INTERACT

Technical Brochure

The Shortest Distance Between Man and Machine
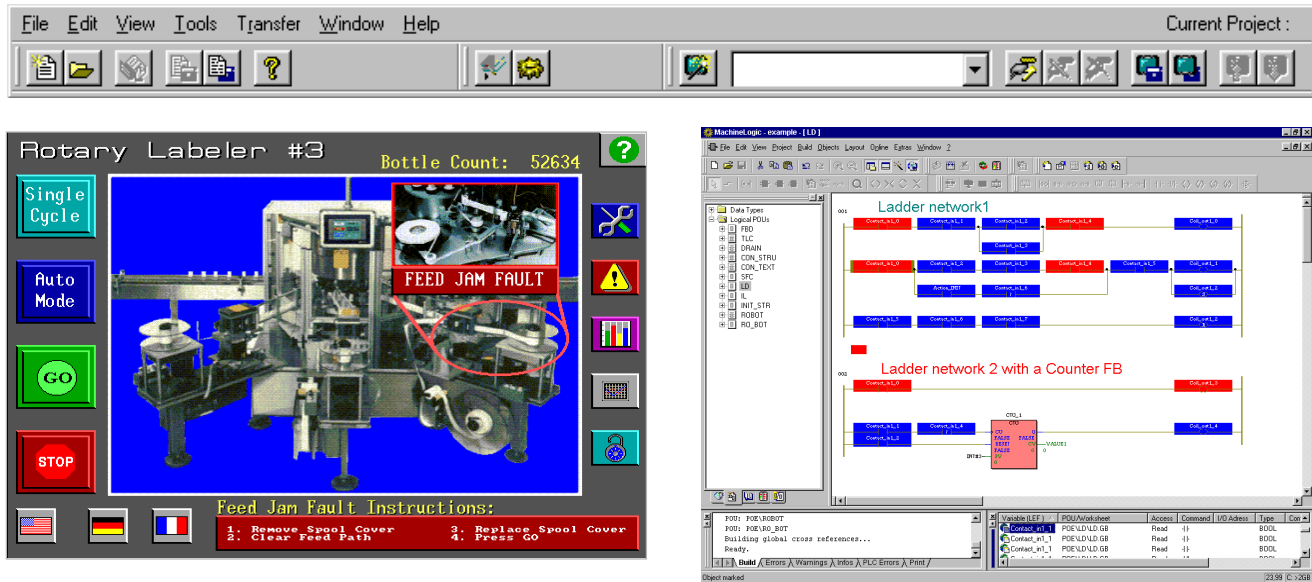
Parker
Automation

Interact Technical Brochure Index

Sections:

Parker
Automation

MachineShop™: The Machine Control Software Suite

Description

MachineShop™ is an integrated suite of Windows-based software tools for developing Interact HMI and MachineLogic™ PC-based control applications.
MachineShop is a suite of software products for HMI and machine control, giving machine builders a time-saving approach to meet their machine requirements.

MachineShop uses a convenient toolbar to make it easy to manage, create, integrate and transfer Interact HMI and /or MachineLogic control applications. It also supports CTC's full line of PowerStations, integrating all of these products into a bundled solution that can fit the requirements of any machine.

MachineShop's toolbar includes a Project Manager, Environment Navigation and a PowerStation Transfer area. The toolbar is packaged with all CTC software – so you can take advantage of its features whether you are using Interact or MachineLogic or both.

MachineShop Features and Specifications

- Appears as a toolbar that can be floating or docked at the top or bottom of the desktop display
- Portions of toolbar are user configurable (can add buttons to Environment Navigation for any application that they would like to use while the suite is running)
- Each toolbar section can be resized by moving the "gripper bars" to view all available selections
- Supports an auto-hide feature where the toolbar appears and disappears automatically upon cursor being moved into and away from the toolbar (like the Windows Start menu)

- Windows Help File details operations and configuration – also includes an Answer Wizard where questions can be entered
- Multi-language support
- Allows the user to specify an I/O Interact for MachineShop when defining a new project

- The MachineShopToolbar consists of following three sections:

➢ *Project Manager*

- Collects all of the runtime application files and configuration data for control, HMI and motion into a central location
- Allows control and HMI projects to appear as a single, unified entity to ease development tasks
- Manages transferring projects and their components to target runtime workstations

- Provides features to back up and restore projects to and from mass storage (diskette, hard drive, network, etc.)
- Documents all project information
- Easily performs project tasks with the guidance of "Wizards"
- Exchanges tags between Interact and MachineLogic databases

➢ *PowerStation Transfer*

- Manages and transfers files that are needed to create or update a runtime project installation on a PowerStation or PowerPanel workstation
- Automatically transfers runtime applications for Interact and/or MachineLogic
- Can backup and restore runtime applications
- Makes serial and Compact FLASH transfers
- Helps select transfer options, using Wizard-based guidance
- New Connection allows user to choose a variety of means to transfer files to and from the PS (i.e. Type= Serial Transfer, Port= COM1 and BAUD= 115.2K)
- Three connection types supported: serial, network and disk

- Automatic configuration features are included using the Connection Wizard
- Information button provides project and system information for the selected PowerStation

➢ *Environment Navigation*

- Allows user to quickly navigate between different development components of the MachineShop Suite
- Can add icons for other Windows programs being used for easy navigation.

MachineShop comes bundled with the CTC software below. For details, see the Technical Sheets on Interact HMI Software and MachineLogic Control Software.

Interact HMI Software: #1 Rated HMI Software

Interact is a feature-rich software package that can be tailored to meet the needs of any HMI project. It provides a unique combination: the ease of use of Windows for application development and on-line testing, with the reliability of DOS in a run-time environment.

With its modular design, Interact lets you build an application by selecting from a complete family of software modules, ranging from 3-D panel tools, to trending, networking and machine configuration. With Interact, you buy only those modules you need for your current application knowing that Interact can easily expand to meet future needs as well.

Interact can run on CTC's PowerStation and PowerPanel workstations or any standard PC.

MachineLogic™ PC-Based Control Software

MachineLogic is a new type of control software designed for the OEM/machine builder. MachineLogic is a PC Logic Controller (PCLC) that gives users a low risk way to move from PLCs to PC, and has significant advantages over the current PLC and PC-based options for machine control.

MachineLogic is cost competitive and approaches PLC reliability with features such as deterministic operation, solid state memory and control software that has been proven in thousands of installations. MachineLogic also offers features such as an open architecture and integrated development with HMI software.

Interact Software: Applications and Architecture

Where Can Interact Be Used?

Most software packages address a few of your machine control HMI requirements, but CTC Parker Automation's Interact solution can meet them all. And, when combined with CTC's MachineLogic PC-based Control Software, Interact provides a truly complete machine control solution.

Interact is a modular software family that can give you all the functionality you need, from control panel replacement to machine configuration and networking. Interact runs on any PC or can be bundled on CTC's full line of PowerStation and PowerPanel industrial workstations. The bottom line… Interact provides a variety of software and hardware options that make it easy to tailor an HMI to fit all the requirements of your application.

Display-based applications can usually be grouped into three categories as shown on the chart. Most plants have all of these applications and system designers must deal with different suppliers and products for each.

Machine control panel replacement applications typically call for a high-speed, cost-effective product that resembles conventional control devices, mimic panels and annunciators. More complex applications may require an operator workstation that delivers alarming, recipes, or

Operator Interface Applications

Different Applications Have Different Priorities

Cost
Hardware
and
Software

$

Interact

Level III
Supervisory Control
Workstations

Level II
Operator Interface
Workstations

Level I
Machine
Control Panel

• Multi-Media
• Open Database
• Multi-Tasking

• Networking
• Reports
• Historical Trends
• Recipes

• Alarms
• Graphics
• Panel Tools

Integration and Support →

← Required Speed of Response

data logging. Higher level supervisory applications might include historical trending, report generation, and networking.

