

Solid State Sensors
Hall Effect Gear Tooth Sensors

GT1 Series



TYPICAL APPLICATIONS

Automotive and Heavy Duty Vehicles:

- Camshaft and crankshaft speed/ position
• Transmission speed
• Tachometers
• Anti-skid/traction control
Industrial:
• Sprocket speed
• Chain link conveyor speed and distance
• Stop motion detector
• High speed low cost proximity
• Tachometers, Counters

FEATURES

- Senses ferrous metal targets
• Digital current sinking output (open collector)
• Better signal-to-noise ratio than variable reluctance sensors, excellent low speed performance, output amplitude not dependent on RPM
• Sensor electronically self-adjusts to slight variations in runout and variations in temperature, simplifying installation and maintenance
• Fast operating speed – over 100 kHz
• EMI resistant
• Reverse polarity protection and transient protection (integrated into Hall I.C.)
• Wide continuous operating temperature range (-40° to 150°C), short term to 160°C

GENERAL INFORMATION

1GT1 Series Gear Tooth Sensors use a magnetically biased Hall effect integrated circuit to accurately sense movement of ferrous metal targets. This specially designed I.C., with discrete capacitor and bias magnet, is sealed in a probe type package for physical protection and cost effective installation.

Units will function from a 4.5 to 24 VDC power supply. Output is digital, current sinking (open collector). Reverse polarity protection is standard. If power is inadvertently wired backwards, the sensor will not be damaged. Built-in protection against pulsed transients to +60V, -40V is also included.

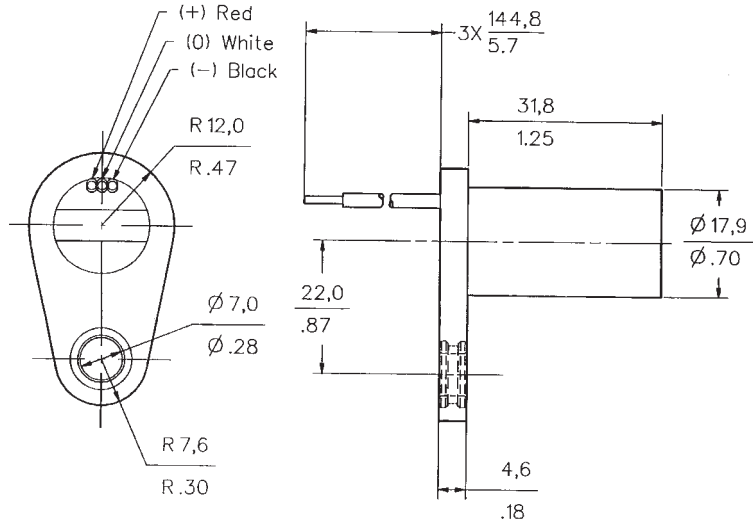
Optimum sensor performance is dependent on the following variables which must be considered in combination:

- Target material, geometry, and speed
• Sensor/target gap
• Ambient temperature
• Magnetic material in close proximity

GT1 ORDER GUIDE

Table with 2 columns: Catalog Listing, Description. Row 1: 1GT101DC, Gear Tooth Sensor

MOUNTING DIMENSIONS (For reference only)



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SENSOR SPECIFICATIONS

All values were measured using 1 K pull-up resistor.

Table with 3 columns: Category, Parameter, and Value. Rows include Electrical Characteristics (Supply Voltage, Supply Current, Output Voltage, Output Current, Switching Time), Absolute Maximum Ratings (Supply Voltage, Voltage Externally Applied, Output Current, Temperature Range), and Switching Characteristics (Operate Point, Release Point, Differential Travel).

\* As with all solid state components, sensor performance can be expected to deteriorate as rating limits are approached; however, sensors will not be damaged unless the limits are exceeded.
\*\* See Reference Target table.

TARGET GUIDELINES

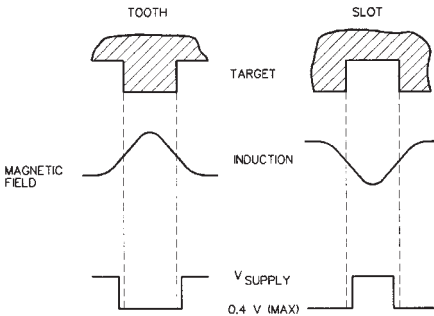
The Target Guidelines table provides basic parameters when an application is not restricted to a specific target.

Any target wheel that exceeds the following minimum specifications can be sensed over the entire temperature range of -40° to 150°C with any sensing gap up to .080 in. (2,0 mm). This data is based on a 4 in. (102 mm) diameter wheel, rotating 10 to 3600 RPM.

Reference Target Dimensions

Table with 2 columns: Parameter and Value. Rows include Tooth Height, Tooth Width, Tooth Spacing, and Target Thickness.

Sensor Output (with pull-up resistor added to output circuit)



REFERENCE TARGET/CONDITIONS

Characteristics will vary due to target size, geometry, location, and material. Sensor specifications were derived using a cold-rolled steel reference target. See table, right, for reference target configuration and evaluation conditions.

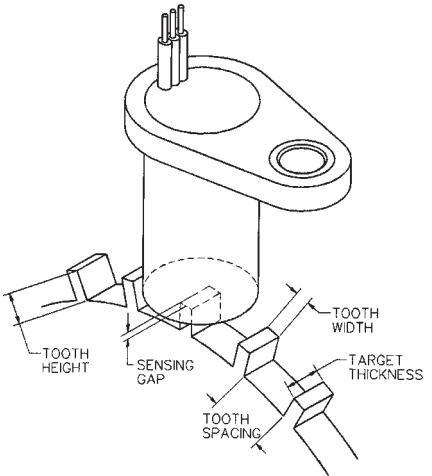


Table with 2 columns: Parameter and Value. Rows include Target (Diameter, Tooth Width, Thickness) and Test Conditions (Air Gap, V Supply, RPM).

Integral Magnet