

Product Description

Revised - 02/02/2009

DataPlace[®] LCL



General System Description

Functional Summary

Amistar's DataPlace Model LCL is a CE compliant labeling system that performs automated placement of labels onto a wide variety of products. The system is primarily designed to service inline labeling for SMT electronic product assembly wherein the user applies one or more labels to each PCB introduced into the assembly process. The system is configured with programmable X- and Y-axis servo system.

Virtually any product that can be reliably conveyed using SMEMA-compatible or custom configured conveyors can be labeled using the system. This includes product types that can be transported via a carrier. While the base model labeling system is configured specifically for SMT applications having SMEMA compliant conveyor systems, machine options and custom configurations are available that allow the system to be used for labeling product types that are far removed from the scope of traditional SMT assembly processes.

Labeling Capabilities

Labels can be placed at any location on products as large as 12" x 18". An option for boards as large as 18" x 18" is available. The theta-axis orientation of labels is programmable in fixed 90° increments. Labels may be placed at 0°, 90° of theta orientation at any programmed position. The system can be used to apply both print-on-demand or preprinted labels. Labels are presented to the gantry's vacuum nozzle using a Zebra thermal transfer printer and a patented shuttle mechanism. Printers use standard labels supplied in rolls. The print-and-deliver station is mounted on the front of the machine for easy access during label and ribbon changes.

Throughput rates as fast as 6.0 seconds per assembly are achievable but are largely application dependant. A wide range of label materials (paper, polyester, polyimide, etc.) and sizes are supported. Label placement is achieved using an intermediate shuttle mechanism that transfers a label from the printer to a predetermined pickup point where the label is presented to the nozzle. The nozzle uses vacuum to pick up labels. Nozzle vacuum sensing is used to verify that a label has been successfully picked and placed. A barcode scanner allows verification that barcode labels are successfully printed and legible. Vision system options are also available for more demanding applications. Scanning or vision inspection prior to placement will impact throughput rates due to the added time required to conduct the inspection.

Product Transport

PCBs are transported into the work area using a SMEMA-compliant conveyor system. When a PCB reaches the stop position in the work area, a side clamp registers the PCB against the fixed conveyor rail. Once clamped, the label placement program is executed. Label placement will occur at any programmed Y-axis location. Once labeling is complete, the PCB is unclamped and transported out of the work area under SMEMA control to the next assembly machine or conveyor. After the labeled PCB exits, the next PCB is transported into the work area and the labeling process repeats.