Interact can provide all the functionality you need on the factory floor, from control panel replacement up to higher-level functions such as report generation and networking. The Interact DDE Server allows you to connect control panels, operator workstations and supervisory control stations by providing a direct link between real-time factory floor stations and Windows applications, such as those in control rooms or office environments.
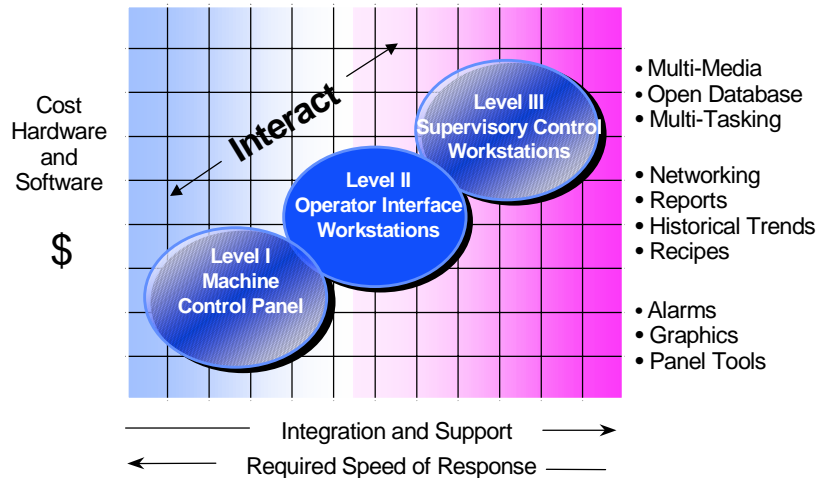
Interact's Unique Architecture

Interact is based on a unique modular concept (*see the architecture diagram on the next page*). The heart of Interact is its Application Manager, a real-time multi-tasking kernel that makes Interact the fastest software solution available. The Application Manager handles communications between the Application Modules and the Communication Device Drivers. Build your application by selecting from a complete family of Application Modules ranging from control panel tools to machine configuration and networking. With the Software Developers Kit, you can even add your own application-specific software.

You develop your Interact application one time – and if you need to add functionality to the system in the future, you can do so by simply adding another module to your existing application. There is no need to redesign your application. Features such as Interact's tag editor also allow you to design a standard application and then change the application to meet each project's requirements without redesigning the whole application.
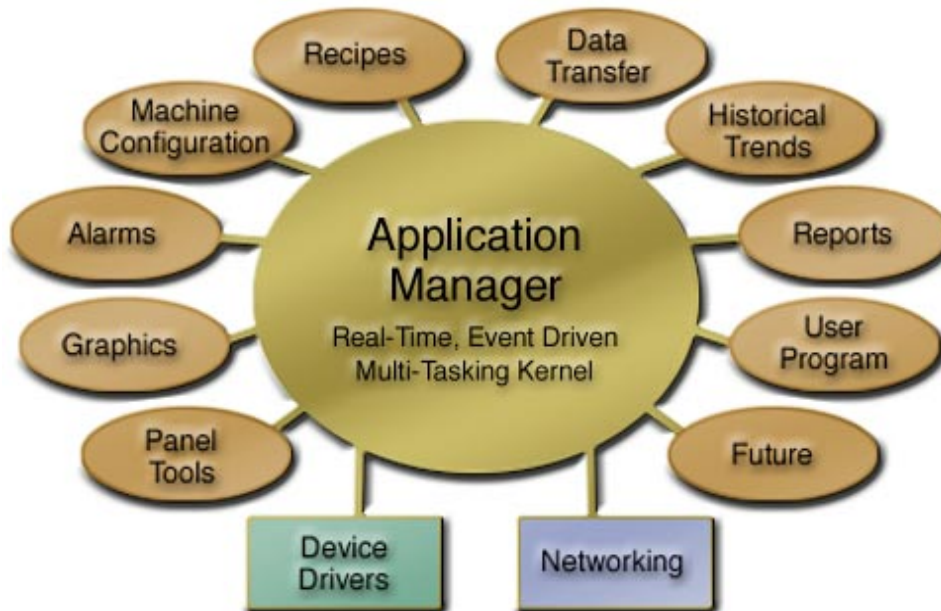
Interact also offers you a variety of connectivity options to programmable controllers and intelligent control equipment. Communication Device Drivers for 50+ serial and Remote I/O PLC connections are part of the standard product. In addition to these standard driver options, you can also add your own driver to communicate with any intelligent control device. Multiple drivers can be run simultaneously, and Interact even offers a high-speed method to easily pass data between different Communication Device Drivers.

The Interact Open Architecture. The core Interact package includes the Application Manager, all Device Drivers, the Panel ToolKit Module, Graphics Monitoring Module and Alarm Management Module. Optional modules can be added at any time.

Panel ToolKit: Create control panels in minutes with this unique library of over 30 standard panel elements

Graphics Monitoring: A CAD-like graphics editor and 256 color support allows you to create free-form, animated displays which can be easily combined with panel tools.

Machine Configuration: Provides unique tools for easy machine setup and product changeovers.

Alarm Management: Display and acknowledge alarm conditions from any screen. Operator comments and alarms can be logged along with application requirements.

Recipe Handling: Operators can download, upload, modify and store recipes on-line. A log of recipe activities is automatically kept.

Data Transfer: Easily build a high-speed software connection between different control equipment by passing information among multiple device drivers.

Historical Trending: Data is logged in binary format. View this information on-line in tabular or line trend formats, or off-line via popular PC packages.

Report Generation: Create free-form reports that can be reviewed on-line, downloaded to a network or disk as an ASCII file format, or printed in hard copy.

User Program: You can add your own software or application specific features to Interact's architecture through the use of the Software Developers Kit.

Networking: A NetBIOS implementation that allows for real-time data to be shared between multiple Interact stations. This high-speed LAN works with all popular networking topologies, providing remote monitoring and control functions, the ability to share activity files, and a connection between distant remote stations via modem.

Interact DDE Server: This product links Interact factory floor stations and Windows application to allow the exchange of real-time factory floor information.

For additional information, see the Interact System Specifications Technical Sheet or the Technical Sheet on each individual Interact module.

Interact Software: System Specifications

Overall Interact Product Specifications

Interact is a feature-rich software package that can be tailored to meet the needs of any HMI project. It provides a unique combination: the ease of use of Windows for application development and on-line testing, with the reliability of DOS in a run-time environment. Interact's event-driven kernel enables reliable, high-speed program execution for machine operation.

With its modular design, Interact lets you build an application by selecting from a complete family of software modules, ranging from 3-D panel tools, to trending, networking and machine configuration. With Interact, you buy only those modules you need for your current application knowing that Interact can easily expand to meet future needs.

This Software Technical Sheet describes Interact's overall system specifications. *For additional general information on Interact, see the Interact Applications and Architecture Technical Sheet.*

Password Protection

Interact's password protection is extremely flexible; it allows you to restrict access to features at multiple levels such as at the screen (panel) level or even down to an individual panel tool. This flexibility gives the system designer the ability to give each user access to only those areas needed. For example, maintenance staff and field service personnel can be granted access to machine setup and diagnostics, and operators can be limited to using specific start/stop buttons on a run-time screen.

- Up to 52 users
- 6 user access levels
- 12 character alphanumeric user name
- Unique 15 digit password for each user
- ID name automatically inserted in activity logs
- Supports online password changes

Language Support

Interact's language support allows system designers to take an application and easily convert it into language-specific applications without having to redesign the application.

- Substitute any language supported by standard IBM ASCII Character Set
- Edit all menu entries, selector button labels, error messages and help files
- Time/date formatting
- Text substitution utility converts run-time applications to native language via user-defined input

Register Manipulation

This Interact feature allows users to apply sophisticated scaling capabilities to the application.

