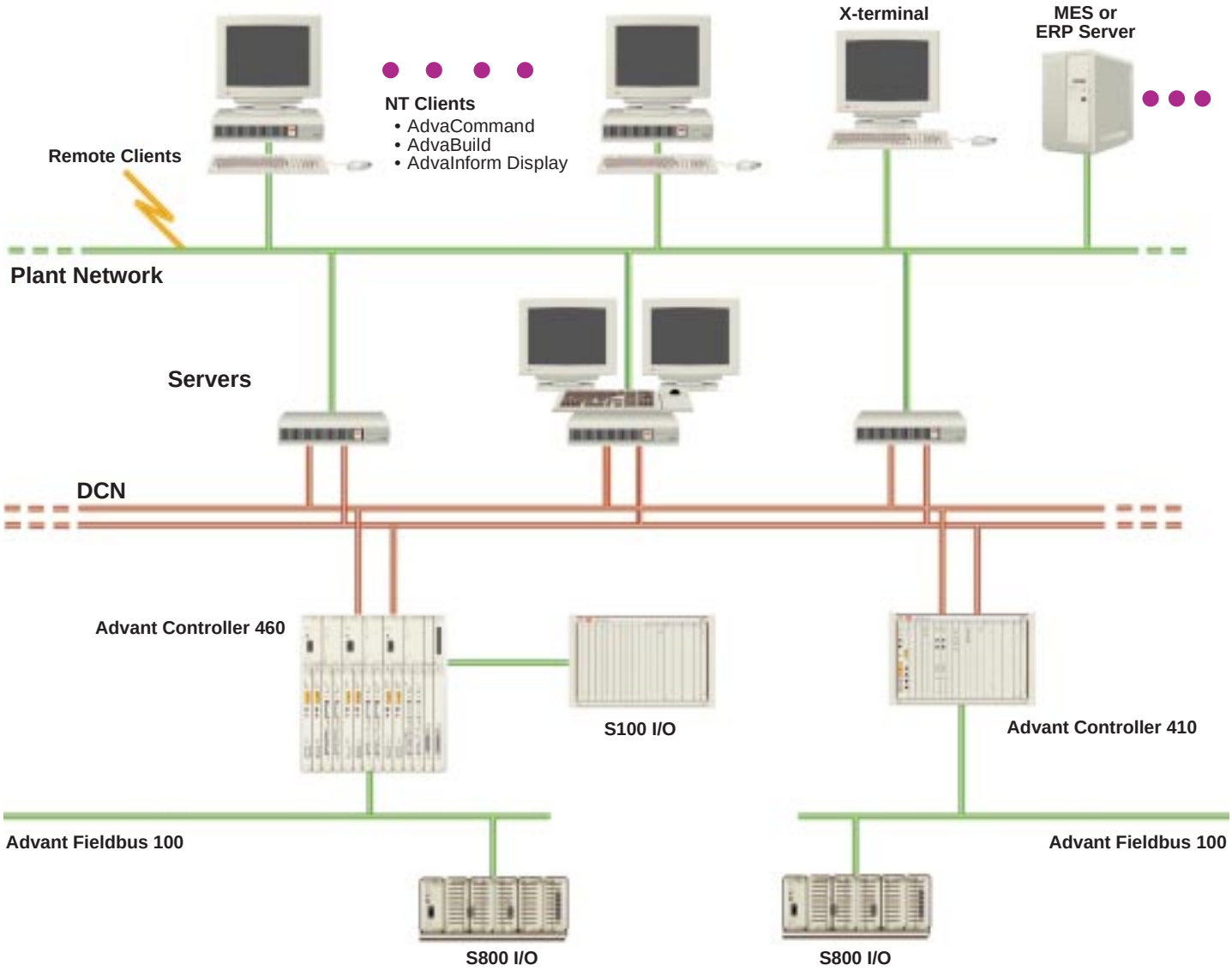
Advant® Controllers

Advant® OCS with MOD 300 Software



Other Field Device Communications

PLC Interface
Smart Devices
Serial Interfaces:
- **Bar Code Readers**
- **Weigh Scales**
- **Packing Equipment**
- **Sequence of Event Recorders**

Advant OCS with MOD 300 software provides an open systems framework that unites functions and people throughout the organization, resulting in productivity increases and profit margin improvements. As part of the Advant OCS portfolio, Advant Controllers combine high processing capacity with flexible software to create a powerful control system environment.

