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Advant® OCS

Open Control System

Advant Controller 250

The Powerful, Compact and Modular Advant Controller



The Advant Controller 250 is a compact, modular controller system, built around small backplanes, which can be connected to suit the desired system configuration.

The Advant Controller 250 is configured and programmed using the Advant Control Builder, a Windows NT® application.

The Advant Controller 250 has interface units for communication to other systems and devices.

The basic hardware consists of controller unit, power supply unit, backplanes and associated cables.

- Compact and modular design makes it simple to expand.
- Optimization for any specific application, through a choice of controller units delivering a comprehensive range of performance.
- Remote programming via Ethernet network or serial channel.
- I/O support for S200 I/O and S200L I/O centrally via the serial I/O bus and remotely via PROFIBUS-DP or ControlNet
- I/O support for S800 I/O remotely via PROFIBUS-DP
- Communication alternatives to other control systems: MMS, Sattlink, COMLI, SattBus, 3964R, and user-defined protocols (via serial channels).
- Units connect to screw terminal blocks and terminal bases, therby simplifying installation and improving reliability.
- Reduced installation and maintenance costs through DIN rail mounting.
- Mechanical code keys prevent the units from being damaged during replacement.

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Software

The Advant Control Builder provides the controller system with a wide range of functionality such as logic functions, PID control, alarm handling and communication possibilities to other controllers, HMI systems and third party alternatives.

Logic Functions

Logic functions, flip-flops, timers, counters etc. are available as specified in IEC 61131-3.

PID Control

PID control functions are available in the controller system.

Alarm Handling

Functions are available for alarm and event detection and alarm printouts on local printer.

Communication

Communication with the programming tool is achieved via MMS on Ethernet or MMS on serial channel (SattLink).

Communication with other systems, e.g. HMI, SCADA and control systems, may be achieved

- via MMS or SattBus on Ethernet.
- via SattBus fieldbus.
- via serial channels (RS232 or RS485). Available protocols are 3964R (as client), COMLI and MMS (SattLink). Also user-defined protocols may be used.

Hardware

The Advant Controller 250 can accommodate up to 16 possible units, one of which is the controller unit, taken from a range of models.

The units in the controller system and the I/O adapters in the central I/O system are interconnected via the controller bus.

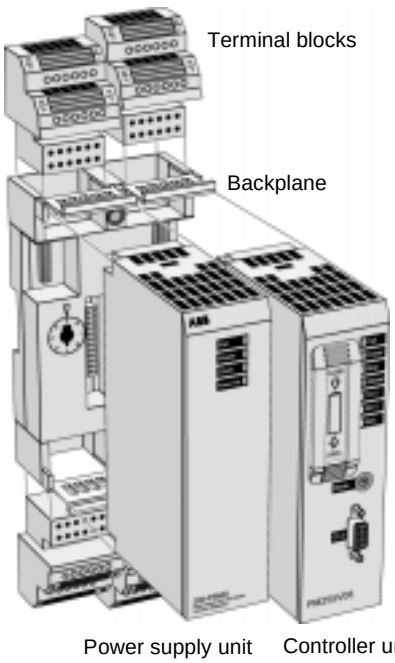
All hardware units have LEDs on the front, indicating signal status, error, etc

Each backplane may hold two hardware units. The terminal blocks (200-BPP) dock with the backplanes, enabling easy signal connection.

Controller Unit

The controller unit is a high performance 32 bit single board computer, available in different models (PM253, PM254 and PM255). All have a floating point processor (FPU), to improve calculations, as well as RAM memory and a real time clock, both with battery back-up. Two RS232 serial channels and a SattBus interface are also included on all types, except the PM255s, which have one RS232 channel.

On the front of the unit is a start-mode switch to select different program modes and a reset button to reset the system.



Unit connection

A range of different controller units are available. Their memory size and performance vary. Please refer to the technical data for more information.