Computers & Connectivity

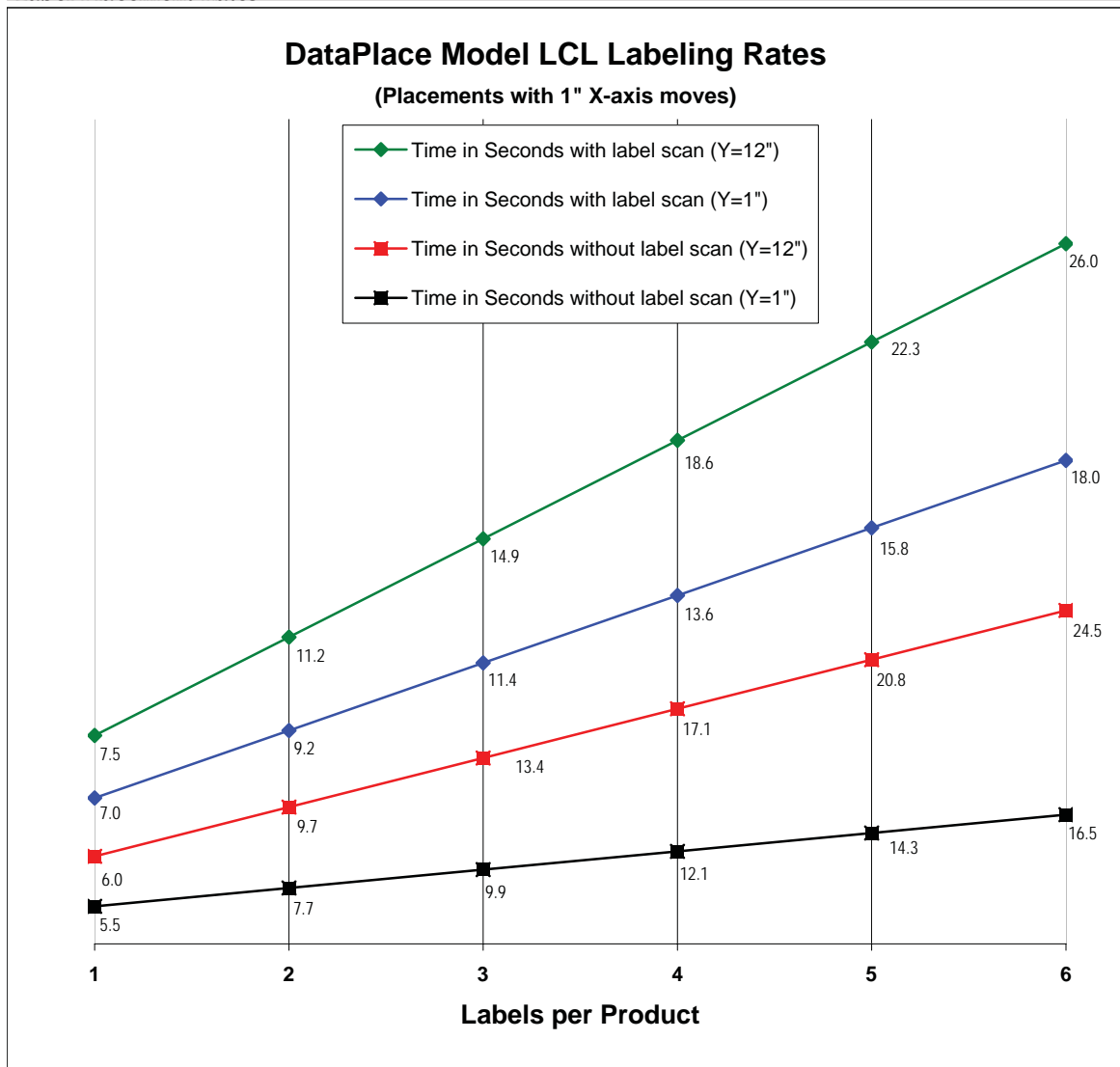
A dedicated computer running Windows™ provides machine and label data control. Network connectivity is a standard feature and is supported via an Ethernet connection (RJ-45) using TCP/IP as the preferred communications protocol. Any communications protocol supported by Windows XP can be used. Machine operation and programming is accomplished using simple, intuitive, online software. Label formatting, label placement programming, machine configuration and calibration, diagnostics, production, and MIS-related functions are performed using a single software application. Label layouts may contain text, graphic, and barcode fields. Text and barcode fields may contain static or changing (serialized) elements. An individual serialized text or barcode field may be subdivided into a maximum of six subfields; each containing changing alphanumeric. All of the subfields may contain interrelated, changing alphanumeric elements. Once a placement program is defined it may be stored for later use. The stored placement program contains job specific information that includes label layouts, label positions and orientations, and the corresponding machine configuration. Online help is easily accessible and is available through a context-sensitive interface.

Gantry & Head Characteristics

Gantry and Head Assembly

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| Functional Description | Servo controlled, Y-axis gantry provides programmable setup of the label pick and place points. The head assembly is belt driven along the gantry in the Y direction and will stop at the programmed Y-axis placement points. Theta orientation of labels is accomplished via a 2-position, air cylinder controlled, rotating shaft located on the head assembly. The Z stroke of the nozzle is a constant force action that requires no setup for differing placement heights. Servo controlled X-Axis board stop enables the board to be driven to pre-determined positions along the X-axis. |
| Number of Placement Nozzles | 1 |
| Label Placement Repeatability | ±0.015" (0.381mm) |
| Label Repeatability | ±2.0° |
| X-Axis Actuation | DC Brushless Servo Motor (0.003" (0.008mm) resolution) |
| Y-Axis Actuation | DC Brushless Servo Motor (± 0.0003" (0.008mm) resolution) |
| Z-Axis Actuation | Air Pot Actuated |
| Q-Axis Actuation | Air-Actuated Cylinder Assembly |
| Label Pickup Method | Vacuum Nozzle |
| Pickup Detection | Vacuum Sensing |
| Z-Stroke Placement Pressure | < 1lb. Placement Force (constant force stroke independent of placement Z height) |