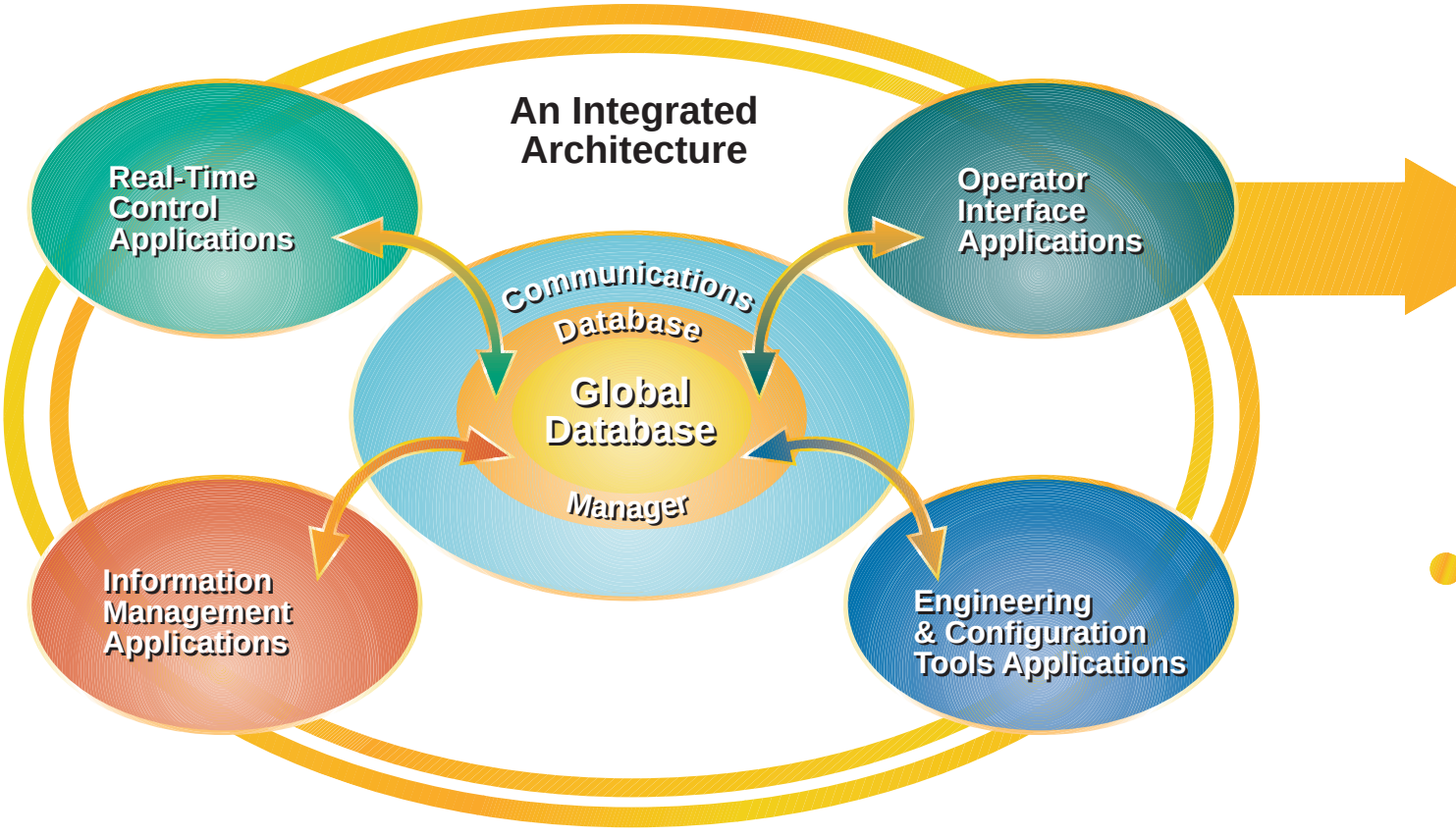
Advant Controllers benefit from a global database and three powerful control languages: CCF, TCL and TLL. Existing MOD 300 6000 Series and SC Controllers can all co-exist on the same Distributed Communications Network (DCN) as Advant Controllers and share data in a seamless manner.

Advant Controllers come in different configurations so that they can be used cost-effectively in various applications.

An Integrated Architecture

All MOD 300 software is designed to work together as an integrated system. The Global Database ensures that information needs to be entered only once and that multiple copies of the same information do not reside in different subsystems—information resides in only one location. Application programs such as control algorithms, operator interface and information management software all use the Database Manager to act upon one set of data.

