

ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

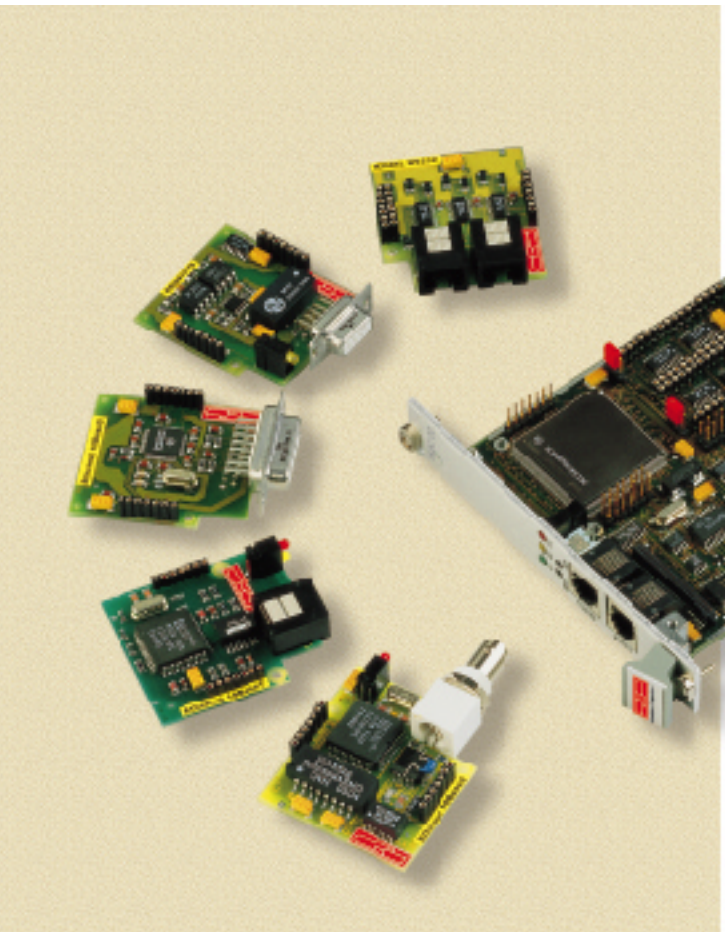
All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Find the *Kontron / PEP DM605* at our website: *Click HERE*

HIGH-PERFORMANCE CPUs
SINGLE-BOARD COMPUTERS

VSBC-32

32-Bit Single-Board Computer



32-Bit Computation Performance

- QUad-channel Integrated Communications Controller
- Up to six serial interfaces
- Serial interfaces accessible by front-panel and CXC
- Flexible front-panel options for network and serial I/O
- CXC interface
- Up to 64 MByte DRAM & 4 MByte FLASH
- Implemented background debugging
- Low power consumption
- Extended operating temperature range capability
- Extensive software support
- CE conformance

PROFI PROCESS FIELD BUS

A VMEbus single-board computer incorporating the 32-bit MC68(EN)360 high-performance QUad-channel Integrated Communications Controller (QUICC).

