Danfoss MBS Pressure Transmitters — 3000 vs 5100, Ranges and the 4–20 mA Loop

cBallast Technical Sourcing · Pressure transmitters · issued 2026-10-18 · cballast.com/documents/danfoss-mbs-pressure-transmitters

Reading an MBS reference (range, process connection, plug, output), what separates the MBS 3000 workhorse from the marine-approved MBS 5100, why 4–20 mA survives every fieldbus fashion, and the installation details — pulsation snubbers, cable glands, loop checks — that keep transmitters honest for decades.

The reference carries the whole datasheet

An MBS line item reads like the stocked rows: MBS 3000, R1/4 3, 4–20 mA, plug connection — family, process thread, output, electrical connection, plus the measuring range (selected per variant: the 1/2 3 0–125 bar IP65 build is one of many). Two families dominate the stocked 300-plus rows:

| MBS 3000 | MBS 5100 |

Position | The general-industry workhorse — compact, piezoresistive, all-stainless wetted parts | The classification-approved build for marine and harsh plant, with pulse-snubber variants |

Stocked examples | R1/4 3 and R1/2 3 plug versions | 1/4 3 0–6 bar, 1/4 3 0–100 bar |

Pick when | Pumps, compressors, hydraulics, general monitoring | Class-surveyed installations and engine-adjacent duty |

Why 4–20 mA refuses to die

Two wires carry power and signal; current is immune to voltage drop along cable runs, so 300 m of engine-room cable reads the same as 3 m.

Live-zero diagnostics: 4 mA = zero pressure, 0 mA = broken loop — a dead cable announces itself instead of reading "zero pressure, all fine". (The signal landscape, including IO-Link, sits in the signal guide.)

Range choice is accuracy: percent-of-span errors mean a 0–250 bar unit watching a 6 bar line is blind. Choose span so the working point sits in the middle two-thirds.

Installation notes that outlast commissioning

Pulsation kills early: piston pumps and solenoid valve slams demand snubbed variants or an external restrictor — diaphragm fatigue from pulsation is the one warranty case nobody wins.

Mount above the tap for condensing media, below for gases with droplets — or add a pigtail/pot; steam always gets a syphon.

The plug gasket is part of IP65: a lost DIN-plug gasket turns a sealed transmitter into a corroded one within a winter.

Switch or transmitter? Hard trip points stay with switches (KP/RT guide); trending, alarms with hysteresis in software, and remote reading belong to transmitters — modern panels run both, split by the selection guide.

Quote the old unit's type code and range off the label — or the duty (medium, range, connection, output, approvals) — and the current MBS equivalent returns within 24 hours from Danfoss stock.

Frequently asked questions
What does 4–20 mA output actually mean?The transmitter regulates loop current between 4 mA at range-zero and 20 mA at full scale — current, not voltage, so cable length barely matters, and anything below 4 mA flags a fault rather than masquerading as a low reading.Which pressure range should I choose for a 7 bar system?A 0–10 or 0–16 bar span, putting 7 bar comfortably mid-range — not a 0–100 bar unit where the whole system lives in the bottom tenth of the span and the percent-of-span error dwarfs the signal.What is the difference between MBS 3000 and MBS 5100?Build target: the 3000 is the compact industrial standard; the 5100 adds the marine classification approvals and harsh-duty details (snubbed variants for pulsation). Where surveys apply, the approval list decides.Can a pressure transmitter replace my pressure switch?For monitoring and soft alarms, yes and better; for hard-wired safety trips, a switch's dry contact often remains required by the approval chain. The common pattern is a transmitter for control plus a switch for the safety function.Why does my transmitter drift after months on a piston pump line?Pulsation fatigue — millions of pressure spikes work the diaphragm. Fit the snubbed variant or a restrictor fitting, and the same sensor lasts years; no amount of recalibration fixes the mechanical cause.

Part numbers and designations are those of the original manufacturers and are given for identification. cBallast is an independent supplier. © cBallast 2026 · cballast.com