Throughout the entire system, all information is identified by tag name. Unlike other control systems, Advant OCS with MOD 300 Software does not require the user to know which subsystem to access when retrieving information. The Database Manager and Communications software work together transparently to access and update data in the different hardware subsystems.

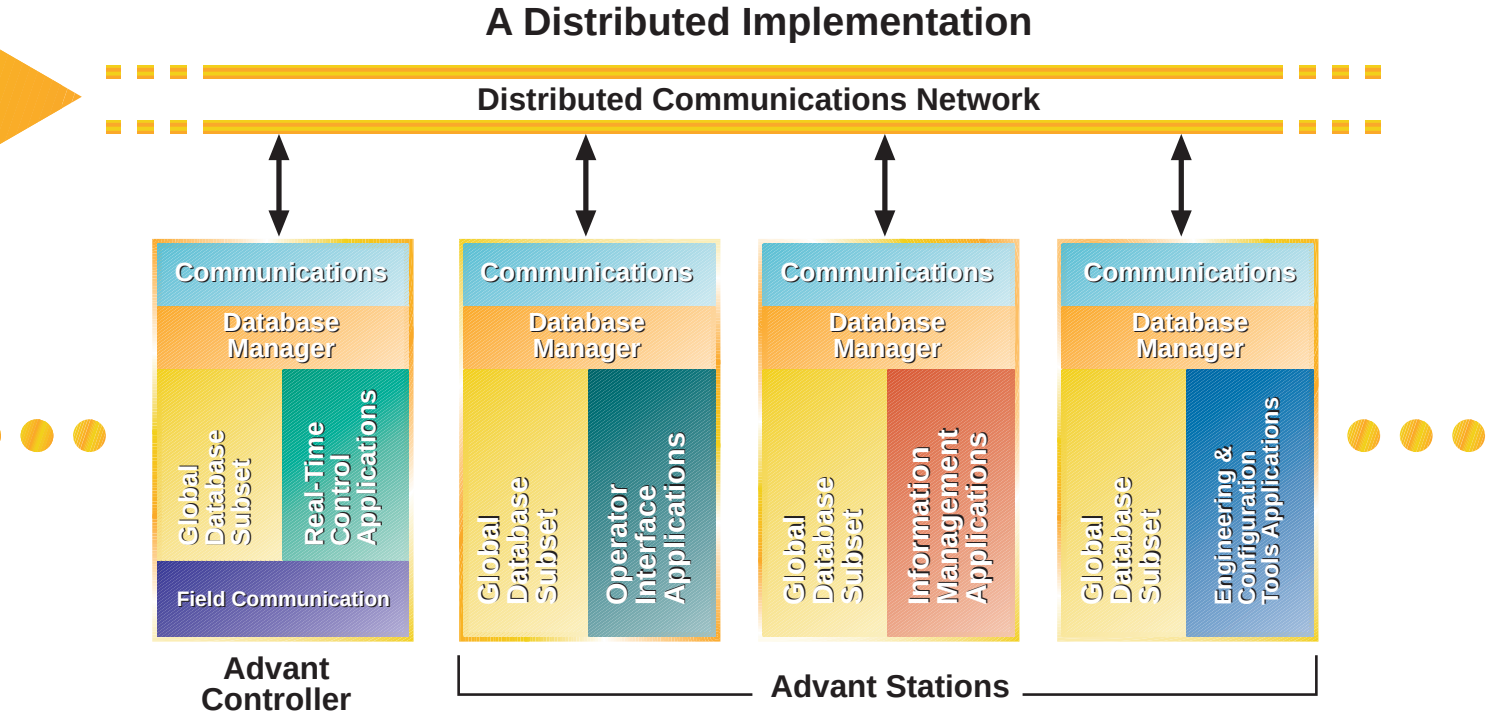


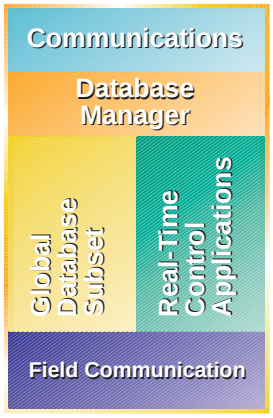
A Distributed Implementation

Advant OCS with MOD 300 Software is implemented by downloading portions of the Global Database, the Database Manager, and Communications and Applications software to hardware subsystems. Each subsystem is connected to the DCN and communicates with others to share data and execute application programs. The Database Manager and Communications Services keep the interfaces to the external world separate from the applications programs and data.

