# **PRODUCT DATA SHEET**

Non-contacting Radar Level Gauge











## 1. Advanced performance

The measuring principle is based on Time-of-Flight by microwave pulse technology.

- Non contact measuring
- Non mechanical moving parts
- High reliability, Easy maintenance
- High sensitivity
- Density, Pressure and Temperature less affected
- ✓ Loop Power System (2-wire)
- ✓ 4-20mA with HART protocol
- ✓ Wide antenna range
- ✓ Interactive Windows-based setup software
- ✓ Built-in display / 4 keys menu driven
- ✓ LCD 90° step rotation for better visibility

## 2. Measuring principle

KRG-10 measures liquid levels by transmitting radar pulses towards the liquid surface and receiving the radar echoes. The travel time for the radar pulse is proportional to the distance between the gauge and the surface.

Upon reception, microprocessors and intelligent software in the gauge head analyzes the echoes and transform them into level output data.

The radar pulse is virtually less affected by the tank content and atmosphere, temperature or pressure. Thus, radar measurement is proven to be the most reliable gauging method in the most applications. Furthermore, maintenance requirements are in fact zero that as no part of the gauge is in physical contact with liquid.

And KRG-10 has a function to remove unwanted echo. By using this function, the user can prevent the erroneous recognition of the reflected wave by unwanted echo.

All this makes KRG-10 very well suited for process tank applications in the chemical and water industry.

## 3. Features <u>Unique Technology</u>

#### • ±2mm High Accuracy

TOKYO KEIKI's advanced pulse technologies achieve +/-2mm accuracy. (Rod Antenna : +/-3mm)

#### Advanced Echo Processing

"Multi-echo Historical-validation" checks trend continuity to track the echoes from liquid during process operation for smooth measurement. And, "Auto Noise Table Function" achieves stable and continuous level measurement on the Reactor tank application.

## Rapid Tracking

"Full-range Search Mode" boosts detection speed and track up to 2m/sec level change.

#### Flow & Volume Calculation

"Extended calculation mode" outputs not only Tank Volume, but also **Open Channel Flow Rate** by weir or flume combination.

#### Wide Line-up Antenna

KRG-10 can be installed for Corrosive, Adhesive and Hygienic applications by various antenna;

 SUS Cone
 for 2" (DN50) & 4" (DN100) nozzles

 PTFE Sealing
 for 2" (DN50) & 3" (DN80) & 4" (DN100) nozzles

 PFA Rod
 for 1" (DN25) nozzle

Details as per page 7 to 12

#### • Wide Measuring Range

Up to 30m Max. by 4" (DN100) Cone Antenna

#### Stable Measurement

#### \* "Disturbance Noise Elimination"

Cyclical & Multi-bounce noise echoes are eliminable for stable output. It realizes stable measurement without leap in process tank measurement.

### "Predict Output"

As the result of echo validation, KRG-10 can output predicted data reasonably.

#### Distance Filter Window

This window is effective for echo searching, and variable ranging available.

#### Bottom Echo Handler

Generally, liquids having low dielectric constant are difficult to be divided surface echo from tank bottom echo when its level is quite low and close to bottom. KRG-10 can deem the level is close to almost bottom without fluctuation.

#### Double Bounce Handler

Delayed echo by multi-bounce between liquid surface and tank ceiling will be eliminated.

## User-friendly Design

## Easy Configuration

Graphical HART Configuration on Laptop PC Also menu driven 4-keys input (need LCD module)

## Rotatable LCD (90° step)

LCD front face can be changed to all four points of the compass.

## • Sun Shade for LCD protection

Rubber-made Sun Shade is provided to protect top-mount LCD.

## • Removable LCD module

LCD module is removal in case that it is not required. In such case, a blind cover the same as terminal cover will be provided before shipment.

## 4. Applications

KRG-10 is available to measure both of calm surface liquid such as storage tanks or buffer tanks and ruffled surface liquid such as reactor tanks.

- Chemical and petrochemical
- Refinery
- Pharmacy
- Food and beverage

Also it will be available in Water industrial such as

- River intake gate,
- Process in waterworks,
- Water reservoir,
- Sewage water treatment plant,
- Hydraulic power station,
- River and dam,
- Coolant pit in steel process,
- Discharge outlet for flow metering.







