

Ultrasonic Sensors for Presence, Distance and Level — Where Sound Beats Light

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When ultrasonic sensing outperforms photoelectric — transparent targets, liquids, dusty air — with the stocked OsiSense XX range: Ø18 brass and M30 barrels, analogue 4–20 mA / 0–10 V distance versions, through-beam pairs and reflex types, plus mounting rules for sound.

Why sound

An ultrasonic sensor times a reflected sound pulse. Because the echo depends on surface geometry, not optics, it reads what light struggles with: clear glass and PET, liquids and foams, black rubber, targets behind film, and it shrugs off dust and moderate fog that blind photoelectrics. Trade-offs: slower response, a minimum blind zone in front of the face, sensitivity to strong air currents and temperature gradients, and soft/angled surfaces that deflect the echo.

The stocked range

Type | Examples | Use |

Ø18 brass barrel, switching | XXV18 PNP NO M12, NPN M12, cable versions | Presence/level to ~1 m class |

M30 switching | XX2V30 1 m PNP, XX630 2 m NO+NC, XX630 NPN | Tanks, hoppers, position |

M30 metal, 90° head, analogue | 4–20 mA, 1 m, 0–10 V, 1 m, 4–20 mA, 2 m | Continuous distance/level |

Reflex Ø18 | XXB18, Sn 0.5 m | Fixed-echo reflex tasks |

Through-beam pairs M18 / flat | XXR18 receiver + XXT18 emitter, flat XXRF1 | Web break, bottle counting |

80×80 block | XX8D1 PNP | Longer-range block format |

Fork (label) | XUVU06 ultrasonic fork | Transparent labels on liner |

Accessories | XXZ30TP protective cover | Washdown protection |

Level measurement rules

Blind zone: mount so maximum level stays outside it; a stand-off nozzle solves tight tanks — keep the nozzle smooth and short or it rings.

Perpendicularity: aim within a few degrees of normal to the liquid; on solids, aim at the angle-of-repose surface and expect ± a few percent.

Foam and vapour absorb sound: thick foam reads as the surface (sometimes you want exactly that); heavy steam scatters — consider a guided alternative if continuous.

Temperature: sound speed drifts ~0.17 %/K; compensated models handle slow drift, but shield sensors from direct radiant heat and sun.

Analogue scaling: teach/set the 4 mA and 20 mA points at the real empty/full distances; verify with a tape, log the settings.

Switching applications

For presence detection, treat an ultrasonic like a diffuse photoelectric with superpowers: set the window so the target sits mid-window; synchronise or space multiple sensors (they hear each other — data-sheet spacing applies, and through-beam pairs must be matched emitter/receiver models). On conveyors with mixed glossy/clear/black products, one M30 ultrasonic frequently replaces three photoelectric attempts. Outputs follow the standard conventions — PNP/NPN, NO/NC, M8/M12 or cable (wiring reference); the 90°-head XXA versions solve low-headroom tank tops without elbows in the cable.

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