



OVAL

**TOKYO
KEIKI**

TOKYO KEIKI INC

Advanced Performance Radar Level Transmitter **KRG-10**

OVAL ENGINEERING INC.

We are a flow measurements specialist.

OVAL exists for those who wish to support and raise “OVAL”.

OVAL shall create new values in every industrial fields based on “fine flow management” as OVAL’s core business.

About TOKYO KEIKI



Company name	TOKYO KEIKI INC.
Representative	Tsuyoshi ANDO, President & CEO
Address	2-16-46, Minami-Kamata, Ohta-Ku, Tokyo 144-8551 JAPAN
Phone	+81-3-3732-2111
Facsimile	+81-3-3736-0261
Date of established	May 1, 1896
Employees	1,400 (Group - approx)
Paid-in capital	7,217 million yen (Net sales : 44,00 million yen 2018/3기준)

Changed the company name
from Tokyo Keiki Co., Ltd. to TOKIMEC INC.



Restored TOKYO KEIKI corporate name



1896 1901 1923 1952 1963 1971 1990 1999 2008 2019

Began manufacturing compasses, depth sounders and other navigation instruments and equipment



Began development of aeronautic instruments



Developed Japan's first marine radar system



MK-II Mod.0 radar display

Developed world's first commercial ultrasound flow meter



UF-100 ultrasonic flowmeter

Developed radar warning system used in the F-4EJ fighter plane



Sales launch of MRG-10 microwave level gauge



K-band Non-contacting Radar Gauge



2 Wired Radar

26GHz Radar Frequency

Easy Installation with any Flange



국내방폭 취득



국내전파법 취득

KRG-10

Measurement Range **30m Max.** (4"(DN100) Antenna)

측정 방식	마이크로파 펄스 레이더 방식
정밀도	±2mm (1" Rod Antenna : ±3mm)
압 력	1.5MPa Max.
온 도	-40℃ ~ +200℃ Max.
보호 등급	IP66 / NEMA4X
방 폭	Ex d ia IIC T4 (ATEX / IECEx KCs Ex d ia)

특 징



정밀 펄스 측정방식
으로 정밀도
+/-2mm 구현

다중 에코 검출 기능
으로 독립적인 에코검출
데이터로 부드러운 수위
측정을 개선합니다.

노이즈 제거 기능으로
반응기 탱크 어플리케이션
에서 안정적이고 지속적인
레벨 측정을 달성합니다.

전체 측정 범위 검색모드
에서는 감지 속도를 높이
고 최대 2m/sec 레벨
변화를 추적하여 측정
합니다.

추가 용적 계산 모드는
탱크 부피를 계산 가능
하며, formula flowrate
or flume flowrate
유량 측정도 가능합니다.

General Specification (Transmitter head)



General Specification	주파수	26GHz	
	빔 각도	8° (4inch Cone antenna & PTFE Sealing antenna)	
		12° (3inch PTFE Sealing antenna)	
		18° (2inch Cone antenna & PTFE Sealing antenna)	
		25° (1inch Rod antenna)	
Measurement	최대 측정 범위	30m (4inch Cone antenna, PTFE Sealing antenna) 25m (3inch PTFE Sealing antenna) 10m (2inch Cone antenna, 2inch PTFE Sealing antenna)	
	정밀도	Cone & PTFE Sealing	±2mm
		Rod	±3mm
	분해능	±1mm	
	측정 주기	1s	
	추적 범위	2m/sec (Max.)	
Display		5 digits LCD / 4 keys-menu-driven (수위, 거리, 용적 (%), 유량, 아날로그출력등 표시내용을 선택)	
Power Supply Signal Output	전원 (Loop-Powered)	EX ia/d (본질/내압방폭)	DC18V~36V
		EX ia (본질안전방폭)	DC12V~30V
		Non-Ex (비방폭)	DC10.5V~36V
	출력	4~20mA + HART7	
Mechanical Specification	경보	Hold, 22mA or 3.6mA selectable	
	주변 온도	-40~+70°C(Non-Ex) / -40~+60°C(Ex)	
	탱크 압력	1.5MPa	
	탱크 온도	-40~+200°C	
	IP Class	IP66, NEMA4X	
	ATEX	II1G Ex ia IIC T4 Ga II1D Ex ia IIIc 135°C Da, IP66	II1/2G Ex d ia IIC T4 Gb/Ga II2G Ex d ia IIC T4 Gb,IP66
	IECEX / KCs	Ex ia IIC T4 Ga Ex ia IIIc 135°C Da, IP66	Ex d ia IIC T4 Gb/Ga Ex d ia IIC T4 Gb, IP66

