

Introducing...

Crane Connectors

A US-Based Designer and Manufacturer of
PCB Connectors for Use in Commercial and Military Applications

- ▶▶ Headers, Sockets and Programming Jumpers on 0.100" (2,54mm) Centers
- ▶▶ Headers, Sockets and Programming Jumpers on 0.079" (2,00mm) Centers
- ▶▶ Headers, Sockets and Programming Jumpers on 0.050" (1,27mm) Centers
- ▶▶ PLCC and SOJ Style Chip Carrier Sockets on 0.050" (1,27mm) Centers
- ▶▶ Surface Mount and Through-Hole Options Available On All Centers
- ▶▶ EMI/RFI Suppressing Headers and Sockets Available On All Centers
- ▶▶ Elevated Sockets for Embedded (PC/104) Applications
- ▶▶ Tailored (Non-Standard / No-Penalty) and Custom Applications

CRANE CONNECTORS

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Introducing Crane Connectors

Crane Electronics, Inc. was established in 1984 for the purpose of manufacturing and selling interconnects for use in board-to-board and board stacking applications by the electronics industry. In 1992, Crane changed its name to **CRANE CONNECTORS** in an effort to more clearly define its manufacturing thrust. From modest beginnings in 1984, Crane products are now used worldwide by companies in the following industries:

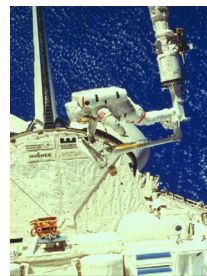
- | | |
|---------------------------------|--------------------------|
| ▶ computers | ▶ computer peripherals |
| ▶ process / industrial controls | ▶ office equipment |
| ▶ data communication | ▶ telecommunication |
| ▶ aircraft, missile, and space | ▶ medical equipment |
| ▶ test and measurement | ▶ automotive electronics |
| ▶ military and defense | ▶ transportation |

Crane's customer base includes a wide array of OEM customers of all sizes. Significant accounts include IBM, Hewlett Packard, Dell Computer, CMS, Rockwell, Texas Instruments, Fluke, Allied Signal, Honeywell, Motorola, AT&T, Cabletron, ITT Aerospace, Lucent Technologies, General Electric, Cisco, 3COM and a host of others. Crane is pleased to be the only Certified Supplier of connectors for MEI (Mars Electronics International). Crane is distributed worldwide by Arrow Electronics, as well as a number of regional and local distributors throughout North America.

Although Crane's market is **primarily commercial** products, many of our connectors are certified for use in military applications by D.E.S.C. (Defense Electronics Supply Center). Please see sheet at rear of booklet for a partial listing of military accounts and applications.

Crane Connectors Are "Out Of This World"

When Canadian Avionics Engineering (CAE) in Montreal needed a high reliability connector for use on the Canadian Control Arm for the Space Shuttle, they evaluated parts from every major connector manufacturer in the world.



Crane quickly moved to the front of the pack, and was given a thorough in-plant audit by quality engineers from CAE. Crane's PEG Series Pin Strip Headers were chosen for the project. So when we say our parts are "out of this world," **we mean it literally.**



Crane Ownership

Crane Electronics, Inc. (d.b.a. Crane Connectors) is a privately held corporation located in Cincinnati, Ohio where its products are designed and manufactured. Ownership consists primarily of top management, which holds in excess of 97% of outstanding shares. Although Crane declines to reveal specific financial information, it has enjoyed record growth (sales and shipments) since 1989.

STRATEGIC EMPHASIS

In 1994, Crane Connectors launched a nationwide performance-based marketing and advertising campaign titled, "**Boring Is Beautiful.**" The campaign came about as a result of a buyer who referred to Crane as his "most boring supplier." Noting our surprise, he quickly qualified the statement with: "*I love boring!*"

Crane's marketing strategy is deeply rooted in our desire to provide our customers with a **TROUBLE-FREE** environment. Our goal simply is to "bore our customers to cheers!" Included in our commitment in this performance-based strategy:

- ▶ samples shipped in twenty-four hours (or sooner)
- ▶ quotes issued in twenty-four hours (or sooner)
- ▶ prints -- including customs -- issued in twenty-four hours (or sooner)
- ▶ delivery as requested (98%-plus on-time ship record)
- ▶ rapid response on TAILORED (Non-Standard / No Penalty) applications

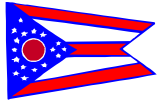
Crane's success is documented not only in its growth, but in the performance evaluations received from long term customers. Crane has received numerous awards for excellence in both service and quality. In 1996, Crane revised its advertising theme to the simple message: **CRANE CAN.** The intent is to proclaim our commitment to tackling the unusual and often difficult needs of connector designers and buyers.

PQS <24

Crane believes that the three most important steps in booking an order -- aside from introducing the Crane line -- are prints, quotes and samples. Our objective is to put all three in the customer's hands in twenty-four hours or less. We call it **PQS <24**. The PQS stands for prints, quotes and service, but it could stand for "pretty quick service!" The "24" stands for the maximum number of hours we want anyone to wait on these items.

At Crane, we believe **whoever gets there first** usually wins the business. As a result, we challenge all time-based assumptions in regards to service.

Manufacturing



Crane products are manufactured in Cincinnati, Ohio at our ISO-9001 approved (UL - File Number A-3620) facilities. Crane uses state-of-the-art high speed assembly equipment in addition to dedicated assembly presses for special applications. In addition to ISO Registration, Crane is one of three manufacturers of our type of product approved for use in military applications by the Defense Electronics Supply Center (D.E.S.C.).

