

## GT Sensors for Gear Tooth Applications

NVE's GT Sensor products are designed for industrial speed sensing where magnetic detection of gear teeth and magnetic encoder wheels with large air gaps are required. GT Sensors with both analog and digital outputs are available. All parts operate down to zero speed. The analog parts feature varied spacing of the sensor elements on the IC to provide usable output signals for even the smallest gear teeth. Single bridges provide speed information, and dual bridges provide speed and direction. The digital sensors take advantage of the GMR sensor element's superior magnetic performance to provide a 50% duty cycle output over variations in voltage and temperature. **Features:** • Input Voltage Range: Maximum: 30V • Operating Frequency: Minimum: DC, Maximum: 1MHz • Temperature Range: -50°C - 150°C • Maximum Output: Nominal: 80mV/V • Resistance: 5K typical

Single or Dual Bridge	Element Spacing (mm)	Output	Digi-Key Part No.	Price Each			NVE Part No.
				1	10	25	
Single	1	Analog	391-1033-5-ND†	3.39	2.55	2.26	ABL004-00
Single	1	Analog	391-1055-5-ND‡	4.11	3.09	2.74	ABL004-00E
Single	0.5	Analog	391-1056-5-ND‡	4.11	3.09	2.74	ABL005-00E
Dual	1	Analog	391-1057-5-ND‡	4.95	3.72	3.30	ABL014-00E
Dual	0.5	Analog	391-1058-5-ND‡	4.95	3.72	3.30	ABL015-00E
Single	1	Digital	391-1064-1-ND‡§▲	6.13	5.25	4.38	AKL001-12E
Single	1	Digital	391-1064-2-ND‡§	6562.50/2,500			AKL001-12E

◆ RoHS Compliant † 8-MSOP ‡ TDFN8-S08 § Tape and Reel ▲ Cut Tape

## AFL Series - Low Power Digital Switch Parts

Featuring low magnetic field operate points and very low power consumption, the AFL series digital switch sensors are the first high precision digital magnetic sensors suitable for continuous operation in battery powered applications. Precise magnetic operate points of 10 Gauss are maintained, along with operating voltages down to 0.9V. Current sinking and current sourcing outputs are available.

**Features:** • Operating Point: 10 Gauss ±3 Gauss • Operating Frequency: Minimum: DC, Maximum 100kHz • Minimum Operate/Release Point: Differential 2 Gauss • Maximum Output: 100µA

Volt. Temp. Range	Operating Range	Output	Bridge	Digi-Key Part No.	Price Each			NVE Part No.
					1	10	25	
<b>Digital Switches</b>								
1.3	-20°C - 85°C	Xistor	Single	391-1039-5-ND◆	9.72	7.29	6.48	AFL000-00E

◆ RoHS Compliant ◆ 8-MSOP

## GMR Digital Magnetic Sensors

**Features: Absolute Maximum Ratings:** Parameters: • Supply Voltage: 33V • Reverse Battery Voltage: -33V • Continuous Output Current: 24mA • Operating Temperature Range: -40°C - 125°C • Magnetic Field: Unlimited Oersted

Sensitivity	Direction of Sensitivity	Output Type	Package	Digi-Key Part No.	Price Each			NVE Part No.
					1	10	25	
20 Gauss	Cross Axis	Source and Sink	8-TSSOP	391-1013-ND	3.81	2.86	2.54	AD221-00

## Float Sensors

Liquid level sensors are cost effective sensors for detecting the presence or absence of liquids. Perfect for vending machines, commercial washing machines, evaporator units and any upper and lower liquid level sensing applications. Horizontal sensors can be turned 180 degrees for opposite detection. UL approved E171218.

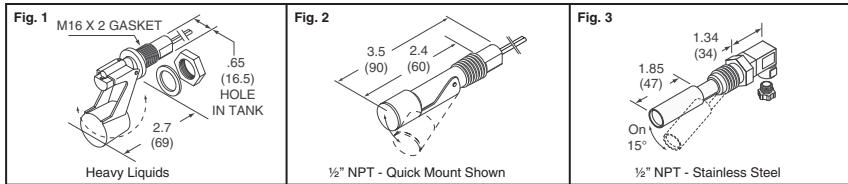
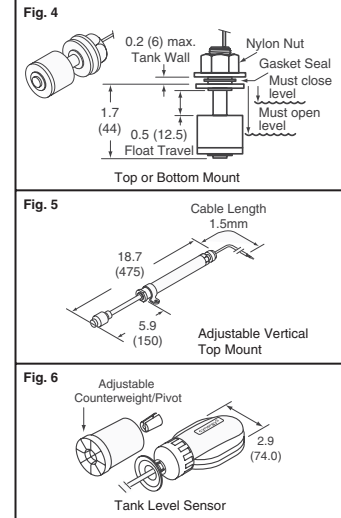