General Specification (Cone antenna)



4 inch Cone Antenna	2 inch Cone Antenna												
Max. measuring Range : 30M	Max. measuring Range : 10M												
Process temperature : -40℃ ~ +150℃	Process temperature : -40℃ ~ +150℃												
Process pressure : -0.1MPa~1.5MPa	Process pressure : -0.1MPa~1.5MPa												
<table> <tr> <td>1. Window / Polycarbonate</td><td>7. Plug or Cable gland</td></tr> <tr> <td>2. Cover (display) / Aluminum</td><td>8. Plug</td></tr> <tr> <td>3. Cover (terminal block) / Aluminum</td><td>9. Flange lock nut / SUS304</td></tr> <tr> <td>4. Housing / Aluminum</td><td>10. O-ring</td></tr> <tr> <td>5. Label</td><td>11. Flange (option)</td></tr> <tr> <td>6. Ground terminal (M5) / SUS304</td><td>12. 2,4inch Cone Antenna / SUS316L</td></tr> </table>		1. Window / Polycarbonate	7. Plug or Cable gland	2. Cover (display) / Aluminum	8. Plug	3. Cover (terminal block) / Aluminum	9. Flange lock nut / SUS304	4. Housing / Aluminum	10. O-ring	5. Label	11. Flange (option)	6. Ground terminal (M5) / SUS304	12. 2,4inch Cone Antenna / SUS316L
1. Window / Polycarbonate	7. Plug or Cable gland												
2. Cover (display) / Aluminum	8. Plug												
3. Cover (terminal block) / Aluminum	9. Flange lock nut / SUS304												
4. Housing / Aluminum	10. O-ring												
5. Label	11. Flange (option)												
6. Ground terminal (M5) / SUS304	12. 2,4inch Cone Antenna / SUS316L												

General Specification (PTFE Sealing antenna)



4 inch PTFE sealing Antenna	3 inch PTFE sealing Antenna												
Max. measuring Range : 30M	Max. measuring Range : 25M												
Process temperature : -40℃ ~ +200℃	Process temperature : -40℃ ~ +200℃												
Process pressure : -0.1MPa~1.5MPa	Process pressure : -0.1MPa~1.5MPa												
<div> </div> <div> <table> <tr> <td>1. Window / Polycarbonate</td><td>7. Plug or Cable gland</td></tr> <tr> <td>2. Cover (display) / Aluminum</td><td>8. Plug</td></tr> <tr> <td>3. Cover (terminal block) / Aluminum</td><td>9. Flange lock nut / SUS304</td></tr> <tr> <td>4. Housing / Aluminum</td><td>10. O-ring</td></tr> <tr> <td>5. Label</td><td>11. Flange (option)</td></tr> <tr> <td>6. Ground terminal (M5) / SUS304</td><td>12. 2,4inch PTFE Sealing Antenna</td></tr> </table> </div>		1. Window / Polycarbonate	7. Plug or Cable gland	2. Cover (display) / Aluminum	8. Plug	3. Cover (terminal block) / Aluminum	9. Flange lock nut / SUS304	4. Housing / Aluminum	10. O-ring	5. Label	11. Flange (option)	6. Ground terminal (M5) / SUS304	12. 2,4inch PTFE Sealing Antenna
1. Window / Polycarbonate	7. Plug or Cable gland												
2. Cover (display) / Aluminum	8. Plug												
3. Cover (terminal block) / Aluminum	9. Flange lock nut / SUS304												
4. Housing / Aluminum	10. O-ring												
5. Label	11. Flange (option)												
6. Ground terminal (M5) / SUS304	12. 2,4inch PTFE Sealing Antenna												

