MAGNETIC PICKUP SENSORS

MPU speed sensing for marine engines & generators

Passive magnetic pickup sensors convert the passage of gear teeth into an AC signal by magnetic induction. Mounted towards a flywheel or toothed wheel, they provide speed feedback for compatible governors, RPM indicators and engine monitoring systems.

Operating principle

No external supply is required for the passive sensor. Output frequency follows tooth-passing frequency: **RPM = 60 x frequency (Hz) / number of teeth**. Signal amplitude depends on speed, air gap, gear geometry and sensor model. Verify the receiving device's input requirements; the minimum AC signal level must meet the receiving controller specifications.

Thread & insertion options

Thread family	Insertion (INS)	Series reference
1/4 UNF	16 mm	SPSR-1/4UNF
3/8 UNF	25-101 mm	SPSR-3/8UNF
5/8 UNF	25-152 mm	SPSR-5/8UNF
3/4 UNF	60-83 mm	SPSR-3/4UNF
M12	65 mm	SPSR-M12
M16	25-152 mm	SPSR-M16
M18	55-70 mm	SPSR-M18

INS is insertion length, not overall sensor length. Confirm thread pitch, insertion, tip geometry and full ordering code before selection. Listed ranges do not imply every length is stocked.

Connection options by thread family

Thread	Available configurations
1/4 UNF; M12	2-wire; 2-wire + terminals; 2-wire + connector
3/8 UNF	2-wire; cable; MS connector; terminals; 2-wire + terminals; 2-wire + connector; cable + connector
5/8 UNF	Cable; cable + connector
3/4 UNF; M16	2-wire; MS connector; terminals; 2-wire + terminals; 2-wire + connector
M18	2-wire; terminals; 2-wire + terminals; 2-wire + connector

TECHNICAL DATA & ACCESSORIES

Range overview - confirm specifications for the selected part number.

Parameter	Range / description
Sensor supply	Self-powered (passive magnetic pickup)
Operating temperature	-60 to +107 degrees C
Housing	Non-magnetic stainless steel / aluminium, depending on model
Sealing / fluid exposure	Operation immersed in motor oil or diesel fuel, confirm suitability for the selected model
Weight	150-350 g, depending on model
Signal frequency	10 Hz to 12 kHz; confirm selected model
Signal output	Output depends on speed, air gap and model; confirm required RMS level with receiving device
Connections	Industrial or heavy-duty connections, depending on model
Shock / vibration	Shock and vibration capability stated; model-specific qualification must be confirmed
Coil resistance	Standard value listed as 900 ohms; high-resistance option listed as >=900 ohms. Limits/tolerances require model confirmation.

Accessories

Accessory	Details	Reference
Locknut	For listed models	SPSR-LCK
Mating connector	For MS / MIL connection	SPSR-MILC
Heavy-duty cable	1.0 / 1.5 / 2.5 / 3.1 / 4.8 m	SPSR-SSC-MIL
Custom cable	Length and connector to specification	SPSR-SSC
5-output pulse distributor	12 or 24 V system; separate powered accessory	SPSR-PD5

Selection & technical support

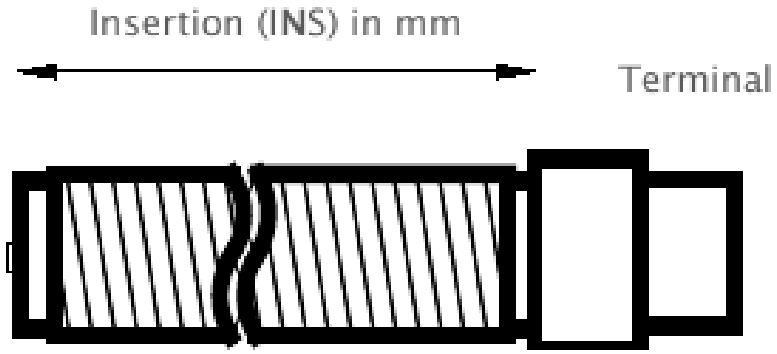
AUTOMATOS KOSMOS 4U supports sensor selection, replacement, connector and cable supply, signal measurement and interface checks. Send the existing part number, thread and insertion dimensions, connection type, tooth count, RPM range and receiving controller details.