Power Supply Units

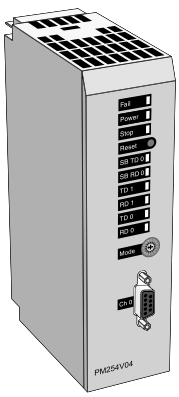
The Advant Controller 250 system power supply units use an external 24 V DC supply to generate the galvanically isolated internal power supply for the Controller and the central I/O system.

200-PSMG

The 200-PSMG is the master power supply unit that also generates the controller bus clock frequency. The clock frequency is automatically set depending on the actual size of the system configuration.

200-PSSG

The 200-PSSG is a slave power supply unit that is used in addition to the 200-PSMG, to enhance the power supply capacity in larger system configurations.


PM254V04


200-PSMG


200-PSSG


200-CI232

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Communication Interface

External communication with the Controller is achieved through interface units for Ethernet, SattBus, RS232, RS485, ControlNet and PROFIBUS-DP.

All communication units interface to the system via the controller bus.

200-CI232

The 200-CI232 has two non-isolated RS232 asynchronous serial channels with overvoltage protection. Connection takes place via the front connectors or via the screw terminal blocks.

200-CI485G

The 200-CI485G has two opto-isolated RS485 asynchronous serial channels, available from the screw terminal blocks.

The signals are galvanically isolated by optocouplers and converted to RS485 levels in the RS485 interfaces. All signals have protection against overvoltage.

It can be used for both half duplex two wire connection and full duplex four wire connection.

The unit needs an external 24 V DC power supply for the two channels.

200-CIE

The 200-CIE has one IEEE 802.3 (Ethernet) channel and performs all the logic operations needed for communication.

It has an AUI port for connection to an external Ethernet transceiver (MAU) via a drop cable. The transceiver is power supplied via the AUI port.

The 200-CIE needs an external 24 V DC supply.

200-CISB

The 200-CISB has two galvanically isolated SattBus supervisor channels available on the lower screw terminal block. A separate communication processor for each SattBus channel handles the field bus communication.

200-CICN

The 200-CICN is an interface to the ControlNet network. It is used for the remote connection of the I/O system.

Each 200-CICN acts as an I/O scanner for the 200-ACN remote I/O-adapters. A coaxial or fiber-optic cable is used for connection to the remote I/O system.

The 200-CICN is connected to the ControlNet cable system via a tap and a drop cable, one meter long.

The unit connects, galvanically isolated, to ControlNet via the front BNC connector.

200-CIPB/DP

The 200-CIPB/DP is an interface to PROFIBUS-DP fieldbus. It is used for remote connection to the I/O system.

The 200-CIPB/DP is a master of class 1 and acts as an I/O scanner for the 200-APB12 remote I/O adapters.

The unit connects to PROFIBUS-DP via the front connector.

Dummy Unit

200-DU

The 200-DU is a dummy unit used to occupy empty slots in the backplane of the controller system. It protects the controller bus from external mechanical and electrical damage.

Backplane

200-BPN

200-BPN is a backplane for Advant Controller 250 units. Each backplane has two slots and the units are held in place with two snap locks.

The backplane is designed to be mounted onto a DIN rail and can be secured by an additional screw if used in environments with severe mechanical stress.

It can be equipped with a maximum of four 200-BPP screw terminal blocks, two for each hardware unit.

Two eight-position rotary mechanical code keys prevent the inserted unit from damage if inserted into the wrong backplane slot.



200-CI485G 200-CIE 200-CISB 200-CICN 200-CIPB/DP 200-DU 200-BPN

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Technical Data

General specifications

Power supply	24 V DC (19.2–30 V DC) incl. 5% ripple according to IEC 61131-2 standard i.e. +20%, –15% and max. 5% ripple.
Temperature	
Operating	+5°C to +55°C
Non-operating	–25°C to +70°C
Humidity	Max 90%, non-condensing
Protection rating	IP20
Approvals (when product or packaging is marked)	CE marked and meets EMC directive 89/336/EEC according to the following standards: EN 50081-2 and EN 50082-2. Low Voltage Directive 73/23/EEC with supplement 93/68/EEC according to the following standard: IEC 61131-2 (only applicable for units connected to 50–1000 V AC and/or 75–1500 V DC). UL listed for US and Canada according to UL 508, with the exception for 200-CIPB/DP.
Package volume for the central system units	
1–2 units	H279 x W360 x D90 mm (9 dm^3)
3–8 units	H265 x W265 x D175 mm (12 dm^3)

