

# Low Current Digital Bar Code Wand

## Technical Data

### HBCS-A000 Series

#### Features

- **Rugged Polycarbonate Case, Switched or Unswitched**
- **Ultra Low Continuous Current Draw**
- **Available in 3 Resolutions to Meet a Variety of Scanning Needs**
- **High Ambient Light Rejection—Operates in Direct Sunlight**
- **Visible Red (655 nm) and Infrared (820 nm) Versions Available**
- **Scan Angle: 0° to 45° Typical**
- **Manufacturing: ISO 9002 Certified**

#### Description

The HBCS-A000 series low current digital wands are hand held scanners optimized to provide excellent scanning of all common bar code formats. The patented low current, high ambient light rejection circuitry is packaged in a rugged polycarbonate case.

Available in three resolutions, these wands are capable of reading a wide range of bar code printing. Visible red and infrared versions are available for reading a wide range of print types and colors.

The wands are available with or without a switch to control the wand operation.



#### Applications

The HBCS-A000 series wands are highly effective alternatives to keyboard data entry. These devices are especially designed for battery powered applications where low power drain is a primary concern. In addition to their low current draw, these wands are also designed to work in high ambient light, such as outdoors or near windows.

#### Selection Guide

| Wand Type                         | Switched   |                         |                        | Unswitched             |                         |                        |
|-----------------------------------|--|-------------------------|------------------------|------------------------|-------------------------|------------------------|
|                                   | 0.33 mm<br>(0.013 in.)   | 0.19 mm<br>(0.0075 in.) | 0.13 mm<br>(0.005 in.) | 0.33 mm<br>(0.013 in.) | 0.19 mm<br>(0.0075 in.) | 0.13 mm<br>(0.005 in.) |
| LED Wavelength                    | 655 nm   |                         | 820 nm                 | 655 nm                 |                         | 820 nm                 |
| 5-Pin DIN Connector               | HBCS-A000*   | HBCS-A200               | HBCS-A400*             | HBCS-A100*             | HBCS-A300               | HBCS-A500*             |
| 9-Pin D-Sub Connector             | HBCS-A008*   | HBCS-A208*              | HBCS-A408*             | HBCS-A108*             | HBCS-A308*              | HBCS-A508*             |
| No connector: Strip and Tin Leads | HBCS-A007*   | HBCS-A207*              | HBCS-A407*             | HBCS-A107*             | HBCS-A307*              | HBCS-A507*             |
| Individually Boxed Wand           | Order Option #A01 with the above referenced part number. The wand is shipped in a "kraft" box, including an HBCS-A000 series data sheet. |                         |                        |                        |                         |                        |

\*Note: Build to order product only. Minimum stock is available for engineering evaluation purchases.

## Specifications (T<sub>A</sub> = 25°C Typical)

| Parameter                         | Minimum | Maximum  | Units            | Notes |
|-----------------------------------|---------|----------|------------------|-------|
| Scan Velocity                     | 7.6 (3) | 127 (50) | cm/sec (in/sec)  |       |
| Edge Contrast                     | 45      |          | %                | 1     |
| Supply Voltage (V <sub>CC</sub> ) | 4.5     | 5.5      | V                |       |
| Supply Ripple                     |         | 100      | mV <sub>pp</sub> |       |
| Temperature                       | -20     | +65      | °C               |       |
| Ambient Light                     |         | 100,000  | lux              |       |

## Absolute Maximum Ratings

| Parameter                | Minimum | Maximum | Units |
|--------------------------|---------|---------|-------|
| Storage Temperature      | -40     | +75     | °C    |
| Operating Temperature    | -20     | +65     | °C    |
| Supply Voltage           | -0.5    | +6      | V     |
| Output Transistor Power  |         | 150     | mW    |
| Output Collector Voltage | -0.5    | +20     | V     |

