NOHKEN GW Series Guided Pulse Level Measurement

Achieves outstanding reliability and operability

Products Overview

GW comprises of an electronics in a housing, process connection, and probe. The probe is inserted into the tank and used to measure the distance to the material level.

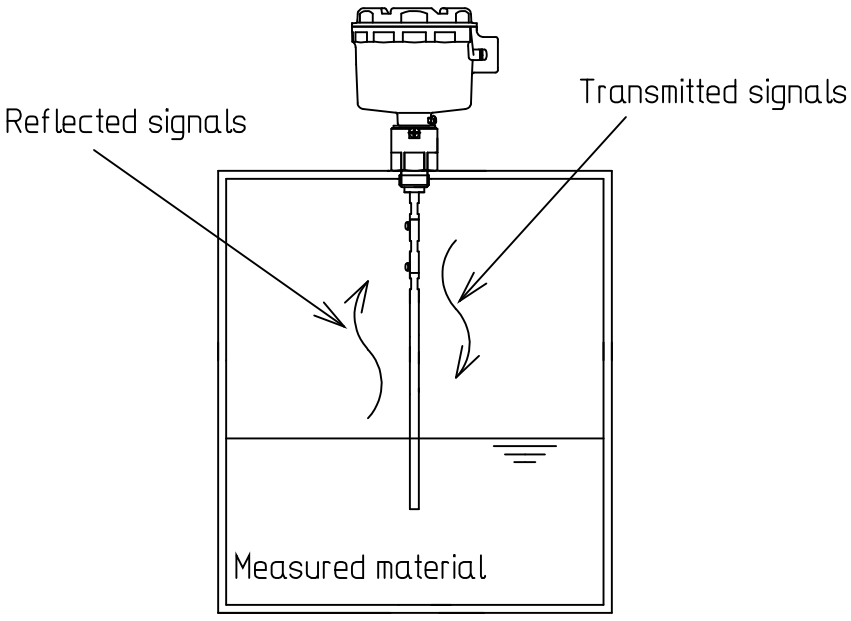
The probe assembly has no moving parts, so the material buildup and resultant adverse affection to measurement are minimized. The user can cut off the end of the rod or wire probe to a desired length. The sensor is easy to program without needing a tester or other device to configure the zero and span points.

Principal of operation

The characteristic impedance of the probe changes when material surface reaches the probe.

The sensor electronics transmits high frequency signals that travel down on the probe. The signals are reflected on the material surface, where the characteristic impedance changes, and then received by the sensor electronics. The sensor electronics measures the time taken from transmission to reception of the signals, and calculates the distance from the reference point to the material surface. The distance is then converted to analog output of 4 to 20mA.

The measurable dielectric constant is 1.8 or larger.



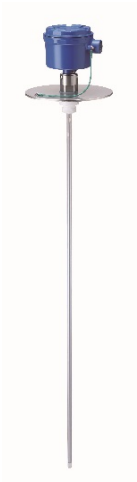
Features

- **Not affected by form on the liquid surface.**
  Bubbles on the liquid surface generated by agitator are not detected, and only the actual liquid level is measured.
- **Improved adhesion resistance.**
  It is almost unaffected by the adhesiveness of highly viscous liquids.
- **Outstanding maintainability**
  Since the housing and probe can be disassembled, maintenance such as repair and replacement is easy.
- **Not affected by obstacle or agitator inside tank.**
  It is equipped with function that stores unwanted waves from obstacle in the tank and agitator in the sensor and cancels the influence of unwanted waves on the rules.
- **Demonstrates high reliability even in heavy environment condition.**
  Achieve pressure resistance of 3.0 MPa and heat resistant temperature of 150 ° C Max.