General Specification (PTFE Sealing antenna)

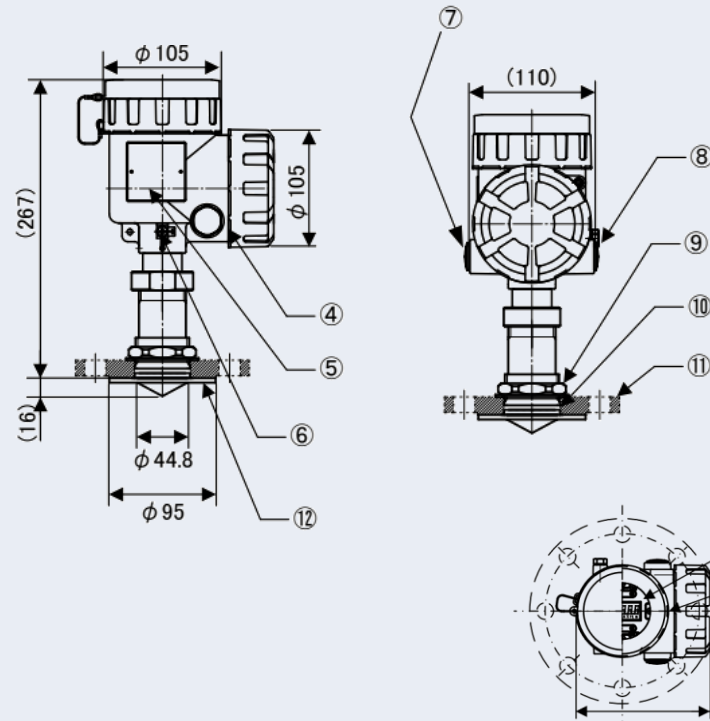


2 inch PTFE sealing Antenna

Max. measuring Range : **10M**

Process temperature : -40°C ~ +200°C

Process pressure : -0.1MPa~1.5MPa

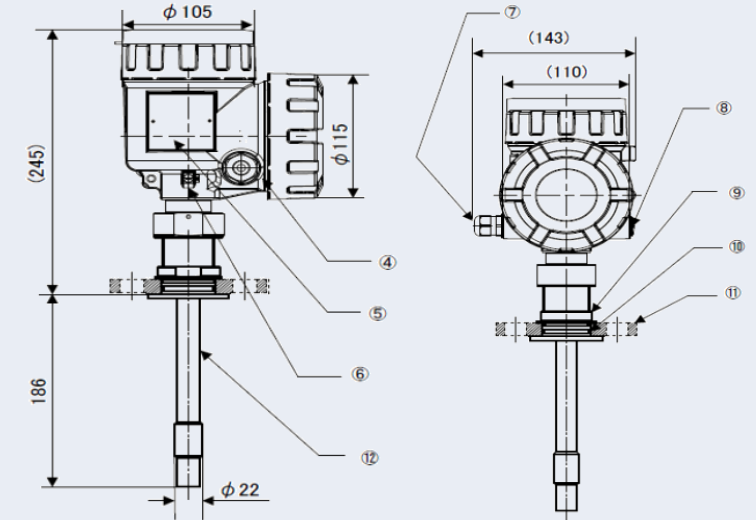


1 inch Rod Antenna

Max. measuring Range : **5M**

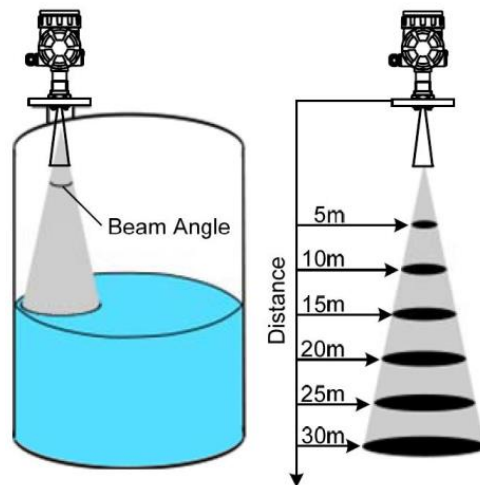
Process temperature : -40°C ~ +150°C