Label Placement Rates



Scanning & Imaging Systems

High Density 2D Imaging (optional)

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| Imager Function (std.) | High density, 2D and linear barcode labels can be scanned after print to confirm legibility and data content. |
| Imager Function (opt) | The imaging system can also be optionally configured to function in a data collection role. Laser-etched or ball peen marked component, part, and PCB may also be scanned for data collection purposes. The imaging system may be designed to read 2D or linear barcode symbology on products located on the conveyor system. Additional software integration may be required to facilitate data transmission to remotely located computers. |
| Scanner Type | RVSI MX-700 controller and MVi-23v camera for imaging high density Data Matrix (2D) codes and linear barcode symbologies. |
| Scanner Mounting | Frame-Mounted |
| Scannable Barcode Symbologies ¹ | Code 128 / Code 39 / Code 93 / Data Matrix / EAN and UPC with 2 or 5 digit supplements / EAN-13 / EAN-8 / Interleaved 2 of 5 / Pharmacode / Postnet / BC412 / UPC-A / UPC-E |
| Minimum Barcode Resolution | Data Matrix - 31 mil (0.076mm) Minimum Cell Size Linear Barcodes - 3 mil (0.076 mm) Minimum Line Width |

Note 1 - The Zebra printer, Labelview software, and linear barcode scanners do not support the same symbology set as the 2D imaging system. Linear barcode symbologies common to all devices and software within the DataPlace system include Code 39, Code 93, Code 128, and Interleaved 2 of 5. 2D code symbologies common to the 2D imaging system, Zebra printer, and Labelview software include the Data Matrix code format.

Medium Density 2D Imaging (optional)

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| Imager Function (std.) | Medium-density, 2D and linear code labels can be scanned after print to confirm legibility and data content. |
| Imager Function (opt) | The imaging system can also be optionally configured to function in a data collection role. Laser-etched or ball peen marked component, part, and PCB may also be scanned for data collection purposes. The imaging system may be designed to read 2D or linear symbologies on products located on the conveyor system. Additional software integration may be required to facilitate data transmission to remotely located computers. |
| Scanner Type | COGNEX Dataman 100 for imaging medium density 2D and linear symbologies. |
| Scanner Mounting | Frame-Mounted |
| Scannable Barcode Symbologies ¹ | Codabar / Interleaved 2 of 5 / Code 128 / Code 39 / Code 93 / Data Matrix / PDF-417 / SuperCode / UPC-EAN |
| Minimum Barcode Resolution | Data Matrix - 6.6 mil (0.10mm) Minimum Cell Size Linear Barcodes - 4 mil (0.05mm) Minimum Line Width |

Note 1 - The Zebra printer, Labelview software, and linear barcode scanners do not support the same symbology set as the 2D imaging system. Linear barcode symbologies common to all devices and software within the DataPlace system include Code 39, Code 93, Code 128, and Interleaved 2 of 5. 2D code symbologies common to the 2D imaging system, Zebra printer, and Labelview software include the Data Matrix code format.

Conveyor System

Specifications

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| Maximum Product Size (X,Y) ¹ | 18.0 x 12.0" (457.2mm x 304.8mm) 18.0" x 18.0" (457mm x 457mm) with Wide Conveyor Option |
| Minimum Product Size (X,Y) ¹ | 1.0 x 3.0" (25.4 x 76.2mm) |
| Maximum Product Thickness | 2.0" (50.8mm) |
| Minimum Product Thickness | 0.025" (0.635mm) |
| Maximum Placement Area (X,Y) ¹ | 18.0 x 12.0" (457.2mm x 304.8mm) |
| Above Product Clearance (min..) | 1.0" (25.4mm) |
| Below Product Clearance (min..) | 1.0" (25.4mm) |

Note 1 - Products ranging from 3.0" to 12.0" in width up to 18.0" in length.