CERTIFIED DIN ISO 9001 QUALITY SYSTEM
Reg. No. 0548 - 02

Modular Computers®

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Ordering Information

VSBC-32

Product	Description	Order No.
VSBC-32-BASE	VMEbus single-board computer comprising MC68360 @ 25MHz, 256 kByte dual-ported SRAM (with Goldcap for back-up), up to 6 serial interfaces without Ethernet support (two available on the front panel as RS232 (RJ45) and an additional four divided between the CXC and SI-interfaces), CXC interface, PEPbug	**12479**
VSBC-32E-BASE	Same as order no. 12479 but with MC68EN360 @ 33MHz providing Ethernet support	**12480**
VSBC-32E-BASE	Same as order no. 12480 but with 1 MByte dual-ported SRAM	**12499**
DM600	Memory Piggyback with 4 MByte DRAM and 1 MByte FLASH memory for VSBC-32	**11852**
DM600	Memory Piggyback with 4 MByte DRAM and 4 MByte FLASH memory for VSBC-32	**11853**
DM601	Memory Piggyback with 16 MByte DRAM and 1 MByte FLASH memory for VSBC-32	**11854**
DM601	Memory Piggyback with 16 MByte DRAM and 4 MByte FLASH memory for VSBC-32	**11855**
DM602	Memory Piggyback with 1 MByte DRAM and 1 MByte FLASH memory for the VSBC-32	**12765**
DM603	Memory Piggyback with 32 MByte DRAM and 1 MByte FLASH memory for the VSBC-32	**16329**
DM603	Memory Piggyback with 32 MByte DRAM and 4 MByte FLASH memory for the VSBC-32	**16330**
DM604	Memory Piggyback with 8 MByte DRAM and 1 MByte FLASH memory for the VSBC-32	**15911**
DM604	Memory Piggyback with 8 MByte DRAM and 4 MByte FLASH memory for the VSBC-32	**15912**
DM605	Memory Piggyback with 64 MByte DRAM and 1 MByte FLASH memory for the VSBC-32	**16369**
DM605	Memory Piggyback with 64 MByte DRAM and 4 MByte FLASH memory for the VSBC-32	**16368**
SI-10B2	10Base2 Thin Ethernet interface piggyback with RG58 coax. connector	**9925**
SI-10B5	10Base5 Ethernet (AUI) interface piggyback with 15-pin D-Sub connector	**9924**
SI-10BT	10BaseT Twisted pair Ethernet interface piggyback with RJ45 connector	**9926**
SI-DUMMY	Front panel without extra interface(s)	**12351**
SI-PB232	Serial interface piggyback for 2x RS232 connections (Modem interface) with 2x RJ45 connectors	**11850**
SI-PB232-ISO	Serial interface piggyback for 1x optoisolated RS232 connection with 1x RJ45 connector	**11851**
SI-PB485-ISO	Optoisolated RS485 interface piggyback for 2-wire half-duplex connection with 9-Pin D-Sub connector	**9927**
CABLE-VM42	3 metre RS232 Serial Interface cable with RJ12 to 9-Pin D-Sub (female)	**12383**

© PEP 1997: ™ All trademarks are recognised, Subject to change without notice
Publication Number AB 12775 DS-0897

Important : The VSBC-32 must be ordered with a memory module (DM60x) and a front-panel with integrated SI - piggyback module.

For OEM quantities, other FLASH memory configurations are available on request. A VSBC-32 with a 6U format is easily created by ordering the relevant SI-piggyback with a 6U format option. Please contact the nearest PEP sales office for more information.

▶ USA ▶ GERMANY ▶ FRANCE ▶ UK ▶ SWEDEN ▶ BENELUX ▶ POLAND ▶ ITALY ▶ SPAIN ▶ NORWAY ▶ DENMARK ▶ FINLAND ▶ SWITZERLAND ▶ CZECHIEN ▶ HUNGARY ▶ CIS ▶ CHINA ▶ JAPAN ▶

▶ Visit our home page at: http://www.pep.de/

USA
PEP Modular Computers Inc.
750 Holiday Drive, Building 9
Pittsburgh, PA 15220
Tel.: ++1 412 921 3322
Fax: ++1 412 921 3356
Toll free: 800/228-1737

Benelux
PEP Modular Computers Benelux
Koning-Albert-Laan 46
B-1780 WEMMEL
Tel.: ++32 (0)2 461 04 08
Fax: ++32 (0)2 461 00 31

Postbus 9712
NL-4801 LV BREDA
Tel.: ++31 (0)76 5217 957
Fax: ++31 (0)76 5217 959

Great Britain
PEP Modular Computers (UK) Ltd.
Riverside Business Centre
SHOREHAM-BY-SEA
BN43 6RE
Tel.: ++44 (0) 1273 44 11 88
Fax: ++44 (0) 1273 44 11 99

