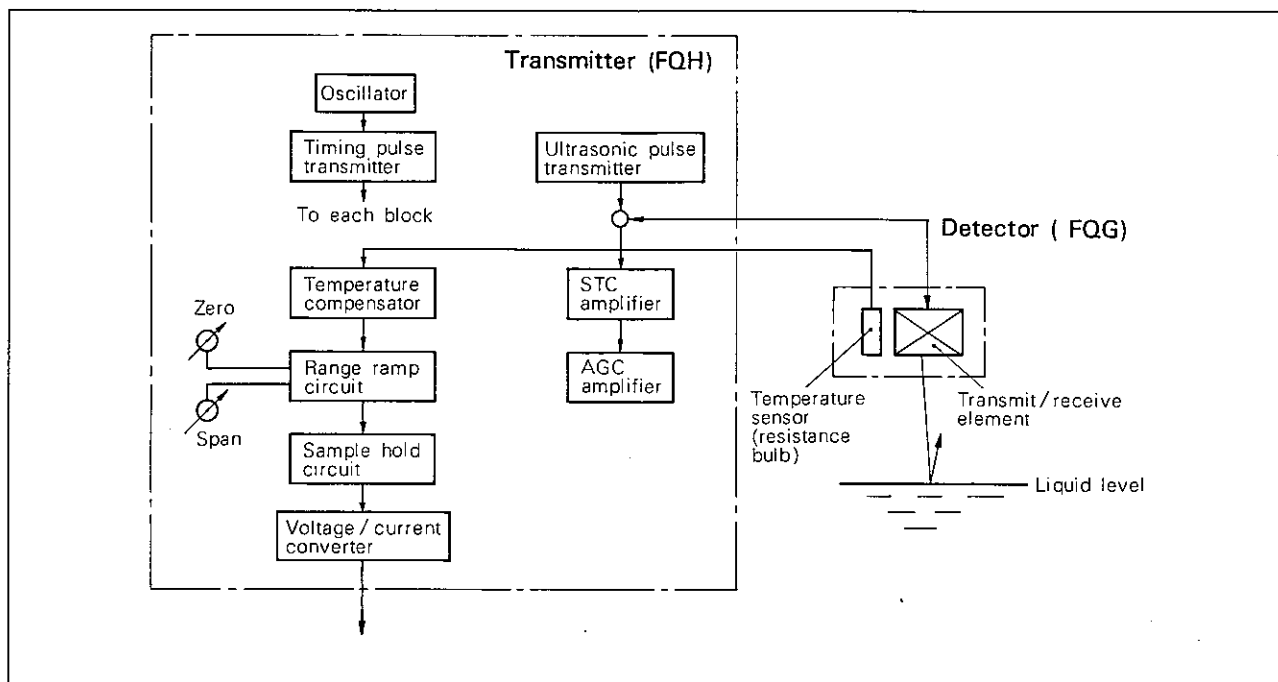
Cable length can be extended up to 100m.

(3) Measurable distance less than 6m

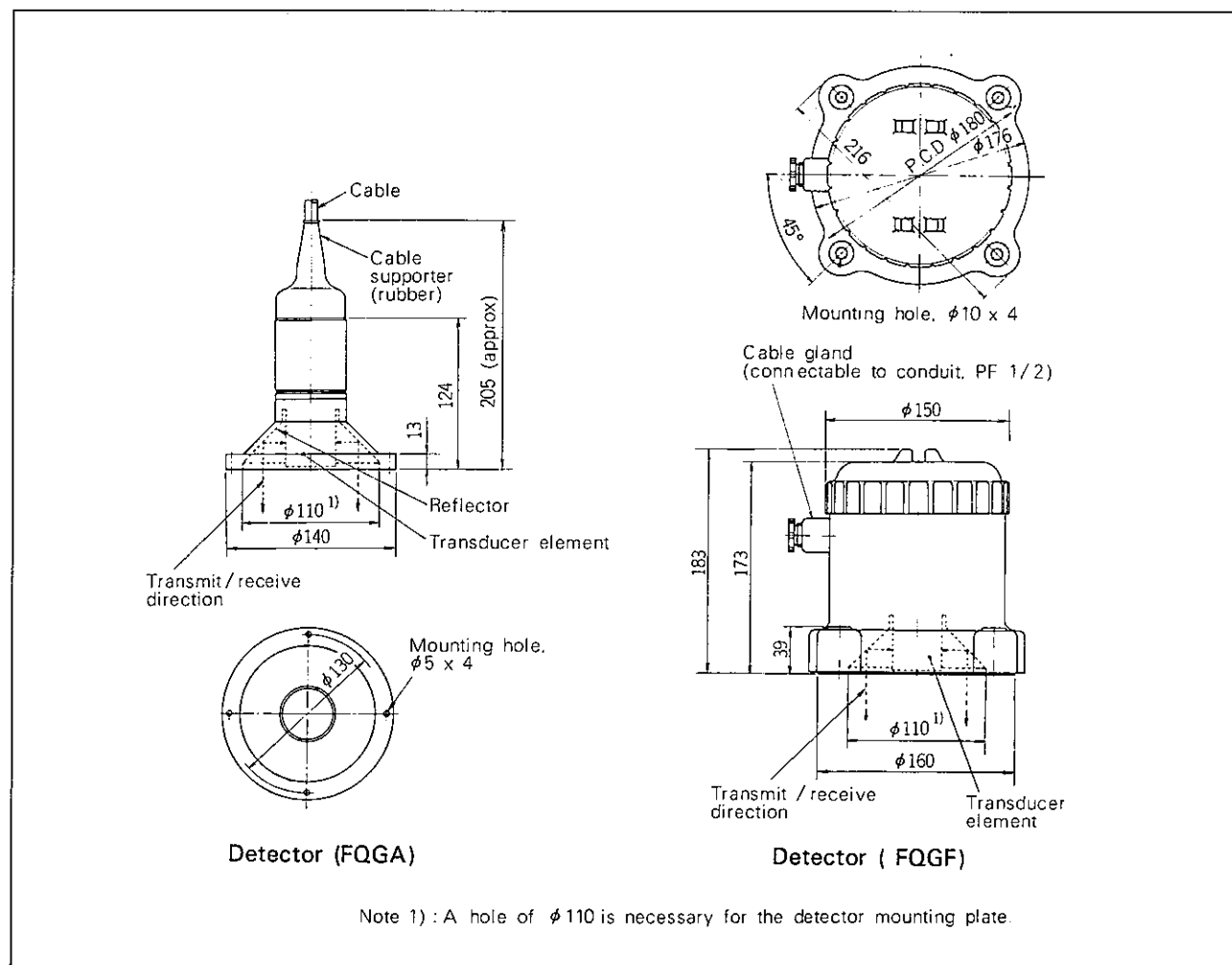
(for long distance transmission):

