

# EGHKM01P05

Magnetic field sensor probe for use with Multi Sensor Test (MiST) unit



## Description

The EGHKM01P05 probe with EGHSM01Q02 graphene Hall sensor (GHS-M01) is designed for use in conjunction with the Paragraf Multi Sensor Test unit (MiST): it provides high sensitivity measurement of magnetic fields with a strongly linear response across a broad temperature range. The GHS-M01 can be operated by the Paragraf Multi Sensor Test unit (MiST).

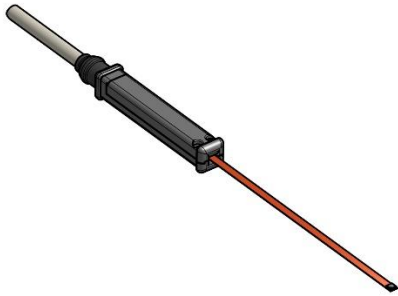


Figure 1. GHS-M01 Probe

## Performance characteristics

Ambient temperature = 300 K / 27°C, unless otherwise specified.  $I_N = 200 \mu\text{A}$ .

Parameter	Test conditions/notes	Min	Typical	Max	Units
Measurable field range				$\pm 2$ (20)	T (kG)
Magnetic equivalent noise	1 T field at 1 Hz, $I = I_N$		50	315	$\mu\text{T}/\sqrt{\text{Hz}}$
Magnetic equivalent thermal noise floor	Freq > Corner frequency		0.06		$\mu\text{T}/\sqrt{\text{Hz}}$
Sensitivity	At ambient temperature		800 (80)		V/A.T (mV/A.G)
		0.1	0.16		V/V.T
Linearity of Hall voltage	$I = I_N$ , at ambient temperature, $\pm 1$ T		0.2		%
Internal resistance	Between pins 1 and 6 or 2 and 7 of the DSUB connector, at field $B = 0$ T		5	8	k $\Omega$
Ohmic Offset	$B = 0$ T		30	50	$\Omega$
Temperature coefficient of offset	$I = I_N$		0.1		$\Omega/\text{K}$
Temperature coefficient of sensitivity	$I = I_N$ , at ambient temperature		0.2		%/K

\* Specifications may change at extreme low temperatures.



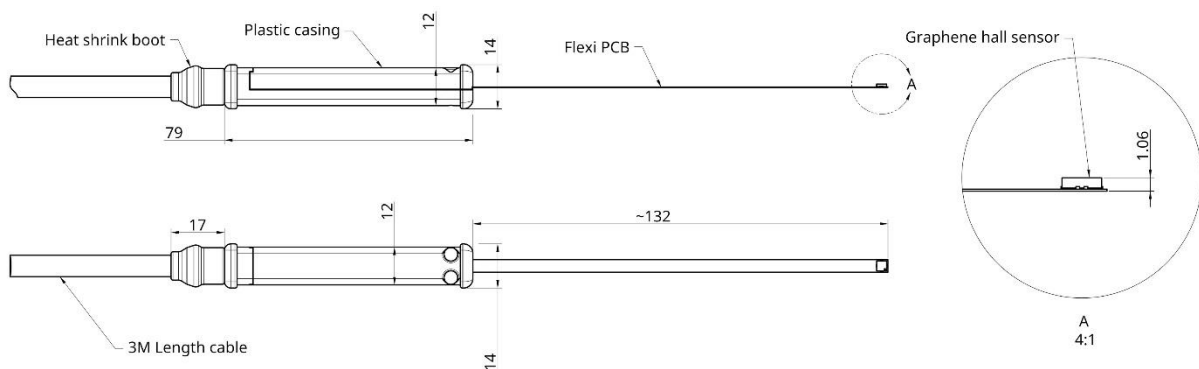
## Operating ratings

A higher current supply will give a larger voltage output for a given sensitivity and field, based on V/AT sensitivity. A typical drive current value is 0.2 mA (200  $\mu$ A).

Parameter	Min	Max	Units
Supply voltage	-24	+24	V
Supply current	-5	+5	mA
Operating temperature *	-5	70	$^{\circ}$ C
Storage temperature	-5	70	$^{\circ}$ C
Storage Humidity	30	80	RH %

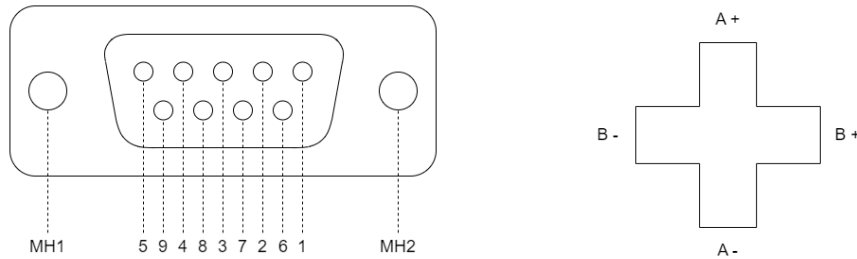
## Physical specification

All dimensions in mm



**Note:** Please refer to the datasheet for the EGHSM01Q02 graphene Hall sensor for complete sensor information. The package is an 8-pin Ni-free ceramic QFN and the active area is located at the centre of the package, 0.47 mm from the top.

