

Coordinate Measuring Machines Guide

The Quality Sourcebook's CMM Guide features information on more than 60 CMM manufacturers' and distributors' products. Our guide provides the critical specifications of each company's CMM to help you narrow your choices. To avoid duplicating manufacturer and distributor entries, repeated product specifications appear only in the manufacturer's listing. Distributor listings indicate which manufacturers each distributes for and show product specifications from manufacturers not otherwise listed.

Our guide includes a number of video- and laser-based products in addition to traditional CMMs. As new technologies arise, look for more of these nontraditional CMMs. Laser- and vision-based machines are performing CMM functions in places that CMMs can't reach and on very large objects, such as aircraft wings. Although these CMMs function differently from traditional CMMs, for this guide, the manufacturers have done their best to translate their specifications into traditional CMM specifications.

New technologies are also improving the performance and versatility of traditional CMMs. Advances in temperature compensation techniques are allowing CMM manufacturers to move their products to the shop floor and still maintain a high degree of accuracy. Advances in and standardization of software protocols, such as DMIS, are allowing CMMs to communicate directly with CAD systems for reverse engineering, design verification, CMM offline programming and real-time part-to-CAD measurement.

This guide reflects some of these new technologies, but to stay informed of the latest in metrology tools, look for technology articles in *Quality Digest*.

CMM Guide

CMM Manufacturers Matrix34

This matrix of CMM manufacturers and distributors features the company name and product names, machine type, range, resolution, linear accuracy, temperature range, volumetric accuracy, repeatability, throughput, guide method, probe type, control method and temperature compensation. Except where otherwise indicated, units of measure for a particular specification are as shown at the top of each column.

CMM Manufacturers Directory41

This directory of CMM manufacturers includes the company name, address, phone and fax numbers, Web address, and a brief description of the company's products and services. (Please note that not all companies provided us with descriptions.)

As with all *Quality Digest* guides, the CMM Guide is in no way meant to endorse or exclude a particular organization. Rather, it's meant to be used as the starting point in the data-gathering process. Readers are encouraged to contact the companies directly for more information and to ask for—and check—references. Please be sure to mention you saw their listings in *Quality Digest's* 2002 Quality Sourcebook!

We appreciate any feedback you have on our CMM Guide. If you have any suggestions for how we can improve this guide for next year, e-mail them to sourcebook@qualitydigest.com.

Glossary

Linear accuracy—accuracy of the instrument when measuring along a single axis. This data is often integrated with the volumetric accuracy.

Range—the x, y or z distance the CMM can travel while measuring a part. For articulating arms, laser trackers and other nontraditional CMMs, this dimension may be represented as a sphere.

Resolution—the smallest distance that can be measured by the instrument

T Comp.—many instruments provide a means for temperature compensation. Temperature data can be manually input, read from a sensor mounted on the part being measured, read from sensors mounted on the instrument itself or any combination of these.

Throughput—describes how many points per minute an instrument can measure. This number tends to be much higher for noncontact measurement systems than for contact measurement systems.

VDI, B89 or ISO—accuracy standards to which the instrument conforms

Volumetric accuracy—accuracy of the instrument when measuring along all axes simultaneously