HS-2210M-01-0300

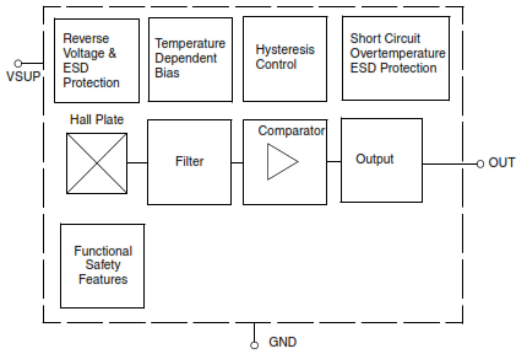
Product image serves as example only.

HS-2210M-01-0300

Bipolar 3 - Wire

Hall Effect Sensor M10 thread

Block Diagram



Features

- Customized types available
- Operates with magnetic fields up to 12 kHz
- Open drain output
- Very high sensitivity
- Threaded housing housing

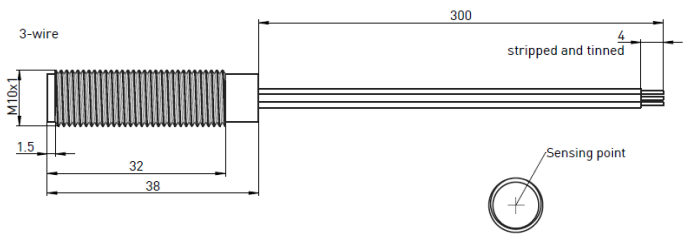
Approvals

RoHS REACH IP67

Recommended Operating Conditions

Symbol	Parameter	Min.	Typ.	Max.	Unit	Conditions
V_{SUP}	Supply voltage	2,7	–	24	V	
V_{OUT}	Output voltage	–	–	24	V	
I_{OUT}	Output current	–	–	25	mA	

Dimensions



Wire Assignment

Name	Function	Cable colour
V_{SUP}	Supply Voltage	red
OUT	Output	white
GND	Ground	black

HS-2210M-01-0300 → wire length (mm)

Material Information

	Material	Colour
Housing	Nickel plated brass	nickel
Cable	UL 1007 AWG 24	red, white, black
Potting	Epoxy	black

Environmental Characteristics

Operating temperature	°C	- 20 to + 85

PIC Proximity Instrumentation Controls
Kontaktbauelemente GmbH
Nibelungenstr. 5A
90530 Wendelstein, Germany
Phone +49 9129 907089-0
Fax +49 9129 907089-99
info@pic-gmbh.com
pic-gmbh.com

HS-2210M-01-0300

Bipolar 3 - Wire

Hall Effect Sensor M10 thread

Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit	Conditions
Supply						
V_{UV}	Undervoltage threshold	2	–	2,7	V	
I_{SUP}	Supply current	1,1	1,6	2,4	mA	
I_{SUPR}	Reverse current	–1	–	–	mA	for V_{SUP} = –18 V
Port Output						
V_{ol}	Port low output voltage	–	0,13	0,4	V	I_O = 20 mA
		–	–	0,5	V	I_O = 25 mA
I_{oleak}	Output leakage current	–	0,1	10	µA	
t_f	Output fall time[1)]	–	–	1	µs	V_{SUP} = 12 V; RL = 820 Ω; CL = 20 pF
t_r	[1)]	–	–	1	µs	
B_{noise}	Effective noise of magnetic switching points (RMS)[2)]	–	72	–	µT	For square wave signal with 12 kHz
t_j	Output jitter (RMS)[1)]	–	±0.58	±0.72	µs	For square wave signal with 1 kHz. Jitter is evenly distributed between –1 µs and +1 µs
t_d	Delay time[2) 3)]	–	16	21	µs	
t_{samp}	Output refresh period[2)]	1,6	2,2	3	µs	
t_{en}	Enable time of output after exceeding of V_{UV} [4)]	20	50	60	µs	V_{SUP} = 12 V B > Bon +2 mT or B < Boff – 2 mT

1) Characterized on small sample size, not tested
2) Guaranteed by design
3) Systematic delay between magnetic threshold reached and output switching
4) If power-on self-test is executed, ten will be extended by power-on self-test period