Process pressure : -0.1MPa~1.5MPa

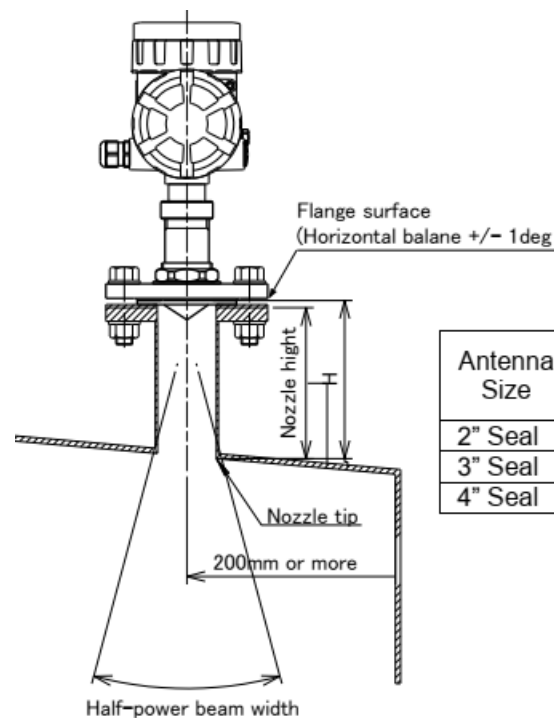


1. Window / Polycarbonate	7. Plug or Cable gland
2. Cover (display) / Aluminum	8. Plug
3. Cover (terminal block) / Aluminum	9. Flange lock nut / SUS304
4. Housing / Aluminum	10. O-ring
5. Label	11. Flange (option)
6. Ground terminal (M5) / SUS304	12. 2,4inch PTFE Sealing Antenna

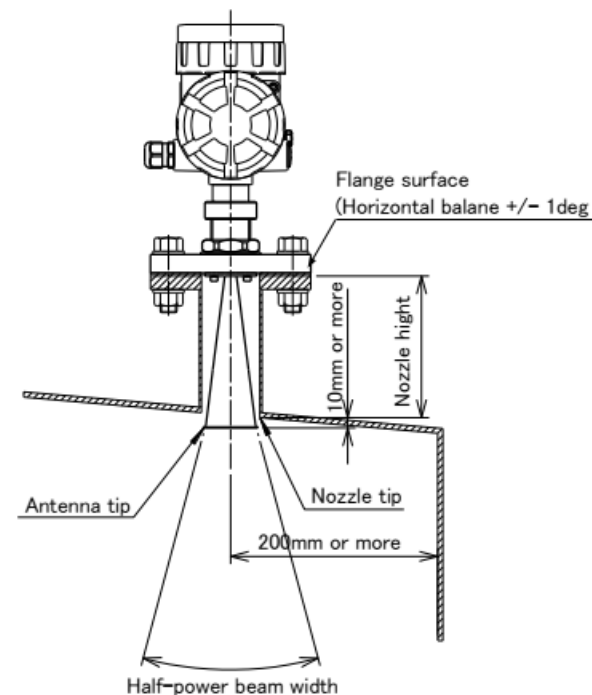
Beam Area (Cone & PTFE)