- Full-function math, including log and trig functions
- Logical operators: AND, OR, NAND, NOT, etc.
- Relational operators: <, >, =, <=, >=, etc.
- Bidirectional operators for inputs and outputs

Tag Name Support

Interact's built-in tag name editor enables users to substitute tag names for standard address references. For example, OEMs can easily adapt a standard application to meet a specific customer's machine requirements without redesigning the whole application.

- 32 character tag name support
- Comments for each tag
- Import/export tag capability from other programs
- Easy application portability among drivers
- Example: dvr\1:1 = @ motor 1

Protection Key Information

Interact Development and Run-time software is key-protected. Individual Interact modules are password protected with enable codes; optional modules can easily be added to the application in the field using this enable code system.

Interact Development Package includes:

- Master key
- Application Manager
- All Device Drivers
- Core Interact Modules: Panel ToolKit, Graphics Monitoring and Alarm Management Modules
- On-line documentation
- All Interact modules are included in the package and can be enabled at any time by purchasing the enable code from CTC. Each Interact module can be evaluated prior to purchase by using the Preview Mode that is part of the standard Development Package.
- Note: Development also includes capability to test the application on-line with a PLC

Features of Interact's Application Manager (APM)

- Real-time multi-tasking kernel
- Data-change-driven update method
- Includes demo driver for prototyping and testing
- Screen saver option (bland or message screen)
- Set cursor modes for mouse and touchscreens
- Change PC system clock on-line
- Read/write time from PLC
- Multiple language support

Hardware Information

Interact is designed to run on any PC-based personal computer; CTC also offers several high-performance, low-cost PowerStation and PowerPanel workstations that can be used for Interact applications.

Minimum Development System Requirements

- 100% IBM compatible personal computer
- Windows 95 or Windows NT operating system
- 80486 33MHz processor
- 8MB of system RAM (Windows 95 users)
- 16MB of system RAM (Windows NT users)
- One 3 1/2" high-density floppy disk drive
- 20MB of free hard disk space
- VGA video card and monitor
- Microsoft compatible mouse or other pointer input device
- Recommended video system: 800x600 resolution minimum with 256 colors for development

Minimum Run-time System Requirements

- 100% IBM compatible personal computer
- MS-DOS version 3.1 or later
- 80386 25MHz processor
- 4MB of system RAM
- One 3 1/2" high-density floppy disk drive
- 4MB of free hard disk space
- VGA video card and monitor
- Microsoft compatible mouse or other pointer input device
- Note: Run-time software is optimized to use small storage space and can fit on Compact Flash

Function Keys

- 40 function keys (F1-F40) are supported
- Select/activate all run-time functions

Printer

- Standard: Epson FX series or compatible
- Over 1000 additional printers available via Product Support Program
- Built-in spooler for graphic screen prints

Core Interact Modules:
Panel ToolKit, Graphics Monitoring and Alarm Management

Description

The standard Interact Package includes the Application
Manager and these core Interact Application Modules:
Panel ToolKit Module (PTM), Graphics Monitoring Module
(GMM) and Alarm Management Module (AMM).

*The screen at the right shows an application using these
modules; the development environment is illustrated.*
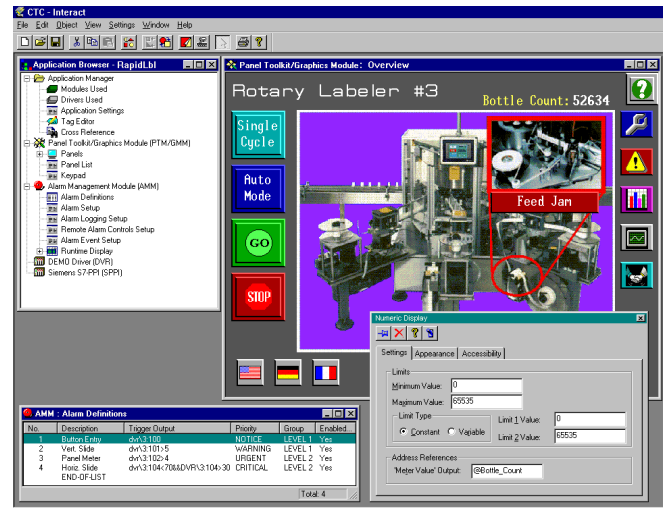
Panel ToolKit Module (PTM)

The Panel ToolKit provides a library of over 35 preconfigured 3D panel tools that can be used to construct the screen-based
equivalent of traditional control panels. These "ready-to-use" tools save on development engineering cost and are modeled
after hardwired devices, giving operators the consistent look and feel of devices found on the plant floor.

Tools include:

- Lighted pushbuttons (momentary, maintained,
  latched, interlocked)
- Numeric and message displays
- Panel meters
- Real-time line trends
- Counter readout
- Bar graphs
- Multistate indicators
- Analog slides
- XY plot
- ASCII tools
- PID faceplates
- Selection entry

Action tools that assist the operator:

- Go To / Load Panel
- Go To / Load Module
- Load Panel
- Change User
- Print Panel

Other PTM features:

- GMM graphics and PCX graphics can be imported as
  background screens
- Ability to show information from other Interact
  modules on display tools (e.g. alarm descriptions on
  message tools)
- Symbols can be placed on tools instead of text
- Screens can be loaded by the PLC
- Easily switch between PTM and GMM graphics or
  overlay GMM panel objects to PTM panel
- Limits, ranges and colors for tools are simply defined
  from a menu; analog, string or ASCII output values
  can be entered
- No limits on tool size or placement
- Output tools range from horizontal and vertical bar
  readouts to panel meters

Graphics Monitoring Module (GMM)

The Graphics Monitoring Module lets users add graphics displays to the application to make the operator interface as intuitive as possible for operators, thereby decreasing training and support requirements. This module includes 256 color support and free-form graphics, giving designers the flexibility to import a picture of a machine and animate images on the machine to create an application that operators will find easy to use.

- PTM required in any application using GMM
- CAD-like, object-oriented graphics development environment
- GMM, AutoCAD (DXF), and imported graphic images work together simultaneously
- Animation actions based on either discrete or analog values
- Animation actions include changes in size, color, location, orientation, and visibility
- Bitmaps or GMM screens can be imported into PTM background to increase performance
- Bitmap format allows scanned images to be utilized in GMM
- Can import from more than 15 different file types (i.e. JPG, BMP, TIF, WMF)

- Import graphic images from digital cameras and scanners using the TWAIN interface
- Can import DXF or WMF files as a single object or as individual free-form elements
- 256 color support
- Multiple discrete and analog inputs can be made from any image (no size limitation)
- Can create static graphic objects that can be imported into a background to increase graphic performance
- Easy to apply animation connections -- simply enter the beginning and endpoints and GMM will automatically calculate what the object should look like as it moves ("tweening")
- 16 colors and 32 patterns can be applied to free-form graphics

Alarm Management Module (AMM)

The Alarm Management Module is a feature rich alarm package that monitors alarm conditions, and allows users to acknowledge and clear alarms from any screen. Operator comments and alarms can be logged along with application parameters.

