

# LIQUID LEVEL GAUGES

For steam and process application.

The determining factor for choosing a gauge is on the one hand the medium, and on the other hand the pressure and temperature range within which the gauge is to be used. It is on these factors that the design, construction materials and finally the price of the gauge depend.

Basically, Klinger liquid level gauges can be used for every medium encountered in practice; our range of construction materials varies from low temperature steels to high-tensile heatresistant steel.

Excluded are the high-pressure Bi-color indicators, which were developed exclusively for use in steam.



## KLINGER GLASS INDICATOR COMBINED WITH MICROWAVE RADAR INDICATOR

KLINGER liquid level gauges are also available with Guided Wave Radar.

The new types MW-T (Microwave - Transparent) and MW-R (Microwave - Reflex) combine the conventional visual type of indication with a 4-20 mA output signal of the guided radar indication - in only one unit.

The liquid level indicator is equipped with a microwave sensor specially designed for use in combination with glass indicators.

This provides continuous and accurate level measurement for most types of liquids.

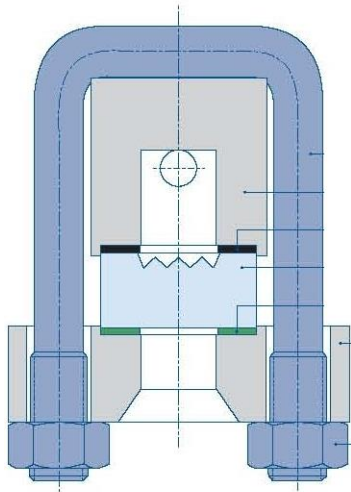
High-frequency microwave impulses are coupled on a measuring rod and guided along the probe. The pulse is reflected from the liquid surface. The time from transmission to reception of the reflected signal is proportional to the distance of the level.

Applications: Offshore, chemical, petrochemical, power generation and pharmaceutical industries. Even in applications with steam and foaming, the sensor provides precise and reliable readings.

# Liquid Level Gauges

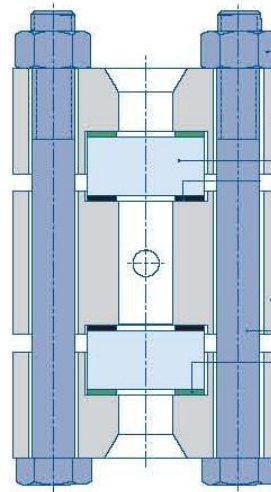
## Selection

### Reflex level gauges (process & steam)



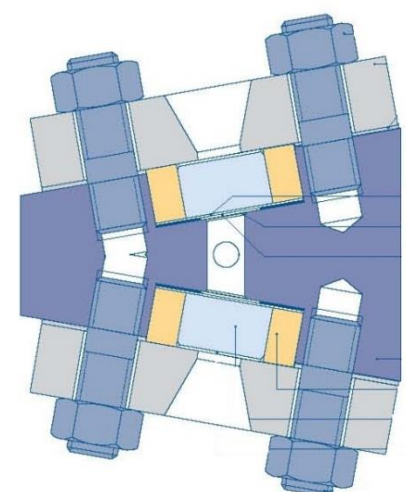
The principle is based on the displacement of the refractive index of liquid and gas or water and steam. The liquid column is located in the trough of the centerpiece behind the sight glass, which is clamped in the indicator body.

### Transparent level gauges (process & steam)



Two transparent glasses are clamped into the display body and close off the liquid channel to the front and rear. If necessary, an illumination device can be attached to the rear of the display body.

### Bi-color level gauges (steam)



In principle, a transparent indicator, but with wedge-shaped center piece. This enables the two-color display: in the illumination display there are two color filters - one red and one green.

## Liquid Level Gauges Selection

Process application	Medium
Reflex level gauges	water, clean liquid, colored fluid
Transparent level gauges	viscous, dirty and uncolored fluid, interface and aggressive fluid (protected glass)

Steam application	Field of application
Reflex level gauges	up to 32 bar
Transparent level gauges	up to 120 bar
Bi-color level gauges	up to 225 bar

# Liquid Level Gauges

## Overview of types – Use in process industry

Type	max. Working pressure (bar)	max. Working temperature (°C)	KLINGER Level gauge model	Shut-off valve		Pressure
Reflex level gauges	25	400	R 25	DG	RAV	PN25 / ANSI 150
	50	400	R 50	DG	RAV	PN50 / ANSI 300
	100	400	R 100	DG	RAV	PN100 / ANSI 600
	160	400	R 160	DG	RAV	PN160 / ANSI 900
	250	400	R 250	--	RAV	PN250 / ANSI 1500
	63	400	UOR large champer	DG	RAV	PN63 / ANSI 400
	400	120	A400	DVK2.IT		PN400 / ANSI 2500
Transparent level gauges	16	185	R-D (glass)	D		PN160 / ANSI 900
	50	400	T 50	DG	RAV	PN50 / ANSI 300
	100	400	T 100	DG	RAV	PN100 / ANSI 600
	160	400	T 160	DG	RAV	PN160 / ANSI 900
	160	400	T 160-XS	DG	RAV	PN160 / ANSI 900
	250	400	T 250	--	RAV	PN250 / ANSI 1500
	63	400	UOR large chamber	DG	RAV	PN63 / ANSI 400
Weld-pad	100	400	UWR / UWT	not applicable		PN100 / ANSI 600
	100	400	USR / UST	not applicable		PN100 / ANSI 600

# Liquid Level Gauges

## Overview of types – Use in steam application

Type	max. Working pressure (bar) Saturated steam	max. Working temperature(C°)	KLINGER level gauge model	Shut-off valve		
Reflex level gauges	32	239	K	D		
	20	215	R 25	D		
	20	215	R 50	D		
	22	219	R 100	D		
	32	239	R 160	D		
Transparent level gauges	10	185	R-D (glass)	D		
	15	202	T 50	D		
	30	235	T 100	D		
	40	252	T 160	D	DA	
	40	252	T 160-XS	D	DA	
	60	270	T 160-XS	DA		
	85	298	T 85	DA	DVK2	RAV 957 seal welded
	85	298	TA 120	DA		
	120	323	TA 120	DVK2		
Bi-color level gauges	225	360	KTA – 225	DVK2		
	180	356	KTA – 180	DVK2		
	75	291	KT – 75	DVK2	DA	
	25	225	KT - 25	D	DA	

## Liquid Level Gauges

### KLINGER Material codes / Materials

#### KLINGER Material codes:

- » **FS/H = Carbon steel**
  - ASTM A105N as standard
  - LF2 available for low temperature service at -46 °C
  
- » **M/H = Wetted part stainless steel,  
others in carbon steel**
  - AISI 316L and ASTM105N as standard
  
- » **M = Stainless steel**
  - AISI 316L as standard

Alloy or other materials are available on request

#### Materials:

- » **Gasket in contact with media**
  - KLINGERgraphit Laminat PSM  
(single tang insert in stainless steel 1.4401)
  - for high pressure KLINGERgraphit Laminat PDM  
(double tang insert in stainless steel 1.4401)
  - other material on request
  
- » **KINGER Schaugläser**
  - „extra-hard” borosilicate glass, according to DIN 7081
  
- » **Shut-off valves**
  - FS/H, M/H, M, other on request