

Датчики и сенсоры e-Throttle, Hall

Технические характеристики

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Sensors

Smart Systems for all
Drive Technologies

Our sensors are the
optimum solution for all
means of transportation.
They are precisely
adapted to respective
conditions.



Sensor Solutions

Intelligent, flexible and reliable: These features characterize our sensor systems for the automotive industry and for all other vehicle types within the category PowerSports.

Whether combustion engine or alternative drive technology – our products are suitable for all models. The sensors use the Hall principle. They work contactless, repeatable and with a high level of precision.

HIRSCHMANN AUTOMOTIVE eThrottle

Contactless Angular Position Sensor
based on the Hall Effect



HIRSCHMANN AUTOMOTIVE eTHROTTLE FOR RIDE BY WIRE

Our electronic throttle for ride by wire is based on the Hall Effect. The other features are also convincing.

This eThrottle is an in-house development of Hirschmann Automotive. The system recognizes the driver’s desired pace and converts it into a signal to control the speed of motorcycles, motor scooters, or all-terrain vehicles.

Functional Principle

At first, the contactless Hall Effect rotary system registers the operating angle of the throttle. This information is then converted into an electrical signal that is subsequently processed by the control unit. The linear mapping of the rotation angle enables the customer to analyze different evaluations regarding driving dynamics and performance.

Product Range

The HIRSCHMANN AUTOMOTIVE eThrottle is offered as a complete system. It includes cables, connectors, and a clamping profile for mounting on the handlebars. On top of that, the eThrottle is optionally available as a variant with integrated heating.

Particularly noteworthy is that the eThrottle grip is effectively shielded against electromagnetic fields, which for example can be caused by magnets for tank bags. In addition, it meets all safety requirements for electronic gas systems. Therefore, the sensor system makes a decisive contribution to meeting the Euro 4 and Euro 5 standards.



Characteristics:

- contactless redundant sensor based on the Hall effect
- immune to magnetic and electromagnetic interference thanks to the integrated shielding function
- robust, even under challenging environmental conditions
- compliant with automotive standards
- application-specific rotation possible
- optional customized signal settings
- integrated switch positioned at a turning angle between 0° and –10°
- optional left rubber grip
- suitable for Euro 4 and 5 vehicles

TECHNICAL PRODUCT INFORMATION

	DESIGNATION	MIN. VALUE	TYPE VALUE	MAX. VALUE
OPERATING TEMPERATURE	TOP	-20° C		85° C
ROTATION ANGLE	ROT	-10°		80°
OPERATING TORQUE	MOP	0.4 Nm		0.5 Nm
SUPPLY VOLTAGE	VDD	4.5 V	5 V	5.5 V
SUPPLY CURRENT	Idd		13.5 mA	15 mA
SIGNAL RANGE	VOUT	6.0 %VDD		90 %VDD
DIAGNOSTIC LOW	diag_low	0 %VDD		4.0 %VDD
DIAGNOSTIC HIGH	diag_high	96 %VDD		100 %VDD
LINEARITY ERROR	lin_error	-2 %		2 %
SYNCHRONISM ERROR	sync_error	-2 %		2 %