Given the integrated, modular hardware and software architecture, it is easy to upgrade communications protocols, drivers and application programs without impacting other parts of the system.

Like other Advant OCS subsystems, each Advant Controller connects to the DCN, executes real-time control applications, and shares data using the Database Manager and Communication Services software.





When in operation, each Advant Controller contains Communications and Database Manager software and a subset of the Global Database. These three elements ensure that the controllers communicate and operate in harmony with other subsytems connected to the DCN. The Real-Time Control Applications manipulate variables read from and written to the production process through the Field Communications software.

Advant Controller 41O

The Advant Controller 410 runs the complete library of MOD 300 control software and is ideal for small- to medium-sized applications. The first several slots of the backplane are occupied by the CPU and the remaining slots support up to fifteen Series 100 I/O cards.

The Advant Controller 410 is the right choice for small to medium-sized non-redundant applications.

Advant Controller 460

The Advant Controller 460 is optionally 1:1 redundant and has a high-speed processor and backplane that allow many functions to execute in a single controller module. It can contain up to three redundant pairs of modules, thereby reducing the footprint.

With 1:1 redundancy, the backup CPU runs in parallel with the primary CPU, mirroring and updating the database, so that in the event of failure, control functions are transferred to the backup CPU. The failure is indicated to the operator and the failed card can be removed and replaced while the system is operating.

The Advant Controller 460 can hold up to three CPUs, and provides complete 1:1 redundancy, from the power supplies through the processor and I/O modules.

Real-Time Control Applications

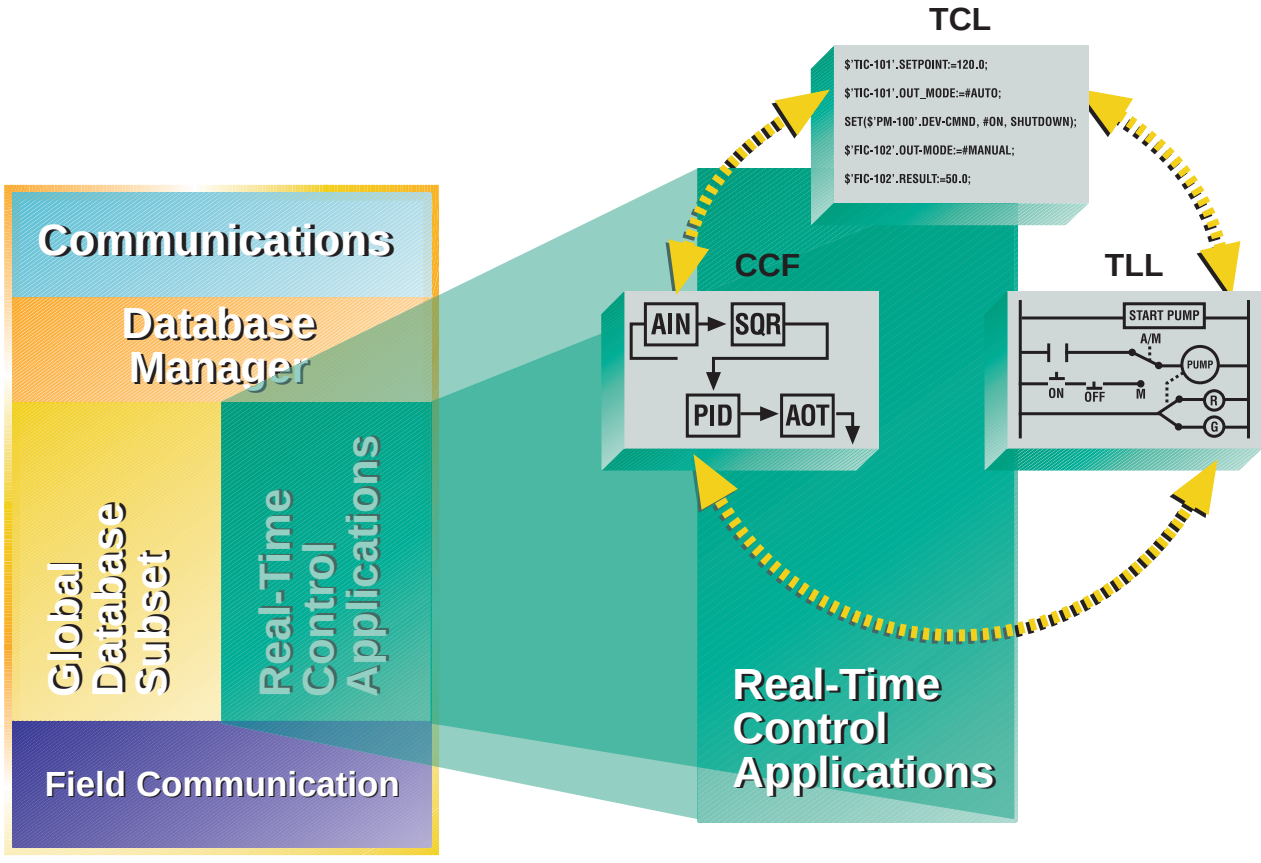
Advant OCS with MOD 300 Software provides three powerful control language packages. Configurable Control Functions, Taylor Control Language and Taylor Ladder Logic provide optimal implementation approaches in the areas of continuous control, discrete device control, supervisor control, sequential and batch control, and high speed interlock logic control.

