1. **Revision Log**

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| Revision Log | | | | | |
| Revision Level | Revision Date | Section | Description | | Revised By |
| REL | 06152016 | ---- | Initial Release | | MLV |
| A | 5/17/19 |  | Mass update, complete re-write to standard | | NT |
| B | 9/23/20 | 5.1  5.1.1 | Added 5.1.4 - 5.1.7  Added Sick to the Preferred Brands list | | NT |
| C | 12/1/23 | Header | Replaced GHSP logo with newer version | | BB |
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| Approval: | | CN: RS,FS | | MX: JH | |
| US: JA | | Other (as req’d): DRW | |

1. **Purpose:** 
   1. To define the global standard for the use of Sensing Devices within GHSP manufacturing facilities.
2. **Scope:** 
   1. This global standard applies to all GHSP manufacturing facilities.
3. **Definitions:** 
   1. PNP – Positive Negative Positive
      1. Sensor with transistor load-lead connected to negative pole of power-supply.
   2. NPN – Negative Positive Negative
      1. Sensor with transistor load-lead connected to positive pole of power-supply.
4. **References:**
   1. CP-WI-MFG-X301 Global Standard Production Equipment Safety, Ergonomic, and Delivery Checklist
5. **Method:**
   1. **Sensor Selection**
      1. Preferred Brands

*Selection outside the preferred brand requires approval by the Advanced Process Engineer and Global Standards Team*

* Balluff
* Turck
* Keyence
* Banner
* Sick
* Sensopart
* Sensotronik
* Di-Soric
* SMC
* IFM Electronics
  + 1. Sensors with PNP output is the preferred type.
    2. It is recommended to use shielded cable where applicable (i.e. analog applications).
    3. Optical sensors and lasers should always have a background beyond their target to prevent false sensor reads in background.
    4. Sensor placement cannot hinder part loading, which there in creates an ergonomic issue.
       - Sensor beam direction shall be away from operator eyesight during normal operation.
    5. It is recommended to use “Spot Laser Visible” sensors.
    6. “Light On” mode should be used in all applications.

1. **Records:** N/A