eTHROTTLE WITH INTEGRATED HEATING

OPERATING VOLTAGE	12 V
RESISTANCE	10 Ω
CURRENT	1.2 A
POWER	14.4 W

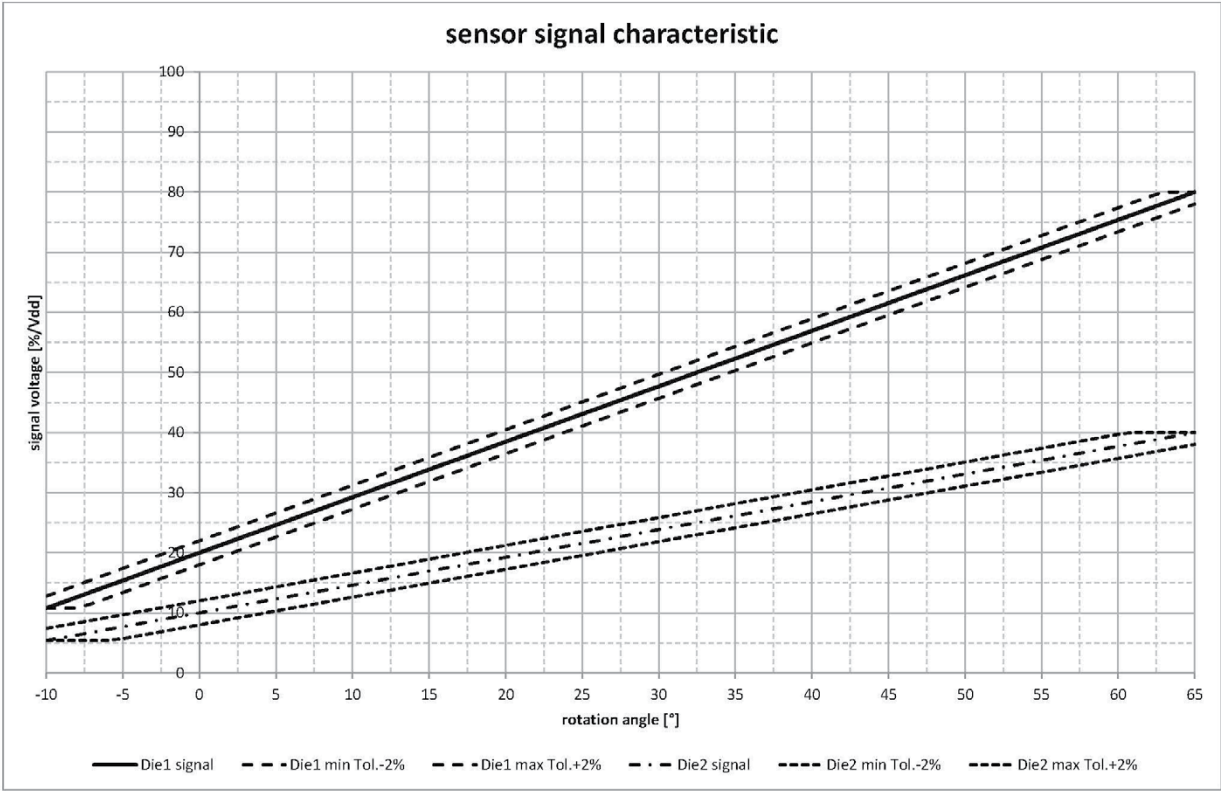


eTHROTTLE

eTHROTTLE WITH INTEGRATED HEATING

SIGNAL REDUNDANT

The following diagram shows the course of the sensor signal from our standard Hirschmann Automotive eThrottle.



Hall Linear Position Sensors

The Components for Optimal
Values in Any Position



HALL LINEAR POSITION SENSORS

Our linear position sensors have a particularly long service life.

Due to the magnetic system, they detect the position precisely and reliably.



TIPOVER SWITCH

TIPOVER SWITCH

Application

- linear position sensing of a cooler bypass flap
- contactless hall technology

Your Benefits

- no wear parts
- high chemical resistance
- programmable output characteristics
- high temperature resistance, up to 150° C
- compensated temperature influence
- robust design for the engine compartment
- absolute differential measuring system



PRESSURE BOX SENSOR

PRESSURE BOX SENSOR

Application

- linear position sensing of a turbo charger actuator
- contactless hall technology

Your Benefits

- no wear parts
- high chemical resistance
- programmable output characteristics
- high temperature resistance, up to 160° C
- compensated temperature influence
- robust design for the engine compartment
- absolute differential measuring system



LINEAR POSITION SENSOR FOR
ENGINE APPLICATION

LINEAR POSITION SENSOR FOR ENGINE APPLICATION

Application

- linear position sensing of a regulating valve
- contactless hall technology

Your Benefits

- no wear parts
- high chemical resistance
- programmable output characteristics
- high temperature resistance, up to 150° C
- robust design for the engine compartment

LINEAR POSITION SENSOR FOR WATER PUMP APPLICATION



LINEAR POSITION SENSOR FOR
WATER PUMP APPLICATION

Application

- linear position sensing of a controlled water pump
- contactless hall technology

Your Benefits

- no wear parts
- high chemical resistance
- programmable output characteristics
- high temperature resistance, up to 125° C
- compensated temperature influence
- robust design for the engine compartment
- absolute differential measuring system

TECHNICAL PRODUCT INFORMATION

	DESIGNATION	MIN. VALUE	TYPE VALUE	MAX. VALUE
POSSIBLE LINEAR TRAVEL		0 mm		40 mm
LINEARITY ERROR	lin_error	±0.5 %VDD		±2.0 %VDD
AIR GAP	airgap	0.2 mm		10 mm
SUPPLY VOLTAGE	VDD	4.5 V	0.5 V	5.5 V
SUPPLY CURRENT	IDD			10 mA
INITIALIZATION TIME	tstart			5.0 ms
REFRESH RATE	tout			300 µs
ESD COMPATIBILITY	ESD			15 kV
OPERATING TEMPERATURE	amb	-40° C	+25° C	+160° C
TIGHTNESS			IP67	IP6K9K

Hall Speed Sensors

The Components for Optimal
Values in Any Position



HALL SPEED SENSORS

Our hall speed sensors are ideally suited for demanding environments.
They produce accurate measurement results in every situation.