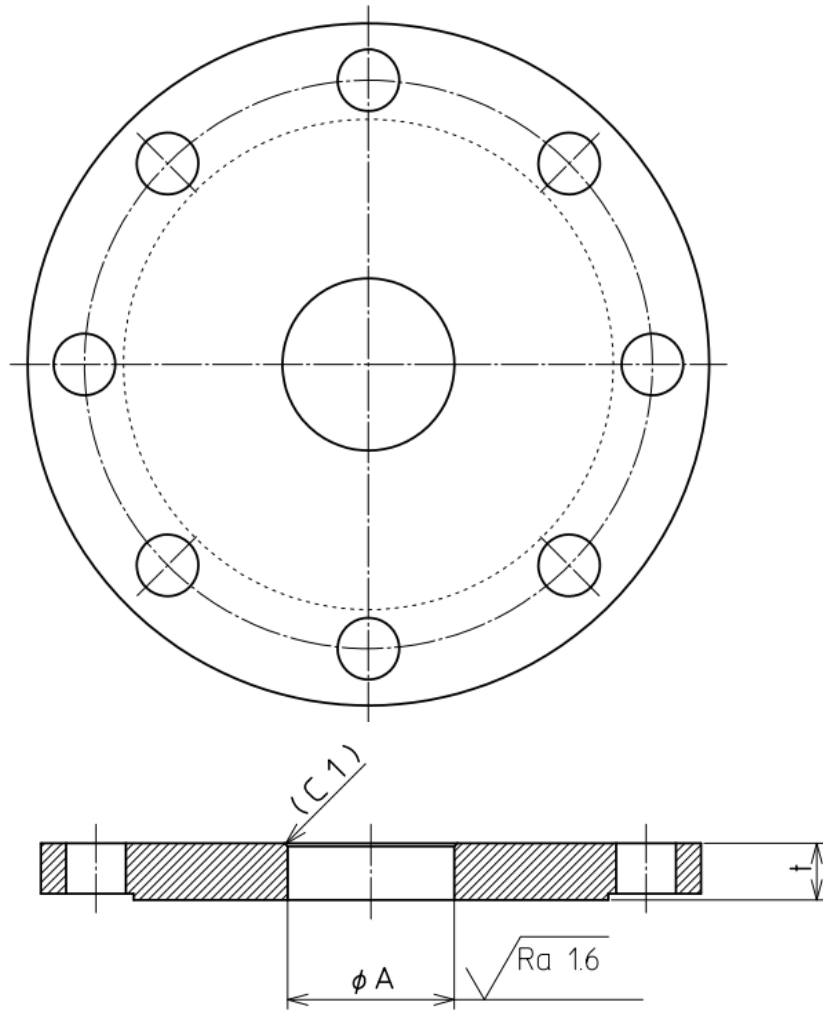
Antenna Type	2" Cone 2" PTFE	3" PTFE	4" Cone 4" PTFE	1" Rod
Beam Angle	18°	12°	8°	25°
Distnace(m)				
5m	1.6	1.1	0.7	2.2
10m	3.2	2.1	1.4	-
15m	-	3.2	2.1	-
20m	-	4.2	2.8	-
25m	-	5.3	3.5	-
30m	-	-	4.2	-