France
EURO PEP Paris
Les Bureaux du Manoir
18 Chemin du Fond du Chêne
F-78 620 L'ETANG LA VILLE
Tel.: ++33 (0) 1 39 16 10 30
Fax: ++33 (0) 1 39 16 10 25

Sweden
PEP Modular Computers AB
Box 1430
S-18314 TÄBY
Tel.: ++46 (0) 8 756 72 60
Fax: ++46 (0) 8 732 63 10

Poland
PEP Modular Computers Sp. z o.o
Al. Jerozolimskie 144
Pok 714 Vp
02-305 WARSZAWA
Tel.: ++48 (0) 22 23 55 75
Fax: ++48 (0) 22 23 55 73

Modular Computers ®

PEP Modular Computers GmbH
Apfeltrangerstr. 16
D-87600 KAUFBEUREN
Tel.: ++49 (0) 8341 803 0
Fax: ++49 (0) 8341 803 499

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

CXC Overview

VSBC-32

First introduced in 1990, PEP's Controller eXtension Connector (CXC) concept enables a mezzanine I/O extension according to the guidelines laid-down in the CXC specification.

PEP has named these mezzanine plug-in units 'Controller eXtension Modules' (CXMs). These 96-pin CXMs are designed to operate with CXC-based host CPU modules which includes the VSBC-32.

Designed primarily to operate in harsh industrial environments, this versatile modularity provides not only a cost-effective engineering solution but also allows customers a near exhaustive selection of system configurations through a portfolio of over 30 CXMs providing analog, digital and other I/O extensions such as SCSI and fieldbus connection (High-speed PROFIBUS, CAN, LON and Interbus-S.) Hence, a feature of the VSBC-32 is that the 'raw' serial signals from the 'QUICC' SCC2, SCC3 and SCC4 channels, being internally wired to the CXC interface, may be used by dedicated signal translation modules.

Network interfacing is provided if required by ordering the relevant front-panel which comes complete with the appropriate SI-piggyback and serial port connectors. Naturally, to cater for those customers who merely wish to take advantage of the communication power and CXC capablility that the VSBC-32 offers, blank front-panels without the networking options have been devised.

Real-Time Software Support

VSBC-32

With several real-time operating systems available, each targeting specific markets, PEP is able to support the most popular brands suitable for the majority of applications due to the open nature of the QUICC and its implementation on the VSBC-32.

VxWorks

Wind River's VxWorks distributed real-time operating system includes integrated networking facilities and a complete software development environment for Windows and UNIX hosts such as high-end PC and SUN Workstations.

Major features of VxWorks include a fast, multitasking kernel with pre-emptive scheduling and fast interrupt response, extensive intertask communications and synchronisation facilities, efficient UNIX-compatible memory manage-ment, multi-processor facilities, a shell for user interface, symbolic and source level debugging capabilities, performance monitoring and an I/O file system.

OS-9

OS-9 is a flexible, modular real-time operating system for 680x0-based applications featuring a scalable architecture built around a powerful standalone microkernel, with ROM-able extensions that can be dynamically loaded and linked to the system while it is up and running. OS-9 is available in different configurations, designed to provide the compact size and I/O support required. *Embedded* OS-9 is designed for FLASH or PROM-based applications; *Disk-based* OS-9 adds support for floppy, RAM disk, SCSI hard disk and tape units; *Extended* OS-9 adds TCP/IP networking and NFS support. The *Ultra C* ANSI compiler represents advanced compiler technology for 680x0 microprocessors and is a complete implementation in accordance with the ANSI X3.159-1989 and POSIX standards. *FasTrak* provides graphical tools on UNIX-based workstations or Windows-based PCs.

pSOSystem

Integrated Systems' pSOSystem software provides a full featured run-time and development environment for embedded systems. The complete cross development environment enables developers to use UNIX workstations or PC compatible host systems running C and C++ language compilers, source language and target-level debuggers, a pSOS+ application simulator and visual debugging and profiling tools.