In addition to its own facilities, Crane has sub-contract agreements with three area assembly operations. All three companies, each audited by Crane in accordance with ISO requirements, are used on a limited -- but regular -- basis. These companies provide a degree of redundancy as well as extra manufacturing capacity if needed. These companies are conveniently located within 2-3 hours of our facility.

Quality

The Crane Commitment FIRST TIME RIGHT

At Crane Connectors, we believe quality must not only be in every part, but in every department. As a result, every Crane employee accepts personal responsibility for getting the job done right the **first time**. Crane's quality commitment has resulted in a level of customer satisfaction rated among the highest in our industry.

Crane's program of total quality management is called **ccQ**. An ongoing effort to achieve the highest levels of quality in all we do, **ccQ** is an acronym standing for "Crane Connector Quality." The two "c's" are smaller than the "Q" as a reminder to all of us which is of greater importance. **ccQ** involves more than producing a quality connector which meets the customer's specifications. It also means:

- ▶ friendly, helpful customer service
- ▶ technically competent sales support
- ▶ precise order entry
- ▶ use of the best raw materials and vendors
- ▶ ongoing training and employee development
- ▶ on-time shipments
- ▶ accurate invoicing
- ▶ continual analysis and improvement of all processes

We are pleased that many of our customers have chosen to visit our facilities to audit (and approve) our program. Vendor rating reports routinely reinforce our belief we are doing a superior job in providing the highest quality parts and service to our customers.

ISO 9001

Crane Connectors has been Registered by UL (Underwriters Laboratories Inc.) to ISO 9001 under UL's accreditation by Raad voor de Certificatie (RvC), the Dutch Council for Certification. ISO 9000 is the name of an international series of quality management and quality assurance standards as adopted by the International Organization for Standardization (ISO) in Geneva. ISO 9001 is the model for companies involved in the design, development, and production of a product.

(Crane's ISO 9001 File Number is A3620. A copy of our certificate is included in this booklet)

EQUIPMENT

Crane has invested heavily in equipment and software that helps us to better monitor both in-coming raw materials and finished product. Crane has recently purchased a **Micro Vu Video Measuring System** that allows us to subject materials to considerable magnification while viewing the parts on a computer screen. The ability to conduct detailed measurements and evaluate surface condition of materials has been greatly enhanced.

At the recommendation of one of its key accounts, Crane purchased several scopes from **Mantis Vision Engineering** that enable us to perform detailed in-process inspection of product. The Mantis System is a lighted microscope that allows the operator to hold (and rotate) parts in their hands for a thorough evaluation of quality.

Crane has just purchased, and is in the process of installing, a new **Keyence CV Vision Inspection System**. This system evaluates product in-process, segregating parts that do not meet the established criteria. This process is used to augment our standard inspection procedures.

OUR EXPERTISE

Crane Connectors is a specialist in the design and manufacture of **STAMPED** and **FORMED** connectors for use on printed circuit boards. Crane products come in a wide variety of options in terms of rows, pin lengths, plating options and center spacings. Crane focuses on this product niche -- as opposed to screw machine parts -- in order to preserve our reputation for producing the best products in our area of specialty.

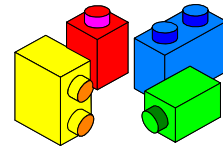
STANDARD PRODUCTS

Crane's new C57 Full Line Catalog includes over a quarter of a million product options, including Pin Strip Headers, Board Mount Sockets and Programming Jumpers on .100" (2,54mm), .079" (2,0mm) and .050" (1,27mm) centerlines. Crane products are offered in through-hole, as well as surface mount configurations. Crane also provides PLCC and SOJ Chip Carrier Sockets. Please reference attached chart for more detail.

DESIGN FLEXIBILITY

Tailored ("Non-Standard / No Penalty") Products

Another specialty at Crane is the creative use of existing raw materials to solve unique customer problems. Unlike custom products, which often have prohibitive lead times, high minimums and prohibitive tooling expense, Crane **TAILORED PRODUCTS** (see pages 4-5 in our C57 Catalog) are quick and cost effective.



At Crane, our specialty is solving problems with clever adaptations of existing resources. In other words, we "tailor" parts to fit our customer's need for "non-standard-no penalty" parts. We compare the approach to a kid playing with a pile of LegosSM. How many ways can they be put them together? Endless. The only limitation is the child's. At Crane, our engineering team looks at our raw materials like a kid looks at a pile of LegosSM. And they are **VERY CREATIVE** when it comes to putting them together to solve a specific customer need!

DESIGN FLEXIBILITY

Custom Products

Although Crane focuses primarily on solving customer problems with standard materials, we are fully capable of producing parts designed and built to unique customer specifications and applications. These parts, in the many cases, involve tooling charges, longer lead times, and minimum order requirements. They are, however, a solution to many customer applications.

Key Factory Contacts

Don't be surprised who you talk to at Crane! Our service mission requires that every call be answered by the second ring. After two rings, every Crane employee regards the call as their own. We do our best to make sure you stay out of "voice mail jail!"

CRANE CAN BE CONTACTED AT:

WATS United States	800-676-7644
WATS Canadian	800-420-7310
U.S. Direct Line	513-631-4700
U.S. Direct Fax Line	513-631-5700
E-mail	info@craneconnectors.com
Website	www.craneconnectors.com