# 5. System

KRG-10 uses 2-wire system, which means both signal and power are available on same wiring. KRG-10 is certified as both flameproof and intrinsically safety instrument.

If you intend to use KRG-10 in hazard area as intrinsic safety device, intrinsically safe barrier is required.

All of data is displayed by 5-digit LCD display on transmitter head and changed items by 4 configuration buttons easily. Also it is possible to operate Interactive Windows-based setup software on PC.

**Example** 



## 6. Measuring

Measuring performance will be decided by products character (dielectric constant), surface conditions and antenna size.

In generally, the liquid, which has higher dielectric constant number such as water, is easily to measure, and calm surface liquid is the same.

On the contrary, low dielectric constant liquid, turbulence surface or forming surface and dirty antenna conditions are relatively difficult to measure.

Even so if you choose right antenna, it is possible to measure in most of case.

Below table and graphs show suitable antenna, products and range.

Туре	Antenna	Targeting
	2", 4"	Tank application,
	Cone	Long Distance
	2", 3", 4"	Hygienic or
	PTFE Sealing	application
KRG-10-□01R□	1" Rod	Narrow & longer tank nozzle

Almost all of liquid may be classified as below 3 types. Antenna Measuring Distance (reference) a: Machine Oil, Gasoline, Hydrocarbons, Petroleum (ε r = 1.8 ~ 2.7) b: Rapeseed oil, Alcohol,

- Concentrated Acid, Solvent ( $\epsilon_r = 2.7 \sim 10$ )
- c: Water base liquid  $(\varepsilon_r > 10)$



## 7. Antenna type



## 7-1. Fitting Flange for nozzle installation

KRG-10's antennas are designed for easy mounting by flange. In order to apply various standard's flange on tank nozzles, KRG-10 can use local flanges that machined for a center hole. So the hole size depends on antenna type, please refer the following dimension table and machine locally procured flanges.

#### Required flange dimensions



Antenna	Ce	nter Hole	
type	ФА	Tolerance	τ
2" & 4" Cone	45		14 ~ 35
2" PTFE Sealing	50		12 ~ 25
3" PTFE Sealing	75	+0.1 0	14 ~ 35
4" PTFE Sealing	80		14 ~ 35
1" Rod	45		11 ~ 35

PTFE Sealing Antenna

## 7-2. Cone Antenna

Cone Antenna is available for both liquid tank / vessel and pipe installation. The size of antenna are provided 2 inch or 4 inch, and the only materials which is exposed in tank inside are consisted of SUS316L and PTFE sealing and O rings.

Thanks to KRG-10 unique flange clamp solution, you can use your existing flange as process connection.

## KRG-10 with 2" Cone Antenna



- 1. Window / Polycarbonate \*1
- 2. Cover (display) / AlSi10Mg(Fe)
- 3. Cover (terminal block) / AlSi10Mg(Fe)
- 4. Housing / AlSi10Mg(Fe)
- 5. Label
- 6. Ground terminal (M5) / SUS304
  - \*1 = Provided that LCD Module is requested.
  - \*2 = See Page21

- 7. Plug or Cable gland \*2
- 8. Blind Plug \*2
- 9. Flange lock nut / SUS304
- 10. O-ring
- 11. Flange (option)
- 12. 2" Cone Antenna / SUS316L

## KRG-10 with 4" Cone Antenna





- 1. Window / Polycarbonate \*1
- 2. Cover (display) / AlSi10Mg(Fe) \*2
- 3. Cover (terminal block) / AlSi10Mg(Fe)
- 4. Housing / Aluminum
- 5. Label
- 6. Ground terminal (M5) / SUS304

\*1 = Provided that LCD Module is requested.

\*2 = See Page21

- Plug or Cable Gland \*2
   Blind Plug \*2
- 9. Flange lock nut / SUS304
- 10. O-ring
- 11. Flange (option)
- 12. 4" Cone Antenna / SUS316L

# 7-3. Sealing Antenna

Sealing Antenna is available for hygienic nozzle on liquid tank / vessel.