Special order 18.0" x 18.0"

Conveyor Specifications

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| Conveyor Type | SMEMA-compliant, antistatic, edge-belt conveyor with clamp mechanism. |
| Conveyor Height | 35.4" +/- 0.79" (900mm +/- 20mm) |
| Conveyor Width Adjust | Manual adjust by thumb screws. |
| Special Conveyor Modes | Bypass Mode – allows transfer of boards through machine without labeling. |
| Conveyor Electrical Interface | Compliant with SMEMA Interface Standard 1.2. |
| Product Positioning | Two-edge registration using board stop and side clamping against fixed rail. Conforms to SMEMA Interface Standard 1.2 edge clearance requirement of 0.118" (3.0mm). |
| Product Transfer Direction | Left to Right (standard) or Right to Left (optional) |
| Product Transfer Rate | 10"/sec (254mm/sec) |
| Product Transfer Time | 4.0 sec (time from board-to-board while in pass-through mode) |
| Product Supports (opt) | None required. |

Printer & Label Media

Printers

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| Printer Function | Print-on-demand label printing or preprinted label dispensing. |
| Printer Type | Thermal Transfer |
| Printer Brand | Zebra (upgraded by Amistar Automation, Inc.) |
| Printer Resolution | 600dpi |
| Maximum Liner Width | 4.5" (114mm) (Printer only. Not LCL.) |
| Minimum Liner Width | 0.79" (20mm) |
| Maximum Print Width | 3.2" (81mm) |
| Printer Mounting | Machine Front-Mounted |
| Machine Printer Capacity | 1 Print-and-Deliver Station |
| Printable Symbolologies ¹ | CODABLOCK / Code 128 (incl. subsets A, B, & C and UCC Case Codes) / Codabar / Code 39 / Code 49 / Code 93 / Data Matrix / EAN and UPC with 2 or 5 digit supplements / EAN-13 / EAN-8 / Industrial 2 of 5 / Interleaved 2 of 5 / ISBT 128 / LOGMARS / MaxiCode / Micro PDF / Code 11 / MSI / PDF-417 / Plessey / Postnet / QR Code / UPC-A / UPC-E |

Note 1 - The linear barcode scanners, 2D code imaging systems, and LabelView software do not support the same symbology set as the Zebra printer. Linear barcode symbologies common to all devices and software within the DataPlace system include Code 39, Code 93, Code 128, and Interleaved 2 of 5. 2D code symbologies common to the 2D imaging systems, Zebra printer, and Labelview software include Data Matrix.

Label Media/Standard Specification

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| Minimum Label Width | 0.20" (5.08mm) ¹ |
| Maximum Label Length | 2.00" (50.80mm) ¹ |
| Smallest Label (W x L) | 0.20 x 0.25" (5.08 x 6.35mm) ¹ |
| Largest Label (W x L) | 1.00 x 2.00" (25.40 x 50.80mm) ¹ |
| Minimum Liner Width | 0.79" (20mm) |
| Maximum Liner Width | 3.54" (90mm) |
| Inter-Label Spacing | 0.079" (2mm) to 0.157" (4mm) |
| Maximum Roll Diameter | 8.0" (203.2mm) O.D. on a 3.0" (76.2mm) I.D. Core |
| Label Materials | Standard materials include paper, polyester, and Kapton (polyimide). |
| Label Quality Standards | For optimum system performance, label media should comply with Amistar's "Label Interface and Manufacturing Requirements" specification document (SD 141846-821) and Zebra Technologies Corporation's printer media specifications. |

Note 1 - Label sizes matching the stated specification are within the basic capabilities of the base model DataPlace 100LP. Labels outside of the specification (either smaller or larger) can be used but may require custom nozzles and/or additional custom engineering development.