Fig.	Description	Material	Contact Rating	Digi-Key Part No.	Price Each			Cynergy3 Part No.	
					1	10	50		
<b>Horizontal Mount Sensors</b>									
1	Heavy Liquid Sensor, SPST, Standard Temperature	Black Nylon	0.6A	725-1002-ND	12.50	11.90	11.30	RSF43Y100RF	
	Heavy Liquid Sensor, SPST, High Temperature	Opaque Poly	0.6A	725-1003-ND	13.23	12.60	11.96	RSF44Y100RF	
	Heavy Liquid Sensor, SPST, Industrial Temperature	Grey PPS	0.6A	725-1004-ND	15.03	14.31	13.59	RSF46Y100RF	
2	External Compression Seal Sensor, SPST, Standard Temperature	Black Nylon	0.6A	725-1005-ND	13.06	12.44	11.81	RSF73Y100RN	
	External Compression Seal Sensor, SPST, High Temperature	Opaque Poly	0.6A	725-1006-ND	13.83	13.17	12.51	RSF74Y100RN	
	External Compression Seal Sensor, SPST, Industrial Temperature	Grey PPS	0.6A	725-1007-ND	15.74	14.98	14.23	RSF76Y100RN	
	External Mount Sensor, SPST, Standard Temperature	Black Nylon	0.6A	725-1008-ND	11.36	10.82	10.27	RSF83Y100R	
3	External Mount Sensor, SPST, High Temperature	Opaque Poly	0.6A	725-1009-ND	13.95	13.28	12.62	RSF84Y100R	
	External Mount Sensor, SPST, Industrial Temperature	Grey PPS	0.6A	725-1010-ND	14.40	13.71	13.02	RSF86Y100R	
	External Mount Sensor, SPST, Standard Temperature	Stainless Steel	0.6A	725-1011-ND	100.04	95.25	90.46	SSF212XP	
	External Mount Sensor, SPST, High Temperature	Stainless Steel	0.6A	725-1012-ND	69.38	66.05	62.73	SSF212X050	
	<b>Vertical Mount Sensors</b>								
4	Reversible Sensor, Single Switch Type, M12 Thread	Black Nylon	0.6A	725-1013-ND	13.33	12.69	12.05	RSF53Y100RC	
	Reversible Sensor, Single Switch Type, M12 Thread	Opaque Poly	0.6A	725-1014-ND	14.13	13.46	12.78	RSF54Y100RC	
	Reversible Sensor, Single Switch Type, M12 Thread	Grey PPS	0.6A	725-1015-ND	15.90	15.14	14.38	RSF56Y100RC	
	Reversible Sensor, Single Switch Type, 1/8\" NPT	Black Nylon	0.6A	725-1016-ND	13.33	12.69	12.05	RSF53Y100R1/8	
	Reversible Sensor, Single Switch Type, 1/8\" NPT	Opaque Poly	0.6A	725-1017-ND	14.13	13.46	12.78	RSF54Y100R1/8	
	Reversible Sensor, Single Switch Type, 1/8\" NPT	Grey PPS	0.6A	725-1018-ND	15.90	15.14	14.38	RSF56Y100R1/8	
5	High Temp. Reversible Sensor, SPST, 1/8\" NPT	Stainless Steel	0.6A	725-1019-ND	60.19	57.31	54.44	SSF22X035	
	High Temp. Reversible Sensor, SPST, 1/8\" NPT	Stainless Steel	0.6A	725-1020-ND	183.97	175.16	166.36	SSF26X035	
6	Adjustable Slide Sensor, Single Switch	Poly	0.6A	725-1000-ND	43.86	41.76	39.66	RSF64EXS	
	Extension Tube 306mm each (3 Max.)	Poly	0.6A	725-1001-ND	10.86	10.34	9.82	RSF64EXT	
	<b>Cable Mount Tank Sensors</b>								
	Turbulent Liquids, SPST-NO, with 5m Cable, WRAS Approved	Poly	10A	725-1024-ND	74.02	70.47	66.93	FFSMC10A	
	Turbulent Liquids, SPST-NC, with 5m Cable, WRAS Approved	Poly	10A	725-1025-ND	74.02	70.47	66.93	FFSMC10B	
Turbulent Liquids, SPDT-C/O, with 5m Cable, WRAS Approved	Poly	10A	725-1026-ND	74.02	70.47	66.93	FFSMC10C		
High Power Tank Sensor SPST-NO with 5m Cable, WRAS Approved	Poly	10A	725-1021-ND	25.62	24.40	23.17	MS10A		
	Poly	10A	725-1022-ND	25.62	24.40	23.17	MS10B		
	Poly	10A	725-1023-ND	25.62	24.40	23.17	MS10C		