The size of antenna are provided 2 inch or 4 inch, and the only materials which is exposed in tank inside are consisted of PTFE sealing only.

Thanks to KRG-10 unique flange clamp solution, you can use your existing flange as process connection.

## KRG-10 with 2" PTFE Sealing Antenna



- 1. Window / Polycarbonate \*1
- 2. Cover (display) / AlSi10Mg(Fe)
- 3. Cover (terminal block) / AlSi10Mg(Fe)
- 4. Housing / AISi10Mg(Fe)
- 5. Label
- 6. Ground terminal (M5) / SUS304

\*1 = Provided that LCD Module is requested.

\*2 = See Page21

- 7. Plug or Cable Gland \*2
- 8. Plug \*2
- 9. Flange lock nut / SUS304
- 10. O-ring
- 11. Flange (option)
- 12. 2" PTFE Sealing Antenna

# KRG-10 with 3" PTFE Sealing Antenna





- 1. Window / Polycarbonate \*1
- 2. Cover (display) / AlSi10Mg(Fe)
- 3. Cover (terminal block) / AlSi10Mg(Fe)
- 4. Housing / AlSi10Mg(Fe)
- 5. Label
- 6. Ground terminal (M5) / SUS304
  - \*1 = Provided that LCD Module is requested. \*2 = See Page21

- 7. Plug or Cable Gland \*2
- 8. Plug \*2
- 9. Flange lock nut / SUS304
- 10. O-ring
- 11. Flange (option)
- 12. 3" PTFE Sealing Antenna

## KRG-10 with 4" PTFE Sealing Antenna





- 1. Window / Polycarbonate \*1
- 2. Cover (display) / AlSi10Mg(Fe)
- 3. Cover (terminal block) / AISi10Mg(Fe)
- 4. Housing / AlSi10Mg(Fe)
- 5. Label
- 6. Ground terminal (M5) / SUS304
  - \*1 = Provided that LCD Module is requested.
  - \*2 = See Page21

- 7. Plug or Cable Gland \*2
- 8. Plug \*2
- 9. Flange lock nut / SUS304
- 10. O-ring
- Flange (option)
   4" PTFE Sealing Antenna

## 7-4. Rod Antenna

The Rod Antenna is made of fluororesin (PFA), which makes it easy to clean and resistant to aggressive chemicals and conditions. It has inactive length of 150mm to ensure that measurements are unaffected by the mounting nozzle or thick flower (Sublimed).

Thanks to KRG-10 unique flange clamp solution, you can use your existing flange as process connection.

## KRG-10 with 1" Rod Antenna





- 1. Window / Polycarbonate \*1
- 2. Cover (display) / AlSi10Mg(Fe)
- 3. Cover (terminal block) / AlSi10Mg(Fe)
- 4. Housing / AlSi10Mg(Fe)
- 5. Label
- 6. Ground terminal (M5) / SUS304

\*1 = Provided that LCD Module is requested. \*2 = See Page21

- 7. Plug or Cable Gland \*2
- 8. Plug \*2
- 9. Flange lock nut / SUS304
- 10. O-ring
- 11. Flange (option)
- 12. 1" Rod Antenna / PFA

# 8. Mechanical Installation

KRG-10 shall be mounted on tank nozzle or pipe easily. To ensure performance you should install gauge properly as bellow.

Antenna should be kept horizontally. Inside of microwave transmitting area might be clear.

Set the gauge to keep away from tank wall as recommended dimension in the measuring ranges. To choose bigger size antenna as you can because big size antenna will be better to gain weak microwave echo in bad conditions.

## Size of microwave beam area

Beam area : Diameter of radiated area Beam angle: Half-power beam width (degree)

		-		
Antenna type	2" Cone	3" Sealing	4" Cone	1" Pod
	2" Sealing		4" Sealing	I KUU
Beam angle	18°	12°	8°	25°
Distance (m)		Diamet	er (m)	
5	1.6	1.1	0.7	2.2
10	3.2	2.1	1.4	-
15	-	3.2	2.1	-
20	-	4.2	2.8	-
25	-	5.3	3.5	-
30	_	-	4.2	_





## 9. Electrical Installation



KRG-10 is 2-wire system, which means both signal and power are available on same wiring. The power source voltage is 10.5~36VDC in nonhazardous area, and 12~30VDC (Ex ia) or 18~36VDC (Ex ia/db) in hazardous area might be available. For application twisted and sealed cable is recommended.