Absolute Maximum Ratings

Stresses beyond those listed in the “Absolute Maximum Ratings“ may cause permanent damage to the device
Functional operation of the device at these conditions is not implied. Exposure to the absolute rating conditions for extended periods will affect device reliability

Symbol	Parameter	Min.	Max.	Unit	Conditions
V_{SUP}	Supply voltage	–18	28	V	t < 96 h[1)]
		–	32	V	t < 5 min[1)]
		–	40	V	t < 10 x 400 ms “Load-Dump”1) with series resistor RV > 100 Ω.
V_{OUT}	Output voltage	–0.5	28	V	t < 96 h[1)]
I_O	Output current	–	65	mA	
I_{OR}	Reverse output current	–50	–	mA	

1) No cumulative stress

PIC Proximity Instrumentation Controls
Kontaktbauelemente GmbH
Nibelungenstr. 5A
90530 Wendelstein, Germany
Phone +49 9129 907089-0
Fax +49 9129 907089-99
info@pic-gmbh.com
pic-gmbh.com

HS-2210M-01-0300

Bipolar 3 - Wire

Hall Effect Sensor M10 thread

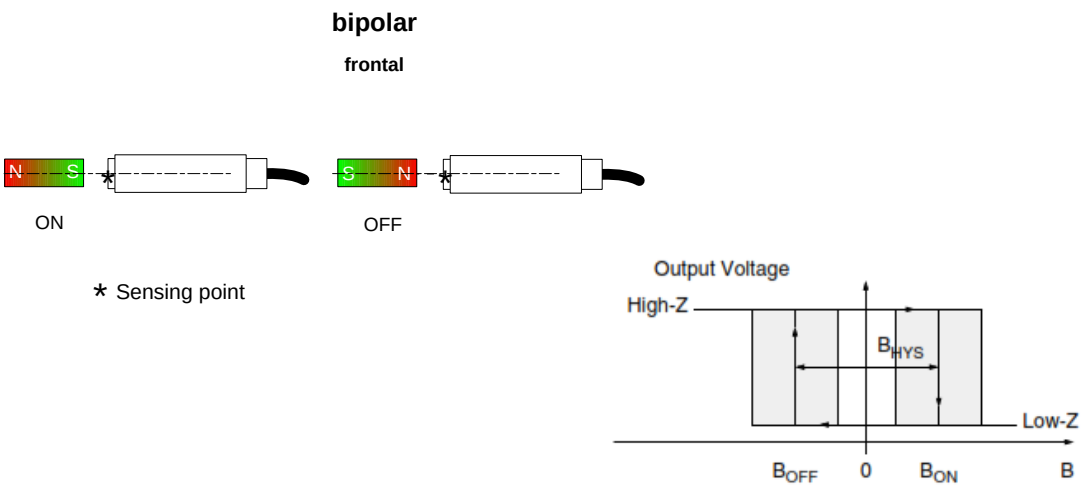
Magnetic Characteristics

Parameter	On point B_{ON}			Off point B_{OFF}			Hysteresis B_{HYS}			Unit
TJ	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	
–40 °C	–0.6	0,5	1,6	–1.6	–0.5	0,6	–	1	–	mT
25 °C	–0.5	0,4	1,5	–1.5	–0.4	0,5	–	0,8	–	mT
170 °C	–1.0	0,35	2	–2.0	–0.35	1	–	0,7	–	mT

[1] The hysteresis is the difference between the switching points $B_{HYS} = B_{ON} - B_{OFF}$

Note: The output turns to Low-Z with the magnetic south pole on the top side of the package and turns into High-Z with the magnetic north pole on the top side.
The output state is not defined if the magnetic field is removed again.
For correct function in the applciation, the sensor requires both magnetic polarities (north and south) on the top side of the package.

Magnetic Approach (for example)



PIC Proximity Instrumentation Controls
Kontaktbauelemente GmbH
Nibelungenstr. 5A
90530 Wendelstein, Germany
Phone +49 9129 907089-0
Fax +49 9129 907089-99
info@pic-gmbh.com
pic-gmbh.com