VRTX32

Spectra represents the first application of a client-server architecture to real-time and embedded software development. Its advanced open software backplane offers unparalleled productivity, convenience and flexibility in host-target connection.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Product Overview

VSBC-32

HIGH-PERFORMANCE CPUs SINGLE-BOARD COMPUTERS

PEP's VSBC-32 combines high computational performance and low power consumption with excellent communication ability afforded by the Motorola 'QUICC' communication controller.

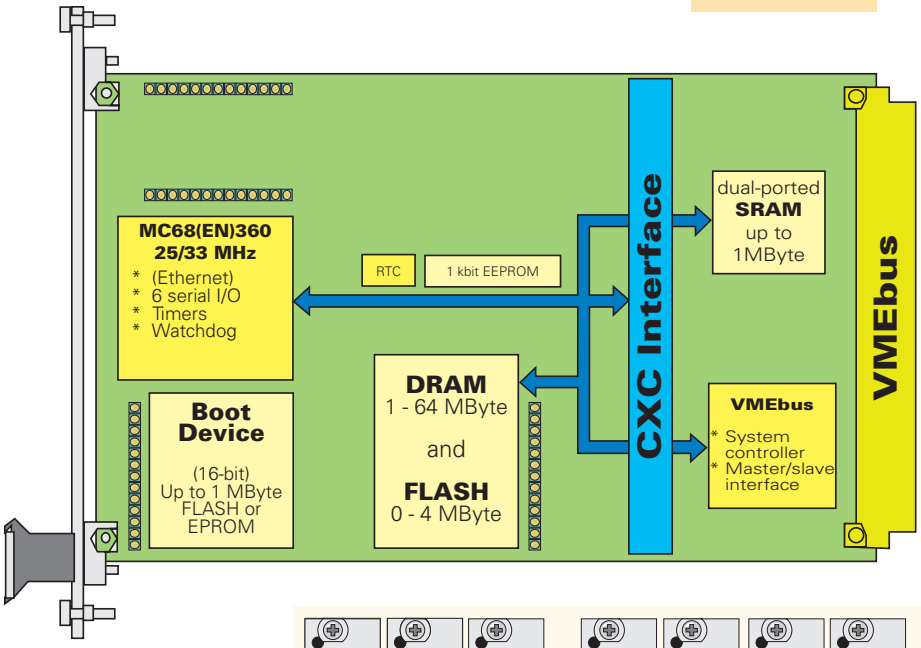
The 'QUICC' is a 32-bit high-performance communication controller which combines powerful peripheral functions with system integration and an on-chip 32-bit core. The core is essentially a 68020 processor operating at 25 MHz or 33 MHz without cache and achieves a computational performance that is approximately three times that of a 68302 running at 16 MHz. It has a communication performance that is approximately six times that of the 68302!

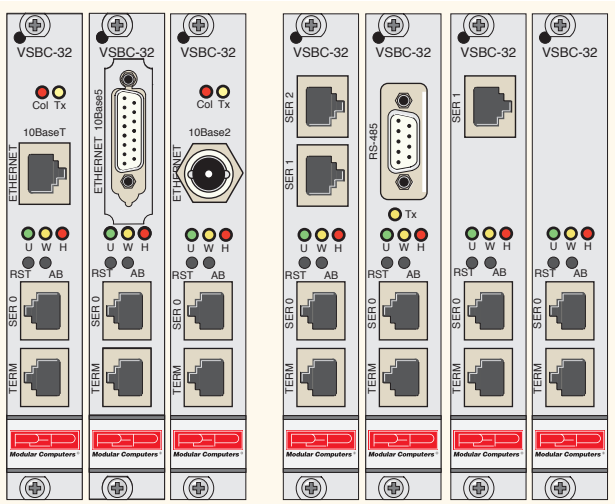
In addition, the 'QUICC' offers background debugging via the on-chip "Background Debug-Mode" which allows direct communication with the CPU core and VME DMA memory accesses are also controlled by the integrated on-chip memory controller.

