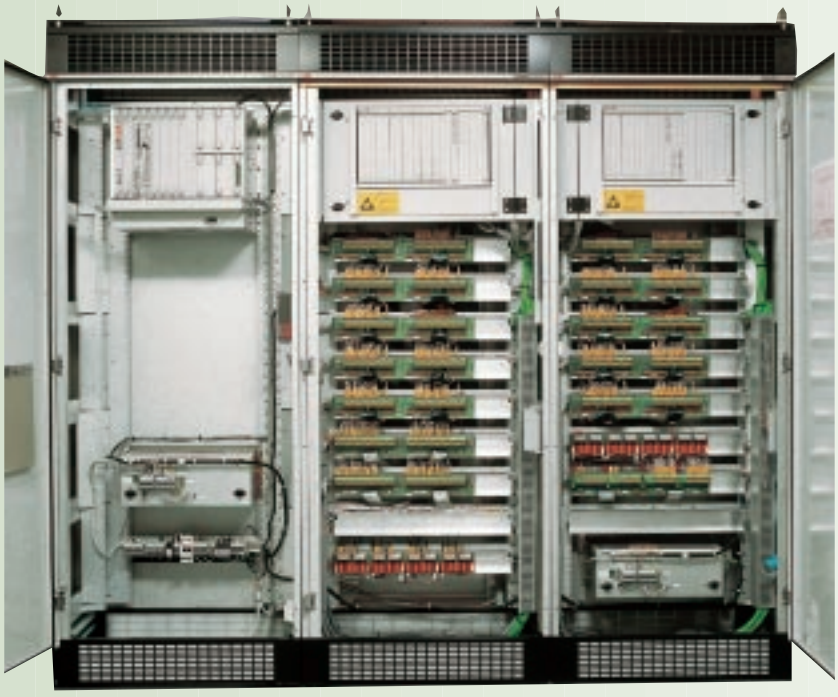
Advant Controller 450

The ultimate process controller



Advant Controller 450 is a high-end process controller for demanding applications.

Advant Controller 450 is a high-end process controller. Its high processing capacity and wide-ranging process and system communication capabilities make it the ideal choice for demanding applications, either standing alone or as part of an Advant OCS system.

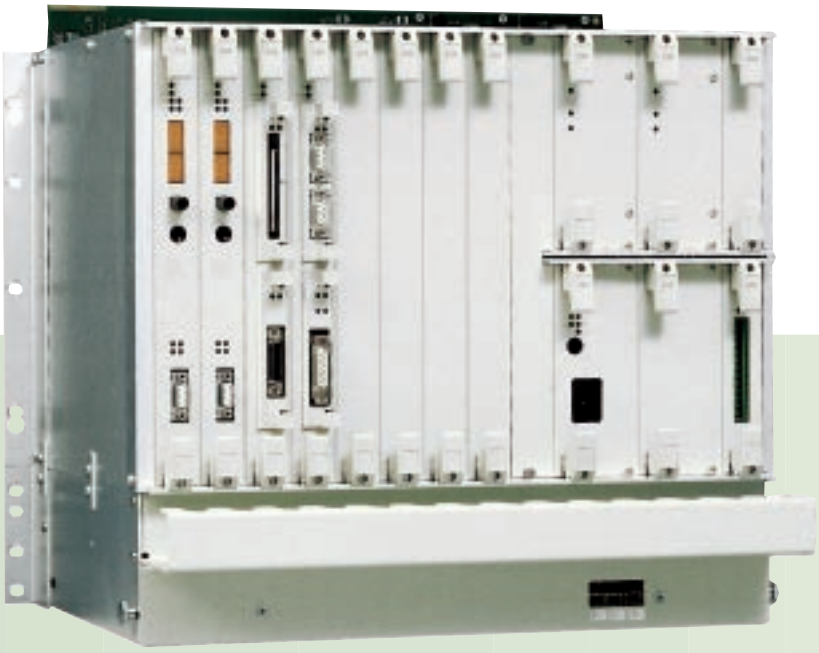
Advant Controller 450 can do "everything" in process control, not only perform logic, sequence, positioning and regulatory control but also manage data and text generally and produce reports. It can even perform self-tuning adaptive, PID control and fuzzy logic control.

The station is programmed graphically in AMPL, as are all other controllers in Advant OCS with Master software. The already rich library of program elements/function blocks can be augmented with user-developed blocks created in AMPL.

A full complement of I/O

The range of process I/O modules is complete, covering general-purpose analog and digital inputs and outputs at different ratings as well as Pt100, thermocouple and pulse inputs. Specialized interfaces are provided for accurate digital positioning, switchgear integration, variable-speed motor control, telecontrol and communication with other makes of programmable controllers. The overall I/O capacity is as high as 5,700 I/O points.

The process controller that has “everything”



An Advant Controller 450 central rack with central unit redundancy offering bumpless change-over in case of trouble.

Both central and distributed I/O are available. Central I/O (S100 I/O) modules are plugged into I/O racks installed in close proximity to the CPU rack/cabinet.