- Define alarm conditions and define corresponding reporting, logging and corrective action procedure
- Assign user access level to all alarm functions
- Five levels of alarm priority with user-defined names
- Color-coded alarm priorities
- User-defined alarm group names
- Acknowledge, inhibit, view by priority and group
- Acknowledge/clear alarm from any screen
- Display alarm parameters with PTM tools
- Alarm interaction can be controlled/displayed from PTM screens
- Predefined run-time displays include Alarm Summary, Alarm Control and Alarm History
- Tie alarms to any controller address

- Automatic alarm activity log including comments and operator name
- Memory is only limited to # of alarms
- Displays the alarm value and current value of alarm conditions in real-time
- User-defined alarm message window allows for detailed explanation
- Define log file parameters: start/stop, overwrite conditions, and file size
- Log files stored in ASCII, comma delimited format and can be sent to any logical drives including networks
- Comments can be entered for alarms and made part of the log
- No special displays must be constructed

Machine Configuration Module

Description

Machine Configuration Module (MCM) is a valuable Interact option designed to address specific requirements of machine builders and users; With the power of MCM, you have the ability to design, manage and perform efficient manufacturing changeovers. This new tool also makes it possible to rapidly develop modular configurations and machine setup functions, allowing you to easily customize products and options to meet your customer's unique requirements.
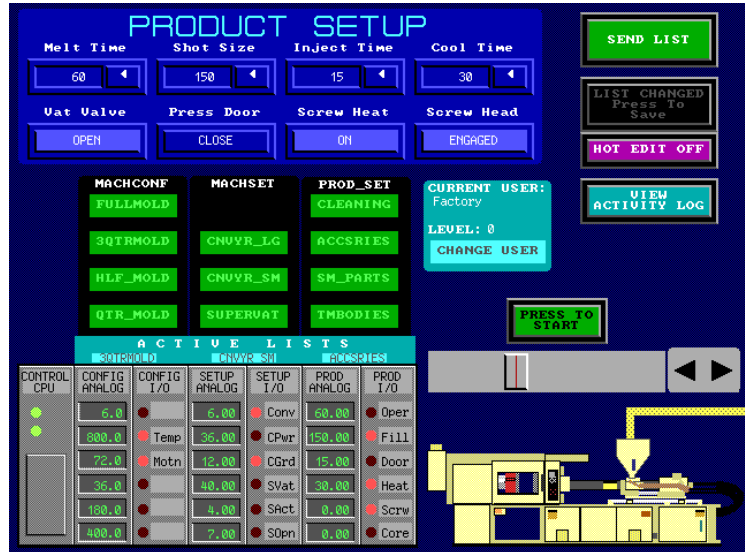
- Listing of machine configuration settings that may be grouped by Machine Function

- Protected "master" lists of machine settings that can be used to create user configured derived list

- Six user access levels may be assigned machine configuration parameters and operations

- Automatic or Single Button Downloads and Uploads of machine configurations

- Optional handshake verification of configuration parameters during download

- Advanced Online Editing of configuration parameters

- One-step Hot Editing to adjust active and stored machine parameters

- Automatic machine startups with "Last Used" configurations

- Automatic activity Log including values modification and operator ID, with view, print, and ba ckup capability

- Online Printing of List

Monitor Mode – enables the operator to see the value of a list item in the control device and compared to its corresponding value in the list

Monitor Mode with Update – works the same as the Monitor Mode, but if there is a discrepancy, the value in the list will be overwritten with the value in the control device

Auto-Save – causes the current list in the group to be automatically saved when a data value of a list changes, the user changes to another list in the group, or upon shutdown of the MCM

Chaining of List – a list may contain an event that downloads the items contained in a second list

Events in List – an optional list item may be defined to act upon a specific event. Timed triggers and data verification for the items in a list are events that may occur before the remaining items in a list are downloaded.

Automatic Triggers – configured by user for multiple actions including Download, Upload, Save and Delete. Selectable for Time of Day, Data Change or Positive Edge

Groups – allow list to be logically categorized for machine operation and security privileges
-   Maximum List Count – user configurable up to 999 lists per group, unlimited number of groups
-   Name – may be up to 15 alphanumeric characters
-   Description – up to 80 characters
-

Lists – are a collection to items that define the date to be downloaded to a controller
-   Description – 32 character description of list
-   Comment – field for up to 512 characters to describe function of list
-

List Items – are elements of a List that define machine parameters or events
-   Up to 999 list items per list
-   Description – 32-character description of parameter
-   Data Type – Discrete, Analog, ASCII, List and Events
-   MIN/MAX – define parameter limits
-   'Send Value' Input – address reference in the controller for write value

-   **Group Path** – User configurable
-   Visible User Level – user level required to view group
-   Downloading/Uploading – Downloading/Uploading complete handshaking
-   "Active List Name" Input – location in the controller to store active list name

-   **User Levels** – item properties define user access privileges for downloading and viewing list items
-   Master/Derived User Levels – user levels that are required to perform the actions for master and derived lists in run mode

-   **'Upload Value' Output** – address reference in the controller to read value
-   Verify – check that data value in controller matches list value
-   User Levels – item properties that add user access privileges to allow downloading, viewing, editing and saving changes to list items

Recipe Module

Description

The Recipe Module (RCM) is designed for batch processing applications. This module creates a library of recipes containing process values, allowing operators to upload, download, modify and store recipes on-line. Other features include a wide range of recipe controls and an automatic recipe activity log.

The screen at the right shows an application.

Features and Specifications

- Assign user access levels to all recipe functions
- 8 alphanumeric character recipe names
- 24 character ingredient name
- Upload recipe values from control devices
- Modify and store recipes under same or different names
- User-definable recipe or ingredient scaling
- Set MIN/MAX for each recipe to define operator limits
- Download recipes to controller based on operator input, controller output, time of day
- Automatic recipe activity log includes operator ID
- Activity log files stored in ASCII, comma delimited format (CSV)

- Up to 9999 total recipes
- Up to 9999 items per recipe
- Save recipes in CSV (comma separated variable) format to be read by other programs
- Data types can be integer, real, discrete or ASCII
- Yes/No enabling feature convenient during start-up phase
- Percent scaling feature prevents scaling of items that do not vary with batch size, e.g. temperature
- Recipe ingredients may be cut/copied/pasted to save time
- Change recipes on-line and save them as new recipes

Data Transfer Module

Description

The Data Transfer Module (DTM) provides a high speed gateway to share information between different types of control equipment by exchanging data among multiple drivers. This module allows you to replace expensive networking software and hardware with inexpensive software connections.

The screen at the right shows graphically depicts how DTM is setup to share information between different types of control equipment.
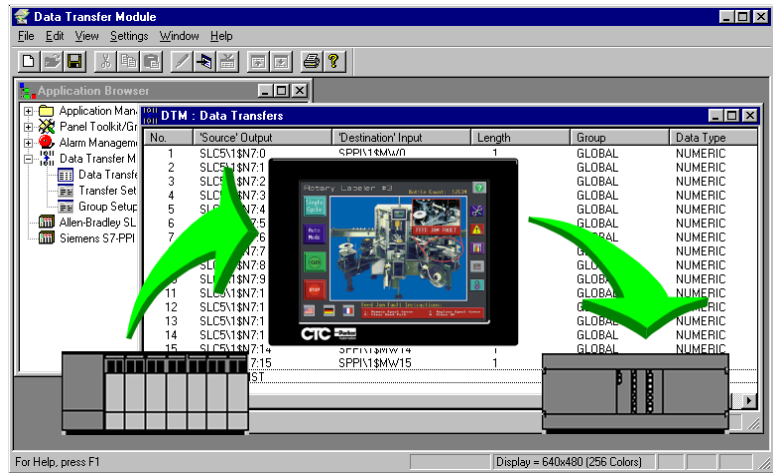
Features and Specifications

- Transfer register values among control and intelligent devices
    - Different brands and models of controller
    - Multiple units of the same controller
    - Between logic and motion controllers
- Organize transfers into groups
- Transfer both numeric and ASCII data
- Define multiple groups and each group has its own controller output
- Define and enable output for each group to obtain:
    - Continuous transfer or
    - Transfer when control output is "true"

- Registers are automatically monitored and data is transferred from one driver to the next when the enable output for a specific group is evaluated as true
- Information required consists of:
    - Source Output: location (source) to read data
    - Destination Input: location to write data
    - Group name (optional use)
- No extra hardware required
- Multiple Device Drivers supported

The Shortest Distance Between Man and Machine

Historical Trending Module

Description

The Historical Trending Module (HTM) gathers selected data from the machine or process, and allows you to view this data on-line in graphical or spreadsheet format. These data files can also be logged to disk so that they can be analyzed off-line using popular PC packages.