KRG-10 is certified as flameproof and intrinsically safe instrument. Then if you intend to use it in hazardous area as intrinsically safe instrument, you should use with intrinsically safe isolator. In that case please refer the electrical parameters in next page.

Cable gland (for Non-Explosion proof)



#### Correlation between Power Voltage and Load Resistance



# **10. Technical Specifications**

# 10-1. General specifications

Measurement	The time-of-flight measurement principle with microwave pulses			
Medium	Measurement object			
Medium	Relative permittivity			
	Process temperature	$\epsilon_r \geq 1.0$		
			EKM O-ripg $: -10^{\circ}$ C $\sim +150^{\circ}$ C	
		Cone Antenna	Kalrez O-ring : $-20^{\circ}$ C ~ $+150^{\circ}$ C	
			VMO O-ring : -40°C ~ +150°C	
		PTFF Sealing	$FKM O-ring : -10^{\circ}C \sim +200^{\circ}C$	
		Antenna	VMQ O-ring : -40°C ~ +180°C	
		Rod Antenna	VMQ O-ring : -40°C ~ +150°C	
		Intrinsically Safe(GAS)		
		Flame Proof(GAS)		
		Cone Antenna	FKM O-ring ; -10°C ~ +150°C	
			Kalrez O-ring ; -20°C ~ +150°C	
			VMQ O-ring ; -40°C ~ +150°C	
		PIFE Sealing	FKM O-ring ; $-10^{\circ}$ C ~ $+200^{\circ}$ C	
		Antenna	$VMQ O-ring ; -40^{\circ}C \sim +180^{\circ}C$	
		Rod Antenna	VMQ O-ring ; -40°C ~ +150°C	
		Intrinsically Safe(DUST)		
		Cone Antenna	FKM U-ring ; $-10^{\circ}$ C ~ $+135^{\circ}$ C	
			Kallez O-ling ; -20°C ~ +135°C	
		DTEE Socied Antonno	$V_{MQ}O_{-111}G_{-1}^{-40}C_{-113}^{-40}C_{-135}^{-100}C_{-135}^$	
			VMO O-ring : -40°C ~ +135°C	
		Rod Antenna	VMQ O-ring $: -40^{\circ}C \sim +135^{\circ}C$	
		NOTE	Ville O-fillig , -40 0 ~ +133 0	
		Cone antenna tempera	ature range differs depending on	
		the O-ring material.		
		<ul> <li>Kalrez(Kalrez6375)</li> </ul>		
		<ul> <li>VMQ(Silicone rubber)</li> </ul>		
		<ul> <li>The maximum tempera</li> </ul>	ature of Ex-types is due to	
	_	temperature class and ambient temperature of E		
	Process pressure	Cone Antenna	-0.1MPa ~ +1.5MPa	
		PIFE Sealing	-0.1MPa ~ +1.5MPa	
		Antenna		
	All Cono Antonno	Rod Antenna	-0.1MPa ~ +1.5MPa	
iviax. measuring	4 Cone Antenna	30(1)		
range	2" Cone Antenna	10m		
	4" PTFE Sealing	30m		
	Antenna			
	3" PTFE Sealing	25m		
	Antenna	4.0		
	2" PTFE Sealing	10m		
	Antenna 41 Ded Antenna	<u>ر</u>		
	T KOO ANtenna	nic (		
	NOTE: It is a conseque installation environment	ence in our environment. nt and the measurement	It may vary depending on the object.	
Measuring cycle ti	me	1sec.		