When used together with PEP's CXC interface, the VSBC-32 is ideally suited for communication applications with up to 6 serial interfaces including LAN, WAN or fieldbuses (PROFIBUS, CAN, LON.)

The use of standard interfaces (VME and CXC) allows combination and customization using currently available off-the-shelf products.

The PEP VSBC-32 comprises a base module (with a choice of controller speed, Ethernet support and SRAM blocks), memory piggyback and SI-interface module. The complete package provides support for several popular real-time operating systems including: VxWorks, OS-9, VRTX, pSOS+, and others on request.





I/O Extension

The illustrated front-panels show the possible connections of the SCC1 communications channel for Ethernet, RS232, RS485 or blank. These have been developed to adapt the usable multi-protocol serial channels of the MC68(EN)360 to the physical interfaces:

- Ethernet 10Base5
- Ethernet 10Base2
- Ethernet 10BaseT
- RS485 Optoisolated
- 2xRS232 Modem compatible
- 1xRS232 Optoisolated

An additional CXC module (CXM-SIO3) routes 2 or 3 of the available but unused serial interfaces to its front-panel allowing different physical connections (RS232, RS485, RS422).

This versatile modularity provides not only a cost-effective engineering solution but also allows customers a near exhaustive selection of system configurations through VME and CXC modules which provide analog, digital and other I/O extensions such as SCSI and fieldbus connections (PROFIBUS, CAN, LON and others on request).

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Specifications

VSBC-32

CPUs (Communication Controller)

MC68360 @ 25 MHz
MC68EN360 @ 33 MHz

Memory

1/4/8/16/32/64 MByte (32-bit access) DRAM†
1/4 MByte (32-bit access) FLASH†
256 kByte or 1 MByte (16-bit access) ROM or FLASH
256 kByte or 1 MByte dual-ported SRAM with data retention via Goldcap
2 kbit serial EEPROM for applications

Real-Time Clock

V3021 with year, month, week, day, hour, min., sec.

Tick

Built-in on MC68(EN)360 providing a programmable periodic interrupt

Timer

4x16, 2x32-bit resolution built-in timers on the MC68(EN)360

Time-Out

On-board BERR* time-out fixed at 8µs with software enable/disable

Watchdog

Enabled by software with front-panel LED; generates RESET

Clocks

CPU clock:	25 MHz, 33 MHz
Communication clock:	24 MHz
VME/CXC clock:	16 MHz

All serial port baud-rate clocks may be configured individually by software

Interrupts

VMEbus IRQ1* - IRQ7* interrupts, enable/disable;
SYSFAIL* and ACFAIL* handlers

System Controller

Single-level (BR3*), FAIR, RWD (Release When Done); Automatic First-Slot Detection
VME and DP SRAM Read-Modify-Write cycle support

Address Modifier

A24 Access Code	: HEX 39/3A/3D/3E
A16 Access Code	: HEX 29/2D
User Defined	: HEX 10-17/18-1F

† Available on DM60x Memory Piggyback

Slave Functions

Dual-ported SRAM for VME;
up to 16 software selectable VME base addresses
VME Mailbox IRQ

CXC Interface

DIN 41612 (C), 96-pin, 3 NMSI ports, DMA

VMEbus Interface

DIN 41612 (C), 96-pin P1 connector
A24/A16:D16/D8 master and slave

DMA

Two independent channels with 32-bit internal/external transfers

Networking

All Ethernet interfaces conform to IEEE 802-3 and are available on SI-xx piggybacks (only with 68EN360)

Serial-Interfaces

From MC68(EN)360 (ports SMC1 and SMC2) with standard RS232 configuration

Power Consumption

Typ. 3W for MC68360 @ 25 MHz
Typ. 3.5W for MC68EN360 @ 33 MHz

Temperature

0ºC to +70ºC (standard)
-40ºC to +85ºC (extended)
-55ºC to +85ºC (storage)

