

HS-2210M-03-0300



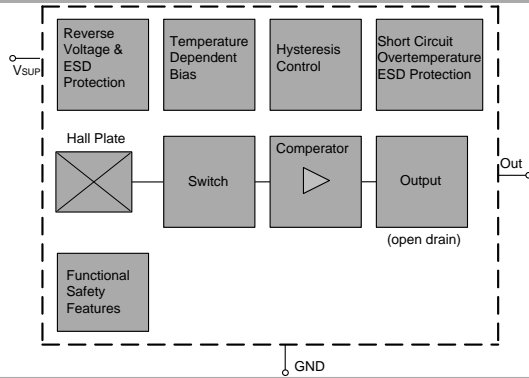
Product image serves as example only.

HS-2210M-03-0300

Unipolar 3 - Wire

Hall Effect Sensor M10 thread

Block Diagram



Features

- › Compact size
- › Various switching sensitivities
- › Customized types available

Approvals



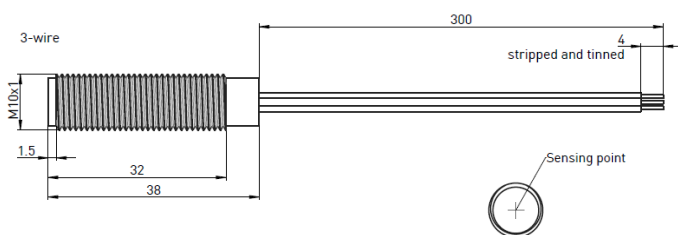
Absolute Maximum Ratings

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 | wire colour | Min. | Max. | Unit | Conditions |
|------------------|------------------------|-------------|-------|------|------|---|
| V _{SUP} | Supply voltage | red | - 18 | | V | t < 1000 h ¹⁾ |
| | | | - | 28 | V | t < 96 h ¹⁾ |
| | | | - | 32 | V | t < 5 min ¹⁾ |
| | | | - | 40 | V | t < 5 x 400 ms ¹⁾ with series resistor R _v > 100 Ohm |
| V _{OUT} | Output voltage | white | - 0.5 | | V | t < 1000 h ¹⁾ |
| | | | - | 28 | V | t < 96 h ¹⁾ |
| | | | - | 32 | V | t < 5 min ¹⁾ |
| | | | - | 40 | V | t < 5 x 400 ms ¹⁾ with series resistor R _v > 100 Ohm |
| I _O | Output current | white | - | 65 | mA | |
| I _{OR} | Reverse output current | white | - 50 | | mA | |

¹⁾ No cumulative stress All voltages listed are referenced to ground (GND)

Dimensions



Wire Assignment

| Name | Function | Cable colour |
|------------------|----------------|--------------|
| V _{SUP} | Supply voltage | red |
| OUT | Output | white |
| GND | Ground | black |

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└── wire length [mm]

Environmental Characteristics

| | | |
|-----------------------|----|--------------|
| Operating temperature | °C | - 20 to + 85 |
|-----------------------|----|--------------|

Material Information

| | Material | Colour |
|------------------|---------------------|-------------------|
| Housing | Nickel plated brass | nickel |
| Cable | UL1007/1569, AWG 24 | red, white, black |
| Potting compound | Epoxy | black |

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Characteristics

At recommended operation conditions if not otherwise specified in the column "Conditions".

Typical characteristics for $T_J = 25\text{ }^\circ\text{C}$ and $V_{SUP} = 12\text{ V}$

| Symbol | Parameter | wire colour | Min. | Typ. | Max. | Unit | Conditions |
|---------------|---|-------------|------|------|------|---------------|--|
| Supply | | | | | | | |
| I_{SUP} | Supply current | red | | 1.6 | 2.4 | mA | |
| I_{SUPHi} | Reverse current | | | | 1 | mA | for $V_{SUP} = -18\text{ V}$ |
| Output | | | | | | | |
| V_{ol} | Port low output voltage | white | | 0.13 | 0.4 | V | $I_o = 20\text{ mA}$ |
| | | | | | 0.5 | V | $I_o = 25\text{ mA}$ |
| t_f | Output fall time ¹⁾ | | | | 1 | μs | ¹⁾ $V_{SUP} = 12\text{ V}$; |
| t_r | Output rise time | | | | 1 | μs | $R_L = 820$; $C_L = 20\text{ pF}$ |
| t_d | Delay time ¹⁾ | | | 16 | | μs | |
| t_{samp} | Output refresh period | | 1.6 | 2 | 2.66 | μs | |
| t_{en} | Enable time of output after settling of V_{SUP} | | | 50 | | μs | $V_{SUP} = 12\text{ V}$ $B > B_{on} + 2\text{ mT}$ or $B < B_{off} - 2\text{ mT}$ |

Power-on-self-test

Self test can be triggered externally; details on request

¹⁾ Guaranteed by design

Recommended Operating Conditions

| Symbol | Parameter | wire colour | Min. | Max. | Unit | Conditions |
|-----------|----------------|-------------|------|------|------|------------|
| V_{SUP} | Supply voltage | red | 2.7 | 24 | V | |
| V_{OUT} | Output voltage | white | | 24 | V | |
| I_{OUT} | Output current | white | | 25 | mA | |

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Magnetic Characteristics Overview

| Symbol | Parameter | wire colour | Min. | Typ. | Max. | Unit | Conditions |
|------------|--|-------------|------|------|--------|-------|------------|
| B_{ONth} | ON threshold range ¹⁾ | - | - 30 | | 30 | mT | |
| B_{OOth} | OFF threshold range ¹⁾ | - | - 30 | | 30 | mT | |
| B_{th} | Adjustable step size ²⁾ | - | | 0.5 | | mT | |
| T_C | Temperatur compensation of magnetic thresholds ³⁾ | - | 0 | | - 3000 | ppm/K | |

¹⁾ Available range

²⁾ Small steps at small values, bigger steps at higher values. May not be undercut

³⁾ Different temperature compensation available on request

Magnetic Characteristics

| Switching Type | Temp. koeff. of magnetic thresh. T_C [ppm/K] | On point B_{ON} | | | Off point B_{OFF} | | | Hysteresis B_{HYS} ¹⁾ | | |
|----------------|---|-------------------|----------|-----------|---------------------|----------|-----------|------------------------------------|------|------|
| | | Min. | Typ. | Max. | Min. | Typ. | Max. | Min. | Typ. | Max. |
| bipolar | 0 | tbd. A | 5.5 B | tbd. C | tbd. D | 3.5 E | tbd. F | - | 2.0 | - |

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

Magnetic Approach (for example)