Selection notes

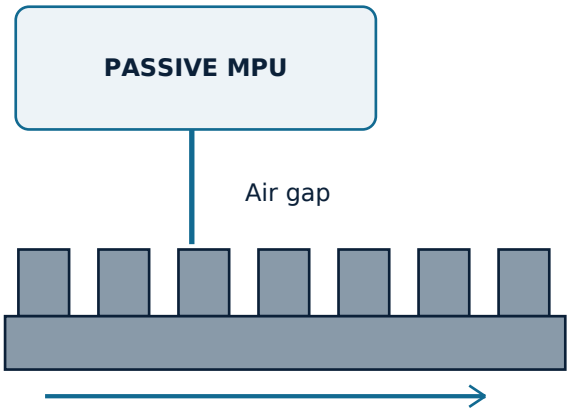
AUTOMATOS KOSMOS 4U supplies magnetic pickup sensors, connection accessories and interface solutions. Specifications depend on the selected part number. Contact our technical team to confirm model suitability, operating limits and any required qualification documents.

HOW THE SENSOR WORKS

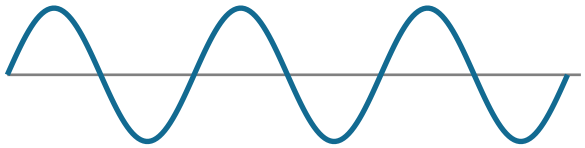
From rotating gear teeth to a usable speed signal



INS is measured as indicated. Confirm the insertion length and exact model drawing with our technical team.



AC signal: illustrative waveform



A passing ferrous tooth changes the magnetic flux at the sensing tip. The pickup coil generates an AC waveform. A compatible input circuit detects the cycles and calculates speed from the configured tooth count.

Example	Calculation
Flywheel teeth	120 teeth
Measured frequency	1,200 Hz
Calculated engine speed	60 x 1,200 / 120 = 600 RPM

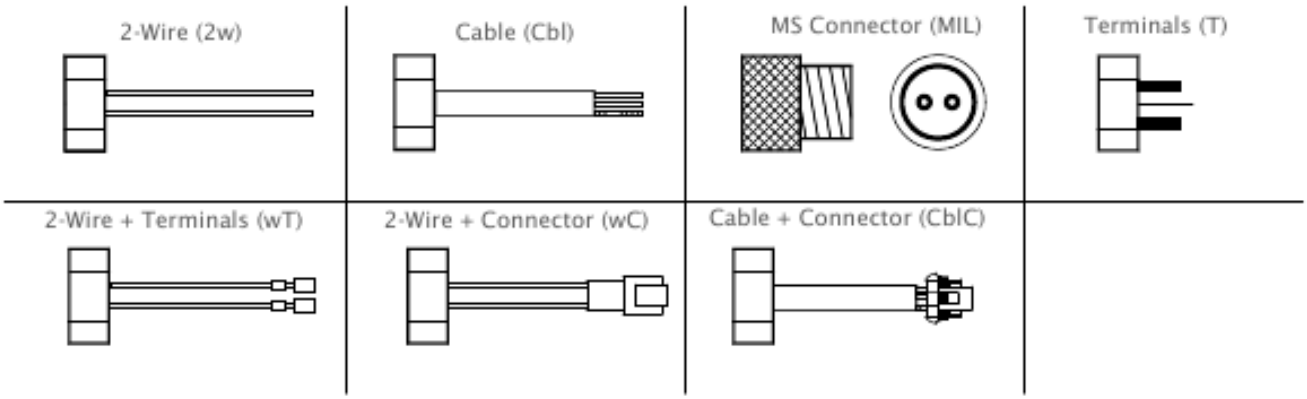
Practical checks

Confirm tooth count, mounting rigidity and clearance before setting the speed scale. Measure AC amplitude and frequency at low speed as well as normal operation. Set the gap and shielding according to the selected sensor and receiving controller instructions; there is no universal gap or voltage threshold for every installation.

A passive MPU does not provide a dependable stationary/zero-speed signal. Low-speed signal capability depends on the complete sensor and input arrangement.