Applications developed on other Advant OCS subsystems can be executed on the Advant Controller. The ability to mix, match and execute these control strategies simultaneously, in common hardware, offers uncompromising versatility to meet today's processing requirements.

Configurable Control Functions

Configurable Control Functions (CCF) is an easy to configure, function block structured control language. It is particularly powerful in the application of continuous process control, discrete device handling and alarm detection.

CCF has an extensive library of functions and is configured through a menu-driven software package using a fill-in-the-blank approach.



Taylor Ladder Logic

Taylor Ladder Logic (TLL) is used for high speed process interlocking and control logic. TLL provides industry standard ladder logic control processing, reducing the need to purchase stand-alone programmable controllers.

Taylor Control Language

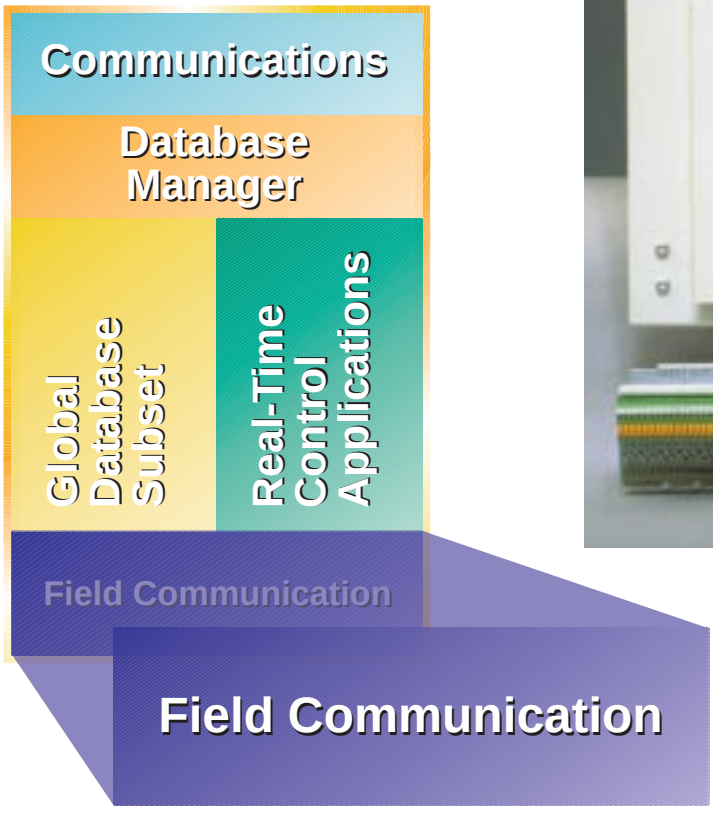
Taylor Control Language (TCL) is a structured high-level procedural language. The programmable flexibility of TCL is ideally suited for batch control, recipe management, batch reporting, process scheduling, supervisory control, and process startup and shutdown.