Humidity

0 to 95% non-condensing

Weight / Dimensions

260g (with 10BaseT and memory piggybacks)
100mm x 160mm 3U format; Single-slot (4HP)

Front-Panel Functions

3 LEDs:	red:	Halt
	yellow:	Watchdog enabled
	green:	General purpose user
2 Switches:	AB:	Abort function (NMI)
	RST:	Reset

Other LEDs showing Ethernet or RS485 activity are present depending on the version ordered

(with 4 MByte DRAM, 256 kByte SRAM and 1 MByte FLASH memory)

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Features

VSBC-32

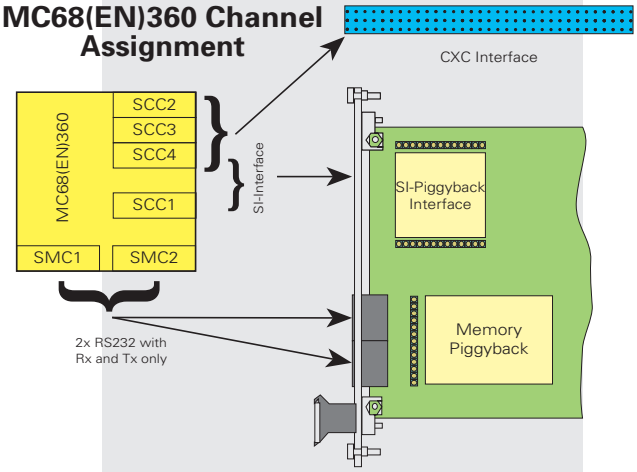
68(EN)360

A 25/33 MHz full 32-bit CPU (CPU32+ core) with I/O and system controller providing all the necessary interfaces, timers and clocks etc. in addition to the DRAM memory controller.

Serial Channels

Six are provided by the QUICC - Two SMC channels are ported to the front panel and the remaining four SCC channels may be optionally configured as shown.

MC68(EN)360 Channel Assignment



Each VSBC-32 comes complete with 2 RS232 serial interfaces provided by the SMC1 and SMC2 channels of the QUICC controller ported to the lower half of the front panel. The SCC1 channel of the QUICC provides the interface to one of the available SI-x piggybacks. All other channels (SCC2, SCC3 and SCC4) of the QUICC are ported to the CXC interface except for the SI-PB232 piggyback which has additional control provided by the SCC4 channel.

CXC-Interface

The 96-pin interface allows other I/O possibilities to be realized by utilising PEP's plug-in cards with digital, analog, serial and SCSI interfaces. Fieldbus controllers com-plete the interface range.

Ethernet Interface

Three different SI piggybacks equipped with all the associated control logic are available for the 'EN' version providing 10Base2, 10Base5 or 10BaseT interfaces.

RS232 Serial Interfaces

2 SI-piggybacks provide MODEM compatible RS232 communication.

RS485 Fieldbus Interfaces

This SI-piggyback provides is a fully optoisolated RS485 interface piggyback with a 9-pin D-Sub connector.

DMA Channels

2 independent channels are provided by the QUICC chip for use by applications requiring DMA transfer between VMEbus, CXC-modules, DRAM, FLASH memory and dual-ported SRAM.

DRAM/FLASH

This memory, complete with a 32 bit-wide access bus is placed on a piggyback with addressing capability for up to two memory banks of 64 MByte each. The on-board programmable FLASH memory allows the user to produce low-cost upgrades by over-writing existing stored data and may also be configured as a boot device.

SRAM

This is a dual-ported battery-backed (Goldcap) memory area with a 16 bit- wide access bus. Users of the VMEbus and CPU both have access to this memory.

EEPROM

A 2 kbit EEPROM is provided on-board; 1 kbit has been pre-programmed with PEP production data leaving the remaining available space for user application code.

Boot ROM/FLASH

2 DIL sockets supporting up to 1 MByte of 16-bit ROM/FLASH memory are available for use as main memory or as a boot device if the FLASH appearing on the DM60x piggyback is not required.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP