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NOVOTURN
Multi-turn Sensor
Non-contacting

MC1-2800

Turn with Confidence
Our Ultra-compact Multi-turn Sensor
MC1-2800

- Non-contacting, magnetic
- Long life
- Measuring range 15840° (44 turns)
- True-Power-On system: counts turns even when not powered.

Non-volatile technology does not require gears or batteries

- Available with push-on coupling or marked shaft
- Easy mounting
- Protection class IP54 up to IP67
- Resolution up to 16 bits per revolution
- Smart sensor functions for condition monitoring

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VDC | IO-Link | CANopen | CAN SAE J1939

Applications

- Mobile machinery
- Valves and actuators
- Printing and paper processing machines
- Drive or steering systems
- Lift platforms
- Door and gate drives
- Robotics
- Wire-actuated encoders
- Motor sports
- Replacement for wirewound potentiometers or encoders

(Images: stock.adobe.com)

A Compact and Cost-Efficient Solution for Many Applications

Today's multi-turn sensors may be associated with some application-specific disadvantages: Cost-efficient multi-turn potentiometers often do not meet the requirements in regards to resolution and reliability.
Optical encoders are too costly and too large for many applications, while geared solutions are prone to wear and tear.
A new generation of multi-turn sensors solves these issues by way of the GMR effect.

The rotary multi-turn sensor MC1-2800 provides absolute position data over several revolutions at high-resolution, in the form of a linear signal. Its non-contacting principle of operation eliminates wear and tear as well as the need for a buffer battery. As a "True-power-on" system, it provides the measurement immediately upon startup. Any rotation occurring within the measuring range is detected even when no power is applied.

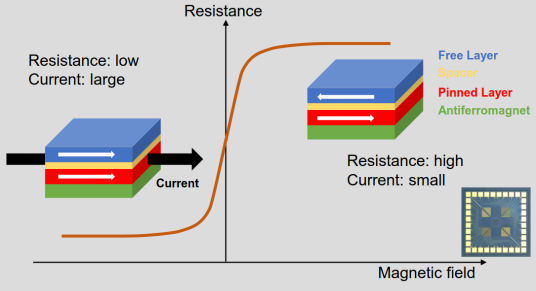
This rotary sensor offers a highly compact solution, in many instances eliminating the need for convoluted, unreliable, or high-maintenance solutions, thus helping to lower the bottom line.

GMR Technology

Revolution detection and storage do not require an electrical power source, since the device relies on the micro-magnetically-based GMR effect (Giant Magneto Resistance Effect).
Owed to this effect, the electrical resistance of a GMR sensor's layered structure is determined by the mutual magnetic orientation of the individual layers.

From the GMR Effect to the Multi-turn Rotary Sensor

Attached to the sensor's rotating shaft is a magnet. During the rotation, it changes the magnetization of a specially-designed GMR sensor element.
Each individual magnetization state is measured for electrical resistance and associated with a unique rotational position with the help of a suitable algorithm. When combined with a 360° measuring sensor, it is possible to measure the absolute rotational position over several revolutions.



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A Tiny Giant
The highly-compact multi-turn sensor MC1-2800, with its diameter of only 30 mm is also suitable for adjustment angles of less than 360°: When applications with tiny mounting spaces call for capturing the rotations of a drive shaft, this can be translated via a significantly smaller gear wheel to the rotary sensor, which is mounted offset from the axis.

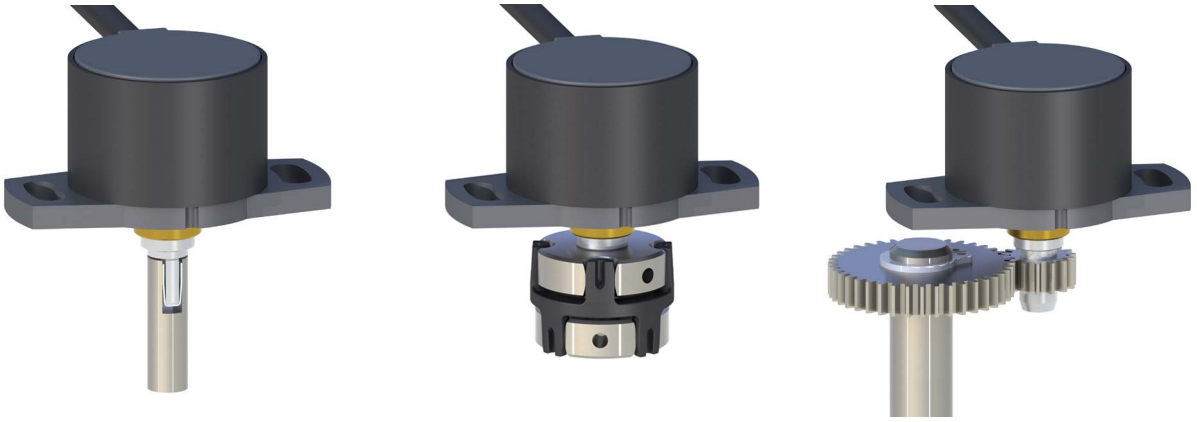
- Miniature design
- Sensor housing made of high grade, temperature resistant plastic
- Available with integrated plug-in coupling for easy coupling or marked shaft
- Elongated hole mounting for easy adjustment