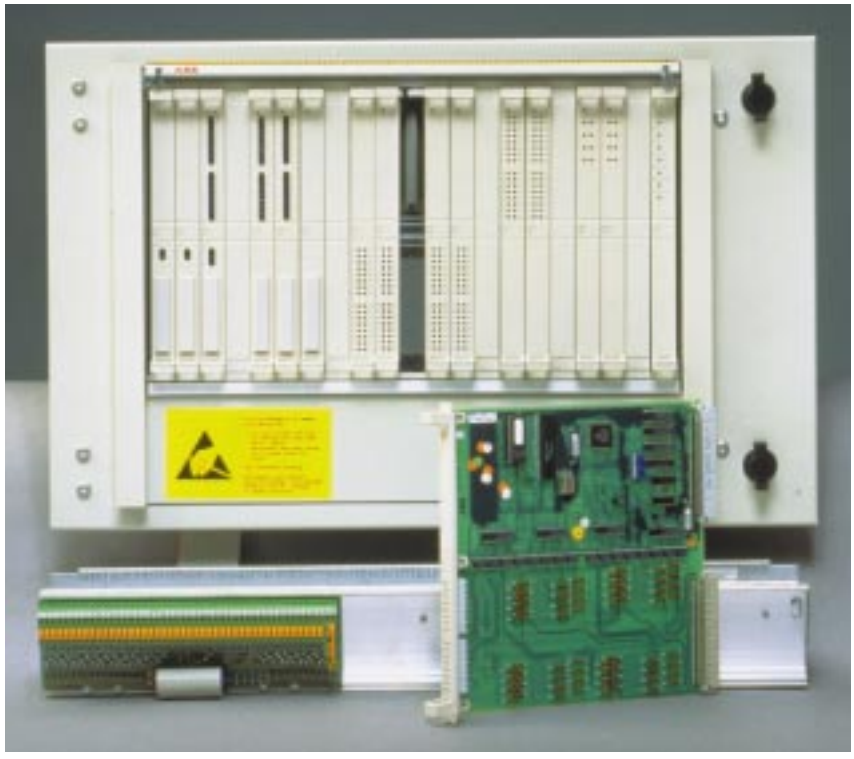
Advant Controllers execute all three MOD 300 applications: Configurable Control Functions, Taylor Control Language and Taylor Ladder Logic.

Field communication software brings process information from the I/O hardware into the MOD 300 database. ABB offers Series 100 I/O and Series 800 Remote I/O for both the Advant Controller 410 and Advant Controller 460. The I/O types can be “mixed and matched” to provide an optimum solution for each application.

Series 100 Local I/O (S100 I/O)

S100 I/O consists of card files containing I/O cards which can be configured to be either redundant or non-redundant. There are many I/O cards with differing functionality and complexity, including analog, digital, pulse, RTD and thermocouple connections. Redundant communication is also available.

