

HS-2210M-05-0300



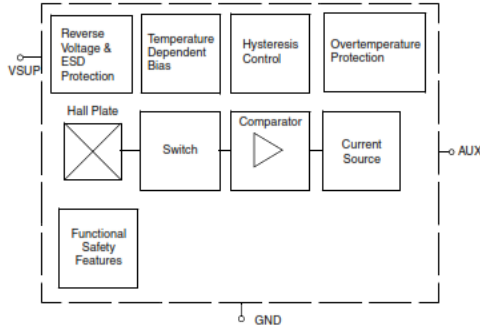
Product image serves as example only.

HS-2210M-05-0300

Unipolar 2 - Wire

Hall Effect Sensor M10 thread

Block Diagram



Features

- Customized types available
- Operates with magnetic fields up to 12 kHz
- Current interface
- Threaded housing

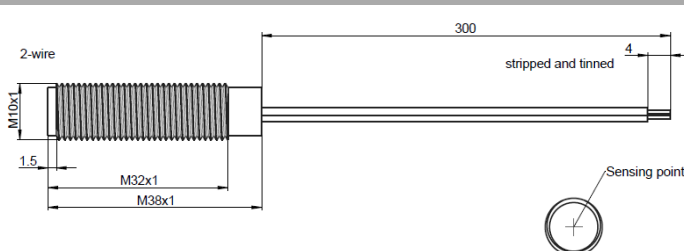
Approvals



Recommended Operating Conditions

| Symbol | Parameter | Min. | Typ. | Max. | Unit | Conditions |
|------------------|----------------|------|------|------|------|------------|
| V _{SUP} | Supply voltage | 3 | – | 24 | V | |

Dimensions



Wire Assignment

| Name | Function | Cable colour |
|------------------|---------------------------|--------------|
| V _{SUP} | Supply voltage and output | red |
| GND | Ground | black |

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→ wire length (mm)

Material Information

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

Environmental Characteristics

Operating temperature | °C | - 20 to + 85

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Characteristics

| Symbol | Parameter | Min. | Typ. | Max. | Unit | Conditions |
|--------------------|--|------|------------|------------|---------|---|
| Supply | | | | | | |
| V_{UV} | Undervoltage threshold | 2 | – | 3 | V | |
| I_{SUPlo} | Low supply current 1 | 2,5 | – | 5 | mA | |
| I_{SUP} | Error current | 0,8 | – | 1,9 | mA | |
| | | | – | | mA | |
| I_{SUPhi} | High supply current | 12 | – | 17 | mA | |
| I_{SUPR} | Reverse current | – | – | 0,6 | mA | for $V_{SUP} = -18 V$ |
| Port Output | | | | | | |
| B_{noise} | Effective noise of magnetic switching points (RMS) ²⁾ | – | 72 | – | μT | For square wave signal with 12 kHz |
| t_i | Output jitter (RMS) ¹⁾ | – | ± 0.58 | ± 0.72 | μs | For square wave signal with 1 kHz. Jitter is evenly distributed between $-1 \mu s$ and $+1 \mu s$ |
| 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} | 20 | 50 | 60 | μs | $V_{SUP} = 12 V$ $B > B_{on} + 2 mT$ or $B < B_{off} - 2 mT$ |

1) Characterized on small sample size, not tested

2) Guaranteed by design

3) Systematic delay between magnetic threshold reached and output switching

Absolute Maximum Ratings

| 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 $R_V > 100 \Omega$. |

1) No cumulative stress

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Magnetic Characteristics

| Parameter | On point B_{ON} | | | Off point B_{OFF} | | | Hysteresis B_{HYS} | | Unit |
|-----------|-------------------|------|------|---------------------|------|------|----------------------|------|------|
| | Min. | Typ. | Max. | Min. | Typ. | Max. | Min. | Typ. | |
| TJ | | | | | | | | | |
| -40 °C | 5.0 | 6,4 | 8,5 | 3,2 | 4,5 | 6,7 | - | 1,9 | mT |
| 25 °C | 4,3 | 6 | 7,7 | 2,9 | 4,1 | 6,1 | - | 1,9 | mT |
| 170 °C | 3,7 | 5,6 | 7,7 | 2,4 | 4.0 | 6,4 | - | 1,9 | mT |

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

Note: The sensor turns to high current consumption I_{SUPhi} with the magnetic north pole on the top side of the package and turns to low current consumption I_{SUPlo} if the magnetic field is removed. It does not respond to the magnetic north pole on the top side of the package. For correct function in the the application, the sensor requires only the magnetic south pole on the top side of the package.

Magnetic Approach (for example)