The screen at the right shows a run-time HTM application screen.
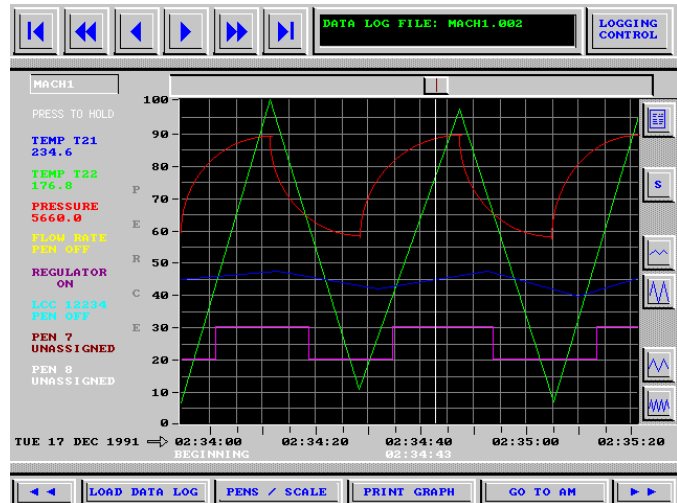
Features and Specifications

- Log data on time interval, event or operator input
- Each log record receives number, time and date stamp
- On-line conversion of the binary file format to an ASCII, comma-delimited format (CSV)
- Can backup log file to 4 different paths, including a network drive
- Files logged in a binary format to save disk space and improve application performance
- Line trend can update with live data (can view current or historical data)
- Advanced features like data and time search allow for enhanced on-line analysis of logged data (e.g. SEARCH FOR :TEMP1 > 100 DEGREES)
- Line trend display specifications
  - ➢ Eight pens per display
  - ➢ Variables plotted together as percent of full scale
  - ➢ Display vertical scale for a specific pen
  - ➢ Scroll display forward or backward through log file
  - ➢ Compress display in horizontally and vertically

- Data logging speed depends on type of communication with the controller (serial is slower)
- HTM can log as fast as the communications interface for the device
- Can support 16 fields per log form
- Number of log forms per application depends on available disk space
- Record data field properties:
  - ➢ FIELD NAME: 8 character variable name
  - ➢ FIELD TYPE: integer, real, or discrete*
  - ➢ MIN/MAX: define Y axis scale, used to calculate full scale
  - ➢ OUTPUT REFERENCE: register where data will be read
- Select actual engineering units for exact analysis
- Bias control for discrete values allows multiple variables to easily be viewed

Report Module

Description

The Report Module (RPM) creates free-form reports for any Interact application. These real-time data reports can be previewed on the display screen while in on-line operation; completed reports can be downloaded to a network or disk for review at a later date. Reports can also be printed in hard copy or ASCII file format.

The screen at the right shows an RPM application screen.

Features and Specifications

- Automatically enters operator's name and allows on-line operator comment field
- Predefined messages can be used in report format
- Report functions include reporting values for:
  - Low-Min
  - High-Max
  - Count
  - Time on/off
- Print report directly to hard copy printout or ASCII text file, or both simultaneously (space-delimited)
- Download or backup reports to network or floppy drives with a built-in on-line utility

- Generate multiple reports simultaneously based on PLC events, triggers, time or input from an operator
- Set group controls to apply math to columns and rows of a report; functions include low, high, sum, average, and total time
- Select from predefined variables for commonly-used functions like operator name, start/end time and date
- Reports can be displayed online to track current production process. Real-time values will be displayed and updated in the report display for enhanced operator productivity.

The Shortest Distance Between Man and Machine

Software Developers Kit and User Program Module

Description

The Software Developers Kit (SDK) allows the Interact architecture to support any operator interface function as well as communicate with just about any type of control equipment by giving you the ability to develop your own module or driver.

The SDK allows you to add features such as statistical process control or bar code input to Interact. You can also develop drivers to communicate with devices such as PLCs not supported by CTC, intelligent I/O devices, and motion controllers.

CTC has done much of the upfront programming for you, reducing development and integration by 50%. Well-documented programming manuals provide instruction, and detailed examples clearly show you how to write a module or driver. Source code examples are provided in the "C" language, further reducing integration effort. *Note: CTC strongly suggests that the Microsoft "C" language be used to write modules or drivers, but any high-level language may be used.*
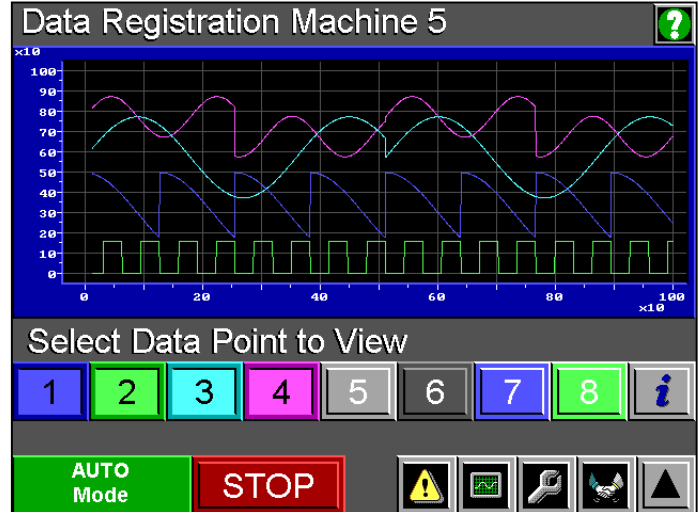
With the ability to select between 8 different data points to be displayed in the real time trend, this sample application screen also allows the user to view 4 data points simultaneously.

Creating an Interact Module

The SDK includes a programming manual that shows you how to write your own Interact application module (which is a terminate-and-stay-resident program or TSR). In order to develop or run the user-written TSR, Interact's User Program Module is required. A development version of the User Program Module is included with the SDK.
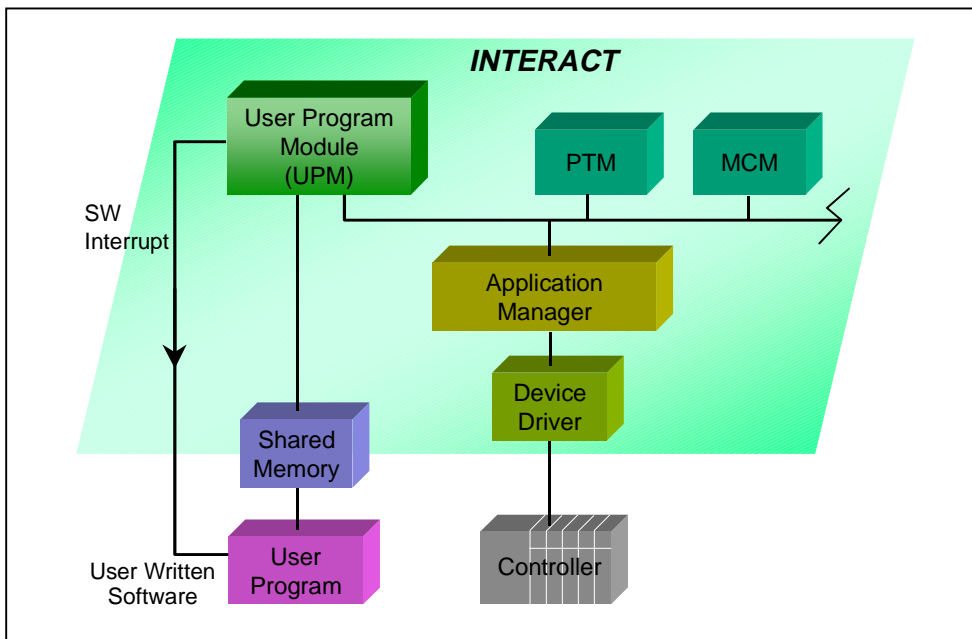
The diagram above illustrates how a user-written TSR program is incorporated into Interact architecture with the User Program Module (UPM).