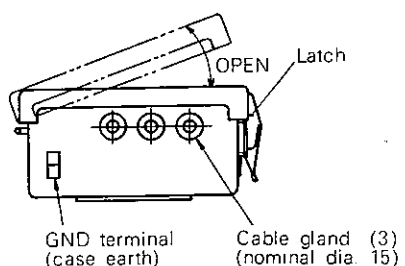
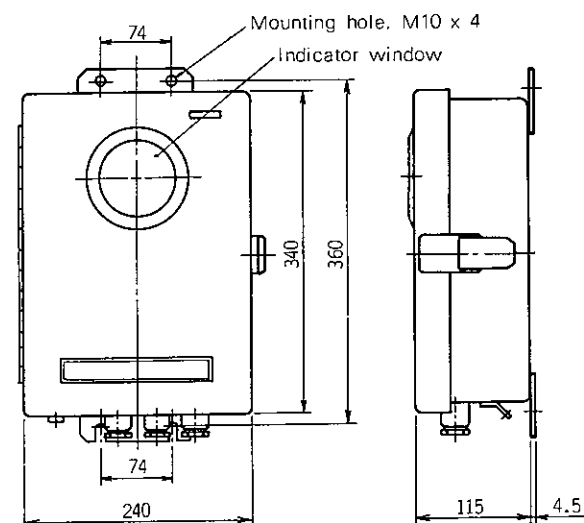
Specify "with preamplifier".

Cable length can be extended up to 100m.

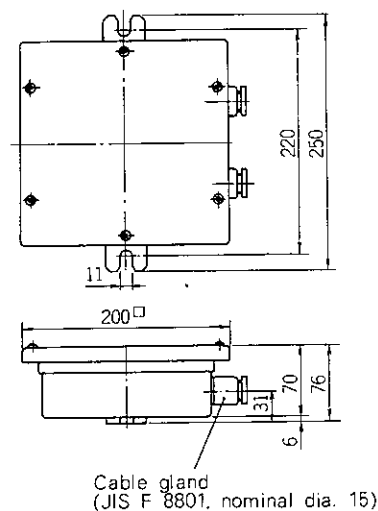


## OUTLINE DIAGRAM (Unit:mm)



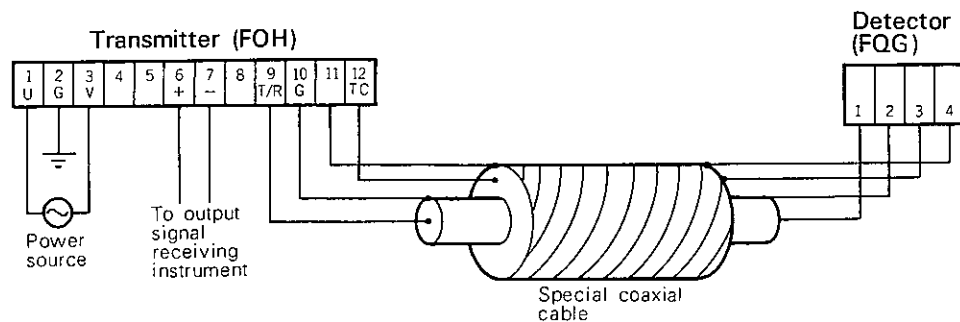


Transmitter (FQH)



Junction box (FQGA2)

## CONNECTION DIAGRAM



Asterisk (\*) item; Non standard

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