Distributed I/O (S800 I/O) stations can be installed up to 13,3 km (8,2 miles) away, communicating over Advant Fieldbus 100, a high-speed serial communication bus.

The controller that stays in touch

Advant Controller 450 supports a wide range of communication protocols, making it easy to design the optimal control system architecture for every application. These protocols include:

- MasterBus 300/300E for communication with other member stations of Advant OCS at the Control Network level.
- GCOM for communication with AdvaSoft for Windows and external computers. The easy, powerful, for external computers to access process data in Advant OCS. Both ways.
- Advant Fieldbus 100 for communication with distributed I/O stations, programmable controllers and motor drives.
- RCOM/RCOM+ for long-distance communication with remote terminals, using dedicated or dial-up telecommunication lines.
- RS232 for communication with external computers at the process signal/device level by ABB's EXCOM protocol and for local printout of data, reports, event messages and alarms.
- MVI (Multi-Vendor Interface) for communication with other makes of control systems over MODBUS I, Siemens 3964R or Allen-Bradley's DF1.
- Profibus DP for communication with other makes of controllers and with stand-alone I/O systems made for this popular communication protocol.
- Telecontrol communication with dispatch centers, power stations and remote terminals.

Motor Control Center

External computer

Remote terminal

External PLC or I/O

- SPA bus communication with relay protection units.
- LONWORKS network for integration with INSUM motor controllers, making it possible, not only to control motors easily but also to monitor them closely. All over a single bussed connection.

Redundancy at all levels

To achieve the highest possible availability, Advant Controller 450 can be equipped with backup redundancy for MasterBus 300/300E, Advant Fieldbus 100, power supplies, voltage regulators, backup batteries, battery chargers, central units (CPUs and memories) and I/O boards for regulatory control.

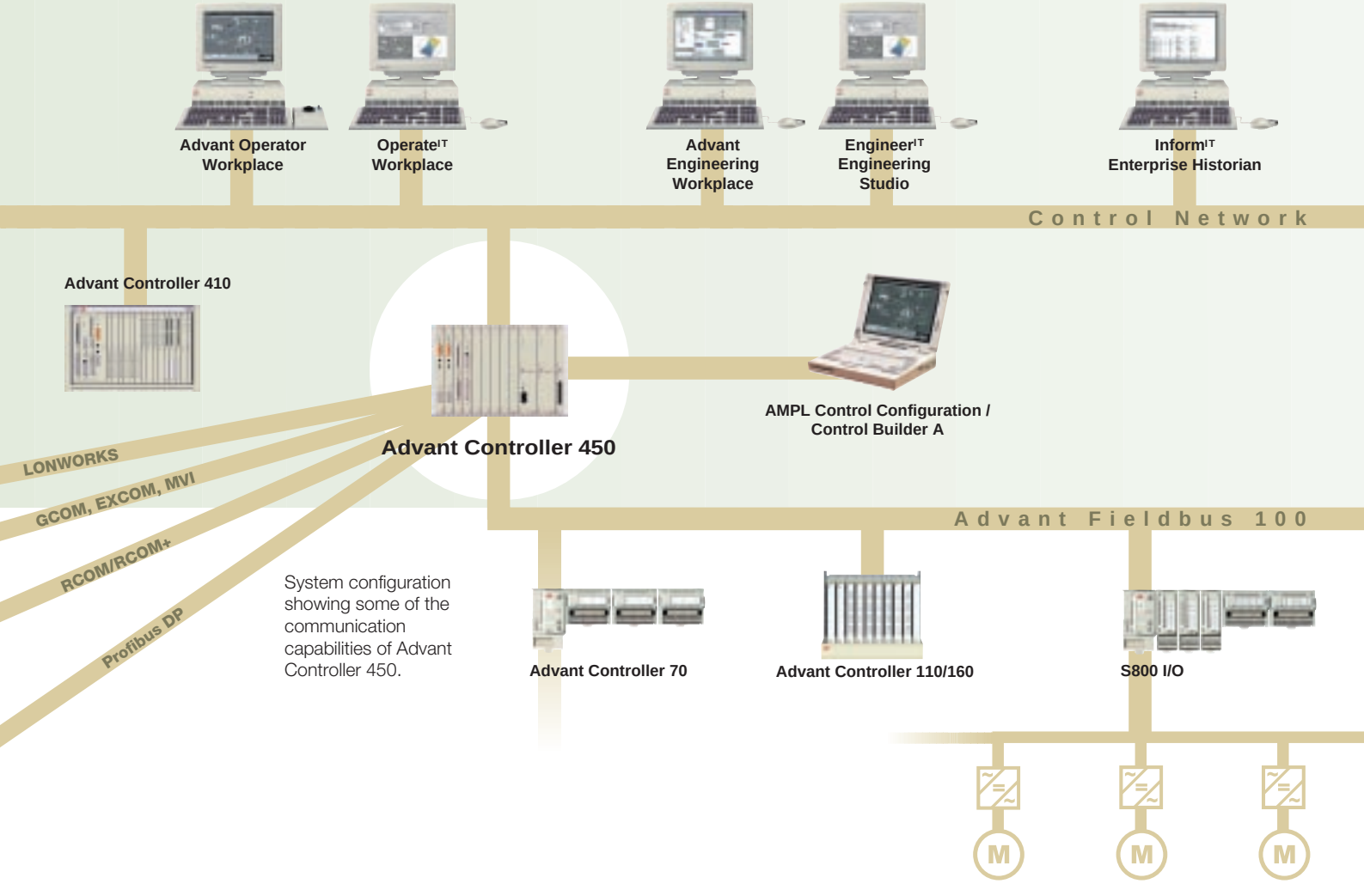
The central unit redundancy is of a patented hot standby type, offering bumpless changeover in less than 25 ms.

