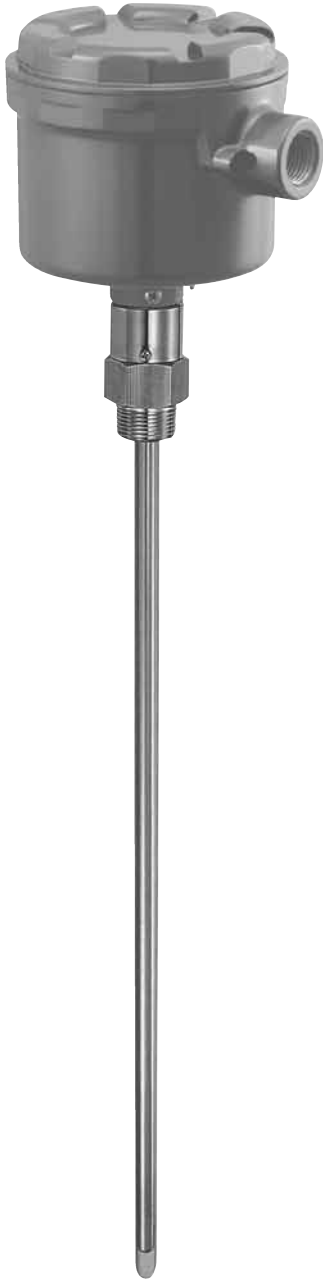# MODEL CG300 New Capacitance Level Measurment

Features

- Easy operation, easy programming
- dK correction
- Improved buildup insensitivity
- High accuracy operation
- Suitable for a wide range of materials
- LCD for operation status indication

General Description

   Model CG300 of integral type is designed for continuous level measurement of liquids or chemicals. This sensor adapts the principle of phase detection and ensures the wide range of sensitivity adjustment, insensitive to buildup, and easy adjustment using digital signals. This sensor can detect Kerosene and Water without changing the circuit board. Model CG300 is not affected by the resistance of buildup due to the phase detection. However, if it is affected, CG300 automatically select reasonable data, and output the signal correctly. When the medium inside of tank is changed, CG300 automatically calculates and output ZERO and SPAN values with one given point adjusted.
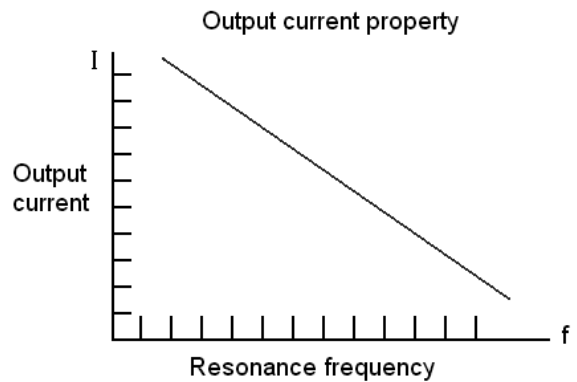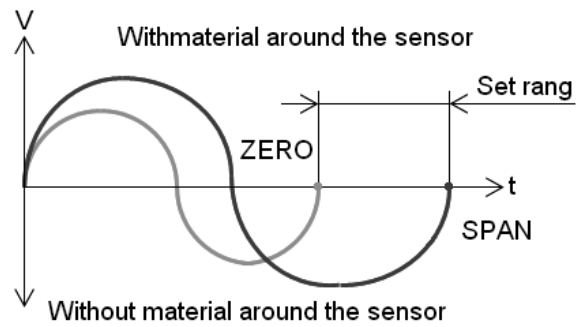
Operational Description

The basic oscillator circuit is of the parallel resonance circuit with L (coil) and C (capacitance between the electrodes). The oscillation frequency (f) of this circuit is: $f=1/2\pi\sqrt{LC}$. The frequency without material around the sensor (f1) is: $f1=1/2\pi\sqrt{LC}$, where C is the capacitance without material around the sensor (ZORO point). With material around the sensor, the capacitance increases (C+ΔC), and the frequency (f2) is: $f2=1/2\pi\sqrt{L(C+\Delta C)}$, where C+ΔC is the capacitance with material around the sensor (SPAN point). The sensor detects the frequency change from f1, and gives output (4 to 20mA) corresponding to the change. With the incorporated microcomputer, offset of output current and reversed output signals for ZERO/SPAN points are also available.