The probe terminates in a standard 9-way D-sub male connector. Below is the pinout connection diagram detailing the functions of each pin.



PIN DESIGNATOR	SIGNAL	DESCRIPTION
1	GHS A+	Hall Sensor Channel A+
2	GHS B+	Hall Sensor Channel B+
3	GND	Ground connection
4	RTD T+	Unused – available for customer use
5	RTD I-	Unused – available for customer use
6	GHS A-	Hall Sensor Channel A-
7	GHS B-	Hall Sensor Channel B-
8	RTD I+	Unused – available for customer use
9	RTD T-	Unused – available for customer use
MN1, MH2	GND	Ground connection for connector

A and B can be used as  $V_{IN}$  (input) or  $V_H$  (output) interchangeably. Polarity of each pair can also be flipped interchangeably. See application note for Hall effect physics and operating recommendations.

PART	PARAMETER	mm
Cable	Length	3000
	Diameter	6.2
PCB	Length	200
	Width	5
	Depth	0.18
Hall sensor	Length	3
	Width	3
	Depth	1.41



## PCB information

Note: bend radius values are theoretical and have not been tested.

EQUIPMENT/USE	PARAMETER	VALUE
Standard PCB	Material	Polyimide SF202 copper clad laminate (flexible)
	Bend radius (fixed installation)	2.4 mm
	Bend radius (occasional flexing)	34.5 mm

## Cable


Note: specifications are from cable manufacturer and have not been independently tested as part of the probe assembly.

EQUIPMENT/USE	PARAMETER	VALUE
Cable	Bend radius (fixed installation)	38 mm
	Bend radius (occasional flexing)	93 mm
	Operating temperature range (occasional flexing)	-5°C to +70°C
	Storage temperature range	-40°C to +70°C
	Conductors	4 x twisted pair
	Cable shield	Tinned-copper wire braid
	Cable insulation	PVC
	Connector	9 Way D-Sub Male Connector



## Disposal

### WEEE Regulation Requirement

Symbol	Description
	Do not dispose of this part as general waste.

Disposal of the EGHKM01P05 probe requires a separate collection for waste electric and electronic equipment (WEEE). Check local regulations regarding WEEE and if needed contact a WEEE waste removal firm or return to Paragraf for disposal.

### Disclaimer

Please refer to the Terms of Sale in relation to this part. These can be found on Paragraf Limited's website at [www.paragraf.com](http://www.paragraf.com).

This data sheet is provided for general guidance only and does not expand or otherwise alter any Paragraf Limited warranty set out in the Terms of Sale. For the avoidance of doubt, no additional obligations or liabilities shall arise from Paragraf providing this data sheet.

## Intended Use

Paragraf Limited's EGHKM01P05 is intended to be used to measure magnetic fields in a dry and clean working environment. The part is NOT designed for any of the following environments:

- Non-industrial or non-research environments
- Outdoors
- Wet conditions
- Explosive or combustible atmospheres.

The part must only be operated by trained and competent personnel and a risk assessment should be carried out before undertaking any work.

The EGHKM01P05 should not be modified



**⚠ CAUTION****CAUTION: RISK OF ELECTROSTATIC HAZARD TO EQUIPMENT.**

- Electrostatic discharge (ESD) can cause permanent damage to the part and connected equipment. Standard ESD precautions should be implemented and maintained when using this part.

**⚠ WARNING****WARNING: RISK OF INJURY TO USER.**

- Do not operate outside the specified operating conditions.
- Any use outside the intended applications is not permitted.
- Any use not specified by Paragraf requires approval by Paragraf Limited.
- Paragraf Limited takes no responsibility for damage caused by incorrect use of the part.
- Do not use the part if it is damaged. If you suspect any fault that cannot be rectified, contact Paragraf Limited.

## Revision History

REVISION NUMBER	DATE OF FIRST RELEASE	DETAILS
V 1.0	20/11/2024	Doc-2193 Version 1.0
V 1.1	20/11/2024	Minor format update
V 1.2	22/11/2024	Minor update to render and drawing

For further information on how to order accessories and additional parts, please contact us:



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