Antenna Size	Max. Nozzle Height
2" Seal	150mm
3" Seal	500mm
4" Seal	500mm



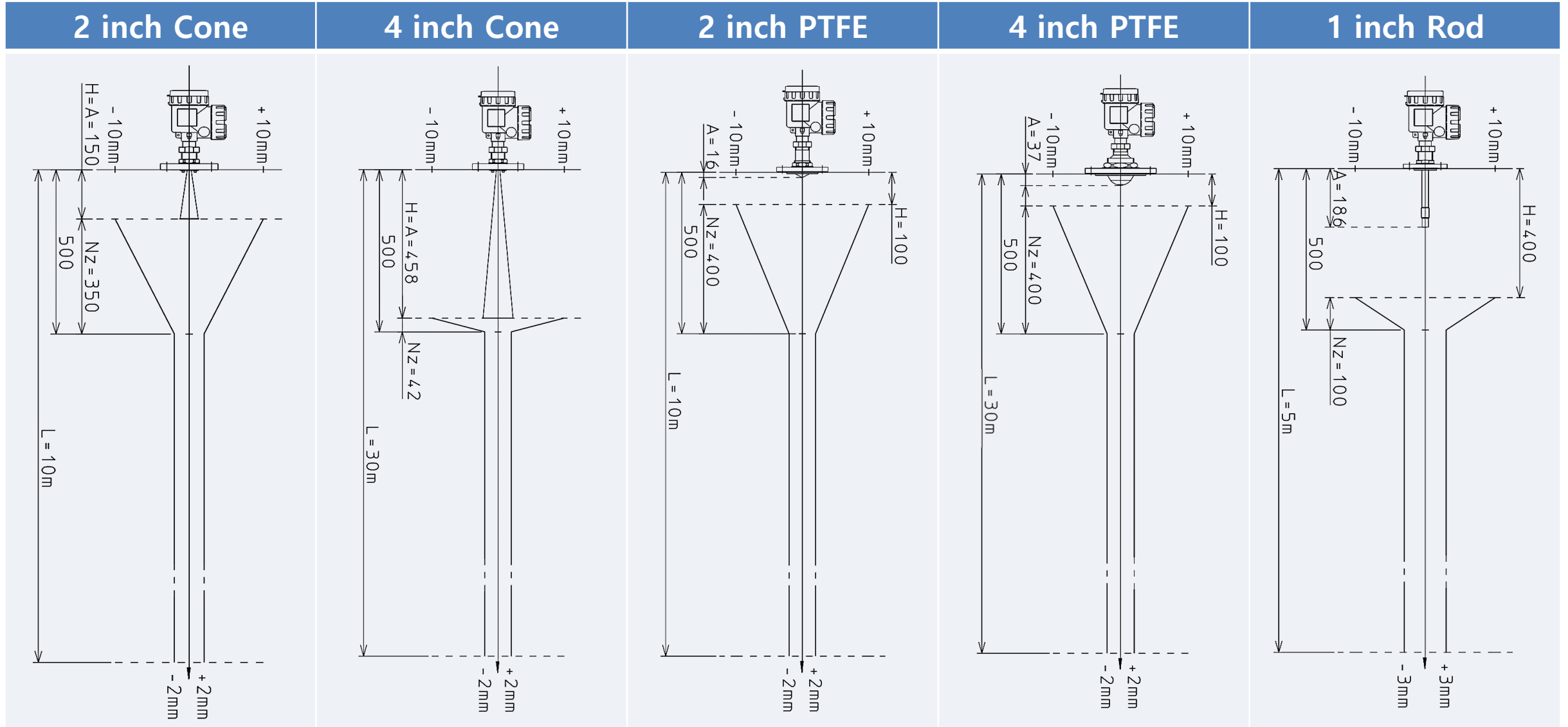
플랜지 치수 및 가공치수



Antenna 타입	φA[mm]		t [mm]
	공차		
2"/4" Cone Antenna	45	+0.1 0	14 ~ 35
2" PTFE Sealing Antenna	50		12 ~ 25
3" PTFE Sealing Antenna	75		14 ~ 35
4" PTFE Sealing Antenna	80		14 ~ 35
1" rod Antenna	45		11 ~ 35

Accuracy (Cone & PTFE)

