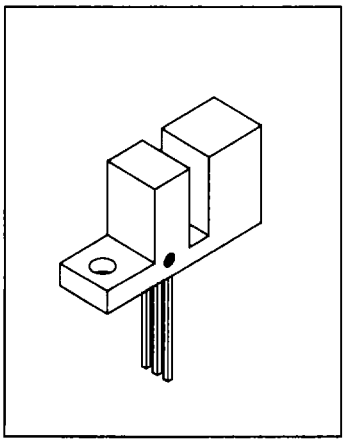
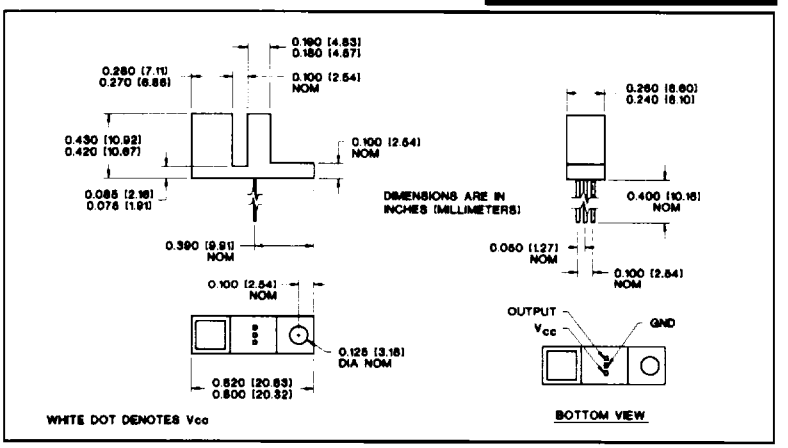
HA-640

Digital Output Hall Effect Assembly

CLAROSTAT
SENSORS AND CONTROLS GROUP





Features

- available with wire leads [1]
- V_{CC} range: 4.5 to 24 volts
- open-collector output
- insensitive to dirty environments
- fully TTL compatible

Description

The HA-640 Hall effect assembly consists of a Hall-effect integrated circuit and a small permanent magnet on opposite sides of a 0.100" (2.54mm) sensing gap. This magnetic position sensor is operated by passing a ferrous vane between the magnet and Hall element. Call OptoSwitch for applications assistance.

Absolute Maximum Ratings (T_A = 25°C unless otherwise stated.)

Storage Temperature	-55°C to +150°C
Operating Temperature	-40°C to +125°C
Lead Soldering Temperature[2]	240°C[3]
Supply Voltage	25V
Power Dissipation	200mW[4]

Notes:

1. Add a -W suffix to order with 12" (305mm) wire leads. Wire 26 AWG, seven (7) strand, with UL1429 insulation or equivalent.

   Red.....Vcc
   Black.....Ground
   White .....Out

2. 0.06" (1.5mm) from the case for 5 seconds maximum.
3. 260°C maximum when wave soldering.
4. No derating required; maximum power dissipation allowed at 70°C.

Fundamental Characteristics

The HA-640 incorporates a small permanent magnet in a U-shaped housing similar to that of a slotted optical switch. The primary difference is in function; a ferrous vane, low-carbon steel (1030 or preferably lower), with a minimum width of 0.250" (6.35mm) and a minimum thickness of 0.030" (.76mm) is required to shunt the magnetic field away from the sensor. A vane thinner than this value may be distorted by the magnetic field and one narrower may not be effective in spreading the field to a level below the release point. Additionally, the position of the vane in the gap can have a pronounced effect on the observed switch points.

The vane should not be more than 0.125" (3.18mm) from the bottom of the slot; as this value is increased, the switch points become closer to the center of the device; the limiting case occurs when the vane is above the Hall element and no switching occurs. Lateral position within the gap *toward the magnet* will move switch points more to the device center and increase hysteresis; translation *toward the sensor* moves switch points away from the center of the device and decreases hysteresis. The magnitude of these effects are related to initial magnet strength, device sensitivity, and the magnetic characteristics of the vane.

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Electrical Characteristics (T_A = 25°C unless otherwise stated)

Symbol	Parameter	min	max	units	Test Conditions
V_{CC}	Supply Voltage Range	4.5	24.0	V	
I_{CC}	Current Drain	-	14	mA	V_{CC} = 24V, Output open
V_{OL}	Output Voltage	-	0.4	V	V_{CC} = 5V, R_L = 270Ω, Gap open
I_{OH}	Output Leakage Current (1)	-	2.0	µA	V_{CC} = 5V, R_L = 270Ω

Notes:

1. Measured with a ferrous vane in the sensing gap.