Machine Control & Interface
Programming

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| Placement Programming Method | Placement programs created via manual data input (online or offline) using Amistar's CIMStar graphical user interface. CIMStar is a Windows based application. Programming occurs within a single application. Label layouts are created using third-party software (Teklynx Labelview) integrated with the programming interface. |
| Label Content | Labels may contain an unlimited number of text, graphics, and barcode fields (note that graphic and barcode content may increase print times and impact machine throughput). |
| Label Serialization | Text and barcode fields may contain static or changing (serialized) elements. An individual serialized text or barcode field may be subdivided into a maximum of six subfields; each containing changing alphanumeric. Of those six subfields, four may contain interrelated, changing alphanumeric elements. |
| LabelView Symbolologies ¹ | PDF-417 / MaxiCode / Codabar / Code 39 / Code 39 mod 43 / Code 93 / Code 128 (incl. subsets) / EAN-8 (incl. +2 and +5) / EAN-13 (incl. +2 and +5) / EAN-128 / Interleaved 2 of 5 / Interleaved 2 of 5 mod 10 / Plessey / Postnet / UPC-A / UPC-E |
| Data Input Method | Tray-mounted mini-keyboard with trackball. |
| Storage Capacity | The number of labels per program, and the number of programs, stored on hard disk is unlimited. |
| Online Help / User Support | Context-Sensitive Help and Online User Manual |

Note 1 - The linear barcode scanner, 2D code imager, and Zebra printer do not support the same symbology set as the Labelview software. Linear barcode symbolologies common to all devices and software within the DataPlace system include Code 39, Code 93, Code 128, UPC-A, UPC-E, EAN-8, EAN-13, and Interleaved 2 of 5. 2D code symbolologies common to the 2D imager, Zebra printer, and Labelview software include PDF-417, MaxiCode, QR-Code, and Data Matrix.

Computer / Networking

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| Computer Processing Unit (CPU) | Celeron (32-bit Processor) |
| Computer Operating System | Windows XP |
| Computer Storage | Computer Floppy Drive & Internal Hard Drive |
| Computer Display | Machine Post-Mounted 15" Color Monitor (LCD) |
| Computer Input Devices | Mini-Keyboard, mouse and Machine Control Switches |
| Network Standard | IEEE 802.3 (TCP/IP or any LAN protocol supported by Windows XP via Ethernet). Other communications protocols are supported optionally on a case-by-case basis. |
| Network Interface | RJ-45 Connector (10/100Base-T). Other network connections are supported optionally on a case-by-case basis. |
| USB | USB 2.0 high-speed socket |

Operator Protection

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| Emergency Stops | Located on the right side of the top cover and on the rear right side of the electronic box. |
| Cover Sensors | Access door uses sensors that interrupt operation when the door is opened. |

Fault Conditions

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| Mispicked Labels | A mispicked label interrupts the placement program and requires operator intervention. |
| Error Notification / Alarm Devices | 3-Color Light Tower (green / yellow / red) and Audible Alert / Software Interface Alerts (option) |
| Light Tower Color Definitions | Green - Labeling program being executed. Normal machine operations. Yellow - Machine ready. Servos Enabled. No labeling program executing. Red - Machine error encountered. Operator intervention required. |

Physical Specifications

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| Footprint / Dimensions (W x D x H) | 39.37 x 39.7 x 66.93" (1000 x 1000 x 1700mm) |
| Weight (base model system) | 250 lbs (113 kg) |
| Crated Dimensions (W x D x H) | 53 x 53 x 55" (1346 x 1346 x 1397mm) |
| Crated Weight (base model system) | 540 lbs (245 kg) |
| Air Requirements | Clean, dry air at 80 psi (0.55 Mpa) |
| Machine Color | Clear Anodize |
| Altitude | 2000 meters |
| Environment | Indoor use |
| Operating Temperature | 59° to 95°F (15° to 35°C) |
| Operating Humidity | 45 to 65% Non-Condensing |
| Power Requirements (std.) | 115 VAC ±10% / 50 or 60 Hz / 1.98 kVA / 30A |
| Power Requirements (alt) | 230 VAC ±10% / 50 or 60 Hz / 3.45 kVA / 15A |