Creating an Interact Driver

The SDK provides a programming manual that instructs you how to create your own high-performance device driver for Interact. All drivers that are developed with the SDK will also require a portion of software from CTC. This software is called the User Device Interface and is provided as a standard part of the Interact Development Package.
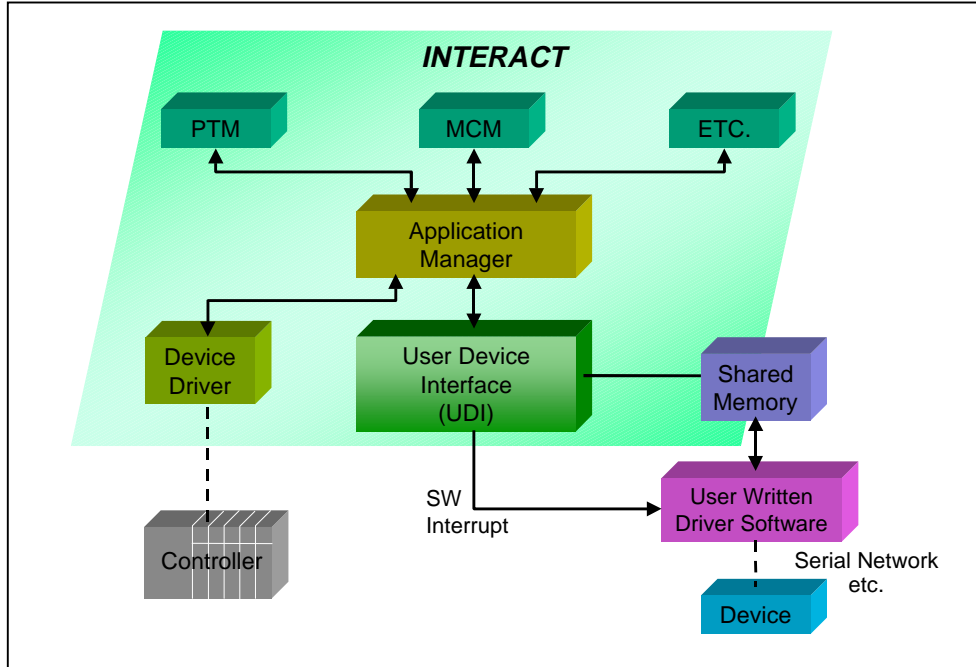
This diagram shows how the User Device Interface (UDI) allows the user to write custom device drivers to be used by Interact.

User Program Module (UPM)

You can add your own software or application-specific features or communication drivers to Interact's architecture through the use of the Software Developers Kit.

Features and Specifications

- Add your own application features easily to Interact's standard architecture
- Designed to allow a user-written terminate-and-stay-resident (TSR) program to share data with Interact
- Interact's Software Developers Kit shows users how to write a TSR program that functions as an Interact module or communication driver
- Interact provides the user-written TSR program with its own interrupt for efficient operation in the real-time environment
- Contains predefined user screens for user-written modules to simplify integration effort

- Development modules allow the TSR to be configured like and Interact module
- Handles multiple data types
- Signed integer (-32768 to 32768)
- Unsigned integer (o to 65535)
- Long value (-2147483648 to 2147483648)
- Float point (IEEE 32 bit floating point)
- ASCII text string
- Required for any application using a user-written application module (TSR program

Interact Device Driver Guide

Description

Interact is a powerful and flexible HMI solution for factory floor machine control applications. CTC knows how important it is for OEMs and end users alike to maintain flexibility, so drivers are available for a wide range of programmable controllers (PLCs) and other intelligent equipment. Device Drivers are part of the standard Interact product and are packaged with the Application Manager.

This technical sheet lists all of the device drivers currently available for Interact. If you don't see the driver you need:

- Call CTC's Inside Sales Department at (513) 831-2340 for the latest information about drivers under development
- CTC's Professional Services (PCS) Department can write any driver you need for your application; just call the PCS Coordinator at (513) 831-2340 for details

- Write your own driver using CTC's Software Developer's Kit (SDK) – *for more information, see the SDK Software Technical Sheet*

Features and Specifications

- Automatically calculates optimum read/write blocks, acquisition levels, etc.
- Remote I/O, Serial, AT BUS and PC/104 connections supported
- Simultaneous execution of multiple drivers
- Exchange data among multiple drivers with the Data Transfer Module
- Addressing scheme native to the controller

- Substitute Tag Names for standard address references with built-in Tag Editor
- Tag names can be edited off-line via any text editor
- Tag names and direct addressing scheme can be utilized simultaneously
- Device Drivers can be created with the Software Developers Kit and can be run by using the User Device Interface
- Serial drivers connect to COM1-COM4

PLC	PLC/PC Connections	Interact Driver
ASCII Driver	▪ The ASCII Driver is a generic communication driver used to interface to devices that support ASCII communications. It communicates RS232/422/485 via a PC Serial Port.	ASCII
Allen-Bradley		
ControlLogix	▪ Ethernet via 1756-ENET Ethernet module	ABEN
	▪ ControlLogix 5550 CPU RS232 port via RS232 PC Serial Port using DF1	ABDH
	▪ 1756-DHRIO module to ControlLogix 5550 CPU using SST Direct Link Card via Data Highway Plus	SSSD
Micrologix 1000/1200/1500	▪ Programming Port via RS232 PC Serial Port	ABDH
PLC-2	▪ 1770-KF to 1771-KA via PC Serial Port	ABDH
	▪ 1771-KG via PC Serial Port	ABDH
	▪ SST Direct Link Interface Card via Data Highway/Data Highway Plus *(see Third Party Interface section for details)*	SSSD*
	▪ 1771 Remote I/O Channel via ABR-3200/5 Interface Module available from CTC	ABR
PLC-3	▪ 1775-KA or 1770-KF2 via PC Serial Port	ABDH
	▪ SST Direct Link Interface Card via Data Highway/	SSSD*
	▪ Data Highway Plus *(see Third Party Interface section for details)*	
	▪ 1771 Remote I/O Channel via ABR-3200/5 Interface Module available from CTC	ABR
PLC-5	▪ Ethernet PLC-with on-board Ethernet port or with a 1771-ENET Ethernet Interface Module	ABEN
	▪ 1770-KF2 via PC Serial Port	ABDH
	▪ Datalink Technologies DH+ Interface Card via PC Serial Port *(see Third Party Interface section for details)*	ABDH
	▪ Channel 0 (25 pin port) via RS232 PC Serial Port	ABDH
	▪ SST Direct Link Interface Card via Data Highway/Data Highway Plus *(see Third Party Interface section for details)*	SSSD*
	▪ 1771 Remote I/O Channel via ABR-3200/5 Interface Module available from CTC	ABR
	▪ Datalink Technologies 1771 Remote I/O Interface Card via PC Serial Port *(see Third Party Interface section for details)*	ABDH
PLC-5/250	▪ SST 5136-SD Interface Card	SSSD*
SLC 501	▪ Programming port - DH-485 connection via PC Serial Port	SLC5
	▪ Remote I/O 1747-SN via ABR-3200/5 Interface Module available from CTC	ABR
SLC 502	▪ Programming port - DH-485 connection via PC Serial Port	SLC5
	▪ Remote I/O 1747-SN via ABR-3200/5 Interface Module available from CTC	ABR
SLC 503	▪ Programming port - DH-485 connection via PC Serial Port	SLC5
	▪ Channel 0 (9-pin port) via RS232/485 PC Serial Port	SLC5/ABDH
	▪ Remote I/O 1747-SN via ABR-3200/5 Interface Module available from CTC	ABR
SLC 504	▪ Channel 0 (9-pin port) via RS232/485 PC Serial Port	SLC5/ABDH
	▪ Datalink Technologies DFK-1000-1/DL2000	ABDH
	▪ SST Direct Link Interface Card via Data Highway/Data Highway Plus *(see Third Party Interface section for details)*	SSSD*
	▪ Remote I/O 1747-SN via ABR-3200/5 Interface Module available from CTC	ABR
SLC 505	▪ On-board Ethernet 10BaseT port	ABEN
	▪ Channel 0 (9-pin port) via RS232 PC Serial Port	SLC5/ABDH
	▪ Remote I/O 1747-SN via ABR-3200/5 Interface Module available from CTC	ABR