Controller units

Processor type	
PM253	Motorola MC68020
PM254	Motorola MC68020
PM255	Motorola MC68060
Clock frequency	
PM253	16.7 MHz
PM254	28.8 MHz
PM255	50 MHz
Floating point co-processor	Yes
Memory and I/O unit support for system and application program	
PM253V01	1 Mbyte RAM, 32 I/O units
PM253V02	2 Mbyte RAM, 64 I/O units
PM254V04	4 Mbyte RAM, 128 I/O units
PM254V08	8 Mbyte RAM, 256 I/O units
PM255V04	4 Mbyte RAM, 256 I/O units
PM255V08	8 Mbyte RAM, 512 I/O units

Status indicators	
PM253 and PM254	Green LEDs for Power, SattBus signals (SB TD0, SB RD0), serial channel signals (TD0, TD1, RD0 and RD1). Red LEDs for Fail and Stop
PM255	Green LEDs for Power, serial channel signals TD0 and RD0. Red LEDs for Fail and Stop. Red/green LED for battery status
Communication channels	
Serial channels	Max. cable length: 15 meters.
Baudrate	75, 110, 134, 150, 300, 600, 1200, 2400, 4800, 9600 (default), 19200 and 38400 baud.
PM253 and PM254	2 RS232 channels. Channel 0 for TD, RD, RTS, CTS, DCD and DTR. Available protocols for channel 0 is MMS (SattLink). Channel 1 for RD and TD. Data bits 7 or 8 (default). Parity odd, even or none . Stop bits 1 (default) or 2. Available protocols for channel 1, see 200-CI232
PM255	1 RS232 channel. Channel 0 for TD, RD, RTS and CTS. Available protocolfor channel 0 is MMS (SattLink).
SattBus	1 channel, supervisor (not available on PM255). Available protocol, see 200-CISB
Real-time clock	Yes
Accuracy, normal mode	
PM253 and PM254	10 ppm (approx. 6 min/year)
PM255	100 ppm (approx. 60 min/year)
Accuracy, battery backup mode	50 ppm (approx. 0.2 s/hour)
Backup battery	Batteries are to be replaced every 3rd year. Note that for all PM254 units, the battery lifetime is max. 3000 h when the system is not powered.
PM253 and PM254	A lithium battery for the memory and real time clock (3.6 V, 1.75 Ah, size AA/R6/UM-3) incl. connection cable.
PM255	A NiMH rechargeable battery for the memory and real time clock (4.8 V, 200 mAh, size 4 x V250H). Backup time is about 1 hour.
Connectors	One 200-BPP screw terminal block. One 9-pin female D-type connector at the front.
Earthing	Directly connected via the 200-BPN backplane.
Power supply	From 200-PSMG/PSSG Power supply unit.
Internal current consumption (from 200-PSMG/PSSG)	Max. 0.6 A
Backplane key code	5.
Weight	0.43 kg excl. packaging 0.50 kg incl. packaging
Dimensions	H 163 x W 45 x D 91 mm (excl. connectors and snap locks)
Order codes	PM253V01 PM253V02 PM254V04 PM254V08 PM255V04 PM255V08