Optional Items

Software Options

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| Remote Programming Manager | Allows creation of placement programs and label layouts using a remotely located computer. Programs and labels created remotely can be moved to and from all DataPlace series machines via the standard network connection. |
| Master Library Manager | Provides access to a centralized database of placement programs and label layouts at a pre-determined network location. Programs and labels are accessible by all DataPlace series machines and Remote Programming Manager computers via the standard network connection. Placement programs and label layouts are automatically compared to the specified master database library when the operator initiates production. If the machine's local program and/or local label layout(s) differ from the Master Library, the operator is notified and is required to choose to either use the locally stored program and label layout(s) or the master library's program and label layout(s). |
| Master Serial Number Management | Extends the functionality of the Master Library Management Software to strictly control serial numbers printed by the DataPlace machines that are connected on the user's network, and have both the Master Library and the Master Serial Number software installed. The Master Serial Number Management Software runs as a stand alone application in conjunction with the Master library Management Software. All data related to serial number creation are issued by the "Master" to the network enabled DataPlace machines in real time. The Master software strictly controls all serial numbers and all related data. The Master should not be installed in applications that require serial number data to be controlled or modified in any way by the local DataPlace machine. |
| Automatic Backup Utility | Schedules automatic backups of DataPlace database information containing placement programs, label layouts, and other perishable information. Backups are generated so that the next scheduled backup does not overwrite a previous backup. Archiving information in this manner provides the ability to selectively retrieve previously created program information if data in the primary database is lost. |
| Factory Integration Software | The labeling system may be optionally configured to connect to any network environment using any telecommunications protocol and to exchange information with any software system used for manufacturing management coordination (i.e. ERP, MRP, MES, or other software). |

Other Options

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| DataPlace VLM | The DataPlace VLM (Virtual Labeling Machine) is a label management station for manual (hand) labeling and repair functions. It provides a computer workstation with network interface and connections for up to four Zebra printers and up to four linear barcode scanners that provide a print verification function. Printers for the VLM are sold separately. The barcode scanner options are sold separately to read and verify only ONE linear barcode per label. The workstation for the DataPlace VLM can also run the Remote Programming Manager and the Master Library Manager Software. |
| Additional Applicator Nozzles | Standard or custom sizes as required by label media. |
| Custom Machine Color | Painted to Customer Specification |