GEAR SPEED SENSOR WITH CONNECTOR

GEAR SPEED SENSOR WITH CONNECTOR WITH & WITHOUT ROTATION DIRECTION DETECTION

- Application**
- speed-sensing without rotation direction detection for gear boxes
 - contactless hall technology

- Your Benefits**
- no wear parts
 - high chemical resistance
 - high temperature resistance, up to 160° C
 - robust design for truck applications

TECHNICAL PRODUCT INFORMATION SPEED SENSOR WITHOUT DIRECTION OF ROTATION RECOGNITION

	DESIGNATION	MIN. VALUE	TYPE VALUE	MAX. VALUE
SIGNAL FREQUENCY	f	1 Hz		10,000 Hz
DUTY CYCLE	duty	40 %	50 %	60 %
AIR GAP	airgap	0.2 mm		5.0 mm
SUPPLY VOLTAGE	VDD	4.5 V	12.0 V	20.0 V
OUTPUT CURRENT	IDD	5.7 mA	7/14 mA	16.8 mA
INITIALIZATION TIME	tstart		120 µs	300 µs
NUMBER OF MAGNETIC PULSES FOR INITIALIZATION	nstart			4 Magn. Edges
ESD COMPATIBILITY	ESD			±12 kV
OPERATING TEMPERATURE	tamb	-40° C	+25° C	+160° C
TIGHTNESS			IP67	IP6K9K

SPEED SENSOR WITH DIRECTION OF ROTATION RECOGNITION

	DESIGNATION	MIN. VALUE	TYPE VALUE	MAX. VALUE
SIGNAL FREQUENCY	f	0 Hz		12,000 Hz
LEFT DIRECTION OF ROTATION SIGNAL PULSE	tDR-L	50 µs	60 µs	70 µs
RIGHT DIRECTION OF ROTATION SIGNAL PULSE	rDR-R	102 µs	120 µs	138 µs
AIR GAP	airgap	0.2 mm		5.0 mm
SUPPLY VOLTAGE	VDD	4.5 V	12.0 V	20.0 V
OUTPUT CURRENT	IDD	5.7 mA	7/14 mA	16.8 mA
INITIALIZATION TIME	tstart		300 µs	345 µs
NUMBER OF MAGNETIC PULSES FOR INITIALIZATION	nstart			4 Magn. Edges
ESD COMPATIBILITY	ESD			±12 kV
OPERATING TEMPERATURE	tamb	-40° C	+25° C	+160° C
TIGHTNESS			IP67	IP6K9K

GEAR SPEED SENSOR WITH WIRING HARNESS



GEAR SPEED SENSOR WITH
WIRING HARNESS

Application

- speed-sensing with rotation direction detection for gear boxes including wiring harness
- contactless hall technology

Your Benefits

- no wear parts
- high chemical resistance
- high temperature resistance, up to 150° C
- robust design
- available in two different shaft lengths (34 and 55 mm)
- adaptable cable length and connectors



SPEED SENSOR WITH WIRING HARNESS

SPEED SENSOR WITH WIRING HARNESS

Application

- speed-sensing with rotation detection for a spindle drive including wiring harness
- contactless hall technology

Your Benefits

- no wear parts



GEAR SPEED SENSOR WITH
WIRING HARNESS

Application

- detection of the camshaft position to provide the ECU the acutal camshaft position for further engine control
- contactless hall technology

Your Benefits

- no wear parts
- high chemical resistance
- high temperature resistance, up to 150° C
- robust design

CAMSHAFT SPEED SENSOR

	DESIGNATION	MIN. VALUE	TYPE VALUE	MAX. VALUE
SIGNAL FREQUENCY	f	1 Hz		8,000 Hz
AIR GAP	airgap	0.5 mm		3.0 mm
SUPPLY VOLTAGE	VDD	3.3 V	14.0 V	24.0 V
OUTPUT SIGNAL	vout	<0.5 V		Vd
INITIALIZATION TIME	tstart			1 ms
NUMBER OF MAGNETIC PULSES FOR INITIALIZATION	nstart		3	4 Magn. Edges
ESD COMPATIBILITY	ESD			±8 kV
OPERATING TEMPERATURE	tamb	-40° C	+25° C	+150° C
TIGHTNESS			IP67	IP6K9K

