Interface Level by Differential Pressure

Height of the interface between two immiscible liquids from a DP transmitter between two taps, with the transmitter range for interface at the lower and upper tap.

Method: Hydrostatics; Δp = g (ρ_H h + ρ_L (H − h))

Input parameters

Unit system: SI

Parameter	Value	Unit
Distance between the taps	2.0000	m
Density of the lighter liquid (top)	850.00	kg/m³
Density of the heavier liquid (bottom)	1,000.0	kg/m³
Measured DP (with the taps fully covered)	181.00	mbar

Calculated results

Parameter	Value	Unit
DP with interface at the lower tap (all light)	166.71	mbar
DP with interface at the upper tap (all heavy)	196.13	mbar
Interface height above the lower tap	0.97124	m
Interface level as a share of the range	48.562	%

Notes for this case

- Both taps must stay covered by liquid; filled or sealed impulse lines add their own head, removed by zero suppression.

Formula and method

$$\Delta p = g\,[\rho_H h_i + \rho_L (H - h_i)], \quad h_i = \frac{\Delta p - \rho_L g H}{(\rho_H - \rho_L) g}$$

Variables

H	Distance between the taps	m
ρ_L	Density of the lighter liquid (top)	kg/m³
ρ_H	Density of the heavier liquid (bottom)	kg/m³
Δp	Measured DP (with the taps fully covered)	Pa
Δp_0	DP with interface at the lower tap (all light)	Pa
Δp_1	DP with interface at the upper tap (all heavy)	Pa
h_i	Interface height above the lower tap	m
h_i/H	Interface level as a share of the range	-

Method and standards

Hydrostatics of two layers.

Assumptions and limits

- Both taps covered; clear interface.

References

- Hydrostatics
- Δp = g (ρ_H h + ρ_L (H − h))

Report details

Report reference	FCC-YRKW-JXWS (the same inputs always give the same reference)
Generated	17 November 2026, 19:44 UTC
Calculator	Interface Level by Differential Pressure
Method last reviewed	12 November 2026
Software release	FireCAD Calc, release of 17 November 2026
Release checks	3 reference cases of this calculator, computed independently, are checked on every release

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/instrumentation/pressure-level/interface-level-dp

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.