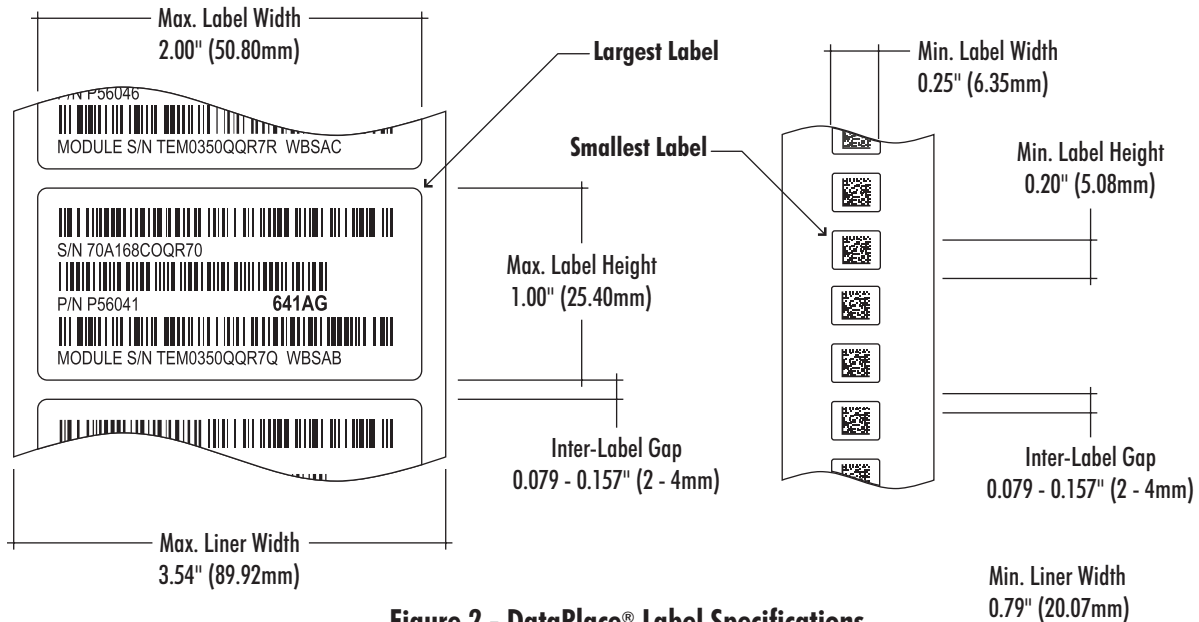
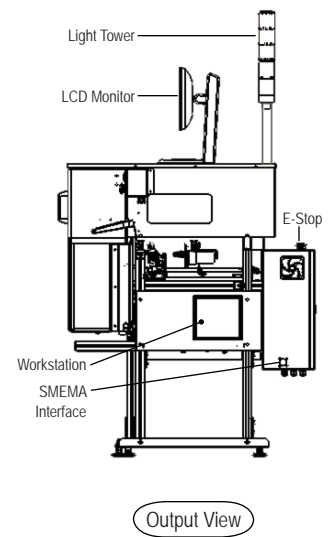
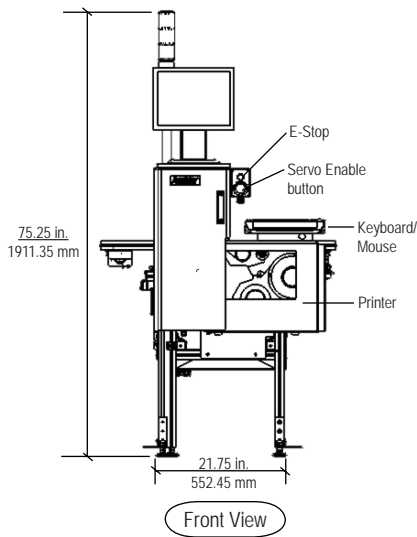
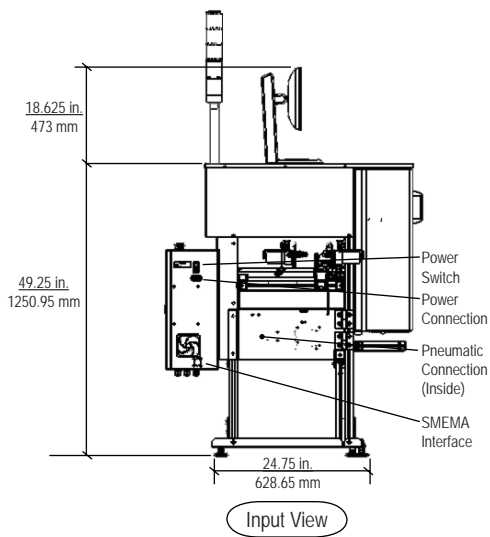
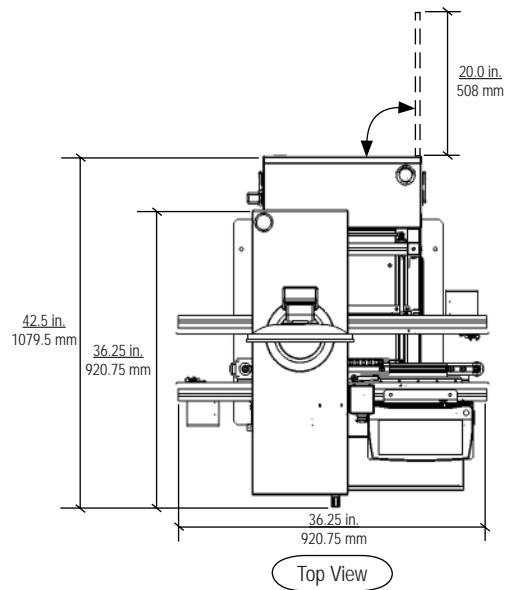


Figure 2 - DataPlace® Label Specifications

(Note - Maximum media roll O.D. is 8.0" on a 3.0" I.D. core.)

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Notes: Risers for 900 mm optional.
Vertical dimensions assume a 900 mm conveyor height
Network connection located in rear of computer