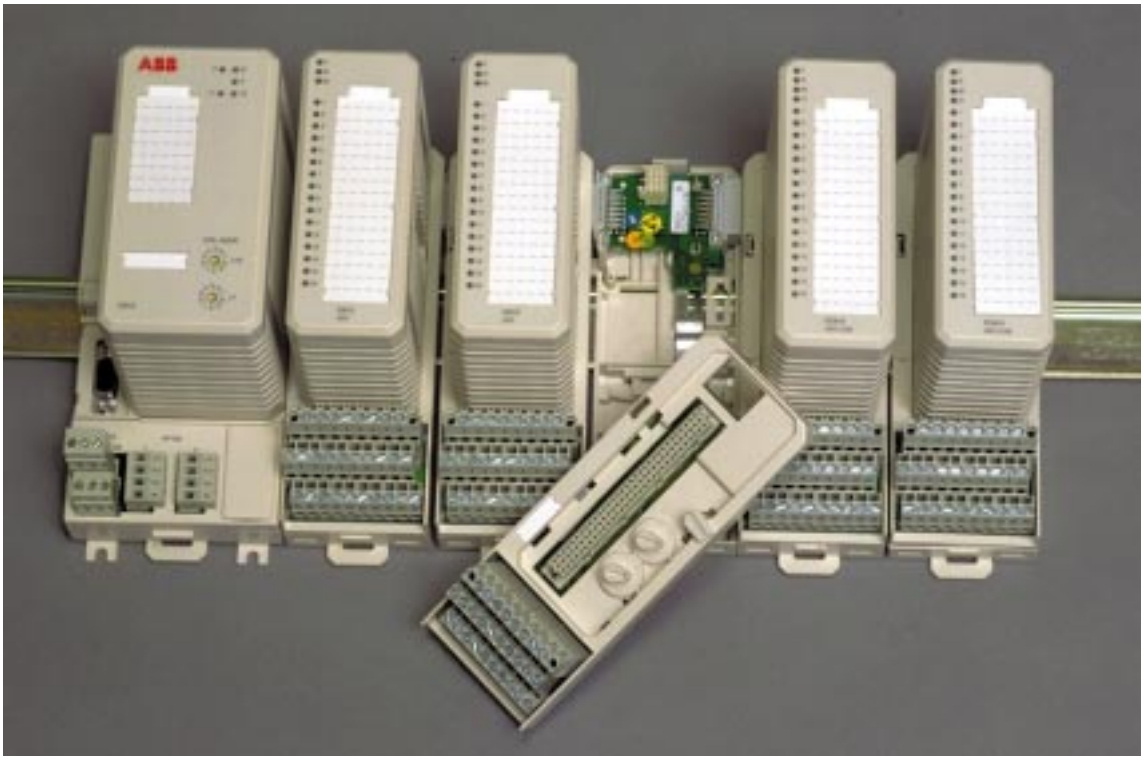




Series 100 I/O can be configured to be completely redundant, including I/O cards.

Series 800 Remote I/O (S800 I/O)

S8OO I/O is a distributed, modular I/O system which communicates with Advant Controller 400 Series over Advant Fieldbus 100 (AF 100). The S800 I/O provides easy installation of the I/O modules and process cabling. It is highly modularized and flexible so that I/O modules can be combined to suit many applications and mounting requirements. All standard I/O types are supported. Communications can be configured to be fully redundant.



I/O modules and terminal blocks can be replaced without affecting the operation of other blocks.

The modular design of S800 I/O saves installation time and panel space, while reducing down-time and maintenance costs.