## GMR Analog Magnetic Field Sensors

NVE's Giant Magneto-resistive Field Sensors offer unique and unparalleled magnetic sensing capabilities. The high sensitivity and ability to sense static magnetic fields provide superior performance which sets them apart from other sensors on the market today. NVE's sensors provide high sensitivity, temperature stability, low power consumption, and small size.

**Features:** • Input Voltage Range: Maximum: ±25V • Operating Frequency: Minimum: DC, Maximum: ±1MHz • Temperature Range: -50°C - 125°C • Maximum Output: Nominal: 45mV/V • Resistance: 5K typical, 30K typical for AA006, 2K typical for AAH

Saturation Field (Oe)	Specified Linear Range (Oe)		Sensitivity (mV/V/Oe)		Digi-Key Part No.	Price Each			NVE Part No.
	Min.	Max.	Min.	Max.		1	10	25	
15	1.5	10.5	3	4.2	391-1045-5-ND◆‡	14.58	10.94	9.72	AA002-02E
20	2	14	2	3.2	391-1048-5-ND◆‡	8.34	6.26	5.56	AA003-02E
50	5	35	0.9	1.3	391-1049-5-ND◆◇	8.10	6.08	5.40	AA004-00E
50	5	35	0.9	1.3	391-1001-ND‡	8.10	6.08	5.40	AA004-02
50	5	35	0.9	1.3	391-1050-5-ND◆‡	8.10	6.08	5.40	AA004-02E
100	10	70	0.45	0.65	391-1002-ND‡	8.10	6.08	5.40	AA005-02
100	10	70	0.45	0.65	391-1052-5-ND◆‡	8.10	6.08	5.40	AA005-02E
50	5	35	0.9	1.3	391-1054-5-ND◆‡	13.71	10.29	9.14	AA006-02E
6	0.6	3.0	11	18	391-1046-5-ND◆‡	14.58	10.94	9.72	AAH002-02E
15	1.5	7.5	3.2	4.8	391-1051-5-ND◆◇	8.10	6.08	5.40	AAH004-00E
15	1.5	10.5	3	4.2	391-1047-5-ND◆‡	14.58	10.94	9.72	AAAL002-02E

◆ RoHS Compliant ‡ 8-SOIC ◇ 8-MSOP

## GMR Sensor Evaluation Kits

**AG001-01:** This kit features several types of NVE's AA and AB Series parts, a selection of permanent magnets for activation or bias purposes, and circuit boards to mount the parts for testing purposes. Also included is a copy of NVE's catalog and applications notes on CD ROM.

**AG003-01:** Facilitates laboratory experimentation and development using GMR current sensors. The kit consists of (4) NVE current sensors (PN AA003-02) assembled to printed circuit board (PN AG002-01). The PCB has (4) trace geometries to simulate various PCB current sensor configurations.

**AG910-07:** Includes over 15 different GMR switch digital magnetic sensors with different operating points and different output configurations (current sink and current source). Magnets, circuit boards, a ZIF socket for easy testing, and NVE's catalog and application notes on CD ROM are included.

**AG911-07:** Same as AG910-07, but does not include the ZIF socket.

**AG920-07:** Kit includes analog and digital versions of the GT Sensor products, for gear tooth sensing applications. A large variety of circuit boards and magnets are included for bench testing purposes, along with NVE's catalog and application notes on CD ROM.

Description	Digi-Key Part No.	Price	NVE Part No.
Analog Sensor Evaluation Kit	391-1059-ND◆	120.00/1	AG001-01E
Current Sensor Evaluation Kit	391-1060-ND◆	86.00/1	AG003-01E
GMR Switch Evaluation Kit	391-1044-ND	180.00/1	AG910-07
GMR Switch Evaluation Kit	391-1061-ND◆	180.00/1	AG910-07E
GMR Switch Evaluation Kit (no ZIF socket)	391-1062-ND◆	130.00/1	AG911-07E
GT Sensor Evaluation Kit	391-1063-ND◆	130.00/1	AG920-07E

◆ RoHS Compliant