A : 안테나 길이, H : 불감대, Nz : 근접대



Radar Level Gauge Application



LG Chemical / EG Plant



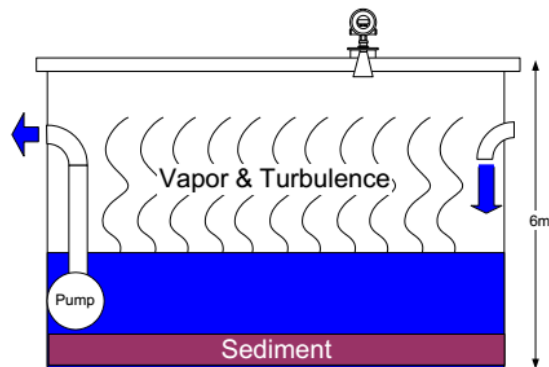
SKInnovation / Agitator Tank



KCC / solvent



KOGAS / Water process liquid



Power plant / Coolant water



Sewage plant / Digester



Food / Soybean sauce



River water

SOFTWARE

KRG-10 LevelConfig

■ HART Software 한글화

- 기본 영어,일본어,한글 지원가능

■ 모니터링 / 로깅

- 소프트웨어에서 액면 에코 및 로깅데이터를 기록 저장 할 수 있습니다.