Power Supply 200-PSMG

Input	24 V DC (19.2–30 V incl. max. 5% ripple) max. 1.3 A
Input fuse	2 A slow 250 V. IEC-127-3 micro fuse, TR5
Inrush current	Max. 4 A for 10 ms
Power drop (hold up)	Max. 0.3 ms
Output	7–9 V DC, max. 2.2 A (1.8 A when also 200-PSSG are used)
Clock frequency	4, 6, 8 and 12 MHz, automatically set depending on the system configuration size
Status indicators	Green LEDs for Power (output voltage) and Clock output. Red LEDs for Fail (initialization) and Power Fail
Galvanic isolation	500 V AC rms between input and output
Connectors	A 200-BPP screw terminal block
Earthing	Directly connected via the 200-BPN backplane
Backplane key code	7
Weight	0.17 kg excl. packaging 0.24 kg incl. packaging
Dimensions	H163 x W45 x D91 mm (excl. connectors and snap locks)
Order code	200-PSMG

Power Supply 200-PSSG

Input	24 V DC (19.2–30 V incl. max. 5% ripple) max. 1.3 A
Input fuse	2 A slow 250 V. IEC-127-3 micro fuse, TR5
Inrush current	Max. 4 A for 10 ms
Output	7–9 V DC, max. 1.8 A
Status indicators	Green LEDs for Power (output voltage). Red LED for Power Fail
Galvanic isolation	500 V AC rms between input and output
Connectors	A 200-BPP screw terminal block
Earthing	Directly connected via the 200-BPN backplane
Backplane key code	7
Weight	0.17 kg excl. packaging 0.24 kg incl. packaging
Dimensions	H163 x W45 x D91 mm (excl. connectors and snap locks)
Order code	200-PSSG

RS232 Communication Interface 200-CI232

Number of channels	2
Communication protocols	COMLI (client and server), 3964R (client), MMS (SattLink) (client and server), and user-defined
Communication interface	RS232C asynchronous serial communication for TD, RD, RTS, CTS, DCD and DTR
Status indicators	Green LEDs for Power and serial channel signals RD0, RD1, TD0, TD1, RTS0 and RTS1
Galvanic isolation	None
Transmission rate	75, 110, 134, 150, 300, 600, 1200, 2400, 4800, 9600 (default), 19200 and 38400 baud. Max. cable length: 15 meters
Data bits	7 or 8 (default)
Parity	Odd, even or none
Stop bits	1 (default) or 2
Max load on DTR	5 mA
Power supply	From 200-PSMG/PSSG Power supply unit
Internal current consumption (from 200-PSMG/PSSG)	Max. 0.2 A
Connectors	Two 200-BPP screw terminal blocks. Two 9-pin D-type female connectors located at the front
Backplane key code	8
Weight	0.20 kg excl. packaging 0.27 kg incl. packaging
Dimensions	H163 x W45 x D91 mm (excl. connectors and snap locks)
Order code	200-CI232

RS485 Communication Interface 200-CI485G

Number of channels	2
Number of nodes	32 per channel
Communication protocols	COMLI (client and server), 3964R (client), MMS (SattLink) (client and server), and user-defined
Communication interface	RS485 asynchronous serial communication for TD, RD and RTS
Status indicators	Green LEDs for Power and serial channel signals RD0, RD1, TD0, TD1, RTS0 and RTS1
Galvanic isolation	500 V AC rms. The channels are individually isolated from the main logic and 24 V DC
Transmission rate	75, 110, 134, 150, 300, 600, 1200, 2400, 4800, 9600 (default), 19200 and 38400 baud. Max. cable length: 1200 meters
Data bits	7 or 8 (default)
Parity	Odd, even or none
Stop bits	1 (default) or 2
Power supply	From 200-PSMG/PSSG Power supply units and external power supply (24 V DC)
Internal current consumption (from 200-PSMG/PSSG)	Max. 0.2 A
External current consumption	Max. 0.1 A (taken from external 24 V DC)
Connectors	Two 200-BPP screw terminal blocks
Backplane key code	8
Weight	0.22 kg excl. packaging 0.29 kg incl. packaging
Dimensions	H163 x W45 x D91 mm (excl. connectors and snap locks)
Order code	200-CI485G