Tracking rate for Level change		Max. 2m/sec. (R>3.0m)		
Repeatability		≤ ±1mm		
Temperature drift		10mm <sub>p-p</sub> o	r less than ±3mm/10K	
Maximum measured error	2" Cone 4" Cone 2" PTFE Antenna 3" PTFE Antenna 4" PTFE	Antenna Antenna Sealing Sealing Sealing	±2mm	
	Antenna	a		
	1" Rod	Antenna	±3mm	
	NOTE:			
	<ul> <li>If the n</li> <li>It is a c</li> <li>environ</li> <li>Deviati</li> </ul>	neasurement d consequence ir ment and the i on by strong, h	istance is be our environ measuremer	low 0.5m, the measured error is $\pm 10$ mm. ment. It may vary depending on the installation it object. by electromagnetic fields within EN 61326.
	≦±50m	m	5 1	<b>,</b>
Type of	Selecta	ble from Non-E	x, Intrinsical	ly safe, Flame Proof
explosion proof	Intrinsic	safty paramet	ers : Ui=30V	, li=93mA, Pi=700mW, Ci=negligible,
			Li=negli	gible
	Associa	ted apparatus	parameter :	Um=250V AC
Ex approval	AIEX	EN60079-0:2	018	Intrinsically Safe
		EN60079-1.2	2012	$   1 \text{ G Ex ia IIC T4 Ga Ta} = -40^{\circ}\text{C to } +60^{\circ}\text{C}$
		EN60079-26:	2015	If 1 D Ex ia IIIC T135°C Da Ta = $-40^{\circ}$ C to $+60^{\circ}$ C,
		EN60529:199	91	IP66
		+A1:2000+A	2:2013	Flame Proof
				FM13ATEX0069X
				11 1/2  G EX la/db IIC 14 Ga / Gb 1a = -40°C to +60°C, IP66
	IECEx	IEC 60079-0:	2017	Intrinsically Safe
		IEC 60079-1:	2014-06	IECEX FMG 13.0039X
		IEC 60079-1	5:2014-10	Ex ia IIC T4 Ga Ta = $-40^{\circ}$ C to $+60^{\circ}$ C, IP66 Ex ia IIIC T135°C Da Ta = $-40^{\circ}$ C to $+60^{\circ}$ C, IP66
				Flame Proof IECEx FMG 13.0039X
				Ex ia/db IIC T4 Ga / Gb Ta = $-40^{\circ}$ C to $+60^{\circ}$ C, IP66
	KCs	IEC 60079-0: IEC 60079-1: IEC 60079-1 IEC 60529:20 IEC 60079-20	2011 2007 1:2011 011 6:2014	Flame Proof Ex ia/db IIC T4 Ga/Gb
EMC directive	·	EN61326-1:2	2013	
Low voltage direct	tive	EN61010-1:2	2010	
RE directive EN302372:		EN302372:2	016	