PLC	PLC/PC Connections	Interact Driver
Bailey Distributed Controls	▪ Network 90 Computer Interface Unit (CIU) via PC Serial Port**	UDI
Bristol Babcock	▪ RS232/422 Communication Port via PC Serial Port	Consult Factory
CEGELEC GEM80	▪ RS232/422 Communication Port via PC Serial Port**	UDI
Compumotor		
6000 Series	▪ Port 1 and 2 via RS232 PC Serial Port point-point	CMOT
	▪ Port 2 via RS422/485 PC Serial Port point-point or multi-drop	CMOT
AT6XX0 Bus Based Controller	▪ AT Bus Card	CMOT
6K Controllers	▪ Port 1 via RS232 PC Serial Port point-point	CMOT
	▪ Port 2 via RS422/485 PC Serial Port point-point or multi-drop	CMOT
	▪ On board 10BaseT Ethernet Port	CMOT
Gemini GT/GT6/GV/GV6	▪ Port 1 via RS232 PC Serial Port point-point	UDI (Gem)
	▪ Port 1 via RS232 PC Serial Port point-point	CMOT
Gemini GT6K/GV6K	▪ Port 2 via RS422/485 PC Serial Port point-point or multi-drop	CMOT
	▪ On board 10BaseT Ethernet Port	Consult Factory
Control Technology Corp.		
2600 and 2700 Series	▪ Controller RS232 port via RS232 PC Serial Port	CTECH
Delta Tau PMAC	▪ RS232/422 Communication Port via PC Serial Port	PMAC
DeviceNet	▪ SST Direct Link Interface Card 5136-DN via Device Net Communication as Master or Slave (*See Third Party Interface section for details*)	DVNT*
Emerson		
FX Series	▪ RS232/422 FX Communication Port via PC Serial Port**	UDI
Axima Multi-Axis Servo	▪ RS232/422 Communication Port via PC Serial Port	MBUS
E Series Servo	▪ RS232/422 Communication Port via PC Serial Port	MBUS
Galil	▪ RS232/422 Communication Port via PC Serial Port	GALI
General Electric		
VersaMax IC200CPU001	▪ Port 1 RS232 via RS232 PC Serial Port	GESN
	▪ Port 2 RS485 via RS485 PC Serial Port	GESN
Series 90 (Micro, 9030 and 9070)	▪ RS422 Communication Port via PC Serial Port	GESN/GSNX
	▪ CMM311 Communication Coprocessor RS232/422 via PC Serial Port	GECM/GESN
Series 6	▪ CCM-2 via PC Serial Port	GECM
Genius I/O	▪ Genius LAN via PCIM AT Interface Card available from GE	GENIUS*
Giddings & Lewis		
MMC	▪ LINK900 - RS232/485 to User Port 2. Supports multi-drop communications. *Note: Requires COMM900 software on PLC available from Giddings & Lewis*	GLP9
Pic 90	▪ NET900 - network connection via ARCNET Card, available from Giddings & Lewis	GLP9*
	▪ LINK900 - RS232 to User Port 2 or Serial Communication Module via PC Serial Port. Supports multi-drop communications. *Note: Both require COMM900 software on PLC available from Giddings & Lewis*	GLP9
Pic 900	▪ NET900 - network connection via ARCNET Card, available from Giddings & Lewis	GLP9*
	▪ LINK900 - RS232 to User Port 2 or Serial Communications Module via PC Serial Port. Supports multi-drop communications. *Note: Both require COMM900 software on PLC available from Giddings & Lewis*	GLP9

PLC	PLC/PC Connections	Interact Driver
Honeywell		
DCS Gateway 9000	▪ RS232/422 Communication Port via PC Serial Port**	UDI
620-16	▪ RS422/485 via ModBus built-in cards (for other models, use a 422/485 COMM card)	MBUS
620-36	▪ RS422/485 via ModBus built-in cards (for other models, use a 422/485 COMM card)	MBUS
IDEC Micro3	▪ RS232 Communication Port via PC Serial Port **	UDI
Indramat		
CLC-D	▪ X27 RS232 Port via RS232 PC Serial Port	ICLC
	▪ X28 RS232/422/485 Port via PC Serial Port	ICLC
CLC-P01	▪ X27 or X28 RS232 Port via RS232 PC Serial Port	ICLC
	▪ AT ISA bus based card via backplane	ICLC
CLC-P02	▪ X27 or X28 RS232 Port via RS232 PC Serial Port	ICLC
	▪ PC/104 bus based card via backplane	ICLC
Klockner Moeller	▪ Programming Interface (PRG) port via RS232 PC Serial Port with any PS416 Programmable Controller	KLOK
Koyo		
205	▪ CPU direct serial (232/422)(point-to-point or multidrop) via PC Serial Port	TICM
305	▪ DCM Module (U-01DM) via PC Serial Port	TICM
405		
MachineLogic PCLC (CTC)	▪ ISA or PC/104 bus based card via backplane to PC runtime	MLD
	▪ TCP/IP Ethernet via PCI backplane, Slot Card on board Ethernet Port or PowerStation Ethernet Port	MLD
Mitsubishi		
A Series (A1, A2, A3)	▪ AJ71C24 Computer Interface Module via PC Serial Port	MITA
	▪ Directly to PLC (RS422) via PC Serial Port	MIPA
	▪ Directly to PLC MelsecNet via A7BDE-A3N Programmable Controller Option Card	MITS*
	▪ Directly to PLC (RS422) via A7BDE-RS4 Serial Port Interface Board	MITS*
	▪ Directly to PLC MelsecNet via A7BDE-J7/P21/R21 MelsecNet Interface Board	MITS*
FX Series *FX0/FX0S* *FX0N* *FX/FX2C* *FX2N*	▪ Directly to PLC (RS422) via PC Serial Port	MIFX
Modicon		
M-84	▪ RS485 multidrop ModBus via Serial Port	MBUS
184	▪ ModBus Port via PC Serial Port	MBUS
384	▪ ModBus Plus port via SA-85 PC Card available from Modicon	MBPL*
484	▪ ModBus Plus port via Panel-Tec PC/104 ModBus Plus Card	MBPL*
584		
884		
984		
Quantum	▪ RS232 ModBus Port via PC Serial Port or RS485 multidrop	MBUS
	▪ Open Modbus TCP via Ethernet Port on 140 NOE 211 00 or 140 NOE 251 00 Modules	MBEN
Momentum	▪ RS232 ModBus Port via PC Serial Port or RS485 multidrop	MBUS
	▪ Open Modbus TCP via Ethernet Port on 170CCC9x020 M1 CPU	MBEN

