

SEMI D28-1101 (Reapproved 0708) SPECIFICATION FOR MECHANICAL INTERFACE BETWEEN FLAT PANEL DISPLAY MATERIAL HANDLING EQUIPMENT AND TOOL PORT, USING AUTOMATED GUIDED VEHICLE (AGV), RAIL GUIDED VEHICLE (RGV), AND MANUAL GUIDED VEHICLE (MGV)

This standard was technically approved by the global Flat Panel Display - Factory Automation Committee.
This edition was approved for publication by the global Audits and Reviews Subcommittee on May 13, 2008.
It was available at www.semi.org in June 2008 and on CD-ROM in July 2008. Originally published
November 2001.

1 Purpose

1.1 This specification defines a common set of feature requirements on and about tool ports of process tools used in manufacturing of flat panel displays. These standardized feature requirements are intended to facilitate the interfacing of AGV, RGV, and MGV equipment to the process tool. Such standards are intended to promote cost-effective interfacing while preserving freedom of choice in material handling equipment, using AGV, RGV, and MGV.

2 Scope

2.1 This specification defines mechanical features on or about the tool port, and in front of or on the tool face. Although these features are intended for specific functions of AGV, RGV, and MGV, the interface requirements are meant to avoid the promotion of any particular form of transport.

NOTICE: This standard does not purport to address safety issues, if any, associated with its use. It is the responsibility of the users of this standard to establish appropriate safety and health practices and determine the applicability of regulatory or other limitations prior to use.

3 Limitations

3.1 Current display manufacturing utilizes several substrate sizes, many of them “non-standard.” This specification includes dimensions for the substrate sizes of 550 × 650 mm, 600 × 720 mm, 680 × 880 mm, 730 × 920 mm, and 800 × 950 mm and anticipates the establishment of standard dimensions in future substrate sizes.

4 Referenced Standards and Documents

4.1 None.

5 Ordering Information

5.1 Since this document is not a product specification but an interface specification, ordering information is not applicable.

6 Terminology

6.1 Definitions

6.1.1 *cassette loading position* — center point at under-surface of a cassette after loading by transport equipment.

6.1.2 *facial datum plane* — a plane that is parallel to the tool face and vertical to both vertical and horizontal datum planes at the cassette loading position.

6.1.3 *horizontal datum plane* — a plane that is parallel to the floor surface at the cassette loading position.

6.1.4 *vertical datum plane* — a plane that is vertical to both facial and horizontal datum planes at the cassette loading position.

6.2 *Dimensional Functions*

6.2.1 *X1* — width of the exclusion zone above the horizontal datum plane, which is needed by the transport equipment in loading cassettes.

6.2.2 *X2* — width of the exclusion fork zone below the horizontal datum plane, which is needed by the transport equipment in loading cassettes.

6.2.3 *X3* — width of the exclusion zone required for MGV cart alignment equipment.

6.2.4 *Y1* — dimension between the facial datum plane and the front of the tool port.

6.2.5 *Y2* — dimension between the facial datum plane and the tool face, which is the exclusion zone needed by the transport equipment in loading cassettes.

6.2.6 *Y3* — depth of exclusion zone required for MGV cart alignment equipment.

6.2.7 *Z1* — height between the horizontal datum plane and the floor surface.

6.2.8 *Z2* — height of exclusion zone above the horizontal datum plane, which is needed by the transport equipment in loading cassettes.

6.2.9 *Z4* — height of exclusion zone required for MGV cart alignment equipment.

6.2.10 *Z5* — height of exclusion fork zone below the horizontal datum plane, which is needed by the transport equipment in loading cassettes.

7 **Requirements**

7.1 Dimensions and tolerances of the required characteristics are shown in Table 1 as well as Figures 1A and 1B.

7.2 The cassette is stored horizontally with the shorter side parallel to the tool face and horizontal datum plane.