■ 더블바운스 제거

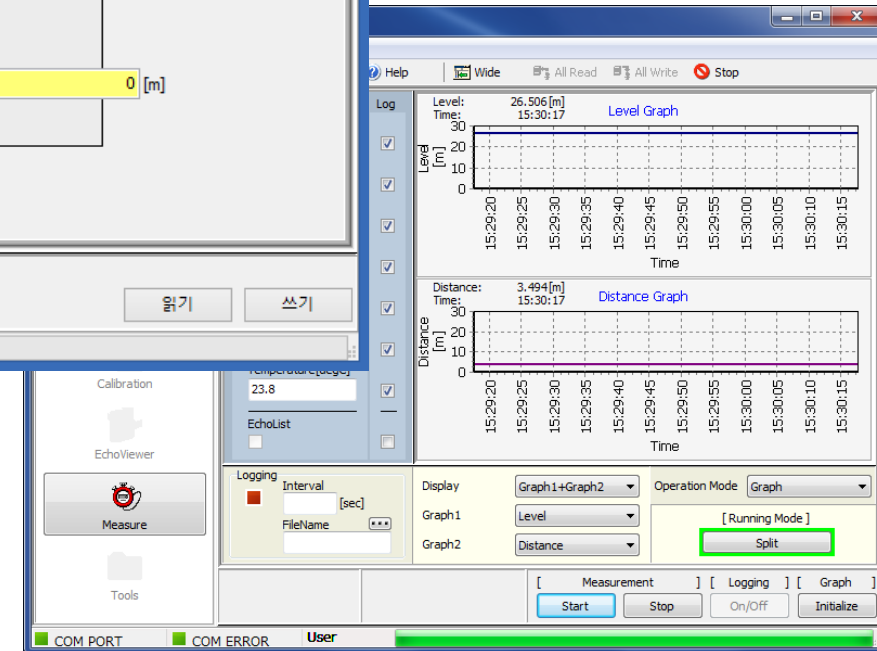
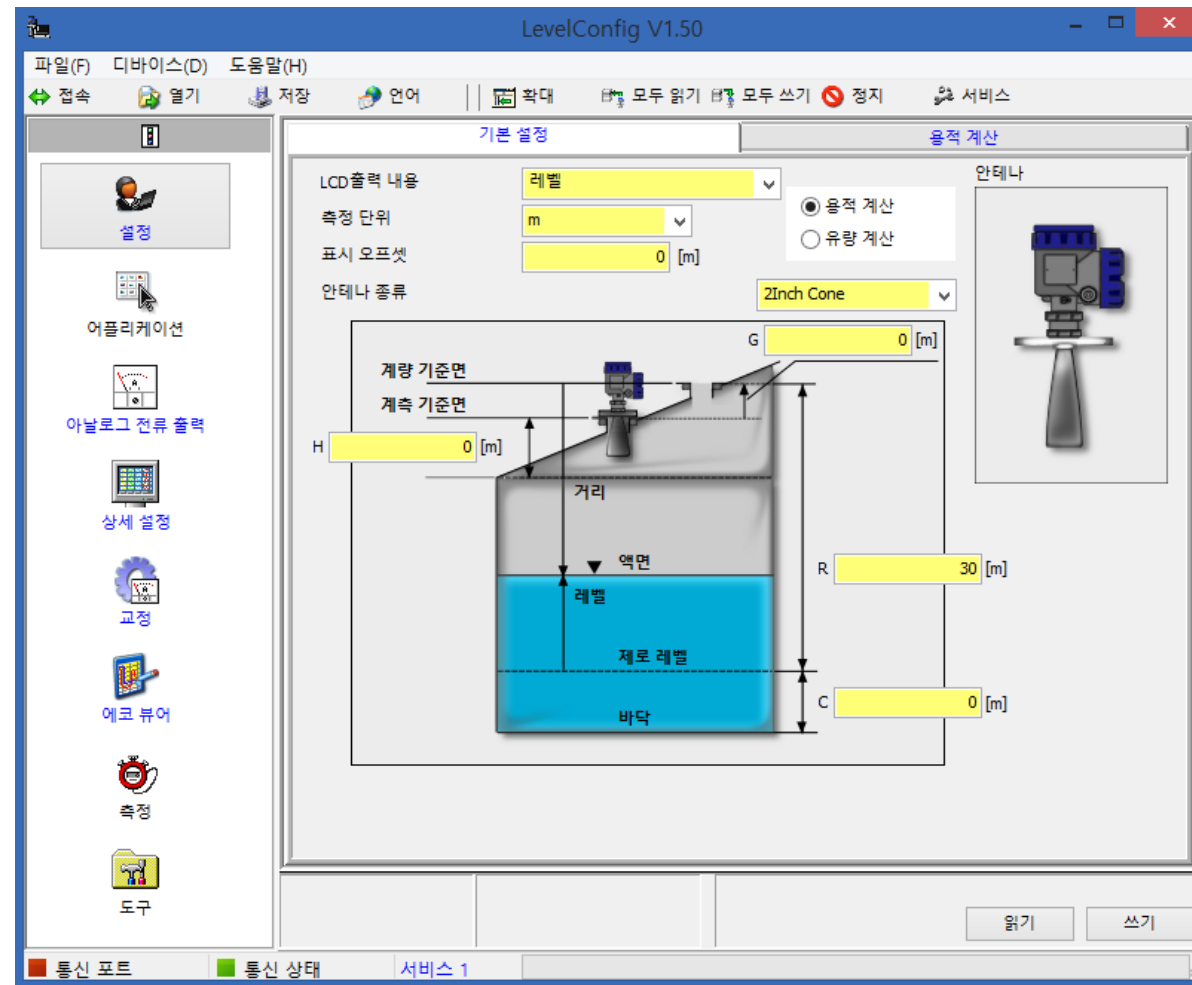
- 에코뷰어에서 더블바운스를 확인할 수 있으며,
- 거리를 설정하여 쉽게 이중바운스를 제거

■ 다중 노이즈 제거

- 다중 노이즈 테이블로 교반기 및 구조물에 대한 노이즈를 확인하여 노이즈에코를 제거 가능

■ Full-range search mode

- 고속으로 액면의 트래킹이 가능합니다.



Thank you very much for your attention

Building the foundation for a better life and society with advanced technology.

TOKYO KEIKI, your partner for a better society

TOKYO KEIKI employs cutting edge technologies that transform human sensory functions of measurement, cognition, and control in products and systems that serve and benefit society. As Japan's first manufacturer of precision instruments, we have contributed to enhancing the community and the safety and quality of life of people for over a century. We will continue to strive with unwavering principle, dedication, and a diversity of technologies in supporting the foundation of a safe and secure optimal society.



We are a flow measurement specialist.



OVAL ENGINEERING INC

경기도 화성시 동탄역로 24-1

<http://www.ovaleng.com>