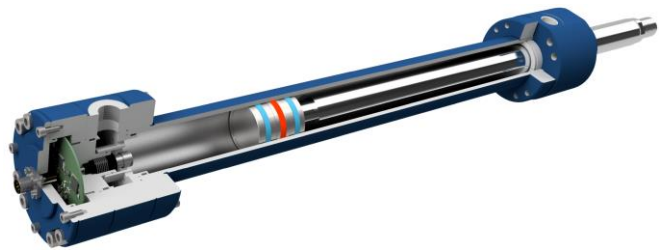
Microwave Positioning Sensor Systems

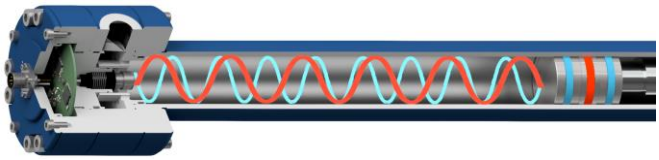
Absolute position sensors for hydraulic and pneumatic cylinders, also suitable for use in accumulators.

One sensor for all stroke lengths. No dead zones, no moving parts. Unaffected by vibration or mechanical stress on cylinders/rods, with consistent performance when mounted both vertically and horizontally.



How it works:

The sensor emits microwaves into the cylinder cavity, and these are reflected by the piston. Absolute position is calculated from phase measurements at different frequencies.



Product Highlights:

- Absolute measuring system
- No gun drilling necessary
- One sensor for all stroke lengths
- No moving parts
- No dead zones
- No abrasion or wear
- No change in performance between vertical and horizontal cylinder mounting
- Not sensitive to vibration or mechanical stress on cylinders/rods
- Internal or external electronics for easy access

Specifications:

Stroke range:	x-length capable (longest cylinder with sensor > 16.000 mm)
Travel speed:	up to 4 m/s
Accuracy:	typically ± 3mm (independent of stroke length)
Resolution:	0.1 mm
Update rate:	typically 1 kHz
Input Voltage:	14 – 36 VDC (current interface) 5 – 36 VDC (CAN bus)
Current consumption:	typically 60 mA (at 24 V DC supply voltage)
Power consumption:	typically 1.44 W (at 24 V DC supply voltage)
Electrical interfaces:	M12 connector, free cable in various lengths, etc.
Integration options:	• internal (antenna and electronics inside end cap) • external (antenna inside and electronics outside for easy exchange)
Environmental:	up to IP 69k
Operating Temperature:	-40˚C to 85˚ C
Storage Temperature:	-40˚C to 85˚ C
Interfaces:	4-20mA, CAN bus, others on request

CANbus Specification:

Com. Profile:	CAN bus / SAE J1939 /CANOpen
Baud Rate Options:	125K, 250K(default), 500K, 1M
Data Rate Options:	10ms (default) adjustable
Termination Resistor:	120 Ohm (default) optional without resistor

Functional safety:

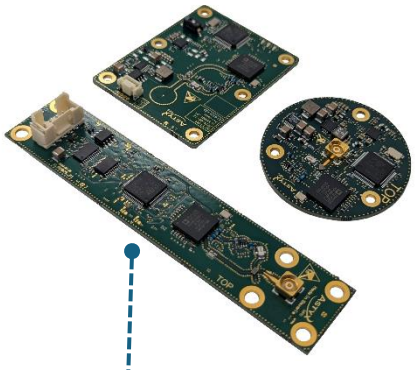
S2Pd = SIL2 / PL d – Cat 2 according to DIN EN 13849-1 (as well as other SIL classes & certifications such as ATEX) upon request.

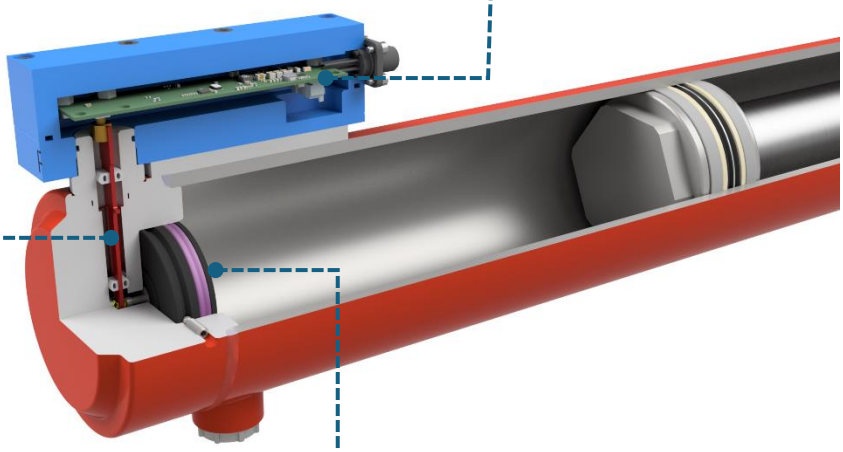
Parts overview:

Electronics:

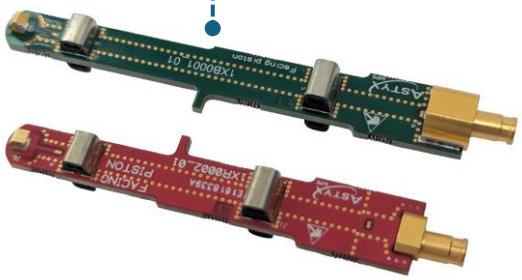
The electronics can be different shapes and sizes, depending on options and cylinder space.

It is possible to integrate it inside of the end cap or put it outside (in combination with the X-Card) to allow replacement in the field.





X-Card:



The X-Card is the connection between the external electronics and the internal antenna. Its length varies with cylinder diameter.

Antenna:

The antenna consists of a black insulator and a metal conductor. It is designed according to the diameter and medium used inside of the cylinder (independent of stroke length).

The antenna is available in various shapes and sizes to be able to react to all possible mechanical conditions inside the cylinder.

For more information please contact:

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