## Electrical Characteristics (T<sub>A</sub> = 25°C)

| Parameter                      | Min. | Typ. | Max. | Units | Conditions              | Notes |
|--------------------------------|------|------|------|-------|-------------------------|-------|
| Supply Current                 | 2.5  | 3.5  | 5.0  | mA    | V <sub>S</sub> = 5.0 V  | 2     |
| High Level Output Current      |      |      | 1.0  | A     | V <sub>OH</sub> = 2.4 V |       |
| Low Level Output Voltage       |      |      | 0.4  | V     | I <sub>OL</sub> = 16 mA |       |
| Output Rise Time               |      | 3.4  | 20   | μs    |                         | 3     |
| Output Fall Time               |      | 1.2  | 20   | μs    |                         | 3     |
| Switch Bounce                  |      | 0.5  | 5.0  | ms    |                         | 4     |
| ESD Immunity                   |      | 25   |      | kV    |                         | 5     |
| ESD Isolation Unswitched Wands |      | 15   |      | kV    |                         | 5     |
| ESD Isolation–Switched Wands   |      | 8    |      | kV    |                         | 5     |
| Wake-Up Time                   |      | 50   | 200  | ms    |                         | 6     |

### Notes:

1. Contrast is defined as  $R_W - R_B$  where  $R_W$  is the reflectance of the white spaces and  $R_B$  is the reflectance of the black bars, measured at the emitter wavelength (655 nm or 820 nm). Contrast is related to PCS by  $PCS = (R_W - R_B)/R_W$  or  $R_W - R_B = PCS * R_W$ .
2. Not including the pull-up resistor current.
3. 10% to 90% transitions.
4. Switch bounce causes a series of sub millisecond pulses to appear on the output.
5. Shield must be properly terminated. The human body is modelled by discharging a 300 pF capacitor through a 500 Ω resistor. No damage to the wand will occur at the specified discharge level. The energy will be passed through the shield to the host device.
6. After this time, the wand is operational.

## Electrical Operation

The HBCS-A000 series digital bar code wands consist of a precision optical sensor and an electronic circuit that creates a digital output of the bar code pattern. The open collector transistor requires only a pull-up resistor to provide a TTL compatible output.

A non-reflecting black bar results in a logic high (1) level output, while a reflecting white space will cause a logic low (0) level output. The initial state will be indeterminate. However, if no bar code is scanned, after a short period, (typically less than 1 second), the wand will assume a logic low state.

The wands provide a case, cable and connector shield which must be terminated to logic ground, or preferably, to both logic ground and earth ground. The shield is connected to the metal housing of the 5 pin DIN connector.

## Certification

### FCC Certification (US Only)

Hewlett-Packard products have received FCC certification for its standard configuration only. Any customer purchasing the product with stripped and tinned leads or a connector without adequate shielding has the responsibility to comply with FCC regulations. Moreover, if the Hewlett-Packard Low Current Bar Code Wands are purchased without a connector, the product becomes defined as a

subassembly and the FCC identification number no longer applies. Hewlett-Packard assumes no responsibility or liability for users of the Hewlett Packard Low Current Digital Bar Code Wands without connectors that fail to comply with FCC regulations.

This equipment complies with Part 15, Class B, of the FCC Rules. Operation is subject to the following two conditions:

- 1) This equipment may not cause harmful interference,
- 2) This equipment must accept any interference that may cause undesired operation.

| Model                   | FCC Identification                         |
|-------------------------|--|
| HBCS-A000 through -A099 | FCC ID: B948JAHBCS-A000<br>HEWLETT-PACKARD |
| HBCS-A100 through -A199 | FCC ID: B948JAHBCS-A000<br>HEWLETT-PACKARD |
| HBCS-A200 through -A299 | FCC ID: B948JAHBCS-A200<br>HEWLETT-PACKARD |
| HBCS-A300 through -A399 | FCC ID: B948JAHBCS-A300<br>HEWLETT-PACKARD |
| HBCS-A400 through -A499 | FCC ID: B948JAHBCS-A400<br>HEWLETT-PACKARD |
| HBCS-A500 through -A599 | FCC ID: B948JAHBCS-A500<br>HEWLETT-PACKARD |



The CE Mark demonstrates compliance with EC directives on EMC.

