The 3 types · side-by-side

Distributor-facing reading. Each row gives best-for, key trade-off, capacity, price band, and how many of SPC's tier slots carry an option at that product type.

PRODUCT TYPE	BEST FOR	KEY TRADE-OFF	TYPICAL CAPACITY	PRICE BAND	BRANDS SPC CARRIES
Cylinder Position Sensor MAGNETIC AUTO-SWITCH · READS THE PISTON MAGNET THROUGH THE CYLINDER WALL	**Confirming a cylinder reached end-of-stroke.** Any cylinder whose extend or retract the PLC needs to confirm before the next step runs. Mounts on the outside of the cylinder body and detects the piston's built-in magnet through the barrel wall: no port, no air connection, a purely electrical add-on. Two per cylinder (one at each end of stroke) is the standard install, making this the highest-volume electrical line in the cylinder ecosystem.	SELECTED TO THE CYLINDER SERIES, NOT CHOSEN INDEPENDENTLY The mount geometry and the piston magnet match a specific cylinder family: a groove style (T-slot / rail groove on a profile cylinder) or a band / strap mount on a tie-rod or round-body cylinder. Reed switches are simpler and lower cost but the mechanical contact limits them in high-cycle duty; solid-state has no moving contact, faster response, and much longer life: the correct choice for high-cycle and safety-critical motion.	Reed or solid-state · one end / both ends / mid-stroke 2-/3-wire PNP or NPN · NO or NC	$	1 / 5 · SMC ONLY
Pressure Sensor READS SYSTEM PRESSURE AT A POINT · OR FILTER DIFFERENTIAL ACROSS TWO TAPS	**Basic system feedback and control.** Answering a status question: is the system at setpoint, is a filter loaded, has the compressor cut out. Two install patterns: single-point reading off the line (one tap), or differential check across a filter (two taps, one each side). The entry-tier monitoring instrument: output is either a visual gauge an operator reads by eye, or an electrical signal (4-20 mA, Modbus, or IO-Link) to a controller.	STATUS-GRADE, NOT AUDIT-GRADE The simplest of the monitoring instruments: suited to answering a status question rather than producing the audit-grade precision a logged historian needs. Matched to the job: ±1% of range for compressor-discharge control, ±0.5 PSI absolute for filter-differential alarms, ±0.25% with a calibration certificate for audit-grade work. Selected by the system working-pressure range and the port thread at the install point.	Single-point or differential · gauge or electrical output 4-20 mA · Modbus · IO-Link	$	1 / 5 · ADSENS ONLY

Vacuum Sensor / Switch VERIFIES THE WORKPIECE IS GRIPPED BEFORE THE ROBOT MOVES	**Confirming the vacuum pick actually latched.** The verification device on a pick-and-place vacuum circuit: monitors the live vacuum level and tells the PLC whether the workpiece is gripped before the robot moves. Carries two adjustable set points: grip-confirm (releases the machine to move) and drop-detect (alarms a part lost mid-cycle). Mounts on the EOAT plate or in a tee within 6 inches of the cup. One quarter of the vacuum end-effector sub-system.	RANGE AND SET POINTS FOLLOW THE WORKPIECE Response is a few milliseconds between set pressure and output. Set points must be re-verified whenever the workpiece changes: grip and drop thresholds shift with cup volume and surface. Vacuum-only models fault on positive pressure; circuits that alternate vacuum grip with blow-off need the compound (vacuum + low positive pressure) variant.	Two set points · grip-confirm + drop-detect · –20 to –27 inHg typical NPN / PNP · analog · IO-Link · IP40 / IP65 / IP67	$	1 / 5 · SMC ONLY

This isn't a tier comparison: the three rows watch three different physical variables (rod position, line pressure, circuit vacuum), so there's no substituting one for another. Read it as "what each device watches, where it mounts, and what it streams to the PLC." What they share is the one rule that breaks installs: the output type (PNP vs. NPN, switched vs. analog vs. IO-Link, voltage) has to match the PLC input card: confirm that before quoting any of the three.