PLC	PLC/PC Connections	Interact Driver
OMRON SYSMAC Link	▪ Via LK21 network card	SLNK*
OMRON FINS/Host Link C Series		
CV / CVM1	▪ CV500 - LK203 Host Link Module, CPU Serial Port via RS232/485	FINS
CS	▪ CPU Serial Port via RS232	FINS
OMRON Host Link/ SYSMAC C		
CV/CVM1	▪ CV500-LK203 and CPU Serial Port set for C-Mode Communications	OMRN
C1000H/C2000H	▪ C500-LK203 and 3G2A6-LK201 Host Link Modules	OMRN
C200H/HS/Alpha	▪ C200H-LK201/LK202, CPU Serial Ports, Alpha Communication boards via RS232/485	OMRN
CQM1	▪ CPU Serial Port via RS232	OMRN
*C**K*	▪ 3G2A6-LK201/LK202 via RS232/485	OMRN
CPM1	▪ RS232/485 via CPM1-CIF01/CIF11 Cable	OMRN
Opto 22	▪ G4LC32SER to COM0 via PC Serial Port	MIST
Mistic 200	▪ G4LC32ARC via ARCNET	MIST*
Profibus DP Slave	▪ L2 - DP Slave via SST Interface Card via Profibus *(see Third Party Interface section for details)*	PFBS*
Reliance		
R-Net	▪ R-Net Gateway via PC Serial Port	RELN
AutoMate	▪ Serial Communication Port CPU via PC Serial Port	RELN
	▪ Serial Communication Module (45C203) via PC Serial Port	RELN
AutoMax	▪ AutoMate Interface (57C417) via PC Serial Port	RELN
R-Net PC-Link	▪ M/N 45C124 Interface Module	RLNT*
Reliance DCSNet	▪ Automax Network Communication Module (57C404B) to PC Link Interface Module (57C445)	DCSNET
Siemens/TI		
S5 95	▪ Programming port via PC Serial Port current loop	SIEMPP
S5 100	▪ Programming port via PC Serial Port current loop	SIEMPP
S5 115	▪ Programming port via PC Serial Port current loop	SIEMPP
	▪ CP524/525 via PC Serial Port (RS232)	SIRK
S5 135	▪ Programming port via PC Serial Port current loop	SIEMPP
	▪ CP524/525 via PC Serial Port (RS232)	SIRK
S5 155	▪ Programming port via PC Serial Port current loop	SIEMPP
	▪ CP524/525 via PC Serial Port (RS232)	SIRK
S7 200	▪ PPI Port to PC Serial Port (RS232)	SPPI
S7 300/400	▪ Communication Port via Profibus DP Slave	PFBS
	▪ MPI Port Driver via HMI Adapter (6ES7972-0CA1O-0XA0 or 6ES7 972-0CA11-0XA0. Version 6ES7 972-0CA11-0XA0 of the adapter must be used for MPI Multi-drop support.	SHMI
305/405/425	▪ CPU direct serial (232/422)(point-to-point or multidrop) via PC Serial Port	TICM
	▪ DCM Module (U-01DM) via PC Serial Port	TICM
545	▪ RS232/422 COM Port via PC Serial Port	TICP
	▪ Ethernet Port via CTI 2572 Ethernet TCP/IP Module	TIEN

PLC	PLC/PC Connections	Interact Driver
560/565	• RS232/422 Communication Port via PC Serial Port	TICP
	• Ethernet Port via CTI 2572 Ethernet TCP/IP Module	TIEN
Series 500/505	• RS232/422 Communication Ports via PC Serial Port	TICP
	• Dual comm port module (Model 500-5029) via PC Serial Port	TICP
	• Ethernet Port via CTI 2572 Ethernet TCP/IP Module in Series 505	TIEN
Square D SY/MAX Serial *PLC 400, 650, 700, 200, 300*	• RS422 Communication Port via PC Serial Port	SQRD
Square D SY/MAX SY/LINK *PLC 400, 650, 700, 200, 300*	• SY/NET LAN via SF1-510 SY/LINK card	SDSL*
Telemecanique	• Uni-Telway TSX SCA 62 via PC Serial Port	TELM
Toshiba *T1 Series*	• RS232 Communication Port via PC Serial Port**	UDI
Toyopuc *PC1/PC2 Controllers*	• RS485 Communication Port via PC Serial Port**	UDI
User Device Interface (UDI)	• Example Development protocol User Device Interface Run-time (*user drivers written with Interact's Software Developers Kit*)	UDI
	• User-configurable to PC Serial Port or I/O Card	
Westinghouse *PC-2000*	• NLCP-2524/2525 via PC Serial (RS232) Port	SIRK
Westinghouse *PC-2000*	• Programming port via PC Serial Port	SIEMPP
Whedco Servo Controller	• RS232 Communication Port via PC Serial Port**	UDI
Yaskawa	• RS232/422 Communication Port via PC Serial Port	YASK

Note: All drivers that communicate via a PC Serial Port or PC/104 Interface Card are compatible with the P1/P2 PowerStation.

*   Requires additional third party communication card.
**   These drivers were written by CTC's Professional Consulting Group using the User Driver Interface (UDI) for specific applications.
   They are not distributed with the standard product but may be downloaded from the BBS or the FTP site for use.

Third Party Interfaces

Manufacturer/PLC	Workstation Interface	Interact Driver
SST Industrial Communication Technologies		
(519) 725-5136		
A-B Data Highway/ Data Highway Plus		
Model No. 5136-SD-ISA	AT Card	SSSD
Model No. 5136-SD-104	PC/104	SSSD
Device Net		
Model No. 5136-DN-ISA	AT Card	DVNT
Model No. 5136-DN-104	PC/104	DVNT
Profibus DP Slave		
Model No. 5136-PFB-ISA	AT Card	PFBS
Model No. 5136-PFB-104	PC/104	PFBS
Datalink Technologies, Inc.		
(360) 671-8731		
A-B Data Highway Plus		
Model No. DL2000-KFX	Free-Standing (Serial Interface)	ABDH
Model No. DL-PC/104	PC/104	ABDH
Model No. DL-PC	AT Card	ABDH
A-B Remote I/O		
Model No. DL2000-KFX	Free-Standing (Serial Interface)	ABDH
Model No. DL-PC/104	PC/104	ABDH
Model No. DL-PC	AT Card	ABDH
Panel-Tec		
(256) 534-8132		
Modbus Plus		
PC/104 Modbus+	PC/104	MBPL

Note: *Contact manufacturer for further details and pricing information.*

If You Don't See Your Driver Listed…

CTC's Professional Consulting Services (PCS) Department develops a variety of custom interfaces for customer applications. Our PCS group cannot only write a driver to meet your specific needs, but we can also convert your existing application to Interact, or build your application from the "ground up". Our staff is flexible and can set up a project development schedule to meet your needs -- whether we help develop your project at your facility or work on your project in our Applications Lab at CTC. Here are just a few of the interfaces the PCS group has recently completed. *For more information about these or similar projects, contact CTC's Professional Consulting Services Group at 1-513-831-2340.*

- Pager interface to a PageOne Terminal
- ASCII driver for PLCs without ASCII support
- Metler Toledo Weigh Scale
- Real-time video in Interact via a video digitizer card
- Miscellaneous Bar-Code Decoder Drivers for:
  - Allen-Bradley
  - DataLogix
  - Microscan
  - PMC-80
- IL1700 Photometer Driver
- GE Power Leader power monitor/controller
- Keithley Metrabyte PDMA32 driver
- Mitutoyo Measuring device driver
- Motorola People Finder Paging System

Pioneers in Factory Floor Automation Since 1980

Since 1980, CTC has been a pioneer in providing the automation industry with innovative Human-to-Machine Interface (HMI) solutions for the plant floor that offer machine builders "The Shortest Distance Between Man and Machine".

In 1998, CTC became an operating unit of Parker Hannifin Corporation. As part of the Parker organization, CTC has the resources to make an even stronger commitment to meet emerging trends on the factory floor with product solutions.

Building Hardware and Software Solutions as Your Single Source

Automation users today need a company that can provide hardware and software products and bundle them together as a single solution. Not only can CTC provide this bundled solution, but because the hardware and software are designed and tested under the same roof, CTC's engineering team can optimize them to yield the best possible system performance. CTC bundles PowerStation hardware and Interact HMI software together, and it also now integrates MachineLogic PC-based control and MachinePoint I/O. CTC is truly a single source for PC-based machine control and HMI solutions.