True-Power-On System
With the help of the GMR technology, it is possible to detect and store up to 44 revolutions - without an external power supply or a buffer battery. Even during power outages, the measured position data remains intact. At the same time, these sensors are highly precise. The linearity deviation is below ±1° over the entire measuring range.

- Measuring range 15840° (44 turns)
- Linearity < ±1°
- Analog and digital interfaces (ratiometric, CANopen, CAN SAE J1939, IO-Link)
- Resolution up to 16 bits per revolution
- Smart sensor functions for condition monitoring

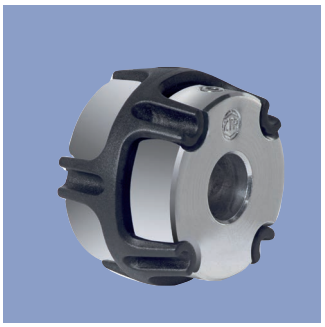
Robust
As this sensor is also very robust, it is suitable for many off-road applications as well. It complies with protection requirements of up to IP67, meaning it is protected against dust and temporary submersion. Neither do impacts and vibrations affect its functionality in any way.

- Long life
- Protection class IP54 up to IP67
- Operational speed up to 800 rpm
- Interference immunity up to 30 V/m according to ISO 11452-5
- Batch traceability of sensor assembly and sensor components



Installation examples

Recommended Accessories



- Low backlash and backlash-free shaft couplings in various designs (double cardanic, fork coupling, spring washer coupling etc.)

- Mating cables and adapter cable M12 in various lengths

For more information and detailed ordering specifications, see https://www.novotechnik.de/en/products/rotary-sensors-linear-position-transducers/

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Ordering Specifications

Preferred types printed in bold

- Delivery time up to 25 pcs. within 10 working days EXW
- Best low-volume pricing

Interface
6_ _: CANopen
J_ _: CAN SAE J1939
A_ _: IO-Link
2_ _ : Ub = 5 VDC, 5 ... 95%/10 ... 90% **ratiometric to Ub (0.25 ... 4.75 VDC/**0.5 .. 4.5 VDC**)**

Electrical connection
2_ _: Cable, 4-pole, L = **1 m, 3 m**, 5 m
5_ _: Connector M12x1, 4-pin/5-pin, with cable, L = 0.15 m

M	C	1	–	2	8	3	2	–	2	4	4	–	A	1	1	–	2	5	2

Number of turns for output characteristic
Analog interface
001 ... **044: 1 up to 44 turns**
Digital interface
244: 44 turns
CANopen
A7F: 44 turns, Node ID 127

Series

Mechanical version
2802: 6 mm shaft with flattening, IP54
2832: 6 mm shaft with flattening, IP65
2862: 6 mm shaft with flattening, IP67
2821: push-on coupling, IP54
2841: push-on coupling, IP65
2871: push-on coupling, IP67
Other shaft configurations on request

For more information and detailed ordering specifications, see https://www.novotechnik.de/en/products/rotary-sensors-linear-position-transducers/

Representatives worldwide

Novotechnik is represented in all of the world's major markets with our own subsidiaries or by approved dealers and representatives.
Thanks to this tightly knit network we can ensure that wherever our customers may be located we can provide first-class service and customer care.

Your contacts can be found at https://www.novotechnik.de/nc/en/service/representatives/

Technical Support

Do you need further technical information?
Please do not hesitate to contact the representative for your country or contact us directly:
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