Product Variety

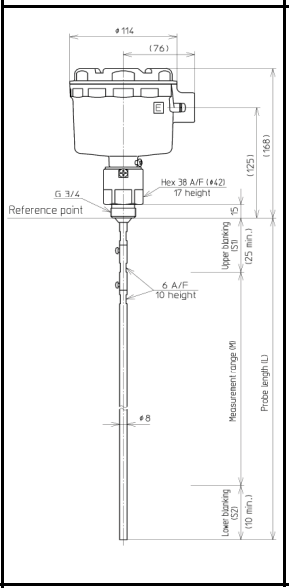
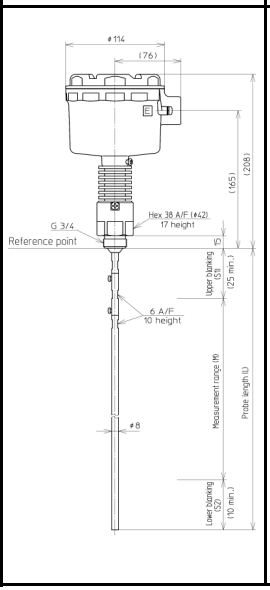
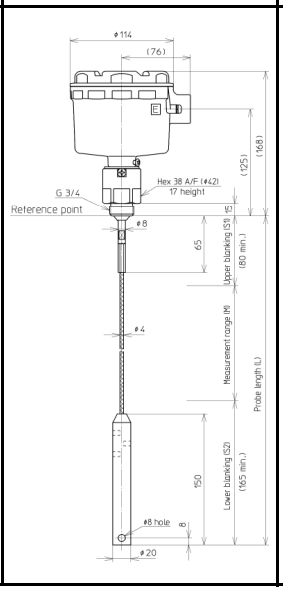
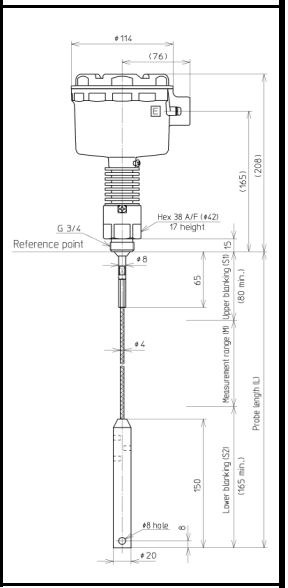
Rod Probe Type	
Ideal for standard process	
	GW100NRA1 GW100NRT1 (Heat proof) The rod can be divided in 1000 mm, and by fixing the connector with a lock screw. The extension rod may not be loosen by vibration. The rod can be easily cut by designed length.

Wire Probe Type	
Ideal for top mounting of tanks with limited mounting space	
	GW100NWA1 GW100NWT1 (Heat proof) The wire type is most suitable when there is limited mounting space on the top of the tank. The wire can be easily cut by designed length.

PFA Tubing type	
Ideal for high corrosive chemicals	
	GW100NPA1 GW100NPT1 (Heat proof) The PFA tubing type is ideal for high corrosive chemicals such as chlorine and nitric acid.

Sanitary Type	
Ideal for food and pharmaceutical	
	GW100SPA1 GW100SPT1 (Heat proof) With ISO2S sanitary clamp mounting, it is ideal for food and pharmaceutical process tanks and storage tanks. It is possible to manufacture ISO2S or higher.

Specifications

		GW100NRA1	GW100NRT1	GW100NWA1	GW100NWT1
		Rod Probe		Wire Probe	
		Standard	Heat Proof	Standard	Heat Proof
					
Measuring Object		Liquids as water and chemical			
Accuracy *1*2		up to 2000mm: ±10mm, longer than 2000mm: ±0.5% F.S.			
Temperature Characteristics		±0.02% F.S./℃			
Dielectric Constant		ε r≧1.8			
Probe Length		300 to 4000mm			
Upper Blanking		25mm Min. (ε r: approx. 80, water)		80mm Min. (ε r: approx. 80, water)	
Lower Blanking		10mm Min. (ε r: approx. 80, water)		165mm Min. (ε r: approx. 80, water)	
Wiring		3-wire			
Power Supply		24V DC ±10%			
Power Consumption		Approx. 2.0W			
Output		Analog output 1 point, 4 to 20mA DC			
Load Resistance		500Ω Max. at 24V DC (Fig. 3-1)			
Operating Pressure (Static)		-80kPa to 3.0MPa (Fig. 3-2)			
Operating Temperature	Housing	-20 to 60℃ (No Dew Condensation)			
	Probe	-20 to 100℃	-20 to 150℃	-20 to 100℃	-20 to 150℃
Operating Humidity		85% RH Max.			
Protection Class		Housing: IP65 / Probe: IP68			
Material	Housing	Aluminum Die Casting (Acrylic Coated)			
	Probe	316SS, PEEK, FKM			
Tensile Load		4kN			
Lateral Load		1.5N・m		-	
Cable Entry		G3/4			
Recommended Cable		Shielded Cable, CVV-S 1.25mm^2 x 3C (Outer diameter ϕ11)			