Key Features and Benefits

- Dielectric constant compensation function
  When the dielectric constant of medium changes, the conventional products need re-adjustment of Zero and Span points. Model CG300 automatically calculates and output Zero and Span values with one given point adjusted.
- Wide range of measuring mediums
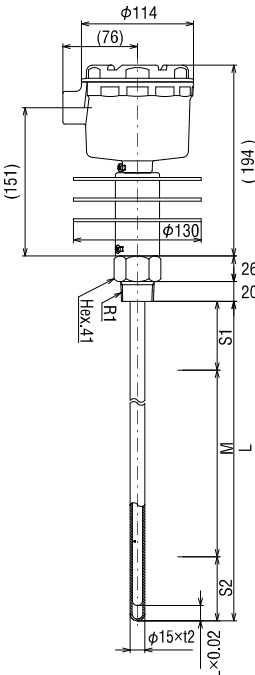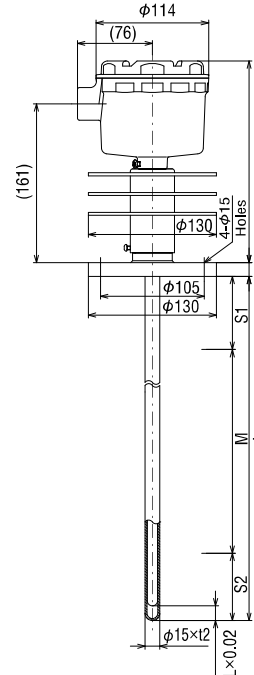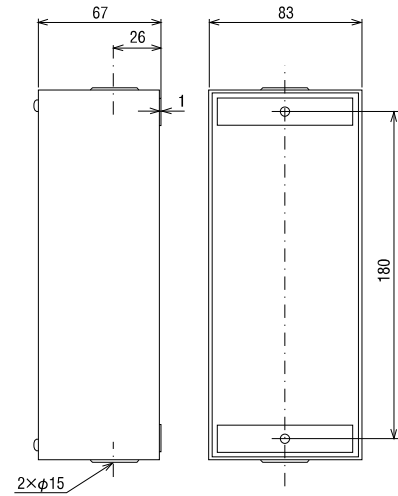 Successful operation for measured medium of 30 to 2000 pF

Example of medium

Name	Dielectric Constants
Kerosene	2.8
Ammonia	15-25
Isobutyl Alcohl	18.7-31.7
Methyl Alcohol	33-56.6
Water	48-80

Specifications

Model	Integral	CG300N	CG300F
	Separation	CG300BN	CG300BF
Drawing			
Type		Standard	
Mounting		R1	JIS5K50A
Supply Power		100 to 240V AC ±10%, 50/60Hz	
Power Consumption		Integral type: Approx. 7VA Max., Separation type Approx. 6VA Max.	
Output Signal		4 to 20mA DC	
Load Resistive		600 Ω Max.	
Operating Temperature	Housing	−25 to 65°C	
	Electrode	−10 to 60°C	
Maximum Pressure		100 kPa Max. (Except mounting part)	
Maximum Humidity		85% RH Max.	
Sensitivity		30 to 2000 pF	
Accuracy		±0.5% F.S.	
Material	Housing	ADC12	
	Electrode	304SS	
	Insulation tube	PFA	
	O-ring	FPM/FKM	
	Radiation fin		
Maximum Probe Length		4000mm	
Cable Entry		G3/4	
Protection		Housing: IP65 / Electrode: IP68	
Recommended cable		Power supply: IV 2 x 2.0mm² or CVV 2.0mm² x 2C Output signal / Between sensor and controller: CVV-S 1.25mm² x 2C	

*S1 and S2 on the drawing is blanking zone.

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CG300NT / CG300BNT	CG300FT / CGM300BFT	CGM1100

Heat Proof		Controller
R1	JIS5K50A	
100 to 240V AC ±10%, 50/60Hz		
Integral type: Approx. 7VA Max., Separation type Approx. 6VA Max.		
4 to 20mA DC		
600 Ω Max.		
−25 to 65°C		−10 to 60°C
−10 to 130°C		
100 kPa Max. (Except mounting part)		
85% RH Max.		
30 to 2000 pF		
±0.5% F.S.		
ADC12		SPCC
304SS		
PFA		
FPM/FKM		
304SS		
4000mm		
G3/4		
Housing: IP65 / Electrode: IP68		IP20
Power supply: IV 2 x 2.0mm² or CVV 2.0mm² x 2C Output signal / Between sensor and controller: CVV-S 1.25mm² x 2C		Separation distance 200m Max.

*S1 and S2 on the drawing is blanking zone.