CONNECTIONS & ACCESSORIES

Connection-style illustrations

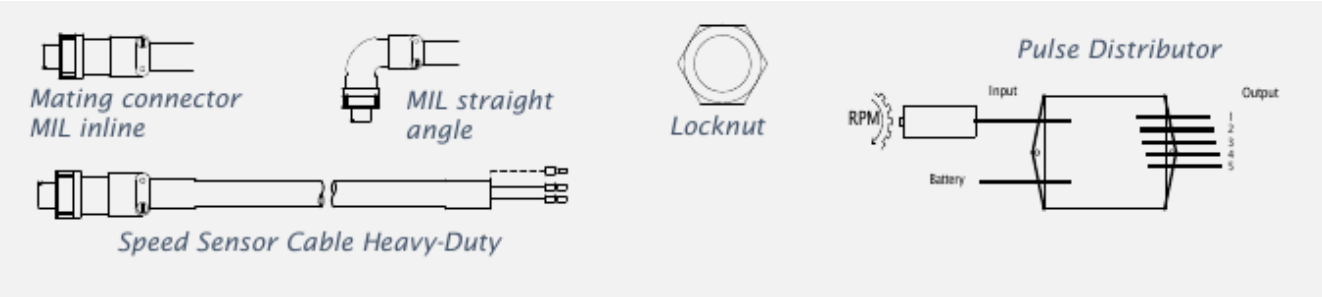


Connection styles available across the range. Illustrations show termination types, not pin assignments or installation wiring.

Selecting the connection

Style	Practical selection point
2-wire / cable	Confirm cable length, conductor identification and shielding.
Terminals	Confirm enclosure protection and terminal arrangement.
MS / MIL connector	Match the mating connector, pin assignment and cable exit.
Combined versions	Confirm exact end-to-end assembly and ordering code.

Cables, mating connectors & pulse distribution

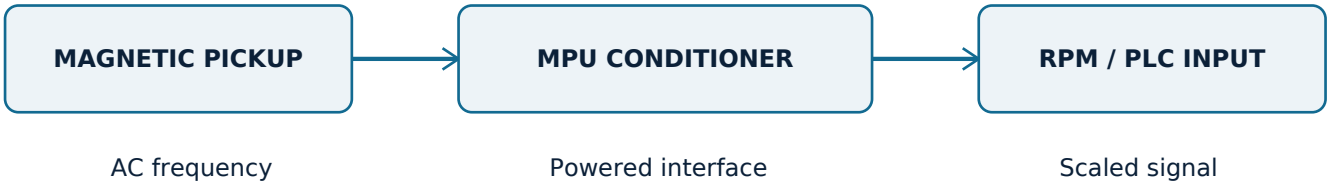


A powered pulse distributor can provide separate outputs to multiple receiving devices. Confirm output type, electrical isolation and input compatibility for the selected distributor.

Avoid connecting additional instruments in parallel without checking input loading. An unsuitable added device can reduce signal amplitude or disturb the existing speed measurement.

SIGNAL CONVERSION & INDICATION

Dedicated modules turn speed frequency into useful indication signals



A compatible frequency-to-analogue converter or speed transmitter can accept the magnetic pickup signal and supply a scaled output for a panel indicator, PLC analogue input or monitoring system. Depending on the module, outputs may include 4-20 mA, 0-10 V, conditioned pulses or switching contacts.

Requirement	Typical interface approach
Analogue RPM indication	MPU-compatible frequency converter with scaled current or voltage output.
PLC / HMI monitoring	Compatible high-speed frequency input, or analogue converter feeding PLC; HMI reads the PLC value.
More than one receiver	Suitable pulse distributor / buffer, with loading and isolation checked.
Speed alarm	Appropriate speed switch or controller with configured setpoint and hysteresis.

Worked scaling example

For 120 teeth and a display range of 0-1,000 RPM, the input span is 0-2,000 Hz. With a linear 4-20 mA output, 600 RPM corresponds to 1,200 Hz and 13.6 mA. This is a calculation example, not a universal wiring or configuration instruction.

Important interface distinctions

The passive sensor needs no supply, but a converter normally requires its own supply. A generic digital input is not automatically suitable for a low-level AC pickup. Indication equipment is not automatically an independent overspeed protection device.

Application engineering & support

AUTOMATOS KOSMOS 4U supports sensor identification, signal measurement, interface selection, scaling and commissioning. Send the sensor code, tooth count, RPM range and receiving device details.