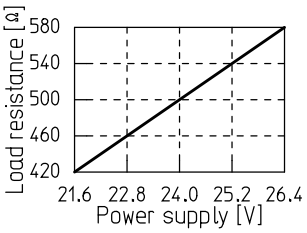


Fig. 3-1: Load Resistance

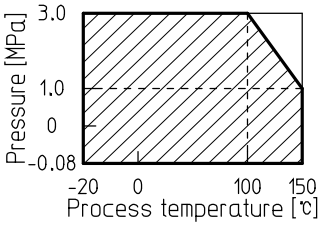
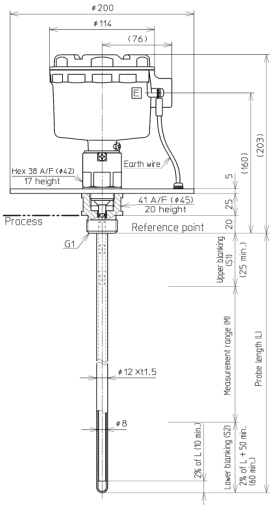
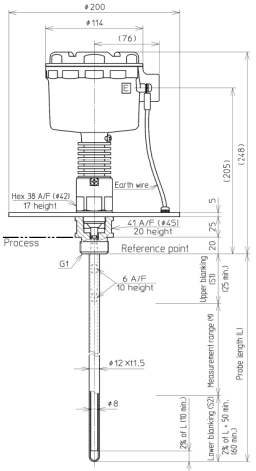
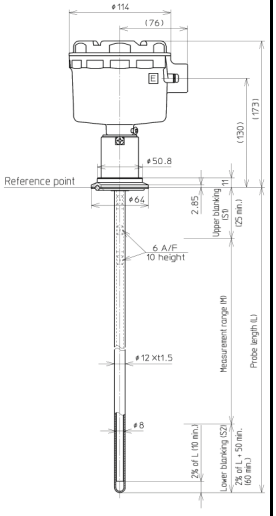
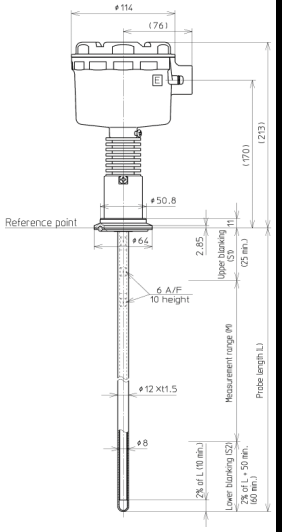


Fig. 3-2: Withstand Pressure

Specifications

		GW100NPA1	GW100NPT1	GW100SPA1	GW100SPT1
		PFA Tubing		Sanitary Ferrule	
		Standard	Heat Proof	Standard	Heat Proof
					
Measuring Object		Liquids as water and chemical			
Accuracy *1*2		up to 2000mm: ±10mm, longer than 2000mm: ±0.5% F.S.			
Temperature Characteristics		±0.02% F.S./℃			
Dielectric Constant		ε r≧1.8			
Probe Length		300 to 4000mm			
Upper Blanking		25mm Min. (ε r: approx. 80, water)			
Lower Blanking		50mm + L x 2% (60mm Min.) (ε r: approx. 80, water)			
Wiring		3-wire			
Power Supply		24V DC ±10%			
Power Consumption		Approx. 2.0W			
Output		Analog output 1 point, 4 to 20mA DC			
Load Resistance		500Ω Max. at 24V DC (Fig. 3-1)			
Operating Pressure (Static)		0kPa to 200kPa			
Operating Temperature	Housing	-20 to 60℃ (No Dew Condensation)			
	Probe	-20 to 100℃	-20 to 150℃	-20 to 100℃	-20 to 150℃
Operating Humidity		85% RH Max.			
Protection Class		Housing: IP65 / Probe: IP68			
Material	Housing	Aluminum Die Casting (Acrylic Coated)			
	Probe	304SS, 316SS, NBR, PEEK, FKM			
Lateral Load		1.5N・m			
Cable Entry		G3/4			
Recommended Cable		Shielded Cable, CVV-S 1.25mm^2 x 3C (Outer diameter φ11)			