**VCCI Registration:** Pending

## Warranty and Service

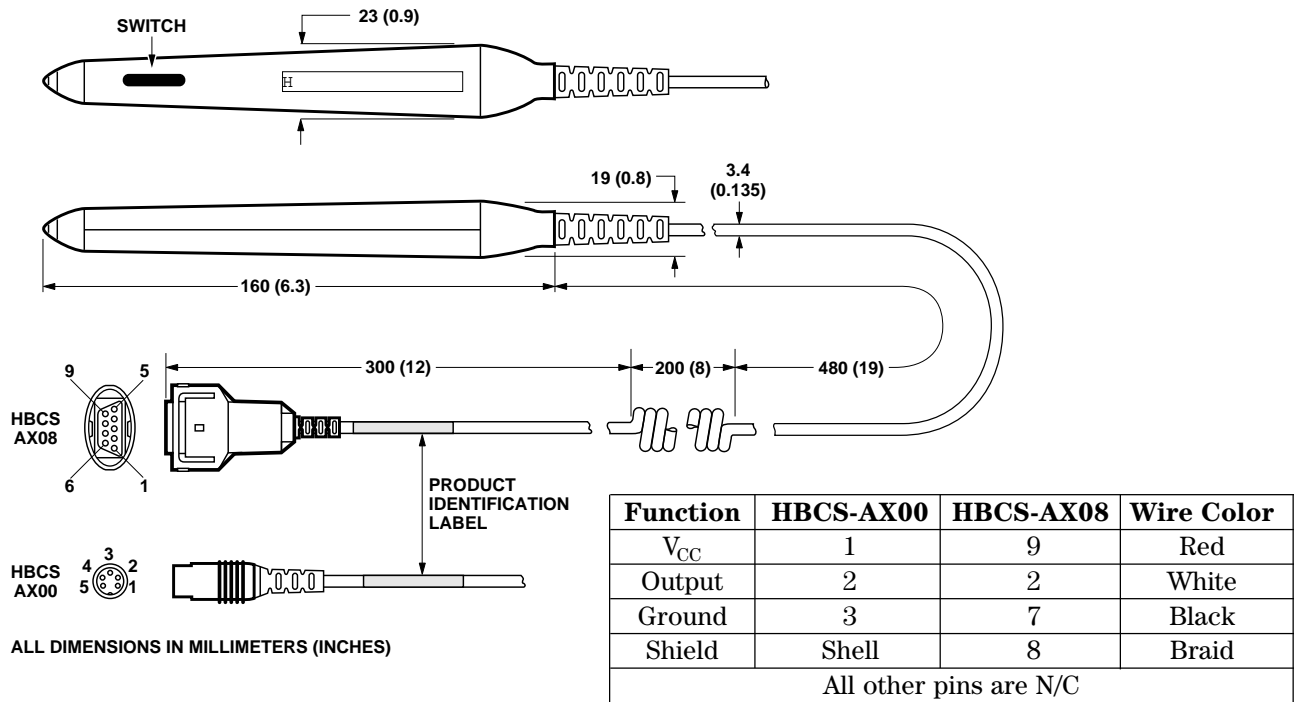
Hewlett-Packard Low Current Digital Bar Code Wands are warranted for a period of one year after purchase covering defects in material and workmanship. Hewlett-Packard will repair, or at its option, replace products that prove to be defective in material or workmanship under proper use during the warranty period.

NO OTHER WARRANTIES ARE EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. HEWLETT-PACKARD

IS NOT LIABLE FOR CONSEQUENTIAL DAMAGES.

For additional warranty or service information please contact your local Hewlett-Packard sales representative or authorized distributor.

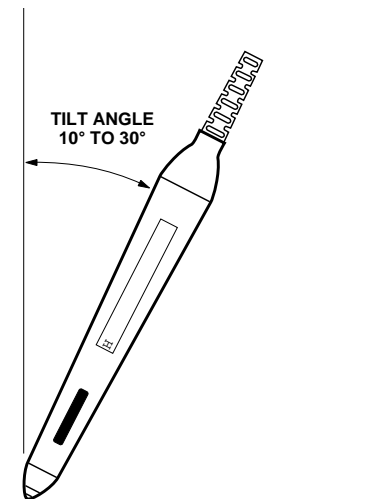
## Wand Dimensions and Connector Configurations



Shield and ground are tied together in the connector.

**Note:** If the part is purchased with stripped and tinned wires, or if the connector is removed, the ground and shield wires must be connected together for proper operation.

## Preferred Orientation



## Preferred Electrical Connection