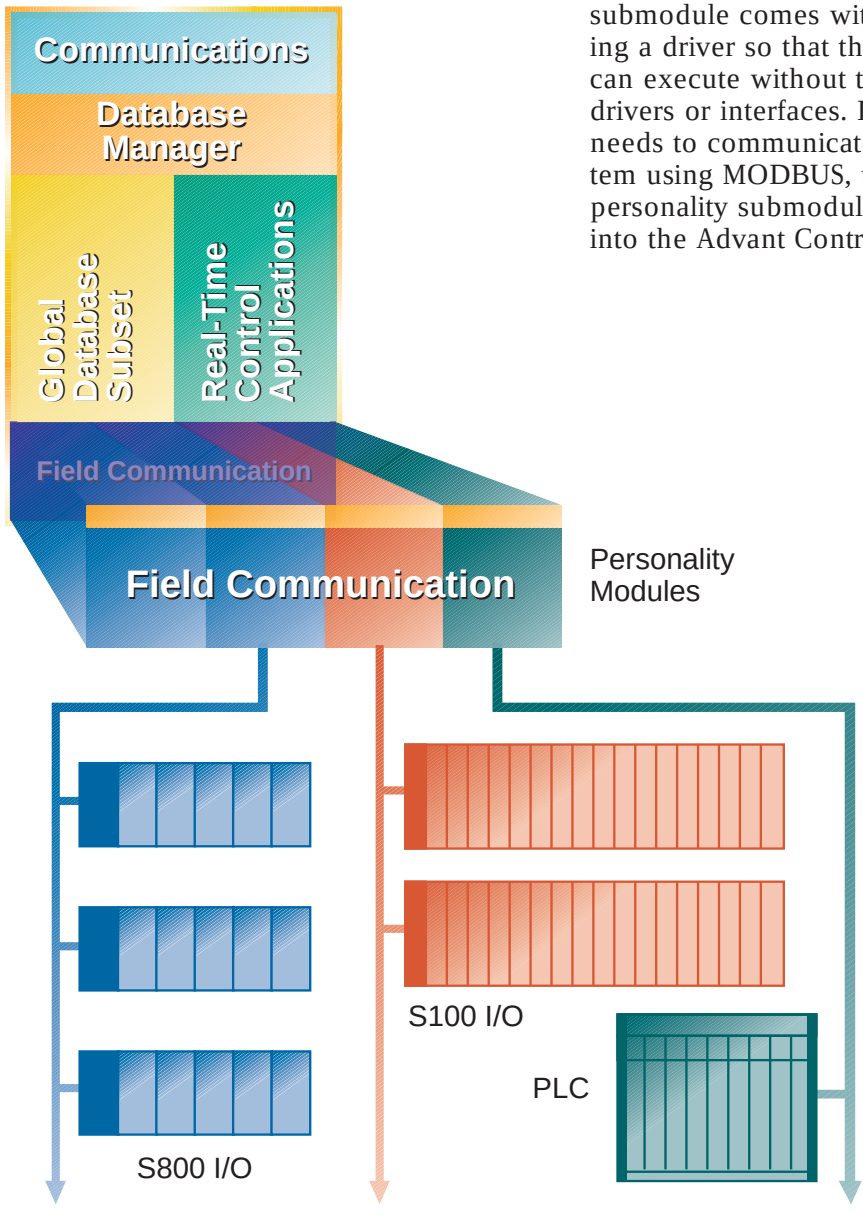
Personality Submodules

A personality submodule contains a specific communication protocol so that when new interfaces are needed, different modules can be plugged into the controller. With this visionary architecture, emerging technologies such as new fieldbuses and high speed fiber-optics can easily be integrated into the system. Personality modules help “future-proof” Advant Controllers in a world where technology is rapidly evolving.

Field communications software executes on the personality submodules and utilizes common commands to interface with the database. This modular approach lets I/O types co-exist on the same controller. Moreover, personality modules simplify integration with programmable logic controllers and other digital devices. By inserting the appropriate personality submodule into the Advant Controller, data from other systems can easily be accessed and shared.

For example, the MODBUS personality submodule comes with a PROM containing a driver so that the MODBUS protocol can execute without the need for custom drivers or interfaces. If the Advant OCS needs to communicate with another system using MODBUS, then the MODBUS personality submodule is simply plugged into the Advant Controller.

As technology continues to evolve rapidly, personality submodules "future-proof" Advant Controllers.



The Advant Controller family of products was designed for easy integration with other systems. Personality submodules, used for communication with I/O and other systems, easily plug into the Advant Controllers and help ensure investment protection.

Personality submodules make it easy to communicate with control systems and devices from other suppliers.

Investment Protection

ABB recognizes how important it is to leverage existing process control resources against future purchases from both ABB and other suppliers. The Advant Controller 400 Series is scaleable from small to large applications, and executes all existing MOD 300 software.

The personality module concept ensures that evolving communications protocols can be cost-effectively incorporated in the future. The Advant Technology philosophy lets customers take advantage of the latest technology with the full confidence that their investments will be protected in the future.

Advant OCS with MOD 300 software is backwards compatible with existing control software applications, thereby ensuring that investments are protected well into the future.

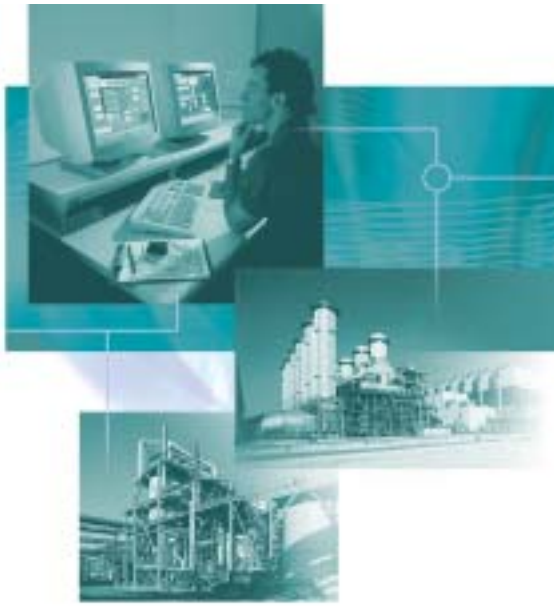
ABB provides the following Data Sheets for additional Controller and I/O System information:

Advant Controller 460 Data Sheet

Advant Controller 410 Data Sheet

S100 I/O System Data Sheet

S800 I/O System Data Sheet



For additional information,
visit us on the Internet at www.abb.com/controlsystems

3BUS092040R0101

ABB Inc.
29801 Euclid Avenue
Wickliffe, Ohio 44092
Phone: +1 440 585-8500
Fax: +1 440 585 8756
www.abb.com/controlsystems

ABB AB
SE-721 59 Västeras, Sweden
Phone: +46 (0) 21 34 2000
Fax: +46 (0) 21 13 78 45
www.abb.com/controlsystems

ABB GmbH
Dudenstraße 44-46, D-68167
Mannheim, Germany
Phone: +49 (0) 1805 266 776
Fax: +49 (0) 1805 776 329
www.abb.com/controlsystems