# 10-2. Transmitter specifications

Microwave	Operating frequency	26GHz		
	Transmitting power	< 5µW		
Power supply	Non-Ex	DC 10.5 ~ 36V		
,	Ex ia	DC 12 ~ 30V		
	Ex ja/db	DC 18 ~ 36V		
Analog output	Current output	4-20mA 4mA(HAR	T multidrop mode)	
i nanog oarpar	Output variable	Level (m or Ft) Dis	stance (m or Et) Volume (%)	
		Flow rate (%). Sign	al strength (dB)	
	Resolution	0.4µA	<u> </u>	
	Alarm output	Hold, 3.6mA, 22mA	A	
	Temperature drift	+0.05%FS / 10K (1	6mA) or +0.5%FS	
	Response Time	2 sec. until staticall	v determinate	
Digital output	HART specification	HART 7	,	
g	Resolution	1mm		
	Fastest output cycle	1s		
Operating and	Display	5 digits I CD		
display module	Display	<pre><displayed parar<="" pre=""></displayed></pre>	neters> (Alternative)	
(option)		Level (m or Ft)	Distance (m or Ft)	
()		Volume (value or	%) Flow rate (value or %)	
		Current (mA)	Signal strength (dB)	
		Max. volume	Max. flow rate	
		Electronic temper	rature (°C)	
	Method of Operation	4 keys operation		
Surge	Non-Ex	COM 4kV / Dif 2kV		
immunity	Exia	COM 1kV / Dif 30V		
	Ex ia/db	COM 1kV / Dif 250	V	
Ambient	Non-Ex (Without LCD display)	-40 ~ +70°C		
temperature	Non-Ex (With LCD display)	-20 ~ +70°C		
	Ex ia, Ex ia/db (Without display)	-40 ~ +60°C		
	Ex ia. Ex ia/db	-20 ~ +60°C		
	(With display)			
humidity		≦95% (Non-cond	ensing)	
Storage & trans	port temperature	-40 ~ +85°C	5.	
Vibration resista	nce (Resonance Point)	1G at 9 ~ 200 Hz		
Wiring port	Standard of screw	M20 x 1.5 (x 2)		
	(number of screw holes)			
	Plug and cable gland	Non-Ex	Non-Ex Blind plug (1),	
	attached accessories		cable gland (1)	
	(number of parts)	Ex ia	Non-Ex Blind plug (1),	
		Ex ia/db	Non-Ex Blind plug (1)	
			Ex Blind plug (1)	
	Connection cable outer	Φ7 ~ 13mm		
	diameter	(in case of standar	d cable gland for Non-Ex)	
	Connection cable core	Stranded wire	0.5 ~ 2.5mm <sup>2</sup> (AWG20~12)	
		Single wire	0.8 ~ 2.0mm² (AWG20~12)	
Material	Housing	Die-cast aluminum	(powder coating)	
	Stainless steel parts	SUS304		
	Seal	VMQ (silicone rubb	per)	
	Window	Polycarbonate (Or	ly in case of "with LCD module")	
Structure	Aluminum housing with double	e chamber		

Waterproof	IP66/IP67	
standard	NOTE:	
	<ul> <li>For Rod antenna and PTFE se seal gasket (optional) and O-rin IP67.</li> </ul>	ealing antenna, it must be used with flange(optional), ng (accessory), to satisfy protection class IP66 or
Dimensions	Without display	H187 x W110 x L157
	With display	H193 x W110 x L157

# 10-3. Antenna specifications

# Cone Antenna

Antenna type	Cone	Diameter 2": (half-power beam width: 18°)	
		4": (half-power beam width: 8°)	
		Material SUS316L, PTFE	
Operating	Process	Non-Ex	
conditions	temperature	FKM O-ring:-10 to +150 °C	
		Kalrez O-ring:-20 to +150 °C	
		VMQ O-ring:-40 to +150 °C	
		Intrinsically Safe(GAS)	
		Flame Proof(GAS)	
		FKM O-ring:-10 to +150 °C	
		Kalrez O-ring:-20 to +150 °C	
		VMQ O-ring:-40 to +150 °C	
		Intrinsically Safe(DUST)	
		FKM O-ring:-10 to +135 °C	
		Kalrez O-ring:-20 to +135 °C	
		VMQ O-ring:-40 to +135 °C	
		NOTE: The maximum temperature is valid by temperature class of explosion proof.	
	Process	-0.1 ~ 1.5MPa	
	pressure		
Process fitting	Flange <sup>1)</sup> (JIS	B2220, DIN 1092-1, ANSI B16.5 etc)	

1) Option

# PTFE Sealing Antenna

Antenna type	PTFE	Diameter	2": (half-power beam width: 18°)
	Sealing		3". (half-power beam width: 12°)
	e e s		4": (half-power beam width: 8° )
		Material	SUS304, PTFE
Operating	Process	Non-Ex	
conditions	temperature	FKM O-	ring:-10 to +200 °C
		VMQ O	-ring:-40 to +180 °C
		Intrinsicall	y Safe(GAS)
		Flame Pro	of(GAS)
		FKM O-	ring:-10 to +200 °C
		VMQ O-ring:-40 to +180 °C	
		Intrinsically Safe(DUST)	
		FKM O-ring:-10 to +135 °C	
		VMQ O	-ring:-40 to +135 °C
		NOTE:The r	naximum temperature is valid by temperature class of explosion proof.
		0.4.4.5	
	Process	-0.1 ~ 1.5	VIPa
	pressure		
Process fitting	Flange <sup>1)</sup> (JIS	B2220, DIN	N 1092-1, ANSI B16.5 etc)

