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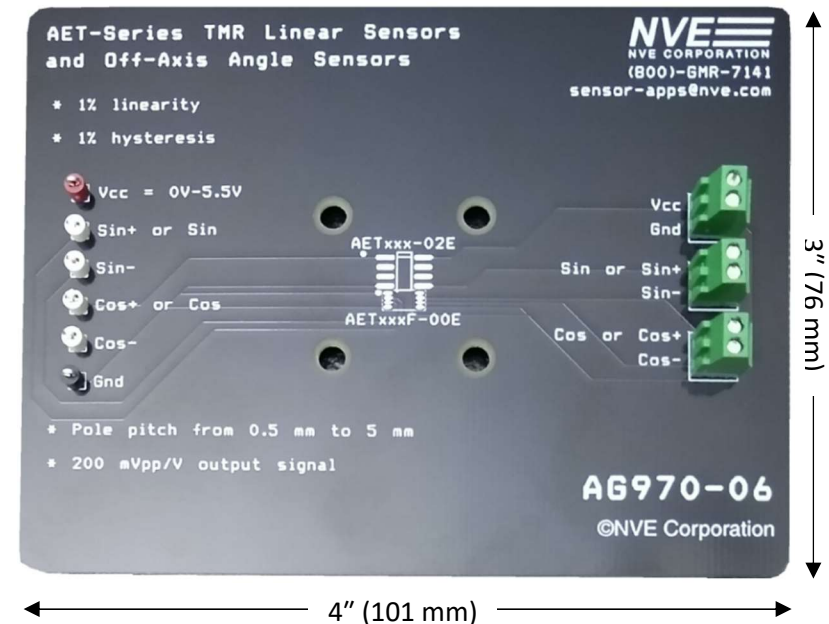
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Manual No.: SB-00-133

# AG970-07E AET-Series Sensor EvaluationKit



SB-00-133

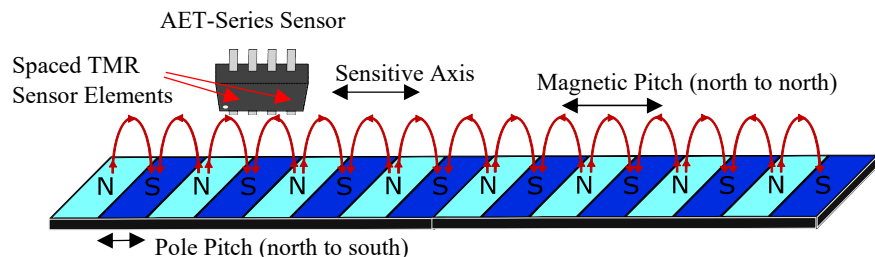
## Overview

This kit allows you to evaluate NVE's AET-Series TMR off-axis rotational / linear sensors. These sensors are resistive bridges with ratiometric output signals. Key features for the AET-Series include:

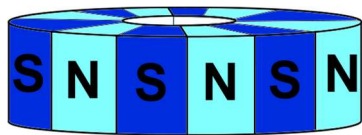
- 400 mV<sub>pp</sub>/V output typical max signal (full-bridges)
- High Accuracy: 1% max hysteresis / 1% typical linearity
- 5 kΩ bridge resistance/2.5 kΩ output impedance for easy interface
- 350 kHz magnetic bandwidth
- -50 °C to 150 °C

More information can be found on the NVE website: [www.nve.com/sensors.php](http://www.nve.com/sensors.php)

## Magnetic Operation

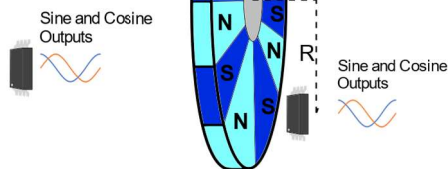


AET-Series sensors are numbered based on the “pole pitch” (as specified by magnet manufacturers) they are optimized to detect. The sensors’ sine and cosine outputs are periodic with the “magnetic pitch,” due to the bipolar TMR sensor elements.



$$\text{Pole pitch} = \frac{\pi \text{ diameter}}{\text{number of poles}}$$

Multipole ring magnet with radial poles.



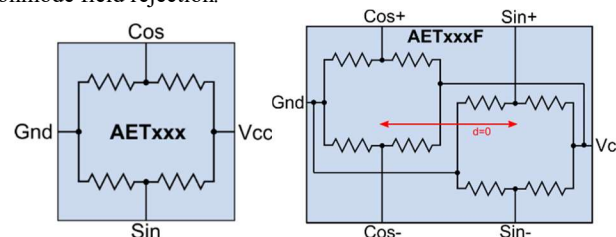
$$\text{Pole pitch} = \frac{2\pi R}{\text{number of poles}}$$

Multipole ring magnet with face poles.

NVE sells magnets that can be used with AET-Series Sensors in this kit through its webstore: [www.nve.com/webstore/catalog](http://www.nve.com/webstore/catalog) go to “sensors” → “accessories”

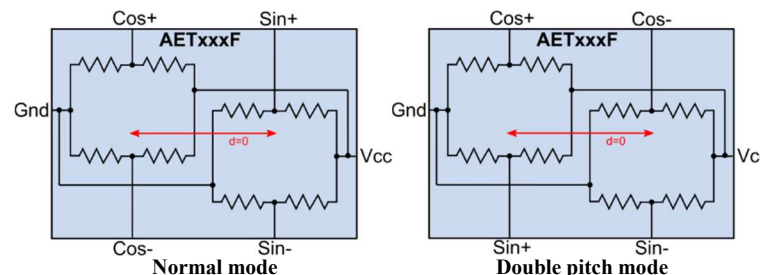
## Full-Bridge and Half-Bridge Versions

AETxxxF are full-bridge sensors with excellent noise immunity, large signals, and common mode field rejection. AET500 sensors combine high performance with a half-bridge outputs interface, ideal for simplicity and miniaturization. The AET500 does not have commonmode field rejection.



## Two Operating Modes for Full-Bridge Sensors

AETxxxF full-bridge sensors can be used in two distinct modes of operation: normal mode and double-pitch mode. Double-pitch mode optimizes an AETxxxF sensor to measure twice as large a pole pitch as its normal mode. To use double pitch mode, swap the connections for “Sin+” and “Cos-” as below:



## Included in This Kit

Part	Pole Pitch (normal mode)	Pole Pitch (double-pitch mode)	Package	Marking
AET500-02E	5 mm	N/A	SOIC8	AET500
AET050F-00E	0.5 mm	1 mm	MSOP8	FTDe
AET075F-00E	0.75 mm	1.5 mm	MSOP8	FTCe
AET100F-00E	1 mm	2 mm	MSOP8	FTBe
AET120F-00E	1.2 mm	2.4 mm	MSOP8	FTEe

AG970-06 PCB, plus fixturing for 10 mm width, 1.5 mm thickness magnetic linear scale tape

*Magnetic tape can be purchased separately, NVE part numbers 12589 to 12592*