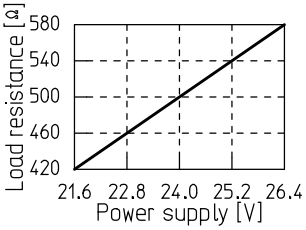
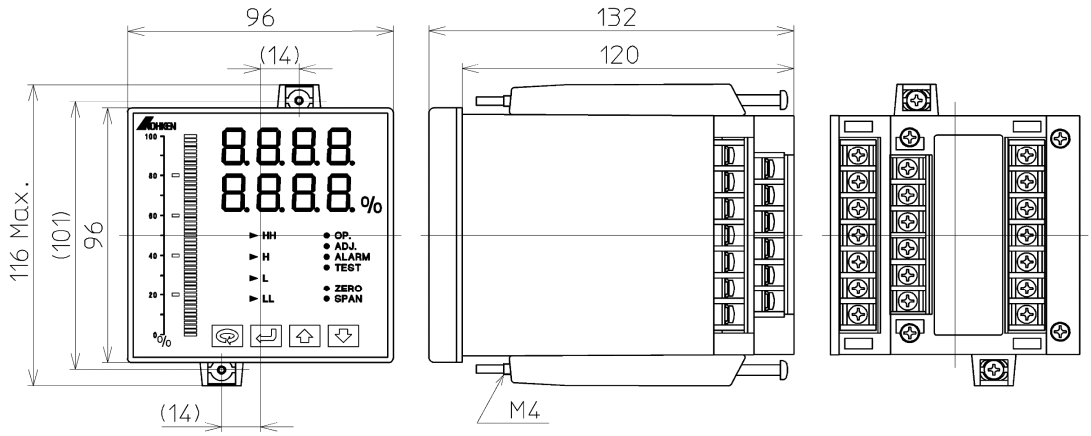
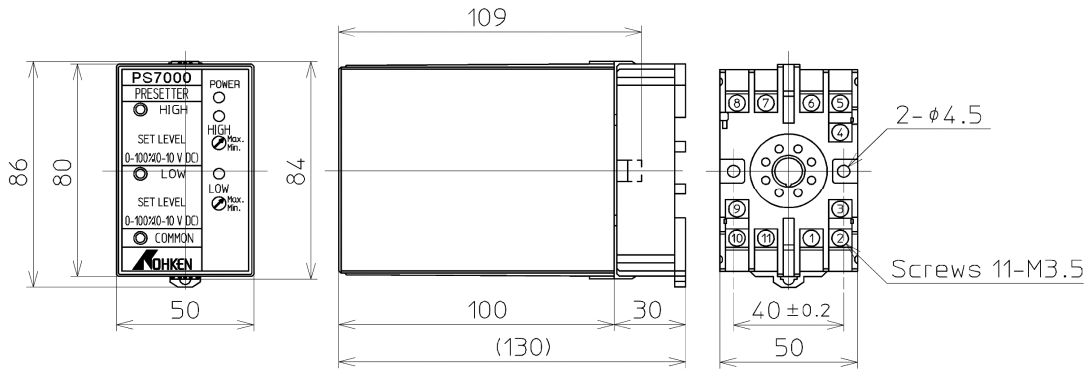