MSC MicroSealedConnector

Robust and Ready for
the Toughest Conditions

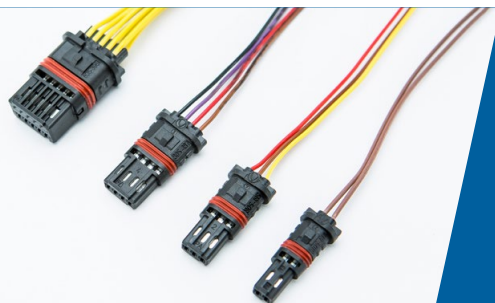


PRODUCT OVERVIEW MSC CONNECTOR FAMILY

Hirschmann Automotive is meeting the requirements of automotive manufacturers for extremely compact and technically most demanding electrical connectors with the MSC family.

The MSC – Micro Sealed Connector – family is a standard product. Development periods for new numbers of poles and technical tool implementation are thus shortened dramatically.

This connector can be used in a diverse range of applications in vehicles thanks to its miniaturized design and robustness.



Characteristics:

- miniature in 2.54 mm pitch
- vibration-resistant
- mechanically very stable thanks to overmolding
- no caps necessary to protect against environmental influences
- tension relief
- watertight

TECHNICAL PRODUCT INFORMATION

Technical Parameters

- intended installation area: body/engine compartment
- operating temperatures: -40°C to +130°C depending on wire insulation material and application

Electrical Parameters

- 1.2 mm contact system
- contact surface: tin, silver, gold
- current capacity (maximum values of contact system)
- derating: 20 A / 80° C
- sn surface: 17/14 A

Higher currents are approved depending on OEM. Maximum permissible currents must be assessed in combination with the conductor cross-sections used.

Minimum Coupling Retention Force in the Receptacle

- frictional connection: > 60 N

Usable Cable Cross Section

- 0.14 to 0.75 mm² (FLR)
- wire insulating material is selected according to requirement profile

Tests According to AK Requirement Specifications

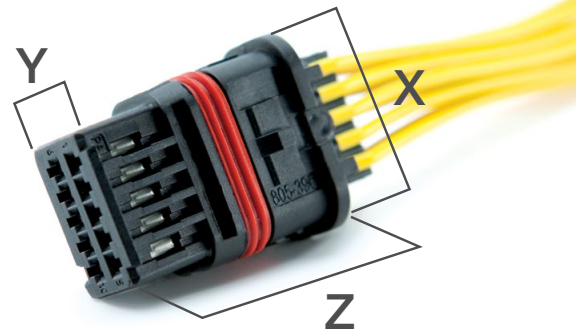
- PG 7 Retention force and functional safety of housings
- PG 17A Dynamic loading
- PG 19 Environmental simulation
- PG 20A Climatic loading of housings
- PG21A Long-term temperature storage
- PG 22B Chemical resistance, extended test
- PG 23 Watertightness

1 ROW MSC PRODUCT FAMILY 1.2 MM / 2 TO 6 WAY VERSIONS

CAVITIES	2	3	4	8
X	11.0	13.5	16.0	26.6
Y	8.5	8.5	8.5	9.0
Z	28.0	28.0	28.0	28.0
SOCKET HOUSING	805-183-...	805-185-...	805-187-...	807-999-...
PIN HOUSING	805-184-...	805-186-...	805-188-...	-

2 ROW MSC PRODUCT FAMILY 1.2 MM

CAVITIES	10
X	21.5
Y	13.5
Z	33.0
SOCKET HOUSING	805-396-...
PIN HOUSING	805-397-...



OPTIONAL PRODUCTS ON REQUEST

1 ROW

CAVITIES	5	6
X	19.0	21.5
Y	9.0	9.0
Z	28.0	28.0

2 ROW

CAVITIES	4	6	8	12
X	13.5	16.0	18.5	24.5
Y	13.0	13.0	13.0	13.5
Z	33.0	33.0	33.0	33.0

CAVITIES	14	16	18	20
X	27.0	30.0	32.5	35.0
Y	13.5	13.5	13.5	13.5
Z	33.0	33.0	33.0	33.0

INTERFACE DRAWINGS

CAVITIES	2-4 5-8	10
ROWS	1	2
DRAWING NO.	808-027-...-00 808-047-...-00	808-139-...-00

HOLDER FOR PIN HOUSING

CAVITIES	2-4
ROWS	1
DRAWING NO.	808-028-...-00

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