Enclosures

Advant Controller 450, equipped with local S100 I/O, consists of one CPU rack and up to five I/O racks. Optical bus extension makes it possible to distribute the S100 I/O up to 500 m (1,640 ft.) away, thus reducing the amount of field cabling required.

The I/O racks are designed for installation in cabinets with a swing-out frames, permitting access to both the front and the rear of racks for ease of installation and maintenance. The external connections are routed through connection units normally fitted inside, at the back of the cabinets for marshalling and noise-suppression purposes.

Cabinets with various degrees of protection are available, e.g. ventilated, tropical and sealed, with or without heat exchangers.



System configuration showing some of the communication capabilities of Advant Controller 450.

Technical shortcut

Power supply alternatives

Direct (unisolated)	24 V d.c.
D.C., by isolated DC/DC converter [1]	24/48 V d.c.
A.C. (isolated) [1]	120/230 V, 47-63 Hz

Basic capacity and performance

Primary memory	8 or 16 MB
Available for application	approx. 5,4 (13,4) MB
Processing capacity index [2]	3-4
Program execution cycle;	Selectable 10ms-2s or 5ms-32s

S100 I/O capacity [3, 12]

S100 I/O racks	Up to 5
S100 I/O modules	Up to 100
Analog input modules	Up to 32
Analog output modules	Up to 32
Digital input modules	Up to 48
Digital output modules	Up to 48

Total I/O capacity (S100 & S800 I/O) [3]

I/O channels	Up to 5,700
AI channels (incl. calculated)	Up to 900
AO channels (incl. calculated)	Up to 900
DI channels (incl. calculated)	Up to 2,300
DO channels (incl. calculated)	Up to 1,400

Software options [3]

- Advanced arithmetic, basic regulation and support for analog thyristor converters
- Advanced PID control, Auto-tuning Adaptive Controller
- Fuzzy logic control
- Advant Operator Workplace support
- MasterBatch 200/1 support
- User defined PC elements
- Object support via Advant Fieldbus 100

Hardware options[3]

Redundant CPU board, PM511 [1]	Up to 2
Interface modules (additional) [4]	Up to 12 or 14
- V.24/RS232 interface, CI531, 2 ch. [5, 14]	Up to 4
- MasterBus 300/300E interface, CS513/SC510	Up to 2
- Ditto, slave CPU version, CS513/SC520 [6,7]	Up to 6
- GCOM interface, CI543/SC510 [10]	Up to 5
- RCOM/RCOM+ interface, CI532Vxx, 2 ch.[10]	Up to 5
- Free-progr. Multi-Vendor interface, CI535, 2 ch.[10]	Up to 5
- Free-programmable interface, PU535	Up to 12
- MasterFieldbus interface, CI570	Up to 7
- Advant Fieldbus 100 interface, CI522A [14]	Up to 8
- Profibus DP interface, CI541V1 [14]	Up to 8
- LONWORKS network, 1.25 Mbits/s interface, CI572 [14]	Up to 4
- Modbus interface, CI532V02 & CI534V02, 2 ch.	Up to 5
- Siemens 3964R interface, CI532V03, 2 ch.	Up to 5
- Allen-Bradley DF1 interface, CI534V4, 2 ch.	Up to 5
- Telecontrol & SPA bus, CI535Vxx [13]	Up to 5
Voltage regulator, SR511 (Tot. 2)	1
Battery charger, SB510	Up to 2

Cabinets [3, 8,11]

- RM500V1, IP21, IP41 or IP54: WxDxH 800x512x2125 mm, (31.5"x20.2"x83.7")
- RM500V2, IP21, IP41 or IP54: WxDxH 700x637x2225 mm, (27.6"x25.1"x87.6")

Notes

1 Can be combined for dual redundancy.
2 Compared to Advant Controller 410 (approx. value).
3 See Advant OCS with Master Software Product Guides for details.
4 Depending on whether one or two PM511 are used.
5 Up to one printer, two EXCOM and four MasterView 320 connections.
6 Standard and low-load MasterBus 300/300E cannot coexist in the same controller.
7 Up to six.
8 Corresponds to the NEMA protection classes 1, 2 and 5.
9 With heat exchanger.
10 Up to nine channels (GCOM + RCOM + Multi-Vendor interface).
11 Can be combined into bays of multiple cabinets.
12 With the optical bus extensions up to 25 S100 I/O racks can be connected.
13 See Advant OCS and Telecontrol Product Guides for details.
14 Up to eight channels (AF100 + Profibus + LONWORKS + EXCOM).

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