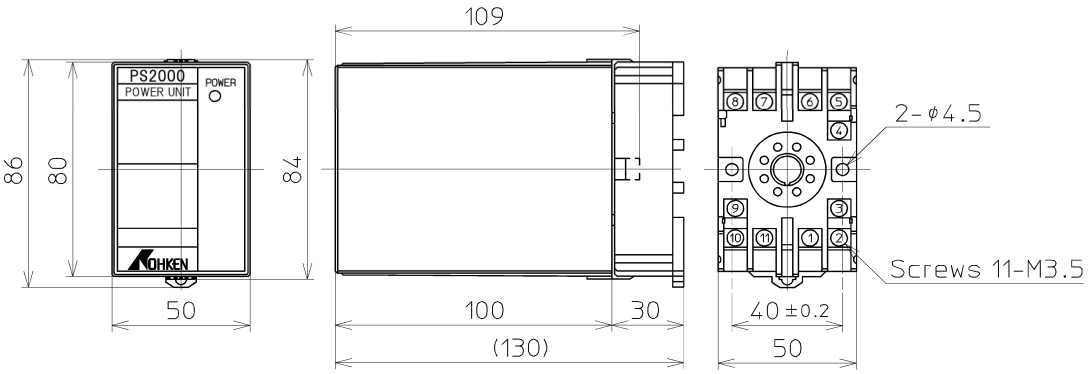
Fig. 3-1: Load Resistance

Connectable Device

	Level controller with digital display
	MP2000-1
	
Output Accuracy	Less than ±0.5% F.S. (4 to 20mA DC input)
Input Accuracy	Less than ±0.5% F.S. (4 to 20mA DC input)
Display Accuracy	Less than ±0.5% F.S. ±1 digit (4 to 20mA DC input)
Display Range	-999 to 9999
Sampling Cycle	Approx. 0.3 seconds
Supply Power	100 to 240V AC ±10% 50/60Hz
Power Consumption	20VA Max.
Supply Power to Sensor	24V DC (200mA DC Max.)
Input Signal	4 to 20mA DC
Output Signal	4 to 20mA DC
Load Resistance	600Ω Max.
Number of Alarm	4 X SPDT (HH, H: Common, LL, L: Common)
Max. Contact Rating	240V 3A AC, 30V 3A DC (Resistive Load)
Min. Contact Rating	5V 10mA DC (Resistive Load)
Withstand Voltage	1500V AC, 1minute between power terminal and earth terminal 500V AC, 1 minute between input terminal and output terminal
Insulation Resistance	100MΩ or more, 500V DC between power terminal and earth terminal 50Ω or more, 250V DC between input terminal and output terminal
Operating Temperature	-5 to 50℃
Operating Humidity	85%RH Max.
Protection Class	Non Drip Proof
External Dimension	W96mm x H96mm x D132mm (Except for fittings), Panel Depth 120mm
Mounting	Panel Mounting, DIN 43 700-96x96 Panel Cut: W92mm x H92mm
Mass	520g

Connectable Device

	Level Presetter
	PS7000-0
	
Power Display	Green LED Lighting
Alarm Display	Red LED Lighting
Alarm Setting Accuracy	±0.5% F.S.
Power Supply	90 to 132/180 to 264V AC 50/60Hz
Power Consumption	Approx. 2VA
Output Signal	Non-voltage Relay Contact (2 X SPDT), Detected: Relay Energized
Input Signal	4 to 20mA DC (Receiving Resistance 25Ω)
Contact Rating	250V 7A AC, 30V 7A DC (Resistive Load)
Operating Temperature	-20 to 70℃ (Get rid of dew)
Operating Humidity	85% RH Max. (Get rid of dew)

	Power Units
	PU2000
	
Power Display	Green LED Lighting
Power Supply	90 to 132/180 to 264V AC 50/60Hz
Power Source	24V DC ± 10%, 120mA DC Max.
Power Consumption	Approx. 10VA
Insulation Resistance	100MΩ or more, 500V DC (Between power terminal and earth terminal)
Withstand Voltage	1500V AC, 1 minute
Operating Temperature	-20 to 50℃ (Get rid of dew)
Operating Humidity	85% RH Max. (Get rid of dew)

Example of Applications

- **Excellent corrosion resistance, ideal for chemicals, foods, pharmaceuticals, steel, pulp and paper, machine tools, hydraulic equipment, water treatment equipment, and other industrial machines**

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