Ethernet Interface 200-CIE

Number of channels	1
Communication standard	IEEE 802.3 (Ethernet)
Communication protocols	SattBus (client and server), MMS (client and server)
Status indicators	Green LEDs for Power, Transmit data TD0, Received data RD0 and Ethernet traffic NET. Red LED for Fail (software controlled)
Galvanic isolation	500 V DC from 24 V DC supply. According to the IEEE 802.3 standard, the transceiver (MAU) must provide isolation between the AUI cable and the broadband coaxial medium. When taking current from the AUI, it must not exceed 0.5 A as provided by the AUI source. For further details see ANSI/IEEE Std. 802.3 and the SS-ISO 8802-3.
Transmission rate	10 Mbits/s
Access method	CSMA/CD (Carrier Sense, Multiple Access with Collision Detect)
Input fuse	Fuse 1.25 A slow. Microfuse TR5 IEC-127-3
Power supply	From 200-PSMG/PSSG power supply unit and external power supply (24 V DC)
Internal current consumption (from 200-PSMG/PSSG)	Max. 0.25 A
External current consumption	Max. 0.5 A at 19.2V DC (typ. 0.2 A) taken from external 24 V DC supply (depending on transceiver type).
Connector	One 200-BPP screw terminal block. One 15-pin D-type female connector with slide latch located at the front.
Backplane key code	8
Weight	0.34 kg excl. packaging 0.41 kg incl. packaging
Dimensions	H163 x W45 x D91 mm (excl. connectors and snap locks)
Order code	200-CIE

SattBus Interface 200-CISB

Number of channels	2
Number of nodes	120
Communication protocol	SattBus (client and server)
Transmission rate	62.5 kbits/s
Access method	Token bus
Status indicators	Green LEDs for Power, Transmit Data (TD 0, TD1), and Receive Data (RD 0, RD1).
Galvanic isolation	500 V AC rms. The channels are individually isolated via signal transformers.
Connector	One 200-BPP screw terminal block
Power supply	From 200-PSMG/PSSG Power supply unit
Internal current consumption (from 200-PSMG/PSSG)	Max. 0.3 A
Backplane key code	8
Weight	0.25 kg excl. packaging 0.32 kg incl. packaging
Dimensions	H163 x W45 x D91 mm (excl. connectors and snap locks)
Order code	200-CISB

ControlNet Interface 200-CICN

Number of channels	1
Communication protocol	ControlNet
Access method	CTDMA (Concurrent Time Division Multiple Access)
Galvanic isolation	Isolation via a signal transformer
Transmission rate	5 Mbit/s
Status indicators	Green/Red LEDs for OK (unit status) and for COM A and B (communication information). Green LED for Power.
Power supply	From 200-PSMG/PSSG Power supply unit
Internal current consumption (from 200-PSMG/PSSG)	Max. 0.5 A
Connector	BNC 75 Ω at the front
Backplane key code	8
Weight	0.25 kg excl. packaging 0.33 kg incl. packaging
Dimensions	H163 x W45 x D91 mm (excl. connectors and snap locks)
Order code	200-CICN

PROFIBUS-DP Interface 200-CIPB/DP

Type	DP master class 1
Number of channels	1
Communication protocol	PROFIBUS-DP
Transmission rate	9.6, 19.2, 93.75, 187.5, 500, 1500, 3000, 6000 or 12000 kbit/s
Galvanic isolation	None
Status indicators	Green LEDs for Power, Ready and Run. Red LED for Error (LED Fail is for future use).
Power supply	From 200-PSMG/PSSG Power supply unit
Internal current consumption (from 200-PSMG/PSSG)	Max. 0.65 A
Connectors	One female 9-pin D-type connector
Backplane key code	8
Weight	270 g excl. packaging 330 g incl. packaging
Dimensions	H163 x W45 x D91 mm (excl. connector and snap locks)
Order code	200-CIPB/DP

Dummy Unit 200-DU

Backplane key code	None
Weight	0.11 kg excl. packaging 0.18 kg incl. packaging
Dimensions	H163 x W45 x D91 mm
Order code	200-DU