1) Option

## Rod Antenna

Antenna type	Rod	Diameter 1": (half-power beam width: 25°)		
		Material SUS304, PTFE(or PFA)		
Operating	Process	Non-Ex		
conditions	temperature	VMQ O-ring:-40 to +150 °C		
		Intrinsically Safe(GAS)		
		Flame Proof(GAS)		
		VMQ O-ring:-40 to +150 °C		
		Intrinsically Safe(DUST)		
		VMQ O-ring:-40 to +135 °C		
		NOTE: The maximum temperature is valid by temperature class of explosion proof.		
	Process	-0.1 ~ 1.5MPa		
	pressure			
Process fitting	Flange <sup>1)</sup> (JIS	B2220, DIN 1092-1, ANSI B16.5 etc)		

1) Option

# 10-4. Weights

Weight	Transmitter Head	approx. 3 kg (with LCD module) approx. 2.9 kg (without LCD module)
	2" Cone Antenna	approx. 1 kg
	4" Cone Antenna	approx. 1.4 kg
	2" PTFE Sealing Antenna	approx. 1.2 kg
	3" PTFE Sealing Antenna	Approx. 2.0 kg
	4" PTFE Sealing Antenna	approx. 2.5 kg
	1" Rod Antenna	approx. 1 kg

# **11. Required parameters for Inquiry**

2) Tank Quantity :		tank(s)
3) Tank Dimension : If pos	ssible, send us DWG of tank.	
Tank Shape : Sphe	rical, Cylindrical, Horizontal, Other (	)
Tank Volume :	m3 or	L
Tank Height :	m <u>Tank Diameter</u> :	m
0% Position : LV	m (=4mA) 100% Position :	LV m (=20m.
4) Agitator Type :		
5) Inner Obstruction : Heate	er coil / Baffles / Pipes / or others (	)
6) Mounting Flange Rating	:	
Tank Diameter m Ta Tank Volume m3	100% Level m ank Height m 0% Level m	
1) Liquid Name	(ma	ain component)
2) Dielectric Constant : & =	(110	(if possible)
3) Temperature :	C deg.~	C deg.
4) Pressure :	MPa ~	MPa
5) Corrosive Requirement : SUS3	16L / PFA/PTFE only	
6) Surface Condition : Calm	/ Foamy / Turbulent	

1) Purpose of process :

2) Existing Level instruments : (if any)

3) Any other problems at Level :

## 12. Product Code



#### NOTE1:

Required cable gland depends on type of explosion protection ATEX, IECEx, and KCs. Each Ex ia & Ex ia/db(ATEX, IECEx, KCs) transmitter should use proper cable gland for explosion proof usage and the attached blind plug. The cable gland for explosion proof shall be prepared as local portion in accordance with safety regulation in each region. And then, The described code of explosionproof on name plate is different depending on this selection. NOTE2:

If you select the PTFE sealing antenna, Material of seal O-ring is FKM or VMQ.

If you select the rod antenna, Material of seal O-ring is VMQ.

NOTE3:

If you need to apply other material for the seal, please consult us.

NOTE4:

Flange is an option. Please refer to Chapter 7-1 Required flange dimensions. NOTE5:

Please refer to the safety instructions to know the IP code for the type of explosion protection. NOTE6:

The KC mark model is only the following nine models. KRG-10-AD02HV-AA, KRG-10-AD04HV-AA, KRG-10-AD04HS-AA, KRG-10-AD02PV-AA, KRG-10-AD02PS-AA, KRG-10-AD04PV-AA, KRG-

KRG-10-AD02PV-AA, KRG-10-AD02PS-AA, KRG-10-AD04PV-AA, KRG-10-AD04PS-AA KRG-10-AD03PV-AA, KRG-10-AD03PS-AA

# TOKYO KEIKI INC.

2-16-46, Minami-kamata, Ohta-ku, Tokyo 144-8551 Japan

Measurement Systems Company Phone : +81-(0)3-3737-8664 Fax : +81-(0)3-3737-8665

May 22 / PDS009R

Copyright 2022 by TOKYO KEIKI INC. All rights reserved. (Specifications are subject to change without notice.)